ESSEX

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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.

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Excavation of Mesolithic and Neolithic flint scatters and accompanying environmental sequences at Tank Hill Road, Purfleet, 2002

Matt Leivers, Catherine Barnett (née Chisham) and Phil Harding

With contributions from David Bridgland, Kayt Brown, Nigel Cameron, Frances Chaloner, Lesley Collett, Nick Debenham, Rob Goller, Richard Macphail, David Norcott, Rob Scaife, Wendy Smith, Elizabeth Stafford, Chris J. Stevens, Lucy Verrill, John Whittaker and Sarah F. Wyles

Investigations of land in the floodplain of the Mar Dyke west of Tank Hill Road, Purfleet, close to the confluence of the Mar Dyke with the Thames, identified large spreads of Late Mesolithic struck flint and concentrations of burnt flint probably marking the locations of hearths. A limited amount of Late Glacial flintwork, Early Neolithic struck flint and pottery and Late Neolithic/Early Bronze Age flintwork also occurred within the same sand layers, sealed by peats and alluvium. Although the material is vertically conflated, the horizontal distributions were only blurred, and technologically distinct elements could be identified.

The main area of Mesolithic flint working concentrated around a very dense concentration of burnt flint in and overlaying a shallow cut filled with burnt sand, the only feature identified other than later tree-throw hollows. These lithics were dominated by microburins and microliths, seemingly manufactured around the hearth. Other manufacturing areas were identified to the west (tranchet axe manufacture and maintenance); leaf-shaped and barbed-and-tanged arrowhead manufacture was concentrated to the north.

Environmental evidence indicates that during early occupation, Tank Hill Road was an open sandy island which became increasingly wooded with oak, elm and hazel. Alder and fen communities encroached from the adjacent floodplain, the site becoming progressively marshy from the Early Bronze Age. Though waterlogged, the peat offered continued (if potentially intermittent) access to humans although settlement was probably pushed further inland. Arable and pastoral land use was established in the surrounding area during the Middle Bronze and Iron Ages while, on the floodplain, evidence for the influence of saline water increased, with the establishment of a tidal regime reflecting more widespread changes in the Thames Valley related to the Tilbury III marine transgression.

The Channel Tunnel Rail Link (CTRL) is a new railway linking London to the Channel Tunnel. Section 1 of CTRL connects the tunnel portal at Folkestone to Pepper Hill near Gravesend, while Section 2 runs from Pepper Hill to London St. Pancras, passing under the Thames at Swanscombe and then through Essex and east London.

Tank Hill Road lay within Section 2 and formed part of a programme of archaeological investigation carried out in 2002 in advance of and during the route construction. The archaeological work was commissioned by Union Railways (North) Limited (URN) and was undertaken by Wessex Archaeology. The site, centred on National Grid Reference (NGR) 555220 179350, was situated within the modern floodplain of the Mar Dyke (Fig. 1). Development proposals comprised the re-alignment of Tank Hill Road (which at the time of the archaeological work formed the eastern site boundary) to bridge the CTRL, which would pass through the site from north-west to south-east, parallel with and immediately to the north of the existing railway which formed the southern site boundary.

Excavation Methods

Prehistoric flint working was first recorded during a watching brief on utility diversion works at Tank Hill Road (URN 2003). Evaluation took place in February and March 2002. Trial trenches 3963TT and 3964TT assessed the archaeological potential of the Pleistocene deposits of the Mar Dyke and the fringes of a gravel high. 3963TT was a 30m by 2m machined trench within which were two geotechnic test pits; 3964TT was a machined trench 15m by 5m.

Worked flint was observed during the excavation of 3964TT; an additional 16 square metres ($16m^2$) were opened adjacent to the main evaluation trench to fully assess the archaeological potential and significance of this material. Approximately 1,500 pieces of worked flint were recovered, of Late Mesolithic and Early Neolithic date.

In the extension, a machine with a toothless ditching bucket removed the overburden, alluvium and peat (see below for the stratigraphic sequence); the underlying sand deposit containing the worked flint was fully exposed by hand. This was then excavated in 0.1m spits,

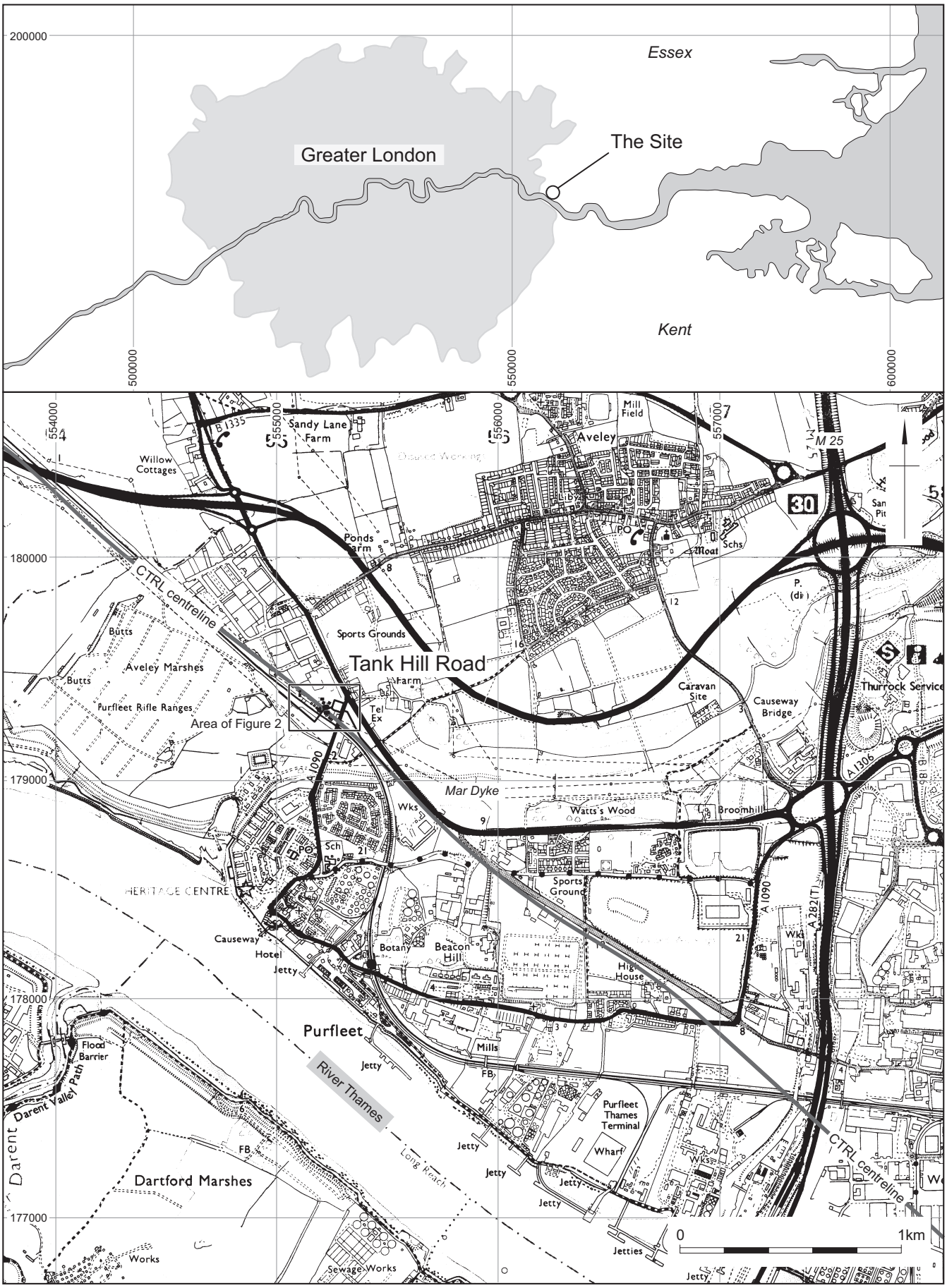

Fig. 1 Tank Hill Road, Purfleet. Site location © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

on a 0.5m^2 grid. Worked flint was individually numbered and recorded in three dimensions using a total station, while all burnt flint and ecofacts were assigned to their appropriate spit and square. An approximate 5% sample of each spit (i.e. three 0.5m^2 squares) was 'whole-earth' recovered and processed to assess the potential for plant macrofossils and microdebitage. The analyses presented below include the material subsequently recovered from these samples.

Further investigations took place in 2002. 3983TT was 4m by 6m adjacent to the initial 4m^2 extension of 3964TT. 3984TT (18m by 6m) and 3985TT (18m by 4m) were designed to mitigate the impact of the first bridge pier and north bridge abutment respectively of the re-aligned Tank Hill Road. 3985TT, machined to a level above the flint-bearing sand in May 2002, was backfilled before excavation to allow the machining of Aveley Drain D immediately to the south. Subsequent re-opening of the trench took place in July immediately north of the original footprint, with subsequent re-excavation of the original footprint within a 4m by 2.5m extension following the discovery of a hearth against the southern edge of the trench.

For 3984TT, the sand was passed through a 4mm mesh on site (both wet and dry-sieving) in order to retrieve artefacts (rather than each piece being individually recorded); a maximum of two spits depth (i.e. 0.2m) was excavated from the trench.

Three trenches (3986TT and 3987TT 3 by 4m, 3988TT 6 by 4m) were excavated within the area of the proposed embankment for the re-aligned section of Tank Hill Road north of the bridge carrying it across the CTRL. Each was excavated by machine to the base of made ground, alluvium and peat (where present). Six evaluation test-pits (3993TP–3998TP) were also examined; in each case a 1m^2 area was hand-excavated into the flint-bearing sand.

Watching briefs were maintained between June and November 2002 on six geotechnic pits (designated A–F, of which A and F were within the footprint of 3985TT), the machining of a drainage ditch (Aveley Drain D), the construction of the bridge abutments of the re-routed Tank Hill Road, and various minor groundworks. The location of all interventions is shown in Figure 2.

Samples selected for radiocarbon dating were submitted to the Rafter Radiocarbon Dating Facility for AMS dating. Calibration was undertaken using Oxcal v3.10 (Bronk Ramsey 1995; Bronk Ramsey 2001) incorporating atmospheric data from IntCal 04 (Reimer *et al.* 2004); the results are expressed to the 2 sigma level at 94.5% confidence.

Existing and Ancient Topography

The trenches were located on the margin of the Mar Dyke floodplain, mostly on land raised above the lower-lying Rainham Marshes, although at less than 2m above Ordnance Datum (OD). Within the site the highest point correlated approximately with 3986TT and 3985TT, with the modern ground surface falling gradually to the south, west and north. To the south, adjacent to the existing railway, there was a pronounced fall or terrace edge, possibly forming the true edge of the floodplain.

With the exception of 3963TT, the interventions lay within an area of 0.5ha. The trenches represented approximately 6.75% of this area. Given this, it is evident that the true extent of the site is unknown, although there are some indications of its bounds.

A comparison of sections and relative heights above OD suggests that the site is situated where the chalk bedrock and overlying gravels rise up to form a topographic high. Data obtained during the initial watching brief indicate that there is possibly a series of high points at the edge of the Mar Dyke floodplain, either eyots or the edge of the gravel terrace, one east and one west of Tank Hill Road (URN 2003). Very little or no struck flint was recovered from either: lithic-bearing interventions were all concentrated at Tank Hill Road. Comparisons of relative heights above OD indicate that the western limit of the Tank Hill Road high lay at a point between 3963TT and 3993TP, while the southern edge lay between the initial watching brief (chalk bedrock at −6.4m OD) and 3964TT extension (chalk bedrock at −0.55m OD). A significant downslope trend in the stratigraphy from west to east between CTRL chainages 28+425 and 28+540 probably marks the eastern edge. The northern edge of the high was not encountered in any intervention; assuming an eyot rather than a promontory, the north-facing slope will have lain north of 3988TT.

Pedology and Geology

by David Bridgland, Phil Harding and Matt Leivers

The site lies on head and Coombe rock (exposed in 3964TT and 3997TP). Modern soils are typical argillic brown earths of the Hucklesbrook Association and pelo-alluvial gley soils of the Wallasea 1 Association where alluvium occurs.

Drift geology comprises variable Pleistocene gravel of rounded medium flint pebbles within a clay loam matrix. Variable depths of raised well-sorted coarse silt–fine sand exist over the gravel, sealed by peat deposits. These raised deposits dip and thin while the overlying peat and alluvial sequence thickens moving into the marshland to the north and north-west.

Clast-lithological analysis was undertaken on two samples from the Coombe rock and sand in 3964TT. The Coombe rock was analysed only at the 16–32mm size, whereas both 16–32mm and 11.2–16mm fractions of the sand were analysed. All three counts were indistinguishable from typical Lower Thames gravels from the immediate vicinity, containing flint (>90%), Greensand chert (1–2%) from south bank tributaries and 'exotic' material (4–7%) from beyond the London Basin.

This suggests that the gravel clasts in the Coombe rock were derived from older terrace gravels on the adjacent valley side. The sand, which represents the fluvial sediments at the site, also seems likely to represent the mainstream Thames. The alternative possibility of it being a Mar Dyke deposit receives little support from the clast-lithology counts. The Mar Dyke would have largely

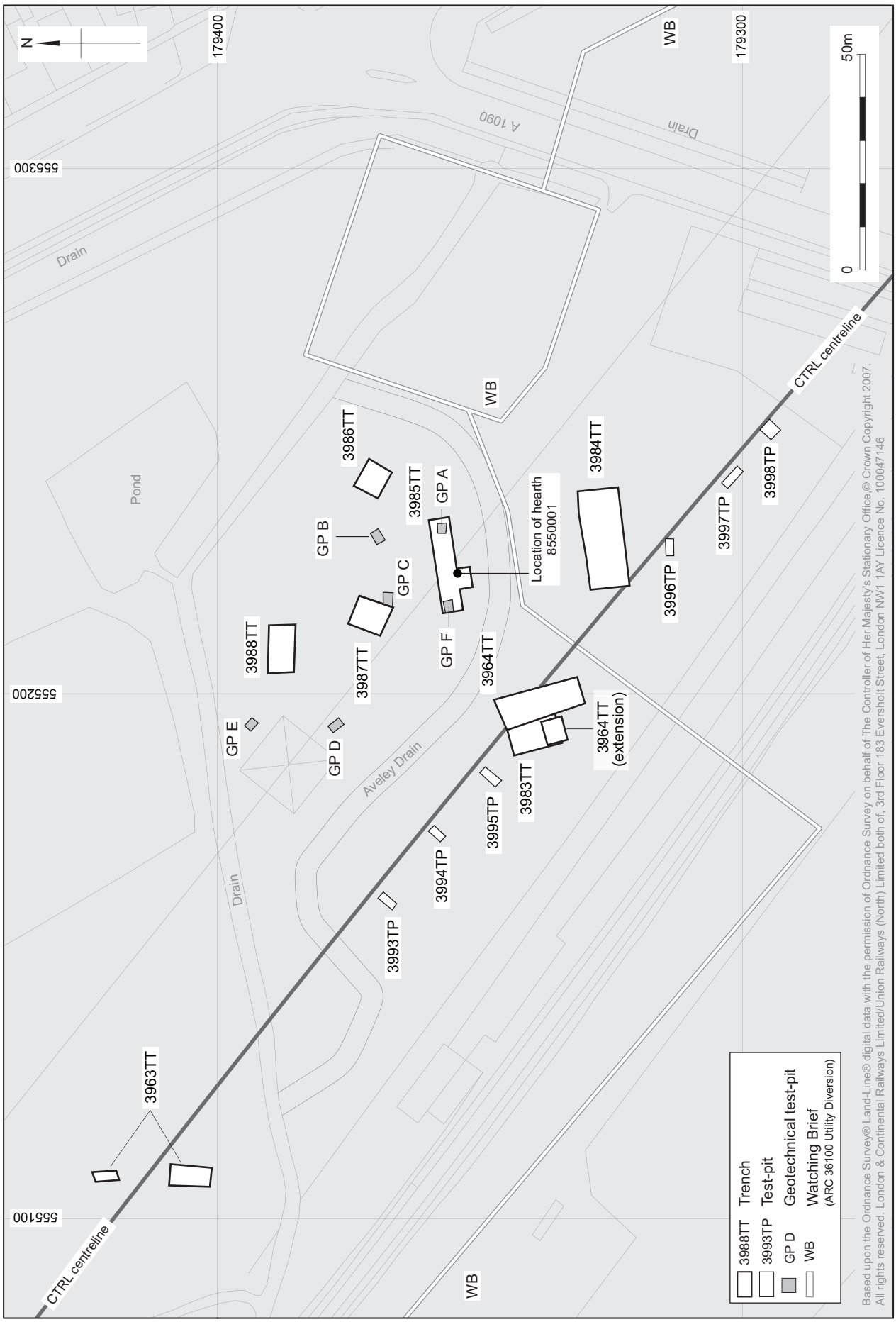

Fig. 2 Tank Hill Road, Purfleet. Location of watching briefs, test pits and trenches © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

reworked Thames terrace deposits but would also potentially have tapped the Palaeogene (Tertiary) beds to the north-east. These include flint pebble beds and would thus have supplied Palaeogene flint pebbles, diluting the Thames component with extra material of this type. However, the sample from 3964TT had one of the smallest Palaeogene (Tertiary) flint components of any from the region. This argues against a Mar Dyke origin and is instead exactly what would be expected from a Late Pleistocene Lower Thames gravel. The proportion of Tertiary flint, although variable, shows a progressive diminution in successively younger Thames gravels, reflecting the progressive erosion of the Tertiary Beds. The somewhat higher Tertiary component in the 3964TT Coombe rock sample conforms with the notion that its gravel component has been reworked from older terrace gravels, whereas the sand sample is likely to be from a Devensian-Holocene context.

Stratigraphy, Soils and Sediments: the on-site sequence

by Catherine Barnett and Richard Macphail

Variations on a single stratigraphic sequence were encountered in all interventions (Fig. 3). Monoliths were taken in four locations to enable detailed geoarchaeological recording. Although not all layers were present in all trenches, or were of varying degrees of development, the combined sequence can be summarised as follows:

The base of the sedimentary sequence was of clean soft white fine–medium sands (group 10007) part of/derived from the underlying Pleistocene fluvial sands and gravels. A dirty slightly humic grey sand (group 10006) overlay it. Fluvial influence on this layer probably declined with climatic amelioration at the start of the Holocene and this sediment would have formed a relatively dry, exposed stable landsurface for some time, thus available to Mesolithic groups as dry land. The sands are soft and loose, and as such would have been prone to windblow and movement.

Soil micromorphological analysis in 3984TT indicates that group 10006 is composed of poorly humic, coarse silt/fine sands with common coarse stones including flint. Trace amounts of fine charcoal and presence of likely burned stones are indicative of an anthropogenic input, consistent with the presence of artefacts. This soil horizon is highly compact and this lack of void space is best explained by wetting and structural collapse caused by site inundation, and eventual deposition of peat, sands and later fine alluvium. This phenomenon may also relate to the soil dispersion effect of sodium (Na+) present in marine-estuarine waters (Goldberg and Macphail 2006b, 162–6), as reported in North Kent (Hazelden *et al.* 1987; Jarvis *et al.* 1984). Other archaeological examples have been reported (French 2003; Macphail 1994; Macphail and Crowther 2003; Macphail and Cruise 2000). The degree of soil dispersion appears moderate, however, compared to

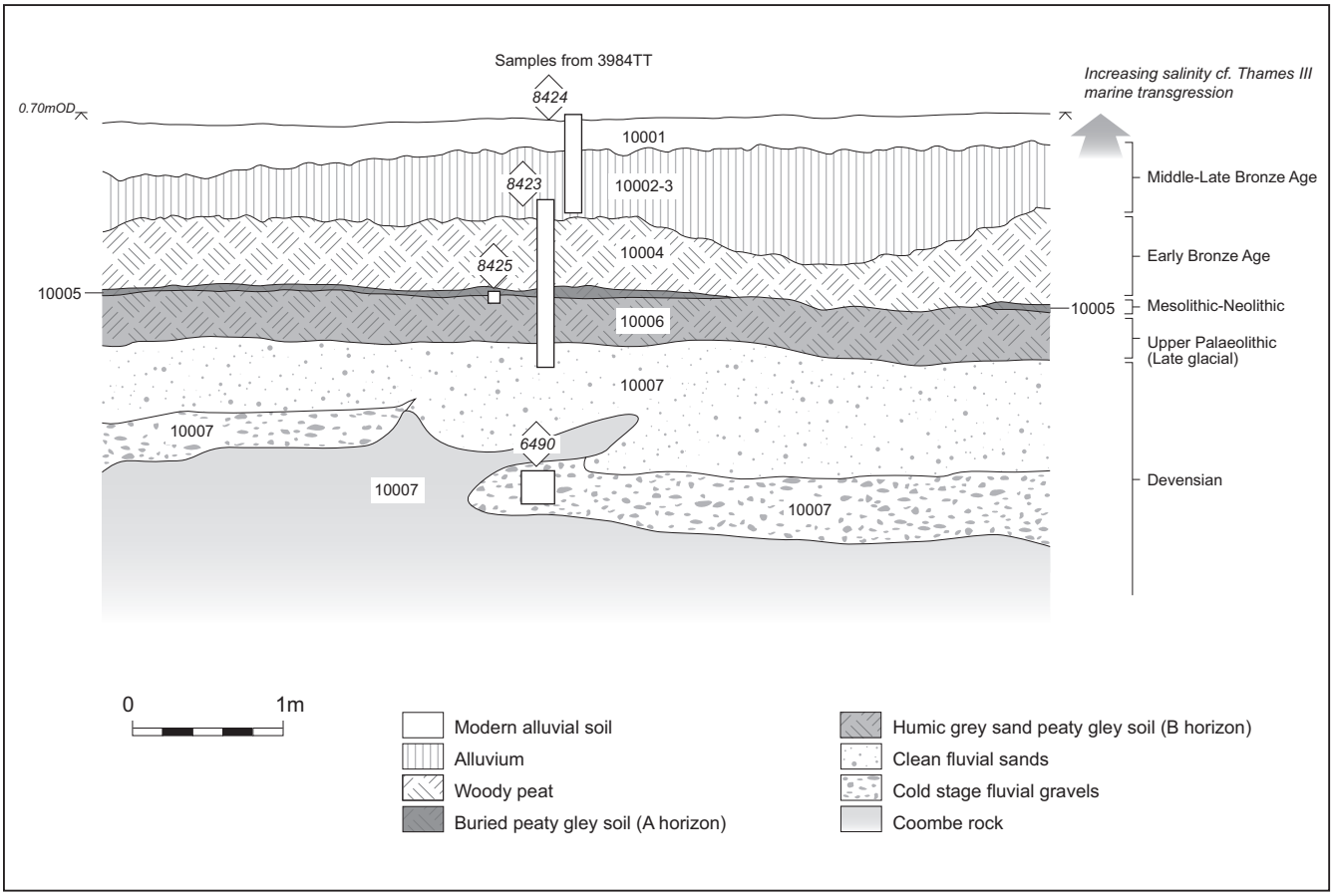

Fig. 3 Tank Hill Road, Purfleet. Schematic section combining the site-wide stratigraphic sequence

some examples noted on the Blackwater and Severn Rivers (Macphail 1994; Macphail and Crowther 2003; Macphail and Cruise 2000), and original inundation waters may have been fresh or low in salinity.

Concomitant base level rises in the water table led to a generally iron-depleted soil being present and inwash of humic silts, fine charcoal and the presence of small amounts of gypsum, a typical mineral associated with estuarine waters and their influence on sediments (Kooistra 1978); reported from such lower Thames sites as the Tower of London moat and below the Rose Theatre (Macphail and Crowther 2004). The upper part of 10006 is more open-structured and slightly more humic being the burrow-mixed junction between the earlier prehistoric palaeosol and the overlying sandy wood peats of group 10005. Silty inwash with fine charcoal is present in the uppermost level, the humic silts may be associated with peat formation, but the inclusion of fine charcoal implies continued human activity, into and beyond the Neolithic.

The encroachment of vegetation and increasingly moist conditions resulted in the accumulation of a highly humic sandy peat horizon (group 10005, *c.* 0.10m thick) on the top of 10006. The sediments stabilised once more, the top becoming a well-vegetated peaty soil A horizon. Micromorphological analysis indicates that 10005 is composed of once-laminated fine sands and wood peat (with woody roots affecting deposits below). The peaty material includes lignified remains of wood and amorphous peat burrowed by mesofauna who have produced abundant organic excrements.

A new shallow acid peaty gleyed soil profile was therefore superimposed over the previous stable sandy landsurface. The grey colouration of the sand top (10006) is, in part, attributable to humic colloids washed down and clear evidence for bioturbation exists. An eluviated soil (Ea) horizon was discerned in 3988TT on higher ground to the northeast of the site. Elsewhere, this layer was not fully developed, although a highly leached B horizon developed, with the acidic nature of the peaty layer and the open loose sands underlying it enabling groundwater leaching. The greater degree of development shown in 3988TT indicates it was dry and exposed to soil forming processes for longer than the rest of the site, which may explain the greater concentration of later prehistoric artefacts in that area. The sands across the site show evidence of being heavily rooted, the voids traceable to the overlying peaty soil and filled with silica crystals (in 3984TT) and humic material translocated from it, the voids also coated with iron oxides. As a consequence, any artefactual and environmental remains in the upper sands and indeed new material deposited in/on the peaty soil surface became subject to vertical movement through rooting and worm sorting.

Following the formation of 10005, the continued spread of wet marsh conditions led to the accumulation of terrestrial fen peat (group 10004, up to 0.25m thick), which buried the soil profile and effectively sealed it although rooting continued to have an effect. Wood remains from the peat indicate dominance of alder carr at this time (as with pollen; see below). The peat itself would have formed a succession of land surfaces, wet but still accessible for ephemeral activity. A gradual transition from desiccated iron-stained peat at the top (group 10003) to the stiff sticky clay alluvium (group 10002) that forms the upper portion of the sedimentary sequence indicates gradual inundation of the terrestrial peat, with no truncation of its upper surface observed. The deposition of up to 0.35m of fine overbank alluvium occurred under high water level conditions. The trigger for these events may in part have been internal such as a shift in channel position but also relates to a wider change in the Thames estuary with marine transgression causing a rise in base level, the increase in brackish/marine influence clearly demonstrated by the diatom assemblage reported for the off-site sequence (Cameron, below). The alluvium ultimately dried out and the modern pelo-alluvial gley soil subsequently formed at its top.

Features

Within this stratigraphic sequence, features were limited to silted tree-throw hollows cutting the lower peat in 3988TT and the upper sand in 3983TT and 3988TT. Anthropogenic features were limited to possible hearth locations within sands 10006 – 10009, marked either by concentrations of burnt flint or (in 3985TT) by a diffuse patch of discoloured sand in and around a shallow cut.

The hearth

by Catherine Barnett, Richard Macphail and Nick Debenham

Hearth 8550001 (Fig. 4) was cut into the basal soft fluvial sands at 0.56m. The feature was filled with sands which had been transformed by pedogenic process to form a similar bioturbated and leached soil profile to that described across the site. The feature was sealed by 0.10m of black humified peat, the base of which has been dated to the Early Bronze Age (*c.* 2400–2100 cal BC) (see Table 9) elsewhere on the site, and from which roots extended into the hearth.

Soil micromorphological analysis was undertaken through the hearth to confirm *in situ* burning and to investigate the pedological processes that had affected the feature and its contents since its creation. The hearth cuts a poorly humic well sorted sand (with coarse silt), the parent material/subsoil of group 10006, and of probable river terrace origin (Hucklesbrook soil association; Jarvis *et al.* 1984). The layer is marked by post-depositional rooting and secondary iron deposition, with iron impregnation of soil channel margins (hypocoatings) typical of a drowned soil (Bouma *et al.* 1990; Macphail 1994) (Fig. 5.1 and Fig. 5.2). The base of fill 8550002 is of burrowed sands with fine charcoal-rich silt inwash (Fig. 5.3) and burnt flint, and is strongly leached. The main part of the fill, consisting of fine sands with charcoal and relict burned small stones, is strongly burrowed, with some burrows infilled with silt and charcoal, implying biological working of this probable 'combustion zone', a common phenomenon affecting hearths (Goldberg and Macphail 2006a; 2006b, 167–8; in prep.).

