TRANSACTIONS

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The Essex Society for Archaeology & History

FORMERLY THE ESSEX ARCHAEOLOGICAL SOCIETY

FOUNDED 1852

ESSEX SOCIETY FOR ARCHAEOLOGY AND HISTORY

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THE ESSEX SOCIETY FOR ARCHAEOLOGY AND HISTORY

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The Society was founded in 1852 as the Essex Archaeological Society. Its objects are:

1. To promote and encourage the study of the archaeology and history of the historic county of Essex.
2. In furtherance of the above, to publish the results of such studies in its journal and to disseminate information on matters relating to archaeology and history in Essex through appropriate media.
3. To organise conferences, lectures and visits for the benefit of members of the Society and interested members of the public; to educate the wider community in the archaeological heritage of Essex; to co-operate with other bodies on matters of common interest and concern.
4. To provide library facilities for Society members and approved members of the public.

Publications

The articles in its journal range over the whole field of local history. Back numbers are available; a list and prices can be obtained on application to the Librarian. Members receive a regular Newsletter covering all aspects of the Society's activities, news of current excavations and fieldwork, and items of topical interest.

The Library

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An Early Bronze Age Beaker domestic site: Excavations at 105–109 New Road, Rainham, London Borough of Havering

R. Bull

With contributions from J. Cotton, A. Doherty, T. Grey, B. Richardson and K. Stewart.
Illustrations by J. Peresztegi and H. Faux

A two-phase evaluation and watching brief led to an open area excavation at 105–109 New Road, Rainham, Essex (site code NEU09). The site is located towards the edge of the Taplow terrace gravels overlooking the Thames floodplain. At the centre of the excavation a group of four pits contained an assemblage of Beaker pottery dating to the Early Bronze Age (EBA), c.2200–c.1800 BC. Associated finds comprise struck and burnt flints, and include a burnt barbed and tanged arrowhead. A number of later features attest to Middle Iron Age (MIA) and Roman activity. Environmental preservation was very poor, but wet sieving produced bulk samples of charred grain and wood charcoal apparently relatable to the EBA and MIA phases of activity. A series of radiocarbon determinations support the MIA chronology of the site.

INTRODUCTION

In 2009, a programme of archaeological fieldwork was undertaken by Museum of London Archaeology (MOLA) at 105–109 New Road, Rainham in the London Borough of Havering (TQ 50870 82917) (Fig. 1). The site lies on the north-west corner of the junction of New Road with Spencer Road.

Initial evaluation (trenches 1–3) was undertaken in May 2009 before the demolition of the single storey warehouses that then occupied the site: a watching brief and a further phase of evaluation (trenches 4 and 5) occurred in June and July 2009 during post-demolition ground reduction. Finds retrieved from trench 4 during this second phase of evaluation included a barbed and tanged flint arrowhead and a moderate quantity of prehistoric pottery. As a result, a larger area in the eastern half of the site was excavated in August and September 2009 (Fig. 2).

In view of the possible survival of fragile prehistoric remains, particular care was taken during the removal of the overlying soils in the excavation area; the subsoil (0.2m in depth) was gradually graded down in 5cm spits to the surface of the natural gravel. No finds or features other than modern intrusions were observed during this operation. Once exposed, the surface of the sandy, natural terrace gravels was cleaned by hand to define the surviving archaeological features.

Excavation of the site followed procedures laid out in the MOLA method statements (Hoad 2009a and b). A detailed report of the results of the evaluations and excavation is presented in the post-excavation assessment (Bull 2010) which is lodged along with the site finds and records at the Museum of London Archaeological Archive (formerly LAARC) under the site code NEU09.

FIGURE 1: The location of the site

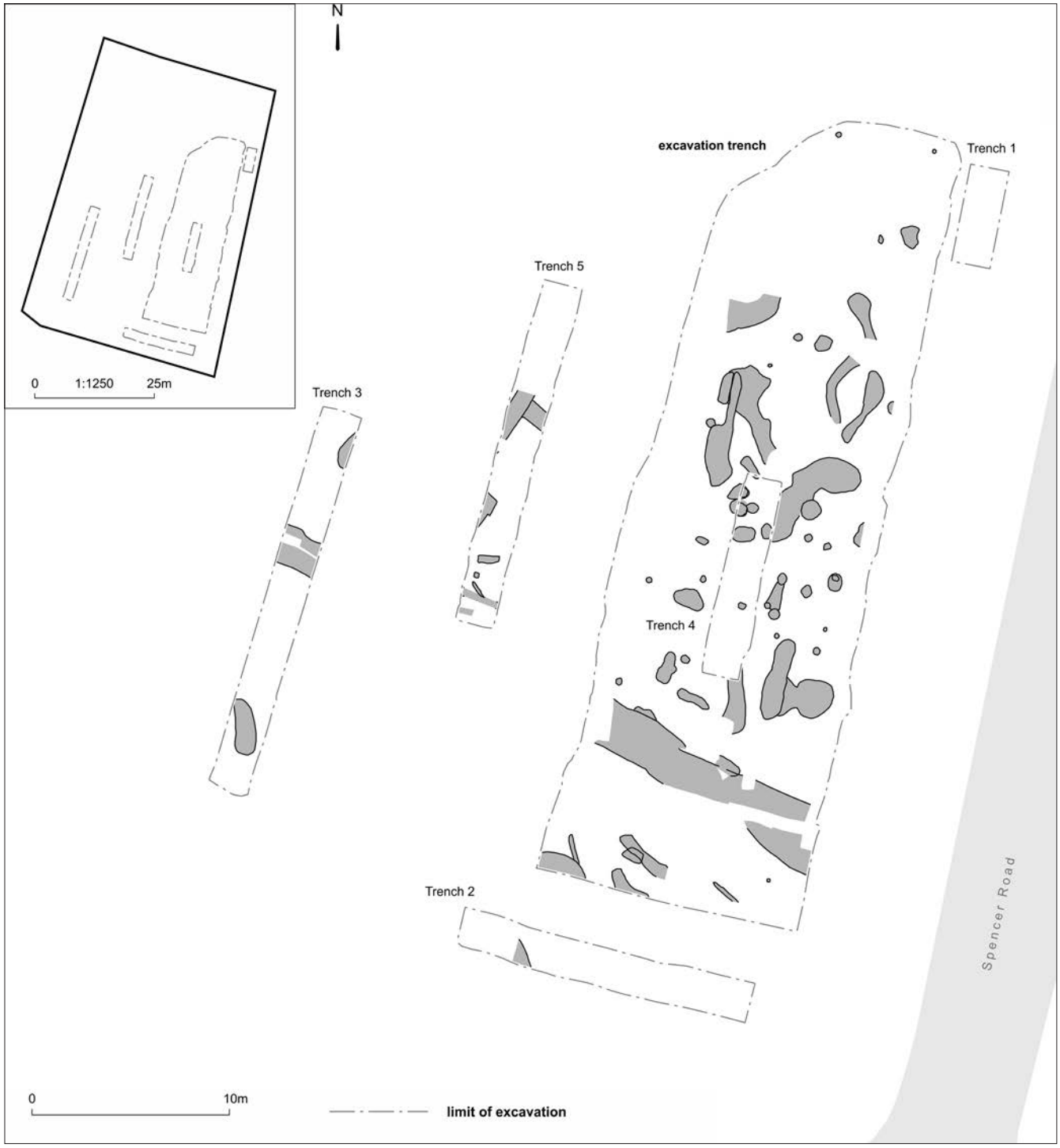

FIGURE 2: The evaluation and excavation trenches referred to in the text and the location of all archaeological features recorded

ARCHAEOLOGICAL BACKGROUND

The site is situated on the southern margin of the Taplow Terrace of Thames river gravel. Immediately south of the site, the terrain gives out onto the wide alluvial floodplain of the Thames (BGS 1996, mapsheet 257): the present course of the river is *c*.1.6km distant. Two minor tributaries run south through Rainham towards the Thames – the Beam River *c*.0.6km to the west of the site and the Ingrebourne River *c*.1km to its east.

Early activity along the local terrace edge is known from past archaeological work in the area (Fig. 3). Scattered features including pits, post-holes and lengths of ditch have been recorded on a number of adjacent sites such as that to the west at 15–17 New Road (NWM02; Maloney and Holroyd 2003, 44); and those to the east at 111–113 New Road (NRR01; Maloney and Holroyd 2002,14), and 137–139 New Road (former Manser Works), where a series of pits and stake-holes were overlain by a layer of burnt flint sealed by the 'alluvial deposits of a natural channel' (MNM03; Maloney and Holroyd 2005, 9). Further east, an extensive area of Late Bronze Age settlement activity was examined adjacent to the Ingrebourne River at Scott and Albyn's Farm, South Hornchurch (RNH96; Guttmann and Last 2000).

Beyond the Ingrebourne other sites on or close to the terrace edge include a Bronze Age brushwood trackway at Bridge Road, Rainham (RA-BR89; Meddens and Beasley

FIGURE 3: Location of the site in relation to topography and selected previous sites within Rainham

1990), and a Beaker pit and other features on the site of the former Rainham Football Club (RA-FG95; Costello 1997). An extensive lithic assemblage and associated features were located on Brookway Allotments, Rainham (RA-BA92; Greenwood and Maloney 1993, 79), while an early Neolithic ring-ditch whose central pit contained Beaker sherds was excavated at Launders Lane, Rainham in 1963 (R-126; Howell *et al*. 2011).

Later prehistoric and Roman activity has been discovered in the same general area, and includes part of a late 1st- or early 2nd-century enclosure at the Mardyke Estate (MYE08; Fairman 2009) 450m to the north-west. In addition a small mixed inhumation and cremation cemetery was disturbed during gravel extraction in the 1920s some 350m north-east of the present site (GLHER – shown as 'Roman cemetery' on Fig. 3), while other Roman features have been located at the Lessa Sports Ground on Rainham Road 1.1km to the east (LSA98), and at Moor Hall Farm away to the north-east (R-MHF77; Howell *et al*. 2011).

Saxon burials of some status were discovered at Gerpin's Farm in Gerpin's Lane some 3km to the east (Evison 1955; O'Leary 1955), while possible evidence of settlement was present at the Lessa Sports Ground. Maps of the area begin with Norden's map of 1594 and Speed's map of 1610. Both maps limit detail to settlements only – with the site occupying open land to the west of Rainham. Chapman and André's map of 1777 shows the site as fields set between small hamlets or farms accessed from Ripple Road (latterly New Road). Mear Ditch (then Mardyke) Farm lay to the west of the site and Marshfoot Farm lay further east along New Road. The first buildings within the present site footprint appear around 1939.

THE EXCAVATION

Natural geology and topography

Well-drained natural sandy gravels were present across the site, sloping gently from 3.5m OD in the north-west to 3.2m OD in the south. The site overlooks a well-defined step to the south as the gravel terrace gives way to the Thames alluvial floodplain (Rainham Marsh), and lies within a lobe of higher ground carved by the Beam River and a smaller unnamed stream *c*.175m to the east. Another small unnamed stream indents the terrace edge *c*.130m to the west, creating in effect a minor promontory occupied by the present site (Fig. 3).

Results from the south-eastern corner of the excavation supported observations from the evaluation and showed the gravels fading out over an underlying seam of soft yellow sands, presumed to be part of the terrace gravel formation. The drop onto the sand was noticeable, falling approximately 0.4m to a surface of 2.90m OD. It is unclear if the sudden change in level is a localised variation in the natural gravel strata or reflects periglacial (or later) erosion, possibly relating to a nearby channel draining from the slope onto the floodplain to the south.

Early Bronze Age (*c*.2200–*c*.1800 BC)

A number of features were located on the east side of the site, in and beyond evaluation trench 4 (Fig. 4). These include a group of four shallow pits, all of which contained Beaker sherds. A sinuous shallow gully [133] to the north produced a single 'S' profile Beaker sherd and may also be EBA in date, while it is possible that isolated pit [101] cutting into gully/natural feature [127] is similarly early, though its soft, slightly humic brown silty sand fill contained no dateable material.

The pit group

The group of four closely spaced pits ([16], [18], [22]/[125] and [26]/[139]) were cut into the natural gravels. The dimensions and principal characteristics of these features are summarised in Table 1, and their contents in Table 2. The double numbers for two of these features (and their fills) reflect that they were recorded during both the evaluation (as [22] and [26]) and excavation (as [125] and [139]).

Pit [16] had well-defined near vertical sides and contained a moderately compacted yellow-brown, silty sand and gravel fill [15]. Within the fill were two decorated Beaker sherds (<P1> and <P2>, Fig. 7a) and one plain form, together with a burnt barbed and tanged flint arrowhead <1> (Fig. 8; see Flint below).

Pit [18] lay to the east of pit [16], and was the smallest of the four pits. It was located at the western end of irregular linear feature [127], a poorly understood and possibly natural feature. Its fill [17], a loose, yellow-brown, sandy

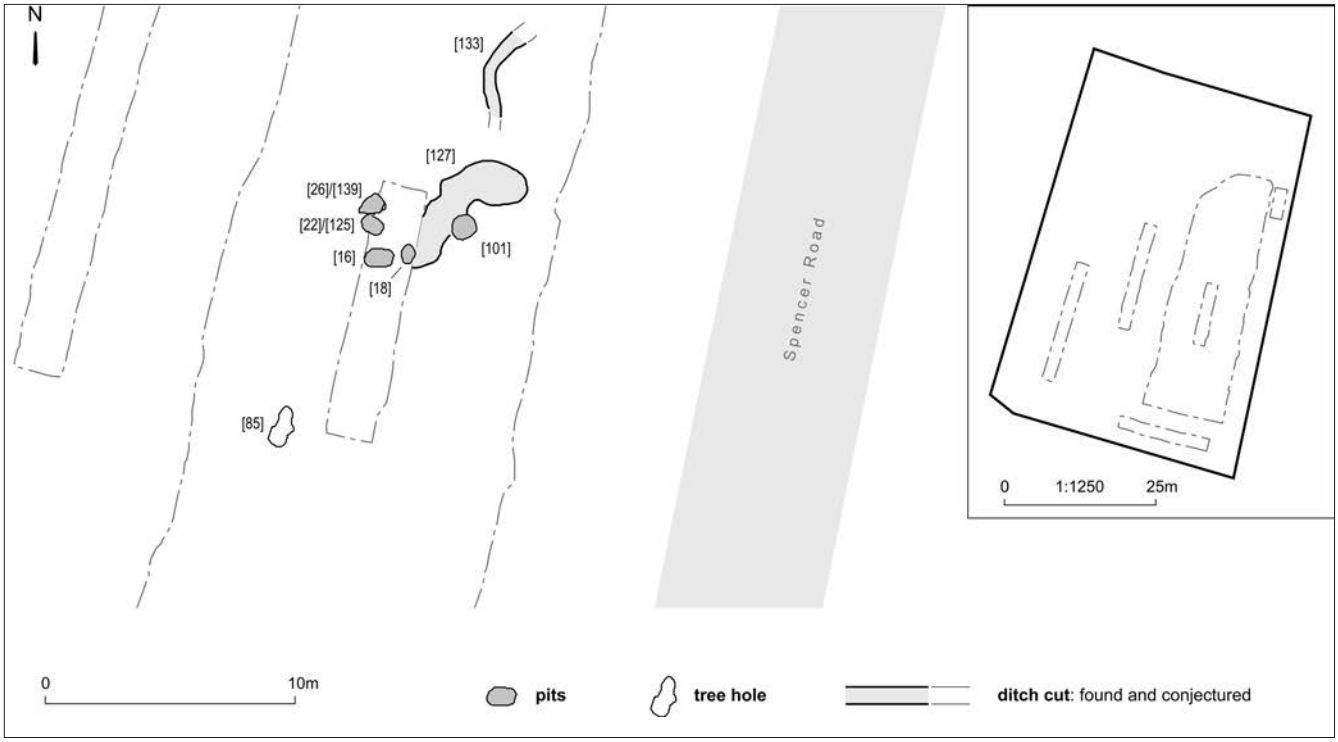

FIGURE 4: The Early Bronze Age features

Pit	Length	Breadth	Depth	Shape/ characteristics
[16]	1.1m	0.8m	0.32m	sub-circular, flat base
[18]	0.7m	0.56m	0.45m	oval, round base
[22]/[125]	0.86m	0.74m	0.50m	oval, flat base
[26]/[139]	1.1m	0.66m	0.34m	oval, flat base

TABLE 1: Summary of pit dimensions

gravel, contained eighteen Beaker sherds weighing 218g and representing up to nine separate vessels (including <P3>–<P5>; Fig. 7a), together with four struck flint flakes.

Pit [22]/[125] lay to the north of pit [16]. Its fill [21]/[124] comprised a firm mid-brown silty sand and gravel. It contained some fired clay but was principally noteworthy for a large group of 108 Beaker sherds weighing 521g, representing up to sixty-four separate vessels (including <P6>–<P14>; Fig. 7a and b). A charcoal lens at the base was similar to that in pit [26]/[139] (see below) and contained a large quantity of burnt flint (222 clasts weighing 1726g), which may represent hearth waste. Additionally, eight struck flints included two multi-platform cores and one blade-like flake. Fragments of wood charcoal and grains of barley (*Hordeum vulgare*)

Pit	Sherd count	Estimated no of vessels (ENV) represented	Wt (g)	Struck flint	Burnt flint (Wt g)	Other
[16] (fill [15])	3	3	50	2 (incl. 1 burnt B&T)	–	–
[18] (fill [17])	18	9	218	4	–	–
[22]/[125] (fills [21]/[124])	108	64	521	9	222 (1726)	fired clay; charred barley grains, wood & seeds of goosefoot, bedstraw; beetles
[26]/[139] (fills [25]/[138])	18	8	200	21	24 (643)	fired clay; ?siltstone frag; charred wood & bedstraw; C14 date 200–40 cal BC

TABLE 2: Summary of pit contents

were identified in the bulk samples amongst seeds of goosefoot (*Chenopodium spp*), bedstraw (*Galium spp*) and a number of indeterminate species. Beetle remains were also present but are thought to be intrusive.

Pit [26]/[139] was virtually contiguous with pit [22]/[125] to the south. Its fills [25]/[138], which were differentiated in section, consisted of a thin primary deposit of silty gravel overlain by a lens of black charcoal and slumped subsoil. The primary gravel and silty charcoal fills contained pottery, struck and burnt flint, charcoal and small fragments of fired clay, and could represent the disposal of further fire/hearth debris – though, as with pit [22]/[125], no evidence of *in situ* scorching was present. Nineteen Beaker sherds weighing 214g and representing up to nine separate vessels were present (including <P15>–<P18>; Fig. 7b), alongside twenty-one pieces of struck flint including three blades and two core fragments, and fragments of burnt flint (24 clasts weighing 643g).

Fragments of charred wood and bedstraw (*Gallium* spp) were recovered from bulk sampling. Charred grains of barley (*Hordeum* sp) returned a radiocarbon date of 200–40 cal BC (Table 11, [138]). It should be noted that a single sherd in a mixed sand and flint tempered fabric of probable MIA type was also present in this context (see ceramic report below); it seems likely therefore that the date is derived from intrusive material.

The Beaker pottery recovered from these four features produced a number of sherd links suggesting that all were filled with material derived from the same source. Sherds from pit [16] linked with sherds from pit [18]; two sherds from pit [18] linked to others in pit [22]/[125]; while sherds from pit [22]/[125] linked with sherds from pit [26]/[139].

Discussion of the EBA features

There are a number of difficulties here, not least the shallow, plough-reduced nature of the site, the absence of direct stratigraphic relationships between the various features uncovered, the worn and abraded nature of the charcoal samples recovered, and the integrity of the resulting radiocarbon date available for Beaker pit [26]/[139].

The material contained within the various pit fills is not suggestive of having been either specially chosen or deliberately arranged. It represents the residue of everyday existence. In this, the Rainham pits are not untypical of other Beaker period examples (e.g. Garrow 2006, 131). Thus, although many Beaker decorated vessels are represented, most in a grog-tempered fabric (GROG1), few profiles are reconstructable and individual sherds are often highly fragmented and variably affected by weathering. Sherd linkages are present across all four features, and each pit has at least one sherd link with one of the others. Furthermore, the restricted lithic assemblage (56 pieces) is dominated by debitage with few retouched pieces, though the latter includes a single burnt barbed and tanged arrowhead from pit [15].

The charcoal and burnt flint within the fills of pits [26]/[139] and [22]/[125] may represent the cold rakings of domestic fires or hearths, of which no other traces survived the later truncation to which the site has been subjected. Charred botanic remains in pit [22]/[125] include a few cerealia (e.g. 6-row hulled barley, *Hordeum vulgare* L) indicative of crop production in the vicinity, though – as the anomalous radiocarbon date from the fill of pit [26]/[139] indicates – the integrity of at least some of this material appears to have been compromised by later reworking and/or intrusions. No animal bone was present, which may be due to the inimical burial environment, or indicate that different arrangements were made for the disposal of faunal remains.

Taken together the contents of the pit fills suggest that they were drawn from a restricted range of sources dominated by domestic refuse – perhaps now-vanished hearths/occupation soils and/or standing middens. Such deposits are 'redolent in various ways of production, consumption, sociality, belonging and domesticity', and their incorporation in the pits may have been a deliberately symbolic act 'that transformed or appropriated domains of inhabitation and reproduction' (Garwood 2011, 123). Thus, although the material represents the ordinary residues of everyday existence, its organisation into deposits placed in the pits is likely to represent a wholely deliberate and conscious act. Whether the pit fills mark acts of commission, inhabitation or termination, however, is unclear.

Middle Iron Age (*c.*300–100 BC)

A number of features could be dated to the Middle Iron Age (MIA) (Fig. 5). These comprise a large pit or ditch terminal [65] in the south-west corner of the site, and a series of post-holes, of which three, [53], [97] and [109], produced calibrated MIA radiocarbon dates. Two of these, [97] and [109], may form part of a small oval structure.

The possible post-built structure

The layout of eight post-holes, [20], [24], [49], [51], [87], [93], [97] and [109], could be interpreted as defining a structure, oval in plan and measuring *c.*4.5m north–south by *c.*5.8m east–west. While this structure occupied the same part of the site as the Beaker pit group (see above), there were no stratigraphic relationships between the two sets of features. A further post-hole [89] lies within the oval area and was linked to post-hole [87] by a shallow linear feature [91], 0.76m in width and aligned north–south. The post-holes were all sub-circular in shape and their dimensions varied in plan from 0.22m × 0.35m (post-hole [20]) to 0.64m × 0.54m (post-hole [109]); the features retained depths of between 0.12m [51] to 0.38m [24], with a median of around 0.23m. No post-pipes were discernible, suggesting that the structure had been dismantled and the posts removed. The post-hole dimensions are summarised in Table 3.

The west side of slot [91] was sharp and vertical while the east side was markedly gentler. Its fill ([90]) contained a small assemblage of indeterminate charred cerealia and wood charcoal (Table 10), similar to that recovered from several of the adjacent post-holes.

Five of the nine post-holes on the western side of the putative structure, [24], [51], [49], [20] and [87], were sterile and filled with a characterless soft, mid brown silty sand and gravel. Those to the east contained small residues of burnt material in their upper fills: charred grain (oat, *Avena* sp.) and wood charcoal were present in [89], [109] and [93].

Calibrated radiocarbon dates were recovered from three post-holes, two of which form part of the possible oval structure (Table 11): post-hole [109] was dated 380–190 cal BC; post-hole [97] was dated 400–340/320–200 cal BC; while post-hole [53] was dated 410–350/300–230 cal BC.

FIGURE 5: The Middle Iron Age features

Posthole	Length	Breadth	Depth	Shape/characteristics
[20]	0.36m	0.22m	0.38m	sub-circular, flat base
[24]	0.6m	0.5m	0.38m	oval, flat base
[49]	0.37m	0.3m	0.17m	sub-circular, round base
[51]	0.5m	0.3m	0.12m	oval, flat base
[87]	0.55m	0.55m	0.16m	circular, flat base
[89]	0.58m	0.43m	0.28m	oval, flat-rounded base
[93]	0.4m	0.4m	0.3m	oval, rounded base
[97]	0.3m	0.24m	0.25m	sub-circular, flat sloped base
[109]	0.64m	0.54m	0.2m	oval, uneven–rounded base

TABLE 3: Summary of post-hole dimensions

Discussion of the MIA features

The Middle Iron Age features supplement the growing picture of an increasingly settled landscape along the terrace edge, as at the former Rainham Football Ground (Costello 1997). More extensive traces of settlement have been located further back on the higher terrace gravels, as at Hunt's Hill Farm and Moor Hall Farm (Fig. 3, R-MHF77) to the north-east (Greenwood 1997, 156–8; Howell *et al*. 2011, 52–3, fig. 45).

Roman (*c*.AD 50–400)

The Middle Iron Age presence across the site was succeeded by a phase of Roman activity in the form of several amorphous pits, delimited to the south by a 2.4m wide ditch running south-east to north-west along the terrace edge (Fig. 6). Although likely to be of late Roman date (*c*.AD 250–400), the ditch profile suggests that it represents the recut of an earlier alignment.

Discussion of the Roman features

The wide ditch at the terrace edge presumably marks the southern boundary of a field system occupying the gravel terrace, and may also have acted as a first line of defence against localised flooding. It is possible that the land was managed from a focus adjacent to the Beam River, as recent work at the Mardyke Estate 450m to the north-west has revealed several phases of Roman activity including a late 1st century–2nd century enclosure ditch (Fig. 3, MYE08; Fairman 2009).

Unphased

A large number of other features were either undated, or likely to be of natural origin. These include the truncated remains of a possible penannular gulley recorded in three segments ([135], [143] and [149]; Fig. 5), a number of isolated post-holes and several tree throws.

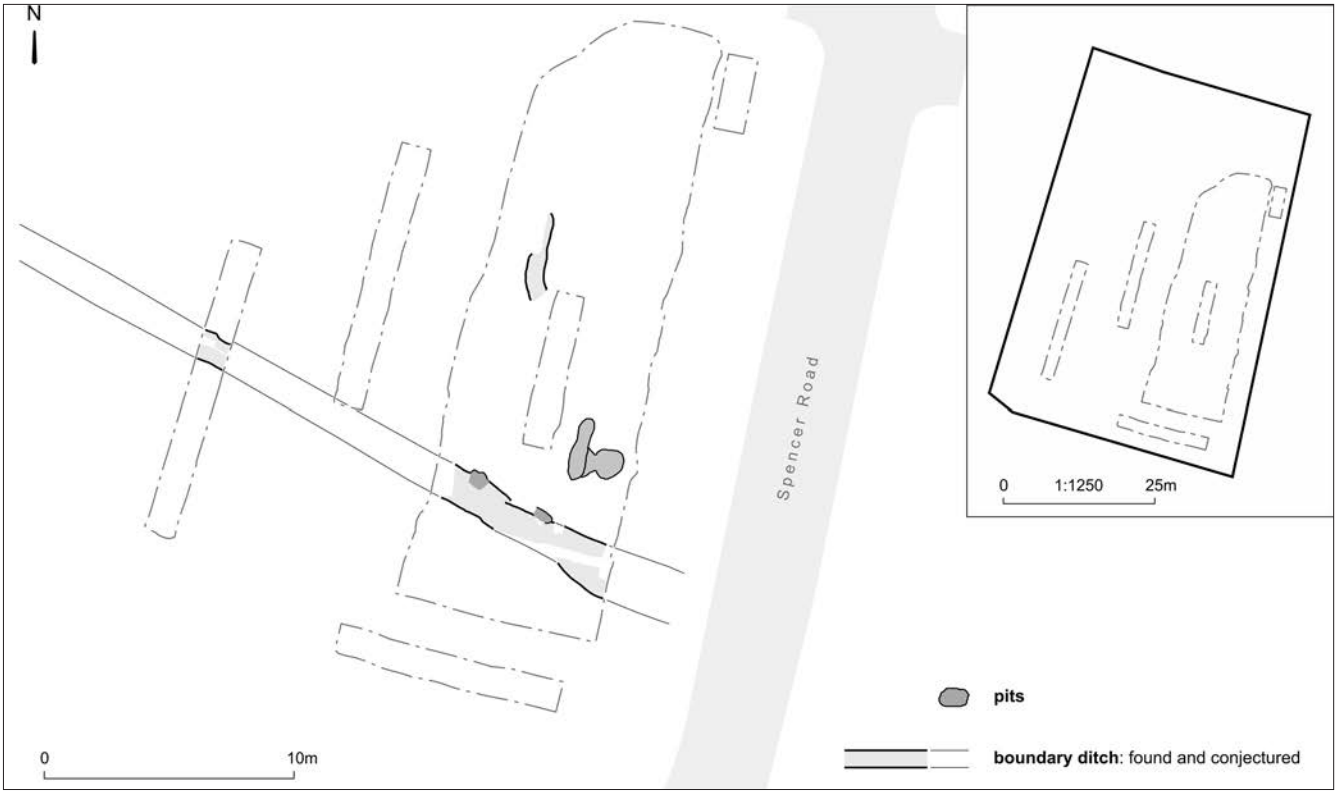

FIGURE 6: Roman features

THE POTTERY by Anna Doherty

The majority of the ceramic assemblage is made up by Early Bronze Age Beaker pottery (see Table 4), all but one small sherd of which was found in pits [16], [18], [22]/[125] and [26]/[139]. These were located within a few metres of one another, and appear to represent a series of related deposits, with sherd linkages between them. The remainder of the assemblage is made up by a small quantity of Middle Iron Age pottery.

The pottery was examined using a ×20 binocular microscope and quantified by sherd count, weight and estimated vessel number. A site specific fabric type-series was created for the assemblage following the guidelines of the Prehistoric Ceramic Research Group (PCRG 1997), whilst standard MOL codes have been employed to describe form and decoration. Data was recorded on pro forma sheets, which are retained for the archive, and entered into an Excel spreadsheet.

Early Bronze Age pottery

The Early Bronze Age pottery amounts to 149 sherds, weighing 1266g from an estimated 86 vessels (Table 5). Three grog-tempered fabrics were recorded, of which GROG1 is by far the most common (Table 6). Both grog and flint inclusions in fabrics GROG1 and GROGFL1 appear to be deliberately added because, although the former only contains rare flint, it is almost always angular and fully calcined. The use of flint in Early Bronze Age fabrics from the locality seems to be a

Fabric code	Description
GROG1	moderate, well-sorted grog of *c*.0.5–1mm in a silty, sparsely micaceous, matrix, containing sparse ill-sorted quartz grains of up to 0.5mm, and often featuring rare large ill-sorted angular calcined flint of up to 5mm
GROG2	rare or sparse fine grog, mostly of *c*.0.5mm, in a similar matrix to GROG1 but with a moderate frequency of quartz grains; this fabric usually does not contain flint and often appears slightly laminar
GROGFL1	similar to GROG1 but contains sparse, occasionally moderate, quantities of ill-sorted flint of between 0.5 and 5mm; this fabric has a tendency to be slightly vesicular, possibly indicating the presence of rare/sparse burnt out organic material
QU1	sparse to moderate quartz, mostly of *c*.0.1–0.3mm, occasionally up to 0.6mm within a background silty matrix; this fabric encompasses some variability in the sorting of inclusions
QUFL1	as QU1 but also containing sparse, occasionally moderate quantities of angular calcined flint between 0.5 and 5mm

TABLE 4: Fabric descriptions

Context	Fabric	Form	Dec	Sh	ENV	Comments	Sherd link	RimD (mm)	EVE	Wt (g)
Period 2 EBA										
[15]	GROG2	–	FND	1	1	paired 'crows-feet' FND; two diagonal incised lines on edge of sherd could form part of an infilled diamond zone of dec. but could just be random marks – infilled motifs not usally associated with FND	17	–	–	14
	GROG1	–	NCD	1	1	widely-spaced horizontal scorded lines with very sparse short scored lines not all of which fully intercut with horizontal lines – smoothed ext.	–	–	–	16
	GROGFL1	–	–	1	1	quite a coarse crudely formed base frag, noticably better smoothed on int. – greyish buff unoxod. interior, orange oxid. exterior – same vessel as sherd in [17] but not cross-fitting	17	–	–	20
[17]	GROGFL1	3	AOC	3	1	S-profile mid or low bellied globular form; similar type of vertical dec. to the 'crow's feet' FND but apparently made with cord	21	*c.*140–160	0.16	54
	GROGFL1	–	FNDC	5	0	a number of non-cross-fitting sherds probably but not certainly from the vessel above; one has a scored line on int. but prob. post-firing – possibly just trowel damage	–	–	–	32
	GROG2	–	FND	2	1	paired 'crows-feet' FND; infilled motifs not usally associated with FND	15	–	–	12
	GROG2	–	MPD	1	1	rows of linear impressed dec. falling broadly into the 'barbed wire' category large bodysherd	–	–	–	28
	GROG1	–	MPD	1	1	much finer neater 'barbed wire'	–	–	–	6
	GROG1	–	NCD	2	1	2 non-cross-fitting, deeply scored, closely spaced horizontal lines – firing colour slightly unusual – greyish unoxid. with orange grog	–	–	–	60
	GROG1	3	–	1	1	partial rim S-profile rim, slight ex. sooting	21	*c.*140–160	0.05	10
	GROG1	–	–	1	1		–	–	–	4
	GROGFL1	–	–	1	1	base frag not cross-fitting but almost ceratinly same vessel as [15]	15	–	–	6
	GROG1	–	–	1	1		–	–	–	6
[21]	GROGFL1	–	AOC	1	1		17	–	–	14
	GROG1	3	FND	1	1	plainer more upright S-profile (less globular) sparse 'crow's feet' FND, quite a long way below the rim	138	–	–	22
	GROG1	3	FND	12	1	S-profile, prob. mid-bellied with quite plain surfaces, only sparse very small, lightly impressed probable fingernail dec.; fine horizontal bands of burnishing on both int. and ext. but unusually think walled	–	160	0.11	150
	GROG1	–	FND	3	1	3 similar non-cross-fitting sherds possibly from the vessel above	–	–	–	22
	GROG1	–	FND	1	1	slight ext. sooting	–	–	–	4
	GROG2	–	MPD	2	1	v. fine 'barbed wire'	–	–	–	14
	GROG2	–	MPD	2	1	coarser 'barbed wire'	–	–	–	10
	GROG1	–	MPD	1	1	regular circular 'barbed wire' dec.	–	–	–	4
	GROG1	–	MPD	1	1	linear version of 'barbed wire'	–	–	–	6
	GROGFL1	3	NCD	3	1	S-shaped globular profile (only one sherd is from the sample) deeply scored horiz. lines	–	*c.*100?	<0.05	36
	GROG1	–	NCD	2	1	horiz. scored lines	–	–	–	4
	GROG1	–	NCD	1	1	horiz. scored lines	–	–	–	10
	GROG1	3	–	1	1	partial rim sherd	17	–	–	4
	GROG1	3	–	1	1	tiny rim sherd – similar firing to the FND plainer profile vessel above but much more out-curving rim	–	–	–	4
	GROG1	3	–	1	1	tiny rim sherd v. fine fabric which is unusually grey and well burnished	–	*c.*140–160	<0.05	2
	GROG1	3	–	2	1	two tiny rims of different vessels	–	–	<0.05	6
	GROG1	–	–	11	11		–	–	–	18
	GROG2	–	–	2	2		–	–	–	4
	GROG1	–	–	3	3		–	–	–	10
[92]	GROG1	–	–	1	1	notably less sandy than other grog fabrics from the site – would assume it is beaker but could not absolutely rule out LIA/eRom date	–	–	–	4

[124]	GROG1	–	FNDC	10	1	bodysherds with horizontal cord impression on a bulbous form	–	–	–	80
	GROG1	–	DCOR	3	1	fingernail impressed cordon with trace of 2nd cordon below	–	–	–	8
	GROG1	3	FND	1	1	quite upright S-profile, one pair of 'crow's feet' FND	–	–	–	22
	GROG1	–	FND	1	1	looks like the thicker-walled beaker from [17] but no cross-fits	–	–	–	24
	GROG1	–	FND	2	2	'crow's feet'	–	–	–	16
	GROG2	3	MPD	3	1	linear 'barbed-wire', more of a beaded rim	–	–	–	26
	GROG2	3	MPD	1	1	v. fine pale orange oxid., slightly beaded rim, fine linear 'barbed wire'	–	–	–	4
	GROG1	–	NCD	1	1	horiz. scored lines, one on int., one on ext.	–	–	–	12
	GROG1	–	NCD	16	5	various sherds of similar firing with horiz. scored lines, unclear how many vessels represented prob. about 5	–	–	–	148
	GROGFL1	–	NCD	2	1	not v. flinty but generally fits more in this fabric group than GROG1	–	–	–	22
	GROG1	–	NCD	2	2	scoring on both int. and ext. on two different vessels	–	–	–	14
	GROG1	–	NCD	3	3		–	–	–	14
	GROG1	3	–	1	1	S-profile rim, suspect it may be part of vessel found in [21] and [138] but no cross-fits	–	–	–	14
	GROG1	–	–	6	6		–	–	–	22
	GROG2	–	–	1	1		–	–	–	2
	GROGFL1	–	–	3	3		–	–	–	10
	GROGFL1	–	–	1	1	does not really fit that well into any fabric group – mod/common flint but fairly low-fired vesicualr like GROGFL1 and prob. contemporary with the group	–	–	–	8
[132]	GROG2	–	–	1	1	tiny rim from S-shaped sherd	–	–	–	4
[138]	GROG1	3	FND	8	1	paired 'crow's feet', smoothed poss. wiped surfaces	21	–	–	98
	GROG2	3	MPD	1	1	linear 'barbed wire' sim. to two vessels in [124] but no cross-fits, slightly more beaded rim	–	–	–	4
	GROG1	–	NCD	1	1	incised short vertical lines – prob. made with a tool rather than fingernail – slightly unusual style of dec.	–	–	–	4
	GROGFL1	3	NCD	4	1		–	–	–	22
	GROG1	–	NCD	1	1	bulbous large bodysherd	–	–	–	62
	GROG2	3	–	1	1	completely different from that found so far probably a long or short necked beaker as classified by Needham 2005 – although quite a partial profile, quite a vesicular fabric	–	–	–	6
	GROG1	–	–	2	2		–	–	–	4
	QUFL1	–	–	1	1	intrusive? MIA fabric	–	–	–	14
Period 3 MIA										
[52]	QUFL1	–	–	3	1	base/bodysherds prob. of jar, well burnished ext.	–	–	–	50
	QUFL1	–	–	3	1	one (tiny) sherd from sample, rest from hand collect; flint more common than typical for this fabric but still a sandy MIA type	–	–	–	16
	QU1	–	–	1	1		–	–	–	6
	QU1	–	–	1	1		–	–	–	2
[64]	QUFL1	2	–	1	1	partial profile – out-turning saucepan related jar or slightly necked s-profile M-LIA form?	–	–	–	8
	FLIN1	–	–	1	1	prob. resid. LBA/EIA fabric?	–	–	–	6
	QU1	–	–	1	1	unusually fine, well-sorted quartz *c*.0.1mm	–	–	–	10
	QU1	–	–	1	1	highly burnished ext. well-sorted quartz *c*.0.2–0.3mm	–	–	–	16
[112]	QUFL1	–		1	1	tiny rim sherd/form unknown	–	–	–	2
[122]	QUFL1	–	–	3	1	with strongly carinated shoulder and upright rim perhaps indicating some Ayleford-Swarling influence but HM and no clear cut GB traits – burnished and spalled ext.	–	180	0.12	82
	QUFL1	–	–	1	1	out-flaring? saucepan pot related Palin form, well-burnished on int. and ext.	–	160	0.08	8
	QU1	–	–	1	1	oxid. ext.	–	–	–	6
	QUFL1	–	–	3	0	sherds of the more complete vessel above from enviro sample	–	–	–	18
	F.CLAY	–	–	1	1	undiagnostic piece not dissimilar fabric QU1 although slightly more common quartz, rare flint – one original surface intact	–	–	–	6

TABLE 5: Prehistoric pottery from NEU09, by context

Fabric	% Sherd count	% Weight	% ENV
GROG1	71.8%	72.2%	72.1%
GROG2	12.1%	10.1%	15.1%
GROGFL1	16.1%	17.7%	12.8%

TABLE 6: Percentage of Beaker fabrics by sherd count, weight and estimated vessel number

Decoration type	ENV
Incised horizontal lines	19
Fingernail decoration	11
Comb-impressed decoration	9
All over cord decoration	2
Other cord decoration	1
Decorated cordon	1
Other incised decoration	1

TABLE 7: Occurrence of main decoration type by ENV

Pottery Drawing	Context	Observation
<P1>	[15]	links with sherd from fill [17]
<P2>	[15]	
<P3>	[17]	links with sherd from fill [21]
<P4>	[17]	
<P5>	[17]	links with sherd from fill [15]
<P6>	[21]	
<P7>	[21]	
<P8>	[21]	
<P9>	[124]	
<P10>	[124]	
<P11>	[124]	
<P12>	[124]	
<P13>	[124]	
<P14>	[124]	
<P15>	[138]	links with sherd from fill [21]
<P16>	[138]	
<P17>	[138]	
<P18>	[138]	
<P19>	[122]	MIA
<P20>	[122]	MIA

TABLE 8: Provenance of illustrated sherds

well-established pattern and grog actually appears to be less frequently encountered (Jones 2011; Timby 1997).

A small proportion of the sherds are in a sandier fabric variant, GROG2 which usually lacks flint. All three fabrics seem to be on a continuum with one another, sharing similar background matrixes and may well originate from a common clay source. There is no clear evidence that form or decorative technique influenced the choice of fabric, although GROGFL1 was less often associated with well-burnished or smoothed surfaces than the other two fabrics and might be considered a coarser ware. However the notion of clearly defined coarse and fine wares amongst Beaker fabrics is far from straightforward (Boast 1995, 72).

The forms in the assemblage (Fig. 7a and b) show a very strong preference for S-profile globular beakers, with 16 examples represented (e.g. <P3>, <P6>–<P12>, <P15>, <P18>). There are no complete profiles in the assemblage but where most of the profile is intact, these generally appear to be mid-bellied. Only one small rim sherd is of a variant out-flaring profile, more likely to be from a carinated form (<P17>).

The range of decorative techniques is fairly limited (Table 7) and in line with Clarke's East Anglian Group, more recently reclassified by Case as the East Anglian and south-eastern England group E (Clarke 1970, 146–52; Case 1993, 263–5). Most of the decorative schemes follow a clear horizontal alignment, chiefly made up by examples with parallel incised lines (<P2>, <P4>, <P8>, <P18>) but also including a large number of comb-impressed (<P5>, <P9>, <P12>) and two all-over-cord impressed examples (e.g. <P14>). However fingernail impressions are also very common, and are often broadly aligned vertically, in pairs, resembling 'crow's feet' (<P1>, <P6>, <P7>, <P10>, <P15>). Other more unusual decorative types include an impressed cordon (<P13>) and some irregular vertical cord impressions (<P3>). The provenance of the illustrated sherds is given in Table 8.

Dating

A review of the dating of Beaker pottery following a program of radiocarbon dating by Kinnes *et al*. (1991) now suggests an overall date range of around 2500–1700 cal BC (Case 1993, 241; Needham 2005, 171). Broadly speaking, the present assemblage would appear to comprise a later Beaker assemblage since mid-bellied and globular forms, which predominate, are generally considered a development of the 2nd millennium BC (Needham 2005; 2007, fig. 6.2). However, at least one lower bellied form, as well as two vessels which feature all over cord decoration, show some continuity with 3rd millennium styles (Needham 2005, 186). It is also worth noting that there is no association with Food Vessel or other Urn pottery although this is in keeping with both the domestic context of the assemblage and the distribution of these types, which are nearly absent in the area (Glazebrook 1997, 15). In summary, the assemblage as a whole is likely to date to around or after the turn of the 2nd millennium, but less likely to be amongst the very latest Beaker groups.

The significance of the Beaker assemblage

The study of Beaker pottery has historically been skewed towards funerary evidence and it has been argued that non-funerary assemblages, especially those from pits, will form the basis for future research (Barclay 2008, 2–3). The current assemblage, although not large in absolute terms, comparatively forms a very substantial associated contemporary group which is of clear regional significance especially when looked at in the context of an apparent focus of Beaker use and deposition around Rainham, at sites like the former Football Ground, Moor Hall Farm and Great Arnold's Field (Costello 1997; Howell *et al*. 2011, 36–7). However the pottery from the latter site, like that found at Orsett (Milton 1984–5) and at an unpublished site at Gerpin's pit, Rainham, may represent a slightly different type of activity, since all came from grave-like features, albeit lacking any skeletal remains;

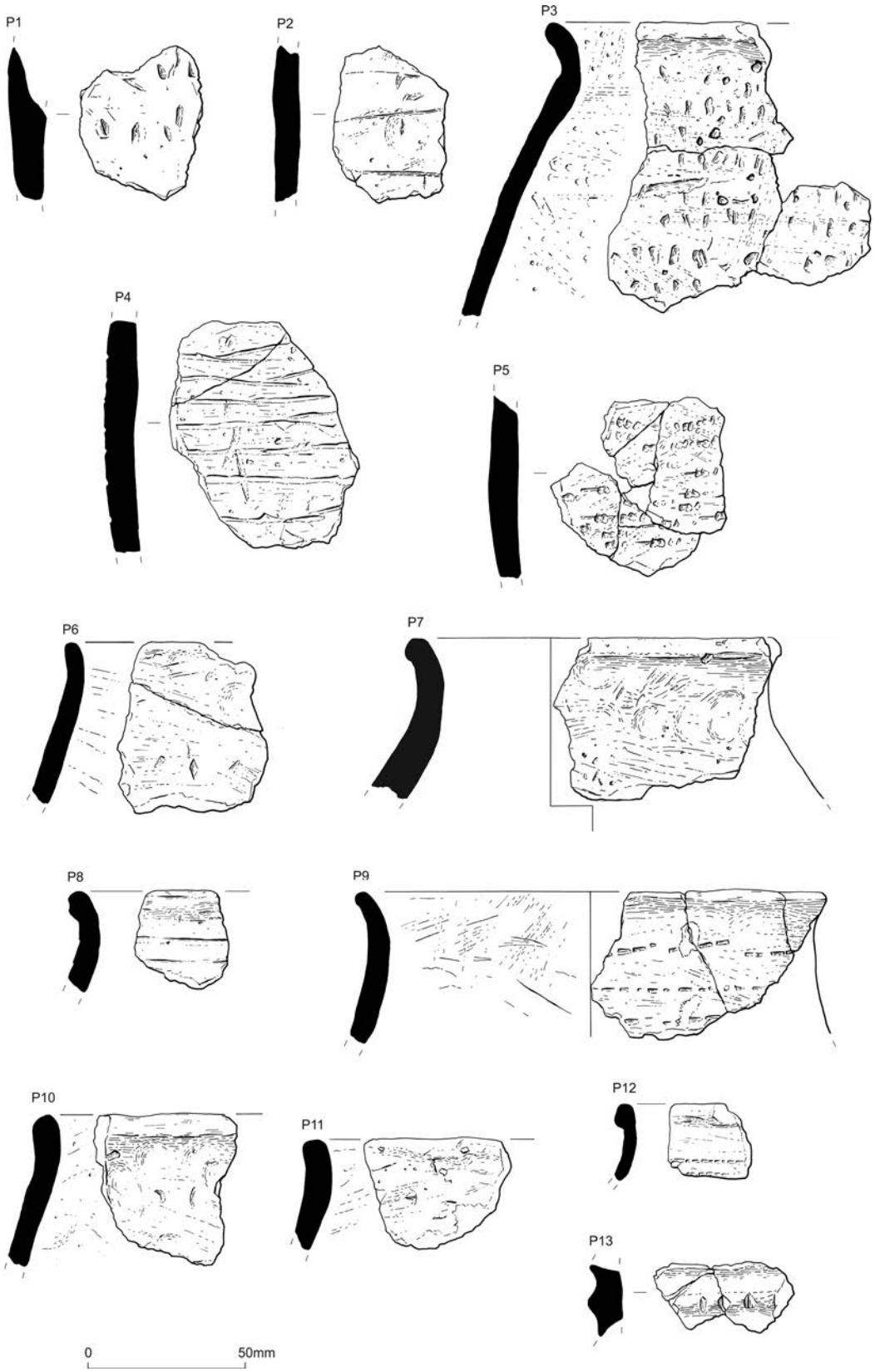

FIGURE 7a: Selected Beaker pottery from NEU09

the former two assemblages came from features respecting still-visible Neolithic monuments.

Although non-funerary assemblages are often labelled as 'domestic' it may be wrong to think of them as necessarily every day or utilitarian in origin. Although 'domestic' Beaker pottery has been found on several sites nearby, these groups usually number in the dozens rather than hundreds of sherds and tend to come from single or small groups of pits with little evidence of accompanying structures or ditches (see concluding discussion below). As well as its sheer rarity, Beaker pottery stands somewhat apart from other later prehistoric ceramics in that it does not seem to represent a full range

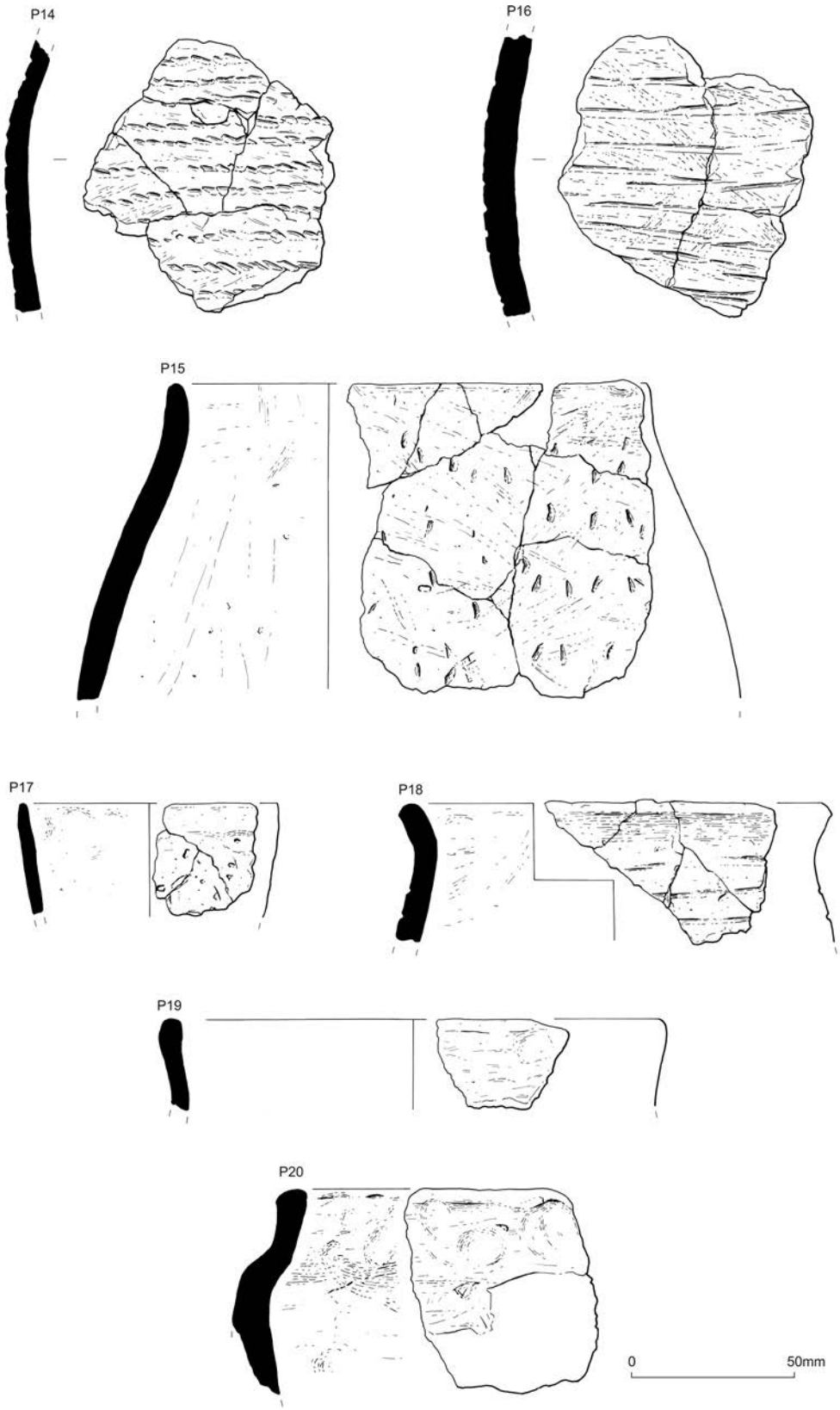

FIGURE 7b: Selected Beaker pottery from NEU09

of sizes or forms suitable for different domestic functions. In this assemblage, almost all measurable diameters are of a standardised size (around 140–160mm), suggesting they may have served a similar function. Although later East Anglian/ south-eastern decorative styles are arguably less complex and specialised than some Beaker motifs, the near universal use of decoration is still perhaps more suggestive of vessels used in public and visible ways rather than in purely utilitarian ones. However, the large number of vessels represented by single sherds seems to argue against these pit groups being purely primary deposits of vessels in use, for example as part of a single feasting event.

Having said this, some larger parts of vessel profiles are intact and there are a high proportion of rim sherds and quite a range of different decorative techniques represented, perhaps intentionally so. In one of the pit fills [15], the pottery is associated with a barbed and tanged arrowhead. It is particularly notable that there are at least five sherd links across the four different features and that each of them had at least one sherd link with one of the other features. This suggests that the pits were filled as part of a single event and that the spreading of culturally significant material across the features may have been a deliberate act. All of these traits tend to indicate that the sherds represent meaningful objects which were intentionally selected rather than being discarded entirely at random.

It is worth noting that Beaker pottery has been interpreted as highly symbolic, and possibly very closely identified with the people who made or owned it (Woodward 2000, 5). Many of the decorative styles in evidence in the assemblage may have been made with personal belongings such as combs, flint tools or textiles, which could also have symbolised a person's role in their community or domestic life (Woodward 2008, 84). Furthermore inclusions of grog and flint are sometimes present in such small quantities that they probably had a minimal effect on the practical performance attributes of the vessels. The idea that clay recipes were not always purely selected for their functional characteristic has been suggested for a range of prehistoric periods and locations in Britain (Gibson 2002, 35). For example it has been suggested that flint might have had associations with the hearth and domestic life (Woodward 2008, 83). Grog, derived from crushed up pottery, might have related to the concept of retaining heirlooms from ancestors and maintaining continuity from generation to generation (Woodward 2000, 5–6).

It also is possible that the small concentration of Beaker sites around Rainham was influenced by its location on the river terrace. Of the few 'domestic' Beaker assemblages known in the region, many come from similar riverside or coastal landscapes. A small collection of Beaker pottery was found in non-funerary contexts at Mucking (CAU 2008; Healey 1993, 18); a largely residual sherd assemblage is known from North Shoebury and two partially complete vessels were found in a pit at Jaywick (Wymer and Brown 1995; Brown 1995). Further afield, assemblages are known from similar contexts in Southwark (Swain 1992; Ridgeway 2000), and from a recently excavated site at Springhead in North Kent (Barclay 2008, 2). The setting for this type of deposition may therefore have been important and linked to a particular type of special or votive offering, perhaps involving sherds or vessels curated or brought from other locations.

STRUCK FLINT by Tony Grey

Fifty-six pieces of struck flint were recovered from the excavation (Table 9). Most of the material is undiagnostic debitage including thirty-nine flakes and shattered pieces; eight blade-like flakes; a bladelet; three cores and four removals from blade cores. The worked diagnostic pieces include a small barbed and tanged arrowhead of Early Bronze Age date, a crudely retouched piercer and a possible combination scraper/piercer. The raw material incorporates poor quality flint and river gravel pebbles and nodules with a buff cortex. The knapping represented at New Road is principally from the secondary stage with most cortex removed by core reduction. Association with datable pottery places much of the assemblage within the Early Bronze Age period.

Bronze Age activity is attested in the surrounding area with struck flint from a ditch fill at 15–17 New Road (NWM02, Fig. 3; Maloney and Holroyd 2005) and Late Bronze Age occupation at 137–139 New Road (MNM03, Fig. 3; Maloney and Holroyd 2003).

Early Bronze Age

Struck and worked flint was recovered from post-holes and pits with fills dated by pottery to the Early Bronze Age. The most striking item is a fine, complete, small barbed and tanged arrowhead <1> from pit fill [17] (Fig. 8). The arrowhead has

Context	Flakes	Blades and blade-like flakes	Cores, core fragments	Retouched forms	Comments
[15]	1	–	–	1	EBA barbed and tanged arrowhead <1>
[17]	4	–	–	–	EBA, 3 shattered frags
[21/124]	5	1	2	–	EBA multi-platform core, blade-like flake
[25/138]	15	3	3	–	EBA multi-platform core, 2 blade-like flakes
[44]	6	–	–	1	piercer, Roman ditch fill
[80]	3	1	–	–	possible piercer, blade-like flake, MIA or EBA fill
[82]	1	–	–	–	shattered frag, Roman ditch fill
[84]	1	3	–	–	1 bladelet, 2 blade-like flakes, unphased fill
[102]		1	–	1	blade-like flake, unphased fill
[128]	1	–	–	–	flake with 25% cortex, unphased fill
[134]	2	–	–	–	flakes, unphased fill
Total	**39**	**9**	**5**	**3**	

TABLE 9: Summary of struck/worked flint from NEU09 by context

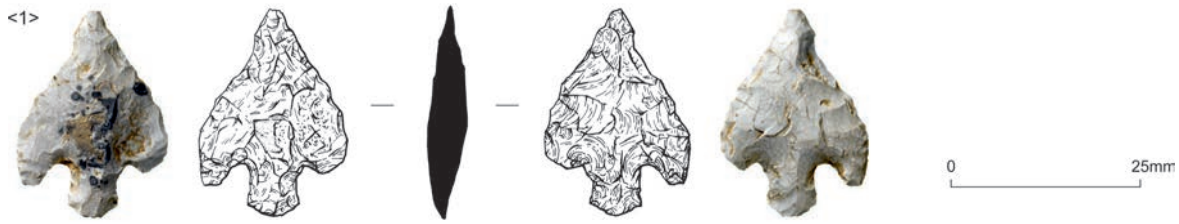

FIGURE 8: Flint arrowhead <1>

been burnt (the original flint colour unknown) and pressure flaked bi-facially by invasive retouch. It is a Sutton b type (Green 1980, 118–120 and fig. 45) weighing less than 8g and with a small length-breadth ratio.

Struck flint was present in pit fills [17], [21]/[124] (a flake core and blade core), and [25]/[138] (a flake core; see Table 9).

Middle Iron Age

Redeposited struck flint was present in dated features including a large pit and three post-holes and in unphased post-holes with fills that could be of Early Bronze Age or Middle Iron Age date. Struck flint was recovered from unphased ditch fill [80], unphased fills [84] and [102], unphased post-hole [102] and unphased fills [128] and [134].

Roman

One shattered fragment was located in pit fill [82] and a piercer was found in [44], a ditch fill cutting the pit. This is residual/redeposited material.

Conclusion

The Early Bronze Age flint including the barbed and tanged arrowhead from four associated pit fills may have been deliberately deposited along with Beaker pottery sherds. Part of the assemblage represents redeposited material in Middle Iron Age and Roman features. Some of the residual flint from unphased, Middle Iron Age and Roman fills may be of Late Bronze Age origin as fairly crude hard hammer technology is observable and Late Bronze Age occupation was discovered at 137–139 New Road in 2003 (Maloney and Holroyd 2005, 9; Site MNM03, Fig. 3).

BURNT FLINT AND HEATED STONE by Tony Grey

A total of 293 pieces of burnt flint weighing 3444g was recovered from 15 contexts. Material from eleven contexts was derived via wet-sieving with a 1mm mesh. The burnt flint and heated stone fragments may represent banking up of hearths and cooking pits. While some of this material is of Early Bronze Age derivation (evidenced by its association with datable pottery and struck flint), some may be redeposited Late Bronze Age flint, given the presence of an occupation site of that period nearby (see above).

Early Bronze Age

The largest concentration of 222 pieces (1726g) along with nine pieces of flint debitage, daub and pottery came from the fill of one of the Beaker pits [22]/[125]. The fill of adjacent pit [26]/[139] contained 24 pieces (643g) of burnt flint from fire/hearth disposal, deposited after cooling, along with pottery, charcoal and struck flint.

Middle Iron Age

Redeposited burnt flint was recovered from the fills of Middle Iron Age post-hole [52] (eight pieces, 213g) and pit [64] (one piece, 46g).

Material was also recovered from unphased fills that may be of Early Bronze Age or Middle Iron Age date including tree hole [84] (one piece, 43g), post-hole [86] (three pieces, 42g), post-hole [110] (one piece, 19g) and post-hole/structural cut [114] (seven pieces, 273g).

Roman

Redeposited burnt flint was located in Roman ditch fill [44] (fourteen pieces, 68g) and fill [82] (two pieces, 8g).

SMALL FINDS by Beth Richardson

Two pieces from a red stone object (<2>, <3>, Fig. 9) were found in contexts [25] and [138], both from the fill of Beaker pit [26]/[139]. The stone is difficult to identify, but might be a fine-grained siltstone (Ian Betts, *pers. comm.*). The surviving fragment is rectangular in section with smooth faces and sharp perpendicular edges. Despite its small and fragmentary state, it appears unlikely to have been a hone or whetstone as it lacks the characteristic wear and finish of these artefacts (Jon Cotton *pers. comm.*) and its function is unknown.

CHARRED PLANT REMAINS by Karen Stewart

Early Bronze Age

Plant remains were noted in samples taken from a group of pits (Table 10). Fill [138] was found to contain wood charcoal in significant amounts. Another pit fill [124] was found to contain charred grains of barley (*Hordeum vulgare*), a common cultivar of the early Bronze Age in Britain.

Middle Iron Age

Samples from a series of pits and post-holes were found to contain wood charcoal, charred weed seeds and grains (Table 10). In post-hole fill [114] barley (*Hordeum vulgare*) was noted, as were the wild taxa common chickweed (*Stellaria*

FIGURE 9: Stone object

	period	2	2	2	2	2	2	3	3	3	3
	context	[84]	[92]	[88]	[90]	[124]	[138]	[64]	[114]	[122]	[146]
	feature	tree throw	posthole	posthole	gully	pit	pit	pit	gully	posthole	posthole
	sample	21	22	28	29	40	47	12	37	39	50
	volume processed (l)	40	40	20	20	40	40	40	40	7	10
Latin name	**English name**	**Plant part**									
Hordeum vulgare L.	6-row barley (hulled)	grain					+			+		+
Cerealia	indeterminate cereal	grain	+	+	+	+	+		+	+	+	+
Triticum sp.	wheat	grain									+	
Avena sp.	oat	grain		+								
	indeterminate	wood	+	+++	++		+++	+++	+	++	+++	+
Chenopodium sp.		seed					+		+	+		
Stellaria media (L.) Vill.	common chickweed	seed								+		
Galium sp.	bedstraw	seed						+				

TABLE 10: Charred plant remains from the period 2 (EBA) and period 3 (MIA) features

media) and fat hen (*Chenopodium album*). Both of these taxa are common weeds of cultivated ground and may be present in the assemblage as contaminants of the cultivated taxa. Post-hole fill [147] also contained charcoal and barley grains, while post-hole fill [123] contained charcoal and wheat grains. Unfortunately the wheat grains from [123] were too abraded to be identified to species, but spelt (*Triticum spelta*) was the most common of the cultivated wheats during the Iron Age.

Conclusion

Though the plant remains assemblage from the site was very limited, the few charred grains recovered do seem to reflect the general pattern of cultivation for the periods they represent, with barley grains present in the Bronze Age samples, and wheat grains appearing more dominant in the Iron Age samples.

RADIOCARBON DATING by Karen Stewart

Three samples were selected from charred remains present in Beaker pit [26]/[139] and post-holes [97] and [109]. An additional sample was taken from carbon residues on a fragment of Middle Iron Age pottery from post-hole [52].

The samples were submitted to the Scottish Universities Environmental Research Centre (SUERC) AMS facility in Glasgow for radiocarbon dating. Details of the methodology, following English Heritage guidelines on sample selection and submission, are in the archive. The calibrated age range was determined according to OxCal v3.10 (Bronk Ramsey 2005). The results are shown in Table 11.

CONCLUDING DISCUSSION

As has already been noted above, the interpretative difficulties at New Road are compounded by the plough-reduced nature of this terrace-edge site, which retains no contemporary land surfaces or supervening soil horizons. Moreover, it would appear that the shallow nature of the site has resulted in the mixing and contamination of deposits contained within the upper fills of the various shallow features that have survived later erosion and truncation.

Nevertheless, the Beaker pits are an important addition to the regional sequence. The relatively large number of sherds representing in excess of eighty separate vessels, many decorated, is noteworthy, as is the worn and fragmented condition of the sherds, and the presence of sherd linkages across the four pits. Taken together with the restricted,

Laboratory.no.	**Feature**	**fill/material**	**Radiocarbon age (BP)**	**Calibrated date (95.4% confidence)**	**δ13C (‰)**
SUERC-32202	posthole [109]	[108] alder charcoal	2210±30	380 BC–190 BC	–29.6
SUERC-32203	pit [139]	[138] charred grain (*Hordeum* sp.)	2105±30	200 BC–40 BC	–21.9
SUERC-32204	posthole [97]	[96] alder/hazel charcoal	2260±30	400 BC–340 BC 320 BC–200 BC	–26.6
SUERC-32205	posthole [53]	[52] carbon residue on pot	2295±30	410 BC–350 BC 300 BC–230 BC	–26.9

TABLE 11: Radiocarbon dates

workaday lithic assemblage dominated by debitage, the burnt flint and the charred remains, this suggests that the pits were backfilled with material drawn primarily from now vanished settlement contexts such as hearths, occupation soils and standing middens, possibly as part of the rites connected with the commissioning, inhabitation or termination of activities at this spot. In this sense it would seem not unreasonable to regard the evidence from New Road as essentially 'domestic' in character.

Measured against Needham's reworking of the funerary data, many of the local Beakers seem to belong to his 'fission' horizon (*Beaker as instituted culture*, c.*2250–1950 cal BC*; Needham 2005, 209) or later (*Beaker as past reference*, c.*1950–1700/1600 cal BC*; Needham 2005, 210) and, as at New Road, comprise globular and mid-bellied vessel forms with generally East Anglian/South Eastern affinities (e.g. Clarke 1970, 146–52; Case 1993, 263–5). However, the occasional vessel such as the low-carinated AOC vessel from the Thames at Mortlake, and another from the headwaters of the Hogsmill at Ewell should be early (*Beaker as circumscribed, exclusive culture*, c.*2500–2250 cal BC*; Needham 2005, 209); new dates from Beaker graves confirm an early currency, which now appears to pre-date 2290 cal BC (Needham 2012, 9 and table 1.3). Copper metalwork which might be expected to accompany these early Beakers is equally sparse and comes mostly from the river or its immediate environs, e.g. the tanged knife from Mortlake (Gerloff 1975, no. 16; Needham 2012, table 1.4 Association Group 1c), a flat axe from St Margaret's, Twickenham, and two halberds – one from Lambeth and the other 'Thames' (e.g. Needham 1987, 99).

Compared with the New Road assemblage, local Beaker domestic groups are generally small and scrappy: sherds comprising a minimum of four decorated vessels (two of globular form) were recovered from a single pit at the former Rainham Football Club just over a kilometre along the terrace edge to the east (Costello 1997, 99–100), while 55 sherds representing a minimum of six vessels from Calvert's Buildings in North Southwark (Swain 1992, 67–8) is exceptional for the floodplain. A third assemblage, from Hopton Street, Southwark, awaits formal publication (Ridgeway 2000), as does the small group from the Royal Docks Community School, Custom House (Holder 1998; Louise Rayner pers. comm.). Other assemblages from the North Downs at Chaldon, Surrey and Ramsden near Orpington in Kent are scarcely larger with around 70 sherds apiece. The Ramsden assemblage (Philp 2006) was recovered from a group of pits overlooking the eastern bank of the River Cray and is composed of sherds representing up to a dozen vessels, two of which can be tentatively reconstructed with high-bellied or globular profiles. Other finds from the pits are reminiscent of New Road, and include quantities of struck and burnt flint, quern fragments, charred cerealia and charcoal of oak, hazel, hawthorn and holly (Philp 2006, 68).

The Orpington site can be compared with various sub-colluvial sites in dry valley locations in Kent and Sussex, the latter often accompanied by ardmarks (e.g. Bell 1983; Allen 2005; Garwood 2008, 6–7). Traces of ard cultivation have been widely recognised on the sand islands at the floodplain in north Southwark and Bermondsey too (e.g. Sidell *et al*. 2002, 35–7), together with what has been interpreted as part of the wooden foreshare of an ard at Three Oak Lane (Proctor and Bishop 2002, 8–9). A second, more complete, example was recovered from a waterhole at Staines Road Farm, Shepperton, and was dated to 2140–1880 cal BC (Jones 2008, 16–17). Although not yet closely dated themselves, the Thames-side ardmarks are usually associated with scraps of Beaker or Collared Urn. They also hint at more permanent activity – though the invariably crisply defined ard marks point to cultivation episodes that were probably short-lived and very much at the mercy of rising river levels in the floodplain floor.

Measured against the expanding settlement data in the Lower Thames, Beaker burials are still few in number and are, unlike others in east Kent or the Upper Thames, neither particularly early nor obviously prestigious. They include two 'empty' graves at Erith, each containing low-bellied East Anglian style vessels (Barrett 1976, 34) and another at Orsett 'Cock', containing three vessels including two misshapen globular forms and a small bowl (Milton 1984–5). Two further graves were located further east at Mucking: a soil stain in grave 137 marked the position of a flexed inhumation accompanied by a low-bellied 'S' profile cord-decorated Beaker and eleven barbed and tanged flint arrowheads; another flexed silhouette in a composite oak coffin in grave 786 was accompanied by two barbed and tanged arrowheads (Jones and Jones 1976, 137–41).

While there is no suggestion that the few Beaker sherds from the central pit inside the early Neolithic ring-ditch at Launders Lane, Rainham are necessarily funerary (e.g. Howell *et al*. 2011, 36), they clearly represent Beaker appropriation of an old location, of which there are other examples, e.g. Orsett causewayed enclosure (Hedges and Buckley 1978, 266 and fig. 35, no 83; Needham 2012, 4). Other Beaker finds from the locality include a now lost long-necked vessel of Clarke's Southern series from Gerpin's Pit, apparently recovered from a 'low eminence' suggestive of a plough-levelled barrow (Evison 1955, pl. 62a). The easy assumption that the various complete vessels recovered from the west London stretches of the Thames and its floodplain, upstream of the City, originally formed parts of grave groups eroded by river action has to be tempered by the discovery of an inverted globular Beaker of East Anglian type apparently placed next to a wooden trackway on the edge of the floodplain at South Woolwich Manor Way on the A13 (Stafford 2012, 121, 162–3, pl. 26 and fig. A2.1, no. 17), and by the curious hybrid Beaker bowl/?Food Vessel buried close to the river in a pit with a flint core and a flint blade at Hopton Street, Southwark (Ridgeway 2000, fig. 2).

Looking at the wider picture, there are some obvious disparities in the overall distribution of Beakers and Beaker-related material within the Thames Valley. The Upper and Lower Thames share evidence of pits and burials, for example: discrete pit groups similar to that at New Road are known from around the Oxford and Wallingford areas (Hey 2011, 315), and some of them are associated with small structures. However, the absence of comparable Beaker material from the Middle Thames is striking (Garwood 2011, 380–1). Did the presence of well-established indigenous Grooved Ware-using communities in this area effectively resist precocious Beaker penetration in the century or so after *c*.2500 BC, and did they continue to ignore the possibilities of later assimilation, perhaps through intermarriage (e.g. Needham 2007; 2012)? Here there is little or no evidence of a domestic Beaker presence, and the very few scraps of Beaker associated with local monuments, as at Terminal 5, Heathrow (Lewis *et al*. 2010, 42), hint at no more

than limited use of indigenous sacred sites (see Needham 2012, 4). The one notable exception is the river between Kingston and the City: here, in addition to pots and metalwork, later Beaker-related material includes a series of flint daggers (and bone skeuomorphs), battle-axes and axe-hammers (e.g. Needham 1987, fig. 5.4; Roe 1979, figs 4 and 5).

In conclusion, the Beaker activity at New Road is likely to fall relatively late within the overall regional sequence, and appears to belong to the century or so either side of *c*.2000 cal BC, at a time when Beakers had been fully adopted by communities in the Upper and Lower Thames. It seems to have been characteristically short-lived and semi-sedentary in nature too, perhaps partly due to the increasingly wet conditions in the floodplain at the start of the second millennium BC – the latter eventually prompting the construction of wooden trackways to maintain access to high points within the floodplain (e.g. Meddens 1996; Carew *et al*. 2009; Stafford 2012). However, there is no doubting that the terrace edge/floodplain interface was, and was to remain, an ecotone of considerable if intermittent significance for local communities, as the Middle Iron Age and Roman finds from New Road and beyond clearly show.

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BIBLIOGRAPHY

Allen, M.J. 2005, 'Beaker settlement and environment on the chalk downs of Southern England', *Proc. Prehist. Soc.* 71, 219–45

Barclay, A. 2008, 'Ceramics of the south-east: new directions', *South-East Research Framework Resource Assessment Seminar* <http://www.kent.gov.uk/NR/rdonlyres/55FBB300-F7A6-4C01-93DE-E1E1A4B76B0D/0/serf_paper_neolithic_barclay.pdf>

Barrett, J.C. 1976, 'The Bronze Age' in *The Archaeology of the London Area: Current Knowledge and Problems*, London Middx Archaeol. Soc. Special Paper No. 1, 33–41

Bell, M.G. 1983, 'Valley sediments as evidence of prehistoric land-use on the South Downs', *Proc. Prehist. Soc.* 49, 119–50

Boast, R. 1995, Fine Pots, Pure Pots, Beaker Pots, in Kinnes, I., and Varndell, G. (eds), *Unbaked Urns of Rudely Shape: Essays on British and Irish Pottery for Ian Longworth*, Oxbow Monogr. 55, 69–80

British Geological Survey 1996, Romford, England and Wales 1:50,000, sheet 257, *solid and drift geology* (Keyworth)

Bronk Ramsey, C. 2005, OxCal program v3.10, Radiocarbon Accelerator Unit, Univ. Oxford

Brown, N. 1995, 'Hullbridge Survey 1982–1985: Neolithic to Early Bronze Age Pottery', in Wilkinson, T. J., and Murphy. P. L., *The Archaeology of the Essex Coast. Volume 1: The Hullbridge Survey*, E. Anglian Archaeol. 71

Bull, R. 2010, *105–109 New Road, Rainham: A post-excavation assessment and updated project design*, MOLA unpub. rep.

Carew, T., Meddens, F., Batchelor, R., Branch, N., Elias, S., Goodburn, D., Vaughan-Williams, A., Webster, L. and Yeomans, L. 2009, 'Human-environment interactions at the wetland edge in East London: trackways, platforms and Bronze Age responses to environmental change', *Trans London Middx Archaeol. Soc.* 60, 1–34

Case, H. 1993, 'Beakers: deconstruction and after', *Proc. Prehist. Soc.* 59, 241–68

CAU 2008 Mucking: the Prehistoric and Roman Landscape. Records published by ADS at <http://ads.ahds.ac.uk/catalogue/resources.html?mucking_eh_2008>

Clark, A. 1993, *Excavations at Mucking: Vol 1, The Site Atlas* (London)

Clarke, D.L. 1970, *Beaker Pottery of Great Britain and Ireland* (Cambridge: Cambridge University Press)

Costello, M. 1997, 'Prehistoric and Roman material from Rainham; an archaeological watching brief at the former Rainham Football Ground, 1995', *Essex Archaeol. Hist*., 3rd ser., 28, 93–102

Cowan, C. 1992, 'A possible *mansio* in Roman Southwark: excavations at 15–23 Southwark Street, 1980–86', *Trans London Middx Archaeol. Soc.* 43, 3–191

Evison, V.I. 1955, 'Anglo-Saxon finds, near Rainham, Essex, with a study of glass drinking horns', *Archaeologia* 96, 159–95

Fairman, A. 2009, *Evaluation of Blocks B, L and P, Mardyke Estate, Rainham (MYE08), archive report*, Pre-Construct Archaeology unpub. rep.

Garrow, D. 2006, *Pits, Settlement and Deposition During the Neolithic and Early Bronze Age in East Anglia*, BAR British Ser. 414 (Oxford)

Garwood, P. 2008, Landscapes, monuments and social practices in the late 4th and 3rd millennia BC: a survey, *SERF resource assessment seminar*

Garwood, P. 2011, 'Early Prehistory', in Booth, P., Champion, T., Garwood, P., Glass, H., Munby, J., Reynolds, A.J., *Tracks through Time: The Archaeology of the Channel Tunnel Rail Link*, 37–150 (Oxford)

Garwood, P., with Hey, G. and Barclay, A. 2011, 'Ritual, Ceremony and Cosmology', in Hey, G., *et al*., 331–82

Gerloff, S. 1975, *The Early Bronze Age Daggers in Great Britain, and a Reconsideration of the Wessex Culture* (Munich: Prähistoriche Bronzefunde VI, 2)

Gibson, A. 2002, 'Aspects of Manufacture and Ceramic Technology', in Woodward, A., and Hill, J.D. (eds), *Prehistoric Britain: the Ceramic Basis*, Prehistoric Ceramics Research Group Occ. Pub. 3 (Oxford)

Glazebrook, J. 1997, *Research and Archaeology: a Framework for the Eastern Counties 1. Resource Assessment*, E. Anglian Archaeol. Occ. Paper No. 3

Green, S. 1980, *The Flint Arrowheads of the British Isles*, BAR British Series 75 (Oxford)

Greenwood, P. 1997, 'Iron Age London: some thoughts on Current Knowledge and Problems 20 years on', *London Archaeol.* 8(6), 153–61

Greenwood, P., and Maloney, C. 1993, 'Excavation Roundup 1992: part 1', *London Archaeol.* 7(2), 49

Guttmann, E.B.A. and Last, J. 2000, 'A Late Bronze Age Landscape at South Hornchurch, Essex', *Proc. Prehist. Soc.* 66, 319–59

Healey, E. 1993, 'Early Prehistory', in Clark, A. (ed.), 1993, 18

Hedges, J.D. and Buckley, D.G. 1978, 'Excavations at a Neolithic causewayed enclosure, Orsett, Essex, 1975', *Proc. Prehist. Soc.* 44, 219–308

Hey, G., Garwood, P., Robinson, M., Barclay, A. and Bradley, P. 2011, *The Thames through Time: The Archaeology of the Gravel Terraces of the Upper and Middle Thames. Part 2 – The Mesolithic, Neolithic and early Bronze Age and the Establishment of Permanent Human Occupation in the Valley*, Oxford Archaeology, Thames Valley Landscapes Monogr. 32

Hey, G., with Robinson, M. 2011, 'Domesticating the Landscape: Settlement and Agriculture in the Early Bronze Age', in Hey, G., *et al*., 311–30

Hoad, S. 2009a, *105–109 New Road, Rainham, R13 8HA London Borough of Havering: a method statement for archaeological evaluation*, MOLA unpubl. rep.

Hoad, S. 2009b, *105–109 New Road, Rainham, R13 8HA London Borough of Havering: a method statement for an archaeological excavation*, MOLA unpubl. rep.

Holder, N. 1998, *Royal Docks Community School site, Prince Regent Lane: post excavation assessment and updated project design*, MoLAS unpub. rep.

Howell, I., Swift, D., Watson, B., with Cotton, J. and Greenwood, P. 2011, *Archaeological Landscapes of East London: Six Multi-period Sites Excavated in Advance of Gravel Quarrying in the London Borough of Havering*, MoLAS Monogr. 54

Jones, M.U. and Jones, W.T. 1976, 'The Crop-mark Sites at Mucking, Essex, England', in Bruce-Mitford, R. (ed.), *Recent Archaeological Excavations in Europe* (London: HMSO),133–87

Jones, P. 2008, *A Neolithic Ring Ditch and Later Prehistoric Features at Staines Road Farm, Shepperton*, Woking: SpoilHeap Monogr. 1

Jones, P. 2011, 'The Fabrics of the Pre-Late Iron Age Pottery', in Howell, I., *et al.*, 2011, 124–8

Kinnes, I., Gibson, A., Ambers, J., Leese, M., and Boast, R. 1991, 'Radiocarbon dating and British Beakers', *Scottish Archaeol. Review* 8, 35–68

Lewis, J., Leivers, M., Brown, L., Smith, A., Cramp, K., Mepham, L., and Phillpotts, C. 2010, *Landscape Evolution in the Middle Thames Valley:*

Heathrow Terminal 5 Excavations Volume 2, Framework Archaeology Monogr. 3

Maloney, C., and Holroyd, I. 2002, 'London Fieldwork and Publication Round-up 2001', *London Archaeol.* 10 supplement 1, 1–30

Maloney, C., and Holroyd, I. 2003, 'London Fieldwork and Publication Round-up 2002', *London Archaeol.* 10 supplement 2, 33–60

Maloney, C., and Holroyd, I. 2005, 'London Fieldwork and Publication Round-up 2004', *London Archaeol.* 11 supplement 1, 1–22

Meddens, F.M. 1996, 'Sites from the Thames estuary wetlands, England, and their Bronze Age use', *Antiquity* 70, 325–34

Meddens, F., and Beasley, M. 1990, 'Wetland use in Rainham, Essex', *London Archaeol.* 6(9), 242–8

Milton, B. 1984–5, 'The Orsett 'Cock' Beaker burial', *Essex Archaeol. Hist.*, 3rd ser., 16, 87–91

Needham, S.P. 1987, 'The Bronze Age', in Bird, J., and Bird, D.G. (eds), *The Archaeology of Surrey to 1540*, 97–138 (Guildford)

Needham, S. 2005, 'Transforming Beaker Culture in North-West Europe: processes of fusion and fission', *Proc. Prehist. Soc.* 71, 171–217

Needham, S. 2007, 'Isotopic Aliens: Beaker Movement and Cultural Transmissions', in Larsson, M., and Parker Pearson, M. (eds), *From Stonehenge to the Baltic: Living with Cultural Diversity in the Third Millennium BC*, BAR International Ser. 1692, 41–6 (Oxford)

Needham, S. 2012, 'Case and Place for the British Chalcolithic', in Allen, M.J., Gardiner, J. and Sheridan, A. (eds), *Is there a British Chalcolithic? People, Place and Polity in the Late 3rd Millennium*, Prehistoric Society Res. Paper 4 (Oxford), 1–26

O'Leary, J.G. 1955, 'The Saxon burials at Gerpins Farm, Rainham', *Essex Archaeol. Hist., new ser.* 25(1), 62–7

Philp, B. 2006, 'Late-Neolithic site at Ramsden, Orpington', *Kent Archaeol. Review* 163, 59–69

Prehistoric Ceramics Research Group, 1997 (1995), *The study of later prehistoric pottery: general policies and guidelines for analysis and publication*, revised edn, Occasional Papers 1 and 2 (Oxford)

Proctor, J., and Bishop, B. 2002, 'Prehistoric and environmental development on Horsleydown: excavations at 1–2 Three Oak Lane', *Surrey Archaeol. Collect.* 89, 1–26

Ridgeway, V. 2000, 'Prehistoric finds at Hopton Street in Southwark', *London Archaeol*. 9(5), 72–6

Roe, F.E.S. 1979, 'Typology of Stone Implements with Shaftholes', in Clough, T.H. McK., and Cummins, W.A. (eds), *Stone Axe Studies*, Counc. Brit. Archaeol. Res. Rep. 23, 23–48

Sidell, J., Cotton, J., Rayner, L., and Wheeler, L. 2002, *The Prehistory and Topography of Southwark and Lambeth*, MoLAS Monogr. 14

Stafford, E., with Goodburn, G., and Bates, M. 2012, *Landscape and Prehistory of the East London Wetlands, Investigations along the A13 DBFO Roadscheme, Tower Hamlets, Newham and Barking and Dagenham, 2002–2003* (Oxford Archaeology)

Swain, H. 1992, 'Prehistoric Pottery', in Cowan, C., 1992, 67–70

Timby, J.R. 1997, 'The Pottery', in Costello, M., 1997, 99–100

Woodward, A. 2000, 'When did pots become domestic? Special pots and everyday pots in British prehistory', *Medieval Ceramics* 22–3, 3–10

Woodward, A. 2008, 'Bronze Age pottery and settlements in southern England', *Bronze Age Review* 1, 79–96

Wymer, J.J., and Brown, N. 1995, *Excavations at North Shoebury: Settlement and Economy in South-East Essex 1500BC–AD1500*, E. Anglian Archaeol. 75, 92–9

A Prehistoric landscape at Langford Hall, near Heybridge: Excavations 1995–6

M. Roy and E.M. Heppell
with contributions from N. Brown, J. Compton, H. Martingell and N. Powers

Excavation of part of a cropmark complex on a gravel terrace of the river Blackwater identified later Neolithic funerary monuments, one of which was remodelled in the Middle Bronze Age. These were succeeded by two Middle Iron Age enclosures, which were superseded by a trackway that appears to have continued in use through the Late Iron Age and into the Roman period, although there is evidence for a Roman reorganisation of the accompanying field system. Overall, this sequence is typical of the intensive prehistoric and later landscape development seen more generally along the lower Blackwater valley and estuary.

INTRODUCTION

An archaeological excavation at Langford Hall was undertaken in two stages, in 1995 and 1996, by the Essex County Council Field Archaeology Unit (ECC FAU) before the enlargement of an agricultural reservoir. The aim of the archaeological excavation was to investigate an area at the northern end of a known cropmark complex which included a rectilinear enclosure and trackway that would be removed by the extension of the reservoir. Although a short note has previously been published on the first stage of work (Cooper-Reade 1996), the present report describes the combined results of both stages of excavation and interprets them in relation to the wider prehistoric landscape. The site archive will be deposited at Colchester Museum under the site codes LGLR 95 and LGLR 96.

Location, topography and geology

The site, centred on TL 8410 0920, was located on the east bank of the river Blackwater, 1km north-west of Heybridge, and 3km upstream of the head of the estuary (Fig. 1). It comprised 1.7ha of cultivated land, south and west of an existing reservoir, on level ground at *c*.10m OD. The surface geology of this part of the Blackwater valley is characterised by river terrace gravels overlain by brickearth.

Archaeological background

The terrace gravels of the lower Blackwater are particularly rich in evidence for prehistoric and later settlement, especially at Elms Farm, Heybridge, only 1km to the south-east of the site (Fig. 1), which was occupied from the Neolithic to the early Saxon period (Atkinson and Preston 1998; 2001).

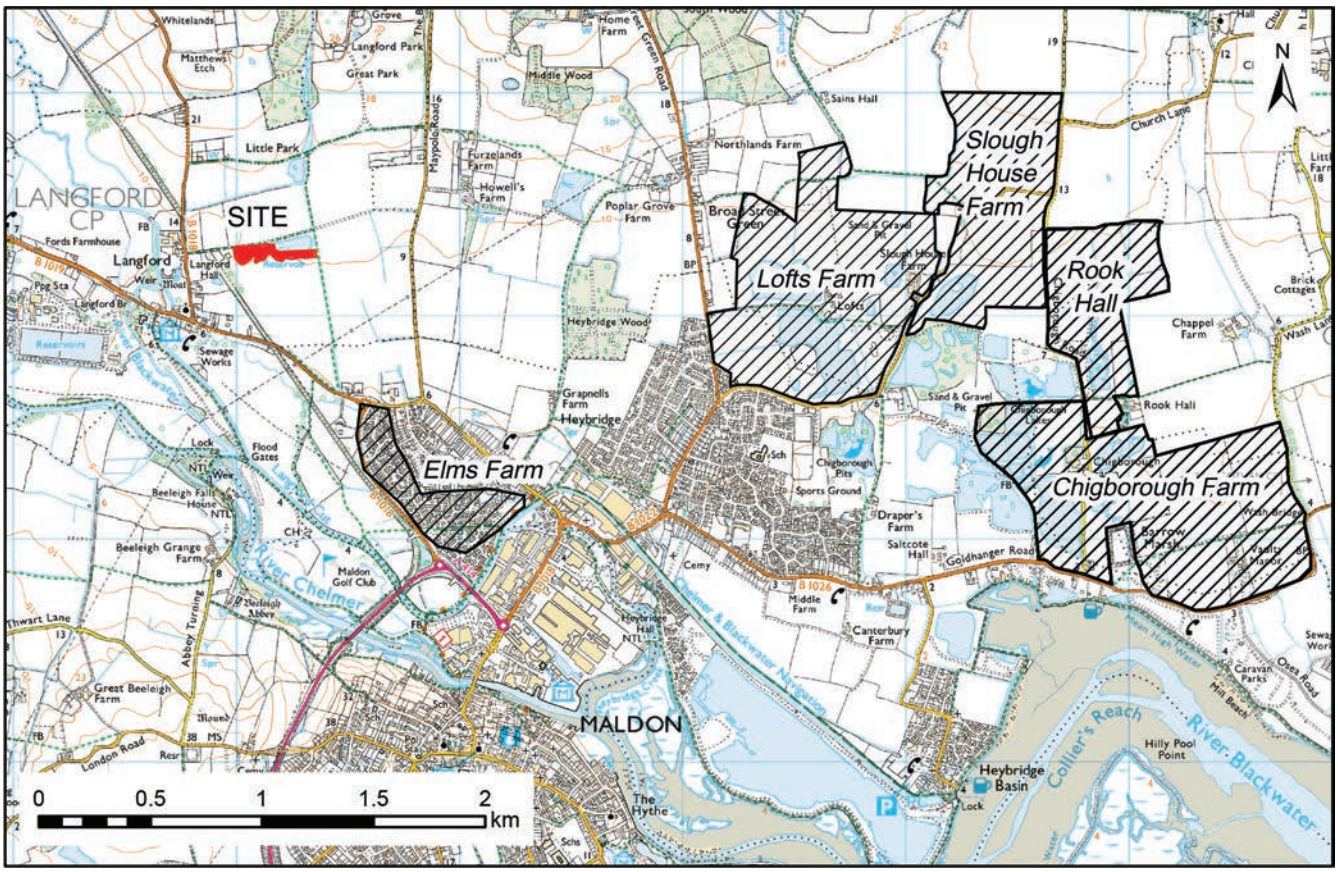

FIGURE 1: Site location

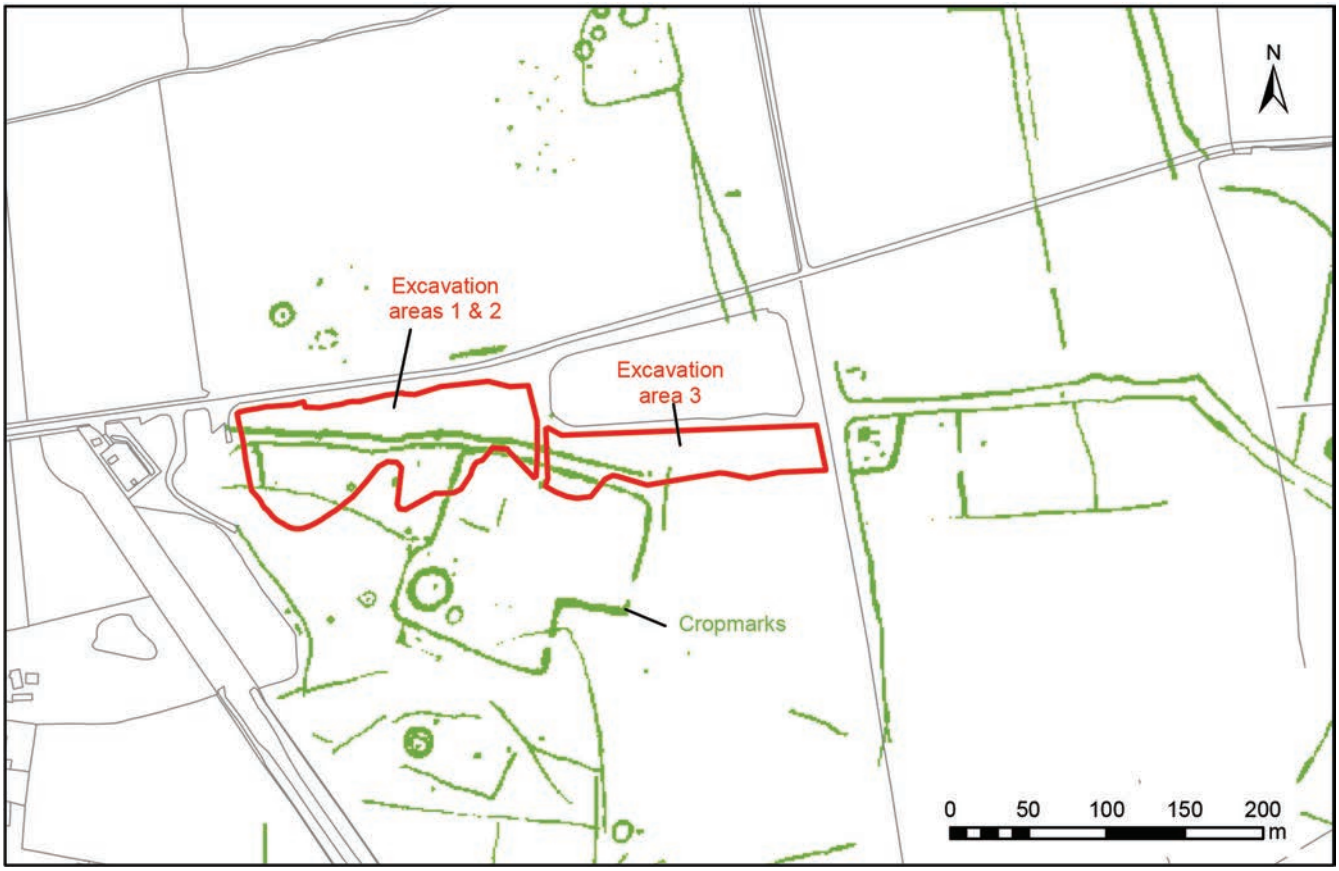

FIGURE 2: Excavation area and associated cropmarks

Large-scale excavation on other sites on the gravels to the north of the Blackwater (e.g. Fig. 1) has revealed the changing use of the landscape from the Neolithic to the early Saxon period, in particular the area adjacent to Elms Farm at Langford Road, Heybridge (Langton and Holbrook 1997), Lofts Farm (Brown, N. 1988; Brown, P. *et al*. 1985), Rook Hall (Priddy 1987), and Slough House and Chigborough Farms (Wallis and Waughman 1998). Important evidence relating to Neolithic settlement, agriculture and landscape has also been recorded in the inter-tidal zone of the Blackwater estuary at the Stumble (Wilkinson and Murphy 1995; Wilkinson *et al*. 2012).

Within this wider landscape the Langford reservoir site was located in an extensive cropmark complex (Wallis and Waughman 1998, 212; Ingle and Saunders 2011, 34–43), and cropmarks within 200m of the excavation area included enclosures, ring-ditches, linear features and pits (Fig. 2). During construction of the original reservoir to the north-east, a pit containing Middle Bronze Age pottery and a flint flake was identified, while worked flint and possible Middle Iron Age pottery was recovered from topsoil (Bedwin 1985; Essex Historic Environment Record 7871).

Excavation methods

The archaeological excavation was undertaken in two stages, with Areas 1 and 2 being investigated in 1995 followed by Area 3 in 1996 (Fig. 2). The aim of these works was to record any archaeological remains within these areas in advance of gravel extraction. In each area initial machine stripping of topsoil was undertaken, then the surface level was reduced by machine by a further 50mm to give better definition of the archaeological features. Of those features that were confirmed as genuine, many had been truncated by agricultural activity. The features all lay below the topsoil/subsoil and were cut into the natural deposit. A 10% sample of ditches and 50% to 100% of discrete features were excavated.

EXCAVATION RESULTS

The range of features exposed comprised two ring-ditches and linear ditches defining enclosures and a trackway (Fig. 3). Discrete features, such as pits and post-holes were also present. A number of other potential archaeological features were initially identified but further investigation established that these were of natural origin (e.g. tree-throws) or modern disturbance. The archaeological remains largely dated to the later Neolithic, Middle Bronze Age and Middle Iron Age. Overall those features which were of archaeological origin were concentrated in Areas 1 and 2. Discrete features were generally concentrated in the vicinity of the ring-ditches but there was also a general scatter of such features across the wider site.

The excavation revealed that the potential of the site was actually greater than that suggested by the cropmark evidence, as two previously unknown ring-ditches were found that had not been identified from aerial photograph plots. These ring-ditches, later Neolithic in date with evidence for re-modelling of one in the Middle Bronze Age, were identified in the north-west of the site, with related features including cremation deposits. A system of Middle Iron Age enclosures was recorded in the south of the site, which was superseded by a ditched trackway which ran east to west. The latter shared the same alignment as the northern boundary of the enclosures suggesting at least

some visible trace of the earlier land division survived. The trackway in turn was superseded by a new field system in the Roman period, including a pair of roughly parallel ditches running north–south across the east end of the site (Area 3). The recorded archaeological remains are described and discussed below, by broad chronological period.

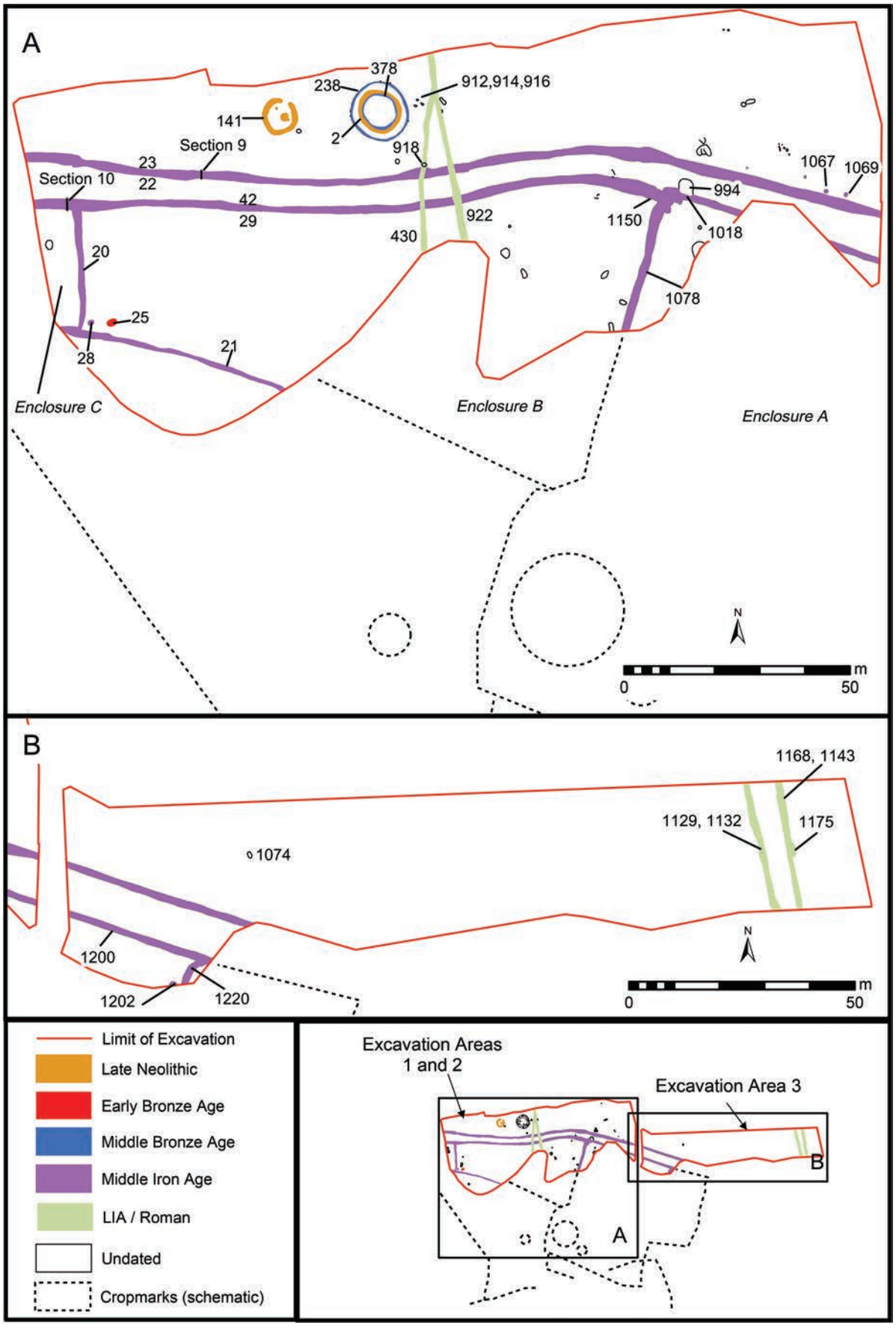

FIGURE 3: Areas 1, 2 and 3: phasing

Mesolithic
Although no features were present, Mesolithic activity was identified across the west of the site (Areas 1 and 2), in the form of residual micro-burins associated with the production of microliths.

Neolithic–Middle Bronze Age (Figs. 3a and b, 4 and 5)
The earliest features were of later Neolithic date, comprising two round barrows in the north-west of the site (Area 1), the remains of which comprised ring-ditches together with evidence of cremation burials. One of the ring-ditches was remodelled in the Middle Bronze Age as a double ring-ditch. Other features in the vicinity of the ring-ditches may be associated with later Neolithic to Middle Bronze Age activity at these monuments, although the absence of dateable artefacts means that this interpretation of their phasing cannot be considered definitive. Elsewhere a single pit, 25, in the south-west of Area 1 (Fig. 3a), contained a flint scraper in an Early Bronze Age form and is thought to be of this date.

Ring-ditch 141
The smaller of the funerary monuments comprised a single ring-ditch, 141, with an internal diameter of around 6m and a 'causeway' entrance orientated towards the north-east (Fig. 4 and Plate 1). The excavation of eight segments through the ring-ditch revealed a rounded profile 1.0m wide and up to 0.5m deep. For much of its circuit the ditch appears to have silted naturally (Fig. 4, section 1), but its eastern arc contained an extensive charcoal deposit (133) within the sequence of fills (Fig. 4, section 2). A very small amount of cremated human bone was recovered from the ditch fills that probably represents the inclusion of residual material rather than deliberate cremation deposits. The ring-ditch fills contained Peterborough ware pottery, while Grooved ware was recovered from the latest fill in the sequence in the east, indicating a probable Middle Neolithic origin for the monument with continued use, or reuse, in the Late Neolithic.

A large pit, 211, 1.0m deep, had been dug towards the eastern side of the interior of the ring-ditch. A small pit, 281, cut into the north-eastern edge contained a deposit of cremated human bone, 282 (Fig. 4, section 3), apparently deliberately placed there as a small token burial (see Cremated Bone, below). Pit 211 was subsequently recut three times, 436, 359 and 360 (Fig. 4, sections 3 and 4), with the first in particular representing a near-complete clearance of the original pit fill and also cutting through the cremation pit 281. The lower fills of the pit contained relatively dense quantities of charcoal, and all the fills contained very small amounts of cremated human bone. Apart from the suggested token burial 281/282, this appears to represent disturbed material rather than placed deposits. The pit may originally have been dug to dispose of pyre debris and the repeated recutting of the pit seems to confirm a ritual purpose, although no further special deposits were recognised in the fills of the recuts. The fill of the final pit recut, 360, contained both Grooved ware and an oblique flint arrowhead, consistent with a Late Neolithic date. Two small pits, 150, which cut pit 211, and 345, both contained a small amount of cremated human bone and may represent further cremation deposits, although the analysis of the bone suggests that this material could simply have been accidentally incorporated into the pit fill; a reasonable supposition given the disturbance in the area. A third, undated pit, 146, may also have been of a similar type and period.

Other internal features of ring-ditch 141 included a series of post-holes, 0.4–0.5m in diameter and up to 0.3m deep (Fig. 4). These contained no datable finds, but were arranged around the inner edge of the ring-ditch, forming a post circle or maybe a circular building, possibly a mortuary structure. It is possible that such a structure would have been a later insertion, but the construction of a post-circle is at least as likely to have preceded the digging of the ditch (Gibson 1998, 36). A large number of putative stake-holes were recorded in and around the ring-ditch; although it is possible that some of them could represent root disturbance, many of them form such clear patterns and alignments that they are likely to relate to the monuments use and reuse. There is a circle of stake-holes around the inner edge of the ring-ditch, and one around the external edge of the ditch while others clearly followed the edge of pit 211 and presumably denote some sort of a lightweight structure around it when open – perhaps simply a fence. A row of stake-holes along the north-east side of pit 211, appears to align with the one of two parallel lines of stake-holes outside the entrance to the monument, which might represent small palisades marking a small 'avenue' leading to it.

The presence of cremated human bone and charcoal deposits in the ring-ditch and its internal features is evidence that pyre material was being deposited around the immediate area of the monument. There were few definite concentrations of cremated bone, however, and only deposit 282 in the edge of the large pit 211, and the fills of pits 150 and 245, are likely to have been deliberately placed cremation deposits. Very little cremated bone was deposited in the ring-ditch itself. It is notable that no cremated bone was retrieved from the extensive charcoal deposit 133, in the eastern arc of the ring-ditch, though it may still represent disposal of pyre debris. The location of this deposit, adjacent to pit 211 in the interior of the ring-ditch, suggests they represent different, but related, aspects of the same funerary activity. A complete Grooved ware vessel (80) placed in the north-eastern terminus of the ring-ditch contained no cremated bone. Both broken and partly burnt, it is interpreted as a ritual or placed deposit – presumably part of a secondary offering and evidence of active veneration of the dead at this monument after interment.

Double ring-ditch 378 / 238
A double ring-ditch was located 12m to the east of the single ring-ditch (Fig. 3). It was originally another single ring-ditch, 378, which was evidently later recut, with an outer ring-ditch, 238, added to it (Fig. 5 and Plate 2). The inner ring had an internal diameter of 7m, and the outer ring was 12m in diameter. Twelve segments were excavated through both inner and outer ring-ditches and a representative section is shown (Fig. 5, section 5).

The original inner ring-ditch, 378, was around 1.0m wide and had a rounded profile up to 0.3m deep. It was re-cut along its inner face by a narrow ditch, 2, between 0.2 and 0.6m wide, with a V-shaped profile 0.4m deep. The outer ring-ditch, 238, was similar to re-cut 2 of the inner ring, being narrow with a V-shaped profile. Like the inner ring, it was continuous, lacking a similar 'causeway' opening to that present in the single ring-ditch 141. Deverel-Rimbury ware pottery of Middle

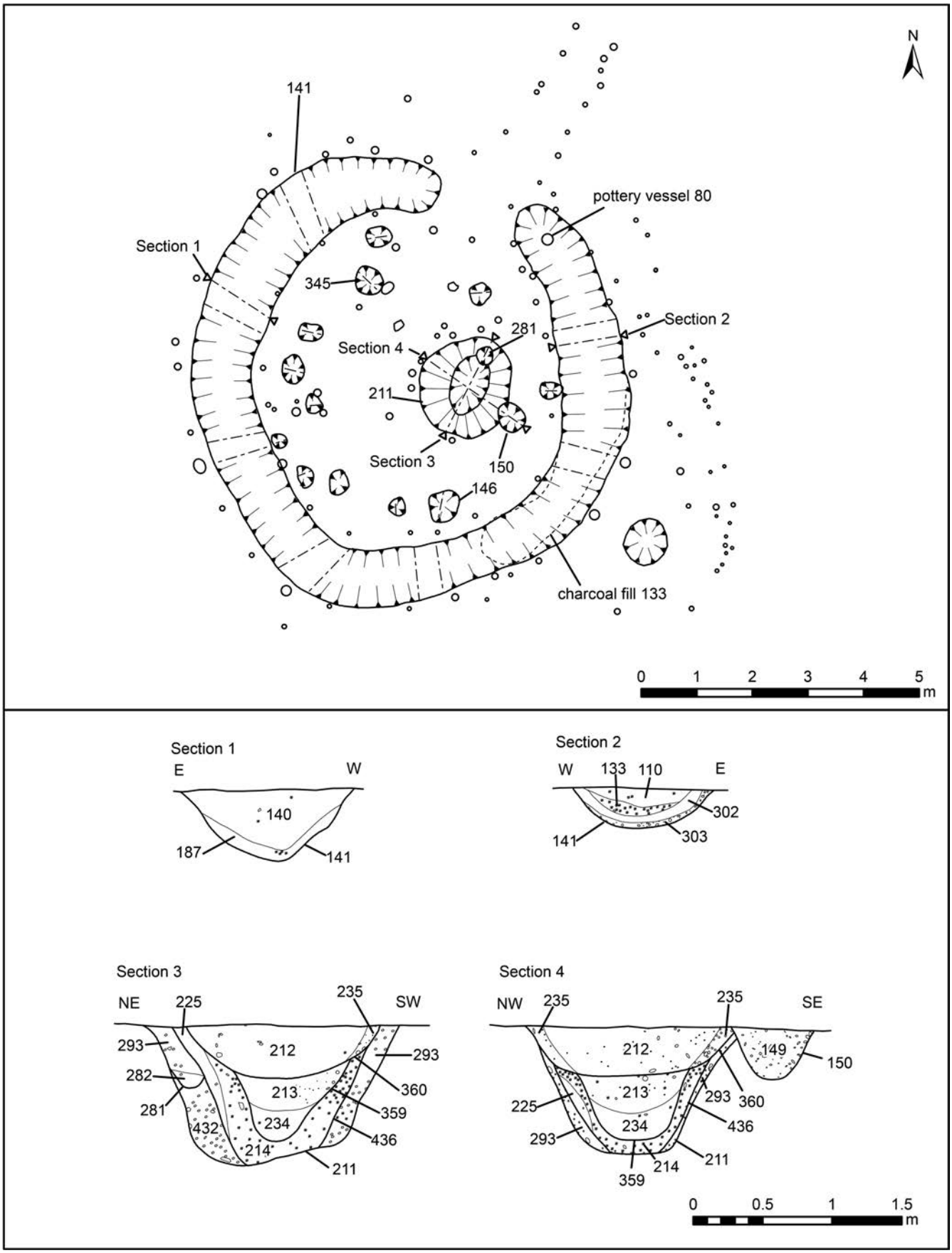

FIGURE 4: Ring-ditch 141, plan and sections

Bronze Age date was recovered from ditch recut 2 of the inner ring-ditch, along with residual Late Neolithic Grooved Ware pottery and a microdenticulate 'saw' of broadly Neolithic date.

Three possible small cremation burial or pyre debris pits, 224, 307 and 439, were located around the western arc of the outer ring. Cremated human bone was only recovered from

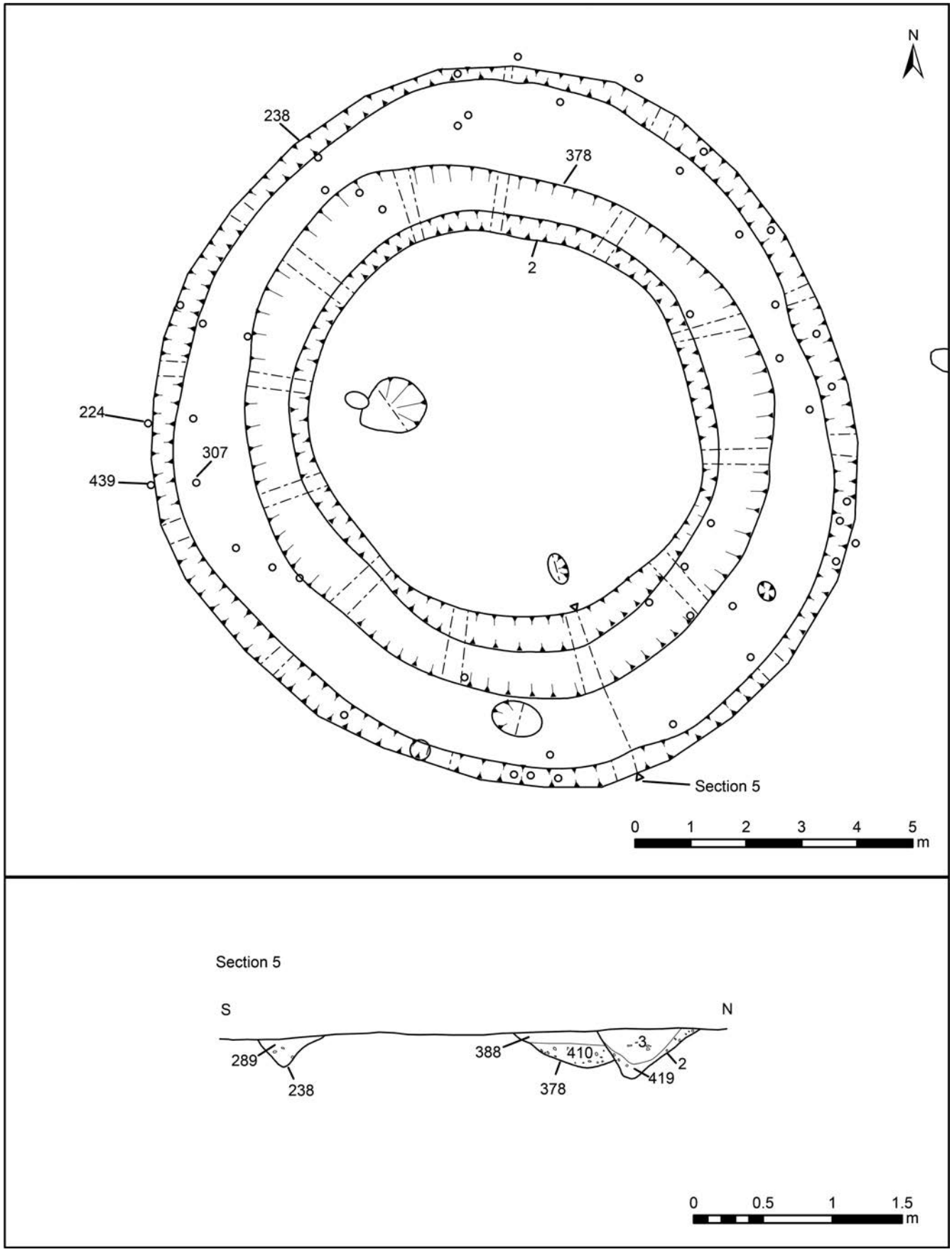

FIGURE 5: Double ring-ditch 378/238, plan and sections

pit 224, while pits 307 and 439 contained significant amounts of charcoal but no further evidence of cremated remains. To the east of the double ring-ditch (Fig. 3) lay a group of three undated, though presumably contemporary, cremation pits, 912, 914 and 916, which contained small quantities of cremated bone. A quantity of stake-holes, mostly located

PLATE 1: Ring ditch 141, looking south-west (2m scales)

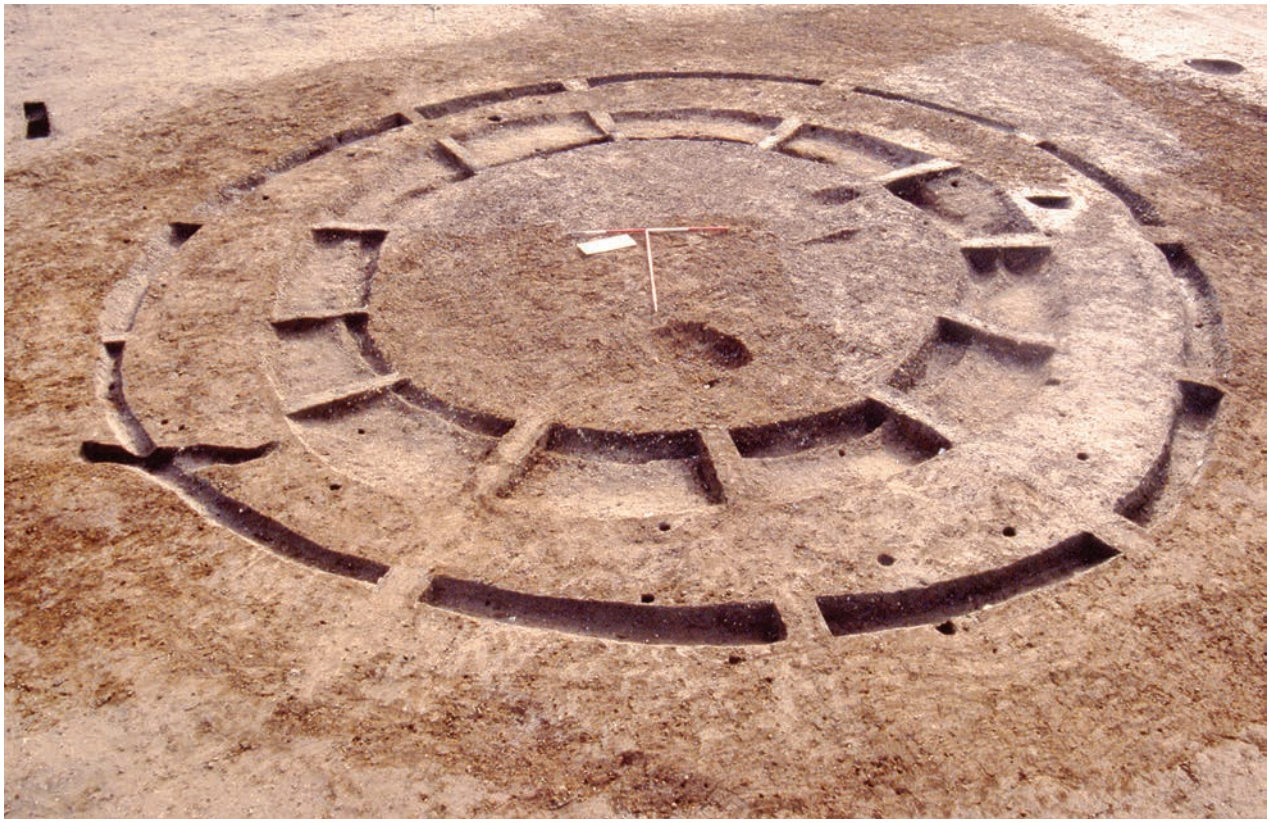

PLATE 2: Double ring-ditch 378/238, looking south-east (2m scales)

between the component ring-ditches, or else around the edge of the outer ring, presumably relate to revetment of the low banks of the monument (Fig. 5). Other undated and featureless pits within the ring-ditch interior appear to be unrelated to it.

The presence of both Late Neolithic and Middle Bronze Age artefacts in the inner ring-ditch makes dating problematical. It is possible that both phases of the ring-ditch are of Middle Bronze Age date, but a more extended sequence is suggested,

with the initial inner ring-ditch representing an original monument of a similar scale and date to the single ring-ditch 141 to the west. These mortuary monuments may have co-existed in the Late Neolithic, before the excavation of the double ring-ditches in the Middle Bronze Age. The similarity in the size and profile of the inner ring-ditch recut, 2, and the outer ring-ditch, 328, supports the interpretation that the monument was remodelled in the Middle Bronze Age. A parallel for a monument of this type and date can be made with ring-ditch 2206 at Elms Farm, Heybridge (Atkinson and Preston 2001, 48), which was also associated with cremation burials.

Cremated bone by Natasha Powers

A total of 213g of cremated bone was recovered from the single ring-ditch 141 and associated features. The largest quantities came from cremation pit 281 (fill 282, 72g) and post-holes 345 (fill 346, 94g) and 150 (fill 149, 60g). Pit 211, inside the single ring-ditch 141, yielded a total of only 16g of bone, whilst that from the ring-ditch itself amounted to only 9g. The majority of the material was human in origin. No indications of pyre goods were found.

As no elements were repeated in the assemblage as a whole, and such small quantities of bone were present, it is possible that all or most of the cremated bone deposits originated from a single individual. The premolar crown within pit 281 and root apex fragments suggest that the individual was at least in his/her later teenage years (14+ yrs) (Gustafson and Koch 1974) and most likely to have been adult at the time of death. This is supported by the general morphology and robusticity of the cranial and femoral fragments in post-hole 345. There was insufficient data to estimate the sex of the individual. No indications of pathological conditions were observed in the remains.

The assemblage consisted of pale blue-grey to white fragments indicating almost complete oxidation, most bones having been subject to temperatures in excess of 600°C (Holden *et al*. 1995 a and b). Burning appears to have been fairly even as fragments were generally uniformly white. The high degree of fragmentation suggests movement of the bones whilst hot, perhaps indicating stoking of the fire, pyre collapse, or raking of the still warm remains after cremation. Fissures and warping, longitudinal, U-shaped and spiral cracking indicate that the remains were fleshed when burnt (Buikstra and Ubelaker 1994).

Gejval (1969) suggested that the open nature of prehistoric cremation was commonly efficient and resulted in a high degree of oxidation. Efficient combustion has been noted on other Bronze Age sites (Roberts 2003) and during experimental pyre cremations (McKinley 2000). Certainly the cremated bone from Langford demonstrates a level of pyre technology capable of sustaining high temperatures for some time, although given the small sample sizes caution should be practised when interpreting the colour of those fragments present as an indicator of the cremated remains as a whole.

There were no indications of staining, perhaps demonstrating that the cremated bone had been carefully separated from the remains of the pyre prior to deposition. Winnowing and separation in water have both been suggested as techniques and would lead to the further fragmentation of the heated bone (McKinley 1989).

It is unclear whether the cremated bone within pit 281 represents a small, perhaps token, cremation burial. It is possible that all the bone within the features originates from the disturbance of this cremation-related feature by the re-cutting of pit 211 (436, 359 and 360). Modern examples have demonstrated that between 1,600g and 3,600g of bone can be expected to result from the cremation of an adult individual (McKinley 1989). Token burials do occur (McKinley 1989), but as the average weight of bone recovered from Bronze Age primary cremation burials is on average 1525.7g, this suggests that these features may not represent a cremation burial at all (McKinley 2000).

As no *in situ* burning was noted, the location of the original pyre site cannot be determined. The lower fills of pit 211 appear consistent with the deposition of pyre debris, containing large quantities of charcoal and small fragments of cremated bone. However, subsequent fills contain far less charcoal and given the spread of cremated bone fragments within the area of the ring-ditch, any bone could be an accidental inclusion from the same original cremation. Without evidence of multiple individuals it must be concluded that a single cremation event and clearance is represented and the purpose of the re-cutting of the feature becomes less clear.

The post-hole structure also contained cremated bone. From the quantity of bone involved, and the location of post-hole 345, it appears most likely that this was also a structural, rather than a burial feature. Whether the cremated bone was deliberately placed within the post-holes, or deposited as a result of raking out or cleaning is unclear. Whilst it is possible that the post-holes represent some form of mortuary structure (perhaps being re-used and cleaned of charcoal and bone), there is insufficient osteological evidence to confirm this.

Very small amounts of cremated bone were incorporated within the fills of the ring-ditch. The ditch also contained a charcoal-rich fill 133 and may also be related to the process of cremation. However, all interpretation must be treated with caution due to the truncation of the area.

Small amounts of bone were also present in the three possibly Late Neolithic or Middle Bronze Age cremation pits 912, 914 and 916. It was not possible to provide a detailed identification and interpretation of these remains.

Middle Iron Age

The aerial photographic plots clearly define a linear cropmark complex and a pattern of enclosures to the south of the ring-ditches, parts of which lay within the area of investigation (Fig. 2). Excavation subsequently established that these were of Middle Iron Age date. It also demonstrated that the remains did not represent a single phase of activity but rather a series of changes, with the complex initially comprising ditched enclosures A, B, and C orientated on a roughly north–south axis, which were later most likely augmented by the addition of a trackway. The relationship between the various ditches of the enclosures and the later trackway was investigated in detail where enclosure ditch and the southern trackway ditch met (Fig. 6) and a series of schematic plans showing the postulated sequence of the ditches is presented as Figure 7.

Enclosures A, B and C

The western boundary of Enclosure A was defined by ditch 1078, its north by 1018/967 and 1200, and possibly its east by

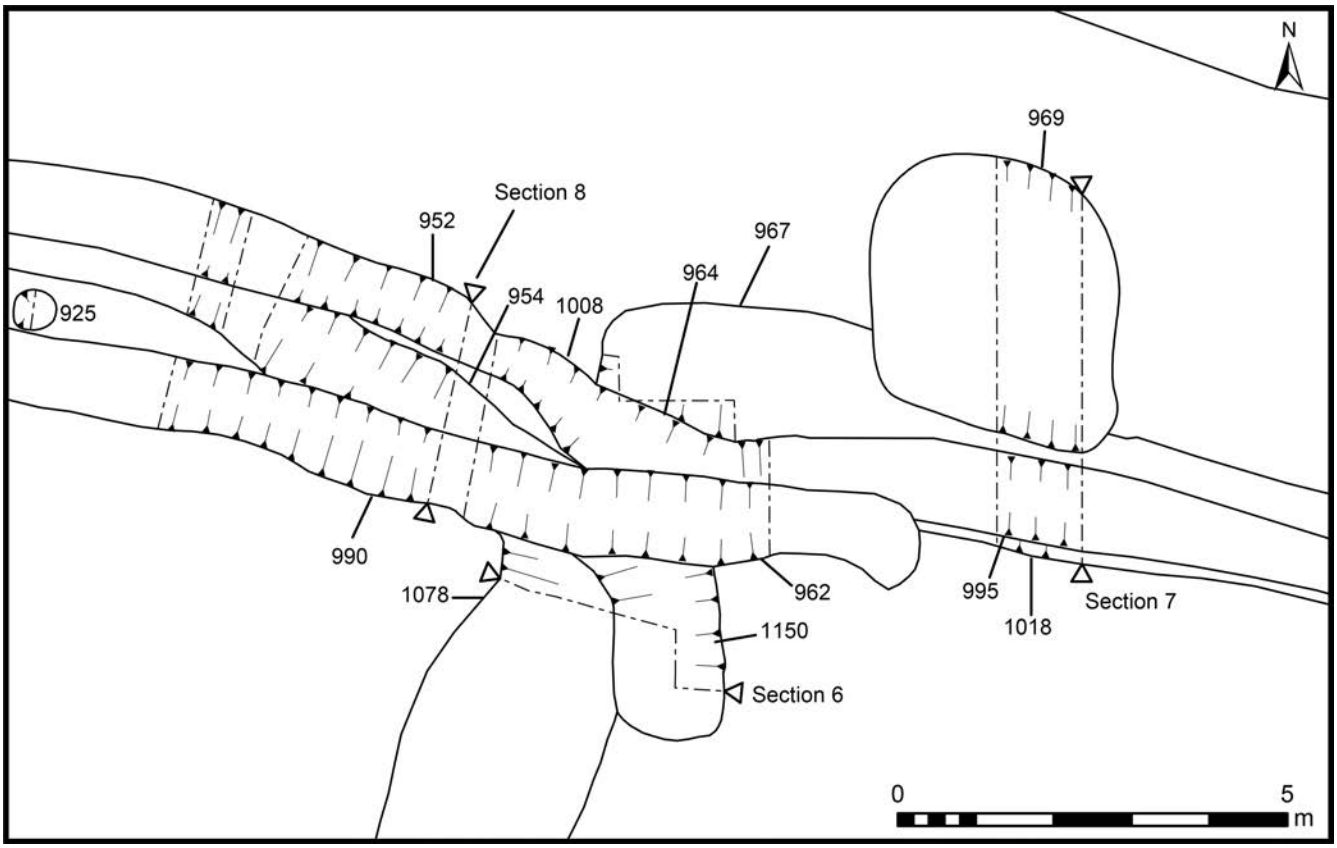

FIGURE 6: Detail of junction of enclosure ditch with southern trackway

1220 (Fig. 3). The remaining boundaries lay outside the area of excavation. Ditch 1078 (Fig. 8, section 6) was a relatively substantial north–south orientated feature, *c*.0.8m deep. Although the survival of the earliest features in this area was fragmented in places due to the cutting and re-cutting of later phases of ditch it is, on the basis of physical characteristics and spatial arrangement, likely that 1078 may have joined with, or even been an integral part of, west–east aligned ditch 967/1018 (Figs 6 and 7), the northern boundary of Enclosure A. These west–east ditches are similarly substantial in character, being 0.70–0.80m in depth (e.g. Fig. 8, sections 6 and 7).

The cropmark plots identify two ring-ditches in the south-west corner of this enclosure, along with what could be pitting and fragments of other ditches on similar orientations, hinting at subdivision of its interior. Excavated evidence of this sub-division was limited to the presence of a short section of roughly north–south orientated ditch, 1220, in Excavation Area 3 (Fig. 3b). Feature 1202, a ditch terminal or pit, is also likely to be associated with the enclosure although a more detailed interpretation is not possible given that only a small part of it lay within the excavation area.

Enclosure B lay to the west of A. Its southern boundary was defined by ditch 21 and its west by 20. It is assumed that ditch 1078 was still extant in some form, perhaps as a partially infilled ditch, and defined its eastern boundary with Enclosure A. Its northern boundary was defined by west–east ditch 954/1150 (Fig. 6), which was roughly *c*.0.6–0.7m deep, and ran along the postulated route of the northern boundary and then across the top of 1078 (e.g. Fig. 7). This enclosure may have represented an addition to a field system which had Enclosure A as its focus.

Although only its easternmost part was exposed within the area of investigation, Enclosure C constitutes a westward continuation of the Middle Iron Age land division system. In overview, expansive Enclosure A appears to have been established first, with more linear Enclosures B and C laid out from it. Together their northern perimeters seem to have demarcated a significant division in the landscape, with the land to their north (and containing the remains of the earlier prehistoric mortuary monuments) seemingly being unenclosed. As such, this major boundary may well have defined markedly differing land-uses to north and south. Unfortunately no contemporary features indicative of land-use were recorded in the various entities defined. Seemingly devoid of settlement remains, it can only be assumed that the enclosed landscape to the south comprised agricultural fields within the investigated site with the ring-ditches in the south-west corner of representing the remains of earlier prehistoric mortuary monuments.

Given that the northern edge of this enclosure system appears to have marked a major land division, it is postulated that an otherwise unmarked routeway through this landscape could have run alongside. Furthermore, it is tempting to speculate that this could have been of significantly earlier origin and to have influenced the siting of the barrows themselves, alongside.

Trackway

The east–west trackway was established, or perhaps more probably *formalised*, after the enclosure ditches had been at least partially infilled. However, it follows the same line as this earlier land division, suggesting that at very least some vestige may still have been visible in the landscape, perhaps

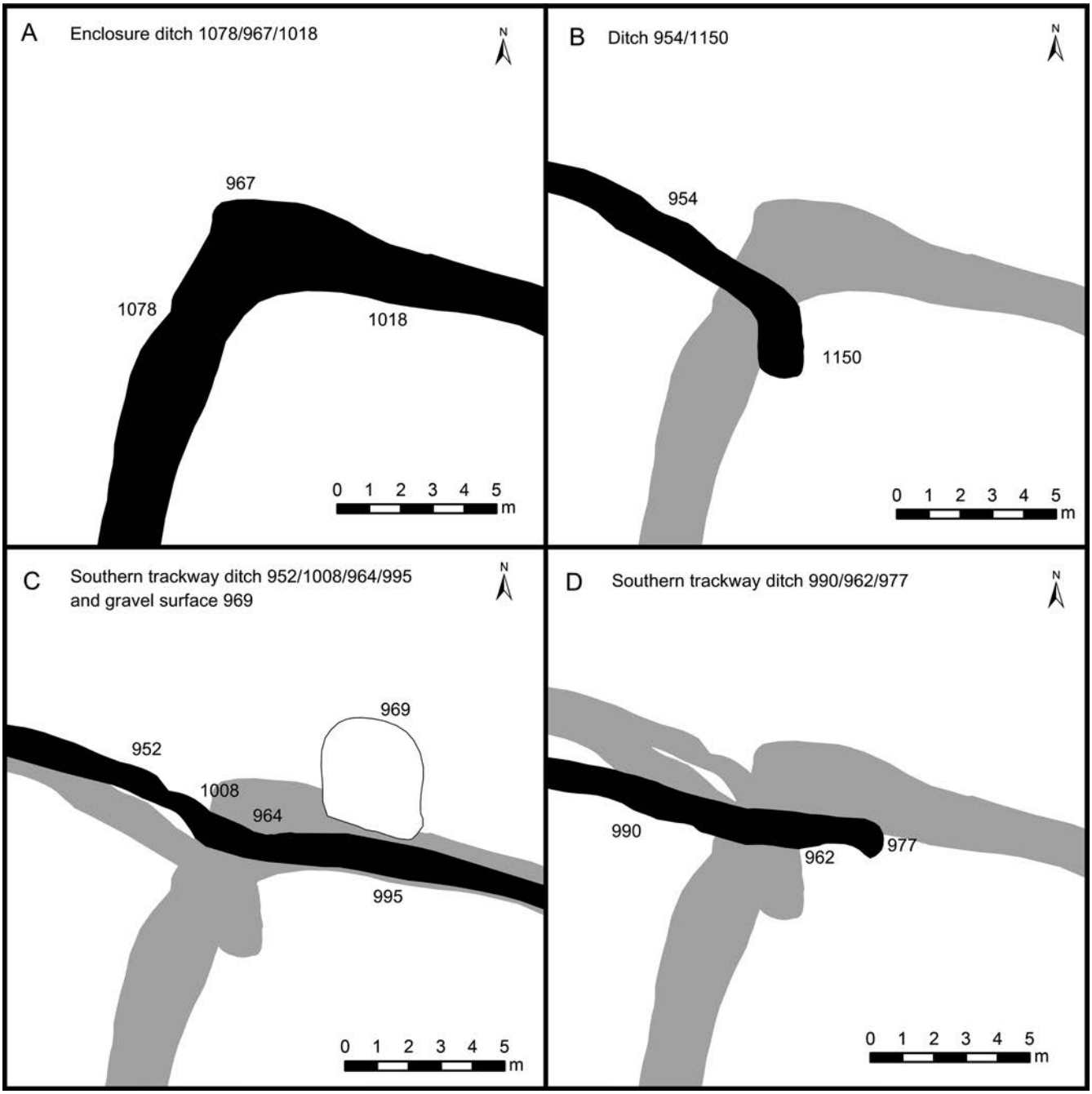

FIGURE 7: Development of the enclosures and the southern trackway at their junction

as partial earthwork or perpetuated by a hedge. It is therefore presumed that the enclosed landscape to its south persisted. This trackway (Fig. 3) varied between 5m and 8m wide and was defined by ditches to either side. These ditches were subject to a series of recuts, best demonstrated at the junction of the southern trackside ditches and the corner of Enclosures A and B. Here the enclosure ditches 1078, 967/1018 and a later boundary ditch 954/1150 were cut by trackside ditches 952/1008/964/995 and these were recut in turn by 990/962 and 977 (e.g. Fig.8, sections 6–8). The latter was a ditch terminal hence there was a gap in the track at this time. To the west of this area both the northern and southern ditches (22 and 29) were recut once (23 and 42; Fig. 8, sections 9–10). The twelve segments excavated through both the northern and southern ditches revealed generally rounded profiles, with varying depths, between 0.2m and 0.8m (Fig. 8).