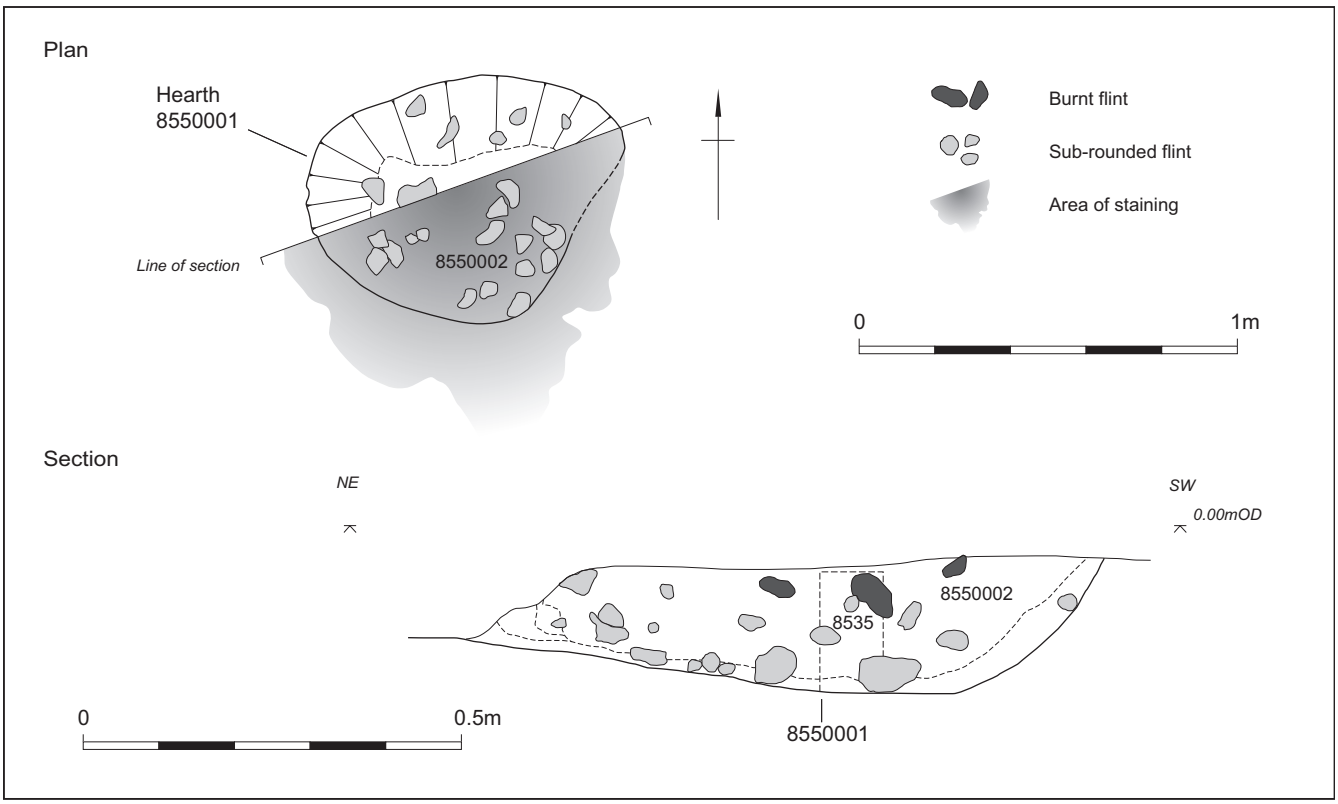

Fig. 4 Tank Hill Road, Purfleet. Hearth 8550001 plan and section

A rare and enigmatic infill feature of dark iron-stained clay is unlikely to be related to general clay inwash that can develop during inundation, or result from inundation-induced soil slaking (e.g. Macphail 1994; Macphail and Crowther 2003; Macphail and Cruise 2000) since only one example is present. This may be a relict trace of clay movement caused by the release of potassium in ash-rich deposits and commonly recorded in pits containing burned residues (Courty and Fedoroff 1982; Slager and Van der Wetering 1977). The hearth, as with the soil recorded in 3984TT, was sealed below a wood peat with post-depositional rooting and iron staining.

Due to conflation and mixing of remains in the soil profile, the relationship between individual charcoal fragments and between charcoal assemblages and datable archaeology could rarely be discerned at the site, the exception being hearth 8550001. This feature contained moderate quantities of burnt flint with wood charcoal and was selected for full analysis. Fragments >2mm extracted from the flot and residues were prepared for identification according to the standard methodology of Leney and Casteel (1975, see also Gale and Cutler 2000). Identification was undertaken according to the anatomical characteristics described by Schweingruber (1990) and to the highest taxonomic level possible, usually that of genus, with nomenclature according to Stace (1997).

The charcoal assemblage, though small at 2g total weight and 40 fragments, was well preserved, firm and fresh indicating little rolling or movement post-deposition. Five taxa were identified (see Table 1), with oak (*Quercus* sp.) dominant at >50% with lesser ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), birch (*Betula pendula/ pubescens*) and alder *(Alnus glutinosa*). All are common deciduous large shrub and tree types but a source of open woodland or hedges is indicated rather than closed canopy woodland particularly by the presence of birch and hazel. The presence of alder demonstrates the proximity of the site to the wet channel and floodplain edge. The types represented are not especially chronologically distinctive, however the importance of oak and ash suggests a Late Mesolithic or later date, these types being slower to colonise and establish at the start of the Holocene than birch and hazel, as confirmed by the radiocarbon dates (see below). The context and also the size and nature of the wood charcoal assemblage indicate casual use and as such all types were probably growing and collected locally.

The Mesolithic hearth site investigated at Goldcliff, Gwent and the Neolithic occupation at the Stumble, Essex (Bell *et al.* 2000; Crowther 2000; Macphail 1994; Macphail and Cruise 2000) compare well to the inundated early prehistoric landscape at Tank Hill Road. Both show how slow (backwater) inundation does not result in destructive site working by wave action or currents; at both sites charcoal gently spread across the site and became entrapped in the overlying estuarine silty clay deposits. Unfortunately, any calcitic ash in the hearth at Tank Hill Road has been lost by leaching and so it is impossible to recognize any features (e.g. recemented ash) that can imply secondary use. On the other hand, it is clear that the site was a dry land area long enough for the hearth to be burrowed by invertebrates and for the ash to become weathered. Localized burning is evident

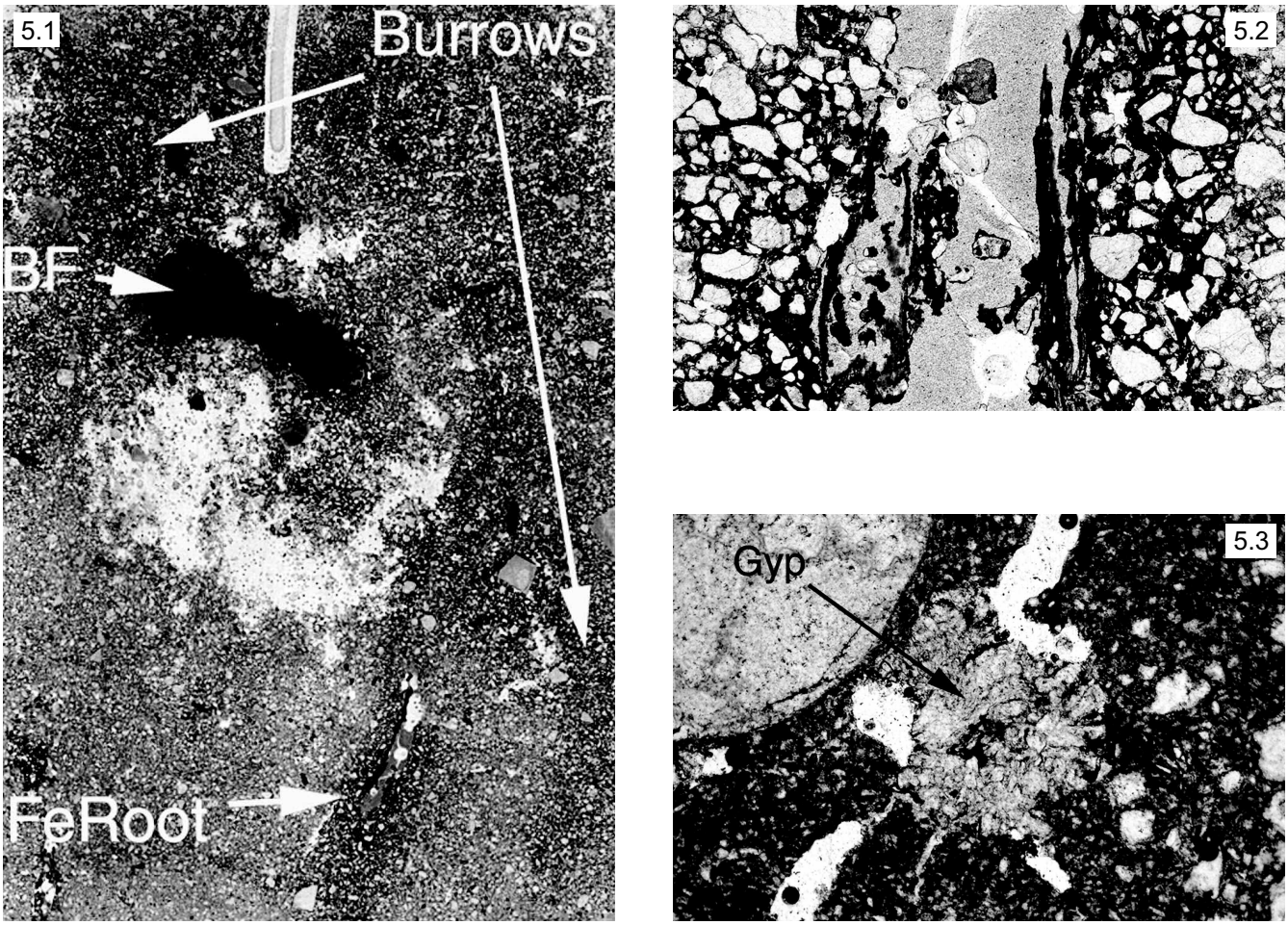

Fig. 5 Tank Hill Road, Purfleet. Soil micromorphology.
5.1: Scan of 8535B. Here the base of the hearth deposit that includes burned flint (BF) is burrow-mixed into the subsoil sands (natural); note iron stained root traces (FeRoot). Frame width is ~50mm.
5.2: Photomicrograph of 8535B focusing on an iron-replaced root and associated void iron hypocoating in the 'natural' under the hearth. PPL, frame width is ~4.6 mm.
5.3: Detail of gypsum (CaSO4) in 8425B; some dissolution is apparent around crystal margins. PPL, frame width is 2.3mm

Sample no.	Feature	Context	Description	*Alnus glutinosa*	*Betula pendula/pubescens*	*Corylus avellana*	*Fraxinus excelsior*	*Quercus sp.*	Unid vitrified	Total no. fragments identified	% assemblage IDd by weight
8522	3985TT, 3985, cut 8550001	8550002	Putative hearth, shallow scoop with moderate charcoal and burnt flint	4	1	6	5	21	3	40	100%

Table 1 Wood Charcoal Identifications ARCPFC01 Tank Hill Road

from burned (including calcined) flints and charcoal and clearly a hearth/combustion feature is represented.

Six of the largest pieces of heated flint from fill 8550002 of the hearth (PFC21–6) were chosen for an initial examination, four of which were selected for thermoluminescence (TL) date measurement. The methods of sample preparation, sample and background measurement are given in archive. The calculated TL

Sample Ref.	Palaeo- Dose(Gy)	b-value(Gy.μm2)	Total Dose-Rate(Gy/ka)	TL Age (BC)
PFC21	5.42±0.32	3.49±0.26	0.814±0.056	4,723±620
PFC22	8.04±0.43	3.00±0.10	0.771±0.052	8,483±900
PFC25	5.52±0.26	3.60±0.41	0.786±0.050	5,083±570
PFC26	4.26±0.10	2.60±0.10	0.673±0.046	4,353±480

Table 2 Thermoluminescence Dates

ages are presented in Table 2. The quoted error limits include both random and systematic sources of uncertainty and refer to the 68% confidence level. The TL dates refer to the most recent heating of the flint pieces to a temperature exceeding 400°C (the palaeodose). In order to reach a high temperature, the flint would necessarily have been at, or very close to, the ground surface.

Of the four TL date measurements, it is clear that three (PFC21, 25 and 26) are not significantly different, while the fourth (PFC22) indicates an earlier heating. If it is assumed that the three concordant flints were heated contemporaneously, the best estimate for the date of the main event is given by the weighted mean of their TL ages, 4,653±380 BC, the Late Mesolithic. Both PFC22 and PFC23 (assessed but not selected for analysis) showed an early date of exposure to high temperature. Thus, it can be concluded that a certain number of the flints recovered from feature 8550001 were not sufficiently close to the (Mesolithic) fire for the event to register in their TL record but had been burned previously (Upper Palaeolithic). This may cast doubt on the extent to which the assemblage can be said to be *in situ*. However, the TL dates provide some evidence for a fire in the vicinity of the feature, which most probably occurred between 5040 BC and 4270 BC.

Two fragments of young wood identified during charcoal analysis of fill 8550002 were submitted for radiocarbon dating. The sample details and results returned are given in Table 3.

The dates are statistically indistinguishable, and date the same burning event at 3520–3360 cal BC. These radiocarbon dates, while internally consistent, differ from the Late Mesolithic TL dates shown for three of the seemingly associated burnt flints. Assuming there is no consistent methodological reason, the discrepancy is best explained as arising from either re-use of the feature or reworking of material. If the former it could be questioned why the flints were not sufficiently reheated in the Neolithic phase, though they may have been cleared to the periphery of the hearth. Using the TL and radiocarbon dates in combination, clearly burning occurred in the immediate vicinity in the Upper Palaeolithic, Late Mesolithic and Early Neolithic, all periods also well represented by artefacts. The possibility of continuous or at least repeated occupation or use of the sand island arises until peat encroachment precluded it in the Bronze Age. However, the date discrepancy indicates that the charcoal in this particular hearth does not derive from the same fire as the burnt flint, and that one or both material categories moved locally during exposure of the sandy land surface.

Site Formation Processes

Worked and burnt flint was recovered from throughout sands 10006–10009. Diagnostic material ranged from the Late Upper Palaeolithic to Early Bronze Age, all within these same horizons. It is evident that the material has undergone vertical conflation within the loose sands, either from land surfaces that no longer survive, or which survive within later soil horizons.

Context	Sample no.	Material dated	Result no.	C13 ‰	Result BP	Fraction details	Cal date BC (2 sigma, 94.5% confidence)	Phase
8550002	8522	Charcoal: *Alnus glutinosa*	NZA 27368	–27.4	4642±30	Treated charcoal	3520–3350 BC	Earlier Neolithic
8550002	8522	Charcoal: *Corylus avellana*	NZA 27369	–27.0	4657±30	Treated charcoal	3520–3360 BC	Earlier Neolithic

Table 3 Radiocarbon Dates on Hearth

Northing	59322	59323	59324	59325	59326	59327	59328	59353	59354	59355	59356	59357	59369	59370	59371	59386	59387	59388	59389	59390
Spit 10006	31	48	34	30	0	44	16	55	125	97	51	25	28	11	38	10	25	33	25	7
Spit 10007	6	4	17	16	37	65	6	10	62	37	25	7	0	8	5	7	34	34	9	5
Trench	3984							3985					3987			3988				

Table 4 Flint Densities in the Upper and Lower Sand

A transect aligned approximately south–north through trenches 3984TT, 3985TT, 3987TT and 3988TT (easting 35216 at the north, 35335 at the south) shows that flint artefacts were most prevalent in trench 3985TT around northings 59353–6. Here, material tends to concentrate in the upper spit (10006), and this is true in most locations. However, there were exceptions, at northings 59326–7 in 3984TT and 59387–8 in 3988TT (Table 4). Differential vertical movement of lithics is frequently encountered in sands: the phenomena was noted at Rock Common, West Sussex (Harding 2000), and at Three Ways Wharf, Uxbridge, where it was attributed to 'the inability of soil processes to penetrate and redistribute dense accumulations of 'interlocking' debitage' (Lewis forthcoming).

Barton and Collcutt have discussed the effects of various anthropogenic and non-anthropogenic phenomena on artefact taphonomy at Hengistbury Head in some detail (Barton 1992, 64ff). In terms of vertical displacement of artefacts through relatively homogeneous sandy layers, sorting by weight and resultant chronological mixing are commonly attested. At Tank Hill Road, the profusion of root penetration from overlying peats into the flint-bearing sands clearly indicates that distortion and mixing will have taken place. Additional less readily-visible processes are likely to have contributed: the dispersal of smaller elements down the profile by as much as 100mm is commonly attributed to trampling (Villa 1982, 279; but see Barton 1992, 94); alternate wetting and drying of sediments is

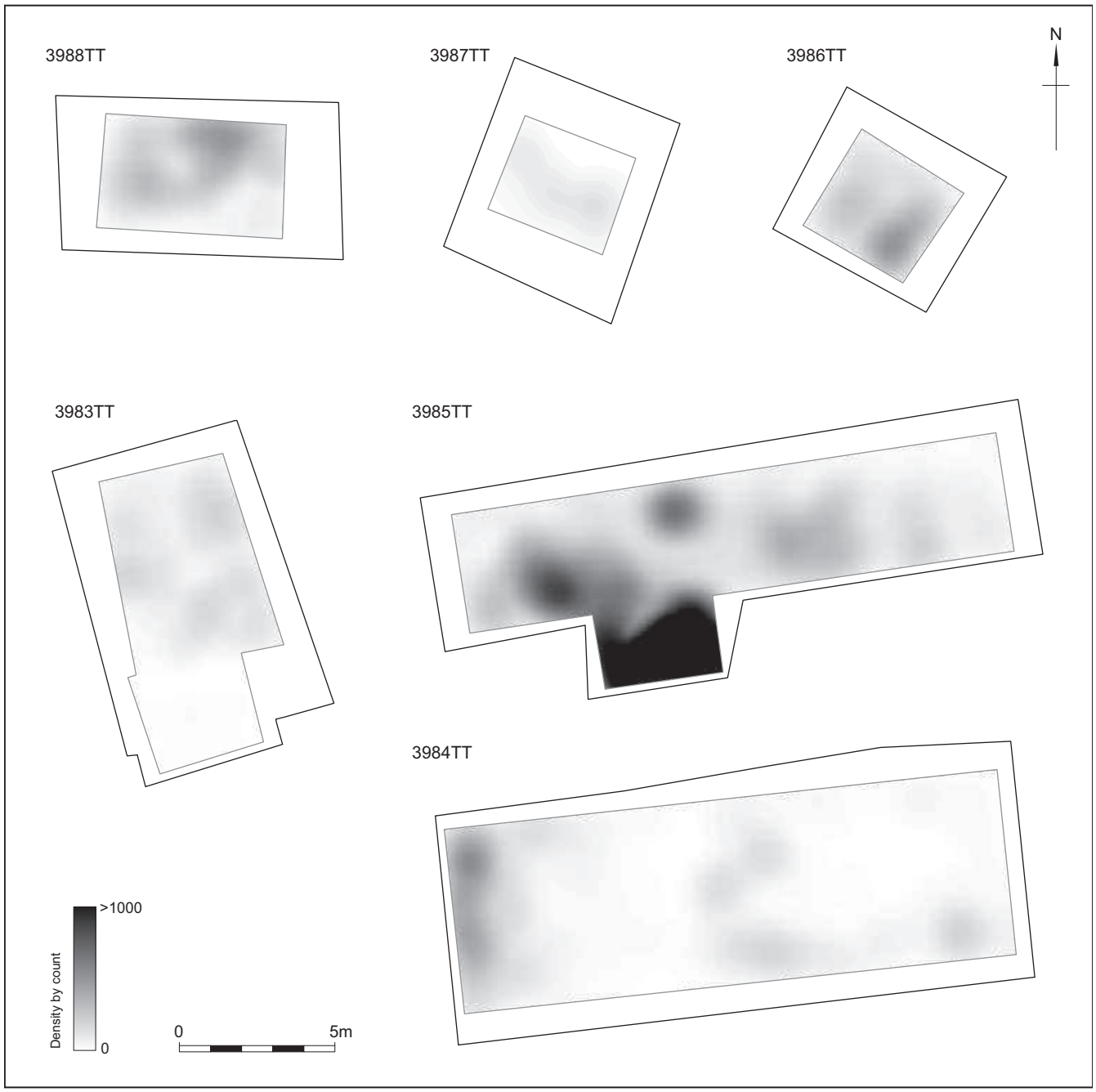

Fig. 6 Tank Hill Road, Purfleet. Densities of burnt flint in the trial trenches

also assumed as a factor in vertical redistribution (Villa 1982, 279).

Although stratigraphic distinctions are lost, it is likely that the spatial patterning of artefacts has survived. Horizontal displacement is attested, but appears to have blurred distributions, rather than erased them. Natural processes (rain, wind, flooding, root disturbance, animal activity) would have caused horizontal movement, but this is unlikely to have been extensive. No comprehensive refitting programme has been carried out to test the degree of horizontal movement, as previous studies of similarly re-sorted material in sands have demonstrated that post-depositional movement only blurs artefact distributions, leaving unbiased assemblages within which activity areas, technologies and typologies can be defined (Collcutt 1992; Harding 2000).

Virtually all of the material recovered was flint. 36,220 individual worked pieces have been quantified, along with 50,774 pieces (162.5kg) of unworked burnt flint. Very small quantities of Early Neolithic pottery were recovered. Faunal remains were completely absent.

Burnt Flint

Burnt flint densities are shown schematically by trench in Figure 6 and in the background to tool type distributions.

A low background scatter of burnt flint was present in most trenches. Concentrated areas (over 400 pieces per square) occurred in 3984TT, where the densest areas occurred along the western edge of the trench associated with a poorly defined area of worked flint. In 3985TT over 2,600 pieces in a concentration in the south-east corner were largely coincident with the densest areas of worked flint from the site. 3986TT contained a well-defined concentration towards the south-east corner, immediately adjacent to a dense concentration of worked flint. In 3988TT a small cluster of pieces was adjacent to an area with slightly increased values of worked flint towards the south-west of the trench; more noticeably towards the north-east a distinct cluster of up to 400 pieces occurred where worked flint was most prevalent. With the exception of the very dense cluster in 3985TT (which was clearly a hearth) these appear to be dumps or spreads which may mark the locations of hearths, but could equally be concentrations of cleared-out material.

Three lesser concentrations of burnt flint occurred in the centre and on the eastern and western margins of 3983TT. These possible hearths were associated with two concentrations of worked flint (one against the eastern edge of 3983TT, the other in the centre of the 4m^2 extension to 3964TT) marking areas of knapping with high numbers of axe thinning and sharpening flakes. A small nucleated cluster of up to 55 pieces lay adjacent to the eastern edge of 3987TT, with two lesser clusters west of it. The largest concentration of worked flint lay in the north-west corner of this trench, although a second dense concentration was partially coincident with the main burnt flint.

Struck Flint

The breakdown of pieces by area is given in Table 5. Blades are defined as flaking products with a length at least twice the width (Bordes 1961), while bladelets are blades no more than 12mm wide and retouched bladelets have a maximum width of 9mm (Tixier 1963). The bulk of the assemblage was identified and quantified during assessment by Phil Harding. The tools, tool debitage and pieces selected for metrical and technological analysis have been re-examined by Matt Leivers. Density distributions of worked flint by trench are shown in Figure 7.

3985TT accounted for 40% of the total assemblage, with 17.5% in 3984TT and the residue in the remaining trenches. It is significant that 35% of the material from 3985TT comprised chips, which provide good indicators of *in situ* flint working. The chip component from 3964TT may be artificially low due to the fact that this was the first trench excavated at the site.

Area	Irreg. waste	Cores	Core prep/rejuv	Chips	Flakes	Blade/ lets	Micro burins	Tools	Micro liths	Total
3964TT	53	36	22	61	1043	278	1	16	-	1510
3983TT	75	66	42	446	1874	498	15	33	(8)	3049
3984TT	190	148	58	1164	3525	1182	20	98	(27)	6385
3985TT	191	200	76	5065	6777	2080	48	135	(45)	14572
3986TT	138	57	53	967	2122	534	9	60	(23)	3940
3987TT	50	27	7	50	390	71	-	18	-	613
3988TT	151	99	19	633	2198	480	4	72	(28)	3656
3993TP	12	4	-	1	228	16	-	1	(1)	262
3994TP	4	2	-	-	130	3	-	-	-	139
3995TP	-	1	-	-	48	3	-	1	-	53
3996TP	-	-	-	-	12	-	-	-	-	12
3997TP	4	3	-	-	154	7	-	-	-	168
Watching Briefs	40	40	7	716	991	49	2	16	(2)	1861
Total	908	683	284	9103	19492	5201	99	450	(133)	36220

Table 5 Worked Flint

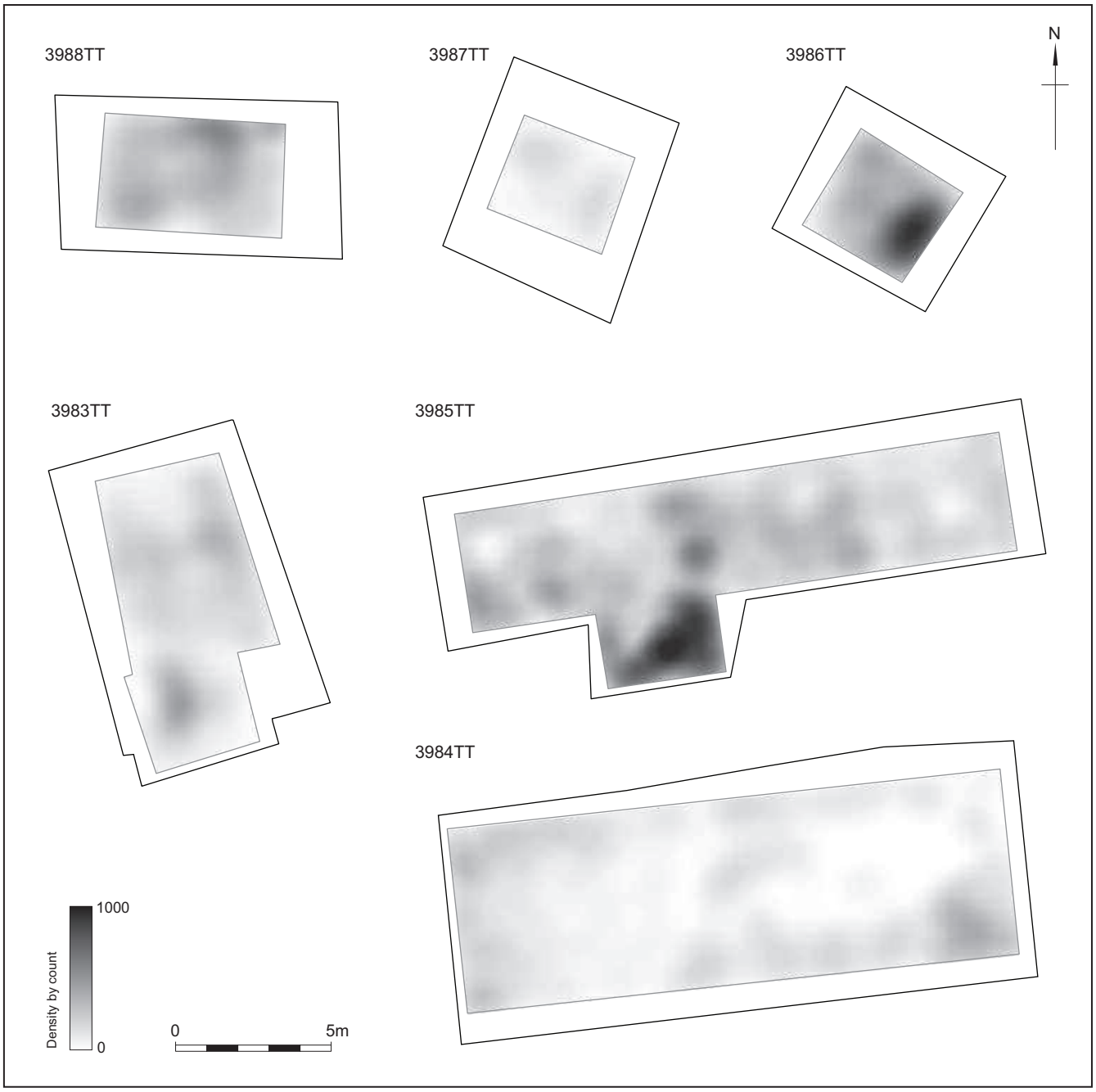

Fig. 7 Tank Hill Road, Purfleet. Densities of worked flint in the trial trenches

Discounting the test pits, the results from Table 5 indicate a mean density of 118 pieces of worked flint per square metre from all trenches. Totals per square metre range from 282 pieces in 3986TT to 47 pieces in 3987TT. Densities per trench indicate that 3986TT (282 pieces per sq. m.), 3985TT (182), and 3988TT (158) lie above the mean density while 3964TT (118), 3983TT (104), 3984TT (59) and 3987TT (47) fall at or below it. If similar calculations are made with the exclusion of the chip component, which is likely to reflect the highest level of recovery variation, the results show some differences. The greatest density per square metre remains within 3986TT (186 pieces), but the second highest density occurs in 3988TT (131), followed by 3985TT (119). 3964TT (91) and its extension 3983TT (87) retain similar densities, although 3964TT, which was the first to be excavated at the site, now has a greater density than 3983TT. 3987TT and 3988TT still show the lowest flint density across the site.

Artefact composition shows considerable variation between trenches. The results from all trenches indicate that flakes and blade/lets form 68% of the assemblage with 30% core material and products of core working and 1% retouched material. Results from individual trenches indicate that flake and blade/let quantities vary from 87% in 3964TT to 61% in 3985TT, although the ratio of flakes to blade/lets shows far less variability, ranging from 1:5 (3987TT) to 1:3 (3984TT, 3985TT). This suggests that the general technology across the site is consistent.

Comparable results are apparent from consideration of the core component. The results from all trenches indicate that blade/let cores account for 47% of all cores.

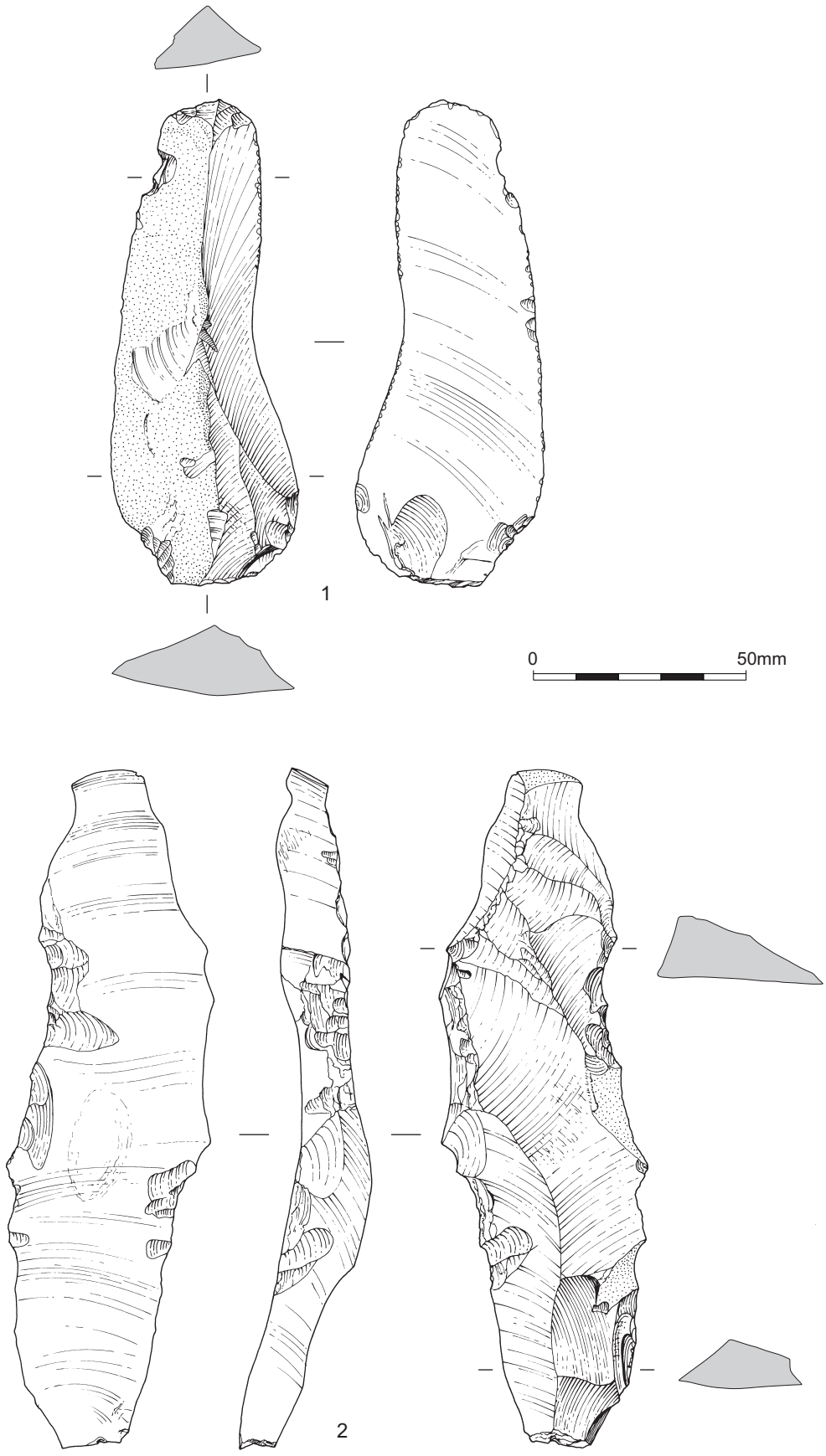

Fig. 8 Tank Hill Road, Purfleet. Long Blade artefacts: 1) end scraper; 2) bruised blade

Results from individual trenches show that values for blade/let cores rise to 55% (3964TT), 54% (3983TT) and 51% (3985TT) where blade production was most prevalent and fall to 30% where blade/lets are scarcer.

Results for retouched material indicate that almost 50% of this group comprises material with miscellaneous undiagnostic retouch, which is often marginal along one edge. This retouch is too consistent to be accidental edge damage and may result from use. The largest classifiable tool component is microliths which account for 29% of all tools. Most are small geometric forms, of Late Mesolithic date.

Terminal Ice Age/Early Post-Glacial

There are a small number of pieces (from 3984TT and 3986TT) which may be assigned to the end of the Devensian or beginning of the Flandrian (within the range 12,000–8,000 cal BC, probably *c.* 10,000–9,000) with varying degrees of certainty (Fig. 8). The material is distinguished by its technology, size and condition. It may be that a small number of undiagnostic pieces have gone unrecognized; however the quantity is unlikely to be significant. The most convincing pieces are a pair of large soft-hammer struck naturally-backed blades with facetted butts from 3986TT. One (an end scraper from 86015) has convex, regular, continuous, direct retouch at the distal end and on the right proximal margin (Fig. 8.1). The second (a *lame mâchurée*) is on a crested blade with discontinuous areas of alternating and bifacial removals on both margins which appear to result from use (Fig. 8.2). A medial blade segment from 86017 has a similar battered edge and may represent a third example. The fourth instance is more doubtful, being merely the medial portion of a large blade.

Although limited, this material is noteworthy for its concentration in 3986TT. The only other pieces identified as potentially early Post-Glacial are a pair of worn, patinated and iron-stained proximal blade fragments, with facetted butts and edge damage which may be post-depositional. Both are from 3984TT, which lies down slope from 3986TT, suggesting that all of these pieces may have derived from the same activity, if they are indeed all of the same date.

Although the excavations did not encounter any discrete activity of this age, the isolated artefacts are important as they probably represent the first recolonisation of the Mar Dyke Valley after the Loch Lomond Stadial and mark a significant, if small, use of the valley by hunter groups. Further evidence of activity on the site at this time is provided by a thermoluminescence date of 10,490±900 BP (9,380–7,580 BC), although the very large margin of error prevents the firm association of this date with the artefacts.

Mesolithic

Watching briefs maintained on utility diversions (Fig. 2, approximately 30m east of 3985TT) revealed an assemblage of 263 struck flints, primarily recovered from the upper 150mm of a fine sand (equivalent to 10007) and at the interface of this sand with the overlying peat (10006). The material from the sand was generally well-preserved, although some slight edge damage suggested that it had been disturbed to some degree from its original location, but probably by an insignificant amount. Technological characteristics of the assemblage suggested a coherent group of Late Mesolithic date, consisting of flake and blade cores and debitage, four burins, a notched flake, an obliquely blunted point and two tranchet axe sharpening flakes (Lamdin-Whymark 2003). This material undoubtedly forms a part of the same activity as the Late Mesolithic material from the excavated trenches.

The bulk of the material recovered from the trenches and test pits is assumed to be Late Mesolithic. Concentrations of diagnostic tool types (predominantly tranchet axes, microliths and the type fossils of their manufacture and maintenance) indicate that much of the activity occurring on the site is of that date, and the debitage is likely to be primarily contemporary. However, the presence of later tool types (predominantly projectiles) in various stages of manufacture indicates flint knapping of more than one period. Metrical analysis has demonstrated that length/breadth ratios are remarkably consistent between groups of debitage likely to be of different ages (discussed further below, but likely to be due to constraints placed upon knapping by the limitations of the raw material). Separation of different chronological elements is therefore difficult, and the Late Mesolithic element is likely to be over-represented.

Raw Material

The raw material consists primarily of poor quality flint which is severely thermally fractured. This component is difficult to source accurately, but is likely to have been obtained from secondary geological sources. While some better quality flint may have come directly from the undisturbed natural chalk (the Purfleet anticline is only 1km to the east), the prevalence of thermally fractured pieces suggests that more came from either cryoturbated chalk or the local Pleistocene drift.

Within the bulk of the assemblage, two more identifiable types were noted. Glauconitic (Bullhead) flint has its origins in chalk that is overlain by the Thanet Sand in Kent and southern Essex. Bi-zoned flint, which has distinctive oval zones of dark flint with lighter coloured material, was also apparent but is harder to source.

Cores and Debitage

There are 683 cores. Unretouched debitage amounts to 35,087 pieces (96.9% of the assemblage), just over a quarter of which are chips and small fragments. 19,492 are flakes, with only 5,201 blades and bladelets. The remaining pieces include core rejuvenation tablets, crested pieces, microburins and angular fragments.

Cores

Cores (Figs 9 and 10) have been classified according to the relic scars on the flaking surface. The 683 examples include 277 producing blades or bladelets and 240 producing flakes. In addition there were 166 broken fragments. Some underwent careful preparation, with a clear intent to produce a predetermined end product. These are normally blade or bladelet cores, but do include some flake cores, sometimes worked by alternate flaking. However, many examples (particularly some of the bladelet cores) were more opportunistic, designed for the removal of bladelets from flake blanks or fragments with an existing ridge to guide the bladelet. These involved the minimum amount of platform preparation, with no subsidiary core dressing, and

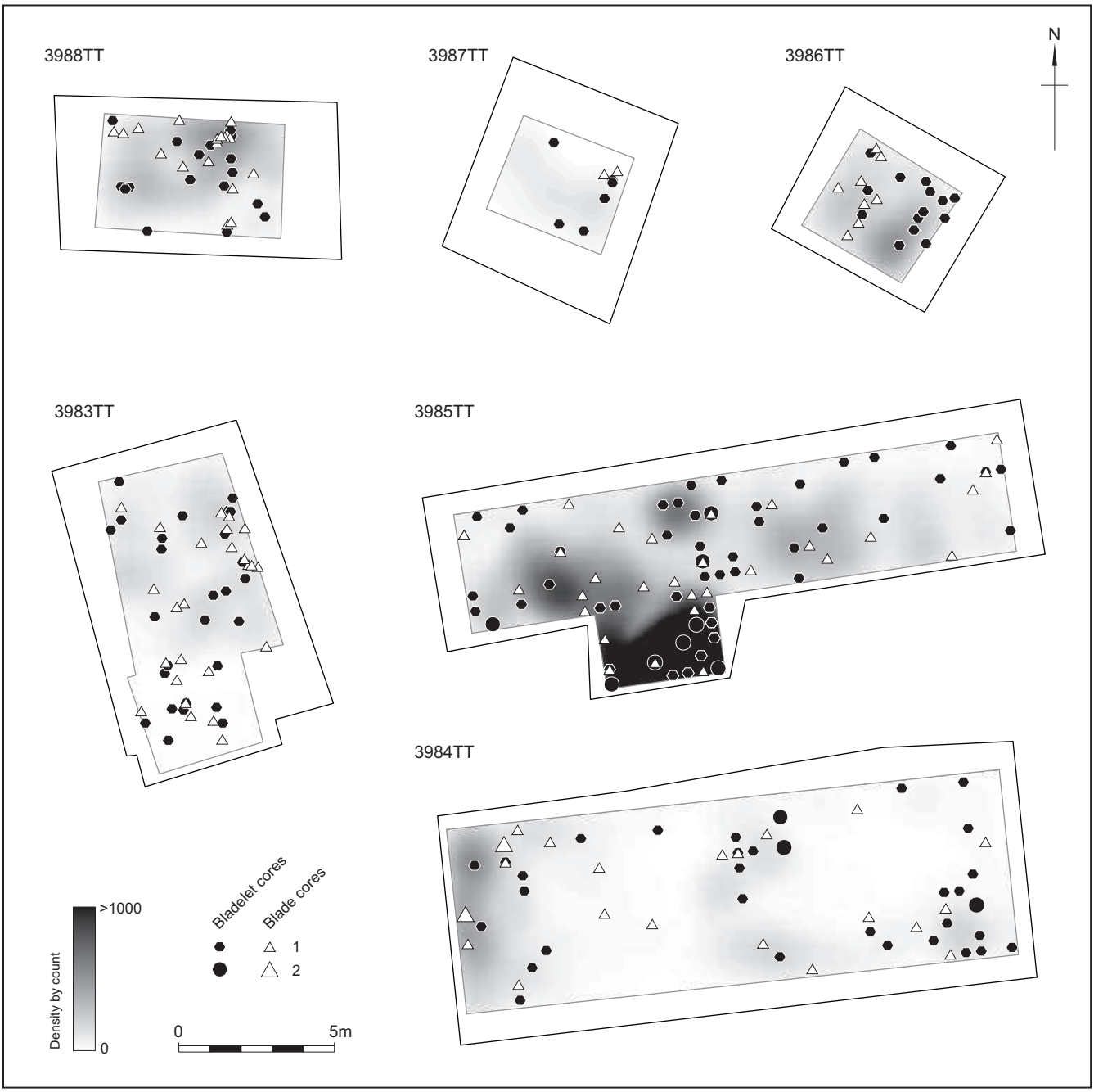

Fig. 9 Tank Hill Road, Purfleet. Mesolithic core distributions in the trial trenches

were often discarded after only a limited number of bladelets had been removed.

Most cores seem to have been prepared with a single striking platform, to which opposed or secondary platforms were added as the main surface became unworkable. Secondary opposed platforms principally served to prolong the active life of the main striking platform but sometimes produced blanks in their own right. Cores were often, but not always, crested by unifacial flaking to prepare the front of the core before blank production began. Cresting was also used as a method of restoring the flaking surface of a core. Core rejuvenation tablets were removed to renew the flaking angle of the core. Some of these tablets have removed the entire top of the core, creating a completely new striking platform while others appear to serve as facetting flakes, which remove and modify only selected parts of the striking platform.

Rejuvenation tablets and crested pieces occurred across the excavated areas, with no more than one example of either from a single square and spit being the norm. Greater densities were present only in 3985TT and 3984TT. In the former, both rejuvenation tablets and crested pieces clustered around the hearth, with both greater densities and higher numbers than in other trenches. In the latter, densities were not as great, but quantities of rejuvenation tablet per individual square were as high as six. In both cases, the concentrations are likely to mark areas of core preparation and/or maintenance. Similar patterns can be seen in 3964/3983TT, where three increased densities of cores coincide with the distributions of rejuvenation tablets and crested pieces.

Across the site, cores and broken cores account for approximately 2% of the assemblage. Values for individual trenches range from 1.4% (in 3985TT and 3986TT) to 4.3% (in 3987TT). The ratio of blade and bladelet to flake cores, which can be taken to provide an indication of blank production, ranges from 1:0.8 (in 3964/3983TT and 3985TT) to 1:2.3 (in 3987TT), although this difference is only partially reflected in the flake component. 3985TT contains only 46% flakes, which confirms that there was a strong element of blade core production. The flake component from 3964/3983TT rises to 65%, which is a direct result of the core tool production that took place in this area.

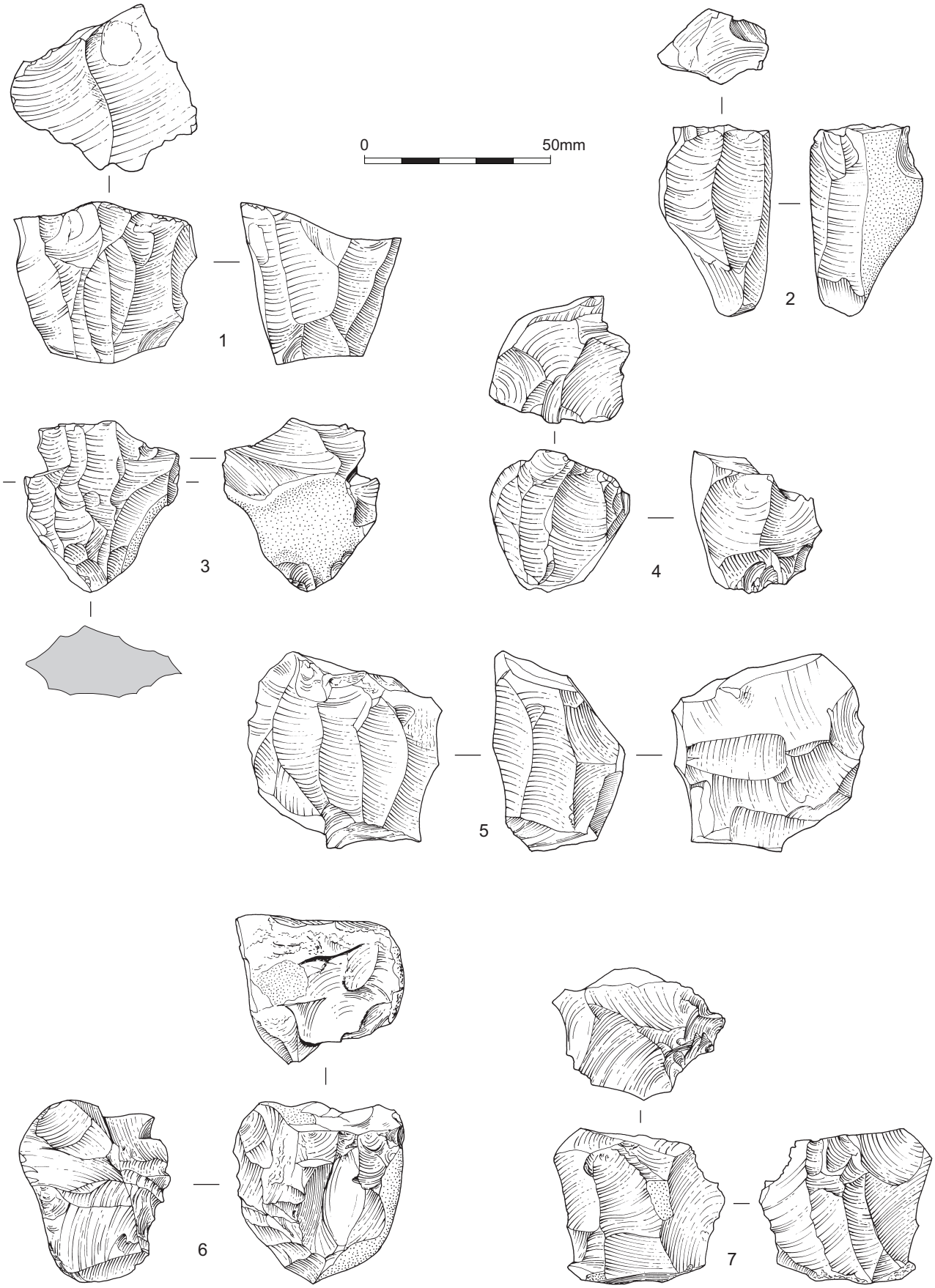

Fig. 10 Tank Hill Road, Purfleet. Cores

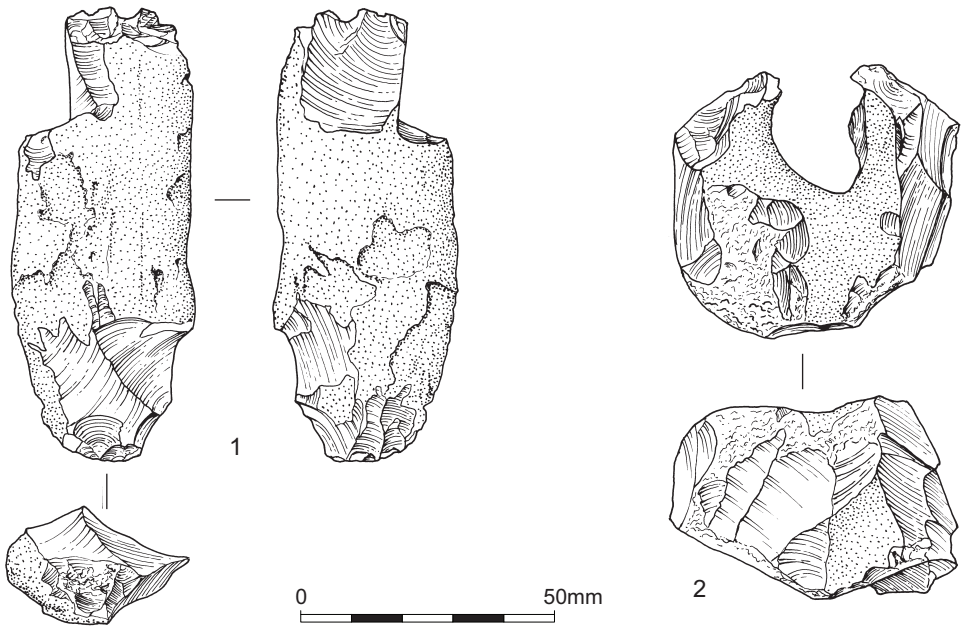

Fig. 11 Tank Hill Road, Purfleet. Hammers

n = 185	**Length**	**3983TT Breadth**	**Thickness**	**n = 185 Length**	**3985TT Breadth**	**Thickness**
Range	9.8–1.78	7.6–1.12	1.31–6.28	9.06–4.07	6.01–6.46	1.08–1.37
Mean	33.55	30.15	6.99	30.79	22.12	5.47
SD (n-1)	16.841	15.731	5.33	13.188	10.341	3.9969
Butt Dimensions (mm)	n = 131			n = 163		
Range		2.64–8.36	0.68–33.08		1.87–43.32	1.01–14.50
Mean		12.4	4.83		11.04	4.4
SD (n-1)		8.466	4.038		6.0599	2.7755

n = 185	**Length**	**3986TT Breadth**	**Thickness**	**n = 185 Length**	**3987TT Breadth**	**Thickness**
Range	9.92–66.63	8.07–71.36	0.7–15.39	8.84–71.96	6.41–64.75	1.07–30.68
Mean	27.14	23.66	4.7	24.63	21.77	4.81
SD (n-1)	10.8997	10.8425	2.6488	11.677	9.8091	4.2205
Butt dimensions (mm) n = 166				n = 175		
Range		1.7–37.95	0.78–15.51		2.24–31.58	0.89–23.56
Mean		11.51	4.5		10.95	4.16
SD (n-1)		5.9486	2.8676		6.2871	3.1671

n = 185	**Length**	**3988TT Breadth**	**Thickness**
Range	185	185	185
Mean	9.84 – 93.55	9.06 – 86.89	1.03 – 26.05
SD (n-1)	30.82	26.41	5.4
	14.484	12.012	4.137
Butt Dimensions (mm) n = 175			
Range		2.84 – 33.24	0.65 – 17.61
Mean		12.9	5.16
SD (n-1)		6.54	2.967

Table 6 Metrical Analysis (mm)

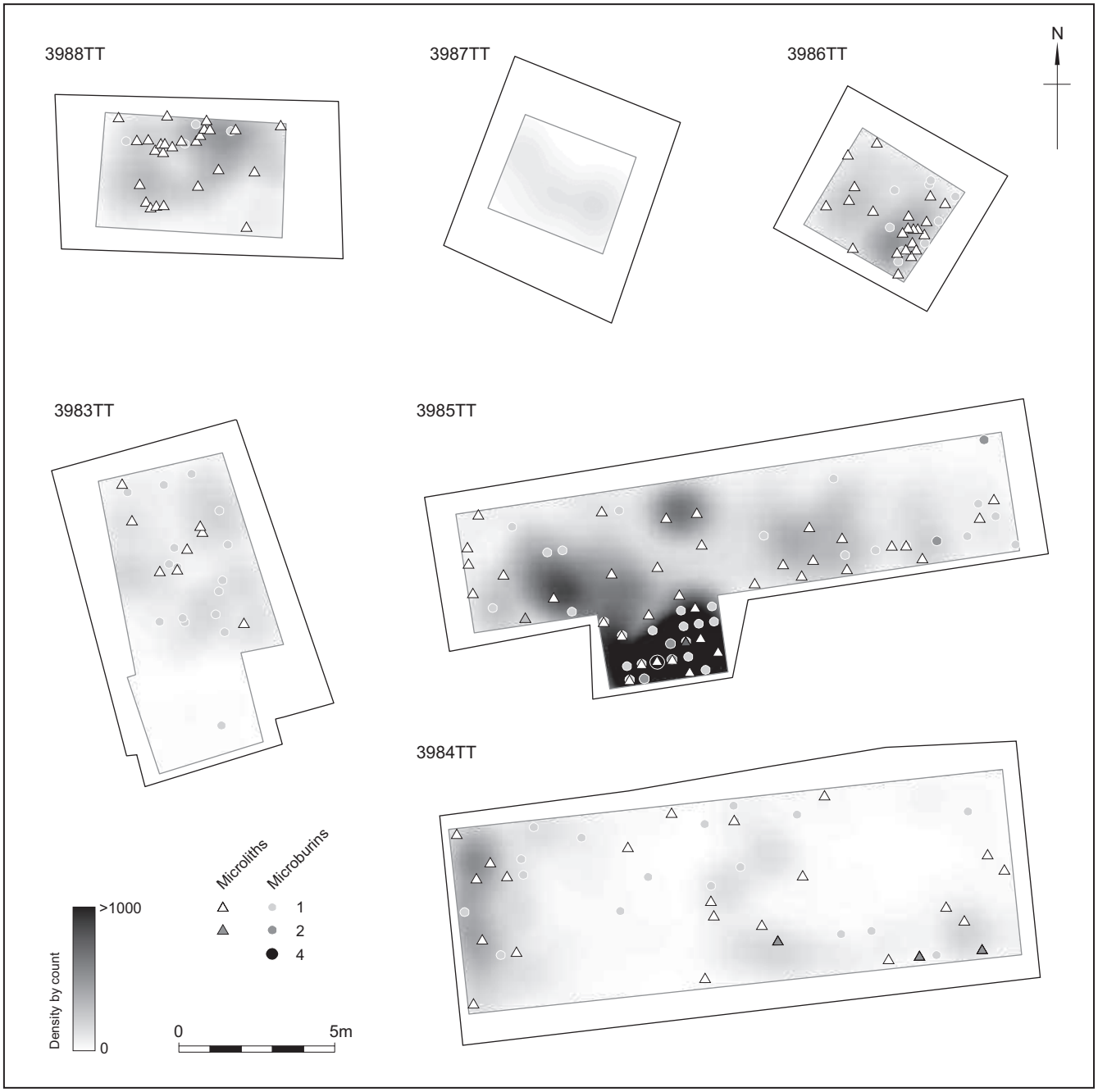

Fig. 12 Tank Hill Road, Purfleet. Microlith and microburin distributions in the trial trenches

Blanks

The principal blank form from all of the excavated areas is the flake, with the ratio of flakes to blades and bladelets being approximately 1:0.3, a significantly different ratio to that for flake cores to blade and bladelet cores (1:1.15).

Hammers were likely to have been hard, probably flint (Fig. 11). Although very few hammers or fragments were found, the prominent bulbs of percussion on the flakes suggest the use of hard hammers. Clusters of incipient cones of percussion, indicating miss-hits, are also present on many of the cores. Successful, prolonged blank production is more difficult to achieve using hammers of this type, which produce a more rapid increase in the flaking angle of the core than soft hammers and necessitate either more frequent platform rejuvenation to maintain blank production or the regular discard of cores after limited blank production. Both are attested in the assemblage.

The general level of technology is quite poor. This can be attributed to the quality of the raw material and the use of hard hammers. This technology recurs across the site and suggests that the same raw materials and hammer types were used in both the Late Mesolithic and later assemblages.

Within the bulk of the material are a number of pieces which stand out as distinctly different. Predominantly from 3987TT, these are mostly blades and rejuvenation tablets produced with soft hammers. These are undoubtedly a part of the Late Mesolithic activity, and appear to represent the work of a knapper or knappers with either a much greater level of skill than most, or a markedly different intention.