The surface of the track did not survive truncation by ploughing, although several areas of silt and gravel 'metalling' probably represent infilled depressions; for example deposit 994, which was located in a shallow hollow (969) and subsequently covered by silty deposit 968 (Figs 6–7; Fig. 8, section 7).

The enclosure, field boundary and trackway ditches have all been broadly dated to the Middle Iron Age on pottery evidence, but a broad range of other material was recovered from these features, particularly the trackway ditches. This included a Late Bronze Age flint scraper fragment in ditch 22 and both Late Iron Age and Roman pottery. Whilst the Neolithic and Bronze Age material was probably residual, the Late Iron Age and Roman artefacts perhaps imply the continued use of the trackway and the accumulation of material in the open remnants of the trackside ditches after the Middle Iron Age.

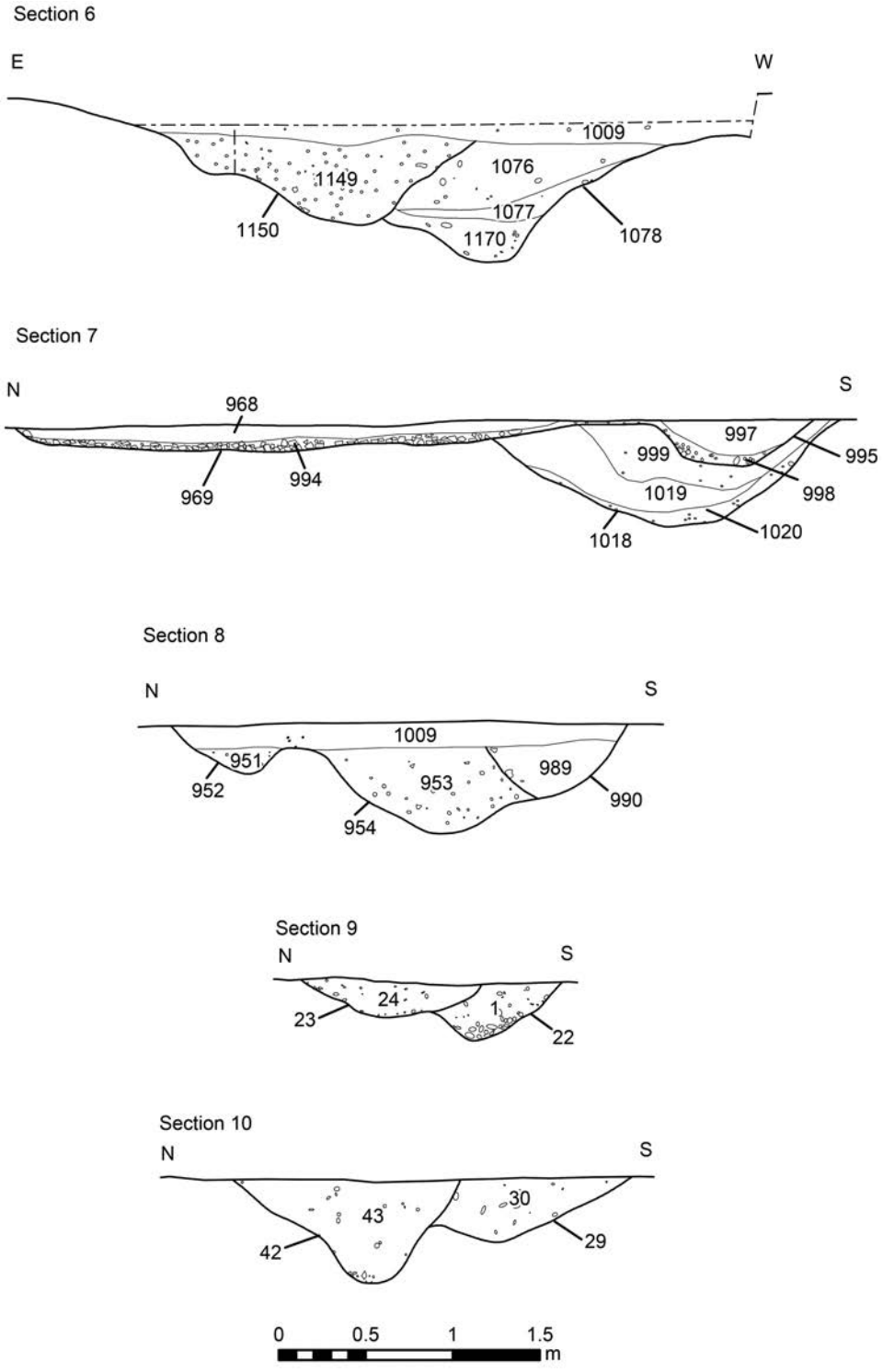

FIGURE 8: Selected sections

A single pit, 28 (Fig. 3a), at the junction of enclosure ditches 20 and 21, was dated by pottery evidence to the Middle Iron Age. It is possible that undated features in the vicinity of the trackway and the enclosure ditches, for example post-holes 1067 and 1069 (Fig. 3a) and cremation pit 1062 (not illustrated), were also of this period.

Late Iron Age/Roman

Pottery, recovered from the upper fills of both trackside ditches, suggests the probable continuation in use of the east–west trackway into the Late Iron Age and early Roman periods. More significantly, a succeeding phase of activity is identified in the form of north–south aligned Late Iron Age and Roman ditches that appear unrelated to the earlier field system.

Two of these ditches (430 and 922) were located to the immediate east of the double ring-ditch and converged at a point immediately alongside it (Fig. 3a). While ditch 430 was a relatively shallow feature with an irregular profile, ditch 922 had a very regular profile with straight, gently sloping sides and a flat base. It was around 0.35m deep and contained a small amount of Late Iron Age pottery. Both clearly cut across the Middle Iron Age trackway and intruded into the interior of Enclosure B, so disrupting all previous land organisation and functional entities.

At the east end of the site, in Area 3, a north–south aligned pair of ditches was investigated; the western ditch within segments 1129 and 1132 and the eastern within 1168 and 1143 (Fig. 3b). Both were recut, which implies that the land boundaries these ditches demarcated were maintained over time. They contained Roman pottery of 2nd to 4th century date and formed part of a Roman landscape, not apparently associated with the earlier enclosure system. These may define either side of a trackway or successive phases of a single Roman period boundary. Previous interpretation of the wider cropmark complex had plotted these ditches as converging further to the north as shown in Figure 2. However, aerial photographs dating to 2009 (post-dating the plots described above) would appear to show two parallel ditches (Google Earth; accessed Nov. 2013).

There were few further features of this period; a single pit or post-hole 918, which contained Samian ware, lay on the line of ditch 430 (Fig. 3a), while ditch 1168 (Fig. 3b) was cut by a large pit, 1175, from which no datable evidence was recovered.

Post-Roman and Undated

There were few post-Roman remains and little modern disturbance. As noted above, a number of natural features such as tree holes (not illustrated) were identified through the archaeological works. In addition a number of discrete features, typically pits, were identified across the site that it has not been possible to phase due to the absence of artefacts or stratigraphic relationships. The artefact assemblage contains no medieval material and very little post-medieval material. By the 19th century the field system in the area had been established in its present form.

FINDS

Worked flint by Hazel E. Martingell

A total of 221 worked flint artefacts were recovered from all areas of the site. The descriptive lists (held in archive) record the flints in full. The artefacts have been analysed using a system loosely based on the Bordes (1968) and Tixier (1963) classifications, and the Clark (1934) and Jacobi (1976) typologies.

There is a marked concentration of worked flint in the areas of the single and double ring-ditches: 82 pieces or 37% of the total came from these features, pit 211 within the single ring-ditch 141, and from other pits and post-holes within them. It is interesting to note that all but one of the stratified blades and bladelets were collected from the trackway ditches, the ring-ditches and other features to the north in Area 1, albeit

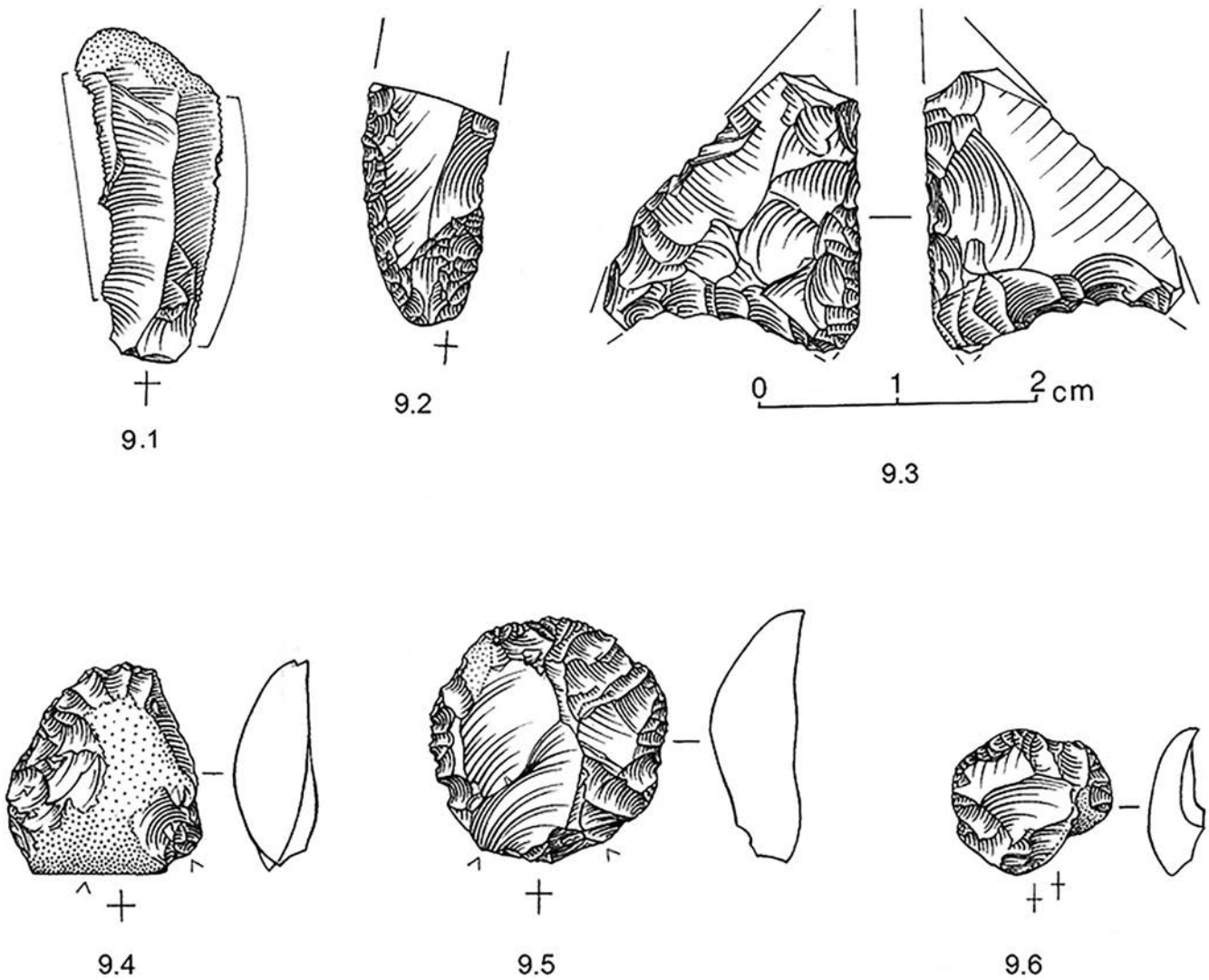

FIGURE 9: Worked flint artefacts

some in residual contexts. This suggests a discrete Neolithic presence in this part of the site.

Mesolithic (c.8000–3500 BC)
The earliest artefacts recovered from the site were found in Areas 1 and 2. These were micro-burins, waste pieces from the manufacture of microliths. They are the only evidence for the presence of Mesolithic activity on this site – although some of the blades may be blanks for microliths. It would seem unlikely that this activity lasted any longer than the time it took to make a few projectile points.

Neolithic (c.3500–1500 BC)
A Neolithic oblique arrowhead (Fig. 9.3) recovered from pit 211 (fill 212) was the most interesting artefact. Unusually, it was the only projectile point in the assemblage. Oblique forms of arrowhead (Clark 1934 – Classes E–I) are sub-triangular in shape, often with a hollowed asymmetrical base, which in some instances develops into a deliberately shaped single barb. Oblique arrowheads seem to be limited to between 2000–1500 BC and to occur with Grooved ware pottery of the Late Neolithic, as in this case. They are not common in Britain but more may be found in the south-east than in other regions. This particular example is white due to burning. Even so, apart from the damaged tips of the point and barb it is in good condition.

A Neolithic microdenticulate/serrated blade 'saw' came from recut 378 (fill 85) of the inner ring of the double ring-ditch (Fig. 9.1). Usually these pieces are hafted with others to form a composite sickle. These sickles occur first in the Mesolithic and continue through to the Late Neolithic. They are thought to have been used to cut grasses and withies.

The butt half of a retouched blade was found in Area 2 in a Middle Iron Age enclosure ditch (context 1007) (Fig 9.2). It has invasive retouch along the left edge and steep retouch backing the right edge.

Bronze Age (c.1500–800 BC)
Four Bronze Age scrapers were recovered. A scraper from pit 25 (fill 17) in the south-west of Area 1 (Fig. 9.5) is a round, pressure flaked, Early Bronze Age tool. In Area 2 a broken Late Bronze Age scraper was found in the Middle Iron Age northern trackway ditch 22. Two unstratified scrapers were also recovered (Fig. 9.4 and 9.6). Apart from these scrapers no other Bronze Age flint artefacts are recognisable in the assemblage.

Notches, flakes and debitage/waste
Only 6% of the flint artefacts were retouched in any way; 58% (129 pieces) were simple flakes. It is likely therefore that many of these flakes were used without modification by retouch, which was common in later prehistoric periods. Notched pieces, common in most mixed assemblages, are rare here. Of the three found, only the notched piece on a retouched flake from pit 1074 in Area 3 is well made. If the view that these tools were used for straightening arrowshafts is correct, then this was a minor activity on this site.

The density of flint artefacts is greatest in the western part of the site decreasing to virtually nothing in the east. This may reflect the continuing preference to use land close to a stream which runs north–south on the western side of the site, or there may be other reasons for this disparity which are at present unknown.

Prehistoric Pottery by N. Brown
The excavations produced a moderate amount of pottery (712 sherds weighing 4.4kg), which has been recorded using a system devised for prehistoric pottery in Essex (Brown 1988; details in archive). Fabrics present in the assemblage are set out in Table 1.

Description and date
The earliest pottery present on the site is Peterborough ware (Fig. 10.1–5). Traditionally regarded as of Late Neolithic date, more recent reconsideration of the dating evidence (Gibson and Kinnes 1997) has suggested an earlier origin, and this is supported within the Chelmer valley by the stratigraphic sequence at the Springfield Cursus (Brown 1997). Body sherds with finger pinched decoration (Fig. 10.2–3), and rim sherds probably from Mortlake style bowls (Fig. 10.1, 10.4–5) are present; the material was derived from the single ring-ditch 141, with a single sherd from a pit to the east (1222, not illustrated). Late Neolithic Grooved ware is present in the form of small decorated sherds (the largest illustrated in Fig. 10.6 and 10.7) from both ring-ditches and, in addition, a large part of a plain bowl was recovered from the single ring-ditch (Fig. 10.8). Middle Bronze Age Deverel-Rimbury pottery in the form of the rim of a bucket urn and large parts of two globular urns was recovered from a recut of the double ring-ditch (Fig. 10.9–11). A few body sherds in flint tempered fabrics derived

Fabric Description	% sherd count	% sherd weight
A, Flint, S, 2 well sorted	< 1	< 1
B, Flint, S–M, 2	15	3
C, Flint, S–M with some L, 2	5	5
D, Flint, S–L, 3	2	5
E, Flint and sand, S–M, 2	2	4
G, Sand, S, 3	1	< 1
H, Sand, S,2	4	6
I, Sand, S–M, 2–3	4	13
J, Sand, S, 2 with veg. voids particularly on surfaces	4	2
M, Grog, may have some sand or flint, and voids	11	14
O, Quartz and Flint, S–L, 2	3	4
P, Largely temperless may have sparse very fine sand, occasional flint, or sparse irregular voids	2	1
Q, Flint S–L, Grog, S–M, 2	28	33
R, Shell M–L 2,	3	1
S, Glouconite	<1	1
V, Flint, S–M, 1	1	4
Z, Unclassifiable	14	3

Size of inclusions
S = less than 1mm diameter.
M = 1–2 mm diameter.
L = more than 2mm diameter.

Density of inclusions
1 = less than 6 per cm²
2 = 6–10 per cm²
3 = more than 10 per cm²

TABLE 1: Prehistoric pottery fabrics

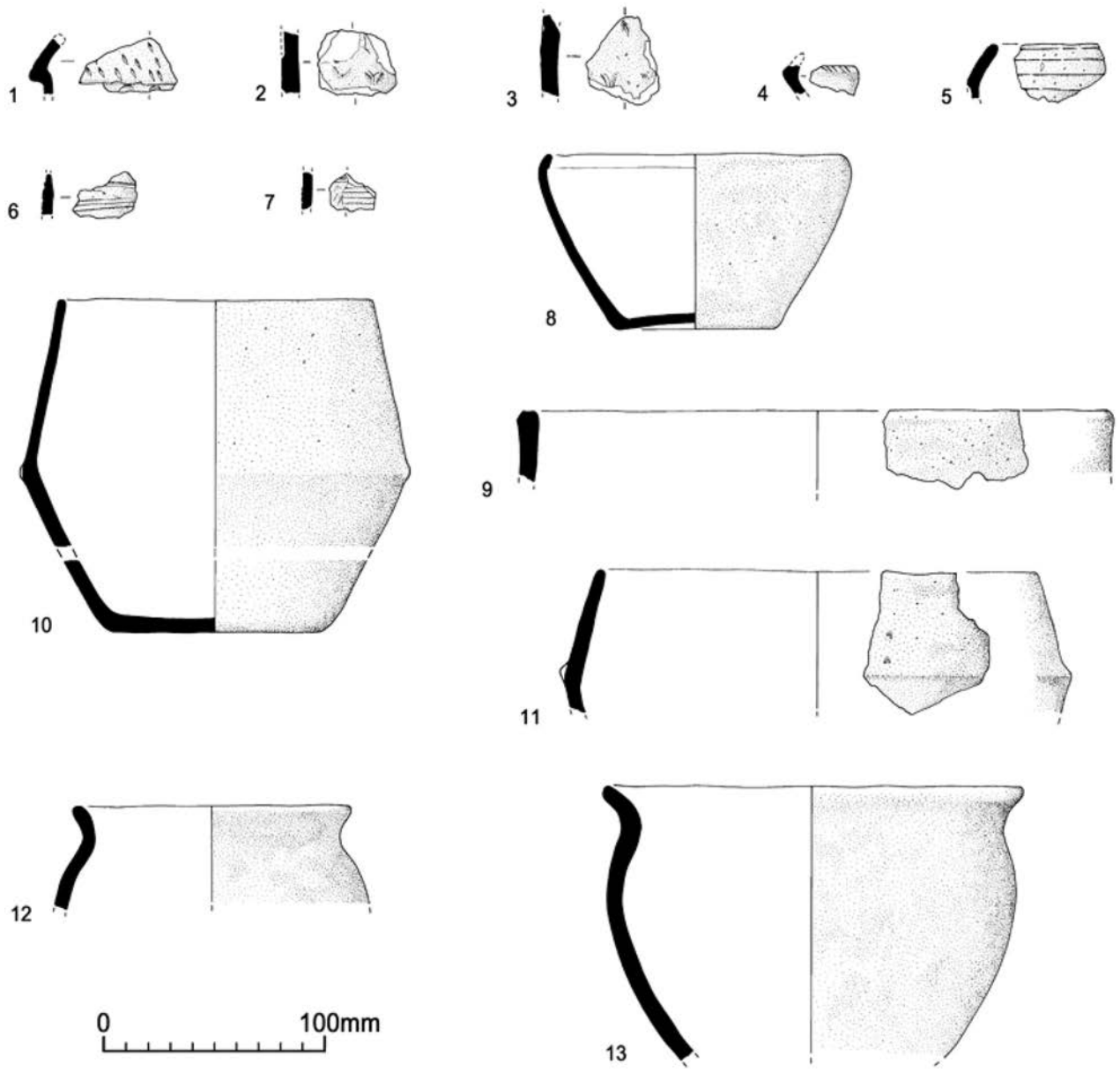

FIGURE 10: Prehistoric pottery

from the linear features are not closely dateable but might, by analogy with more diagnostic pottery from elsewhere in the Chelmer valley/Blackwater estuary (e.g. Brown 1988), be of Late Bronze Age date. However, the majority of pottery from these features is of Middle Iron Age date, represented by body sherds in fabrics typical of this period (fabrics E, G, H, I, J and S; Drury 1978; Brown 1998), and some diagnostic forms (*e.g.* Fig. 10.12–13).

Catalogue of illustrated Sherds

The illustrated sherds represent the full range of form and decoration and comprise 66% of the diagnostic sherds (by sherd count).

Fig.	Context	Description	Fabric
10.1	44	Peterborough Ware Rim, Mortlake Style. Smoothed surfaces, interior of rim missing. Finger impressions on neck and fingernail impressions on top of rim.	O
10.2	44	Peterborough Ware. Finger pinched 'crows foot' impressions on exterior.	D
10.3	128	Peterborough Ware, smoothed surfaces, finger pinched 'crows foot' impressions.	D
10.4	185	Peterborough Ware, Rim, probably Mortlake Style, interior of rim missing.	O
10.5	1222	Peterborough Ware, Rim probably Mortlake Style fine horizontal lines produced by very closely set fingernail impressions. Burnt.	D
10.6	85	Grooved ware horizontal grooved lines on exterior.	P
10.7	212	Grooved ware chevron pattern of grooved lines on exterior.	M
10.8	80	Grooved ware, complete base, about two thirds of rim and large part vessel walls. Open bowl with inturned rim, thin walled smoothed but not burnished surfaces. Part of interior of rim burnt, as is part of the base. Small patch of black deposit/sooting on interior. Small firing spall below rim on exterior.	M
10.9	99	Flat topped rim of Bucket Urn.	C
10.10	3;41	Globular Urn, rounded rim carinated shoulder, flat base. Smoothed surfaces ?originally burnished, some sherds abraded.	Q

Fig.	Context	Description	Fabric
10.11	4	Globular Urn, flat-topped rim, carinated shoulder formed by the addition of a separate strip of clay, rather roughly finished surfaces with traces of wiping.	Q
10.12	43	Smoothed and burnished surfaces with patches of abrasion. Fine bowl probably Little Waltham Form 13 (Drury 1978).	H
10.13	46	Smoothed surfaces partly abraded. Little Waltham Form 1 (Drury 1978).	I

Discussion

The Peterborough ware is decorated with a combination of finger and fingernail impressions, a form of decoration that dominates the Peterborough ware within the Chelmer valley/Blackwater estuary river system (Brown 2004). However, the largest assemblage from this river system, that from Springfield Cursus, though still dominated by finger impression, has a more diverse range of decorative techniques (Brown 2001). It is likely that the Langford Peterborough ware rim sherds are all derived from Mortlake style vessels. The use of linear decoration formed by closely set fingernail impressions seen on one of the Langford rims (Fig. 10.5) is a technique which occurs on Peterborough ware at Springfield Cursus (Brown 2001) and on beaker pottery at Orsett Cock (Brown 1987) and North Shoebury (Brown 1995a). The Langford sherd has been heavily burnt before deposition; by contrast the rest of the Peterborough ware from the site, although of fairly small sherd size, is relatively unabraded. In one case (Fig. 10.1) the surfaces are remarkably well preserved and indicate the use of a slip.

In common with material from nearby sites (Brown 1998) most of the Langford Reservoir Grooved ware (e.g. Fig. 10.6–7) is of small sherd size and cannot be confidently ascribed to one of the Styles used to characterise Grooved ware (Wainwright and Longworth 1971). The exception is a very large part of a plain bowl from context 80 in single ring-ditch 141 (Fig. 10.8). This bowl is quite fine with well-smoothed surfaces particularly on the interior – the complete base, a large part of the walls and about two thirds of the rim are represented. The bowl had been broken and partly burnt prior to deposition. Bowls are a significant component of Durrington Walls Style assemblages (Wainwright and Longworth 1971), and plain examples occur at a number of sites (Longworth *et al*. 1988). The form of the Langford Reservoir bowl is closely paralleled by a number of pots from Grimes Graves, Norfolk (Longworth *et al*. 1988, figs 4, N24–6; 5, N35–6; 6, N46). There is little doubt that the Langford bowl represents a ritual deposit. Although highly fragmentary, the other Grooved ware sherds from Langford derive from relatively small thin-walled pots; the large, thick-walled bucket shaped vessels so characteristic of many Grooved ware assemblages are lacking. The Grimes Graves Grooved ware similarly lacks bucket forms and is dominated by bowls, and the discussion suggests that this reflects selection of easily portable 'personal' pots (Longworth *et al*. 1988). Good contextual information is absent for most of the Grimes Graves Grooved ware but it is clear that the two large decorated bowls recovered by the 1971 excavations (Mercer 1981) were derived from ritual/structured deposits. The context of the Langford pottery may indicate that the vessels represented in the much larger assemblage from Grimes Graves were selected for reasons other than simply portability.

The Deverel-Rimbury pottery from Langford can be easily accommodated within a regional group of Deverel-Rimbury ceramics centred on the Thames estuary which included the Chelmer/Blackwater river system, rather than the Ardleigh group to the north (Brown 1995b; 1999). With the exception of the rim of a bucket urn from context 99, identifiable vessels comprise two Globular Urns from contexts 3, 4 and 41. These are all fills of the inner ring of the double ring-ditch. Very few Globular Urns have been recovered from south and central Essex, and the Langford pots go some way to redressing this apparent imbalance between Globular and Bucket Urns.

The few sherds that *might* be of Late Bronze Age date (above) lack diagnostic features. The Middle Iron Age pottery was mainly derived from the linear features and occasional pits. Though of generally small sherd size, larger fragments occur occasionally (e.g. Fig. 10.13). Elements of a typical domestic assemblage comparable to material from larger collections within the Chelmer/Blackwater river system (e.g. Drury 1978; Brown 1998) are represented, including large jars (Fig. 10.13) and fine bowls (Fig. 10.12).

Late Iron Age and Roman pottery by Joyce Compton

Pottery of Late Iron Age and Roman date came from eighteen contexts in total, amounting to 87 sherds weighing 739g. The pottery has been recorded by sherd count and weight, in grams, by fabric, using the ECC Field Archaeology Unit fabric series, and the few forms present were recorded using the typology devised for Chelmsford (Going 1987, 13–54). The range of fabrics present is given in the table below. Full details by context can be found in the archive.

A large part of the assemblage (84% by weight) comprises abraded body sherds in coarse fabrics, and most of these are not closely datable within the Roman period. The sherds that could be dated exhibit a wide date range, spanning the whole of the Late Iron Age and Roman periods. Over half of the pottery was recovered from the top fills of east–west trackway ditches 22 and 29. Almost all of these sherds are undiagnostic and probably represent a thin scatter of material along the length of the trackway. A sherd each of samian and Dressel 20 olive-oil amphora from a fill of ditch 29 indicate access to traded commodities from the continent during the Roman period.

Several sherds of grog-tempered pottery came from north–south ditch 922. A small pit, 918, in the vicinity of associated ditch 430 contained a single sherd of samian ware. This originated in southern Gaul, and bears the potter's stamp 'Secundus'. The potter was probably active during the late 1st century AD. It is worth noting that the stamp is centrally-placed on the sherd and it is possible that the sherd had been trimmed, perhaps as a curio, in antiquity.

Most of the datable pottery came from the parallel north–south ditches 1129/1132 and 1168/1143 in the eastern part of Area 3. The forms and fabrics present indicate a late 2nd to 4th century date. Hadham oxidised ware and shell-tempered ware, from Harrold in Bedfordshire, are both late Roman types.

Few conclusions can be drawn from such a small assemblage, other than activity during the Roman period can be demonstrated. Most of the pottery was locally made, but sherds of samian and amphora, and the late Romano-British traded wares, also indicate supply from further afield.

Fabric Code	Fabric Name	Count	Weight (g)	% Weight
ABAET	South Spanish Baetican amphora	1	24	3.3
BSW	Black-surfaced ware	10	52	7.1
GROG	Grog-tempered wares	20	206	27.9
GRS	Sandy grey wares	36	326	44.1
HAX	Hadham oxidised wares	9	64	8.7
LSH	Late shell-tempered ware	1	8	1.1
NKG	North Kent grey wares	1	14	1.9
NVC	Nene Valley colour-coated ware	3	6	0.8
SGSW	South Gaulish samian ware	2	1	0
STOR	Storage jar fabrics	4	38	5.1
	Totals	87	739	100

TABLE 2: Late Iron Age and Roman pottery fabrics

DISCUSSION

The significance of the excavated remains is enhanced by consideration and interpretation of the wider cropmark evidence (Fig. 2), and the site is discussed below, in its own terms, and as part of a more extensive archaeological landscape.

The presence of Mesolithic flint, indicates early activity, and Mesolithic and earlier Neolithic evidence is widespread in the Chelmer/Blackwater river system (e.g. Wilkinson and Murphy 1995; Brown 1997). However, there is a relative paucity of later Neolithic evidence on the terraces of the Blackwater in comparison with the earlier Neolithic, this is in spite of the effects of marine transgression which made coastal sites such as the Stumble (Wilkinson and Murphy 1995) uninhabitable and may have led to movement of activity onto the gravel terraces (Wallis and Waughman 1998, 218). The later Neolithic funerary monuments identified at Langford Hall Reservoir go some way to redress that imbalance.

The ring-ditches are the earliest substantial features on the site. Originating in the later Neolithic, they were quite complex monuments. They have much in common with the numerous ring-ditches and small hengiform monuments which characterise the later Neolithic of the Middle Thames valley, and contrast markedly with the much larger monuments built in Wessex (Bradley and Holgate 1984; Thomas 1999, 188–92).

The penannular ditch 141 was considered during the course of excavation to be the remains of a barrow and it is possible it had an internal mound, but it seems more likely that spoil from the ditch was used to create a bank. This may have been an external bank in classic henge style, in which case the pit and scatter of possible post-holes west of the ditch would presumably predate any bank. Cremated remains were deposited in the termini of the ring-ditch and also in internal pits. The ditch, which contained Peterborough ware of broadly Middle Neolithic date, might be a primary feature of the monument, though the post-ring it encloses may well predate the ditch. The ring-ditch at Lawford appears to have had an internal post-ring (Shennan *et al*. 1985) and such features are quite common components of both henges and barrows (Gibson 1994; 1998). The general sequence at this monument appears to be similar to that at the Springfield cursus further up the Chelmer valley (Buckley *et al*. 2001). Both sites have ditches with Peterborough ware in the lower ditch fills and Grooved ware in the upper and both have post circles, which are, at Springfield probably, and at Langford possibly, early features of the monuments. The internal and external rings of stake-holes which lie very close to the ditch edges at Langford presumably post-date the digging of the ditch. It seems possible that these stake circles are related to the parallel rows of stakes which formed an approach to the entrance to the ring-ditch. The south eastern row appears to align with a line of stake-holes along the north-west side of pit 211. The pit and stake-holes forming the entrance approach may have been contemporary elements, and the pit certainly seems to have been neatly located on the south-east side of the ring-ditch leaving access through the entrance gap to and from the interior clear. The repeated recuts of pit 211 are reminiscent of the way burials and pits associated with Beaker pottery were recut/reopened at two nearby sites, Langford Road (Langton and Holbrook 1997) and Elms Farm (Atkinson and Preston 2001).

As noted previously, the double ring-ditch 378/238 may have originated in the Late Neolithic, although it is also possible that it was constructed in the Middle Bronze Age, with the Grooved Ware sherds recovered from the ditch fills being residual. Either way, the monument also appears to have had a reasonably complex history, with the original ditch, which presumably surrounded a central mound, being recut with a different profile and an outer concentric ditch added. Possible cremation burials associated with this monument lay on the western fringe of the structure and also to its east and the cropmark evidence indicates the presence of at least two more barrows a short distance to the north – no doubt part of the same cemetery use of this location.

The Chelmer/Blackwater river system has one of the main concentrations of ring-ditches in Essex (Wallis and Waughman 1998, 220; Ingle and Saunders 2011; Germany 2015). A number of these sites have now been excavated, including a double ring-ditch at Lofts Farm, excavated by the Maldon Archaeological Group, which contained a cremation burial of Early Bronze Age date (Wallis and Waughman 1998, 232), and two ring-ditches excavated nearby at Slough House Farm also represented barrows of Middle Bronze age date (Wallis and Waughman 1998, 55). A single ring-ditch excavated at Elms Farm was associated with a cremation burial, also of Middle Bronze Age date; four further possible truncated cremation pits were identified in the vicinity of this monument and charcoal-rich deposits, with cremated bone, lay in the Late Bronze Age

silting of the ring-ditch (Atkinson and Preston 2001, 48–9). This ring-ditch was surrounded by an external post circle, with an opening to the north-east (Atkinson and Preston 2001, 69) and it is notable that the opening across the single ring-ditch at Langford Hall Reservoir was similarly orientated. Further up the Chelmer Valley ring-ditches have been excavated associated with the Springfield cursus (Buckley *et al*. 2001) and excavations at Old Hall reservoir, Boreham have revealed a small henge and Early and Middle Bronze Age ring-ditches, together with a Middle Iron Age ring-ditch (Germany 2015).

Landscape development

The tangible occupation of the Langford Hall landscape begins with the construction of the two funerary monuments found in the north-west of the site. In the absence of other contemporary remains, such as boundary ditches and settlement features, it can only be assumed that these monuments occupied an unenclosed and uncultivated landscape location, perhaps used as pasture. This landuse is comparable to that revealed at Old Hall, Boreham, where excavations revealed a group of mortuary monuments of Late Neolithic/Middle Bronze Age date within an unenclosed landscape with no other features of these periods being identified (Germany 2015). The Langford monuments were constructed just above the 10m contour line and may have been located at a significant boundary between different types of land use to north and south. In the Middle Iron Age a system of enclosure ditches defining broadly rectilinear plots was established. Their shared northern boundary, seemingly marking a significant landscape division, lay about 20m south of the earlier monuments. While the land to the south was now enclosed and most probably functioned as agricultural fields, that to its north remained open. It is highly likely that the mortuary monuments to the north of the division survived as visible features in the landscape at this time and the siting of the later enclosures suggests a continuing appreciation of their significance, and perhaps demonstrates a long established boundary. Elsewhere, Bronze Age ring-ditches at Elms Farm and Slough House Farm appear to have been long-lived territorial markers (Atkinson and Preston 2001, 70).

At Langford, within the enclosed landscape to the south, Enclosure A may be considered to be of central importance; particularly judging by the cropmark plot. Its sub-square plan would appear to have entrances on its east side, one giving access to circular features in the south-west corner, the other to a rectangular sub-enclosure or building in the north-west. Although the date of the circular features is unknown it is likely that they are of a similar date to the ring-ditches investigated on site, that is Late Neolithic/Middle Bronze Age, and the layout of Enclosure A again suggests a respect for these earlier monuments, with the western boundary kinking around the ring-ditches and accommodating them in this enclosed landscape (Fig. 3).

Later in the life of this enclosure system, though still within the Middle Iron Age, it was supplemented by a ditched trackway that utilised the northern boundary. Reinforcing and perpetuating this major land-use division, it is likely that the imposition of the trackway was merely a formalisation of a pre-existing routeway at this location. The cropmark plot suggests that rather than continue eastward, the track turned south and followed the east side of Enclosure A, presumably to its entranceways, suggesting that their functioning was closely associated.

A similar system of land management was introduced at the Elms Farm site in the Early to Middle Iron Age (Atkinson and Preston 2001, 49), while a field system was also established at Slough House Farm in the same period. There was a general tendency at this time for settlement on the gravel terraces to become more nucleated and sites such as Slough House Farm and Lofts Farm demonstrate a trend towards enclosed settlement (Wallis and Waughman 1998, 223). Although once again no evidence of domestic settlement structures was encountered at Langford Hall, the imposition of a rectilinear enclosed field system suggests that the clear demarcation of territory was of importance for the population of the area, bringing with it implications of land ownership, management and increasingly intensified agricultural exploitation.

It is considered likely that the east–west track remained visible in the landscape, perhaps marked by hedges, and may even have continued into the late Iron Age and, perhaps, Early Roman period when it was superseded by a different system of land division based on north–south aligned ditches. These boundary features are unaccompanied by other contemporary remains and too sparsely represented within the investigated site to provide detailed insight into surrounding land-use. However, the easternmost ditches can be readily extrapolated to continue further north as a pair of converging or parallel cropmarks which eventually meet an enclosure. While the ditches are possibly contemporary, as suggested by the dating evidence retrieved from their excavated portions, it is perhaps more likely that one was a replacement of the other. Based purely on the similarity of their roughly north–south alignment, it is likely that the rectilinear cropmark complex to the east of the site (Fig. 2) is contemporary with these two ditches. If indeed that is the case, one or other of the ditches could have formed the west side of a wide routeway which had an east–west trackway extending off it, with enclosures alongside. Interestingly, this east–west trackway could be construed as a perpetuation of the earlier route, albeit on a slightly revised alignment, suggesting the longevity of such ancient access routes through the landscape.

This limited evidence of activity of Late Iron Age and Roman date, with a series of north–south ditches that reorganised the system of land division in the area, may be paralleled at Chigborough Farm where a realignment of the field system was implemented around the 2nd century AD (Wallis and Waughman 1998, 225).

Overall the sequence at Langford is broadly similar to that revealed at Woodham Walter (Buckley and Hedges, 1987, 42–4) and appears fairly typical of the development of the landscape seen more generally along the lower Chelmer and Blackwater valleys and upper Blackwater estuary – an apparently unenclosed landscape, with boundaries perhaps marked by barrows and other monuments, developing through the establishment of enclosures in the Middle Iron Age and their reorganisation in the Late Iron Age/Roman period.

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BIBLIOGRAPHY

Atkinson, M. and Preston, S. 1998, 'The Late Iron Age and Roman Settlement at Elms Farm, Heybridge, Essex, Excavations 1993–5: An Interim Report', *Britannia* 29, 85–110

Atkinson, M. and Preston, S. 2001, 'Prehistoric Settlement and Burials at Elms Farm, Heybridge', *Essex Archaeol. Hist.*, 3rd series, 32, 42–74

Bedwin, O. 1985, 'Langford Hall', in Priddy, D. (ed.), 'Work of the Essex County Council Archaeology Section, 1983–84', *Essex Archaeol. Hist.*, 3rd series, 16, 82–122

Bordes, F. 1968, *The Old Stone Age* (London)

Bradley, R. and Holgate, R. 1984,'The Neolithic Sequence in the Upper Thames Valley' in Bradley, R. and Gardiner, J. eds *Neolithic Studies: a review of some current research*, Brit. Archaeol. Res. Rep. 133, 107–34

Brown, N. 1987, 'The Prehistoric Pottery', in Milton, B., 'Excavations at Barrington's Farm, Orsett Cock, Thurrock, Essex 1983', *Essex Archaeol. Hist.*, 3rd series, 18, 16–33

Brown, N. 1988, 'A Late Bronze Age Enclosure at Lofts Farm, Essex', *Proc. Prehist. Soc*. 54, 249–302

Brown, N. 1995a, 'Neolithic and Beaker Pottery' in Wymer, J. and Brown, N., *Excavations at North Shoebury: Settlement and Economy in South-east Essex 1500BC–AD1500*, E. Anglian Archaeol. 75

Brown, N. 1995b, 'Ardleigh reconsidered: Deverel-Rimbury pottery in Essex' in Kinnes, I. and Varndell,G. (eds) *'Unbaked urns of rudely shape': Essays on British and Irish Pottery for Ian Longworth*, Oxbow Monog. 55, 123–44

Brown, N. 1997, 'A landscape of two halves: the Neolithic of the Chelmer Valley/Blackwater Estuary', in Topping, P. (ed.), *Neolithic Landscapes*, Oxbow Monogr. 86, 87–98

Brown, N. 1998, 'Prehistoric Pottery', in Wallis, S. and Waughman, M., *Archaeology and the Landscape in the Lower Blackwater Valley*, E. Anglian Archaeol. 82

Brown, N. 1999, *The Archaeology of Ardleigh, Essex: Excavations 1955–1980*, E. Anglian Archaeol. 90

Brown, N. 2001, 'The Prehistoric Pottery', in Buckley, D.G. and Hedges, J.D., 'Excavations at a Neolithic Cursus at Springfield, Essex', *Proc. Prehist. Soc.* 67, 101–62

Brown, N. 2004, 'The Prehistoric pottery', in Germany, M., *Excavations at Great Holts Farm, Boreham, Essex, 1992–1994*, E. Anglian Archaeol. 105

Brown, N. and Murphy, P. 2000, 'Neolithic and Bronze Age', in Brown, N. and Glazebrook, J. (ed.), *Research and Archaeology: a Framework for the Eastern Counties, 2. Research Agenda and Strategy*, E. Anglian Archaeol. Occ. Paper 8

Brown, P., Buckley, D. and Martingell, H. 1985, 'Lofts Farm, Great Totham', in Priddy, D. (ed.), 'The Work of the Essex County Council Archaeology Section, 1983–4', *Essex Archaeol. Hist.*, 3rd series, 16, 82–122

Buckley, D. G. and Hedges, J. 1987, 'Excavation of a Cropmark Complex at Woodham Walter, Essex 1976' in *Excavations at Woodham Walter and an assessment of Essex Enclosures*, E. Anglian Archaeol. 33, 1–46

Buikstra, J. and Ubelaker, D. (eds) 1994, *Standards For Data Collection From Human Skeletal Remains*, Arkansas Archaeological Survey Research Series 44

Clark, J.G.D. 1934,'The Classification of Microlithic Culture', *Archaeol. J.* 90, 52–77

Cooper-Reade, H. 1996, 'Langford, Langford Hall Farm', in Bennett, A. and Gilman, P.J. (ed.),'Archaeology in Essex 1995', *Essex Archaeol. Hist.*, 3rd series, 27, 268–9

Drury, P. 1978, *Excavations at Little Waltham, 1970–71*, Counc. Brit. Archaeol. Res. Rep. 26

Gejval, N-G. 1969, 'Cremation', in Brothwell, D. and Higgs, E. (eds), *Science in Archaeology* (2nd edition), 468–79 (London, Thames and Hudson)

Germany, M. 2015, 'Continuity and Change in the mid Chelmer Valley. Archaeological Excavations at Old Hall and Generals Farm, Boreham', *Essex Archaeol. Hist.*, 4th series, 5, 45–86

Gibson, A. 1994, 'Excavations at the Sarn-y-bryan-caled Cursus Complex, Welshpool, Powys and the timber circles of Great Britain and Ireland', *Proc. Prehist. Soc.* 60, 143–225

Gibson, A. 1998, *Stonehenge and Timber Circle* (Tempus)

Gibson, A. and Kinnes, I. 1997, 'On the urns of a dilemma: radiocarbon and the Peterborough problem', *Oxford Jnl of Archaeol.* 16, 1, 65–72

Going, C.J. 1987, *The Mansio and Other Sites in the South-eastern Sector of Caesaromagus: the Roman Pottery*, Chelmsford Archaeol. Trust Rep. 3.2, Counc. Brit. Archaeol. Res. Rep. 62

Gustafson, G. and Koch, G. 1974, 'Age estimation up to 16 years of age based on dental development', *Odontologisk Rev.* 25, 297–306

Healey, E. 1978, 'The Flint', in Drury, P.J. (ed.), *Chelmsford Excavation Committee Report I, Excavations at Little Waltham 1970–71*, Counc. Brit. Archaeol. Res. Rep. 26

Holden, J.L., Phakey, P.P. and Clement J.G. 1995a, 'Scanning Electron Microscope Observations of incinerated human femoral bone: a case study', *Forensic Science International* 74, 17–28

Holden, J.L., Phakey, P.P. and Clement J.G. 1995b, 'Scanning Electron Microscope Observations of Heat-Treated Human Bone', *Forensic Science International* 74, 29–45

Ingle, C. and Saunders, H. 2011, *Aerial Archaeology in Essex: the role of the National Mapping Programme in interpreting the landscape*, E. Anglian Archaeol. 136

Jacobi, R.M. 1976, 'Aspects of the Mesolithic Age in England and Wales' (unpubl. PhD thesis, Univ. of Cambridge)

Langton, B. and Holbrook, N. 1997, 'A prehistoric and Roman occupation and burial site at Heybridge: excavations at Langford Road, 1994', *Essex Archaeol. Hist.*, 3rd series, 28, 12–46

Longworth, I., Ellison, A., and Rigby, V. 1988, *Excavations at Grimes Graves, Norfolk, 1972–1976*, Fasc. 2

McKinley, J. 1989, 'Cremations: Expectations, Methodologies and Realities', in Roberts, C., Lee, F. and Bintliff, J. (eds), *Burial Archaeology: current research, methods and development*, Brit. Archaeol. Rep., Brit. Ser. 211, 65–76

McKinley, J. 2000, 'The analysis of cremated bone', in Cox, M. and Mays, S. (eds.), *Human Osteology in Archaeology and Forensic Science* (London: Greenwich Medical Media Ltd), 403–22

Mercer, R.J. 1981, Grimes Graves, Norfolk 1971–72 (London: HMSO)

Priddy, D. (ed) 1987, 'Little Totham, Rook Hall Farm' in 'Excavations in Essex 1986, *Essex Archaeol. Hist*., 3rd series, 18, 107–8

Roberts J. 2003, 'The human and animal bones from the urn', in MacGregor, G., *Excavation of an Urned Cremation Burial of the Bronze Age, Glennan, Argyll and Bute*, Scottish Archaeol. Internet Rep. 8, 9–10

Shennan, S.J., Healy, F. and Smith, I.F. 1985, 'The excavation of a ring-ditch at Tye Field, Lawford, Essex', *Archaeol. J.* 142, 150–215

Thomas, J, 1999, *Understanding the Neolithic* (2nd edition, Routledge)

Tixier, J. 1963, *Typologie de l'Epipaléolithique du Magreb*

Wainwright, G.J. and Longworth, I.H. 1971, Durrington Walls: Excavations 1966–68, Soc. Antiq. Res. Rep. 29

Wallis, S. and Waughman, M. 1998, *Archaeology and the Landscape in the Lower Blackwater Valley*, E. Anglian Archaeol. 82

Wilkinson, T.J. and Murphy, P. 1995, *Archaeology of the Essex Coast: Volume 1 The Hullbridge Survey*, E. Anglian Archaeol. 71

Wilkinson, T.J., Murph, P.L., Brown, N. and Heppell, E.M. 2012, *The Archaeology of the Essex Coast, Volume 2: Excavations at the Prehistoric Site of The Stumble*, E. Anglian Archaeol. 144

Excavations at Earls Hall Farm, St Osyth

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With contributions by Paul Blinkhorn, James Newboult, Laura Bailey and illustrations by Anna Sztromwasser

An investigation by Headland Archaeology took place in February 2012 ahead of the construction of a five-turbine wind farm at Earls Hall Farm, St Osyth, Clacton-on-Sea. The excavation revealed two phases of activity; prehistoric pits and evidence of medieval settlement. Analysis has added to our understanding of prehistoric activity and medieval settlement in an area where currently little is known. The results indicate the presence of a multi-period landscape in use from the Bronze Age, through the late Iron Age/early Roman period into the Middle Ages.

INTRODUCTION

Investigations at Earls Hall Farm, St Osyth, Clacton-on-Sea, began with a desk-based study supplemented by a site walk over, which was carried out for an Environmental Impact Assessment of a proposed wind farm development (CgMs, 2005). The most significant features identified were cropmarks located to the south of the site which were thought to relate to prehistoric or Romano-British field systems and settlement remains. A pre-determination archaeological evaluation by Foundations Archaeology (2006) comprised excavation of trial trenches at each proposed turbine location. Pits relating to the Bronze Age were identified at Turbine 3 (Fig. 2) whilst a group of pits and ditches of medieval date were found at Turbine 5 (Fig. 3).

Planning consent for the five-turbine wind farm was granted, subject to a condition requiring a scheme of archaeological investigation to be undertaken at the site. The requirements for this work were set out in a brief issued by Essex County Council's Historic Environment Management Team. Headland Archaeology was commissioned by RENERCO to undertake this programme of work. A Written Scheme of Investigation (WSI, Entec 2010), in accordance with the brief, specified the work that would be undertaken to fulfil the condition. This comprised open area excavation in advance of construction at Turbines 3 and 5 (Figs 2 and 3). The archaeological mitigation work took place between 7 and 17 February 2012 (Headland Archaeology 2012).

SITE LOCATION AND DESCRIPTION

The site is located to the north of Earls Hall Farm, in the parish of St Osyth, approximately 3.5km from the centre of Clacton-on-Sea. It is bounded by agricultural field boundaries to the south, east and west, and by Hartley Wood to the north. The site is centred on grid reference TM 1470 1710 and lies at an average height of *c*.16m AOD.

The site can be characterised as flat, open arable farmland. The geology comprises London Clay which lies directly below the topsoil across the majority of the site. To the north of the site, the Kesgrave and Lowestoft Formations of sand and gravel overlie the clay. These superficial deposits represent a local environment previously dominated by shallow water and rivers (British Geological Survey Website; Hodge *et al*. 1984, 12).

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The landscape surrounding Earls Hall Farm has been occupied since prehistory. The earliest (and most significant) activity within the environs of the site was discovered at Lodge Farm, St Osyth (EHER 2970) *c*.1.5km south-west of Earls Hall. The multi-period site included a Neolithic causewayed enclosure comprising three broadly concentric circuits of discontinuous ditches (EHER 18332). Within the interior of the enclosure were Neolithic pits, an Early Bronze Age pond barrow and a Middle Bronze Age barrow cemetery. A middle Iron Age enclosed settlement was also revealed. A Roman field system (EHER 19799) and medieval settlement remains (EHER 45674) comprising pits, a pond, buildings, a timber-lined pit and a number of ditches have also been recorded in the vicinity.

The Essex Historic Environment Record (EHER) lists several sites which have been characterised through cropmarks. Approximately 200m west of Earls Hall Farm, cropmarks of former field boundaries (EHER 2987) were mapped as part of the NMP (National Mapping Program) update. Cropmarks of two or three linear trackways are also visible *c*.300m north-east of the farm (EHER 8928). Various other cropmarks have been recorded, mostly in the form of linear features forming trackways and possible enclosures (EHER 2995, 3657, 3658, 17030, 17225) as well as a number of ring-ditches (EHER 2996). These cropmarks are of probable prehistoric or Roman date. Indeed, an evaluation in 2009 confirmed cropmarks (EHER 47185) north of St John's Road (south of Earls Hall Farm) were on the same alignment as the modern field boundaries and were likely part of a post-medieval field system associated with the now demolished Joy's Farm.

The area was, in the medieval period, part of Earls Hall manor. This took its name from ownership by Count Eustace of Boulogne, who is thought to have acquired it in the early 1070s and certainly held it in 1086 (VCH Essex, 1903, 469b). Later in the Middle Ages it was added to the endowment of St Osyth priory (Morant 1768, 456–7). Following the dissolution the land passed through the Darcy, Rochford and Nassau families.

The map of 1777 by Chapman & André indicates that the area was at that time agricultural in character (CgMs 2005). Given the frequency of agricultural cropmarks in the landscape, it is clear that the site has been used for this purpose since the prehistoric period. In more recent times, the character of the landscape remains agricultural, comprising large, open arable fields subject to modern ploughing regimes.

RESULTS OF THE INVESTIGATIONS

The text which follows is structured by period relating to the chronological periods represented. Features are generally identified by Group (G) and context numbers in the text and illustrations. Cuts of features are shown as [100], whereas deposits are shown as (101).

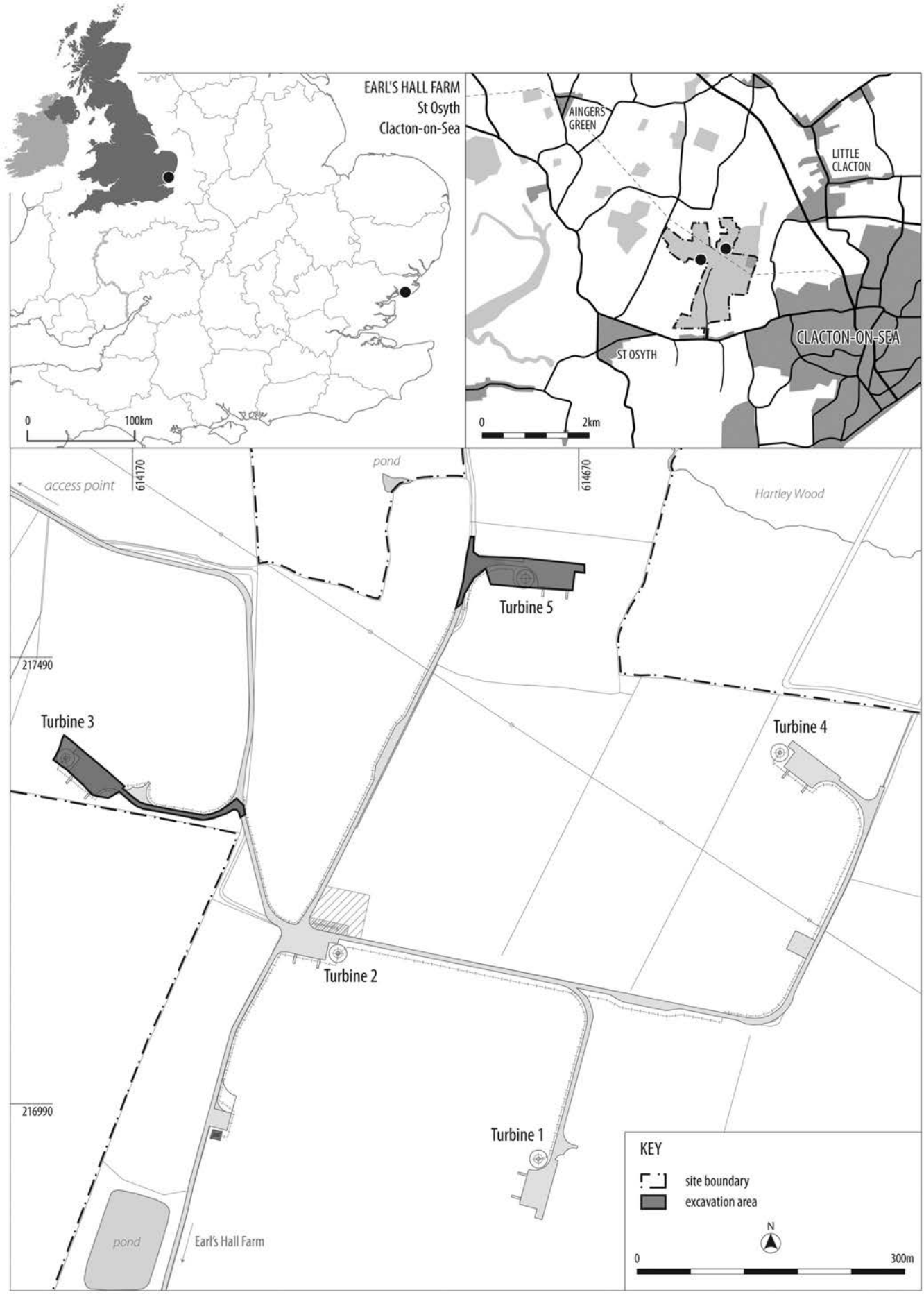


FIGURE 1: Site location

Bronze Age to Early Roman (1500 BC – AD 43)

A ditch and pits

Within the area of Turbine 3, in the western part of the site (Fig. 2) a portion of a north-east to south-west aligned ditch (G1) was recorded. It measured 2.8m in length, 1.30m in width and 0.23m in depth. One fragment of fired clay and three sherds of probable Bronze Age pottery were present in the backfill.

To the south-east of ditch G1, a concentration of features were recorded, comprising a group of pits cut into the natural clay (G2). They varied in size with the largest measuring 1.18m in length, 0.64m in width and 0.20m in depth. They had an oval shape in plan, sharp sloping sides and broadly concave bases. Generally their deposits comprised grey/brown silt clay with inclusions of gravel, flint and charcoal and were a result of deliberate backfilling. Charcoal fragments recovered from the backfill deposits of pits [362] and [366] were mainly that of small branches and twigs, as well as medium-sized oak timbers.

Pottery and flint dating to the Bronze Age was also recovered from each of the pits. All sherds recovered from the pits and ditch showed a degree of wear, although this appeared to be the result of the softness of the underfired fabric rather than through attrition during redeposition or disturbance.

The character of deposits contained within pit [356] were more stratified than those of the surrounding pits. They comprised a sequence of charcoal bearing deposits interleaved with grey/yellow clay (Fig. 2). Sherds of pottery dating to the late Iron Age/early Roman period were recovered from the final fill (368) of the pit along with iron fragments likely to be the remains of hobnails. The presence of these artefacts, within an otherwise Bronze Age pit, potentially places activity within the late Iron Age/early Roman period. However, it is unclear whether the pit dates to the Bronze Age or the late Iron Age/early Roman period.

Charcoal fragments selected from the fill (363) of pit [362] and [366] were analysed and identified (Appendix 2). The main taxon used for fuel wood was oak (*Quercus* sp). A small amount of wild cherry (*Prunus avium*) and ash (*Fraxinus excelsior*) was also identified. Ring curvature showed that charcoal from all species was derived from small to medium branches or twigs. Radial cracks were present on some fragments, suggesting that the wood was damp prior to burning. Fungal hyphae were also observed within some of the non-oak charcoal, indicating that dead or rotting wood was collected for use as fuel wood (Schweingruber, 1990; Marguerie and Hunot, 2007).

Medieval (AD 1066 – AD 1500)

Settlement

Excavations at Turbine 5 (Fig. 3) uncovered evidence of medieval settlement in the form of ditches and pits (G3). Ditch [557] was curved from a north-west/south-east to a north-east/south-west alignment and was approximately 1.18m wide and 0.23m deep. It became gradually shallower at the terminal ends indicating that the ends were most likely the result of plough truncation rather than a creation of deliberate terminals. A pit [508] measuring 0.59m in length, 0.41m in width and 0.13m in depth was located near the north-west edge of the north-east/south-west part of ditch [557]. The backfill of these features contained charcoal and burnt clay from which a number of fragments of daub, broken quern stone and 11th–12th century pottery were recovered.

Two pits, [559] and [565] were located adjacent to the north-west corner of ditch [508]. Both were approximately 1m in diameter, 0.23m depth and were of similar morphology. They contained a backfill composed of waste material including charcoal and burnt clay. Sherds of 11th century pottery were also recovered. The backfill of the pits was of a similar nature to that contained in ditch [557] and pit [508] and is likely representative of the same type of event. Indeed, these features were not identifiable in plan as individual pits and ditches prior to excavation due to the homogeneity of the backfill material spread across the top of the features. However, it is also possible this was partly due to disturbance of the upper part of the features through ploughing. This was evident through the presence of plough scarring within the excavation area.

The pottery assemblage retrieved from these features was generally in good condition with most of the assemblage made up of three partially reconstructable vessels, all jars (appendix 1). Two of these were of Early Medieval Sandy Ware and one was of Middleborough-Type Ware (also a sandy ware). All sherds had clear signs of use in the form of sooting on their outer surfaces. An assemblage of such jars represents a very typical pottery consumption pattern for the early medieval period in this region (Cotter 2000, fig. 18).

Two further pits; [563] and [569] were located to the west and south-east of ditch [557] respectively. They were sub-circular in plan and shallow with a maximum depth of 0.10m. To the south-west of ditch [557], a length of broadly east–west aligned curvilinear ditch [510] was also recorded. Although no datable material was recovered from the backfilled deposits of these features, they are considered to be broadly contemporary with the other G3 features due to their close proximity and similar character of backfill.

DISCUSSION

Pits

The presence of late Iron Age/early Roman Period pottery within the upper backfill deposit of pit [356] is of interest as it may place the pit later than the other three surrounding pits.

Two possibilities present themselves for backfilling of this particular pit.

- The pit is Bronze Age and remained as a partially open feature in the landscape into the late Iron Age/early Roman period. OR
- The pit contains residual Bronze Age pottery and dates entirely to the late Iron Age/early Roman period.

Both possibilities are plausible. The Bronze Age pottery within pit [356] appears in the lower backfills whilst the later pottery was recovered from the uppermost fill. The presence of late Iron Age/early Roman pottery within the upper fill of an otherwise Bronze Age pit suggests the pit may have existed in the landscape as a partially filled depression which was completely filled in a later period. In such a situation, unless there were sedimentary input from alluvial deposition or natural/anthropogenic erosive processes, it is possible that features could remain open in this way for potentially very long periods.

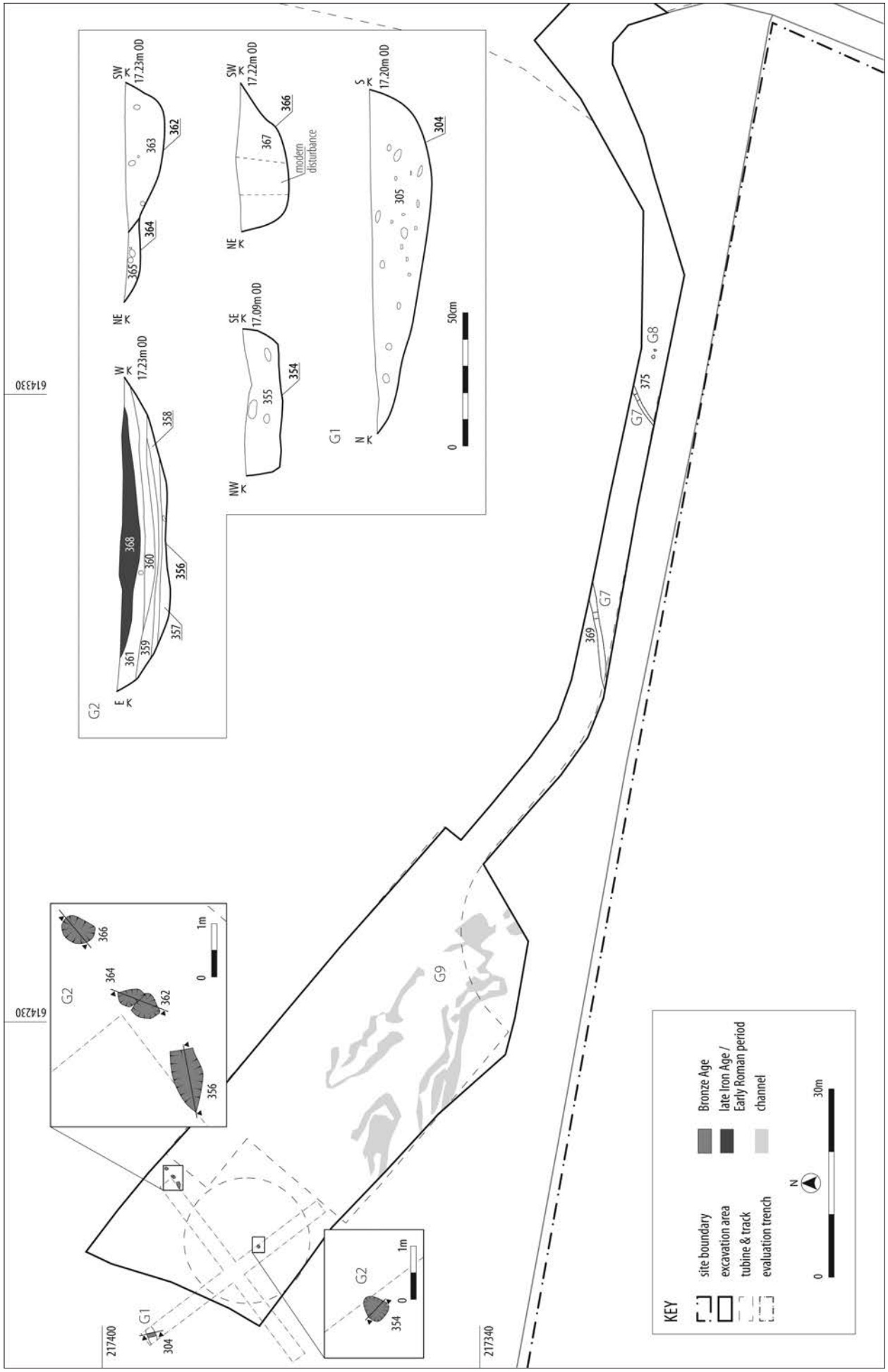


FIGURE 2: Excavation at area of Turbine 3

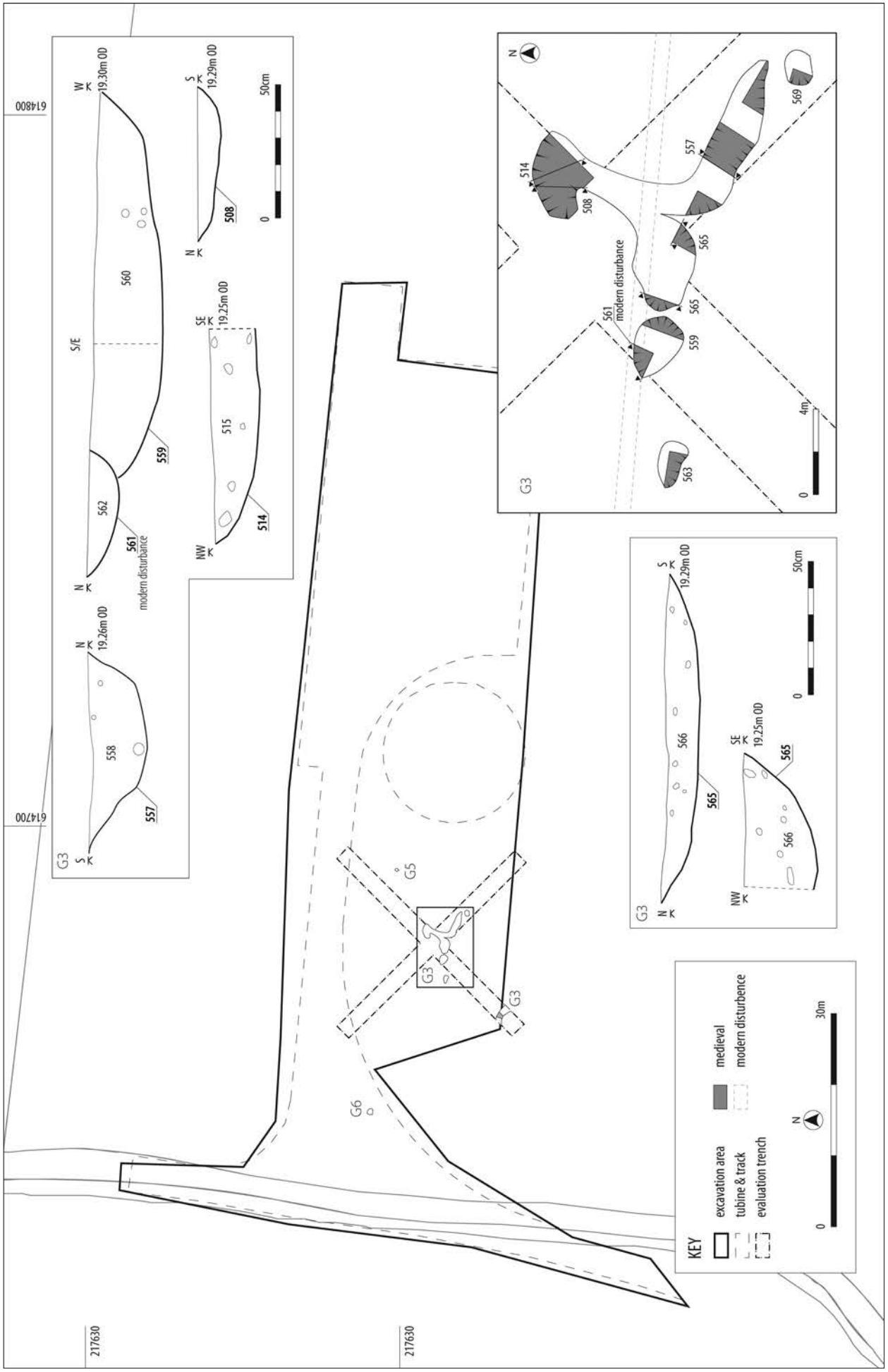


FIGURE 3: Excavation at area of Turbine 5

The alternative is that the pit, as a whole, is later than the three surrounding Bronze Age pits. The presence of the two sherds of Bronze Age pot within a backfill may be residual. With the known Bronze Age activity in the surrounding area, it is likely that material may have ended up in a later dating pit.

The character of the backfill within the pit distinguishes it from the others as the deposits were more stratified than those of the others. The deposits indicated deliberate backfill but their sequential character (deposits of charcoal interleaved with yellow clay) demonstrated the deposits were unmixed prior to deposition.

Excavations at Ardleigh, Essex, discovered a landscape which flourished from the Bronze Age, predominantly as a cemetery complex. Later discoveries of Iron Age ring ditches and Roman pottery production indicates that Ardleigh was occupied throughout prehistory and beyond. Fills of a number of pits recorded at Ardleigh (Areas 8, 20 and 21) contained Late Iron Age and Roman sherds as well as Bronze Age pottery (Brown, 1999, 42) just as the pit at Earls Hall Farm did. This demonstrates that the Tendring Plateau, as a whole, was occupied and utilized from the Early Bronze Age and material culture, such as pottery from this period, was present throughout later occupation and often became mixed in later deposits.

The nature and small quantity of pits recorded at Earls Hall Farm makes it difficult to place the activity exclusively to a period. We can presume however, that the material that ended up in the pits was the result of activity taking place elsewhere. The fragmented condition of the charcoal discovered within the pits supports the interpretation that the material derived from elsewhere on site and was redeposited in the pits. Fired clay found within the pits suggests a type of high-temperature activity or event was taking place. However there is no evidence for *in situ* burning and it suggests that the backfill deposits derive from a burning event elsewhere.

The Late Bronze Age / Early Iron Age Environment

The charcoal fragments retrieved from the prehistoric pits (G2) has provided us with information on tree types being exploited at that time, particularly for fuel. Although there is no evidence of woodland management in the form of coppicing, charcoal analysis does show that dry-land deciduous woodland was resourced for fuel wood. The presence of oak and ash represents the exploitation of large canopy trees, whilst the presence of wild cherry, albeit in comparatively small quantities, suggests either that the canopy was fairly light and open, or that the fuel wood was also gathered elsewhere from scrubland or marginal woodland resources.

The dominance of oak suggests that it may have been deliberately selected for use as a fuel wood. Indeed, oak was a significant fuel during the Bronze Age (Kelly, 2002). The fire which produced the charcoal thrown into the G2 pits is likely to have been within the immediate vicinity of the pits. It is likely that oak was available in the local area. Oak is a superior wood fuel and was likely preferentially selected due to its high burning temperature (O'Donnell, 2007). However the presence in the assemblage of non-oak charcoal from rotted wood indicates people may have needed to supplement the oak. Therefore oak may not have been in abundant supply. Alternatively, this may represent opportunism.

Pollen diagrams from the east of England show that oak woodland was still in existence during the Bronze Age period, however, oak pollen is seen to decline in diagrams at the same time as rises in the microscopic charcoal curve (e.g. Bennett *et al*. 1990). This suggests the clearance of oak trees during the Late Bronze Age/ Early Iron Age, which may also be linked to its use as a major fuel wood during this period.

The natural channels that were recorded to the south-east of the pits are of note. Although the date of these channels was not determined during the excavation, they were a clear feature in the landscape. It is possible that the pits may have been purposely located on the edge of a water course at the time of their use. Perhaps the creators of the pits were utilizing the landscape and its natural resources. However, as the channels remain undated this interpretation cannot be verified.

Medieval Settlement

The ditch and associated pits (G3) discovered at the location of Turbine 5 were found in isolation. It is possible these features had some structural function and were part of a once larger group of features. This is supported by the fact that modern ploughing has left the remains truncated with only the basal remains surviving – perhaps ploughing has removed the entirety of other remains.

The range of fabric types within the pottery recovered from G3 indicates that any activity here was somewhat short-lived; from the mid-11th century at the earliest to the mid/late 12th century at the latest. The assemblage is typical of the early medieval period in this area of Essex (Cotter 2000), with the lack of common glazed wares, particularly Hedingham Ware, indicating that the end date is secure. This is further supported by the fact that most of the pottery is of early medieval sandy wares, types which fell from use in the early 13th century. The relatively large sherd size and numbers of joining sherds in the assemblage does indicate that the assemblage is a primary group and results from medieval settlement activity within the immediate vicinity.

Much of the East Anglian region has primarily a dispersed medieval settlement pattern, rather than a nucleated one (Medlycott, 2011, 70), and the medieval landscape of the Tendring Plateau is no exception with dispersed settlements, hamlets and individual farms (Wade and Havis, 2008, 55). The settlements were set within a variety of field types, including common fields which were mostly sub-divided long before parliamentary enclosure. Focal points for these dispersed settlements were provided by church or hall complexes, greens and commons (ECCHEB, 2008, 26).

Excavation of a multi-period site at nearby Lodge Farm (EHER 45674) (*c*.1.5km south-west of Earls Hall Farm) found medieval settlement in the form of pits and ditches. Large amounts of 12th/13th century pottery was recovered, most likely making it contemporary with any settlement which may have existed at Earls Hall Farm. Excavation which took place as part of the A133 Little Clacton to Weeley bypass project in 1993 revealed a medieval moated site at Gutteridge Hall, *c*.4km north-west of Earls Hall Farm, and *c*.1.5km to the east, a contemporary site near Langford Lodge. These sites together would have been part of the dispersed settlement across the landscape with their focal point presumably at St Osyth Priory.

Phase	Group	Sub-Group	Context	F300 No	F300 Wt	F301 No	F301 Wt	F302 No	F302 Wt	Date
			U/S	1	14					Medi
MED	3	4	504	3	18	2	22			M12thC
MED	3	4.1	503	5	197					M11thC
MED	3	4.1	505	94	670	3	133			M12thC
MED	3	4.1	558	11	102	6	84			M12thC
MED	3	4.3	509	1	7					M11thC
MED	3	5.1	507	2	20					M11thC
MED	3	5.1	560	1	6					M11thC
MED	3	7.1	511					1	12	M12thC
U/P	6	10.1	556	2	11					M11thC
U/P	7	11.1	376	4	10					M11thC
			Total	124	1055	11	239	1	12	

Fabric Abbreviations: F300 - Early Medieval Sandy Ware; F301 - Early Medieval Sandy Ware, Middleborough Type; F302 - Essex Sandy Grey Ware

TABLE 1: Pottery occurrence by number and weight (in grams) of sherds per context by fabric type

CONCLUSION

The archaeological investigations at Earls Hall Farm revealed evidence of a landscape most likely exploited from early prehistory onwards. Despite the extensive mechanical ploughing regime which has taken place at the site, some remains still survive in the form of prehistoric pits and a small amount of medieval settlement. Although limited information can be gained from these discoveries, they contribute to the understanding of the archaeology of the Tendring Plateau and its multi-period utilisation.

APPENDIX 1

Medieval Pottery by Paul Blinkhorn

The pottery was recorded utilizing a coding system and chronology based on that of the Post-Roman pottery from Colchester (Cotter 2000), as follows:

Fabric Code	Fabric	Dating	Sherds	Weight	EVE
F300	Early Medieval Sandy Ware	mid 11th–early 13th C	124	1055g	0.74
F301	Early Medieval Sandy Ware, Middleborough Type	mid 12th–early 13th C	11	239g	0.34
F302	Essex Sandy Grey Ware	mid 12th–late 14th C	1	12g	0.05

Description

The medieval pottery assemblage comprised 136 sherds with a total weight of 1306g. The estimated vessel equivalent (EVE), by summation of surviving rim sherd circumference, was 1.13. The pottery occurrence by number and weight of sherds per context by fabric type is shown in Table 1. Each context-specific date is a *terminus post quem*. A mixture of Prehistoric, Romano-British and early medieval wares were noted, as follows:

APPENDIX 2

Charcoal Remains *by Laura Bailey*

The results of charcoal identification are summarized in Table 2 and presented below.

Context	Sample	Feature	Period	Phase	Species Identified
363	005	Fill of Pit [362]	Bronze Age	G2	Oak, Ash, Wild cherry (*Prunus avium*)
367	006	Fill of Pit [366]	Bronze Age	G2	Oak (*Quercus* sp) and Ash (*Fraxinus excelsior*)

TABLE 2: Results of charcoal analysis

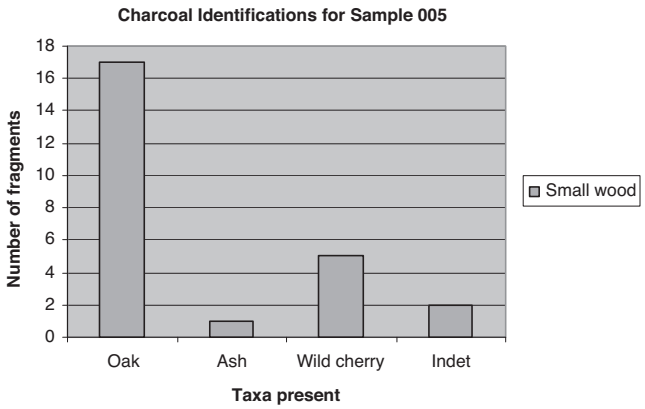


FIGURE 4: Charcoal identified from the fill (363) of Pit [362]

ACKNOWLEDGEMENTS

Headland Archaeology is grateful to RENERCO for funding the work; in particular Marlene Buchinger for her support throughout the project. Thanks are extended to Adrian Gascoyne who monitored the work on behalf of Essex County Council.

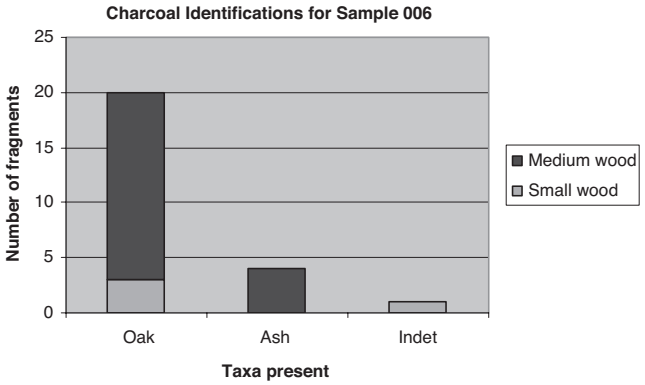


FIGURE 5: Charcoal identified from the fill (367) of pit [366]

Excavation and recording on site was carried out by Nuala C. Woodley and Peter James. Processing and preliminary recording of the finds was undertaken by Julie Franklin, while soil samples were processed by Steve Roe. Analysis was undertaken by the following specialists: pottery – Paul Blinkhorn; charcoal – Abby Mynett, Laura Bailey and Scott Timpany (Environmental Manager). The illustrations were produced by Anna Sztromwasser and managed by Caroline Norrman. Documentary research was carried out by Adrian Gascoyne at the Historic Environment Record.

Nuala C. Woodley was Project Officer for the duration of the works (fieldwork, post-excavation assessment, and analysis and publication) and was author of this article. James Newboult managed the duration of the project for Headland Archaeology.

The project archive can be found at Colchester Museum under accession number COLEM: 2012.1

BIBLIOGRAPHY

Bennett K.D., Simonson W.D. and Peglar S.M. 1990, 'Fire and Man in Post-Glacial Woodlands of Eastern England', *J. of Archaeol. Science*, 17, 635–42

British Geological Survey Website <www.bgs.ac.uk> (accessed 21 August 2012)

Brown, N.R. 1999, *The Archaeology of Ardleigh, Essex: Excavations 1955–1980*, East Anglian Archaeol. Rep. No. 90

CgMs Consulting 2005, *Archaeological Desk Based Assessment: Earl's Hall Wind Farm, St Osyth, Clacton on Sea, Essex*. CgMs

Cotter, J. 2000, *Post-Roman pottery from excavations in Colchester, 1971–85* Colchester Archaeol. Rep. 7

ECCHEB (Essex County Council Historic Environment Branch) 2008, *Tendring District Historic Environment Characterisation Project*, Essex County Council Historic Environment Branch

English Heritage, 2003, *Ripping up History* (English Heritage)

Entec 2010, *Earls Hall Wind Farm: Written Scheme for Archaeological Investigation*. Entec UK Ltd

Foundations Archaeology 2006, *Earls Hall Farm Wind Farm, St Osyth, Clacton on Sea, Essex: Archaeological Evaluation*, Foundations Archaeol. Rep. No. 516

Headland Archaeology 2012, *Earls Hall Wind Farm, St Osyth, Clacton-on-Sea, Essex: Updated Project Design and Assessment of Results* (Headland Archaeology)

Hodge, C.A.H., Burton R.G.O., Corbett, W.M., Evans, R. and Seale, R.S., 1984, *Soils and their Use in Eastern England*, Soil Survey of England and Wales 13

Kelly, D.W. 2002 *Charcoal and Charcoal burning* (Shire Publications. Buckinghamshire)

Marguerie, D. and Hunout, J.Y. 2007, 'Charcoal analysis and dendrochronology: data from archaeological sites in north-western France', *J. of Archaeol. Science*, 34, 1417–33

Medlycott, M., 2011, *Research and Archaeology Revisited: a revised framework for the East of England*, E. Anglian Archaeol. Occasional Paper 24

O'Donnell, L. 2007, 'Environmental archaeology: Identifying patterns of exploitation in the Bronze Age, Charcoal and wood' in Grogan, E., O'Donnell, L., Johnston, P. 2007, *The Bronze Age Landscapes of the Pipeline to the West. An integrated archaeological and environmental assessment* (Wordwell Ltd)

Schweingruber, F.H. 1990, *Microscopic Wood Anatomy* (3rd edn, Paul Hupt Berne and Stuttgard Publishers, Stuttgard)

Wade, A. and Havis, R. 2008, 'The archaeology of the A133 Little Clacton to Weeley by-pass', *Essex Archaeology and History*, 3rd ser., 39 (2008), 10–56

Watts, V. 2010, *The Cambridge Dictionary of English Place-Names* (Cambridge University Press)

Continuity and change in the mid-Chelmer valley – archaeological excavations at Old Hall and Generals Farms, Boreham, 2007

Mark Germany
with contributions by Joyce Compton, Damian Goodburn, Nick Lavender, Hazel Martingell, John Meadows, Elissa Menzel, Helen Saunders, Paul Sealey, Sue Tyler and Helen Walker

Archaeological investigation preceded the construction of an agricultural reservoir and flood plain extension at Old Hall and Generals Farms, Boreham, with preliminary trial trenching leading to the excavation of three sites within the overall scheme area. Located on the north side of the Chelmer Valley, these investigations give insight into the past land use of its slope and valley floor adjacent to the river and navigation. The exploitation, development and changing significance of this landscape are demonstrated from the Late Mesolithic/Early Neolithic onwards, as evidenced by a palaeosol and tree-throws containing worked flint, a Late Neolithic/Early Bronze Age henge, Bronze Age and Iron Age barrows, Late Iron Age and Roman field systems, a Saxon waterfront structure and a medieval farmstead. The presence of a coal yard and wharf alongside the River Chelmer marks the continued evolution of the site into the post-medieval period.

INTRODUCTION

Site evaluation in 2006 and subsequent excavation of three sites (labelled A to C) in 2007 was undertaken in advance of and during the construction of an agricultural reservoir and flood plain extension on land at Old Hall and Generals Farms, Boreham (Fig. 1); hereafter more simply referred to as 'Old Hall'. The archaeological work was undertaken as a requirement of planning consent for the reservoir development. The resultant site archive has been deposited with the Chelmsford and Essex Museum. The site code is BOOH 06.

Location, topography and geology

The 15.43ha reservoir scheme site was situated alongside the River Chelmer within farmland to the north-east of Chelmsford (Fig. 2). It extended across two arable fields and

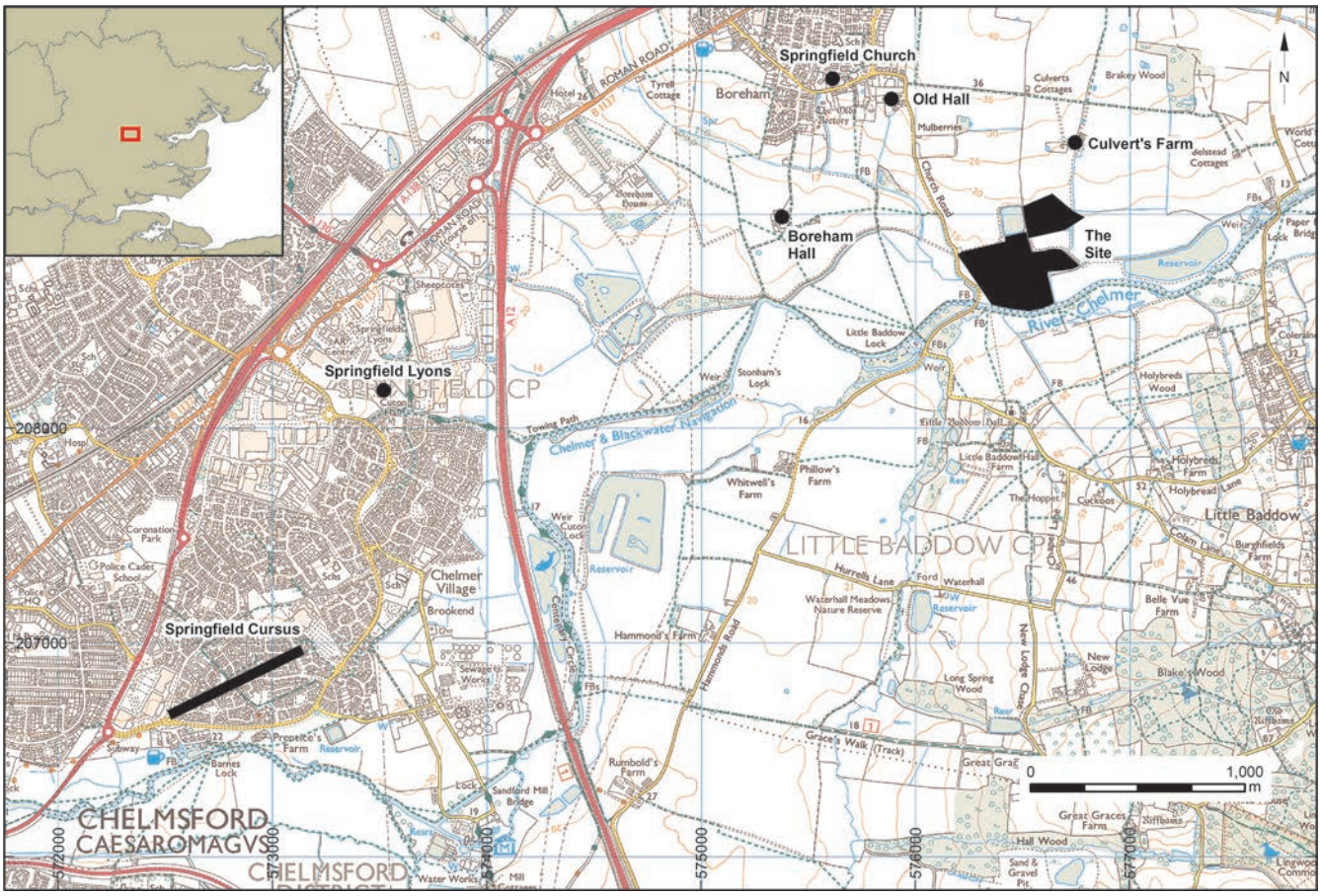


FIGURE 1: Old Hall, Boreham. Location of site and local places mentioned in text

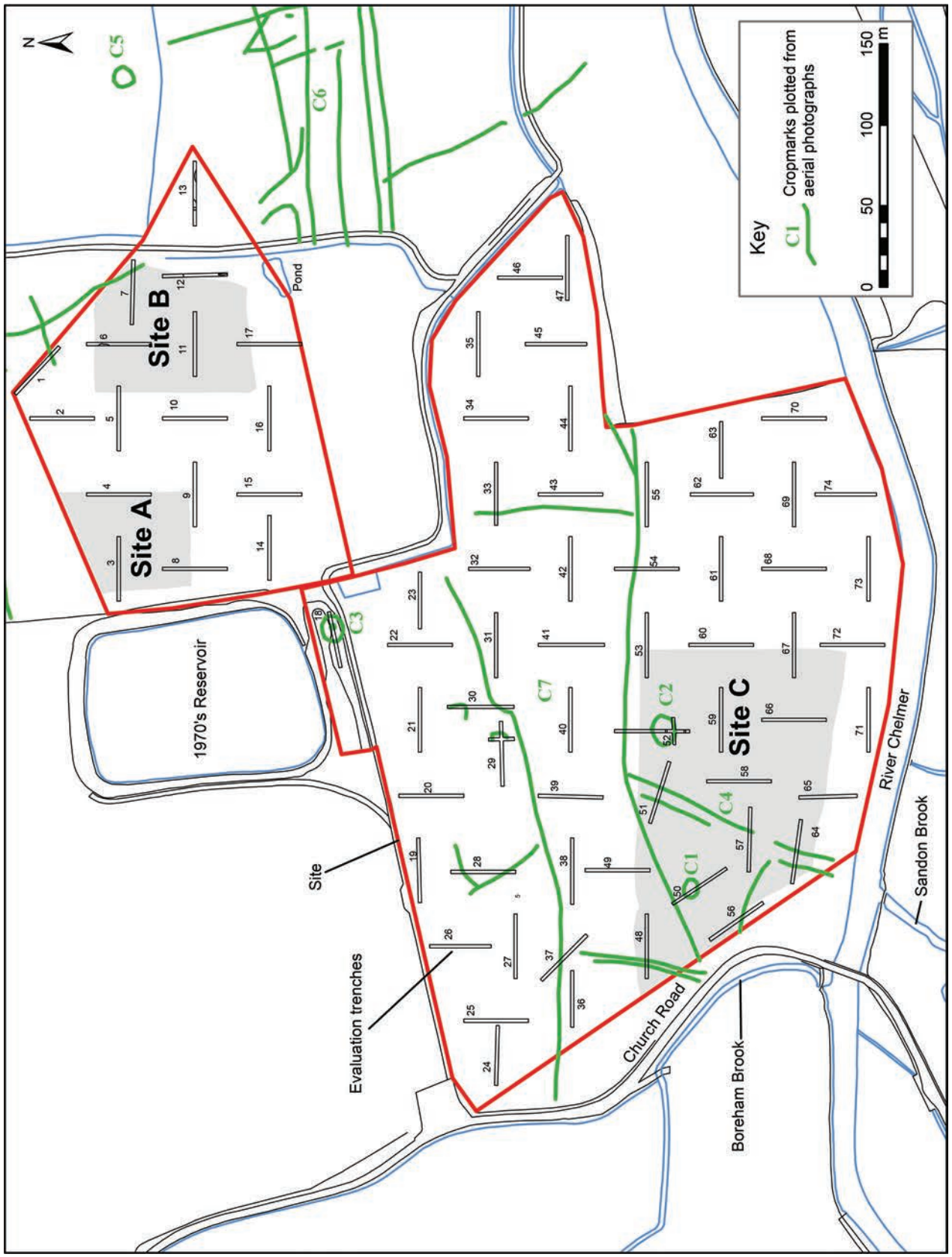


FIGURE 2: Cropmarks, evaluation trenches and Sites A to C, in relation to Church Road, the River Chelmer and the Boreham and Sandon Brooks

bordered a small agricultural reservoir constructed in the 1970s. Most pertinently, the scheme area extended down the moderately-sloping north valley side falling from *c.*18m OD, down across the floodplain, to the Chelmer navigation at *c.*14m OD. Church Road, which runs across the valley between Boreham and Little Baddow defined the western extent of the development. A modern bridge and the confluence of the River Chelmer and the Boreham and Sandon Brooks are located at its south-western corner, while Old Hall Farm and the village of Boreham occupy a spur of high ground to the north. The Danbury/Little Baddow ridge lies immediately south of the river and is one of the most prominent and easily distinguishable pieces of high ground in central Essex. Springfield Lyons to the west is another locally occurring piece of high ground, and provides a far ranging view of the mid-Chelmer Valley to the east of Chelmsford.

The surface geology of the mid-Chelmer Valley consists of river terrace sands and gravels above London Clay, surrounded by an irregular patchwork of glacial Head, brickearth, Lowestoft formation and glaciofluval and glaciolacustrine deposits. The bedrock is London Clay above chalk. Alluvial deposits lie alongside the banks of the river and most of its tributaries. Within the reservoir scheme area, the surface geology of Sites A and B comprises a patchwork of sand and gravel and silt clay, and that of Site C of sand and gravel below palaeosol and alluvium. The latest deposit comprises a *c.*0.4m thick layer of ploughsoil. The local soil conditions are non-conducive for long-term survival of bones (unless cremated) and non-carbonised plant remains, unless permanently water-logged.

Archaeological background and previous work

Known cropmarks comprise three ring-ditches (C1 to C3), trackway (C4) and post-medieval/modern field ditches (C7) within and near to Site C, and a ring-ditch (C5) and a cluster of undated linear features (C6) to the east and south-east of Site B (Fig. 2).

The evaluation consisted of seventy-four trenches, each measuring 40m × 2m (Fig. 2). Its purpose was to locate, record and date archaeological remains within the scheme area and to investigate cropmarks C1, C2 and C4. This work recorded the presence of a Late Neolithic pit in trench 3, Roman, Early Saxon and medieval pits and ditches in trenches 1, 6, 7, 12 and 13, and investigated the below-ground remains relating to cropmarks C1, C2 and C4 in trenches 50 and 52, and 51, 57 and 64 respectively. The features in the south field produced very few finds and proved very difficult to detect within the loose and dirty gravels. Cropmark C3 lay beneath a very large bund and was therefore not investigated; it is not known if it survived the construction of the adjacent 1970s reservoir.

Known prehistoric sites within the mid-Chelmer Valley include the Springfield Cursus and both a Neolithic causewayed enclosure and Late Bronze Age enclosed settlement at Springfield Lyons (Buckley *et al*. 2001; Brown and Medlycott 2013). Analysis of aerial photography shows that the mid-Chelmer Valley, including the area surrounding the Springfield Cursus, was seemingly a focus for the building of mortuary monuments as evidenced by numerous ring-ditch cropmark sites. The Late Bronze Age enclosure was also later the focus for an Early Saxon cemetery and then a Late Saxon manorial settlement (Tyler and Major 2005).

The present-day channel-like form of the River Chelmer is largely the product of dredging, land drainage, medieval and post-medieval alluviation, and the canalisation of the Chelmsford to Maldon stretch of the river in the late 18th century. The pre-medieval form of the river is not known, although lowland temperate-zone rivers in their natural unmanaged state tend to be shallow, wide, braided and punctuated by eyots of vegetation and gravel (Brown 1997). Investigations of silted-up former channels of the river have taken place to the south of Springfield Lyons and to the north-west of Chelmsford and have revealed indications of its previous form (Drury 1978, 146–8; Murphy 1996). The canalisation of the river in the 1790s, and its transformation into the Chelmer Navigation, significantly improved its navigability and enabled the transportation of such bulk commodities as coal via the North Sea to Chelmsford. Indeed, the 1838 tithe map depicts a coal wharf occupying the area of the south-west corner of the Site, alongside the bridge over the navigation (ERO D/CT 40B).

THE EXCAVATIONS

The locations and extents of excavation Sites A, B and C (0.42ha, 0.69ha and 2.04ha respectively) were determined with reference to the cropmark evidence and the results of the evaluation (Fig. 2). Sites A and B lay within the area of the new floodplain extension, and were positioned in the vicinities of a Late Neolithic pit in trench 3, and multi-period remains in trenches 6, 7 and 12. Site C lay within the footprint of the new agricultural reservoir and explored an area surrounding cropmarks C1, C2 and C4.

The sites were stripped of their topsoil, under archaeological supervision, to expose any remains present within them. An extensive and relatively late alluvial layer was found across much of the southern part of Site C. Established to be sterile and to seal earlier archaeological remains, this deposit was recorded and then removed by machine.

Once exposed, archaeological remains in Sites A and C were manually excavated and recorded. Investigation across Site C focussed on the principal features such as enclosure ditches, ring-ditches and associated remains. Extensive layers, such as the palaeosol were sampled by hand-dug test pits and box-sections. A multitude of amorphous tree-throws, and burnt patches/spreads were selectively excavated, sufficient to provide a representative record of each feature type.

Within Site B, a significant density of largely medieval occupation remains was encountered and the reservoir developer decided to adjust their flood plain extension works in order to avoid further impact in this part of the scheme area. Consequently, the exposed remains were only recorded in plan prior to reinstatement, with no intrusive investigation taking place.

Site A

Stripping of Site A and monitoring of further construction groundworks to the immediate south of it revealed 141 pits and post-holes, three ditches and two post-built structures (Fig. 3), most of which were undatable as they contained no, or very few, closely-datable finds.

The few closely-dated features were Neolithic pit 27 at the west end of trench 3, and Early Saxon pits 93 and 420 within the site's south-western corner and the monitoring area to the

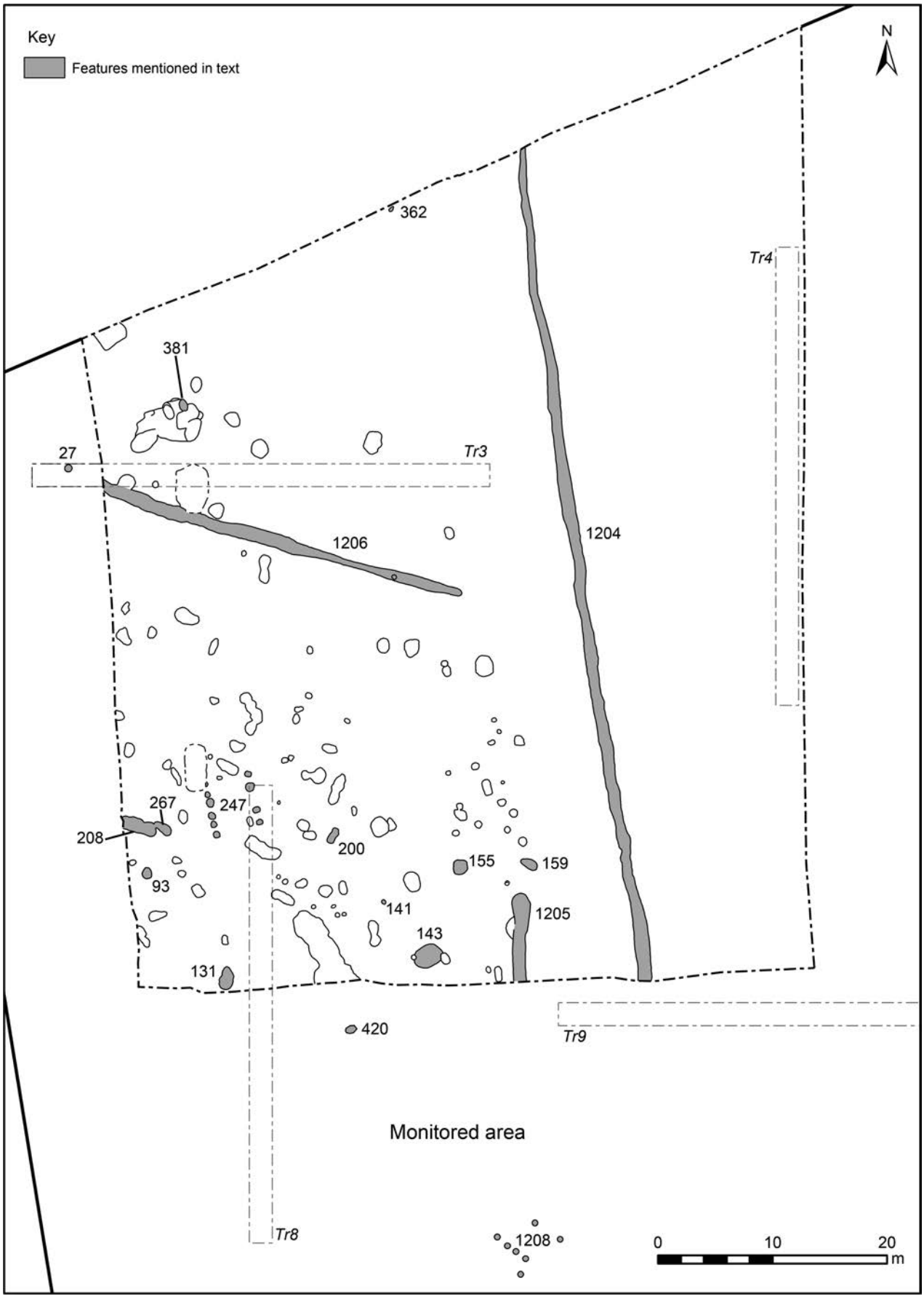


FIGURE 3: Site A and adjacent evaluation trenches

south. Pit 27 produced sherds of Neolithic pottery, and pits 93 and 420 pieces of late 5th/early 6th century pottery and residual Roman tile.

The more noteworthy of the undated features included two post-built structures (247 and 1208), and three ditches, possibly representing a north–south trackway (1204 and 1205) and an approximate east–west boundary (1206) between trackside enclosures to the immediate west. The structures lay near the site's south-western corner and in the monitoring area to the south and were probably the remains of small timber buildings. Structure 247 measured 3.5m wide and 5m long and was the more complete of the two. It and ditch 1204 to the east followed the same alignment, suggesting that they may have been contemporaneous with each other. Ditch 1204 followed a clear change in the surface geology and was therefore probably a significant boundary in terms of land-use.

Ten of the pits amongst the numerous undated discrete features were possibly in use during the Late Mesolithic/Early Neolithic (131, 141, 159, 208 and 267) or Late Neolithic/Early Bronze Age periods (143, 155, 200, 362 and 381), but produced too few finds to confirm it. The artefacts from these included Late Mesolithic/Early Neolithic flint blades and bladelets, a Neolithic flint scraper, and pieces of Late Neolithic/Early Bronze Age Grooved Ware pottery.

Site B

Site B, and some of the trenches within and around it, contained a variety of multi-period remains, mostly of Early Saxon and medieval date (Figs 4 and 5). As previously outlined, Site B received minimal investigation and its recorded remains were left un-excavated, before being re-interred beneath topsoil. Site phasing therefore relies on datable surface finds and the results of the evaluation. The south and central parts of the site were under-stripped, affecting feature legibility. The recorded remains are conjectured to be part of an extensive area of Roman, Early Saxon and medieval enclosure systems and settlement, with further elements possibly represented by cropmark complex C6 to the south-east (Fig. 4). The medieval features and finds occupy the upper valley slope and are probably components of a 13th/14th-century tenement, belonging to one of the manors of Boreham.

This site produced very few Late Mesolithic/Early Neolithic worked flints, by contrast to Sites A and C, probably due to its minimal investigation. Residual artefacts included a Bronze Age flint piercer, a sherd of Late Bronze Age/Early Iron Age pottery, and fragments of Roman brick and tile. The earliest dated features were a heavily truncated 1st/early 2nd-century Roman cremation burial pit (29) in trench 1, and an Early Roman ditch (45) in trench 13 (Fig. 5), which hint at occupation of the upper slope at this time. Burial 29 contained the cremated remains of a human adult, inside a fragmented Early Roman greyware jar, with no associated grave goods.

Early Saxon pit 41 in trench 12 and an interrupted enclosure defined by ditches 25, 59, 1240 and 1241 in Site B were associated with sherds of late 5th/early 6th-century pottery (Fig. 4). The enclosure and its extent set the boundary and the general alignment for the medieval enclosures which followed and marked the beginning of concerted occupation within the area of Site B. Although undated, it is tempting to conjecture that parallel ditch 1232, *c.*60m to the north, is also an Early Saxon landscape component.

The medieval remains included two enclosures, and three ditches probably defining a third. The earliest enclosure was indicated by ditches 1229, 1235, 1242 and 1243 and was probably in use during the first half of the 13th century (Fig. 4). A small gap in its south side between ditches 1242 and 1243 is suggested to have served as an entranceway. A possible replacement enclosure sat within the footprint of the first and was possibly in use during the second half of the 13th century. Three ditches (1239, 1236 and 1237) represented it and enclosed a thin concentration of undated pits, post-holes and gullies. A large break on the west side of the enclosure suggested a main entranceway. The third of the three enclosures was also possibly the latest. It was indicated by ditches 1227 and 1231 in Site B, and by ditch 23 in trenches 14 and 15 to the west (Fig. 5). Three surface concentrations of medieval pottery lay on part of its projected course and perhaps implied that it went out of use during the mid-13th to 14th century. A medieval ditch (44) was also encountered in evaluation trench 13 to the east. It is possible that further medieval land boundaries lie within cropmark complex C6 to the south, although the alignment of these differs slightly from those of Site B.

The latest Site B features were ditch 1233, gully 1234 and brick-lined pit 1279 all within the north-east part of the site (Fig. 4). All likely post-medieval or later, they constitute a phase of land-use unrelated to that of the medieval farmstead. Indeed, ditch 1233 may have been infilled as late as the 20th century. Two undated post-holes (1245 and 1246) and an arrangement of four interconnected perpendicular lines of baked clay and charcoal (1244) in the southern part of the site, off the outside corner of ditch (1227/1231) are conjectured to be remnants of a burnt timber-framed building.

Site C

Site C, substantially the largest of the three investigated, contained a widespread array of features and finds which included numerous tree-throws, ditches, pits, palaeosol, ring-ditches and timber posts that spanned the Late Mesolithic/Early Neolithic to post-medieval periods (Figs 6 and 7). A thick layer of medieval or later alluvium was found to cover remnants of a palaeosol and other features on parts of the valley floor. There were no upstanding remains, such as banks or mounds, presumably due to truncation and leveling by later cultivation.

Investigation of the site concentrated on the prehistoric monuments and the features within their immediate vicinities. Numerous discrete features lay beyond these, of which about a quarter were investigated to provide a representative record of what were mostly un-dated pits, burnt spreads, root holes and discrete patches of surviving alluvium and palaeosol deposits. The investigation of the alluvium and palaeosol consisted of the hand digging of box-sections 1092 to 1094 and test pits A to D (Fig. 8). Both feature presence and intercut relationships generally proved very difficult to detect because they had poorly defined edges and outlines in the loose and silty natural gravels, even after surface-cleaning and weathering. Dating and understanding of the features were further compromised by a dearth of closely-datable and diagnostic artefacts. The finds mainly comprised Late Mesolithic/Early Neolithic worked flints, mostly occurring residually in later contexts. As such, these are only mentioned where particularly pertinent.

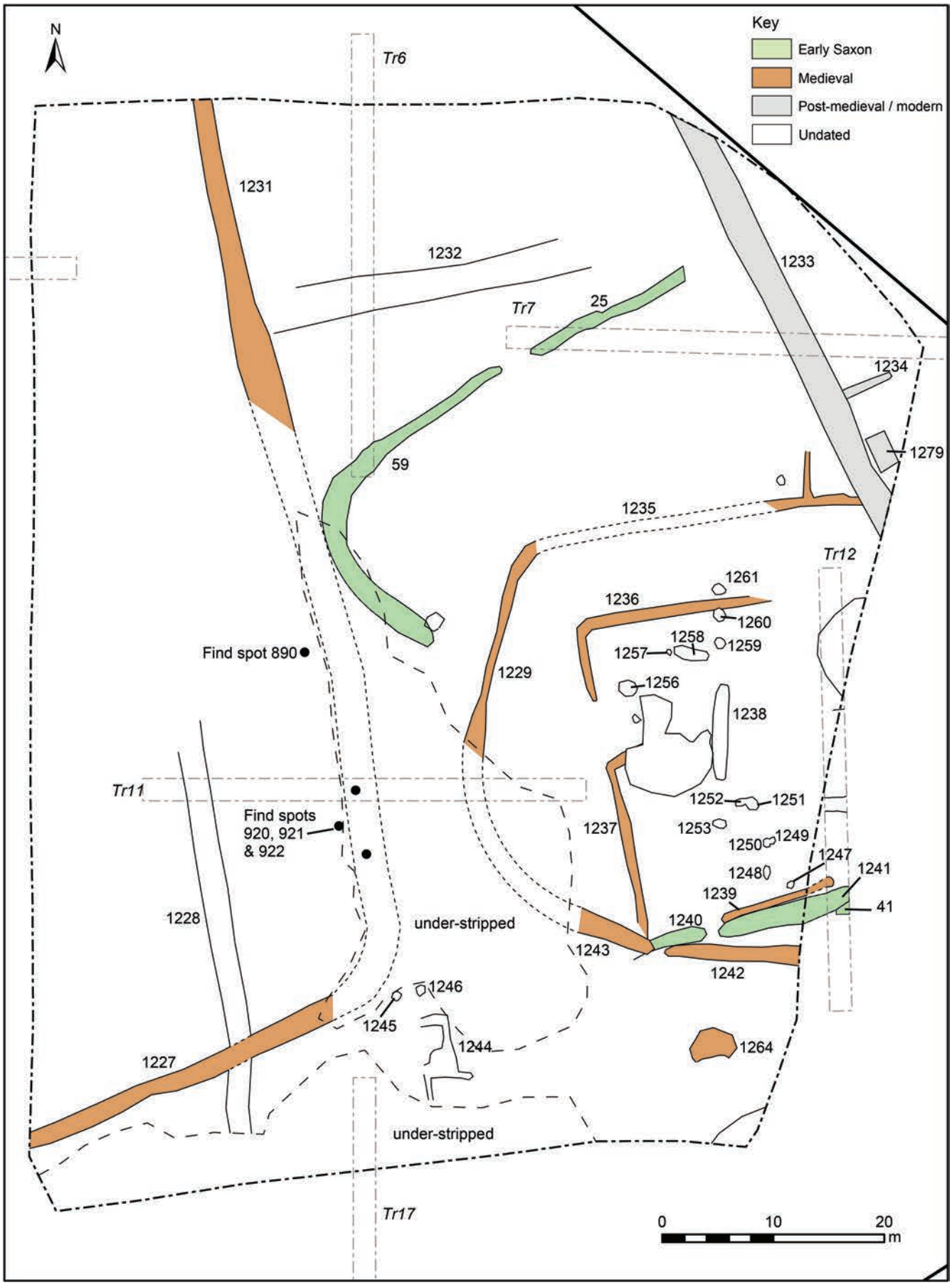


FIGURE 4: Site B and adjacent evaluation trenches

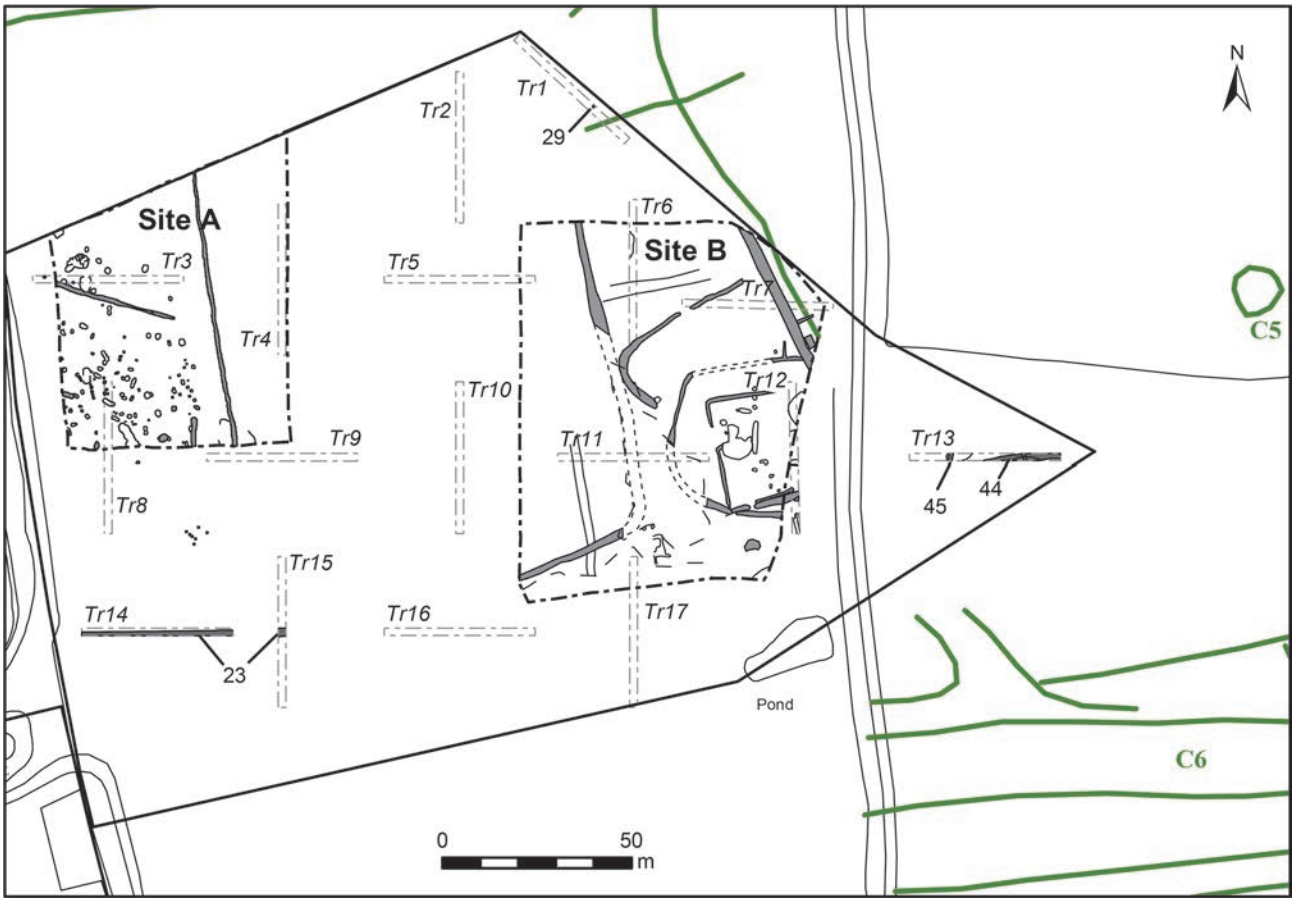


FIGURE 5: Sites A and B, adjacent evaluation trenches, and nearby cropmarks C5 and C6

Palaeosol and tree-throws

The palaeosol (1096) sat protected beneath alluvium and measured up to 0.13m thick. It contained numerous artefacts and was probably a remnant of previously extensive, humic, stone-free topsoil (McPhail 2008) (Fig. 6). It extended across the river floodplain and the southern-central part of the site and became more concentrated within natural undulations and around tree-throws. Where sampled within test pits A to D and box-sections 1092 and 1094 (Fig. 8), its finds assemblage comprised burnt and worked flints and a small quantity of undiagnostic prehistoric pot sherds. While most of the worked flint was not closely datable, a significant component was of Late Mesolithic/Early Neolithic date. Struck flints of Neolithic and Iron Age date were also present, but in much smaller numbers.

Forty-three features identified to be tree-throws, six of which were excavated (712, 738, 769, 1110, 1165 and northern outlier 1045) occupied much of the same area as the palaeosol (Figs 7 and 8). In plan view most of them consisted of ribbon- and crescent-shaped areas of dark silt to either side of a central core of disturbed/displaced natural gravel. Tree-throw 1165 (Fig. 8) was probably formed during the Late Mesolithic/Early Neolithic period as it contained numerous burnt and worked flints, mainly chippings, cores, flakes, blades and bladelets. Tree-throws 769 and 1110, by contrast, were more likely formed during later periods, as their finds included an Iron Age flint flake and a possible Early Saxon pot sherd respectively. Remaining tree-throws 712, 738 and 1045 produced no finds and were therefore undatable. Other natural features comprised undated animal burrows or root holes (1084, 1097, 1099, 1125, 1127, 1133 and 1143) (Fig. 8).

Late Mesolithic/Early Neolithic

Land-use during the Late Mesolithic/Early Neolithic period was indicated by a pair of shallow intercut pits (805 and 807) in the north-central part of the site (Fig. 16), aforementioned tree-throw 1165 (Fig. 7), and numerous residual pieces of Late Mesolithic/Early Neolithic worked flint in the palaeosol and some of the later features. The flints in pits 805, 807 and 1165 included blades, bladelets, flakes, cores and microburins. Sixteen other pits contained small quantities of Late Mesolithic/Early Neolithic worked flints and attest to depositional activities in this period, seemingly limited to the vicinity of the valley floor (Fig. 8, pits 1135, 1148, 1194 and 1197; Fig. 9, pits 622, 819, 841, 854, 858, 868 and 877; Fig. 11, pit 412; Fig. 11, pits 70 and 626; Fig. 17, pits 449 and 592).

Late Neolithic to Middle Bronze Age

Later prehistoric monuments, comprising a henge ditch (818) and four ring-ditches (374, 565, 760 and 1000), were positioned on or just above the flood plain within Site C (Fig. 6). Ring-ditches 565 and 1000 correspond with circular cropmarks C1 and C2 (Fig. 2). The attribution of these monuments to the Late Neolithic and Early/Middle Bronze Age periods is largely based on their form and appearance as their basal fills produced no, or very few, closely-datable finds. The henge and ring-ditches 374 and 565 subsequently became focal points for the digging of pits in which quantities of burnt flint were deposited. While the nature of activities involving this pit digging are unknown, this at least serves to indicate the continuing interest in and use of these monuments. Site C was perhaps wholly a mortuary/ritual landscape during the Late

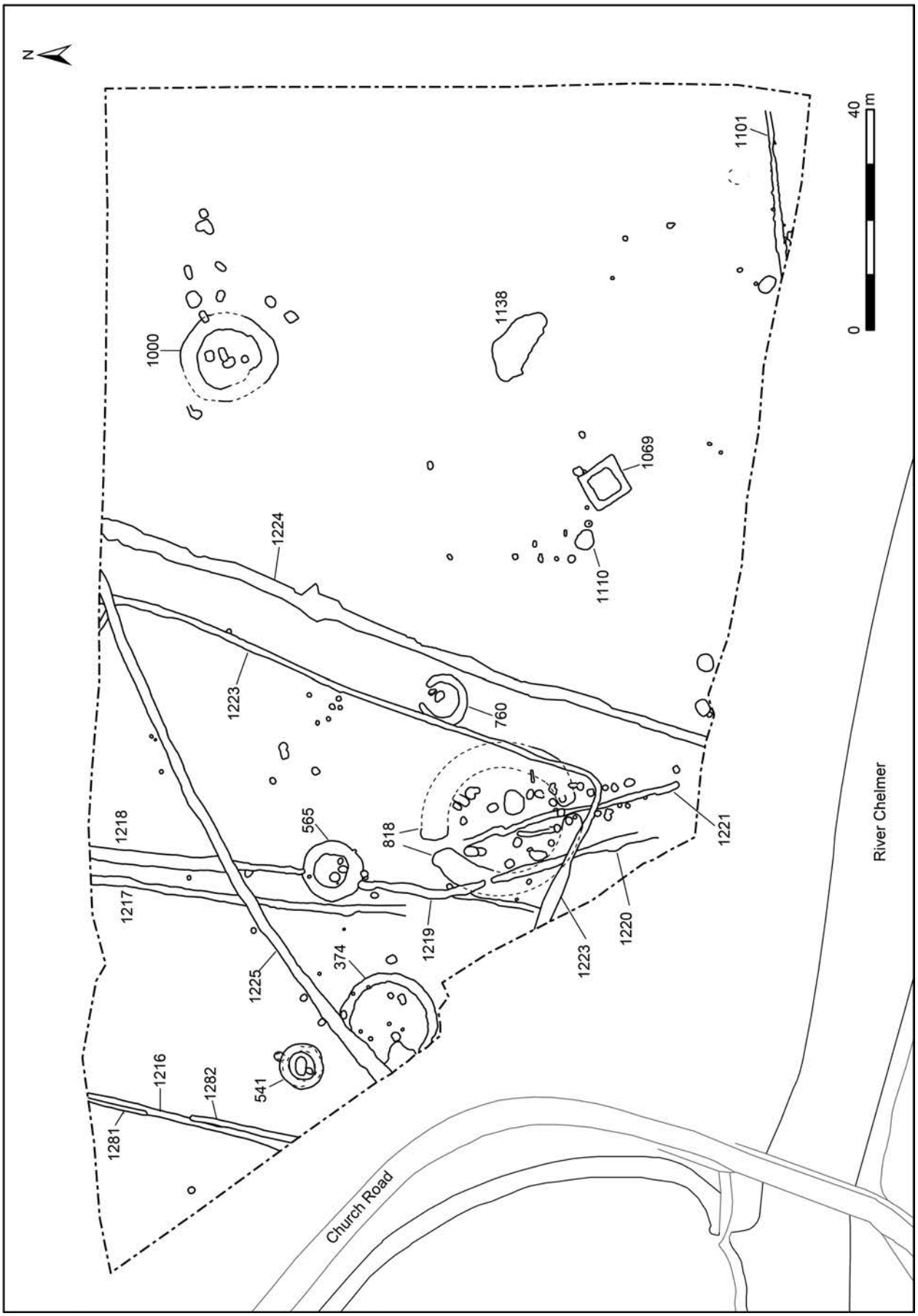


FIGURE 6: Site C and its main features, indicated by numbers

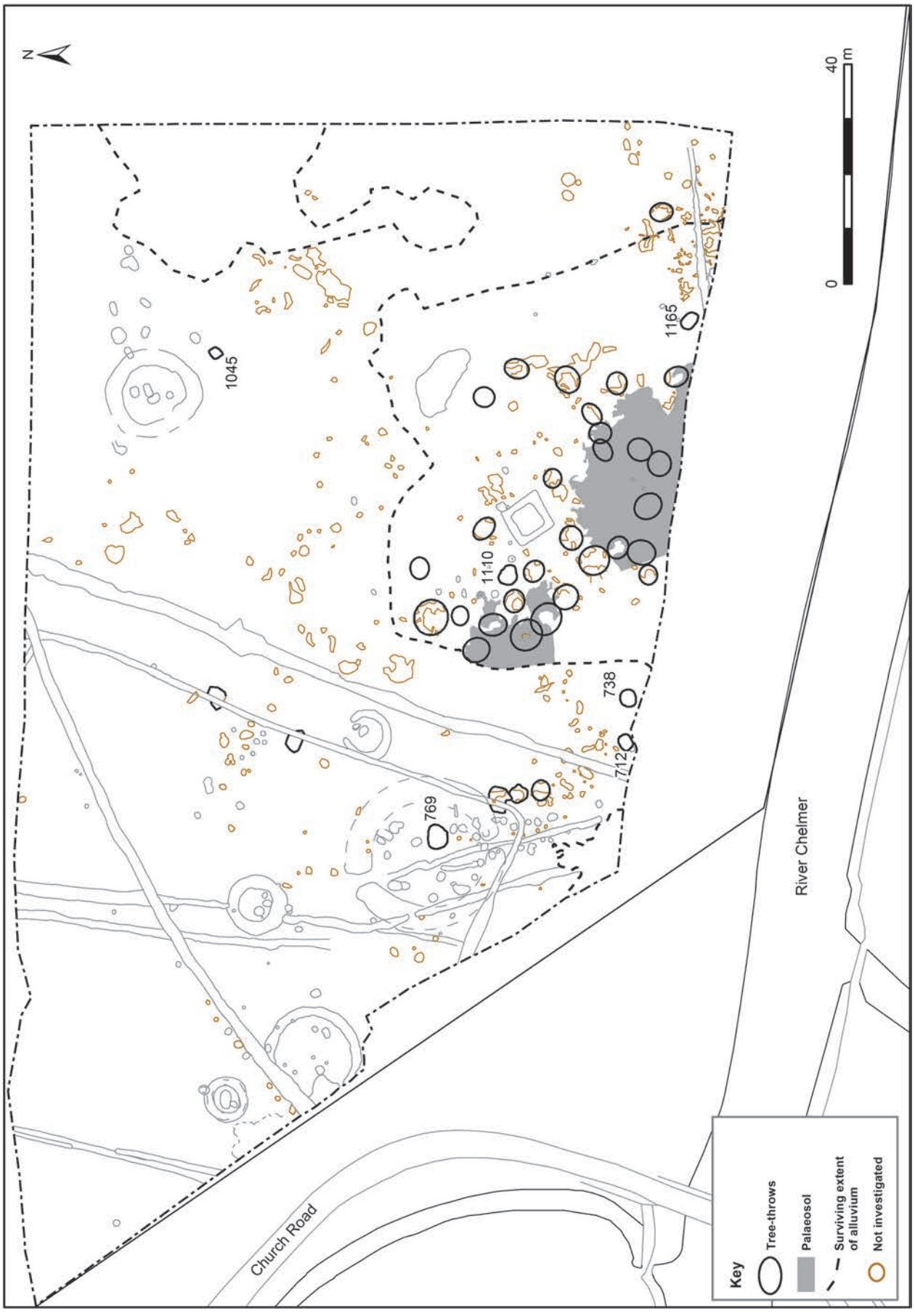


FIGURE 7: Site C: tree-throws, uninvestigated deposits and features, and the surviving extents of the palaeosol and the alluvium

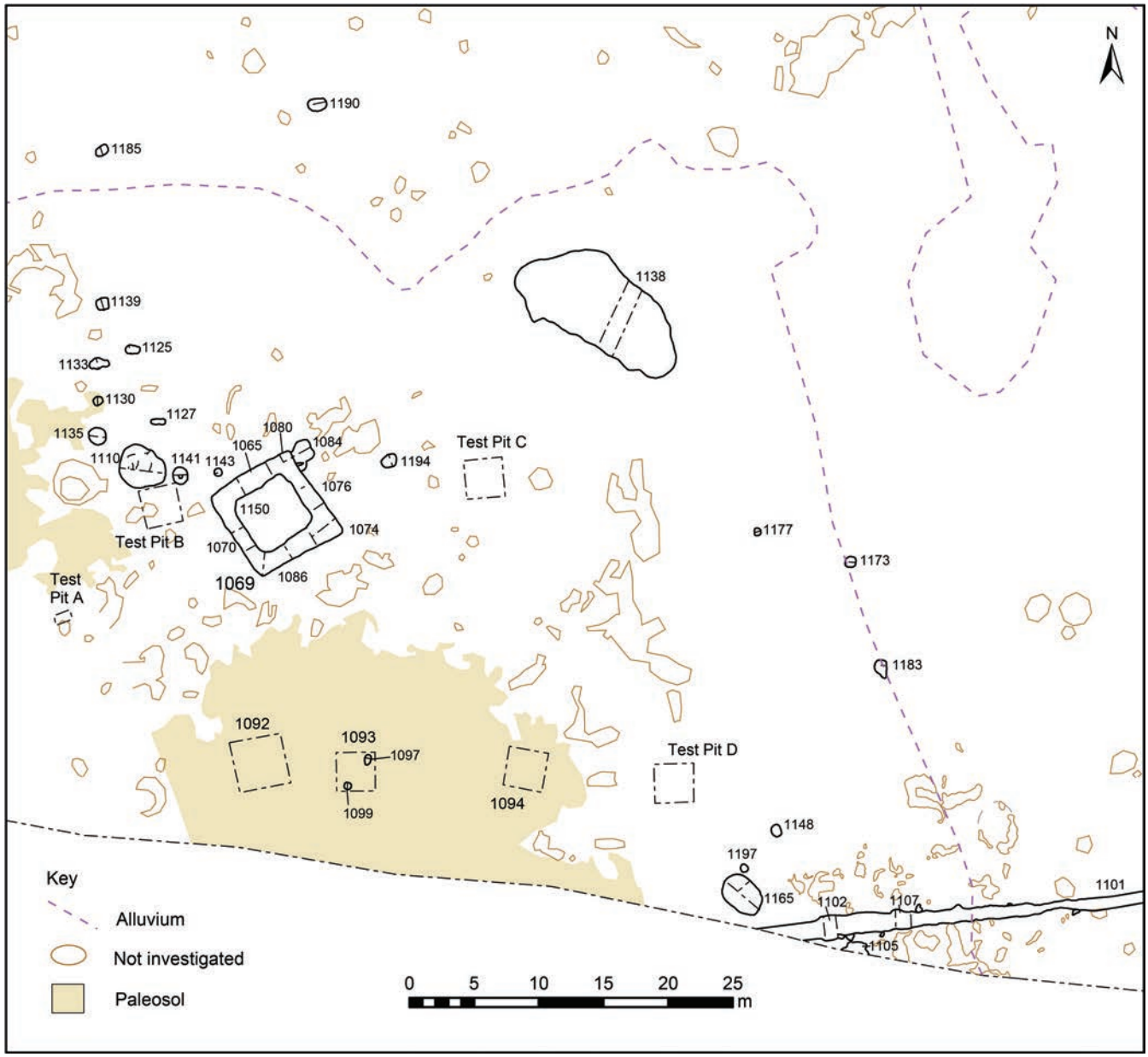


FIGURE 8: South-central part of Site C: locations of palaeosol and alluvial test pits A to D and box sections 1092, 1093 and 1094

Neolithic to Middle Bronze Age period as it produced very few Late Neolithic to Middle Bronze Age finds, and no clear direct indications for on-site occupation or farming.

Henge ditch 818, located in the south-west of Site C and *c*.45m from the present-day course of the Chelmer Navigation, took the form of a *c*.28m-diameter circular enclosure ditch with opposing north–south entranceways (Fig. 9). Where excavated in segments 701, 872, 885, 971, 974 and 980, the *c*.4m-wide ditch had a consistent *c*.0.75m-deep profile of moderately-sloping sides and a broad, flat base. No recuts were evident and all excavated segments contained relatively simple fill sequences of sand, silt sand and gravel (Fig. 10, S1 and S2). Typically of Late Neolithic construction, the only finds retrieved from its fills were a Late Mesolithic/Early Neolithic flint blade, and a fragment of burnt flint from segment 829. No remnant bank deposits surrounded the ditch and none of the fill sequences display tip lines particularly suggestive of slippage of bank material back into the ditch. However, upper fills were notably extensive and comprised deposits of silty gravel very similar to the surrounding natural. It is possible that these derived from a bank. Despite its large size, the legibility of this enclosure ditch was consequently poor and its extents were not readily apparent in plan.

No contemporary features associated with the monument's use, either inside or in its immediate vicinity, were identified, all those present being either undated or significantly later. However, Middle Iron Age or earlier pit 798 in the north-west of the henge interior contained several crumbs of possible Grooved Ware pottery, while Neolithic worked flints were present in the nearby palaeosol, in various discrete features, and residually in some of the ring-ditches within the wider vicinity.

Numerous pits and post-holes lay within the interior of the henge and close to its ditch. Upon excavation, four of these were found to contain bases of large wooden posts (612, 649, 670 and 688) (Plate 1; Figs 8 and 16; Fig. 9, S3, S4 and S7). The posts' setting (a henge), form and wood-working evidence suggested them to be of prehistoric date, although this was later contested by radiocarbon dating, which instead suggested them to have been in use during the Mid to Late Saxon period.