Five sets of material were selected for detailed technological and metrical analysis. Material was selected at random from debitage in physical proximity with various chronologically distinctive tool types in order to test if the observed associations were chronologically contemporary or the result of conflation of successive and separate events. Groups of flakes were chosen from 3983TT, associated with evidence of tranchet axe production (thinning flakes were excluded);

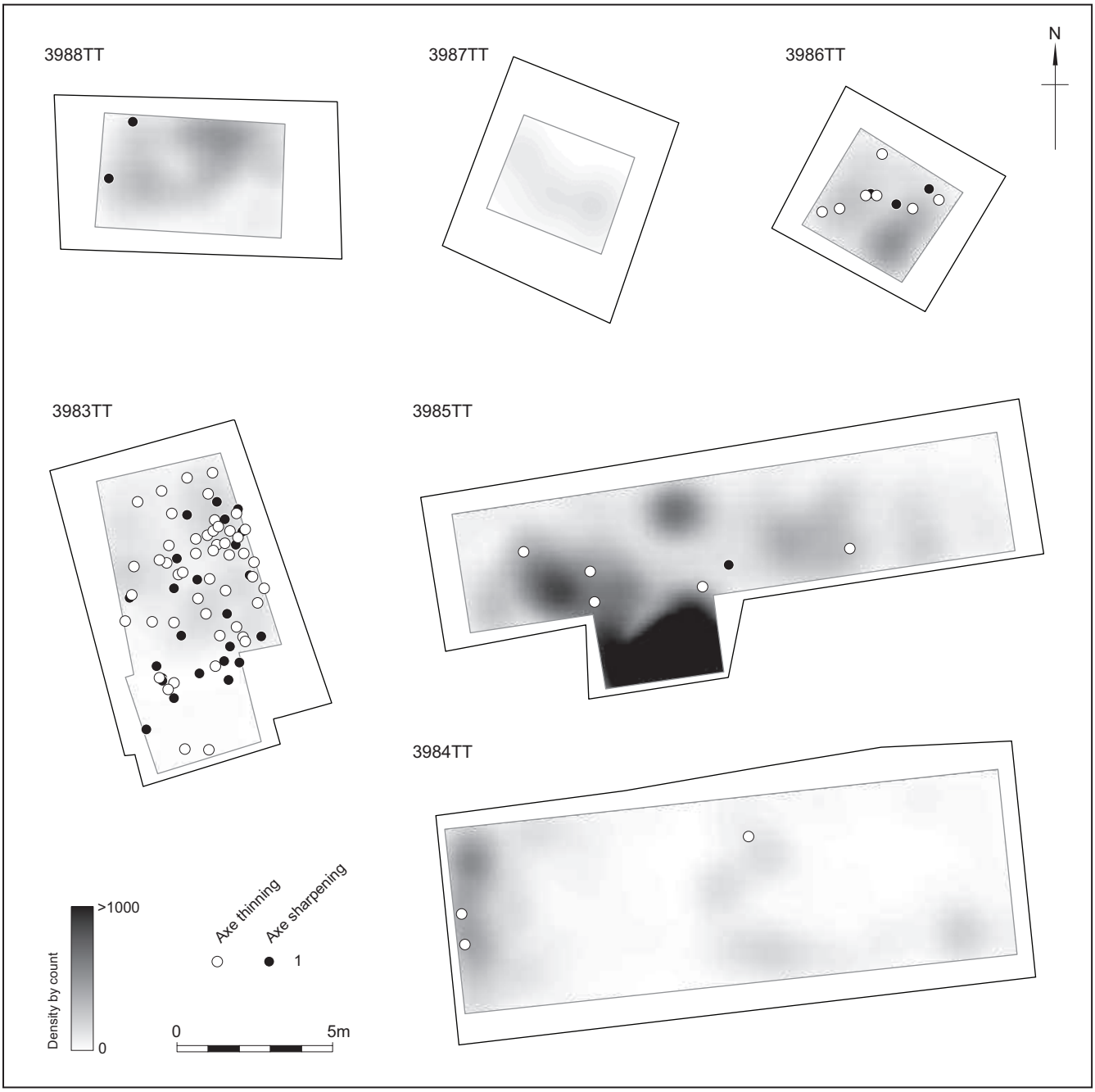

Fig. 13 Tank Hill Road, Purfleet. Axe debitage distributions in the trial trenches

from 3985TT, associated with blade production for conversion to microliths (blades/bladelets excluded); 3986TT, with barbed-and tanged arrowheads; 3987TT, with soft-hammer technology; and from 3988TT, with leaf-shaped arrowhead manufacture.

Analysis of Variance (ANOVA) of the data presented in Table 6 and Fig. 12–Fig. 13 indicates that there is significant difference among the various groups for all five measured criteria. Tukey Least Significant Difference (LSD) analyses can be summarised as follows:

3983TT (Tranchet axe manufacture): Debitage is broader and thicker than in all other areas; debitage is longer than in areas with barbed & tanged arrowhead manufacture (3986TT) and highly skilled blade production (3987TT).

3985TT (Microlith manufacture): Debitage is narrower than in areas with leaf-shaped arrowhead manufacture (3988TT); debitage is longer than in areas with barbed & tanged arrowhead manufacture (3986TT) and highly skilled blade production (3987TT).

3986TT (barbed & tanged arrowhead manufacture): Debitage is shorter than in areas with leaf-shaped arrowhead manufacture (3988TT).

3988TT (leaf-shaped arrowhead manufacture): Debitage is broader than in areas associated with microlith manufacture (3985TT) and highly skilled blade production (3987TT); debitage is longer than in areas with barbed & tanged arrowhead manufacture (3986TT) and highly skilled blade production (3987TT); butts are broader and thicker than in areas with highly skilled blade production (3987TT).

3987TT (highly skilled blade production): Debitage is narrower and shorter than in areas with leaf-shaped arrowhead manufacture (3988TT), and shorter than debitage in all other areas.

For the most part, the tests of statistical significance confirm intuitive expectations of samples of debitage from areas dominated by the

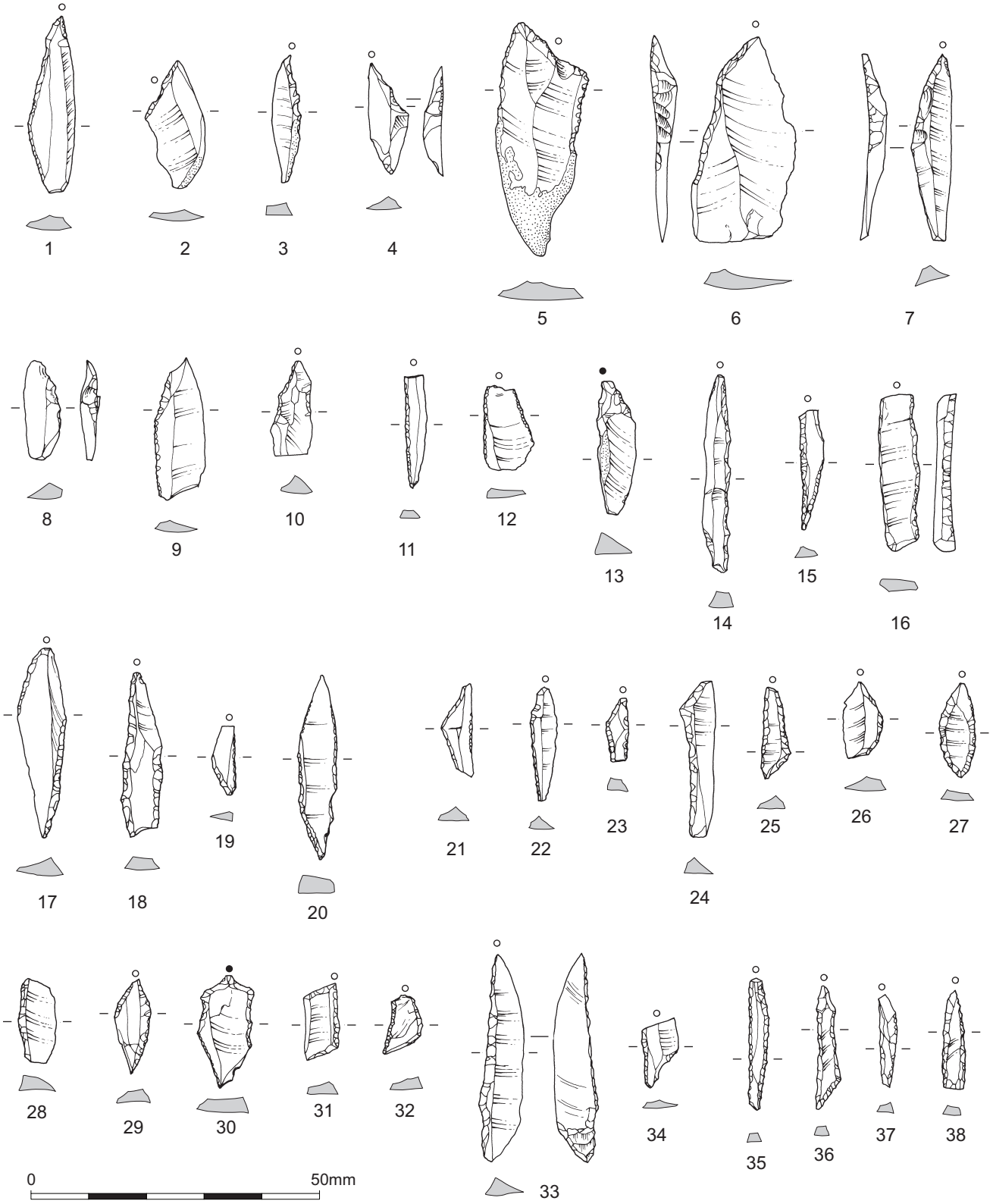

Fig. 14 Tank Hill Road, Purfleet. Microliths: 1–2) A1a; 3–4) A1c; 5) A1d; 6) A2a; 7) A2b; 8–9) A2c; 10) A2d; 11–12) B1; 13) B2; 14–15) B3; 16) B4; 17) C1a; 18) C1b; 19–20) C1d; 21) D1aii; 22) D1bi; 23) D1bii; 24) D1biii; 25) D1biv; 26) D2ai; 27) D2aii; 28) D2bi; 29) D2bii; 30) D4; 31–2) D6; 33) E; 34) G; 35–8) rods

identified activities. There is, however, one exception: the debitage from 3987TT does not have the characteristics that would be expected if highly skilled blade production were the dominant activity in that area, and this seems to confirm that this material is a 'special case' amongst the bulk of the rather undistinguished reduction, albeit in an area typified by the thinnest and narrowest butts on the site.

Tool Debitage

Microburins (Fig. 12)

The ratio of microburins to microliths is 1:1.34, indicating the relative importance of the microburin technique in microlith production (perhaps surprising given the very small size of many of the finished

tools). The patterns of presence and absence of both microburins and microliths can be interpreted to identify different activity areas: there is a wide range in the frequency of microburins, which vary from 48 (3985TT) to 0 (3987TT) and 1 (3964TT). The low frequencies encountered in these two trenches are both mirrored by the absence of microliths and may be explained by the presence of later material and by excavation techniques. However 3983TT, which in most respects displays similar proportions of material to 3964TT has 15 microburins and only eight microliths. This may indicate that 3983TT (and 3964TT) represent microlith manufacturing sites rather than areas of tool use. This contrasts with 3986TT and 3988TT where the ratios of microliths, 23 and 28 respectively, to microburins, 9 and 4, is more likely to indicate areas of tool use. Coincidentally these trenches also have a relatively high (2%) retouched tool component. 3984TT and 3985TT have broadly similar numbers of both microliths and microburins, suggesting that both activities were undertaken together.

Most (67% i.e. 66) are proximal with notches on the left, entirely typical of microburins in Britain. The remainder are distal (16) or unidentified fragments (17). No double microburins were identified. 79% of all microburins were successful, while 21% failed due to miss-hits.

Axe debitage (Fig. 13)

3964/3983TT represents an area of specialised core tool manufacture and re-sharpening. The overall density of worked flint within the trench was relatively low compared with some of the others; however there was a distinct concentration of axe thinning flakes adjacent to the east edge of the trench. Newcomer has defined thinning flakes as thin, with feathered edges, curved profiles, punctiform, linear or shattered butts, poorly marked ventral undulations, and scars of other flat removals on the dorsal surface (Newcomer 1971). The nucleus of the spread covered an area approximately 1.5m across, seemingly representing a knapping spread with limited post-depositional movement. Other axe thinning flakes occurred across the trench. The area also contained the greatest density of tranchet axe sharpening flakes, although only one broken tranchet blade segment was present – suggested as a snap during re-sharpening.

Occasional axe thinning flakes occurred elsewhere, including three from 3984TT, five from 3985TT and eight from 3986TT, although this may be significant only in 3986TT, where they were associated with three tranchet axe sharpening flakes and were located beyond the main concentrations of worked and burnt flint. The remainder may represent thinning flakes removed by trimming flake or blade cores and cannot be taken to indicate that core tools were made on the spot.

The additional tranchet axe sharpening flakes, comprising three from 3986TT, two from 3988TT and one from 3985TT, are more diagnostic and may indicate re-sharpening of an axe. In all cases the sharpening flakes were located outside the main concentrations of worked and burnt flint.

Tools

	No.	%
Microliths	133	29.56
Scrapers	39	8.67
Piercers	5	1.11
Burins	11	2.44
Projectiles	10	2.22
(Micro)denticulates	10	2.22
Fabricators	5	1.11
Core tools	10	2.22
Other tools	88	19.56
Miscellaneous retouch	139	30.89
Total	450	100.00%

Table 7 The Retouched Tool Component

Microliths

Microliths (Figs 12 and 14) make up the largest classifiable tool component, with 133 examples accounting for 29% of all tools. Both typologically early and later forms are present, with the later types predominating. Most common are the various geometric forms of Clark's type D (1934), which make up over a quarter of the total. The remainder consist primarily of A-types (obliquely blunted points), C-types (obliquely bi-truncated) and B-types and Rods (straight-backed bladelets), with only a very small number of other forms (Table 8).

The A and C forms and the single tanged point may represent an earlier element within the assemblage, although this is difficult to isolate. Of the 26 obliquely blunted points, 14 are greater than 8mm wide (range = 8.4–19.76mm; 12 are 3.96–7.4mm): Jacobi identified microliths in the 8–11mm width range as 10th–9th millennia (1976). Reynier has however demonstrated that length is the most significant attribute in determining the general age of obliquely blunted points (Reynier 1994, 201). In this respect, the A-types average 26.3mm long, suggesting predominantly later examples (although not necessarily Late Mesolithic – Reynier's analysis indicated lengths of around this value for Horsham-type assemblages, distinctive of a 'middle' Mesolithic predominantly in the 8th and early 7th millennia).

The backed bladelets (Clark's B-type and Rods) seem to be predominantly of Late Mesolithic type (the 11 rods especially suggest this).

The Geometric types are predominantly scalene triangles (including sub-triangular forms) and crescents. The former fall entirely into the category of 'micro-triangles' (that is 2–7mm wide; actual range = 3.23–6.85mm). The relative proportions of geometrics are similar to Hermitage Rocks (East Sussex) where 36% were scalenes, and 33% lanceolates (equivalent to crescents in the Tank Hill Road classification). Jacobi notes that 'narrow-blade' assemblages (where convex-backed and lanceolate forms outnumber obliquely blunted pieces) typify his 'Southern English Social Territory', basically south of the Severn/Thames Estuaries, and that in some of these scalenes outnumber both (1981). While it is true at Tank Hill Road that scalenes are the dominant geometric form, oblique truncations outnumber any subdivisions of the D-type.

	No.	%
A-types (obliquely blunted)	26	19.8
B-types (straight-backed)	18	13.7
C-types (obliquely bi-truncated)	10	7.6
D-types (geometric)	37	28.2
Isosceles Triangles (D1ai)	1	
(D1aii)	1	
Sub-total	*(2)*	
Scalene Triangles (D1bi)	3	
(D1bii)	3	
(D1biii)	4	
(D1biv)	5	
	(15)	
Crescents (D2ai)	5	
(D2aii)	3	
(D2bi)	1	
(D2bii)	4	
	(13)	
Lanceolate (D4)	1	
Quadrangular (D6)	6	
E-types (inverse basal retouch)	1	0.8
G-types (tanged)	2	1.6
Rods	11	8.4
Unclassified	28	19.8
Total	133	99.9

Table 8 Microliths

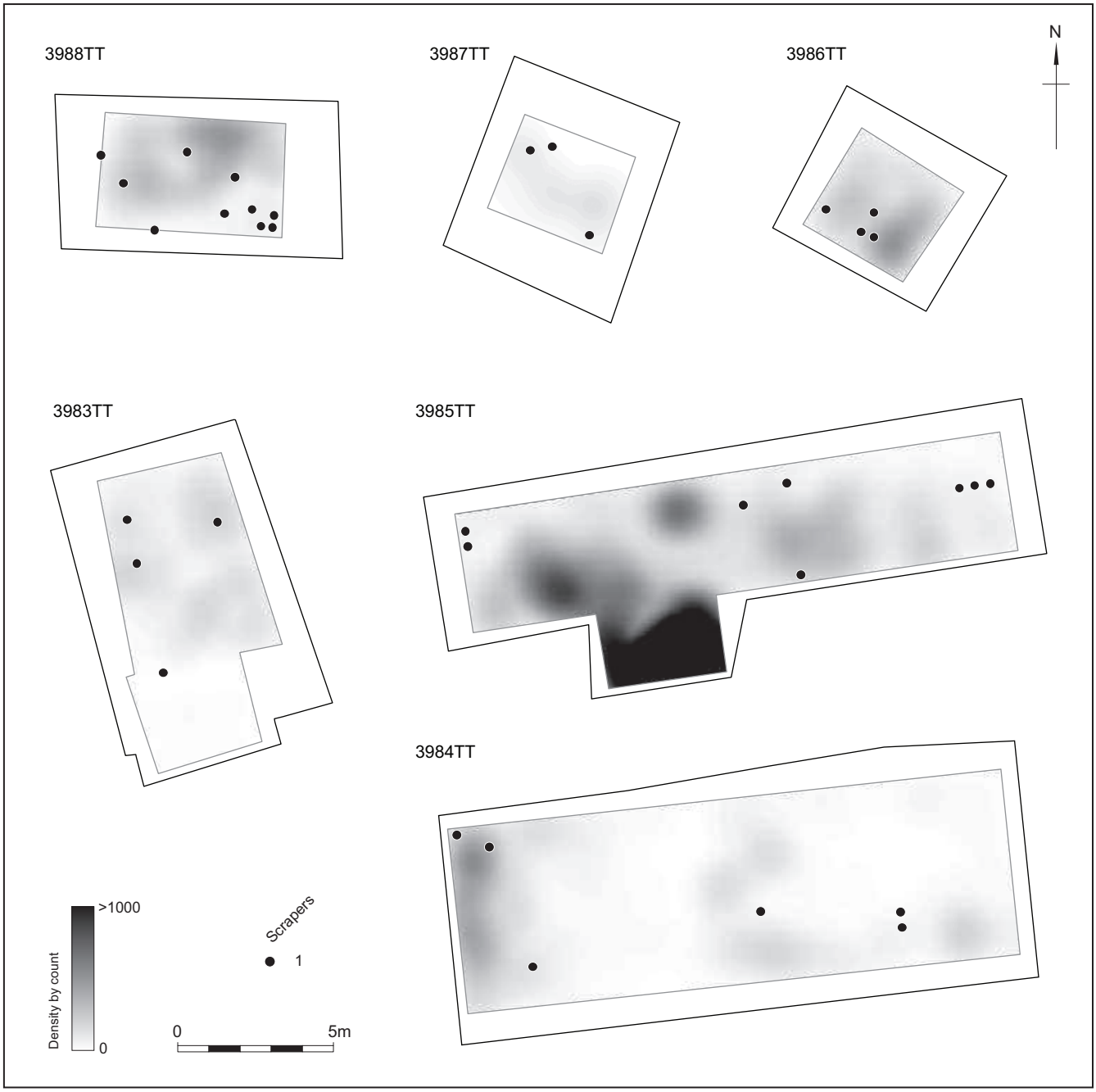

Fig. 15 Tank Hill Road, Purfleet. Scraper distributions in the trial trenches

Distributions from individual trenches indicate a degree of variability in the presence of microliths, accounting for 33% (3985TT), 32% (3986TT, 3988TT), 25% (3984TT), 17% (3983TT) and 0% (3964TT, 3987TT). The largest concentrations of microliths therefore coincide with the greatest densities of worked flint. The absence of microliths in 3964TT may be partially accounted for by the excavation of that trench before the true nature of the site became apparent. Two microliths were recovered from samples that were sieved through a fine mesh after the completion of the excavation. However the absence of microliths from Trench 3987 may be due to the fact that this trench, apart from having the smallest flint density at the site, shows the most variability in its composition. Apart from having a low blade component its retouched material accounts for almost 5% of the artefact collection and includes a relatively high scraper frequency, barbed and tanged arrowheads and miscellaneous tool types. It is possible that the flint from this area includes a proportion of later prehistoric artefacts other than the barbed and tanged arrowheads.

The conclusions noted for microburins (above) apply equally to the microliths, with manufacture attested in 3964/83TT, 3984TT and 3985TT, and use in trenches 3984TT, 3985TT, 3986TT and 3988TT. The frequency with which additional tools are present in each trench also mirrors the conclusions about the likely use of each area. Trenches identified as areas where microliths were used are associated with a wider range of tools than those associated with a higher proportion of microburins. 3985TT, for example, has 10 classes of tools with 3984TT having nine. Conversely 3964TT has only four classes of retouched tools and 3983TT only six.

Scrapers

Of the 37 scrapers likely to be Late Mesolithic, 20 are definitely or probably end-scrapers, mostly on flakes. There are six side scrapers, nine end-and-side scrapers, one concave scraper and one unclassifiable fragment (Figs 15 and 16).

The scrapers can be divided into examples which are well made with semi-abrupt retouch on the convex distal end (mostly on thin secondary and tertiary flakes and blades with sinuous or markedly hooked profiles), and pieces on less regular blanks (primary flakes, rejuvenation tablets, thermal flakes) with less regular often very abrupt

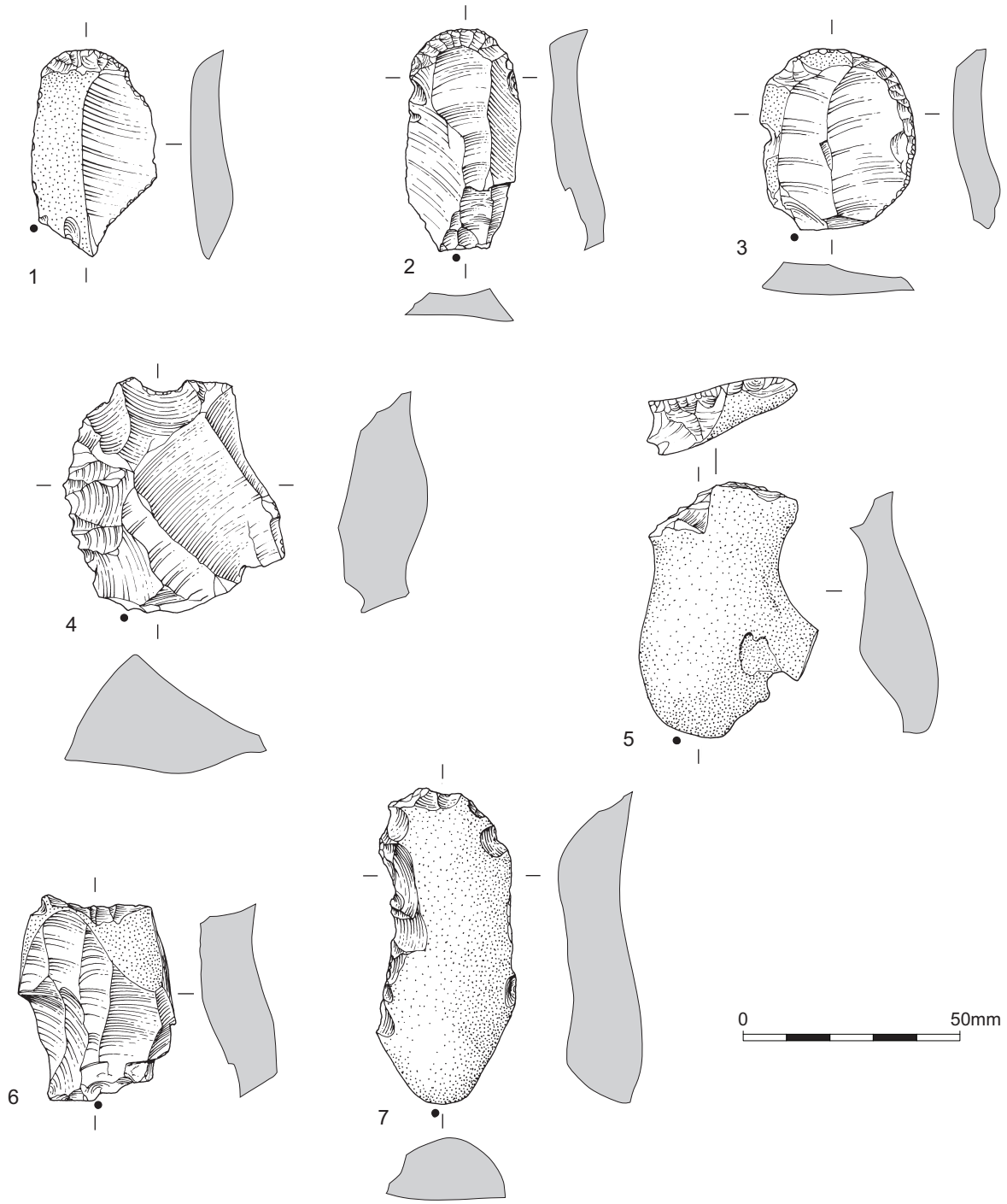

Fig. 16 Tank Hill Road, Purfleet. Scrapers

retouch often giving an irregular, flat or slightly convex working edge. While most do not seem to have been made on specially-prepared blanks, but rather on pieces selected expediently, there are a small number which have features (lack of cortex on dorsal surfaces, regularity) suggesting more deliberation in the process of blank creation or selection.

Nine examples are broken. Of these, four are fragments of pieces burnt after manufacture (two complete or near-complete examples are also burnt). Four pieces have flexional snaps suggesting accidental breakage, which in at least one instance may have occurred during retouching. The final piece lacks approximately the left third of the blank, and the break appears to have occurred during or after manufacture.

Barton (1992, 213–4) notes suggestions that variation in scraper morphology may relate to intended use: thicker, flat-profiled pieces without pronounced curvature and with thick edges may be woodworking tools, while flatter, thinner-edged tools were preferred for hide-working. If this observation is of substance, then the division drawn between pieces on thin, regular flake and blade blanks on the one hand and more irregular pieces on larger more varied blank types may relate to this difference in use.

Scrapers are not especially well-represented and – while occasional examples occur in or close to the main distributions of debitage and burnt flint – more tend to occur in empty areas, and thus perhaps in areas of working rather than knapping. This is especially apparent in 3984TT and 3985TT.

Few of the pieces are chronologically distinctive. Some are crude enough to suggest a date in the Late Bronze Age, although platform-edge abrasion on some blanks suggests that this is probably not the case and that they are in fact earlier. While the bulk of the pieces are probably

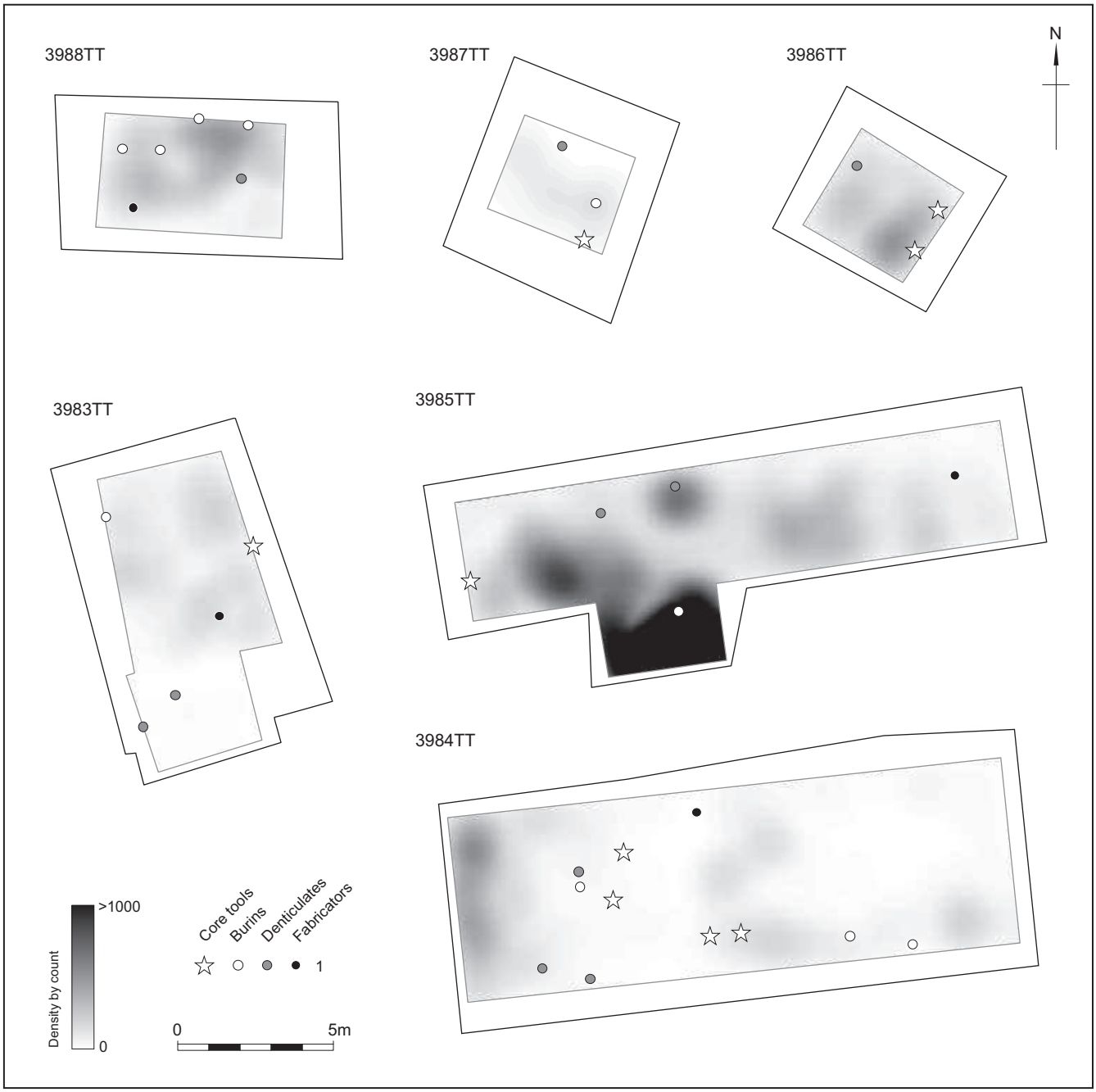

Fig. 17 Tank Hill Road, Purfleet. Distributions of other tool types in the trial trenches

Mesolithic, it may be significant that the trench with the greatest number of scrapers (3988TT, n=10) is also a location associated with the manufacture of leaf-shaped arrowheads (see below).