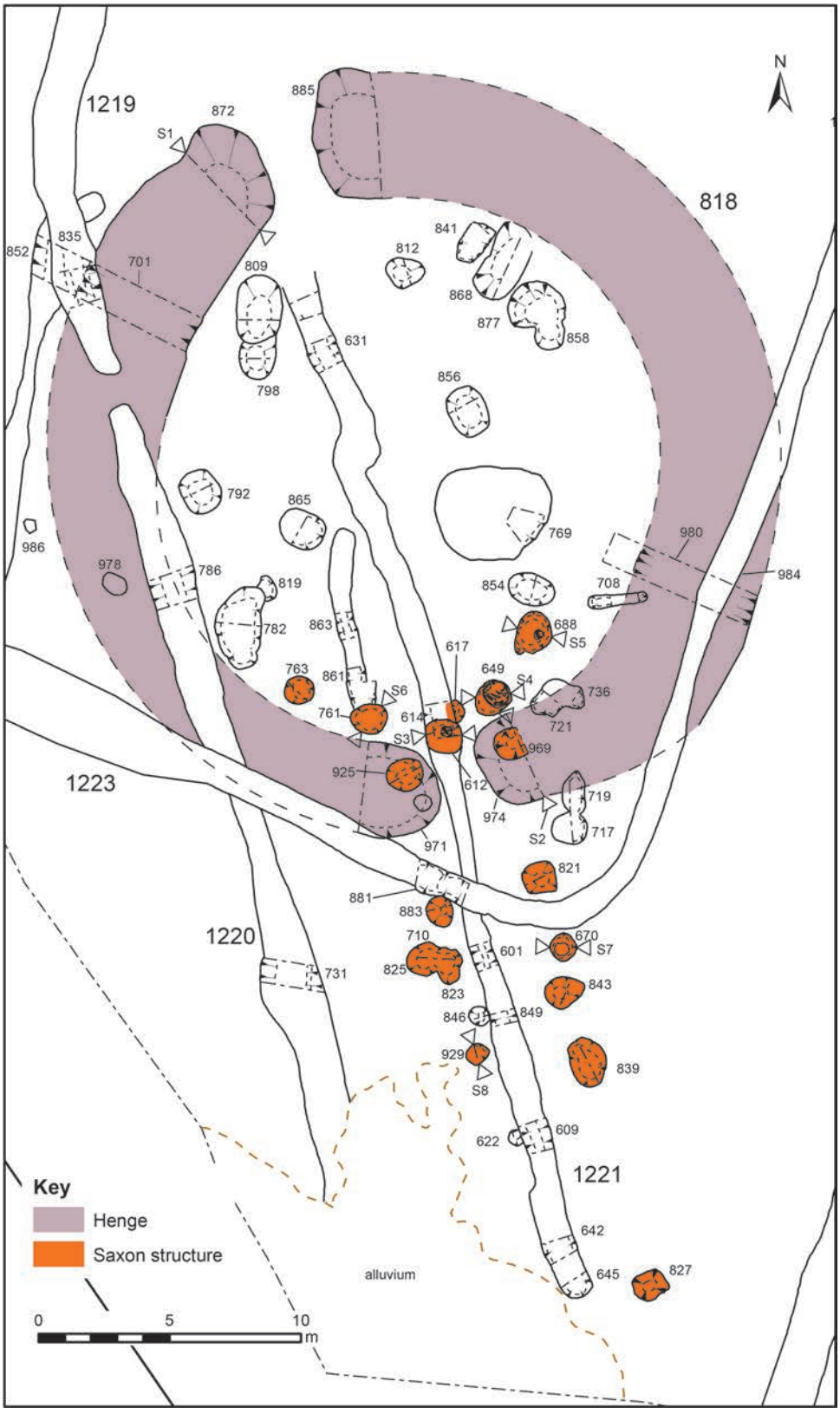


FIGURE 9: Site C: Henge 818 and the overlying, mid-to-late Saxon timber structure

Ring-ditches 374, 565 and 760 are all accorded an Early to Middle Bronze Age date and were positioned in an arc, just above the valley flood plain, around the northern side of the henge (Figs 6 and 17). It would appear that these barrow remains respect and focus on the earlier monument which presumably persisted as an earthwork in the landscape and may well have retained meaning and function. Ring-ditch 1000 lay at some distance to the north-east of this group, but was sited at a similar elevation, outside the floodplain.

Ring-ditch 374 had a diameter of *c*.18m and formed a near-perfect circle (Fig. 10). Modern features 433 and 1225 had removed its north-western sector. Where excavated in segments 358, 364, 369, 390, 393, 396, 401 and 409 the relatively narrow and *c*.0.3m-deep ditch had moderately-sloping

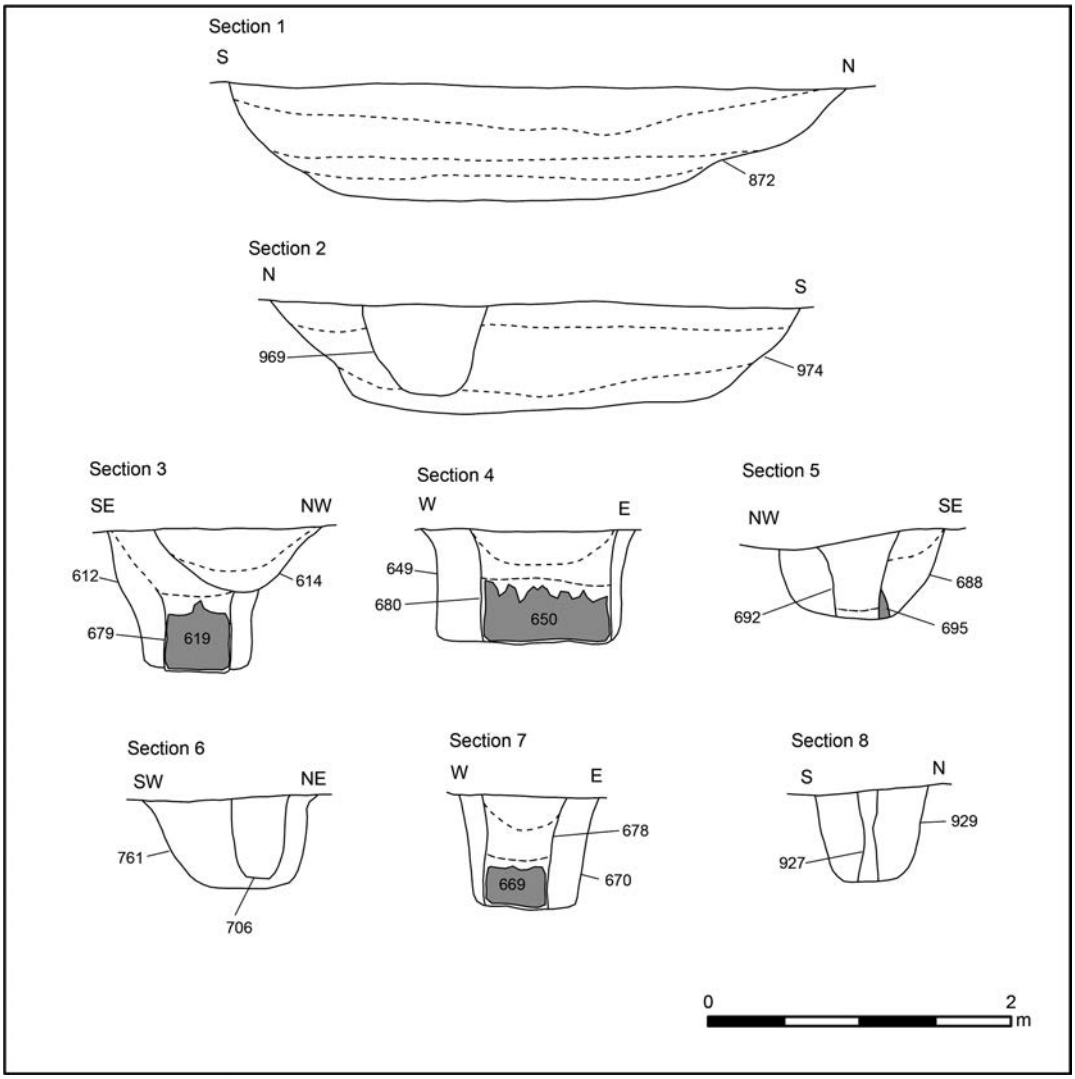


FIGURE 10: Site C: Sections 1 and 2 (Henge 818), and 3 to 8 (Saxon timber structure)

sides and a slightly concave base (Fig. 11, S9 and S10). The basal deposits in the fill sequences were sandy and gravely, while those above them were dark and silty. The cant of some of the basal fills suggested the former presence of an outside perimeter bank. Most of the latest fills, and some of the basal ones, contained pieces of residual Late Mesolithic/ Early Neolithic worked flint and burnt flint fragments. A small number of sherds of Roman pottery in some of the ring-ditch's latest fills imply its continuing survival as an earthwork into the Roman period. An undated deep post-hole (425) in the exact middle of the ring-ditch possibly indicated the presence of a central post. Other pits and post-holes were present within and close to the area of the monument, although all of these were either modern or not closely datable. The monument was perhaps very formal in its appearance, since the near-perfect circular form of its ring-ditch is conjectured to have been obtained by using its central post as a pivot, implying a concern for precision and neatness.

Ring-ditch 565 lay on the north–south axis of the henge and had a diameter of *c*.10m (Fig. 12). The northern part of it was narrow and shallow, probably due to truncation by later cultivation activity. Where investigated in segments 513, 551, 556, 561 and 577, the ditch had moderately-sloping sides and a broad, slightly concave base with a maximum depth of 0.65m. Filling the ring-ditch were deposits of sand silt and gravel, which gave little indication of an upcast bank either inside or outside the enclosure (Fig. 11, S11 and S12). The intermediate and latest fills contained small quantities of undated and, presumably residual, Late Mesolithic/Early Neolithic worked and burnt flints. It is probable that the monument was still extant into the Roman period, as one its later ditch fills contained a group of sherds from a 1st-century AD flagon. Occupying the monument interior, in an off-centre position, was small pit 446 containing a quantity of cremated human bone, probably that of an adult male. It contained no finds, but radiocarbon dating of a burnt bone sample produced a Middle Bronze Age date (1420–1130 cal BC, SUERC-25611). Pits 485 and 626 were also present inside and there were others close to the ring-ditch, but none were closely datable or readily associated with the monument.

Penannular ring-ditch 760 had an external diameter of *c*.9m and was positioned more-or-less immediately north-east of the henge. Its entranceway lay on the north side, faced upslope, and measured *c*.3m wide. Its terminals ended abruptly and were rounded in plan (Fig. 13). Excavation of segments 729, 743, 753, 757 and 776 revealed the ring-ditch to vary in depth and profile, presenting no clear trend or pattern (Fig. 13, S13 and S14). Its depth varied between 0.37m

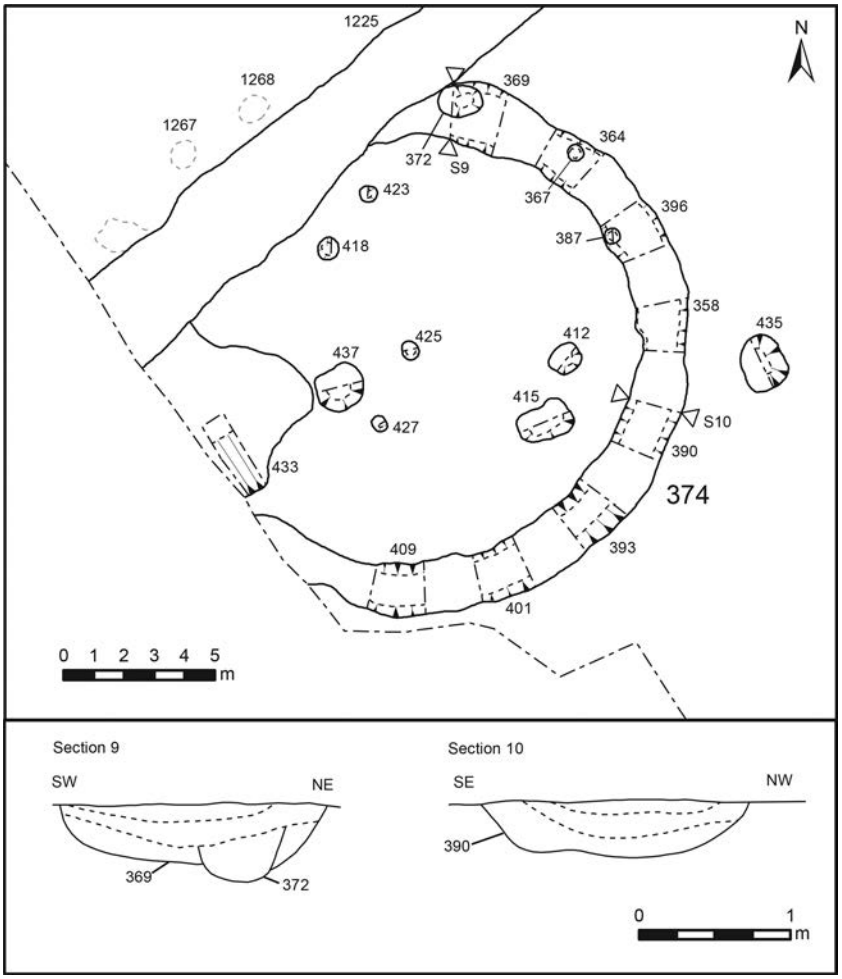


FIGURE 11: Site C: Ring-ditch 374 and sections 9 and 10

and 0.53m deep, with its shallowest and deepest parts being segments 370 and 530 respectively. Deposits of silt sand and gravel formed the two to three fills within each of its segments and included small amounts of undated and, presumably residual, Late Neolithic/Early Mesolithic worked flint. They lay either flat or slightly concave and presented no clear indirect evidence for the ring-ditch having been accompanied by an internal or external bank or a central mound. A pit (772) and a root-hole (774) occupied the monument's interior, although neither was closely datable. Pit 772 was sufficiently large to have accommodated a crouched inhumation, although there were no bones or grave goods to confirm it.

As previously outlined, ring-ditch 1000 was situated away from the group of mortuary monuments clustered around the henge, at *c*.80m to their east. Slightly oval in plan, it measured *c*.16m east–west by *c*.17m north–south (Fig. 14). Where excavated in segments 1001, 1011, 1020, 1029 and 1041 the *c*.1.0m-deep ditch cut had moderately-sloping sides, a concave base and basal and intermediate deposits of grey silt-sand overlain by final deposits of brown silt (Fig. 14, S15 and S16). There was no evidence for an associated mound or bank, although one is assumed to have been originally present. The monument's fill sequence perhaps represents accumulation of natural deposits eroded in from the ring-ditch's sides, mound or bank, succeeded by accumulation of topsoil and silt. A recut is suggested by the third fill in segment 1001, although this is not replicated in the other segments. Finds from the ring-ditch comprised residual worked flint and small amounts of Late Iron Age and Roman pottery sherds (discussed below), all of which lay within the latest fill. Sub-square pits 1034 and 1061 within the ring-ditch interior are conjectured to represent associated graves, although no skeletal remains survived to confirm this. Other discrete features and a tree-throw were present within or close to the monument, but were either undated or demonstrably later.

Late Bronze Age to Roman

The earlier prehistoric monuments continued to exist in the valley landscape during the Late Bronze Age to Roman periods, and appear to have been appropriated on at least one occasion. No datable Late Bronze Age features were discovered, perhaps suggesting that this location on the valley side was minimally utilised in this period.

Of the four Late Neolithic to Middle Bronze Age barrows present, earthwork remains of at least three, i.e. 374, 565 and 1000, were evidently still extant during the Iron Age and Roman periods. As mentioned above, Iron Age and Roman pottery was deposited in the latest fills of their ring-ditches, demonstrating that they were still partially open. While this material could constitute discard by casual visitors to these mounds, the scatters of discrete features which lay within and alongside them perhaps demonstrate more purposeful forms of human activity. Two Iron Age pits (782 and 809) and an Iron Age or later tree-throw 769 lay within the henge interior

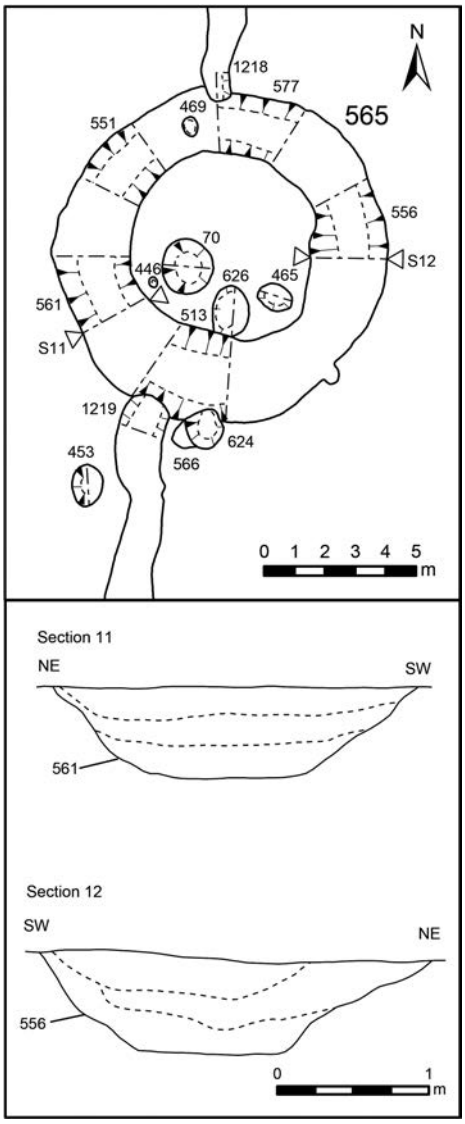


FIGURE 12: Site C: Ring-ditch 565 and sections 11 and 12

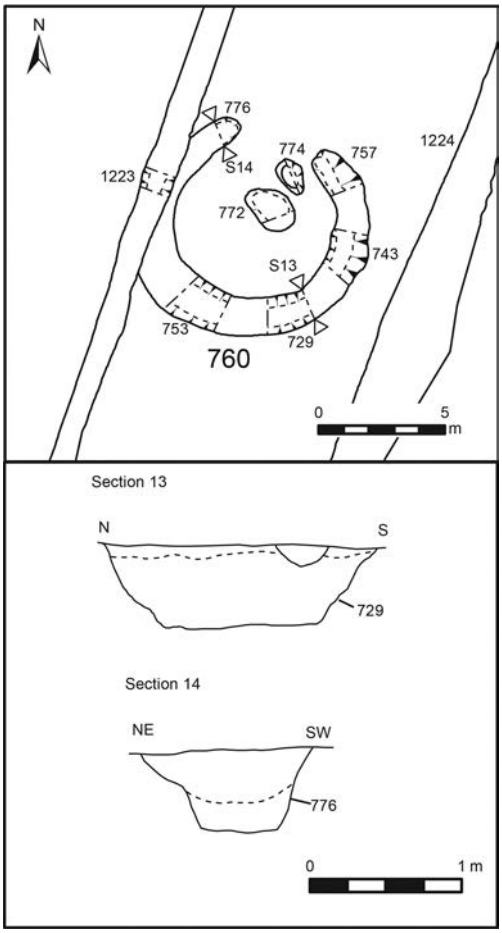


FIGURE 13: Site C: Ring-ditch 760 and sections 13 and 14

(Fig. 9). Pit 782 contained a large quantity of burnt flint and more than 200 worked flints, many of which were residual items of Late Mesolithic/Early Neolithic date. Pit 809 included seven sherds of Middle Iron Age pottery and a small quantity of worked and burnt flints, including an Early Bronze Age polished-edge knife/scraper (Fig. 22). Artefactual material in tree-throw 769 was less plentiful, but included an Iron Age flint flake. The collection, reuse and storage/deposition of lithic material from earlier periods is possibly represented by the wide range of material in pits 809 and 872. Lastly, Roman or later pit 1157 was sited just east of ring-ditch 1000 (Fig. 14).

The clearest indication of the enduring mortuary significance of the Site C location and its monuments into the Iron Age and beyond is Middle Iron Age ring-ditch 541, positioned a short distance north-east of earlier ring-ditch 374. It had a diameter of *c*.8m (Fig. 14) and was investigated by hand excavation of six segments (467, 474, 482, 493, 522 and 530). The profile of its *c*.0.56m deep and 1.5m to 2m wide cut consisted of a slightly concave base below moderate to steep sloping sides that stepped and splayed close to the surface (Fig. 15, S17 and S18). One to three deposits sat within each of its segments, but provided no consistency, other than they lay slightly concave and all composed deposits of yellowish/ brownish grey silt sand and gravel. None of them provided clear evidence for recutting or accompaniment by an adjacent mound or a bank. The lower half of the ring-ditch's profile being better preserved than the upper is perhaps an indication that that rate of infilling decreased over time, giving the near-surface parts of the ring-ditch more time to erode. The artefacts from the ring-ditch are not numerous, but nonetheless include three sherds of Middle Iron Age pottery and part of a Middle Iron Age copper-alloy brooch from the secondary fill of segment 467 (Fig. 23.1). Other recovered artefacts consisted of three sherds of residual prehistoric pottery and small amounts of worked and burnt flint.

Two pits lay within the interior space of the ring-ditch (499 and 502), one of which (499) had no finds or clear stratigraphic relationship and was therefore unable to be dated. Pit 502 occupied most of the space enclosed by the ring-ditch and is likely to have been a large grave. It had steep sides and a flat base and measured 3.2m long, 1.7m wide and 0.6m deep. No human remains survived within its acidic gravelly fill, although two 4th-century BC iron penannular brooches (SF06 and SF07; Fig. 23.2 and 23.3) sat on its base, towards its east end, probably indicating that the interred body had been buried east–west and fully-clothed. Indications of that occupant's high status are the two brooches, the provision of a barrow and its choice of location. The size of the grave cut is unusually large, and may imply that it held not one but two occupants or one occupant alongside a large amount of grave goods, nearly all of which have not survived. An additional grave good is perhaps represented by an

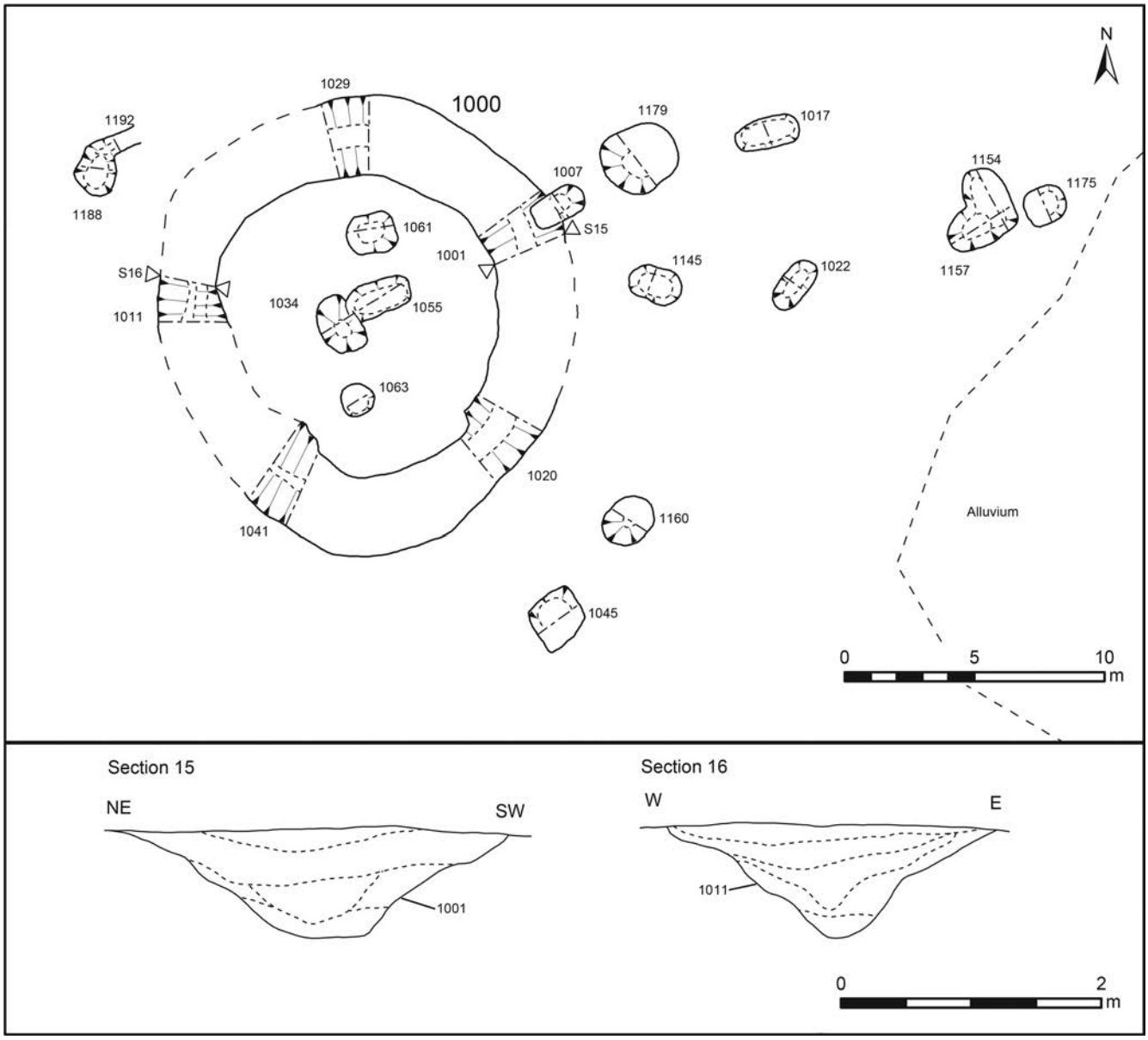


FIGURE 14: Site C: Ring-ditch 1000, adjacent features, and sections 15 and 16

undiagnostic small iron shaft fragment, which was retrieved during metal detecting of the grave fill spoil. There seems little doubt that this Middle Iron Age mortuary monument constituted a deliberate addition to the prehistoric cemetery.

Square enclosure ditch 1069, located in relative isolation very firmly within the floodplain, is also posited to be an Iron Age mortuary enclosure (Fig. 16). Surviving beneath a later alluvium deposit to a depth of only 0.4m, this enclosure measured 7.2m wide and 7.6m long. Investigation of the feature within seven segments (1065, 1070, 1074, 1076, 1080, 1086 and 1150) revealed a consistent three-fill deposit sequence (Fig. 16, S19 and S20), but few finds. While no features were present within its interior, a small sherd of Middle Iron Age pottery and a quantity of residual worked flint were retrieved from the ditch's secondary fill within segment 1074. Although excavated examples of Iron Age square barrows are relatively rare in Essex, they are not unknown. Neither is the absence of a central grave problematic, as some interments were evidently placed on the ground surface and covered with a mound.

Seven pits contained large amounts of burnt flint and appeared to refer to the henge (Fig. 8, pits 719, 782 and 978) and ring-ditches 374 and 565 (Fig. 11, pit 435; Fig. 12, pits 453, 469 and 566). Most of them were not closely datable as they produced few finds other than burnt flint. Previously mentioned pit 782 was dug during the Iron Age, while three others (469, 719 and 978) cut the henge ditch or ring-ditch 565, probably implying that their excavation took place after each of those ring-ditches were at least two-thirds full.

Saxon

The south-western part of Site C contained post-pits and timbers, possibly constituting the remains of a Middle to Later Saxon waterside structure – perhaps even a bridge crossing the river. Other possible Saxon features comprised aforementioned tree-throw 1110, and three or more grave-like pits at ring-ditch 1000.

Continued appreciation and use of the surviving vestiges of the prehistoric monuments is the predominant aspect of the Saxon period land-use, as with the preceding Iron Age and

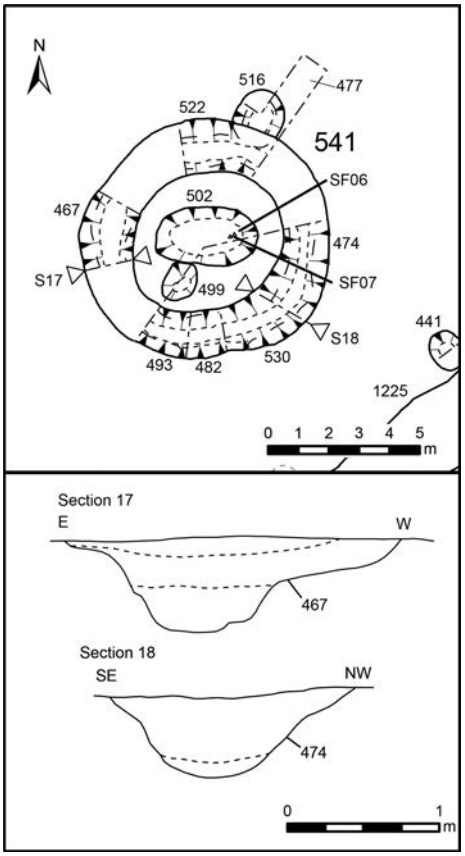


FIGURE 15: Site C: Ring-ditch 541 and sections 17 and 18

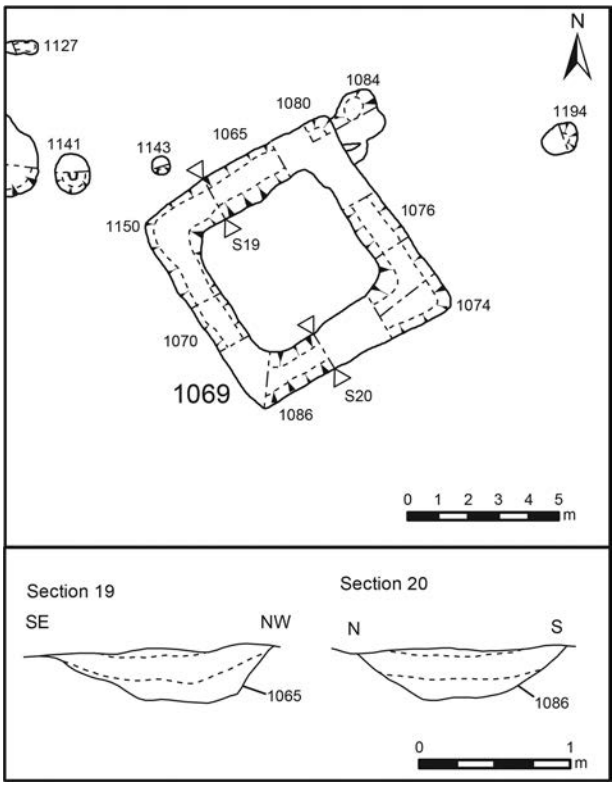


FIGURE 16: Site C: Square enclosure 1069 and sections 19 and 20

Roman periods. Ring-ditch 1000 is again a focus of activity, with a number of elongated, grave-like, pits (1007, 1017 and 1055) forming an evenly-spaced alignment that runs out in a radial line from the centre of the former barrow (Fig. 14). A fourth grave-like pit, 1022, is possibly an outlier. All four pits are artefactually undated as they produced no finds apart from an animal molar and a sherd of undiagnostic prehistoric pottery from the latest fill of 1055. Despite the lack of diagnostic artefacts and human remains, the pits appear to be analogous in their alignment, and their choice of location, to Early Saxon reuse of barrows as cemetery sites.

The last vestiges of the henge earthwork were probably used to incorporate a Middle to Later Saxon timber structure (Figs 9 and 17). Whether this was the result of its recognised ancient importance, or the consequences of more mundane practical opportunity is explored later. A total of sixteen post-pits, some with remnants of posts preserved *in situ*, define a construction clearly laid-out with direct reference to the henge remains. Post-pits 612, 649, 688, 761 and 763 formed an arc closely following the inside of the henge ditch, by now presumably largely in-filled, pit 612 being positioned at the former south entrance. Further post-pits (883, 823/825, 925, 929 and 670, 821, 827, 839, 843, 969) formed two parallel lines, some 4m apart, which extended southwards either side of the former south entrance of the henge. The pits themselves were seemingly irregularly-spaced within each line, though some may have been paired (i.e. 925 and 969; 821 and 883; 670 and 823). The northernmost pair, 925 and 969, had been cut into the infilled ditch terminals either side of the former entrance. All of the post-pits were steep-sided and fairly substantial, ranging from 0.65m to 1.9m wide and 0.4m to 0.9m deep (Fig. 10, S3 to S8). All were also very difficult to discern within the dirty gravels of the floodplain and, as suggested by the apparent isolation of southernmost pit 827, it is entirely likely that a number of further component pits of the two alignments went undetected. Indeed, the recorded 13m extent of the eastern line should properly be regarded as a minimum length, with the structure most likely continuing southwards and into the river.

Positioned in the river floodplain, the water table was high. Consequently, the lower parts of large wooden posts, consisting of oak boles (619, 650 and 669) and an oak branch (695), survived in four of the post-pits (612, 649, 670 and 688) (Plate 1; Figs 9 and 17; Fig. 10, S3, S4, S5 and S7). Preservation was such that a reasonable amount of information regarding their sourcing and preparation can be discerned (see wood technology report below); the trees from which they derived had been felled with metal axes and stripped of their bark. Most of the posts exhibited one side that was slightly flat and worn, suggesting that they may have dragged to the site by horses or oxen. Radiocarbon dating of the suitable timbers has produced calibrated dates of AD720–885 for post 669, AD775–965 for 650 and AD260–430 for 619. The anomalous 5th/6th century date of post 619 suggests that it was either a reused timber or not part of the structure. No posts survived in the other post-pits, although post-pipes were evident in two, 761 and 929 (Fig. 9, S6 and S8). Otherwise, the backfills of these pits contained only small quantities of residual burnt and worked flint.

The simplicity of this Saxon structure gives little clue as to its superstructure or to its function, although its position and alignment in relation to the river is surely pertinent. Identification of these structural remains as a possible bridge is tentatively offered, but it may be significant that its location was only *c*.80m east of the present-day bridge. However, a function as a jetty or even as a monumental structure in its

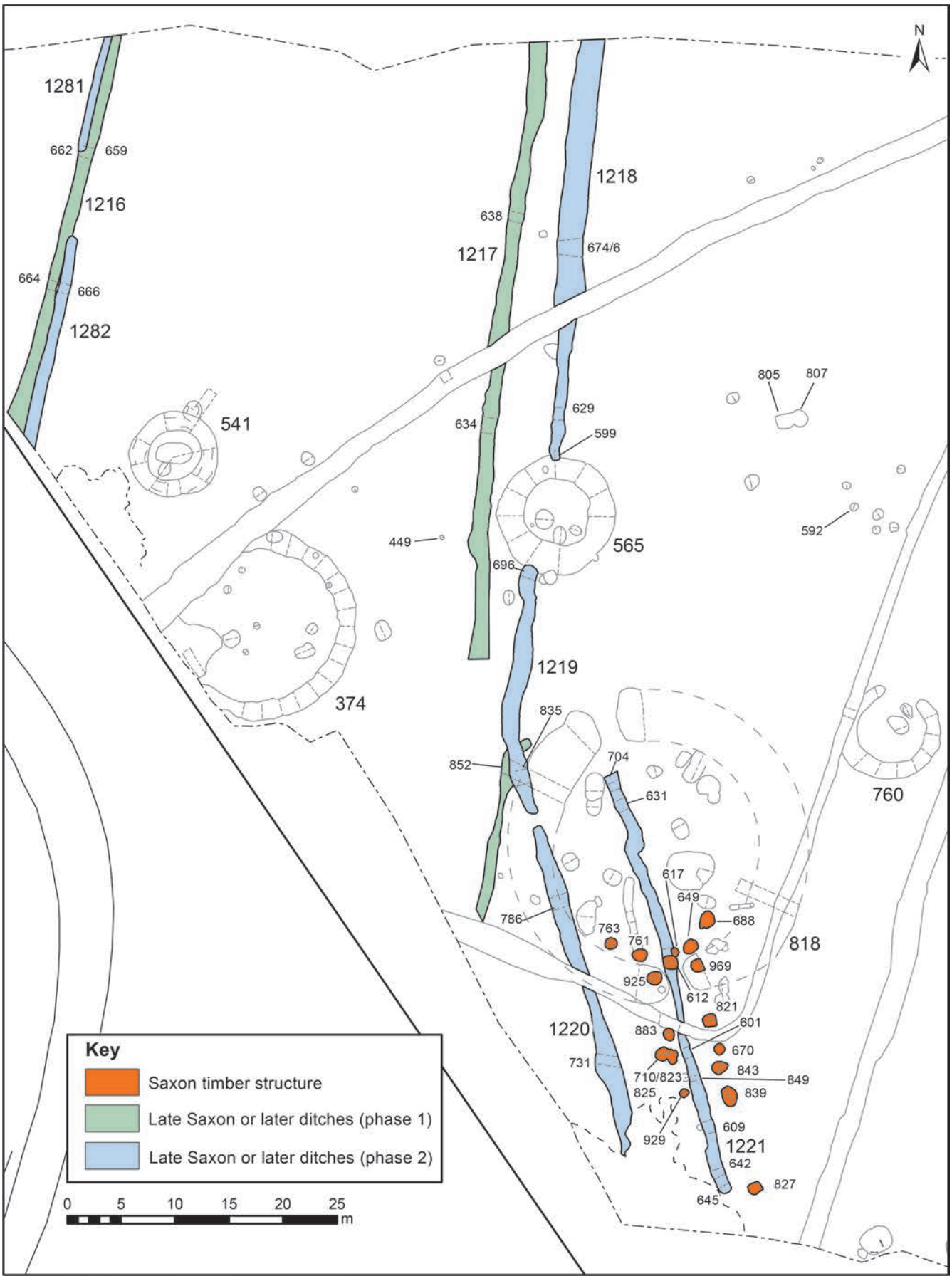


FIGURE 17: Site C: Mid to Late Saxon timber structure, and Late Saxon or later ditches

own right is not discounted. Consideration of its surviving posts, some of which appear disproportionately large for a structure of this apparent scale, is presented in the specialist wood report. The likely relationship with both the henge monument remains and the river is further considered in the concluding discussion, below.

Medieval, post-medieval and modern

Two phases of ditches in the west of Site C probably constitute the first imposition of formal agricultural land division that were probably introduced during the Middle to Late Saxon period, or later. The ditches of both phases contained pieces of burnt and worked flint, although these are likely to have been residual. A small sherd from segment 662 of ditch 1216 is probably Saxon.

Broadly parallel ditches 1216 and 852/1217, *c.*40m apart, from the first phase of ditches, ran down slope, presumably defining a series of linear fields which extended down to the river (Fig.17). The gap between 852 and 1217 may mark a point of entry between land units, as the curving north end of 852 seems to follow the enclosure ditch of the former henge. It is likely that the siting of this first phase of ditches was influenced by the surviving remains of at least one of the prehistoric monuments since ditch 1217 runs immediately west of ring-ditch 565. If a trackway or footpath lay immediately east of 1217 and ran down to a river crossing provided by the Saxon timber structure, then the earthwork of ring-ditch 565 was probably regarded as a waymarker, an obstruction or both.

Parallel ditches 1281/1282, 1218/1219/1220 and 1221 from the second phase perpetuated the land division, being direct replacements of the earlier boundaries (Fig. 16). They delivered a slight eastward shift from 1217 to 1218/1219 and incorporated the probably still upstanding remains of barrow 565 into one of their boundaries. It seems probable that the remains of the henge were no longer apparent or respected when this took place since parallel ditches 1220 and 1221 partly rotated the south end of the previous route south-eastwards, guiding it directly across the central and south-western parts of the henge. In addition, neither ditch respected the footprint of the Saxon timber structure, probably implying that it too was no longer standing by then. Ditch 1221 is a clear indication of this as it cuts and truncates Saxon post-pit 612. If the partial rotating of the south end of the route was related to introduction of a replacement timber structure, then no direct evidence for that replacement has been found.

The denudation of much of the palaeosol and the formation of an alluvial deposit across the valley floodplain probably took place during or after the medieval period, presumably as a consequence of erosion and flooding. The alluvium (574), consisting of light brown stone-free silt-clay, extended across the southern part of Site C and was up to 0.27m thick (Fig. 7). While only two small sherds of medieval pottery were retrieved from the hand-excavated portions of it, it clearly overlaid the palaeosol, the prehistoric remains, and the infilled Saxon ditches (1101, 1220 and 1221). Excavations in the centre of Chelmsford have encountered a similar alluvial deposit, where it has been dated to shortly after the mid-13th century (Wickenden 1992, 1, 10 and 141).

Given the presence of the farmstead higher up on the valley side in Area B, it is presumed that much of its surrounding area was under agriculture in the medieval period, although no evidence for a related enclosure system of medieval date has been found in Site C. The date of the levelling of the surface remains of the monuments is not known, but is likely to have taken place during the medieval or early post-medieval periods, probably via erosion caused by flooding and/or ploughing.

Shallow, parallel, post-medieval ditches 1223 and 1224 extended across Site C and correlated with cropmark C4 (Fig. 18). They defined the sides of a broad trackway extending down the valley side, approximately 10m wide, which opened out into an enclosure in the south-west corner of the site. Metal detecting of its ditch fills retrieved iron horse shoes and large square-headed bolts. It is evident that the enclosure relates to a late 18th/early 19th century coal wharf and yard known to have been situated alongside the Navigation and Church Road (Burgess and Rance 1988, 13). Apparently short-lived, the 1796 yard and trackway are depicted on the *c.*1838 tithe map (ERO D/CT40B) but not on the Ordnance Survey maps from 1875 onwards. The cornering of the former henge site by ditch 1223 is perhaps incidental (Figs 6 and 9).

Boundaries defining the relatively late enclosure of the valley side were recorded within Site C as ditch 1225 across its north-west, but also across the wider scheme area in the evaluation trenches (Fig. 18). These generally closely correlated with cropmark boundaries and with the field system depicted on historic maps. Ditch 1225 is shown on the 1792 survey of the proposed route of the Chelmer and Blackwater Navigation (ERO D/DP P70 1/2), evidently being the removed part of a more extensive land drain still extant in the landscape. These ditches were largely east–west aligned, imposed not only to drain the land but to divide the valley side into zones presumably reflecting its variable soil qualities – ditch 1225 marking the upper extent of the floodplain and more poorly draining lower slope.

Mid Chelmer Valley ring-ditch cropmarks

by Mark Germany and Helen Saunders

The wider context of the prehistoric monuments found within the excavations, as represented by ring-ditch remains 374, 541, 565, 760 and 1000 in Area C, was explored with reference to rectified and digitised plots of archaeological cropmarks from aerial photographs held in the Essex County Council Historic Environment Record. This work identified ring-ditches of barrows elsewhere within the mid-Chelmer Valley and concentrated on their morphology and on associations between barrows, trackways, boundaries, and other types of prehistoric monuments. Consideration of distribution of the barrows in relation to soil type and topography was not undertaken as the distribution of the areas of cropmarks was tilted towards valley floor, where soil conditions are more favourable to the forming of archaeological cropmarks. Misidentification of roundhouse ring-ditches as those of barrows was minimised by looking for additional features more typically associated with the latter, such as central grave pits, broad ditches and a tendency to have no entranceways. Ring-ditches present within enclosures were discounted as probable round-houses within prehistoric farmsteads. Ring-ditches with diameters greater than 30m were likewise excluded in order to avoid misidentification with typically larger constructions such as henges, hengiform monuments, Springfield Lyons-type enclosures, and medieval windmills. Most of the ring-ditches had been previously

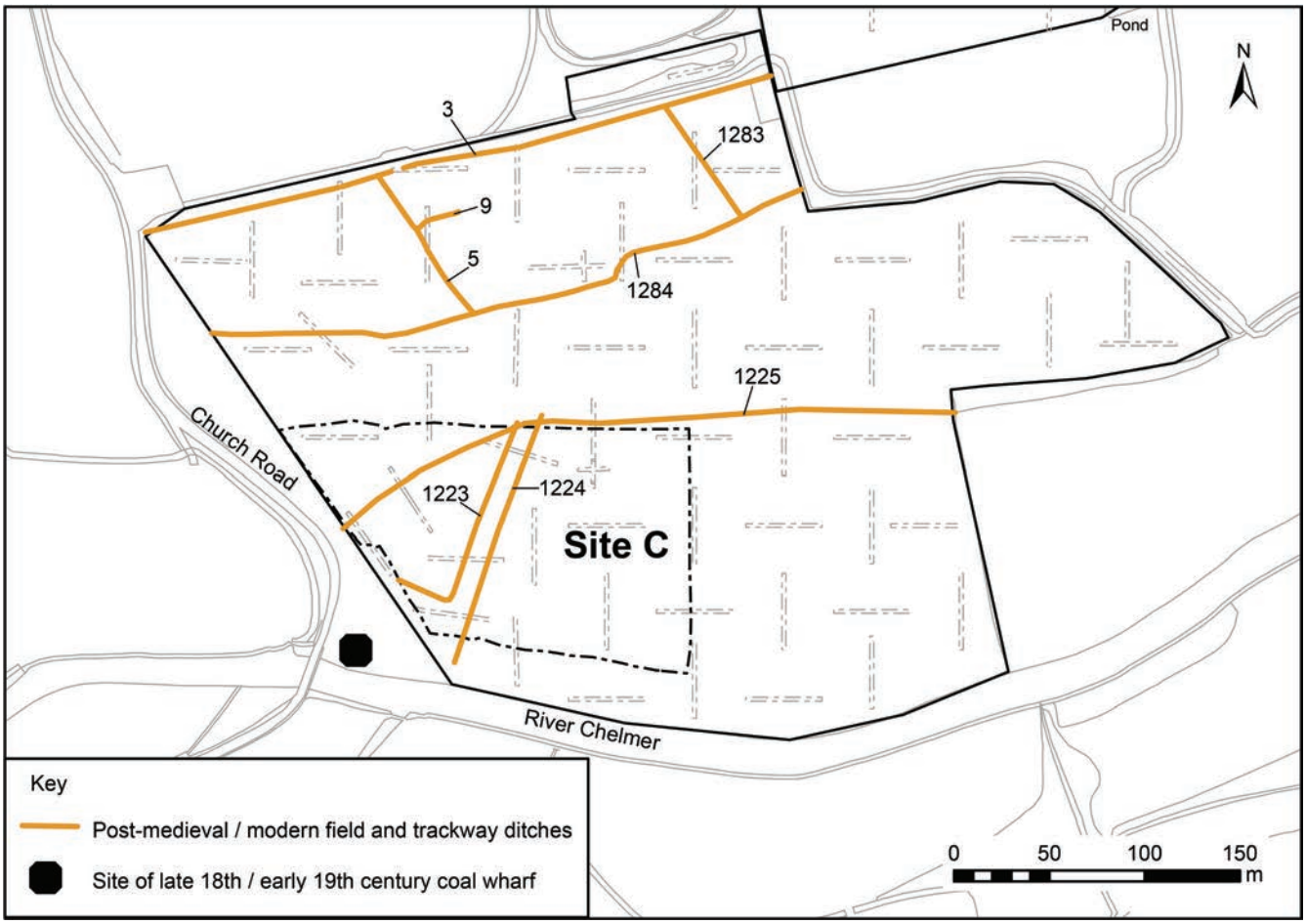


FIGURE 18: Site C: Post-medieval and modern ditches, and location of late 18th/early 19th century coal wharf

recorded as barrows by the National Mapping Program. The size of the area covered by the cropmark survey was 64km^2.

The survey identified sixty-six probable barrows within the area of survey (Fig.19), two of them (30 and 31) corresponding with excavated ring-ditches 565 and 1000. A further two (3 and 6) were encountered during the investigation of the Springfield Cursus (Buckley *et al*. 2001, figs 9 and 17). The plotted plans of the cropmark sites are presented as Figure 20. Many of the barrow ring-ditch cropmarks were fragmentary. One was concentric (55), four were penannular (1, 9, 56 and 64) and fourteen associated with possible grave pits (3, 10, 13, 16, 17, 23, 24, 29, 32, 40, 41, 46, 60 and 64). The orientation of the entranceways of the penannular barrow ring-ditches was not consistent. The majority of the barrow ring-ditches were circular, with diameters measuring between 6m and 22m. The survey area is extrapolated to have originally contained *c*.200 barrows (roughly three per square kilometre), based on an assumption that only one in every three of them has been detected.

Many of the barrow ring-ditches were located within close proximity of other cropmark features and/or excavated sites. Those probably associated with earlier prehistoric monuments comprised seven near the cursus at Springfield (1 to 7), two near the henge at Boreham (30 and 31) and one (37) to the south-east of an ovate enclosure. Ring-ditch barrow 60 and a small square enclosure similar to 1069 in Site C occupied the same site. Six of the ring-ditches were possibly paired (20, 41 and 56). Ring-ditches seemingly being referred to by landscape boundary cropmarks were more numerous and included one (25) next to a T-junction of ditched trackways, seven (5, 17, 20, 36, 41, 43 and 49) intersecting with linear boundaries and a further three (17, 34 and 55) clipped by passing boundaries. In several of these cases (17 and 34) the boundary features kink or change course where they intersect with the ring-ditches. Thirteen of the ring-ditches were situated within 20m of at least one linear ditch cropmark, although in these cases this could be incidental.

FINDS

Finds recovered during the course of the investigations predominantly comprise worked and burnt flints, although other significant assemblages include pottery, worked timbers and a small quantity of metalwork. Burnt human remains were also retrieved from a single cremation burial and are reported upon here too. Animal bone was largely absent, as a consequence of poor survival in the harsh acidic gravel soils present at this location. Pertinent finds summary reports are presented below, with further details and quantifications available in the site archive.

Worked and burnt flint by H. Martingell

A total of 2102 pieces of worked flint was recovered from a range of features and deposits (mostly from pits, tree-throws, palaeosol, ring-ditches and ditches) across the evaluation trenches and subsequent Sites A, B and C. The assemblage from each site area is described and discussed below, and

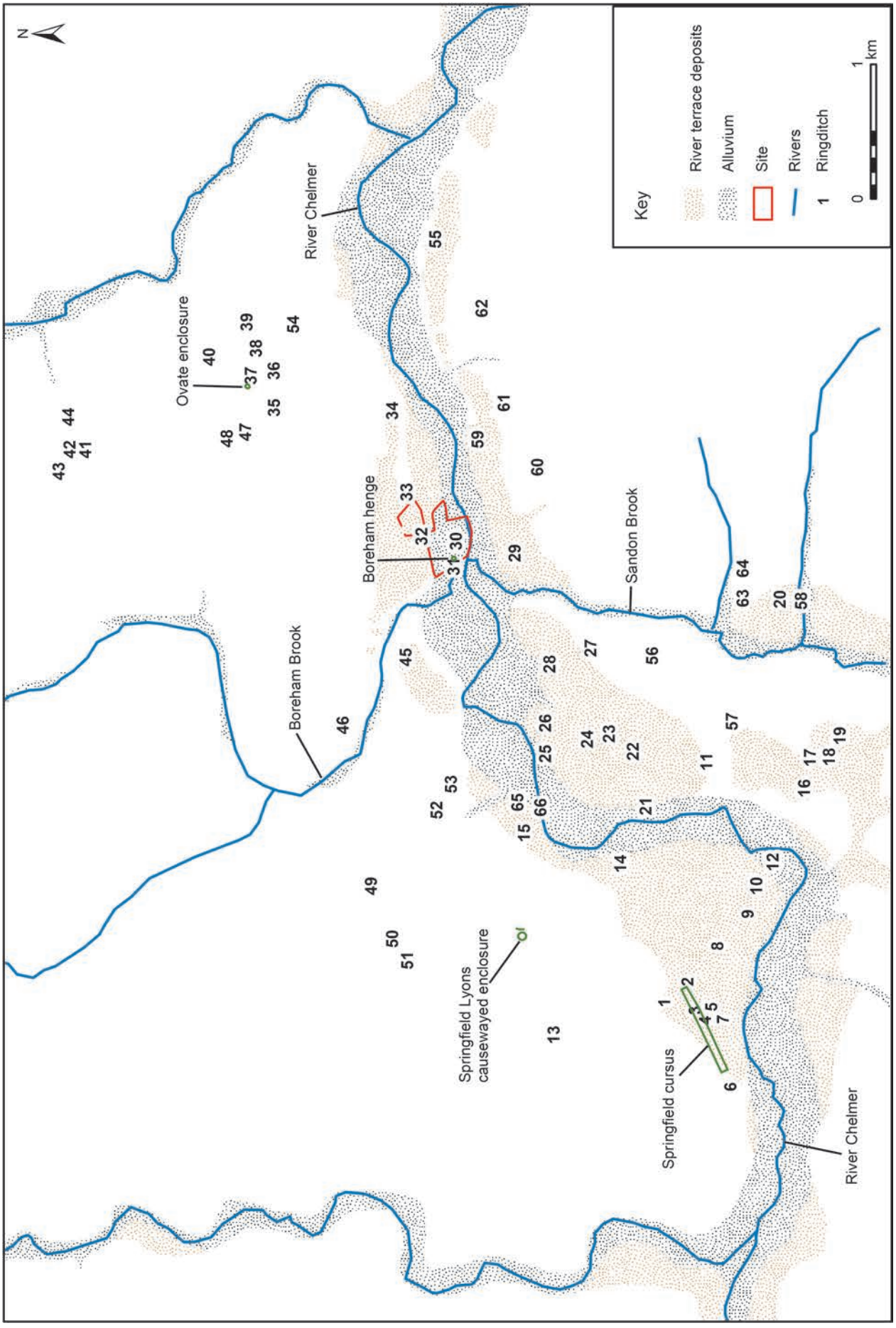


FIGURE 19: Mid-Chelmer Valley ring-ditch cropmark survey. Locations of identified ring-ditches

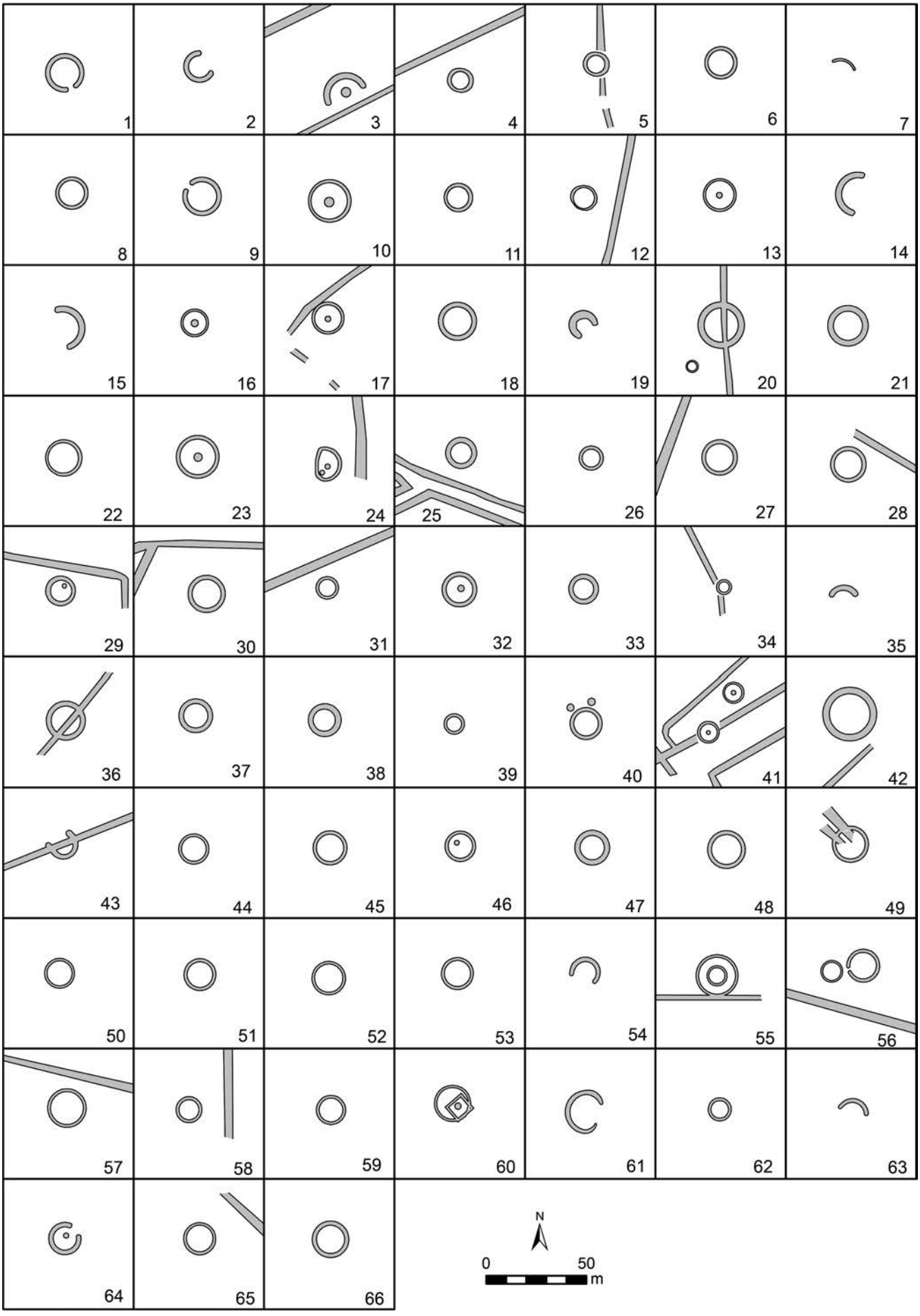


FIGURE 20: Mid-Chelmer Valley ring-ditch cropmark survey. Cropmark plans of ring-ditches 1 to 66

Type/Site	A	B	C	Total
Flake	65	2	1289	1356
Blade	13	3	420	436
Core	4		136	140
Core tablet			8	8
Scraper	6		10	16
Piercer		1	3	4
Knife			1	1
Hammerstone		1	1	1
Microdenticulate			4	4
Microlith	2		8	10
Burin			3	3
Microburin			9	9
Backed point			1	1
Arrowhead			1	1
Notched blade			5	5
Notched spall			5	5
Bifacial pebble tool			1	1
Retouched	2		21	23
Fragment/waste	2		47	49
Waste block			29	29
Total:	**94**	**7**	**1998**	**2102**

TABLE 1: Summary of worked flint by type, Sites A to C

summarised in Table 1. About 85% of the worked flint from all three sites and the evaluation trenches is undatable. Of the datable items 82% is of Late Mesolithic/Early Neolithic date, 9% of Neolithic date, 7% of Late Neolithic and Bronze Age date, and 2% of Iron Age date. Both Sites A and C produced items of all four periods.

Most of the worked flint appears to derive from local gravels, with little evidence for importation of larger flint nodules of good quality. About 25% of the pieces are patinated to varying degrees. Patination occurs most frequently on blades and blade cores. About 97% of the artefacts consist of waste from knapping, and 33% of this is made up of blades and blade cores. Many of the blades are of narrow blade type, suggesting a Late Mesolithic date. The remaining waste is undatable except for a few pieces that may be later prehistoric. Only sixty-two artefacts are retouched, about 3% of the total number of worked flint pieces. Eight of these are microliths of Late Mesolithic type (Fig. 21), one of which is patinated. There are also ten scrapers, two of which are patinated. One item of note is a complete polished-edge knife-and-scraper of probable Early Bronze Age date from Iron Age pit 809 inside the henge (Fig. 22). The remaining forty-three tools consist of piercers, denticulates, edge retouched and notched pieces.

Sites A and B

Various features within site A produced a total of eighty-one flints. There are eight blades, forty-two flakes, three cores (one blade), three scrapers, two microliths, one retouched fragment and one other fragment. Thirty-one of these artefacts, including one of the microliths, a scraper and the retouched fragment came from pit 381 in the site's north-west corner. The microlith is a complete Late Mesolithic geometric, an isosceles triangle (Jacobi 1978, type 2a; Clark 1934, type C11) (Fig. 21.6). The scraper and retouched fragment are both Neolithic.

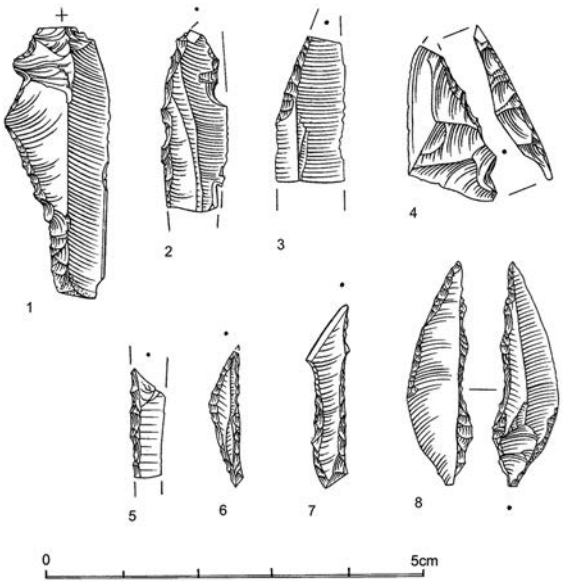


FIGURE 21: Late Mesolithic microliths

The other microlith came from pit 141 (Fig. 21.3). Pit 27 in evaluation trench 3 produced seventeen flakes, two blades and two scrapers.

The restricted nature of the investigation of Site B resulted in the recovery of a total of only seven worked flints. These comprised three blades, two flakes, one piercer on a flake and one hammerstone fragment, none of which are closely datable.

Site C

Palaeosol 1095 and tree throw 1165

A total of 146 worked flints were recovered from sample areas 1092 to 1094 excavated in the palaeosol, and a further ninety-five worked flints collected from the wider palaeosol surface 1095. In sample box 1092 there was a total of seventy-two worked flints. Two of these, a blade and a flake, had small areas of retouch, but are not datable. Amongst the waste was one crested blade; a type of core preparation practised during the Mesolithic and Early Neolithic periods. There were also thirty-nine flakes, twenty-four blades, six cores and waste blocks. Palaeosol box section 1093 produced seventeen blades, ten flakes, one core, one crested blade and one core tablet. All the waste material, the crested blade and core tablet are core preparation waste, found in Mesolithic and Early Neolithic contexts. Forty-four worked flints were recovered from palaeosol sample box 1094, comprising nineteen blades, twenty-three flakes, one core and one crested blade. All are waste material. The worked flints from the buried soil surface 1095 included forty-seven flakes, thirty-two blades, thirteen cores, three retouched artefacts, one scraper, one notched flake and an unusual arrowhead. These are all typical of Neolithic date with the exception of the notched flake which is of a later Neolithic/Early Bronze Age date.

While relatively modest Mesolithic assemblages were recovered from pits 805 and 807, a total of 251 worked flints were recovered from tree-hole 1165 (Table 2), in the south-eastern corner of Site C. There are nine cores, eight waste blocks, thirty-two blades, 197 flakes, one microburin (the waste part from making a microlith), five retouched artefacts, one retouched flake, one notched blade, one knife and one microlith. The microlith is a backed blade type of Mesolithic

Type/Feature no.	805	807	1165
Flake	6	20	196
Blade	14	8	32
Core	1	1	9
Core tablet	1	1	
Scraper	1		
Microlith			1
Microburin	1	2	1
Notched blade			2
Notched spall			1
Retouched	1	1	1
Fragment/waste		1	
Waste block			8
Total	**25**	**34**	**251**

TABLE 2: Worked flint from Late Mesolithic/Early Neolithic features 805, 807 and 1165

date (Fig. 21.2). Contained within pit 1148 to the north-east of the tree-throw were a microlith roughout and a microlith backed rod (Figs 21.1 and 21.5).

Henge 818

A total of 524 worked flints was recovered from the henge ditch (818) and the features within its immediate area. Of these, eighteen are retouched pieces, 314 are flakes, ninety-nine are blades, forty-one are cores and thirty-six are waste pieces. The earliest retouched artefacts are two microliths from post-pit 843 (Fig. 21.7) and pit 868, and three microburins in pits 782, 843 and 868. These microliths are all of a Late Mesolithic type, as is the burin on a blade. Of possible Mesolithic or Early Neolithic date are two microdenticulates from pits 809 and 841, two denticulates from pits 782 and henge ditch segment 829, a retouched flakelet from overlying ditch 1221 (segment 609) and a truncated blade from pit 854. There are also three retouched blades and two retouched flakes. The most important find of all, from a worked flint perspective, is an Early Bronze Age polished-edge flint knife and scraper from Iron Age pit 809 (Fig. 22). These are rarely found and are considered to be a special type of artefact attributable to the Beaker period, the transition from the Late Neolithic to the Bronze Age. A core and piercer from ditch 1221 (segments 609 and 645), and two scrapers from pit 782, are rather roughly knapped and could be from the later prehistoric period.

Ring-ditches 374, 565, 760 and 1000 and square enclosure 1069

Ring-ditch 374 produced 247 worked flints. There is only one retouched artefact; a microlith from excavated segment 358 which is a Jacobi (1978) Type A of Late Mesolithic date. There are also 204 flakes, twenty blades, nine cores, one flaked pebble and thirteen fragments and waste pieces. Although there is only one fine blade core and a patinated blade that can be dated to the Late Mesolithic, it is not inconceivable that the other pieces are also from the same period.

A total of 207 worked flints were recovered from Bronze Age ring-ditch 565 and the discrete features within its immediate area. Seven of these are retouched artefacts. Pit 70 produced a microlith of Late Mesolithic type, as did pit 453 (Fig. 21.8), and ditch segment 513 produced a microdenticulate on a blade, and a burin. Worked flint from segment 561 included a scraper on the end of a blade and a small piercer. These six artefacts are Mesolithic or Early Neolithic in date. Unusual artefacts comprise a backed point from pit 70 (Fig. 21. 4) and a notched blade from segment 556; both could be of any date. Other finds comprise 153 flakes, twenty-five blades, fourteen cores and eight other waste pieces, including a microburin of Mesolithic date in pit 70.

In contrast, Bronze Age ring-ditches 760 and 1000 produced only twelve and twenty-seven worked flints respectively. Those from ring-ditch 760 comprised two flakes, seven blades, two

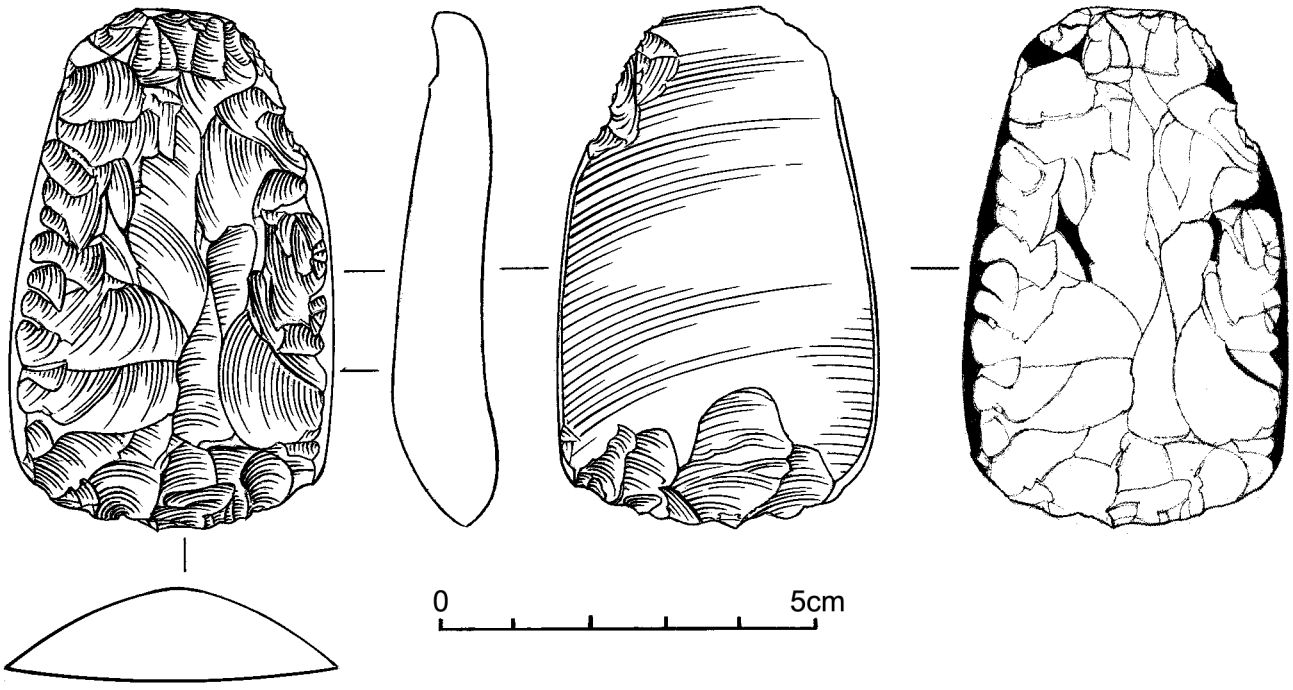


FIGURE 22: Early Bronze Age polished edge scraper-knife from Iron Age pit 809, Site C

waste fragments and one undatable retouched flake, and those from ring-ditch 1000 twenty-three flakes, one blade and three cores. None is diagnostic of any particular period.

A total of sixty-eight worked flints were recovered from Iron Age ring-ditch 541. There are two retouched pieces, a scraper of undatable type from segment 530, and one piercer. Forty flakes, seventeen blades, four cores and five waste blocks and fragments were also collected.

Square enclosure ditch 1069 produced twenty-two worked flints; of these, fifteen are flakes, six are blades and one a retouched artefact – a burin. Again, none is typical of any specific period.

Burnt Flint (all sites)

A relatively large amount of burnt flint was collected from twenty contexts. Prehistoric pits 435, 453, 469, 566, 719, 782 and the Early Neolithic tree-throw 1165 all contained over 1kg of burnt flint. Notably, over 10kg was retrieved from pit 978 on the west side of the henge, suggesting a continued and/or concentrated area of activity. The burnt fragments are light grey in colour, variable in size and irregular in shape. The flint appears to come from the local gravels. Large quantities of burnt flint have been found on other Mesolithic sites; it appears to be a significant component of Mesolithic occupation/activity (M. Bell, *pers. com.*). The reasons for this are still under discussion. However, it should be noted that burnt flint is often also a feature of Neolithic and Bronze Age sites.

Conclusions

This reservoir scheme area, and Site C in particular, have produced one of the largest Mesolithic/Early Neolithic assemblages discovered in Essex, since 85% of the closely-datable pieces can be assigned to that period. It is probable that the valley floor was being used to make flint tools, which were then taken away to be used elsewhere, as most of the assemblage consists of blade cores and other waste material. The number of items which may have been contemporary with the probable Late Neolithic/Bronze Age construction of the henge and the barrows is very small, although further pieces probably lie within the flint debitage. The marked disparity between the amounts of identified Late Mesolithic/Early Neolithic and Late Neolithic/Bronze Age worked flints no doubt reflects the different uses of the valley during those periods, as the site would have been used for flint sourcing and knapping and intermittent settlement during the former, and the carrying out of religious and mortuary activity during the latter.

Prehistoric pottery by N. Lavender

The trenching evaluation and excavation of Sites A to C produced 316 sherds (960g) of prehistoric pottery. The material has been recorded using a system developed for prehistoric pottery in Essex (Brown 1988; details in archive). The assemblage is dominated by flint-tempered fabrics (83% by sherd count, 72% by weight) and mainly comprises very small abraded sherds and crumbs, resulting in an average sherd weight of less than 3.1g. Most of this material consists of undiagnostic pieces and is therefore undatable within the prehistoric period. A small, but significant, proportion of the assemblage is made up of sand-tempered sherds (5.6% by sherd count, 9.2% by weight). There are also twenty-six sherds of grog-tempered pottery, most of them quite large and comprising 15.2% of the assemblage by weight. Most of the assemblage is abraded, although only one tiny sherd, from Roman cremation burial 29, is obviously residual.

Earlier Neolithic

Two rim sherds are of Early Neolithic date; both are very small. The first is an externally-thickened rim recovered from test pit B (context 990) through the buried palaeosol horizon at the southern edge of Site C. The second is T-shaped and from the nearby square-ditched enclosure (fill 1075 in segment 1074). Fifteen fragments of abraded flint-tempered, but otherwise undiagnostic, pottery from the latter context may be contemporary. As the enclosure is judged to be of Iron Age date, the pottery is presumably residual and may be derived from the buried palaeosol into which it was cut. A small sherd in sand-tempered Fabric G was also recovered from this context and a Middle Iron Age date for the feature seems probable.

Later Neolithic

A small quantity of Grooved Ware (19 sherds, 145g), in grog-tempered and flint-tempered fabrics, was recovered from both the evaluation and excavation phases of work. Identifiable sherds comprise approximately 15% of the assemblage by weight. Most of the material (12 sherds, 118g) was retrieved from pit 27 (trench 3), including one large sherd bearing six deep horizontal grooves. This sherd, and three others from the same context, comes from a large, thick-walled vessel. The remaining material is from a thinner-walled pot. A small number of flint-tempered sherds from contexts 39, 47 and 80 in trenches 12, 13 and 52 are possibly Later Neolithic date. The handful of sherds recovered from the excavation phase is nearly all from Site A, with the single exceptions to these comprising two crumbs of possible Grooved Ware pottery from Middle Iron Age or earlier pit 798 inside the henge. Almost all of the Grooved Ware, therefore, has no obvious physical association with the henge monument some 400m to the south-west, and no Beaker pottery has been identified.

The presence of Grooved Ware, albeit in small quantities, suggests a focus of Late Neolithic activity on the higher ground (though still below the 20-metre contour) overlooking the River Chelmer and almost certainly related to the construction or use of the henge down on the flood-plain. The quantity of material suggests that it is unlikely to represent a permanent domestic settlement, but it may result from deposition at a seasonal occupation site – perhaps – by people working on the construction of the henge or visiting it afterwards.

Grooved Ware has been recovered quite frequently in the Chelmer Valley, sometimes seemingly the consequence of re-use or revisiting of earlier monuments. It has been found in the upper fills of the Springfield Cursus (Brown 2001a) and in isolated pits at Springfield Lyons, close to the causewayed enclosure (Brown 2013). A further isolated pit at Great Baddow (Brown and Lavender 1994) lay within the Late Bronze Age enclosure there, but no earlier features have yet been located there to suggest a reason for its presence (it may simply mark a vantage point). Finds of Beaker pottery at the Cursus and a Beaker burial near the former White Hart public house in Springfield also attest to Late Neolithic and Early Bronze Age activity in the general area of the mid Chelmer Valley.

Middle Iron Age

Middle Iron Age pottery was mainly recovered as a general light scatter in features across Site C; within ring-ditch 374 (segment 401), ring-ditch 451 (segment 467), square enclosure ditch 1069 (section 1074), pit 809 inside the henge, and pit 1160 near ring-ditch 1000. Two sherds of pottery from trench 12 (within subsequent Site B) were the exceptions to this pattern.

Much of the Site C pottery was made up of small and abraded flint-tempered sherds that offer little by way of dating evidence. Ring-ditch 541, which surrounded the grave pit containing the iron brooches, produced a surface find, consisting of a single sherd from a rounded and everted rim of Middle Iron Age date (context 608). A second, small, rounded rim sherd came from ring-ditch 374 to the south (fill 403). A Middle Iron Age sand-tempered sherd was also recovered from square enclosure ditch 1069, and it is this, rather than the Early Neolithic rim, which is considered to date the feature.

None of the Middle Iron Age pottery is decorated. Generally it seems to belong to Drury's (1978) Little Waltham style, but there is too little of it and most of the sherds are too small to assign to particular forms. The exceptions to this comprise two sherds of Little Waltham Form 8 from ring-ditch 541, and a single sherd of Little Waltham Form 6 from square enclosure ditch 1069.

Discussion

Given the location of this site and the quantity of prehistoric monuments within it, investigation has produced a rather disappointing assemblage of prehistoric pottery. This was in spite of the assiduous attempts to recover artefactual material and the large number of segments excavated through the ring-ditches. The large assemblage of struck flint strongly suggests that finds recovery was perfectly adequate and that nothing substantial has been missed. The condition of the pottery is often poor in that it is fragmentary and abraded, but there is no indication that a large proportion of the original assemblage has been destroyed by adverse soil conditions.

Absence of pottery in ring-ditches of mortuary monuments is, perhaps, to be expected. In this respect, the Middle Bronze Age barrow cemeteries of north-east Essex, *e.g.* Ardleigh (Brown 1999), St Osyth (Germany 2007) and Brightlingsea (Clarke and Lavender 2008), are analogous, with very little pottery recovered from their ring-ditches. Only at Chitts Hill (Crummy 1977), where the mounds had been deliberately levelled during the Iron Age, was there any quantity of pottery in the ditches. The Late Iron Age funerary enclosure at Maldon Hall Farm (Lavender 1991) similarly produced only a few scraps of abraded pottery, despite the quantity of pottery in the actual burials.

With regard to the henge, in 1971 Wainwright and Longworth remarked that "It is clear . . . that the users of Grooved Ware had a close association with henge monuments . . ." and went on to associate the deposition of pottery with ceremonial activities (although at that time only seven henges, most of them large, had produced Grooved Ware). At Boreham, there is no such close association. No pottery was recovered from the henge itself, and if the two small crumbs from pit 798 are excluded, then the closest Grooved Ware lay some 400m to the north-east. The pottery was found in contexts with no obvious connection to significant later Neolithic features, as with other Grooved Ware finds in the valley (although all except Great Baddow had major features from the earlier Neolithic). Similarly, whilst there is some worked flint of later Neolithic and earlier Bronze Age date (Martingell above), there is not much and it is not directly associated with the henge. Most of the flint is late Mesolithic or early Neolithic and residual in later contexts. Evidently the henge was not used for the deliberate 'ritual' deposition of either pottery or flint, and neither does there appear to be any accidental loss or rubbish disposal associated with the monument.

As for the Middle Iron Age pottery, most of this comes from the various ring-ditches; the paucity remarked on above, both in terms of overall quantity and the number of diagnostic sherds, makes the assemblage quite unhelpful. However, the association of the pottery with the well-dated brooches (Sealey below) confirms the 4th-century BC date for the origin of Middle Iron Age pottery in Essex and possibly takes that date back as far as *c.*350BC rather than the previously accepted one of *c.*300BC. Any advance in the clarification of the (rather uncertain) dating of such pottery is welcome, as would be further instances of associations with well-dated artefacts and, hopefully, rather better pottery assemblages.

Late Iron Age and Roman pottery by J. Compton

Twenty contexts produced pottery of Late Iron Age and Roman date, amounting to 378 sherds, weighing 1391g. The pottery has been recorded by sherd count and weight, in grams, by fabric; full details can be found in the site archive. The fabrics were recorded using the Essex County Council fabric series and the few vessel forms present were identified using the typology devised for Chelmsford (Going 1987, 13–54). The assemblage is fragmentary (average sherd weight 3.7g) and generally abraded. Some sherds are encrusted, making fabric identification difficult. Most of the assemblage comprises body sherds in coarse fabrics which are not closely datable within the Late Iron Age or Roman periods. Together, the coarse wares form 80% by weight of the total assemblage. Imported samian occurred in two evaluation trench contexts; otherwise the pottery derives entirely from local sources. Few contexts contained more than three or four sherds; the exceptions are cremation burial 29 in trench 1 and excavated segments 513 and 1020 across ring-ditches 565 and 1000 respectively.

The lower part of a black-surfaced ware jar, which contained the cremated bone, was recovered from cremation burial 29. Unfortunately, the vessel had been truncated in antiquity so the exact form cannot be discerned. Some sherds had wavy-line decoration, however, and the jar may be a Going Type G23.4 (1987, fig.10). These are tentatively dated to the 3rd century at Chelmsford, but the Old Hall jar can be accorded an early Roman date on fabric grounds. Segment 513 of ring-ditch 565 produced many sherds from a J1 flagon (Going 1987, fig.16) in coarse buff ware, probably a Colchester product. Most of the vessel seems to be present, although there are many small sherds which do not conjoin. This type of flagon, known as a Hofheim flagon due to the numbers found there, is a mid-1st century type which does not continue beyond the Neronian period (*c.*AD65). Segment 1020 of ring-ditch 1000 contained a large number of abraded grog-tempered sherds dating to the Late Iron Age. More than one vessel is represented but most of the sherds appear to belong to a single jar.

Early Saxon pottery by S. Tyler

A small assemblage of fine and coarse wares (twenty-six sherds, weighing 246g) came from fourteen contexts, mostly representing Site B surface finds, the exceptions to this being pit 41 and ditch 57 in evaluation trench 12, and ditch segment 662 of Site C ditch 1216. Most of the large, sandy, body sherds (some deliberately roughened with 'schlickung') probably belong to storage jars or cooking-pots (some have carbonised residues on surfaces). However, there is also a decorated neck/rim sherd (find-spot 912, Site B) from a vessel which in its entirety could stand comparison to cremation vessels from cemeteries such as nearby Springfield Lyons (Tyler and Major 2005).

The predominance of sandy fabrics and the use of the 'schlickung' technique suggest a pre-AD650 date for the assemblage. It is likely that the pottery has derived from late 5th/early 6th century settlement/cemetery contexts somewhere in the vicinity.

Medieval and later pottery by H. Walker

A total of 234 sherds, weighing 2.5kg, was retrieved from fifteen contexts, almost all of which were surface find-spots within Site B or else deposits in trial trenches in its immediate vicinity. No fine wares are present apart from single sherds of Mill Green fine ware and Hedingham fine ware, both, unfortunately, unglazed and undecorated. Otherwise the pottery comprises early medieval ware, medieval coarse ware (including probable examples of Mill Green and Hedingham coarse wares) and a single sherd of shell-and-sand-tempered ware. Cooking-pots are the most common vessel form and there are examples with B4, cavetto and H2-type rims, all of which would have been current during the earlier 13th century. A thickened, everted bowl rim is also present. Most of this pottery was found in the area of the remains of a small sub-rectangular enclosure and possible building and is probably associated with this settlement. Find-spots 921 and 922 to the west of the enclosure produced later pottery including part of a cooking-pot with a developed E5 rim, dating to the late 13th/14th centuries, and a sherd of Mill Green ware, dating from the mid-13th/14th centuries. These may represent a second, slightly later phase of activity. The only medieval pottery from Site C comprises two sherds of early medieval ware, datable to *c*.1200, that were collected from alluvium layer 574 in test pit A. No medieval pottery was found within Site A.

The assemblage is typical of central Essex, although the lack of fine wares suggests the pottery is from service areas rather than from living areas. A few sherds of post-medieval pottery were excavated, but these could be the result of muck-spreading of midden material rather than evidence of settlement. They comprise sherds of black-glazed ware and post-medieval red earthenware, including a sherd that appears to be a kiln waster. A post-medieval sherd from gully 21, in trench 13, could be intrusive.

Iron Age brooches by P. Sealey

Three early La Tène brooches were recovered from ring-ditch 541 and its central pit 502 in Site C. In the ditch itself, there was a 4th-century BC copper alloy brooch associated with Middle Iron Age pottery. Two iron brooches were present in the central grave pit; one was penannular, and the other a possible penannular. The only other Iron Age grave from Britain with a pair of penannular brooches is at Huntow (Yorkshire). The secure association of pottery and metalwork at Boreham allows the start date of Middle Iron Age pottery in Essex to be moved back into the 4th century, to *c*.350 BC.

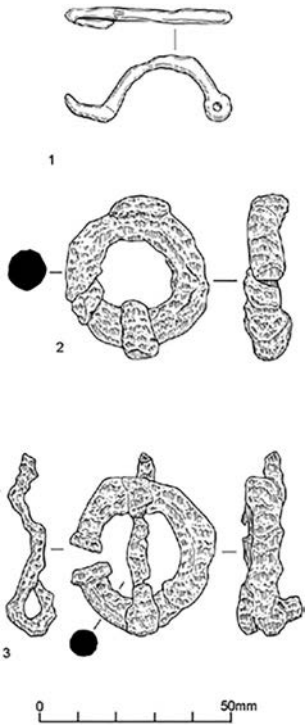


FIGURE 23: Middle Iron Age brooches from Middle Iron Age pit 541, Ring-ditch 541, Site C

La Tène I Copper alloy Brooch (fill 468 in segment 467)

Copper alloy brooch fragment with a curved bow terminating in a short straight length of metal with a cleft to provide a seating for the pin; beyond, the foot rises upwards and begins the curve that originally turned it to point backwards towards the head of the brooch (Fig. 23.1). In section the bow is sub-rectangular with a maximum thickness of 4.4mm. All that survives of the head is a flat circular feature with a diameter of 7.3mm. There is a tiny hollow aperture on each side of this flat terminal which would originally have housed a rivet or axis bar. Brooches like this exemplify the mock-spring arrangement described by Stead (1979, 68–9; 1991, 80). The condition of the brooch is poor: there is extensive and deep corrosion that has entirely removed nearly all the surface; the end of the foot and the pin are missing.

The brooch is La Tène I and belongs to the Hull Type 1 family. Its bow does not have the more or less semi-circular form of the well-arched 1a, but exemplifies instead the lower and shorter arc of the 1b. Not enough survives to allow allocation to one or other of the variants of 1b. Chronologically, a 1b brooch means a product centred on the 4th century BC (Hull and Hawkes 1987, 73, 95, 97, 107).

Annular Iron Brooch (fill 503 in pit 502)

The brooch consists of a continuous oval hoop with maximum and minimum external axes of 40.2 and 39.3mm; the hoop itself is 8.8 to 11.2mm thick and sub-circular in section (Fig. 23.2). An iron collar 9mm wide secured the (missing) pin to the hoop; all that survives of the pin itself is an amorphous

stump on the collar on the inside of the loop. Such is the extent of the corrosion and the accompanying distortion of the piece that the measurements given here should be regarded as only indicative of the original dimensions. The condition of the brooch is fragile. Radiographs suggest some metal survives within the core. They also reveal a straight line running through the hoop from the inner to the outer side suggesting the presence of two flat and unexpanded terminals that had been forced together in antiquity. If this was the case, the brooch would have been penannular. The classification and chronology of the brooch is discussed below.

Penannular Iron Brooch (fill 503 in pit 502)

What now survives is apparently all a corrosion product. Such is the extent of the corrosion and the accompanying distortion of the piece that the measurements given here should be regarded as only indicative of the original dimensions. The condition of the brooch is fragile. Radiographs of the brooch show the hoop with a thin white outline. This distinctive feature suggests the surface had once been coated with a veneer of some material other than iron; it may have been tinned. The penannular hoop of the brooch is an oval with maximum and minimum external axes of 41.2 and 39.6mm; the hoop itself ranges from 7.8 to 10.2mm thick and is sub-circular in section (Fig. 23.3). Both terminals have flat oval faces with expanded edges; they are 2mm apart on the inside and 9mm apart on the outside. A collar secures the pin to the hoop. It is 10.8mm wide towards the outside of the hoop, and it tapers towards the pin. The best preserved length of pin suggests it was rectangular in section at the collar end, changing to a tapered circular section at the end. In the middle of the hoop, a short length of the pin has a flexed (humped) profile. Together, the pin with its collar is 46.4mm long.

The brooch is a Fowler Type Aa penannular (Fowler 1960, 150). There is some reason to think that its companion brooch was also penannular (despite its present appearance), and is probably another Type Aa. Penannular brooches of this kind are now thought to represent an introduction from the mainland of Europe, rather than (as Fowler argued) an insular development. The starting point is an iron specimen from a grave dated *c*.400–380 at Trugny (Aisne); another La Tène Ia grave from Pernant (also Aisne) has a bronze example (Rowlett 1966, 133–4; Simpson 1979, 319). Penannular brooches of Types A and Aa are present in Arras Culture contexts in Yorkshire from the start (Stead 1991, 89–90); some of those from graves there are iron (Stead 1979, 71). They are rare in France and their popularity in Britain at this early date reflects a predilection here for hinged, rather than sprung brooches (Stead 1971, 38; 1979, 71). Type A and Aa brooches had a long history, lasting until Roman times (Olivier 1996, 258, 261). The Boreham brooches could be as early as any of the penannulars in Britain, bearing in mind the La Tène I brooch from the ring-ditch. An iron penannular brooch of Fowler Type Aa excavated at Wandlebury hill fort (Cambridgeshire) and stratified with pottery (Hartley 1957, fig.8 nos 69–71, fig.9 no.3, 23–4) shows the type was current in East Anglia in the Middle Iron Age. Most graves with penannulars from Yorkshire only had a single brooch but there was a pair of bronze Aa brooches from the Huntow barrow (Stead 1979, 36, 70–1, 102). The Huntow pair is an important consideration at Boreham where the context is considered to be funerary.

Brooches and the implications for pottery chronology at Boreham

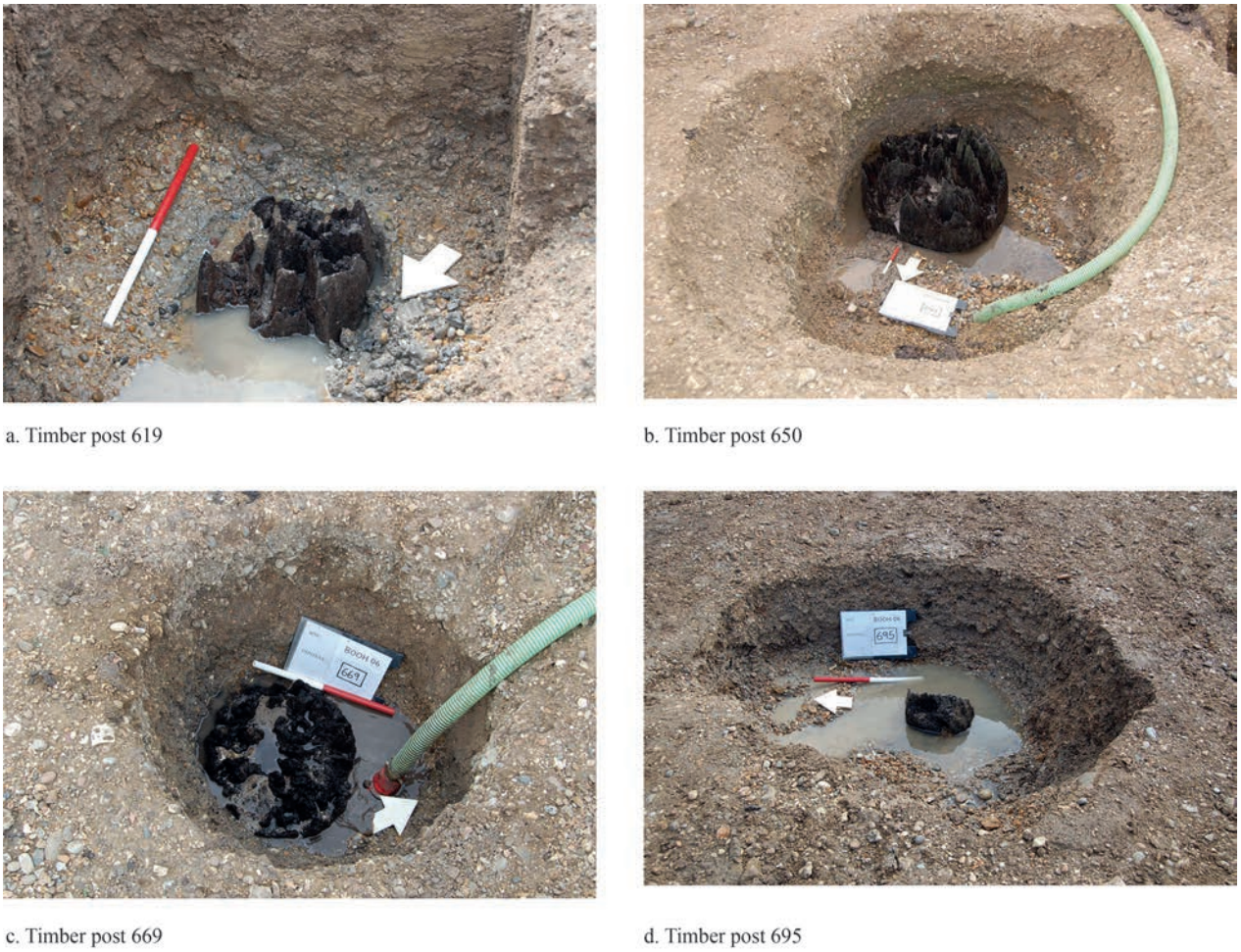
The three brooches reported here are a consistent suite of 4th-century BC jewels. Bearing in mind the difficulties of dating Early to Middle Iron Age pottery in Essex, it is worth considering what the Boreham brooches have to say about the chronology of the pottery from the site. The copper-alloy brooch was associated with the rim and shoulder of a vessel of Middle Iron Age type, Little Waltham Form 8. In the fill of nearby square enclosure ditch 1069 was the rim of another Middle Iron Age vessel, Little Waltham Form 6 (Drury 1978, 53–4). Assemblages of pottery from these contexts are dominated by flint and flint-with-sand tempered wares, suggesting a position early in the Iron Age sequence (Sealey 2007, 50–1). Mindful of the date of the copper alloy brooch, it is reasonable to place the start of this ceramic style in the 4th century, at *c*.350 BC rather than *c*.300 BC (Sealey 1996, 46, 50 *pace* Sealey 2007, 55).

Wood by D.M. Goodburn

The remains of four timber post-bases were recovered from the south-east corner of Site C, in the immediate vicinity of the posited henge enclosure 818. Initially presumed to be of Early Bronze Age date on the basis of both the henge-like form of their context and the metal axe marks discerned on the post-bases themselves, the surprising early medieval dates subsequently obtained by radiocarbon dating have necessitated a total revision of our initial understanding of its probable function, period and cultural affiliations. Although the pagan Saxon reuse of Bronze Age monumental ritual sites such as round barrow cemeteries is well known, this timber structure, seemingly set within the circular ditch and featuring an avenue-like post alignment, is currently unique. The total lack of parallels for this type of woodworking and arrangement of massive timber posts in the early medieval period in England is noted. While the scientific dating is cautiously accepted, it is further noted that this does not fit the general pattern of dating for these types of structures that has accumulated during the last hundred years of field archaeology in Britain, and this anachronism requires well-reasoned and thorough explanation.

The in situ posts

That part of Site C containing the henge enclosure and the remains of the four timber post-bases was relatively low, lying adjacent to the current course of the River Chelmer, and the groundwater clearly remained high enough to provide waterlogged conditions in the bases of some of the deeper post pits on the southern side of the structure (Figs 8 and 16). Three of the post-bases found were part of the partial oval arrangement of large posts inside the henge ditch (post-bases 619, 650 and 695). One further post, timber 669, survived in a shallow post-pit 670 to the south. The post-bases were waterlogged and also mineralised to some extent by water-born iron minerals. All were rather decayed except in places on the bottom faces of posts 619 and 650. The decay had fragmented all the timbers, passing down the radiating medullary rays and pores in a somewhat erratic manner; very little of the perishable outer sapwood survived except in small areas at the very base of post 619 and possibly 650. The bases of the posts had also been variably compressed with some gravel being forced into the end grain. Where this had occurred, the tool marks had been removed. The surviving heartwood was found



a. Timber post 619

b. Timber post 650

c. Timber post 669

d. Timber post 695

PLATE 1: Mid to Late Saxon timber post-bases 619, 650, 669 and 695

to be mostly solid surviving up to *c*.0.5m high in the tallest example. In two cases, patches of very fine tool mark details even survived when initially exposed during the excavation. These were fine striations left by small nicks in the axe blade used, known as 'signature marks', but by the time the detailed recording took place they were no longer clearly visible. It was clear that the post-bases had been cut to bevelled, or slightly rounded, flat bases with axes rather than sawn across.

Off-site analysis

The timber of all the post-bases seen in cleaner condition off site clearly had all the defining characteristics of oak, i.e. one of the two native species or their hybrids (*Quercus robur*, or *Q petraea*). Radiocarbon dating samples were taken from the outside surfaces of each of the timbers where the wood was fairly near the outer limits of the parent tree. Tree-ring slice samples were also taken from all the timbers both for dendrochronological dating and to examine the possibility of 'same-tree matching'. The tree-ring study proved unable to obtain dates for the timbers by dendrochronology, but was able to establish that none of the measured sequences matched each other, indicating that the timber used did not derive from the same large parent oak (Bridge 2009, 7).

Parallel evidence for early medieval 'treewrighting' (felling, bucking, axe types, post sizes)

The key features of treewrighting relevant to the analysis of the limited evidence for woodworking recorded in the Old Hall timbers are those for felling and cross cutting ('bucking') techniques, the size and form of axe blades used, and size range of earth-fast post previously found. It must also be remembered that most Saxon buildings and structures such as timber river and dock walls were built with earth-fast posts of varied type.

Close examination of hundreds of earth-fast posts from buildings, timber river and dock walls and bridges has provided evidence of the felling techniques used and how larger timbers were bucked. In all well preserved examples seen by this author the felled ends of posts showed patterns of axe marks indicating felling cuts made from both sides of the base of the parent tree. The V-shaped cuts formed were used to control the direction of felling with the lower V made on the side of the intended fall (Goodburn 1992, 108; 1999, 29; and see drawing of post-base 619 below). Bucking cuts were made in a similar way with two V-shaped axe cuts from either side of the felled parent tree, probably after some side branches were lopped. Evidence of the use of large saws for cross-cutting or cutting along the grain has not been found after the 5th century AD in England until *c*.AD 1180–1200 (Goodburn 1992, 110).

There appear to have been four basic types of axe used for woodworking in early medieval England as shown mainly in evidence from London excavations and some generally less tightly provenanced earlier museum collections. The first archaeologist to catalogue the axe finds of the period found in the south-east was Mortimer Wheeler (Wheeler 1927). However, the clear stop marks of two distinct forms have been the most

commonly found, and are also the most common as tool finds in the Museum of London collections. These are marks of narrow-bladed general purpose tools with blades generally between *c*.65–75mm wide and fairly square ended (Goodburn 1992, 110; 1999, 29). These marks would fit with the general purpose 'woodsman's axe' sometimes called Mortimer Wheeler Type I. The location and quality of these marks shows that they were used for felling, lopping and bucking trees, as well as the first stages of hewing out beams planks and posts. The second most common form of woodworking axe in the early medieval south-east was clearly the very wide bladed T-form of broad axe with fine blades up to *c*.300mm wide (Goodburn 1992, 112; 1999, 51; Hardy, Watts and Goodburn 2011, 345). These tools were used for secondary trimming and finishing boards, beams and some other timbers but not cross-cutting so are not relevant to the post-base evidence considered here. Finally, in the 11th and 12th century, marks from axes with slightly more rounded blades up to c.120mm wide have been documented at London sites such as Bull Wharf in the City (Goodburn in prep). This latter form of early medieval axe seems to have been used for both cross-cutting and general hewing and may possibly have been of a bearded form. Some smaller fine-bladed hatchets are also known from the period but were not suitable to the heavy work of felling and bucking large oak posts. Some of the axe marks recorded on the Old Hall post-bases are fairly typical of documented early medieval forms of narrow-bladed 'woodman's axe but the larger more curved examples are atypical. However, the limited evidence certainly cannot rule out an early medieval date bracket for the work.

Typical early medieval earth-fast posts recorded in the south-east of England were very much smaller than the examples found in the Old Hall structure. They varied greatly in cross sectional shape with many of the smaller examples having wedge-shaped, D-shaped, sub-rectangular, irregular or rounded shapes. Neatly squared post-bases are very rare indeed until the early 12th century. Rounded-section posts were sometimes minimally trimmed logs but have also been found to have been neatly trimmed whole or even half logs where the bark and most of the sapwood was hewn off (Goodburn 1997 and in prep). This writer is not aware of evidence for the early medieval use of earth-fast posts over *c*.0.4m in diameter in England for any previously known timber structure. In the Old Hall structure the largest surviving post-base, timber (650), must have been at least 0.9m in diameter originally, allowing for some decay. Small increases in diameter add exponentially to the volume and weight of timber so the largest Old Hall post would have been perhaps four times the volume and thus the weight of any otherwise documented Early Medieval structural earth-fast posts. Clearly any timbers of that size set upright would have resembled timber versions of megalithic stones or huge 'totem poles' rather than any other known early-medieval posts. Indeed, it seems to be the case that the largest posts of the Old Hall structure are the largest documented for any period on any site in Britain. This size implies very conspicuous consumption of labour and materials by those who organised the building of the structure. This said, it should be borne in mind that the above ground form of the earth-fast posts found at Old Hall may have been quite different from that below ground, i.e. the rounded sections under discussion here. Some early medieval, earth-fast uprights have been found hewn to sub-rectangular or lentoid cross-sections above ground but retaining a rounded, more natural cross-section below ground, and others have been found with surprising sculptural appendages above ground (Goodburn 1997 and in prep). If this had applied to the Old Hall posts, wide fields for carved and/or painted decoration would have existed.

Post-base timber 619 (Fig. 24)

This post-base was found to be the best preserved from the site and was set in post-pit 612 in line with, and presumably blocking, the southern causeway of the henge (Figs 9 and 17). The oak post-base was markedly oval, nearly D-shaped in plan, and survived 0.39m high, 410mm wide and 340mm thick. The south side of the post was very decayed but the others were only slightly decayed with traces of sapwood surviving on the east side. No bark was found, which is durable and tough in oak so it must have been trimmed away. On the west side it was clear that

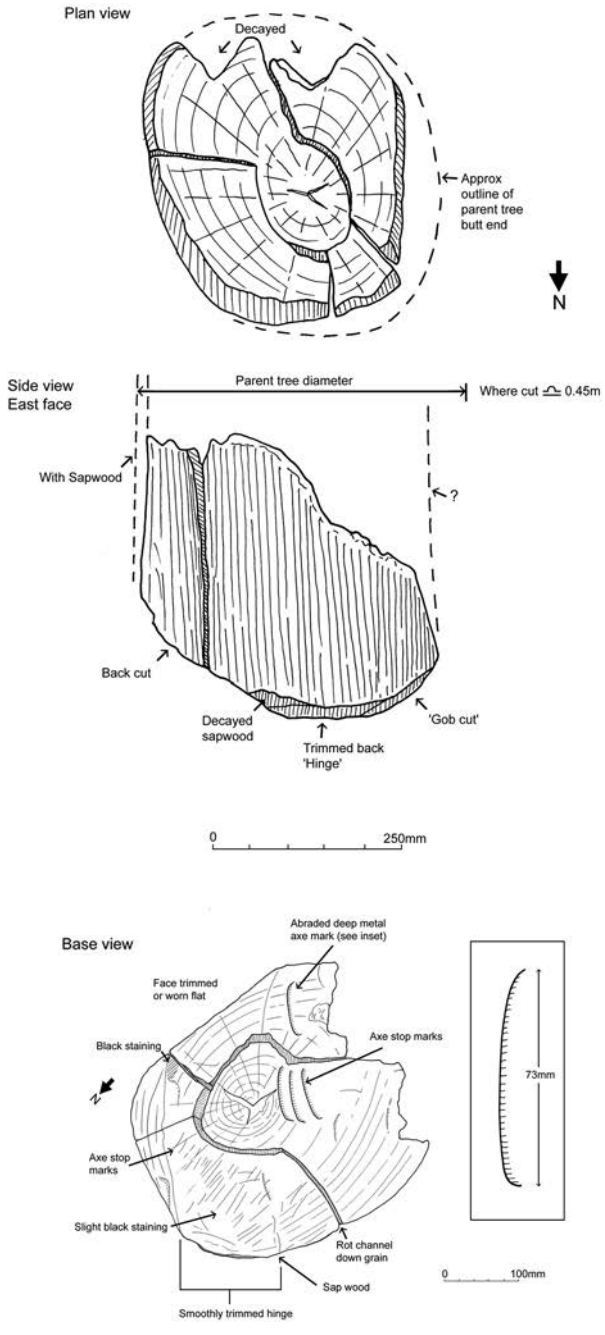


FIGURE 24: Mid to Late Saxon post-base 619

the curved face of the log had been flattened deliberately and worn, possibly by abrasion during dragging from the felling site. There had also been some trimming back of part of the north side, perhaps to remove a bulging buttress which would also have caused drag. No tool marks survived on the sides but many facets and several axe stop marks survived on the base.

Viewed from the side, the base of the post had been left in the form of a blunt wedge from the felling cuts made, showing that the post was made from a butt log of a deliberately felled tree set with the butt down (as it grew). The wedge-shaped felling cuts were mainly made from two sides with the first cut or 'gob' being made lower than the longer 'back cut'. This evidence shows that the felling of the tree was carefully controlled. The base of the post-pit must have been cut with a rounded concavity to mirror this shape to some extent. The 'hinge area' which is normally ragged after felling, had been smoothed over neatly with an axe, a tough job across the grain where, at the butt of the parent oak, the timber is normally toughest. In several places the slightly eroded remains of complete axe stop marks can be seen (Fig. 24, base view). These marks are *c.*73mm wide with only a modest curvature and rounded corners. Although clear signature marks survived on site they were not visible later when the detailed recording was carried out, despite the use of careful washing and raking light. The stop marks were often very deep indicating a very powerful cutting stroke similar to what can be achieved with a small modern steel axe in tough but freshly felled, oak heartwood. This implies strong hafting and a forceful swing. This size and form of axe stop mark would fit that left by a Mortimer Wheeler Type I Saxon woodsman's axe. Traces of slightly more curved, incomplete axe stop marks were found where the hinge had been trimmed back. These must have come from the use of an axe with a more curved blade; thus at least two tools were used, one in the felling and another for trimming up the post-base. The complete axe stop marks are slightly different from those found on the base of post 650 indicating the use of at least four (probably many more) axes in working the posts for this structure. This may reflect the coming together of a whole community to build the structure; not surprising when the logistics of moving the large oak timbers is considered (see timber 650 discussion below). Slight traces of a black deposit, possibly superficial charring, were seen on the northern half of the base but not sides of the post.

With the loss of some heartwood, some sapwood and all the bark, a minimum butt diameter of *c.*450mm may be estimated for this post; at chest height this might have been *c.*350mm. The growth rate of the parent oak was very slow with rings less than 1.5mm wide and the whole log had *c.*180 annual rings surviving, which would equate with a slow growing parent oak *c.*190–200 years old when felled.

Tree-ring dating was unsuccessful and so a small sample was taken for radiocarbon dating from the outermost parts of the post-base and a felling date range of *c.*AD 260–430 AD obtained (Bridge 2009 and below). As this did not seem to include any of the noted trace of sapwood the interpreted date range would be *c.*50 to 100 years later.

Post-base timber 650 (Fig. 25)

This, the largest oak post-base from the main oval arrangement, was substantially decayed, in places surviving as no more than peaty voids, but the seven major fragments found were in contact with each other in their original locations in the

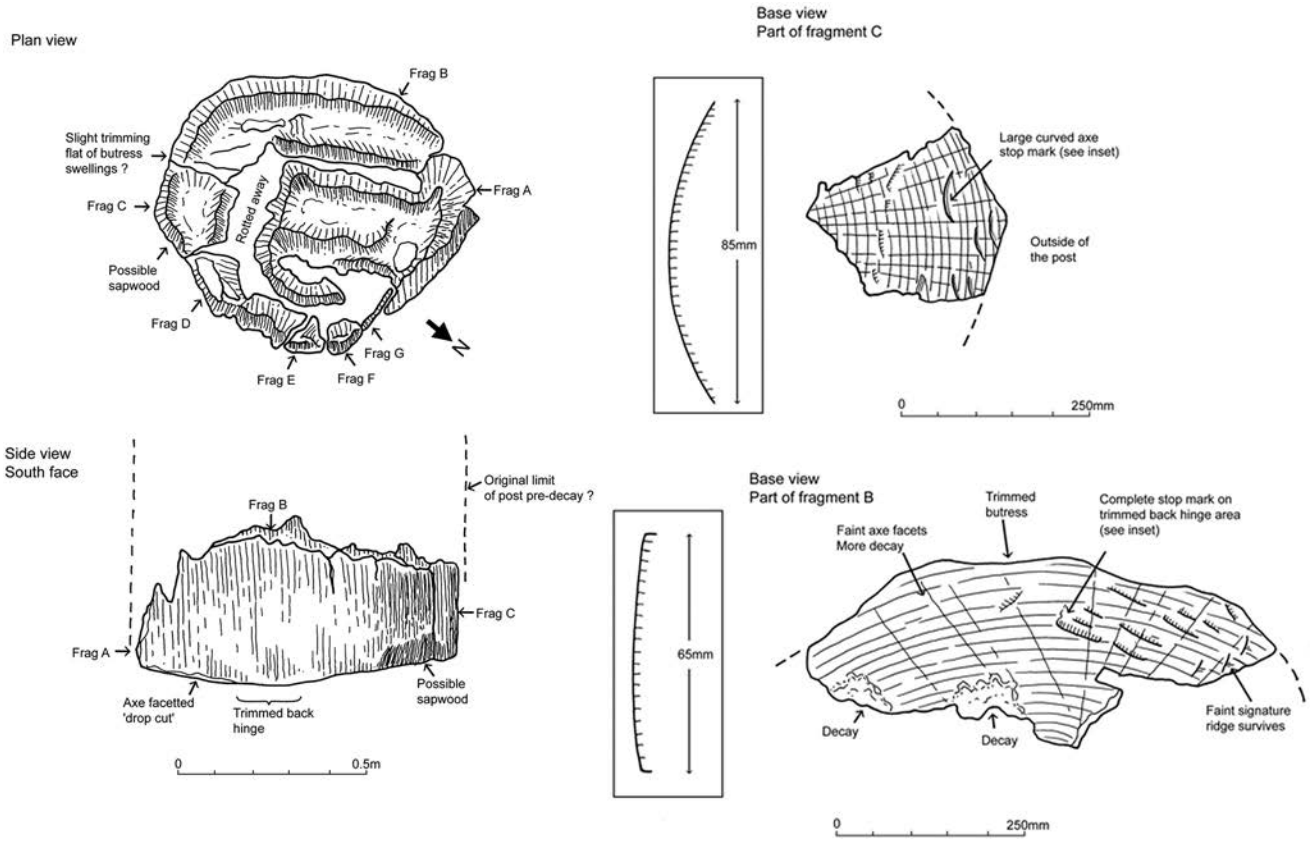


FIGURE 25: Mid to Late Saxon post-base 650

post-pit. Post-base timber 650 occupied the vast majority of post-pit 649 and had a surviving diameter of *c*.0.88m as found, with a height limited by ancient decay of 470mm. Despite the decay many features were still clear in the remaining oak heartwood which was for the most part solid. This timber post-base is the largest in cross-section that this writer has ever seen from a British excavation. Clearly the logistical implications of using timber of this size were considerable (see below).

It can be seen in the side view that the base is characterised by the remains of two flattened surfaces forming a very shallow V-shape that may be the remains of a felling cut or, possibly more likely, a bucking cut. There was also an area where the hinge was cut back as in post-base 619. The side view in Figure 24 shows this clearly. The apex or hinge was neatly trimmed back with an axe presumably to make the post sit more upright in the post-pit. Again one side of the rounded log surface had been cut back and it approached a D-shape in cross-section with the flattened area on the north side which was also worn. No tool marks survived on the sides of the post but in one place sapwood may have originally survived. All the bark had been removed.

On the base of the post, two areas were relatively well preserved (Fig. 25, fragments B and C). Again two distinct forms of axe stop marks survived. Around the edges, associated with the original felling or bucking cuts more worn, deep and strongly curved stop marks 85mm wide were found. Where the hinge area had been cut back, smaller, more straight-edged axe stop marks could be seen, only 65mm wide, with some very faint traces of signature striations surviving here and there. Clearly two axes of markedly different blade size and form had been used for this work. The comparative freshness of the hinge trimming suggests that this was done just before the post was reared whilst the other marks may have been slightly abraded in transit and perhaps by some limited weathering. The narrower, rather square ended, axe marks would again be moderately typical of the Saxon Mortimer Wheeler Type I woodsman's axe but the wider very curved axe stop marks are atypical for the early medieval period. Indeed, the closest parallels can be found in the larger examples of Early Bronze Age axes, which often had very curved blade edges of 80—100mm wide (Sands 1997, 78).

The parent tree for this post timber is difficult to characterise in terms of its growth rate as the rings are distorted by the presence of buttresses. However, it is apparent that the growth rate was also very slow in terms of the annual ring width. Tree-ring and radiocarbon dating samples were taken and although the tree-ring slice sample was from the largest section reaching to the outside of the log, only eighty-two rings could be measured and a mean annual ring width of 1.2mm recorded (Bridge 2009). With such an annual ring width the overall age of the parent tree would have been over 250 years old. The felling date range obtained from the last heartwood rings was *c*.AD 775—965 which including sapwood would have been *c*.10 to perhaps 50 years later.

Post-base timber 669 (Fig. 26)
This oak post-base was set in post-pit 670 on the east side of the 'avenue' type alignments of post-pits running south from the oval arrangement of posts. The post-base survived *c*.0.26m high by 520mm in diameter in one main northern fragment and ten other smaller fragments. It was impossible to reassemble exactly during the detailed recording, but it

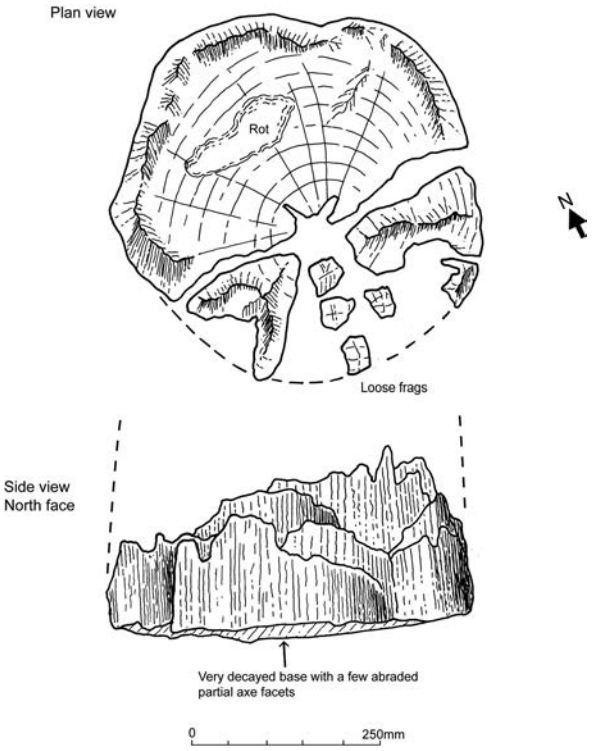


FIGURE 26: Mid to Late Saxon post-base 669

could be seen that there was a small flattened area on the north-west part of the post which may have corresponded to the more obvious flattened sides of the posts described above. When viewed from the best preserved side some indication of a convex bottom to the post can be seen. Very faint, incomplete axe facets survived on the bottom face which was much more decayed than those discussed above. The post was of medium to slow growth rate and had an estimated 150 annual rings which would have been c.180 with the degraded core and missing sapwood.

Tree-ring and radiocarbon dating samples were taken from this post and although the tree-ring sample could not be dated it is noted as having 'complete sapwood' of eighteen rings (Bridge 2009). The radiocarbon dating samples apparently derived from this timber were measured four times to confirm the surprising dating and because sapwood was found in the samples taken. The date range obtained was AD 720—885.

Post-base timber 695 (Fig. 27)
This post-base, from the main oval alignment, proved to be the most decayed; only an ark of heartwood survived about 330mm across and 0.26m high. No tool marks survived. The post-base was set in post-pit 688. One interesting feature was the presence of a large decayed knot on the west side. The slope of the knot indicated that the post had been used the way up it grew, and that it had derived from a second or possibly third log up in a large oak. It is possible that some of the other posts derived from the same large parent tree.

Source woodland
All the four post-bases found were derived from parent oaks that had narrow or very narrow growth rings indicating slow lateral growth. At least one of the post-bases (650) was made

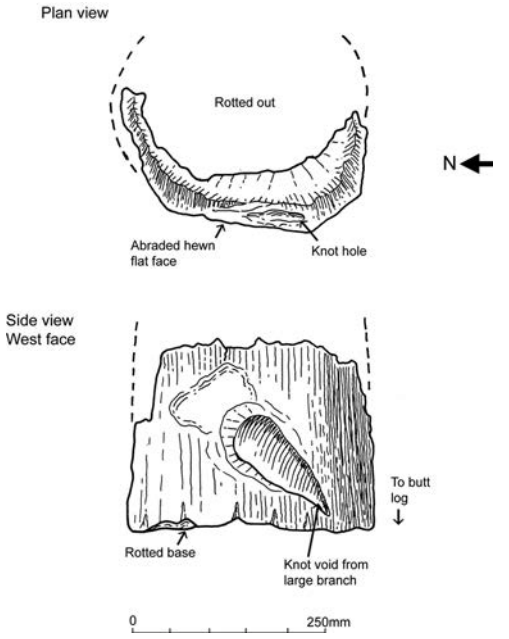


FIGURE 27: Mid to Late Saxon post-base 695

from a slow grown oak log that must have been cut from a parent tree around 250 years old and *c*.1m diameter at chest height. In sum, all the evidence points towards a clear origin for the parent oaks in a tall dark, wildwood-type setting. It is likely that this area of wildwood was located relatively close to the site due to the size of the timber and the difficulty of moving it. It should be remembered that such wildwood oaks could be very tall trees with boles clear of major branches for over 10m (Peterken 1996). This means that the uprights of the Old Hall structure could have been tall if braced together in some way, such as by linking lintel beams.

Logistical considerations for the moving and erecting of the massive oak posts

Should the largest post timber 650 have been *c*.4m long (perhaps 1m in the ground and 3m above) and have been log-shaped above ground, it would have weighed *c*.2.3–2.5 tonnes when freshly cut. This value is calculated using an average green oak heartwood weight of 1.073 tonnes/m3 (Millett and McGrail 1987, 106). However, narrow-ringed oak is less dense than typical medium-growth rate modern British oak but a weight of *c*.2.0 tonnes would still be likely if it was of the size suggested. Clearly if reduced to a smaller hewn cross-section above ground, the overall weight would have been much reduced. Whatever the case, moving the bucked logs from the felling sites would have been a major task probably involving a skid road for the larger examples and at least twenty people, although it may also have employed horses or oxen. Erecting the post in the hole would also have been a labour intensive task probably involving the use of other timbers to guide the heel of the post into the desired place. The building of the Old Hall timber structure clearly represents a substantial communal effort whatever its purpose was in early medieval Essex.

Other finds by J. Compton

Worked stone

Lava quern fragments were found in an area of modern disturbance (433) in Site C, along with post-medieval material. The pieces are very small but may have derived from a millstone, perhaps of medieval date. A small fragment of puddingstone, used during the Iron Age for beehive querns, was recovered from the fill in segment 609 of Middle to Late Saxon ditch 1221.

Brick and tile

Twenty-four contexts produced Roman and post-medieval brick and tile fragments, amounting to a total of eighty-six pieces, weighing 3826g.

More than 70% of the assemblage is Roman and was derived from features and find-spots on Sites A and B, especially from evaluation trenches 12 and 13. Both brick and tegula fragments were noted, but the assemblage is fragmentary and many pieces are undiagnostic. Layer 56 and the top fill of ditch 57 (both trench 12) contained appreciable amounts of brick and tile, but most contexts contained single pieces. The Roman brick and tile fragments are incidental in their contexts; nothing appeared to be *in situ*, for instance, no tile-lined hearths or furnace structures were recorded.

Most of the post-medieval fragments also came from Sites A and B, although pieces of this date were also found in two locations on Site C (modern intrusion 433 and segment 542 of trackway ditch 1224). Possible medieval pieces came from several contexts, mainly on Site B. Those from finds' spot 890 are in a brown sandy fabric reminiscent of Coggeshall Great Bricks. Unfortunately, although the fragments clearly derived from the same brick, its dimensions could not be established.

Animal bone

Animal bone was poorly represented, due to adverse soil conditions. The bone which has survived is either in poor condition, mainly comprising tooth enamel fragments, or is burnt. Five contexts, all on Site C, produced a total of thirty-four fragments, weighing 49g. Sheep/goat humerus fragments came from modern disturbance 433. A cattle molar, probably burnt, and an undiagnostic burnt fragment were found in the fills of Iron Age pit 782 inside the henge. A further burnt fragment was recovered from the fill of segment 1150 across square enclosure ditch 1069. The top fill of pit 1055 in the centre of ring-ditch 1000 produced a number of tooth enamel fragments. These are from a large mammal, probably cattle or horse, but are in too poor a condition for certain identification.

Cremated human bone by Elissa Menzel

A total of 856.9g of burnt bone was recovered from four contexts (30, 31, 89 and 447) originating from two cremation burials 29 and 446.

Cremation 447

A total of 530g of burnt bone was recovered from cremation deposit 447 (Table 3), a truncated, un-urned fill in pit 446 within ring-ditch 565 in Site C. Bone from the burial was subjected to radiocarbon dating which produced a calibrated date range of 1420 to 1130 BC (SUERC-25611).

No repeated elements or osteological inconsistencies were present and this burial is considered to contain a single individual. The fragments of bone appear to be from an adult individual but a more precise age range was unable to be estimated (Schuer and Black 2000). A single fragment of cranium displays male characteristics and two fragments

Context Number	Fragment size (mm)	Weight per skeletal element (grams)					*% of whole assemblage*	Total (grams)
		Skull	Axial	Upper Limb	Lower Limb	Unident		
447	>4	32	6.9	47.3	10.6	165.2	*49.4*	530.3
	>8	39.1		26.8	41.5	4.6	*21.1*	
	>20	37.7	12.8	28.8	36.2		*21.8*	
	>30	6.5		9.7	24.6		*7.7*	
% of identifiable material		*32*	*5.5*	*31.2*	*31.3*			

TABLE 3: Quantification of bone from burial 447

of vertebrae display possible evidence of osteoarthritic degeneration (Buikstra and Ubelaker 1994).

The majority of bone fragments were white in colour with the occasional bluish colour on the interior of the compact bone, indicating an efficient cremation process with pyre temperatures reaching a minimum of 600°C (Holden *et al*. 1995a and b.). The majority of bone (49.4%) came from the less than 4mm fraction with most of the fragments from this fraction unidentifiable due to abrasion. It is likely that the low weight and high fragmentation is due to disturbance of the burial feature. The skull, upper and lower limbs were represented almost equally with the less robust axial skeleton only representing 5.5% of identifiable areas. The largest single fragment was from a fibula and measured 44.6mm in length. Smaller elements of the skeleton, for example tooth roots, were also recovered suggesting en-masse collection, rather than hand selection (McKinley 2006, 29). Although the total weight only represents approximately 33% of the estimated bone for a modern adult cremation (McKinley 1993) the weight compares well to other un-urned Bronze Age assemblages in south east Britain; at Brightlingsea 63% of the burials weighed less than 100g (Garland 2008, 27) and at Westhampnett burials weighed between 450–978 grams (McKinley 2006, 35).

Cremation 31

Cremation pit 29 was found in evaluation trench 1, north of Site B. Cremated deposit 31 was contained within ceramic vessel 32 which is dated to the Early Roman period. The vessel was found in situ but heavily truncated, with bone recovered from the surrounding pit backfill (30 and 89). The total weight of bone retrieved from this burial is 326.6 grams (Table 4).

This burial appears to contain the remains of a single individual, most likely of an adult age (Schuer and Black 2000). Sex estimation was not possible due to the fragmentary nature of the remains and no pathological lesions were observed.

The bone from this cremation was white with minimal bluish colouring, indicative of an efficient cremation process (Holden *et al*. 1995a and b). The less than 4mm fraction contained the majority of bone (40.2%) with most of it unidentifiable due to fragmentation. However, 66% of the total fragments present were identifiable to skeletal area. The upper and lower limbs were the most represented areas with the less robust axial skeleton only representing 1.8% of identifiable areas. The skull typically has a high representation due to its distinctive nature; however, its low presence here may be due to the disturbed nature of the cremation. Although the burial was disturbed, the fact that it was contained within a vessel may explain why nearly 60% of the recovered bone is greater than 8mm in size. The largest single fragment was from a humerus and measured 72.45mm in length. Smaller elements of the skeleton, for example tooth roots and bones of the hands and feet, were not present. This, and the majority of large fragment sizes, may suggest hand selection rather en-masse collection (McKinley 2006, 29). The total weight of this burial only represents approximately 20% of the estimated bone for a modern adult cremation (McKinley 1993). This weight is low even compared to the average of 796g of bone present in other disturbed Roman cremation burials across Essex (McKinley 2007), further emphasising the extent of disturbance.

Scientific dating by J. Meadows

Four samples were submitted for radiocarbon dating: a piece of cremated human long bone from cremation burial 447, and the latest surviving tree-rings of timber posts 619, 650 and 669 from post-pits 612, 649 and 670 respectively (Table 5). Attempts to cross-match and date the timber posts by dendrochronology proved unsuccessful, partly due to the posts

Context Number	Fragment size (mm)	Weight per skeletal element (grams)					*% of whole assemblage*	Total (grams)
		Skull	Axial	Upper Limb	Lower Limb	Unident		
30, 31, 89	>4	5.7	3.8	12.2	19.2	90.5	*40.2*	326.6
	>8	4.6		19.5	32.5	15.3	*22.0*	
	>20			30.7	21.9	6.7	*18.2*	
	>30			53.5	10.5		*19.6*	
% of identifiable material		*4.8*	*1.8*	*54.1*	*39.3*			

TABLE 4: Quantification of bone from burial 31

Laboratory code	Sample	Identification	δ13C (‰)	Radiocarbon age (BP)	Calibrated date (95% confidence)
SUERC-25611	Cremation burial 447	Cremated human long bone	–21.7	3045 ±40	1420–1130 cal BC
SUERC-25809	Post 669 years 83–92	Wood, oak sapwood	–26.5	1185 ±40	cal AD 720–885
SUERC-26230			–26.5	1220 ±30	
SUERC-26231			–26.8	1220 ±30	
SUERC-26229			–27.2	1220 ±30	
Weighted mean of post 669 results: T'=0.6, T'(5%)=7.8, ν=3				1215 ±16	
OxA-22156	Post 619 years 93–102	Wood, oak heartwood	–26.7	1659 ±27	cal AD 260–430
OxA-22157	Post 650 years 73–82	Wood, oak heartwood	–24.5	1166 ±24	cal AD 775–965

TABLE 5: Radiocarbon dating

being in a poor state of preservation and having insufficient sapwood. The resulting dates (Table 5) proved to be somewhat surprising, since the setting and form of the posts suggested them to be considerably older.

All the samples were dated by Accelerator Mass Spectrometry (AMS) radiocarbon dating. Those measured at the Scottish Universities Environmental Research Centre in East Kilbride (SUERC) were processed according to Lanting *et al*. (2001), Vandeputte *et al*. (1996), Slota *et al*. (1987), and Xu *et al*. (2004). Samples measured at the Oxford Radiocarbon Accelerator Unit (OxA) were dated following Bronk Ramsey *et al*. (2002; 2004). Internal quality assurance procedures and international inter-comparisons (Scott 2003; Naysmith *et al*. 2007) indicate no laboratory offsets, and validate the measurement precision given.

The results reported are conventional radiocarbon ages (Stuiver and Polach 1977), quoted according to the format known as the Trondheim Convention (Stuiver and Kra 1986). The calibrated date ranges have been calculated by the maximum intercept method (Stuiver and Reimer 1986), using the program OxCal v4.1.0 (Bronk Ramsey 1995; 1998; 2001; 2009) and the IntCal09 data set (Reimer *et al*. 2009), and are quoted in the form recommended by Mook (1986), rounded outwards to decadal endpoints, or to five years if the radiocarbon age error is smaller than ±25.

The felling dates of posts 619 and 650 cannot be precisely determined from the radiocarbon measurements, although both must be more recent than indicated in the table by a *minimum* of *c*.10–55 years, which is the estimated number of sapwood rings lost. The *maximum* wood-age offset applicable to these samples is more difficult to estimate because whereas post 665 might be easily contemporary with post 669, post 619 must be significantly earlier, unless it has an intrinsic age of 400 to 600 years. A wood-age offset of that magnitude appears unrealistic, even for oak.

DISCUSSION

The archaeological investigation of the reservoir scheme at Old Hall, Boreham, has revealed remains covering a period of some six thousand years. They date from the Late Mesolithic/Early Neolithic to the present and consequently offer many insights into the origins, development, exploitation, management and settlement of the mid Chelmer Valley, complementing and supplementing many of the insights previously presented by Brown (2001b). Collectively, the major features of Sites A to C are a good example of a steadily evolving landscape and of how man-made and natural topographical features have been appropriated and re-used through time. Various topographical features were invested with meaning and used as reference points for human attachment (Tilley 1994, 17–26), making the recorded remains, those of the prehistoric monuments in particular, more thoroughly understood when seen in that context.

Significant factors in people being attracted to the lower valley slope and floor of the Site C section of the mid-Chelmer Valley during the past were probably initially its natural resources, the presence of a river crossing and its marginality. Another factor may have been a 'sense of place', brought about by fascination of its natural features, examples of which may have included the overlooking presence of the Danbury/Little Baddow ridge to the south, the babbling confluence of the River Chelmer and the Boreham and Sandon Brooks, and the distinctive, elongated, arena-like form of the central section of the mid-Chelmer Valley between Boreham and Springfield Lyons. The valley floor itself can be suggested to have been noted for its marginality, being positioned alongside a natural boundary formed by a river, an area susceptible to mistiness, bogginess and occasional flooding; an unattractive place to live, but perhaps an appropriate place for the dead and the spirits?

In due course, it seems almost inevitable that partly because of such aforementioned reasons, the mid-Chelmer Valley would come to be used as a place for undertaking of religious activity and building of monuments, thereby perhaps partly explaining construction of Springfield Lyons causewayed enclosure and Springfield cursus to the west (Buckley *et al*. 2001; Brown and Medlycott 2013). If both of these monuments retained import after they went out of use, which seems probable, then they probably served as an added inducement to use the mid-Chelmer Valley as a site for a henge.

By contrast to the valley slopes and floor, the high ground away from and overlooking Site C appears to have been predominantly used for occupation and farming; the evidence for which includes the undated trackway and enclosures in Site A, and the Saxon and medieval phases of enclosures within Site B, with hints of an earlier period of land-use perhaps being represented by Roman cremation burial 29 in evaluation trench 1 and early Roman ditch 45 in trench 13. Clear indications of settlement use comprise undated structures 247 and 1208 in, and immediately south of, Site A, and possible

burnt timber-framed structure 1244 in Site B. The multi-period farming and occupation remains of Site B are suggested to have been fairly extensive and to have included elements of nearby cropmark complex C6. Land-use of the upper slopes for occupation and farming is probably due to better drainage and lighter soils, although positioning above a probable river crossing to the south-west, and close access to the major Roman thoroughfare of the London to Colchester Road to the north were no doubt influential as well. Two other important factors were probably close proximity to the riparian resources of the river and spring to autumn-time use of the valley floor as a place to graze livestock. The prehistoric pits and Late Mesolithic/Early Neolithic and Late Neolithic/Early Bronze Age artefacts of Site A and the small quantity of prehistoric struck flint from Site B can be suggested to represent sites of encampment, related to recurring but brief episodes of use of the adjacent valley floor, initially for its natural resources, but later on for its monuments.

Late Mesolithic/Early Neolithic

The earliest indications of human activity in this part of the Chelmer Valley, as represented in the recorded remains of Sites A to C, is that of intermittent, probably seasonal, occupation by semi-nomadic hunter-gatherers and subsistence cultivators as implied by the Late Mesolithic/Early Neolithic tree-throw, pits and widespread scatter of worked flint debitage. Most of the Late Mesolithic/Early Neolithic remains lie within the valley floor in Site C, although some also occur higher in Sites A and B; probably indicating that much of this earliest activity took place close to the river.

A dense wildwood of mainly deciduous trees covered much of southern Britain during the Late Mesolithic/Early Neolithic period (Rackham 1986, 68–73). Such a landscape would have offered few open vistas, and its navigation was likely facilitated by a detailed knowledge of watercourses and paths and by referring to distinctive topographical features, such as upturned tree boles of large fallen trees (Evans *et al*. 1999, 242), a Late Mesolithic/Early Neolithic example of which is probably represented by tree-throw 1165. Accordingly, it is suggested that the adjacent confluence was used as an easily identifiable reference point in a network of watercourses and paths and that the natural resources (e.g. fish, wild fowl, reeds etc.) of the river and its valley were exploited by individuals and groups moving up and down it. No doubt regular and prolonged use of the confluence led to it becoming invested with meaning (beliefs, traditions, pathways and practices), some of which may have continued, in one form or another, into the Late Neolithic period and beyond.

One activity on the valley floor was apparently the sourcing of flint nodules and manufacture of flint tools for use elsewhere, as suggested by flakes, blades, chippings and core debitage within the palaeosol – a remnant of the original topsoil of the floodplain. The flints derive from river gravel, probably sourced from the bed of the Chelmer or from its banks or eyots. This tool-making, along with the digging of pits, suggests at least a degree of encampment amongst the trees on the valley floor and lower slope. While it is often posited that tree-throws were perhaps used as temporary shelters and working areas, the lithic material found in tree-throw 1165 was perhaps instead deliberately deposited as a ritual act of clearance, to symbolically return the site to its previous unsullied state after a period of use (after Evans *et al*. 1999, 249). The Late Mesolithic/Early Neolithic finds in pits 805 and 807 may also have been deposited in a similar fashion. However, if symbolic cleansing of the valley floor landscape was taking place then it was either very infrequent or highly tokenistic, as most of the Late Mesolithic/Early Neolithic artefacts were evidently ending up as surface finds in the topsoil, with some of these subsequently finding their way into later features – perhaps sometimes the result of deliberate deposition as evidenced by the large number of Late Mesolithic/Early Neolithic worked flint in Iron Age pit 782, inside the henge.

Exploitation and occupation activity at Old Hall reflects the high probability that hunter-gatherers and subsistence-level early farmers were moving between various sites along the entirety of the river valley. Concentrations of Late Mesolithic/Early Neolithic worked flint have been found elsewhere at Great Baddow, at Chelmsford and on various sites within the Blackwater Estuary (Jacobi 1980, 14–25; Wilkinson and Murphy 1995, 67–9; Wickenden 1992, 16–17). The material at Chelmsford was located near the confluence of the rivers Can and Chelmer and is perhaps further evidence for hunter gatherers and early farmers finding such places attractive. Wilkinson and Murphy have postulated that the Blackwater Estuary sites were used by hunter gatherers moving between seasonally occupied home bases and temporary sites in specific resource areas, and by early farmers growing crops in small clearings (1995, 212–16). It is suggested that the Old Hall vicinity was used in a similar fashion, it being a recognised and valued resource area; a place to obtain riparian flora and fauna, and river gravels for flint tool making.

Late Neolithic to Middle Bronze Age

The Late Neolithic to Middle Bronze Age period was a time of increasing sedentism, during which Neolithic monuments were outmoded by barrows, and people started to live all-year round in permanent settlements, probably beginning from the start of the Early to Middle Bronze Age period onwards (Bradley 1998, 147–8). By the time this began to take place, much of the Late Mesolithic/Early Neolithic wildwood, including perhaps the trees of Sites A to C, is likely to have been cleared and to have been replaced by wood pasture and small areas of settlement and cultivation. Accordingly, it is suggested that the occupants of the mid Chelmer Valley at the beginning of this transitional period were pastoralists shifting between areas of grassland for the grazing of livestock, but by the end of it were mixed-economy farmers living in all-year-round permanent farms and farmsteads. A significant feature of this process of change is likely to have comprised a shift from communal to private/personal holding of land, much of the evidence for which, in the corpus of archaeological work for Essex, is in the form of increasing amounts of land enclosure by ditches, probably from the Early/Middle Bronze Age period onwards. Related aspects of that process of change were probably the conspicuous displaying of wealth, power and their own sense of heritage and entitlement by landed local elites. This may have been partly expressed by appropriation of earlier monuments and building of barrows.

Developing use and occupation of the mid Chelmer Valley from the Late Mesolithic/Early Neolithic period onwards is likely to have led to increasing amounts of human attachment

to many of its more memorable man-made and natural features, causing those features over time to become replete with meaning and cultural significance. Development of a network of paths and trackways took place almost certainly alongside this, with the routes of that network being navigated through use of stories and visual and mental referencing of distinctive and meaningful landmarks, examples of which may have included the henge and the confluence.