Core tools

Eight core tools (Figs 17 and 18) were recovered during the excavations. Three pieces (two from 3984TT, one from 3985TT) were roughed-out, unfinished or abandoned tools: the example from 3985TT (the only example from that trench) was probably intended as a tranchet axe.

Tranchet axes were also represented by three broken blade segments. Two (from 3983TT and Aveley Drain) had snapped across thermal fractures possibly during attempted re-sharpening. The third came from 3986TT. All show the technological traits identified by Ashton (1988), especially the use of hard hammers and a limited number of small removals after the sharpening blow, presumably to remove the deep negative scar of the tranchet removal. Two other pieces (from 3984TT and 3986TT) are broken fragments which cannot be identified to type. The two pieces from 3986TT were recovered from the area of densest debitage on the eastern side of the trench.

Other tools

The frequency with which additional tool types are present in each trench has implications for the likely use of each area (Figs 17 and 18). For instance, trenches identified as areas where microliths were used are associated with a wider range of tools than those associated with a higher proportion of microburins. Tool types are rather limited, and consist of small numbers of burins, piercers, microdenticulates, 'fabricators', truncated blades and flakes, knives and pieces with miscellaneous retouch.

Of the eleven burins recovered, four are dihedral, with seven made on truncations (Fig. 18.3–4). In six out of those seven cases, the truncation is at the distal end. Four were recovered from the northern edge of 3988TT, in and adjacent to the main concentration of worked and burnt flint. The remainder are scattered in trenches 3983TT, 3984TT, 3985TT and in the northern bridge abutment. One spall was recovered from 3983TT.

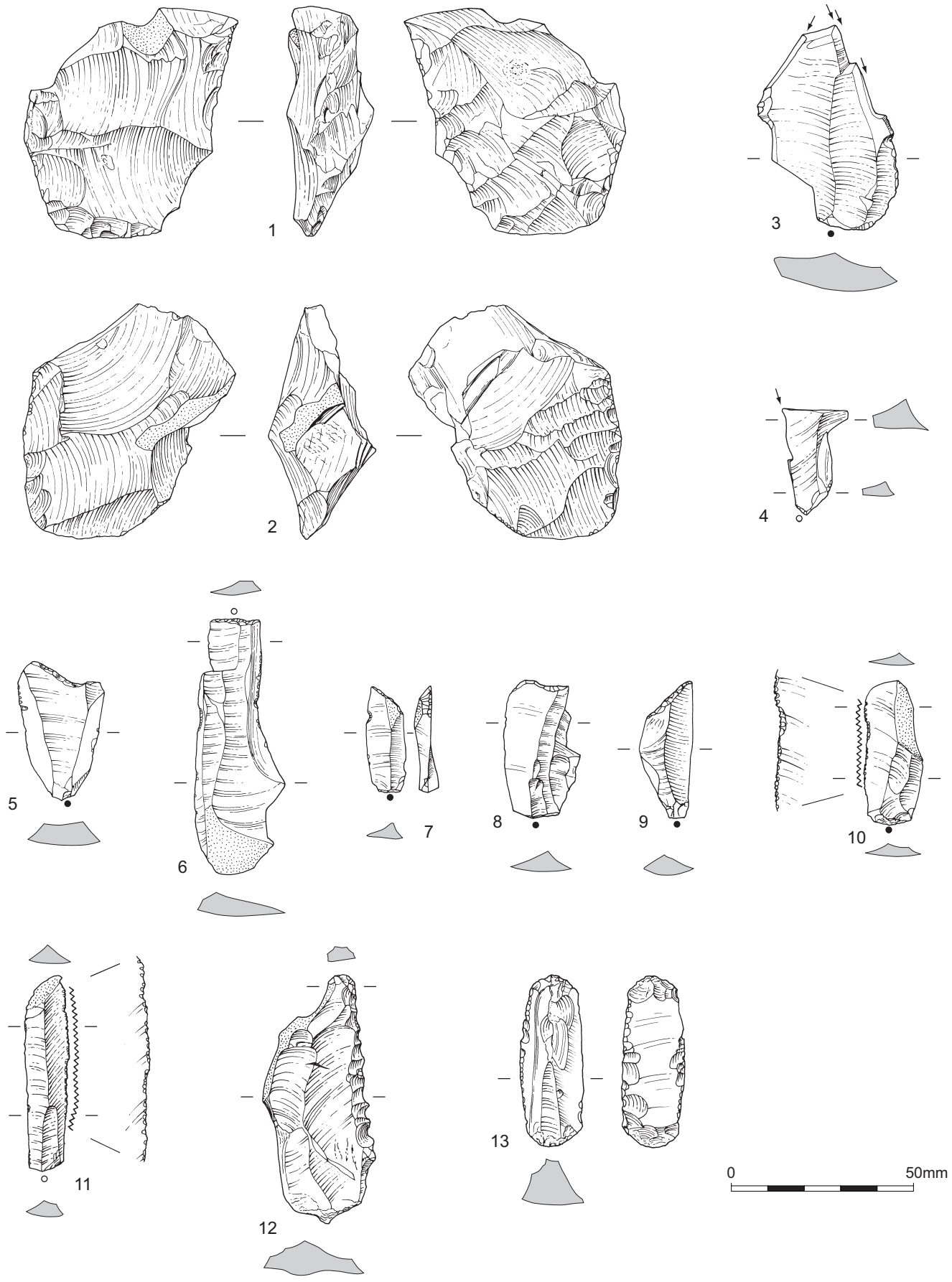

Fig. 18 Tank Hill Road, Purfleet. Other tools: 1–2) tranchet axe fragments; 3–4) burins; 5–9) truncations; 10–11) microdenticulates; 12) denticulate; 13) fabricator

Two tools can be tentatively classified as piercers. A piece from 3985TT has retouch on both dorsal margins and the ventral surface of the distal end of a tertiary blade, and shows considerable wear. The piece from 3995TT has two margins of a triangular cross-sectioned tertiary thermal fragment retouched to form a long point with only slight traces of wear.

Of the 25 truncations, 15 were made on blades. 20 are distal, four proximal, and one double-ended. Of these 16 are oblique, nine straight (although many of these tend towards concave). Thirteen came from 3985TT, five from 3984TT, three from 3964/83TT, two from 3986TT, and one from 3988TT and Aveley Drain (Fig. 18.5–9).

Only seven microdenticulates were recovered (Fig. 18.10–11). All are made on secondary blanks, either blades or blade-like flakes, generally with slightly curved or twisted profiles (one is burnt and broken; one is on a thermal blank). The morphology of the blank margins was perhaps the most important factor in the choice of edge to retouch: in three instances the retouch is on the right, in two the left, one has both margins retouched, and one is thermal: there is no dominant trend. In five examples however, the retouch occurs on a concave or sinuous margin, in one instance on a convex margin, and one piece has retouch on both lateral margins, indicating that more often than not a concave or sinuous cutting edge was desired. All pieces are retouched from the dorsal surface, and in four of the six complete examples the retouch takes up the entire margin. There is no evident pattern to the distribution of these tools, which are usually considered to be for incising or cutting plant material (Levi-Svala 1992, 241).

Three denticulated tools were recovered. One (from 3984TT) has a semi-abrupt direct retouch forming a continuous series of teeth along most of the right margin; the distal end has a semi-abrupt truncating retouch, and there is a crude burin-like removal from this truncation on the left distal margin (Fig. 18.12). A secondary flake from 3984TT has a direct retouch on the right margin and proximal end. The left angle of the distal end has a small area of truncation, from which two burin removals have been made. The third example (from 3985TT) is a large secondary flake with direct abrupt retouch on the left two-thirds of the distal end.

Two broken blade segments (a proximal end from 3985TT and a distal from 3984TT) both appear to be naturally backed knives. In both instances the right dorsal margin has a low angle retouch, while the left is either cortical (in the 3984TT example) or is very thick.

Five 'fabricators' were recovered. The example from 3984TT is made on a crested blade, with flaking along the spine and one edge. The piece has no visible wear. The example from 3985TT is a 'fabricator' or double ended hammer on a blade with an almost equilateral triangular cross section. This example has been heavily used. A second piece (from 3983TT) is similar (although larger), but has heavy use-wear on one end only. The pieces from 3988TT and 3987TT are the ends of burnt 'fabricators' with lenticular cross sections. Both are considerably worn; the example from 3988TT was located immediately south of a higher than normal density of burnt flint.

The example from 3985TT (Fig. 18.13) is likely to be Mesolithic. The others are not closely dateable, and could derive from Mesolithic to Late Neolithic industries.

Neolithic and Later (Figs 19 and 20)

Early Neolithic flint and pottery suggest nothing beyond transient use of the area, as do Early Bronze Age lithics. Activity in these periods was probably limited to fleeting visits to the water's edge, in what would have been an increasingly wet alder carr. There is a degree of uncertainty regarding the assignation of certain tool types to period (scrapers, micro-denticulates and piercers especially), and it may be that some implements discussed above as Late Mesolithic belong instead to Early Neolithic tool kits.

Definite Early Neolithic tools include four complete arrowheads, and three abandoned during manufacture. One complete example (from 3985TT) is a leaf-shape of Green's type 3A, approximating to his sub-shape h or k (1980, 71, fig. 28). The piece is markedly asymmetrical, and may have been abandoned when almost complete due to a flaw in the flint preventing further controlled retouch. The piece is otherwise well-made, with covering bifacial retouch, and appears unused (Fig. 20.1). A piece from 3988TT may be a leaf-shape abandoned during manufacture: the piece has bifacial covering retouch at the proximal end. A second example (from 3984TT) is another potential leaf-shape abandoned before completion.

The remaining examples are barbed-and-tanged types. One (from 3985TT) is of Green's 'fancy' type, most like the Green Low subdivision (Green 1980, fig. 46). The piece is well-made (although somewhat asymmetrical about the barbs) with covering bifacial retouch. The tip is absent (Fig. 20.2). The second barbed-and-tanged (from 3964TT) is a very crude unfinished example made on a secondary flake. The retouch is marginal and the barbs vestigial (Fig. 20.3). The piece may be related to Green's Sutton a type (Green 1980, fig. 45). The third piece (from 3987TT) is peculiar, and apparently a cross between a small ripple-flaked or oblique arrowhead of Green's British type f (Green 1980, fig. 38), and a barbed-and-tanged. The form is best seen in the accompanying illustration (Fig. 20.4). The work is very fine, with covering bifacial retouch.

There is also an unfinished arrowhead on a tertiary flake, from 3985TT. Flaking has begun on both faces, and one barb is part-formed. A broken bifacial point is likely to be the tip of a projectile; there is a second similar piece from 3987TT.

One final piece was found as two refitting halves (from 3988TT). The piece is unfinished, may have broken during manufacture, and refits to form an implement 58mm long, consequently a laurel-leaf rather than an arrowhead (Fig. 20.5).

A large side-scraper from 3988TT, with regular, direct, continuous semi-abrupt retouch on the distal end and right lateral margin made on a thick secondary flake struck with a hard hammer is likely to be Early Neolithic (Fig. 20.6).

A burnt fragment of a Neolithic polished axe came from 3987TT. A small implement from 3984TT, 77.4mm by 37.8mm by 19.2mm, is similar to Late Neolithic types, although it may be a tranchet axe made on a flake. The blank has been shaped into plano-convex form with a direct retouch on three sides, and an attempted inverse tranchet blow on the fourth has failed.

One awl (the distal end retouched to a point along one ventral and one distal margin) on a hard-hammer struck tertiary flake shows considerable polish and wear on the point and both retouched margins. Typologically this piece (from 3984TT) is likely to be Early Neolithic (Fig. 20.7). Two piercers (from Aveley Drain and 3985TT) conform more or less closely to the snub-nosed or 'spurred' type that is generally later Neolithic (Fig. 20.8).

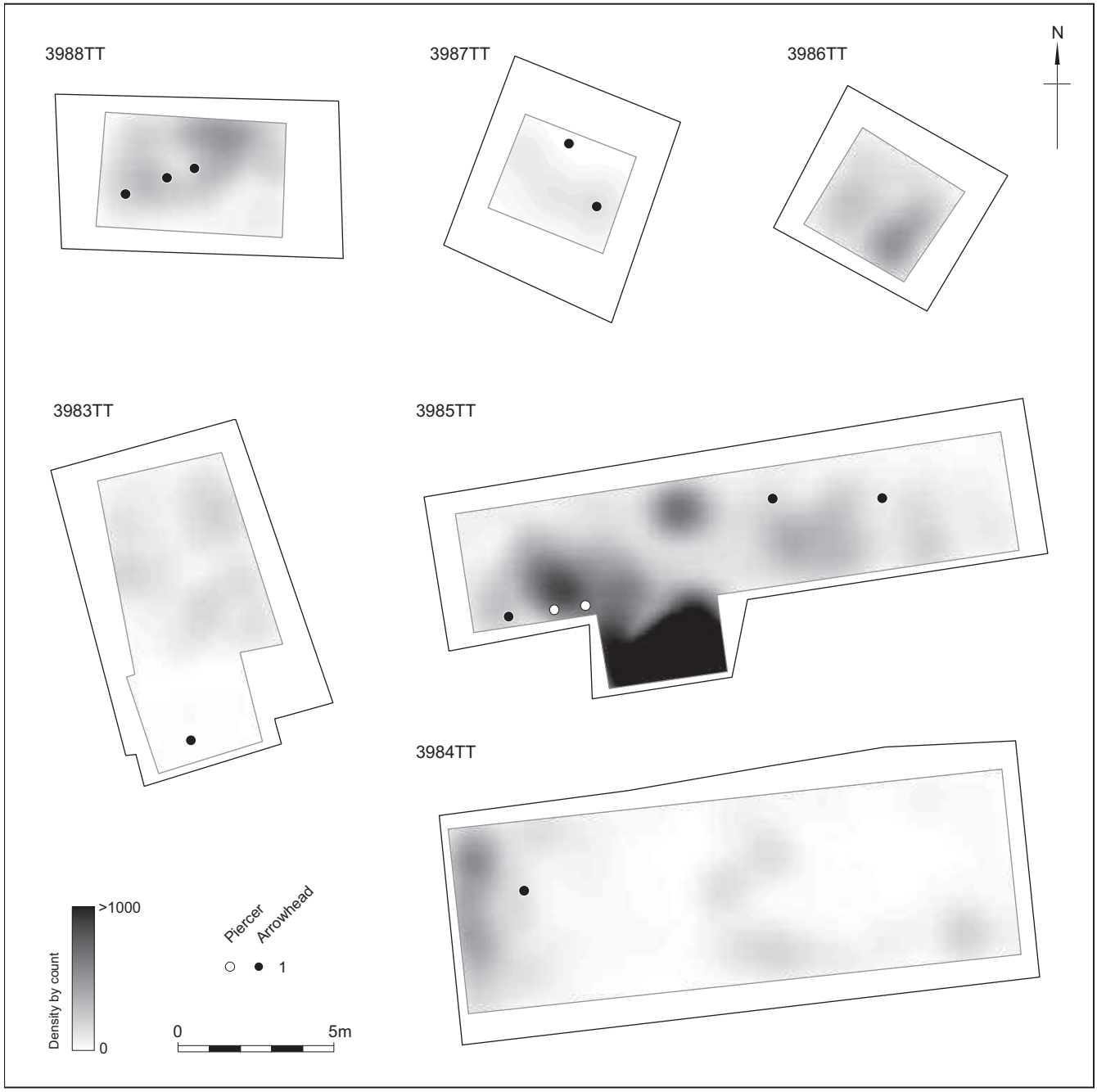

Fig. 19 Tank Hill Road, Purfleet. Distributions of piercers and arrowheads in the trial trenches

Three edge-flaked knives were recovered from 3987TT. Two are on flakes with a low-angle retouch along one margin (Fig. 20.9). The third is broken (only the distal end survives), with retouch along both edges. All are very similar in terms of raw material and technology, and probably form part of the Late Neolithic or Early Bronze Age assemblage represented by the barbed-and-tanged arrowhead in this trench. A further edge-flaked knife (from 3964TT) was made on a flake struck from a polished implement (Fig. 20.10)

Pottery

Pottery was recovered from 3984TT, 3986TT, 3987TT and 3988TT. The majority of the material (61 sherds), including a rim sherd, was recovered from 3988TT. All pottery, with the exception of a sherd from a tree-hole fill, was recovered from spits within the trial trenches. The assemblage was in a poor condition, being highly fragmentary and comprising small, abraded, friable sherds. The majority of these sherds occur in flint-tempered fabrics, one coarse flint, the other containing better sorted flint and some quartz. A small number of sherds occur in a predominantly sandy fabric with some flint.

With the exception of one sherd of indeterminate prehistoric date, the assemblage is Early Neolithic. Only two rim sherds were identified, both rolled-over rims from open bowl forms.

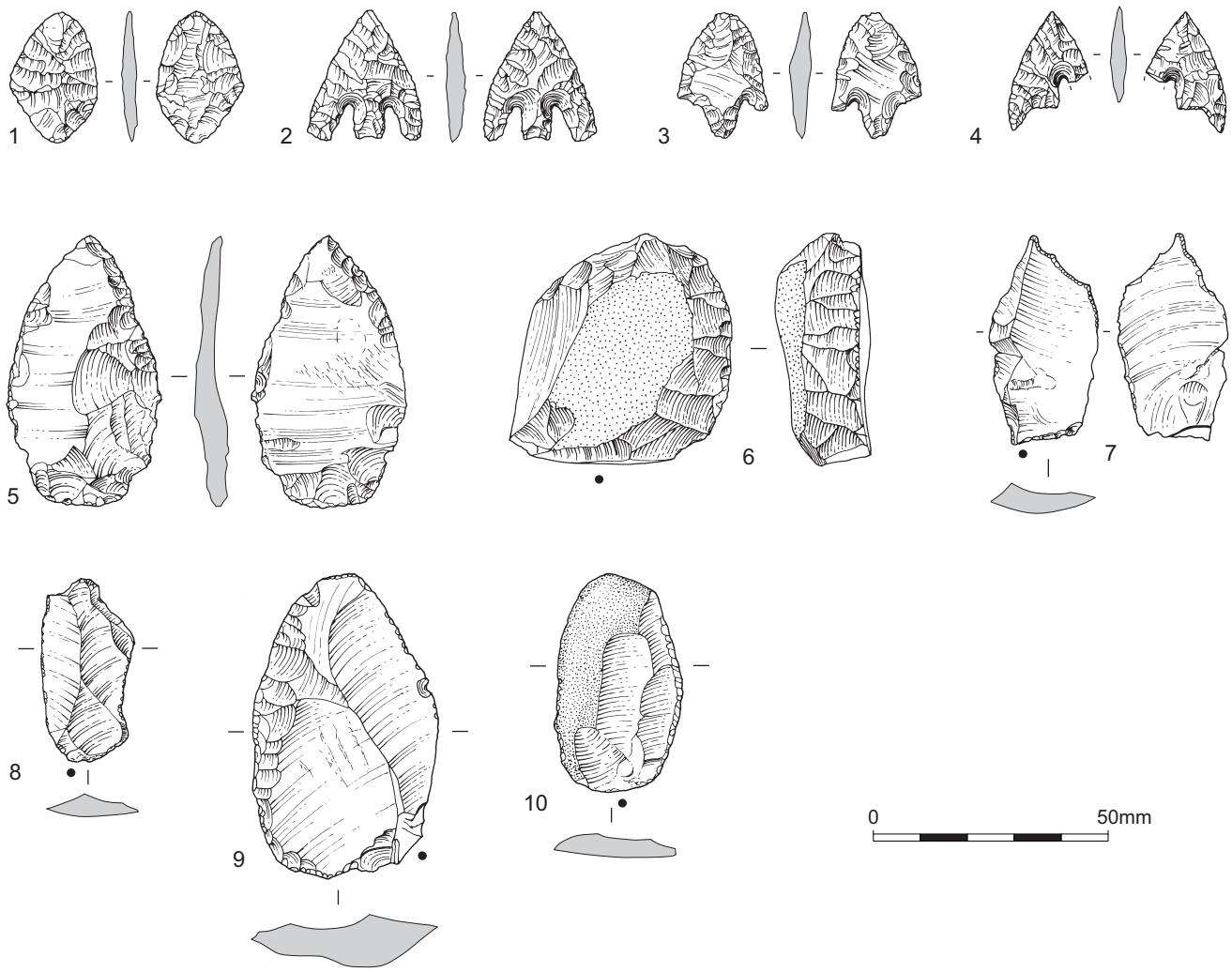

Fig. 20 Tank Hill Road, Purfleet. Later tool types: 1) leaf-shaped arrowhead; 2–4) barbed & tanged arrowheads; 5) laurel leaf?; 6) scraper; 7–8) piercers/awls; 9–10) knives

Prehistoric Landscape and Environment

Environmental summary
by Catherine Barnett

Following deposition of fluvial sands and gravels under cold-stage (Devensian) river conditions, drier and raised areas of the floodplain including the Tank Hill Road eyot were subject to weathering and colonisation by vegetation with the onset of warm conditions from the early Holocene. During the period of Upper Palaeolithic, Mesolithic and Early Neolithic use of the site, Tank Hill Road was a sandy island surrounded by peat fen, with access to nearby riverine and marsh resources. A humic soil developed which, due to its sandy nature, became heavily leached in the areas longest exposed. Environmental and archaeological remains deposited during the Upper Palaeolithic to Neolithic periods were subject to weathering and movement. The island became increasingly wooded and, by the Neolithic, supported lime woodland with oak, elm and hazel. Alder thrived, fringing the wetland margins from the Late Mesolithic/Early Neolithic (Atlantic period) and a rich sedge fen occurred on the floodplain. Wet marsh conditions progressively spread, with peat initiation on the floodplain from the later Neolithic to Early Bronze Age (2,480–2,290 cal BC; Table 10), correlating well with the end of the Tilbury III marine regression (Devoy 1979) and consequent estuarine shrinkage.

Peat growth encroached onto the floodplain edge settlement site from the Early Bronze Age (2,400–1,860 cal BC; Table 9). Differing degrees of soil maturity indicate that this spread was diachronous across the site, with higher, drier, areas persisting to the north-east of the site, enabling continued access or settlement. The peat would have formed a succession of semi-stable terrestrial land surfaces which, although waterlogged, would have allowed continued access to the nearby riverine resources at least seasonally. An anthropogenic lime decline coupled with evidence for arable and pastoral land is recorded in the on- and off-site pollen spectra, indicating continued human activity in the local area through the Middle to Late Bronze Age and beyond. Increasing freshwater alluvial deposition occurred from the Early Bronze Age (off-site from 2,130–1,900 cal BC; Table 10) forcing any continued settlement further back inland. The pollen and diatom evidence suggest that influence

of saline water increased from the Middle Bronze Age and into the Iron Age, with the establishment of a tidal regime. This reflects wider changes in base level throughout the Thames Valley driven by the Thames III marine transgression described by Devoy (1979).

Dating the on-site sequence
by Catherine Barnett
Securely stratified fragments of twig wood and woody stem were taken from monolith sequences from two locations in order to date the onset and spread of peat over the site and establish when accumulation ceased due to alluvial inundation.

It is apparent that peat accumulation began and spread across the site within the Early Bronze Age. However, the results for the top and bottom of the peat in 3984TT are reversed, with no overlap in the calibrated date range at 2 sigma. Whilst every attempt was made to select well-stratified material, bioturbation (already noted as a serious issue) is the probable explanation. No further interpretation on whether this spread was diachronous can therefore be made.

Onset of peat of this date has been reported widely in the Thames Valley area (e.g. Chisham *et al.* in prep.; Sidell *et al.*, 2000; Sidell 2003), in response to marine regression, causing a drop in base levels and consequent shrinking of the estuary (Long *et al.* 2000). This phenomenon correlates well with the end of the Tilbury III regression reported by Devoy (1979; 1980) Gibbard (1994) and Haggart (1995).

Pollen Analysis
by Rob Scaife
A series of ten samples through the peat and underlying soil in 3984TT was assessed for pollen and eight samples analysed in full (monolith 8423). Sub-samples were processed using standard techniques (Moore and Webb 1978; Moore *et al.* 1991) with micromesh sieving to remove clay. Absolute pollen frequencies were calculated using added exotics to known volumes of sample (Stockmarr 1971) and counts of 400–750 grains achieved per level. The pollen diagram (Fig. 21) was plotted using Tilia and Tilia Graph. Taxonomy follows that of Moore and Webb (1978) modified according to Bennett *et al.* (1994) for pollen types and Stace (1997) for plant descriptions. Pollen preservation is poor in the lower soil samples and grains are absent in the basal samples of the humic B/Eb horizon. However, useful information was obtained from the top horizons of this soil, i.e. the old land surface associated with prehistoric activity. Three principal local pollen assemblage zones were recognized, characterized as follows.

Zone 1: 0.86–0.67m. Quercus–Tilia–Alnus glutinosa. Alnus glutinosa (alder) percentages are very high (68%; calculated outside of the pollen sum) due to on-site growth of fen carr woodland. *Quercus* (oak, 47%), *Ulmus* (elm, 5%), (*c.* 20%) and *Corylus avellana* type (hazel, 38%) are the principal arboreal types. *Tilia* (linden/lime) is notable, comprising both well preserved and substantially degraded pollen, the latter especially prevalent in the sub-soil. There are few herbs with only sporadic occurrences of *Poaceae* (grasses), *Cyperaceae* (sedges), *Sinapis* type (mustards), *Filipendula* (meadowsweets) and *Plantago lanceolata* (ribwort plantain). Monolete spores (*Dryopteris* type, fern) are important in this zone.

Zone 2: 0.67–0.50m. Poaceae. This zone is characterised by a marked reduction in all tree and shrub pollen, *Alnus glutinosa* remains present but declining to 10% sum+marsh. *Quercus* and *Corylus avellana* type are reduced to half of preceding values whilst *Tilia* (*T. cordata*, small-leaved lime) is absent in this upper zone. There are small numbers of *Salix* (willow). Herbs become important in number and diversity, with Poaceae dominant (to 59% at 0.52m) and presence of cereal type pollen (to 5%), *Plantago lanceolata* (4%) and a range of other taxa of probable grassland communities or disturbed arable. There is also an increase in *Pteridium aquilinum* (bracken). Cyperaceae and other marsh types (*Typha angustifolia*/*Sparganium* type, bulrush/ bur reed, *Iris*, and *Potamogeton*, pondweed) replace *Alnus glutinosa* in local importance.

Zone 3: 0.50–0.46m. Poaceae–Cyperaceae. The change to alluvial sediments in the upper part of the profile is associated with expansions of Cyperaceae (44%) and Chenopodiaceae (goosefoots, oraches and glassworts, 7%). Poaceae remains important (25%). *Quercus* (15%) and *Corylus avellana* type (20%) are the remaining arboreal taxa.