The small amounts of Grooved Ware, Late Neolithic/Early Bronze Age pit 27, and discrete features 143, 155, 200, 362 and 381, which may have been in use during the Late Neolithic/Early Bronze Age period but contained too few finds to confirm it, in Site A, are small in number but are nevertheless interpreted to represent a place of Late Neolithic/Early Bronze Age domestic activity on the upper valley side; perhaps a site of short-term small scale settlement or repeated encampment that may have been used by people building and using the henge and/or barrows within the valley below. The form and full extent of the settlement are not known, although it's positioning on the high ground of the valley is probably intentional, firstly to take advantage of that area's better drained soils, and secondly to enable it to be used as a vantage point. Additional reasons were perhaps simple aesthetics, overseeing of the henge and its use, and monitoring of the valley floor as a place to graze valuable livestock. Regular grazing of the henge and the valley floor were probably a necessity as it was the quickest and easiest way of preventing those areas reverting to scrub.

The siting of the henge monument within a former area of Late Mesolithic/Early Neolithic activity on the valley floor is perhaps an indication that the adjacent confluence had been maintained or re-claimed as a river crossing, and that people were still drawn to it because they found it attractive and useful.

Minimal information can be obtained from the henge concerning its form and function as it is poorly defined, missing its external bank, un-associated with datable Late Neolithic features and finds, and conspicuously devoid of any material likely to constitute a 'placed deposit'. Radiocarbon dates suggest that most 'classic' henges, as opposed to earlier transitional/formative types, were constructed between 2800 and 2100 BC (Harding 2003, 12–15). Archaeological excavations of other henges within Eastern England have taken place at Etton in Cambridgeshire, Arminghall in Norfolk and Lawford in Essex (French and Pryor 2005; Clark 1936; Shennan *et al*. 1985), although the number of identified examples continues to remain low. One of two possible reasons for this is that the cropmarks of the monuments are often difficult to distinguish from those of other types of prehistoric monument and medieval windmills (Harding and Lee 1987; Brown and Germany 2002; Ingle and Saunders 2011, 30). It is also worth mentioning that most of the region's henges have lost one of their main distinguishing features, their outside perimeter bank, due to having been intensively ploughed.

Henges are generally regarded to have been used as centres for religious and ritual activity because of their consistent design (a common feature of places of worship), the general absence of everyday domestic rubbish in their interiors and ditches, and a frequent close association with ritual deposits (Harding 2003, 23 and 36). Two of these defining characteristics are evident in the Boreham example, as it displays the opposed entranceways of a 'classic' type II henge, and has no immediate association with contemporary domestic activity – the nearest known Late Neolithic/Bronze Age settlement site being over 400m distant up the valley side. Most prehistoric mortuary monuments are believed to have lain separate from settlement, as a means of emphasising their liminality, otherworldliness and specialness of associated rites, and of making the trip to get to them a meaningful part of their overall use (Barnatt 1998, 96; Loveday 1998). The Boreham henge appears to be un-associated with Late Neolithic ritual deposits, although it must be conceded that such material could have been present in the unexcavated parts of the henge ditch.

The River Chelmer probably played a significant role in the use of the henge as its close proximity to the monument is unlikely to be incidental. Henges are often sited close to water courses (Harding and Lee 1987, 34), although seldom so closely as the one at Boreham. It is possible that they were integrated with Late Neolithic lines of communication and movement, as rivers have long been regarded as potent metaphors for movement and journeys (Harding 2003, 97). Also, rivers and other sources of water were often associated with supernatural forces and/or used for depositing or sacrificing special items (Harding 2003, 56). In either case, the opposing openings of the Boreham henge would appear significant, as they possibly represent an entranceway and an exit, and therefore a prescribed direction of movement, perhaps even amounting to a processional route. It may be speculated that the users of the monument entered via the north opening, undertook ceremonies in the centre, and then used the south opening to depart and/or deposit special items in the river. That said, it must be pointed out that no recognised ritually deposited items have yet been found in the river.

It is very likely that the mid Chelmer Valley was a major focal point of human activity during the Late Neolithic because in addition to the henge monument it also contains Springfield Cursus, Springfield Lyons causewayed enclosure and a possible long barrow/mortuary enclosure (Buckley *et al*. 2001; Brown and Medlycott 2013). This importance is perhaps not unexpected as it contains the riparian environment of the River Chelmer, and facilitates access to the estuarine and coastal environment of the Blackwater Estuary and the terrestrial environment of the 'clay lands' of south and north-west Essex, making it centrally located and therefore within easy reach of a wide variety of different resources (Brown 2001b).

The construction of the Neolithic monuments of the mid Chelmer Valley, including the henge at Old Hall, probably occurred during a period of expanding local population and to have taken place alongside continuing development of the surrounding area for occupation and farming. The local people are likely to have been socially cohesive and communally minded as they presumably provided most, if not all, of the labour.

The duration of the use of the henge for its original intended purpose is not known, although subsequent structures and pits and their contents demonstrate it to have been reinterpreted and occasionally reused by later generations, although probably not for its original purpose. Barrow ring-ditches 374, 565 and 760, Iron Age pits 782 and 809 and burnt flint pits 719, 978 and 782 constitute the earlier indicators

for its reuse. In the case of the barrows, it may have been so that, in locating them within its proximity, their constructors were referencing the henge in order to claim and assert it to be a significant part of their heritage, an assertion of their perceived legitimate rights to the holding of land and power. Fascination with the henge may also have resulted in it being identified with supernatural properties, leading to it being reused during the Late Neolithic/Early Bronze Age to Iron Age periods as a focal point for acts of religious belief. Iron Age pits 782 and 809 and probably later prehistoric burnt flint pits 719, 978 and 782 likely relate to casual visitation and undertaking of small acts within and around the henge, not all of which may have been religiously significant. The large quantity of burnt and residual Late Mesolithic/Early Neolithic worked flints in Iron Age pit 782 perhaps imply collecting, recycling, and storing of found items for later reuse and/or cleansing of the henge surface in order to keep it unsullied and spiritually clean, an indication of it being venerated during that period. Evidence for subsequent use of the henge to make offerings is probably restricted to Iron Age pit 809 in the north-west corner of the monument, the contents of which included a probably covetable, if not necessarily still usable, Late Neolithic/Early Bronze Age polished-edge flint knife.

In the Early and Middle Bronze Age, monument construction takes the form of round barrows located on the lower valley slope, as represented by ring-ditches 374, 565, 760 and 1000. In contrast to the henge, which is suggested to be a place of worship and congregation for a widespread community, these are remnants of funerary monuments for local elites; by definition an exclusive sector of their society. The introduction of these monuments marks a change in the use of this part of the valley landscape, though still related to the preceding period of monument building, representing a transitional period during which 'communal' monuments like henges were outmoded by 'private' ones such as barrows, and open-landscape pastoralism was slowly superseded by sedentism and farming of enclosed landscapes. These changes in practice and in relationships with monuments make it likely that the henge was no longer in use when the barrows were built, although its earthworks were probably still extant and appreciated as a culturally significant feature of the landscape. The positioning of barrows 374, 565 and 760 clearly demonstrate referencing of, and perhaps deference towards, the relict remains of the henge as they form an arc around one of its sides, and ring-ditch 565 is clearly located on the extended line of the monument's axis. It is probable that the barrows constitute a dynastic burial ground, constructed by people who were appropriating and using the heritage of the henge to legitimise land ownership and to further aggrandise themselves and their house or clan. The reuse of the henge as a focal point for funerary monuments possibly implies that it was misinterpreted as an earlier barrow, although it might have been the case that the builders of the ring-ditches simply identified it as a special place, a site of obvious antiquity which, regardless of its original function, they invested with religious significance and appropriated it to meet their own needs.

The Old Hall ring-ditches, and those of the ring-ditch cropmark survey, complement an existing body of excavated examples from sites elsewhere within the mid Chelmer Valley/Blackwater Estuary (Buckley *et al*. 2001, figs 9 and 17; Germany 2003, figs 7 and 9; Archer and Clarke 2005, 189–90; Atkinson and Preston 2001, fig. 7; Bennett and Gilman 1996, 268–9; Roy and Heppell 2015). The ring-ditches of this collected body of information vary in their diameter, circularity, form, width and depth of ditches, and presence or absence of grave pits. It seems probable that this variation was further increased by numerous different arrangements of associated mounds, banks and timber structures, such as the central post in ring-ditch 374. This variation may suggest that the form of barrows was not strongly controlled or dictated and that barrows were often subject to reuse and amendment and/or had complex histories of construction and use (Woodward 2000). Further illustration of how prehistoric barrows could vary in their details is presented by the results of the archaeological excavation of Langford Reservoir, further down the Chelmer Valley, towards Maldon and Heybridge (Roy and Heppell 2015).

Use of barrows was almost certainly restricted to local elites, as the estimated 200 barrows thought to have originally been present within the 64km2 area of the cropmark ring-ditch survey is greatly insufficient to account for all of the people who lived and died in that area over the *c*.700 to 800 years of the Late Neolithic/Early Bronze Age to Middle Bronze Age period, even if it is assumed that each barrow, including satellite burials, represents the burial ground of as many as ten people. Few examples of Late Neolithic to Middle Bronze Age burials lying separate from barrows have been found in the region, and it may be the case that the bodies of the non-elite members of that period were scattered or thrown into rivers after being rested, de-fleshed or cremated. Barrows referencing earlier monuments as at Old Hall are further demonstrated by cropmark survey ring-ditches 1 to 7, all seven of which lie in close proximity to Springfield Cursus, highlighting the continuing importance of that monument as an apparent focus of cultural significance into the Late Neolithic/Early Bronze Age period.

Late Bronze Age to Roman

The Late Neolithic to Middle Bronze Age monuments probably remained conspicuous in the landscape and continued to be culturally significant during the Late Bronze Age to Late Iron Age, and possibly Roman, periods. This is evidenced by the incidence of Middle Iron Age ring-ditch 541, possible square barrow or enclosure 1069, Iron Age and Roman pits 782, 809 and 1157, and general prehistoric burnt flint pits 435, 453, 469, 566, 719, 782 and 978, all lying within the vicinity of earlier monuments, suggesting a continuing relationship. Settlement activity again appears to be located higher on the valley slope, beyond the excavated areas, as suggested by the early Roman cremation burial 29 and ditch 45 in evaluation trenches 1 and 13 and residual Late Bronze Age pottery and Roman tile from the northerly Sites A and B. Farms, 'villages' and associated field systems probably dotted the landscape of the mid Chelmer Valley and adjacent areas during these periods, good examples of which include the Late Bronze Age Springfield enclosed settlement at Springfield Lyons, the Middle Iron Age 'village' at Little Waltham, and the Roman timber villa at Great Holts Farm, Boreham (Buckley and Hedges 1987; Drury 1978; Germany 2003). Environmental remains from a sediment sequence taken from the Sandon Brook during construction of the A12 Chelmsford Bypass suggest that the much of the landscape during the Late

Iron Age to Saxon periods included cereal cultivation and remained largely open (Murphy 1996).

Middle Iron Age barrow ring-ditch 541, occupied by grave pit 502 dating to the 4th century BC, constitutes the ongoing appropriation and reuse of the monumental landscape of the lower valley. Clear examples of Middle Iron Age barrows are very rare, possibly due to excarnation and/or disposal of corpses in rivers perhaps having been the predominant burial practices during the Late Bronze Age to Middle Iron Age periods (Woodward 2000, 54). By form, size and content, barrow ring-ditch 541 is closely paralleled by a Middle Iron Age barrow at Bromfield in Shropshire, which upon excavation was found to contain an iron brooch, an iron penannular bracelet and a bronze pendant (Hughes 1994). It is suggested that the construction of the Old Hall, Boreham example represents an act of individualism, the earthwork being a conscious imitation of the Late Neolithic to Middle Bronze Age barrows 374, 565, 760 and 1000, all three of which are very likely to have been still extant as earthworks during the Iron Age. As with the preceding Late Neolithic to Middle Bronze Age ring-ditches, it is suggested that its builders were appropriating the heritage of earlier monuments in order to aggrandise themselves and to construct or reinforce their claim to control of the surrounding area through expression of an association with 'ancestors'.

Square enclosure ditch 1069 is poorly dated, but is nevertheless conjectured to be another example of a funerary monument, this time inserted into the valley probably in the Early to Middle Iron Age. Archaeological excavations at St Osyth and Mucking in Essex (Germany 2007, 33–5; Clark 1993, sheet 14), Brandon in Suffolk (Gibson 2004, 23–5) and Maxey in Cambridgeshire (French and Pryor 1985, 73–7 and 260) have produced similar examples, although some of these have proven difficult to date, and all have proven difficult to interpret. The datable ones were found at Maxey and Mucking and were probably in use during the Early Iron Age period and the 1st century BC respectively. It is noted that a small square enclosure, similar to 1069, over or underlies mid Chelmer Valley cropmark ring-ditch site 60 (Fig. 19), and possibly implies that square enclosures or barrows were not so unusual occurrences within the area of the mid Chelmer Valley. Eastern Yorkshire contains numerous examples of square barrows, which look superficially similar to small square-ditched enclosures, although these occur in large cemeteries and are part of a tradition that was probably unique to that area (Woodward 2000, 45–7). Small, singly-occurring square enclosure ditches, like 1069, can be conjectured to be Early to Middle Iron Age mortuary enclosures, where bodies were left for defleshing. Post-holes occur in some of the quoted examples and it is possible that these indicate the presence of scaffolds or platforms, where bodies were held above ground level, in order to minimise the impact of animal scavenging (after Carr and Knüsel 1997; and Taylor 1997, 196).

Saxon

The western edge of nearby Early Saxon settlement on or above the north side of the valley is possibly indicated by the incidence of late 5th/early 6th century features and finds on Sites A and B. The relationship between this settlement activity and the previous Roman activity is not known, though the same preference for location on the upper valley slope is noteworthy. Within Site C, pits 1007, 1017 and 1055, associated with Bronze Age barrow 1000, are posited to be Early Saxon inhumation graves, but have produced no bones or grave goods to confirm this. Earlier sites, and particularly prehistoric monuments, were often reused as burial sites during the Early Saxon period (Williams 1998, 92–6; Taylor 2001, 158) and it is possible that the Early Saxons were engaging in a symbolic relationship with the ancient past (Williams 1998, 97). Reuse of prehistoric monuments, including barrows, as locations for human interment was not uncommon during the Early Saxon period and was probably carried out for a variety of reasons, including evocation and expression of local authority and identity, and creation of a 'sense of place' (Semple 2013, 7). A notable and nearby demonstration of this is the siting of the Early Saxon cemetery within the Late Bronze Age enclosure at Springfield Lyons (Tyler and Major 2005). Early Saxon graves often lie in radial or fan-shaped arrangements around prehistoric circular monuments (Williams 1998, 97), and the arrangement of possible grave pits 1007, 1017 and 1055 in relation to ring-ditch 1000 is perhaps a further example. An alternative explanation is that the posited grave pits are not Saxon but Roman, since their arrangement partly resembles a lineal array of Roman inhumations overlying one of the Bronze Age barrows at Ardleigh (Brown 1999, 36–7).

The Middle to Late Saxon timbers and post-holes in the south-western part of Site C are tentatively suggested to be the landward end of a river-related structure, perhaps a bridge across the River Chelmer. The part of the structure that they represent probably stood on an area of sometimes dry ground as the surviving timbers are posts, not piles. If similar to the 11th and early 12th century bridges at Hemington Quarry in Leicestershire (Ripper and Cooper 2009) then the structure's central span to the south was either supported by a combination of large, stone-filled, lozenge-shaped timber boxes and mid-pier-support timber trestles, or a double row of irregularly-spaced oak piles with lateral bracing. The latter seems the more likely and it may be that the parallel lines of post-holes continued southwards as parallel lines of piles. If so constructed, then the structure's overall appearance may have been somewhat ramshackle, perhaps implying that in that particular case cost, utility and expediency were of greater concern than overall form and appearance. A big increase in the number of bridges being built nationally took place during the 9th to 11th centuries (Harrison 2004, 32–6 and 102) and it is possible that the posited Boreham example was part of that process.

Alternative explanations for the timbers and the other related post-holes are that they are remnants of a quay, causeway, jetty or fish traps. Within Essex, archaeological investigations of Saxon, water-related, timber structures have taken place at Mersea Island, and at Collins Creek, Pewett Island and The Nass within the Blackwater Estuary. The timbers of Mersea Island consisted of parallel rows of numerous small piles with pointed basal ends and were probably part of a causeway, linking Mersea Island to the mainland (Crummy *et al*. 1982). The individual timbers of the Blackwater Estuary are similar in size and form to those of Mersea Island, but are nonetheless remnants of fish traps, originally consisting of very large, V-shaped arrangements of numerous, closely-spaced piles, supporting barriers consisting of hurdles (Heppell 2011).

Saxon structures with posts and post-holes more akin to those of the timber structure of Site C, Old Hall, Boreham,

include large timber halls, good examples of which form part of the 7th/8th century royal complex at Yeavering in Northumberland, where some of the post-holes are up to 2m deep (Hope-Taylor 1977). If the Saxon post-holes of Old Hall represent one or more timber buildings then their related building or buildings must have been water-related, because of the site's proximity to the river, suggesting that they might have been part of mill.

Regardless of function, the building of the structure evidently included the obtaining, shifting, working and erection of very large timbers, making it likely that it also involved communal effort by a large group of organised people, probably assisted by horses or oxen. The timbers derive from slow grown oak trees from within an area of wildwood and are suggested to have been locally sourced due to the difficulty in transporting large timbers. Most of the surviving timbers each have a slightly worn side making it probable that the larger timbers were not brought to the site in wagons or carts but were dragged by teams of men, horses and oxen, the undertaking of which would likely have been facilitated by use of a purpose-built skid track. The appearance of the surviving timbers is crude, although the upper reaches of them above ground level may have had hewn cross-sections, making them more slender in appearance and easier to work with.

The siting of this Saxon structure is a clear indication that the henge was still a recognisable earthwork at the time of its construction. It is tentatively suggested that it made use of an earlier and long-lived crossing point, one that may have stemmed as far back as the earliest exploitation of the valley in the Late Mesolithic/Early Neolithic period. Similarly, the trackway leading to the posited bridge can be suggested to have followed the course of an earlier, perhaps processional prehistoric, route leading to the henge since the end of the Saxon structure clearly references and makes use of the monument's south entranceway.

The construction of the timber structure is likely to have been a moderately large undertaking and to have been initiated and funded by one or more people in positions of power. If that is correct then the decision to route it through the middle of the henge and the surrounding monument complex can be viewed as an assertion of secular power by a local elite, an illustration of how, by the Mid to Late Saxon period, reverence for ancient monuments had begun to diminish. Other acknowledged uses of prehistoric monuments during that period were largely secular and included those of meeting points, boundary markers and places of execution (Semple 2013).

A belief amongst the Middle and Late Saxons (in contrast to the Early Saxons) that prehistoric barrows were places of malign supernatural forces (Semple 1998 and 2013; Williams 1998, 97–8) is more likely to have been superstition than hard conviction as it does not appear have deterred them from utilising the central component of the relict monument complex. The intrusion of the posited bridge into the remnant ancient landscape is a clear manifestation of how, during the Mid to Late Saxon period, reverence and mythic investment in ancient monuments had begun to breakdown following widespread acceptance of Christianity (Semple 2013, 237).

The two phases of Middle to Late Saxon or medieval ditches suggest that tighter control and a sub-division of the lower valley slopes and floor for encroaching agriculture first took place during this period (Fig. 16). The ditched trackway of the second phase of ditches heads towards the river and overlies the remains of the bridge, possibly implying that the first bridge was subsequently replaced by a second. Barrow remains 565 is clearly referenced by ditches 1218 and 1219 and was probably still extant as an earthwork when they were laid out. According to the results of the cropmark ring-ditch survey, examples of ditches with relationships with barrows are quite common (Figs 18 and 19, cropmark ring-ditches 17, 20, 25, 34, 36, 41, 43 and 55). Use of barrows as boundary and territorial markers probably took place from the moment they were first introduced into the landscape. It may have been a recognised secondary function, but was perhaps not emphasised by accompanying man-made linear features such as hedges, trackways and ditches until the Late Saxon period, as perhaps implied by Late Saxon charter bounds (Semple 2013, 13 and appendix 4).

Medieval, post-medieval and modern

The settlement pattern of Boreham during the medieval period would have been typical of most of Essex, in that it would have composed dispersed polyfocal settlement, much of which would have consisted of manors and rented holdings. It is probable that the 13th/14th-century remains of Site B are remnants of a rented farmstead tenement belonging to one of the local manors, three of the candidates for which comprise Culverts Farm to the north, Old Hall to the north-west and Boreham Hall to the west (Fig. 1). Culverts Farm lies closest, although this does not necessarily imply that Site B had been part of its estate. Archaeological excavations carried out elsewhere within the parish have revealed further elements of its medieval polyfocal settlement pattern. Their findings include a solitary early medieval long-house at Great Holts Farm, a 12th/13th-century windmill in a moated enclosure at Bulls Lodge Quarry, medieval house plots alongside the B1137 and a 13th-century farmstead holding near the Boreham Interchange (Germany 2003; Clarke 2003; Foreman 1997; Lavender 1999).

The alluvium that covers a large part of the valley floor is the product of an increase in the rate of water and fine sediment being discharged into the river, probably brought about by woodland clearance, large-scale conversion of pasture to arable, and an increase in the amount of artificial drainage issuing into the Chelmer. It overlies some of the Saxon or later ditches and two small sherds of medieval pottery have been retrieved from it; it is therefore likely to have been deposited during the medieval period or later and is presumably the product of the encroachment of arable agriculture down the lower slopes of the valley. This change in land-use is likely to have been widespread as alluvial deposits of medieval date have also been found alongside the river at Little Waltham and in the middle of Chelmsford (Drury 1978, 50–1; Wickenden 1992, 1, 10 and 141).

Most of the post-medieval and modern ditches on the valley side are recorded on the first four editions of the Ordnance Survey and are former field boundaries and drains that have been removed within the last fifty years to make the fields more suitable for mechanised agriculture. The relationship between the Saxon or later ditches and the post-medieval/modern field system is not clear, but it seems unlikely that one developed from the other. Within this agricultural landscape, the only significant features comprise the coal wharf compound located

next to the present-day bridge, and its ditched trackway extending away up the valley side. Although for a different purpose and a product of a very different and increasingly industrialised age, their positioning very much reflects that of the prehistoric henge and subsequent monuments and structures on the valley floor and close to the river.

CONCLUSIONS

The Old Hall excavations demonstrate that the Chelmer Valley has been utilised, exploited and settled since the Late Mesolithic period. The evidence for this human activity within the mid-section of the valley extends down the valley sides and is equally prolific on the valley floor. Alluviation on the flood plain has masked those remains, making them non-conducive to cropmark detection. Nonetheless, because of that interment, important Late Mesolithic and Neolithic features and deposits are preserved and remain only partly disturbed due to the relatively late arable cultivation of what would have been marginal land. The relict soil, numerous tree throws and occasional pits, all of which contain large quantities of worked flint, attest to movement of people up and down the valley, following the river and exploiting the resources offered within its tree-covered floor.

With increasing sedentism, from the Late Neolithic onwards, the upper slopes of the valley are settled and cultivated, no doubt with the lower slopes being important areas for grazing of livestock. The Boreham henge, with its close proximity to, and association with the nearby river, is just one of a number of communal earthwork monuments built in the middle part of the valley. Together with Springfield Cursus and Causewayed Enclosure, it signals the presence of a cohesive and organised community and henceforth a pattern of continuity and change, the thread of which arguably extends into the post-medieval period.

In essence, in the case of Sites A to C, there is a continuity of land-use with settlement occupying the upper slopes and above, and monument building and use below. This lower valley use is the most instructive in terms of people's evolving engagement and interaction with the developing landscape, with successive cultures appropriating and assimilating the earlier monuments into their physical worlds and understanding, as well as periodically augmenting them with their own monuments. Behind this, probably lay desires to explain, consolidate and enhance their presence, belonging and ownership of this portion of the landscape and in doing so landscape elements, including monuments, were often reused, renegotiated and reinterpreted. Hence, the Late Neolithic/Early Bronze Age henge, a place of communal religious and ritual practice, is subsequently a focal point for an Earlier to Middle Bronze Age barrow cemetery, a place of elite burial. A Middle Iron Age barrow and associated mortuary activity augment this, a thousand years later. It is evident from the incidence of Roman period features near the barrows and artefacts in the upper fills of their enclosing ditches (e.g. the 1s century flagon in ring-ditch 565) that they continued to attract attention. Perhaps finally, Earlier Saxon burials are possibly inserted within and around one of the surviving barrow earthworks, a thread of continuity resulting from recognition of the earthwork remnants being significant as a place of burial and remembrance of dead ancestors and heroes, whether real or imagined or fabricated. Connection with these prehistoric monuments probably waned during the latter half of the Saxon period, presumably as a consequence of Christianity, the incorporation of a large timber structure, perhaps a bridge, being a clear indication of this.

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BIBLIOGRAPHY

Archer, J. and Clarke, R. 2005, 'A Late Iron Age and early Roman enclosure at Bulls Lodge Quarry, Boreham Airfield: archaeological monitoring and recording 1997–2004', *Essex Archaeol. Hist*., 3rd ser., 36, 188–93

Atkinson, M. and Preston, S. 2001,'Prehistoric settlement and burials at Elms Farm, Heybridge', *Essex Archaeol. Hist*., 3rd ser., 32, 42–74

Barnatt, J. 1998, 'Monuments in the landscape: thoughts from the peak', in Gibson, A. and Simpson, D. *Prehistoric religion and ritual* (Sutton Publishing Limited: Stroud, Gloucestershire), 92–107

Bennett, A. and Gilman, P.J. 1996, 'Archaeology in Essex 1995'. *Essex Archaeol. Hist*., 3rd ser., 27, 261–76

Bradley, R. 1998, *The Significance of Monuments* (Routledge)

Bridge, M. 2009, *Boreham Henge, Old Hall, Boreham, near Chelmsford, Essex. Dendrochronological analysis of oak timbers. Scientific dating report*, English Heritage Res. Dept. Rep. Ser. no. 84-2009

Bronk Ramsey, C. 1995, 'Radiocarbon calibration and analysis of stratigraphy', *Radiocarbon* 36, 425–30

Bronk Ramsey, C. 1998, 'Probability and dating', *Radiocarbon* 40, 461–74

Bronk Ramsey, C. 2001, 'Development of the radiocarbon calibration program', *Radiocarbon* 43, 355–63

Bronk Ramsey, C. 2009, 'Bayesian analysis of radiocarbon dates', *Radiocarbon* 51, 337–60

Bronk Ramsey, C., Higham, T.F.G., Owen D.C., Pike, A.W.G., and Hedges, R.E.M. 2002, 'Radiocarbon dates from the Oxford AMS system: Archaeometry datelist 31', *Archaeometry* 44(3), Supplement 1, 1–149

Bronk Ramsey, C., Higham, T., and Leach, P. 2004, 'Towards high precision AMS: progress and limitations', *Radiocarbon* 46(1), 17–24

Brown, A.G. 1997, *Alluvial Geoarchaeology. Floodplain archaeology and environmental change* (Cambridge Manuals in Archaeology: Cambridge University Press)

Brown, N. 1988, 'A Late Bronze Age enclosure at Lofts Farm, Essex', *Proc. Prehist. Soc*. 54, 249–302

Brown, N. 1999, *The archaeology of Ardleigh, Essex: excavations 1955–80*, E. Anglian. Archaeol. 90

Brown, N. 2001a., 'Prehistoric pottery' in Buckley, D.G., Hedges, J.D. and Brown, N., 'Excavations at a Neolithic Cursus, Springfield, Essex, 1979–85'. *Proc. Prehist. Soc.* 67, 123–34

Brown, N. 2001b, 'The Late Bronze Age enclosure at Springfield Lyons in its landscape context', *Essex Archaeol. Hist*., 3rd ser., 32, 92–101

Brown, N. 2013, 'Neolithic and Early Bronze Age pottery' in Brown, N. and Medlycott, M. *Excavations at Springfield Lyons, Essex: I. Prehistoric*, E. Anglian Archaeol. 149

Brown, N. and Lavender N.J. 1994, 'Later Bronze Age sites at Great Baddow and settlement in the Chelmer Valley 1500–500 BC', *Essex Archaeol. Hist*. 25, 3–13

Brown, N. and Germany, M. 2002, 'Jousting at windmills? The Essex Cropmark Enclosures project', *Essex Archaeol. Hist*., 3rd ser., 33, 8–53

Brown, N. and Medlycott, M. 2013, *The Neolithic and Bronze Age Enclosures at Springfield Lyons, Essex: Excavations 1981–1991*, E. Anglian Archaeol. 149

Buikstra, J.E. and, Ubelaker, D.H. (eds) 1994, *Standards for Data Collection from Human Remains*, Arkansas Archaeological Survey Research Series No. 44

Buckley, D.G. and Hedges, J.D. 1987, *The Bronze Age and Saxon Settlements at Springfield Lyons: an interim report*, Essex County Council Occasional Paper 5

Buckley, D.G., Hedges, J.D., and Brown, N. 2001, 'Excavations at a Neolithic Cursus, Springfield, Essex, 1979–85', *Proc. Prehist. Soc*. 67, 101–62

Burgess, E. and Rance, M. (eds) 1988, *Boreham: History, Tales and Memories of an Essex Village*, Boreham Histories Project

Carr, G. and Knüsel, K, 'The ritual framework of excarnation by exposure as the mortuary practice of the Early and Middle Iron Ages of central southern Britain', in Gwilt, A. and Heselgrove, C., *Reconstructing Iron Age Societies*, Oxbow Monograph 71, 167–73

Clark, J.G.D. 1934, 'The Classification of a Microlithic Culture: The Tardenoisian of Horsham', *Arch. J*. 90, 52–77

Clark. J.G.D. 1936, 'The timber monument at Arminghall and its affinities'. *Proc. Prehist. Soc*. 2, 1–51

Clark, A.J. 1993, *Excavations at Mucking Vol. 1: The Site Atlas*, English Heritage Archaeol. Rep. 20

Clarke, C.P. and Lavender, N.J. 2008, *An Early Neolithic ring-ditch and Middle Bronze Age cemetery excavation and survey at Brightlingsea, Essex*, E. Anglian Archaeol. 126

Clarke, R. 2003, *A Medieval Moated Settlement and Windmill: Excavations at Boreham Airfield, Essex 1996*, E. Anglian Archaeol. Occ. Paper 11

Crummy, P. 1977, 'A Bronze Age cemetery at Chitts Hill, Colchester, Essex', *Essex Archaeol. Hist*., 3rd ser., 9, 1–16

Crummy, P., Hillam, J., and Crossan, C. 1982, 'Mersea Island: the Anglo-Saxon causeway', *Essex Archaeol. Hist*., 3rd ser., 14, 77–86

Drury, P.J. 1978, *Excavations at Little Waltham 1970–71*, Chelmsford Excavation Committee Report 1, Counc. Brit. Archaeol. Res. Rep. 26

Evans, C., Pollard, J. and Knight, M. 1999, 'Life in woods: Tree-throws, settlement and forest cognition', *Oxford Journal of Archaeology* 18(3), 241–54

Foreman, S. 1997, 'Medieval Boreham: excavations at the former Buxted Chicken Factory, Boreham 1992–3', *Essex Archaeol. Hist*., 3rd ser., 28, 103–12

Fowler, E. 1960, 'The origins and development of the penannular brooch in Europe', *Proc. Prehist. Soc.* 26, 149–77

French, C. and Pryor, F. 1985, *The Fenland Project, Number 1: The Lower Welland Valley*, E. Anglian Archaeol. 27, Vols. 1 and 2

French, C. and Pryor, F. 2005, *Archaeology and Environment of the Etton Landscape*, E. Anglian Archaeol. 109

Garland, A.N. 2008, 'The human cremated remains from the Middle Bronze Age cemetery', in Clarke, C. P. and Lavender, N. J. (eds), *An Early Neolithic Ring-ditch and Middle Bronze Age Cemetery: excavation and survey at Brightlingsea, Essex*, E. Anglian Archaeol. 126, 27–8

Germany, M. 2003, *Excavations at Great Holts Farm, Boreham, Essex, 1992–4*, E. Anglian Archaeol. 105

Germany, M. 2007, *Neolithic and Bronze Age monuments and Middle Iron Age settlement at Lodge Farm, St Osyth, Essex*, E. Anglian Archaeol. 117

Gibson, C. 2004, *Lines in the Sand: Middle to Late Bronze Age Settlement at Game Farm, Brandon*, E. Anglian Archaeol. Occ. Pap. 19

Going, C.J. 1987, *The Mansio and other sites in the south-eastern sector of Caesaromagus: the Roman pottery*, Chelmsford Archaeol. Trust Rep. 3.2, Counc. Brit. Archaeol. Res. Rep. 62

Goodburn, D. 1992, 'Woods and woodland: carpenters and carpentry', in Milne, G., *Timber Building Techniques in London c 900–1400*, LAMAS Special Pap. 15, 106–31

Goodburn, D. 1997, 'The production of timber for building in England before and after *c* 1180', *Pre-prints Medieval Europe 1997* (Brugge), Vol. 7, 155–61

Goodburn, D. 1999, 'A summary of the evidence for early medieval woodwork found at Cheapside', in Hill, J., *Excavations at 72–75 Cheapside/83–93 Queen Street, City of London*, MOLAS Archaeological Stud. Ser. 2, 47–51

Goodburn, D. in prep., *The early medieval woodwork recorded at Bull Wharf, City of London*

Harding, A.F. and Lee, G.E 1987, *Henge monuments and related sites of Great Britain*, BAR British Series 175

Harding, J. 2003, *Henge monuments of the British Isles* (Tempus: Stroud)

Hardy, A., Watts, M., and Goodburn, D. 2011, 'The Mid-Saxon Mill at Northfleet', in Andrews, P., Biddulph, E., Hardy, A., and Brown, R., *Settling the Ebbsfleet Valley; High speed 1 Excavations at Springhead and Northfleet, Kent, Vol. 1*, 307–23

Harrison, D. 2004, *The Medieval Bridges of England. Transport and Society 400–1800* (Oxford University Press)

Hartley, B.R. 1957, 'The Wandlebury Iron Age hill-fort, excavations of 1955–6', *Proc. Cambridge Antiq. Soc*. 50 (1956), 1–27

Heppell, E.M. 2011, 'Saxon fishtraps in the Blackwater Estuary, Essex: monitoring survey at Collins Creek, Pewett Island and The Nass 2003–2007', *Essex Archaeol. Hist*., 4th ser., 2, 76–97

Holden, J.L., Phakley, P.P., and Clement, J.G. 1995a, 'Scanning electron microscope observations of incinerated human femoral bone: a case study', *Forensic Science International* 74, 17–28

Holden, J.L, Phakley, P.P. and Clement, J.G. 1995b, 'Scanning electron microscope observations of heat-treated human bone', *Forensic Science International* 74, 29–45

Hope-Taylor, B. 1977, *Yeavering: an Anglo-British centre of early Northumbria* (HMSO: London)

Hughes, E.G. 1994, 'An Iron Age Barrow Burial at Bromfield, Shropshire', *Proc. Prehist. Soc*. 60, 395–402

Hull, M.R. and Hawkes, C.F.C. 1987, *Corpus of Ancient Brooches in Britain: Pre-Roman Bow Brooches*, Brit. Archaeol. Rep., Brit. Ser. 168 (Oxford)

Ingle, C. and Saunders, H. 2011, *Aerial Archaeology in Essex: the role of the National Mapping Programme in interpreting the landscape*, E. Anglian Archaeol. 136

Jacobi, R.M. 1978, 'The Mesolithic of Sussex', in Drewett, P.L. (ed.), *Archaeology in Sussex to AD 1500*, Counc. Brit. Archaeol. Res. Rep. 29, 15–22

Jacobi, R.M. 1980, 'The Mesolithic of Essex' in Buckley, D. (ed.), *Archaeology in Essex to AD 1500*, Counc. Brit. Arch. Res. Rep. 34, 14–25

Lanting, J.N., Aerts-Bijma, A.T., and van der Plicht, J. 2001, 'Dating of cremated bones', *Radiocarbon* 43(2A), 249–54

Lavender, N. 1991, 'A Late Iron Age burial enclosure at Maldon Hall Farm, Essex: Excavations 1989', *Proc. Prehist. Soc*. 57, 203–9

Lavender, N. 1999, 'Bronze Age and medieval sites at Springfield, Chelmsford: excavations near the A12 Boreham Interchange, 1993', *Essex Archaeol. Hist.*, 3rd ser., 30, 1–43

Loveday, R. 1998, 'Double entrance henges – routes to the past?' in Gibson, A. and Simpson, D., *Prehistoric religion and ritual* (Sutton Publishing Limited: Stroud), 14–31

McKinley J. 1993, 'Bone fragment size and weights of modern British Cremations and the Implications for Interpretation of Archaeological Cremations', *International Jnl of Osteoarchaeology* 3: 283–7

McKinley, J. 2006, 'Human remains from Section 1 of the Channel Tunnel Rail Link, Kent', Channel Tunnel Rail Link, London and Continental Railways, Oxford Wessex Archaeology Joint Venture

McKinley, J.I. 2007, 'Chapter 5. Human Bone', in Timby, J.R., Brown, R., Biddulph, E., Powel, A.B., and Hardy, A, *A Slice of Rural Essex: Recent Archaeological Discoveries from the A120 Between Stansted Airport and Braintree*, Oxford Wessex Archaeology Monograph, Vol. 1

McPhail, R. 2008, 'Soils' in Germany, M., *Old Hall reservoir, Boreham, Essex. Archaeological excavation*, ECC Field Archaeology Unit report 1732, unpublished

Millett, M., and McGrail, S. 1987, 'The archaeology of the Hasholme logboat', *Archaeol J.* 144, 69–155

Mook, W.G. 1986, 'Business meeting: recommendations/resolutions adopted by the twelfth International Radiocarbon Conference', *Radiocarbon* 28, 799

Murphy, P. 1996, 'Environmental archaeology in Essex', in Bedwin, O. (ed.), *The Archaeology of Essex: Proceedings of the Writtle Conference* (Chelmsford: Essex County Council), 168–80

Naysmith, P. Scott, E.M., Cook, G.T., Heinemeier, J., van der Plicht, J., Van Strydonck, M., Bronk Ramsey, C., Grootes, P.M., and Freeman, S.P.H.T. 2007, 'A cremated bone inter-comparison study'. *Radiocarbon* 49(2), 403–8

Olivier, A.C.H. 1996, 'Brooches of silver, copper-alloy and iron from Dragonby', in May, J., *Dragonby: Report on Excavations at an Iron Age and Romano-British Settlement in North Lincolnshire*, Oxbow Mono. 61, 231–64 (Oxford)

Peterken, G. 1996, *Natural Woodland* (Cambridge)

Rackham, O. 1986, *The history of the countryside. The classic history of Britain's landscape, flora and fauna* (Phoenix: London)

Reimer, P.J. et al. 2009, 'INTCAL09 and MARINE09 radiocarbon age calibration curves, 0–50,000 years cal BP', *Radiocarbon* 51(4), 1111–50

Ripper, S. and Cooper, P.L. 2009, *The Hemington Bridges, The excavation of three medieval bridges at Hemington Quarry near Castle Donnington, Leicestershire*, Leicestershire Archaeology Mono. 16

Rowlett, R.M. 1966, 'Penannular fibulae in the Marne Culture', *Antiquity* 40, 133–6

Roy, M. and Heppell, E.M., 'A Prehistoric landscape at Langford Hall, near Heybridge: excavations 1995–6', *Essex Archaeol. Hist*., 4th ser., 5, 19–36

Sands, R. 1997, *Prehistoric Woodworking: The Analysis and Interpretation of Bronze and Iron Age Toolmarks, Wood in Archaeology Vol. 1* (UCL: London)

Scott, E.M. 2003, 'The third international radiocarbon intercomparison (TIRI) and the fourth international radiocarbon intercomparison (FIRI) 1990–2002: results, analyses and conclusions', *Radiocarbon* 45, 135–408

Sealey, P.R. 1996, 'The Iron Age of Essex' in Bedwin, O. (ed.). *The Archaeology of Essex: Proceedings of the Writtle Conference* (Essex County Council: Planning), 46–68

Sealey, P.R. 2007, 'The Early and Middle Iron Age pottery' in Crummy, P.J., Benfield, S.F., Crummy, N.C., Rigby, V.A. and Shimmin, D., *Stanway: An Elite Burial Site at Camulodunum*, Britannia Mono. 24, 48–66 (London)

Semple, S. 1998, 'A fear of the past: the place of the prehistoric burial mound in the ideology of middle and later Anglo-Saxon England' in Bradley, R. and Williams, H. (eds), *The Past in the Past: The Reuse of Ancient Monuments*, World Archaeology Vol. 30, No. 1

Semple, S. 2013, *Perceptions of the Prehistoric in Anglo-Saxon England: Religion, Ritual, and Rulership in the Landscape* (Oxford: Oxford University Press)

Shennan, S.J., Healy, F. and Smith, I.F. 1985, 'The excavation of a ring-ditch at Tye Field, Lawford, Essex', *Archaeol. J*. 142, 150–215

Simpson, G. 1979, 'Some British and Iberian penannular brooches and other early types in the Rhineland and the "Decumantes Agri"', *Anitiq. J*. 59, 319–42

Schuer, L. and Black, S.M. 2000, *Developmental Juvenile Osteology* (Academic Press Inc.)

Slota Jr, P.J., Jull A.J.T., Linick T.W., and Toolin L.J. 1987, 'Preparation of small samples for ^{14}C accelerator targets by catalytic reduction of CO', *Radiocarbon* 29, 303–6

Stead, I.M. 1971, 'Yorkshire before the Romans: some recent discoveries', in Butler, R.M. (ed.), *Soldier and Civilian in Roman Yorkshire: Essays to Commemorate the Nineteenth Centenary of the Foundation of York*, 21–43 (Leicester)

Stead. I.M. 1979, *The Arras Culture* (York)

Stead, I.M. 1991, *Iron Age Cemeteries in East Yorkshire: Excavations at Burton Fleming, Rudston, Garton-on-the-Wolds, and Kirkburn*, English Heritage Archaeol. Rep. 22 (London)

Stuiver, M. and Polach, H.A. 1977, 'Reporting of ^{14}C data', *Radiocarbon* 19, 355–63

Stuiver, M. and Kra, R.S. 1986, 'Editorial comment', *Radiocarbon* 28(2B), ii

Stuiver, M. and Reimer, P.J. 1986, 'A computer program for radiocarbon age calculation', *Radiocarbon* 28, 1022–30

Taylor, A. 2001, *Burial Practice in Early England* (Tempus: Stroud)

Taylor, J. 1997, 'Space and place: some thoughts on Iron Age and Romano-British landscapes' in Gwilt, A. and Haselgrove, C. (eds.), *Reconstructing Iron Age Societies*, Oxbow Monograph 71, 192–204

Tilley, C. 1994, *A phenomenology of landscape* (Berg: Oxford)

Tyler, S. and Major, H. 2005, *The Early Anglo-Saxon Cemetery and Later Saxon Settlement at Springfield Lyons, Essex*, E. Anglian Archaeol. 111

Vandeputte, K., Moens, L. and Dams, R., 1996, 'Improved sealed-tube combustion of organic samples of to CO_2 for stable isotope analysis, radiocarbon dating and percent carbon determinations', *Analytical Letters* 29(15), 2761–73

Wainwright, G.J. and Longworth, I.H. 1971, *Durrington Walls: Excavations 1966–1968*, Rep. Res. Comm. Soc. Antiq. London

Wheeler, M. 1927, *London Museum Catalogues: No1 London and the Vikings* (London)

Wickenden, N. P. 1992, *The temple and other sites in the north-eastern sector of Caesaromagus*, Chelmsford Archaeol. Trust Rep. 9, Counc. Brit. Archaeol. Res. Rep. 75

Wilkinson, T.J. and Murphy, P.L. 1995, *The archaeology of the Essex coast, volume 1: The Hullbridge Survey*, E. Anglian Archaeol. 71

Williams, H. 1998, 'Monuments and the past in early Anglo-Saxon England' in Bradley, R. and Williams, H. (eds), *The Past in the Past: The Reuse of Ancient Monuments*, World Archaeology Vol. 30, No. 1

Woodward, A. 2000, *British barrows. A matter of life and death* (Tempus: Stroud)

Xu, S. et al. 2004, 'Capabilities of the new SUERC 5MV AMS facility for C^{14} dating'. *Radiocarbon* 46, 59–64

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A Late Iron Age red hill and saltern at Bradwell-on-Sea

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With contributions by Mark Atkinson, Anna Doherty, Dawn Elise Moody and Elke Raemen

The discovery of a previously unknown red hill and saltern site in advance of the construction of Bradwell Wind Farm on the Dengie Peninsula has provided a rare opportunity to expose the full extent of a salt making site and extensively excavate it. The site dates to the Late Iron Age (c.10–60AD) and consists of two phases of salt production. Both phases were sited upon a deliberately modified clay platform and separated in time by the deposition of a substantial amount of red earth material. The site was short-lived and produced only a small assemblage of pottery and briquetage, but one in-keeping with the north-east Essex saltern tradition.

INTRODUCTION

Salt-making has been a significant industry around the Essex coast for millennia. Salterns (salt production sites) are usually situated on the edge of the high tide line and were used to manufacture salt through the evaporation of sea water. A by-product of the salt manufacturing process in the Late Iron Age and Early Roman period was the production of considerable quantities of red burnt soils. These red soils survive today as low, often extensive, mounds or surface spreads of material that are particularly evident on the surface of ploughed fields, which are known locally as 'red hills'. There is a noteworthy distinction to be made between the saltern sites themselves, which consist of tanks and hearths used for the holding and evaporation of sea water, and the burnt soils of the red hill debris which often seal them.

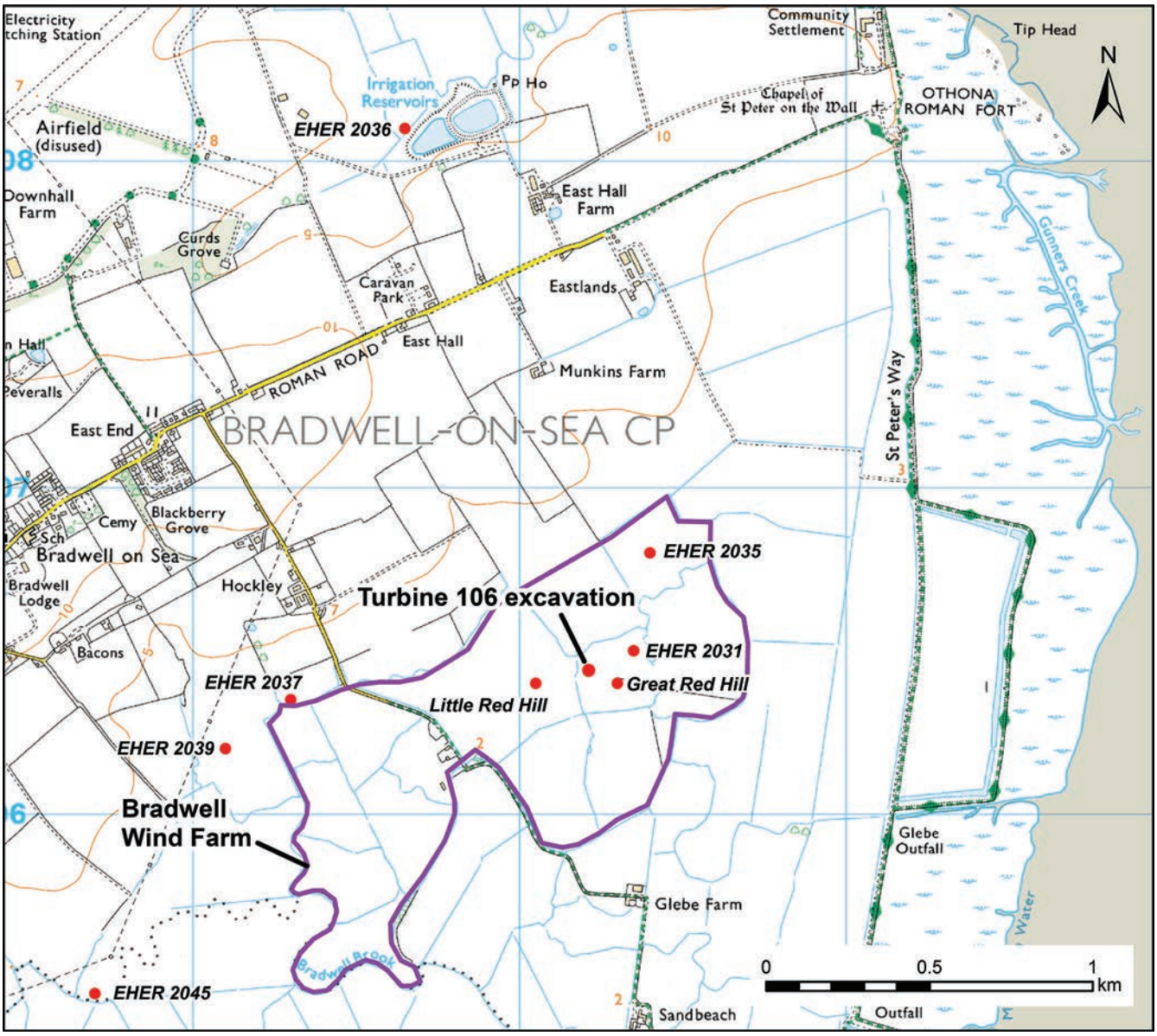

FIGURE 1: Site location plan

Project Background

The excavation of a red hill and saltern at Turbine 106, Bradwell Wind Farm, Hockley Lane, Bradwell-on-Sea in August 2012 followed a programme of archaeological preliminary investigation and monitoring that stretched back to 2005. Prior to the submission of a planning application for the wind farm, a desk-based assessment (Orr 2005) and a geophysical and magnetic susceptibility survey (Johnson 2005) were undertaken. These identified several possible red hill sites. A subsequent trial-trench evaluation (Foundations Archaeology 2006) confirmed the presence of the below-ground remains of a large red hill in the proposed construction area of Turbine 106 and led to the re-positioning of this turbine further west to preserve the remains *in situ*.

No archaeological remains of significance were present at the revised location of Turbine 106 (Germany 2011). However, later archaeological monitoring of test-pitting during an unexploded ordnance survey in July 2012 identified the position of another red hill immediately to the south, in the area to be consolidated for an associated crane platform. As this red hill could not be preserved *in situ*, a decision was made to fully uncover, excavate and record these archaeological remains.

The site

The wind farm is located in the parish of Bradwell-on-Sea on the north-eastern side of the Dengie Peninsula (Fig. 1). The area is under arable cultivation and comprises a landscape of fields defined by drainage ditches, hedgerows and trees. The Turbine 106 site (NGR TM 0221 0641) is located 1.8km south-east of Bradwell-on-Sea village, approximately 1.5km inland of the coast, and is situated within a 5.2ha field on reclaimed marshland at a height of around 1.5m AOD. The underlying bedrock geology comprises Palaeogene Period Thames Group Clay overlain by Quaternary Period undifferentiated intertidal deposits of silty clay and sand (British Geological Survey © NERC 2013).

Historical and archaeological background

The earliest known saltern sites in the county have been found in the intertidal zone of the River Crouch and date to the Bronze Age (Wilkinson and Murphy 1995, 132–65). Red hill sites are generally considered to be Late Iron Age and Early Roman in date (Fawn *et al*. 1990, 35–9), although recent investigations at Stanford Wharf on the Thames Estuary have recorded saltern sites in association with red burnt soils ranging in date from the Middle Iron Age to the late Roman period (Biddulph *et al*. 2012).

The wind farm is located within a landscape dotted with probable Late Iron Age and Roman red hill remains (Fig. 1; EHER 2031, 2035, 2037, etc.). These are all situated below the 5m contour in areas that would have been open to tidal inundation prior to the construction of sea walls and land reclamation in the medieval and post-medieval periods. The sites straddle the divide between former marsh and dry land and would have been situated near to tidal creeks to aid the collection of sea water. Some of the red hill remains have been identified through aerial photograph analysis, others by fieldwalking or by local farmers (*e.g.* Gurney 1978); though none had been excavated (Orr 2005). Significantly, Turbine 106 is located within a field named 'Great Red hill' on the Tithe Award of 1837. A small field to the immediate west was named as 'Little Red hill' (Orr 2005). Geophysical and magnetic

PLATE 1: Red hill under investigation

susceptibility survey (Johnson 2005) identified the presence of a large anomaly, over 60m in diameter, within the centre of the field which was later confirmed as a red hill by evaluation trenching (Foundations Archaeology 2006). A second, smaller, potential saltern was identified as a geophysical anomaly at the southern edge of the field (Fig. 6).

SITE NARRATIVE

Methodology

The excavation commenced with the machine removal of topsoil and subsoil from the footprint of the crane platform for Turbine 106 and from part of an access road to the immediate west. Approximately 0.2m of greyish-brown plastic silty clay topsoil and 0.25m of olive-brown plastic silty clay subsoil were removed to reveal the roughly circular spread of red earth denoting the position of a red hill (Plate 1). In total an excavation area of some 625sq m was established that fully exposed the red hill remains and part of the natural clay surrounding it. The excavation area was cleaned, planned and recorded. All discrete features were hand-excavated and the red earth deposit divided into quadrants with the opposing north-east and south-west quadrants part excavated by hand and part by supervised mini-digger (Fig. 2). Both long sections were drawn. Further areas of the red hill were investigated within smaller segments.

Turbine 106 overview

The depth (0.45m) of the removed topsoil/subsoil overburden appeared to have preserved the integrity of the red hill deposits intact with no obvious sign of truncation or disturbance from deep ploughing. A total of five layers and eleven cut features were investigated and recorded. These comprised burnt soil/clay deposits of the red hill, with various hearth pit, tank and post-hole saltern features cut into them or else sealed beneath, for which a degree of stratigraphic and chronological sequencing can be demonstrated. Recovered artefacts mainly comprised briquetage (baked clay) fragments deriving from tanks, furniture and hearth lining, though a small quantity of pottery and slag were also present. Two phases of salt production were identified separated in time by the deposition of a substantial amount of red earth material. The following description of the site is presented in broad chronological/stratigraphic order.

Pre-red hill saltern

The earlier saltern occupied a distinct levelled clay platform approximately 7m square that stood proud of the top of the surrounding ground by *c*.0.25m (Fig. 3). The clay was brownish-cream in colour and appeared to be an *in-situ* natural deposit that graded into an underlying, more expansive, deposit of whiter clay beneath. The clay had been deliberately reduced and sculpted, and the sides of the platform inclined, varying in slope from 25–30° in the east to 45° in the north. Much of the upper clay surrounding the platform appeared to have been purposefully removed. An irregular patch of similar clay survived undisturbed 3m to the east.

To the north and west, the modified terrain adjacent to the platform was relatively flat and featureless. However, within the south-west excavated quadrant, the slope down from the platform was more pronounced, with the cleaner white clay exposed at the base of the sequence. The surface of this clay was undulating and pitted, being a clear indication of ground reduction and disturbance having taken place to the south of the platform – perhaps to deliberately bring tidal water closer

PLATE 2: Clay platform with tank [37] in foreground

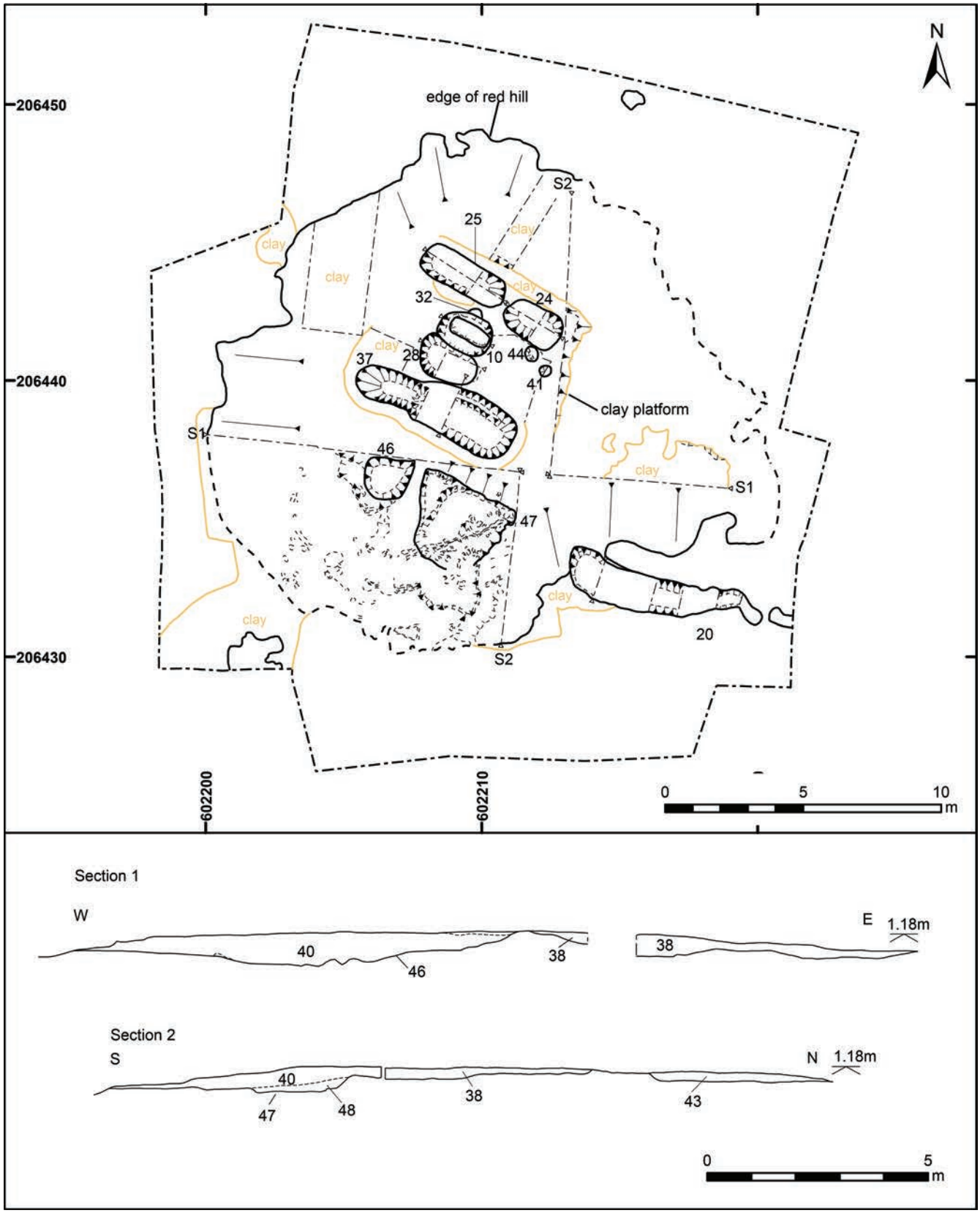

FIGURE 2: Excavated features and long sections 1 and 2

to the production site. The bases of two pits or depressions were evident within this deeper area (Plate 3). Pit [46] was the more defined, being bowl-shaped in profile and up to 0.6m deep at its higher eastern edge but shallower to the west. Depression [47] was larger, but only about 0.2 to 0.3m deep with the vestigial remains of a slightly curving channel extending from its southern side. Running north-east/south-west through the pock-marked base of this cut was an irregular undulating groove which varied in depth and width and appeared to be of natural origin. The base of depression [47] was filled with mid greyish-red clayey silt. It is likely that both depressions were used to collect and retain sea water.

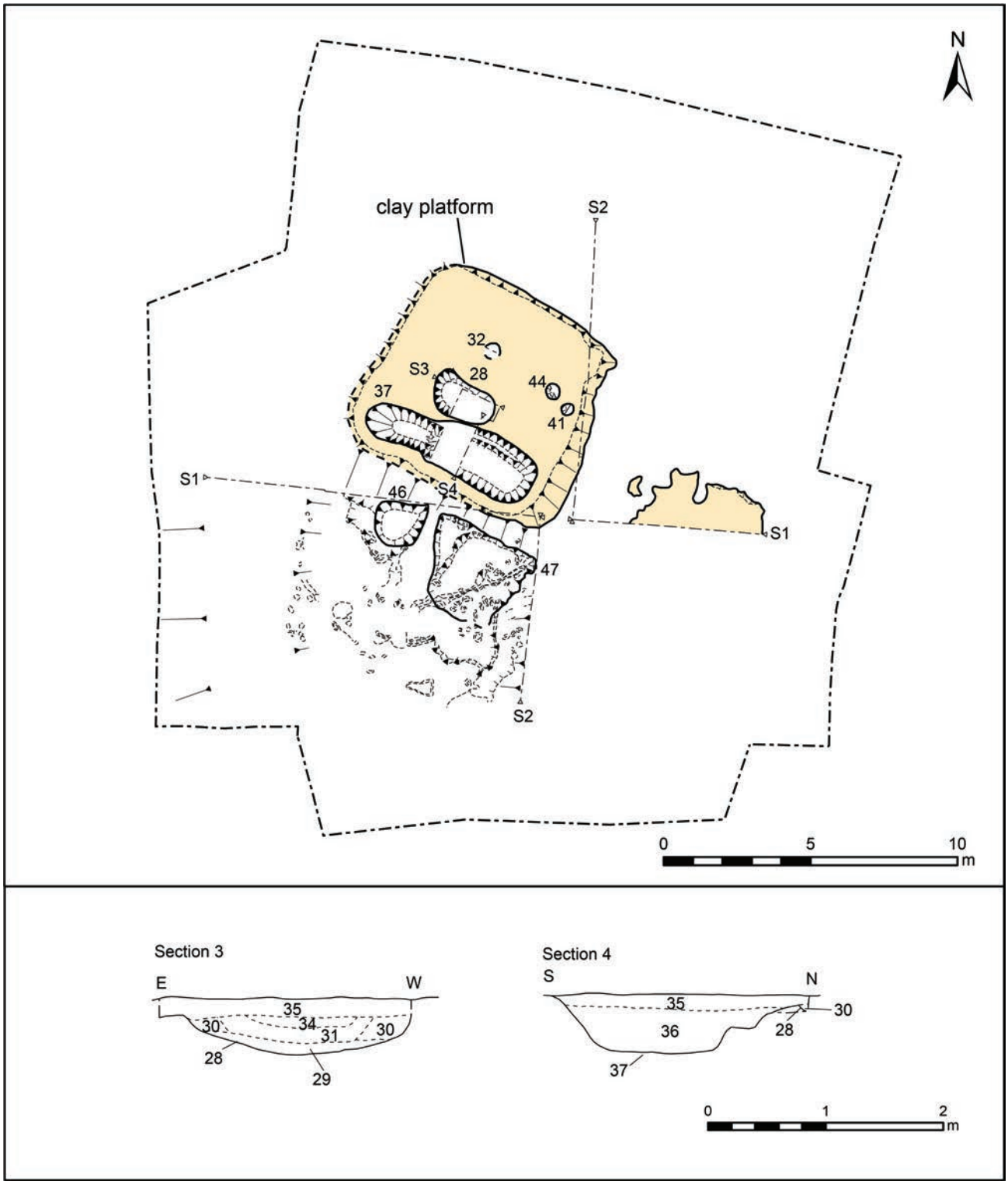

FIGURE 3: Pre-red hill saltern and sections 3 and 4

The top of the platform was cut by a hearth pit [28], a large elongated tank [37] and three post-holes [32, 41 and 44] (Figure 3). All were broadly parallel and shared a west-north-west/east-south-east alignment. Hearth pit [28] was a sub-rectangular, almost oval, cut 2m long, 1.38m wide and 0.32m deep located more-or-less in the centre of the platform. It contained a relatively complex sequence of fills that suggests an episode of re-cutting and reuse of this feature (Fig. 3, section 3). The underlying clay at the base of the hearth showed no evidence of being in contact with intense heat. Primary fill [29], a dark greyish-black sandy silt, was judged to be the product of its scorched soil and ash/charcoal content, though only occasional distinct charcoal flecks could be discerned. Overlying fill [30] was a dark brownish-red sandy silt containing occasional pebbles. Mid orange-red sandy silt [31] and overlying greenish brown-red sandy silt [34] appear to have occupied an un-discerned (and so unnumbered) re-cut in the middle of the feature. Orange-red sandy silt [31] may have been the remains of a heat-affected hearth lining, and deposit [34] its subsequent backfill. No intervening

charcoal deposit was noted implying that this later phase of hearth had been cleaned-out prior to its infilling. Artefacts were absent from all of the fills of hearth [28], except for a few pieces of baked clay noted in [34].

Tank [37] was 6m long and filled mainly with red-brown clay silt [36] with lenses of clay and occasional charcoal flecks (Plate 2). Finds from it included part of a briquetage fire-bar and three possible vessel fragments. The western third of the tank was 1.15m wide and 0.37m deep and had a rounded end, whilst the eastern two thirds were 2m wide and 0.5m deep, distinctly more rectangular in plan and had a noticeable step along the top of the north side (Figure 3, section 4). These differences suggest that the tank may have originally consisted of two features.

The three post-holes formed a slight arc to the north-east of hearth pit [28]. All three were demonstrably part of this earlier saltern phase as post-hole [32] was cut by later hearth [10] and post-holes [41] and [44] were sealed beneath later red earth deposit [38]. The post-holes were between 0.4–0.5m wide and 0.13–0.2m deep and contained reddish sandy silt fills. Four fragments of vessel briquetage were retrieved from the fill of post-hole [44], while small burnt clay lumps were noted in post-hole [32].

The phase 1 saltern appears to have gone out of use prior to the deposition of the red hill, as hearth pit [28] was mostly in-filled before this occurred. The main fill [36] of tank [37] was however quite similar to red earth deposit [40] and it's likely that this larger redundant feature was left substantially open until the red hill was formed. The same may also be true of post-holes [41] and [44]. There appeared to be little debris left over from the salt making process suggesting that the site was kept clean and that reasonably intact briquetage items were retained for use elsewhere.

Red hill deposition

The red hill showed as a low irregular mound (Fig. 4), roughly centred on the earlier clay platform, with a diameter of about 20m. The body of the red hill comprised a generally brownish-red burnt soil/clay deposit that had been deliberately deposited on all four sides of the previously modified platform. The bulk of this red-earth was an extremely uniform deposit of fine and compact brownish-red sandy silt [40] that can reasonably be regarded as a single depositional episode (Plate 3). The deposit contained infrequent coarse inclusions and produced only a small finds assemblage. The long sections excavated across the red hill revealed no significant variation in composition (Fig. 2, sections 1 and 2), the changes in surface colour probably only being the result of thickness in relation to the underlying natural deposit and perhaps variable moisture content. Only in the north-east quadrant was there any evidence of depositional complexity where localised layer [22] contained noticeably more pottery and briquetage than underlying layer [23]. The red earth removed within slots and quadrants was recorded as equating layers [22/23], [35], [38], [40] and [43], and was found to overlie and/or infill various undulations and cut features.

There was comparatively little deposition of material over the top of the clay platform itself. Open tank [37] and post-holes [41] and [44] were in-filled and then sealed, along with the top of hearth pit [28], beneath a general layer of red material 0.12–0.14m thick. On top of the platform, to the north of these features, only a few centimetres of red earth was deposited. Adjacent to the north, east and west sides of the platform there was 0.20–0.25m of red earth that decreased in depth with distance from it. The deposit was thickest in the south-west quadrant where up to 0.70m of material in-filled the deeper area above features [46] and [47] (Plate 3).

The red earth deposits contained a modest quantity of Late Iron Age grog-tempered pottery sherds including several large pieces from a single vessel in deposit [22]. Broken briquetage was present in several of the red hill contexts and four pieces of fuel ash slag (960g) were recovered from context [40].

Post-red hill saltern

Once the red hill had been formed, the former saltern site was evidently re-occupied. The post- red hill saltern (Fig. 4) consisted of three features located in the northern half of the red hill above the northern part of the former clay platform and a fourth to the south-east of the red hill. The northern features, hearth [10] and tanks [24] and [25], had a near identical alignment to their pre- red hill forerunners.

Hearth pit [10] was stratigraphically one of the latest features as it clearly cut red hill debris layer [35] which in-filled the top of redundant hearth pit [28]. Its cut was 2.1m long, by 1.4m wide and 0.42m deep, it had a similar positioning and alignment to the earlier hearth, and is likely to be a later replacement. The clay sides of the pit had been baked hard due to intense heat, so producing a 0.3m-thick orange red 'lining' recorded as 'fill' [39] (Fig. 4, section 5). However, the hearth pit base did not contain any such scorching – perhaps having been removed by its repeated cleaning-out during use. Its primary fill comprised a soft black sandy silt [11] containing occasional charcoal fragments, but no artefacts. This presumably constituted a final use deposit within the hearth pit. The two overlying fills, [12] and [13], were pebbly brown- to grey-red sandy silts, the upper of which contained a large quantity of briquetage, including fragments of trough and fire-bar.

To the north of the hearth were two sub-rectangular tank-like features [24 and 25] in a linear arrangement. Tank [24] was 2.2m long by 1.30m wide and 0.36m deep (Fig. 4, section 7). It had a single fill [27] of dark red to brownish-red clay silt with occasional lenses of soft brown clay. Tank [25] was 3.15m long by 1.2m wide and up to 0.4m deep (Fig. 4, section 6). It also contained a dark red clay silt fill [26] with occasional lenses of green-grey clay. The base of tank [25] was somewhat irregular with lumps of clay in its centre that might be part of a possible secondary clay lining or remnants of a clay partition.

The fill of tank [25] produced several large, diagnostic pottery sherds from a single wheel-thrown bowl (Fig. 5.8). This can be equated to *Camulodunum* forms 212–216 (Hawkes and Hull 1947; *cf.* Thompson 1982 E1 forms). In Colchester bowls of this type were considered to date to a fairly brief period in the first half of the 1st century AD (*c*.AD10–40). However, this example is in rather a well-fired sandy grog-tempered ware and could perhaps be as late as the early post-conquest period. A few sherds in similar fabrics were noted in the earlier tank [37].

On the south-east edge of the red hill, and extending eastwards from it, was an irregular channel-like feature [20]. Broadest at its west end (Fig. 4, section 8), this 7.2m-long cut

PLATE 3: Section through red earth deposit [40], with depressions [46] and [47] in foreground

seemingly tapered and became increasingly irregular in shape to the east (possibly due to truncation?). Its mid orange-red to dark brown-red silt clay fill [19] contained a significant quantity of briquetage vessel and fire-bar fragments, along with the majority of the structural briquetage (probable hearth lining) found on the site. One piece of light grey fired clay, distinctly different from the briquetage fabrics, was also recovered which presumably came from a different source than the saltern structures themselves. The feature was interrupted close to the eastern limit of the excavation where the unexcavated fill became more clay-like. It is possible that this interruption was the result of truncation of this undulating-based feature rather than an original definite break. The position of the channel at the lowest part of the site running up to the edge of the red hill suggests it may have been used to bring tidal water closer to the working area in this later phase of salt production.

FINDS AND ENVIRONMENTAL REMAINS

The recovered finds from this saltern and red hill site are of modest quantity, limited range and all consistent with a date in the first half of the 1st century AD as indicated by the small quantity of pottery retrieved. By far the largest and most significant component of this assemblage is the briquetage. Other finds are restricted to small amounts of pottery, slag and baked clay which have been integrated with the site descriptive text and are not described further here. Carbonised plant macrofossil remains recovered from soil samples from the later saltern hearth pit provide some limited but useful insights into fuel materials and general environmental conditions.

Briquetage by Mark Atkinson and Elke Raemen

A total of 312 pieces of briquetage, weighing 24264g, was collected from eleven contexts. Fragments were all hand-collected. The vast majority derives from features above the red hill, although a small group of nine fragments was recovered from beneath the red hill (tank fill [36] and pit fill [45]). The assemblage is limited in its range of forms, largely made up of evaporation tank fragments and fire-bars. Other support material is largely absent. The material of the hearths is included as briquetage following the definition of briquetage by Fawn *et al*. (1990, 10). The assemblage as a whole is in good, largely unabraded condition, although severe abrasion was noted on some of the fire-bars. Hearth material too is in abraded condition, as a result of the silty and low fired character of the fabric rather than suggestive of reworking. Identification and quantification by context is presented in Table 1.

Fabrics

While the fine, silty clay matrix of the retrieved fragments is more-or-less consistent, the amount of vegetable tempering added to the clay may be used to distinguish two main groups, the first of which is further divided into three sub-fabrics. Sparse to moderate vegetable temper was noted in all vessel and furniture fragments. The second group, lacking any organic temper but poorly mixed with a light, aerated result,

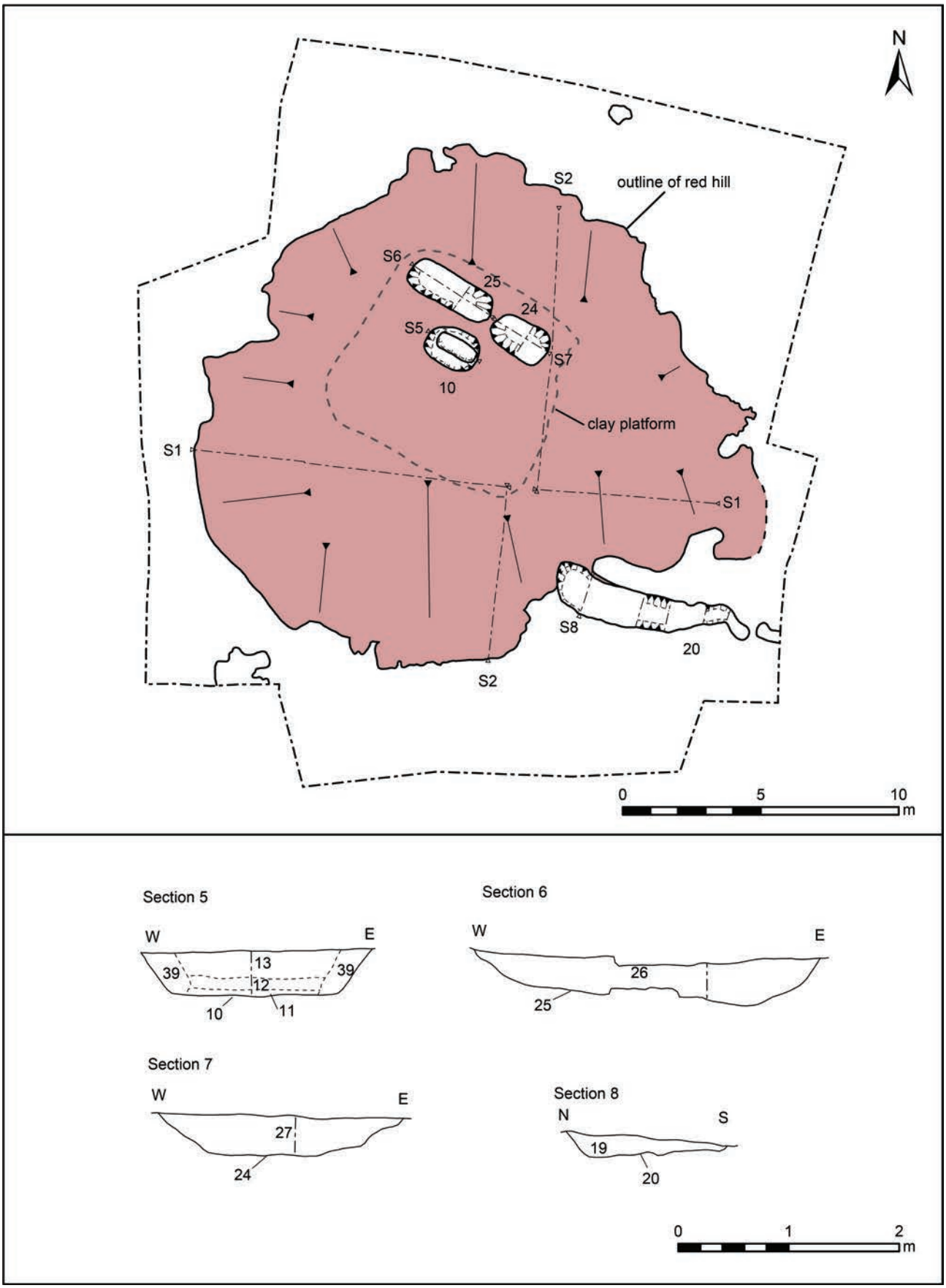

FIGURE 4: Post-red hill saltern and sections 5–8

Context	Briquetage Type	Description	Fabric A		Fabric B		Fabric C		Fabric D	
			Ct	Wt (g)	Ct	Wt (g)	Ct	Wt (g)	Ct	Wt (g)
13	Vessel	Trough: wall and rim; few corner and base frags			29	2878	46	6570		
	Furniture	Fire-bar: triangular, fragmentary	2	440	11	1890	1	280		
	Misc	Distorted/curving fire-bar end? Small vessel sherd			1	82	4	190		
19	Vessel	Trough: base, corner and wall frags, mostly three vessels	8	220	2	140	44	5600		
	Structural	Hearth lining							84	2288
	Misc	?short rod							1	12
22	Vessel	Trough: wall and rim frag (or fire-bar?)					1	40		
23	Vessel	Trough: wall frag					1	110		
	Furniture	Fire-bar: triangular, fragmentary					1	90		
26	Vessel	Trough: very fragmentary, featureless	3	100	11	300	4	80		
	Structural	Hearth lining? Some surfaces/ shaping present							13	400
27	Vessel	?Trough: wall or base fragments			4	230				
35	Vessel	Trough: wall or base fragments			1	30	1	60		
36	Vessel	Trough: wall frags					4	100		
	Furniture	Fire-bar: triangular, fragmentary			1	120				
40	Vessel	Trough: wall frags, some rim	3	200			7	740		
	Furniture	Fire-bar: triangular, fragmentary			4	450				
	Structural	Smoothed surfaces and one edge present							4	154
43	Vessel	Trough: wall or base fragments			5	120	7	140		
45	Vessel	Trough: wall fragments			4	210				
		Totals:	**16**	**960**	**73**	**6450**	**121**	**14000**	**102**	**2854**

TABLE 1: Quantification and summary of briquetage assemblage (Ct = Count, Wt = Weight)

was noted on the structural briquetage as well as a single possible short rod fragment.

Group 1:

Fabric A: Silty orange matrix with moderate chaff temper. Rare to common coarse non-calcereous cream inclusions.
Fabric B: Silty orange matrix with common chaff temper. Rare to common non-calcereous coarse cream inclusions, some measuring up to 20mm across.
Fabric C: Silty orange matrix with rare chaff temper. Rare to common non-calcereous coarse cream inclusions. Rare coarse quartz and rare scorched flint to 2mm.

Group 2:

Fabric D: Aerated silty clay with orange matrix. Some with rare scorched flint pebbles to 10mm.

Group 1 is fairly homogenous and distinctions are so minimal that they may well have occurred within a single batch of clay. Rare quartz and flint inclusions probably formed part of the raw material. Fabrics in Group 1 are largely orange in colour but red-orange and pink/lavender tinges were also noted. A number of vessel and fire-bar fragments show the white decolouration commonly found on briquetage. Some also display a whitish 'residue' around burnt out seed voids. Both features have been discussed by Barford (1995, 174). Fabrics are similar, if not identical, both beneath and above the red hill. Chronologically, this does not have any implications, as knowledge of optimum proportions of chaff and raw clay would be passed down to following generations of salt workers.

Forms

Vessels

Virtually all recovered and identified vessel fragments comprise trough. A few thinner-walled sherds may be speculated to be remains of smaller salt moulds or perhaps evaporation bowls.

PLATE 4: Briquetage trough from fill [19] of channel [20]

Troughs

Trough fragments were recovered from all 11 contexts containing briquetage, totalling 195 fragments weighing 18620g. Corners are well-finished, making it difficult to establish the construction technique and there are no obvious join corners, perhaps suggesting a predominance of folded segments. Base, wall and joint or corner fragments are all represented, some with signs of hand shaping and smoothing apparent on their surfaces. They are all of similar size and form as the troughs found at Peldon, Heybridge and Cooper's Beach Red Hill (Fawn *et al*. 1990, 11; Tyrrell 2015; de Brisay 1978, Fig. 12). This type has been referred to as 'Type A' briquetage by Fawn *et al*. (1990, 11), and is markedly heavier than its smaller and thinner-walled counterpart in the southern part of the county. Rims, where present, are generally knife cut at right angles or are simple rims finished by hand, causing a slight internal or external beading. A wider variation of rim forms was found in hearth [10] (fill [13]). Included is a rim with shallow thumbing along its top, resulting in slightly external beading (Fig. 5.1). A simple rim of which the top has oblique impressions from finishing with a narrow knife or similar implement, resulting in internal thickening/beading of the rim edge (Fig. 5.2), is paralleled in Peldon (de Brisay 1978, Fig. 12). A similar but less pronounced decoration can be found on a corner fragment (Fig. 5.3). A simple, hand-finished rim with simple tapering was also noted (Fig. 5.4). In addition, a fragment with a stick imprint on the edge, measuring 10mm in diameter, was also included with the trough fragments. However, there is too little present to establish this with certainty. Wall thickness varies: upper wall thickness is 14–20mm. Base thickness is as much as 25mm. Some of the thinnest fragments could perhaps derive from non-trough vessels or even be plate pieces as defined by Poole (2012). Varying degrees of scorching/burning are apparent.

The assemblage from channel [20] (fill [19]) is notable as it largely comprises material from substantial portions of three troughs. One of these containers is readily identified by its distinctive thick black reduced core; a number of pieces can be refitted to give the full length and approximate width of the vessel (Fig. 5.5; Plate 4). Its base measures 345 by 145mm, and is 16mm thick, splaying to 20mm to meet the walls. A black reduced band on the inside base surface would have been caused by an object laying on the bottom of the vessel as it was fired. Although the length of the trough is clearly defined, the width is less obvious. Whereas one side raises up gradually to a vertical wall with rounded corners, the corresponding probable wall is suggested only by a scar as well as a hint of a sharp corner, and would have been quite abrupt, resulting in a roughly D-shaped trough base. The same probable wall also displays wattle impressions vertically along the edge. They measure 4 to 8mm in diameter. Wattling has previously been noted on base fragments from Peldon, where it was suggested they were imprints from pallets made of sticks used to transport the leather-hard vessels (de Brisay 1978, 48). There were no wattle impressions on any of the bases, but this particular vessel may have been pushed into the side of a temporary storage or transport construction when unfired. Remains of a second trough comprise mostly base fragments, some of which conjoin and display a reduced black band across the base as was noted in the first vessel. An upright corner with knife-cut rim survives to the trough's full height of 170mm (Fig. 5.6). The third trough comprises

again mostly base fragments, in this case curiously reduced on the inside of the base.

The remaining contexts all contained only small quantities of featureless trough base or wall fragments.

Other Vessels

While no salt moulds or evaporation bowls (smaller-sized circular to oval vessels) are positively identified, a thinner (only 12mm) curving fragment from hearth [10] (fill [13]) could be from a smaller vessel such as this. Further wall fragments from the same context and measuring only 10mm thick, as well as a fragment from tank [37] (fill [36]) may also derive from smaller containers.

Furniture

Distinctive triangular fire-bars constitute the majority of the briquetage fragments deriving from items of recognisable hearth or kiln furniture. No pedestals are present, nor are any other support items such as wedges and pinch props. A few pieces of briquetage, currently identified as thin trough or other vessel wall from hearth [10] (fill [13]), could perhaps represent plate fragments. The same context also contained a flat slab fragment with chamfered edge, probably trimmed by knife but hand-smoothed, with an obtuse corner. The fragment, measuring 18mm thick, is too small to be certain of form. A possible short rod fragment was recovered from channel [20] (fill [19]). It is tubular (dia. 22–25mm) and

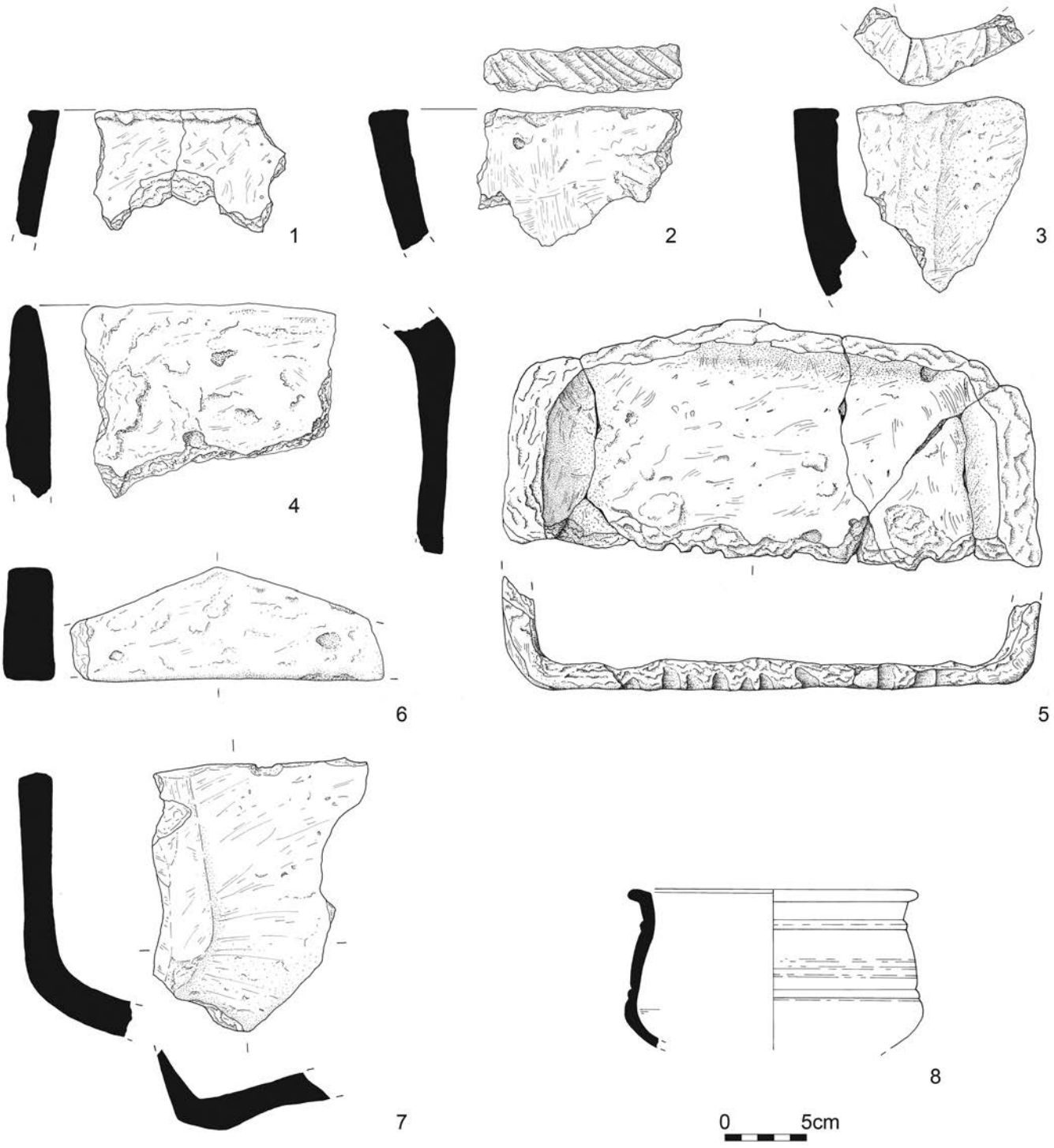

FIGURE 5: Briquetage Illustrations 1-7, pottery illustration 8: Grog-tempered bowl (Cam. 212–216) from tank [25]

tapering, however, its back is broken so identification remains uncertain.

Fire-bars

A total of 16 fire-bar fragments, weighing 2290g, were retrieved. Some variation in colour and intensity of firing is evident. None are complete, although they can all be identified as of the typical triangular type. Fire-bars are noticeably denser and harder fired than the troughs, and their surfaces are often covered in white to pink 'residue'. The bulk came from hearth [10] (fill [13]), with one or two each from layer [23], tank [37] (fill [36]), layer [40] and possibly layer [22]. Most fragments are from the thicker and more robust central part of the fire-bar. All are slightly thicker at their base and taper towards their ends. Apices are all of the pointed type, although some are so abraded they appear rounded to near blunt. The most complete example was recovered from [13], retaining approximately two thirds of the fire-bar, measuring 190+mm long by 65mm high and 25–30mm thick (Fig. 5.7). The remaining fire-bar fragments are too abraded to establish heights. However, they measure consistently at 20–35mm thickness, with the majority (ten examples) measuring between 25 and 30mm thick. Several fragments from [13] and [40] display a white/pink discolouring. A predominance of fire-bars is often noted on sites on the north-eastern coast of Essex, as opposed to southern sites where they are near absent (Fawn *et al*. 1990, 13).

Structural

A total of 100 pieces of briquetage, weighing 2842g and identified as structural briquetage, was recovered from channel [20] (fill [19]), tank [25] (fill [26]) and layer [40]. The majority was collected from fill [19], comprising 84 relatively small fragments (2300g). As mentioned above, all are in Fabric D. Most fragments are amorphous or display just one flat and curving surface. A crude edge, sliced at right angles, was recovered from layer [40] and shows one rough surface. Only a few pieces display the pink/mauve colouring and one piece is near-vitrified. This material probably derives from the incidental heating of clay linings/sides of hearths and flues at the saltern site.

Discussion

The briquetage assemblage is fairly small but in good condition. Few forms are represented however and particularly the (near) absence of any props and supports is notable. Wedges, pinch props and short rods are generally relatively scarce on Red Hill sites, especially in the north-east (Fawn *et al*. 1990, 13–14). The distinct absence of pedestals might indicate that fire-bar slots set into the hearth lining were used instead. Examples were found at Peldon (de Brisay 1978, Fig. 10). No such slots were noted at Bradwell Windfarm.

A comparison between the assemblages above and below the red hill would be unfair given the small size of the latter. However, both contain fire-bars with pointed apices so they are broadly contemporaneous.

In summary, the finds assemblage, comprising a modest and relatively limited range of artefacts, is clearly indicative of a production site (as opposed to secondary working or consumption). The type of troughs used and the predominance of fire-bars is consistent with other salterns in the north-east Essex tradition, rather than the south of Essex or Thameside. Pottery and stratigraphy suggest a short time of operation. This lack of prolonged activity, and consequent absence of significant reworking and disturbance of the site, has provided a 'snap-shot' briquetage assemblage for a pre-conquest Late Iron Age saltern.

Catalogue (Fig. 5)

1. Trough Fragment. [13]. Fabric B. Simple rim with slight thumbing along its top resulting in slight external beading.
2. Trough Fragment. [13]. Fabric C. Simple rim, finished with a narrow knife or similar implement, forming oblique impressions along the top and resulting in internal beading of the rim edge.
3. Trough Fragment. [13]. Fabric C. Oblique impressions as in cat. no. 2 but less pronounced. Corner fragment.
4. Trough Fragment. [13]. Fabric B. Hand-finished rim with simple tapering.
5. Trough Base. [19]. Fabric C. Conjoining fragments, forming near complete base (16mm thick). Width of trough base 145mm, length 345mm. Black reduced band across base surface. Wattle impressions (dia. 4–8mm) at right angle of base, pressing into ?wall side along one length.
6. Trough Corner. [19]. Fabric C. Conjoining fragments of well-finished corner with knife-cut rim. Complete height 170mm.
7. Fire-bar. [13]. Fabric B. Pointed apex; ends missing. L190mm+. H65mm. 25–30mm thick.

Charred Plant Macrofossils by Dawn Elise Mooney

Bulk soil samples were analysed from the site to recover environmental remains such as wood charcoal, plant macrofossils, fauna and mollusca. Two samples were taken from the primary (sample <1>, context [11]) and secondary (sample <2>, context [12]) fills of saltern hearth pit [10]. The soil samples were processed by floatation and plant macrofossils and other remains recovered (Table 2). All archaeological plant remains were preserved by charring, although modern seeds and roots were also recorded. Nomenclature used in the table, and below, follows Stace (1997).

Results

Although cereal grains, chaff, seeds of common weeds and wetland plants and charcoal/charred wood fragments were moderately common within the hearth assemblage, plant remains were scarce elsewhere. Preservation was generally good, although some seeds had lost their diagnostic seed coats.

Both oat (*Avena* sp.) and wheat (*Triticum* sp.) grains were noted within the assemblage from sample <1>, with oats, possibly including cultivated specimens, occurring most frequently. The wheat was generally poorly preserved, although some displayed the elongated 'drop' form typical of spelt (*T. spelta*), and spelt glume bases were also recorded. In addition to the cereal remains, a range of seeds of common segetal weeds were also present within the assemblage, with taxa noted including brome (*Bromus* sp.), fat hen (*Chenopodium album*), black bindweed (*Fallopia convolvulus*), goosegrass (*Galium aparine*), grasses (Poaceae), buttercup (*Ranunculus acris/repens/bulbosus*) and dock (*Rumex* sp.). Fragments of charred root, rhizome or stem were recorded, and some charcoal fragments were also noted.

Sample <2> contained numerous small fragments of burnt clay and a high density of mineral concretions (possibly derived from the heating and/or settling processes) along with siliceous and vitreous globules, probably derived from high temperature combustion of organic materials.

	Sample <1> Context 11	Sample <2> Context 12
Cereals		
Avena sp. (grains)	*	
(floret base)	*	
A. sativa L. (floret base)	*cf	
Hordeum sp. (rachis node)	*cf	
Triticum sp. (grains)	*	
(glume base)	*	
(rachis internode)	*	
T. spelta L. (glume bases)	**	
Cereal indet. (grains)	*	
(basal rachis node)	*	
Herbs		
Asteraceae indet.	*	
Atriplex sp.	*cf	
Brassiaceae indet.	**	
Bromus sp.	**	
Chenopodium album L.	*	
Chenopodiaceae indet.	**	
F*allopia convolvulus* (L.) A. Love	*	
Galium sp.	*	
G. aparine L.	*	
Medicago/Trifolium/Lotus sp.	*	
Small Poaceae indet.	*	
Large Poaceae indet.	*	
Ranunculus acris/repens/ bulbosus	*	
Rumex sp.	*	
Stellaria media (L.)Vill	*	
Wetland plants		
B*olboschoenus/ Schoenoplectus* sp.	*cf	
Other plant macrofossils		
Charcoal <2mm	**	*
Charcoal >2mm	**	*
Charcoal >5mm	**	
Charcoal >10mm	*	
Charred root/rhizome/stem	****	*
Indet.culm nodes	*	
Indet.seeds	**	*
Other remains		
Burnt/fired clay	*	**
Siliceous globules		**
Vitreous material		**
White/buff/pink mineral concretions		****
Volume of flot (litres)	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**

TABLE 2: Quantification of flot macrofossils (* = 1–10, ** = 11–50, *** = 51–250, **** = >250)

Discussion

The small macrofossil assemblage recovered from the primary fill of hearth [10] is broadly similar to other contemporary saltern sites in the region (*cf.* Wilkinson and Murphy 1995; Lane and Morris 2001; Hunter 2012), with the assemblage of taxa representative of both wetland and dry grassland environments along with cultivated areas indicated by the cereal remains. The dominance of oats and spelt-type wheat amongst the cultivated cereal remains echoes the composition of the much larger cereal assemblage from the contemporary site of Stanford Wharf (Hunter 2012). The charred plant macrofossils preserved in this assemblage are likely to be indicative of fuel waste, including cereal processing and storage waste. The small quantity of charcoal combined with the presence of charred seeds of grass and herb taxa and charred roots, rhizomes and stems may be indicative of the use of turf or peat as fuel, rather than wood. However, the quantity of material recovered is too small to contribute significantly to the discussion of fuel use for salt production in East Anglia.

DISCUSSION AND CONCLUSIONS

The Turbine 106 red hill is a relatively modest sized and uncomplicated example of a north-east Essex type of saltern site as identified by Fawn *et al*. (1990). It is typical in terms of its mounded red earth deposit, its small complex of hearth and tanks, and the presence of larger briquetage troughs though otherwise restricted range of briquetage vessels and furniture. Although only a small amount of pottery was recovered, the salt-making activity is relatively confidently dated to the late Iron Age *c*.10–60AD with pottery sherds in similar fabrics found both above and below the episode of red earth deposition.

The site appears to have had a relatively short working lifespan, exhibited in the lack of complexity of its features, fore-knowledge of where the buried saltern was when siting the later one and similarity between saltern layouts. Only two phases of salt-making were reliably identified with the phases clearly separated by the deliberate deposition of red earth material to form a mound over the original saltern site.

The creation of the earlier saltern site would have commenced with the stripping of vegetation and topsoil to provide a clear and level working area. The site was no doubt chosen because it was high enough, at *c*.1.2m AOD, to remain dry through most high tides but close enough to a tidal channel to allow the easy collection of sea water. The exposed natural clay was then shaped into a raised working platform and the land to the south was seemingly reduced to create or enhance an existing scarp down to the saltmarsh or a natural channel leading off it. The topsoil magnetic susceptibility plot of the field (Johnson 2005), suggests the presence of a small former creek to the immediate south-west of the site (Fig. 6) and a larger one further to the south-east. It seems likely that the excavated depressions [46] and [47] to the south of the platform were fed by tidal waters from this creek system. Pock-marks in this deeper area are deemed to be of natural origin – mud, plants, etc. – rather than stake-holes as evident at the late 2nd century Roman salt-making site at Shell Bridge, Holbeach St Johns, Lincs (Gurney 1999, 66). Whilst it is possible that the irregular groove in the base of this area is evidence for some form of timber sluice gate to retain the water, variations in width and depth, and lack of supporting

features such as post-holes, suggest it is more likely to be of natural origin.

In the first salt-making phase the raised clay platform was occupied by a large tank, used for evaporation or settling of the brine, a single hearth pit and three post-holes; the latter perhaps evidence for a short length of fence perhaps to shield the hearth from winds from the north-east. Raised platforms defined by gullies and containing similar arrangements of hearths and tanks are a feature of the recently excavated saltern complex at Stanford Wharf, Essex (*e.g.* saltern 5808, Biddulph *et al*. 2012, 115) and of phase 1 of the saltern complex at Blackborough End, Middleton, Norfolk (Crowson 2001, 167–73), albeit both are of later Roman date. Variation in shape and depth between the two ends of the evaporation/settling tank suggests that it may have consisted of two cells separated by a clay or timber partition. Multi-celled tanks are not uncommon and are found both on contemporary, and later, Roman saltern sites. The tank held brine prior to it undergoing evaporation in briquetage troughs over the hearth; the troughs suspended over the hearth with the use of the briquetage fire-bars. One notable aspect of this earlier phase of production is the absence of fuel ash and briquetage debris, common on other red hill sites, such as Peldon, Essex (de Brisay 1978), from which it must be presumed that such material was conscientiously removed and disposed of elsewhere in order to maintain a fairly clean working environment. Indeed there was no *in situ* evidence for the presumably baked and vitrified base of the earliest phase of hearth [28] implying that it had been completely removed.

On conclusion of the first phase of salt production there then appears to be a deliberate deposition of red earth debris over the obsolete saltern. This material was, in general, remarkably uniform and well–sorted with no visible tip lines as at some other red hill sites, *e.g.* RH184 at Osea Road, Maldon (Fawn *et al*. 1990, 32). The material infilled the top of the partially open hearth pit, the tank and water collection pits, and in particular the deeper area to the south-east of the platform. The red earth is not believed to be a product of this saltern, but to have derived from another nearby salt production site, or sites, of which there are several (Fig. 6). The formation processes associated with the red earth debris are still not fully understood and no further discussion is offered here. It has been suggested that the red earth consisted of broken-up hearth material (Fawn *et al*. 1990, 31) and more

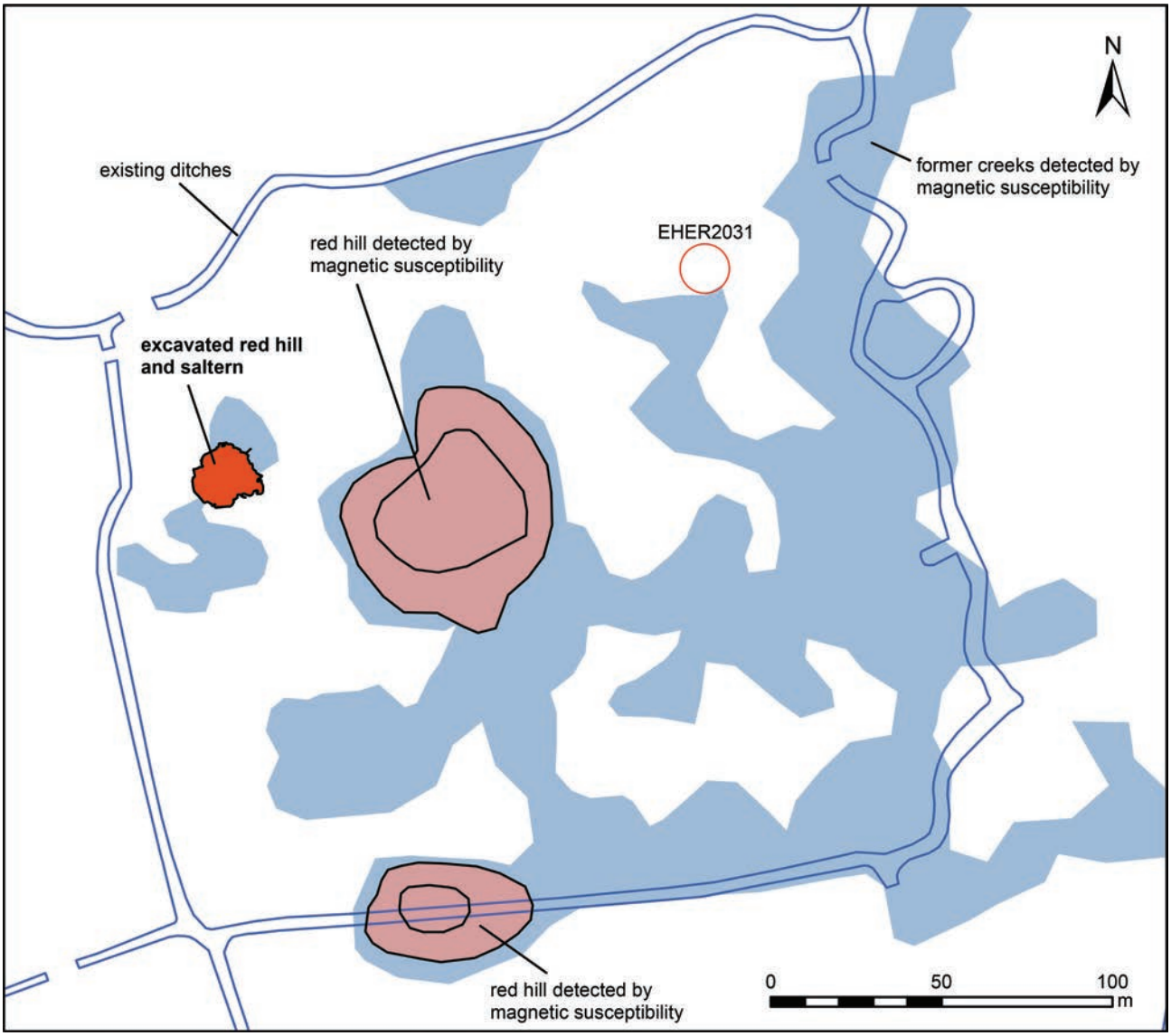

FIGURE 6: Magnetic susceptibility plot (reproduced with permission of Oxford Archaeotechnics Ltd)

recent scientific analysis at Stanford Wharf has concluded that it mainly comprises of burnt salt marsh sediment (Biddulph *et al*. 2012, 80) that had been used to make brine. Whatever and wherever its source, the purpose of this deliberate dumping of material was seemingly to remodel and rejuvenate an obsolete saltern by creating a higher and larger platform on which to work. Lower areas were infilled and the site re-profiled to create a reasonably circular and even mound and was perhaps prompted by a rise in sea level.

The second phase of salt-making took place upon the newly formed red hill. A new hearth was constructed accompanied by a second pair of tanks, one of which, [25], also showed some sign of being sub-divided into two separate cells. The new hearth pit [10] was located immediately to the north of the old [28] and the whole complex was positioned above the original clay platform implying that it was still partly visible and which in some way seems to negate the need for a more expansive red earth mound. As the deeper area to the south of the old platform was by now in-filled, tidal water was brought closer to the site by means of a channel [20].

Similarities in the arrangement of the salt-making features between the two phases, suggests that the interval between the two production periods was relatively short and that the nature and scale of the procedure remained unchanged. The uniformity of the recovered finds assemblage also supports this. Its restricted range of material and evident consistency within the briquetage assemblage is construed to indicate the relatively short lifespan of this saltern site. The lack of a domestic component, other than a small quantity (20 sherds) of pottery, is notable and suggests that any long term settlement or related occupation activities were not located in close proximity to this saltern. However, the few pottery sherds recovered were relatively large and unabraded suggesting that only a small number of pottery vessels were used and discarded in the immediate vicinity of the saltern, perhaps derived from a small-scale temporary camp used by the salt-workers or simply discarded at their place of work.

The general lack of processing debris, such as fuel ash and burnt hearth lining, continues into the second phase of salt production implying that this material was deliberately removed from the working area. Only in the final stages of abandonment are significant amounts of waste material, in the form of pieces of briquetage, found in the tops of the redundant hearths, channel and tanks. The briquetage pieces were notably larger than those from a longer-lived and more complex site, such as Stanford Wharf (Biddulph *et al*. 2012). Indeed, the lack of significant amounts of carbonised deposits, other than from latest hearth [10], has constrained the potential to investigate the environmental setting of this saltern and its wider location. Tank [10] was also notable for the lack of a hardened fire-baked base and this appears to have again been deliberately removed as with the hearth in the earlier phase. It is possible that some of the structural briquetage recovered from channel [20] originated from here.

While the Turbine 106 salt-making operation would appear to have been a short-lived and relatively modest venture, it should be borne in mind that this was very probably just one of a number of salterns along this edge-of-saltmarsh location. At least four are believed to be present in the current field, including the 'great red hill' itself and the remains of several others are known in the wider vicinity. This particular red hill and saltern was not identified previously because it was buried beneath both topsoil and clay subsoil, which masked its presence from aerial photography and geophysical survey but beneficially protected it from plough disturbance. It is reasonable to assume that additional red hills and salterns still lie undiscovered elsewhere below the clay of the Bradwell marshland.

The Turbine 106 site is the only extensively, and professionally, investigated red hill site on the north-east Essex coast for some decades. The exposure of the entirety of a single red hill mound has provided an important opportunity to further understanding of the nature, function, development and chronology of these salt production sites. However, as Stanford Wharf has shown, more expansive excavation of the surrounding vicinities of these salt-making sites are just as informative and crucial to investigating the inter-relationships between them and the associated activities that go on around them. As many aspects of the salt production process and red hill formation are still not fully understood, it is hoped that further opportunities to excavate these sites will occur in the future.

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BIBLIOGRAPHY

Barford, P.M. 1995, 'The Briquetage from Blackwater Site 11' in Wilkinson T.J. and Murphy P.L., *The Archaeology of the Essex Coast, Volume I: The Hullbridge Survey*, E. Anglian Archaeol. 71, 173–80

Biddulph, E., Foreman, S., Stafford, E., Stansbie, D. and Nicholson, R. 2012, *London Gateway. Iron Age and Roman Salt Making in the Thames Estuary: Excavation at Stanford Wharf Nature Reserve, Essex*, Oxford Archaeol. Mono. 18

Crowson, A. 2001, 'Excavations at Middleton, Norfolk', in Lane, T. and Morris, E. (eds), *A Millennium of Saltmaking: Prehistoric and Romano-British Salt Production in the Fenland*, Lincolnshire Archaeol. & Heritage Rep. Ser. 4

de Brisay, K. 1978, 'The Excavations of a Red Hill at Peldon, Essex, with Notes on some other Sites', *Antiquaries J.* 58, 31–60.

Fawn, A.J., Davies, G.M.R., Evans, K.A. and McMaster, I. 1990, *The Red Hills of Essex: Salt Making in Antiquity*, Colch. Archaeol. Group

Foundations Archaeology 2006, *Bradwell Wind Farm, Essex: Archaeological Evaluation*

Germany, M. 2011, *Turbine 9 [6], Bradwell Wind Farm, Hockley Lane, Bradwell-On-Sea, Essex: Archaeological Excavation*, ECC FAU unpublished report

Gurney, D. 1978, 'Iron Age and Romano-British salt production on the Essex Coast' (unpubl. BA dissertation, Univ. of Durham)

Gurney, D. 1999, 'A Romano-British Salt-making Site at Shell Bridge, Holbeach St Johns: Excavations by Ernest Greenfield, 1961', in Bell,

A., Gurney, D. and Healey, H., *Lincolnshire Salterns: Excavations at Helpringham, Holbeach St Johns and Bicker Haven*, E. Anglian Archaeol. 89, 21–69

Hawkes, C.F.C. and Hull, M.R. 1947, *Camulodunum, first report on the excavations at Colchester, 1930–1939*. Society of Antiquities Research Report XIV (Oxford)

Hunter, K. 2012, 'Specialist Report 19: Plant Macrofossils', in Biddulph, E., et al., *London Gateway: Iron Age and Roman Salt Making in the Thames Estuary*

Johnson, A. E. 2005, *Proposed Wind Farm, Bradwell-on-Sea, Essex: Topsoil Magnetic Susceptibility Survey*, Oxford Archaeotechnics Ref: 3010805/BRE/NPR

Lane, T. and Morris, E. (eds.) 2001, *A Millennium of Saltmaking: Prehistoric and Romano-British Salt Production in the Fenland*, Lincolnshire Archaeol. Heritage Rep. Ser. 4

Orr, K. 2005, *An archaeological desk-based assessment of land at Bradwell-on-Sea, Essex*, Colchester Archaeol. Trust Rep. 04/5a

Poole, C. 2012, 'Specialist Report No 8. Briquetage and Fired Clay', in Biddulph, E., et al., *London Gateway: Iron Age and Roman Salt Making in the Thames Estuary*

Stace, C. 1997, *New Flora of the British Isles* (2nd edn, Cambridge University Press)

Thompson, I. 1982, *Grog-tempered 'Belgic' pottery of south-eastern England*, BAR Brit. Ser. 108 (Oxford)

Tyrrell, R. 2015, 'Salt Briquetage', in Atkinson, M. and Preston, S., *Heybridge: A Late Iron Age and Roman Settlement. Excavations at Elms Farm 1993–5*, *Volume 2*, Internet Archaeology 40, http://dx.doi.org/10.11141/ia.40.1.tyrrell11

Wilkinson, T.J. and Murphy, P.L. 1995, *The Archaeology of the Essex Coast, Volume 1: The Hullbridge Survey*, E. Anglian Archaeol. 71

Late Iron Age, Roman and medieval occupation at Letch's Yard, 109 High Street, Braintree

Trevor Ennis
With contributions by Lucy Allott, Gemma Ayton, Joyce Compton, Anna Doherty, Elke Raemen and Helen Walker

Excavation within Letch's Yard, Braintree in 2003, revealed further archaeological remains of the Roman small town and preceding Late Iron Age settlement. This supplements previous discoveries along Pierrfitte Way. Evidence of Roman occupation in the 1st century AD consisted of the partial remains of at least two timber structures, one with a masonry foundation, and pitting. A low incidence of later Roman and absence of Saxon and earlier medieval remains suggests that this location reverted to agricultural or horticultural use until its re-occupation in, or by, the 15th century as part of the south-westward expansion of the town along the High Street.

INTRODUCTION

Following exploratory trenching, an archaeological excavation was undertaken by the Essex County Council Field Archaeology Unit at the former Letch's Builders Yard site, 109 High Street, Braintree, in 2003. Three areas were excavated (centred at TL 75480 22940) on land proposed for residential development (Fig. 1). The excavation areas (totalling *c*.300 sq. m) broadly encompassed the footprint of the proposed new buildings and other land subject to disturbance by construction works. The extent of all three areas was limited by a live electricity cable running roughly north-west/south-east across the site. This note is based on an archive report (Ennis 2003), a copy of which is held in the Essex County Council Historic Environment Record (HER). The archive will be deposited at Braintree Museum under the site code BT38.

Background

Braintree is situated between the rivers Blackwater and Brain on a plateau of mixed glacial deposits of sand, gravel and clay. The site itself is situated on the southern edge of the plateau at the border with sand and gravel river terrace deposits laid down by a forerunner of the River Brain. Although evidence of prehistoric activity has been found in the area, extensive permanent occupation of the plateau appears to have begun in the Late Iron Age when a settlement developed adjacent to an east–west trackway. In the 1st century AD the settlement developed into a small Roman town situated at the cross-roads between Stane Street (Rayne Road) and a Roman road, on the line of the High Street, running between Chelmsford and Sudbury.

Many of the earlier Braintree excavations that produced Late Iron Age and Roman evidence have been summarised in Drury 1976 and Havis 1993. More recent work has included a small-scale excavation behind the former Flacks Hotel at 103–105 High Street (Hickling 2002), excavation to the rear of 97–99 High Street (Pearson 2002) and a further watching brief that encompassed both sites (Pocock 2006); all recorded Roman settlement remains of the 2nd to 4th centuries AD (Fig. 1).

During the 1980s the Brain Valley Archaeological Society and the Manpower Services Commission undertook numerous excavations along the proposed route of Pierrefitte Way (Fig. 1). The nearest of these excavations to the present site (Letch's Yard HER 6293–6294, the Fountain HER 6356–6360, Boars Head HER 16351–3, 2–4 London Road HER 6295 and College House HER 6297) revealed multi-period occupation ranging in date from the Late Iron Age through to the Saxon period (Medlycott 2007). Remains of Late Iron Age occupation were found on four sites (Boars Head, College House, 2–4 London Road and the Fountain) and chiefly comprised a circular ditched enclosure and two roundhouses. Roman occupation activity dating from the 1st to 4th centuries AD was identified on all five sites. This included a minor road, boundary ditches, building platforms, timber structures, clay floors, cobbled yards, wells, a clay-lined pond, two child burials and areas of pitting. One structure, interpreted as a workshop, contained a bloomery with a casting pit located outside. Although largely unpublished, these remains still provide the best indication of the nature of the Roman small town.

In 2004 an excavation was undertaken on land east of Pierrefitte Way (Newton 2010). This excavation adjoined the 1980s Letch's Yard site and was located some 10m north of the present Area 1. Roman activity on this adjacent site commenced in the 1st century AD and continued into the late 3rd/early 4th century with an apparent hiatus in activity between the 2nd and 3rd centuries. Remains were of a domestic nature and consisted of a plot of land demarcated by two boundary ditches within which was an area of pitting. In the final phase of activity (late 3rd to early 4th century) the area was deliberately in-filled and levelled. No remains post-dating the 4th century were identified and the site remained relatively undisturbed until the post-medieval period.

There is limited evidence for occupation of the Roman town area in the early Saxon period with possible sunken-floored buildings excavated at the Fountain and at Brands beneath the present multi-storey car park (Medlycott 2007). Elsewhere, a build-up of cultivated soil (e.g. at nearby 103–105 High Street) in the post-Roman and medieval period suggests agricultural/horticultural activity. Indeed, early Ordnance Survey mapping indicates that most of the current site was open farmland up to the end of the 19th century. The Pierrefitte Way excavations revealed no evidence relating to the medieval town, which developed around the Market Place following the granting of a weekly market and annual fair in 1199. The Church of St. Michael's is 13th-century in origin (HER 6315) and there are a number of extant 14th- and 15th-century buildings along the High Street. Part of the former Flacks Hotel (103–105 High Street) has been dated to the 16th century and is one of a series of late medieval buildings identified at the southern end of the

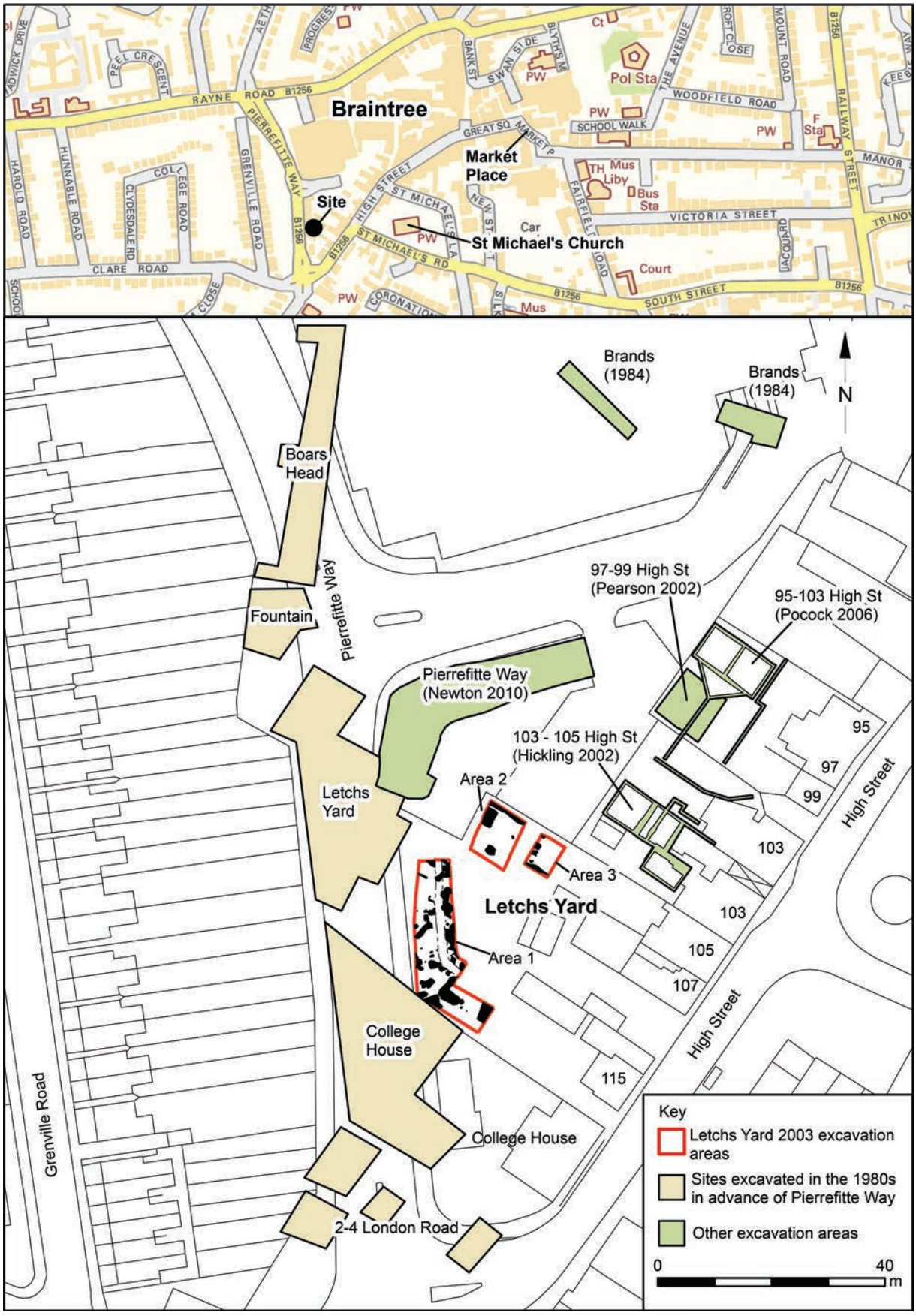

FIGURE 1: Location of site and previous investigations

High Street (Andrews 2002, 422). The history of the former Letch's Yard goes back in name at least to 1874 when property at 103 and 105 High Street was listed in the Post Office trade directory as inhabited by Walter Edward Letch (builder). In the 20th century the builders' yard occupied land to the rear of properties stretching between 105 and 115 High Street and extending west to the back gardens of houses on Grenville Road.

EXCAVATION

The overburden comprised various modern yard and make-up deposits and disturbed topsoil/subsoil. It varied in depth from 0.2m (Area 1) to 0.7m (Areas 2 and 3) and was machine stripped to reveal a variety of archaeological deposits, gullies, post-holes and pits cut into natural deposits of sand and gravel. Survival and clarity of archaeological features was generally fair to good, although some modern ground reduction and levelling had clearly occurred. Features in Area 1 had been truncated by an exploratory trench and subsequent collapse of its sides.

A number of modern deposits and features were identified including a ramp pit and two domestic pet burials. The archaeological remains in Area 1 were directly overlain by dark grey silt [29] that contained a variety of 20th-century finds. Two natural features ([19] and [23]) were identified and a small number of undated features were all located in areas of post-medieval and modern disturbance. The dated archaeological remains are described below in phase order. Features of possible Late Iron Age and Roman date were only identified in Area 1.

Late Iron Age (early-mid 1st century AD)

A number of features of potential Late Iron Age date were excavated in Area 1 (Fig. 2). All were truncated to some degree or continued beyond the edge of the excavation area. One of the better dated was a large, sub-rectangular rubbish pit [15/21], 2.4m long and 0.20m deep, that contained 138 sherds of pottery and fragments of baked clay. The southern edge of this pit truncated smaller pit [17] and other pits ([3], [46], [119] and [130]) were scattered across the area. Oval pit [46] was over 1m in length but only 0.07m deep. A post-hole [48], 0.25m deep, appeared to be cut into the base of this pit. Both features contained similar fill and pottery but their exact relationship was obscured by modern disturbance.

One fragmentary length of gully, [124], 1.6m+ long by 0.25m deep, also belongs to this phase. The gully was broadly aligned north-west/south-east and appeared to be slightly curving before continuing beyond the northern edge of the trench. It did not continue east of the initial trial trench.

Early Roman (mid-late 1st century AD)

Activity in the Early Roman period appears to be more intense and is characterised by the partial remains of at least two structures and further pit digging (Fig. 2). The partial remains of a possible timber structure were excavated in the centre of Area 1. This comprised a north-east/south-west orientated slot [97], 2.5m long by 0.9m wide and 0.2m deep, with three possibly contemporary post-holes; [99] located at the west-end of the slot and the other two, [103] and [105], at the east-end. Two small adjacent post-holes ([101] and [149]) and a larger post-hole or small pit [115] may also be associated.

A second structure was located adjacent to the western edge of the site where a fragment of flint walling ([166]), 0.08m high, sat upon a solid flint and clay foundation. Wall fragment [166] continued beyond the edge of the excavation and was composed of medium to large flints in a yellowy buff mortar matrix. The underlying foundation ([54]) consisted of a solid deposit of medium to large flints densely packed in light brown clay constructed in a linear cut, [53], over 1.7m long and 0.3m deep. This may represent the south–east corner of a masonry structure that extended beneath the modern boundary wall of the site. The masonry may have replaced an earlier timber structure represented by underlying post-hole [51] and post-hole [49] immediately to the south.

In the north-east corner of Area 1, a line of three post-holes ([79], [82] and [151]) on a north-west/south-east alignment, also appear structural but are more likely to form part of a fence line rather than a timber building. The best preserved of the three was post-hole [79] which was sub-circular in plan with a diameter of 0.5m and a depth of 0.28m. The other two post-holes were not fully exposed within the trench but appeared to be of similar dimensions. A partially exposed, east–west orientated, linear feature [126], located west of [151], may be an associated gully.

The majority of pits ([1], [27], [32], [37], [38], [64], [83], [85], [92] and [145]) were dated by their pottery to the early Roman period. Pit [38] cut adjacent 0.2m deep stake-hole [40] that, although undated, is likely to be broadly contemporary. Larger pits [32] and [37], 0.6m and 0.7m deep respectively, were oval-shaped in plan with a similar profile, each displaying a distinctive deeper area (0.10m+) to the west. Both pits had two sandy silt fills and contained a relatively large amount of 1st century AD pottery, fragments of baked clay and slag. Although a number of bulk soil samples were taken and processed, a definite domestic or industrial function for these pits could not be determined.

The top of pit [64] was infilled with a flattened midden deposit [69] containing animal, bird and fish bones, numerous oyster shells and fragments of baked clay. Pits [110], [112], and [114] contained only small amounts of pottery and can only be tentatively assigned to the early Roman period. No patterning was discerned, especially in relation to apparent structures.

Mid to late Roman

Two features belonged to a later Roman phase of activity (Fig. 2). Oval-shaped post-hole [25] contained pottery dating to the mid-late 2nd century AD and had been cut through the backfill of an earlier pit ([27]). Small sub-circular pit [13] contained probable 4th-century pottery and a fragment of late Roman vessel glass. No other features of later Roman date were identified. This lower density of later features was in part mirrored at the 2004 Pierrefitte Way site to the north where a hiatus in activity was identified in the 2nd to 3rd century (Newton 2010, 1178–80). Their presence here may correspond with a posited late phase of expansion and development of the Roman town (Medlycott 1998, 11). It is possible that some features of late Roman date have been removed by later truncation of the site.

Late medieval

While no Saxon or early medieval remains were present, two late medieval pits were identified in Areas 1 and 2 (Fig. 3). The larger rubbish pit [7], over 3.4m long and 1.1m deep, was located in the north-west corner of Area 2. Finds included animal bone, brick and tile, oyster shell and pottery fragments. The majority of the pottery was recovered from the upper fill [9] and dated to the late 15th to early 16th century. Pottery from the lower fill [8] was generally of slightly earlier date broadly ranging from the 14th to the 15th century. The second pit [58], 2.3m long and 0.95m deep, but truncated to the

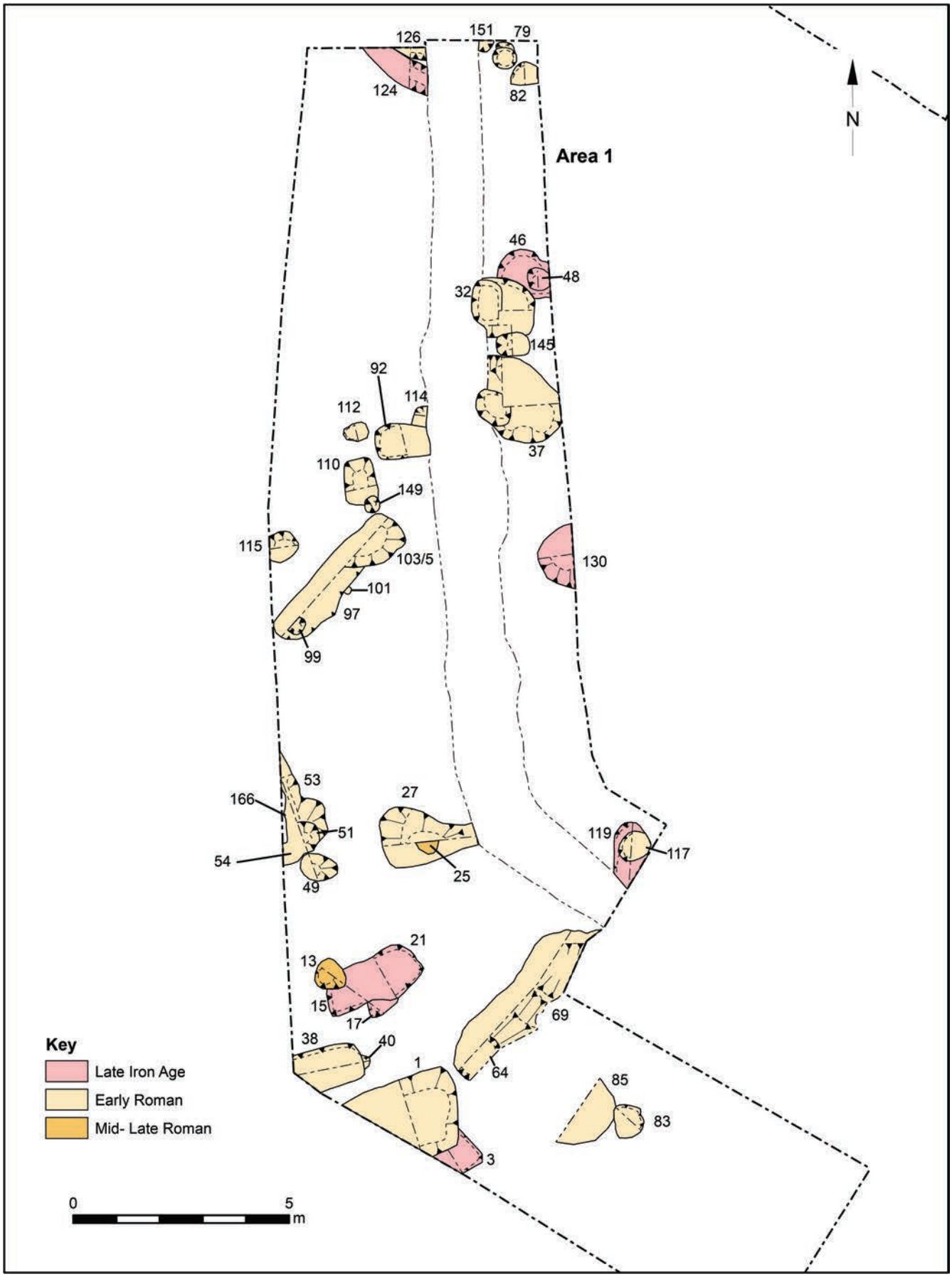

FIGURE 2: Late Iron Age and Roman features

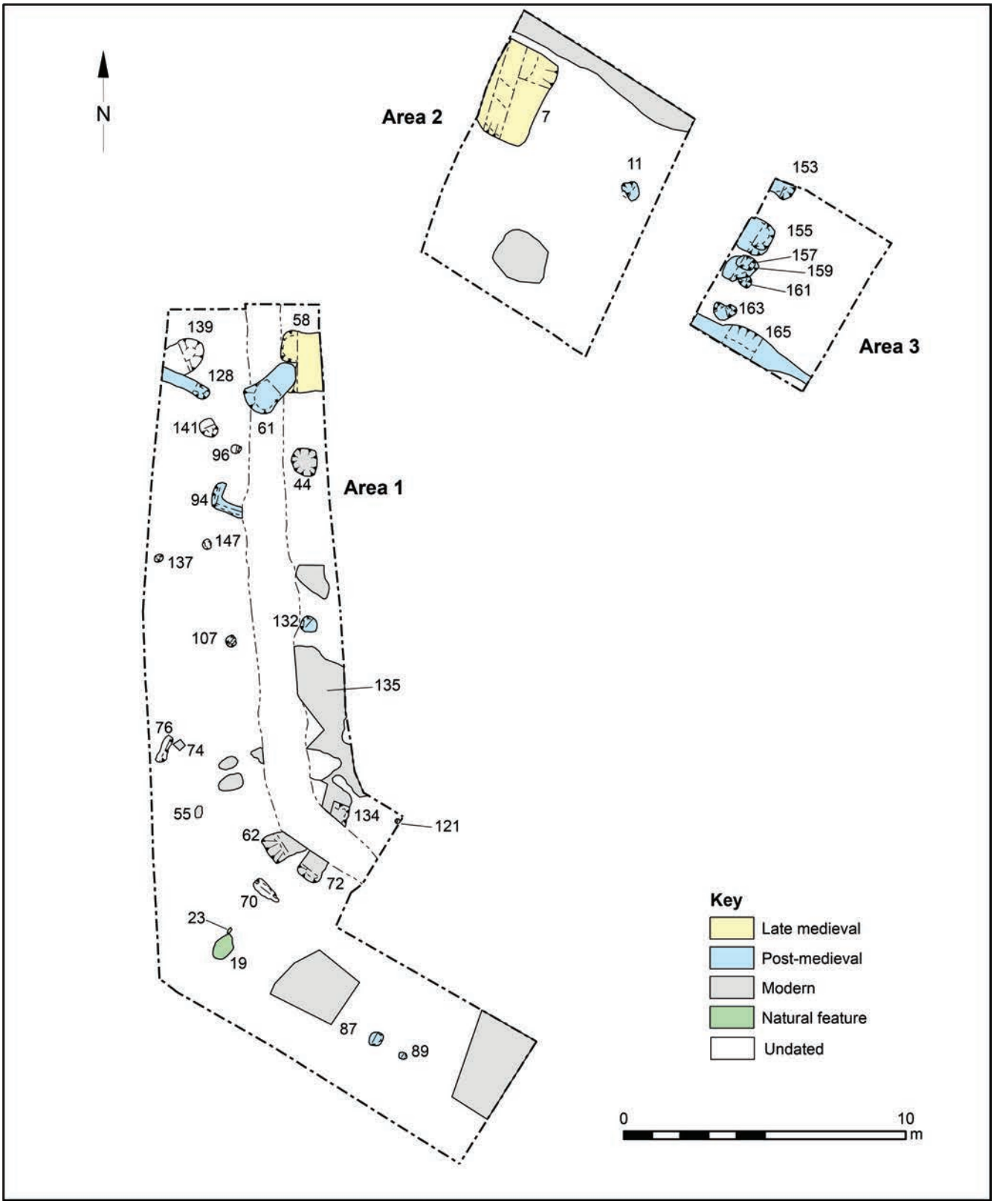

FIGURE 3: Late medieval, post-medieval and modern features

south-west, was excavated at the north end of Area 1. Pottery recovered from this pit also dated to the later 15th century.

Post-medieval

An apparent arrangement of small pits and post-holes ([153], [155], [157], [159], [161] and [163]), on a north-east/south-west alignment, were identified along the western edge of Area 3 (Fig. 3). These features contained 18th-century pottery, post-medieval brick and tile, pieces of coal and fragments of clay pipe and it is likely they formed a fence or boundary to the rear of property No. 105 fronting onto the High Street. Partly exposed feature [165] to their south could be a boundary ditch running at right angles to the High Street. A number of other poorly dated post-medieval features ([11], [61], [87], [89],

[94], [128] and [132]), containing pottery ranging in date from the 17th to the 19th centuries, some of which may be residual, were scattered about Areas 1 and 2.

FINDS AND ENVIRONMENTAL EVIDENCE

Finds were recovered from the majority of investigated features. The largest component was pottery of mainly 1st century AD date with smaller amounts of pottery dating to the medieval and post-medieval periods. Other sizeable components included brick and tile, much of which was of post-medieval date, and metalwork consisting mainly of iron nails and fragments. Categories, such as clay tobacco pipe, shell and stone were small, of limited potential, and have only been reported on in archive (Compton 2003).

Late Iron Age/Early Roman Pottery by Joyce Compton and Anna Doherty

A moderate assemblage of Late Iron Age and Roman pottery (1184 sherds, weighing 22,562g) was recovered from the site (quantified by sherd count, weight and estimated vessel rim equivalence (EVE) in Table 1). Pottery fabrics were recorded using standard Essex County Council Field Archaeology Unit fabric descriptions and the vessel forms using the *Camulodunum* type series (Hawkes and Hull 1947, 215–75) for the Late Iron Age pottery, and the type series devised for Chelmsford (Going 1987, 13–54) for forms of Roman date.

Late Iron Age/earlier Roman pottery

Fairly certain ceramic evidence for pre-conquest activity has been recorded within 100m of the site at Grenville Road (Martin 2000, 103–04). However, it should be noted that feature assemblages from the early-mid 1st century AD phase at the current site are small. Some, such as those from pits [21] and [15], are almost exclusively grog-tempered. The presence in the wider assemblage of pedestal jar forms, a few examples of Gallo-Belgic imports and a single example of a black sand amphora fabric probably hint at some pre-conquest activity in the immediate vicinity, although it is perfectly possible that the earliest stratified features date to as late as the AD40s.

More generally, the assemblage seems to suggest a peak in activity in the pre-Flavian to early Flavian period. Some context groups assigned to the mid-late 1st century AD phase, such as ditch [1], pits [27], [83], [85] and [117] and layer [69], are also almost entirely grog-tempered but contain one or two examples of more certain post-conquest fabric types. However, some evidence of chronological development can be seen in other mid-late 1st century AD groups like those from pits [32], [37], [38], and [92], where coarsely grog-tempered or 'Romanising' wares tend to make up about half of the pottery with the remainder made up by Roman coarse and fine ware fabrics.

The assemblage is chiefly made up by mid to late 1st century types such as jar forms *Cam* 218, 221, 231, 254, 257, G16, G17 and G20 (Fig. 4.9–13; Fig. 5.21); however a few forms including an example of a B1 dish and C2, C19 and C26 bowls are of more late 1st century/early 2nd century date (Fig. 4.16–20).

In terms of table wares, it is interesting to note a mixture of Gallo-Belgic and Roman influences. Amongst the former are butt-beakers, cups, including *Cam* 57 forms and platters including a *Cam* 16 copy (Fig. 4.3–4, 6–8, 14). The platter, from pit [37], has an imitation potters' stamp impressed in the interior (Fig. 4.6). One of the *Cam* 57 cups also bears a stamp probably reading IIVII (Fig. 4.3). Similar – though not

Fabric Code	Fabric Name	Count	Weight	% Weight	EVE	% EVE
AMPH	Amphora fabrics	24	1327	5.9		
BB2	Black burnished ware 2	1	14	0.1	0.04	0.4
BSW	Black-surfaced ware	150	1254	5.6	1.66	17.1
BUF	Unsourced buff wares	3	5	<0.1		
CGGLZ	Central Gaulish glazed ware	1	2	<0.1		
COLB	Colchester buff ware, inc mortaria	60	1210	5.4	1.51	15.5
GRF	Fine grey wares	51	648	2.9	1.08	11.1
GROG	Grog-tempered ware	392	3529	15.6	3.21	33.0
GROGC	Grog-tempered ware (storage jars)	158	8636	38.2	0.08	0.8
GROGRF	Red-surfaced grog-tempered ware	7	84	0.4		
GRS	Sandy grey wares	227	2452	10.8	1.55	15.9
LIME	Lime-tempered ware	2	76	0.3		
MICW	Miscellaneous Iron Age coarse wares	1	32	0.1		
NGWF	North Gaulish white fine ware	5	50	0.2	0.31	3.2
NVC	Nene Valley colour-coated ware	4	11	<0.1		
OXRCM	Oxfordshire red colour-coated ware mortaria	1	18	0.1		
STOR	Storage jar fabrics	71	2922	13.0	0.23	2.4
TN	*Terra nigra*	3	12	0.1		
TR	*Terra rubra*	3	14	0.1		
TSG	Unsourced samian wares	19	216	1.0	0.06	0.6
VRWM	Verulamium Region white ware mortaria	1	50	0.2		
Total		**1184**	**22562**	**100**	**9.73**	**100**

TABLE 1: Quantification of Late Iron Age and Roman pottery

identical – numeral stamps are known from Colchester (e.g. Rigby 1999, fig. 5.5, LTC40, LTC48, LTC49). The stamp on this example is quite distinctive, the first three characters standing out in high-relief. The source of this vessel is unknown; its fabric is high-fired with grey core, oxidised margins and black exterior surfaces, burnished on the exterior only. It has a fine, sparsely micaceous, very silty matrix with sparse fine grog of <1mm. It appears dissimilar to known name-stamped wares

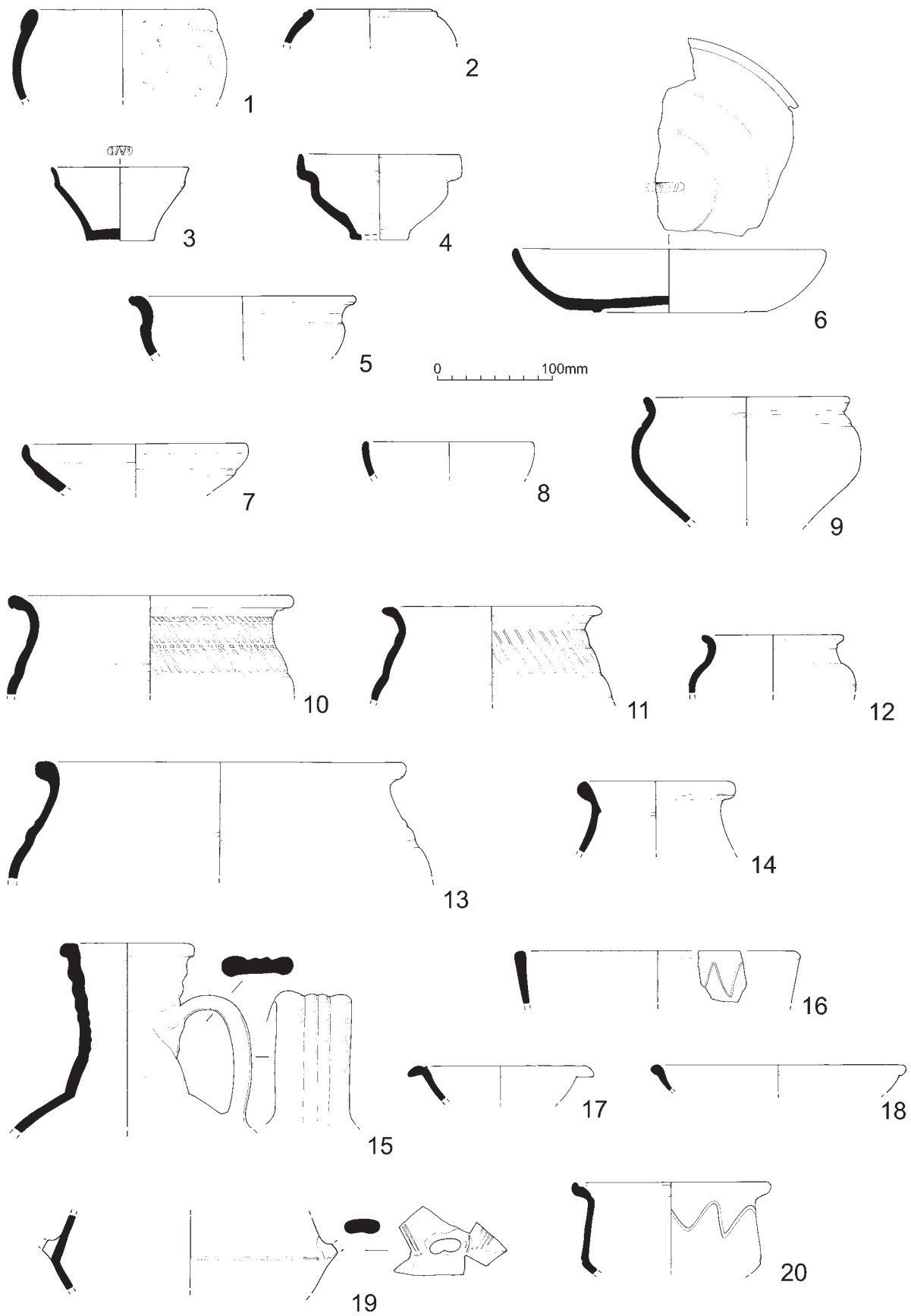

FIGURE 4: Late Iron Age and Roman pottery, Nos. 1–20 (scale 1:5)

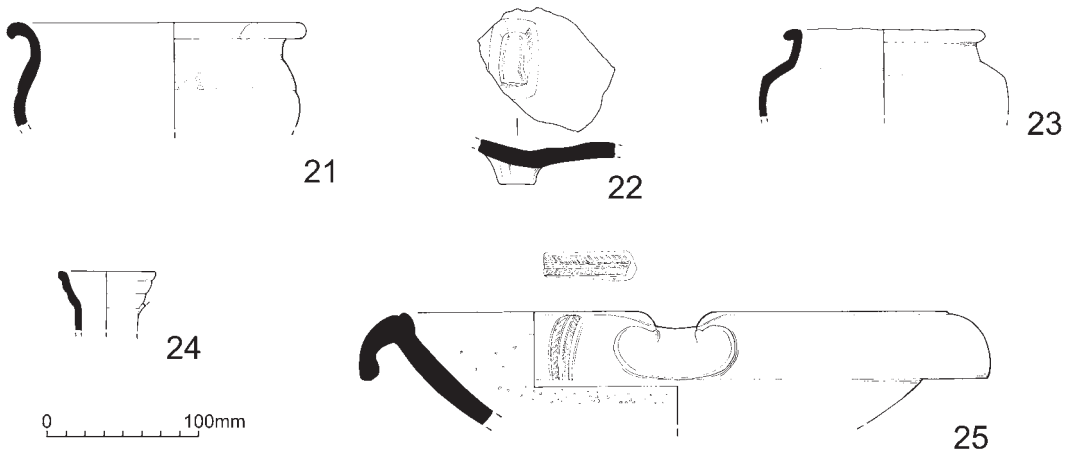

FIGURE 5: Late Iron Age and Roman pottery, Nos. 21–25 (scale 1:5)

such those from West Stow (Tomber and Dore 1998; fabric WES FR) and the fabric known as ERMS in London (Davies *et al*. 1994, 89). Also of note is a fragment of a tripod bowl (Fig. 5.22).

Romano-British table wares are chiefly made up by Colchester buff ware flagons, most diagnostic examples being ring-necked (Fig. 4.15; Fig. 5.24). A number of features contained samian, mainly in the form of 1st-century platters and dishes. One dish, unfortunately unstratified, had been trimmed in antiquity and carefully smoothed at the basal angle in order to form a lid, or for use 'upside down'. It also featured an inscribed X graffito. The vessel bore a partial stamp reading OFMODE[..], probably die 4d of the La Graufesenque potter Modestus I, dated to *c*.AD40–65 (Hartley and Dickinson 2010, 118–31). Other Roman imports include Dressel 20 and Dressel 2–4 amphorae, and there is a single sherd of Central Gaulish glazed ware with barbotine decoration.

Mid/later Roman pottery

The most solid evidence for mid-Roman activity is the presence in pit [25] of a Colchester D2 flanged mortarium with a herringbone stamp (Fig. 5.25). The stamp is very similar to examples said to have been concentrated in the vicinity of Kiln 19 at Colchester (Hull 1963, Fig. 60, no. 33) as well as in fortress/*colonia* sites in the town (Symonds and Wade 1999, Fig. 4.27, no. 151). The production of mortaria with herringbone stamps is closely correlated with a period of exportation to the forts of the Antonine wall and they are considered to belong to quite a narrow date range of *c*.AD130/140–170 (Symonds and Wade 1999, 209). However, the remaining few sherds from this feature are all grog-tempered wares, generally from storage jar forms which are fairly undiagnostic of date.

The fill of pit [13] also contained an example of a possible 4th-century form (G35), alongside a possible abraded sherd of Nene Valley colour-coated ware and a plain B2 dish in a burnt BB2-like fabric which almost certainly dates to *c*.AD120–300. A fragment of Oxfordshire red-slipped mortarium from a medieval feature also probably attests to some 4th-century activity in the vicinity of the site. This is of some note given the absence of 4th-century material from previous excavations in the southern part of the settlement (Martin 2000, 107).

Illustration Catalogue (Figs 4 and 5)

1 *Cam* 254-type vessel; fabric GROGC; context [4]
2 Vessel with inturned rim; fabric GROG; context [2]
3 *Cam* 57 cup, with stamp; fabric GROG; context [2]
4 *Cam* 57 cup; fabric GROG; context [118/120]
5 Bowl with groove on rim; fabric GROG; context [4]
6 *Cam* 16B with mock stamp; fabric GRF; context [36]
7 *Cam* 26 platter (perhaps a lid); fabric BSW; context [129]
8 Cup or platter rim; fabric TN; context [144]
9 *Cam* 221 bowl; fabric GROG; context [86]
10 *Cam* 218 jar; fabric GROG; context [86]
11 *Cam* 218 jar; fabric GROG; context [28]
12 G20 jar, three joining sherds; fabric GROG; context [16]
13 G16 jar; fabric GROG; context [69]
14 *Cam* 113 butt beaker; fabric NGWF; context [118]
15 *Cam* 154 flagon; fabric COLB; context [50]
16 B1 dish with zigzag decoration; fabric GRF; context [39]
17 C2 bowl; fabric GRS; context [30]
18 Bowl with groove under rim; fabric COLB; context [30]
19 C26 handled bowl, joining body sherds; fabric COLB; context [30]
20 C19 bowl with single wavy-line decoration; fabric GRS; context [30]
21 G17 jar, joining sherds; fabric GRF; context [30]
22 Tripod foot; fabric GRS; context [30]
23 Jar with out-turned rim; fabric BSW; context [33]
24 J3.2 flagon; fabric COLB; context [33]
25 D2 mortarium with herringbone stamp; fabric COLBM; context [26]

Medieval and post-medieval pottery by Helen Walker

This report describes in detail medieval and late medieval pottery from two pits in Areas 1 and 2. In addition, there were a number of other features producing minor assemblages of predominantly post-medieval pottery, which merit only a brief summary. The pottery has been classified according to Cunningham's typology for post-Roman pottery in Essex (Cunningham 1985a, 1–16, expanded by Cotter 2000). Some of Cunningham's vessel form and sub-form codes are quoted in this report. The Medieval Pottery Research Group's classification of vessel forms is also referred to (MPRG 1998). Several of the late medieval vessels are paralleled by examples from Moulsham Street, Chelmsford (Cunningham 1985a and b).

Late medieval pits [7] and [58]

A total of 137 sherds weighing 3.6kg was excavated from late medieval pits [7] and [58] and is quantified in Table 2. As well as the medieval and late medieval pottery itemised, small amounts of residual Roman pottery were present in all pit fills apart from fill [9] (listed in archive). The lower fill [8] of pit [7] produced a much smaller assemblage than the upper fill [9], and differs slightly in composition, producing slightly earlier pottery (Table 2). There is a higher proportion

	Pit [7]			Pit [58]	
Fabric	**Lower fill [8] Sherd nos**	**Upper fill [9] Sherd nos**	**Total wt (g)**	**Single fill [57] Sherd nos**	**Total wt (g)**
Mill Green ware	1		8		
Hedingham coarse ware	10	2	116	1	6
Cambridgeshire sgraffito ware	3	2	29		
Late medieval buff surfaced ware	5	7	196		
Cheam white ware		2	115		
Medieval coarse ware (borderline sandy orange ware)		2	149	1	5
Sandy orange ware	1	59	1921	10	191
Late medieval Harlow Ware		6	306		
Low Countries red ware		2	107		
Tudor red earthenware	2	18	374		
Black-glazed ware (intrusive)				1	14
Non-local post-medieval red earthenware (intrusive)		2	109		
Totals	**22**	**102**	**3430**	**13**	**216**

TABLE 2: Quantification of pottery from pits [7] and [58] by fill, fabric, sherd count and total weight of pottery

of medieval wares in the lower fill, comprising a single sherd of Mill Green ware and several sherds of Hedingham coarse ware, including an H3 cooking-pot rim, which could date to the late 13th to 14th centuries (Drury *et al*. 1993, 81–2). There is only a single sherd of sandy orange ware in the lower fill, contrasting with the upper fill where this is the commonest type. The sherd is unglazed, thin-walled and highly fired. It is unlike that in the upper fill and may be non-local. The sherds of Cambridgeshire sgraffito ware and late medieval buff-surfaced ware in the lower fill are 14th to 15th century, and the sandy orange ware sherd may also be of this date. The latest pottery in this fill comprises two sherds of Tudor red earthenware, which share sherd linkages with the upper fill. If these are discounted as intrusive, then the pottery in the lower fill dates to the 14th to 15th centuries. The upper fill however contains wares and vessel forms that are datable to the 15th to 16th centuries, with a late 15th century date perhaps most likely for this assemblage.

Vessel forms present in the pits are itemised in Table 3; most are represented only by fragments. The earliest vessels are the cooking-pots and the glazed and decorated tableware jugs in Mill Green ware and Cambridgeshire sgraffito ware, also including the fragment showing red slip decoration in a fabric similar to that of Cambridgeshire sgraffito ware. The sparsely glazed and undecorated Cheam white ware barrel jug is somewhat later and straddles the divide between kitchenware and tableware. Although incomplete, the jug has a rim diameter of 80mm, suggesting a relatively large size for this vessel form and it may have had a capacity of around 1.5–2 litres (Pearce and Vince 1988, 69), suggesting it was used for serving or storing liquids rather than as a drinking jug.

Fragments from large jugs and cisterns are the most common vessel form. These occur in sandy orange ware and in the smooth Tudor red earthenware. Thick-walled sherds of late medieval buff-surfaced ware could also be from these vessel forms. In addition, there are rims from two large jugs with broad strap handles in a fabric that is midway between medieval coarse ware and sandy orange ware, having grey exteriors but thick orange cores and may represent the transition from medieval coarse ware to sandy orange ware that took place perhaps at the end of the 14th century (Cotter 2000, 109–10). All examples of large jugs/cisterns are either unglazed or sparsely glazed, apart from one recessed base showing an internal glaze. A sandy orange ware jug handle and body sherds of Tudor red earthenware are slip-coated and several sandy orange ware examples are slip-painted. In sherd material, it can be very difficult to distinguish cisterns from large rounded jugs (Cunningham's form D4) as both are thick-walled with broad strap handles and are often slip-painted. However, the presence of a bunghole shows that at least one cistern is present. Bunghole cisterns are a common form in late medieval/early post-medieval assemblages; they are very large vessels used for the storage of liquids and especially for brewing ale, which was produced domestically by the housewife as well as by taverns (Cunningham 1985a, 4, 14). At Moulsham Street, this vessel form is present by the 15th century, but is most frequent during the 16th (Cunningham 1985b, table 5, 70).

Two rounded, virtually unglazed jars are present, in sandy orange ware and Tudor red earthenware, both with diameters around 160mm. The sandy orange ware jar is represented by the rim and shoulder only and shows no traces of use. However the second jar (Fig. 6.1), which has a pouring lip, is semi-complete and shows a thick internal encrustation of limescale, indicating it was used for the repeated boiling of hard water. The base, which is either flat or slightly sagging, shows fire-blackening on the underside which ends abruptly at the basal angle and does not extend up the sides of the pot. This demonstrates that it was not placed in a wood-burning hearth, the typical heating system for medieval pots. A thin film of limescale covers the external surface under the rim and on the lower walls, presumably where the water has boiled over. Another jar form, part of a Low Countries red ware double-handled cauldron, shows fire-blackening on the underside and was probably used for cooking.

Vessel form	Fabric	Description (and fill)	Date range
Cooking-pots	Hedingham coarse ware	H1 cooking-pot rim (fill [9])	Throughout 13th C
		H3 cooking-pot rim (fill [8])	Late 13th to 14th C
Jugs	Mill Green ware	Sherd from shoulder of jug, slip-painted and glazed (fill [8])	Mid 13th to mid 14th C
	Cambridgeshire sgraffito ware	Decorated body sherds, one showing intertwining lines (fills [8], [9])	14th to early 15th C
	Sandy orange ware	Shoulder of jug, showing a glossy honey coloured glaze and two short horizontal lines of red slip, similar fabric to that of the Cambridgeshire sgraffito ware (fill [9])	?14th to early 15th C
	Cheam white ware	Rim and handle of unglazed barrel-shaped jug, MPRG vessel form 3.1.2, *cf.* Pearce and Vince 1988, fig.121.535 (fill [9])	Mid to late 15th C or later
Large jugs (and possible Cisterns)	Sandy orange ware	Slip-coated bifid handle, unglazed apart from stray splashes (fill [9])	14th to 15th C
	Medieval coarse ware/borderline sandy orange ware	Inturned rim with ribbed strap handle (fill [9])	14th to 15th C
		Inturned rim and broad bifid strap handle (fill [9])	14th to 15th C
	Sandy orange ware	Recessed base thumbed on the underside, internally glazed, externally reduced (fill [9])	14th to 15th C
	Late medieval buff ware	Thick-walled unglazed sherds perhaps from large jugs and cisterns (fills [8], [9])	14th to 15th C
	Tudor red earthenware	Unglazed, thick-walled partially slip-coated fragments (fill [9])	15th to 16th C
Cisterns	Sandy orange ware	Faceted bunghole from a cistern (Cunningham's form C15) and perhaps from the same vessel, a base thumbed in groups of two, a fragment of lower handle attachment comprising a broad bifid strap handle with a broad slip-painted band beneath, and slip-painted body sherds (fill [9])	15th to 16th C
Rounded jars	Tudor red earthenware	Semi-complete jar with upright hollowed everted rim and pouring lip, internal limescale, MPRG form 4.1.7 (fills [8], [9])	15th to 16th C
	Sandy orange ware	Jar rim and shoulder, Cunningham's vessel form C4E (*cf.* Cunningham 1985a, fig.4.23), MPRG form 4.1.7, unglazed apart from patches of honey-coloured glaze inside the neck and on top of the rim (fill [9])	15th or later
Double-handled cauldron	Low Countries red ware	Body and lower handle attachment, partial internal white slip-coating on upper half and all over internal honey coloured glaze, externally fire-blackened, MPRG vessel form 4.4; Cunningham's vessel form C12 (fill [9])	Throughout 15th C (at Moulsham Street)
Large flared bowl	?Late medieval Harlow ware	Flanged rim, relatively narrow base (Cunningham's form B5A), horizontal hemispherical lug handle attached at rim edge, comparable to Cotter (2000, fig.98.177), internally glazed, oblique slip-painted stripes around rim and internally (fill [9])	Late 15th/early 16th C
Pedestal base cup	Tudor red earthenware	Cup handle in smooth buff fabric with partial honey coloured glaze, Cunningham's form E3, *cf.* Cunningham 1985a, fig.9.59/60 (fill [9])	15th C
?Industrial vessel	Sandy orange ware	Crudely finished flat base with near vertical walls, vessel may not be circular, patch of fire-blackening on external surface of vessel wall, reduced zone around basal angle and on underside of vessel, but the centre of the base is oxidised (fill [57])	15th to 16th C

TABLE 3: Vessel forms

A single bowl form is present, part of a large flared bowl (Fig. 6.2) with an internal glaze and flanged rim, a form that was often used in the dairy and may also have been used in the kitchen. This bowl is unusual because it has a lug handle attached at the edge of the rim flange and because it is decorated with oblique slip-painted stripes around the rim, with an oblique stroke of slip-painting also visible in the interior. It has been identified as late medieval Harlow ware, a type of sandy orange ware, although it is not paralleled at the Harlow production sites (Davey and Walker 2009, 15–19, 27–41). Oblique slip-painted stripes around the rim are a characteristic of Harlow ware (Davey and Walker 2009, fig. 21.71), but they also occur in the similar Colchester-type ware industry so identification is tentative (e.g. Cotter 2000, fig. 118). Comparable bowls with lug handles, albeit thumbed and undecorated, occur in Colchester-type ware and are dated

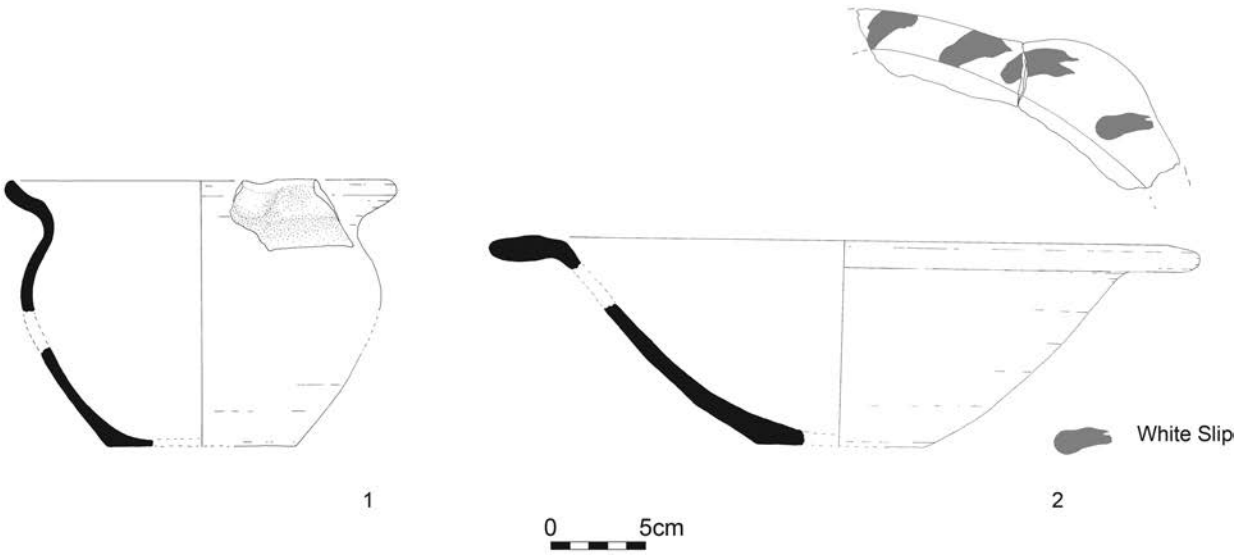

FIGURE 6: Medieval pottery, Nos. 1–2 (scale 1:4)

to the late 15th/early 16th century. Slip dashes on the rims of Colchester-type ware vessels also occur during this period (Cotter 2000, fig. 118).

In contrast to the hefty kitchenware bowls, large jugs and cisterns, a delicate loop handle can be identified as belonging to a pedestal base drinking cup. As is typical of this tableware, it is in a buff-red Tudor red earthenware fabric and shows a partial honey coloured glaze.

All the vessel forms described above derive from pit [7]. Pit [58] produced only a small amount of pottery (from fill [57]) similar to that from the upper fill of pit [7], but with a more limited range of fabrics (see Table 2). It is likely that the fill of pit [58] is of a contemporary 15th- to 16th-century date. The only vessel form present is a crudely made base with vertical sides, described in Table 3, which may have had an industrial use.

Most of the pottery supply is fairly local. Cambridgeshire sgraffito ware is so named because it was first identified in Cambridge (Bushnell and Hurst 1952) but, as it is a relatively common find in the northern half of Essex, may have actually been made locally, perhaps somewhere in the north-western corner of Essex, for easy trading access into Cambridgeshire. Finds of late medieval buff surfaced ware have been found at other sites in north-central Essex, such as Rivenhall (Walker 2004, 54) and Kelvedon (Walker 2003). It may have been manufactured at Blackmore End, near Wethersfield, where the remains of ploughed-out kilns producing similar pottery were found (Walker 2012, 133). Sandy orange ware and Tudor red earthenware are generic types that were made at a number of production centres. Only the slip-painted bowl has been tentatively assigned a source and was perhaps manufactured at Harlow. Medieval Harlow ware products appear to be confined to the western half of Essex, and Braintree is therefore just within its normal limits of distribution. The only traded wares are Cheam white ware and Low Countries red ware. Cheam white ware is part of the Surrey white ware industry, whose products are widely, if somewhat sparsely, distributed throughout Essex. Low Countries red ware is common at sites near the coast and at ports such as Maldon. Small amounts have also been found inland at Chelmsford (Cunningham 1985b, 64), although Chelmsford would have had easy access to goods from the nearby port of Maldon. Inland, Low Countries red ware is uncommon and was not reaching local markets, at least not in significant quantities, so its appearance at Braintree is unusual. Flemish weavers settled in the adjoining settlement of Bocking in 1304 and by the later medieval/early post-medieval periods Bocking and Braintree were important cloth manufacturing centres (Medlycott 1998, 11) so the presence of Low Countries red ware may be the result of personal importation rather than the result of trade.

Pottery from the remaining medieval and post-medieval features

Seven features and a layer in Areas 1 and 3 produced small amounts of pottery spanning the late medieval to modern periods (a total of thirty sherds weighing 191g). Most features produced less than five sherds, often of differing dates. Pit [61] produced a single unglazed buff ware sherd, it may be late medieval, but is unlike the buff ware from pit [7]. A sherd of Cambridgeshire sgraffito ware was residual in pit [165] and is similar to that from pit [7]. The remaining pottery is later, ranging in date from the 17th to the 19th centuries.

Significance of the assemblage

The excavated assemblage shows that this part of the High Street was developed by the 15th century and that there is some evidence for activity during the later 13th to 14th centuries. The emphasis of the recovered pottery, especially that from the upper fill of pit [7], is on kitchenwares with vessels used for the storage and serving of liquids, brewing ale, cooking and possibly dairying. The limescale encrusted jar and vertical-sided base indicate more specialised activities. A small amount of tableware, i.e. the glazed and decorated jugs and the pedestal base cup, are also present, the glazed jugs belonging to the earlier period.

There have been a large number of excavations at Braintree and Bocking, but few have produced significant medieval and later pottery assemblages. A neighbouring site at 103–105 High Street, produced a comparable assemblage (Walker 2002), with a small amount of 13th to 14th century pottery and, rather more interestingly, a late medieval/early

post-medieval slipped flanged-rim bowl; although unlike the bowl from this excavation, it is not slip-painted, but slip-coated on both surfaces, and these may be related forms. Post-medieval pottery spanning the late 16th to 19th centuries is also present. A relatively large assemblage, comprising nearly 7kg of pottery was excavated at Tofts Garage, a site to the east of the High Street, adjacent to Great Square (Huggins 1986), where some 13th- to 14th-century pottery was found and a large group of mid-16th-century pottery; a little later than the main pit groups at Letch's Yard. The Letch's Yard site is also significant because the presence of a Low Countries cooking vessel suggests that Flemish cloth weavers may have lived here.

Illustration Catalogue (Fig. 6)

1 Rounded jar; fabric Tudor red earthenware; context [9]
2 Flared bowl with flanged rim; fabric Late medieval Harlow ware; context [9]

Animal Bone by Gemma Ayton

The excavation produced a moderately sized animal bone assemblage containing 833 fragments of mammal, bird and fish bone recovered from pits, gullies and layers dating from the Late Iron Age, Roman and late medieval periods. The majority of the bones have been hand-collected, though a small percentage have been retrieved from bulk soil samples.

The assemblage has been recorded in accordance with the zoning system outlined by Serjeantson (1996). Due to the poor condition of the assemblage, all 'non-recordable' fragments (those which comprise of less than 50% of one zone) have also been quantified. Wherever possible the fragments have been identified to species and the skeletal element represented. Elements that could not be confidently identified to species have been recorded according to their size and categorised as large, medium or small mammal.

The assemblage is in a moderate to poor condition with bones displaying evidence of surface erosion and no complete specimens remaining. Of the 833 fragments recovered, only 251 could be identified to taxa and include cattle, caprine, pig, dogs, cats, domestic fowl, herring, eel, smelt and anuran (Table 4).

Late Iron Age

The Late Iron Age bone assemblage derived from five contexts including a post-hole and pit fills. Most of the fragments derive from non-meat producing elements including mandibles and teeth. Cattle are represented by scapulae fragments. Due to the size of the assemblage, it provides little insight into contemporary husbandry techniques.

Early Roman

The Early Romano-British assemblage was recovered from 21 contexts, the majority of which were pits fills and probably derives from domestic waste. The assemblage is dominated by cattle which are represented by meat-bearing and non-meat bearing elements. Specimens recorded as 'Large Mammal' include scapula and long-bone fragments that could not confidently be identified to species. No evidence of butchery survives though canid gnawing was noted on two specimens. Charred and cremated bone was retrieved from bulk soil samples.

Late Medieval

The late medieval assemblage derives from four pit fills which contain both meat-bearing and non-meat bearing bones. No evidence of butchery has been noted.

Metallurgical Remains by Luke Barber

The excavations recovered just six pieces of hand-collected slag, weighing 435g, from five separate contexts. A further 50g was recovered from the residues of the 11 bulk soil samples.

The earliest material dated to the Late Iron Age and was recovered from pit [21], fill [22]. However, this assemblage is negligible, consisting of a small piece of hearth lining with vitrified surface (8g) and 2g of smithing hammerscale. The bulk of the assemblage was recovered from a single layer [69] and scatter of five pits ([1], [27], [32], [37] and [38])

	Late Iron Age	Early Roman	Late-Medieval	Modern
Cattle	14	28	3	
Sheep/Goat	2	9	3	
Sheep			4	
Pig	6	1	1	1
Dog		2		
Cat				54
Large Mammal	3	58	1	
Medium Mammal		18		
Small Mammal		1		4
Domestic Fowl		1		31
Greylag/Domestic Goose			2	
Eel		1		
Herring			1	
Smelt		1		
Anuran		1		
Total	**25**	**121**	**15**	**90**

TABLE 4: Animal bone NISP (Number of Identified Specimens) by Period

dated to the early Roman period. The group includes three pieces of fuel ash slag (16g), two pieces of iron smithing slag (256g) and around 41g of hammerscale (mainly flakes but also spheres too) spread between the layer and four of the pits. Low levels of iron smithing in the Late Iron Age and Roman periods are quite common on urban and rural sites and the presence of associated waste here is not unexpected. Indeed the lack of larger pieces of smithing waste is more surprising considering the concentrations of hammerscale. The 1g of hammerscale from late medieval pit [7] is probably residual Roman material.

Miscellaneous Finds by Elke Raemen

Ceramic Building Material

Ceramic building material comprised 172 fragments weighing just under 10kg. Only twelve Roman pieces were found. Included are brick and tegula fragments. Of interest is a brick fragment from pit [38] (fill [42]) which retained a partial signature in the form of a semicircular arc. This type of mark is fairly common and likely to have been made by the manufacturer. Too little survives from the signature to establish the type (Warry 2006, 149). Post-Roman material (160 fragments), consisting entirely of post-medieval roof tile, has been recorded and reported on for archive.

Metalwork

A small assemblage comprising 52 fragments was recovered from twenty separate contexts. Ironwork consists almost entirely of nails, mostly from contexts of Early Roman date. They all represent general purpose nails (Manning 1985, 134, type 1b). Copper alloy objects consist largely of undiagnostic small fragments recovered from bulk soil samples. A binding strip fragment from Early Roman pit [37] (fill [33]) retains at least three rivet holes. The remainder of the copper alloy objects are of post-medieval date and comprise two tin-coated dress pins, including a solid headed example and one with a wound-wire head.

Glass

A small assemblage comprising 16 fragments of glass (wt 62g) was recovered from seven different deposits. Ten of the fragments are Roman vessel glass. An amber rim fragment from a cast bowl or plate, dated to the 1st to later 2nd centuries, was found in layer [69]. The other fragments can only be dated broadly to the Roman period and include three blue/green vessel base (e.g. flask) fragments from pit [32] (fill [30]), a colourless beaker or cup fragment with two lines of wheel-cut decoration, and undiagnostic clear and pale green cylindrical vessel fragments from pit [1] (fill [2]) and layer [69]. Post-Roman glass included a sherd of post-medieval green bottle glass recovered from pit [11] (fill [12]) and a sherd of post-medieval window glass from pit [61] (fill [60]). The remaining sherds were modern.

Fired Clay

Fragments of fired clay, totalling just under 2kg, were recovered from pits [1], [3], [7], [21], [32], [37], [38], [130] and [145] and layer [69]. Over 75% of the material was recovered from just three Early Roman features – layer [69] and pits [37] and [145]. The majority of the assemblage comprises structural daub. No wattle imprints were noted, although several pieces retained a flat surface. The two main fabrics encountered are a silty, orange clay with moderate organic temper, and a calcareous pale pink/beige silty fabric with very coarse chalk inclusions to 17mm and rare flint pebbles to 15mm. One possible briquetage fragment was recovered from Late Iron Age pit [3] (fill [4]). The piece consists of a fragment in a sparse fine quartz fabric with common organic temper, rare calcareous material to 2mm and rare coarse quartz, probably from a rectangular vessel. Five slab or brick fragments, two of which conjoin, were found in Early Roman layer [69]. Too little survives to establish the object's form. Interestingly, the piece is pierced with a bundle of at least four sticks/rods of different diameter (total diameter 20mm). The fragments are in a moderate fine quartz-tempered fabric with rare coarse quartz and rare organic temper.

Macrobotanical remains by Lucy Allott

A total of eleven bulk soil samples were collected from five Late Iron Age, Early Roman and late medieval pits. A preliminary assessment (in Ennis 2003) recorded occasional charred cereal grains in three samples from late medieval pit [37]. An overview of the contents of these samples is presented below followed by a discussion of the results in chronological order. Full details, including tabulated data, is held in the archive. Identifications of macrobotanical remains have been made using modern comparative material and reference texts (Cappers *et al*. 2006; Jacomet 2006; NIAB 2004) and nomenclature used follows Stace (1997).

The majority of samples produced small flots. Many were dominated by small flecks of wood charcoal (primarily <2mm in size) or by modern uncharred organics such as rootlets, the latter suggesting low level disturbances through bioturbation. Two samples produced no macrobotanical remains. The remaining nine samples all contained small quantities of plant macrofossils, such as cereal grains, weeds typical of arable and disturbed ground as well as woodland environments, with the largest assemblage retrieved from pit [37]. Wood charcoal fragments were recovered from many of the sample residues but the assemblages were very small.

Preservation of charred macrobotanical remains was generally poor to moderate, with occasional well preserved examples. Many of the cereals were fragmented and display distortion and puffing that can result from charring for prolonged periods or in an oxygen rich environment (Boardman and Jones 1990). Seeds from weed/wild taxa were also often fragmented although a few examples, such as the black bindweed (*Fallopia convolvulus*) and elder (*Sambucus nigra*), display better preservation of overall form and surface morphology.

Results discussed by occupation period

Evidence for plant use associated with the Late Iron Age occupation is restricted to occasional charred oat/brome (*Avena/Bromus* sp.) grass and elder seeds retrieved from pit [21] (fill [22]). These may all derive from wild plants and there is therefore no clear indication of crops associated with this phase of land use.

The Early Roman pits [27], [38], and [37] in particular, contained evidence for a range of crops including spelt wheat (*Triticum spelta*), bread-type wheat (*Triticum* cf. *aestivum*) and barley (*Hordeum* sp.) in addition to wild or cultivated

oat. Based on the current small assemblages none of these crops could be considered dominant. The presence of spelt glume bases in pit [37] probably indicates that some of the grain was processed at the site, although these limited assemblages are too small to conclude that they derive directly from crop processing waste. Glume bases might also be present if grain was stored whilst still in the ears rather than dehusked. The majority of wild/weed taxa represented are common arable weeds that may have been brought to the site among crops. Elder trees are common on woodland margins and in hedgerows and might have been exploited for their fruit.

A single sample from the upper fill [9] of late medieval pit [7] contained small quantities of charred grain. Some of the grain is consistent in form with bread-type wheat (*Triticum* cf. *aestivum*). This sample also contained large quantities of wood charcoal although no further identifications were obtained as this feature fill does not represent a primary deposit directly associated with fuel use.

DISCUSSION

The Letch's Yard excavation has provided further insight into the date and extent of Late Iron Age and Roman settlement at Braintree and confirmed that areas of occupation, previously identified under neighbouring sites at Pierrefitte Way (i.e. College House and the earlier excavated part of Letch's Yard) continue east into the 2003 excavation area. As importantly, its late medieval pits demonstrate the chronology and development of the south-westward expansion of the later town.

Late Iron Age

The presence of a low density of pits and a gully of probable pre-conquest Late Iron Age date in Area 1 demonstrate the eastwards continuation of settlement activity previously identified at sites under Pierrfeitte Way in the 1980s. Round house gullies were found to the north-west, at the Fountain and the Boars Head, and part of a Late Iron Age enclosure was found to the south-west, at College House and 2–4 London Road (Medlycott 1998, 11). However, no remains of Late Iron age date were found at the more recent Pierrefitte Way site to the north (Newton 2010), nor in Areas 2 and 3, and it is possible that all of these more recent sites may be peripheral to the main focus, or foci, of occupation. The Late Iron Age settlement is not thought to be urban in nature and its full extent has yet to be determined, but it is conjectured to cover much of the area north of the High Street, between Grenville Road in the west and Bank Street in the east (Medlycott 2007, 5). Although confined to a single fragment, the presence of briquetage in pit [3] is significant in that it presumably indicates that coastal commodities such a salt were reaching communities this far inland at this time.

Roman

With the development of the Roman town in the latter half of the 1st century AD activity at this location increased, reaching a peak in the pre-Flavian and Flavian periods. Later activity was less intense with only one feature of mid-late 2nd-century date and one of probable 4th-century date identified. It is highly likely that many of the more ephemeral archaeological features, perhaps including a later Roman element, were removed during modern levelling of the site associated with the builders' yard. Area 1 had clearly been truncated as Roman remains were directly overlain by a deposit of modern date. The recovery of two coins of George V suggest that this may have occurred in the early decades of the 20th century.

Lacking property boundaries, it is difficult to infer much about the layout of the Roman settlement at this location. The fragmentary remains of timber structures, although nowhere near complete enough to construct meaningful plans from, were at least of similar construction to those encountered during the 1980s Pierrefitte Way excavations. The masonry wall fragment was perhaps more exceptional and could denote the presence of a more substantial building. Similar stone foundations were excavated on the earlier Letch's Yard site some 15–20m to the north-west and also at 2–4 London Road and 97–99 High Street, where they have generally been assumed to have supported timber superstructures (Pearson 2002, 80). This said, its full extents are unknown and it remains possible that this was instead part of a lesser structure such as a drying floor. Certainly, the wheat and barley macrofossil remains retrieved from some of the Roman pit fills could be the product of cereal processing activities.

The majority of pits appear to have been used for rubbish disposal and the finds generally indicate activity of a more domestic than industrial nature; the presence of indicators of crop processing and lack of items such as window glass perhaps reflecting a non-urban settlement character. Although metalworking residues were present, these are likely to be incidental at this site. The earlier Pierrefitte Way sites produced more convincing evidence and may have been the source of this material; a large quantity of smithing material was recovered from the College House excavation and the remains of a possible bloomery and a casting pit were identified on the original Letch's Yard site.

Post-Roman

A low frequency of Saxon period remains have been found in this part of Braintree, most notably at the Fountain site (EHER 6359) and at Brands beneath the present multi-storey car park (Medlycott 2007) where possible sunken featured buildings were excavated. It is assumed that in the post-Roman period the site reverted to agricultural or horticultural use for which no archaeological evidence survives. The absence of such remains at Letch's Yard would accord with this pattern.

A probable cultivation soil containing finds ranging in date from the 12th to the 16th centuries has been identified at the nearby 103–105 High Street site (Hickling 2002, 96). However, this deposit had been removed from most of the present site during levelling for the modern builders' yard. Only the two late medieval rubbish pits survive to suggest that this part of the town was re-occupied by the 15th century, with residual finds pointing to a resumption of activity in the area perhaps as early as the later 13th or 14th century. The two pits were probably located to the rear of properties fronting onto the High Street, which is believed to have been developed by this time (Medlycott 1998, 13). The linear arrangements of post-medieval pits and post-holes presumably relate to continuing backyard activities behind the High Street frontage prior to this location becoming a builder's yard.

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BIBLIOGRAPHY

Andrews, D.D. 2002, 'Braintree, Flacks', *Essex Archaeol. Hist.*, 3rd ser., 33, 421–2

Boardman, S. and Jones, G. 1990, 'Experiments on the Effects of Charring on Cereal Plant Components', *J. of Archaeol. Science* 17, 1–11

Bushnell, G.H.S. and Hurst, J.G. 1952, 'Some further examples of Sgraffito ware from Cambridge', *Proc. Cambridge Antiq. Soc*. 46, 21–6

Cappers, R.T.J., Bekker, R.M. and Jans, J.E.A. 2006, *Digital Seed Atlas of the Netherlands*, Groningen Archaeological Series 4 (Barkhuis, Netherlands)

Compton, J. 2003, 'Finds', in Ennis, T., *Letch's Builders Yard, 109 High Street, Braintree, Essex*, ECC Field Archaeology Unit rep. 1167 (unpublished)

Cotter, J. 2000, *The post-Roman pottery from excavations in Colchester 1971–85*, Colchester Archaeol. Rep. 7

Cunningham, C.M. 1985a, 'A typology for post-Roman pottery in Essex', in Cunningham, C.M. and Drury, P.J., *Post-medieval sites and their pottery: Moulsham Street, Chelmsford*, Chelmsford Archaeol. Trust Rep. 5; Counc. Brit. Archaeol. Res. Rep. 54, 1–16

Cunningham, C.M. 1985b, 'The pottery', in Cunningham, C. M. and Drury, P. J., *Post-medieval sites and their pottery: Moulsham Street, Chelmsford*, Chelmsford Archaeol. Trust Rep.5; Counc. Brit. Archaeol. Res. Rep. 54, 63–78

Davey, W. and Walker, H. 2009, *The Harlow pottery industries*, Medieval Pottery Research Group Occ. Paper 3

Davies, B.J., Richardson, B. and Tomber, R.S. 1994, *A dated corpus of early Roman pottery from the City of London. The Archaeology of Roman London Vol. 5*, CBA Res. Rep. 98

Drury, P.J. 1976, 'Braintree: Excavations and Research 1971–76', *Essex Archaeol. Hist*., 3rd ser., 8, 1–143

Drury, P.J., Cunningham, C. M., Kilmurry, K and Walker, J.S.F. 1993, 'The later Saxon, medieval and post-medieval pottery', in Rodwell, W.J. and Rodwell, K.A., *Rivenhall: Investigations of a Villa, Church and Village, 1950–1977*, Chelmsford Archaeol. Trust Rep. 4.2; Counc. Brit. Archaeol. Rep. 80, 78–95

Ennis, T. 2003, *Letch's Builders Yard, 109 High Street, Braintree, Essex*, ECC Field Archaeology Unit rep. 1167 (unpublished)

Going, C.J. 1987, *The Mansio and Other Sites in the South-eastern Sector of Caesaromagus: the Roman pottery*, Chelmsford Archaeol. Trust Rep. 3.2; Counc. Brit. Archaeol. Res. Rep. 62

Hartley, B.R. and Dickinson, B.M. 2010, *Names on Terra Sigillata: an index of makers' stamps and signatures on Gallo-Roman Terra Sigillata (samian ware)*, 6: Masclus I-Balbus to Oxittus. Bulletin of the Institute of Classical Studies Supplement 102 (London)

Havis, R. 1993, 'Roman Braintree: excavations 1984–90', *Essex Archaeol. Hist.*, 3rd ser., 24, 22–68

Hawkes, C.F.C. and Hull, M.R. 1947, *Camulodunum. First Report on the Excavations at Colchester 1930–1939*, Rep. Res. Comm. Soc. Antiq. London, 14 (London)

Hickling, S. 2002, 'A Roman Site behind Flacks Hotel, 103–5 High Street, Braintree', *Essex Archaeol. Hist.*, 3rd ser., 33, 89–97

Huggins, R. 1986, 'Medieval and post-medieval pottery', in Milton, B.H., 'Excavations at Toft's Garage, Braintree, 1980', *Essex Archaeol. Hist.*, 3rd ser., 17, 87–90

Hull M.R. 1963, *The Roman potters' kilns of Colchester*, Rep. Res. Comm. Soc. Antiq. London, 21 (London)

Jacomet, S. 2006, *Identification of cereal remains from archaeological sites* (2nd edn, Archaeobotany laboratory, IPAS, Basel Univ., unpublished manuscript)

Manning W.H. 1985, *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum* (London, British Museum)

Martin, T.S. 2000, 'The Late Iron Age and Roman pottery', in Garwood, A. and Lavender, N.J., 'Late Iron Age and Roman sites at Grenville Road and College Road, Braintree', *Essex Arch. Hist.*, 3rd ser., 31, 103–107

Medlycott, M. 1998, *Bocking: Historic Towns Project; Assessment Report*, Essex County Council Archaeology Section Internal Rep.

Medlycott, M. 2007, *Braintree Roman Town, The MSC and BVAS excavations: interim report*, Essex County Council (unpublished)

MPRG 1998, *A Guide to the Classification of Medieval Ceramic forms*, Medieval Pottery Research Group Occ. Paper 1

Newton, A.A.S. 2010, 'Roman and post-medieval archaeology at Pierrefitte Way, Braintree, Essex', *Essex Archaeol. Hist.*, 4th ser., 1, 175–93

NIAB 2004, *Seed Identification Handbook*: *Agricultural, Horticulture and Weeds* (2nd edn, Cambridge: NIAB)

Pearce, J.E. and Vince, A.G. 1988, *A Dated Type-Series of London Medieval Pottery Part 4: Surrey Whitewares*, Trans London Middlesex Archaeol. Soc. special paper no. 10

Pearson, A. 2002, 'Excavations at 97–99 High Street, Braintree', *Essex Archaeol. Hist*., 3rd ser., 33, 78–88

Pocock, M. 2006, *95–103 High Street, Braintree: Archaeological Monitoring and Excavation*, ECC Field Archaeology Unit Rep. 1375 (unpublished)

Rigby, V. 1999, 'Stamps on Gallo-Belgic and related wares', in Symonds, R.P. and Wade, S. 1999, *Roman Pottery from Excavations in Colchester, 1971–86*, Colchester Archaeological Rep. 10 (Colchester, Archaeological Trust), 217–28

Serjeantson, D. 1996, 'The Animal Bones', in Needham, S. and Spence, T., '*Runnymead Bridge Research Excavations, 2: Refuse and Disposal at Area 16 East, Runnymead*' (London, British Museum), 194–223

Stace, C. 1997, *New Flora of the British Isles* (Cambridge, University Press)

Symonds, R.P. and Wade, S. 1999, *Roman Pottery from Excavations in Colchester, 1971–86*, Colchester Archaeological Rep. 10 (Colchester, Archaeological Trust)

Tomber, R. and Dore, J. 1998, *The National Roman Fabric Reference Collection: a Handbook*, Museum of London Archaeology Service (London)

Walker, H. 2002, 'Medieval and post-medieval pottery' in Hickling, S., 'A Roman Site behind Flacks Hotel, 103–5 High Street, Braintree', *Essex Archaeol. Hist.*, 3rd ser., 33, 89–97

Walker, H. 2003, 'Medieval and post-medieval pottery', in Mordue. J., *Lances, Church Street, Kelvedon: Archaeological Excavation*, ECC Field Archaeology Unit Rep. 554 (unpublished)

Walker, H. 2004, 'Medieval and later pottery', in Clarke, R., 'Rivenhall revisited: further excavations in the Churchyard of St Mary and All Saints, 1999', *Essex Archaeol. Hist.*, 3rd ser., 35, 50–62

Walker, H. 2012, *Hedingham Ware: a Medieval Pottery Industry in North Essex; its Production and Distribution*, E. Anglian Archaeol. 148

Warry, P. 2006, *Tegulae: Manufacture, Typology and Use in Roman Britain*, BAR British Series 417

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The gardens of Moulsham Hall: Excavations at Princes Road, Chelmsford, 1996–97

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with contributions by Helen Walker and Pat Ryan

Archaeological investigation was undertaken in advance of a housing development at Princes Road, Chelmsford, which lay within the former gardens of Moulsham Hall, the seat of the Mildmay family from the 16th to 19th centuries. Remains relating to the gardens of the Tudor hall and particularly its Georgian successor, built in 1728, were recorded. This archaeological evidence is considered in relation to the well-established history of Moulsham Hall as informed by documentary, cartographic and illustrative sources to offer additional insights into its nature and development.

INTRODUCTION

Archaeological investigations were carried out in 1996–7, in advance of development of a strip of land to the north of Princes Road (Fig. 1), now the site of Fortinbras Way, Chelmsford. Historical, cartographic and aerial photographic evidence suggested that Moulsham Hall, the seat of the Mildmay family from the 16th to 19th centuries, lay in close proximity (Fig. 2). Consequently, trial trenching and excavation were undertaken to establish if any archaeological remains were present and to record them prior to the development of the site. The investigations identified the remains of construction and demolition layers, wall foundation and robber trenches, garden features and ditches. The majority of these were indeed associated with Moulsham Hall and its estate, built in the mid-15th century and rebuilt between 1728 and 1743 before being demolished in 1809.

The history of Moulsham Hall and the Mildmay family is inextricably linked with that of the development of the town, now city, of Chelmsford throughout the post-medieval period. A multitude of documents such as court-rolls, account books, surveys and maps survive attesting to this influential family and their manorial seat. There are, however, gaps in the historical record, particularly relating to the layout of the hall and its associated infrastructure pre-dating the accurate small scale mapping of the 19th century tithe maps and early editions of the Ordnance Survey.

The analysis of the results of the investigations with reference to historical records has provided a better understanding of the establishment, growth and decline of Moulsham Hall. A synthesis of results is presented here, while the full site archive is deposited at Chelmsford Museum.

BACKGROUND

Located along the north side of Princes Road (TL 71000555; Fig. 1A), the site lay to the southeast of Moulsham, on the edge of what was historically a small settlement to the south of the River Chelmer, distinct from the town of Chelmsford itself. The historic core of the settlement was Moulsham Street itself (Fig. 1B). Subsequent development, particularly from the 19th century onwards, extended out and the site now lies within the extensive suburbs of Chelmsford. At the time of the archaeological fieldwork much of the site was covered by rough pasture, with areas of relatively dense vegetation and allotment gardens being present in the central portion of the site. The ground rose slightly towards the south-east from *c*.28m OD (in the vicinity of Lady Lane) to *c*.38m OD. Cropmarks had been previously identified within the site. These included parchmarks (Fig. 2A–E), situated on a slightly raised platform, which was conjectured to represent the remains of a building (Fig. 2).

A trial trenching evaluation was carried out in 1996 over much of the site (Fig. 2). On removal of *c*.0.30m of topsoil a range of archaeological remains were exposed within many of the trenches (Clarke 1996). An area around trenches 11–14 (Fig. 2), where remains of Tudor date had been identified, was subsequently subject to area excavation in 1997. An area of 55m by 52m was stripped of topsoil exposing extensive deposits of rubble, modern drain cuts, disturbed natural deposits and demolition/construction layers across much of its extent. A series of machine-cut trenches were deployed within the excavation area in order to explore below these expansive spreads of debris. As such, the natural subsoil was only exposed in the north-west corner of the excavation area. Archaeological remains in these trenches were, where possible, recorded in plan but in some cases were only visible in section and are indicated as such on the plan figures in this report.

THE SITE

The following section provides a chronological narrative of the development of the site and its environs as deduced from the available documentary evidence and the results of both the archaeological evaluation and excavation. The main historical sources comprised historic maps, particularly the Walker map of 1591 (ERO D/DM P2) and the Chapman and André map of 1777. Extensive accounts of the Mildmay family can be found in Hilda Grieve's two volume history of Chelmsford *The Sleepers and the Shadows* (1988; 1994) and the published account books of Benjamin Mildmay (Edwards 1977).

The Medieval Period

Moulsham Manor was held by the Abbott of Westminster through the medieval period, although they never built a church here (Grieve 1988, 6). The location of the manorial centre is unknown. Much of the manor would have been rural in nature and this is reflected in the character of the medieval archaeological remains identified on the site.

In Trenches 4 to 9 a number of ditches were recorded which correlated with the recorded cropmarks (Figs 2 and 3). Ditch 309, and 163 which was roughly parallel with it, correlated with cropmarks A and B. Ditch 309 was demonstrably medieval in date; its fills containing pottery and a tanged blade of 13th–14th century date.

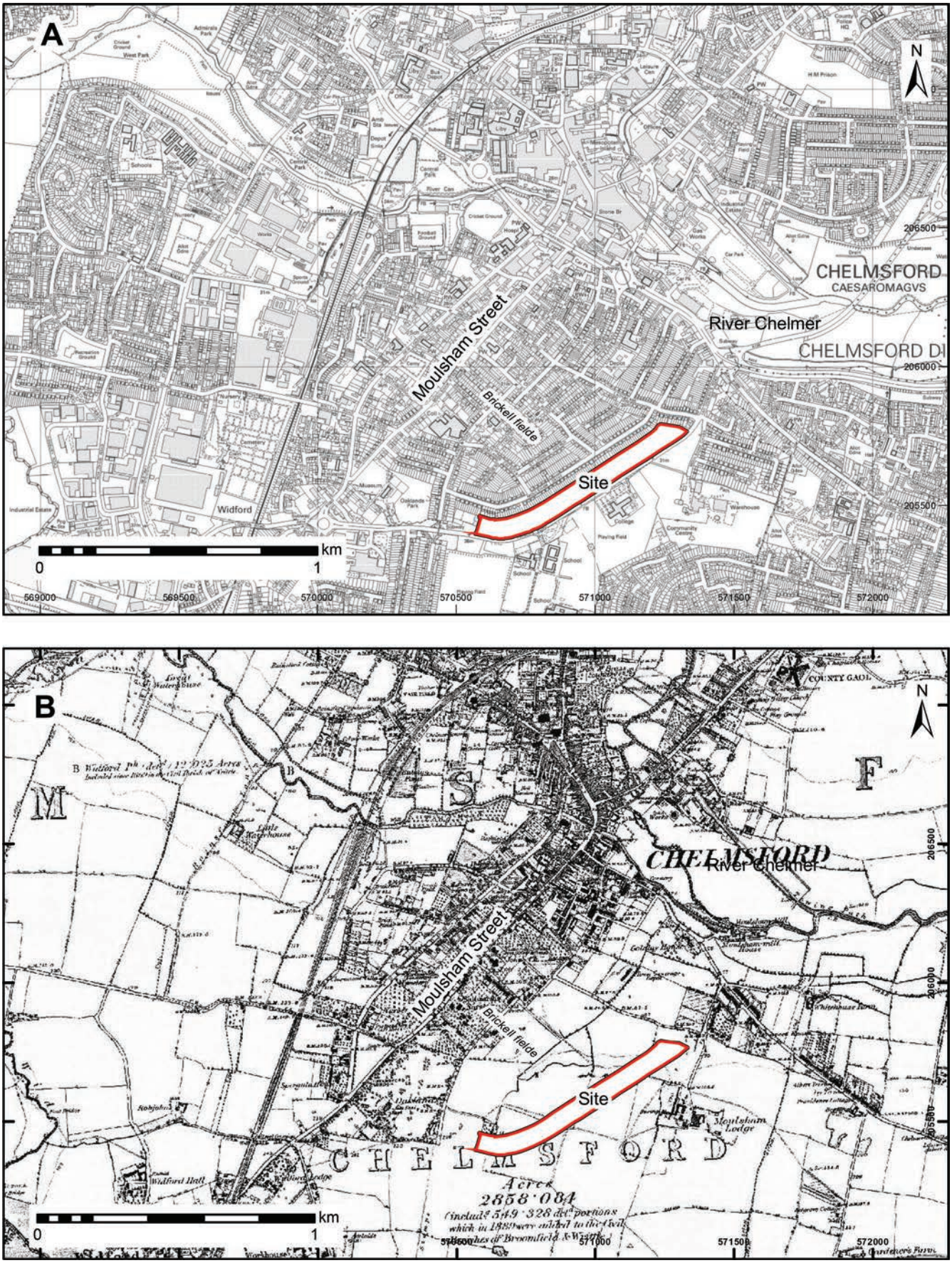

FIGURE 1: Site location shown on a) 1990s mapping and b) 1890s mapping

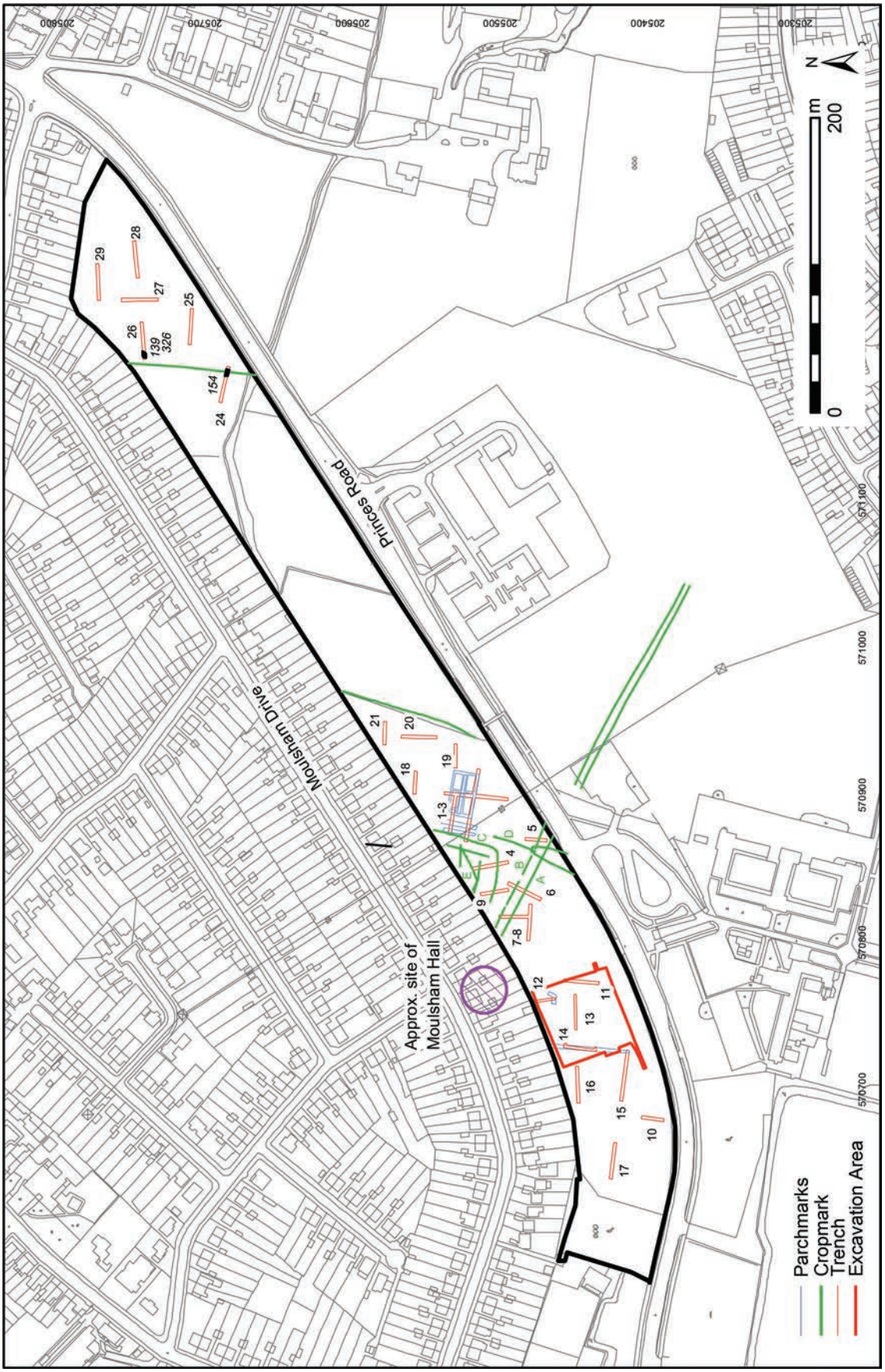

FIGURE 2: Site – showing cropmarks/parchmarks and trenches

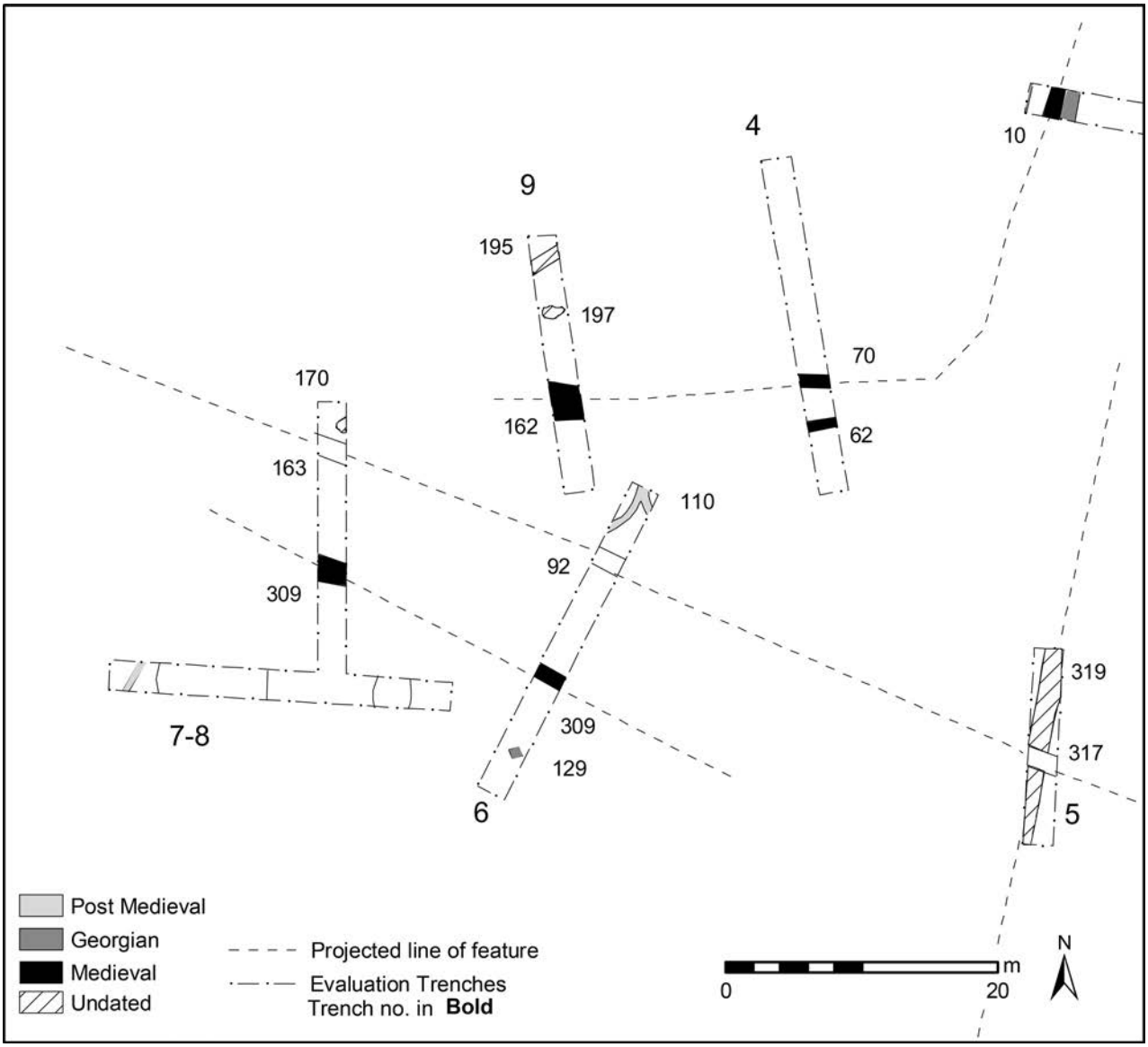

FIGURE 3: Medieval features

To the north, curvilinear cropmark C was defined by ditches 162, 70 and, possibly, 10 (Figs 2 and 3). The fills of both 162 and 70 contained medieval pottery. No medieval material was recovered from ditch 10, the finds being confined to post-medieval red earthenware and intrusive 18th brick fragments. This ditch was infilled in the 16th century and subsequently cut by Georgian construction trenches and the later robber trenches, resulting in the inclusion of intrusive material in the ditch fills. Cropmark D was likely defined by 319 and may well have been medieval in origin too. Similarly, cropmark E (Figs 2 and 3, ditch 195), feature 170 (Fig. 5) and a large ditch crossing through trenches 24 and 26 (Figs 2 and 3), with an adjacent smaller gully in trench 26, could feasibly all have had medieval origins; the fill of 170 contained a small amount of 13th–14th century pottery.

In the north-east corner of the excavation area, overlying Ditch 658 (not illustrated) and Ditch 564/605 (Fig. 5), recorded in section, may also date to the medieval period, although this is reliant on a single abraded sherd of what may be 10th–11th century pottery in the primary fill. It is probable that the ditches and gullies discussed above are the remains of earlier field boundaries and drainage features which date from the era when the area was monastic farmland.

Medieval Pottery by Helen Walker

The pottery has been catalogued according to Cunningham's typology of post-Roman pottery in Essex (Cunningham 1985, 1–16) and is fully quantified and described in the archive. The following is a summary of the pottery assemblage. The earliest pottery recovered is of Saxo-Norman date and comprises a tiny sherd of St Neots-type ware dating from c.AD 900 to the 12th century. There is also an abraded everted rim sherd from a small fine greyware jar, which could be an example of Saxo-Norman Thetford-type ware, dating principally to the 10th and 11th centuries. However, it could equally well be Roman greyware. Possibly contemporary with the Saxo-Norman pottery is a sherd of early medieval ware spanning the 10th to earlier 13th centuries.

The bulk of the medieval pottery belongs to the mid-13th to 14th centuries and includes part of a Mill Green ware conical jug (Fig. 4.1), which is decorated with cream slip-painting under a partial clear glaze flecked with green. Sandy orange

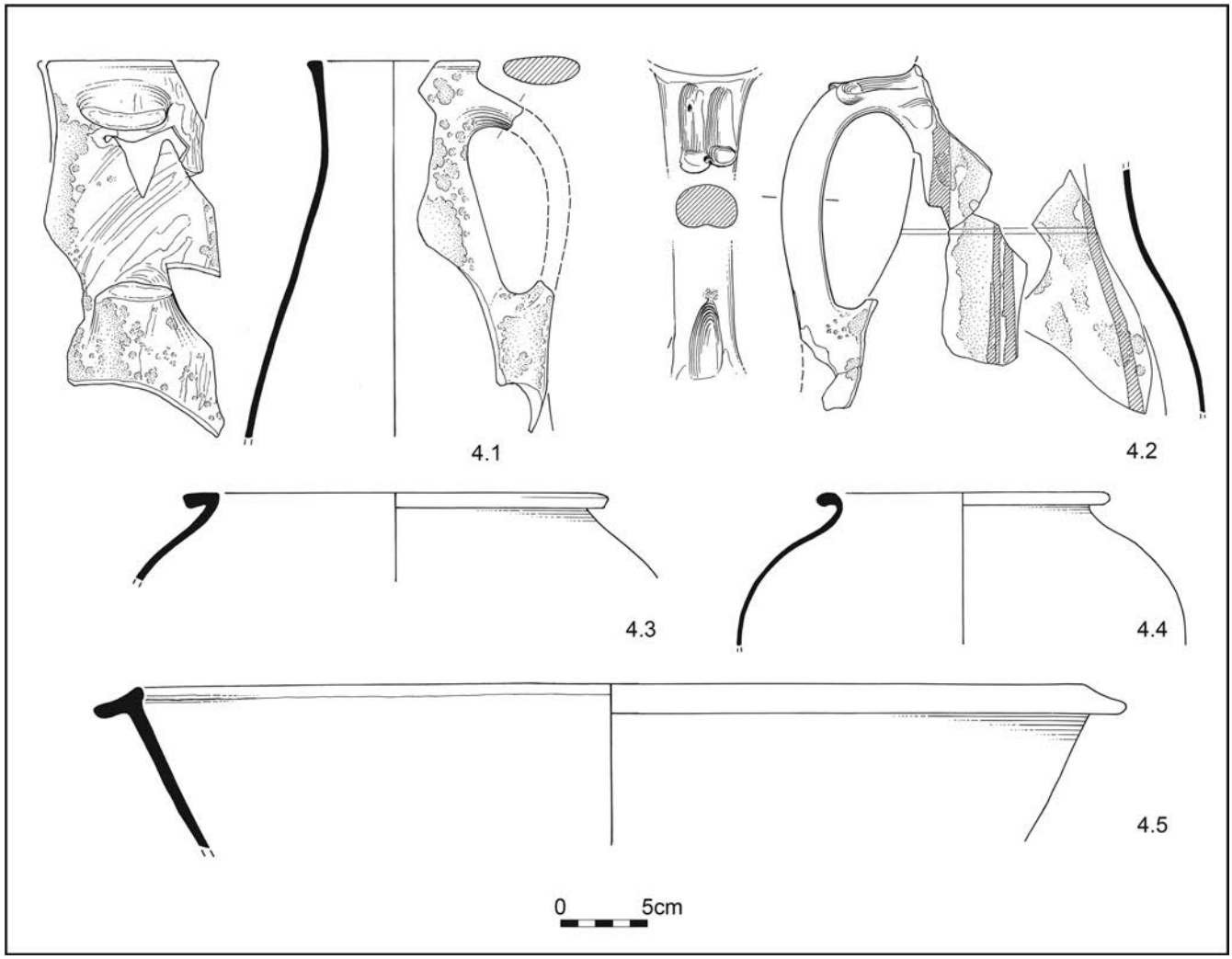

FIGURE 4: Medieval pottery

ware was also recovered, finds including a jug decorated with vertical slip-painting under a partial clear lead glaze (Fig. 4.2). The jug shows similarities to Mill Green ware, especially in the shape of the handle, and indeed sandy orange ware, which was produced at several sites throughout the county, often imitated Mill Green products. Coarsewares include fragments from two Mill Green coarseware cooking-pots (Fig. 4.3–4) and a wide flanged-rim bowl in medieval coarseware (Fig. 4.5). The cooking-pots have developed rim-types which are datable to the late 13th to 14th centuries, and are probably contemporary with the conical jugs. There appears to be no pottery dating to the late 14th to 15th centuries.

The find(s) of Saxo-Norman pottery is unusual in central Essex, it being much more frequent at coastal sites and ports, and in the north-western corner of the county. The medieval assemblage with its preponderance of Mill Green ware, however, is typical of central Essex, the industry being centred at Mill Green, near Ingatestone, just to the south of Chelmsford.

Illustrated Pottery (Fig. 4)

4.1 Part of a Mill Green ware slip-painted conical jug (context 171)
4.2 Part of a sandy orange ware slip-painted conical jug (context 307)
4.3 Rim of a Mill Green coarseware cooking pot rim (context 307)
4.4 Part of a Mill Green coarseware cooking pot rim (context 63)
4.5 A medieval coarseware wide, flanged-rim bowl (context 654)

The Tudor Hall and Gardens

Historical Background

The Mildmay family came to prominence in Chelmsford in the 16th century. Thomas Mildmay acquired a market stall in 1506 and by 1524 he was the second wealthiest man in the town and prominent within the community (Grieve 1988, 90–1). It was his eldest son, Thomas, who founded Moulsham Hall. He was one of the 'commissioners for the tenth' who, in 1535, began visitations of religious houses and in 1536 he was appointed to the 'Court of Augmentations of the revenues of the Crown', who administered the dissolution of the smaller monasteries. Thereafter he was distinguished from his father as Thomas Mildmay Esquire or 'Master Auditor'.

Thomas the Master Auditor was able to acquire a number of monastic estates including Moulsham manor, which Westminster Abbey surrendered in January 1540. He pulled down the manor house and began work on Moulsham Hall (Grieve 1988, 94).

Sir Thomas Mildmay, his eldest son, commissioned a professional survey of his manors in 1591, supported by John Walker's map which is the earliest depiction of Moulsham Hall, its gardens and estates. Computer rectification of the Walker map has been undertaken which enables it to be draped over modern mapping with *c*.5–10m accuracy. This has made it possible to compare the Walker map to later historical

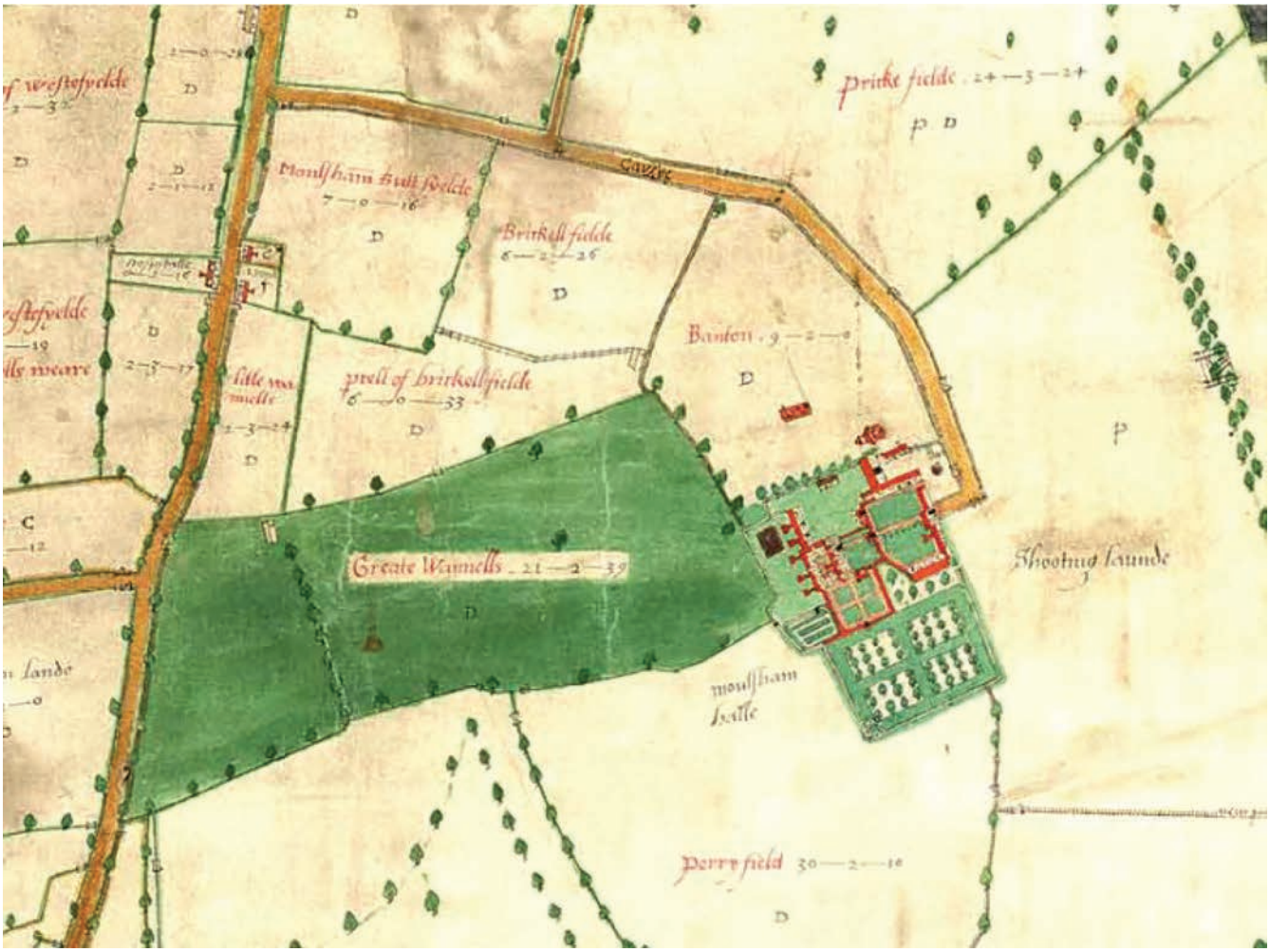

PLATE 1: Extract from the Walker map of 1591 (courtesy of the Essex Record Office)

and modern mapping and the results of the archaeological investigations (e.g. Fig. 6).

The Walker map depicts Moulsham Hall in perspective view (Plate 1). In the modern landscape the site of the hall is now below residential gardens on the south side of Moulsham Drive (Figs 2 and 6). The hall comprised four ranges arranged around a rectangular central courtyard, orientated north–south. To the east, at the front of the house, was a walled courtyard opening onto a large outer courtyard, surrounded by further ranges of buildings. To the south of the hall lay a walled *parterre* garden; a formal garden laid out in a symmetrical pattern. The southern wall of the formal garden was shared with an orchard, set out in four squares and surrounded by a wall. The kitchen/herb garden lay to the west of the walled garden. The driveway to the hall ran from Moulsham Street along what is now St John's Road, turning south at approximately the junction with St John's Avenue, before turning west to enter the outer courtyard of the hall.

In 1638 the 'beautified' hall, by now the manorial seat of Sir Henry Mildmay, was visited by Marie de Medici en route to London to visit her daughter Queen Henrietta Maria. An account of the occasion was recorded by Puget de la Serre, an author who was part of the court of Marie de Medici, and includes an illustration of the hall. The main differences between this depiction and the earlier Walker map are the presence of a moat around the main hall, complete with a small drawbridge, and the walled parterre garden shown as situated to the north rather than south. These differences in layout could perhaps represent an aesthetic decision by the illustrator, rather than an accurate representation of the hall.

Archaeological remains associated with the Tudor hall

Archaeological remains associated with the Tudor Hall phase were identified on site, primarily in the main excavation area. These comprised construction layers, the partial remains of walls and foundations, other brick-built features, a 'buried soil', and ditches and gullies.

The structural remains comprised fragments of walls and their foundations relating to the orchard (e.g. Fig. 6). Wall [103] is likely to have been its western boundary (Fig. 5). Its survival was variable, sometimes only surviving as a brick rubble foundation. It is estimated that the wall foundations were *c.*1m wide and the base of the wall itself 0.5m wide. On the basis of the Walker map, this western orchard wall is estimated to have been *c.*90m in length, of which a 13m-length was investigated.

In the north-east corner of the excavation area the shared northern wall of the orchard and southern wall of the formal gardens survived as a substantial wall foundation, [568], orientated roughly perpendicular to [103] (Fig. 5). Remains comprised a foundation of flint nodules, brick pieces, tile,

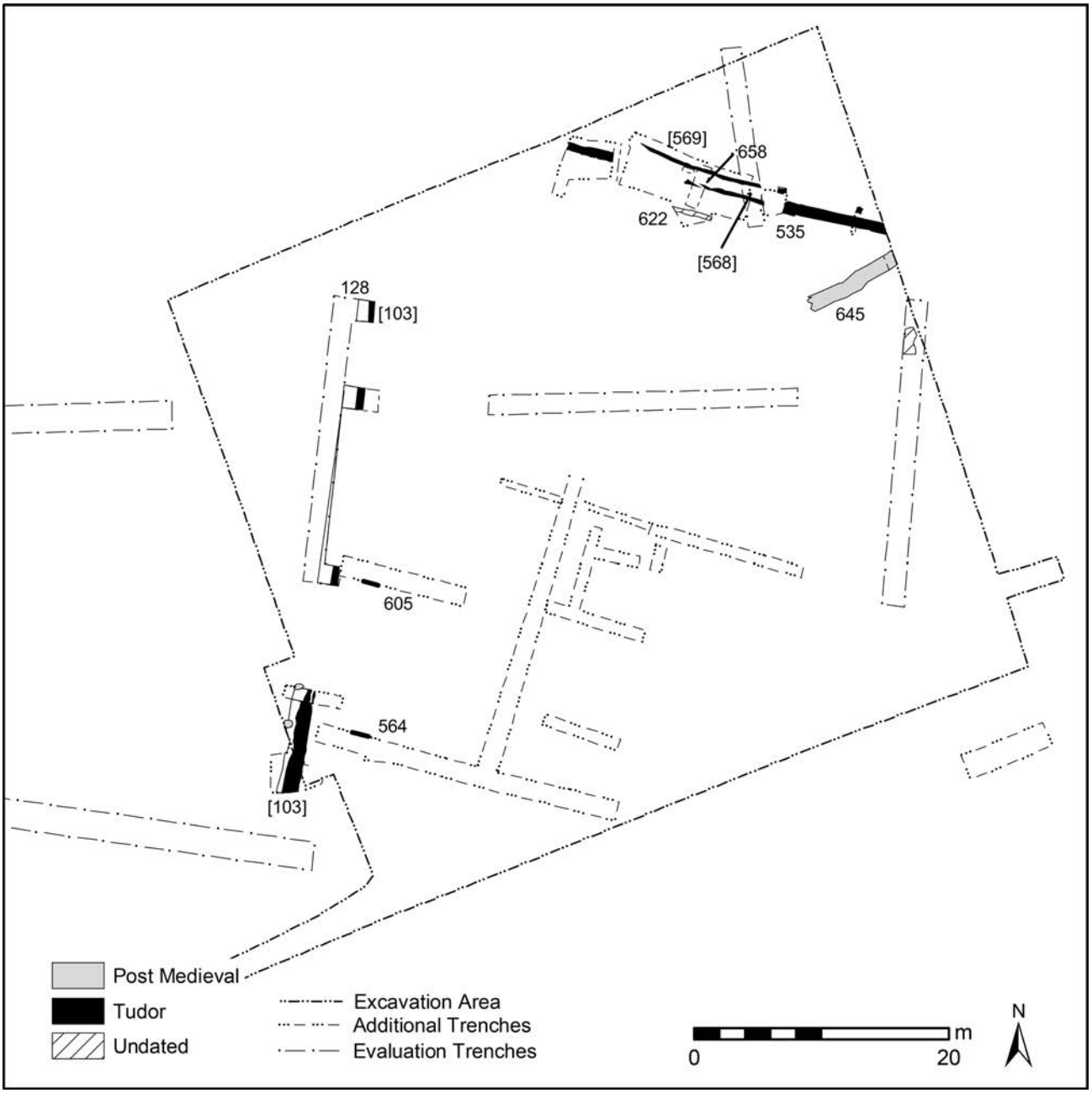

FIGURE 5: Tudor remains within the excavation area

mortar and sandstone with up to four courses of Tudor place bricks surviving (see brick report below for details). Reference to the 1638 illustration of Moulsham Hall and to similar structures elsewhere, for example at Cressing Temple (near Braintree), would suggest that the wall may originally have stood to a height of 2–3m. The top of the wall may have had a chamfered cap, as a chamfered 'special' brick was recovered from the demolition rubble.

To the north of, and parallel with, the northern wall of the orchard was a brick-built drain (Fig. 5), [569], in a shallow cut through a cultivation layer. It comprised a simple un-bonded structure of Tudor bricks laid widthways to form the base of the drain, with a single course laid lengthways on top forming its sides, and capped with a course of bricks again laid widthways (Fig. 10, Section 1). Presumably, the drain ran alongside a pathway which ran around the interior of the formal garden, its capping perhaps defining the path edge.

Other recorded features within the walled orchard include a ditch (564/605) and gulley (622) (Fig. 5) which may perhaps have been further drainage features. They ran parallel with the orchard wall, offset by *c*.2.5m, and would perhaps have delineated the inner edge of the grassed pathways which are depicted on the Walker map.

Fragments of a 'buried soil', a yellowish-brown silty-clay, were also identified across much of the excavation area and extended beyond. The stratigraphic position of this buried soil, below 18th-century construction layers, suggests that it may have been of Tudor date and perhaps the remains of garden or cultivation soils.

To the west and south of the hall outside the area of the more formal gardens, earlier field boundary ditches (identified in Trenches 1–3 and 5) had been backfilled and the ground surface above them consolidated with layers of broken peg tile and cobbling.

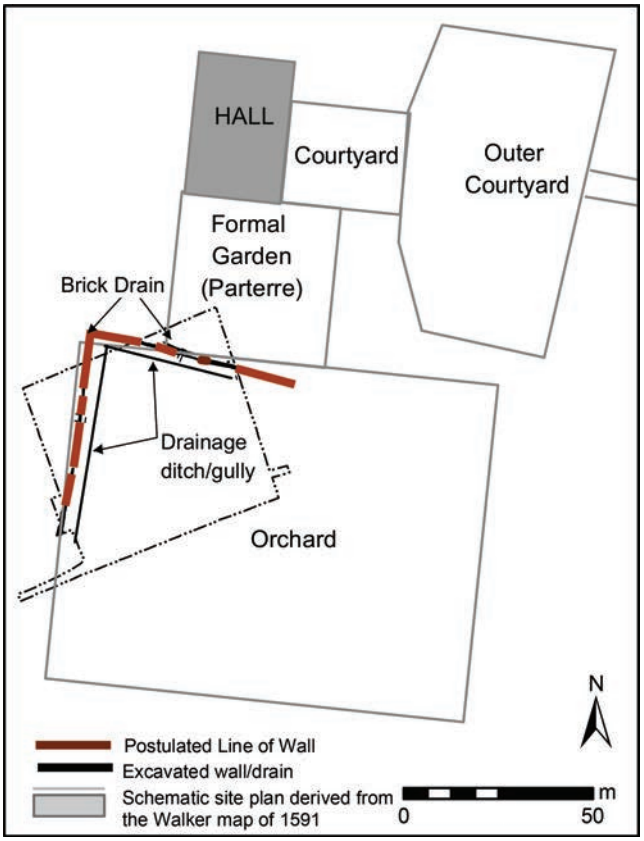

FIGURE 6: Tudor remains – interpretative plan

Benjamin Mildmay and the rebuilding of Moulsham Hall

In 1728 Charles Mildmay, 18th Baron of Fitzwalter, a direct descendant of Thomas the Master Auditor, died leaving the Mildmay estates in the hands of his brother Benjamin (Grieve 1994, 127). Benjamin spent the next 20 years and an estimated £17,000 rebuilding Moulsham Hall and remodelling the gardens (Edwards 1977, 28–35). In 1724 he began keeping detailed accounts, six books of which have survived. The following section is summarised from A.C. Edwards' 1977 publication on Benjamin Mildmay and his accounts.

Benjamin Mildmay purchased Moulsham Hall and its surrounding 45 acre estate for £630 on 17 May 1728, from the dowager Lady Fitzwalter. He proceeded to construct a new hall with his architect Giocamo Leoni, demolishing the old hall sections at a time and re-using the foundations, and perhaps materials, in order that the expenditure would not outstrip his income. The first brick of the new Moulsham Hall was laid on July 15 1728 (Edwards 1977, ix) and in 1730 Benjamin moved his family in for the summer season, although building was not completed until 1749. As well as the hall itself there were the typical outbuildings to be found in a country estate including new stables and a walled kitchen garden. Significant sums of money were also expended on the re-laying of the gardens.

Whilst there is significant detail in the account books, such as the names of suppliers and craftsmen, there are few sources which illustrate the layout of the house and gardens. They comprise three images; an engraving of the hall looking roughly south-west, which was published in 1773 (Plate 2), the 1805 Ordnance Survey (1'') and Chapman and André's county map (2''), published in 1777. From these sources and the later Ordnance Survey historic mapping it is possible to suggest the location of some of the key elements of the Georgian mansion and its gardens.

The accounts specify that the mansion was built on the same site as the earlier hall, thus it would lie below Moulsham Drive (Fig. 2). The mansion was Palladian in style, "... of a quadrangular form inclosing a court in the centre and commanding a view of Danbury Hill from the grand front..." (Dugdale 1819). It is assumed that the main frontage, as per the 1773 illustration, was that on the east of the building, consistent with the layout of the earlier hall. In front of the

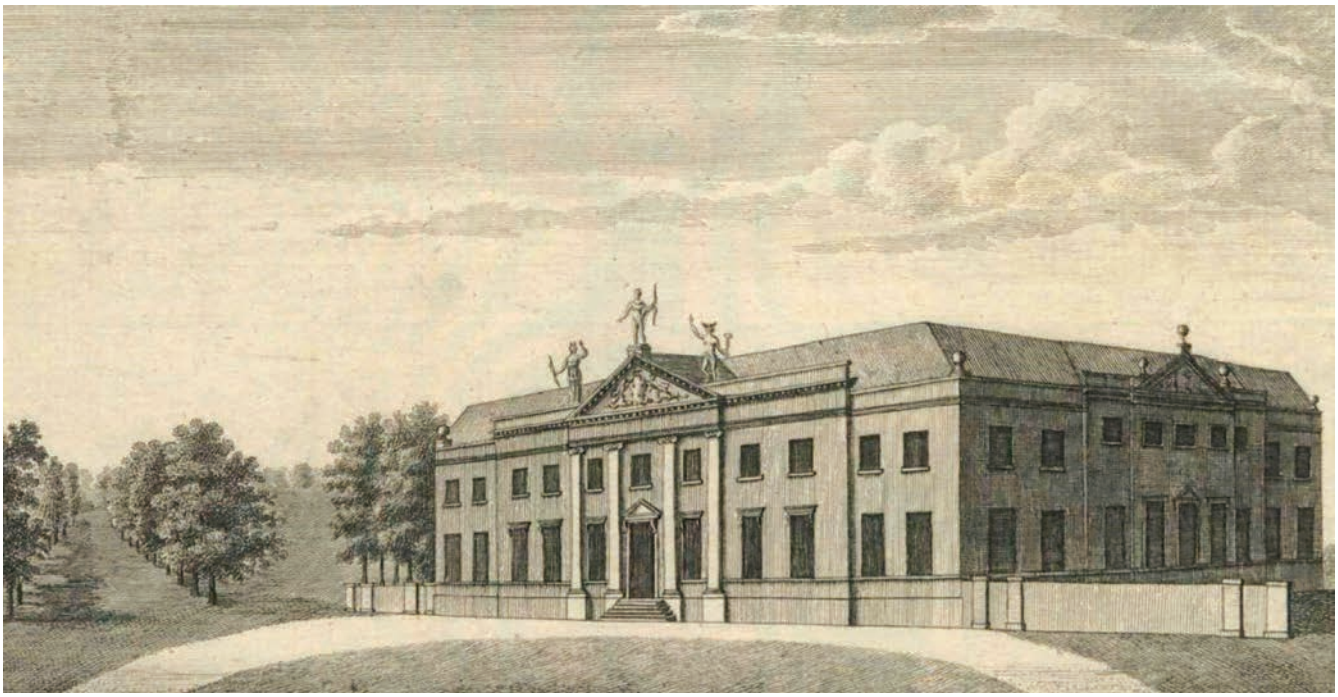

PLATE 2: Benjamin Mildmay's Hall (courtesy of the Essex Record Office)

mansion was a circular driveway which was approached from St John's Road/Lady Lane or from Lodge Farm. The parkland style gardens lay to the north and east of the mansion. Walled gardens were situated to the rear (west) of the hall, including kitchen gardens, which survived the subsequent demolition of Benjamin's mansion and are depicted on early editions of the large scale Ordnance Survey maps as 'Moulshamhall Gardens'. The whole was situated within an extensive park.

Archaeological Remains

The Demolition of the Tudor gardens and the construction of the 1728 gardens

Given that the excavation areas lay outside the main buildings of the Tudor Hall the archaeological evidence relating to its 1728 demolition comprises only of layers of demolition material and deposits used to level the ground. The demolition layers were primarily located in the central area of the site, in the vicinity of Trenches 1–3, and comprised a large expanse of deposits containing brick, tile and mortar debris. Whilst the full extents of these demolition deposits remain unknown as they extended beyond the limits of the trenches, it would seem most likely that they were spread across a wide area and that, in some cases, they filled natural variations in ground levels and the tops of partially infilled ditches. Within the main excavation area, the walls defining the Tudor garden were demolished in this period; both the northern and western walls were toppled into shallow trenches that had been dug alongside them. In the case of the northern wall the three lower courses of the brickwork survived in places, with the rubble of the remainder spread alongside and compacted, perhaps to be used as a pathway.

Above the Tudor buried soils a silty clay layer (18) was evident across virtually all of the trenches 1–3. Above this was a layer of very compact, re-deposited natural gravel (19). A gravelly layer was present in the machine sections across the excavation area (e.g. 574); this deposit could be the equivalent of the re-deposited gravel (19). A subsoil layer (20) was also identified. These layers, especially the re-deposited gravel, are probably construction or consolidation layers dating from the Georgian period of rebuilding in the early 18th century. The layers of demolition debris would not have provided a good base for building foundations and it is probable that layer (18) was laid down to level the ground with layer (19) on top to form a compact, solid surface. It is these layers, and the underlying demolition layers, which probably account for the appearance of the raised area on this part of the site.

The Georgian Building

The fragmentary remains of a Georgian building were investigated in Trenches 1–3 (Fig. 7). As the materials of the Georgian estate were dismantled and auctioned off in 1809 (see below), including the bricks, the building was identified only by the presence of construction and robber trenches rather than actual surviving walls. Several robber trenches orientated east–west and north–south were excavated which, together with the parchmark plot, suggest that they mark the foundations of one (or more) rectangular building(s). This area was not opened for full excavation as it was retained as open space within the development in order to preserve the remains *in situ*. Despite the limited nature of the investigation of this part of the site it has been possible to draw some conclusions about the building.

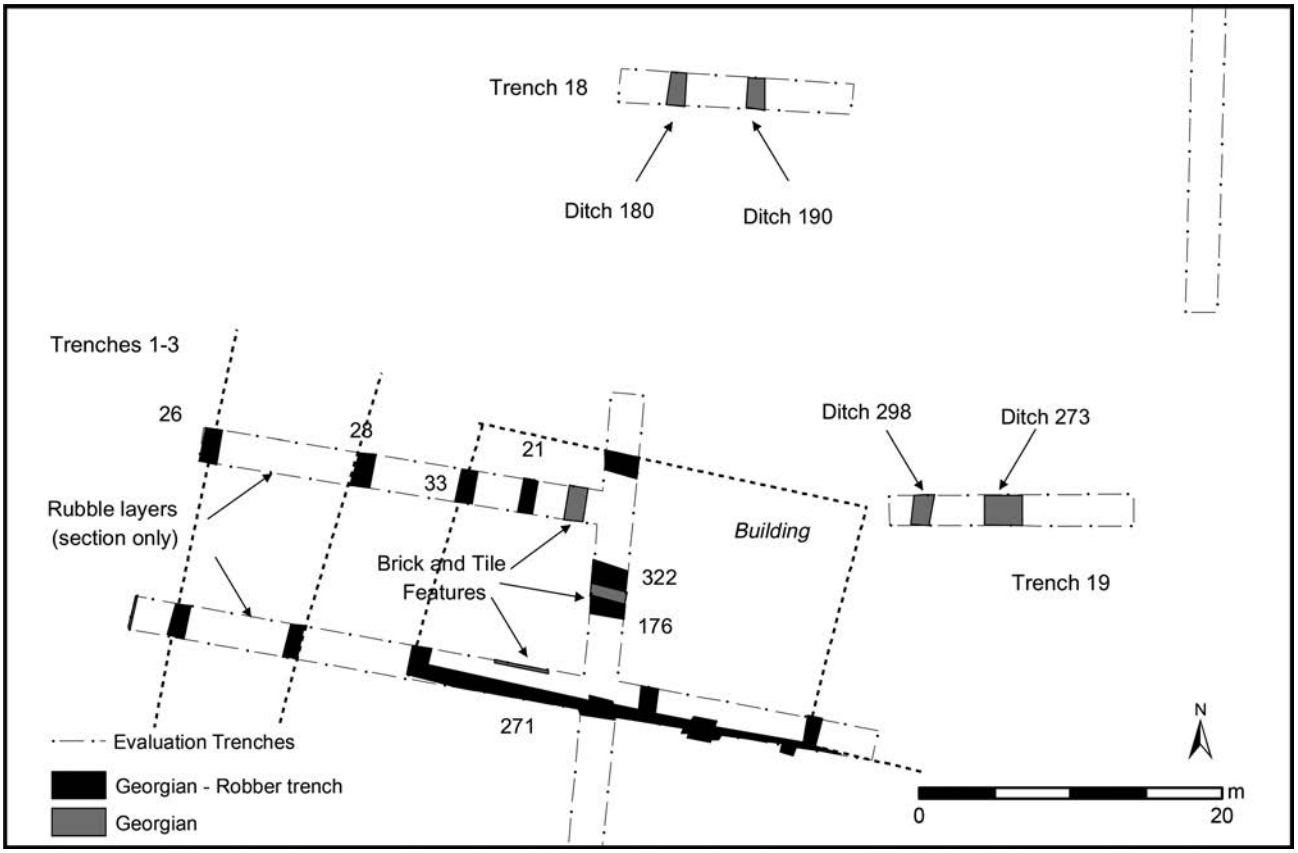

FIGURE 7: Georgian outbuilding

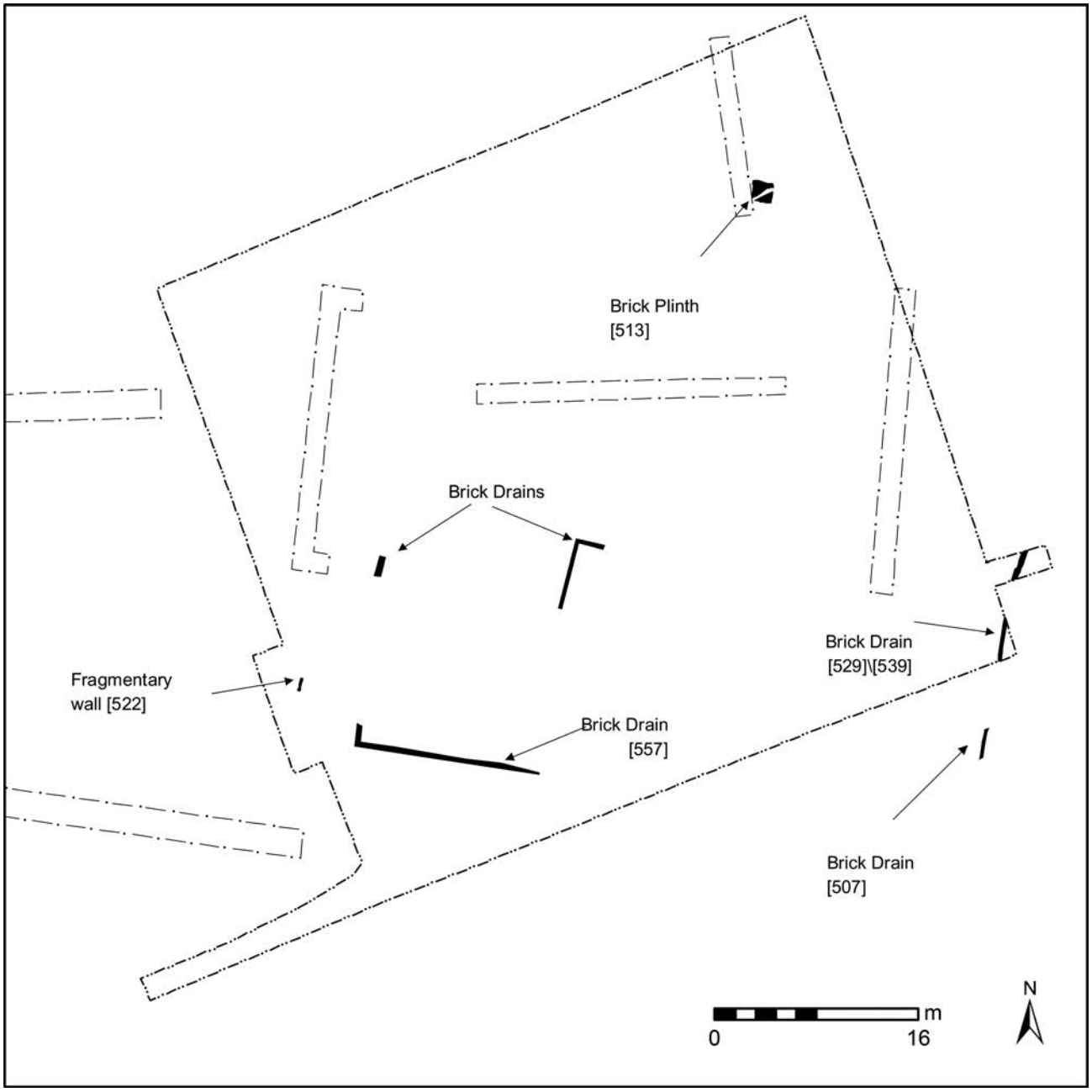

FIGURE 8: Georgian remains – excavation area

The remains are probably those of a single building, approximately 28m × 18m, with internal divisions in the northern side, and a passageway with a tile-lined path running east to west along the centre. The wall-foundation cuts (as opposed to robber trenches) were occasionally still visible in section and were on the whole quite substantial, being *c.*1m wide and at least 0.70m deep, shallowing towards the east. The longest stretch of exposed wall trench formed a corner at its western end. The eastern end was poorly defined and may perhaps have extended beyond the edge of the trench. Two square holes were evident along this length of wall, and were probably cuts for integral buttresses. The eastern wall of the building was not as clearly defined as the other walls, being represented by a shallow silty clay filled feature, perhaps indicating an internal wall or partition. Several tile features were also located within the interior of the building. These comprised what appeared to be paths constructed of reused roof tiles, laid flat on the ground. A parallel pair of robbed-out walls, [26] and [28] at the east end of Trenches 1 and 2, were broadly contemporary and may have been part of the same building or perhaps a separate structure alongside it. The partial remains of a brick wall were also present at the western end of Trench 1 but do not appear to be part of the building and are perhaps more likely to be the remains of a garden wall.

Two sets of parallel ditches (180/298 and 190/273), orientated approximately north–south were present to the north and east of the stables building (Fig. 7). These features could have defined a road/track that ran towards the Georgian building and round its eastern side.

Finds recovered during the machine-excavation of Trenches 1–3, although unstratified, provide further information about the building materials used. Several blocks of probably 18th-century building stone were found in the vicinity of the building. Most significant of these was a large

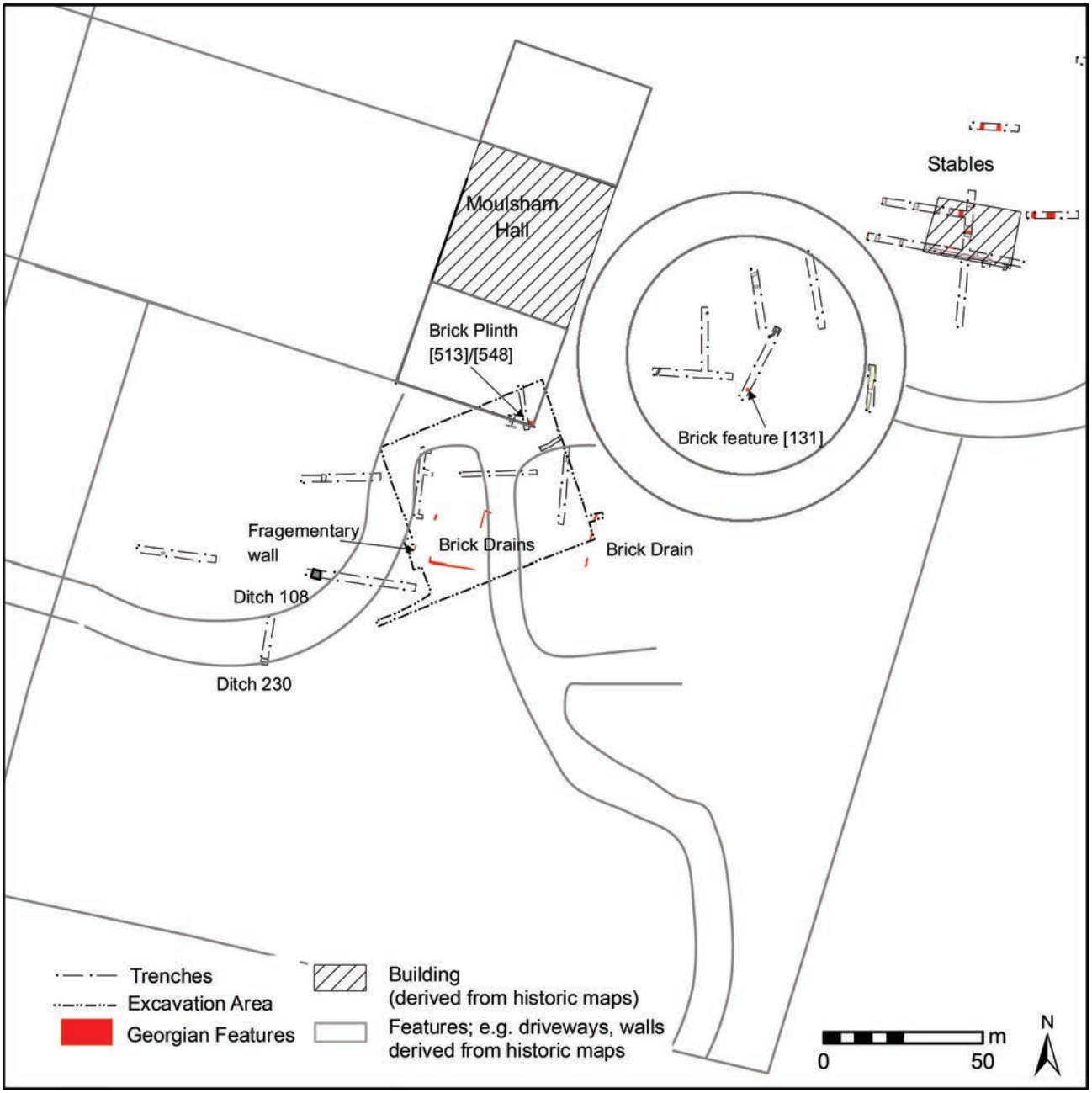

FIGURE 9: Georgian remains – interpretative plan

fragment of fine-textured limestone which was probably part of a window. This would suggest that, although brick-built, the building had been embellished with stonework, perhaps primarily on its frontage.

The construction date of the building remains is difficult to definitively determine as the majority of the stratigraphic relationships were destroyed by the final robbing phase and no *in-situ* structural foundations were remaining. The bricks from the back-fill of the robber-trenches, however, have all been dated to the 18th century, suggesting that this building was part of the Georgian phase of Moulsham Hall. Its function is also speculative; it is not part of the main building but may be the remains of the stables. We know from Benjamin Mildmay's accounts that the stables took two years to build and were embellished with cupolas, a stable clock, along with a bell and two weather vanes (Edwards 1977, 32). This level of decoration would suggest that they lay in a visible location; the excavated building remains lay on the north side of the circular drive to the mansion (Fig. 9) where the Chapman and André map shows a small darker mark that could, conceivably, be depiction of a building.

The Gardens

To the southwest of the Georgian building described above the archaeological investigations were situated within what would have been the gardens of the mansion (Figs. 8 and 9). Most of the Georgian remains identified here had a drainage-related function. They included a narrow curvilinear cut [110] in Trench 6 (Fig. 3) which was lined with mostly complete roofing-tiles, with rubble packing along its sides of 18th century brick and stone fragments. This feature was probably contemporary with another similar cut [114] (not illustrated) which also contained an 18th century brick-rubble 'lining'. To the southwest of these features was a small, brick lined sump

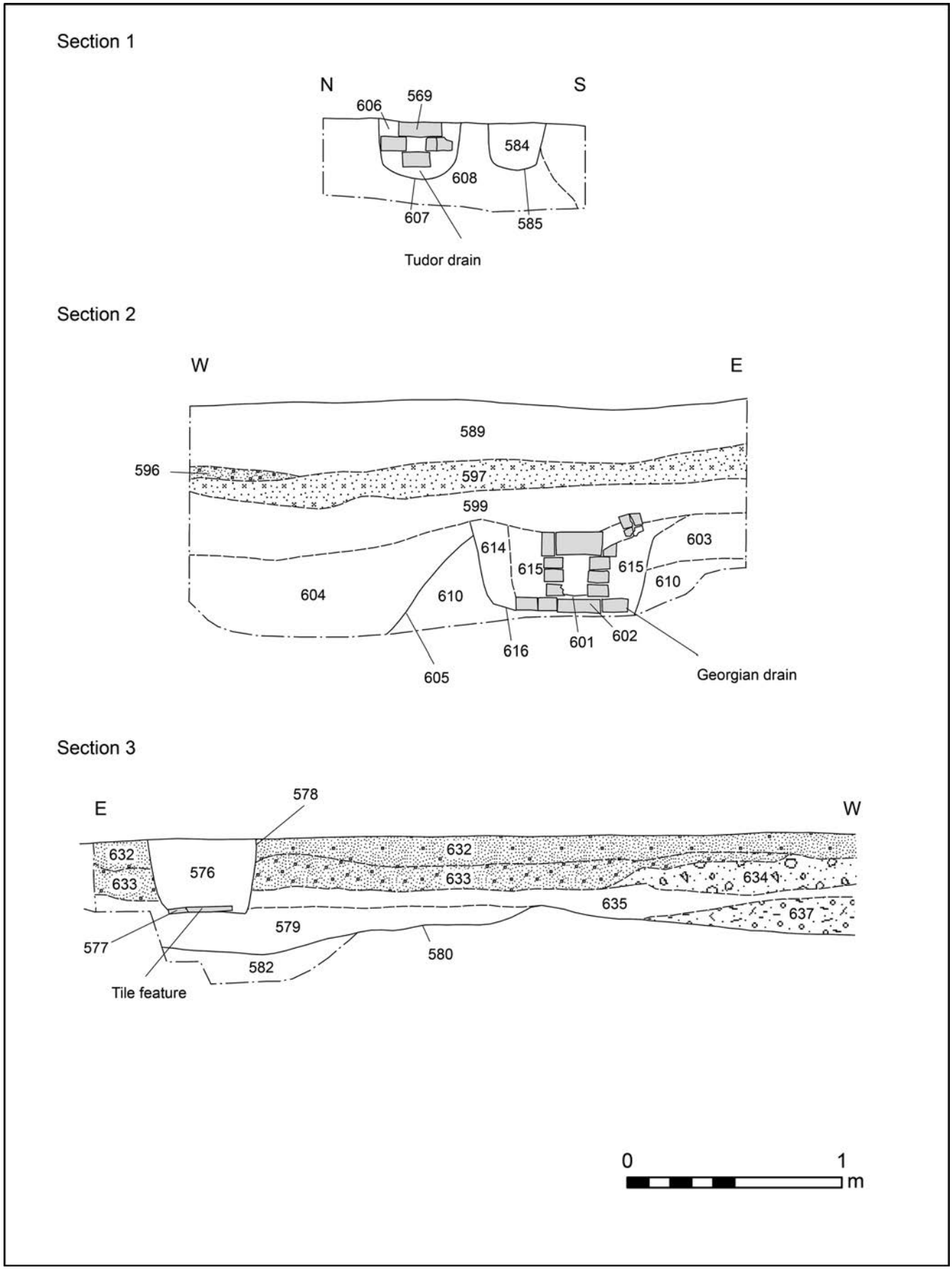

FIGURE 10: Sections

or soak-away [129] or perhaps the foundation for a pedestal, being approximately centrally located within the area enclosed by the circular drive (Fig. 9). To the west of the excavation area ditches [108] and [230] appeared to delineate the edges of driveways shown on the Chapman and André map (Fig. 9). The latter has square sides and a flat base suggestive of its being a foundation/robber trench, perhaps the foundation for edging of one of the driveways.

Within the excavation area a large brick feature, [513], roughly 1.4m square, was identified and it is thought to be the remains of a clasped buttress at the corner of the front garden wall which extends from the front of the mansion, as shown on the 18th century engraving, thus helping fix the site of the mansion. If it is assumed that the wall turned a right-angle (south-west to north-east), it would have run along the same line as the Tudor garden wall and is likely to have reused those foundations. Indeed, it would appear that some of the bricks were reused; some Tudor 'specials' being found amongst the 18th century bricks.

In the excavation area fragments of drains were identified (Figs. 8 and 9), generally comprising a brick base, brick sides two to three courses high, with un-mortared brick capping (e.g. Fig. 12 Section 2). Brick from drains [557] and [529/539] dated to the late 17th to early 18th century, with some of Tudor date also present. These drains post-date the initial construction levelling phase associated with Georgian mansion, thus they are likely to be associated with the subsequent enhancement of the gardens by Benjamin Mildmay.

The later history of Moulsham Hall and Gardens

Thomas the Master Auditor had specified that the estate must pass through the male line. The last of his direct descendants died in 1784 having assigned a great niece, Jane, as heir, conditional on her husband taking the Mildmay name. In 1786 Sir Henry Paulet of Hampshire did so, becoming Sir Henry Mildmay. Jane also inherited the estates of Dame Anne Mildmay, who required her heirs to live at Moulsham Hall for at least three months of a year (Grieve 1994, 231). Accordingly the family regularly moved from Hampshire to Essex as required until they were able to escape the obligation in the early 19th century.

In the late 18th century parts of the Moulsham Hall estates were requisitioned by the military (Grieve 1994, 232–6). Sir Henry offered to lease the government the hall itself in return for them passing a bill releasing him from his occupancy obligations. This was passed in 1804 and the hall became the quarters of the General Commanding Officer and his staff at which time problems with the building had already been noted. By 1808, when the military lease ran out, it was considered a financial liability and the family trustees decided that it should be pulled down (Grieve 1994, 241). In March 1809 the contents were auctioned, raising £1,661 and the materials (including windows, bricks, joists, etc.) raised £4,470. The hall and all other buildings were dismantled with the exception of the garden walls and a small garden house. By the 1870s the only identifiable remnant of the estate was the walled gardens which are marked on early editions of the Ordnance Survey as 'Moulshamhall Gardens'.

In the early to mid-20th century the 'Moulshamhall Gardens' were cultivated as market gardens by William Teager. Following their closure in 1952 the remainder of the north garden wall was demolished and built over. Whilst some fragments of the garden walls remained by 1977 there were no surviving structures in the area (Grieve 1994, 241). Following these changes, part of the site was used for allotments and the remainder was, in the 1990s, under rough grass. Following the completion of the archaeological investigations the site was developed and is now occupied by housing along Fortinbras Way.

Archaeological remains associated with the demolition of the Georgian hall

The archaeological evidence relating to the demolition of the Georgian hall takes two forms; a series of robber trenches in Trenches 1–3 and demolition rubble in the main excavation area. The reclamation of building materials for resale at auction in 1809 was carried out zealously, the possible stables building was not just taken down to ground level but the foundations were also dug out so that all that remained in the archaeological record to suggest its presence was a series of robber trenches empty of structural remains.

In the excavation area, the Georgian remains were covered by extensive spreads of rubble and other debris such as clinker and charcoal. Across the centre of the excavation area these deposits largely comprised broken brick, roof tile, mortar, glass, burnt wood and general debris of Tudor, 17th and 18th century date in a sandy clay silt soil. Additional trenches which were machine excavated through the debris layers (Fig. 5) established that these deposits were between 0.15m and 0.30m thick. Given that the excavation area lay beyond the hall and buildings, it is postulated that these remains represent the debris left from the demolition process, perhaps the materials being stockpiled here prior to auction.

The deposits of rubble and general detritus were covered in places by a thin patchy orange gravel layer (e.g. 596, Fig. 10 Section 2). The latter was overlain in turn by dirty orangey-brown gravel which was perhaps a mix of the underlying gravel and topsoil resulting from the 20th century agricultural/market garden activities. These deposits were cut by a number of ceramic mole drains and gullies (e.g. 585; Fig. 10, Section 1) and tile-lined drains (577; Fig. 10, Section 2). The latter comprised trenches with a peg-tile lined base and filled with gravel (e.g. Fig. 12 Section 3). Similar drainage features were identified in the trenches to the west of the excavation area and all are thought to relate to the agricultural/market garden use of the site following the demolition of the hall. An infilled boundary ditch in trenches 5, 6 and 7 (ditch 92/163/317; Fig. 3), also illustrated on early Ordnance Survey mapping, represents the new layout of the landscape following the breakup of the Mildmay's Essex estate.

Post-Medieval and Modern Finds

The post-medieval and modern artefact assemblage was dominated by building materials, particularly brick. The following provides a summary of the brick and tile analysis (Pat Ryan 1996; 1997) and of post-medieval pottery and other selected artefacts.

Brick and tile

Place bricks (bricks placed directly on the ground for drying) were recovered from Tudor drains. They were also present in a

number of later contexts. The place bricks were typically orange or sienna in colour, occasionally having some areas of blue grey and often contained occasional pebble inclusions. They were generally irregular in form and the upper surfaces were sometimes rain-pocked, straw-marked and showed evidence of striations. The dimensions of the bricks were variable, from 235mm to 255mm in length, 110mm to 120mm wide and 50mm to 65mm thick; the average Tudor brick being 240mm × 120mm × 60–65mm. A number of place bricks with similar characteristics, but with widths varying between 110 and 115mm, and thicknesses between 50 and 55mm, are probably slightly later in date. These were recovered from rubble layers in Trench 13 (the centre of the excavation area). A number of Tudor 'special' bricks were also retrieved. These included bricks with rubbed or cut chamfered faces and would typically have been used for the top course of plinths. Other specials, with chamfered corners or more elaborate shapes cut at the leather hard stage, would have been used in door or window openings. At least some of these Tudor bricks may have been produced on the Moulsham Hall estate; the 1591 Walker map shows two fields named 'Brickell Fielde' and 'pert of Brikell Fielde' to the northwest of the Tudor hall, in the vicinity of St John's Road (Fig. 1).

The late 17th century/early 18th century bricks from the site varied in colour from orange to sienna, brown and purple, all with patches of lighter or darker colour and a number had blue/grey glazed header faces. The clay from which the bricks were made was variable in content and relatively poorly mixed. Most of the bricks were regular in general form, but had slightly irregular rounded or sharp arrises. The majority of this type of brick measure either 230 × 110 × 65–70mm or 220 × 105 × 60–65mm. The tiles were, in general, fragmented and where identifiable were standard post-medieval roof tiles.

Benjamin Mildmay purchased vast amounts of bricks; for example in April 1731 he brought some 101,300 bricks (quoted in Edwards 1977, 46). The bricks and at least some of the roof tiles were produced by Thomas Spite between 1729 and 1743 (ERO D/DM A5 and 7; Edwards 1977, 51). The Spite (or Spight) family operated in the Galleywood/Great Baddow area and advertised in trade directories until 1874. Although the precise location of Spite's works is unknown they are thought to have been in the vicinity of Galleywood Common, *c*.2km to the southwest of Moulsham Hall.

Rubbing bricks dating to the 18th or 19th century were also recovered, these are soft sandy bricks that can be cut and rubbed into shape for use in architectural detailing. In the case of Moulsham Hall Benjamin Mildmay's accounts show that Methums, a brickmaker at Blackmore, was paid £6 2s 6d for rubbing bricks (Edwards 1977, 52). Other finds from the site included small 18th century cream bricks. These were similar in size to Dutch clinker bricks, also recovered, although the latter are harder and thus were popular for flooring from the 17th century onwards. Other post-medieval construction materials included fragments of building stone with flat surfaces and traces of mouldings and a limestone window moulding.

Overall, the remains of the construction materials show that the key building material was brick, but also that the buildings were also embellished with 'specials' and stonework. The material was largely locally sourced in the case of both the Tudor and Georgian estates.

Post-medieval pottery

A small quantity of post-medieval pottery was recovered from feature fills and layers. The most common type was post-medieval red earthenware which was produced from the late

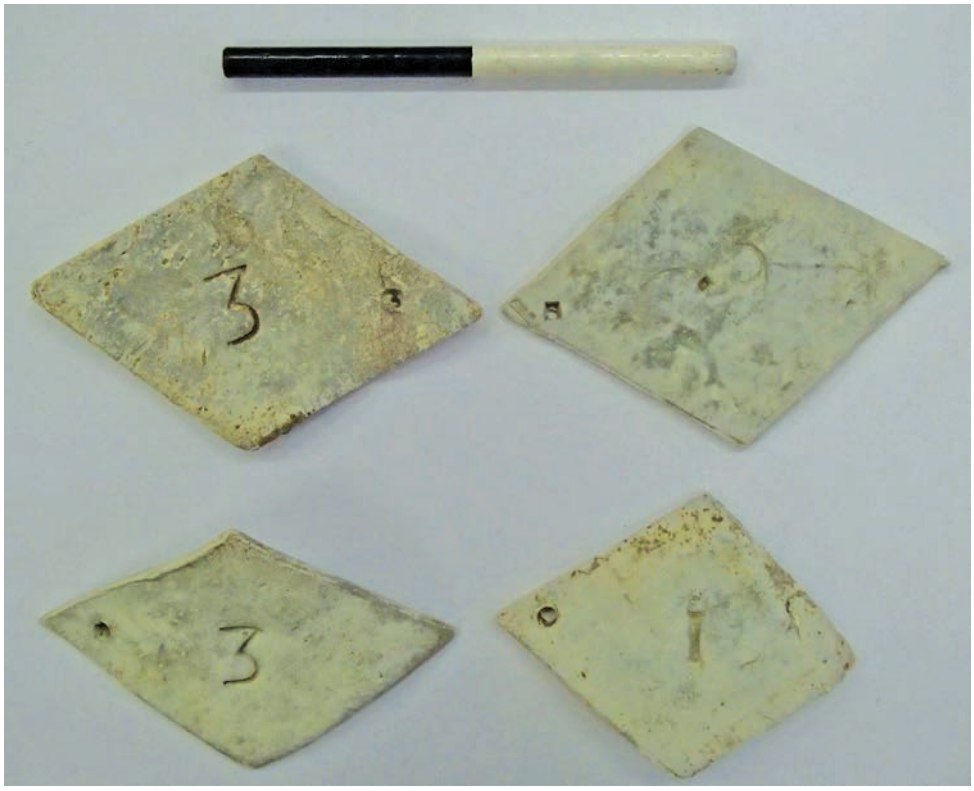

PLATE 3: Lead plant tags (10cm scale)

15th or 16th century until the 19th century. Recovered forms include part of a lid-seated rim and lower handle attachment from a pipkin (a small cooking vessel with a tripod base), a small jar, a slip-painted jug or cistern handle (16th century) and a large flanged bowl (16th century). Some17th century black-glazed wares and tin-glazed earthen wares were also present.

Other pottery types included Surrey-Hampshire white ware generally dating from the later 16th to the end of the 18th-century. Surrey-Hampshire white ware seems to be relatively common at Chelmsford and accounted for a significant proportion of the assemblage at Moulsham Street, Chelmsford (Cunningham 1985, fig. 39B). Imported pottery included Frechen stoneware of mid-16th to 17th-century date from the German Rhineland, and Raeren stoneware dating to the late 15th to 16th centuries. Later pottery types included a sherd of early 17th to early 18th-century Westerwald stoneware, 18th-19th century creamware, an 18th-century Chinese porcelain cup handle and several sherds of modern stoneware.

The post-medieval and modern pottery assemblage is rather small and few conclusions can be drawn from it. The pottery would be typical of almost any post-medieval site, which supports the interpretation that the site lay beyond the immediate area of the mansion itself and that the nearest buildings were more utilitarian in character.

Other artefacts

Of interest are artefacts directly associated with the gardens of the hall, which included a group of diamond-shaped lead tags/plaques with a hole in the corner and numbers incised in their centre (Plate 3). They may have been used to mark specific trees or shrubs (or types of tree or shrub) with the number referenced in gardeners account books. The historic use of lead, copper and zinc tags to mark plants was relatively common as they are both flexible and durable.

CONCLUSIONS

The investigations at the Princes Road site identified archaeological remains from the medieval, Tudor and Georgian periods; the latter being of particular importance as they relate to Moulsham Hall, the seat of the Mildmay family who played a significant role in the development and administration of Chelmsford from the 16th to the 19th centuries. Prior to them, the location of Moulsham Hall was only known in the most general terms. However, the identification of garden structures and outbuildings associated with the successive halls, has assisted in understanding the layout of their grounds, which adds value to the historical record. Furthermore, the recorded remains demonstrate the impressive scale of the works undertaken, particularly by Benjamin Mildmay. There is a good correlation between the archaeological record and the historical record, particularly cartographic and illustrative sources. It has also been established that the Georgian hall is likely to have been constructed of brick with stonework detailing.

The development of the gardens of Moulsham Hall reflects the changing trends in landscape design through the centuries. The Tudor gardens were formal in character, but those of Benjamin Mildmay, whilst retaining some formal elements, appear to have been more naturalistic with sweeping drives and clumps of trees. Thus the grounds were a mix of the old and new, perhaps typical of the majority of the more conservative gentry of the county (e.g. Hunter 1999, 153) in contrast to the more experimental designs being put forward by, for example, Robert James, the eighth Lord Petre, at Thorndon Hall. The design of the gardens at Moulsham has more in common with those of Bower Hall, Steeple Bumpstead, built in 1710, whose gardens include neat parterre gardens and formal avenues along with clumps of trees (Hunter 1999, 153). The archaeological works give a glimpse into the smaller scale gardens of the gentry which are less well represented in the record and the picture is further enhanced by the contemporary accounts of Benjamin Mildmay.

ACKNOWLEDGEMENTS

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BIBLIOGRAPHY

Clarke, R. 1996, *Land North of Princes Road, Chelmsford, Essex. Archaeological Evaluation*, ECC FAU, limited circulation rep.

Cunningham, C.M. 1985, 'A Typology for Post-Roman Pottery in Essex' in Cunningham, C.M and Drury, P.J., *Post-medieval sites and their pottery; Moulsham Street, Chelmsford*, CBA Research Report 5 (Dorchester)

Dugdale, J. 1819, *The New British Traveller: Or, Modern Panorama of England and Wales; Exhibiting an . Account, Historical, Topographical, and Statistical, of this Portion of the British Empire. Interspersed with Biographical Particulars of Eminent and Remarkable Persons* (J. Robins and Co., London)

Edwards, A.C. 1977, *The Account Books of Benjamin Mildmay, Earl Fitzwalter* (London)

Edwards, A.C. and Newton K.C. 1984, *The Walkers of Hanningfield* (Chelmsford)

Grieve, H. 1988, *The Sleepers and the Shadows. Chelmsford: A town, a people and its past. Volume 1*, Essex Record Office (Chelmsford)

Grieve, H. 1994, *The Sleepers and the Shadows. Chelmsford: A town, a people and its past. Volume 2*, Essex Record Office (Chelmsford)

Hughson, D. 1809, *London; Being an Accurate History and Description of the British Metropolis and Its Neighbourhood: To Thirty Miles Extent, from an Actual Perambulation, Volume 6* (W. Stratford, London)

Hunter, J. 1999, *The Essex Landscape. A study of its form and history*, Essex Record Office (Chelmsford)

Knowles, D. 1976, *Bare Ruined Choirs* (Cambridge)

Morant, P. 1769 (Reprinted 1978), *The History and Antiquities of the County of Essex* (London)

Sr. de la Serre. 1639, *Histoire de l'entree de la reyne mere du roy tres-chrestien dans la Grande-Bretaigne enrichie de planches par le Sr. de la Serre* Historiographes de France [Online]. Accessed 2013. < https://archive.org/details/lentreedelareyne00lase>

Ryan, P. 1996, 'Brick' in Clarke, R. 1996, *Land North of Princes Road, Chelmsford, Essex. Archaeological Evaluation*, ECC Field Archaeology Unit, limited circulation report

Ryan, P. 1997, *Brick and Tile Report and Catalogue*, unpublished document

The Stationary Steam Engine in Essex before 1840

Andrew Phillips

It is now well recognised that the stationary steam engine does not merit the transforming role it was once awarded for the classic period of the Industrial Revolution between 1780 and 1820. Its impact as a power source belonged more to the High Victorian phase after 1840, and, above all, after 1870, when engines were more reliable mechanically and cheaper in unit costs, and when railways, themselves a product of steam technology, could distribute coal, the essential raw material, cheaply and in bulk. (Musson 1976; Von Tunzelmann, 1978) In fact, for most of the 19th century, the cheapest unit of power was a human being and those traditional free sources, wind and water, though these needed quite complex machinery to harness their power. Another widely employed power source was the horse. Early fixed steam engines were often installed to replace small armies of horses, or pairs of horses, endlessly turning a whim or 'horse engine', a mechanical device almost forgotten now, but then in widespread use (Almeroth-Williams 2013). Initially these early, ponderous steam engines proved invaluable at pumping water: for mine owners, for waterworks companies and for the giant new breweries appearing in our large cities. These three functions were prominent in the early work of that celebrated firm formed from the partnership of Matthew Boulton & James Watt.

In Essex, which, beyond its small Metropolitan segment, was not significantly industrial, the stationary steam engine was very slow to arrive. True, so early as 1746 a public water supply at West Ham made use of a 'fire' (i.e. steam) engine (ERO, D/DU 621/1), however the author calculates that before 1840 fewer than 25 working steam engines in total (by no means all contemporaneous) can be traced in non-Metropolitan Essex, a claim explored below. By contrast there were 240 *currently working* steam engines in Birmingham in 1838 (Royal Statistical Society, Annual Report 1840). Steam engines then were found in cities and, appropriately, the first known steam engine in 'shire' Essex was in Colchester, by far the county's largest town, which in 1801 was, in terms of population, among the top 35 towns and cities in Britain (Census Returns, 1801).

This first engine was installed in Colchester's waterworks in 1808 by the now rather discredited civil engineer, Ralph Dodd, who had already promoted waterworks companies in several locations in London (James 1977, 161–78). With his London background and London backers, Dodd arrived in Colchester with bold promises to transform the town's waterworks, then driven by a whim engine turned by a couple of bullocks. Dodd used steam power to pump water from a spring-fed reservoir at the bottom of Sheepen Hill, through pipes up that hill, to a standing reservoir inside the Balkerne Gate, in front of where 'Jumbo' the late Victorian water tower, now stands, at the highest point of the then built-up area, from whence it might be gravity fed to paying customers (Fig. 1; Booker 1974, 171; Phillips 1985, 11).