Vegetational History

The development of this sequence and the changing pollen assemblages relates largely to the transition of the site from a sandy island within a surrounding fen to a peat fen. The data from nearby Mar Dyke with its long pollen sequence to *c.* 3,550 cal BP show a similar dominance of floodplain alder carr woodland (Scaife 1988). The spread of fen peat and alder carr was brought about by regional eustatic change (sea level rise) that increased ground water level. Pollen data suggest that during

Context/ Group	Sample no./depth (m)	Material dated	Result no.	C13 ‰	Result BP	Fraction details	Cal date BC (2 sigma, 94.5% confidence)
88419	8831 0.28–0.29	Twigwood from base of peat on higher part of site	NZA 27553	–27.7	3809±30	Treated wood	2400–2380 (1.2%), 2350–2130 (94.2%)
10005	8423 0.60–0.61	Degraded twigwood from top of peat on lower part of site	NZA 27551	–29.5	3757±35	Treated wood	2290–2110 (78.0%) 2100–2030 (17.4%)
10006	8423 0.73–0.74	Woody stem from base of peat on lower part of site	NZA 27552	–28.2	3572±40	Treated degraded wood	2030–1860 (81.0%), 1850–1770 (14.4%)

Table 9 Radiocarbon dates for the on-site peat sequence

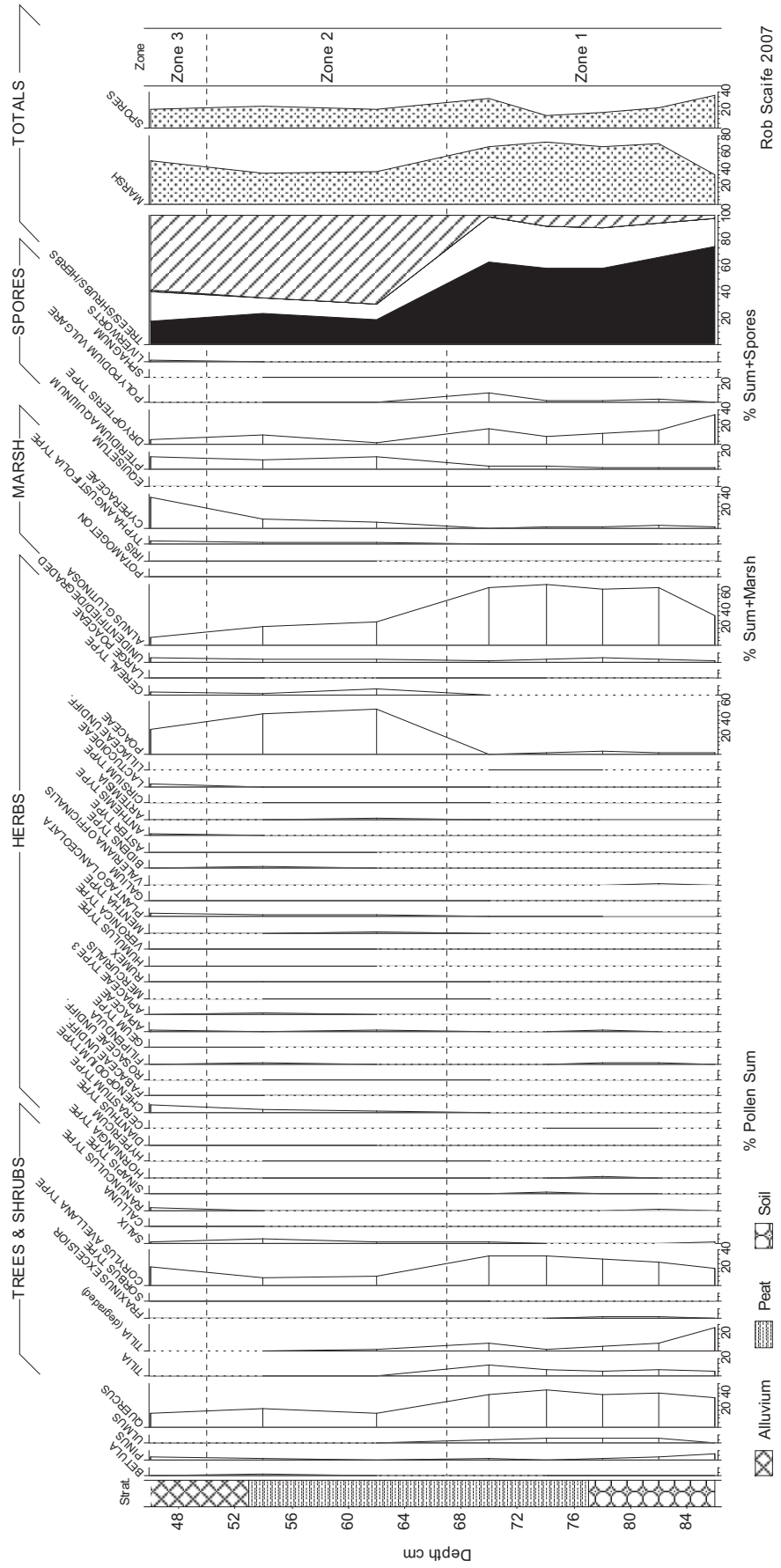

Fig. 21 Tank Hill Road, Purfleet. On-site sequence pollen diagram (monolith 8423)

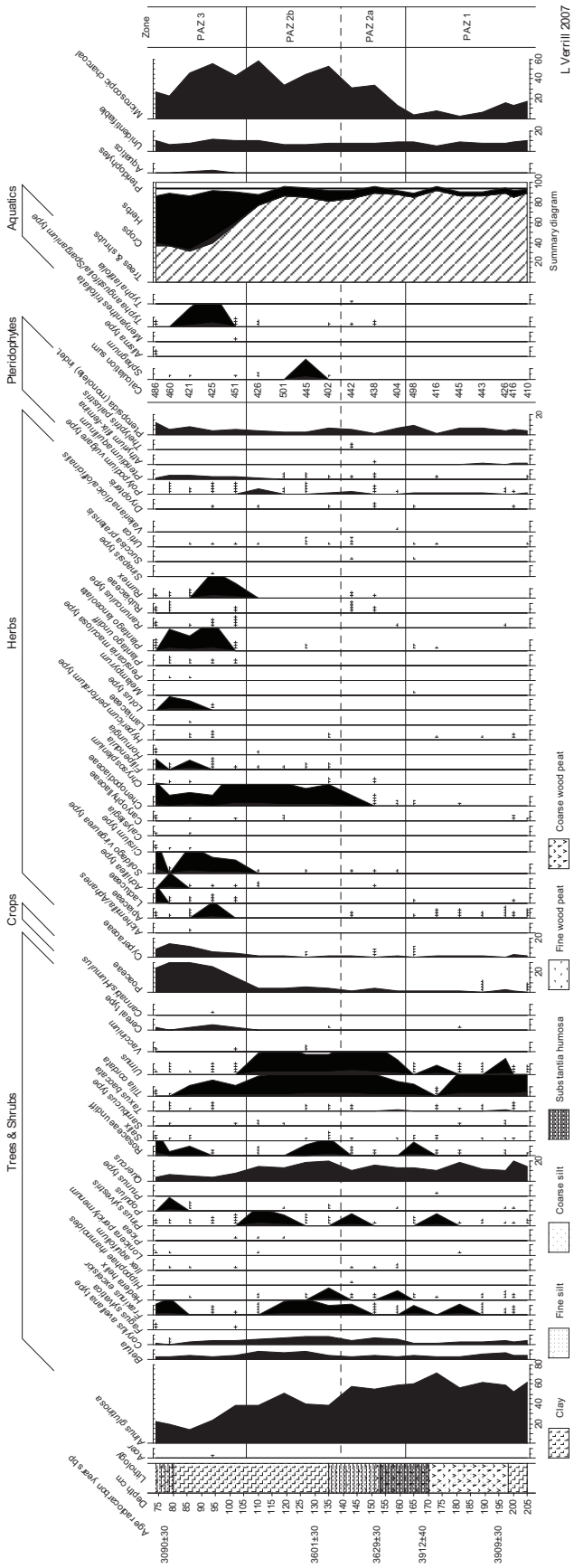

Fig. 22 Tank Hill Road, Purfleet. Off-site sequence pollen diagram (sample 528–530)

the later period of occupation/habitation, the sand island was wooded. Of significance are the high values of small-leaved lime pollen. Although producing copious pollen, it is entomophilous (insect-pollinated) and not well dispersed by other means. Furthermore, it flowers in mid summer when this and other trees are in full leaf thus further inhibiting pollen dispersion. It is now widely accepted that lime/lindens were the dominant or at least co-dominant tree type during the middle Holocene (Atlantic period) and the Neolithic and Bronze Age until its widespread demise during either or both of these periods (Moore 1977; Scaife 1980; Greig 1982). There is a substantial amount of data from the London region that demonstrates this widespread dominance (Greig 1982; 1989; Scaife 2000a; 2000b; 2000c). The high values of *Tilia* pollen indicate that this was the dominant taxon on drier parts of this site.

The deepest samples containing countable pollen at 0.82m and 0.86m come from the upper portion of the buried soil; these assemblages contain higher numbers of degraded lime/linden pollen, which as a robust pollen grain has become over represented in the poor preservational environment of the soil profile (Keatinge 1982; 1983). At this time, there is also evidence of alder carr close by and oak, elm and hazel were present. That the site became wetter is indicated by the formation of peat, showing that a degree of anaerobic conditions existed. As noted, alder was important in the surrounding marsh and expansion of carr here was probably an asynchronous change that occurred progressively in response to positive changes in relative sea level. Initially this was primarily alder but there is evidence that an increasingly higher water table initiated a retrogressive hydrosere with change to a progressively herb rich fen. Palynologically this is seen with the expansion of sedges, iris and reed mace and/or bur reed and probably a proportion of the grass pollen. Willow was also growing locally, perhaps as a fringe to the wetland surrounding the sand island.

The demise of the woodland described may be seen partly as a consequence of this increasing wetness/flooding. However, there are also strong indications that this decline in lime pollen is a result of human activity. From the point of declining lime pollen there is evidence of weeds of agriculture and also cereal pollen. Furthermore, the decline in lime occurs within the peat rather than at the transition from the soil/terrestrial environment to the alder carr (as can occur, e.g. Waller 1994). This is clearly not the case here and a typical anthropogenic 'lime decline' is demonstrated. This event is likely to be of Bronze Age date in common with most occurrences from this region. A lime decline was also noted in a previously analysed profile from the Mar Dyke (Scaife 1988) and was suggested to be of Iron Age date on the basis of overlying alluvium. The decline at that site may, however, also be of Bronze Age date given the further evidence obtained during the past two decades.

From the lime decline, on there is an expansion of herbs in the sequence, suggesting that areas cleared of woodland were used for agriculture and the presence of cereal pollen indicates arable cultivation occurred locally. Indicators of pastoral agriculture are less easily defined and although grasses are the dominant pollen, these may come from a range of habitats. However, small numbers of ribwort plantain point to a disturbed grassland/pasture. Expansion of sedges in the highest sample examined is also coupled with an increase in Chenopodiaceae, which may be of halophytic affinity. It is probable that continued rising relative sea levels, suggested as the cause of rising ground water tables and peat growth, ultimately led to wetter marsh/fen and deposition of alluvium which contains evidence of stronger saline conditions (salt marsh) in proximity to the site.

Waterlogged plant remains, wood and charred plant macrofossils

by Chris J. Stevens, Catherine Barnett and Sarah F. Wyles

Waterlogged plant matter was retrieved from the lower part of the peat sequence in 3964TT. The remains were heavily dominated by wood of alder (*Alnus glutinosa*), with some seeds of *Carex* sp. (sedge) and *Apium* sp. (perhaps fool's watercress, more probably marshworts), leaves of willow and one piece of *Prunus* sp. (cherry/blackthorn) wood. Alder carr and sedge fen is again indicated for the immediate area.

Assessment of material from the buried soil showed hazelnuts to be the dominant charred remain; these may relate to prehistoric subsistence. However, a general paucity of charred remains (both in quantity and range of taxa) limits their potential to inform on prehistoric environments. In addition, conflation and lateral movement of material in the heavily leached soil profile, as demonstrated by distribution plots of flints, burnt flints, charcoal and charred plant remains, mean no contemporary/coherent assemblages can be defined nor a direct relationship between the plant macrofossils and the archaeology of any one phase established.

The Off-site Palaeoenvironmental Sequence

Given the difficulties encountered with the on-site environmental assemblage resulting from bioturbation and movement in the loose sands and sandy soils and the lack of material demonstrably contemporary with archaeological activity, deeper sequences in the adjacent floodplain collected as part of the CTRL Thames Holocene study were investigated further. Earlier prehistoric layers were sought to provide a landscape context for Upper Palaeolithic, Mesolithic and Neolithic activity, that for later prehistory already having been provided by data from the on-site peat and alluvial sequence. However, the thicker sediments proved to represent a similar time period to the upper soil and peat of the on-site sequence, though offering a higher resolution environmental record.

The off-site sequence occurs on the low-lying floodplain of the Mar Dyke, approximately 200m to the south-east of the excavation at CTRL chainage 28+518. Intact monolith and bulk samples were retrieved from a 2m deep sequence of alluvial and peat deposits exposed in a pipe trench during the watching brief in 2001 (URN 2003). Ground level measured +0.05m OD and at the time of the watching brief rough grass and scrub covered the site.

Sediments

by Elizabeth Stafford

At the base of the exposed sequence lay a freshwater minerogenic alluvial deposit of slightly sandy clayey silt, probably deposited by moderate to low energy over-bank flooding from an adjacent channel. This deposit became more organic up-profile grading rapidly into dark reddish brown silt, approaching the interface with the overlying peat complex at 1.98m (-1.93m OD). A radiocarbon date of 2,480–2,290 cal BC (Table 10) on twig wood retrieved from 1.98–1.93m suggests accumulation of peat at this location commenced in the Late Neolithic or Early Bronze Age and is therefore only broadly contemporary with the later phase of activity on-site.

The basal part of the peat, between 1.98m and 1.70m (-1.93 to -1.65m OD) comprised a mottled dark brown to black well humified slightly silty peat with abundant

twigs, larger wood fragments and bark. Its accumulation suggests increased surface wetness, rising groundwater tables and ultimately the spread of freshwater alder carr environments on the low-lying floodplain area. This is consistent with the on-site environmental evidence during this period. Above 1.70m, however, the peat became increasingly silty and less woody, grading into an organic silt at 1.53m (-1.48m OD) and organic clay silt above 1.34m (-1.29m OD). The increasing silt content of the peat up-profile suggests low-energy, but consistent flooding, possibly seasonally, transporting sediment from an adjacent channel and perhaps increased surface run-off from higher ground. This may be the result of deforestation and agricultural activity on the adjacent terrace, but it is of note also that the diatom assemblages (below) suggest some marine influence from the Early Bronze Age. Between 0.80m and 0.70 (-0.75 to -0.65m OD) a slowdown in accumulation is indicated by the deposition of a thin unit of brownish-black organic silty clay suggesting lower energy deposition, perhaps as a result of slight channel shift away from this location. Radiocarbon dating of waterlogged alder wood suggests a Middle Bronze Age date (Table 10, context 375).

Above 0.70m there was an abrupt change in lithology to inorganic structureless minerogenic silty clay. This unit may correlate with a major regional environmental change identified in many of the sediment sequences examined along the CTRL route (URN 2003) and at other east London sites, representing a significant ingress of tidal waters as a result of rising river and ultimately sea levels. This appears to have occurred quite rapidly, with abrupt changes in lithology from predominantly freshwater organic to brackish water minerogenic accumulation in the later prehistoric and Romano-British periods. At Dagenham Vale radiocarbon dating of the top of the organic deposits indicates cessation of peat accumulation at 410–200 cal BC (2270±45BP; NZA16262) and at Ferry Lane 530–370 cal BC (2352±46; NZA 11596). On Wennington Marsh, however, dates of 1120–830 cal BC (2815±45; NZA16271) and 1540–1400 cal BC (3217±40; NZA 16299) are earlier. This difference could be due to very local factors, the result of erosion of the peat by later channel activity, and/or the location of the sequences immediately adjacent to a tidal tributary channel. In the case of Wennington Marsh this may have been the now silted up Wennington Creek, and at Tank Hill Road, the Mar Dyke channel.

Dating the off-site sequence
by Catherine Barnett

Waterlogged plant material was removed from six levels through the monolith sequence in order to provide a chronological framework. The sample details and results returned are given in Table 10.

A coherent sequence of dates is presented which demonstrate initiation of peat growth from the later Neolithic-Early Bronze Age, slightly earlier than on-site due to its greater proximity to the main channel. Some increase in minerogenic alluvial input took place from the Early Bronze Age at 2,130–2,080 cal BC as water levels rose and/or a channel shift took place but peat growth continued at least into the Middle Bronze Age (1,430–1,270 cal BC).

The basal two calibrated dates for the top and bottom of the lower woody peat overlap and are potentially reversed, indicating either rapid accumulation or a degree of bioturbation/reworking though neither phenomenon is observable in the pollen record.

Pollen analysis
by Lucy Verrill

Nineteen samples were prepared using Method B of Berglund & Ralska–Jasiewiczowa (1986). Minimum counts of 400 grains were achieved per level. Pollen identification was made using the key of Moore *et al.* (1991) and a small modern pollen reference collection. Andersen (1979) was followed for identification of cereal-type grains. Taxonomy follows Moore *et al.* (1991) modified according to Bennett *et al.* (1994) for pollen types with plant nomenclature according to Stace (1997). Pollen percentages are calculated as percentages of total land pollen and pteridophyte spores. Other taxa (aquatics, *Sphagnum*, indeterminate grains and microscopic charcoal >5mm) are presented as percentages of the sum plus group. A pollen percentage diagram is presented in Figure 22, shaded curves represent ×10 exaggeration and a cross represents a single pollen grain or spore. Three local pollen assemblage zones were identified visually:

Zone 1: 2.05–1.62m (later Neolithic–Early Bronze Age) Alnus–Quercus–Betula. This basal zone is characterised by high *Alnus glutinosa* (alder) pollen, fluctuating between 50% and 80% of the pollen sum. Other principal arboreal types are *Quercus* (oak, 15%) and *Betula* (birch, 5%), with lower values (<5%) of *Corylus avellana*-type (hazel) and *Tilia cordata* (lime/linden). *Ulmus* (elm) and *Pinus sylvestris* (Scots pine) pollen are present in very low percentages. *Tilia cordata* pollen declines to negligible values at 1.72m, but recovers. Non-arboreal types are scarce at <5% Poaceae (grass family), Cyperaceae (sedge family) and monolete spores (ferns). Microscopic charcoal particles decline from 20% to 5% of the pollen sum+charcoal.

Zone 2: 1.62–1.06m (Early Bronze Age)
Subzone 2a: 1.62–1.39m Alnus–Quercus–Corylus. As the sediment changes from woody to silty peat, *Alnus glutinosa* remains dominant, but at the top of the subzone declines from *c.* 60% to *c.* 40% of the pollen sum. *Quercus* remains the secondary pollen taxon. *Corylus avellana*-type pollen increases substantially while *Ulmus* and *Tilia cordata* increase slightly. Increases in Poaceae and Chenopodiaceae occur but the overall herb diversity is low. The upper boundary is marked by a minor increase in *Polypodium vulgare*-type spores. Microscopic charcoal particles increase steadily throughout the subzone, reaching 40% sum+charcoal by the upper boundary.

Subzone 2b: 1.39–1.06m Alnus–Quercus–Betula–Corylus. Alnus glutinosa pollen remains stable at *c.* 40%. At the opening of the subzone, *Quercus* and *Betula* pollen percentages experience a slight increase. Mid-subzone, *Betula* pollen to increases to *c.* 10% and *Fraxinus excelsior* pollen is better represented than previously. Poaceae increases slightly while other open-ground taxa are represented sporadically in low numbers. Again, a minor temporary increase in *Polypodium vulgare*-type spores marks the upper boundary of the subzone. Microscopic charcoal particles fluctuate between 30–50% sum+charcoal, peaking at the upper boundary.

Context	Sample no.	Depth/ Height OD	Material dated	Result no.	δC13 ‰	Result BP	Fraction details	Cal date BC (2 sigma, 94.5% unless stated)	Phase
375	530	0.77/–0.72	Waterlogged wood: *Alnus glutinosa* (degraded) from bottom of desiccated peat lens	NZA 27527	–28.5	3090±30	Treated wood	1430–1290 (94.3%) 1280–1270 (1.1%)	Middle Bronze Age
376	529	1.30/–1.25	2 waterlogged *Alnus* cones from bottom of clay silt/silty peat interface.	NZA 27522	–27.9	3601±30	Treated cones	2040–1880	Early Bronze Age
377	529	1.52/–1.48	Waterlogged twigwood from bottom of silty peat.	NZA 27534	–29.9	3629±30	Treated twig wood	2130–2080 (8.5%) 2050–1900 (86.9%)	Early Bronze Age
378	528	1.68/–1.63	Waterlogged wood: *Alnus glutinosa* from top of woody peat	NZA 27625	–27.1	3912±40	Treated wood	2560–2530 (1.4%), 2490–2280 (93.0%), 2250–2230 (1.0%)	Later Neolithic-Early Bronze Age
378	528	1.93–1.96/ –1.88–1.91	Waterlogged twigwood (3) from bottom of woody peat	NZA 27528	–28.8	3909±30	Treated wood	2480–2290	Later Neolithic-Early Bronze Age

Table 10 Radiocarbon dates for the off-site peat sequence

Zone 3: 1.06–0.74m (Middle Bronze Age) Poaceae–Cyperaceae. The opening of Zone 3 (1.09–1.00m) is characterised by declining arboreal pollen percentages. Poaceae pollen increases to 30% and Cyperaceae pollen to 15%. A continuous curve of cereal-type pollen commences and a single grain of *Cannabis/Humulus* (Cannabis/hemp-) type is recorded. The herb pollen suite is more diverse and better represented than in either of the previous zones, with Chenopodiaceae, *Plantago lanceolata* (ribwort plantain) *Rumex* (dock), Apiaceae (cow parsley family) and *Solidago virgaurea*-type (michaelmas daisy family) pollen notable amongst the group. *Pteridium aquilinum* spores reach *c*. 5%, and monolete spores remain at 5–10%. A minor peak in aquatic pollen – principally *Typha angustifolia/Sparganium*-type (bulrush/bur-reed) occurs mid-zone. Microscopic charcoal particle percentages are high, over 40% sum+charcoal, for most of the zone, but decline to 30% by the upper boundary.

Vegetational history

The profile begins in the later Neolithic/Early Bronze Age as woody peat began to accumulate over alluvium. The data indicate that the landscape was dominated by floodplain alder carr, with the dryland component consisting of mixed oak-birch-hazel-lime-elm woodland. This landscape interpretation is in agreement with those from the on-site sequence (Scaife, above) and the nearby Mar Dyke sequences (Scaife 1988), adding to the corpus of data recording alder carr as a feature of the Thames Valley in the later prehistoric period. Aside from two isolated cereal-type pollen grains, there are no indications of anthropogenic activity in the form of crop cultivation or vegetation clearance prior to that seen in Zone 3. Considering that some wild grass species can produce pollen grains comparable in size to those of cereal crops (Andersen 1979), the occurrence of isolated cereal-type pollen grains in pollen profiles should not be taken as a definitive indication of former cereal cultivation, especially in the absence of other palynological indicators of agricultural activity (O'Connell 1987).

Total arboreal pollen percentages, largely reflecting changes in alder representation rather than dryland tree taxa, began to decline from 1.70m (later Neolithic–Early Bronze Age). It appears that in some areas the alder carr was replaced by mixed woodland, and that the proportion of open ground expanded only very slightly. Therefore, the steady increase in proportions of microscopic charcoal in subzone 2a, continuing into 2b, may reflect anthropogenic clearance at some distance from the site. The slowly increasing, but low, levels of Chenopodiaceae reflect the estuarine location rather than the alternative ruderal habitat usually interpreted from this family (e.g. Behre 1981). If the absence of ostracoda and foraminifera does indicate freshwater rather than brackish conditions (Whittaker below), the area may not have been tidal at this time.

The first local, intensive anthropogenic woodland clearance occurred at 1.18m (Early Bronze Age), with alder being the only significantly affected taxon. High levels of microscopic charcoal indicate that fire may have been used for clearance purposes. The issue of the lime decline, usually interpreted as anthropogenic, is complex in this profile. There appears to be a short-lived decline at 1.72m (later Neolithic–Early Bronze Age), in a single spectrum, followed immediately by resurgence. Whether this short-lived reduction in lime pollen percentages actually reflects anthropogenic clearance or pollarding is arguable. Although microscopic charcoal values temporarily increase at the same point, which could indicate clearance by fire, only one other arboreal pollen type (oak) declines at the same time and there is no corresponding increase in open-ground pollen taxa. A more typical lime decline, occurring in the context of unequivocal anthropogenic clearance, seems to have occurred in the Middle Bronze Age, almost at the top of the profile, though it is not well marked because of the gentle rate of decline prior to its virtual disappearance. Although grasses, sedges and other herbaceous taxa did not immediately respond to the newly created open spaces, the peak of *Polypodium vulgare*-type spores at 1.18–1.02m indicate that woodland was becoming more open.

Deforestation continued and grassland began to expand. Mixed agricultural activity is evident, with disturbed grassland (grasses with ribwort plantain, docks, daisies, dandelions and meadowsweet all present) and cereal cultivation is indicated by the cereal-type pollen curve. At the upper limit of the pollen profile, some decline in agricultural intensity is suggested as tree pollen values stabilised, with some alder expansion, and declines in grass, cereal pollen and most herbs are seen. The dating of the main clearance to the Early Bronze Age is in broad agreement with other sites in the vicinity, particularly the on-site sequence (Scaife above) and the Mar Dyke sequences (Scaife 1988).

Plant macrofossils

by Wendy Smith

A series of 10 litre bulk soil samples were collected through the off-site peat sequence directly associated with the series of monoliths collected for the recovery of other environmental proxy data including the pollen, diatoms and ostracods reported here. Preservation of waterlogged plant macrofossils was moderate, with primarily only the woodier remains present, and none recovered from the basal alluvium. The assemblage is again dominated by indicators for alder carr throughout the peat and organic silts, consistent with the results from sequences at ten other sites along the West Thames corridor assessed by Robinson (2003) and with the on-site assemblage. There is also limited evidence for marsh/meadow conditions (such as *Ranunculus* sp. (buttercup), *Iris* sp. (iris) and *Caltha palustris* (marsh-marigold)) and a few finds of woodland taxa, such as *Taxus baccata* (yew), which could occur as a component of fen woodland (Robinson 2003).

Diatoms

by Nigel G. Cameron

Fifteen samples were prepared, evaluated and, where suitable, analysed for diatoms from the off-site sequence. Preparation followed standard techniques: the oxidation of organic sediment, removal of carbonate and clay, concentration of diatom valves and washing with distilled water (Battarbee 1986). Two coverslips, each of a different concentration of the cleaned solution, were prepared from each sample and fixed in a mounting medium of a suitable refractive index for diatom microscopy (Naphrax). Slides were scanned at magnifications of ×400 and ×1000 under phase contrast illumination. Diatom floras and taxonomic publications were consulted to assist with identification; these include Hendey (1964), Werff and Huls (1957–74), Hartley *et al.* (1996) and Krammer and Lange-Bertalot (1986–91). Diatom species' salinity preferences are discussed using the classification data in Denys (1992), Vos and de Wolf (1988; 1993) and the halobian groups of Hustedt (1953; 1957, 199), these salinity groups are summarised as follows:

1. Polyhalobian: >30 g l^{-1}
2. Mesohalobian: 0.2–30 g l^{-1}
3. Oligohalobian-Halophilous: optimum in slightly brackish water
4. Oligohalobian-Indifferent: optimum in freshwater but tolerant of slightly brackish water
5. Halophobous: exclusively freshwater
6. Unknown: taxa of unknown salinity preference

Diatom data were manipulated and plotted using the C2 program (Juggins 2003).

Diatom numbers and preservation varied but diatoms were present in all samples, with 12 containing assemblages suitable for analysis, the remaining three samples (1.96m, 1.72m, 0.78m depth) contained few diatoms, and these were poorly preserved, with a high degree of valve breakage and silica dissolution (Flower 1993, Ryves *et al.* 2001). The results are shown in Figure 23. A summary of the diatom halobian groups in this sequence is shown in Figure 24.

The off-site diatom sequence begins at 2.04m depth (approximately -2.0m OD). Levels at 1.68m and 1.93–1.96m depth respectively were dated to *c.* 2,560–2,230 cal BC (Table 10). The four samples analysed from 2.04m, 1.99m, 1.88m and 1.80m depth, along with two samples assessed from 1.96m and 1.72m depth, show a consistent picture of diatom assemblages dominated by freshwater (oligohalobous indifferent) taxa, mainly non-planktonic freshwater species such as *Anomoeoneis sphaerophora*, *Amphora libyca, Gomphonema angustatum, Gyrosigma acuminatum, Sellaphora pupula* and *Pinnularia major/nobilis*. The poorly preserved assemblages at 1.96m and 1.72m depth in the core also contain freshwater diatoms. *Amphora libyca, Anomoeoneis sphaerophora* and fragments of *Pinnularia* sp. are present at 1.96m along with chrysophyte stomatocysts. The freshwater, non-planktonic species *Gyrosigma acuminatum, Pinnularia major/nobilis, Synedra ulna* and *Amphora libyca* are present at 1.72m. Many diatoms in the four samples counted were small fragments (mainly central raphe nodes) identifiable only to the generic level but those identified to specific level are associated with shallow-water habitats, the majority benthic, epipelic species inhabiting the mud-surface, but a number of taxa represent epiphytic and eplilithic habitats. Polyhalobous (marine) and Mesohalobous (brackish water) diatoms are uncommon in this freshwater part of the sequence and their background presence may reflect reworking of sediments, wind-blown diatoms or occasional flood events.

From 1.64m depth the percentage of oligohalobous indifferent diatoms declines, falling from over 60% of the total diatoms in the first phase of the sequence to less than 50%. Freshwater diatoms then fall to 10% or less at 1.50m depth and in overlying samples. Mesohalobous and polyhalobous diatoms increase from the traces present in the first phase of the sequence to maxima of over 40% (mesohalobes) and 50% (polyhalobes) in levels dated to the Early Bronze Age. Here the dominant marine taxa are planktonic diatoms such as *Paralia sulcata, Cymatosira belgica, Podosira stelligera, Rhaphoneis* spp., *Actinoptychus undulatus* and *Thalassiosira decipiens*. These planktonic, polyhalobous diatoms represent the allochthonous input of coastal marine diatoms. There are only low numbers of benthic and attached marine diatoms such as *Diploneis smithii, Cocconeis scutellum* and *Dimeregramma minor*. Mesohalobous species are represented by the planktonic species *Cyclotella striata* and by benthic diatoms like *Diploneis didyma, Nitzschia compressa, Nitzschia granulata* and *Nitzschia navicularis*. The latter species are epipelic diatoms found in the surface of mudflats and are likely to be of autochthonous origin.