Dodd's engine may have been based on his recent patent for raising water by a high pressure steam engine similar to that being developed by Richard Trevithick, but we only know of its disastrous impact from the chance survival of a letter sent by the town's Chamberlain, Benjamin Strutt, a man of wide learning, in reply to an enquiry from Shrewsbury as to whether the town was satisfied with its new waterworks. Replying on behalf of the mayor in 1809, Strutt's letter was deeply critical of Dodd, his steam engine 'of great pretended power', the pipes 'which Mr Dodd called patent', and the fact that the waterworks were still not working. He recalled the official opening thus: 'all things appeared in readiness to raise the water – when by a few strokes of the engine the pipes went asunder like rotten paper, as had been predicted by everyone who saw them, and about 700 feet rendered useless'.[1]

It is not surprising that Dodd was sent packing. He was apparently replaced by Robert Mylne, a leading waterworks engineer, while Dodd's engine was replaced, early in 1810, by a smaller version of the Boulton & Watt (B & W) rotative beam engine which Mylne had recently installed in the East London Waterworks.[2] Shortly before this, however, in 1809, the town's second steam engine, also a B & W, had been installed in the substantial brewery built in 1800 by John Bawtree near St Botolph's Corner. Probably in recognition of the large and growing garrison being assembled in a town and a district threatened by invasion by Napoleon's forces, this brewery was of considerable size, seeking to emulate the large London breweries dedicated to that celebrated product, London Porter. Set round a central courtyard, its 4,500 square metre footprint, which included the Woolpack Hotel, was probably the largest in shire Essex and remained so for many years.[3] Thanks to the survival of much of the B & W archive it has proved possible to describe with some certainty the appearance and function of these two early Colchester engines, one in the brewery, one in the waterworks.

Before doing so, however, it is worth reflecting on the significance to an East Anglian market town, an appropriate term for Colchester in the age before railways or steam ships, of installing two engines from the world's most advanced engine manufacturers, sited so far away as Birmingham, a city then so distant that Colchester residents commonly dismissed it as 'the shires' (pronounced *sheers*). Much curiosity must have accompanied the arrival of the heavy castings, products of the relatively modern Soho Foundry, travelling perhaps by canal to London and thence by sea to Colchester, and the rare opportunity to see for the first time a steam engine's majestic, if ponderous, power when finally in working order.

A trawl through the extensive B & W archive (Ince, 2000, 103–17; Tann, 1981, 1–21) reveals that before 1820, when the firm was responsible for perhaps one quarter of all steam engine power then produced in Britain, their engines were overwhelmingly sold to the great centres of industry: London, Manchester, Birmingham, Leeds, Newcastle; for textile mills, ironworks, coal mines, waterworks, waterways, breweries, distilleries and for large numbers of sugar mills in the Caribbean. In the Eastern Counties they did not find much business. One engine in 1805 served the Orwell Navigation. This was followed by the two Colchester engines. Also in 1809 one powered Robert Ransome's small engineering works in Ipswich, one in 1814 drove a Cambridge mill, one in 1815

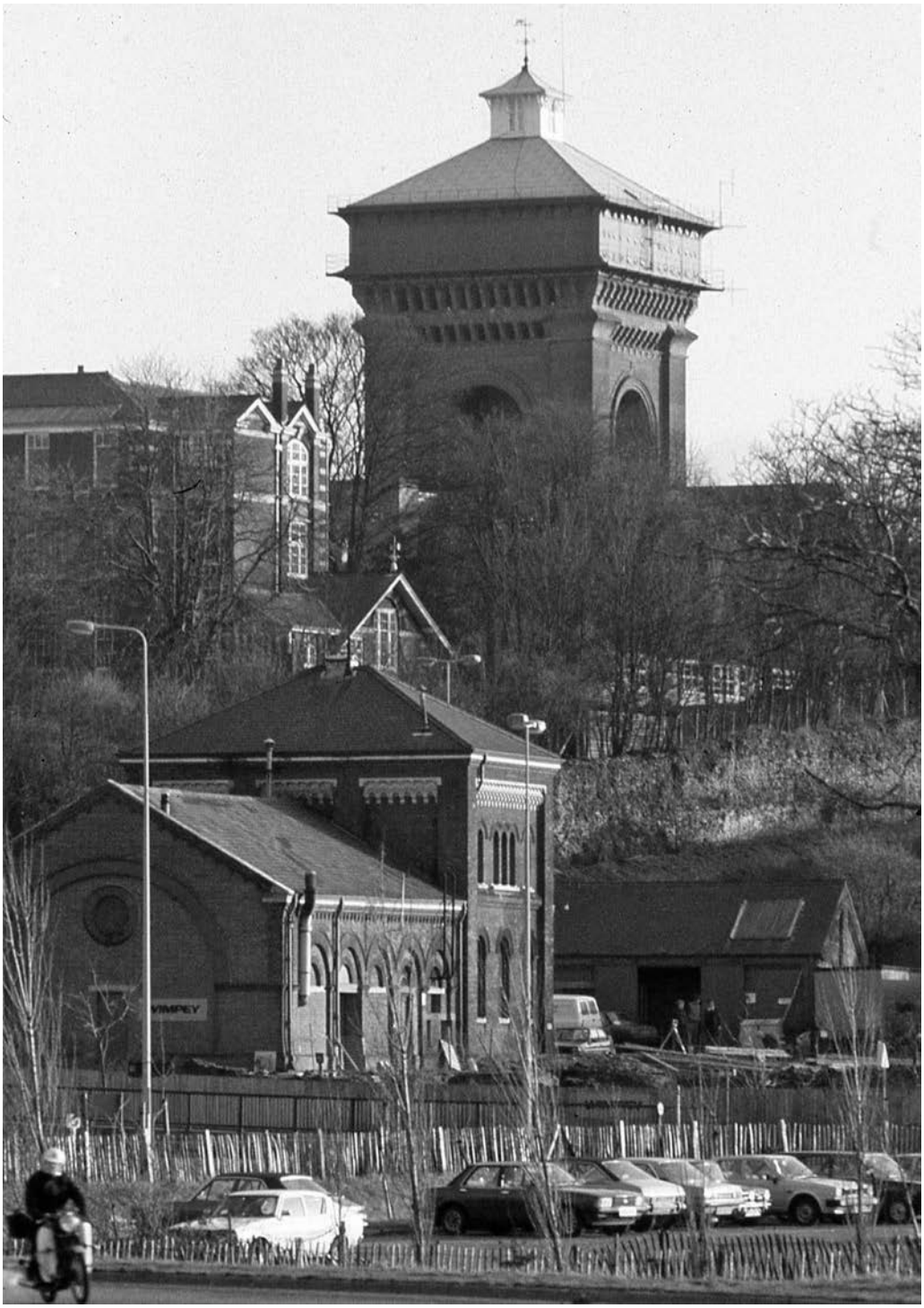


FIGURE 1: The challenge of pumping water up Balkerne Hill is illustrated by this long-lens photograph of the late Victorian Pumping Station and water tower 'Jumbo' which subsequently replaced the pumping station and Upper Reservoir described here

served Norwich's largest crepe manufacturer and in 1817 Ransome's son and partner James bought a second engine.[4]

There were several sound reasons why the still small business units of Essex were slow to adopt steam power. Firstly and self-evidently Essex lacked the heavy industries where early steam engines were installed. Such engines were very large and required special housing arrangements. The initial cost of an engine was high: that for the Colchester brewery, an engine of modest power, was £410 (Ince, 2000, 111), at a date when a man's wages for a year might be £25 (Brown 1969, 132). To this must be added perhaps £200 for the engine house, framework, pipework and cost of erection. Maintenance and running costs were also high and called for specialist staff, versed in the mysteries of the technology. Depreciation costs – scarcely recognised in contemporary bookkeeping – were high too, though no one at this stage could be sure how long a steam engine might survive and remain economically viable, for another characteristic of early steam was a not undeserved reputation for unreliability.

Above all, a steam engine required a cheaper and more accessible supply of coal than many in Essex could contemplate. In the first half of the 19th century coal prices

fluctuated alarmingly. While coal in northern industrial centres might cost as little as 10 shillings (50p) a ton before 1820 (Von Tunzelmann 1978, 62–7), in Essex, shipped from Newcastle to Harwich, Colchester or Maldon, it cost anything from 23 to 40 shillings a ton (*Colchester Gazette* 18.1.1817; ERO, D/U251/89, D/DU251/1, D/DTaA3). Not till 1840 did freight costs for coal at Colchester's Hythe average 9 shillings a ton (Tabor 1841), yet only three years later the Hythe's main supplier, John Mann, was offering steam coal for sale at 18 shillings a ton delivered (*Essex Standard* 28.7.43), reflecting the known fact that coal in Essex cost far more the further you were from a port.[5]

A stock take of all known stationary steam engines in non-Metropolitan Essex before 1840 is heavily weighted towards the last quinquenium, 1835–40 (see Appendix B), reflecting the onset of a point where the improved efficiency and reliability of steam, thanks to improvements introduced by Watt and others, and the falling cost of coal made it economically viable as an alternative to existing prime movers, as seen in specific Essex industries. The silk industry, an Essex speciality, which had grown up where water could be utilised for power, is represented by engines installed by Samuel Courtauld in his weaving mills first at Bocking in about 1826, then at Halstead in 1828 (Coleman 1969, 71–2); by John Hall who installed a steam engine in his Orchard Works at Coggeshall, opened in 1839 for both silk throwing (spinning) and weaving (Brown 1951); and Stephen Brown who had installed a second-hand 20 H.P. Boulton & Watt engine at his Colchester throwing mill by 1836 and perhaps several years earlier (*E.S.* 3.6.1836; 20.3.1840). The sole known waterworks engine was the one at Colchester. Brewing, outside Colchester, may have used steam power, but none has been traced. In Colchester as well as the B & W installed at Bawtree's Brewery in 1809, two small engines, each of 2 nominal horse power (H.P.), from the Plough Inn, almost opposite Bawtree's Brewery, were sold second hand in 1824 and may represent that inn's decision, facing such competition, to cease brewing, an activity it had pursued for many years, having access to the same spring-line water sources to which Bawtree himself had access (*Ipswich Journal* 7.11.1789; *Colchester Gazette* 11.9.1824). Down at Colchester's port, the Hythe, a large and ambitious spirit distillery, built in 1812 by John Bawtree's brother Samuel and his partner George Savill on the site of an existing water mill, also made use of an 8 H.P. steam engine. The distillery did not flourish and by 1840 had ceased to function (Cromwell 1825, 294–5). Also at the Hythe Joseph Eisdell had by 1835 installed an 8 H.P. engine in what appears to have been a private laboratory adjacent to the town's gas works (*E.S.* 3.9.1835). One other possible pre-1840 'industrial' candidate is the Maldon Marine Salt Company at Heybridge which had a small steam engine by 1843 (*E.S.* 3.3.1843). There, in terms of industrial use, the Essex list ends. A notable absence is the infant engineering industry, despite the existence by 1840 of several Essex foundries (*E.S.* 3.3.1837). Of these, Richard Coleman's enterprising foundry (i.e. engineering works) in St John's Street, Colchester, was in 1844 the first known to boast a steam engine – in fact the first known portable engine in the county (Phillips 1982, 102–10; *E.S.* 5.7.1844).

The most extensive use of steam power in Essex was in corn grinding, almost always in association with existing wind or water mills. Windmills thus assisted were at Upminster, so early as 1812 (Farries 1988, 74), West Thurrock in 1818 (Farries 1988 55–6), West Tillbury by 1834 (*Chelmsford Chronicle* 6.6.1834), Goldhanger by 1837 (ERO, D/F 21/8, 35), Fyfield at the time of its sale in 1839 (*C.C.* 18.1.1839), and South Benfleet at the time of its sale in November 1840 (*C.C.* 20.11.1840). Orsett steam mill, set close to an existing smock mill, probably dates from 1840 (Booker 1974, 87) and Bentley Mill at South Weald boasted a 10 H.P engine at the time of its sale in 1841 (*C.C.* 23.7.1841), but the Steam Corn Mill at Coggeshall recorded as 'newly erected' in September 1842, probably dates from after 1840 (*E.S.* 9.9.1842). To put these nine engines in context there were around 280 windmills in Essex in 1840 (Farries 1981, 30). The earliest of these mill engines, a bell crank installed at Upminster, survived, much modified, to be photographed in 1936. By contrast, the only steam-assisted watermills before 1840 were Marriage's Mill at Broomfield from 1836 (Benham 1983, 38), and the Lexden Watermill whose 1836 plan shows an engine house and boiler.[6] It is not clear whether the steam engine used by the water mill at the Hythe Distillery site in Colchester when it was sold in 1842 was the same engine as was installed for the original distillery, but it looks like it (*E.S.* 17.8.1842). Described as a low pressure engine, it was certainly an old one.

If brewing and milling may be termed agricultural-related industries, the absence of agriculture itself, overwhelmingly the main economic activity of shire Essex, is notable. This was not merely a product of the farmer's alleged hostility to innovation; those well informed did not yet see any potential. Despite the rare honour of a lavish illustration, demonstrating its visionary design, Heathcoate's steam plough did not impress the correspondent of the *Chelmsford Chronicle* (*C.C.* 22.12.1837). It his view, though the steam plough

> 'would ultimately become as common as a steam ship on the Thames, this may not be in our time – perhaps not in this century.'

Allegedly Essex farming did not boast a single stationary steam engine until Alderman Mechi, a wealthy Londoner and self-declared 'experimental agriculturalist', installed one on his model farm at Tiptree in 1846. He himself regularly proclaimed this 'first' (Mechi 1857). However, the Prittiwell Priory Farm had a 4 H.P. steam engine attached to a threshing machine at the time of its sale in 1842 (*C.C.* 2.9.1842), encouraging the thought that undetected examples of steam threshing may have existed in Essex before 1840, a date which excludes from consideration that archetypical source of agricultural power, the tall-chimneyed, large wheeled, steam portable, an engine pioneered and perfected during the 1840s, and which, after 1850, also served to provide auxiliary power to a number of windmills.

Our total of 20 or so known engines in Essex before 1840 is unlikely to be complete, but, with most known documentary sources now consulted, it seems improbably that it is likely to rise beyond 30, albeit no information can yet be found for a number of potential sites. A total of perhaps 160 current H.P. can be compared with the 3,436 H.P. in use in Birmingham in 1839 (*C.C.* 27.9.1839) and the 9,925 H.P. in Manchester in 1837 (Von Tunzelmann 1978, 32). There was however more to steam than stationary engines. Our Essex figures do not include the steam engine driving the revolutionary propeller-driven boat launched by William Hale at Colchester's Hythe

in 1833 (*E.S.* 8.6.1833), the steam carriage which caused an accident to the Braintree coach at Stratford, East London, in 1832 (*E.S.* 5.5.1832), the steam engine employed in 1833 by the Lea Union Canal on the Essex–Hertfordshire border (*C.C.* 24.5.1833), or the handful of locomotives working the Eastern Counties Railway, then still under construction, which by 1840 was approaching Brentwood.

Such facts remind us that the informed Essex resident, capable of some travel, would in 1840 be well acquainted with the regular passage of steam ships down our long coastline with coal from Tyneside or 'general goods' from Yarmouth; from the new dock built at Ipswich between 1838 and 1841 (*Ipswich Journal* 30.3.1839); or travelling up the Thames carrying passengers from Southend to London (*E.S.* 4.9.1835) or from Essex to Kent. It was in 1840 that the steam boat The Brocklebank initiated a regular service from Colchester to the Port of London (*C.C.* 29.5.1840), and Mr Creed launched a new steam ferry across the Thames from Tilbury Fort to Gravesend (journey time 4 minutes) pioneering a kind of roll-on, roll-off service, his steam ship towing large boats fitted with benches for passengers, and separate boats for the passengers' horses and carriages (*C.C.* 24.4.1840).

Equally familiar was the sight of steam tugs towing large sailing ships up and down the Thames. In December 1840 one such boat, the 'Fiddler', caught fire (*C.C.* 1.1.1841). Its crew having escaped, the ship continued burning as the sun went down and on into the night, recalling the present nation's favourite painting, 'The Fighting Temeraire', first exhibited by J.W.H Turner in 1839. Dramas such as this filled the virtual world of the contemporary media. Readers of the *Essex Standard* and the *Chelmsford Chronicle* were regularly titillated by tales of locomotive derailments or the violent explosions of steam engines in distant collieries, invariably involving the loss of life, even as Penny Cyclopaedias wowed them with the size of Brunel's 'Great Britain' and the horse power saved, or men spared labour, by the nation's adoption of steam.

There is, of course, something arbitrary about a cut-off point of 1840, not least because the rise in the number of stationary steam units in Essex was exponential not arithmetic. As already noted, over half of those engines listed in Appendix B cover the final 5-year period. This pattern continued, particularly after 1850. In Colchester the number of known engines trebled in six years; in Chelmsford, a town not two fifths of the size of Colchester, Hilda Grieve was able to list an impressive range of industrial and commercial steam power in 1858, where none had apparently existed in 1840 (Grieve 1994, 355). Soon portable engines, rolling off the production lines of a handful of East of England firms by 1860, were being sold throughout the county by established ironmongers and machinists, while the first Essex firm to *manufacture* steam engines, Algar and Striffler, albeit on an exceptionally modest scale,[7] began trading in 1850 (*E.S.* 5.4.1850, 23.4.1856, 26.12.1856).

APPENDIX A: THE BOULTON & WATT ENGINES AT COLCHESTER

With technical calculations by ALEX WALFORD M.I.Mech.E., and drawings by SIMON PEECOCK Dip. Slade

It remains only to concentrate on the considerable details available of the two pioneering Colchester engines. Despite their Heath-Robinson appeal today, few outside a close circle of specialist appreciate the technical complexities of early steam engines, which the following descriptions explore.

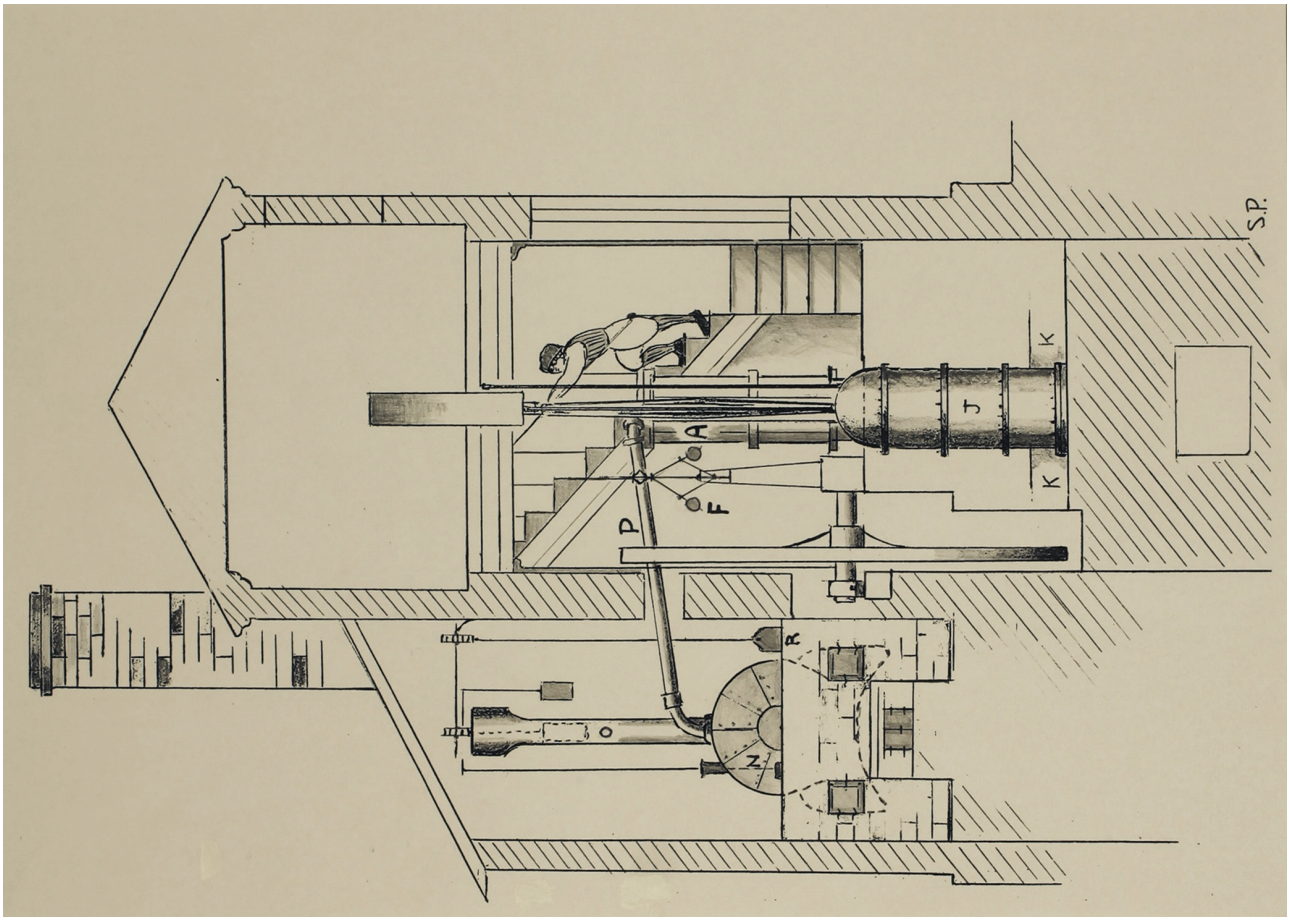
1. THE WATERWORKS ENGINE (Fig. 2a and 2b)[8]

The beam engine installed in Colchester Waterworks was one of Watt's classic rotative engines, its design refined over the previous 25 years. The balanced wooden beam which gave the type its name had, since 1801, become a cast iron one (Dickinson *et al.* 1926).

The Colchester engine was rated at 10 nominal H.P., and was almost the smallest such model the firm produced. Nevertheless, as our illustration shows, the engine was large. The piston travelled four foot (1.22 metres) up and then down in its 17¼-inch (43.5 cm) diameter vertical cylinder (**A**), impelled by the combined effect of the injection of steam from the boiler and the vacuum created in the condenser (**B**) where steam from the previous downward stroke was condensed by a jet of water. Given that steam pressure in the early B & W engine was at best only 7 lbs (3.175 kilos) per square inch (p.s.i.) and probably nearer 5 lbs p.s.i., while the vacuum generated was 10 lbs (4.54 kilos) p.s.i., the vacuum was the dominant factor, generating 66% of the total force applied. The cylinder and associated valves were set within an air tight, cast iron casing, leaving a gap of approximately 4 inches or 10 cms. between the two walls. Steam was admitted into this encircling sheath, creating what was known as steam jacketing. This not only prevented heat loss, but, more importantly, it greatly reduced any risk of steam condensing within the cylinder.

The upward progress of the piston, via the piston rod, tilted that end of the beam upwards. The connecting rod (**C**) on the opposite end of the beam in consequence pushed downward and, via a crank arm (**D**), applied circular motion to the large cast-iron flywheel. With a diameter of twelve feet, and cast in four, sometimes six, pieces, this alone weighed 2 tons. The inflow of steam to the piston was controlled by valves. It is not clear from the surviving drawings whether the waterworks engine used the 'long D' sliding valve, recently invented by James Murdoch, or the older plug valves. By either system steam was directed to the top of the piston pushing it down, even as a further vacuum was created by steam evacuating from below the piston into the condenser, causing the beam to rock the opposite way. This enabled the crank arm to further drive the flywheel, facilitating continuous motion.

Applying steam to both top and bottom of the piston was called 'double acting' and was improved by Watt's patent 'parallel motion' (**E**), a moving parallelogram of hinged rods anchored on a fixed point of the engine frame, transferring the strict up and down motion of the piston rod to the beam end which itself moved up and down in an arc. The parallel motion thus prevented any sideways stress on the piston, with the added advantage of taking almost a metre off the height of the engine. The speed of the engine was controlled by a centrifugal governor (**F**), a device adapted by Watt from its earlier use in wind and water mills. The two weighted balls were spun round by bevel gears. The faster these went so the balls spun outwards and upwards which, by a lever at the top, contracted the throttle valve supplying steam from the boiler to the engine, thereby reducing the inflow of steam on the piston. This reduced the velocity of the flywheel and the governor adjusted accordingly.



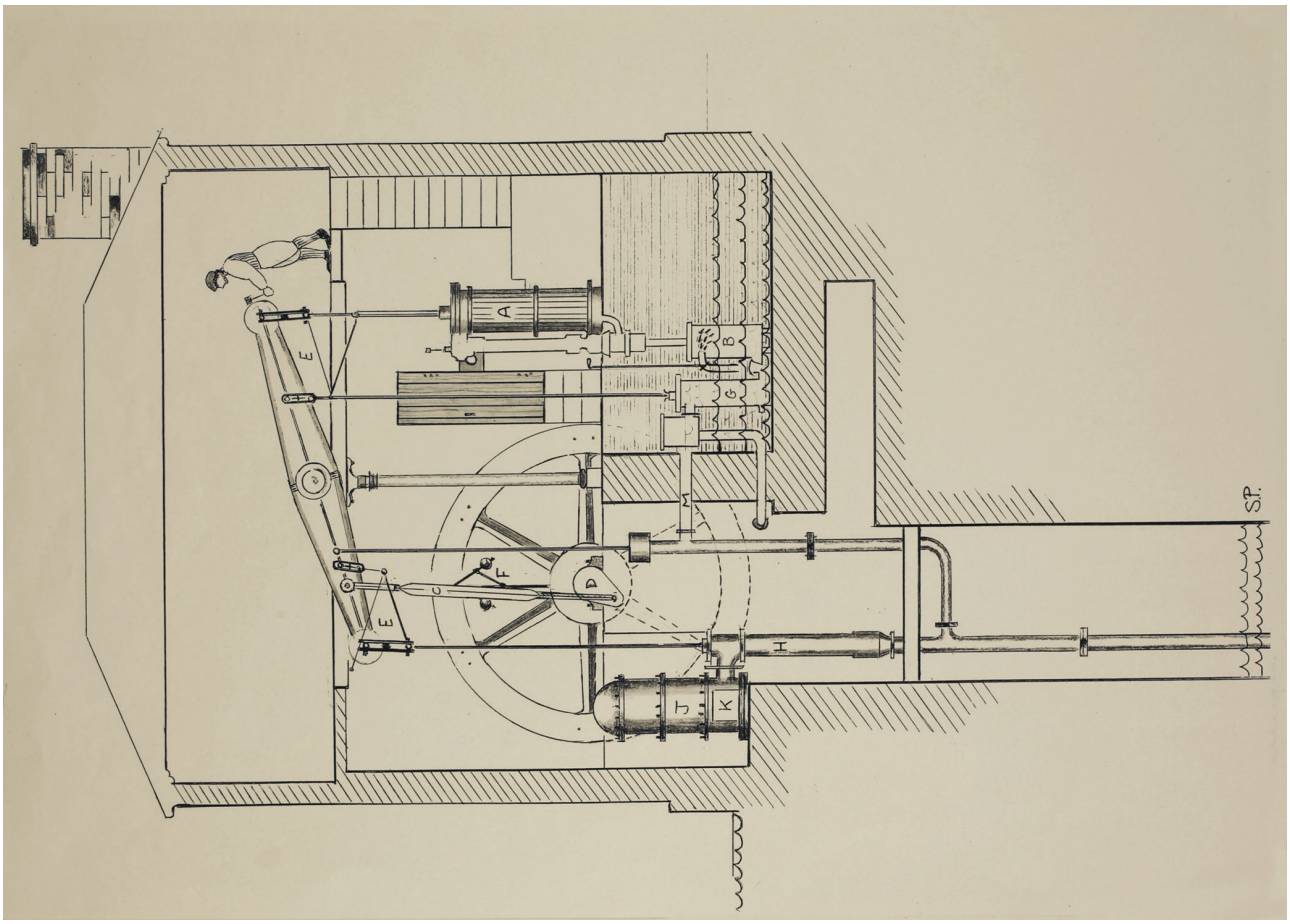


FIGURE 2A and B: Waterworks engine

The up and down motion of the beam was also used to operate the condenser pump, the air pump (**G**) and the well pump. The condenser was immersed in a tank of cold water. Steam evacuated from the cylinder flowed into the condenser where a tube, controlled by a cock, sprayed a jet of cold water to condense the steam. From the bottom of the condenser a short pipe led to the so-called air pump, which was set in the same tank of cold water. In the short pipe was a flap valve called the foot valve, opening towards the air pump. The warm water formed from the condensed steam passed through the foot valve into the vacuum created by the air pump which was operated by a rod connected to a mid point of the beam. As the beam rises this piston, fitted with a one-way valve, sucked the warm water up into the 'hot well' where another pump lifted it to a pipe which fed some warm water directly to the boiler. Alternatively, this water could be tapped off to provide a hot bath, sold to the Colchester public at two shillings a time! (Cromwell 1825, 301)

The engine's well pump (**H**) was a lift and force pump, driven by the main connecting rod on the crank arm side of the beam, to which it was attached by a second parallel motion, lifting the water from the well. Since water was only pumped on the up stroke and was naturally inclined to flow back with an equal and opposite force, an air vessel (**J**), a large, domed, upright, cast iron cylinder, served to smooth out the pulsation in the uphill main. As water gushed up from the well it compressed the air in the air vessel which then pushed the water back smoothing out the fluctuation in the flow of water uphill. A two-way junction at ground level (**K**) enabled the pump both to pump water uphill or, when the Upper Reservoir was full, to pump it directly into the Lower Reservoir. A smaller pipe (**M**) ran off the main well pipe providing a supply of cold water to top up the cistern in which the condenser and air pump sat.

Water was pumped up Balkerne Hill to a large oblong clay-lined reservoir [the Upper Reservoir] just inside the Balkerne Gate. The water came in part from a similar oblong reservoir [the Lower Reservoir], fed by pipes from a nearby spring, situated beside the waterworks pumping station. In addition a well was sunk over 20 feet (6.1 metres) below the engine house to access an additional water supply, possibly assembled via drainage adits from the many springs in the vicinity. These were created where surface water, draining through the glacial sands and gravels on which central Colchester stood, hit the impervious London clay below and ran along the strata to the side of the river valley where the London clay had been exposed by the glacier which had gouged out the flood plain during the last ice age. Such springs explain the siting of the pumping house on the side of the river valley.

Each stroke of the engine lifted about 7 gallons (31.8 litres) of water and since the engine achieved 17.5 revolutions per minute this meant a total of 125 gallons (568.25 litres) per minute, or 7,500 gallons (34,095 litres) an hour. Given the limited number of customers, both domestic and commercial, which the waterworks then served, it is likely that the engine was initially run for only a few hours per day, making household storage cisterns essential for anyone wishing to be supplied by the waterworks company. We know that by 1850, at which date the original boiler and perhaps even the engine may still have been in situ,[9] there was an output of 450,000 gallons a week (Phillips 1985, 154, *E.S.* 8.12.1842, 11.7.1851). This would be exactly achieved by a ten-hour day for six days a week, a very likely working week for that era.

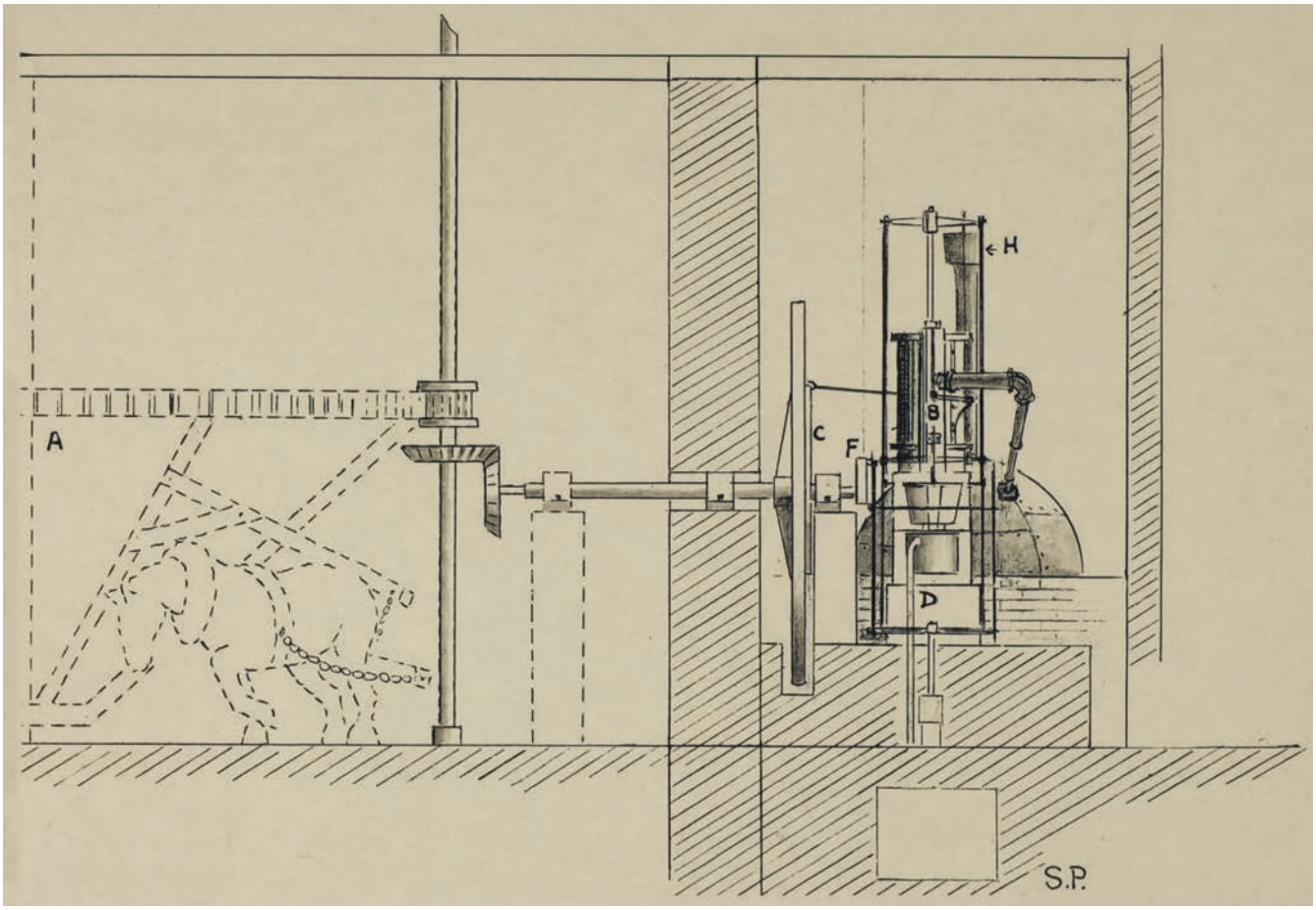
Steam was raised in the boiler in the adjacent boiler house and carried though the wall in a steam pipe (**P**). The so-called wagon top boiler, an elongated domed vessel with the lower half full of water, had a cross-section the shape of a covered wagon. It had a coal-fired furnace beneath it. Usually made of copper, the boiler was set in brickwork which served to channel the hot furnace gasses round it, thus to secure the maximum heating of the water. A float on the surface of the water, via a rod and lever (**N**), opened a valve which controlled the water fed to the boiler, keeping the water level constant. Another float sat in the column of water in the damper pipe (**O**) which stood upright on top of the boiler, looking to us like a chimney. This float controlled via a pulley the opening and closing of a damper (**R**) from the exhaust gas to the chimney, regulating the production of steam, preventing a rise in steam pressure. These two floats represented a remarkably early example of an automatic control system.

2. THE BREWERY ENGINE (Fig. 3a and 3b)[10]

The 6 H.P. bell-crank engine installed in the brewery was in many ways the more interesting. While Watt's rotative beam engine has become a visual icon of the early age of steam, the bell-crank engine has been all but forgotten, even among steam aficionados. Indeed, one measured drawing and a poor photograph of a much altered engine are all that survive to provide the necessary detail to the Boulton & Watt drawings of the Colchester installation (Dickinson *et al.* 1926, 296). The bell-crank engine was the invention of William Murdoch, who also developed the long D slide valve. A Boulton & Watt employee, he was arguable the inventive equal of Watt himself, and so important to the partnership now led by James Watt Junior that he received the then princely salary of £1,000 a year (Tann 1981, 11). The engine takes its name from the triangular crank used on those bells which then hung in rows below stairs in large houses, summoning servants to the room where the bell rope had been tugged, a procedure which remained in use well into the 20th century. The bell-crank engine became a standard B & W product between 1799 and 1813. Designed to be cheaper and more compact, its significance lies in being the first free standing steam engine, not needing to be hung within the structural framework of a building as beam engines were.

What makes the Colchester engine doubly interesting is that the surviving drawings show that, much like the waterworks' engine, it was installed to supplant a geared, overhead horse whim (**A**), which nevertheless remained in situ, and, coupled to the engine, continued to drive the machinery of the brewery above it. The new engine also pumped the water, which the brewery constantly needed, from a relatively shallow well fed by an active spring, up to an elevated cistern whence it was gravity fed to fill the copper and vats of the brewery.

The engine was steam jacketed and double acting, with steam applied to each side of the piston in turn. This was effected by Murdoch's long D slide valve (**B**), so named from resembling a much elongated letter D, which, as it slid up and down, exposed first the upper then the lower steam inlet. A novel eccentric modified the slide valve's motion by a 90 degree phase shift, so that the inlet valve was at the end of its stroke



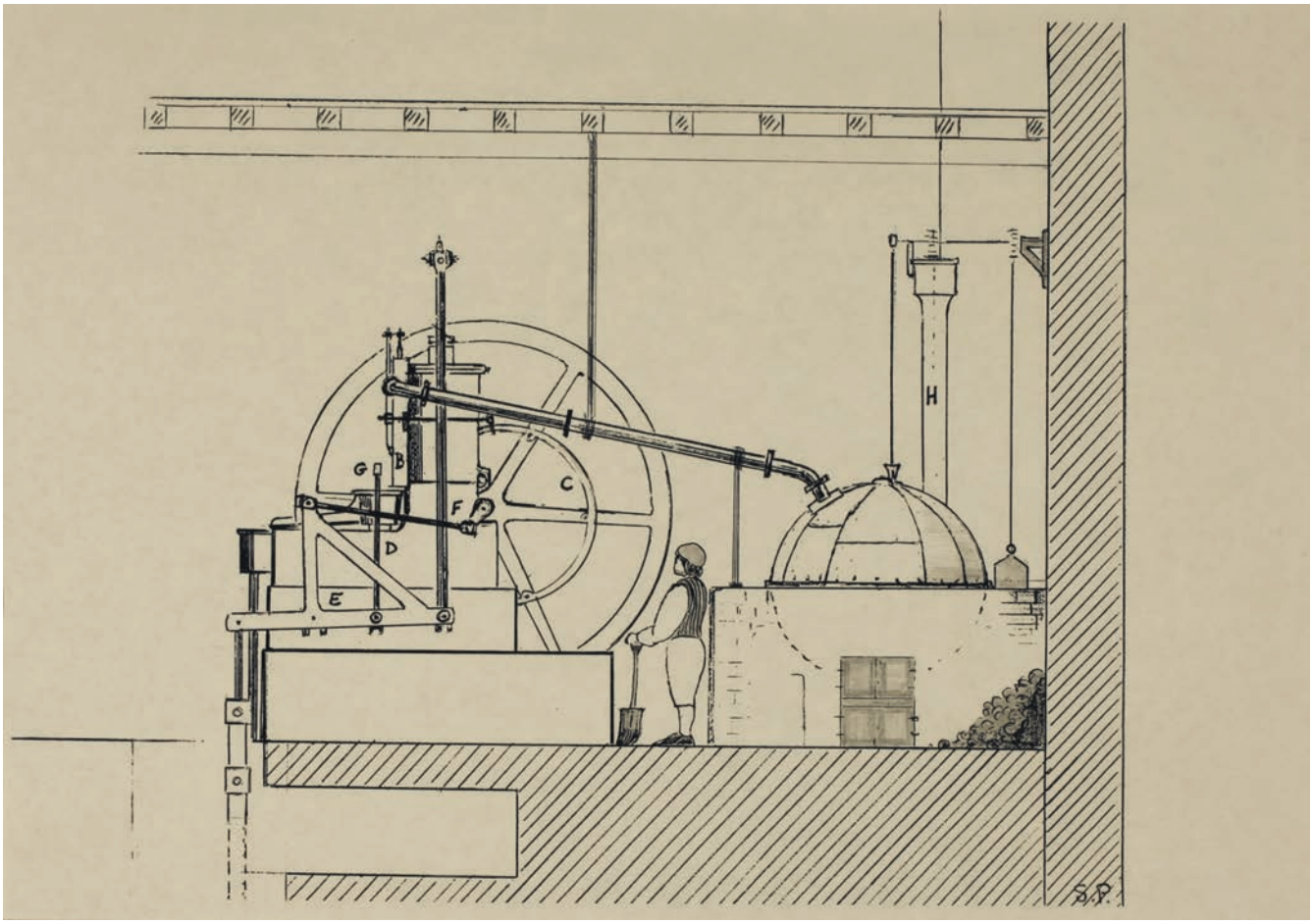


FIGURE 3A and B: Brewery engine

when the piston was in the centre of its stroke. This eccentric (**C**) was made from a cast iron ring bolted on to the arms of the flywheel with a radius which fluctuated between two and three feet. Its protruding rim was engaged by an iron fork which via a series of levers moved the slide valve up and down. A future Astronomer Royal, Sir George Biddle Airy, recalled in his autobiography how, as a boy at the Colchester Grammar School, he was able to admire this latest refinement to the slide valve when the engine had been stripped down for repair (Airy 1896, 18).

The cylinder sat on a hollow cast iron box or base (**D**), while the flywheel shaft sat on a masonry platform. Two triangular bell cranks sat either side of the engine base to which they were anchored (**E**), their horizontal arms being driven by the main piston. On either side the bell crank's vertical arm drove, via connecting rods, the crank arm (**F**) which turned the flywheel. The horizontal arms of the two bell cranks, linked by cross beams, also drove the air pump via connecting rods (**G**). The air pump and condenser appear to have sat in a cistern of water inside the cast iron box.

Steam for the engine was raised in a circular copper boiler of the so-called haystack variety. It was approximately half full of water and heated by a coal fire beneath it, the whole set in brickwork which contained flues for circulating the hot gasses. On top of the boiler sat a damper pipe (**H**), with an arrangement of floats similar to those on the Waterworks boiler. From these it can be calculated that steam was delivered at only 4lbs per square inch (p.s.i.), so that the power of the engine was very dependent on the vacuum created by the air pump at perhaps 10 lbs p.s.i., or, more strictly, minus 10 lbs p.s.i.

As with the Waterworks engine we do not know how long this bell crank engine remained in use, but the brewery well remained active and by 1874, now worked by a portable engine, was providing a water supply to that part of eastern Colchester which remained beyond the range of the two Waterworks engines which by that date worked an artesian well from a pumping house at the bottom of Balkerne Hill. Eight years after this the borough council built its iconic water tower, followed by a new pumping station and new engines, thereby providing all parts of Colchester for the first time with a 24-hour-a-day water supply (Phillips 1985, 90,102,105–29).

APPENDIX B: STATIONARY STEAM ENGINES IN ESSEX BEFORE 1840

The list below extends the findings of John Booker's pioneer work, 'Essex and the Industrial Revolution', hitherto the only published work covering the county. This list is based on extensive searches in the Essex Record Office, the files of the *Chelmsford Chronicle*, *Colchester Gazette* and *Essex Standard* newspapers and consultation over the years with three historians of Essex towns: Grieve (Chelmsford), Gyford (Witham and Kelvedon) and Cooper (Saffron Walden).

ACKNOWLEDGEMENT

This paper has benefitted from the observations of an anonymous referee.

ABBREVIATIONS

ERO	Essex Record Office
E.S.	*Essex Standard*
C.C.	*Chelmsford Chronicle*

YEAR	ENGINE
1808	Colchester Waterworks, Ralph Dodd's engine
1809	Colchester: Bawtree's Brewery, Boulton & Watt 6 H.P. bell crank engine
1810	Colchester Waterworks, Boulton & Watt 10 H.P. beam engine
1812	Colchester: Hythe Distillery 6 H.P.
1812	Upminster windmill – auxiliary power. 6 H.P. bell crank, later converted to a table engine. Owned by John Noakes
1817	West Thurrock windmill – auxiliary power. Owned by John Noakes
engine sold 1824	Colchester: Plough Inn (i) 2 H.P.
engine sold 1824	Colchester: Plough Inn (ii) 2 H.P.
about1826	Courtauld's silk mill Bocking 4 H.P.
1828	Courtauld's silk mill Halstead 6 H.P.
windmill sold 1834	West Tilbury windmill – auxiliary 8 H.P.
by 1835	Colchester: Hythe gas works 8 H.P.
by 1836	Colchester silk mill Boulton & Watt 20 H.P, probably second hand. 2 boilers
plan of 1836	Lexden watermill – auxiliary
1836	Broomfield (Marriages) watermill – auxiliary
1837	Goldhanger windmill – auxiliary, second hand
1839	Coggeshall silk mill, John Hall. Used 2 boilers
windmill sold 1839	Fyfield windmill – auxiliary
windmill sold 1840	South Benfield windmill – auxiliary
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*c.*1840	Orsett steam corn mill, A-frame engine by Middleton
windmill sold 1841	Bentley windmill – auxiliary 10 H.P.
farm sold 1842	Prittiwell Priory Farm 4 H.P. for a threshing machine
'newly erected' 1842	Coggeshall steam corn mill 20 H.P.
first noted 1843	Maldon Marine Salt Company

ENDNOTES

1 The author has a copy of Strutt's letter, now owned by a philatelist.

2 The initial approach to Boulton and Watt (B & W) in 1809 was made by the owner of the Islington Waterworks who was also a director of the Colchester company. Reference to drawings by Mylne, engineer to the New River Company at Islington, appear on the B & W Colchester drawings. Details of B & W engine sales for this period are listed in Ince, 2000, 103–24.

3 The St Botolph Brewery buildings can be measured on the 1 in 500, 20 inch to the mile, 1876 Ordnance Survey map.

London Porter was a landmark in brewing. A brown beer or stout, it was the first beer to be mass produced and aged at breweries, so that it could be transported distances and yet be ready to drink immediately. Bawtree's Brewery was arguably too ambitious, and failed to prove profitable after the disbandment of the garrison and the death of John Bawtree. In 1833 it became an outlet for the London Porter of the Whitechapel brewery of Barclay & Perkins.

4 In 1809 James Ransome formed a partnership with his father who soon afterwards moved in virtual retirement to Colchester. Both engines may therefore have been purchased by James.

5 Calculation are complicated by coal being sold by the chaldron, a now redundant measurement which could vary in different parts of England from 32 to 40 bushels.

6 Plan of Lexden Mill, property of David Cawdell.

7 Algar and Striffler of Inworth, appear to have had a special relationship with that nearby 'experimental agriculturalist', Alderman Mechi.

8 Birmingham City Archives, Boulton & Watt Papers MS 3147/5/1073; Hills, R.L. (CUP paperback edition 1993) *Power from Steam: A history of the Stationary Steam Engine*, 70–94.

9 A letter by James Paxman, the engineer, dated 23.1.1897 in ERO D/F 23 Letterbook No. 12, page 570 implies the boiler and possibly the engine were still in use when he first knew the Waterworks in the mid 1840s.

10 Birmingham City Archives, Boulton & Watt Papers MS 3147/5/774.

BIBLIOGRAPHY

Airy, W. (ed), 1896, *The Autobiography of George Biddle Airy* (Cambridge)

Almeroth-Williams, T., 'The Brewery horse and the importance of equine power in Hanoverian London', *Urban History* 40 (2013) 416–41.

Benham, H., 1983, *Some Essex Watermills* (2nd edn, Colchester)

Booker, J., 1974, *Essex and the Industrial Revolution* (Chelmsford)

Brown, A.F.J. (ed), 1951, *The Story of Coggeshall 1700–1900* (Colchester)

Brown, A.F.J., 1969, *Essex at Work 1700–1815* (Chelmsford)

Coleman, D.C., 1969, *Courtaulds: An Economic and Social History*, Vol. 1 (Oxford)

Cromwell, T., 1825, History of Colchester (London)

Dickinson, H.W. & Jenkins, R., 1926, *James Watt and the Steam Engine* (London)

Farries, K.G., 1981, *Essex Windmills, Millers & Millwrights*, Vol. 1(London)

Farries, K.G., 1984, *Essex Windmills, Millers & Millwrights*, Vol. 4 (London)

Farries, K.G., 1988, *Essex Windmills, Millers & Millwrights*, Vol. 5 (Weston-Super-Mare)

Grieve, 1994, *The Sleepers and the Shadows*, Vol. 2 (Chelmsford)

Hills, R.L., 1993, *Power from Steam: A history of the Stationary Steam Engine* (Cambridge)

Ince, L., 2000, 'The Soho Engine Works 1796–1895', *Journal of the International Stationary Steam Engine Society* 16, 103–24.

James J. G., 1977, 'Ralph Dodd, the very ingenious schemer', *Transactions of the Newcomen Society* 47, 161–78.

Mechi, J.J., 1857, *How to Farm Profitably* (London)

Musson, A.E., 1976, 'Industrial Motive Power in the United Kingdom, 1800–1870', *The Economic History Review*, 29 No.3, 415–39

Phillips, A., 1982, 'Early Colchester Foundries', *Essex Archaeol. Hist.*, 3rd ser., 14, 102–10

Phillips, A., 1985, *Ten Men and Colchester: Public Good and Private Profit in a Victorian Town* (Chelmsford)

Possee, D., 1998, *The Weaver and the Throwster* (Braintree)

Tabor, J.A., 1841, *Lecture to Colchester Mechanics Institute* (Colchester)

Tann , J., 1981, *The Select Papers of Boulton & Watt Vol. 1: The Engine Partnership 1775–1825* (Cambridge, Massachusetts)

Von Tunzelmann, G.N., 1978, *Steam Power & British Industrialisation to 1860* (Oxford)

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Edited by D. Andrews

ESSEX TREE-RING DATES

Recent dates have been commissioned by property owners, by Essex Historic Building Group (EHBG) for buildings which it has identified as of particular interest, and in the context of the Discovering Coggeshall project which ran from 2009–2013. The work at Buttsbury was largely paid for by a grant from the Essex Heritage Trust; English Heritage commissioned the work at Rainham church; and the Newport Victoria County History Group commissioned the buildings in Newport. More information on these dates can be found in the lists published in the journal *Vernacular Architecture*.

Tollesbury Hall, long recognised as an early house, is now one of the oldest dated buildings in the county. The dating of the hall and services of Ashdon Street Farmhouse is notable because it was obtained using samples of elm as well as oak. Upper Town Cottage in Nazeing is an H-plan house with a clasped purlin roof and a timber frame unusual in having thin intermediate studs at the first floor which were set behind the wattle and daub, creating the appearance of wide panel framing at this level. The use of such thin studs is uncommon in Essex and is called Kentish-style framing as it can be paralleled in that county. Similar thin studs also occur in Raybourne Cottage, Little Burstead.

Building	Date	Notes
Ashdon, Ashdon Street Farmhouse	1447	Hall and services
	1468	Cross-wing
Birdbrook, Baythorne Hall	1341	Raised aisle hall, with contemporary jettied cross-wings
Buttsbury, St Mary's Church	After 1156	North nave door
Coggeshall, 30 Church Street, Spooners	1353–86	In-line house
Coggeshall, 18 East Street	1361–97	Cross-wing
Coggeshall, 10 East Street	1386	Cross-wing, ?wool hall
Coggeshall, 40 Church Street, Craig Dhu	1387–1423	Hall and cross-wing, originally one of a pair
Coggeshall, 17–19 East Street	1397	H-plan house
Coggeshall, The Cricketers, West Street	1403–29	Market and court hall
Coggeshall, 29 East Street	1418–54	Cross-wing
Coggeshall, 9 Market End	1422–48	Cross-wing, part of White Hart
Coggeshall, 18 Church Street	1428	Rear wing only
Coggeshall, 6B East Street	1441	Commercial building
Coggeshall, 5–7 Church Street	1454	Cross-wing
Coggeshall, 10–12 East Street	1552–88	Rebuilt hall
Coggeshall, 18 Church Street	1545	Frontage building, long-wall jetty
Coggeshall, 55–63 Stoneham	1555	Building moved here after 1575
Coggeshall, 23 East Street	1599	Long-wall jetty house
Coggeshall, 30 Church Street	1608–09	Rear wing
Coggeshall, 8 East Street	1618	Rear wing
Coggeshall, 16 East Street	1636	Rebuilt hall
Dunmow, Pharisee Green, Minchins	1543/4	Gentry house, west wing
Gestingthorpe, Edeys Farm		Interrupted tie-beam house, negative assessment
Little Burstead, Raybourne Cottage	1547	Small cross-wing
Nazeing, Upper Town Cottage	1461–65	H-plan house
Newport, Old Vicarage	1386–96	North cross-wing
	1492–1524	South cross-wing
Newport, Monks Barn	1453	Northern part, a half-Wealden
Newport, Old Priory	1497	Long jettied building with oriel bay window
Newport, 7 Belmont Hill	1498/99	Three-bay jettied house
Newport, Tudor House	1551–83	Northern range
Rainham, church of St Helen and St Giles	After 1379	South chancel door
Saffron Walden, Myddylton Place	1497–1501	West range
Sible Hedingham, 49 Swan Street		Long-wall jetty house, negative assessment
Southminster, Sheepcotes	1614/15	Lobby-entry house
Tillingham, Stows Farm	1478–80	House with unusual plan, possibly associated with St Paul's
Tollesbury Hall	1265–89	Aisled hall

TABLE 1: Tree-ring dates obtained for Essex in the last five years

AVELEY ST MICHAEL
David Andrews

This is an attractive medieval church comprising chancel, north chapel, nave and aisles, and west tower. Most of the building dates from the 12th and 13th centuries, apart from the tower which is 15th century. In 1992, the parish built a mezzanine floor over the clergy vestry at the west end of the north aisle where this flanks the side of the tower. The groundworks involved constructing four concrete ground beams about 400mm wide set in trenches 600mm deep north–south across the width of the aisle to take the self-supporting structure of the mezzanine which was not to be attached in way to the fabric of the church. The foundations of the original west wall of the aisle demonstrated that this had been extended to the west along the side of the tower. They were rather poorly defined, being represented by a concentration of large flints and pieces of chalk.

In the course of refurbishment and redecoration in 2012 which involved renewal of plaster, a number of observations were made on the fabric of the church. The inside face of the east wall is built of chalk. This can be seen in photographs taken by the RCHM (vol. iv, 1923), but had been plastered over since that time. In the east wall of the north chapel, there is a small piece of carved chalk with a lozenge pattern, which looks Norman or earlier. The south aisle wall is built of flint on the inside, and incorporates some blocks of Purbeck stone. It was also noted that there is a course of what looks like *opus signinum* in the external face of the south chancel wall.

SHEERING CHURCH NAVE ROOF
David Andrews

In the winter 2009–10, Sheering St Mary was damaged by fire, affording an opportunity to access the roof. This is impressive and unusual, of hybrid form, combining queen and king posts. It could be considered a butt purlin roof, as it is made with short rafters tenoned into the purlins. Curiously, however, the roof changes pitch either side of the purlins, such that it is of mansard or gambrel profile. The roof is of two bays, with a central truss and trusses against the tower and chancel walls. The long span of the purlins down the length of the nave, and the change in roof pitch, made the support of the queen posts essential. However, they have not proved equal to the task, and sometime in the 18th or 19th centuries additional strengthening timbers have been added to the purlins with forelock bolts. Despite its unusual design, and the large section timbers used, the roof is relatively plain, with mouldings only on the tie beam and ridge piece, which terminates in a V-shaped profile with a bowtell above an ogee. Dating evidence is limited. The common rafters are joined to the purlins with centre tenons. The purlins have splayed scarf joints, and it is probably these which inclined Hewett (fig. 129) to favour an early 14th century date, which would fit generally with the construction of the church.

Today the roof is sound but has undergone complete repair, something which is not evident from below. Originally it must have been boarded with lead over the boards. Severe erosion of some of the joints suggests that the lead was not well maintained and that there has been water ingress. As already mentioned, the purlins have been strengthened. In the 17th or 18th century, the roof was covered by a lath and plaster ceiling. This was removed in the 19th century, possibly when the north aisle was built. This involved inserting an arch under the tie-beam, and substituting a large timber corbel for the vertical wall piece. By the second half of the 20th century, a major repair was carried out which involved constructing a steel framework over it, to which the individual timbers were attached by steel rods, such that the roof is now suspended from it.

Bibliography

Hewett, C.A. 1980 *English Historic Carpentry*, London: Phillimore

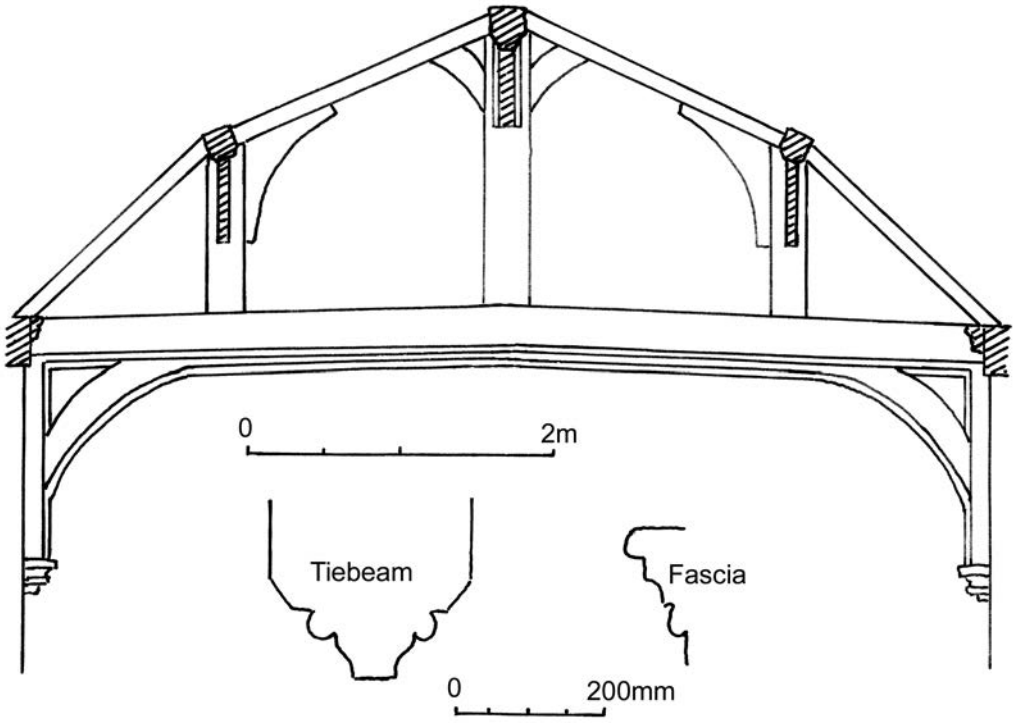


FIGURE 1: Sheering St Mary, central truss of nave roof

BAYTHORNE HALL, BIRDBROOK. A RAISED AISLE HALL MANOR HOUSE BUILT IN 1341

John Walker

Introduction

Baythorne Hall is an isolated raised aisled hall in north-west Essex which had its timbers felled in 1341 (Miles and Bridge 2011). It was the manor house of the sub-manor of *Bathorne* or *Bapthorne* in the parish of Birdbrook in north-west Essex, on the border with Suffolk. Externally it is a text book example of an H-plan house with an aisled open hall flanked by a cross-wing at each end of the hall, all built in one single phase. Until 1989 it was thought to be a conventional aisled hall, and drawn as such by Cecil Hewett in his *English Historic Carpentry* (p. 140), until Adrian Gibson identified it as a raised aisled hall during a visit by the Essex Architectural Research Society (Figs 1 & 2). The tree-ring dating of the house was commissioned by the Essex Historic Buildings Group following their AGM held in the house in 2010 and undertaken by Martin Bridge in 2011.

One of the drawbacks with conventional aisled halls is that the arcade posts in the centre truss of the open hall interfere with circulation in the hall. From the late 13th century, various solutions were adopted to remove these posts from the hall. One method was to cut off the bottom of the arcade posts in the centre truss and raise the posts up on to a beam, called a dropped tie-beam, which spans the full width of the hall (Fig. 2 and 3). These raised aisled halls are relatively common in central and north-east Suffolk, but rare in Essex. Essex has only one other known raised aisled hall, Gatehouse Farm, Felsted, though a number of conventional aisled halls were converted to raised aisled halls in the late 14th and 15th centuries. Only three raised aisled halls have been tree-ring dated, Baythorne being the earliest of the three. The other two are Lodge Farm, a farmhouse in Denton, Norfolk (1355–60d; *VA* 25, p. 25), and Wymondley Bury, the manor house of Little Wymondley, Hertfordshire (1378/9d; *VA*, 37, p. 107).[1]

The tree-ring date shows that Baythorne Hall was built by Sir John de Walton, as according to Morant he held the manor in 1341/2. He died in 1347. He was Sheriff of Essex and Hertfordshire in 1331 and was probably also the builder of the moated aisled manor house of Tiptofts in Wimbish, Essex in the first quarter of the 14th century (timber felled 1287–1329; *Vernacular Architecture* 30, 118). This is another, though grander, aisled hall with two cross-wings, but at Tiptofts he adopted a different solution to clear the posts from the centre of the hall; a hammer beam truss. It is interesting to compare these two distinct solutions (Fig 4). Fourteenth-century aisled halls with hammer beam trusses are very rare in England; raised aisled halls are much more common.

This report provides a description of Baythorne Hall's surviving timber framing, an analysis of the Baythorne as built in 1341, a comparison with Tiptofts and a brief outline of later developments and alterations to the house. An analysis by John Walker of Baythorne Hall and its relationship to other raised aisle halls appeared in *Vernacular Architecture* vol. 45 (2014).

Surviving timber framing in Baythorne Hall

Baythorne Hall faces south-east with the service cross-wing to the left and the parlour cross-wing to the right. For convenience below it is assumed the building faces south with cross-wings

FIGURE 1: South front of Baythorne Hall

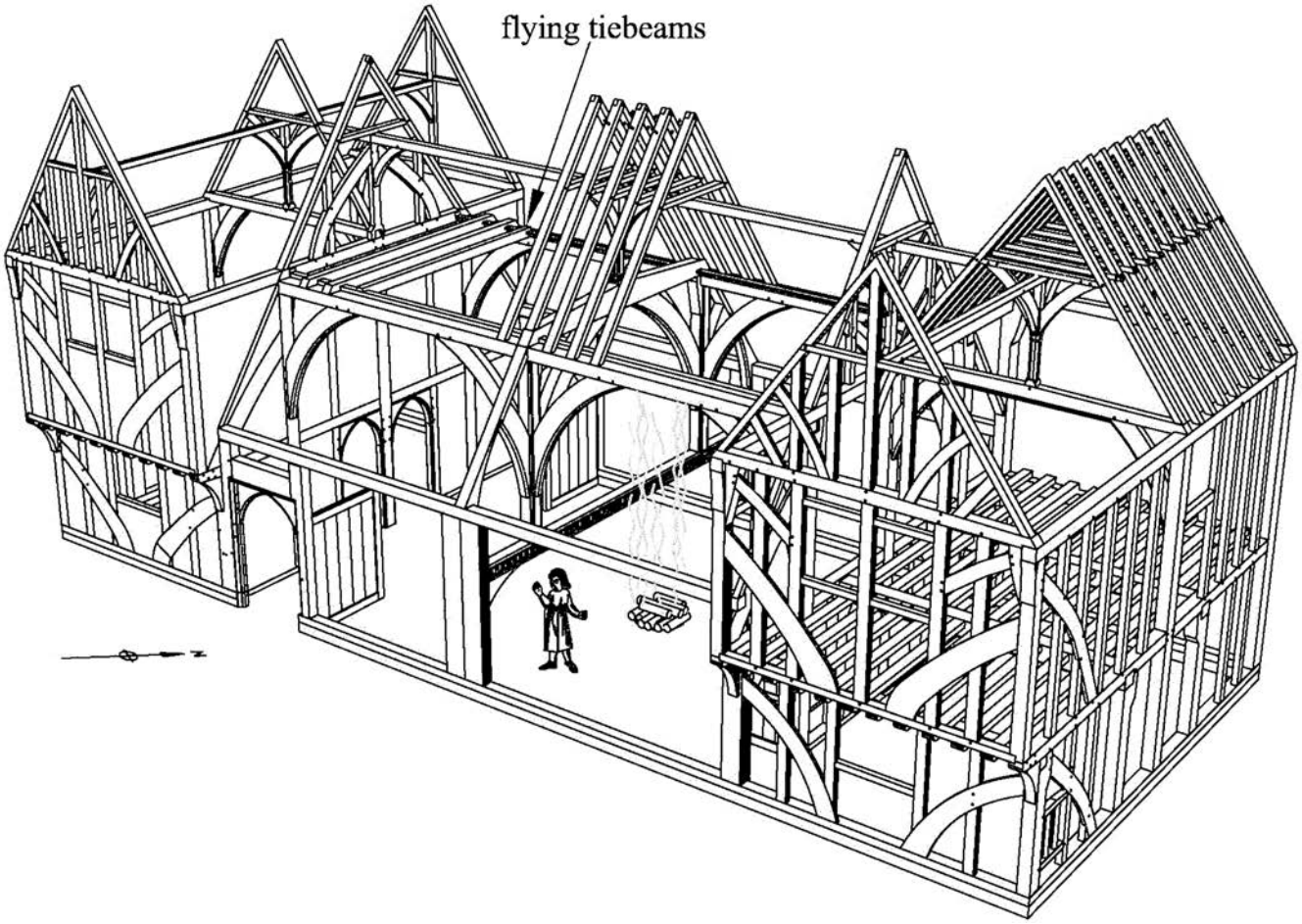


FIGURE 2: Reconstruction of Baythorne Hall, viewed from south-east

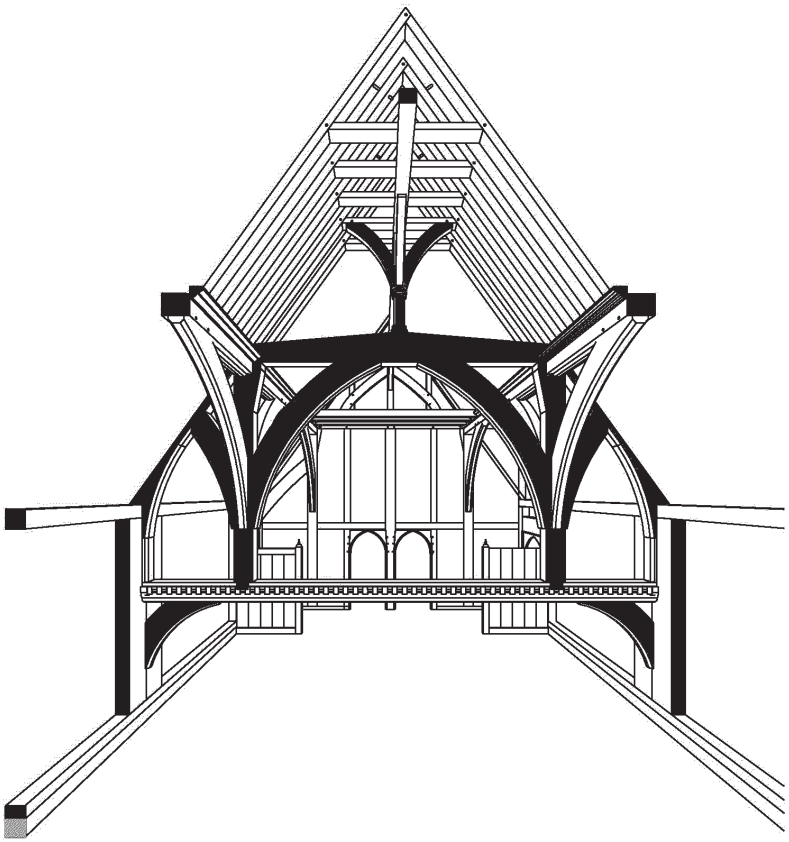


FIGURE 3: Reconstruction of centre truss of Baythorne Hall, looking west to low end

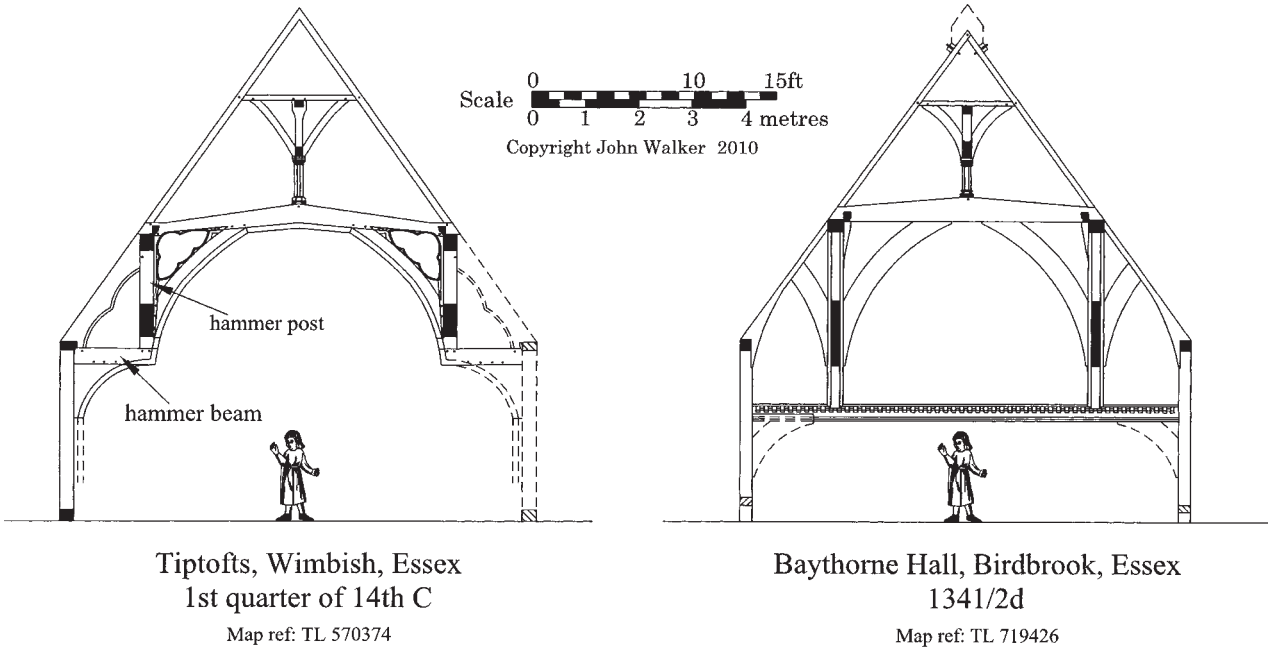


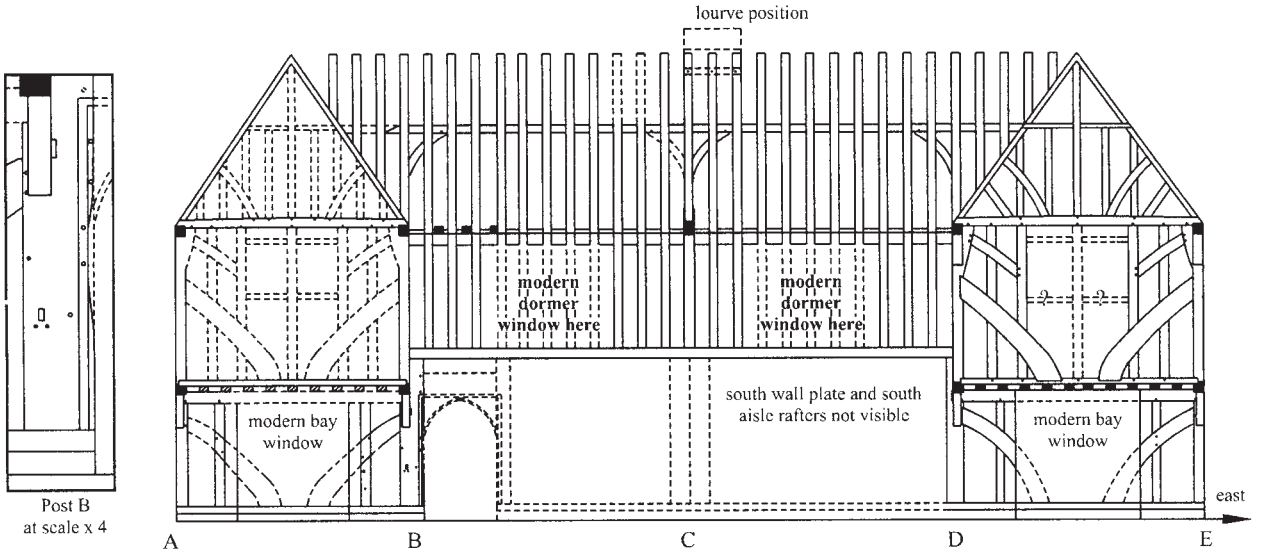
FIGURE 4: Comparison of centre truss of Tiptofts and Baythorne Hall

to the east and west. Today Baythorne Hall has its timber framing exposed on the front and the external side walls of the two cross-wings, though when the Royal Commission on Historical Monuments in England (RCHME) examined the house in 1914 the exterior was plastered over (Fig. 5). Nothing is visible today of the timber framing of the front wall of the hall; probably it has been almost completely rebuilt. Similarly none of the framing of the rear north wall of the hall is visible, while the rear wall of the parlour cross-wing (right hand wing) has also been completely rebuilt. Inside much less is visible. In the 16th century a floor was inserted into the hall.

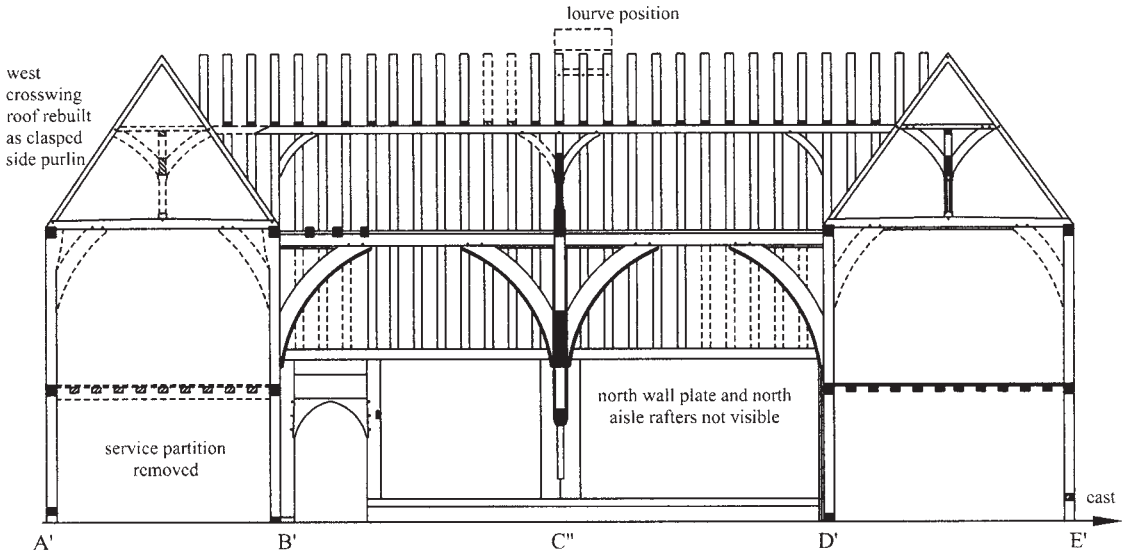
The following features can be seen on the ground floor in the hall:

- the two service doors and the bottom of the south west arcade post (Fig. 8)
- the northern three-quarters of the crenellated dropped tie-beam in the centre truss along with the bottom of the

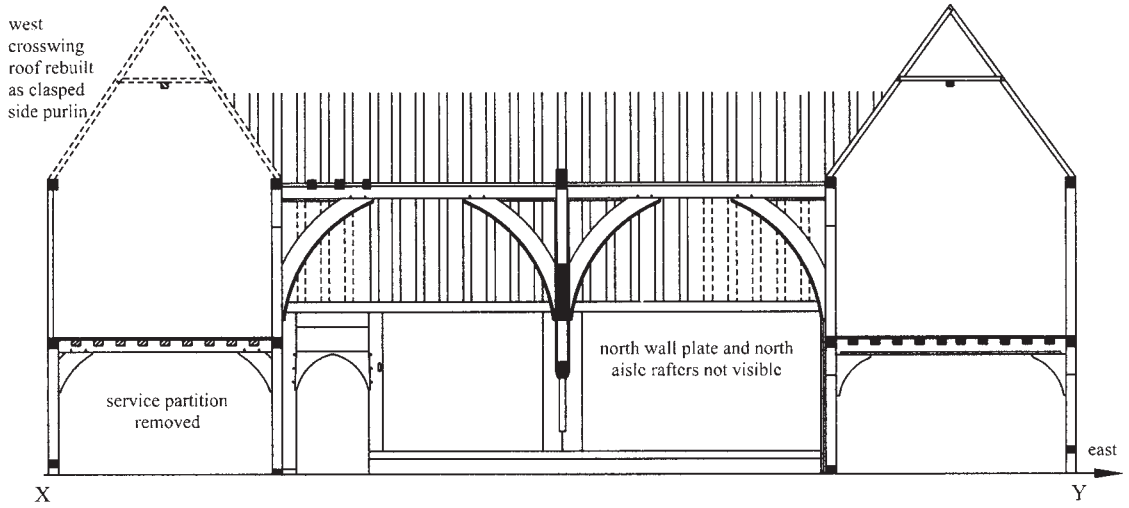
FIGURE 5: Baythorne Hall, February 1914 (RCHME)



Front elevation



Section through centre of building with rear wall of hall also shown



Section XY through rear half of building with rear wall of hall also shown

FIGURE 6: Baythorne Hall, front elevation and longitudinal sections

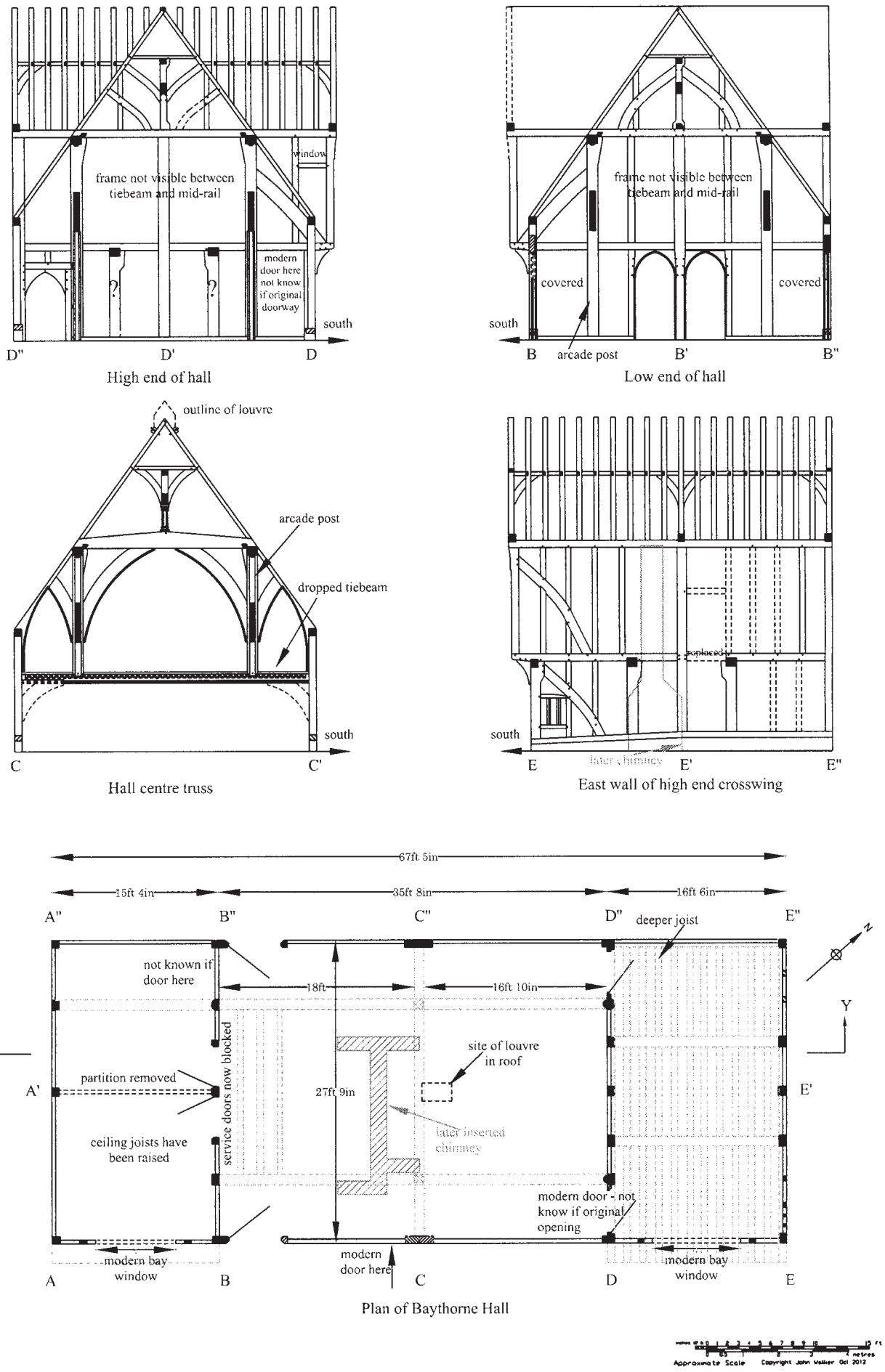


FIGURE 7: Baythorne Hall, ground plan and transverse sections

FIGURE 8: Baythorne Hall's service doors

north arcade post of the centre truss rising from the beam (Fig. 9), plus the principal aisle post of the centre truss in the north wall that supports the beam
- the rear north cross-passage door
- the north door to the parlour at the high end of the hall
- the bottom 7ft of the north east arcade post in the high end wall of the hall
- in the parlour virtually all the ceiling is visible on the ground floor

Visible on the first floor over the hall is the top part of the aisle post of the central truss in the north rear wall, the four front (south) braces to the arcade plate and the central south arcade post. The parlour chamber, which had a moulded ceiling inserted in the 16th century, has this ceiling visible in the southern two-thirds of the cross-wing along with the eastern 14th century principal post of the centre truss of the cross-wing. The west service cross-wing has been extensively altered. The south front wall has been largely rebuilt, though the original tie-beam survives along with some of the original studs on the ground floor wall under the jetty. The ground floor ceiling has been raised in the southern half of the wing and nothing is visible on the first floor. The roof, which was originally a crown-post roof, was rebuilt in the late 16th or early 17th century as a clasped side purlin roof, but the original rafters over the centre tie-beam of the wing remain *in situ*. The hall roof, heavily smoke blackened from the open hearth, survives complete, apart from where the 16th century chimney was inserted (Fig. 10), though none of the rafters over the aisles are visible. The roof over the east high end cross-wing is complete apart from the rear north gable which has been rebuilt. The reconstruction drawings in Fig. 2 and 14, and those of the section and elevations in Fig. 6 and 7, reflect this lack of detail.

Analysis of Baythorne Hall

Baythorne Hall comprises a raised aisled two bay open hall with contemporary jettied cross-wings at each end containing two service rooms to the west and a parlour to the east (Figs 2, 6 and 7). In total it is 67½ft (20.6m) long. The arcade posts in the hall's centre truss are carried on a crenellated dropped tie-beam set 4ft (1.2m) below the aisle wall plates and spanning the whole 27ft 9in (8.46m) width of the hall (Fig. 3 & 4). The east high end cross-wing is 16½ft (5.03m) wide, a little wider than the west low end wing which is 15ft 4in (4.67m) wide (plan Fig. 7). The open hall is 35ft 8in (10.9m) long and of two bays, the low end bay 1ft 2in (0.36m) longer than the high end bay, an unusual feature. Thirteenth-century aisled halls usually had two equal bays, but in the 14th century in Essex the low end bay is usually shorter than the high end bay. However, there are at least two other examples of aisled halls like Baythorne Hall. One is the 13th-century aisled hall of Almshoebury, Ippollitts, Hertfordshire, which has a low end bay of 21ft (6.4m) long, 2ft (0.6m) longer than the high end bay. The other interestingly is the 14th-century Gatehouse Farm, Felsted, the other Essex raised aisled hall, which has a low end bay of 12ft (3.66m), also 2ft (0.6m) longer than the high end bay. Gatehouse Farm is considerably smaller than Baythorne Hall, having a hall of only 22ft (6.7m) in length and 21½ft (6.5m) wide.

FIGURE 9: Base of north raised arcade post

FIGURE 10: Hall roof viewed from the east

None of these buildings had a separate spere truss to demarcate the entrance cross-passage as happened at Tiptofts, and it is therefore possible the extra length was to provide more space for the cross-passage. Baythorne Hall has a mortice in the rear cross-passage door for the usual draft screen in East Anglia protecting the entrance (right hand side of doorway in Fig. 11), and it also has three flying tie-beams over the cross-passage which presumably were there to emphasise the entrance to the hall (Fig. 2 and 6). All three tie-beams are smoke blackened, so are original features. Flying tie-beams are a feature of north Suffolk 13th- and 14th-century aisled halls, both conventional and raised, usually with one additional tie-beam either side of the centre truss and/or an additional two over the cross-passage. No other Essex aisled hall is known to have had flying tie-beams over the cross-passage and none have the extra tie-beams either side of the centre truss.

At Baythorne Hall the original two centred doorway into the high end cross-wing survives in the north aisle of the hall. This has mortices in its south door jamb for a draft screen to protect the high end bench which would have been fixed against high end wall of the hall. It is not known if there was a similar door in the south aisle, but there is a modern door there today.

The high end cross-wing is jettied to the front and of two bays, but the ground floor ceiling is divided into three bays with the principal joists running east to west, supported on separate jowled posts in the east wall of the cross-wing (Fig. 7 and 12). It is assumed in the reconstruction drawing in Fig. 2 that there are similar posts in the west wall of this cross-wing which forms the high end of the hall, though no details are visible today. This framing is unique in Essex; the normal method in a two bay jettied cross-wing is to have a two bay ceiling with the principal joist tenoned into the principal posts of the centre truss. Also there is no evidence in this ceiling at Baythorne Hall of an opening for stairs. In the rear bay of this ceiling, the third common joist from the west, about where stair traps are usually situated, is much deeper than the other joists, but neither this or any the other joists have any mortices for a framed stair opening (see plan in Fig. 7). Possibly the stairs to the first floor were external along the north wall of the cross-wing, entered from a door at the high end of the hall in the north wall of the hall, and rising to a first floor door in the north wall of the cross-wing, a method seen in other 14th-century aisled halls (Fig. 13). However this cannot be proved as the north wall of Baythorne's high end cross-wing appears to have been rebuilt, and no details are visible in the north aisle wall of the hall.

The west low end cross-wing of Baythorne is of two bays and has two service doors visible in the hall indicating that it was divided into two rooms on the ground floor (Fig. 8), though nothing is visible today of this division.

The hall and high end cross-wing have crown-post roofs with the braces as thick as the posts (Fig. 10). The low end cross-wing also originally had a crown-post roof but this has been replaced with a 16th- or early 17th-century clasped side purlin roof. However the centre tie-beam of this cross-wing and its pair of original rafters survive *in situ* with a large mortice in the centre of the tie-beam for a crown post. Mortices in the rafters show that the crown-post braces were mortised into the

FIGURE 11: North cross-passage door

FIGURE 12: East side of high end cross-wing. Jowled posts support ground floor ceiling joists

FIGURE 13: Rear of Upton Court, Slough, Berkshire, an aisled hall dated to 1320d (*VA* 19, p. 46), showing external 1st floor door to parlour chamber

rafters, unlike those in the east high end cross-wing where they are mortised into the collar. Even allowing for the low end cross-wing being narrower, there was room to have had identical braces to those in the high end cross-wing and still have them tenoned into the collar. One interesting feature is that the crown-post braces in the high end cross-wing are numbered with carpenter's marks consisting of circles or part circles made with an auger, where as those on the common rafters over the hall have Roman numerals made with a race knife. This suggests a different carpenter made the crown posts to those cutting the common rafters.

The high end cross-wing has evidence of a couple of windows in unusual positions. On the ground floor surviving in the east wall is a low set 3-light diamond mullion window against the south east corner post (blocked window bottom left in Fig. 12). Its cill is 2½ft (0.75m), and its top 5ft (1.5m), above the ground. Why it is set so low, or why it is at the corner of the cross-wing is a mystery. On the first floor at the south end of west wall of the cross-wing is a window set very high up overlooking the front south aisle (Fig. 7, drawing of high end of hall, and 14). Its cill is over 7ft (2.1m) above the first floor of the cross-wing and impossible for anyone to see out of without a ladder. Windows are often found in this position, but set much lower enabling one to look along the front of the building.

The timber framing has:

- widely spaced studs (Fig. 2)
- multiple tension bracing in the front walls of the cross-wings (Fig. 2)
- two-centre arched headed doorways (Figs 8 and 11)
- quarter round mouldings on the hall's arcade plate cornice and on the two-centre arched headed service doorways
- crown posts with moulded capitals and bases on the open trusses – the centre truss crown post has a water holding base (Fig. 15)
- a crenellated dropped tie-beam, but otherwise very little decoration

There is also a noticeably lower quality of timber in both cross-wings, particularly in the low end cross-wing, compared with very good quality in open hall. The arcade posts at each end of the hall have fully finished and chamfered faces into the hall, but the backs of the posts still have sapwood on them and are rounded following the line of the original tree.

There is evidence of a louvre on the high end side of the centre crown post. In the rafters over the crown post in the centre truss are two pegs just below the apex of the roof with similar pegs in the next two pair of rafters on the east, high end, side of the truss. These would have supported a horizontal timber on each side of the roof from which a structure would have risen, looking probably a bit like a dog kennel with partly open sides to allow the smoke to escape (Figs 2, 6, 7 and 14).

Comparison with Tiptofts, Wimbish

In 1342/2 Sir John de Walton held the manor of Baythorne. He resided at Tiptofts, a sub-manor of Wimbish in Essex. This is a large double cross-wing 'H' plan aisled hall, similar to,

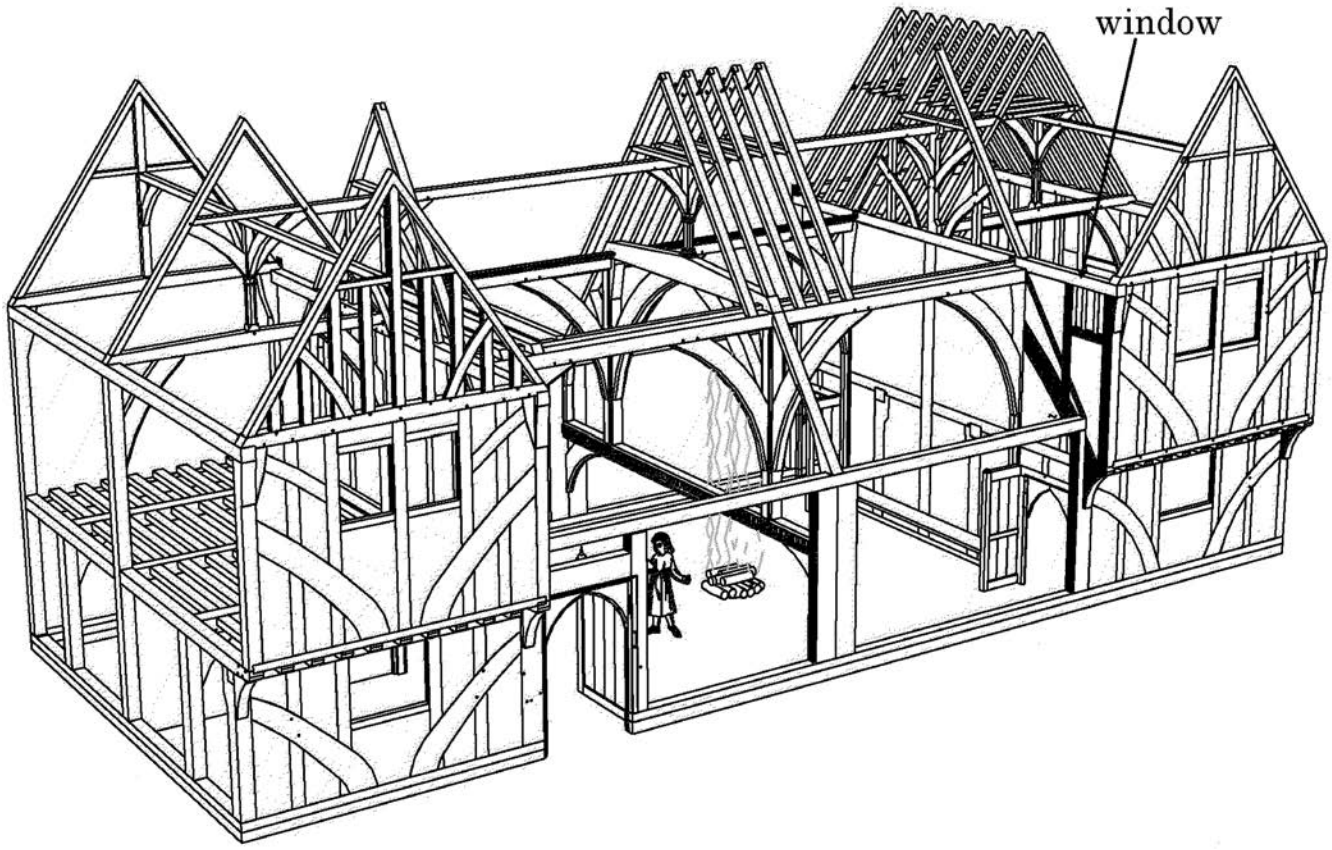


FIGURE 14: Reconstruction of Baythorne Hall, viewed from south-west

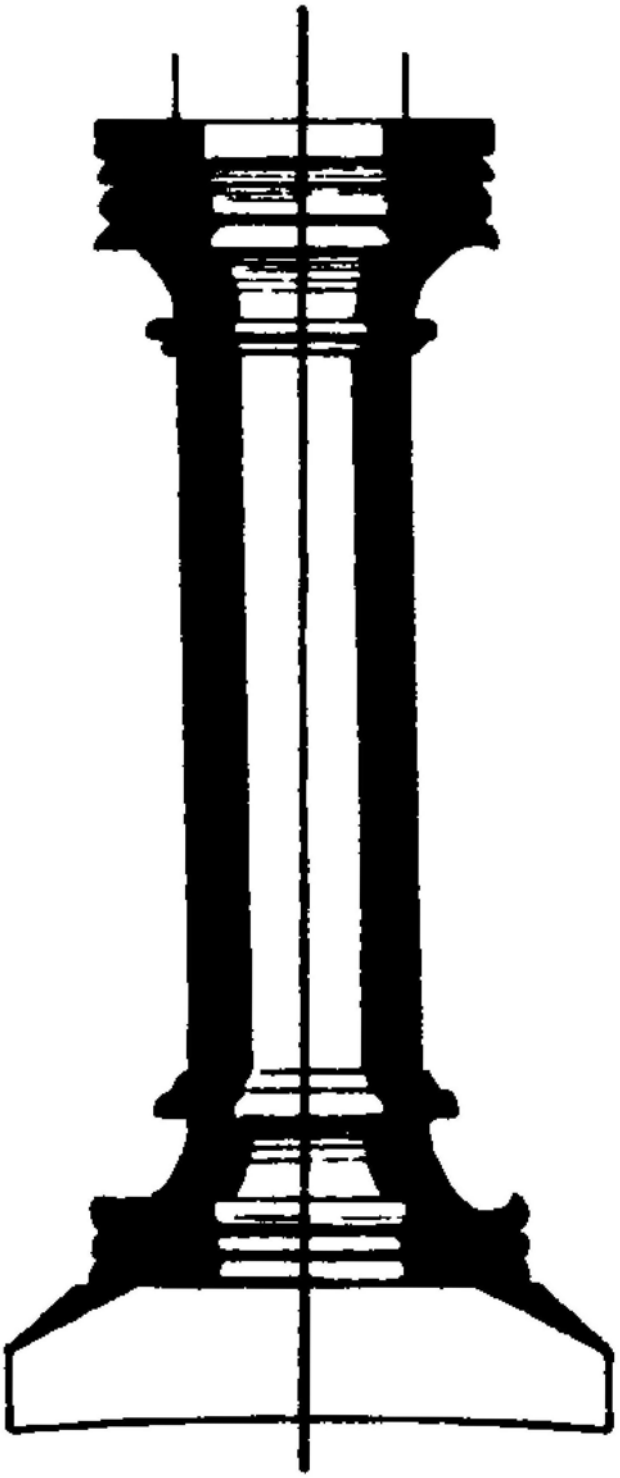


FIGURE 15: Shaft of crownpost on centre truss of the open hall (C. Hewett)

but grander than, Baythorne Hall (Fig. 16). It also cleared the arcade posts from the centre of the open hall, but used a hammer-beam rather than a dropped tie-beam (Fig. 4). It was built before Baythorne but dendrochronology has left a slight quandary. Tiptofts is clearly built in two stages. The low end cross-wing is structurally earlier and empty mortises show it was originally attached to a smaller aisled hall that was replaced by the present aisled hall. However, the tree-ring dates are 1287–1329 for the low end cross-wing and 1282–1327 for the hammer-beam hall (*VA* 30, 118) (Fig. 16). This could be taken as suggesting that the hammer-beam was earlier, but as mentioned above, structurally the low end cross-wing is earlier. It is likely to have been built before 1300 with the hall built in the first quarter of the 14th century. The owners are unknown before 1327 when Sir John Walton is recorded buying a pardon from the King for acquiring this sub-manor without a licence. Sir John is the most likely builder of Tiptoft's hammer-beam hall. He was Sheriff of Essex and Hertfordshire in 1331.

Baythorne Hall is slightly smaller than Tiptofts. The width of Baythorne's open hall is 1½ft (0.45m) smaller and its height 1¾ft (0.53m) lower, but its side walls are a similar height to those at Tiptofts, just over 11ft (3.4m) (Fig. 4). Baythorne has its dropped tie-beam set 4ft (1.2m) below the aisle wall plates whereas Tiptofts has its hammer beams set immediately under the wall plates. One striking similarity is that at both Tiptofts and Baythorne the arcade posts in the side walls supporting the hammer-beams/dropped tie-beam consist of two vertical posts spliced together, though exactly how cannot be ascertained at either building. This is a feature not noted at any other aisled hall, and this and other points above raise the question, was Tiptofts originally built as a raised aisled hall and later converted to a hammer-beam truss? I think it was definitely built as a hammer-beam truss because the chamfering on Tiptoft's braces to the tie-beam continue down on to the hammer post and round the ends of hammer-beam (Fig. 4). It would have been impossible to achieve this continuity in the chamfering after construction, though of course one should never say 'impossible'.

At Tiptofts the arcade posts in the centre truss are set relatively closer to the edge of the hall; the space between the arcade posts accounting for 61% of the width of the hall compared to 54% at Baythorne Hall. The pressure on the hammer-beams means that the hammer posts need to be set closer to the side walls in hammer-beam trusses than is necessary for the arcade posts in raised aisled halls, though even here there is a limit on how far in the posts can be set in from the side walls before causing the dropped tie-beam to fail. However, this difference between Tiptofts and Baythorne is not conclusive evidence for Tiptofts being built as a hammer-beam truss as the ratio at the raised aisled hall, Lodge Farm, Denton, is similar to Tiptofts, 60%, while the other dated raised aisled hall, Wymondley Bury, the ratio is 57%. At Gatehouse Farm, Felsted, Essex's other raised aisled hall, the arcade posts are set further in from the side walls, the space between the arcade posts being around 53% of the total width, and this is why, when the centre of the dropped tie-beam was later removed in an attempt to create a hammer-beam centre truss, props had to be put under the cut ends of the dropped tie-beam to prevent it collapsing (Fig. 17).

It would seem that when Sir John Walton built Baythorne he wanted to make a statement about the importance of the manor house by making it an aisled hall, but one with considerably less decoration than Tiptofts. He also wanted it to have the same advantages as his main residence with the arcade posts cleared from the hall, but achieved it by adopting the simpler raised aisle centre truss. It is possible this was breaking new ground when built and was the first raised aisled hall to be constructed. But it is more likely this form first emerged slightly earlier in the 14th century in north Suffolk where it became a popular house type continuing on

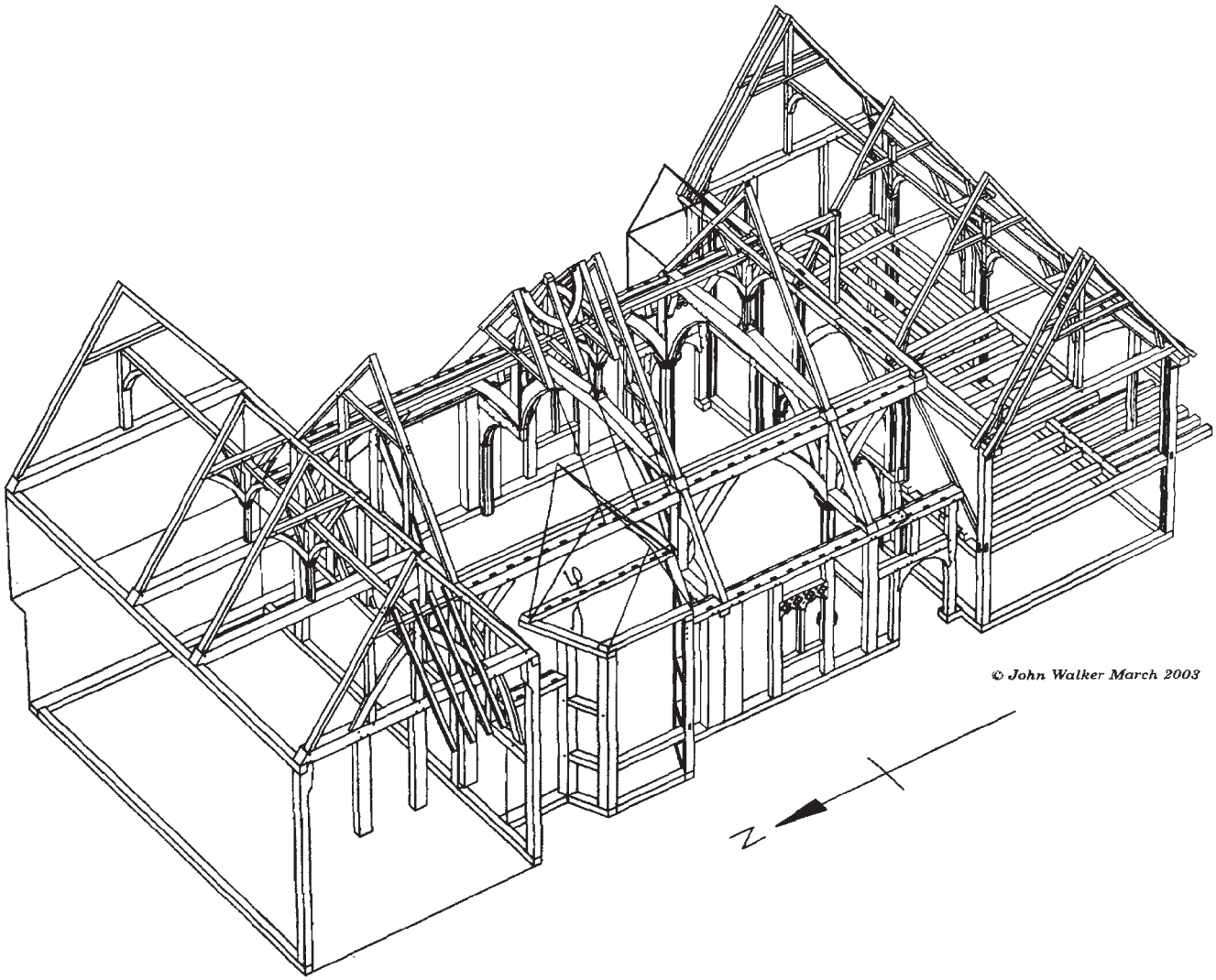


FIGURE 16: Tiptofts, Wimbish, Essex, viewed from the rear

into the 15th century, and where none have so far been tree-ring dated.

Later developments of Baythorne Hall in the 16th century

In the 16th century, in common with most medieval open hall houses, a chimney were inserted into the hall at Baythorne and the hall floored over (plan in Fig. 19). The common position was to insert the chimney stack either at the low end of the hall with a single fireplace backing onto the cross-passage as happened at Wymondley Bury, heating just the hall on the ground floor, or at the high end of the hall with back to back fireplaces heating the hall and parlour as happened at Lodge Farm, Denton in Norfolk. North Suffolk and Norfolk favoured the high end fireplace, while south Suffolk and Essex initially had a preference for the low end stack. Baythorne Hall however adopted a different solution which happened at a number of large aisled halls, and one that has not been discussed in the literature. Here a chimney stack with back to back fireplaces was inserted against the low end side of the hall's centre truss dividing the old open hall into two heated rooms. At Baythorne the inserted stack has a large wide cooking fireplace on the low end side, and a smaller fireplace on the high end side (plan Fig. 19). Exactly the same insertion happened at many of the Essex aisled halls including Tiptofts, Fyfield Hall and Lampetts in Fyfield, Harlowbury in Harlow, Little Chesterford Manor House and Gatehouse Farm in Felsted. Where the chimney stack is at the low end backing on to the cross passage or at the high end of the hall, the house still has the medieval tripartite plan of services, hall and parlour, the only difference being that the hall is floored over and heated by a chimney stack. The bulk of new houses built in the 16th century in Essex and Suffolk had chimneys and adopted one or other of these two sub-medieval plans.

In the case of these large aisled halls the addition of the chimneystack created a four cell ground floor plan. Probably the heated high end room of the hall replaced the parlour which either become an unheated room or was at some stage pulled down as at Harlowbury. At Baythorne Hall the parlour in the east cross-wing remained unheated in the 16th century even though the first floor chamber above was upgraded and improved by the insertion of a very heavily moulded ceiling (Fig. 18). Previously it was open to the roof. The parlour was not heated until the 18th or 19th century when a chimney stack was added on the side wall (Fig. 19). The parlour chamber remained unheated.

FIGURE 17: North side of centre truss of Gatehouse Farm, Felsted, where the centre of the dropped tie-beam has been cut out and props inserted under the cut ends

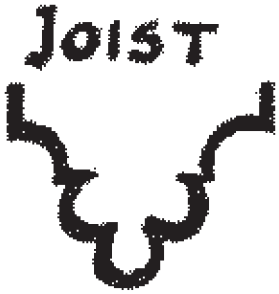


FIGURE 18: Moulding of 16th century common joists in parlour chamber (from RCHME)

At some stage the front door was moved from the low end of the hall to its present position opposite the chimney stack creating a lobby entrance (Fig. 19). No evidence is visible as to when this change occurred. The rear cross-passage door was retained and is still in use today. A chimney stack was added in the 18th or 19th century to the west side wall of the low end cross-wing heating the front 'service' room, and probably at the same time the ceiling of this room was raised to give more headroom. In 1914 when the Royal Commission on Historical Monuments surveyed the house, this room was called a drawing room (Fig. 19). Before 1914 bay windows were added under the jetty of the two cross-wings and a small two storey extension added behind the high end of the hall; these are marked as 'modern' on the RCHME 1914 plan, that is after 1714. In the 20th century a two storey extension was added behind the west service cross-wing (Fig. 20).

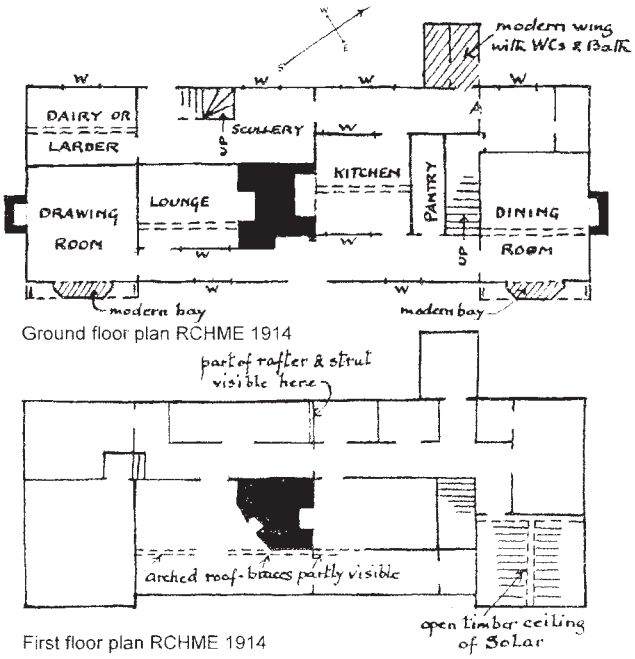


FIGURE 19: RCHME plan of Baythorne Hall in 1914

Abbreviation

VA = Vernacular Architecture

Endnote

1 'd' indicates a tree-ring date.

FIGURE 20: Rear of Baythorne Hall in 2012

Bibliography

Copinger, W.A. 1908, *The Manors of Suffolk, vol. ii, The hundreds of Blything and Bosmere and Claydon* (London)

Miles, D. and Bridge, M. 2011, 'Tree-ring dates from the Oxford Dendrochronology Laboratory', *Vernacular Architecture* 42, 104–7

Morant, P. 1768, *The History and Antiquities of the County of Essex, vol. ii* (London)

Page, W. 1912, *The Victoria History of the county of Hertford, vol. iii* (London)

Walker, J. 2014, 'Baythorne Hall, a raised-aisled hall in Birdbrook, Essex, and its relationship to other raised-aisled halls', *Vernacular Architecture* 45, 81–95

THE STOCKWELL RESTAURANT, THE FORMER STOCKWELL ARMS PUBLIC HOUSE, COLCHESTER

David Stenning

The Stockwell Arms stands in West Stockwell Street, in the Dutch Quarter, that part of the town romantically associated with Protestant immigrants who introduced the manufacture of the New Draperies. These Flemish or Dutch newcomers were to become important in the town's economy, but there seems little evidence to especially associate them with this part of the town. Whilst a great deal has been lost through relatively recent redevelopment, there remain a number of buildings that pre-date the 16th century. It is possible that the area was unfashionable and hence a suitable new home for these newcomers.

The Roman town plan of Colchester within the walls is still partly evident. Much of the High Street is a major Roman alignment (*decumanus maximus*), as are North Hill and Head Street (*cardo maximus*). The Dutch Quarter lies to the east of North Hill and is bounded to the north by the Roman wall. The Roman town plan took the form of a chequerboard of *insulae* framed by minor streets. The Stockwell Arms is in *insula* 12 and had a minor Roman street to its rear. Both the High Street and North Hill had burgage plots still recognisable from the medieval plan, those in the High Street were influenced by surviving Roman boundaries.

West Stockwell Street was formerly called Angel Lane, the corner with the High Street containing the Angel Inn and also Angel Court. The Stockwell Arms fronts the east side of the street at the junction with Stockwell. The building has

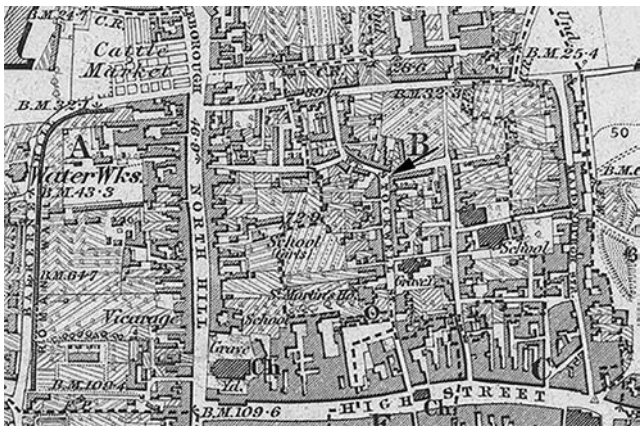


FIGURE 1: Colchester from the 1st edition OS maps, the former Stockwell Arms arrowed

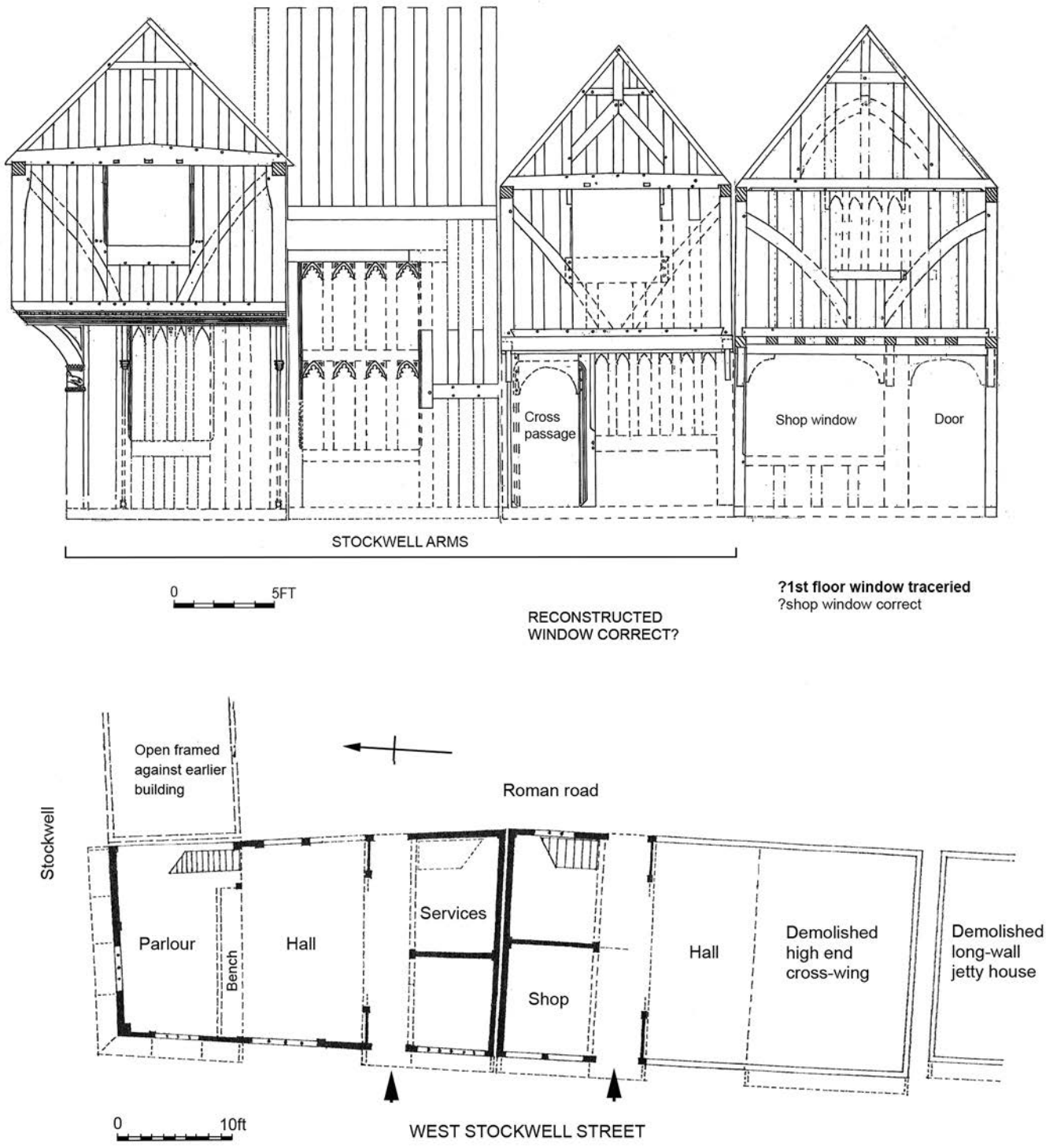


FIGURE 2: Plan and elevation of the former Stockwell Arms and the buildings to the south (elevation by Richard Shackle)

recently been restored, revealing that it consists of a complete 15th-century house with two jettied cross-wings, adjoined by the jettied cross-wing of a second house to the south. The plan form and general character of this second house can be determined from the late 19th-century 1:500 OS map and old photographs.

It seems probable that both houses began life in the 15th century as fairly modest in-line hall houses which were probably fairly common in this part of the town. Both 'ends' of each house were subsequently rebuilt as cross-wings to increase the accommodation and provide more private space.

The northern house located on the corner tapers to the north so that it fits into a narrowish gap in the frontage, evidence of the medieval carpenter's skill in building non-rectangular structures to exploit every available inch of land. The crown-post roof of the surviving part of the hall is exceptional in that it has soulaces on each rafter pair. Because of the tapering plan, each rafter pair was different and the soulaces stabilised the geometry. The front elevation of the hall has a large moulded mullion window with a traceried head. The rear wall is much less complete but has a narrower window tucked in the corner. There seemed to be little, if any, soot blackening in the roof, suggesting the

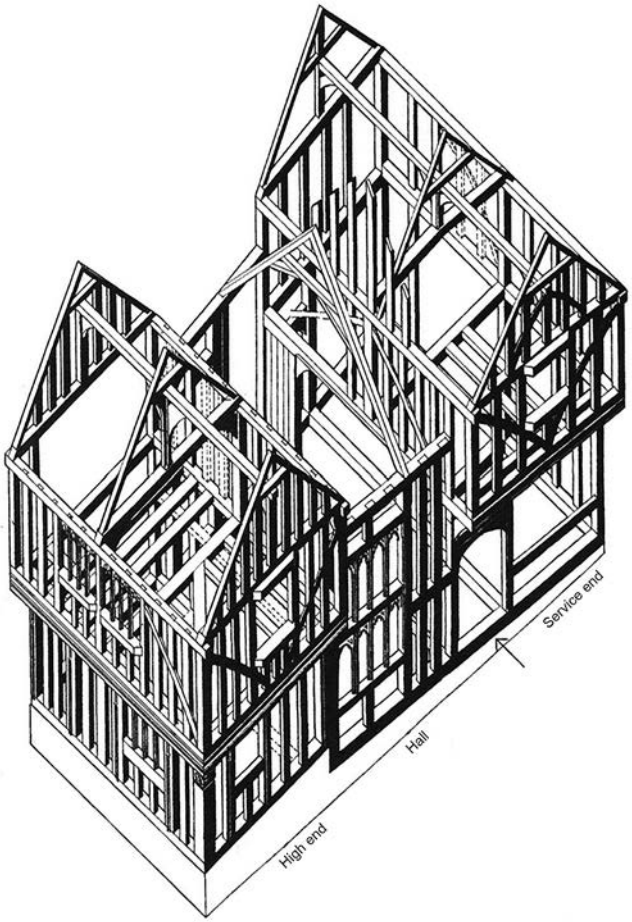


FIGURE 3: The Stockwell Arms, axonometric reconstruction. See plan for correct tapering of hall and north cross-wing

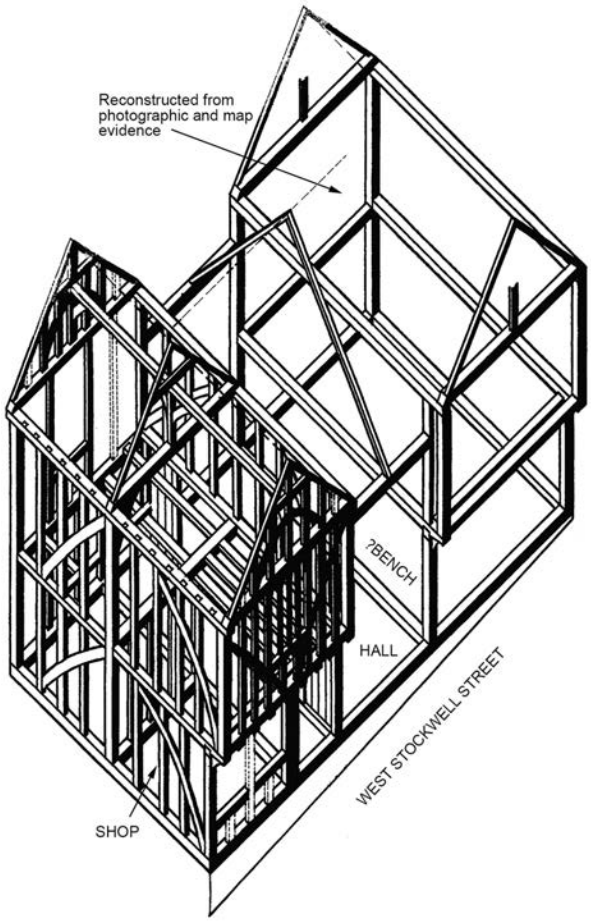


FIGURE 4: Second southern house with shop and reconstructed south cross-wing

FIGURE 5: Reconstructed street scene showing the former Stockwell Arms and the buildings to the south

possibility of some sort of chimney on the now fragmentary rear wall.

It seems probable that both the cross-wings were the work of the same carpenter though not built at the same time. They both have outer jetty bressumers of two superimposed timbers, an extremely unusual technique. The northern cross-wing contained parlour and solar and a bench recess facing the hall. It is extremely decorative, with jetties to both frontages. Notable are the number of jetty brackets, the angel-carved corner post, probably St. Michael, and the projecting cills of the northern first floor windows. The service cross-wing has an undershot cross-passage, with former speres to the low end of the hall. Unfortunately the floor of this wing was lowered and rebuilt in the 17th century. It seems likely that there was a stair in the rear bay.

The second house to the south only survives in the form of a low end cross-wing. The OS map indicates that its frontage width was similar to the other house, with a 'condensed' urban plan with cross-wings either side of a diminutive hall. The shop was entered through an undershot cross-passage. Stylistically the houses are similar and they had probably developed their full plan form by the mid 15th century. The southern house is possibly the older as the top plate has a splayed halved and bridled scarf joint. Because of the small size of the hall, the high end cross-wing probably had a bench recess. To the south was a long-wall jetty house, now demolished, of similar frontage width to the other two houses, indicating that plot widths seem to have been standardised.

The medieval buildings on this side of the street, between Stockwell and St. Martin's church, all have their rear elevations perfectly aligned as if they were observing a common boundary. This could be an ancient boundary that was once the edge of the minor Roman road. This road was rediscovered in the course of the building works to the rear of the Stockwell Arms. Can it be that the properties were limited to the footprint of the buildings without any yard or garden? It has been suggested that the southern end of the area behind was a public washing place associated with the historic Stockwell and the wool hall fronting that street. The Dutch Quarter was inhabited from at least the mid 13th century when there was a number of Jewish households there. Any oddness of plot layout, here and perhaps also in East Stockwell Street, must be of ancient origin. The lack of evidence for burgage plots in the Dutch Quarter must have some explanation.

BULLOCKS CROSS, COGGESHALL

David Andrews

Bullocks Cross is an old timber-framed farmhouse on the Marks Hall estate situated to the west of the north–south road from Coggeshall to Earls Colne which was restored in 2014. The house is a large cross-wing with an outshot on one side, clearly a fragment of a larger building. It was a copyhold of the manor of Great Coggeshall, possibly linked to a Bullock family recorded in the 15th century. Bullocks Cross seems to have come into the Marks Hall estate in 1749 when Richard

FIGURE 1: Bullocks Cross, front (east) view of the house before restoration

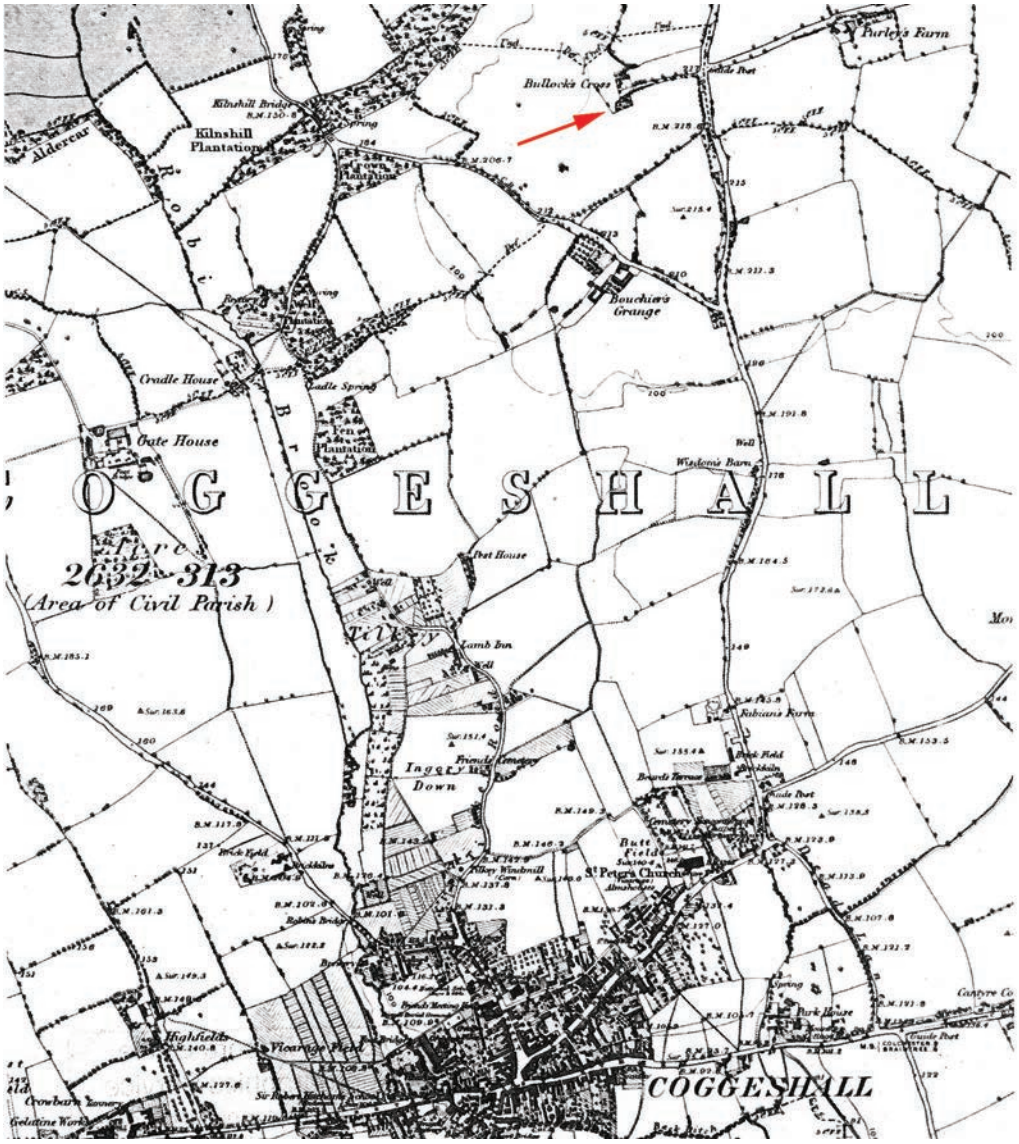


FIGURE 2: Map of 1881 showing the location of Bullocks Cross (arrowed)

FIGURE 3: South elevation, showing the surviving frieze window

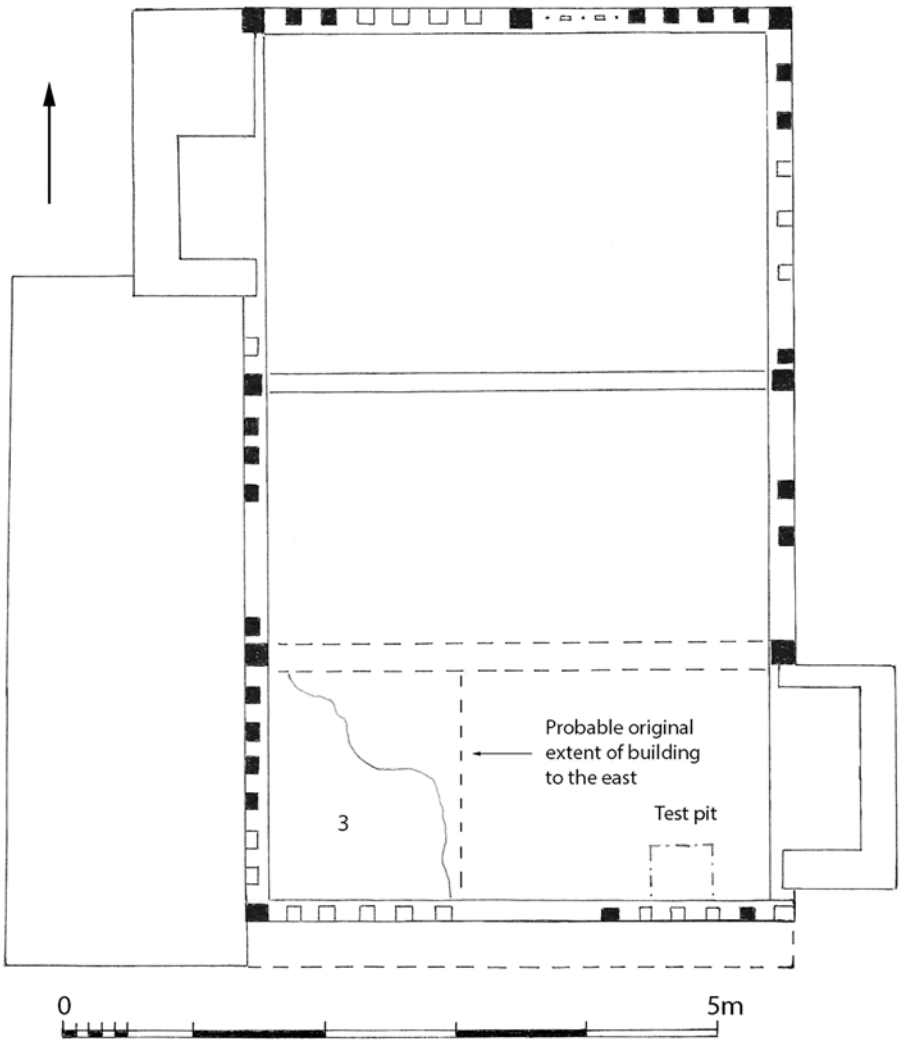


FIGURE 4: Bullocks Cross, plan to illustrate the timber frame

Honeywood obtained it through an exchange of property (ERO, D/DHt T107/19). The Honeywood estate book contains a 1787 survey of Bullocks Cross, where it is recorded as a copyhold measuring 73a 1r 11p (ERO, D/DCm E2). By the time of the Great Coggeshall tithe map of 1853, the house had been reduced to its present size, and the rather fine small barn to the north of it and the little brick outbuilding to the west of it had already been built (ERO, D/P 36/27/1). When in 1867 Frances Emma Honeywood renewed the lease of Bullocks Cross and another farm called Marygolds, containing 99a, the tenant farmer was living at Marygolds and Bullocks Cross was presumably amongst the cottages he let to his workmen, a circumstance which probably explains how what had been a fine house became downgraded and reduced to a single cross-wing (ERO, D/DHt T456).

The cross-wing has a close studded frame of good quality oak. There is no wattling groove in the mid rails and top plates. The building is of three bays of unequal length aligned north–south. The two shorter southern bays were undivided, forming large rooms at ground and first floor. There are edge halved scarf joints in the top plates. The roof is of clasped purlin construction with wind braces. The principal rafters and collars coincide with the tie-beams. There are some chiselled carpenters' marks in the roof. The floor joists are wide section (150 × 100mm), except for those to the attic, which are narrow section (70 × 170mm). The attic was however an original feature, as there are four light diamond mullion windows in each gable.

The jettied front south elevation is very weathered and in poor condition, but there is a substantial bressumer attached to the ends of the joists and supporting the first floor studs which looks as it had carved decoration. At both floors there were large central windows with frieze windows either side of them. The ground floor one was a projecting oriel. The frieze windows on the east side survive: like all the windows in the house except the attic, they had ovolo mullions with iron stanchions between them for the attachment of glazing. The west side of the wing has a serpentine brace at ground floor, and three windows. Two windows one above the other in the north elevation suggest that there was a lobby at the back of the building for a stair. Evidence for a stair trap has been lost because the floor in the rear bay has been rebuilt.

The east wall does not have any windows but there are gaps in the studwork suggestive of door positions, as many as three at ground floor and one at the first floor, though evidence for lintels is absent. These features suggest that there was a building on this side of the cross-wing. This would presumably have been a hall against which the cross-wing was built as an independently framed structure. The number of possible doors suggests the cross-wing could have been built at the

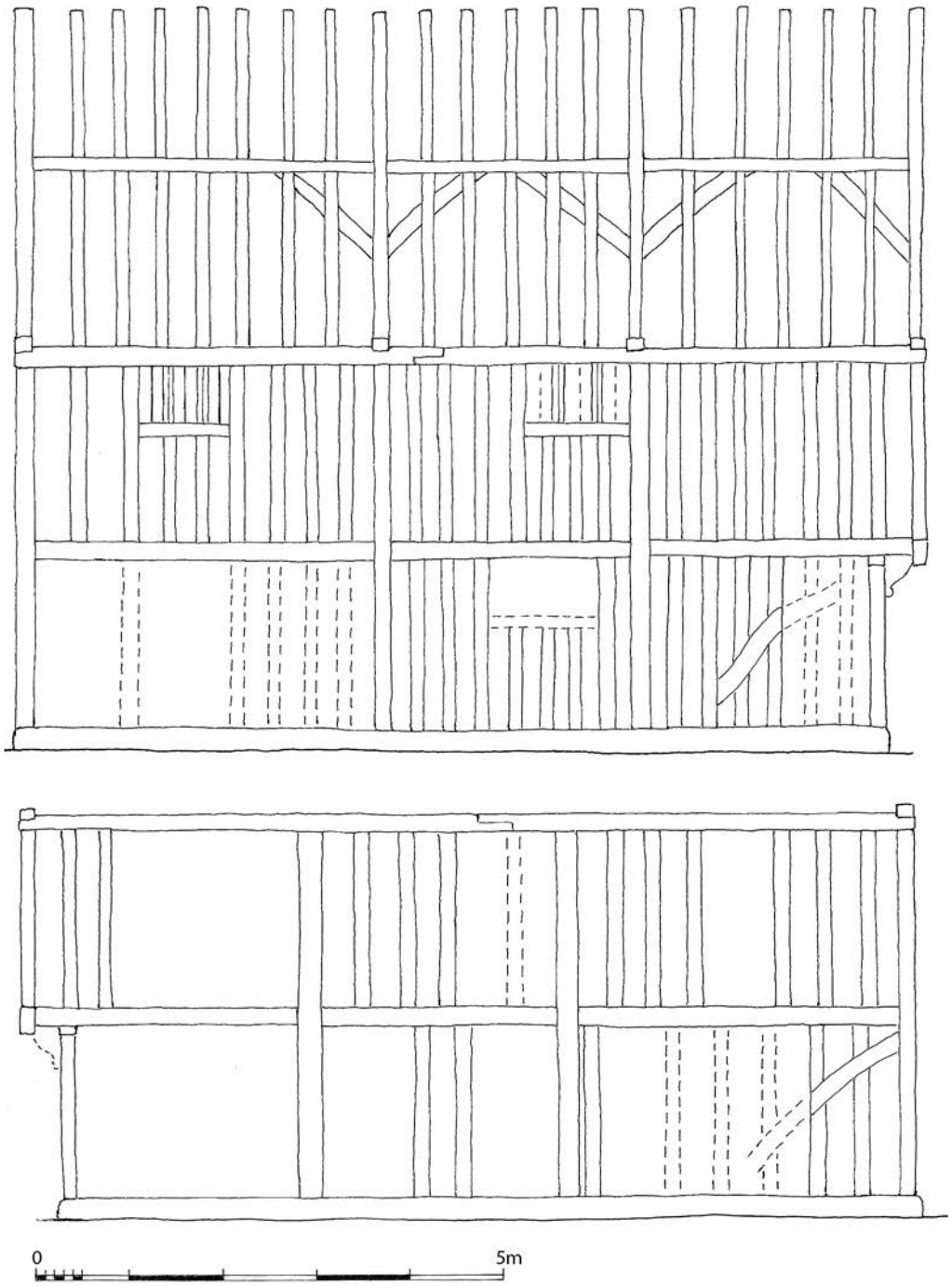


FIGURE 5: Bullocks Cross, west (bottom) and east (top) elevations

service end, though its splendid front windows would be more consistent with a parlour wing.

The south end of the east wall is largely concealed by a later brick chimney stack the fabric of which seems to be 18th century but probably built over earlier footings in Tudor type brick. The position of this stack is unusual and problematic, but as far as it could be made out, it seems to be original.

In the 18th century the house was plastered, the west wall retaining extensive plaster with a simple stabbed pattern arranged in vertical rows where an outshot was built up against this side. At the north end of this wall a chimneystack was added probably in the late 18th or early 19th century.

Excavation of the front room of the cross-wing suggested that it had been built onto the Boulder Clay subsoil after the removal of topsoil, the clay forming the floor surface. In the west half of the room, there were patches of lime and stones with potsherds pressed flat on top of them, what looked like an external surface. The pottery included part of a Frechen (Rhineland) stoneware *Bartmann* jug datable to *c.*1600.

The carpentry and architectural features of the cross-wing point to a construction date of *c.*1600. The serpentine bracing is typically later 16th century. Edge-halved scarf joints are expected to go out of use before the end of the century, and probably not to be used in conjunction with clasped purlin roofs which tend to come in at the end of the century. The frieze windows and glazing indicate that this was a high quality building. It seems to represent a remodelling of one end of a late medieval house located to the east of

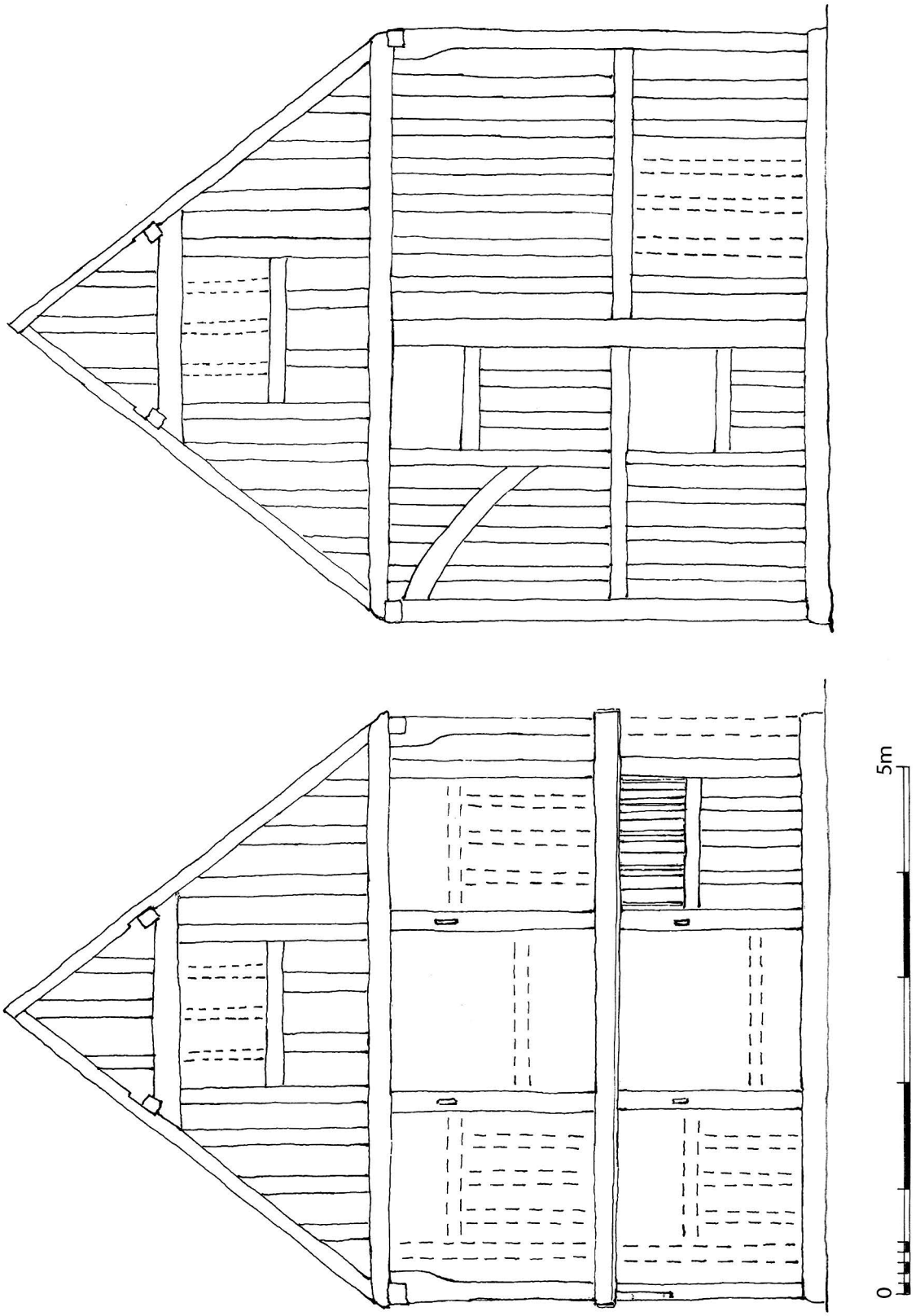


FIGURE 6: Bullocks Cross, south (left) and north (right) elevations

FIGURE 7: Frechen stoneware Bartmann drinking jug from the excavations, late 16th century

it. The archaeological deposits inside the cross-wing can be interpreted as an external surface which was then built over and included within the house, the result of the cross-wing being wider than the in-line end which it replaced. The Frechen stoneware fits very well with the probable date for the house.

The copyhold status of Bullocks Cross would suggest that it is an ancient house site. This is confirmed by the presence of pottery of the 13th century or earlier, and it would be reasonable to conclude that the site had been occupied from the 11th or 12th century. This raises questions about the origins of the farmstead. Was it part of a hamlet associated with a pattern of open fields, or was it the result of assarting woodland?

Abbreviation

ERO = Essex Record Office

PARSONAGE FARM, SCHOOL LANE, BROOMFIELD, CHELMSFORD

Brenda Watkin and Elphin Watkin

History

The site is at Parsonage Green on School Lane at the western edge of Broomfield (TL 7035 0990). Adjacent is the grade II listed Parsonage, now separated from the farm buildings. It is of 19th-century construction replacing what must have been an impressive earlier house dating possibly from at least the 16th century judging by the outline depicted on an estate map of 1756 where it is shown with extensive gardens and an orchard (Fig. 2). This report describes the farm buildings as they were in 2009.

The farmyard site contains two listed buildings, the barn and an outbuilding range to the south of the site. The northern boundary has a further range comprising a stable/carriage shed range with further buildings attached to the west. The whole forms a partially closed farmyard with the house forming the eastern boundary. To the west of the main farmyard is a stock area comprising shelter sheds and other buildings but all yard divisions are now lost.

At the suppression of the monasteries in the 16th century, the tithes and the Parsonage, held by the Priory of the Holy Trinity, London, were granted by Henry VIII to William Harris. They then passed to Richard Lord Rich who made them part of the endowment of his free-school and almshouse at Felsted (Morant 1768, ii, 78).

A series of leases from 1720 through to 1862 survive in the Essex Record Office and provide a fascinating insight to the contribution that the rent from this property and lands of 94 acres made to the Rich charities. Morant refers to the various money rents payable to the churchwardens of Felsted for the use and support of the Rich foundation. 'From Broomfield parsonage £50 6s 11d more from thence by grant of the late Earl of Nottingham, £18. In all £68 6s 11d'. This was the payment due to the foundation when in 1753 the Hon. Edward Finch Esq. of Sackville Street, St. James, City of Westminster, entered into a 21 year lease. Prior to that date the lease had been £18 6s 11d. However through the 19th century the rent escalated first to £180 in 1845 and £530 in the final lease found when the Marriage family took the lease on the property in 1862.

Morant describes The Parsonage as being improved by John Hill Esq. of Broomfield (1726–32) and Richard Price Esq. of Hayes, Middlesex (1732–53) 'so as to be fit for a Gentleman's seat', and names the lessee at his time of writing as the Hon. Edward Finch Esq. brother to the Earl of Winchelsea and Nottingham, patron of Felsted School. It was Finch who sponsored the estate map of 1756 that shows the charity's lands (ERO, D/Q11/114). The house was replaced in the 19th century and it is clear that the lessees, whether they lived there and farmed the land or sublet, were affluent. Their commitments included a complete repair clause on the buildings of the holding, repairs to the chancel of Broomfield church, and an annual payment to the vicar of Broomfield of 15s. 4d.

Morant (1768, ii, 420) also mentions the corn rents paid to the Felsted almshouse: 'From Broomfield-parsonage, 18 bushels of wheat, and 4 of malt'. This contribution is carefully described in the leases as '2 quarters & 2 bushells of good sweet and merchantable White or Redd wheat and 3 quarters & 5 bushells of good sweet and merchantable barley wheat', to be delivered to the almshouse in Felsted at set times during the year.

At the time of the tithe award for Broomfield in 1846, the estate was still in the hands of the Felsted charities and being leased to a Thomas Wall Crooks. He also owned land and a cottage in the parish that he was leasing out, as well as a further 70 acres or so in the parish making him a major farmer in the area. The lands were well spread out with areas near the river to the east and woodland to the south-west, all with fields linked to road access. He also had further land in the north-east of the parish that included buildings assumed to be farm buildings.

Based on the listed mix of land and the descriptions of the buildings on the Parsonage site, it is suggested that he was farming a larger area as arable with a lesser acreage of pasture, sufficient for cattle and for the provision of hay for which storage still exists. This would explain the number of ponds in the areas of land listed as pasture as they would have provided water for the animals. Since his lands in the north-east of the parish contained more pasture as well as buildings,

FIGURE 1: Extract from the Chapman and André county map of 1777 to show the location of Broomfield Parsonage

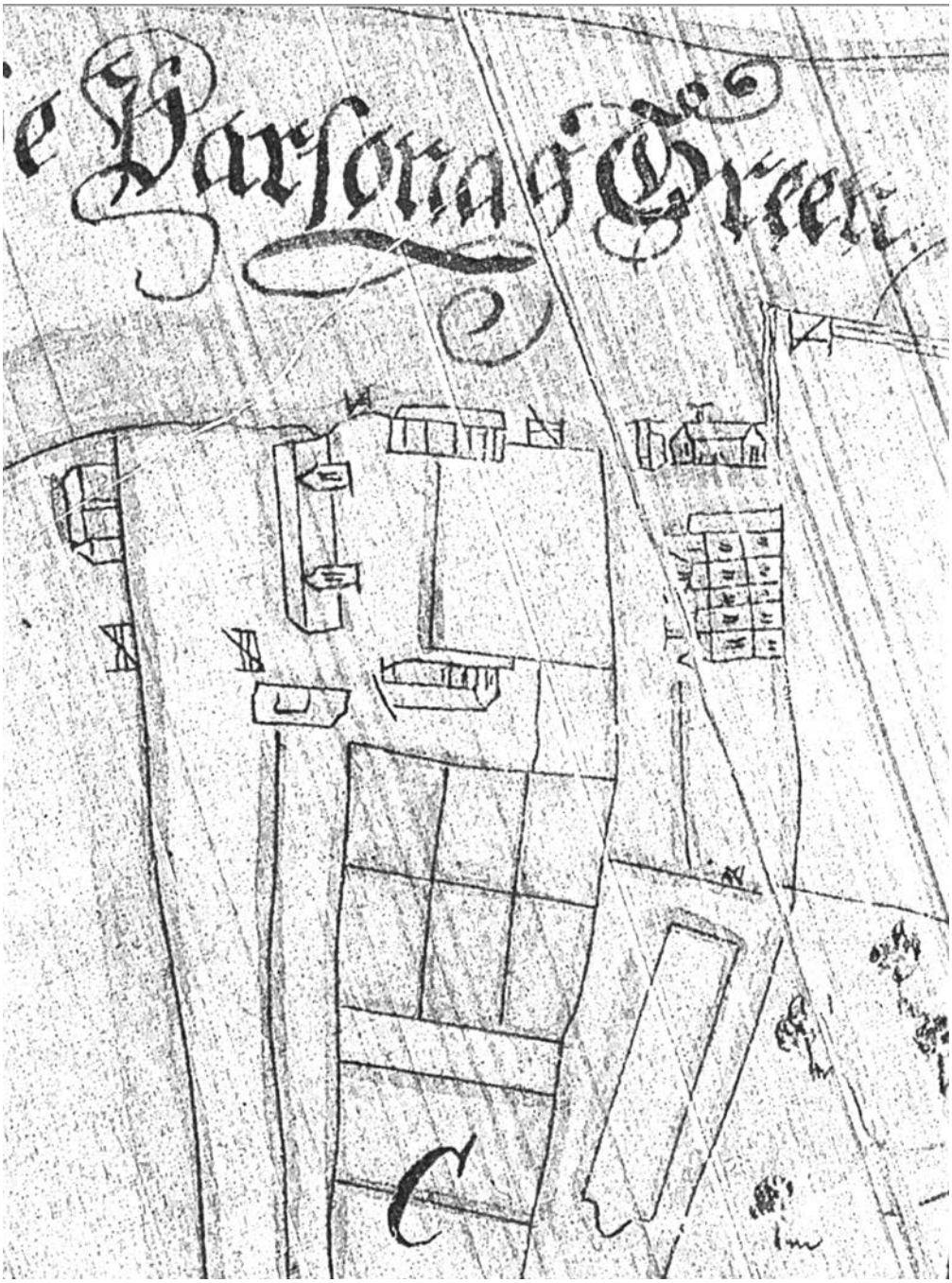


FIGURE 2: 1756 map of the Parsonage lands for Edward Finch, 19th century copy (courtesy of Essex Record Office)

it is possible that he may have been a major milk producer in the locality.

After the transfer of the lease to the Marriage family in 1862, already millers and farmers in the parish, one has to assume that the arable side of the farm became more important. The Marriages finally negotiated to purchase the freehold of the property in the 1920s.

The present farmyard buildings appear to date from the later 17th century onwards. This suggests a major rebuilding programme from about one hundred years after the Rich and Felsted connection is first noted. The large barn confirms the importance of the arable land holding and the other buildings, although not named but listed in the various leases, provide for both dairy and hay production.

The barn (Figs 5–6)

The large seven bay barn closes the western side of the farmyard opposite to the farmhouse. It is double midstrey, mainly framed in oak timbers, and aisled on the west side, with smaller doors opposite the midstreys restricted to aisle height. It is about 88ft (26.8m) long and about 26ft (8m) wide with the midstreys projecting another 12ft (3.6m). The roof, originally of side purlin construction, collapsed in 2006, and the aisle roof and midstreys are the only parts surviving. It has a later lean-to between the midstrey and south-east barn wall with access doors on to the farmyard. No remnants of threshing floors survive in the midstrey bays. The midstreys are similar in size and detail, with side access doors in their north walls. The southern midstrey has

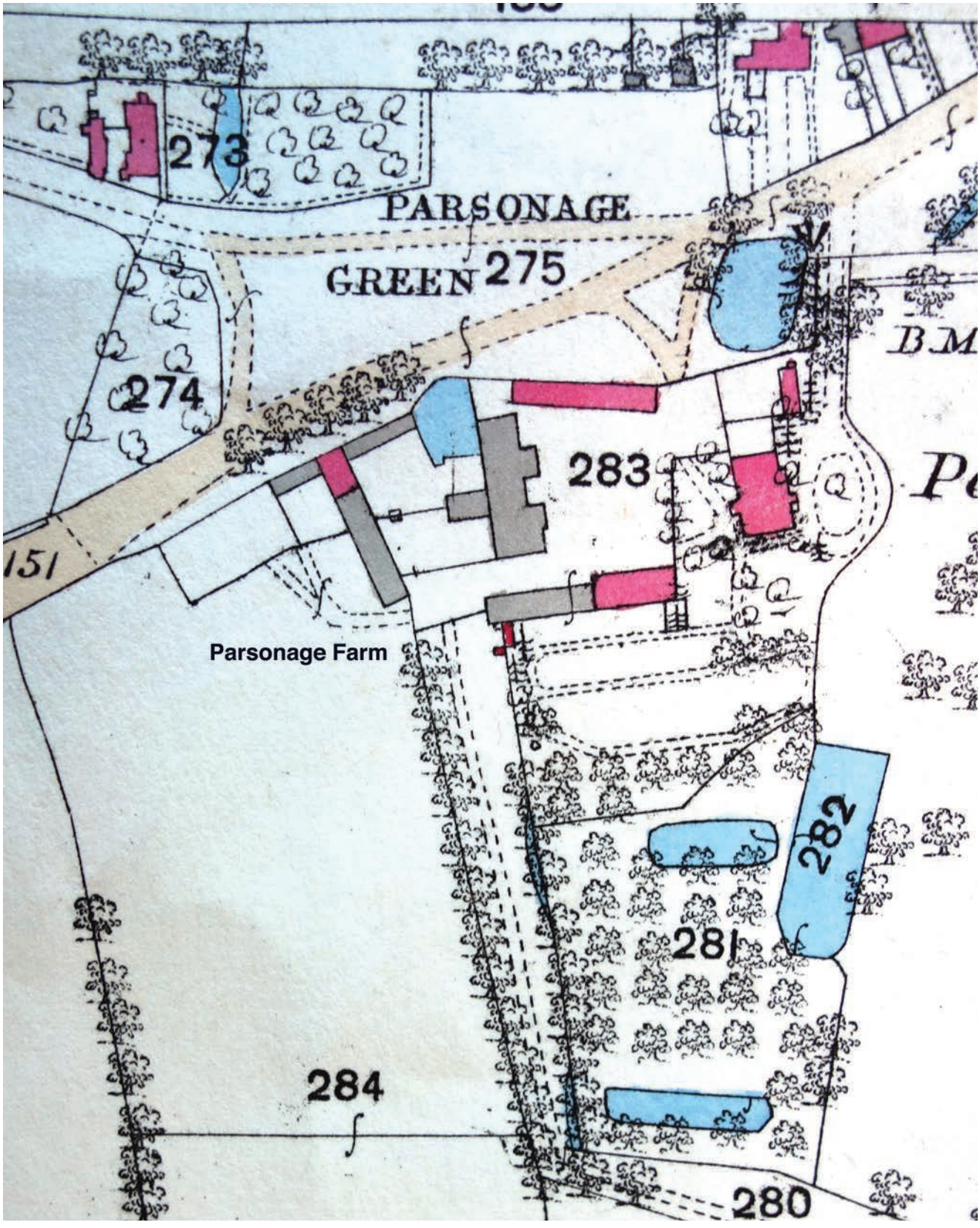


FIGURE 3: Parsonage Farm on the 1876 1st edition OS map (buildings in red are of brick as are the shelter sheds bordering the roadway to the west of the site although shown in grey)

a pigeon box in the gable. They have iron ties at sill level to the main barn frame.

The aisle and midstrey doors are 19th-century. The aisle doors were increased in width in the 19th-century repairs: the peg holes suggest that they were originally single doors, approximately 3ft 6ins wide. Various areas of the frame also show repair and replacement, whilst the south-western long bay of the aisle appears to have been completely rebuilt in

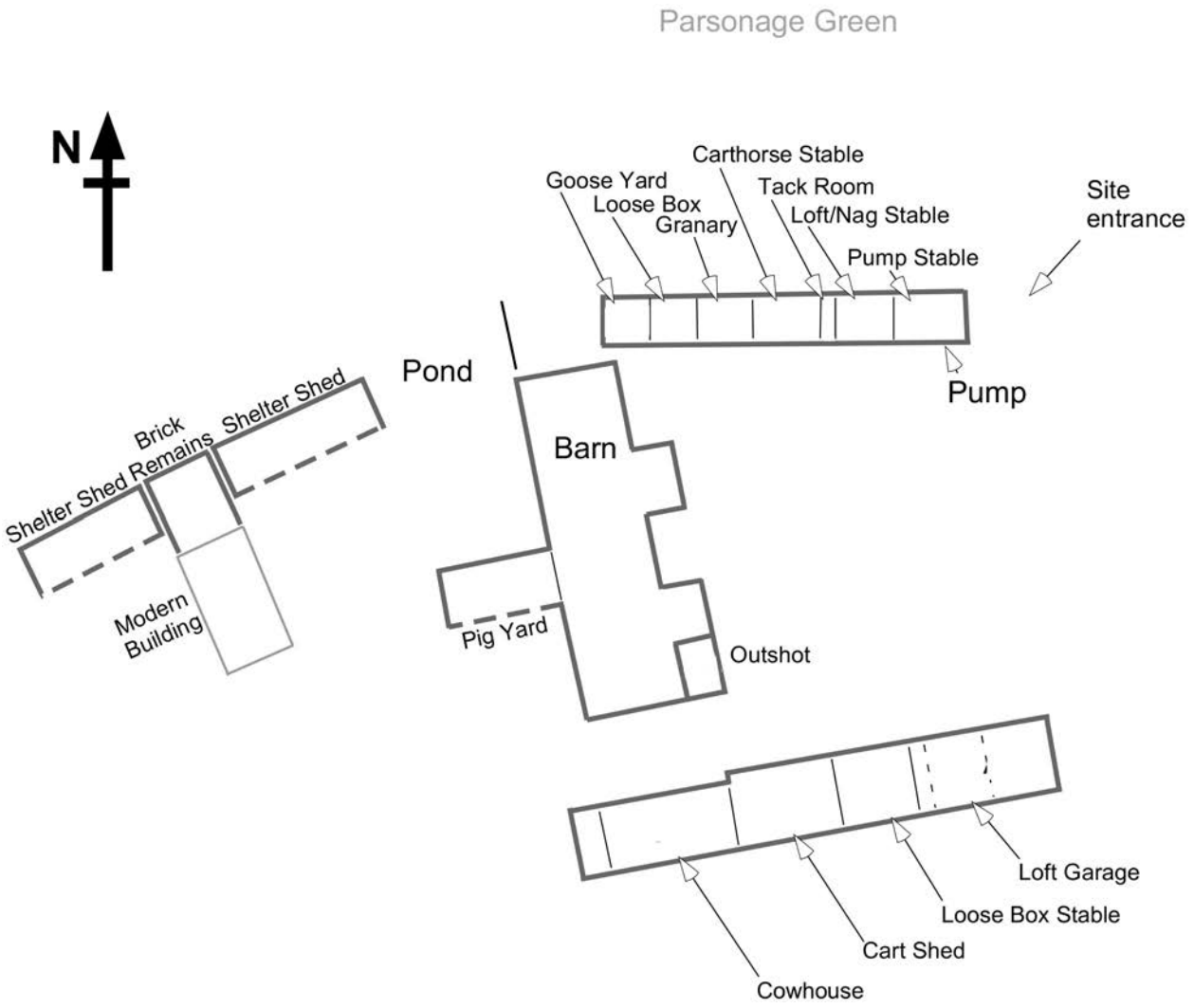


FIGURE 4: Parsonage Farm on the 1876 1st edition OS map (buildings in red are of brick)

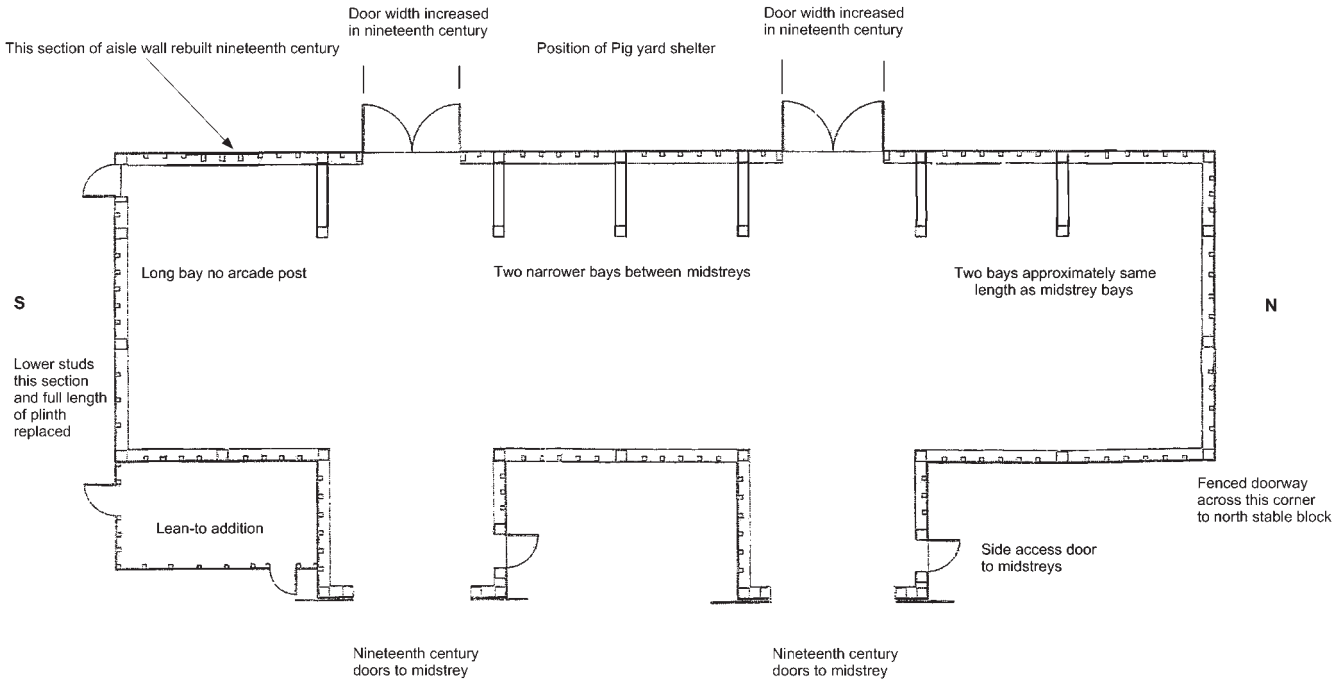


FIGURE 5: Plan of the barn

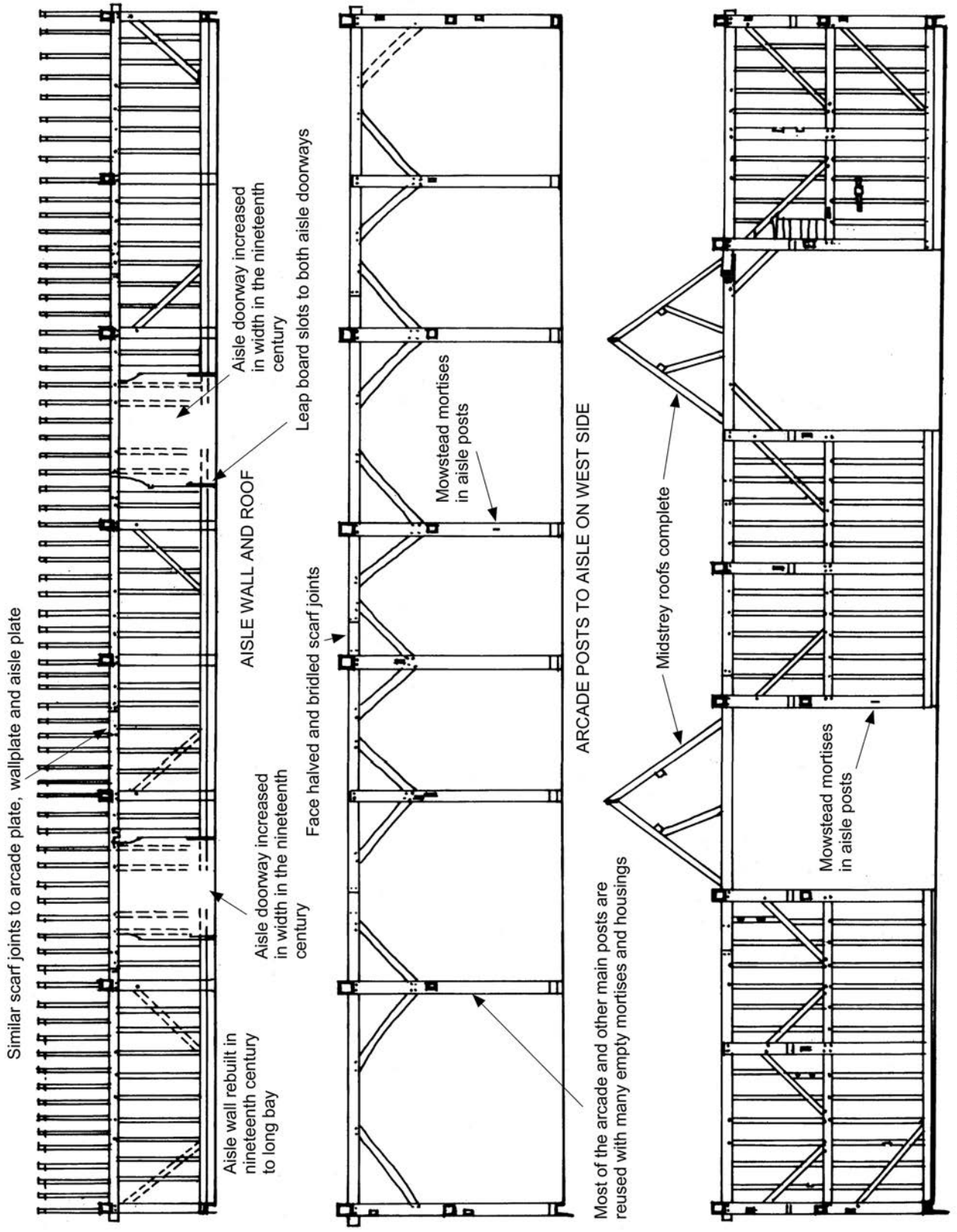


FIGURE 6: Elevations and section through the barn

the 19th century as has the eastern half of the south gable wall.

The timber-frame suggests a construction date towards the end of the 17th century, using much reused timber most likely from a 15th-century barn of similar proportions. This is shown by wall plates now used as midrails and posts, main posts with mortises from a previous constructional use, timbers sawn down in size from larger sections, and by the variation in section size of various timbers through the barn. It is of primary braced frame construction, having full length studs pegged and those to the braces not pegged. It has return sole plates to the arcade posts from the aisle wall. The scarf joints are all relatively long, face halved and bladed with two face pegs to each blade. Some show a large central key peg through the joints.

What is unusual in this barn are the bay proportions: whereas one would expect the bay sizes to be consistent, as found in most Essex barns, in this barn they vary. From the north are two approximately 12ft (3.65m) bays with a 12ft (3.65m) midstrey bay. The two central bays are approximately 11ft (3.4m), followed by another 12ft (3.65m) bay for the southern midstrey. To the south of this is one bay about 18ft 6ins (5.6m) long with no arcade post or truss at the midpoint, although a full length post exists at the midpoint of the east wall. A possible explanation is that the barn was built to accommodate the requirements of the lease in providing certain amounts of crop to the Felsted charities, and it would allow easy space segregation of the amounts required. That the barn was used for threshing is shown by the leap board slots to the main midstrey and aisle doors, and mortises for a mowstead division across the barn at the north midstrey.

The stable range (Figs 7–9)

The northern boundary of the site to School Lane is a stable range. To the east is the earliest building, probably dating from the first half of the 18th century. It, or a building in the same position, is shown on the 1756 map. It is brick built. The half hipped roof is a side purlin construction with tenoned purlins, typical of the period in reusing earlier timbers where possible with only most of the principal timbers being new. The bay containing the dormer access to the hay loft is actually a reused section of fully framed side purlin roof. The collars all appear to have only bird's mouth jointing to the purlins. It has angle set anti-racking bracing nailed to the underside of the rafters, possibly not original.

The south wall facing the farmyard has three doors, the eastern retaining its original boarded and ledged door with good surviving 'horse proof' iron hasps and staples. The first two bays from the east have pivoting windows to the right of the doors, the second one along with the added security of vertical iron bars set to the inside. This can be explained by the different use of the two sections. Although in its last use the east bay was a loose box, it was originally a carriage shed with an opening in the east gable wall. This did not need added security whilst the next bay was the nag or small carriage horse stable for six horses that would have needed ventilation when in use hence the additional bars.

The nag/carriage horse stable has a brick floor of square sets and is divided into three bays, each of about 6ft width. These bays each took two horses showing the smaller size of horse accommodated in this stable. The standard of fitting also shows the care usually shown to the riding or carriage horses. The divisions are timber-framed with a post at the outer end rising to ceiling level. The return faces are clad each side in well finished boarding leaving a smooth surface to each side. Each of the openings is fitted with a decorative pelmet between each of the stall posts with small iron lamp brackets on which to hang a lamp. Each stall has a wooden feed trough originally with two iron tying rings to each. Above the feed troughs is a full length hay rack with trap openings in the ceiling above.

At the end of this bay, and entered from it by a narrow original door, is a narrow tack room, fully boarded out to both sides and to the ceiling under the hay loft above with good quality wide boards, and with a brick floor. The room has a fireplace on the north wall with a stack rising through the hay loft and changing to a diagonally set square form as it exits the roof. There are hooks and brackets to each of the side walls for harness, saddles, collars etc. and a small bench in the corner opposite the entrance door with a wooden medicine cupboard above.

The western bay was the carthorse stable, much simpler in fittings but with all the basic necessities for working horses. The wide entrance door is set in a heavy timber-framed opening and high up to the right of it is a vent in the wall. West of the door there was a window, now bricked in. A continuous feed trough on the rear wall has rings for five horses with no

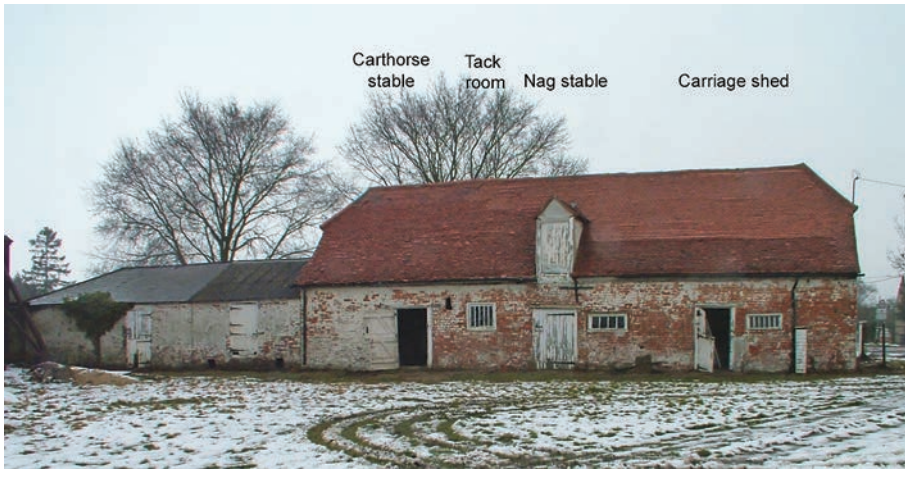


FIGURE 7: The stable range on the north side of the farmyard

FIGURE 8: The fittings in the carriage horse stable

FIGURE 9: West end of the stable range on the north side of the farmyard

divisions between. The hay rack has gone but shadow and fitting positions show where it was fitted above the feed trough. Heavy brackets made from tree branch cuts are fitted to one wall and would have supported the harnesses. Ventilation was provided by an open hole cut into the brickwork to the east of the main entrance door. An unusual feature of this section is a gallery on the eastern side. This was accessed by a door from the hay loft or possibly by a stairs as well, now missing, rising up from the carthorse stable through an area of the gallery floor with a framed opening. The hay loft above these areas was accessed by a high level inward opening door in a dormer set into the roof. The loft has a boarded floor with three access traps to the feed rack below in the stable.

On the outside south wall of the building is a water pump, seemingly complete and encased in a wooden box cover. The pump was fed from a well situated in the farmyard to the south of this building.

It is possible that this building extended further to the west and that the adjoining 19th-century range is a rebuild. At the junction of these two buildings the earlier brickwork is badly finished suggesting that it was broken at that end. The adjoining brick range was probably built about the middle of the 19th century, seemingly being marked on the 1848 tithe map. It consists of three sections comprising a granary, with two dog kennel entrances beneath, a loose box and the Goose Yard. These names are from references on the keys provided

by the previous owner of the buildings. The division walls are unbonded inserts into the construction but appear original. The bricks measure 9 × 4¼ × 2½ins average size and are laid to Flemish bond above an English bond plinth. The roof is of a lower pitch more typical of the 19th century and is of collar purlin construction with a ridge board and the collars mortised and tenoned into the principal rafters. The common rafters, of consistent section, lay onto the purlins that have simple splayed joints at collar positions.

The entrance door to the granary is raised by five courses of brick above plinth level that ties in with the top of the two timber-framed kennel entries, either side of the doorway, giving the normal raised floor found in granaries to deter rodent ingress. Inside the brickwork was plastered as would be expected. All the eaves within the granary were originally infilled again to seal the building against rodents. The floor is modern boarding, 1 inch thick. Its last use by the Marriage family is indicated by a series of item tickets pinned to a nail dating to 1977 for beet pulp nuts showing the milling and feed supply connections. The building has board slots surviving on some walls showing that it was divided for different crops.

The central section of the building is laid out as a loose box with a feed trough in the north-east corner and a white brick paver floor. The brick constructed diamond vent in the north wall was the only ventilation other than unfilled eaves. The next section called the Goose Yard is now open through to the loose box. It also has a white brick floor but set at a slightly higher level than that in the loose box. The eaves areas were again infilled to the goose yard area. The access to this section was from the west with a central door. This leads out onto a brick surfaced area, now in very poor condition, that possibly extended to the edge of the adjoining pond that has a brick revetment, running north–south, with a constructed buttress or possibly steps down into the pond. This would have made a controlled area for geese.

The coach house (Figs 10–11)

To the south side of the farmyard is a building called the Coach House. The eastern section was a brick built carriage house, the centre section an open timber cart lodge, and at the western end is a timber-framed building designated the Cowhouse, with a later lean-to on the western end. The rear wall of the various builds also forms the garden wall of the house.

The much altered carriage house comprises a carriage bay now with sliding doors and an adjoining stable and loose box at the western end. Its roof is well constructed from what appears to be mainly oak timber. The heavy collars are mortise and tenoned to the principal rafters with the common rafters laid onto the purlins. It is typical of the first half of the 18th century and the best roof on the site. It seems to be shown on the 1756 map, and was probably originally built as a carriage building and stable for the earlier 'big' house. It may have been re-fronted in brick in the early 19th century as the brick to the north-west corner changes, with a different brick in the return wall to that on the front wall. The return wall bricks have diagonal pressure marks suggesting an 18th-century date whilst those to the front have horizontal pressure marks suggesting the early 19th century.

Sometime in the later 18th century the building was updated to provide coachman's quarters at first floor level. A stair was constructed, neatly boxed in with 18th-century cock-bead wide boarding leading up to a landing with the closed hay loft to the west and a doorway into a small room to the east. Light was provided by a dormer window. The western part of the building was converted by the insertion of a timber division to make two equal sized loose boxes and a stable which had a pelmet detail similar to those found in the northern range in the nag stable. Above there is a hay loft with loading door set in a dormer.

Linking this building to the timber-framed cowhouse beyond is a cartlodge. It was reroofed in 1842, an event celebrated by a plate mounted in the roof, stating: 'This roof was rebuilt by own craftsmen of elm grown on farm Oct. 42'. This new roof was a nailed truss queen post roof of typical low pitch but covered with plain clay tiles. The rear wall is also rebuilt, possibly at the same time, and possibly increasing its span from the width of the cowhouse to that of the brick build. The upper gable of the building has a good area of pargetted

FIGURE 10: The coach house on the south side of the farmyard

FIGURE 11A and B: The cartlodge roof (a) and the sign (b) recording its rebuild in 1842

plaster left above tie-beam level with a zig-zag design popular in the 18th/19th century.

The timber cowhouse at the west of this range suggests a build in the early 19th or very late in the 18th century. It has a relatively small section primary braced frame, using reused timbers, with infill timbers of varying sizes. The simple collar purlin roof has nailed on collars. The tie-beams have knees bolted to the farmyard face and at the rear, south, the tie-beams sit onto a wall plate on the garden wall. The brick floor has a drain channel running out to the west where it could discharge into a ditch. The western end of the building had been converted to a loose box with a feed trough covering what had been an original entrance through the garden wall. Beyond the west wall, now opened through by the removal of the timber framed wall, was a 19th-century lean-to. This is divided roughly in half with open timber divisions having gated entries to allow sorting and movement between each of the sections. It was possibly for calves.

Beyond the main farmyard to the west are a further series of buildings that show various changes and rebuilding over time. Nothing appears to be earlier than the 18th to 19th centuries. The first is the 'Pig Yard' connected to the centre of the west aisle of the barn. At the north of the site are two shelter sheds with the remnants of another brick building between them, now trapped by a 20th century timber framed and weatherboarded building. The brick building looked 18th-century, and its thick walls could have supported an upper storey. If so it could have been a small malting as the farm had to supply malted barley to Felsted. There is also a building shown on the 18th-century map in this position. The first edition OS map of 1874 shows the yard divisions in this western area with the now truncated brick building having another possible shelter shed running from it to the south. This created the divisions for the pig yard area.

Discussion

This is a very interesting farmyard with many good features. The barn is special in having an unusual layout. The southern brick building is particularly interesting, and the cowhouse could be earlier than suggested if it is the same building that appears on the estate map of 1756. The fittings surviving in the stables and tack room in the north range are good and rare.

The big question relating to the southern brick building is was it originally a service building to the substantial mansion house shown on the 1756 map? Morant had referred to the Parsonage being improved in the period 1726–53 to make it suitable as a 'Gentleman's' residence. As the construction features of this building concur with these dates, it is likely to have been a new service block. This would have held the services immediate to the house with the similar but now

very fragmentary northern building providing another service function, perhaps malting and brewing.

The farming scene in the surrounding lands suggested a mixed farm and the selection of buildings for animals, working horses and the big barn confirm that. The unusual bay divisions of the barn appear to be the answer to a specific storage requirement that could relate to the conditions of the lease. Thus the wheat and barley for the Felsted almshouses could be stored separately. This farm and its buildings show a very long history with remarkably few owners, but, what has emerged from this is a picture of how a property, having an extremely long life under lease, was still improved and new buildings built to suit the changing needs of farming and living.

Abbreviation

ERO = Essex Record Office

Bibliography

Morant, P. 1768, *The History and Antiquities of the County of Essex*, vol. ii (London)

THE LISTED BARNS AT COLEMAN'S FARM, THEYDON MOUNT

Brenda and Elphin Watkin

Introduction

This farm complex was looked at for the owners, the Crown Estates, prior to residential conversion. The survey was limited by the extremely limited access to most of the buildings. None were in current farm use. The south barn had lost the main roof, the interior was filled with clutter, and the lean-tos were so dangerous that one was not entered. This report describes the barns as they were in 2009. Residential conversion did not take place until 2014.

It sits in a shallow valley with a tributary of the River Roding stream running to the south (map ref: TQ 4948 9972). Theydon Mount church is about a quarter of a mile south-west of the site and Hill Hall a little further away to the west. Coleman's Farm was part of the Hill Hall estate and was previously known by the names of Theydon Farm or Mount Farm at various times. Mention of the farm appears in the records of the Smyth Family of Hill Hall. Although they incorporate reused earlier material, the main farm buildings all seem to derive from the late 17th through to the 20th century.

The earliest map showing Coleman's is a 1657 estate map of the parish of Theydon Mount when it was a small freehold within an area mainly controlled by the Hill Hall estate. In poor condition, the map shows no visible farm buildings but three tenements, the largest being the house that survived to the late 19th century, situated to the south-east of the present farm buildings, and two smaller cottages to the east in the region of the present more modern cottages.

The tithe map of 1838 shows the house with a range of buildings running to the north and buildings approximately on the line of the ranges considered in this report. The 1st edition Ordnance Survey map, surveyed in 1872, shows the house in the same position with the accompanying buildings to the north. Almost all the farm buildings considered in this survey appear on this map. By the time of the 2nd edition of the Ordnance Survey of 1896, much had changed with the removal of the house and the buildings to its north but one southerly extension from it is still shown. The new house is shown in the field to the north of the farmyard as it is today. The brick stable considered in the report had now been reduced in length to its present size (Fig. 1).

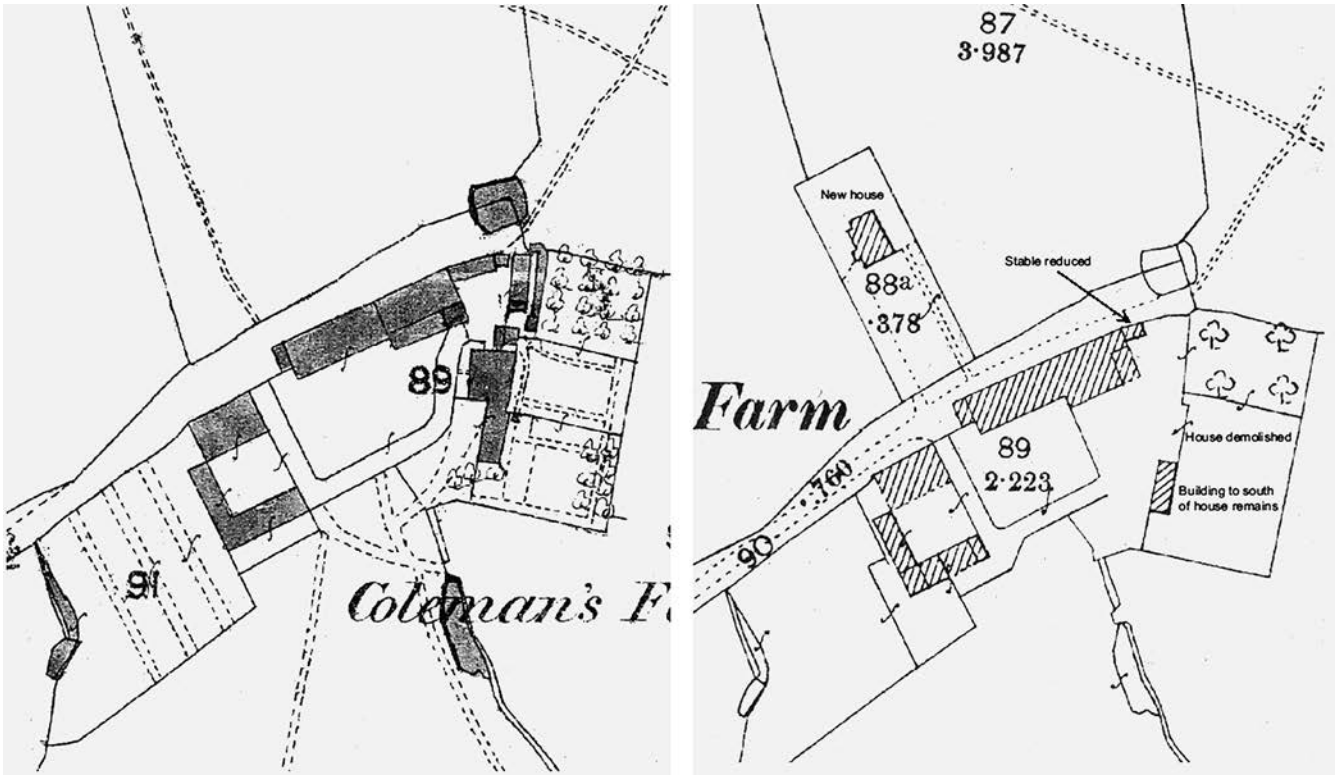


FIGURE 1: Coleman's Farm from the 1872 (left) and 1896 (right) OS maps

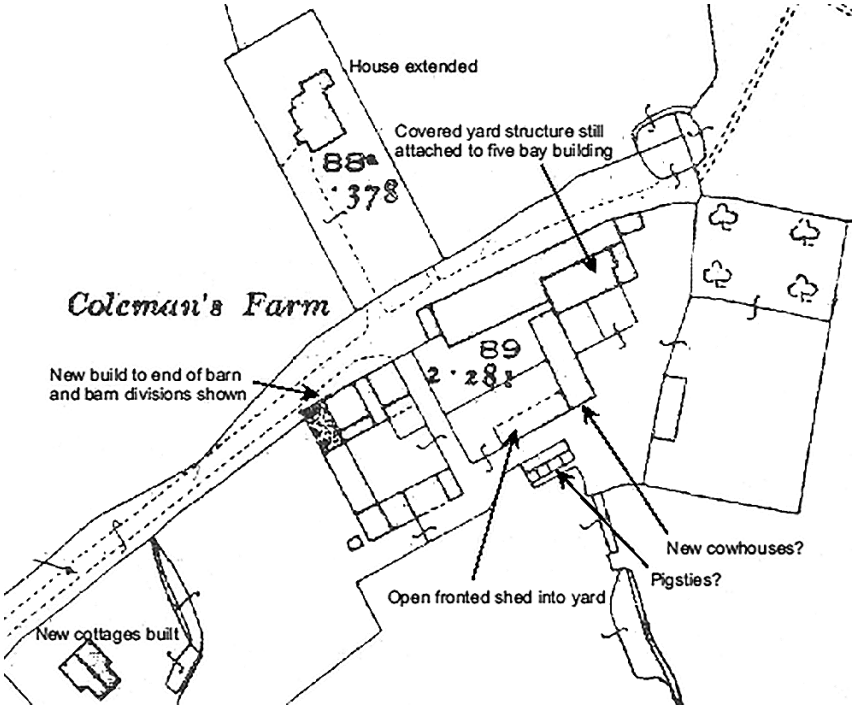


FIGURE 2: Coleman's Farm from the 1922 OS map

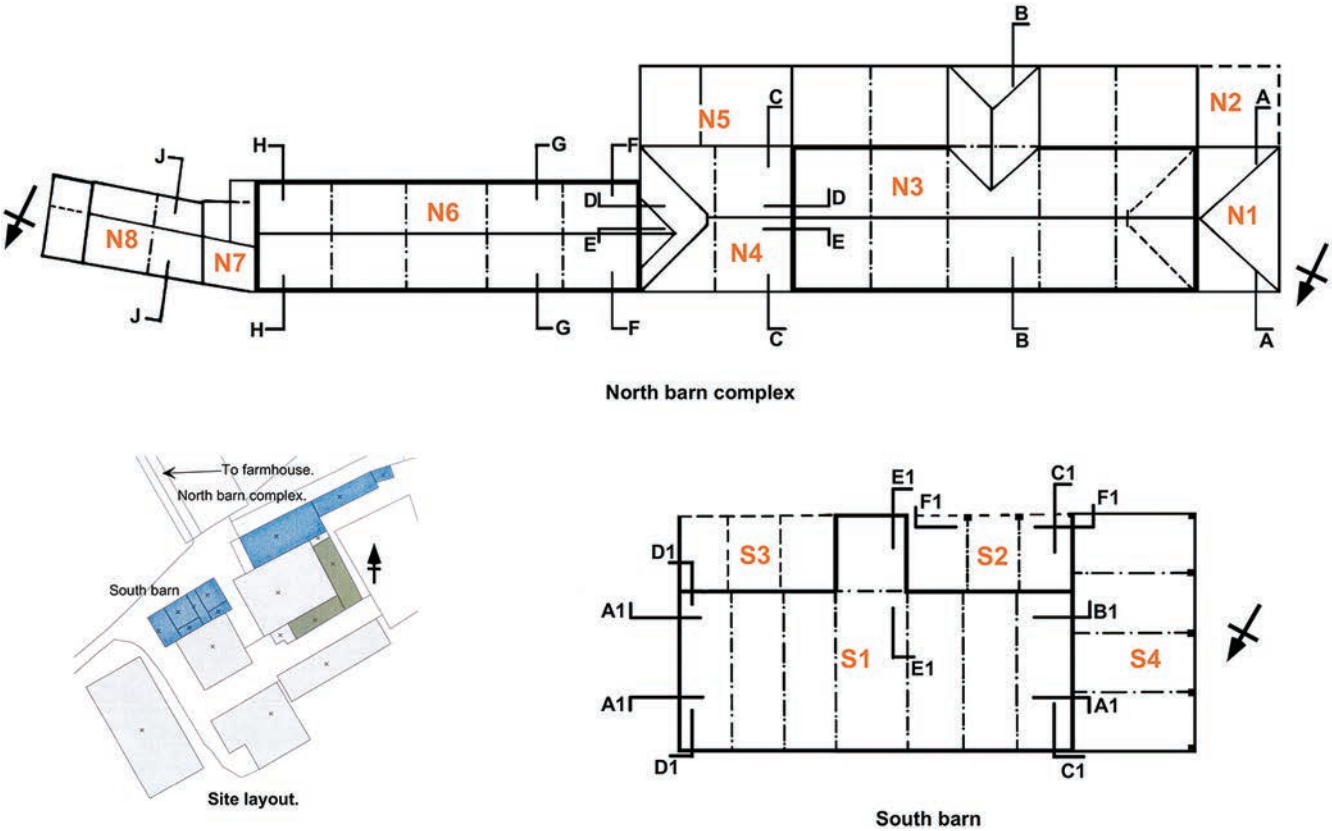


FIGURE 3: The barns at Coleman's Farm

The 1922 OS map shows additional buildings covering the line of the stabling block in an L form running to the south-east, almost certainly milking parlours, and open shelters to the yard. It also shows the lean-to building, S4, possibly the engine house listed in the 1949 sale document. With the stables this western farmyard and barn formed an enclosed yard running south from the south barn. The map also suggests that the central bay of the south barn with its porch, by then most likely with its raised roof, was used as a hay store to feed the horses (Fig. 2).

This farm shows very unusual development especially in the relationship of the original house to the farm buildings. It appears to start as a very small holding most likely concentrating on dairying that in less than three hundred years had grown ten times and was still in the main a dairy based farm. However, in the last fifty years it had changed to

an arable based farm with the addition of many new buildings wiping away much of the past history. The land holding in 1949 amounted to about 297a.

The South barn (S1)

This is a typical late 18th- or early 19th-century corn barn of seven bays, built on a brick plinth with small buttresses at intervals. It was clad in weather boarding and originally had a tiled roof. Map evidence suggests it is not on the 1838 tithe map but it appears by the time of the OS map of 1872. This would make it a mid 19th-century barn with a half hip roof and wedge tensioning of the king-post trusses.

The less common feature is the porch, facing south-east, always a low opening with open shelter lean-tos (S2 and S3) to each side and one common roof over the full length. This roof pitches from the rafter plate above the wall-plate of the main barn to the wall-plate above the open front with one purlin supported by a strut from the bay tie-beams. In the 20th century the porch was modified to increase its height to within about one foot of the main wall height of the barn (i.e. to level with the main frame wall plate) in order to construct a gabled roof from a wall frame built up from the original porch side timbers. Only the interior of the porch was increased in height; there was no provision for having high doors fitted. This suggests there may have been an inserted floor for the high level storage of threshed grain or maybe a hay store for the then adjacent stables. The north-west side of the barn has no porch, but that there was a high doorway is shown by the increased section of wall-plate over this opening to provide the strength to span the open area.

All the timber wall framing is of a consistent style with primary bracing to the upper half of each bay mortised to the main timbers but not pegged. The studs are mortised to the plates and mid rail but not pegged. Where they meet braces they are nailed to the brace. Many of these studs, as with much of the main framing, are re-cut earlier timbers. Where scarf joints have been required in the plates they are of edge halved and bridled type with on average four iron spikes holding them together (Fig. 5).

The roof had failed and been cleared down to wall-plate level. It comprised softwood trusses typical from the later 18th century, with a deep rectangular section tie-beam set onto the wall plates with a bare-faced dovetail joint with iron straps saddled and spiked to the wall-plate. The trusses have a central shouldered king post with a slotted top to accept the ridge board; the shoulders to each side are mortised at top and bottom to accept the principal rafter and at the bottom the angle strut that met the principal rafter at the side purlin position. None of the mortise and tenon joints were pegged. The king post was attached to the tie-beam by an iron stirrup set under it with legs up either side of the king post, and wedge tightened by opposing iron wedges through a slot in the king post that were locked by turning over an iron strap set between the wedges. The tie-beam to principal rafter joint was locked with a through iron bolt. The trusses have joints marked with chiselled carpenters marks numbered from south to north, I–IV (Fig. 6).

The end walls were constructed as half hips giving the original stability to the roof; one half hip partially survived laid down flat onto the truss at the eastern end. The softwood rafters were notched at their lower ends over a rafter plate set above the wall-plate by vertical timber spacers. This design allowed a standard rafter to be laid over the purlins and then be nailed to the rafter-plate and ridge board without having to either set the tie-beam lower down or have oversize principal rafters to allow the purlin to be cut into them.

The north-east bay was separated from the main barn by a concrete block cross wall that had two in-line concrete spine walls to the end of the barn. A 1949 sale catalogue shows that they were originally built to form three concrete storage bins. An early 20th-century lean-to implement shed (S4) clad in corrugated sheeting was added to the south-west end of the barn extending the full width of both it and the lean-to on the south-east side.

The lean-to 'S2' was built with an open front but has mortises in the posts to accept rails suggesting it may have been used for animals at some period. The lock-bar mortises had then been partly filled at a later date making any horizontal rails permanent. No rails survived. The front wall-plate had Samson plates under it at each bay post, their outer lower corners relieved by large hollow chamfers. As with the main barn much of the new timber is imported softwood as evidenced by shipping marks. The lean-to 'S3' was not examined due to its overgrown and dangerous state, but it was also open fronted and structurally identical to S2, though it was shown as a loose box with small yard in front on the 1922 map (Fig. 3).

North Range

This long range of buildings comprises builds from many periods, all timber-framed except for the most northerly building that is of brick. The builds will be discussed as units commencing from the south (Fig. 3).

N1 is a timber framed extension almost totally in reused timber to the southern end of the north barn, little more than the addition of a hipped end to its gable end. It is shown on the 1872 OS map. A high narrow building, it was most likely a high clearance implement shed. This type of building was being incorporated into existing buildings by often just partially raising the roof level to accommodate such items as threshing machines or even in some cases steam tractors. The north-west end may have had high level doors. Behind to the south-east, there is a small flat roofed building N2, which was not examined as part of this survey.

The north barn designated N3 is engulfed by the previous buildings to the south and another added building, N4, to the north. N3 is a five-bay barn with midstrey and lean-tos to the south-east. The roof was originally built with full hipped ends having small gablet openings but that to the south-west was converted to a full gable wall when the extension N1 was built on to it (Fig. 7).

Its timber frame is mainly new oak with some elements re-cut and re-used from a previous building. The structure is primary braced to the upper half of the wall frames, with bracing set at a very flat angle suggesting a date in the later 17th century. The timber sections are relatively large and the corner posts have jowled heads. The substantial tie-beams have arch bracing, some of which is replaced by straight braces nailed into position. The principal rafters all contain mortises for wind bracing, although no evidence could be found for them being fitted as no fixings can be found on the outer faces of the purlins. This could point to the principal rafters being

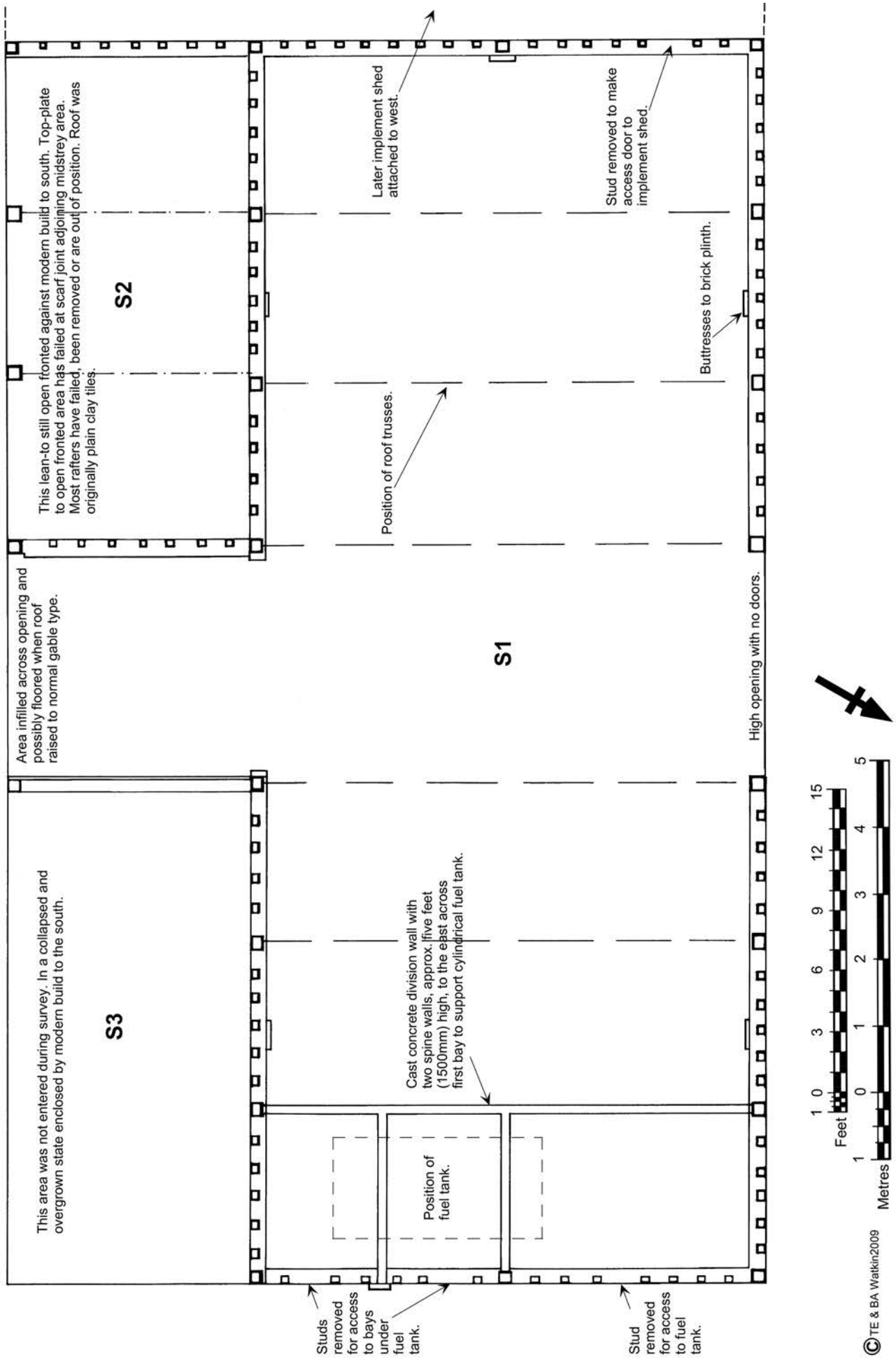


FIGURE 4: Plan of the south barn

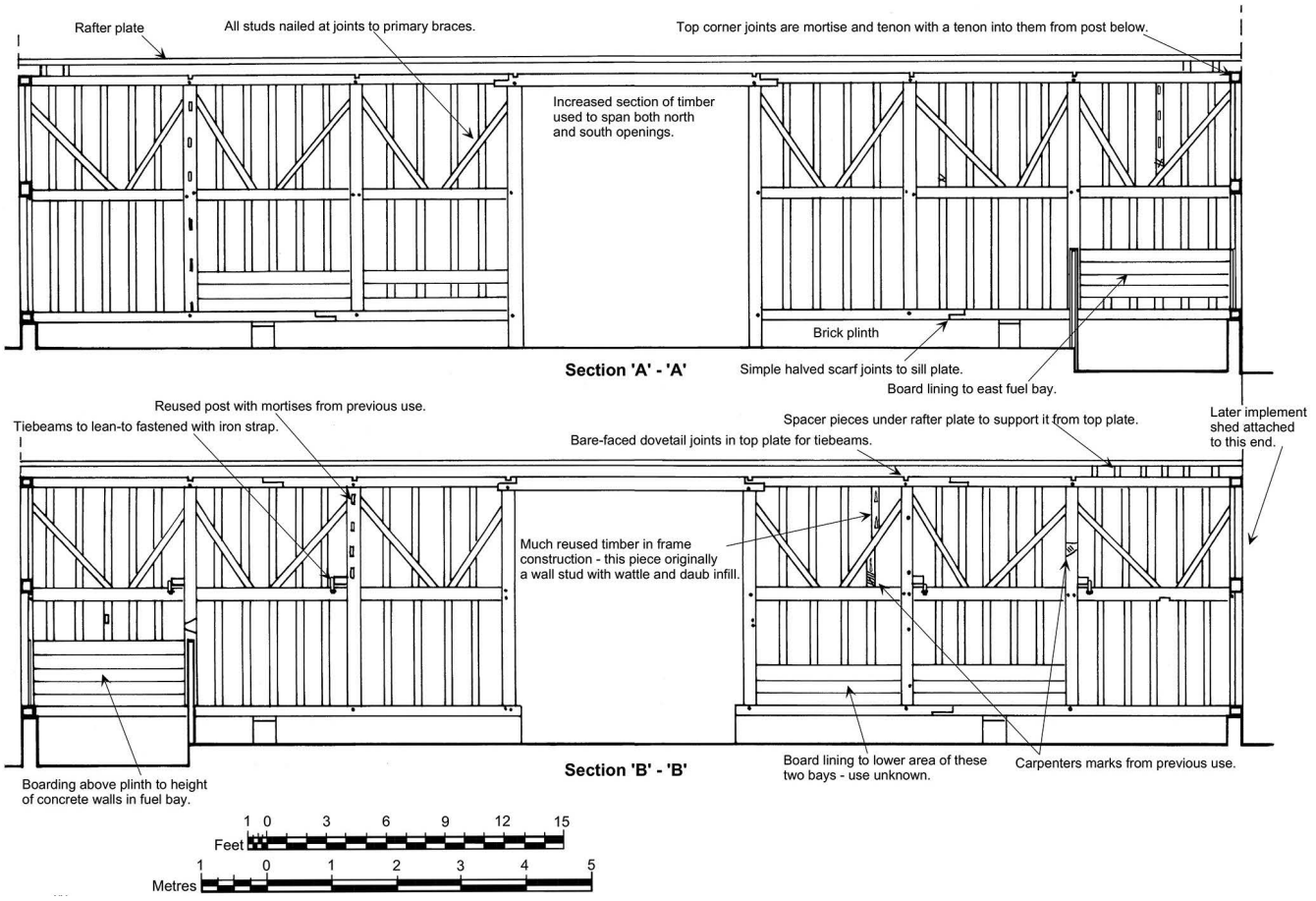


FIGURE 5: Long sections of the south barn

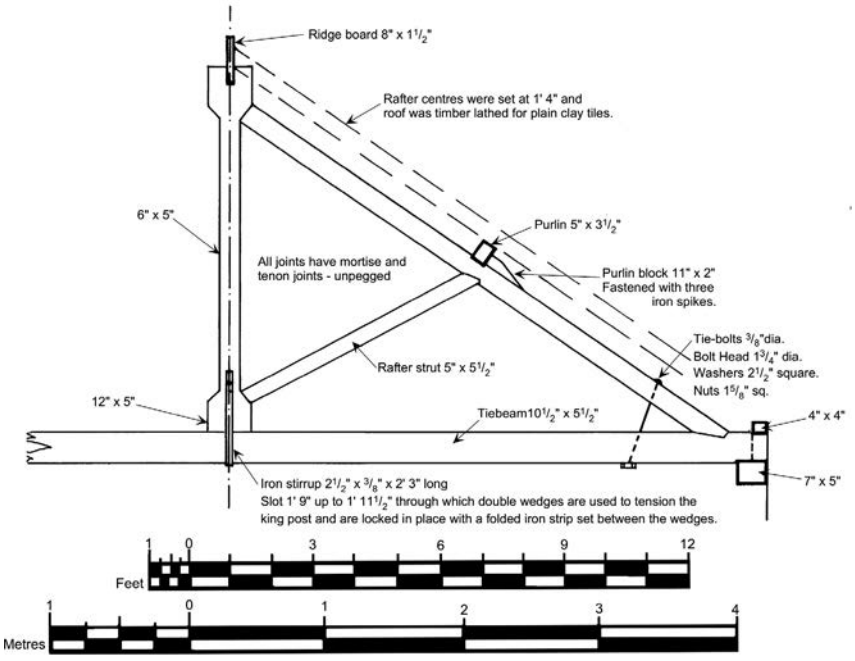


FIGURE 6: Reconstructed roof truss of the south barn

reused from a previous building, or a major rebuild of this barn roof that could also explain the variation in the arch braces and the common rafter spacing. The visible tie-beams showed a combination of methods of conversion. Where much wood was to be removed the faces are sawn. When this reduced sufficiently to make sawing difficult the conversion was finished with an axe. This method has been seen on various 17th-century Essex buildings, one example being tree-ring dated to 1623. The visible carpenters' marks are chiselled and the bays are marked I–IIII reading from south-west to north-east.

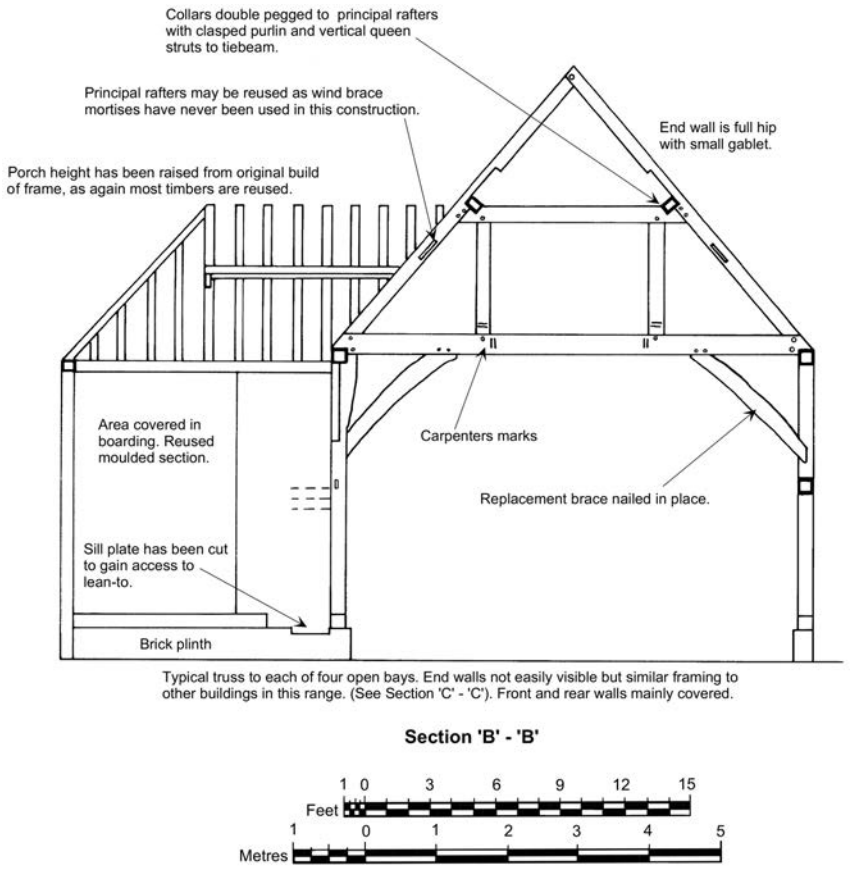


FIGURE 7: North range, barn N3

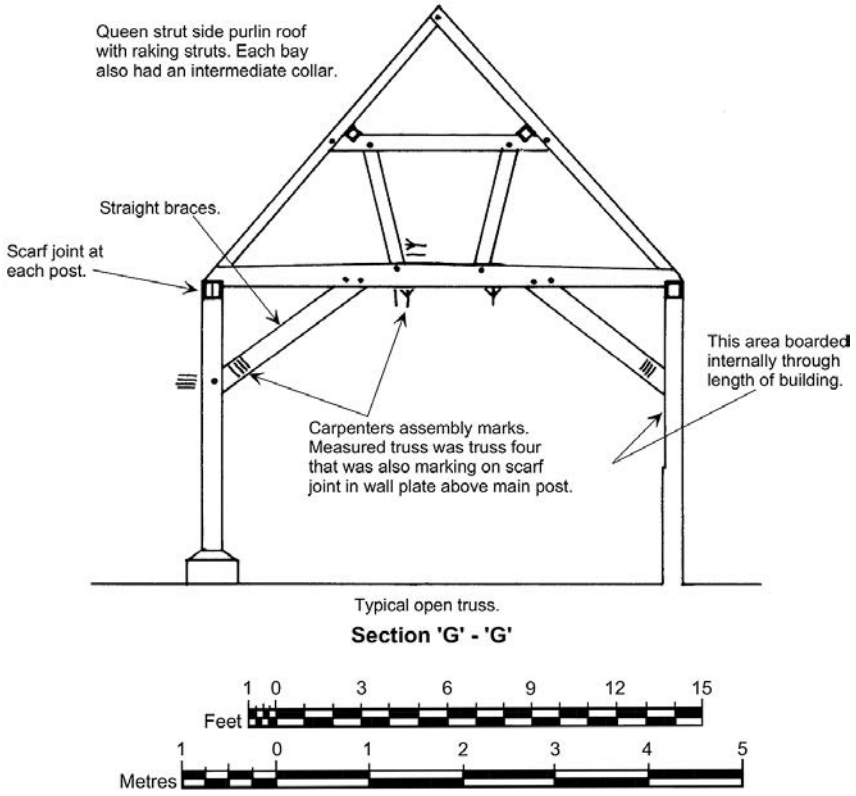


FIGURE 8: North range, barn N6, typical section

The principal rafters are only reduced in section for a sufficient distance to allow the insertion of the side purlin between collar and rafter. The main roof structure is queen strut with vertical struts to the underside of the collars that are mortised and double pegged to the principal rafters. Intermediate collars with bird's mouth joints to the purlins are set between the collars. The midstrey to the south-east appears to be a later addition as evidenced by empty mortises to the

underside of the wall plate and mortises for a mid rail to the central trusses echoing the north west opening.

Attached to the south-west of the building, to either side of the later midstrey, are lean-to extensions. A mixture of new and reused timber, and some softwood, suggests a late 18th- to early 19th-century date. The tie-beam to the northerly lean-to also has graffiti with dates from 1793 to 1805 distinguishable with various initials. The southerly lean-to appears to be later as the timber to the roof is of more consistent sawn section suggesting the second half of the 19th century. No suggestions are offered for original use but the remnants of double wall lining may be for granary storage.

Between the barn N3 and the next main building N6 to the north, there is an infill building N4 with a rear outshot N5 to the south-east. Much reused timber is again evident and although many rafters were new they are in many cases not much more than triangular sections as a small tree has been quartered to produce four rafters. They are supported from a side purlin truss where the collar is nailed to the principal as are the raking struts to the tie-beam. Weather boarding to the rear south wall suggests that the outshot was a later addition, the roof of which has commenced part way up the main roof with cripple pieces supporting it from the rear wall-plate. The front wall has a low wide double door opening with doors that again suggest a late 18th- to early 19th-century build date. A later high window has been cut into the front wall that has severed one of the primary braces to the wall-frame. The primary braces are set at a steeper angle than in barn N3 and would suit the above date. In the north-east corner is a doorway that leads into the end bay of unit N6. Although a secondary feature it may be more original to that building than this one. The rear out-shot N5 is divided into two sections both of which could be accessed by doors cut into the rear wall of N4.

Building N6 was a five-bay barn possibly without porch, but as it is relatively high to wall-plate level, it could well have had high doors at least to the south-east. Narrower than the linking buildings to the south-west it has a queen strut roof with vertical or slightly raked queen struts from the tie-beams up to the collars at each bay division. The tie-beams are each from one tree with axe conversion and appear to be using an upper part of the tree with much shape and section variation. The collars support the side purlins for the roof. No visible signs of wind bracing to the principal trusses was evident but later long wind bracing had been nailed to the underside of rafters. Intermediate collars were or had been fitted approximately central to each bay unit (Fig. 8).

The gable walls at each end have primary bracing. The south-east walling has been removed from all five bays with concrete block walling and stable doors built into the south easterly three bays.

The long north-west walling is clad both outside and inside with no part of the frame visible. The wall-plates have full face halved and bridled scarf joints mainly set at bay divisions, each still showing carpenters' assembly marks. The timber is mostly axe converted and again much earlier timber has been reused in the frame construction. Details suggest that this could be a late 17th-century building utilising much timber from a possible 15th-century building having a crown-post roof. Timber reused in the wall-plate can be seen to have come originally from a building with diamond mullion windows and large section wall studs. Further timbers with chamfers and stops that end well before the end of the timber maybe from floor joists to a jettied floor. This all suggests that it may have been a domestic or public building rather than a farm building that had been taken down sometime prior to this build. No detail survives to show how this building was used other than for storage.

To the north-east of building N6 is a link building designated N7 between it and a brick building N8 that completes the northern range. This final building N8 raises many questions. Initially it appears to be a two-bay stable well built in brick with a brick on edge floor set to provide drainage channels. The wide doorway supports this argument. But, when examined more closely the exterior wall to the east can be seen to be an infill wall set under a bay tie-beam, with later brickwork filling the area above the tie-beam. This must have been added when this wall became an outside wall, the outside view of the tie-beam area being marked by brick on edge enclosing that timber. The eastern end of the north wall is broken and the ground area beyond shows building remains confirming that the building continued for at least one more bay to the east. It may also be suggested that the same happened at the west end as it is finishing at a wall buttress with no sign of a return wall. At the south-west corner of the building the wall finishes as broken brick against the opening to N7. If so it could be suggested that the timber end wall does in fact relate to building N8 as a division wall rather than to the infill building N7. Within the surviving brick walls lacing pieces are set for the normal protection boarding usually found in stable buildings. The axial stall division is well made in timber with a diamond mullion vision area above for about four feet other than in the area of the feed troughs where it is fully boarded. The tie-beam over the brick division wall has a harness bracket board still in place for six brackets.

This building could originally have had a feed bay or similar to the west and maybe another two stalls to the east. The first edition 1872 Ordnance Survey map shows this range and it possibly confirms that it was two bays longer to the east and the west finished against the end wall of building N6. By the second edition in 1896 it had been reduced to the present size. The reason for constructing N7 is unclear other than maybe to make a covered lodge for a small wagon such as a light pony trap.

Conclusions

This farm complex has undergone many changes and shows an unusual layout in that the earlier buildings were being developed more or less in a line rather than as a farmyard layout. The large area of modern build and the addition of the stable complex may have obliterated clues to the early layout of this farm. The 17th- and 18th-century visible work is typical of that found on many large estate farms, with quick changes to farming practice especially through the 18th century. The south barn was possibly built in response to the surge in corn prices due to the Napoleonic wars if in fact it was built at the end of the 18th century. This survey was made extremely difficult, and, in many parts impossible, due to the transfer of use from farming to other occupations and the close proximity of the later build in the farmyard blocking access to parts of the earlier buildings.

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Heybridge Hall and the Freshwater Family

Kevin Bruce

INTRODUCTION

In the 1998 volume of *Essex Archaeology and History*, David Andrews provided a detailed assessment of Heybridge Hall's structure (Andrews, 1998). It was described as a 14th-century hall, with a 15th-century cross-wing and later significant work of the 16th and 17th centuries. This article examines several documentary sources that complement the structural assessment.

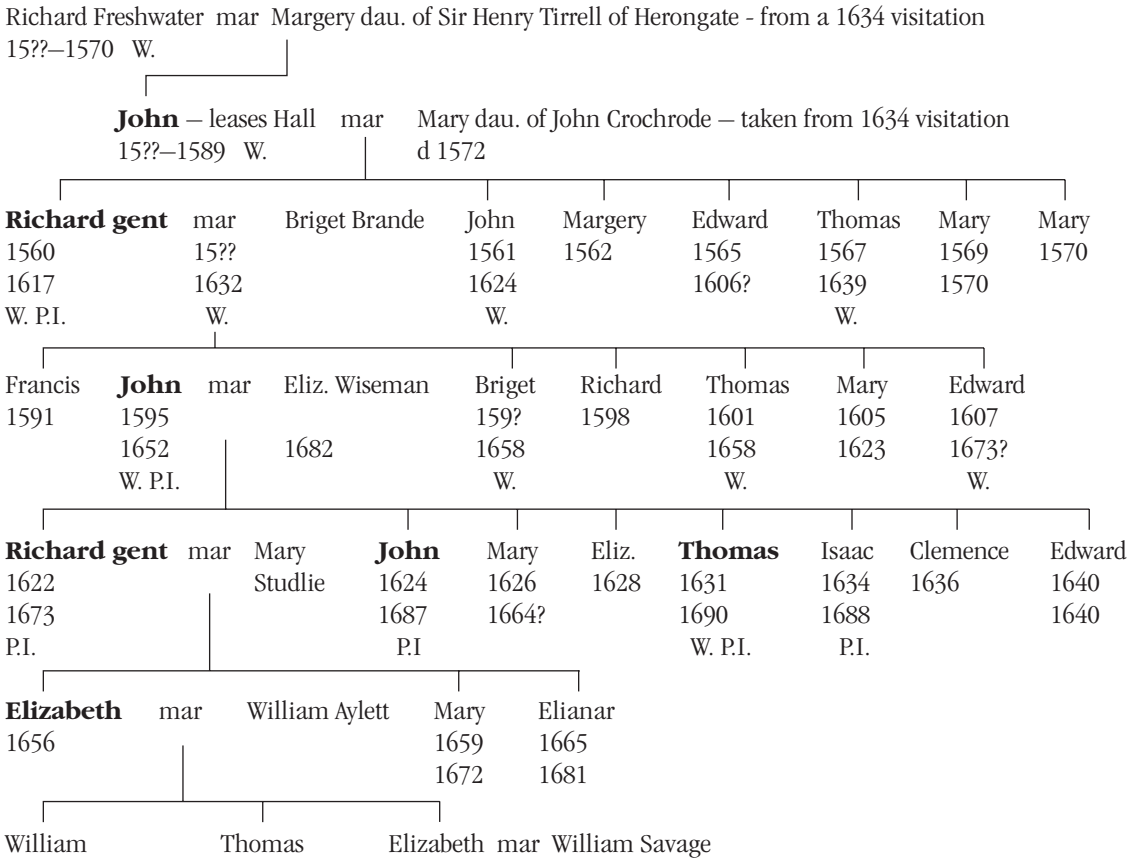
THE DOCUMENTS

As Heybridge Hall was one of the manors of St Paul's Cathedral, documents have survived that are not frequently found for other parishes. In addition, many documents relating to the Freshwater family of Heybridge survive at the National Archives. Of most value for this study are probate inventories, five of which relate to the Freshwater family of Heybridge Hall, for 1617, 1653, 1673, 1687 and 1690. A sixth inventory of 1688 also exists for a member of the family in Heybridge and may be connected to the Hall. There is a further inventory for 1700 for a John Nicholls of Heybridge Hall which suggests he was leasing part of the building and farming the lands. The 1653 and 1690 inventories are unfortunately badly damaged and cannot be fully transcribed. There is also a Parliamentary Survey of the manor for 1649 which provides a brief description of the Hall.

THE FRESHWATER FAMILY

The Freshwaters had become a well established Heybridge family in the 16th century with the name having been recorded from the 1530s. The earlier family centre was in the Tollesbury area.

In 1570 Richard Freshwater of Heybridge, yeoman, bequeathed £131 13s. 4d. in money, principally to the six children of his son John, but also in livestock. This came to a total of thirty-five cattle and 147 sheep, though the children would only receive these at age 21, so the distribution would have been spread over a number of years. There were bequests to the poor of the parishes of Tollesbury, Goldhanger and Heybridge (TNA, C 108/15). It was his son John, who had earlier obtained a 99 year lease of Heybridge Hall in 1564 at £50 p.a. In 1569 Richard had assigned all his property over to



Key
W. = Will
P.I. = Probate Inventory
Names in Bold Type indicates descent of Heybridge Hall.

FIGURE 1: Freshwater Family Tree

John (TNA, C 108/15). It is not known if Richard resided at the Hall.

John's will of 1589 also describes himself as a yeoman (TNA, C 108/15). His monetary bequests only came to £66 17s. 4d. of which £60 was for his two daughters. The rest was to the poor of Heybridge and Tollesbury, three servants, and a few neighbours. His son Richard was his principal heir and he took over Heybridge Hall and the manor. The other three sons each received a customary property but no money. John had Parkmans in Heybridge, Edward a tenement in the occupation of widow Ranke in Goldhanger, and Thomas Freshwater had Hearmans grove in Heybridge and 'all the fore cropp of one acre of meadowe called Snt Catherines Acre, lying in the Comonmeade, nowe in the occupyinge of me the said John Freshwater.'

The earliest probate inventory lists the goods of Richard Freshwater, described now as a Gentleman, room by room, following his death in 1617 (TNA, C 108/15). Fifteen separate rooms are recorded. They are listed as follows with an indication of the nature of the room's use based on the description and the contents listed :

The hall, containing tables, seating and a fire place
The great parlor containing the dining table, etc, and a fireplace
The little parlor containing beds and a fireplace
The lower Parlor containing beds
The chamber over ye dyninge Parlor containing a bed and a fireplace [Over the 'great parlor'?]
The greene chamber containing a bed and a fire place, plus a tapestry
The gallery over ye greene chamber containing beds [an attic?]
The little chamber at the Stayers head containing beds
There were four other little chambers containing one, two, three and four beds each. One was by the kitchen
The Kitchen containing a fireplace
The buttery
The boulting house

The total value, which included all the live and dead stock, plus the value of two leases, was £1385 19s. 4d.

Richard's will records his wife Brigett and five living children, also his two brothers and a brother-in-law (TNA, PROB 11/132/534; TNA, C 108/15). He appears to have considerably increased his family's fortunes. His total bequests amounted to £2320. These bequests would have been spread over a number of years as his children came of age. His son John inherited Heybridge Hall and the manor.

Richard wished his son Thomas to become an apprentice in London and bequeathed £50 for this. His son Edward he wished 'shalbe brought upp in Learning by my sayde executor if he will bee perswaded thereunto and continue in learning untill hee shall be made fitt to goe unto the University of Cambridge or Oxford'. But, if he wished to transfer to one of the Inns of Court in London, he would be allowed £40 p.a. for this. He was educated at Maldon under Mr Danes before going to Cambridge and later become a lawyer at Lincoln's Inn following in the steps of his uncle Thomas Freshwater (There is a splendid monument to Thomas and his wife Sarah in St. Andrew's Church, Heybridge). His son Richard was to receive £500 and his daughters Bridget and Mary £380 each, plus £20 which their grandfather had earlier bequeathed to them.

The only reference relating to Heybridge Hall is the provision he made for his widow. Bridgett was to be provided with a room for her use and accommodation for a maid and manservant. She was also to have her own 'milche kine' and two horses, firing, beds and bedding. She made her will in 1632 from which it is clear that she occupied the 'Green Chamber' during her widowhood (TNA, C 108/15). The 17th-century extension may well have been erected for Richard and Bridgett's private accommodation with its own stairtower.

The total number of beds listed in 1617 in the ten rooms containing beds was eighteen plus two 'trundle' beds which could be stored under the main bed during the day. They might have been occupied or just 'put-u-up' beds. Servants' rooms are not specifically mentioned as in the later inventories but the two chambers containing three and four beds probably equate with these. Six rooms including the kitchen had fireplaces.

In addition to the direct family, there may have been accommodation for aunts, uncles and in-laws. Richard and Bridgett's daughter Bridgett died a 'singlewoman' in 1638 and her bequests did not include property (TNA, PROB 11/253/519; TNA, C 108/15). She may have been a maiden aunt residing at the Hall. From time to time the occupier of the Hall would also have had to entertain visitors, particularly relations and officials from St Paul's Cathedral. Between 1585 and 1596, nine poor people were recorded in the burial register as having died at the Hall including a boy who died in a barn. It was almost as if Richard Freshwater took poor folk in at the Hall (ERO, D/P 44/1/1).

The parliamentary survey of 1649 (LMA, CLC/313/L/F/012/MS25631), during John Freshwater's occupancy, describes the hall thus:

> 'All that Mannor house and Mansion place wth the scite thereof Consisting of a Hall, two Parlors, a kitchen, a Butterye, a Sellor, and 7 Chambers over the said roomes wth a Studdye, a Dayrie house, a Brewhouse, two Barnes, two Stables, a Swynarie, a Malt house, a Dove house wthout any Doves, and other out houses : a Fouldyard, a Garden plot & 2 Orchards.'

This appears to equate to the inventory of 1617, the study being a possible addition unless it was a conversion of a chamber. The cellar was also a new item making fourteen rooms plus the dairy and brewhouse.

When the Dean and Chapter of St Pauls were forced to sell all their properties by the Commonwealth Government in 1649, John purchased the manor from them for £1423 7s. 8½d. On the restoration of Charles II, the original lease of the manor was handed back to St Paul's and a new lease for 21 years was granted in 1662 (TNA, C 108/14).

John Freshwater, esquire, died in 1652 but his probate inventory dated 1653 is too damaged for full analysis (TNA, C 108/15). Because of the damage, it can not be said with certainty how many rooms existed then but eleven can be made out though not all their names. Newly listed since 1617 were the dairy, cheese house and brew house. The total value was £1432. He bequeathed £1400 to three of his children and made arrangements for others to receive property or income from property. Richard Freshwater, his son and heir, inherited the estate and Hall (TNA, PROB 11/225/262).

When the new lease was granted in 1662, it was to Richard's uncle Edward Freshwater, the lawyer, who appears

Heybridge Hall Rooms	1617		1649	1653 incomplete	1673		1687		
Room		**Beds**				**Beds**		**Beds**	
Hall	F		F	F	F		F		
Gt Parlor	F		F	F	F		F		
Little Parlor	F	1 + T	F	F	F	1	F	1	'Lt Parlour Chamber' in 1673
Lower Parlor		2			F	1	F		'Commom Lt Parlor' in 1687
Buttery									
Boulting House									
Kitchen	F		F	F	F		F		
Lt Chamber by Kitchen		1				1 + T		2 + T	
Green Chamber	F	1	F	F	F	1	F	1	
Yellow Chamber			F	F	F	1	F	1	
Chamber over Dining Parlor	F	1						1	'Chamber over ye Parlor' in 1687
Stairs Head Lt Chamber		2				2 + 2T		2	
Gallery over Green Chamber		2							
Garret Chamber			5			1		2	
Lt Chamber		1 + T	other						
Another Lt Chamber		3	rooms						
Maids Chamber						3		3	
Another Chamber		4							
Men Servants Chamber						3		2	'Folks Chamber' in 1687 & mentions a 'dining room'
Lt Parlor next Kitchen									
1st Closet in Kitchen Chamber									
Another Closet in Kitchen Chamber									
Chamber over Boulting House						1		1	
Chamber over Entry						1			
Study									
Back Room to Study									
Cellar									
Larder									
Wash House									
Dairy House									*KEY*
Cheese Chamber									Room with Fireplace F
Chamber next Cheese Chamber									Room Present
Brew House									Trundle Bed T

TABLE 1: The rooms listed in the 17th-century probate inventories

to have been acting for Richard. Dove houses and a moat are mentioned in this lease (TNA, C 108/14).

The inventory of 1673 is for Richard Freshwater, Esquire, John's son and heir, and lists all of the fifteen rooms recorded in 1617 plus several extra rooms (LMA, CLC/313/K/C/19504/18/06). Twenty-nine are named but several are probably separate from the house. Even so, twenty-three could have been in the one building. John, having obtained ownership of the Hall between 1649 to 1662, this might have given him the opportunity to extend or alter the building during this period.

In 1673 there was a 'yellow chamber' which contained a yellow rug as part of the bedding. This is most likely the 'chamber over the dyning room' of 1617 as this also contained a fireplace and can not be found by that name in later years. The room also had 'a window with ye hangings abt ye roome'. There were several stools and three chairs, and a carpet.

There were also a maids chamber, men servants chamber, a garret chamber fairly comfortably furnished, a chamber above the entry, the little parlor chamber with beds, a kitchen chamber with beds and fireplace, a first closet and another closet in the kitchen chamber used for storage, and a chamber over the boulting house. The stair head chamber is again listed as in 1617, and the study as in 1649. There is also a room behind the study. The study contained a writing desk and a 'hanging cupboard wth his library', and a 'great trunk', which very likely contained many of the documents now housed at Kew.

In addition to the rooms recorded in 1649 we find a larder, a cheese house, a chamber next to the cheese house, a wash house and a corn chamber. These are more likely to have been external to the main house. In 1673 there were then eleven

rooms with beds containing fifteen bedsteads and three trundle beds. The bedrooms had increased by one but there were three less main beds. Seven rooms then had fireplaces with the 'lower Parlor' having apparently acquired one if the 'Lt Parlor Chamber' of 1673, and the 'Common Lt Parlor' of 1787 refer to the same room.

Richard died intestate so we only have the inventory. His widow Mary accused her brothers-in-law John and Thomas Freshwater along with Samuel Hall, possibly the family clerk or agent, with having entered the study and other rooms searching for and removing the will and other documents. They denied this (TNA, C 108/15). The total value of the estate was then £2649 0s. 4d. His administrator, his brother John Freshwater, records £2959 paid out to family members and several other persons. This included £120 paid to his mother but it is not known where she was living at that time. She was recorded as of Maldon in a 1655 agreement for her support (TNA, C 108/15). He also listed in addition sundry debts of about £200.

A separate account of these monies paid out identifies three female servants, seven male servants and a further eight males, surname only, described as Richards's servants and workmen. The women most likely lived in the Hall but we can not tell how many male servants resided there. This list also identifies the names of several tradesmen and their occupations to whom Richard owed money. His apothecary was a Mr Pond to whom he owed £2 6s. 6d. He also owed Mr John Laseby, vicar of Heybridge, £4 6s (TNA, C 108/14). Maura Benham in her book on Goldhanger, says that Laseby resided for about eighteen years with the Freshwaters while vicar (Benham 1977), but in 1662 and 1670 he is separately assessed for four hearths in the Hearth Tax.

The debts also included ten shillings due for unpaid Hearth Tax. In 1662 there were ten hearths listed for Richard Freshwater, gentleman, and in Heybridge in 1670 for 'Freshwater gen' twelve and for 'John Freshwater gen', five hearths (Ferguson, et al. 2013). The number of hearths is nearly twice the number of fireplaces within the Hall so the others must have been in the out buildings, a point worth noting in the interpretation of Hearth Tax records. Isaac Freshwater had four hearths in St Mary's parish in Maldon in 1670.

Richard had died after suffering a 'fever' for some days. His widow Mary also had a fever and said that she was 'extreamely sicke and in miserable paine an soe much that it was despaired of [her] Life', so she had agreed with her brother-in-law John for him to take on the administration of the estate. Mary survived and then claimed that John and his brother Thomas had cheated her and her two daughters of the estate (TNA, C 108/14). Mary was not able to recover the estate and so the Hall passed to John. He did though enter into a bond with Mary, to ensure payment of £250 each when her two daughters came of age or marriage (TNA, C 108/14). Her daughter Elizabeth married William Aylett of Great Totham.

In the 1687 inventory for John Freshwater, Gentleman (LMA, CLC/313/K/C/19504/36/61), some of the rooms are no longer listed, i.e. the little parlor and its chamber but instead there are the further and common little chambers which might be the same. The little parlor next the kitchen, one of the kitchen closets, the chamber over the entry, the cheese house and its chamber, and the buttery, in all previous lists, were no longer recorded. There were then ten rooms containing sixteen bedsteads and one trundle bed. Seven rooms appear to have had fireplaces.

John's brother Thomas then took over the estate but he only survived until 1690. The first sections of his probate inventory containing the details of the hall itself are unfortunately missing having become detached and lost (TNA, PROB 4/20153).

Due to the nature of probate inventories, there had to be items of value in the rooms for the rooms to have been listed. The absence of some rooms in 1687 might be explained by that, or that they had ceased to exist. On the first reading of these inventories it appeared as if Heybridge Hall had been extended between 1649 and 1673 because of the increase in listed rooms. The structural evidence though points to the 17th-century extension as having been built at the early part of the century, quite probably during Richard Freshwater's tenure between 1589 and 1617.

The inventories make very interesting reading but only those aspects that might throw some light into the structure of the Hall and the use of the rooms have been referred to so far. Among the more interesting items were the small arsenal of weapons listed in 1673. In the hall were '1 musket 4 holberds 1 pr of bandilers 1 drum', while in the kitchen were '2 fowling peeces 6 pistolls 2 crossebowes 3 old swords … a birding peece'. And, in the kitchen chamber were '2 pistolls 2 swords 1 birding peece' (LMA, CLC/313/K/C/19504/18/06). No weapons were listed in 1687, but in 1617 in the Hall there were 'a musket, a caliver, and their furniture to them, an ould fowling peece, a corslet, with other implemts' (TNA, C 108/15). Richard had been High Constable of Thurstable Hundred and a member of the county light horse in 1601 (ERO, D/DQ 25/1). His son John became a captain, probably of the trained bands, in 1622 (V.b.364 Folger Shakespeare Library), and the armoury recorded in the probate inventories almost certainly relates to these commands.

The Probate Inventory for Isaac Freshwater in 1688 describes him as a gentleman of Heybridge (LMA, CLC/313/K/C/19504/38/31). No household furniture was amongst the items listed so he may then have then resided in a room at the Hall. In addition to his forty-eight cattle, a horse and saddle, were a few personal effects, plus debts (presumably due to him) of £290, to a total value £533 8s. 18d. No will has been found for Isaac.

Thomas Freshwater, 'gentleman of Heybridge Hall', made his will in 1687 (TNA, PROB 11/399/262). The residue, which presumably included the hall and manor, was left to his niece Elizabeth Aylett, widow, daughter of his deceased brother Richard. Amongst his bequests were properties in Heybridge, Bradwell juxta mare and East Hanningfield amounting to ninety-six acres, and an inn in Maldon called 'Flower de Luce' (several deeds for this inn are to be found in TNA, C 108/15). All four properties he bequeathed to his kinsman Thomas Aylett, son of Elizabeth by her late husband, William Aylett. He also left £250 to his brother Isaac Freshwater but he had died before Thomas's death in 1690. Thomas was the last of the name of Freshwater to occupy Heybridge Hall.

John Nicholls's inventory of 1700 is complete but only includes the kitchen, the little parlour, parlour chamber, kitchen chamber, a wash house with its chamber, a larder with its chamber, a boulting house also with its chamber, a

FIGURE 2: Sketch of Heybridge Hall and farmyard, made by Revd Pridden, vicar of Heybridge, in 1793 (Reproduced by courtesy of the Essex Record Office)

FIGURE 3: Heybridge Hall, *c.*1900

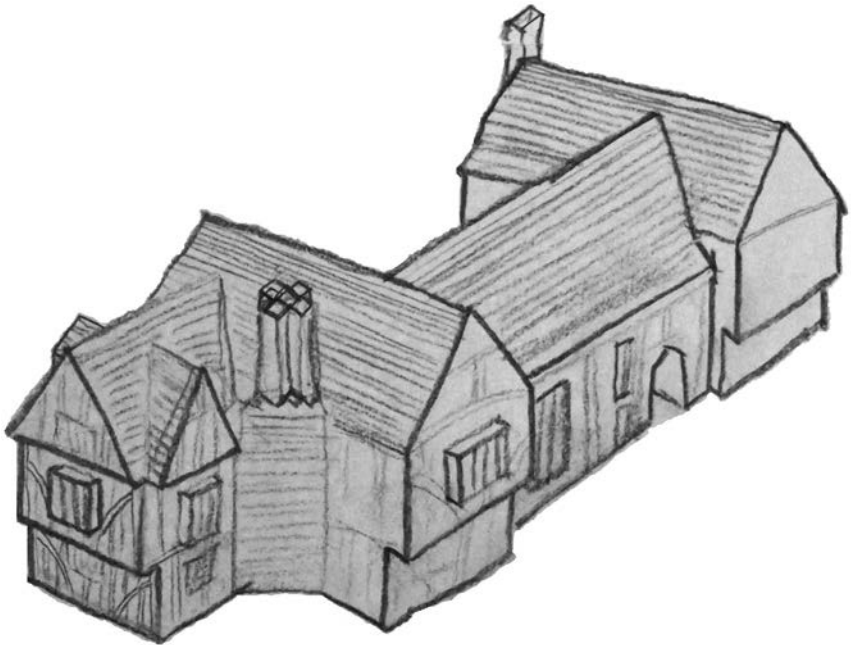


FIGURE 4: Interpretation of the earlier Heybridge Hall based on Revd Pridden's sketch of 1793, and the timber frame shown in Fig. 5

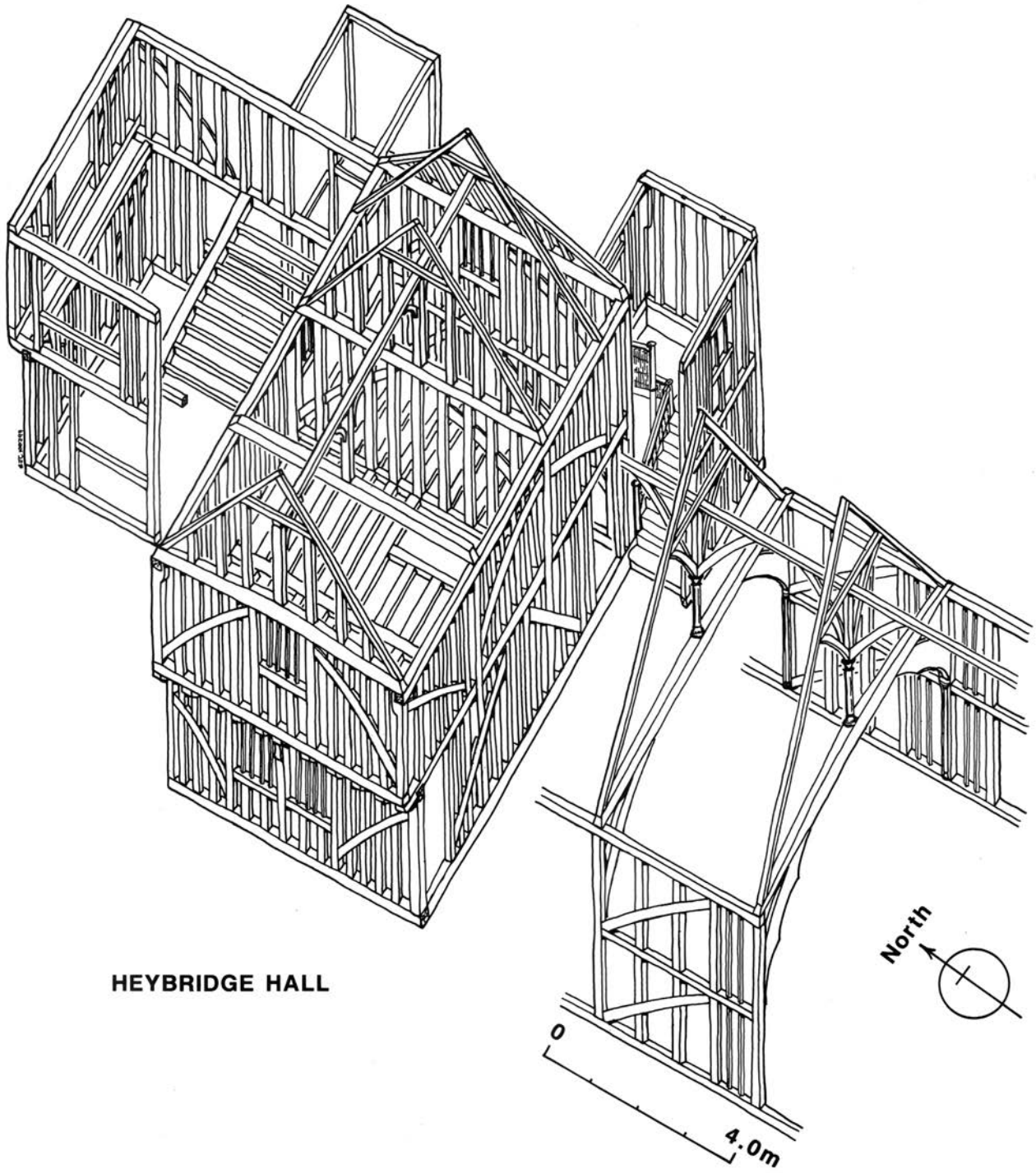


FIGURE 5: The framework of the Hall from the original by B. Hillman Crouch in D. D. Andrews survey of 1998 (*Essex Archaeol. Hist.*, 3rd ser., 29 (1998), 235)

small beer cellar and a strong beer buttery, which might have formed part of the Hall building. Six of these rooms contained beds. Only the kitchen and its chamber appear to have had fireplaces. In addition there were a dairy, cheese chamber, stable and hackney stable, granary, barn, pig sties and a 'round house' which contained hay. No other farm buildings are mentioned although a bull, ten Welsh heifers and 17 cows were 'on the grounds'. Crops of hay, rye, oats and barley were recorded. His estate was worth £476 16s. This points to Nicolls tenanting a part of the Hall and the farm. We can only assume that the main Hall was either separately occupied or vacant by 1700 (LMA, CLC/313/K/C/19504/52/17).

HEYBRIDGE HALL, THE STRUCTURE

The Rev. Pridden's sketch of 1793 (Fig. 2; ERO, D/DU 23/139/2), shows the original roof arrangement and the earlier service end of the Hall which was demolished before 1900. Many of the surrounding farm buildings are shown and some of these may date to the time of the probate inventories. Later, the roof was remodelled with a single roof spanning the hall, cross wing and later extensions (Fig. 3).

Based on the Pridden sketch, the isometric interpretation in Fig. 4, including the later demolished service wing, shows how the Hall may have appeared.

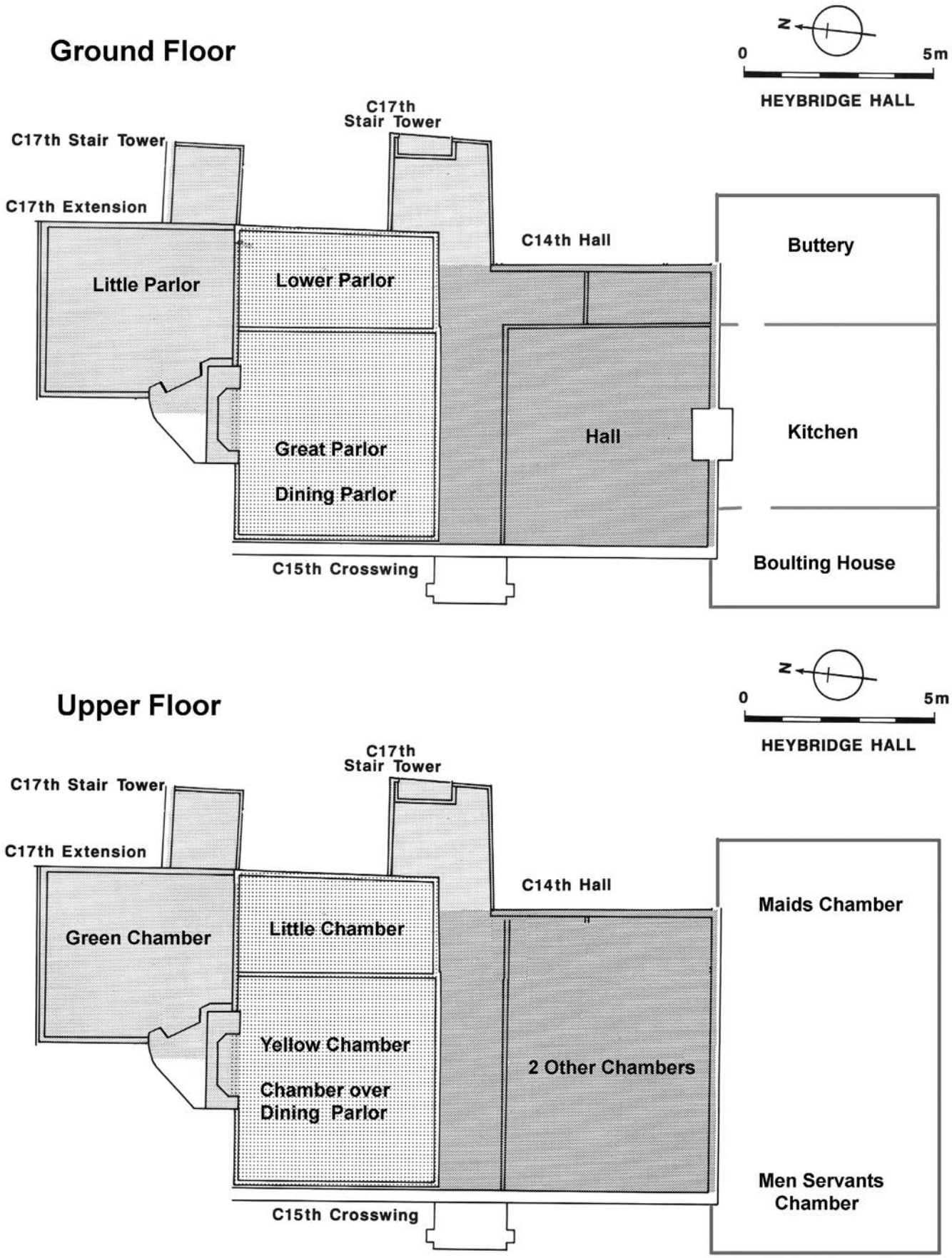


FIGURE 6A and B: Plans modified from the original by B. Hillman Crouch in D.D. Andrews survey of 1998 (*Essex Archaeol. Hist.*, 3rd ser., 29 (1998), 235)

From the probate inventories the following possible interpretation of the internal arrangements has been postulated as shown in Fig. 6. In addition, there possibly would have been some attic rooms, e.g. 'gallery over ye greene chamber'.

It is hoped to follow up on other aspects of the Freshwater family in future articles based on the many documents found at The National Archives and an account book of John Freshwater 1617–1654 that is now in the Folger Shakespeare Library in Washington DC.

ACKNOWLEDGEMENTS

I would like to thank Tim Howson and David Andrews for their contributions. Transcripts of all the documents will be deposited at the Essex Record Office.

ARCHIVES

ERO = Essex Record Office
LMA = London Metropolitan Archives
TNA = The National Archives

BIBLIOGRAPHY

Andrews, D.D. 1998, 'Heybridge Hall. The end of a manor. An assessment of the listed building and the importance of its site', *Essex Archaeol. Hist.*, 3rd ser., 29, 233–8

Benham, M. 1977, *Goldhanger, An estuary village*

Ferguson, C., Thornton, C. and Wareham, A. (eds) 2013, *Essex Hearth Tax Return, Michaelmas 1670* (British Record Society)

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Ancient and modern, developing landscapes of south Essex: A review of four recent monographs

Nigel Brown

INTRODUCTION

This article reviews four monographs which publish the results of archaeological work in advance of major modern infrastructure provision in various places along the Thames estuary. These investigations have added substantially to our knowledge of the long and remarkable history of human activity and landscape development in south Essex. Each book is significant in its own right and is reviewed individually below. In addition, taken together these volumes exemplify contemporary practice with regard to archaeological work arising from the planning process. Accordingly this article concludes with some general comments on the current approach to fieldwork and publication.

The four volumes reviewed are:–

Landscape and Prehistory of the East London Wetlands: investigations along the A13 DBFO road scheme, Tower Hamlets, Newham and Barking and Dagenham, 2000–2003 by Elizabeth Stafford with Damian Goodburn and Martin Bates, 2012, Oxford Archaeology Monograph 17, 313pp. ISBN 978-0-904220-70-4

By River, Fields and Factories: The Making of the Lower Lea Valley: archaeological and cultural heritage investigations on the site of the London 2012 Olympic and Paralympic Games by Andrew B. Powell, 2012, Wessex Archaeological Report 29, 471pp. ISBN 978-1-874350-59-0

London Gateway, Iron Age and Roman Salt Making in the Thames Estuary: Excavation at Stanford Wharf Nature Reserve, Essex by Edward Biddulph, Stuart Foreman, Elizabeth Stafford, Dan Stansbie and Rebecca Nicholson, 2012, Oxford Archaeology Monograph 18, 209pp. ISBN 978-0-904220-71-1

Thames Holocene: A geoarchaeological approach to the investigation of the river floodplain for High Speed 1, 1994–2003 by Martin Bates and Elizabeth Stafford, 2013, Oxford Wessex Archaeology 258pp. ISBN 978-0-954597-09-2

LANDSCAPE AND PREHISTORY OF THE EAST LONDON WETLANDS

This volume makes a major contribution to our understanding of the development of the prehistoric landscape of the Thames estuary. Three phases of archaeological fieldwork were carried out in advance of improvements at a number of key junctions and route sections along the line of the A13 at five locations; Ironbridge to Canning Town (CT), Prince Regent Lane (PRL), Woolwich Manor Way (WMW), Roding Bridge (RB) and Movers Lane (ML). These five sites, often referred to throughout the volume (and in this review) by their initials, are within the London Boroughs of Newham and Barking and Dagenham, once part of the historic county of Essex, though one, CT, extended across the river Lea into Tower Hamlets. The line of the A13 lies close to the junction of the alluvial floodplain of the Thames and its tributaries, and the higher, drier, gravel terraces, a location particularly attractive for human activity. Deep alluvial deposits provided considerable potential to investigate and interpret landscape change.

The volume has a clear and fairly conventional structure; Part I, Introduction (chapters 1–2) describes the general background to the work, its aims and methodology. Part II describes the five sites in turn (chapters 3–7), each has a section on 'Sedimentary architecture and environments of deposition' followed by, for the three sites where it occurred (PRL, WMW, ML), a section on 'The cultural evidence'. Part III has four discussion chapters, covering landscape and environment, prehistoric occupation, timber structures and some general concluding comments. The full specialist reports are contained in a series of appendices.

The length and content of the acknowledgements indicates the large number of organisations and individuals involved in this work. Indeed as the Chapter 1 Introduction makes clear '. . . the A13 archaeological programme saw an unusually complex interaction between project sponsor, construction contractor and the various archaeological consultants and contractors.' (page 2). The short 'archaeological project history section' gives a good idea of just how complex these arrangements were. A minor but noticeable trend throughout the volume is that all the contributors rely very heavily on comparative information from the Greater London area, rarely looking to the north or east further into Essex. That is not unreasonable and does little harm to the quality of the interpretations offered, but throws up some oddities, for instance both Amesbury Banks and Loughton Camp in Epping Forest are considered to be in east London (page 10). The summary of medieval use of the area at the end of Chapter 1 is rather weak and does not do justice to the complexity and importance of medieval marshland exploitation as revealed in Grieve's (1959) classic study, or Rippon's (2000) more recent work. However, given that the nature of the deposits encountered means that the evidence recovered relates overwhelmingly to prehistoric periods, that is perhaps understandable. It is certainly true as the last paragraph of chapter I notes that 'The historic character of the marshland over a large part of East London has largely disappeared. . .' (page 11). With that in mind, it would have been appropriate to mention Rainham Marsh, which straddles the contemporary boundary between Thurrock and Greater London. Over 40 years ago it was thought this remarkable survival would inevitably be '. . .surrendered to industrial or housing development' (Essex Record Office 1970), but thanks, initially to happenstance, and latterly to the concerted efforts of a range of organisations, it survived, and is now in the hands of the RSPB, giving visitors a good idea of what the character of the marshland was like until relatively recently.

Bates and Whittaker's (2004) consideration of human activity interacting with sea level change and landscape development, is usefully summarised in Table 1.3, and was plainly of great importance to the fieldwork and its publication.

It clearly contributed to the projects research aims set out in chapter 2. There seems no doubt that these clear research aims were a significant factor in the success of a project of great practical and administrative complexity. Much the same can be said for the methodological approach to the work, summarised on pages 14–19, which provided clarity and consistency throughout the project.

The description of the excavated sites in Part II sets out clearly the basic evidence recovered; well-illustrated with plans, sections, photographs and line drawings. The environmental evidence indicates a broadly similar process of landscape change with localised variation between the sites. A range of timber structures are of particular interest; most were constructed by people, but a beaver dam was recorded at ML. Where the excavated area lay close to the terrace/floodplain interface (e.g. PRL, ML, WMW) indications of occupation were revealed, mostly of Mesolithic, Neolithic and Bronze Age date but with some Roman and later evidence.

Part III, the discussion section, forms the core of the volume and presents a series of valuable synthesises of the project's results. Chapter 8 deals with landscape and environment the interpretation is correlated with the Bates and Whittaker regional model but illustrates that '...significant complexity exists within the sedimentary sequences at terrace edge locations and in the vicinity of palaeochannels...' so that the sequences revealed are '... a reflection of complex local as well as regional factors.' (page 95) A series of evocative images of braided river channels, flooded Alder Carr woodland and marsh (plate 20 shows one of my, very many, favourite pieces of Essex saltmarsh) enliven the text. Numerous clear and colourful diagrams greatly assist in understanding this chapter, and will be particularly useful for those not especially familiar with the archaeology and geomorphology of deep alluvial sequences. The chapter ends with a summary of vegetation change during the periods to which most of the evidence for human activity recovered by the project belong. A broad sequence of change from Mesolithic woodland, through later Mesolithic to early Bronze Age alder carr, to reed swamp, sedge fen, fresh and saltwater marsh from the 2nd millennium BC onward. The presence of yew in the prehistoric woodlands whose remains are preserved in these Thames estuary locations has long been known, Reaney (1935, xxiv) noted that 'A sunken yew-forest stretches across the whole marsh at Dagenham and Rainham and elsewhere...' Such damp locations represent a remarkable change from the yew's present ecological preference, and Chapter 8 notes that it has been suggested (Siddell *et al*. 2000) that these prehistoric species rich wet coastal woodlands have no modern counterpart.

Chapter 9 reviews the prehistoric occupation evidence associated with the terrace edge. Mesolithic evidence is limited to artefact scatters, many reworked and redeposited in later contexts. The chapter considers this evidence in relation to a growing body of evidence from the lower Thames and notes the importance of occupation in tributary valleys such as the Colne to the west of London and the Beam to the east. Scatters of Neolithic pottery and flintwork were present at a number of sites, though again many appear to be redeposited. However, at WMW a buried soil had in situ occupation debris, and bulk samples included a significant quantity of charred cereal remains. The Neolithic remains from WMW appear rather similar to those recorded at The Stumble in the Blackwater estuary (Wilkinson *et al*. 2012); where despite the difficulties of working in the intertidal zone the Neolithic landsurface is more accessible. Bronze Age pottery, flint and burnt flint were recovered from many of the sites and there is a range of evidence indicating the ways in which the landscape was exploited; this includes a burnt flint mound at ML, a variety of drainage and/or field boundary ditches at ML and PRL, and most strikingly a range of wooden structures, trackways and platforms. The latter including an example from Freemasons Road (part of PRL) whose piles are amongst the most substantial Bronze Age timbers from the region (page 122), the structure may be the remains of a bridge linking the terrace edge to an island in the floodplain. The proliferation of such trackways at this time is part of a wider pattern of economic change during the Bronze Age (Bradley 2007, 184). Evidence from later periods is limited to a Roman linear feature at PRL and Roman pottery from several sites with a relatively substantial assemblage from WMW, perhaps reflecting the proximity of a postulated Roman road following the line of East Ham High Street and Manor Way. Post-Roman evidence was mostly notable for its absence.

Chapter 10 considers the trackways and other wooden structures in relation to previously recorded examples, building on Meddens' (1996) seminal article. It discusses the environmental context of the structures, Bronze Age woodworking, including, construction techniques and the identification of plank preparation from woodworking debris. The large quantity and variety of wood studied allows inferences to be drawn regarding the treescape and woodland management, there are also some intriguing suggestions about the way various tasks may have been divided between adults and children. Cooking techniques are also considered, the possible use of a pointed stick in cooking over a small fire is described and evocatively illustrated (page 140 and fig. 10.8) and compared to Native American practice. Interestingly in Essex, exactly the same cooking technique is described as having been used by Travellers at the turn of the 19th and 20th centuries '...a sharp stick will be found with one end thrust obliquely in the earth, the other inclined over the fire, and the middle supported by a large stone or forked stick. This is the primitive roasting-jack' (Beckett 1901, 26).

Chapter 11 provides some 'Concluding remarks' which summarise the main results of the investigations and include some key points for further research particularly regarding the occurrence and use of the Bronze Age trackways. The practicalities of the project are also considered and the success of the geoarchaeological approach to the project noted, not least in that it provided a context for training and informing fieldstaff since relatively few archaeologists are '...accustomed to working routinely in alluvial environments' (page 151). The need for training in wood identification and recovery to ensure efficient sampling is also noted.

Three appendices contain specialist reports on scientific dating, artefacts and environmental studies. Given that they take up not far short of half the text and without the information contained in them, the interpretations offered in chapters 8–11 would be impossible, a more logical location for these reports would have been before, not after, Part III. The extensive set of radiocarbon dates supplemented by a few Optical Stimulated Luminescence dates, anchor the chronology. There is a full and interesting prehistoric

pottery report, though the London centric nature of the contributors, noted above, is here very obvious. For instance, it is appropriate to compare the Beaker pottery to material from Heybridge, but odd not to consider the pottery from, for instance, Southchurch, Thorpe Bay, Orsett, and Mucking which are closer. It is even odder, in discussing comparative material for the post Deverel-Rimbury pottery, not to include the pottery from the numerous sites along the Thames estuary in south Essex. It is interesting to see the attention paid in the flint report to the occurrence of burnt flint, with, in addition to the probable burnt mound at ML, possible spill over from burnt mounds at PLR and WMW. The discussion at the end of the flint report provides a useful synthesis of the material, both from the excavations reported here, and others around the estuary. The report sets out what may be deduced about activities at particular sites and patterns of activity in the wider landscape, including an intriguing suggestion of a 'flourishing hide working industry located along the edge of the marshes' in the later Bronze Age (page 187). Alison Sheridan's report on the Middle Neolithic jet belt slider is a tour de force, providing not only a full account of the piece recovered from ML but also a national overview of the distribution and interpretation of these remarkable objects, complete with gazetteer. The reports on two perforated 'ceramic beads' and a collection of unfired clay from PRL are intriguing, and it is unfortunate, given the well-illustrated nature of the volume, that no drawings or photographs are provided since it would have been good to see what they looked like. The reports on pollen, diatoms, ostracods, foraminifera, insects, charred and waterlogged plant remains, wood charcoal and soil micromorphology, provide the detailed information on which the account of the landscape and environmental conditions in earlier chapters are based. The text ends with some pages of splendid full colour pictures of soil microphotographs and scans, though it is likely that the vast majority of readers, like me, will admire them as colourful and intriguing patterns rather than for the information they contain.

BY RIVER, FIELDS AND FACTORIES

This volume presents the results of investigations carried out in advance of the development of the Olympic Park in Stratford, the fieldwork being carried out between 2005 and 2009.

The structure of the volume is similar to that of the east London wetlands monograph. Part 1 provides the background, the location and nature of the fieldwork and the research aims. The Lea is described as London's second river, its valley containing a record of it's '...unique history as a natural landscape, as enclosed farmland and ultimately as an industrial centre...' (page 1). Though 'ultimately' is probably the wrong word since the work reported here was carried out in advance of redevelopment which transformed a large part of the lower Lea valley into a centre for sport, leisure, shopping and housing. Arising as it does from the Olympics, that most political (though not necessarily party political) of enterprises; the political context of this volume is clear. 'Legacy' and the Olympic Delivery Authority (ODA) loom large, 'community engagement' figures and the monograph is described as an '... academic volume, which provides the definitive statement on the cultural heritage...' alongside '...a popular publication and web-based resources...' part of the ODA's programme to achieve dissemination to '..the widest possible audience..' (page 1). Inevitably, but rather unfairly, all this calls to mind the BBC's brilliant comedy *2012*, but that shouldn't detract from the considerable achievements of the cultural heritage investigations, presented in this volume. However, there are hints that the investigations did not run entirely smoothly, in what must have been a very pressured programme. One wonders how much the work may have been compromised, some parts of the area are described as '...unsuitable for archaeological investigation...' because of the '...timetable of the construction programme...' (page 6). The site was divided into fifteen Planning Delivery Zones (PDZ) and it is not clear why the archaeological investigations in one of them (PDZ9) are not included in the report, although the geoarchaeological investigations are. In describing the recording of the built heritage it is noted that structures and features associated with infrastructure had a '...relatively lower perceived significance...' than other elements of the built heritage, the use of 'perceived' in this context may indicate some dissatisfaction with that judgement.

Part 2 is divided into five chronological periods each with a broad theme. Chapter 2 covers the earliest evidence, from the late Pleistocene to the early Bronze Age. The fact that it starts with a geologically defined period and ends with an archaeological one says something about its content, which considers 'The origins and early occupants of the Lea valley'. In fact there is relatively little evidence derived from the Olympic Park itself, but what was discovered is well presented and the chapter provides a useful summary and synthesis of evidence from elsewhere in the Lea valley and the wider region. Chapter 3 'Settling the Riverside: Later Bronze Age and Iron Age fields and farmsteads' depends very heavily on the evidence from one fairly large excavation area (Trench 9) which revealed an interesting sequence of a kind which has general similarities in south Essex and more widely in the south and east of Britain (e.g. Wymer and Brown 1995; Bradley 2007). Fragmentary Middle Bronze Age fields/enclosures were succeeded by a Late Bronze age settlement characterised by scatters of pits and postholes, with a typical artefact assemblage including pottery, perforated clay slabs and charred cereals. There was little indication of Early Iron Age settlement, but in the Middle Iron Age there were two phases of, ditch defined, broadly rectilinear enclosures associated with the fragmentary remains of a number of roundhouses. There was also a small cemetery of four unaccompanied inhumation burials, one of which yielded a Late Iron Age radiocarbon date. Chapter 4 deals with 'The development of London's hinterland: the Romano-British, Saxon and medieval periods'. Here again '...the investigations across the site produced very little archaeological evidence for activity in these periods.' (page 65). Indeed one of the most interesting aspects of the work is what was not found; the route of the Roman road from London to Chelmsford and Colchester was not revealed. For the Saxon period, the volume notes that without radiocarbon dates various ditches and enclosures '... in the absence of diagnostic finds would not have been recognised as belonging to this period.' (page 84). That echoes recent work by Rippon (2008, 2012), and it is clear that more extensive use of radiocarbon dating will be essential for a better understanding of Saxon, particularly middle and late Saxon, settlement. As with Chapter 2 there is a useful summary of evidence from the wider area, and one of the most significant developments took

place immediately to the south of the Olympic park. A causeway and two bridges were built in the early 12th century south of the difficult river crossing at Old Ford, which was a major factor in the development of Stratford and '. . . determined the future disposition of economic activity.' (page 93).

The final two Chapters in Part 2, 5 'Agriculture, Industry and Infrastructure in the Post-Medieval to Early Victorian Period' and 6 'From farmland to factories, 1860–1960 a century of industrial development' deal with the most significant part of the investigations. These two chapters are structured around the periods used by the VCH (1973) to characterise the industrial development of West Ham. A series of colourful maps (figs 6.11–6.17) usefully summarise this industrial growth. One of the most striking features is just how much marsh and other agricultural land survived not only throughout the 19th, but well into the 20th century. The low lying marshy ground was predominantly used as pasture and the excavations appear to have revealed examples of stetch (pages 103–4), something which has been more widely recorded on the coastal grazing marshes (Medlycott and Gascoyne 2006; Gascoyne and Medlycott 2012). In terms of water management the investigations revealed evidence of the change from the exploitation of the areas numerous water courses as major sources of water supply, power and transport to the management of water flow and floodrisk. The former uses declined as major reservoirs were built elsewhere in the Lea valley, transport became dominated by road and rail and new forms of power were introduced.

Trench 75 at Temple Mills provides the key archaeological sequence which documents the industrial development of the area from the 17th century. The earliest phase comprised a considerable depth of made ground and fragmentary structures of uncertain purpose. In the late 17th to mid-18th century the site was occupied by a large rectangular building with a brick built furnace, perhaps associated with the manufacture of metal kettles and plates. A water channel with substantial timber revetments may have supplied a small undershot mill wheel providing power to the building. In the late 18th to mid-19th century that building was demolished and replaced by another industrial structure associated with a row of circular pits lined with timber casks. Part of a row of six brick built terraced cottages was revealed along the west side of the trench with brick drains to carry rainwater east to the Tumbling Bay stream. In the late 19th century the Tumbling Bay stream was provided with a very substantial revetment with iron tie roads attached to timber anchors 5m back from the bank. The use of entirely industrial materials and imported timber, contrasts with the local/regionally produced timbers used in earlier revetments. The terrace cottages were supplied with either mains water or gas through lead pipes and a neat pavement, of rectangular slabs with large granite kerbs, was constructed along the front of the terrace.

Much of the industrial development of the area is revealed by the building and other structural recording. The construction methods and materials used in the areas major infrastructure shows clear contrasts between the mid-19th and late-19th/early-20th century. The northern outfall, a key component of Bazelgette's major improvements to the London sewage system passed through the area. There is a distinction between the original brick built sewer constructed in the early 1860s, which has a concern with architectural detailing and the major enlargement carried out in between 1900 and 1907 to increase capacity which is more strictly functional with a plainer finish. From the 1890s the rail lines were widened to increase capacity, and the rail bridges were also lengthened to allow road widening to accommodate increasing road traffic. Again there is a contrast, between the brick arches of the early rail bridges and the plain abutments and riveted steel girders of the enlargements carried out in the 1920s and 1930s. Almost no physical remains survived of the important railway engineering works and good yards, which in 1906 spread across 30ha and employed 6,000 people.

The interpretation of the numerous industrial buildings was hampered as almost all internal fixtures and fittings had been removed from the buildings before recording started. Even so, much was revealed about the industrial development of the area, though that probably gives little comfort to those who mourn the loss of an industrial heritage '. . . whose importance as the home of the 'second industrial revolution' had incalculable historic and landscape value equal to the Ironbridge Gorge.' (Orton and Worpole 2013, 12). Of the numerous factories many were not 'new builds', but were created by adaptation and accretion. The accumulation of buildings and extensions, between the late 1860s and the early 20th century, on a slightly awkwardly shaped plot at Marshgate Lane, which formed Smith's Brush and Mat factory, is a good example. By contrast the Clarnico factory at King's Yard, an extension to their already large works, was built between 1903 and 1905 and has much more clearly planned layout. The survey notes the mix of modern and traditional materials and forms, the group of buildings seems to be transitional between 19th and 20th century constructional techniques. Similar changes are demonstrated by the contrast between the Edwardian brick building of Yardley's soap works in Carpenters Yard, and the 1930's extension, steel framed, with large areas of windows glass in the non-load bearing walls and internal art-deco styling. The area suffered considerably from bombing in World War II, a number of defence structures were recorded, including the extensive remains of a heavy anti-aircraft battery. After the war, the industrial dynamism of the area did not seem to return, relatively few post-war industrial buildings existed in the study area and almost none post-dated the 1960s. The area's buildings were largely unsuited to modern manufacturing processes and techniques and there was a trend to relocate to 'edge of town' industrial parks. The last decades of the 20th century saw much demolition and buildings left to deteriorate, a context which make it seem likely that the loss of internal fixtures and fittings noted above was something that had been going on for many years before the area's redevelopment.

Chapter 7, which has the odd, and somewhat off-putting title, 'Human Residues', deals with the finds and environmental evidence. Overall the finds assemblages were not large; the Middle Bronze Age, Late Bronze Age and Middle Iron Age pottery is largely derived from the settlement sites excavated in Trench 9. The quite small post-medieval pottery assemblage appears to contain fairly typical elements reflecting domestic uses. The larger groups of pottery and glass, particularly those from the late 19th and early 20th century give greater insight into patterns of supply and consumption. It is overwhelmingly British, mostly quite local to London. The names on the food jars are familiar Keiller's marmalade, Horlicks and Pan Yan

pickle, which, apparently, was originally manufactured in the Isle of Dogs. Despite the area being part of the capital of a vast global empire, aside from a few fragments of porcelain from east Asia, the material is overwhelmingly parochial, so much so that a jar of Harris's Clotted Cream from Devonshire seems quite exotic. Unsurprisingly much the same is true of the clay pipes with London, and mainly east London, manufacturers predominating. Many of the metal objects are evocative, domestic cutlery, fragments of bird cage, children's toys and WWII helmets found in made ground above the anti-aircraft battery. Amongst the leather items are two remarkable finds, a well preserved length of 18th century feed hose from a pump, and a rifle bucket for carrying a weapon on horse-back. Waterlogged wood was quite common; mainly derived from revetments to the numerous watercourses, but with some unusual items such as part of a Middle Iron Age bentwood tub and well preserved remains of a small boat probably originally constructed in the early 19th century. The latter being particularly significant since, as the report notes, records, remains and archaeological studies of such small boats built before the 1880s are very rare. The reports on the prehistoric human and animal bone, though of quite small assemblages, are welcome additions to the fairly small corpus of such material from Essex. Plant remains have been more generally recovered from Essex sites, but notable amongst the material from the Olympic Park is another instance of the presence of spelt wheat in the later Bronze Age. The very high levels of hemp pollen in the Roman period, perhaps indicating textile and/or rope production, are also of interest. Chapter 8 on the Environmental and Geoarchaeological investigations is a clear synthesis of complex datasets, its description of the development of the local landscape complementing the work of the Lower Lea Valley Mapping Project (Corcoran *et al*. 2011). The concluding paragraphs emphasising the care which must be taken in ensuring there are enough, carefully selected, radiocarbon samples to achieve an appropriate chronological framework will be very useful in informing future studies. The volume ends with Chapter 9 'Overview and concluding remarks' which provides a short summary of key points.