The quality of preservation is poor in the uppermost sample counted from the sequence (0.85m depth). However, a consistent trend appears, with declining numbers of polyhalobous diatoms, for example *Paralia sulcata*. Overall polyhalobes decline to about 6% of the total diatoms at 0.85m and no marine species were preserved at 0.78m. The proportion of the mesohalobous taxon *Cyclotella striata* declines to just over 10% at 0.85m depth, but the overall total of mesohalobous taxa is maintained at almost 50% at 0.85m depth. The planktonic brackish water species *Cyclotella striata* is replaced by benthic mesohalobes such as *Diploneis interrupta, Navicula peregrina, Nitzschia navicularis* and *Scoliopleura tumida*. Halophilous diatoms such as *Navicula slesvicensis* and *Actinocyclus normanii* are also present at 0.85m depth. The small numbers of diatom fragments identified from 0.78m depth include the central areas of *Pinnularia major/nobilis*, possible fragments of the central area of *Cyclotella striata* and chrysophyte cysts. These sediments represent material dating to the Middle Bronze Age.

Foraminifera and ostracoda

by John Whittaker

Eight samples from 0.20–2.06m depth were processed for microfauna. All but the top proved barren of calcareous remains. This negative evidence, coupled with the nature of the sediments, could be an indication of a freshwater, reducing environment for the majority of the sequence (a reedy swamp or the like). However, the diatom flora indicates the onset of increasingly brackish water above *c.* 1.1m. The top sample at 0.20–0.30m contained earthworm granules and mollusc fragments (including *Pupilla* sp.) that indicate the onset of soil formation and establishment of grassland.

Discussion

by Matt Leivers and Catherine Barnett

The earliest human presence most probably dates to the very end of the Devensian or beginning of the Flandrian, and represents the first 'long-blade' find-spot on the north bank of the Lower Thames to complement the growing number on the opposite side of the river at Erith, Herne Bay (Gardiner *et al.* forthcoming), North Cray, Bexley (Chandler 1915), Riverdale (Barton 1991) and Springhead (Burchall 1938; Leivers 2005). Although material of this type from the area is rather scanty, and tends to stand in isolation from other sorts of evidence, there are indications that particular environmental settings were favoured (characterised as highpoints overlooking watercourses or low riparian slopes or gravel terraces in Gardiner *et al.* forthcoming).

The Late Mesolithic Site

The Late Mesolithic material represents probably repeated human utilisation of a gravel island on the edge of the flood plain at the confluence of the (then non-tidal) Thames and the tributary Mar Dyke, ideally

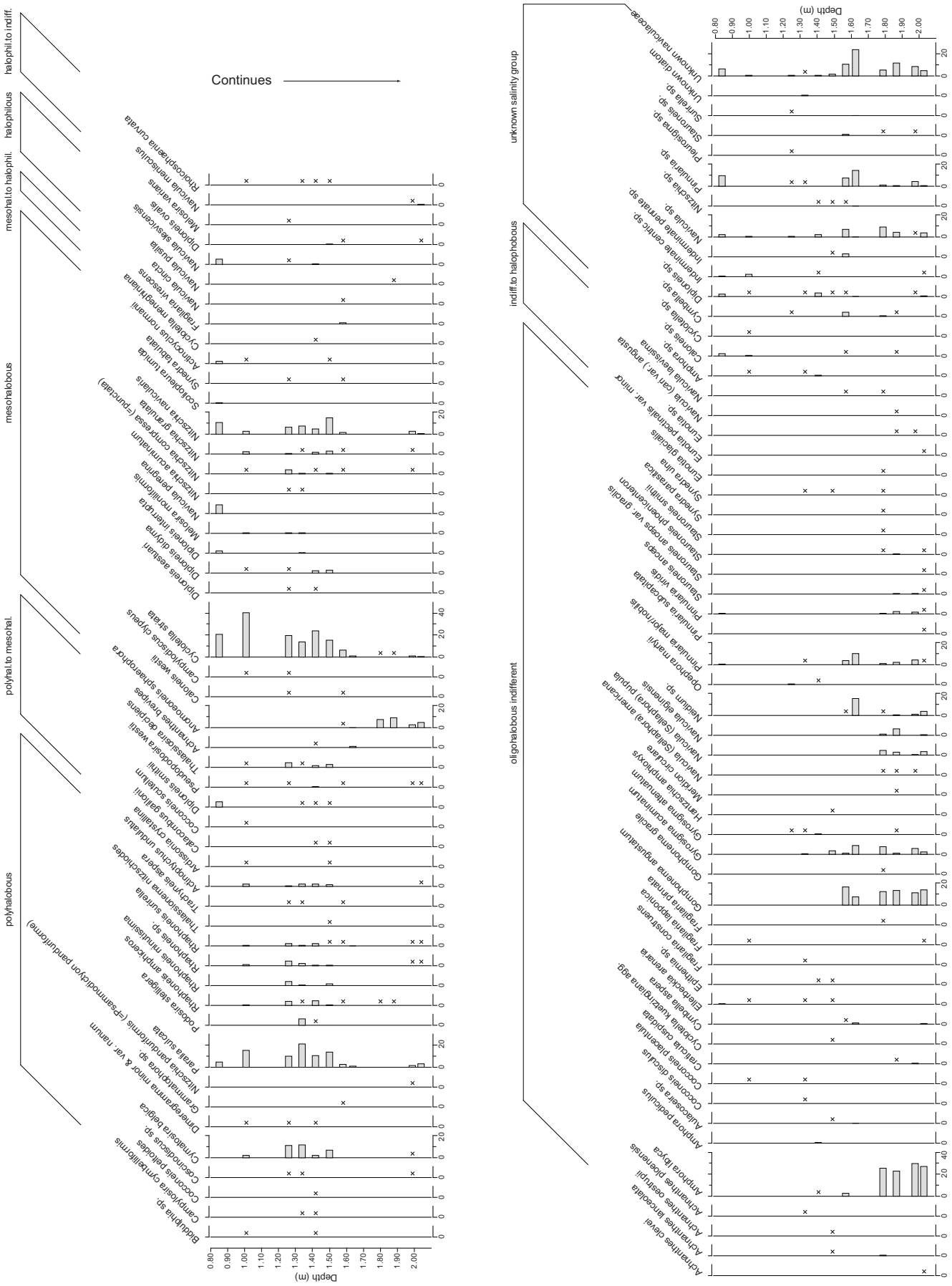

Fig. 23 Tank Hill Road, Purfleet. Diatoms

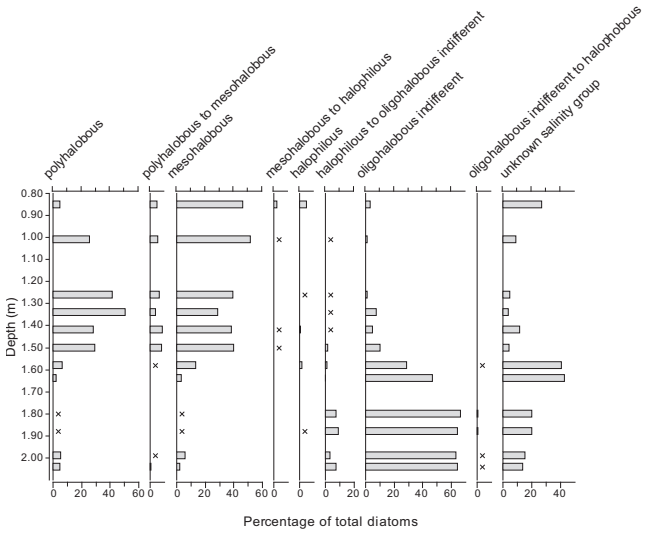

Fig. 24 Tank Hill Road, Purfleet. Diatom halobian groups

located for the exploitation of a wide spectrum of resources. Although far from certain, the island may have been in the region of 150m north–south by 200m east–west, and would have commanded a wide field of view across the low-lying land to the south-west. The absolute lack of faunal remains precludes the identification of resource exploitation, but it is perhaps safe to assume that the available spectrum was utilised, presumably including fish and other riverine animals, birds, terrestrial fauna visiting the water's edge, and a range of flora. Tranchet axe manufacture suggests woodworking.

The lack of any perceptible structures on the site makes its characterisation very difficult. Buildings – even temporary or small/light ones sometimes represented by arrangements of stake holes or stones – are entirely lacking, and there is no certainty that the concentrations of burnt flint mark the actual locations of hearths (rather than being dumps of material cleared out of hearths, or the deposited residues of some other activity). Given this, it is very difficult to identify any structure to the activity represented by the burnt flint and lithic debitage, or to determine individual episodes within that activity.

That there was more than one episode of activity on the site is certain: the lithics and absolute dates confirm a human presence in the Early Post-Glacial, the Late Mesolithic, the Early Neolithic and the Early Bronze Age, but whether or not activity in each of those periods was unique or episodic is impossible to determine. The quantity of Late Mesolithic material suggests periodic re-use of the site, and Mesolithic campsites elsewhere in Britain were often revisited, but there are no stratigraphic or other indicators at Tank Hill Road to confirm this.

Even if use of the site in the Late Mesolithic was periodic, indications are that there was a maintained spatial organisation. The spreads of unworked burnt flint are very probably accumulations over time as opposed to relics of unique individual events, indicating that

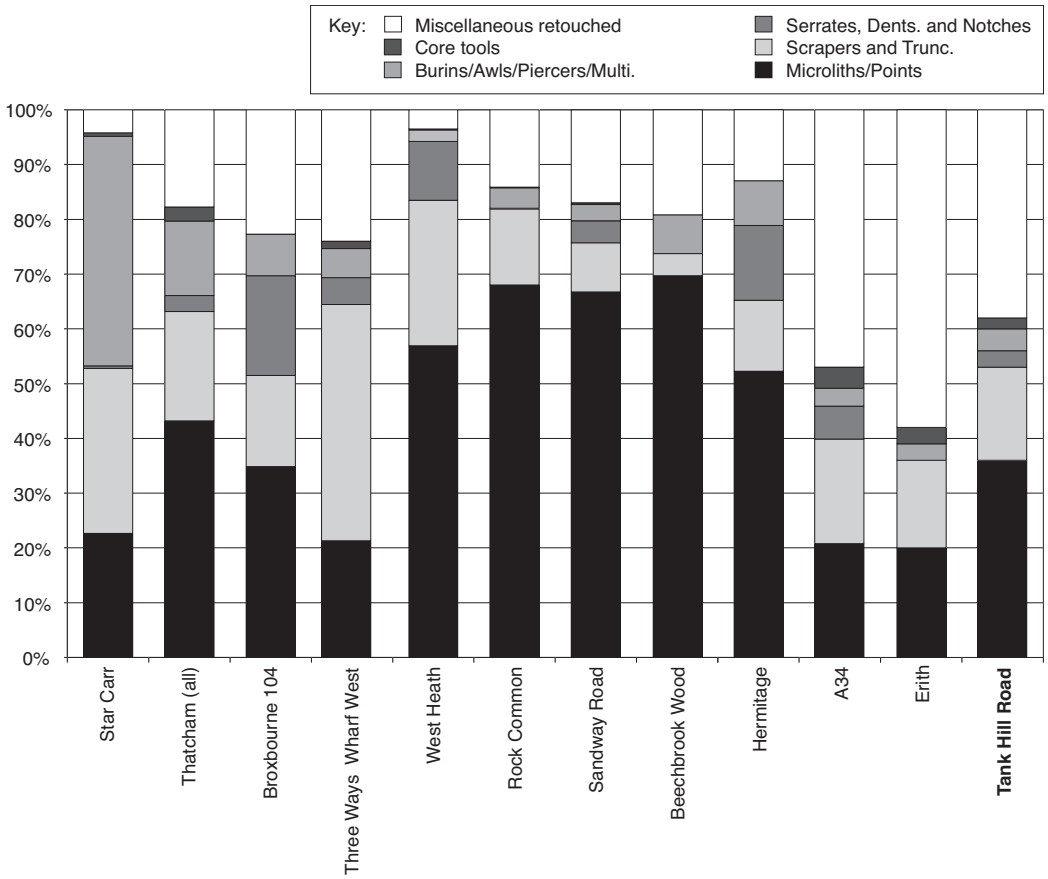

Fig. 25 Tank Hill Road, Purfleet. Comparative lithic assemblages

hearth locations may have been reused, and that there were maintained disposal areas for hearth 'waste'.

That at least some of the concentrations of burnt flint may represent dispersed hearths is suggested by the concentrations of lithic debitage around them. Although there is a degree of overlap between some of the worked and burnt flint distributions, this is more likely to result from post-depositional blurring than episodic dumping of knapping waste and hearth clear-outs, since the make-up of the debitage assemblages (particularly the numbers of chips and microdebitage) strongly suggest *in situ* knapping. In some instances the distributions remain clearly separate, indicating a variety of tasks (flint knapping, tool manufacture and maintenance, hide-processing, wood-working) being undertaken around these burnt flint concentrations.

Different activities attested by the lithics show very definite preferences for certain tasks to be undertaken in certain areas. 3984TT and the hearth in 3985TT seem to have been associated with the manufacture and use of microliths, while 3986TT and 3988TT seem not to have been locations in which microliths were manufactured, but in which they were either used, or in which the tools they formed were constructed, maintained or disassembled.

The manufacture and maintenance of core tools seem to have been spatially distinct, concentrated in 3964/3983TT, possibly associated with a second hearth. The prevalence of tranchet axe thinning and sharpening flakes in these areas very strongly suggests their manufacture there, and the limited occurrence of blade portions of such tools also suggests their resharpening in the same location. Whether the area was one set aside for tool manufacture and maintenance, or was rather one in which woodworking tasks were carried out, is not clear.

Tasks involving scrapers seem to have been undertaken on the periphery of the main knapping concentrations (particularly in 3984TT and 3985TT), probably indicating processing tasks taking place away from hearths. This is a pattern familiar from many other sites both in the Mesolithic in Britain and in other hunter/gatherer campsites across Europe in the Late Glacial and early Holocene (Taborin 1994). At Tank Hill Road it is uncertain whether all of these activities occurred simultaneously, or whether their apparent contemporaniety is the result of conflated assemblages.

Some of the lithic signatures cast light on the nature of the tasks being carried out at Tank Hill Road. The discrepancies in the relative proportions of flakes to blades and bladelets and flake cores to blade and bladelet cores indicates that while both flakes and blade(lets) were produced on the site in great numbers, flakes tended to remain while blades and bladelets and the tools they were putatively transformed into did not. Two possibilities present themselves: either the site functioned as a production centre for blades which were then circulated amongst other Mesolithic groups in the area, or the camp was a base for a local hunting group.

Is the site convincing as one dedicated to the production and maintenance of 'hunting' equipment? While the prevalence of microliths and microburins might traditionally suggest this, more recent research into Mesolithic toolkits has called the automatic association of microliths with hunting into question. Microwear and impact fracture analyses (Barton 1992; Grace 1992; Finlayson 1990; Finlayson and Mithen 1997) have demonstrated that while microliths could be used as armatures, they were put to a much broader series of uses, as saws, knives, piercers, gravers, etc., demonstrating that use as armatures was only one (and not necessarily the dominant) purpose of microliths. Additionally, the occurrence of other tool types at Tank Hill Road – particularly core tools and scrapers – suggests a wider range of activities than a 'tooling-up' hunter's camp would normally be expected to support.

Other Late Mesolithic sites (for instance Thatcham: Healy *et al.* 1992; Site 1 in the Lambourn Valley, Berkshire: Bellamy 2000) have certain similarities – primarily as low lying river-side locations with diverse tool assemblages and markedly under-represented blades compared to blade cores. These are not specialist sites, but attest to a wide range of activities. In the traditional model of Mesolithic social structure and settlement pattern these sites – including Tank Hill Road – would be domestic 'home bases', and more particularly winter aggregation lowland base camps associated primarily with fishing and wildfowling (Spikins 2000).

Any attempt to fit Tank Hill Road into a seasonal system of aggregation and dispersal depends on two factors as yet undiscussed: evidence for seasonality, and for other potential sites belonging to the proposed system in the immediate area.

Environment, Landscape Development and Seasonality

Environmental results compare well with data on the establishment of alder carr and of prehistoric woodland development at other wetland edge sites in London, such as Erith (Scaife 1997), Canning Town (Chisham *et al.* in prep.) and Silvertown (Crockett *et al.* 2002). However, the lack of well-stratified charred plant and bone remains at Tank Hill Road hinders any extrapolation of seasonality data in the Late Mesolithic. There are some indications that the site on the south bank of the Thames at Erith was a summer occupation, with lithics deposited at times of seasonally low water, but other signs of seasonally occupied sites are absent. A summer occupation would be at odds with the traditional model of the Mesolithic seasonal round, and it may be that the sites around the Lower Thames were semi-permanent settlements, even if individual sites were not continually occupied.

The Wider Mesolithic Context

At Tank Hill Road (as at many other sites of this period) only a sample of the material has been recovered by excavation, and consequently the full extent of the site, and any other areas of specialisation within it remain unknown. The contemporary site at Bronze Age Way, Erith on the opposite bank of the Thames had a very similar lithic industry and palimpsest of Late Mesolithic and Early Neolithic material (Bennell 1997), but at this

site (which is in other respects almost identical to Tank Hill Road) the sampling strategy produced an assemblage with very few microliths and dominated by tranchet axe thinning flakes.

In the Lower Thames valley, Late Mesolithic evidence is very much more common on the Kentish side than in Essex. This is most often explained by the proximity of extensive chalklands south of the river from which good quality flint could be obtained. Very few diagnostic artefacts of Mesolithic date were known from the environs of the Mar Dyke Valley prior to works associated with the CTRL. Only sixteen find spots from Thurrock Parish were listed by Wymer (1977, 94–5), and Wilkinson (1988, 115) listed as few as six finds localities. Although Mesolithic material is known from the immediate area (PaMela database, in prep.), most of these records refer to individual discoveries of poorly provenanced tranchet axes, such as the ten recorded from the Thames at Erith (Haughey 2000). Their existence indicates that Mesolithic activity was probably quite extensive in the area, and may indicate an opening-up of woodland, possibly to facilitate access to other resources.

Late Mesolithic flint artefacts have been recovered from the north bank of the Thames from at least as far west as Rainham to the east of Grays. Taken as a whole, this material suggests a fairly widespread utilisation of both margins of the river, with sites on sand islands or the banks of broad, slow moving braided channels. Away from the Thames, in Essex Mesolithic material has been found on Orsett Heath (Bingley 1978), while on the Kent side significant quantities are known from Swanscombe and in the area bounded by the Cray and Darent rivers (Taylor 1996).

Later Prehistoric Activity, Environments and Landscape

Definite evidence of Early Neolithic activity at Tank Hill Road is rather slight, but unequivocal. Diagnostic tool types (leaf-shaped arrowheads and a laurel leaf) and ceramics (a small quantity of bowl-type pottery) demonstrate use of the site, and the nature of those lithics (predominantly broken or abandoned during manufacture) provides some indication of activities. Given this, it seems likely that more lithics of this date exist within the bulk of the debitage (and less chronologically-distinctive tool types), but the lack of stratigraphic integrity and similarities in knapping technology make this element impossible to isolate. It is of course possible that there was continued activity across the supposed Mesolithic–Neolithic transition and that consequently any attempt to separate the material into two distinct assemblages is misplaced. The co-incidence of locations of demonstrably Late Mesolithic and Early Neolithic material supports arguments for continued activity; the apparently mid-4th millennium-type pottery weakens such an argument.

The limited evidence from Tank Hill Road complements the fairly widespread evidence from the lower Thames relating to later prehistoric periods. Brookway, Rainham (http://ads.ahds.ac.uk/catalogue/projArch/newham/rainham/raba92.cfm) and Bronze Age Way, Erith (Bennell 1997) had Early Neolithic artefacts and pottery. Sites around Rainham and West Thurrock have indicated an earlier Neolithic presence in the general area (Hedges 1980; Holgate 1988, 273; Lewis 2000, 68; Macdonald 1976). Large-scale Neolithic utilisation is attested at the Orsett causewayed enclosure 10km east of the site (Hedges and Buckley 1978). Around the Mar Dyke, scattered evidence of a Neolithic human presence takes the form of pits at North Stifford (Wilkinson 1988, 115), a few diagnostic flint tools (including a leaf-shaped arrowhead) from Ardale School (*ibid.*, 27), and polished axes from Purfleet (Wilkinson and Murphy 1995, 98) and Mar Dyke near Stifford (Wilkinson 1988, 115). At Purfleet (Wilkinson and Murphy's Thames Site 2) the authors interpret a group of polished axes and a chisel as evidence of 'a specific activity area within woodland, associated with a later Neolithic settlement' (Wilkinson and Murphy 1995, 98).

Other phases of work on the CTRL have produced evidence of Early Neolithic activity in the general area. Various interventions, made under the Purfleet Pleistocene principal study, encountered later prehistoric lithic artefacts, particularly at Bronze Shield Yard, where 253 pieces included a significant proportion of blades and a hard hammer technology (Harding 2002). During the West Thames watching brief phase of works, a flint scatter was identified east of Ferry Lane, lying at the interface of a sandy deposit and mid-Holocene peat at –1.0m OD, likely to represent part of an *in situ* knapping scatter. Radiocarbon dating of the base of the peat sealing the flint scatter provided a date of 3,510–3,430 cal BC (4601±40 BP; NZA16266), apparently confirming this (URN 2003).

Peat deposits further east on the CTRL route indicate a broadly contemporary possible decline in elm pollen which may be associated with woodland clearance by local communities (URN 2003). Utilisation of the margins of the Lower Thames is attested throughout the Neolithic and Bronze Age, best represented by a series of timber trackways and platforms (Meddens 1996; Crockett *et al.* 2002). An example at Silvertown dates to the Middle Neolithic, and provides definite indications of a human presence on the margins of the floodplain at this time (Crockett *et al.* 2002).

Bronze Age evidence has been encountered around the Mar Dyke valley (for instance at Stifford Clays, Ardale School, Mitchell's Wood (Wilkinson 1988)). Scatters of flint tools are known from West Thurrock, and Food Vessels and a Beaker from Rainham (Couchman 1980), but there are no indications of intensive Early Bronze Age human use of the area leaving substantial archaeological traces.

At Tank Hill Road, wet marsh conditions progressively spread, with peat initiation on the floodplain from the later Neolithic to Early Bronze Age (2,490–2,280 cal BC), correlating well with the end of the Tilbury III marine regression and consequent estuarine shrinkage. Peat growth soon affected the floodplain edge settlement site, with the encroachment of fen communities and alder carr onto the sand island in

the Early Bronze Age (2,400–1,860 cal BC). The differing degrees of soil maturity across the site indicate this spread was diachronous, with higher drier areas persisting to the north-east of the site, enabling continued access or settlement. The peat would have formed a succession of semi-stable terrestrial land surfaces, which, although waterlogged, would have allowed continued access to the nearby riverine resources at least seasonally. The spread of stable, though waterlogged terrestrial surfaces represented by the peat in the Early Bronze Age would have caused a change in the opportunities offered to local groups. On the one hand the ephemeral exploitation of the rich fen habitats for food is likely to have increased, but the spread of peat over once dry sand islands would have forced settlement back from the floodplain margins onto higher ground. A clear anthropogenic lime decline has been recorded in the pollen spectra both on and off site, in layers associated with clearance and establishment of arable and pastoral land locally, thus demonstrating continued human activity in the area through the Middle to Late Bronze Age.

Gradual inundation of the peat occurred from the Early Bronze Age (off-site from 2,130–1,900 cal BC), at first dominated by freshwater conditions, with repeated high water conditions leaving a deposit of fine overbank sedimentation that seals the site. These increasingly wet conditions would have forced any continued settlement further back inland. The pollen and diatom evidence suggest that influence of saline water increased from the Middle Bronze Age and into the Iron Age, with the establishment of a tidal regime. This reflects wider changes in base level throughout the Thames Valley driven by the Thames III marine transgression described by Devoy (1979). Similar local responses/changes in the depositional environment have been recorded at the nearby sites at Rainham Marshes and Mar Dyke (Devoy 1979; 1980; 1982; 2000; Scaife 1988) and in the wider catchment (Devoy 1979; 1980; Sidell *et al.* 2000; 2002).

A series of major landscape changes therefore occurred locally, some directly caused by local human activity such as clearance and cultivation, others driven by wider changes in sea level with corresponding hydrological changes causing increasing ground water levels, peat growth, fluvial inundation and alluvial sedimentation.

Conclusion

The site at Tank Hill Road provides a palimpsest of intermittent prehistoric human activity over perhaps six thousand years. The earliest and latest phases of that activity seem to stand in isolation from the main Late Mesolithic and Early Neolithic artefact concentrations, but the relationship of those two periods of activity requires some consideration.

The possibility of continued activity across the supposed Mesolithic–Neolithic transition was one of the most intriguing aspects of the Tank Hill Road assemblage. However, the lack of stratigraphic integrity at the site, the difficulties of assemblage comparisons between sites, and the paucity of understanding of the developmental connections between later Mesolithic and earlier Neolithic assemblages in general (Stafford 1999) made a sufficiently rigorous analysis of this material impossible. Sadly, the bulk of the available regional comparanda suffer from the same setbacks, and consequently (even with the benefits of thermoluminescence and radiocarbon dating), no convincing case can be made for the Tank Hill Road assemblage being transitional, as opposed to Late Mesolithic and Early Neolithic. It remains possible that the people present at the site throughout the late 5th and early 4th millennia BC were each others forebears and descendants rather than a Late Mesolithic group ousted by Early Neolithic agriculturalists, but neither option is conclusively demonstrable.

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Prehistoric and medieval remains at 20–22 London Road, Maldon: excavations, 2003 and 2004

Andrew Robertson

With contributions from Joyce Compton, Nick Lavender, Rebecca Nicholson and Helen Walker

Archaeological investigations prior to the construction of a residential development revealed prehistoric, medieval and later remains.While it is apparent that this location was peripheral to the medieval town until at least the 13th/14th centuries, prehistoric remains add to a growing body of evidence that the Saxon burh possibly had far earlier origins in an early Iron Age hilltop enclosure.

INTRODUCTION

An archaeological evaluation and subsequent excavation were carried out by Essex County Council Field Archaeology Unit prior to the construction of a residential development at 20 –22 London Road, Maldon (TL 8468 0708) in spring 2003 and summer 2004. The aim of the investigation was to examine the nature and significance of any surviving features or deposits and, more specifically, to identify any Iron Age or Saxon remains; particularly those relating to the Saxon *burh*. Detailed excavation reports (Roy 2003 and Robertson 2004) are held in the Essex Historic Environment Record (EHER) and as part of the site archive deposited at Colchester Museum.

The site lies on London Road, to the west of the late Saxon / medieval market-place and core of Maldon (EHER 18789). London Road runs west from the medieval and modern town centre towards Chelmsford. Its line is posited to respect two entrances of a Saxon defended enclosure or *burh* (EHER 7718). This *burh* was built by Edward the Elder around AD 916 as part of his campaign to recover eastern England from the Danes (Bedwin 1992, 18). Although the exact location of the *burh* has not been identified, its boundaries have been linked to almost obliterated earthworks that lie to the west of the town centre (EHER 7766), to the rear of properties along Spital Road. The present site lies near the centre of the postulated *burh* (Fig.1). Excavations at Spital Road in 1985–86 by the Maldon Archaeological Group identified a bank and ditch that may have been the main boundary of the *burh*, though no late Saxon dating evidence was recovered (EHER 7767). It has been suggested that the *burh* made use of pre-existing Iron Age earthworks (Bedwin 1992, 22). Evidence for early Iron Age activity in the vicinity has been identified at various locations, notably at Beacon Green, where evidence points to hilltop settlement (Bedwin 1992). There are several surviving late medieval houses in the vicinity of the present site, attesting to occupation of the immediate area. These include houses at 7 London Road (EHER 38400) and 13 and 15 London Road (EHER 38407) to the south-east of the site.

Excavation (Fig. 1)

The site was bounded to the north, east and west by residential properties, while the south faced onto London Road. Prior to redevelopment the site was a fire station with a 19th/ 20th century house on the road frontage.

The northern end of the development area, towards the rear of the property, was heavily disturbed by modern services and was waterlogged due to a high water table. Excavations at this end of the site revealed a single undated ditch, 7, pits 9 and 25 and a series of medieval rubbish layers (none illustrated), the latter corresponding to those identified in the southern area.

The southern excavation area was positioned towards the front of the property, facing onto London Road, where there was less disturbance by modern services and, as a result, substantial archaeological remains survived. Below *c.*0.3m of modern/post-medieval overburden a range of prehistoric ditches, medieval rubbish layers, pits and post-holes and remains of a possible building were cut into the mid-brown natural silty clay, which overlies London clay.

Phase 1: Late Bronze Age/ Early Iron Age (c.800BC –c. 400BC) (Fig. 2)

The archaeological remains dating to the end of the Late Bronze Age/ Early Iron Age were all concentrated towards the southern end of the site. However, residual pottery was also recovered from later deposits at the northern end.