LONDON GATEWAY, IRON AGE AND ROMAN SALT MAKING IN THE THAMES ESTUARY

The extensive excavations reported in this volume, have provided a remarkable advance in our understanding of the nature of Iron Age and Roman salt working, and of that characteristic feature of Essex Archaeology, the red hill. This is a result both of the scale of the work and the range of modern analytical techniques utilised. The significance of the results are a credit to the range of archaeological skills which were brought to bear on the project and the professionalism of all those involved. The archaeological fieldwork arose from the development of London Gateway, a major deep water container port on the site of the former Shellhaven oil refinery. It is important to note that the excavation took place not in response to the port development itself, but as a result of the need to mitigate adverse impacts on the natural environment. To do that it was necessary to provide a large area of new intertidal mudflat, as habitat compensation for mudflats lost to the port development. As the summary notes the volume '. . . presents the findings of the fieldwork, providing a narrative of the site from the late Glacial period to modern times, and integrating the results of the artefactual, environmental and scientific analyses.' The excavated features are exhaustively described, and summaries of the specialist reports are included, but full specialist reports are made available separately via Oxford Archaeology's digital library.

Chapter 1 The Introduction provides an overview of the project, and the circumstances under which it was undertaken. It is important to note that this managed realignment scheme was specifically designed to create mudflats and required a 0.5m ground reduction. Most realignment schemes around the Essex coast have been designed to allow salt marsh regeneration and do not require overall surface reduction. There is a short description of the archaeology of south Essex which provides a background for the project, though coverage of the post-Roman periods is rather thin. An interesting summary of archaeological and ethnographic evidence for salt production is also provided. The site was divided into a number of excavation areas labelled a–k as shown in Fig. 1.2. The evaluation and excavation techniques are helpfully summarised and the research objectives and report structure are clearly set out. Some of the maps have errors, although not of a kind which greatly affects their usefulness; the built-up area of Southend is consistently wrong and the outline of Canvey is completely missing from Fig. 1.5.

Chapter 2 presents the landscape evolution from the Late Glacial to post-medieval periods. An Early Holocene dry land environment was, through a process of inundation, beginning in the mid-Holocene, transformed into a landscape of creeks saltmarsh and mudflats. The investigated area was divided into four zones, clearly depicted in Fig. 2.2, and running roughly form north to south, zone 1 comprised terrace and head deposits, zone 2 was a substantial palaeochannel 5–6m deep, zone 3 an area where Pleistocene deposits are deeply buried by up to 7m of alluvium, and zone 4 a slightly raised area within zone 3. The field and laboratory methodologies employed are summarised at the start of the chapter and were clearly crucial to the success of the project. In particular it is worth drawing attention to the thoughtful approach to sampling strategies (pages 22–3) and radiocarbon dating (pages 23–7). The analysis has revealed the striking complexity of plant communities which existed in later prehistory during a period of wetland expansion. The evidence summarised in this chapter is fundamental to understanding the important phases of salt production during the Iron Age and Roman periods which form the core of this book.

Chapter 3 considers the prehistoric exploitation of the landscape prior to the Iron Age; the evidence was largely confined to flint scatters of Mesolithic, Neolithic and Bronze Age date. Investigation was limited since this prehistoric evidence was largely covered by a considerable depth of later Iron Age, Roman cultural layers and alluvial deposits, and would not be affected by the 0.5m ground reduction. Most of the flintwork recovered was Neolithic in date and it is noted (page 63) that '. . .the site potentially contains a Neolithic landsurface with extensive *in situ* scatters. . .' perhaps like those which exist rather more accessibly in the Blackwater estuary to the north (e.g. Wilkinson *et al*. 2012)

The next three chapters form the core of the volume and are where its importance lies. Chapter 4 describes Middle Iron Age salt production at Stanford Wharf. Dating was largely provided by an assemblage of typical Middle Iron Age pottery (described

on page 74 as comprising 'over 500 sherds' and on page 77 as '465 sherds').The Middle Iron Age date is of considerable interest as with some notable exceptions (e.g. Germany 2004) red hills have largely been dated to the late Iron Age and early Roman periods. The excavation revealed a tightly clustered, rather linear, arrangement of red hills concentrated in the north-west corner of Area A. Settling tanks, pits and hearths cut into the mounds, indicated successive reuse. In one instance a working surface appeared to have been 'cobbled' with large sherds of briquetage. It appears that salt production was carried out during temporary, probably seasonal, visits (page 82). Whilst there is evidence for the use of crop processing waste, a major source of fuel seemed to be the salt marsh plants readily available at, or close to, the site. The red hill mounds consisted largely of material derived from burning salt marsh plants and the sediment adhering to their roots. A by-product of the fuel burning was a salt rich ash which could be mixed with sea water to create concentrated brine, the residue from this process being dumped. The excavators brought to bear a '... battery of chemical, micromorphological and other scientific analyses....to reconstruct the sequence of deposition with an unparalleled level of detail.' (page 79). This careful analysis of the formation processes is a significant advance in our understanding of red hills and is a small triumph for modern archaeology.

Chapters 5 and 6 deal with Roman salt production. The early Roman period saw a shift in the focus of activity to Area B, and the evidence for salt production is rather slighter than for the middle Iron Age, comprising an assemblage of briquetage, pit/hearths, and short lengths of ditch or elongated pits, to trap seawater and store brine. It seems that salt-marsh plants continued to be used as fuel, but no red hills appear to date from this period. Given that elsewhere in Essex red hills are most common during the Late Iron Age and early Roman periods that is remarkable. The excavators suggest that this lack may in part be because the red hills at Stanford had been '...truncated through natural, probably tidal, and human agencies, and it is possible that late Iron Age and early Roman deposits have been lost' (page 99). The most striking discovery from the early Roman period is a large post-built structure, interpreted as a boat house. The structure was orientated roughly north south the southern end was open and fronted a paleo-channel, a group of post holes behind the much narrower northern entrance are plausibly interpreted as the supports for a windlass to assist in hauling a boat from the channel into the boathouse.

After a period of apparently limited activity at the site during the 2nd and earlier 3rd centuries AD, there was another major phase of salt production during the later Roman period. In the later 3rd and 4th centuries, there was considerable evidence of activity and salt production from across the site, though mostly concentrated in area A. This later Roman use of the site was divided into two broad phases. In phase 1 a rectangular ditched enclosure was constructed with associated trackways to the north and east, and a saltern was constructed on the top of a middle Iron Age red hill. The enclosure had internal fence lines and postholes of an internal fence or palisade flanked the ditch on two sides. A large cess pit in the north-eastern corner of the enclosure yielded a remarkable array of finds, pottery, part of a wooden ladder, a large quantity of fish bone and a variety of insect and plant remains. In phase 2 substantial boundary ditches roughly preserved the line of the rectangular enclosure and several salterns of each of slightly different form were constructed. Finds included large quantities of bones of young fish, notably herring and smelt.

Most interesting is the change in method, and apparently intensity, of salt production compared to the earlier periods. There is evidence for the use of lead vessels alongside the continued use of briquetage, wood and possibly charcoal were used as fuel, but burning salt marsh plants was still an important part of the process. Despite the intensity of salt production unlike in earlier periods red hills were not created. Clearly the changed methods of salt production did not generate the quantities of red earth, and the crucial difference seems to have been that saltmarsh sediment itself was no longer burnt as part of the process, as it had been during the earlier periods of salt production. The process of salt production in the later Roman period is thoroughly discussed (pages 158–67) and fig.6.58 provides a graphic composite summary of the process based on evidence from the range of salterns at the site. Amongst the most interesting parts of the book is the section headed 'One stop shop – using salt at Stanford wharf', which reasonably suggests that the numerous bones of young fish at the site are the residue of fish sauce production and that the distinctive animal bone assemblage suggests that both the salting of meat and curing of hides were carried on at the site. The nature of settlement and seasonal activity are considered and the role played by the site in an integrated pattern of later Roman activity around the greater Thames Estuary is discussed. The most striking of the structures dating to this phase was associated with saltern 5760. Here a circular ditch enclosed a rectangular setting of four, substantial roughly square post-poles each with rubble post pads, one of which had clear indication of replacement or reinforcement. I remember at the time of the excavation there was speculation that this structure might be the remains of a tower. However, an extended discussion of the structure (pages 168–9) concludes, rather disappointingly, that it was '...a circular structure with an external clay mass wall and substantial internal roof-supporting posts, which was used for salt making and other industrial activity...' . Despite that, the notion of a tower was clearly too attractive to dismiss, and after discussing the possibility that the various products of the site were used to supply the military, chapter 6 ends with these lines 'This returns us to the tower at Stanford Wharf, and its suggested use as a signal tower. The evidence is hardly conclusive, but a spearhead recovered from the base of a replacement posthole hints at a low-level military presence at the site. After all, the army had its supply of salt and fish sauce to protect'.

Chapter 7 deals with the 'Transformation of the post-Roman marshland' and is the least successful part of the book, perhaps that is unsurprising, since the investigations did not reveal anything like the range and quality of data for these later periods, as they did for the earlier ones. Certainly not much could be made of two oak piles of Middle Saxon date. Even so, the proliferation of timber structures elsewhere around the Essex coast at that time (Strachan 1998, Murphy and Brown 1999) provides a context and should have been mentioned, as should the remarkable range of Middle Saxon finds from Canvey, just a short distance to the east of Stanford Wharf (Crowe 1996, Murphy and Brown 1999). The account

of evidence produced by archaeological investigations on Canvey (page 185) is actually a somewhat garbled summary of various archaeological sites around the Essex coast, and what is mentioned is not especially pertinent to the archaeology of Canvey. Interesting parallels from Lymington and the Gwent levels are noted for some block like patterns of ditches and gullies recorded at various parts of the Stanford site. However, no mention is made of the extensive archaeological evidence for stetch which is widespread on the south Essex marshes just a short distance from Stanford wharf (Medlycott and Gascoyne 2006; Gascoyne and Medlycott 2012), and which may have resulted in similar patterns of ditch like features. The flaws in chapter 7 should not detract from what is overall a fine and very significant piece of archaeological work. Not unreasonably the short final chapter 8 'Worth its salt – concluding comments' is somewhat self-congratulatory in tone and offers a short summary of the importance of the archaeological project and the new nature reserve.

THAMES HOLOCENE

As the abstract (page xii) makes clear, this monograph is '... intended to present the methodological approach...' to the archaeological investigation of about 18Km of the route of HS1 (aka The Channel Tunnel Rail Link) which ran across the deep alluvium of the Thames estuary. Another phrase from the abstract provides a summary of the overall purpose of the work, which was '...to determine a cost-effective and logical approach to archaeological mitigation.'

Presenting a methodological approach may seem a somewhat limited purpose for an entire monograph, but investigating archaeological remains within deep alluvial sequences is of considerable importance and presents some difficult technical challenges. The work described in this volume will be a good basis for developing future projects which need to address similar issues. However, it does not provide a methodology which should be simply adopted wholesale. In that regard, it is certain, given the careful approach that authors clearly took, both to the fieldwork and to the preparation of this volume; that they would not expect it to be used in anything other than a critically thoughtful way. The three chapters of part I 'Introduction and Background' provide an overview of the geographical location, nature and purpose of the project. There is a short summary of the literature (pages 1–2) arising from the 'Investigation of alluvial wetland areas within the UK ...' which is interesting but the Anglo-centric approach is perhaps limiting. Alluvial archaeological investigations in the UK, though not uncommon, are not the norm, by contrast in the Netherlands and adjacent parts of Europe they are rather more the rule than the exception. There are occasional references to Dutch sources but the volume does not really seem to engage with archaeological practice in adjacent parts of northern Europe. It is possible that the authors are so familiar with such work that they have overlooked the need to provide citation to guide less expert readers. Page 2 also identifies a major target audience as the '...curators and consultant archaeologists who may learn from the successes and failures of our approach...'. In passing it is worth noting that page 5 offers an excellent definition of, and the complexity contained within, the word 'alluvium'. The aims of the study are clearly set out, though it seems a bit odd to give them a separate Chapter (2) since they only take up about half a page. Chapter 3 'Regional Background to the Route Corridor' is an essential preliminary to the main study, summarising the geology and geomorphology of the Thames estuary. Though the study deals mostly with what might be termed the inner estuary, the generous definition of the Thames estuary '...49 (*c*.79 Km) miles across from Margate to Orford Ness.' is commendable, this area, often referred to as the Greater Thames Estuary, encompasses the whole of the Essex coast, it accords with the definition provided by the Regional Research Framework (Williams and Brown 1999, GTEASC 2010) and is surely the way in which we need to understand the estuary. The identification of the need for research into post-Roman sediment sequences and marshland development (page 17) is very welcome. The 'Framework for Floodplain development' page 18 and the tabulated summary (Table 2) of Quaternary stages, geological events and archaeological periods, will be helpful to many readers.

The three chapters of Part II, 'Strategies and Methods'; cover research design, concepts and desk-top investigation. An important part of the approach was the identification of buried landsurfaces and the project demonstrates a sophisticated use of information derived from boreholes, Cone Penetration Testing (a technique explained on page 53) and a variety of geophysical techniques. A factor of central importance for this, or any similar project, is that '...careful consideration should be given to understanding the limitations of the information sources and the ways in which the information is combined to formulate models and interpretations.' (page 33). The key points of the geoarchaeological model for the study area are set out in a series of clear bullet points (pages 35–6) although the second and fourth bullets perhaps owe more to modern 'common sense' than they do to past wetland settlement and exploitation (e.g. Coles and Coles 1996,1; Van de Noort and O'Sullivan 2006, 33). The importance of purposive boreholes to supplement engineering boreholes is worth noting, as is the comment that '...even on completion of the project the distribution of data along the route corridor remained uneven and skewed to areas of major engineering structures rather than targeting areas of archaeological interest.' (both page 52). Part II concludes with a list of 'Key points to consider' which will certainly be of interest to anyone involved in designing archaeological investigations in similar circumstances.

Part III is the heart of the book and comprises six chapters, dealing with sections of the HS1 route from the Lea to the Ebbsfleet valley. Each chapter summarises 'Construction Impacts', 'Key Archaeological Issues', Strategy, Aims and Objectives', 'Methodologies', 'Results of the investigations' and 'Discussion'. In each case the 'Results' section is the core of the chapter and provides a very detailed description of the alluvial sequence, pollen and other environmental data, and any archaeological evidence is also summarised. The description of the sequence in trenches at Temple Mills in the Lea valley (Chapter 7) provides some interesting detail to set alongside the more valley wide accounts in the volumes reviewed above. Neolithic occupation on a buried landsurface was recorded at Dagenham and Hornchurch Marshes (Chapter 8) and a large medieval ditch and artefact rich occupation soil was recoded at Rainham and Wennington marshes (Chapter 9) adding to the growing body of archaeological evidence for medieval exploitation of the south Essex marshes. Chapter 10 dealing with Aveley marsh summarises the important Mesolithic site

at Tank Hill Rd which has been fully reported in this journal (Leivers *et al*. 2007). Chapter 11, dealing with the Thames Crossing section of the route, provides a detailed description of the sedimentary and environmental history around a small headland. Excavation, which required the use of a coffer dam, revealed Upper Palaeolithic occupation when the headland offered a vantage point above the floodplain, and Neolithic activity by which time fen carr was encroaching on the former dry ground. By far the most complex archaeological evidence was revealed in the Ebbsfleet valley (Chapter 12), an area of great potential for Palaeolithic and Mesolithic remains and, as the excavations demonstrated, for later periods as well. Neolithic finds of flint and pottery included, appropriately, fragments of Ebbsfleet style bowls. Intriguingly cod bones were recovered from freshwater peat, suggesting the possibility of salt water fishing, surprising since the evidence for marine foods during the Neolithic in Britain is generally so slight that it has been suggested that there was a taboo against their consumption (Thomas 2003). In the Middle Bronze Age a number of rather flimsy trackways were recorded, along with the remains of a more substantial platform or possible bridge. Drawing on a variety of sedimentary and environmental data it was possible to elucidate the changing environment and landscape of the valley. This is well illustrated in fig. 86, which shows reconstructions of part of the valley in the early Neolithic, earlier Bronze Age and Roman Periods. The situation of the Northfleet Roman villa, on a promontory overlooking saltmarsh and tidal creeks is particularly striking. A Saxon tide mill excavated at Northfleet is a remarkable discovery of great importance for our understanding of the Saxon period and, in a broader context, relative sea level (Brown 2011).

Part IV 'Synthesis' has two short chapters 'Discussion' and 'Conclusions' summarising the projects results. The absence of timber structures on the Aveley and Wennington marshes is interesting and may well be a genuine absence, although as the report notes this may reflect '...the extent and level of archaeological visibility...' (page 173, incidentally the reference to Meddens *et al*. 2012, on this page is not in the bibliography, but presumably refers to Meddens' contribution to the East London Wetlands volume reviewed above). That seems quite possible, given that much of the recording in that part of the project was undertaken as a watching brief. Watching briefs often seem to be considered a cheap way of carrying out fieldwork, but should probably be regarded as an expensive way of finding nothing. The discussion of changing environmental conditions between the late Mesolithic and Early Neolithic (page 180) is particularly interesting with the suggestion of '...unusual conditions pertaining within the estuary for a time', with alder carr woodland spreading across former saltmarsh without an intervening phase of reedswamp development. The emphasis on the need to be aware of, and explore, local variation is particularly important (page 176). The volume is thought provoking and will be of great benefit in informing future work, not least through the four points listed under the heading 'Lessons for the Future' (pages 182–3). To produce a work of such coherence from fieldwork which spread across more than 10 years is a credit to all involved.

DISCUSSION

Perhaps the most striking thing about these four volumes is the high standard of production, liberal use of colour, good quality printing and, for three out of the four, hard covers. Well-chosen illustrations include not only images derived directly from the excavations, but reconstructions and photographs of contemporary landscapes which illustrate the appearance of past environments, adding to the attractive appearance of the books. Readers of this journal will note how articles in ESAH publish detailed accounts of some of the excavations arising from these major projects (Leivers *et al*. 2007), or complement and augment their findings (Jarrett 1997; Andrews, 2009; Nicholls *et al*. 2013; Ritchie 2013).

These books provide an insight into current archaeological practice, reflecting the impact of PPG16 introduced at the start of the 1990s, together with subsequent developments, notably Environmental Impact Assessment (EIA). The nature of these changes to the way that archaeology operates through the planning process have been outlined elsewhere (e.g. Bedwin, 1996; Buckley 1996; Waugh 2006; Brown 2012; Webley *et al*. 2012). The speed of publication of these major projects is notable and contrasts with what could generally be achieved in earlier years. To take examples with which I was directly involved in the 1980s, whilst small or medium scale projects were speedily published (e.g. Brown 1988), large scale projects took far longer, 10–15 years being fairly normal, and 20 years or more not unusual (e.g. Wymer and Brown 1995; Brown and Medlycott 2013). By contrast the major investigations reported in these volumes were published less than 10 years (in two cases a lot less), after completion of the fieldwork. The exception being the Thames Holocene volume, however, it should be noted that book is just one of a series of articles and monographs arising from fieldwork associated with HS1 and published between 2007 and 2013.

It is not only speed of publication which provides a contrast between current practice and what it was previously possible to achieve. Whilst it might be an exaggeration to say that all major infrastructure projects nowadays are accompanied by adequate archaeological provision, it is reasonable to suggest that is now the norm rather than the exception. By contrast, in the 1970s and 1980s such provision might be viewed as the exception rather than the rule. In Essex, this may be demonstrated by comparison of archaeological work, or quite often the lack of archaeological work, in advance of construction of the M11, M25 or A12 Chelmsford bypass, with that associated with the recent A13 junction improvements or HS1 construction. This emphasises the remarkable achievement of the archaeological investigations in advance of construction of the A13 Grays bypass. That project, organised by Essex County Council, and carried out under the direction of Tony Wilkinson in 1979–80, was a model of coherence, the integration of environmental and archaeological data, and prompt publication (Wilkinson 1988).

Essentially, the more general provision of adequate archaeological investigation and the speed of publication since PPG16 is a reflection of changes to the funding base; which led to more fieldwork being funded, and, most importantly for prompt publication, proper financial provision for post-excavation. In the 1970s and '80s funding derived almost entirely from the Department of the Environment and/or Local Authorities. Consequently, funds were only available to relatively few projects and even then were often rather limited. Post-excavation funding was equally limited and often episodic in availability militating against quick publication.

Since PPG16 almost all development-led archaeological work has been funded by the developer, funding has been more generally available, with better provision for post-excavation work. Developer funding usually means from the private sector; though for infrastructure projects of the kind reviewed here the situation varies, funding may be a mix of public and private, public sector, or occasionally wholly private sector. Archaeological work is undertaken by competitive tender, and the success of the major UK archaeological contracting firms is apparent from the volumes reviewed here.

The complexity of the work requires numerous specialists, that some of the same key staff were involved in more than one of these projects was clearly a factor in their success (note, for instance, the repeated occurrence of Martin Bates and Elizabeth Stafford amongst the authors). As mentioned above the acknowledgement sections of these volumes give a good idea of the astonishing array of individuals and organisations involved in this kind of work. In every case the role of the archaeological curators, responsible for identifying the need for, and scope of, archaeological work and for monitoring its implementation is noted. This critically important role is played by Local Authority archaeologists (exceptionally in London it is undertaken by English Heritage) who advise the Planning Authorities. Their role is essential in making the system work, and, given the extreme pressure on Local Authority funding, is the part of the system most under threat. In Essex archaeological advice to Local Planning Authorities is largely provided by Essex County Council's team of specialists, and the maintenance of a critical mass of staff is vital. The sheer range and complexity of the archaeological issues involved in the kind of projects reviewed here, is such that one or two staff could not really hope to keep abreast of them. A Local Authority advisor operating as part of a larger team, whose expertise can be drawn upon, is essential. That those responsible for managing the archaeological resource should be based in Local Authorities is appropriate. Our archaeological heritage is a common possession and its management should be subject to democratic control. Local Authorities, however flawed their credentials may sometimes appear, have an essentially democratic foundation. As such, their key role in the archaeological process is especially vital at a time when the dominance of neoliberal economics tends toward the removal of democratic oversight (Kunkel 2014; Marquand, 2014).

The potential for major infrastructure projects to investigate complex wetland archaeology is increasingly recognised (Larsson 2007), and the four books reviewed here certainly demonstrate that potential. The reconstruction of past environments is one of the most important contributions of these volumes. The story they tell is one of constant change, human engagement with the natural world, shaping and being shaped by the changing landscape. As the 'Landscape and Prehistory of the East London Wetlands' notes (page xv) 'Ultimately this is of relevance not only to understanding the past but also to current concerns regarding environmental management along the Thames estuary'. An earlier review in this journal (Brown 2011) noted that water management and, in particular, flood risk management, are now, and will continue to be, major issues driving landscape change, and will present great opportunities and challenges for the historic environment in Essex. It is clear that an integrated approach to the natural and historic environment will be essential to address such issues, and increasingly such integration is seen to be generally applicable if conservation management is to be effective (Cassar and Fouseki 2014, 228; Salon 2014). Fortunately Essex County Council's historic environment staff have been at the forefront of such integration, developing close working relationships with nature conservation agencies (e.g. Murphy *et al*. 2012, 148; Medlycott and Gascoyne 2006; Gascoyne and Medlycott 2012, 136–8). The recent creation of the Place Services team at Essex County Council (Brown 2012, vi) offers further scope for the development of integrated working.

The four books reviewed here are exemplars of the currently dominant style of archaeological monograph publication. To someone who has been actively involved in trying to address the best way to publish large scale archaeological work (Drewett 2001, 311) these volumes seem very successful. That is not to suggest that the current style of publication will inevitably produce uniformly good results. Success is far from guaranteed, in particular digital techniques and speed of production though desirable, can bring problems as Sealey (2009) notes. It is also probable that the best way of publishing and integrating finds reports, including reports on environmental data, is not yet fully resolved. However, to conclude this piece one cannot do better than quote a review, by John Schofield (2013, 438) of two similar volumes and note these books '. . . require sympathy with, if not knowledge of, many specialisms. But I am convinced this is the way to go, and I shall be using. . . these reports for a long time'.

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BIBLIOGRAPHY

Andrews, P. 2009, 'West Thurrock: Late prehistoric settlement, Roman burials and the medieval manor house, Channel Tunnel Rail Link excavations 2002', *Essex Archaeol. Hist.*, 3rd ser., 40, 1–77

Bates, M. R. and Whittaker, K. 2004, 'Landscape evolution in the Lower Thames valley: implications for the archaeology of the earlier Holocene period', in Cotton, J. and Field, D. (eds) *Towards a new Stone Age: aspects of the Neolithic in south-east England*, Counc. Brit. Archaeol. Res. Rep. 137, 50–65 (Oxford)

Beckett, R. A. 1901, *Romantic Essex* (Dent, London)

Bedwin, O. 1996, 'Preface' in Bedwin, O. (ed.) *The Archaeology of Essex: Proceedings of the 1993 Writtle Conference* (Essex County Council, Chelmsford), vi

Bradley, R. 2007, *The Prehistory of Britain and Ireland*, Cambridge University Press (Cambridge)

Brown, N. 1988, 'A late Bronze Age enclosure at Lofts Farm, Essex', *Proc. Prehist. Soc.* 54, 249–302

Brown, N. 2011, 'Review of Galloway, J.A. (ed.) 'Tides and Floods: New research on London and the tidal Thames from the Middle Ages to the Twentieth Century', *Essex Archaeol. Hist.*, 4th ser., 2, 258–9

Brown, N. 2012, 'Preface', *Essex Archaeol. Hist*., 4th ser., 3, v–vi

Brown, N. and Medlycott, M. 2013, *The Neolithic and Bronze age enclosures at Springfield Lyons, Essex: excavations 1981–1991*, E. Anglian Archaeol. 149

Buckley, D. G. 1996, 'Essex Archaeology: retrospect and prospect' in Bedwin, O. (ed.) *The Archaeology of Essex: Proceedings of the 1993 Writtle Conference* Essex County Council, Chelmsford, 207–18

Cassar, M. and Fouseki, K. 2014, 'My Historic Environment', *The Historic Environment: Policy and Practice* 5, no. 2, 226–8

Coles, J. and Coles, B. 1996, *Enlarging the Past: the contribution of wetland archaeology*, Society of Antiquaries of Scotland monog. 11 (Edinburgh)

Corcoran, J., Halsey, C., Spurr, G., Burton, E. and Jamieson, J. 2011, *Mapping past landscapes in the lower Lea valley: a geoarchaeological study of the Quaternary sequence*, MOLA Monog. 55 (London)

Crowe, K. 1996, 'The early medieval settlement on Canvey Island', *Essex J.* 13 (1) 12–17

Drewett, P. 2001, 'Review of Brown, N.R. The Archaeology of Ardleigh, Essex: excavations 1955–80', *Essex Archaeol. Hist.*, 3rd ser., 32, 310–11

Essex Record Office 1970, *Essex and the Sea*, Essex County Council (Chelmsford)

Gascoyne, A. and Medlycott, M. 2012, 'The English Goshen: the archaeology of the medieval and early post-medieval landscape', *Essex Archaeol. Hist.*, 4th ser., 3, 123–40

Germany, M. 2004, 'A middle Iron Age red hill at Tollesbury Creek, Tollesbury', *Essex Archaeol. Hist.*, 3rd ser., 35, 192–5

Grieve, H. 1959, *The Great Tide: the story of the 1953 flood Disaster in Essex*, Essex County Council (Chelmsford)

GTEASC 2010, *The Greater Thames Estuary Historic Environment research Framework 2010: Update and revision of the Archaeological Research Framework for the Greater Thames Estuary (1999)* http://www.english-heritage.org.uk/publications/greater-thames-estuary-research-framework-2010/

Jarrett, J. 1997, 'Medieval and later activity at Thorne Close avenue estate, Leytonstone, north London', *Essex Archaeol. Hist*., 3rd ser., 28, 298–304

Kunkel, B. 2014, 'Paupers and Richlings: review of Thomas Piketty: capital in the 21st century', *London Review of Books* 36, no.13, 17–20

Larsson, L. 2007, 'Wetlands and major infrastructural programmes: prehistoric wetland sites in excavation projects in Scania, southernmost Sweden' in Barber, J., Clark, C., Cressey, M., Crone, A., Hale, A., Henderson, J., Housley, R., Sands, R. and Sheridan, A. (eds) *Archaeology from the Wetlands: Recent Perspectives*, Society of Antiquaries of Scotland (Edinburgh)

Leivers, M. Barnett, C. and Harding, P. 2007, 'Excavation of Mesolithic and Neolithic flint scatters and accompanying environmental sequences at Tank Hill Rd, Purfleet', *Essex Archaeol. Hist*. 3rd ser., 38, 1–44

Marquand, D. 2014, *Mammon's Kingdom: an Essay on Britain Now*, Allen Lane (London)

Meddens, F.M. 1996, 'Sites from the Thames estuary wetlands, England, and their Bronze Age use', *Antiquity* 70, 325–34

Medlycott, M. and Gascoyne, A. 2006, *A contemplation of things wide and infinite: A report to the RSPB on archaeological desk-top and walkover surveys of proposed new RSPB reserves in south Essex*, Limited circulation Essex County Council report for RSPB

Murphy, P. and Brown, N. 1999, 'The archaeology of the coastal landscape', in Green, S. (ed) *The Essex Landscape: in search of its history*, Essex County Council (Chelmsford)

Murphy, P. Heppell, E. and Brown, N. 2012, 'The Archaeology of the Essex Coast' *Essex Archaeol. Hist.*, 4th ser., 3, 141–4

Nicholls, M. Corcoran, J. Eastbury, E. Cotton, J. Scaife, R.C. Whittaker, J.E. Macphail, R.I. Cameron, N. and Stewart, K. 2013, 'A Prehistoric Eyot at Canning Town, Newham, a Geoarchaeologial Investigation', *Essex Archaeol. Hist*., 4th ser., 4 3–26

Orton, J. and Worpole, K. 2013, *The New English Landscape*, Field Station (London)

Reaney, P.H. 1935, *The Place-Names of Essex*, Cambridge University Press (Cambridge)

Rippon, S. 2000, *The Transformation of Coastal Wetlands: Exploitation and Management of Marshland Landscapes in North-West Europe during the Roman and Medieval Periods*, British Academy (London)

Rippon, S. 2008, *Beyond the Medieval Village: Diversification of Landscape Character in Southern Britain*, Oxford University Press (Oxford)

Rippon, S. 2012, 'Ancient and planned countryside: the origins of regional variation in landscape character across Essex and East Anglia', *Essex Archaeol. Hist*., 4th ser., 3, 97–109

Ritchie, K. 2013, 'Further Excavations at a Late Prehistoric and Roman Site at West Thurrock', *Essex Archaeol. Hist*., 4th ser., 4, 27–39

Salon 2014, 'Provoking debate' Society of Antiquaries of London online Newsletter 323, 13th July 2014 http://www.sal.org.uk/salon/

Schofield, J. 2013, 'Review of 'Winchester – A City in the making: archaeological excavations between 2002 and 2007' and 'Trade and Prosperity, War and Poverty: an archaeological and historical investigation into Southampton's French quarter', *Antiq. J.* 93, 437–8

Sealey, P.R. 2009, 'Review of 'A Slice of Rural Essex: recent Archaeological Discoveries from the A120 between Stansted Airport and Braintree', *Essex Archaeol. Hist.*, 3rd ser., 40, 231–2

Siddell, J., Wilkinson, K., Scaife, R., and Cameron, N. 2000, *The Holocene evolution of the London Thames: archaeological investigations (1991–1998) in advance of London Underground Limited Jubilee Line Extension*, MoLAS monog. 5 (London)

Strachan, D. 1998, 'Intertidal stationary fishing structures in the Blackwater estuary', *Essex Archaeol. Hist.*, 3rd ser., 29, 282–90

Thomas, J. 2003, 'Thoughts on the 'Repacked' Neolithic Revolution', *Antiquity* 77, no. 295, 67–74

VCH 1973, vi (ed.) Powell, W.R.

Van de Noort, R. and O'Sullivan, A. 2006, *Rethinking Wetland Archaeology*, Duckworth (London)

Waugh, K. 2006, *Archaeological Management Strategies in the Planarch Area of North West Europe*, Report for the Planarch 2 Interreg IIIB project

Webley, L. Vander Linden, M. Haselgrove, C. and Bradley, R. (eds) 2012, *Development-led Archaeology in Northwest Europe*, Oxbow Books (Oxford)

Wilkinson, T. 1988, *Archaeology and Environment in south Essex: rescue archaeology along the Grays By-pass, 1979/80*, E. Anglian Archaeol. 42

Wilkinson, T.J., Murphy, P.L., Brown, N. and Heppell, E.M. 2012, *The Archaeology of the Essex Coast, Volume II: Excavations at the Prehistoric Site of the Stumble*, E. Anglian Archaeol. 144

Williams, J. and Brown, N. (eds) 1999, *An archaeological Research Framework for the Greater Thames Estuary* Essex County Council, Kent County Council and English Heritage (Chelmsford)

Wymer, J. and Brown, N. 1995, *Excavations at North Shoebury: settlement and economy on south-east Essex 1500BC–AD1500*, E. Anglian Archaeol. 75

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Shorter notes

A POSSIBLE ROMAN TILE KILN AT PRENTICE PLACE, CARTERS MEAD, HARLOW

Sarah Mounce and Philippa Bradley

Summary

A possible tile kiln and associated spread were identified during a watching brief undertaken at Prentice Place, Harlow. Overfired and underfired ceramic building material, including *tegula* and *imbrex* roof tile and box flue tiles, recovered from a charcoal-rich spread indicates waste from tile manufacture.

Results

A watching brief was undertaken in February and March 2010 in advance of the creation of a new play facility at Prentice Place, Carters Mead, Harlow, Essex (NGR TL 47149 08661). This summary is based on the watching brief report (Wessex Archaeology 2010). An area covering approximately 504m² was stripped using standard archaeological methods. The underlying geology is London Clay.

A rectangular structure (115) was identified on the western side of the site (Fig. 1; Pl. 1). This structure comprised an external wall (111), constructed of Roman tile and brick, and four internal divisions all aligned east–west and each formed from one large Roman brick. The north-east corner of the external wall (111) appeared more substantial in plan than the southern end of the wall. Roman pottery (dating to the 3rd to 4th centuries AD), ceramic building material (CBM), including *tegula* and *imbrex* roof tile and box flue tiles, animal bone and burnt flint were recovered from the wall make-up and inside the structure. A single sherd of post-medieval date is clearly intrusive. The structure was recorded and preserved *in situ*.

A large spread (103) consisting of tile, CBM, pottery and charcoal was recorded along the southern and eastern edges

PLATE 1: Possible tile kiln viewed from the north

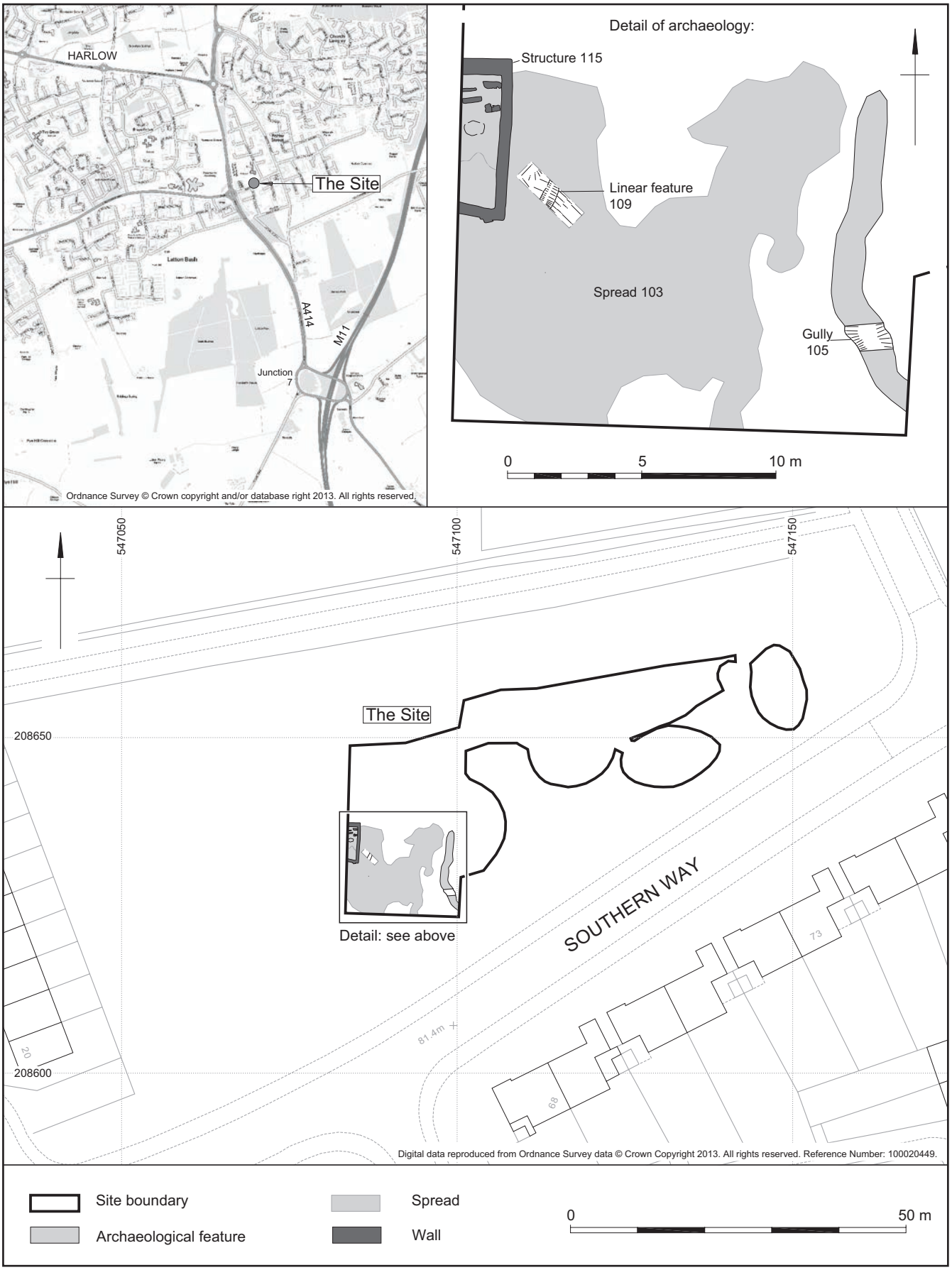

FIGURE 1: Site location showing excavated features

of structure 115. A slot excavated through the deposit revealed a linear feature (109) aligned north-east/south-west, the base and sides of which were lined with tiles, suggesting it was possibly a drain. The pottery from these deposits also dates from the 3rd to 4th centuries AD, with two pieces of mortaria from spread 103 (context 107) dated within the range of AD 240–300. A second sherd of intrusive post-medieval pottery was recovered from spread 103. The CBM included large quantities of overfired with a few underfired pieces, suggesting that the structure may have been a tile kiln. However, examination of the CBM suggests that the varying fabric types present and several styles of combing on the box flue tiles are not typical of a single point of manufacture. Another possible interpretation is that the structure was associated with a bath house; however given the relatively small area examined it is difficult to assign function with any certainty.

A shallow gully (105) to the east of the spread is of unknown function.

Bibliography

Wessex Archaeology, 2010, Prentice Place (New Play Facility) Carters Mead, Harlow, Essex, Archaeological Watching Brief, unpubl. client rep. ref. 73720.01

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THE MISPLACED MASTERPIECE – A REASSESSMENT OF THE BERRYFIELD MOSAIC

Philip J. Wise

The Berryfield Mosaic, illustrated on the front cover of this volume, is one of the most important Roman antiquities ever discovered in Colchester. It was found in 1923 in the south-eastern corner of the walled Roman town, in an area known as Berryfield, and was on display in Colchester Castle Museum for almost ninety years before it was relocated to the town's newly-built contemporary arts space known as 'Firstsite' in 2011. The redisplay of the mosaic prompted a reassessment of the circumstances of its discovery and, in particular, its exact findspot in Berryfield.

The mosaic measures 5.8m (19ft) square, with a central panel 3.0m (10ft) square. It is from the dining room of a luxurious town house because the decorated area is surrounded by a red border where dining couches would have been positioned. It dates to the late 2nd century AD and has a nine-panelled decorative scheme divided up by guilloche, or ribbon patterns. The central panel is of square shape containing a roundel of guilloche and a highly stylized flower. In the corners there were originally floral patterns, although one is missing as a result of its destruction by a medieval rubbish pit. The four rectangular panels each contain a fabulous beast, swimming clockwise, pursuing a dolphin. These are: a marine bull; a sea-gryphon, with the body of a lion and the head of an eagle; a sea-leopard and a sea monster, with the head missing, but which may have originally been a 'pistrix' with a dragon's head and the body and tail of a fish.

The first and fullest account of the discovery of the Berryfield Mosaic appeared in volume XVI of the *Transactions of the Essex Archaeological Society* (Gurney Benham 1923, 295–6). Here it is stated that the pavement 'was found about 5 March [1923], about 3½ feet below the surface, in Berryfield... The land where the pavement was found is occupied by Mr. [William Cecil] Lewis, as a nursery garden, and the discovery was due to a deep hole having been dug in order to bury a collection of weeds'. The account also gives the following information about the precise location of the discovery on the Berryfield site, 'about 30 yards east of Queen Street'. This published account does not include a site plan and there are no further details of the excavation itself, beyond the information that it was 'a matter of great difficulty' and cost £70. There is a photograph of the mosaic *in situ* (Gurney Benham 1923, pl. facing p. 294), but this is tightly framed and shows none of the surrounding area.

There are other surviving photographs of the discovery, including one that was published in *The Times* and shows two men inspecting the mosaic, one of whom is believed to be the landowner Mr Douglass Gray Round and the other, almost certainly, the Honorary Curator of Colchester Castle Museum Dr Philip Laver. This photograph shows the two men standing on the mosaic and thereby confirms its depth below ground level. In the background there is a metal fence and an area of grass, but no notable features which could help to precisely locate the findspot. Amongst the other photographs are two taken by Philip Laver, confirming that he must have visited the site, but again only of the mosaic itself rather than of the surrounding area.

Laver refers to the Berryfield Mosaic in an article he wrote about the early history of Berryfield in which he bemoans the fact that the location of this and other mosaics was 'not accurately determined with regard to some permanent or well-known object, such as the town wall; much trouble would have been saved by so doing' (Laver 1924, 118). In this article, in which the findspot of the mosaic is described as 'Beryfield', Laver states that 'the middle [of the mosaic] was 320 feet from the town wall on the east, and 250 feet from the same on the south, these distances being taken at right angles to the run of the [town] wall' (Laver 1924, 119). Lastly in these published early accounts is the record in the Annual Report of Colchester Castle Museum for 1923/4 (p. 17, 4758.24) of the donation of the mosaic by Mr Round to the Museum, but no further details of its discovery are given.

There is then a gap of over thirty years before the next publication by Rex Hull in his 'Roman Colchester' of 1958 (Hull 1958, 218, entry 103). In this comprehensive survey Hull follows the location for the findspot of the mosaic given by Laver, stating that 'The position (reported inaccurately as about 30 yards east of Queen St.) has been measured on the map by the Borough Engineer'. Hull, incidentally, also re-dates the discovery of the Berryfield Mosaic to 14 March 1923.

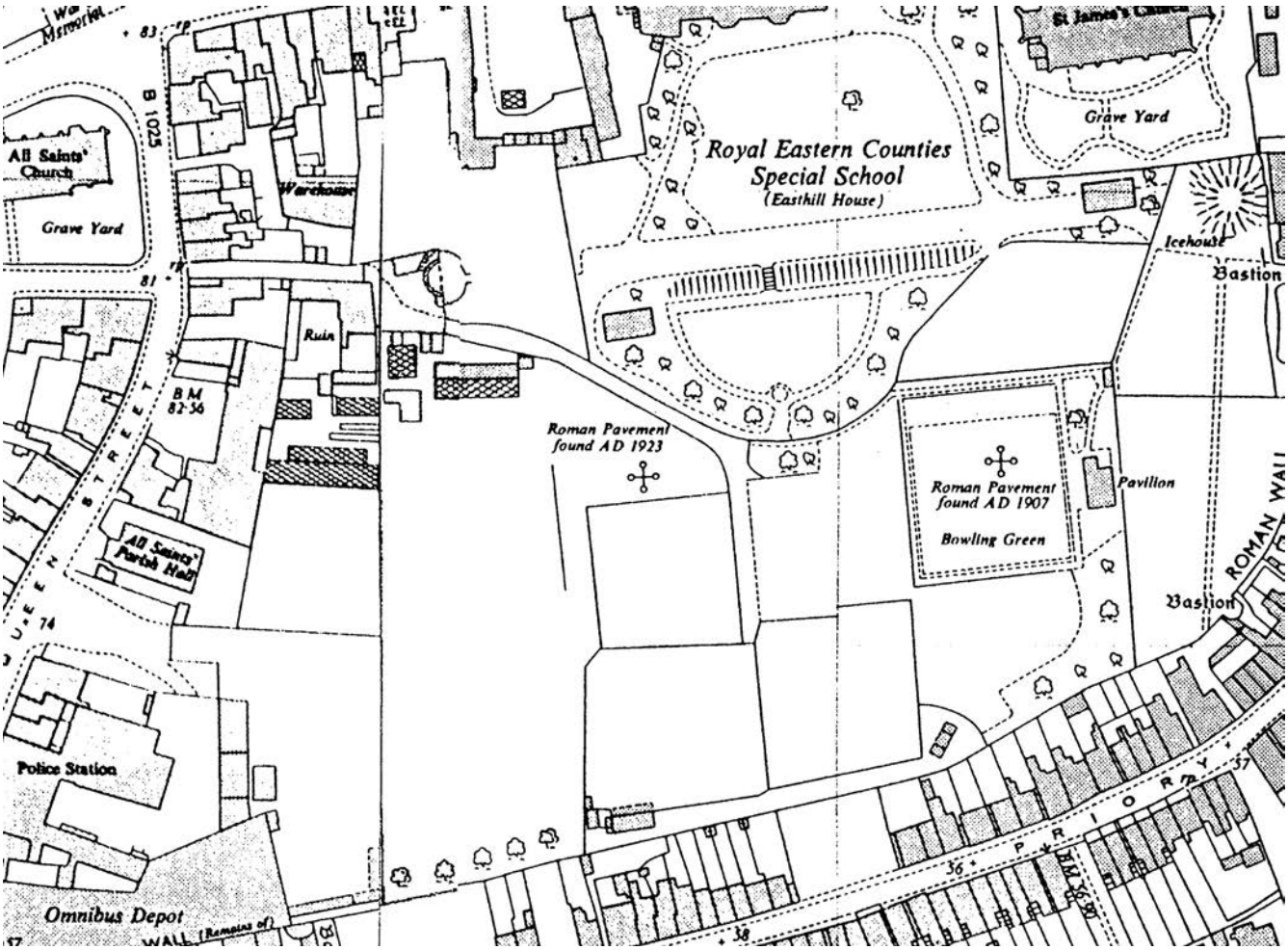

FIGURE 1: Extract from 1952 Ordnance Survey Map

The Berryfield Mosaic is included in Rainey's 1973 publication of mosaics found in Roman Britain, but the entry is brief and adds nothing beyond citing a parallel found at Dyer Street, Cirencester (Rainey 1973, 56, entry 12). More recent is the magisterial survey by David Neal which provides a detailed description of the mosaic design and its parallels, including the similarity between the central panel and mosaics from North Hill and the Three Cups Inn in Colchester (Neal and Cosh 2009, 126–9, entry 291.59).

A study of these various published accounts reveals therefore that there are two possible locations for the findspot of the Berryfield Mosaic. The first, that given by Gurney Benham, is shown on the 1952 Ordnance Survey map as being west of a north–south boundary running down the centre of Berryfield which separates a group of tennis courts and bowling green to the east from a market garden to the west (Fig. 1). In the course of excavations in the 1950s on the site, which by then had become known as Lewis's Gardens, the excavator Kitty Richardson cited information from the head gardener Mr A.H. Bloomfield also giving a location west of the boundary (Richardson 1968, 7). The second, that favoured by Laver, places the mosaic on the opposite side of the boundary and it is this which is followed by Rex Hull in his 1958 publication 'Roman Colchester' (Hull 1958, 218) (Fig. 2).

In favour of the eastern location proposed by Philip Laver it is worth noting that in 1907 two fragments of a mosaic were found during the construction of a bowling green in the Berryfield. These were described by Philip Laver's father Henry as 'a large piece of red tessellated pavement… and, also nearby, a smaller piece of coloured, with geometric figures in it' (Laver 1909, 89; Neal and Cosh 2009, 126, entry 291.58). In addition an archaeological evaluation undertaken by the Colchester Archaeological Trust in 2006 during the construction of 'Firstsite' revealed the existence of a Roman building with an *opus signinum* floor in the service yard at the eastern end of the new building (Orr 2006). This confirms that Roman buildings do extend into the eastern part of the Berryfield site.

By contrast three pieces of evidence may be advanced for the western location given by Gurney Benham. Firstly, the land tenanted as a market garden by Mr Lewis in the 1920s is known to have been to the west of the north–south boundary referred to above. Secondly, it may be suggested on grounds of date and context that the mosaic comes from the luxurious town house, known as House II, found on the site in 1955 by Richardson which extended into this location (Richardson 1968, 9–10). Thirdly, and following on from the second point above, there are strong similarities between the guilloche pattern on the Berryfield Mosaic and those seen on the fragments found in the Lewis's Gardens excavations. Both guilloche are described by Neal as being 'outlined grey with red, yellow and white strands' (Neal and Cosh 2009, 126, entries 291.57 and 291.59). In addition, Neal suggested that the fragmentary mosaic from Lewis's Gardens was decorated with fabulous sea monsters on the

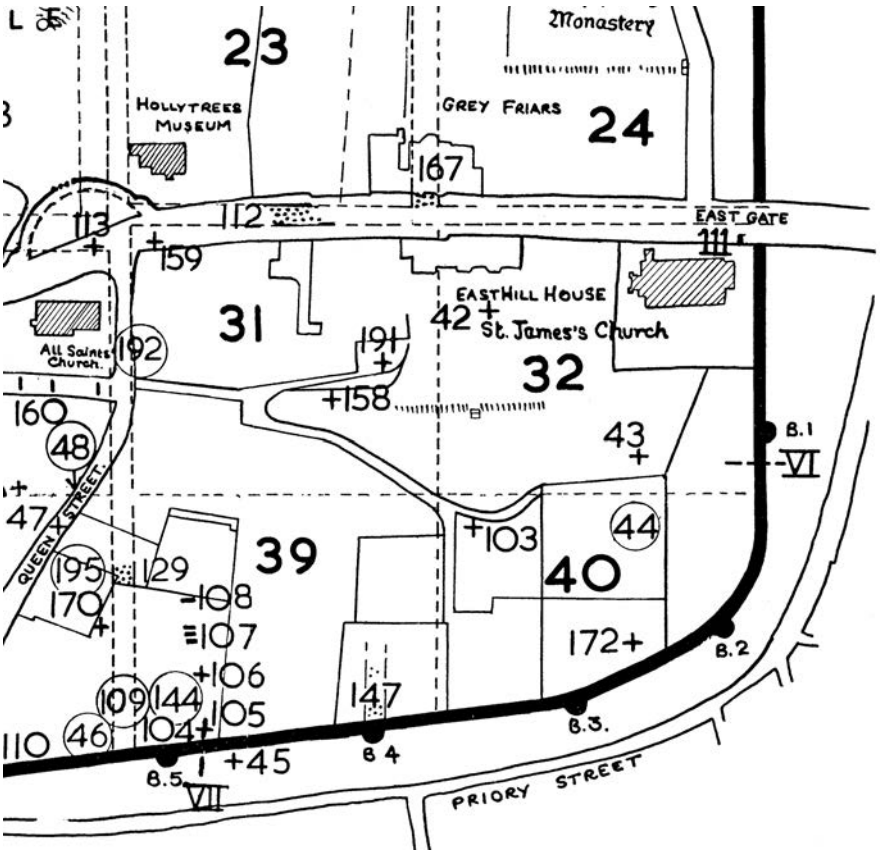

FIGURE 2: Extract from plan in Hull's *Roman Colchester* showing the Berryfield Mosaic as located at findspot 103

basis of a small surviving area with an animal's paws or hooves and a red 'streamer' (Neal and Cosh 2009, 126, entry 291.57). Thus both the fragmentary mosaic from Lewis's Gardens and the Berryfield Mosaic had the same decorative scheme. On balance then the western location seems the most likely.

In 2011 the Berryfield Mosaic went on permanent display in the 'Firstsite' building in an area in the central part of the structure which has become known as the 'Mosaic Space'. As a result of the research presented here it is possible to confirm that the Berryfield Mosaic is displayed only a few metres from where it was originally found in 1923. The exact findspot is at the front of the auditorium close to the right (or east) wall when viewed from the audience seating. This is surely a very rare example of a Roman mosaic returning home.

Acknowledgements

I was prompted to write this note by Kath Wood, the then director of 'Firstsite', who invited me to give a lecture entitled 'The Secret Life of the Berryfield Mosaic' in November 2011 at 'Firstsite'. This paper builds on earlier work undertaken by Dr Simon Collcutt for a desk-based assessment of the Berryfield site in 2003 – St. Botolph's Quarter Regeneration Schemes Colchester Cultural Heritage (Archaeology) Statement Part 1: Background & Existing Situation. I have also benefitted from stimulating discussions about the Berryfield Mosaic with Sarah Smith.

Bibliography

Gurney Benham, G. 1923, 'Archaeological Notes: Two Roman Pavements at Colchester', *Essex Archaeol. Trans.*, New ser., XVI, 294–6

Hull, M.R. 1958, *Roman Colchester* (London: Society of Antiquaries)

Laver, H. 1909, 'Mosaic pavements in Colchester', *Essex Archaeol. Trans.*, New ser., X, 84–90

Laver, P. 1924, 'Archaeological Notes: Beryfield', *Essex Archaeol. Trans.*, New ser., XVII, 118–21

Neal, D.S. and Cosh, S.R. 2009, *The Roman Mosaics of Britain Volume III: South-East Britain* (London: Society of Antiquities)

Orr, K. 2006, 'Firstsite: Newsite, Summary of Archaeological Test-pits', unpublished note, Colchester and Ipswich Museum Service archives

Rainey, A. 1973, *Mosaics in Roman Britain* (Newton Abbot: David & Charles)

Richardson, K.M. 1968, 'Excavations in Lewis's Gardens, Colchester, 1955 and 1958', *Essex Archaeol. Trans.*, 3rd ser., 1 (for 1961–5) 6–35

'NEW' ANGLO-SAXON CHARTERS OF BARKING ABBEY

James Kemble
using, with his permission, notes by the late C.R. Hart

In 1951, Dr Hart collected the early charters known at that time relating to Barking Abbey from its foundation, and 15 years later extended the discussion as part of an analysis of charters of eastern England (Hart 1951, 1966). In 1987 Dr Kenneth Bascombe published two previously unknown 16th century copies of Anglo-Saxon charters of the late 7th or early 8th centuries, manuscript copies of which had been found in 1969 by Mr Herbert Lockwood of Ilford while he was researching at Hatfield House in Hertfordshire (listed in the 'Salisbury Collection' as Essex Ilford Hospital 1/6) (Bascombe 1987, 85; Lockwood 1990, 11). In the same manuscript were a further seven charters which had been copied probably from a now-lost cartulary of Barking Abbey. The discovery by Mr Lockwood of these copies was the largest single discovery of texts of Anglo-Saxon charters made within the second half of the last

century, and their study provides a window to Essex history in a period before and after the Viking disruption about which detailed evidence is sparse. Over 40 years after their rediscovery, an attempt to provide some further observations on these 'new' charters is perhaps due (Keynes 1988, 186).

The circumstances by which the discovery occurred were supplied by the late Mr Lockwood to the second author. The discovered 'Salisbury' manuscript is identified with a 'Vellum Book' of Ilford Hospital of St Mary and St Thomas which was abstracted by the antiquary Smart Lethieullier in his manuscript 'History of Barking' (Lethieullier *c*.1759). The 'Vellum Book' came to the Salisbury family in the mid-19th century. Ilford Hospital, founded *c*.1140, was under the control of Barking Abbey; it was granted in 1538 after the abbey's dissolution to J. Vaughan, a master in chancery (*VCH* ii, 186; v, 228). According to a contemporary record kept at Valence Reference Library (Barking & Dagenham PL), the 'Salisbury' manuscript is referred to in the case of 'Fisher versus Wite respecting the Tithes of North Grange claimed by Ilford Hospital in the Bishop's Court, Trinity 1593'. Vaughan surrendered the hospital's deeds to his successor Mr Henry Fanshawe (?recte Thomas Fanshawe) in 1577. These included a parchment which, by Vaughan's orders, had been copied in 1572 by his servant, James Armorer, from 'a more ancient document somewhat defaced'. This included a tithe list and rental of Ilford Hospital dated 8 Richard II (1385/6).

What Armorer was copying was probably a lost Barking Abbey cartulary. The latest datable deed in the 'Vellum Book' in Armorer's handwriting is one of Isabella Missenden dated 1397/8 (f. 13v). Later deeds entered into the 'Vellum Book', not in Armorer's writing, may have been copied from a second Barking cartulary (also lost) known to Lethieullier, the Register of Catherine de la Pole (abbess from 1433–73). It is of interest that Armorer's transcription left gaps after each charter, suggesting that the boundary clauses written in Old English in the cartulary were incomprehensible to him but that he hoped that assistance at some future date would allow them to be inserted. Other Barking Abbey manorial documents which came to the Hulse family of Breamore House, Wiltshire (last lords of the manor, to which Smart Lethieullier was related by marriage) were transferred to the Essex Record Office in 1968 at Mr Herbert Lockwood's suggestion. Mr Lockwood enquired into the possibility that lost cartularies or early deeds of Barking Abbey remain at Breamore House and it is conceivable that others may yet be discovered there or in the 'Salisbury' collection at Hatfield House.

The context of the 'New' charters

Bede records, without a date, the foundation of the monasteries at Barking and Chertsey by Eorcenwald, probably a member of the royal household, who subsequently became the fourth bishop of London whose diocese included Essex (Bede, HE, iv, 6). Barking's foundation occurred in the reign of Sebbi (*c*.663 × 693/4) after the East Saxons had been brought back from their pagan idolatory in 665 (Yorke 1990, 48), so the traditional date of 666 in the Chertsey Register (BL Cott. Vit. A xiii, f. 19) may be correct. The foundation at Barking with Æthelburga as abbess was made with the grant of 40 *cassatae* (hides) called *Beddanhaam* (the home of B(a)edda) and *Berecingas* (from which 'Barking' derives) which Reaney (1935, 88) translates 'dwellers among birch-trees', though Ekwall (1960, 26) and Watts (2004, 35) prefer 'people called after Berica'. A charter, which has been dated to *c*.687 (Hart 1966, 133), contains the bounds added by a later scribe which include *writola burna*, identified as the Beam river, the Thames and a prominent tree probably in Central Park, Dagenham (Kemble 2007, 29). Following the Viking invasions and the abbey's destruction, probably *c*.870, Barking's records are silent for half a century (Lethieuiller *c*.1759; Dugdale, *Monasticon*, 445).

Of the nine Barking charters which Armorer copied, apart from the two published by Dr Bascombe, seven are not well-known in Essex, though the Latin transcripts have been added to the useful Electronic Sawyer website provided by the server at Kings College, London. These seven date to after the retrieval of Essex from the Vikings by Edward the Elder by 917 (Hart, 1993, 183). The Barking Ordinale records that Wulfhida was abbess of Barking *c*.963 when the abbey was 'restored' by Edgar (Loftus, n.d., 14). The three earliest of the 'new' charters, dated 932 and 946, suggest that the abbey began functioning again, not in the reign of that great builder and refounder of monasteries King Edgar (955–79) and his archbishop Dunstan, but several years earlier (Brooks, 1992, 1). This conclusion is supported by the independent evidence of a Will dated 946x951 of earldorman Ælfgar, by which he bequeathed an estate at Baythorne in Birdbrook to Barking monastery, an unlikely act if Barking had been defunct (Whitelock 1930, 7).

The nine 'New' charters

The following extracts from the new charters, relating to the land grants only, are provided to support the discussion that follows. The full text of the charters can be found at the electronic sawyer website: www.esawyer.org.uk

A and B. King Suebred's grant to ffymme of 30 manentes (hides) in Nasingum (Nazeing), and 10 manentes called Ettunende obre. Dated 693x709; (Hatfield House, Ilford Hospital 1/6, f. 15r, copy, s. xvi med); e-Sawyer nos. 65a, 65b.

C. King Athelstan's grant of 10 cassatae (hides) to abbot Beorhtsige at Buram (Bowers Gifford). Dated 9th November 932; (Hatfield House, Ilford Hospital 1/6, f. 16rv, copy, s. xvi med); e-Sawyer no. 418a.

ego Æthelstanus rex Anglorum . per omnipotentis dexteram totius Brittanie regni solio sublimatus . quandam telluris particulam . meo fideli abbati Biorhtsigio . meritis exigentibus humillimis suis . id est decem cassatarum in loco quem solicole et Buram uocitant libenter tribuo .

Translation: I, Athelstan, king of the English .....to my faithful abbot Beorhtsige for the deserts of his humble reverence willingly bestow ten hides in a place called Bura.

D. King Eadred's grant of 4 mansae (hides) to a religious woman Æthelgifu at *Tollesfuntum*, ?Tollesbury or Tolleshunt. Dated 946; (Hatfield House, Ilford Hospital 1/6, f. 18v: copy s. xvi med); e-Sawyer no 517a.

ego Eadredus rex Anglorum ceterarumque gentium in circuitu persistentium gubernator et rector . primo anno imperii mei . litteratoris apicibus roboraui quod cum consensu heroicorum uirorum tradidi cuidam sancte monialis femine uocitate nomine Æthelgifu modicam numinis mei partem id est . iiii . mansas agelluli . eternaliter tradendo concessi . pro illius amore qui dixit 'data et dabitur vobis' . ubi turbarum collacione iamdudum nomen illatum hoc adesse profertur . at Tollesfuntum .

Translation: I Eadred king of the English and of people in the realm governor and ruler in the first year of my reign .....grant to a woman of the holy nuns named Æthelgifu a small part of my dominion that is 4 hides of fields to hold in perpertuity .....at Tollesfuntum

E. King Eadred's grant of 19 mansas (hides) to a religious woman Eawynn at Hockley. Dated 946; (Hatfield House, Ilford Hospital 1/6, f. 18r: copy s. xvi med); e-Sawyer no 517b.

ego Eadredus rex Anglorum ceterarumque gentium in circuitu persistentium gubernator et rector . cuidam religiose sanctae conuersacionis moniali femine uocitato nomine Eawynn . modicam numinis mei partem id est . xviiii . mansas agelluli eternaliter tradendo concessi pro illius amore…. at Hoccanleage
Translation: I, Eadred, king of the English and of other people in the realm governor and ruler to a certain religious woman of the holy congregation of nuns named Eawynn by my will grant 19 hides of fields to hold for ever for love at Hockley

F. King Eadred's grant of 17 manentes (hides) to his thegn Ælfstan at Wigborough. Dated 947; (Hatfield House, Ilford Hospital 1/6, ff. 15v–16r: copy s.xvi med); e-Sawyer no. 522a.

ego Eadredus rex Anglorum ceterarumque in circuitu persistentium gubernator et rector . cuidam fideli meo ministro uocitato nomine Ælfstano . pro eius amabili obedientia eiusque placabili fidelitate quam michi in sue deuotionis obsequio semper egit . xvii . mansas in illo loco ubi iamdudum solicole illius regionis nomen imposuerunt at Wicgan beorgun . quatenus ille bene perfruatur ac perpetualiter possideat
Translation: I Eadred king of the English and of other people in the land governor and ruler to my faithful minister named Ælfstan for his fealty and fidelity which he always showed to me in his service of devotion 17 hides in the same place…….at Wigborough for him to possess in enjoyment and in perpetuity

G. King Eadred's grant of 8 manentes (hides) to the monastic community at Barking of Lippanwelle and Ciricdune. Dated 950; (Hatfield House, Ilford Hospital 1/6, ff. 17v–18r: copy s.xvi med); e-Sawyer no. 552a.

[Edredus]. Cuius regis largitatem monastice conuersationis familia in Bercingum iam ualet alactriter conlaudare de harum usurpacione terrarum octo manentium iiii ad Lippanwelle iiii ad Ciricdune . quas scilicet tellures anno dominice incarnacionis . Dccccl . et quarto quo regie dignitatis sceptra susceperat . perpetualier concessit
Translation: Eadred……grant in perpetuity land to the monastery of the religious congregation in Barking ……..8 hides, 4 at Lippanwelle 4 at Ciricdune so named, in the year of our Lord 950

H. King Æthelred's grant of 20 mansae (hides) to a man called Sigered at Nadfelda Regnante, Hatfield Broad Oak. Dated 18th April 1013; (Hatfield House, Ilford Hospital 1/6, ff. 17rv: copy s.xvi med); e-Sawyer no. 931a.

ego Edelred rex Anglorum ceterarumque gentium in circuitu persistentium gubernator et rector . cuidam uenerabili uiro uocitato nomine Sigered . uiginti mansas eternaliter tribuo . in illo loco ubi ruriculi appellatiuo usu ludibundisque uocabulis nomen indiderunt . at Nadfelda . ut eandem supratаxatam terram uite sue cursu feliciter possideat
Translation: I Æthelred king of the English and of other people in the realm governor and ruler bestow to a venerable man named Sigered 20 hides for ever in the place…. Hatfield so that he may hold the above stated land in felicity for the course of his life

J. King Æthelred's grant of 5 mansiunculi (hides) to Sigered, his minister, at Horndon. Dated 20th April 1013; (Hatfield House, Ilford Hospital 1/6, ff. 16v–17r: copy s.xvi med); e-Sawyer no. 931b.

ego Æthelred rex Anglorum . per omnipotentis dexteram totius Brittannie regni solio sublimatus . ruris quandam particulam uulgariter Đorndun nominatum . quinis mansiunculis estimatum . liberam preter arcem pontem expedicionemque . Sigeredo ministro meo . in ius perseuerabile . uita comite perfruendam . ultimoque exaltato spiramine . cuicumque uoluerit relinquendum . pro eius satis placabili ministerio munereque amabili libenter admodum concedo
Translation: I Æthelred king of the English with right of rule of the whole of Britain grant land which is commonly called Thorndon 5 hides by estimation to Sigered my minister in lasting right of enjoyment.

Discussion

Charters A and B. These two charters of Suebred are discussed by Dr Bascombe (1987, 85) who suggested that they represented the foundation of a nunnery at Nazeing. Archaeological excavation has exposed two probable Middle Saxon churches and burials, mainly of females, a possible site of a convent of nuns at Nazeingbury (Huggins 1978, 49).

Charter C. There are a number of possibilities for the location of *Buram*, Bures in Hinckford Hundred, Mount Bures in Lexden Hundred, both in the extreme north of Essex, and Bowers Gifford in Barstable Hundred in the south. The Domesday holdings in Bures and Mount Bures are multiple and each is small, mostly of a few acres, the largest one hide of Roger de Poitou at Mount Bures. For Bowers Gifford in 1086, Ranulf Peverel held one hide, Walter the Deacon held two hides 40 acres and Grim the Reeve two hides. Westminster Abbey held 50 acres in Bowers Gifford. With these five hides 90 acres, Hart (1993, 183) included five hides of thegn Alric in nearby Langdon, in total approximating to Athelstan's grant of 10 hides to Beorhtsige.

Biorhtsige, abbot, appeared as witness to a charter at Winchester in 934 (S 425). In 949 Beorhtsige was witness to Eadred's grant of 26 hides of Reculver minster, beyond the south bank of the Thames estuary, to Christ's Church Canterbury (S 546; Keynes 1980, 27). Here he is described as 'episcopus huiusece donationis corroborationem contuli' ('bishop, making corroboration of this gift'). Electonic Sawyer ascribes his bishopric to ?Rochester, on the other side of the Thames opposite Bowers Gifford. Was this the same man as abbot Beorhtsige who received Bowers Gifford in 932 who had made his progress to bishop of Rochester by 949 in succession to Bishop Burgric?

There was a mother church, perhaps also the site of a monastery, at St Mary's South Benfleet (O.S. reference TQ 778862), adjacent to Bowers Gifford on the north bank of the mouth of the Thames estuary. Abbot Beorhtsige may have been its abbot. The foundation at St Mary's South Benfleet was offered by King Edgar to St. Oswald in 969 when he was looking for a site for a monastery, but it was rejected in favour of Ramsey (Bryhtferth, *Vita Oswaldi*, i, 427). Edward Confessor confirmed a grant of land of St Mary's Benfleet to Westminster Abbey which held seven hides and 30 acres in 1086, but the church retained part of its Bowers Gifford endowment. In the absence of later evidence, Bowers Gifford seems the most likely site of *Bura* of Athelstan's grant, perhaps also including land in South Benfleet (Morris 1983, f. 14a) (Morant, 1768; Hart 1971, 31; Kemble 2008, 156).

The relationship with Barking Abbey is not clear in this grant, though its inclusion in the 'Vellum Book' indicates there almost certainly was one. Part of Fanton Hall, North Benfleet, was included in the St Mary's Benfleet endowment, and part held by Barking at Domesday, plus an unidentified estate of two hides and 50 acres (Morris 1983, ff. 14a, 17b). North and South Benfleet and Bowers Gifford all held adjacent detached portions of their parishes on Canvey Island in the Thames estuary until the 19th century. These may be related to Athelstan's grant to abbot Beorhtsige, all or part of which, at some unknown date, presumably came to Barking.

Charter D. The four parishes Tolleshunt D'Arcy, Knights, Major and Tollesbury form a compact group north of the Blackwater estuary, the division of the Tolleshunts post-dating the Norman Conquest (Carter, 1965). A large detached part of Tollesbury of 986 acres was in 1888 incorporated into Tolleshunt D'Arcy. St Pauls acquired an estate in Tolleshunt before *c*.998. In 1086 and before, Barking held the manor of *Tolesbia* for eight hides, and Ranulf Peveral held one hide from the abbess. This is almost certainly the detached 130 acres of Tollesbury shown on the 6'' Ordnance Survey map of *c*.1875 and a few acres in Tolleshunt D'Arcy, belonging to Hyde Farm, the farmhouse on the borders of D'Arcy and Tollesbury (O.S. ref. TL927100). Part of Barking's eight hides may have been Æthelgifu's in 946.

In 1086, Ranulf Peverel held *Toleshunta* (D'Arcy) which Siward had held as a manor of four and a half hides and 30 acres. Of this four free men had held half a hide and five acres TRE which Ralph Baynard and Hugh de Montfort had. This was D'Arcy Hall (Round, 1900). The four-hide holding of Æthelgifu may be represented by Siward's holding less the half hide and five acres of the four free men, as Little Domesday suggests (Morris 1983, ff. 18b, 54b, 75b).

Charter E. At Domesday, 1086, Barking Abbey held seven and a half hides at *Hocheleia*, in Rochford Hundred (Morris, 1983, f. 18b). Earl Swein held one hide at *Hocheleia*, one hide at *Hachleia* and one at Plumberow in Little Hockley. Eadred's grant of 19 hides to Eawynn had evidently been subdivided. Of Swein's holding of Plumberow which had been Wymarc's *temp*. Edward the Confessor, the church belonged to Barking until *c*.1384 (Ordnance Survey ref. TQ 826934). The tithes were granted in 1606 to Edmund Newport to hold of the manor of Greenwich, and the advowson passed to Wadham College, Oxford. Plumberow may have been part of this subdivision (Morant 1768, 287).

Eawynn also appears as the beneficiary of a grant by King Eadred of 12 hides at Shopland, also in Rochford Hundred, in 946 (S 1793). Shopland appears in the 'Ship List' of 995x998 as the property of St. Pauls but when Eawynn disposed of it is not known; certainly Shopland was not in Barking's hands in 1086.

In these two charters D and E are named two religious women, Eawynn and Æthelgifu, who may have been previously unknown abbesses of Barking. Both charters are dated 946, indictione iiii. D specifies Eadred's 'primo anno imperii mei'. Though there are similarities, the rubrics and witnesses differ significantly. This raises a question as to whether this was a year when one abbess succeeded the other at Barking, or whether one of them, possibly Æthelgifu, was head of a dependent convent being granted land in a similar way as ffymme received Nazeing (Charters A and B).

Charter F. Great and Little Wigborough are neighbouring parishes to the Tolleshunts on the northern bank of the Blackwater estuary. At Domesday, Barking held *Wicgheb'ga* for 11½ hides and 13 acres, with six salthouses, probably those of Salcot, a hamlet of 550 acres in Wigborough. Hamo the Steward held Little Wigborough which a free man Goti had held before 1066 as a manor for seven hides of land and one hide of woodland. Hamo annexed two of the king's freemen with 30 acres. Ranulf Peverel held *Wigheb'ga* which a free man had held as a manor for half a hide. Hugh of St Quentin held *Wigheb'ga* which a free man had held as a manor for two hides. At some time between 947 and 1066, part of Ælfstan's holding came to Barking (Hart 1993, 183).

Ælfstan, dux, witnessed charters concerning Thanet in Kent in 943, and Leckford in Hampshire in 947 (S 489, S 526). It is apparent that Barking Abbey had acquired a substantial land-holding in the Tolleshunts and Wigborough producing salt and containing salt-marsh pasture for sheep, accessible from London by river and sea in the east of the county.

Charter G. Electronic Sawyer suggests Lippanwelle was in Barnstaple Hundred (*recte* Barstaple), but it is probably to be identified with the manor of Limpwella in Chafford Hundred, recorded in Domesday Book but subsequently lost. In 1066 this manor had been held by Edric for half a hide but by 1086 it had passed to Hugh who held it from the Bishop of Bayeux. Limpwella's location has been a matter of some doubt as Morris (1983) deemed it 'unidentified' and Powell (1978) suggested that it may have been Imphy Hall in Buttsbury. However, the entry in Domesday Book for Limpwella immediately follows an entry in which Gilbert, a man of the bishop of Bayeux, held an estate of one and a half hides in Stifford in Chafford Hundred (Morris 1983, f. 25a).

In 1066 Barking Abbey also held another estate of 70 acres in Stifford (TQ 604803), a parish through which runs the Mardyke stream (Morris 1983, f. 18a). On the fly-leaf of a Gospel Book of Barking Abbey (Bodleian Library, MS. 155, f. 196v) is a memorandum, dated *c*.1090, of the lands of Gilbert in Stifford amounting to 72 acres on both banks of the Mardyke (TQ 600805). It therefore seems probable that the 70-acre estate held by Barking Abbey at Stifford in 1066 can be equated Gilbert's lands, although the tenant is not named in Domesday Book (Hart, 1971, 44). He was almost certainly the man of the same name who had held one and half hides in Stifford of the bishop of Bayeux in the Domesday Book entry preceding Limpwella (above; Morris 983, f. 25a). These lands may be the remnants of King Eadred's four hide grant to the abbey.

With regard to Ciricdune, a farm called Cherrydown (Chear(e)downe in a terrier of 1559) appears on the 1897 Ordnance Survey Map in Chingford (TQ 373933). A Roman road ran just west of the farmhouse. About 250 yards north of the farm on Church Hill is the site on Chingford Mount of the church of SS Peter and Paul (Kemble 2007, 30). Old English *cirice dun*, 'church hill', has evolved by confusion into 'cherry down'. This charter is the only known documented evidence of a tenurial association with Barking. By Domesday, St Pauls held six hides and Robert Gernon five hides in Chingford (Hart 1993, 193, 201).

Charter H. Hatfield Broad Oak's 20 hides held by Harold in 1066 corresponds to Æthelred's grant of 20 hides to Sigered. The identification of this grant is with Hatfield Broad Oak alias Hatfield Regis, Nadfelda Regnante. Before 1066, a church existed here whose one hide and 30 acres were seized by Earl Sweyn after he lost his position as sheriff of Essex (*VCH*, i, 429). After the dissolution in 1536 of Hatfield Broad Oak priory, Barking Abbey briefly owned the advowson of Hatfield Broad Oak until 1539; it passed in 1546 to Trinity College, Cambridge (Dugdale *Monasticon*; *VCH*, viii, 180).

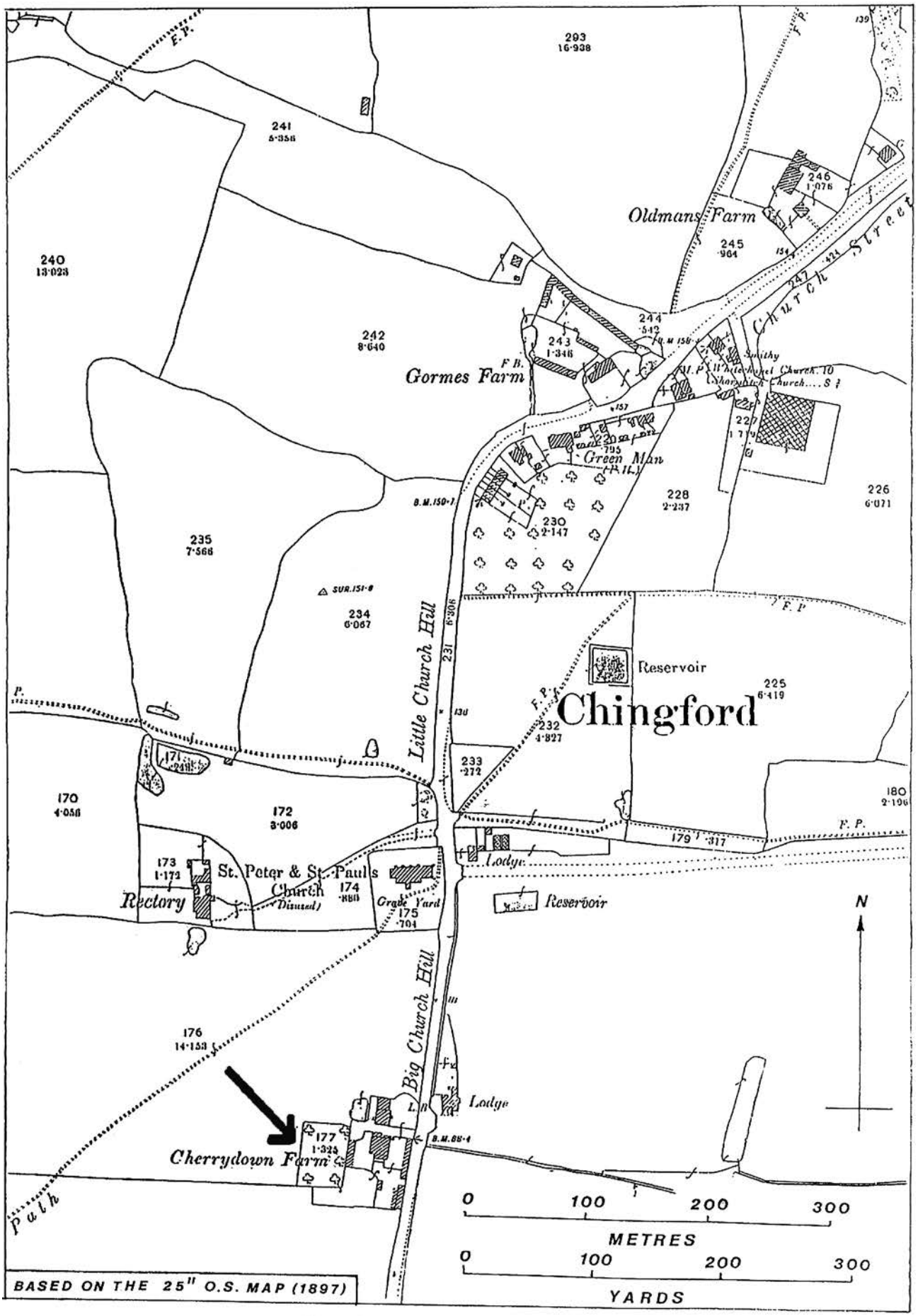

FIGURE 1: The site of *Ciricdune* (Cherrydown Farm)

Æthelred granted land at Sibertswold in southeast Kent to his minister Sigered in 990 (S 875). He witnessed in 1005 for land in Devon and in 1006 for land in Suffolk and Kent and Lawling in Essex (S 910, S 914).

Charter J. In Domesday Book, Earl Swein held *Torindunam* (West Horndon) for five hides and 15 acres which King Edward's thegn Alwin had held. Drogo held *Torindunam* (the manor of Abbots in East Horndon) from William Peverel, in 1086 three and a half hides and 21 acres, which Aelmer, a free man had held before 1066 as a manor for one and a half hides (Morris, 1983). The hideage of Æthelred's grant to Sigered, the king's minister, of five hides is similar to the five hides and 15 acres of Swein, the king's sheriff. There are only perhaps some 50 years between the two documented holders minister Sigered and thegn Alwin. This became Lord Petre's estate of Thorndon Hall (Round 1903, 399).

Charters H and J of King Æthelred were drawn up by Ælfun, bishop of London, where the king's court had assembled in the summer of 1013. The estates lay in Ælfun's diocese (Keynes, 1980).

Conclusion

On 9th November 932 King Athelstan was at Exeter 'ciuitate famosissima' when he issued the grant of *Buram* to abbot Beorhtsige, before travelling eastwards to Amesbury in Wiltshire the following month. His presence in Devon was no doubt to show a determination to keep the Cornishmen at bay west of the River Tamar, having deprived them of Exeter just five years previously. Only the previous year Athelstan had been in Essex at Colchester with his royal court when he had confirmed land in Hampshire to abbot Ælfric (S 412). This was a period of relative peace in the kingdom, the Northumbrians having been conquered in 927 and prior to Athelstan's campaigns by land and sea against the Scots in 934.

In contrast, the four charters of King Eadred spanning the years 946 to 950 were granted during years of conflict. They were made at the start of his nine-year reign, succeeding his brother Edmund who died by stabbing in a brawl on 26th May 946. The grant of Wigborough to thegn Ælfstan was in the year that the king came to Tanshelf, near Pontefract in Yorkshire, to secure the submission of Wulfstan, archbishop of York, and the Northumbrians who had rebelled. It is interesting that Wulfstan attested the Wigborough grant, though he allied himself again under Eric 'Bloodaxe' against Eadred the following year. Wulfstan continued be a thorn in Eadred's side at the time of the grant of Lippanwelle and Ciricdune to Barking, though he also witnessed this charter. Within two years Eadred had him imprisoned (ASC).

The two grants of King Æthelred to Sigered, dated April 1013, were made only eight months before the king fled to Normandy from repeated Viking attacks under Swein, king of Denmark. All that year Swein had ravaged across Mercia and Wessex as far as London, and attempts by Æthelred to buy him off had failed. Only the previous year Archbishop Ælfheah of Canterbury had been hacked to death with an axe by drunken Vikings after they ravaged Kent, Essex and East Anglia. Essex was leaderless after its ealdorman Leofsige had negotiated too generously with the Danes and then was banished for killing the king's reeve. Whether Barking Abbey could have been occupied at this time is not known, and it is likely that, however the abbey came to acquire an interest in minister Sigered's property, it followed in the more peaceable times of Cnut's reign after the battle of *Assandun* (probably Ashdon in north Essex) on October 18th 1016 (Hart 1992, 553; Kemble, 2014).

These seven charters C–J shed some further light about Barking Abbey in the 10th and early 11th centuries. Two previously unknown religious women, probably abbesses or anchoresses, are named. Some information about when and how the Abbey acquired its estates, some of which it held at the Domesday Survey, others which had lost or exchanged, is here revealed. Occasionally the later continuity of these Saxon estates can be traced.

Acknowledgement

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Bibliography

ASC: *Anglo-Saxon Chronicle* (ed.) Garmonsway, G.N., 1972 (Dent, London)

Barking & Dagenham Public Library, MS *Fisher v. Wite, Tithes of North Grange 1590–1593*

Bascombe, K. 1987, 'Two Charters of King Suebred of Essex', in K. Neale (ed.), *Essex Tribute* (Leopard Head Press), 85–96

Bede, *Ecclesiastical History of the English People*, trans. L. Sherley-Price (rev. edn, Harmondsworth, 1968)

Brooks, N. 1992, 'The Career of St Dunstan', in N. Ramsey, M. Sparks, T. Tatton-Brown (eds), *St Dunstan: His Life, Times and Cult* (Woodbridge), 1–23

Byhtferth, *Vita Oswaldi* (ed.) Raine, J. (London, Rolls series 71, 1879), 2 vols

Carter, H.M. 1965, 'The Manors of Tolleshunta', *Essex Archaeol. Hist.,* 3rd series, 1(4), 239–46

Dugdale, W., *Monasticon Anglicanum* (ed.) J. Caley, H. Ellis, and B. Blandinel, 6 vols (London 1817–30)

Ekwall, E. 1960, *The Concise Oxford Dictionary of English Place-names* (4th edn, Oxford)

Hart, C. 1951, *The Early Charters of Barking Abbey* (Colchester)

Hart, C. 1966, *The Early Charters of Eastern England* (Leicester University Press)

Hart, C. 1971, *The Early Charters of Essex (*Leicester University Press)

Hart, C. 1992, *The Danelaw* (Hambledon Press)

Hart, C. 1993, 'Essex in the Late Tenth Century', in Cooper, J. (ed.), *The Battle of Maldon, Fiction and Fact* (Hambledon), 171–204

Huggins, P.J., 1978, 'Excavation of Belgic and Romano-British Farm with Middle Saxon cemetery and churches at Nazeingbury, Essex, 1975–6', *Essex Archaeol. Hist.*, 3rd ser., 10, 29–117

Kemble, J. 2007, *Essex Place-names, Places, Streets & People* (Historical Publications)

Kemble, J. 2008, 'The East and Middle Saxon estates of Westminster Abbey', *Essex Archaeol. Hist.*, 3rd ser., 39, 152–61

Kemble, J, 2014, 'Knutsdrapa and the Site of the Battle of Assandun', *Essex Journal*, 49(i), 4

Keynes, S. 1980, *Diplomas of King Aethelred 978–1016* (Cambridge)

Keynes, S. 1988, 'Regenbald the chancellor', in R.A. Brown (ed.) *Anglo-Norman Studies X* (Woodbridge), 185–222

Lethieuiller, S. *c.*1759, *A History of Barking Abbey*, vol. 2, p. 153, photocopy at Valence House, Ilford (copy available in ERO, T/P 93/1–3)

Lockwood, H.H. 1990, 'One Thing Leads to Another', *Essex Journal*, 25(i), 11–13

Loftus, E.A, and Chettle, H.F. 1954, *A History of Barking Abbey* (Barking)

Morant, P. 1768, *The History and Antiquities of the County of Essex*, i

Morris, J. 1983, *Domesday Book – Essex* (Phillimore)

Powell, W.R. (ed.) 1978, *Victoria County History of Essex*, vii

Reaney, P.H. 1935, *The Place-names of Essex* (Cambridge)

Round, J.H. 1900, 'Tregoz of Tolleshunt Tregoz', *Trans Essex Archaeol. Soc.*, ns., viii, 330–2

Round, J.H. 1903, *Victoria County History of Essex*, i, 399

S: Sawyer, P.H. 1968, *Anglo-Saxon Charters* (London; and Electronic Sawyer, www.esawyer.org.uk)

Tolhurst, J.B.L. 1927 (ed.), *Barking Ordinale and Customary of the Benedictine Nuns of Barking Abbey* (Henry Bradshaw Society)
Victoria County History of Essex (ed.) Page, W. and Round, J.H., ii (1907)
Victoria County History of Essex (ed.) Powell, W.R., v (1966)
Victoria County History of Essex (ed.) Powell, W.R., viii (1983)
Watts, V. 2004, *The Cambridge Dictionary of English Place-names* (Cambridge)
Whitelock, D. 1930, *Anglo-Saxon Wills* (Cambridge)
Yorke, B. 1990, *Kings & Kingdoms of Early Anglo-Saxon England* (Routledge)

COLLEGIUM CHRONOLOGICUM

Herbert Eiden

In the course of the recent relocation of the Society's basement store at Hollytrees Museum the Library Committee examined the content of tin trunks comprising antiquarian books and manuscripts. One of these books was a leather-bound tome in *quarto*-format. On the spine is written 'Collegum Chronolog: MSS Sub Grævio Habitum 1698'. I have subsequently undertaken a more thorough inspection of the volume and in the course of this received excellent help and advice from Dr David Rundle, an expert in the cultural history of Renaissance Europe at the University of Essex.

Content

The volume is a handwritten chronicle in two parts, written in Latin on paper. The title page reads 'COLLEGIUM CHRONOLOGICUM Sub Celeberrimo Graevio habitum Aº MDCXCVIII.' After an eight-page introduction, discussing inter alia the virtues of the chronicles of Eusebius of Caesarea (AD 260/265–339/340) and the date of the Deluge, the chronicle begins with the events during the first century after the Flood, which is given here as the 23rd century before the birth of Christ. This part of the chronicle runs to page 231. The second part deals with events from the 1st century after Christ up to the Treaty of Breda, on the 30th (*recte* 31st) July 1667, which ended the second Anglo-Dutch war. This part, starting again with page one, has 363 pages. It is preceded by a short (3-page) explanation of the solar cycle, the moon cycle (also known as the metonic cycle) and the indiction cycle, periods of time used to date medieval documents.

Authorship

The title page and the spine give the name Graevius. Johann Georg Gräve, or in its latinized form, Johannes Georgius Graevius, was a German philologist and historian. Born in 1632 in Naumburg in Saxony he died in Utrecht in the Netherlands in 1703. Initially destined for the law profession, he abandoned his studies in jurisprudence in Leipzig after a meeting with the classical scholar Johannes Friedrich Gronovius in Deventer. He took up the study of philology which he completed in Leiden. After professorial positions in Duisburg (Germany) and Deventer (the Netherlands) he was called to the first chair of rhetoric at the University of Utrecht in 1662. Five years later, and in addition to this chair, he was also appointed professor of history and politics, positions which he held until his death. Graevius was a very popular teacher and lecturer who also enjoyed the favour of Louis XIV of France and William III of England; the latter made him historiographer royal.

All this makes Graevius an excellent candidate for the authorship of the chronicle. However, the title page says 'sub celeberrimo Graevius' which means 'under the most celebrated Graevius'. If Graevius were the author one would have expected a 'per' ('by') or 'auctor' ('originator'). Also, Graevius might not have called himself 'celeberrimo'. Furthermore, in a catalogue of Graevius' library, printed in the year of his death in 1703, which lists 119 manuscripts, there is nothing that equates with the 'Collegium Chronologicum'.[1] And why would he compile a chronology and end it in 1667, the year he became professor, with the book then produced in 1698? (if we can take that as the date of the ms's manufacture). All this adds to the sense that the book is from his circle in Utrecht, but may well reflect his own work or writing. Perhaps it is a transcript of his lectures by one of his students? If someone wanted to research this further, autograph letters by Graevius in the British Library would certainly be a good starting point for a comparison of the handwriting in the book and in his correspondence.[2] I think that, in the absence of firm proof about the authorship of the Collegium, it should be catalogued as 'attrib. to Johannes Georgius Graevius'.

Provenance

As intriguing as the question of the authorship of the chronicle, is that of how it ended up in the possession of the Essex Archaeological Society. On the flyleaf, the blank page at the front of the book, a certain 'Guil. Hen. Niger' stated in Latin that he bought the volume on 14 November 1866 from a London bookseller. Unfortunately, neither the name nor address of the dealer is given. The same person then gave a précis of the book in Latin (this entry dated 11 June 1868), and on the reverse of the page the same 19th-century hand, but without initials and undated, provides a brief biography of Johannes Graevius, quoting the German bibliographer Johann Albert Fabricius and other sources. 'Guil. Hen. Niger' was doubtlessly, the antiquary William Henry Black (1808–72), a prolific writer on antiquarian subjects. It is not known how the book came into the hands of the Society, but one possibility might be that it was acquired by Philip Laver, who was honorary librarian of the Society from 1928–1941. Laver owned a copy of Black's catalogue of the Arundel MSS, which is now in the Society's library.

This leaves a final question, namely how did the Collegium come to England in the first place? The answer to this question brings into focus one of the most infamous book thieves of the 19th century, Guglielmo Libri (1803–69). He was an Italian count and mathematician who led a picaresque life. Appointed professor of mathematics at Pisa at the age of 20, he was given emeritus status only a year later, yet he kept his salary. After being involved in the liberal political movement in his home country he emigrated to Paris in 1830. Through his connections with high-powered French academics and politicians he was appointed inspector of libraries in France ('Commission du Catalogue général des manuscrits des bibliothèques publiques de France'). This enabled him to steal over 40,000 books and manuscripts – although he might have stolen books during his time in Italy as well. After the French Revolution of 1848 he lost his political protection and he fled, with his books and manuscripts in 18 trunks, to England. Here he was supported

by the director of the library of the British Museum, Antonio Panizzi, whom Libri convinced that the allegations in France were unfounded and only motivated by his Italian origins! Libri led a bohemian lifestyle in England which he financed by selling his books privately or by auction. In one of these auctions by S. Leigh Sotheby & John Wilkinson in March 1859 a catalogue entry (no. 423) reads:

> 'Graevii (J. G.) Collegium Chronlogicum habitum MDCXCVIII. *vellum* 4to. Sæc. xviii on paper
>
> A very excellent Chronology of History from the Creation to the Treaty of Breda 1677 [sic]. This work on general history, chronologically arranged by this celebrated scholar, consists of 363 pages.'[3]

Despite the wrong end date and the wrong number of pages given in the description this is certainly 'our' book. Where it was stolen from, if it was stolen at all, remains a mystery.

Notes

1 *Catalogus Bibilothecae … vir summus Jo. Georgius Graevius …* (Utrecht, 1703), pp. 258–64; cf. C. Clark, 'The Library of J. G. Graevius', *The Classical Review* 5 (1891), pp. 365–72.

2 For example: BL, Add MS 11751; Add MS 28285; Add MS 30807; TNA: PRO, SP 105/85/25v.

3 http://books.google.co.uk/books?id=qqZFAAAAcAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false (accessed 3 August 2015).

Book Reviews

THE RED HILLS OF ESSEX: STUDYING SALT IN ENGLAND by I.W. Brown, 2013, 145pp, 102 in text figures. ISBN 978-0-988389-34-2, $29.95.

The Red Hills of Essex is an attractive and accessibly written book, rich in illustrations. Its author – unusually perhaps for a book about Essex – is a Professor of Anthropology at the University of Alabama and an acclaimed expert in the archaeology of salt in North America and more broadly. The book is written in three parts. The first comprises an account of Brown's two-week visit to England to study Essex's red hills. The second provides a summary of key texts about salt-making at red hills in Essex. In the third section, Brown offers his own model of the activities undertaken at these sites. Overall, his approach is explicitly personal – his intention is to relay the interpretative process rather than to straightforwardly present facts about prehistoric and early Roman salt-making sites (p. 3). In this review I will discuss each section of the book in turn before offering some broader comments.

Part 1 – *English notes: the journey* – is presented in the form of a journal. It includes details and comments about topics as diverse as English Bed and Breakfasts and ways of life more broadly (for instance church-going), historic sites and landscapes in south-east England (the site of the Battle of Hastings, Sutton Hoo, the Archaeology and Anthropology Museum in Cambridge, Chiddingstone, Constable Country and so on), and the author's visits to red hill sites along the Essex coastline.

This section is certainly an entertaining read. Beyond this, however, I had doubts about its content and purpose. Firstly, red hills – supposedly the main focus of the volume – strangely feature very little in Brown's account. The time that he spent directly examining collections of material from red hills in Colchester Museum and visiting the remains of these sites along the Essex coastline amounts to less than half of the fortnight that he spent in England. Rather than offering personal insight into Brown's interpretative journey regarding red hills (his stated aim, p. 3), it made me concerned as to how much he could add to the substantial body of existing studies of these sites. Secondly, while he suggests at one point that he removed 'inane facts' and 'most of the offending passages' (p. 4) I was not wholly convinced that he had been successful in doing so. The account includes many details about arrival times, driving between places and at one point visiting an ATM cash machine. It also includes comments about 'an adorable brunette with a very shapely figure' from a Mediterranean restaurant in Colchester (p. 22), an 'irritating' elderly woman who he encountered at Kings College in Cambridge (p. 46) and 'a beautiful long-haired blond' from the Dog and Pheasant pub in East Mersea. Thirdly, there were occasional minor factual errors – at one point Brown calls the 'Society of Antiquaries of London' the 'Royal Society of Antiquaries'.

More importantly, I felt slightly unsure as to the purpose of this section. In writing a personal narrative such as this, I think it is important that the author asks why their opinions might be of interest to readers at a broad level. Brown's argument is that this interest lies in the section's potential to relay his interpretive journey regarding red hills. For me, the background role played by red hills makes it difficult for him to achieve this aim. Details about how Brown's background in studying salt-making at an international level played a role in his approach to Essex's red hills might have been both more illuminating interpretatively and, for me, more interesting.

Part 2 – *The red hills explored* – summarises in chronological order some of the archaeological literature relating to the use of salt-making sites in Essex. In particular Brown focuses on contributions that 'rethink certain matters that just didn't seem to fit' or that helped provide 'clues regarding the ground and the objects contained within' (p. 82). His account starts with Stope's study of 'The salting mounds of Essex' (1879) and ends with De Brisay's 'The basic briquetage of salt-making: a comparative analysis' (1981). The section is presented as a series of literature summaries – a format that he suggests allows the reader to follow the debate 'as it developed' (p. 82).

As a limited summary of literature relating to red hills in Essex – a bibliographic starting point – this section works fine. Beyond this, once again, I had reservations regarding both its content and style. Even accepting Brown's acknowledgement that he has not attempted to present a comprehensive review of literature about Essex's red hills, the literature covered in this section is extremely partial. No accounts more recent than 1981 are included, despite the fact that substantial work has been done in this area subsequently (see, for example, Fawn *et al*. 1990; Sealy 1995; Biddulph *et al*. 2012). Additionally, no mention is made of the fact that similar studies have been undertaken on comparable sites elsewhere in Britain that might shed light on the topic at hand (e.g. Bradley 1975, 1992; Chowne *et al*. 2001; Lane *et al*. 2001; Morris 1994; Kinory 2012). It is worth noting that although one of the cited studies (Fawn et al. 1990) bears the same title as Brown's own volume – *The Red Hills of Essex* – this connection is not even raised, let alone explained. Given Brown's very narrow coverage of 'Essex red hill' literature, it also seems odd that he includes seven of Kay De Brisay's works on the topic, even though several of these overlap in content (e.g. he includes both interim and final reports on the same site, presumably in order to show the interpretative journey?).

In relation to this last point, I do very much agree with Brown that it can be interesting to follow interpretative journeys relating to archaeological entities and that personal histories are an important part of these journeys (see, for instance, Cooper 2013). Unfortunately, I was not persuaded by the way that Brown portrayed this process. At times, I found his series of literature summaries slow-going. A much briefer synopsis of the literature that Brown did cover, drawing out key points in the 'process of discovery' might have conveyed the interpretative journey more effectively. Alongside this, I would have been very interested to know more about the life

histories of key figures in the study of salt-making in Essex and the role that such histories played in this particular interpretative voyage. As with Part I, there were small but in this case quite important factual errors in this section of the book. I felt slightly disappointed that the author had not engaged with Essex's archaeology enough to appreciate that M.U. [Margaret] Jones – undoubtedly a key 20th century figure in British archaeology, as the forthcoming publication of Mucking's prehistory celebrates explicitly (Evans *et al*. forthcoming) and an archaeologist whose work Brown clearly respects – was most definitely a 'she' not a 'he' (p. 107).

Part III – *The red hills explained: a new model of salt-making* – presents Brown's personal interpretation of the salt-making process in Essex. Since, at two separate points earlier in the book, Brown advises that 'less tolerant readers' might want to jump straight to this section, it is clearly this part that he sees as being of greatest academic worth. It includes a summary of the key characteristics of Essex's red hills; a consideration of the process of salt-making including the role of significant red hill artefact types – fire bars, pedestals, troughs – and of how this activity fitted into peoples' lives more broadly; and an outline of what he would expect an ideal archaeological imprint would look like according to his model, together with an assessment of how closely the actual archaeological record resembles this ideal. This section is enhanced by the inclusion of helpful photos and other illustrative material.

As someone who is interested, but certainly not a specialist, in salt-making, I will not attempt to comment in detail on Brown's model. Based on what I do know and on my discussions with experts in this field, the following points are worth making. Some aspects of Brown's model seem reasonable – for instance the seasonal character of salt-making, and the possible involvement of non-durable containers such as baskets both in the salt-making process and for transporting the finished product. However Brown does not acknowledge that these observations have been made previously in archaeological studies of salt-making (see, for instance, Bradley 1992; Kinory 2012). In fact it could be said more broadly that it was difficult to gain a clear sense of how Brown's own account related to earlier or alternative understandings of the salt-making process. Additionally (and slightly oddly), where Brown does refer to previous interpretations, he positions his arguments almost exclusively in relation to those put forward in Fawn *et al*. (1990) – an account that does not even feature in his literature review. In this way, it could be contended, once again, that the very 'interpretative journey' he hopes to portray is lost. Elsewhere, it is evident that Brown's model includes strong and not necessarily easily justifiable statements about the salt-making process, and that several of his theories could easily have been explained in other ways (a point which he does at least acknowledge). Indeed his argument regarding the limited availability of fuel at salt-making sites (p. 116) is directly undermined by the findings from recent investigations at Stanford Wharf in Essex (Biddulph 2012) – findings that the author was presumably aware of when he wrote the book (the publication is in his cited references).

At a general level, I was unconvinced by Brown's argument that archaeologists should assume that people in the past operated according to 'common sense logic' unless there is clear evidence to suggest otherwise (p. 135). For me, one of the great pleasures of archaeology is the realisation that people in the past often did not operate on the basis of what people today understand to be 'common sense'. I was also uncertain about Brown's assertion that the spectrum of prehistoric and Roman salt-making practices found in Essex could be explained at a broad level by any single model (p. 116). This is particularly the case since the model that he presents includes some quite specific details. As recent studies by Kinory (2012) and Harding (2013) show, salt-making was a feature of peoples' lives across Europe from at least the Bronze Age onwards – in England it probably spanned the period from *c*.1400 BC to the early centuries of Roman colonisation. It is also clear (and unsurprising) that the practices and materials associated with this activity varied in different contexts and through time. Surely it is important to explore this variability as well as to highlight the commonalities between salt-making sites?

Overall, *The Red Hills of Essex* is very readable and provides an accessible introduction to salt-making in Essex. Brown's model for this process is also thought-provoking. My engagement with this book certainly spurred me into looking further into this important and interesting topic. Ultimately, however, I felt that this book fell slightly uncomfortably in between two different genres of writing – popular and academic. In order to operate more successfully as an introductory text and guide to red hills, a brief outline of the archaeological remains of salt-making at the very start might have been helpful. In order to operate better as an academic text, much more time and consideration should have been given to the important and detailed work of other, particularly recent, scholars working in this area. Without such attention, this volume could unfortunately be dismissed as the fleeting reflections of a salt-making tourist.

Anwen Cooper

References

Biddulph, E., Foreman, S., Stafford, E., Stansbie, D. and Nicholson, R. 2012, *London Gateway: Iron Age and Roman Salt-making in the Thames Estuary: Excavation at Stanford Wharf Nature Reserve, Essex*, Oxford archaeology monograph, Vol. 18 (Oxford: Oxford Archaeology)

Bradley, R. 1992, 'Roman salt production in Chichester Harbour: Rescue excavations at Chidham, West Sussex', *Britannia* 23, 27–44

Bradley, R.1975, 'Settlement and salt in the Hampshire Sussex borderland', in De Brisay, K., Evans. K. (eds) *Salt: The Study of an Ancient Industry* (Colchester: Colchester Archaeological Society), 20–5

Chowne, P., Scole Archaeological Committee, and Wessex Archaeology 2001, *Excavations at Billingborough, Lincolnshire, 1975–8: A Bronze-Iron Age Settlement and Salt-Working Site* (Salisbury: Trust for Wessex Archaeology in conjunction with the Scole Archaeological Committee)

Cooper, A. 2013, *Prehistory in Practice: A Multi-stranded Analysis of British Prehistoric Research, 1975–2010*, BAR British Series 577 (Oxford: Archaeopress)

Evans, C., Appleby, G., and Lucy, S. with Appleby, J. and Brudenell, M. (forthcoming), Lives in Land – Mucking Excavations by Margaret and Tom Jones, 1965–1978: Prehistory, Context and Summary (London: English Heritage)

Fawn, A.J., and Colchester Archaeological Group 1990, *The Red Hills of Essex: Salt-Making in Antiquity* (Colchester: Colchester Archaeological Group)

Harding, A.F. 2013, *Salt in Prehistoric Europe* (Leiden: Sidestone Press)

Kinory, J.L. 2012, *Salt Production, Distribution and use in the Britsh Iron Age*, BAR British Series 559 (Oxford: Archaeopress)

Lane, T.W., Morris, E.L., Heritage Trust of Lincolnshire, and Fenland Management Project Committee 2001, *A Millennium of Saltmaking: Prehistoric and Romano-British Salt Production in the Fenland* (Sleaford: Heritage Trust of Lincolnshire)

Morris, E.L. 1994, 'Production and distribution of pottery and salt in iron age Britain: A review', *Proc. Prehistoric Soc.* 60, 371–93

ELIZABETH DE BURGH, LADY OF CLARE (1295–1360). HOUSEHOLD AND OTHER RECORDS edited and translated by Jennifer Ward, Suffolk Records Society, Volume LVII (general editor Mark Bailey), Woodbridge, 2014, xxx and 186pp. ISBN 978-1-843838-91-3, £25.

This recent addition to the Suffolk Records Society publications is a transcript by Jennifer Ward of the 14th century household accounts of Elizabeth de Burgh, Lady of Clare held at the National Archives (TNA).

It begins with an introduction which gives context to the transcript that forms the bulk of the text. This contains a brief biography of Elizabeth de Burgh, including an invaluable family tree to help to keep track of her immediate family. The biography is followed by a description of the household's management, with the central role of the Chamber and the various departments of the Wardrobe, and continues with notes on the types of accounts which have been transcribed. The introduction and transcripts are footnoted thoroughly.

The transcripts begin with excerpts from the Chamber Account of 1326 and the Wardrobe and Household accounts of 1339–1340. These give a context to the records as the next four chapters are arranged thematically – Clare Castle; Food, Hospitality and Travel; Estates and Lordship; and Patronage and Influence. The final chapter is a transcript of Elizabeth's will held at Lambeth Palace Library.

The thematic transcripts are of whole documents, or, where appropriate, excerpts. All of the text is in English, although the original Latin has also been included for three of the transcripts. They are clearly laid-out, and this makes it easy for the reader to follow. The book concludes with an appendix listing all of the documents with their full TNA references, a glossary and two indexes – people and places and subjects.

The transcribed records relate almost entirely to the period after her third widowhood in 1322 and her brief brush with treason in the later years of the reign of Edward II. By this date Elizabeth was mostly resident in Clare in Suffolk and London. While the majority of the land she owned was in Suffolk, she also owned two Essex manors at Great Bardfield and Claret Hall in Ashen and her influence, mostly in terms of expenditure can be seen, not only in north Essex, but throughout the county. It might be expected that money was regularly spent in Colchester, but the household expenses also include the purchases as far afield as Chelmsford, and while travelling between London and Clare, the provisioning of her household in North Weald and Great Bardfield.

The Estates and Lordships chapter includes transcripts of Suffolk manorial and borough court rolls which give some idea of the typical business dealt with by these types of courts. Elizabeth de Burgh is perhaps most well-known as the founder of Clare Hall (today's Clare College) in Cambridge and the chapter on Patronage and Influence gives some insight into this and her support of other religious foundations.

The transcripts offer a fascinating insight into Elizabeth de Burgh's influence and, wealth, and how this extended from Suffolk into Essex and Cambridgeshire. While the thorough indexes can be used to pick out references of interest, it is well worth reading the whole book to obtain the fullest understanding of the records and their contents.

Katharine Schofield

BEELEIGH ABBEY: A GUIDE AND HISTORY by Christopher Foyle, Christopher Foyle Publishing Ltd, 2012, 97pp. ISBN 978-0-954889-62-3, £14.75

This book by the proprietor reflects his pride and great interest in his home, Beeleigh Abbey, near Maldon. Christopher Foyle describes the book as a guide and history of his house and this is exactly what it is. In addition, it is something of a personal history of the author's family and his quest to restore the house for future generations. It will appeal mainly to the non-specialist but also to all enthusiasts of Essex history.

The book begins with the early history of the abbey founded for White Canons of the Premonstratensian Order in 1180 by the lord of Little Maldon manor and former sheriff of Essex Robert Mantell. Events such as royal visits, sudden death, and the succession of lay patrons of the abbey are carefully described, as is the management and growth of the abbey's estates. No stranger to historical research, Christopher Foyle nonetheless has engaged the help of numerous experts, including several members of ESAH, to assist him with his task. The abbey remained a Premonstratensian house until the Dissolution in 1536 and was notably associated with Roger Niger, also known as Roger of Beeleigh. Before his death in 1241 while Bishop of London, Roger attained unofficial status as a saint and such was his fame that his heart was removed from his corpse (which was buried in St Paul's cathedral) and sent for interment at Beeleigh. Before long, St Roger became the object of a popular local cult which centred on a chapel within the abbey.

What follows is an outline of the productive archaeological investigation which took place between 2001 and 2006 by the Maldon Archaeological and History Group supervised by ESAH member David Andrews. The account, though short, is beautifully illustrated and whets the appetite for the complete excavation report published by the MAHG.

The penultimate section of the book is a clear, unambiguous description of the abbey site, its surviving buildings and the many treasures within, notably the superb library. The illustrations here, as elsewhere, are of very high quality and add greatly to the reader's enjoyment. The final part of the book deals with the development of the gardens (which are regularly open to the public) by Christopher and Catherine Foyle, the present owners.

There is a short bibliography and a long list of those who the author most generously acknowledges to have helped him with every aspect of the historical, architectural and archaeological research undertaken on the house, as well as those who assisted him in the vast project which brought about the restoration of the house and the regeneration of the gardens.

This is a personal and engaging book which deserves to be a template for other guides to Essex houses. Where it might perhaps be improved would be with the addition of a glossary of technical terms and, also to allow the Foyle family tree to spread across two pages rather than one. No one who reads this book could doubt that, like St Roger, Christopher Foyle's heart is here at Beeleigh Abbey.

Christopher Starr

THE BOROUGH OF MALDON 1688–1800: A GOLDEN AGE by J. R. Smith, Brewin Books, 2013, xvii and 532pp. ISBN 978-1-858585-13-0, £35.

John Smith's *The Borough of Maldon 1688–1800* is the brilliant sequel to Dr W.J. Petchey's outstanding work *A Prospect of Maldon 1500–1689* published in 1991, which describes the history of Maldon during the previous two centuries. Interestingly Smith and Petchey, both graduates of the Department (now Centre) for English Local History at the University of Leicester, agreed some 40 years ago to divide the research and writing of some 300 years of the town's history between them: this book honours the agreement (as did Petchey's book in 1991).

The product of many years work, principally at the Essex Record Office, the National Archives and Maldon's Plume Library, *The Borough of Maldon 1688–1800* is a massive but elegant book comprising some 550 pages, almost 100 illustrations (the majority of which are in full colour), 5 maps, 18 tables and 32 appendices. The fluent style, colourful illustrations and innovative design make the book pleasant to read and to handle: the exquisite detail is never tedious. John Smith is no stranger to the publication of Essex history, but with this book he demonstrates as a former archivist at the ERO, his absolute professional mastery of diverse sources of local history and his ability to marshal facts from a galaxy of data.

In the preface to his book, the author describes how he has written for two distinct readerships – firstly, the people of Maldon and others interested in urban and local history, secondly those wishing to study the book at an academic level. In the process, he provides sufficient detail to show what was particular about Maldon and much data for the comparative study of other small English towns in the long eighteenth century, not only in the region but nationally. As Professor Penelope Corfield says in her Introduction to the book, towns like Maldon 'have a generic importance but, simultaneously, their own individuality'.

It is pleasant to note that not only has John Smith brought his immense local knowledge to bear on his subject, but he has in the process engaged the help of numerous friends and well-wishers to assist him with the task, whose 'generous help and encouragement' is, he says, 'neither forgotten nor undervalued'. The Maldon described in this book comprised only some 2000 people at its apogee; despite this, the book buzzes and sizzles with interesting characters whose vigour reminds us of the world of Charles Dickens and John Bull.

Between a section in the book setting the town in its geographical, historical and economic context, and a concluding section which provides a retrospective view of the period 1688–1800, there are three major sections covering government and politics; economy and occupations and society. These sections are sub-divided into chapters, which focus on town government, including crime and punishment; mercantile, professional, clerical and largely manual occupations; care of the poor, smallpox, education, religion and leisure respectively. Each chapter is further divided into numerous short sections which enable the book to be easily studied. The text is fully referenced with immaculate endnotes and there are useful indexes of personal names, and places and subjects. This reviewer enjoyed the description of the Maldon Cricket Club whose 'regular set played the game in the marsh, and the other members staid at the Ship, smok'd their pipes and play'd a game of cards' in 1786. A generation earlier in 1755, the gentlemen of the club issued a challenge to any town in Essex to play the Maldon club 'for a prize of 11 gold rings, each to the value of 15 shillings'.

The author informs us that between 1688 and 1800 'Maldon occupied a very lowly position in the English urban hierarchy' yet it was also 'a dynamic place where fortunes could be amassed within the space of one generation by men of ability'. Throughout most of the period the town was contained within its medieval limits and further stabilised by a web of marriages which linked the important families. The town's buoyant economy, largely based on maritime trade, ensured that pauperism and unemployment were at a low level. The growing political activities of Dissenters and their supporters the Whig party in the 1690s led to conflict between Whigs and the landed gentry's Tory party. Ultimately this conflict led to the dismantling of the town Corporation.

It is to be hoped that the John Smith's homage to the town of Maldon will be widely read and enjoyed as it certainly deserves to be, majestically adding as it does to the corpus of published urban history for Essex. Furthermore, we can agree with John Smith's modest claim that 'Maldon's history from 1500 to 1800 is now covered in some depth'.

Christopher Starr

BRICKS, BUILDINGS AND TRANSPORT. A HISTORY OF MARK GENTRY, THE HEDINGHAM RED BRICK INDUSTRY, BUILDINGS, ROAD AND RAIL TRANSPORT by A. Corder-Birch, published by A. Corder-Birch, Halstead, 192pp, many illustrations, index. ISBN 978-0-956721-91-4, £14.95 + £2.75 p&p, from the author, Rustlings, Howe Drive, Halstead, Essex CO9 2QL.

Sible Hedingham is a curious place, perceived by many as no more than a bottleneck on the A1017, largely 20th century in appearance, and possessed of what is today a surprising array of shops and services. It is in fact a post-industrial village and has only recently lost its principal industry, the Rippers joinery works. But it was brickmaking which first really led to its growth in the 19th century, and it is that which Adrian Corder-Birch celebrates in this his latest contribution to the study of the local brick industry. The focus of the book is Mark Gentry, a builder and contractor from Stratford who transferred to Sible Hedingham, where from about 1884 until his death in 1912 he was the principal figure in the local brick industry. Clearly an energetic and larger than life character, he acquired two brickfields where he installed modern equipment, was active as a benefactor in the community being associated with most local organisations, and stood unsuccessfully as a Conservative in the first county council elections of 1889. His brickworks was one of the largest in the eastern counties, producing at its peak up to 5 million bricks a year and employing up to 200 people. This was an industry of more than local importance. Much of his production went to London, where they are to be found in the Blackwall Tunnel and Claridges, as well as further afield, even to Africa and Ireland. The bricks were exclusively reds, and a speciality was the manufacture of decorative relief moulded bricks and larger terracotta plaques, things which are a feature of late 19th century brick buildings of this part of Essex. The lodges and stables built by Gentry at his house Rookwoods at the northern edge of Sible Hedingham are showcases of what he could do, two of these buildings now grade II listed. After the death of Gentry and his son, the business was combined

with another brickyard as the Sible Hedingham Red Brick Company. Effectively owned by Rippers, and with the benefit of new down-draught kilns, this operated from 1919 until 1954 when the business was closed. Virtually all trace of it has now disappeared, as is also now true of the Rippers works.

The research presented here is to some extent raw data which would have benefited from more analysis and interpretation, but it does provide many interesting insights into business practice, industrial conditions, industrial archaeology, and other aspects of local life. Another important personality was Greville Montgomery, briefly a local resident, a publisher and trade exhibition organiser, and founder of *The British Clayworker*, a journal which has proved an important source for this book. Key to the success of the brick industry was the Colne Valley and Halstead Railway, but the brickmakers had difficult relations with the railway companies, which failed to provide powerful enough locomotives or enough rolling stock to move their products, which were often damaged in transit. The need to transport bricks was a major incentive in the move to develop the Central Essex Light Railway from Ongar to Castle Hedingham, a project overtaken by the World War and better road transport before it could be implemented. This book will also be useful to family historians and anyone interested in the growth of Sible Hedingham and its buildings, though for this purpose a good map of the whole village would have been a great help.

The book is profusely illustrated with fascinating old photographs, trade advertisements and other documents. But what are lacking are the catalogues published by Gentry of his products, a valuable source which has otherwise eluded the author's comprehensive research, and for which he appeals for help in locating.

David Andrews

A CARING COUNTY? SOCIAL WELFARE IN HERTFORDSHIRE FROM 1600 edited by S. King and G. Gear, Hertfordshire Publications – an imprint of University of Hertfordshire Press, 2013, xiv and 350pp, with 51 illustrations, 17 tables and index. ISBN 978-1-909291-12-6, paperback, £16.99.

The historiography on the subject of poverty has burgeoned in the last two decades; this collection of essays on social welfare in Hertfordshire since 1600 is a welcome addition to our understanding of the chronological and spatial variations in the treatment of the poor within a single county. The idea for the volume was conceived at the annual symposium of the Hertfordshire Association for Local History in 2008 in Barnet Museum and a subsequent lecture at Welwyn Library in the same year, although it is unclear which of the essays originated as papers presented at the meetings (if any) and which were written specifically for the collection.

Edited by Steven King, professor of economic and social history at Leicester University, and Dr Gillian Gear, archivist for Barnet Museum, the volume comprises eleven essays, a general introduction and an introductory note to three of the final four essays. In a concise introduction Steven King helpfully sets poor relief in Hertfordshire into a wider comparative context, highlighting the importance of county studies but also pointing to many under-researched aspects such as our fractured knowledge of the working of the new poor law (after 1834), the role of human agency and the lack of studies representing the 'voices of the poor' themselves.

The first three papers deal with poverty due to physical and mental illness; while Robert Dimsdale explores the old poor law and medicine in the county town and Carla Herrmann studies the care for the sick in 18th-century Royston, Gary Moyle examines the history of private mental health asylums in Hertfordshire from 1735 to the beginning of the 20th century. Poor relief in the east of the county in the early to mid-17th century (a period which saw bad harvests, rising bread prices, plague and smallpox followed by the crisis of the civil wars) is the subject of Alan Thomson's paper. David Short deals with a relatively neglected sub-group of the poor, the elderly, in Ashwell from 1670–1770, while Sheila White discusses the treatment of the inmates of Cheshunt parish workhouse in the mid-18th century. A case study of how the old poor law regime worked in Pirton in the north of the county is undertaken by Helen Hofton.

Different aspects of the care of abandoned children and orphans are the focus of three essays. David Allin looks at the history of London Foundling Hospital and its 'outsourcing' of children at nurse in Hertfordshire. Key to their well-being was the competence of the nurses and the local inspectors who employed and supervised the nurses. One such inspector was the formidable Prudence West who not only had the most children in her care compared to other Hertfordshire inspectors; she also ran the branch of the Foundling Hospital in Barnet for the few years of its existence during the 1760s. Yvonne Tomlinson's account of West's activities is an example of the importance of human agency in the distribution of welfare. Jennifer Sherwood examines the last years of the Foundling Hospital in Berkhamsted from the 1930s to the mid-1950s; the portrayal of life during and after the Second World War is based on interviews with and memories of former foundlings. The final essay by Gillian Gear covers aspects of residential care and training for unruly and vulnerable children by Certified Industrial Schools from the inception of these schools in 1857 until their transformation into Approved Schools in 1933.

Generally, the essays are based on recent research by local historians and are thoroughly footnoted. Some background information on the authors would have been welcome. The book is well produced and the images, maps and tables are informative and of high quality, as is the bibliography. The index is useful although inconsistent. For example, some towns and villages have a main index entry while others do not; the entries for Certified Industrial Schools are under 'schools' while those for hospitals are found under several entries, and, contrary to what the index states, 'West, Prudence' is not found under 'foundlings' but under 'fostering' and its sub-entry 'Barnet'.

Despite these minor points the essays are all highly readable and informative. For readers of this journal some of the essays may be of special interest as they deal with aspects of Essex history, e.g. the pioneering practice of inoculation on a large scale in Essex in 1750 (Dimsdale), settlement cases involving vagrant paupers (Thomson), the survival rate of Essex foundlings at nurse compared with other counties (Allin), and committals of Hertfordshire children to Halstead Industrial School for Girls and Essex Industrial School in Chelmsford (Gear). However, the book is first and foremost an example of the fine scholarship of local historians in the county of Hertford, and after finishing the book the reader should be able (tentatively at least) to answer the leading question of the title of the book 'A Caring County?' in the affirmative.

Herbert Eiden

A Bibliography of journal literature on Essex archaeology and history for 2014

Andrew Phillips and Paul Sealey

Both monographs and periodic literature are included; articles published in festschrifts or in journals which are devoted exclusively to Essex history (e.g. Essex Journal) are not included. Items overlooked in previous bibliographies are included for comprehensive coverage.

Bartrum, S., Curteis, M., Mead, E., Moore, A., Wheeldon, C., White, A. 2014, *The Stour Valley: A Prehistoric Landscape. An Investigation into the Cropmarks of the Middle Stour Valley by the Colchester Archaeological Group* (Colchester: Colchester Archaeological Group)

Anonymous 2014, 'More elite burials found near Colchester', *British Archaeology*, Jan\Feb 2014, 10

Allen, M.R., Ghey, E. and Naylor, J. (eds) 2014, 'Coin hoards from the British Isles 2013', *Brit. Numis. J.* 84, 263–75 [includes the Stansted hoard of Gallo-Belgic A coins]

Boyer, P., Nicholls, M., Bishop, B. 2014, 'Bronze Age environments and burials in the Lower Lea Valley: archaeological excavations in the Stratford City Development', *London Archaeology* 13, No. 10, 276–80

Blackmore, L., Betts, I., Cowie, R., Jeffries, N., Morris, J., Pearce, J., Pipe, A., Richardson, B., Stuart, K. 2014, 'View from a cesspit: a late Georgian household in West Ham Abbey', *London Archaeology* 13, No. 10, 265–70

Cummings, R. 2014, 'New light on early leather-working industries in medieval West Ham', *London Archaeology* 13, No. 11, 304–6

Compton, J. 2015, 'Unusual kiln vessels from Danbury, near Chelmsford, Essex', *J. Roman Pottery Studies* 16, 73–6

Heslop, T.A. 2012, 'Constantine and Helena: the Roman in English Romanesque', in J.A. Franklin and C. Stevenson (eds), *Architecture and Interpretation: Essays for Eric Fernie* (Woodbridge: The Boydell Press), 163–75 [includes a discussion of Helena in the context of medieval Colchester]

Kemble, J. 2012, 'The lost Domesday estate of Geddesduna', *English Place Name J.* 43, 18–24

Macadam, J. 2012, 'English weather: the 17th century diary of Ralph Josselyn', *J. of Interdisciplinary History* 43, 721–46

McDonald, J. 2012, 'The relative efficiency of the King's, ecclesiastical and lay estates in Domesday Essex 1086', *Australian Economic History Review* 52, 250–69

O'Dell, S. 2012 'Holiday plotlands ansd caravans in the Tendring District of Essex 1918–2010, *Local Historian* 42, 119–34

Peacock, D.P.S. 2013, *The Stone of Life: The Archaeology of Querns, Mills and Flour Production in Europe up to* c. *AD 500* (Southampton Monographs in Archaeology New Series No.1) (Southampton: The Highfield Press) [Pages 113–14 discuss the *c*. AD 1800 mill from Mashbury, and Fig.6.14 on Page 115 has a black and white photograph of the mill]

Perry, S. and Johnson, M. 2014, 'Reconstruction art and disciplinary practice: Alan Sorrell and the negotiation of the archaeological record', *Antiquaries J.* 94, 323–52 [Alan Sorrell was an Essex artist]

Pitts, M.E.J. 2014, 'Reconsidering Britain's first urban communities', *J. Roman Archaeol*. 27, 133–73 [includes Colchester]

Woods, D. 2014, 'Cunobelinus' ''Wild Heart'' stater', *Britannia* 45, 302–6 [study of a coin issued at Colchester *c*. AD 25–39/40]

REVISED NOTES FOR CONTRIBUTORS

Submission of articles

1. Article may be submitted at any time and will be considered for the first available edition of *Essex Archaeology and History* (hereafter *EAH*).
2. All contributions should be sent to the Hon. Editor, and should comprise two hard copies of the text and illustrations, and a digital version of the same on DVD or CD, arranged as described below.
3. All material submitted on DVD or CD should be clearly labelled with titles readily identifiable with their contents.
4. Articles should be prepared under the general conventions set out in the Guidelines (2009) for the *East Anglian Archaeology* (hereafter *EAA*) series. They can be accessed and downloaded from the *EAA* website (www.eaareports.org.uk).
5. It is essential that these Guidelines and style conventions are followed, and in particularly that the use of the system of referencing is consistent.

Submitted text

1. To assist the editorial process, please:
2. Prepare the digital copy in Word or RTF.
3. Limit the amount of formatting as much as possible (such as the use of tabs) on both text and tables. Do not attempt to emulate the layout of *EAH* by adding formatting other than the advice given here, as the correct formatting for the articles will be applied during the typesetting process.
4. Use a standard font, ample margins, 1.5 or 2.0 spacing, and number each page sequentially.
5. Print all A4 pages on one side only.

Submitted Figures and Tables

1. All Figures and Plates should be submitted as separate files. Do not embed them in the text.
2. Simple Tables may be embedded in the text, but make the formatting as simple as possible. Larger and more complex Tables should be provided in separate files, carefully labelled.
3. All Figures, Plates and Tables that are provided as files separate to the text should be provided with a list of Captions in a separate Word or RTF file, i.e.

   FIGURE 1: Site location
   FIGURE 2: Plan of excavated area

4. It will be helpful on the final submission (after refereeing and corrections) for the suggested placement of Figures and Tables to be marked in pencil in the margins of a hard copy.

Organisation of articles and headings

1. All main articles and shorter notes should begin with a title on one line, followed by the author(s) names, initial(s) and surname(s), on a following line.
2. Main articles should then have a summary paragraph (in italics) setting out the main objectives, content and findings of the article.
3. The article proper should then start with a main heading, such as INTRODUCTION.
4. Most archaeological articles are sub-divided by headings; historical ones frequently have the text in continuous form but may also be sub-divided by headings if desired. If in doubt, please consult the Hon. Editor.
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Main Heading	14pt, bold, caps	**INTRODUCTION**
Sub-heading	12pt, bold	**Excavation**
Sub-sub-heading	12pt, italic	*Pottery*
Sub-sub-sub-heading	12pt	Iron-Age

6. To aid clarity for the referees and editor, each of the above headings or sub-headings should be followed by a blank line.
7. Acknowledgements should be a separate main heading at the end of an article, but before the Bibliography.

Punctuation, spelling and grammar

1. Please follow the *EAA* Guidelines, section 5.

Numbers, measurements and dates

1. Numbers below 100 should be written out, unless measurements, e.g. 'twenty-one potters made 207 pots in 226 days. Of these only ten pots had a diameter of less than 2.45cm.'
2. En rules (–) rather than hyphens (-) should be used for number and dates ranges, i.e. Figs 3–4 not Figs 3-4.
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5. Use AD and BC only where necessary and in the following format: 323 BC; AD 63.
6. Other calendar dates should use the following format:
   7 March 1654
   7 March
   March 1654
7. For radiocarbon dates, see *EAA* Guidelines 6.3.

Compass points and grid references

1. Abbreviated compass points may be used but these are perhaps best left to non-narrative parts of the text. Do not use N, NW, SSE, *etc*., at the beginning of sentences. Do not use 'northern', 'northerly' where 'north' will do. 'North-to-south' is preferable to 'north-south'.
2. Heights above Datum should be expressed in the form *e.g.* 2.4m OD (no full stops).
3. Grid references should normally be eight figures: TL 3456 7890.

Illustrations (Figures and Plates)

1. It is the responsibility of authors to ensure that all illustrations are of publishable quality. The Society cannot normally pay for material to be re-drawn to professional standards.
2. Illustrations can be provided as hard-copy originals suitable for scanning or as digital files, in the latter case as uncompressed .jpegs or .tiff files or similar. See *EAA* Guidelines, section 9.5.

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References

1. *Essex Archaeology and History* generally uses Harvard-style bibliographical references in parentheses in the text, with a full Bibliography at the end of each article. For example:
   (Jones 1962, 223–5)
   (Pryor et. al. 1980, 140–7)
   (Green, H.S., 1980; Green F. 1982)
2. References to an author who has more than one publication in a year should be distinguished as follows:
   (Bloggs 1984a, 21)
   (Bloggs 1984b, 76–7)
3. References to on-line sources should give the URL in angled brackets, for example:
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   <www.essex.ac.uk/history/esah/essexplacenames/index.asp> (accessed 1 July 2013)
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Bibliography

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9. The use of *et al*. should be confined to references in the text, with all authors cited in the bibliography.
10. Please note the following examples of punctuation, italicisation and formatting carefully, as this always causes the heaviest copy-editing.

Books/Mongraphs:
Kemble, J. 2001, *Prehistoric and Roman Essex* (Stroud)
Cunliffe, B.W. 1991, *Iron Age Communities in Britain* (3rd edn, London)

Edited Books/Mongraphs:
Gibbs, M. 1939 (ed.), *Early Charters of the Cathedral Church of St. Paul, London*, Camden Third Series, 58 (London)
Mays, M.R. (ed.) 1992, *Celtic Coinage: Britain and Beyond. Eleventh Oxford Symposium on Coinage and Monetary History*, Brit. Archaeol. Rep. British Ser. 222 (Oxford)

Articles:
Holland, M. 2004, 'Captain Swing', *Essex J*. 39, 20–3
Carew, T, Clarke, C. and Eddisford D., 2011, 'Medieval occupation in Maldon, Essex: excavations at 127–129 High Street, 2007', *Essex Archaeol. Hist*., 4th ser., 2, 107–16

Articles in edited books:
Hedges, J. 1978, 'Essex Moats', in Aberg, F.A. (ed.), *Medieval Moated Sites*, Counc. Brit. Archaeol. Res. Rep. 17, 63–70
Wade-Martins, P. 1989, 'The Archaeology of Medieval Rural Settlement in East Anglia', in Aston, M., Austin, D. and Dyer, C. (eds), *The Rural Settlements of Medieval England* (Oxford)

Specialist reports in articles:
Margeson, S. 1982, 'The artefacts', in Atkin, M.W., '29–31 St Benedict's street', in Carter, A. (ed.), *Excavations in Norwich 1971–78, Part I*, E. Anglian Archaeol. 15, 8–9

Theses and dissertations:
Senter, A.M. 2014, 'The development of Essex seaside resorts, 1815–1914' (unpubl. PhD thesis, Univ. of Essex)

Electronic sources:
Peacey, A. 1996, 'The Introduction of Tobacco and Tobacco Pipes to the British Isles', *Internet Archaeol*., 1: Available: <http://intarch.ac.uk/journal/issue1/peacey/intro.html> (accessed 18 July 2014)

Abbreviations

1. A full-stop should be used for an abbreviation, other than where it is a contraction, e.g. ed. (for editor) but eds (for editors).
2. Some common abbreviations that may be used in the text:

Fig.	Figure(s)
Pl.	Plate(s)
No.	Number
St or SS	saint(s)
c.	circa
%	per cent

OD	Ordnance Datum
AD	Anno Domini
BC	Before Christ

3. Some common abbreviations that may be used in the Bibliography:

General (*these should be* italicised *if part of a title of a periodical or published report*)

Archaeol.	Archaeology/archaeological
Brit.	British
Colln.	Collections
Counc.	Council
edn	edition
Hist.	History/Historical
J.	Journal
Monogr.	Monograph
Proc.	Proceedings
Res.	Research
Rep.	Report(s)
Ser.	Series
Trans.	Transactions
Univ.	University
unpubl.	unpublished

Specific periodicals and series

Counc. Brit. Archaeol.	*Council for British Archaeology*
Colch. Archaeol. Rep.	*Colchester Archaeological Reports*
E. Anglian Archaeol.	*East Anglian Archaeology*
Essex Archaeol. Hist.	*Essex Archaeology and History*
Essex Archaeol. Trans.	*Transactions of the Essex Archaeological Society*
VCH	*Victoria History of the Counties of England*
RCHM	*Royal Commission on Historical Monuments*

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3. If the article is deemed suitable for publication, the Hon. Editor will then copy-edit the article.
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7. Publisher's page proofs will be sent to authors for checking.
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