Four ditches (59, 108, 76 and 119) were the principal remains from this period. The stratigraphically earliest ditches, 59 and 108, ran parallel on a roughly east-west alignment and were approximately 2.5m apart. However, no dateable material was recovered from either and, apart from both being cut by ditch 119, there is no direct relationship between them. It is possible that they are contemporary and the remains of a trackway, or that one is a replacement of the other. The second pair of ditches, 76 and 119, ran north-east to south-west across the site. Ditch 76 cut ditch 119 and is almost certainly a direct replacement, although the lines of the ditches seem to diverge towards the north-eastern end of the site. The

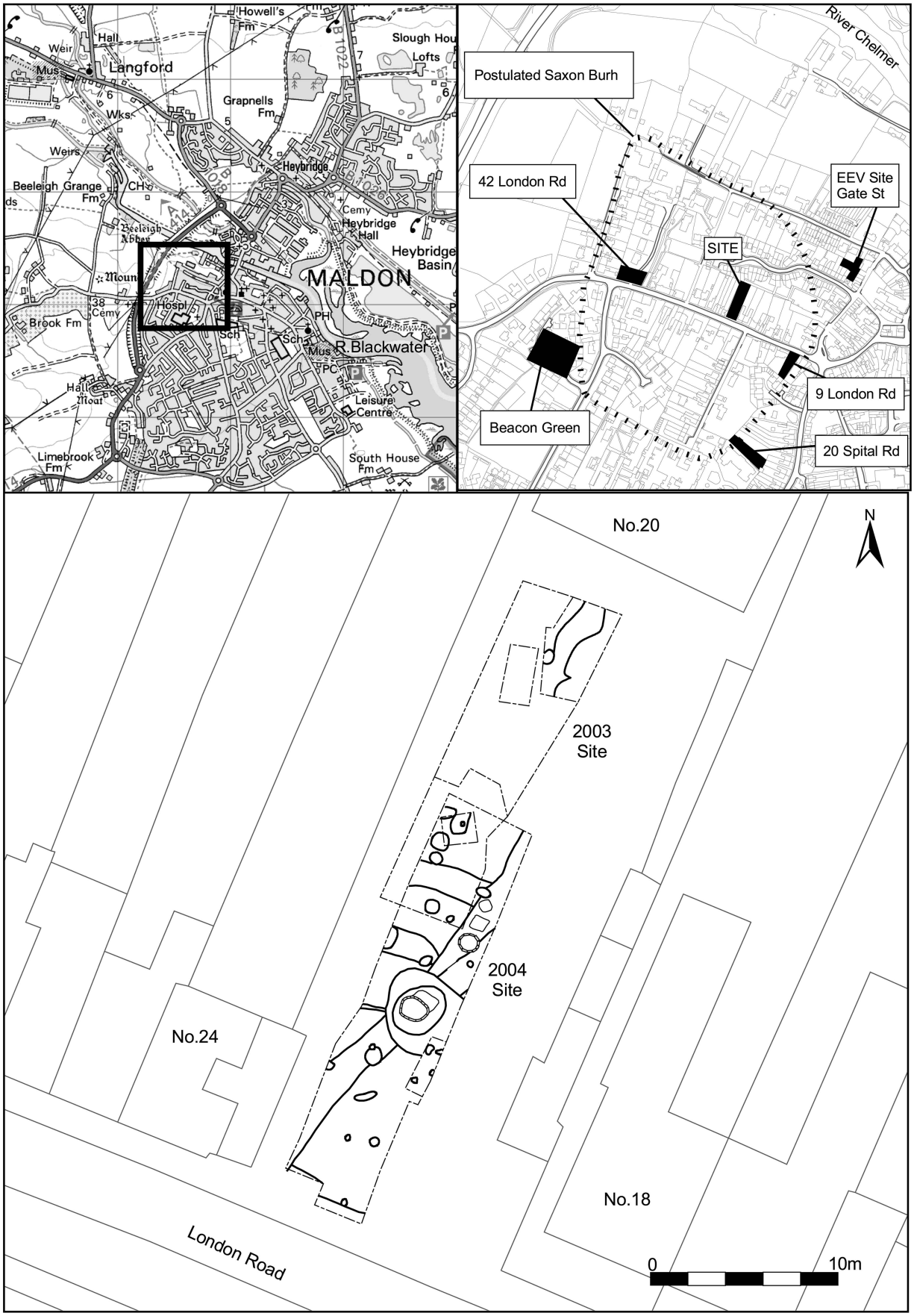

Fig.1 Site Location © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

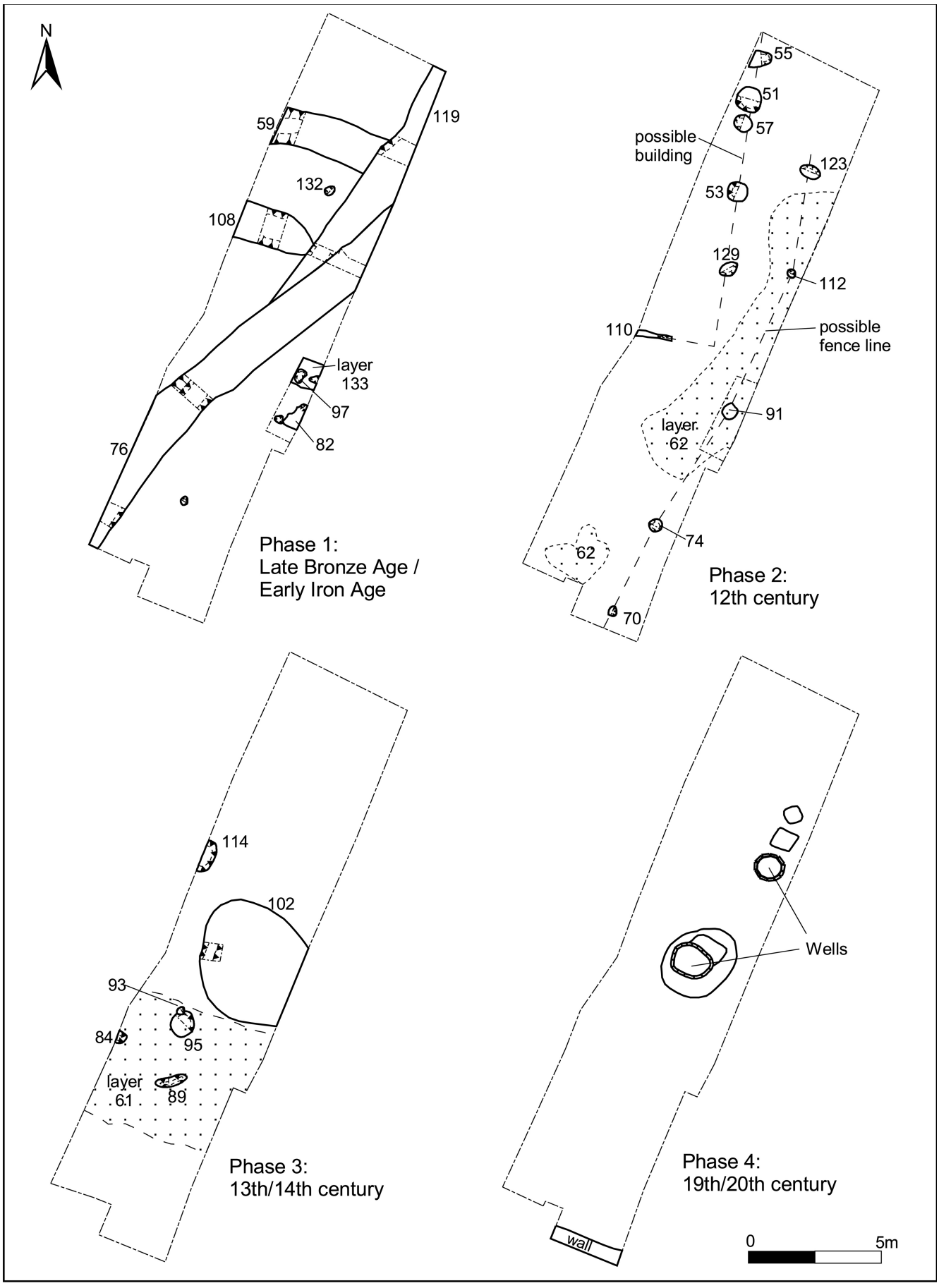

Fig.2 Phased site plans

earlier ditch 119 was *c.*0.3m deep and filled with a dark grey silty clay while the later ditch 76 was about the same depth but filled with a light grey-green silty clay. It seems likely that these ditches represent boundaries, although it is unclear as to what they delineate given the confines of the site. The presence of a few disparate post-holes or small pits (82, 97 and 132) and the edge of a shallow silty layer 133, while not necessarily suggesting that the site or its immediate area were occupied during Late Bronze Age/ Early Iron Age, indicate that this location on the hilltop was at least perhaps utilised for agriculture.

Phase 2: Early medieval (probable 12th century) (Fig. 2)
The edge of a possible building lay in the north-west corner of the site. The eastern side consisted of five post-holes (51, 53, 55, 57, and 129) running north-south. The post-holes varied in size from 0.95m to 0.66m in diameter and from 0.11m to 0.16m deep. The spacing between them was irregular, which may indicate that the alignment had been repaired, and individual posts replaced. A short length of shallow gully (110) may have formed the southern side of the structure. It was truncated by later medieval features and its relationship to the eastern wall is unclear. However, its perpendicular alignment to the post-holes does suggest that these features are related.

Five further post-holes (70, 74, 91, 112 and 123) running along the eastern side of the site may have been the remains of a fence line. These were again irregularly spaced but in general more widely-spaced than the post-holes associated with the posited building. They ranged in size from 0.3m to 0.85m in diameter and were all *c.*0.2m deep.

Layer 62 also probably dates to this phase, albeit dependent upon a single sherd of 12th-13th century pottery. This silt deposit was approximately 0.3m deep and covered the southern and eastern part of the site. The distinctive green colour of the layer suggests that it had a high cess content. It is possible that layer 62 was the residue from the disposal of organic remains such as animal or human night-soil waste and may have been associated with the adjacent building. Layer 30 (not illustrated), which was identified at the northern end of the site, was probably deposited at the same time and may indeed be part of the same layer.

Phase 3: Later medieval (13th to 14th centuries) (Fig. 2)
The building and fenceline of the preceding phase seem to have been abandoned, or removed, by the late 13th century with the site now dominated by a large pit 102, around which was clustered a number of other, smaller, rubbish-filled pits.

Pit 102 was by far the largest medieval feature present, at over 4m in diameter and at least 0.3m in depth. Unfortunately, it was severely truncated by a modern brick-lined well / soakaway which makes interpretation of its function difficult. It was probably contemporary with adjacent pit 95, as several sherds of the same vessel were recovered from both. Two pits, 89 and 95, in particular, contained a relatively large quantity of pottery and bone.

Layer 61 was 0.45m thick and overlay all of the medieval cut features, as well as layer 62, and contained substantial quantities of charcoal and oyster shell, as well as pottery and bone. Also recovered were two metal objects of a personal nature; a copper-alloy garter-hook and a buckle. This layer probably represents the base of a midden deposit and may be an indication that settlement was in closer proximity than during the previous phase, or at least that the waste material deposited was of a more domestic nature than previously. Layer 61 also correlates with similar layers 3, 13 and 22, which were all recorded at the northern end of the site (Roy 2003).

Phase 4: Modern (Fig. 2)
Two brick-built wells or soakaways occupied the site, probably during the 19th century, to aid drainage and are likely to be the watersource indicated on the 1st edition O.S map. Two other small pit-like features towards the north of the site contained pieces of clearly modern glass and copper wire. It is likely that this location was unoccupied in the post-medieval period, until the construction of a house, or fire station, in the 19th century, the front wall of which was identified along the street frontage (Fig 2).

The Finds

Artefact assemblages were retrieved from features and deposits of prehistoric, medieval and post-medieval date. Those of post-medieval date (Phase 4) are relatively recent (19th/20th century) and therefore are not judged to be of sufficient significance to warrant reporting here. Descriptions are, however, lodged in the archive.

Late Bronze Age/Early Iron Age Pottery (Phase 1) by NJ Lavender
The excavation produced a total of 120 sherds (899g) of prehistoric pottery from twenty-three contexts, a small quantity of which was residual in later features and deposits. The material has been recorded using a system developed for prehistoric pottery in Essex (Brown 1988). Most of the material is in flint-tempered fabrics, with a small number of flint-and-sand-tempered sherds. Several sherds are grass-wiped on the interior and one large sherd from fill 92 of pit 97 has signs of heavy wiping on the exterior. The condition of the pottery is variable and many contexts produced only one or two small abraded sherds.

The earliest material comprises two rim sherds from the fill of pit 97. These are from jars with short upright rims. Both are decorated with oblique slashing on the outside of the rim. The larger has an applied cordon just below the rim, which is slashed in the opposite direction, forming a herringbone pattern. Gouges visible below the cordon result from its application. A late Bronze Age date would be appropriate if it were not for the presence of a number of sherds from early Iron Age fine ware vessels

from the same context. Among these are two slightly flared rounded rims, well-smoothed and possibly originally burnished.

Further obliquely slashed rims were recovered from layer 82, and residually from layer 61. A rounded shoulder sherd decorated in the same manner came from fill 77 of ditch 76, which also produced a sharply-carinated sherd from a Form K bowl. Fragments of Form K bowls were also collected from fill 118 of pit 132 and from layer 61. No identifiable base sherds were recovered.

The small and fragmentary assemblage from London Road belongs to Cunliffe's (1968) Darmsden-Linton tradition, typified by the sharply-carinated Form K bowls. Some of the coarse ware sherds, however, appear to reflect an earlier, late Bronze Age, tradition, indicating a continuation of styles. The assemblage is, unfortunately, too small to draw any detailed conclusions.

Excavations at nearby Beacon Green produced 26kg of early Iron Age pottery (Brown 1992) and the assemblage was dominated by Form N tripartite angular-shouldered jars and Form K tripartite bowls. Together with the large assemblage from Beacon Green and the smaller quantities recovered at the Youth Hostel site and 20 Spital Road (Priddy (ed.) 1986, 162), the London Road assemblage adds to the growing body of evidence for a substantial early Iron Age settlement at Maldon (Bedwin 1992).

Medieval pottery by H Walker

The medieval pottery has been recorded using Cunningham's typology for post-Roman pottery in Essex (Cunningham 1985).

10th to 13th century (Phase 2)

A small quantity of medieval pottery, twenty-one sherds weighing 126g, was excavated from remains of this phase. Most came from a line of post-holes (51, 53, 74, 91), with pottery also from layer 61. Finds comprise mainly undiagnostic sherds of early medieval ware, and early medieval shelly wares, spanning the 10th to 13th centuries. Also present are two sherds of medieval coarse ware dating from the 12th to 14th centuries, and a sherd of St Neots-type ware. St Neots-type ware is a non-local Saxo-Norman fabric made from East Midlands Jurassic clays, naturally containing fossil shell fragments. It has a limited distribution in Essex, but occurs at ports and coastal sites including Maldon. Its date range is 10th to 12th centuries. However, much of the St Neots-type ware previously found at Maldon is of a type datable to the 12th century, and it is possible that this material also dates to the 12th century. Although the pottery from Phase 2 spans the 10th to 13th centuries, a 12th-century date is perhaps most likely, and provides evidence of limited domestic activity in this area during the early medieval period.

13th to 14th century (Phase 3)

Rather more pottery was excavated from Phase III; a total of 238 sherds weighing 3549g. Most came from a number of adjacent pits (84, 89, 93, 95, 102) all producing similar pottery, and a cross-fit between the top fill of pit 95 and pit 102 indicates these two features at least were infilled at the same time. Layer 61 produced a relatively large assemblage, with the southern end of the layer containing more residual pottery than the northern. Pottery was also excavated from isolated pit 25 and layer 28 within the 2003 site (not illustrated). The pottery is typical of a medieval domestic assemblage, comprising fragments from decorative fine ware jugs and a much larger proportion of coarse wares for kitchen use.

Fine wares, used at the table and for display, comprise Hedingham ware and Mill Green ware. There is also a single sherd of green-glazed Rouen ware, a type of white ware imported from northern France during the early to mid 13th centuries. Diagnostic Hedingham ware sherds include an example showing Rouen-style decoration (from the middle fill of pit 95) in imitation of the French pottery, which was widely copied by English potters. Other featured Hedingham ware material comprises a sherd from strip jug dating from the second quarter of the 13th to the early 14th centuries, from the top fill of pit 95, and an unusual broad strap handle showing columns of thumb-nail decoration, from layer 61. Mill Green ware spans the mid-13th to 14th centuries and includes sherds with combed decoration, and slip-painted and glazed decoration. There are also sherds from jugs in sandy orange ware, some of which appear to be of Colchester-type ware.

Most of the kitchen wares are in medieval coarse ware. There are a few shelly and early medieval ware sherds but these may be residual in this phase. Cooking pots are the commonest coarse ware vessel form, with examples of H2 and H1 rims datable to the 13th century, and H3 and E5A rims datable to the late 13th to 14th centuries. There are also fragments from coarse ware jugs including a base with a very distinctive thumbed cordon around the basal angle. This is a type also found at Maldon Bus Station (in archive), and at Rivenhall Churchyard (Walker 2004, 52), so it is possible that there was a medieval coarse ware production site somewhere in the Blackwater valley. A number of the coarse ware sherds show an internal white residue, probably limescale deposited from boiling water.

Phase III produced a typical domestic assemblage datable to the later 13th to 14th centuries. The imported Rouen white ware, which is rare inland, shows Maldon's significance as a port. The relatively large amount of pottery in Phase III may reflect the expansion of the town during this period. There is no evidence, from the pottery, of occupation after the 14th century until the modern period.

Copper Alloy Objects by Joyce Compton

Two objects were recovered, the hook from a medieval garter- or dress-hook and a small annular buckle, both from medieval layer 61. Similar buckles are dated 1250–1450 in London (Egan and Pritchard 1991, figs. 38 and 39).

1. (not illus.) Small annular buckle, complete, tang has separated from frame.
   Diameter 16mm. SF1, layer 61, 14th century
2. (not illus.) Hook, from a garter- or dress-hook. Length 22mm. SF2, layer 61, 14th century

Animal Bone by Joyce Compton

The animal bone assemblage (total weight 2810g) comprised hand-collected material and numerous small bones and fragments extracted from soil samples. Generally, the bones are in a fragmentary but good condition, with little abrasion. The exception is the bone from the fill of prehistoric ditch 76, where poor surface condition was noted. The fragmentary nature of the assemblage hindered identification of taxa and skeletal elements. In spite of the fragmentation, however, a range of taxa was identified (using Schmid 1972), although a high proportion of the assemblage could only be sorted according to size. Much of the bone assemblage exhibits knife and/or chop marks, as a result of the preparation of carcasses into joints for consumption. A number of horn cores are present, mainly from sheep/goat, and there appears to be a large number of skull and mandible fragments compared to other skeletal regions. This may not be significant, since fragmentation of the assemblage has resulted in a bias in identification towards these elements. Cattle and sheep/goat predominate, and there are several instances of pig and horse. Bird, probably domestic fowl, was recorded in just three contexts. The bones from a small mammal, probably a cat, were found in layer 61. Burnt bone fragments were also noted in a number of contexts. No contexts contained appreciable quantities of animal bone, although 14th-century layer 61 produced more than 700g. The range of taxa present, coupled with the evidence for butchery, indicates that most of the animal bone is likely to represent domestic food waste.

The incidence of sheep/goat is notable, probably indicating a preference for mutton in medieval Maldon, although it must be noted that a full assessment of the taxa and skeletal elements could not be made due to the fragmentation. The high proportion of bone from midden layer 61 is also noteworthy, appearing to confirm the use of the outskirts of Maldon for rubbish disposal during the medieval period.

Assemblage Characteristics

Phase 1

Six contexts assigned to this phase produced animal bone representing 17% of the total assemblage by weight. Cattle and sheep/goat are present in equal numbers and a pig humerus was recovered from the fill of pit 97. No evidence for butchery was noted.

Phase 2

Small amounts of animal bone came from six contexts assigned to Phase 2, very little of which could be identified due to the degree of fragmentation. Of the identified bones, sheep/goat formed the majority, with pig and domestic fowl also recorded in the fill of post-hole 74.

Phase 3

The largest proportion, 66% by weight of the total, came from Phase 3 contexts, with midden layer 61 accounting for almost 61% of the Phase 3 total. Sheep/goat again formed the majority, with cattle and domestic fowl also present in some numbers. Pig was not certainly identified in this phase. A single horse molar and bones from a small mammal, probably a cat, were noted in layer 61. Also from layer 61 is a long bone shaft exhibiting gross pathology, probably indicating a severe form of bone disease in the animal. Many bones exhibited evidence of butchery, and knife marks on some bones may indicate that skinning was being carried out, probably for the utilisation of hides.

Fish Remains by Rebecca Nicholson

A small assemblage of fish remains was collected from three contexts. In two cases, the fish bone was recovered from the residues of sieved soil samples. Additionally, a more numerous fish bone group (fill 90 of pit 89) was hand collected. All the samples derived from Phase 3 medieval contexts, apart from that from fill 75 of post-hole 74 (Phase 2). Identifications were checked using the author's comparative collection. Major head bones and vertebrae were identified to species where possible, but otherwise to genus or family. Ribs, and spines, hyal bones, branchial bones and minor cranial bones were classified as unidentified, as were tiny miscellaneous fragments of bone. The number of bones was too small to warrant detailed biometrical analysis, but single measurements of a cod dentary and a cod premaxilla have been taken following Wheeler and Jones (1976) and fish sizes were calculated from these measurements (following Jones 1991). Otherwise, fish sizes were estimated by comparison with reference specimens of known size and crude size classes were assigned (*i.e.* large, medium, small, tiny individual). A full catalogue can be found in the archive.

The fish bones were recovered from rubbish pit 89, a midden deposit (layer 61) and the fill of post-hole 74. Results are as follows:

Sample 11, fill 75, post-hole 74, Phase 2

An assemblage of fifteen identifiable bones was recovered. Identified taxa included herring (*Clupea harengus*) as well as medium (0.4–0.7m), large (0.7m-1m) or extra large (over 1m) cod (*Gadus morhua*) and indeterminate cod family fish (Gadidae). Measurements taken on a cod dentary indicated a fish of about 0.9m long.

Samples 10 and 12, layer 61, Phase 3

The identified assemblage comprises six bones only, from a cod of about 1.1m long, herring and small flatfish, along with fragments of spines or rays.

Fill 90, rubbish pit 89, Phase 3
Twelve identified bones were all from large (0.7–1m) or extra-large fish (over 1m), including ling (*Molva molva*), cod, and indeterminate Gadidae. Both ling bones are vertebrae, while the cod remains included cranial elements as well as a cleithrum, post-temporal and supercleithrum – bones from the back of the head often left in dried fish after de-heading. Most of the many unidentified fragments also probably derived from gadid head elements.

The small fish assemblage from Maldon contains taxa typical of medieval urban fish assemblages, with a concentration on herring and gadids, with cod becoming particularly important from the 12th century onwards (Locker 2001, Barrett *et al.* 2004). Flatfishes, particularly plaice, flounders and soles were also a common resource. For a coastal community close to major international ports in East Anglia and London, it is likely that both fresh and preserved fish were available and commonly eaten. Fresh fish were more expensive than marine taxa by the medieval period (Dyer 1988) and the rise of commercial fishing from about AD1000 had dramatically increased the availability of sea fish to most sectors of society.

Shell by Joyce Compton
Sixteen contexts produced a total of 195 fragments of shell, weighing 1914g. Most of the assemblage comprises oyster, and 132 separate valves were recorded, representing a minimum of sixty-six individuals. Whelks were also noted, mainly as single examples, and two cockle valves came from the fill of medieval pit 114. Over 90% by weight of the oyster shell came from Phase 3 contexts, with 14th-century midden layer 61 accounting for more than half. All of the whelks, and the cockles, were recovered from Phase 3 contexts. The incidence of shells in layer 61 is notable and is likely to represent food waste. One oyster shell from this layer seems to have been pierced. This may be damage sustained from the implement used to open the oyster, or may be a piercing made by a predator. Dog whelks are known to attack other shellfish in this way, in order to extract and consume the contents.

Discussion

The results from the excavations give an indication as to the nature of the activity in and around the site during the various phases. When considered with the other sites in the area, a wider picture of landscape development and use begins to emerge (Fig. 1).

The late Bronze Age/early Iron Age ditches could be interpreted as the remains of agricultural boundaries, as they are not really large enough to be any form of defensive enclosure. There is increasing evidence for significant and extensive early Iron Age activity in the postulated area of the later *burh*, from sites such as Beacon Green (Bedwin 1992), 20 Spital Road (Brown 1986) and 42 London Road (Bassett 1986). All of these sites feature similar types of ditches but no clear evidence of prehistoric settlement *per se*. While it may be possible to suggest that the hilltop was not the main settlement focus, but instead lay in an area populated by small farmsteads with associated fields and enclosures during the late Bronze Age/early Iron Age, it is conceded that such an interpretation is difficult to reconcile with the postulation of the presence of a contemporary, or closely succeeding, hillfort.

The lack of later Iron Age and Roman remains, other than a few residual pottery sherds, is not unexpected at this location, but the absence of Saxon evidence is noteworthy – reflecting a general dearth of unequivocally Saxon artefacts within the posited area of the *burh*. It is possible that settlement activity was focused toward the waterfront, perhaps in the vicinity of The Hythe, at this time.

The earliest evidence of concerted settlement activity at London Road dates to the 12th century. The lack of artefactual evidence indicates that the building was not a domestic structure, perhaps rather an outbuilding of some sort, with the adjacent fence separating it from the wider agricultural area. Cess-rich layer 62, that surrounds the east side of the building, appears to represent associated dumping, primarily of animal dung. The siting of an outbuilding in this area may indicate that it was on the periphery of any settlement and perhaps associated with an outlying farmstead, rather than in the core settlement which is understood to lie further east down the hill during this period.

The 13th/14th century phase shows a marked difference to the earlier medieval occupation in the type of both the artefactual and ecofactual material recovered and the increased prevalence of rubbish pits. The assemblages are far more domestic in nature, with a relatively high percentage of the pottery belonging to kitchenwares, animal bones displaying butchery marks, large fish bones and items of personal metalwork being recovered from this phase. This change is particularly evident in layer 61, which is quite different in composition to that of the earlier medieval layer 62. Although the historic town assessment (Medlycott 1998) identifies no settlement in this area during the medieval period, there is an increasing amount of evidence for occupation activity from excavations such as at Gate Street (Gilman 1993, 200). Certainly, the evidence from this excavation would indirectly support the idea of the top of the hill being settled and of possible westward expansion, or at least an intensification of land use, along the main route to Chelmsford during the later medieval period. Such westward expansion is further supported by the still-extant late medieval houses on London Road. These possibly once formed part of a low-density ribbon development along the road, with gardens and probable smallholdings attached.

From the 16th century until the 18th century, Maldon seems to have occupied the area around the High Street and Market Hill; with little further development along London Road (Medlycott 1998). It was only at the end of the 18th century that this was extensively developed. This apparent break in the westward expansion of Maldon is reflected in the archaeological remains, with

no features or deposits dating to between the 14th and 19th centuries. Two wells or soakaways indicate that the area was occupied during the 19th century at the latest. The 19th-century date corresponds very well with cartographic evidence as the 1777 Chapman and André Map indicates that development, although progressing along London Road, had not yet reached the site. However, by 1873 and the 1st edition O.S. map, a fire station with associated outbuildings is present at this location.

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Evidence of Roman agricultural drainage: excavation south of the former A120, Takeley, 2003

Ben Roberts

With contributions by Nina Crummy, Tom McDonald, Carina Phillips and Peter Thompson.
Illustrations by Donna Cameron.

Excavation revealed three phases of shallow, parallel linear ditches and a number of pits, cooking pits and hearths dating to the middle Iron Age to early Roman period. The character and topographical arrangement of the ditches suggests that they were associated with land drainage.

INTRODUCTION

In March and April 2003, Archaeological Solutions (AS) carried out an excavation on a 3.8 ha. site to the south of the former A120, Takeley, (centred on NGR TL 5580 2120; Fig. 1) in advance of residential development. This revealed three phases of parallel linear ditches as well as several pits, cooking pits and hearths dating to the middle Iron Age to early Roman period (Figs 2–3).

Description of the site location, topography, geology and soils

The site is located to the south of the former A120, in the western part of the village of Takeley (Fig. 1). It lies on relatively high ground at between *c.*101 to 103m OD rising slightly towards the north and east. Takeley is in the uplands of north-west Essex, *c.* 2 km south-east of Stansted Airport. It rests on a layer of London clay and calcareous clayey soils of the Hanslope association (SSEW 1983). The entrance to the site, formerly Barkers Tanks, was covered in concrete hardstanding, and hawthorn and rose shrubs were growing on the remaining land.

Archaeological and historical background

The prehistoric occupation of the clay uplands of north-west Essex and east Hertfordshire has been the subject of much recent fieldwork and research. This is principally due to the concentration of fieldwork in advance of development on large multi-period sites such as Stansted Airport (Havis and Brooks 2004; Cooke *et al.* forthcoming), Thorley (Last and McDonald forthcoming), Bishops Stortford (Last and Humphrey forthcoming) and the A120 trunk road (Timby *et al.* 2007). The development of the prehistoric landscape and of settlement patterns is summarised particularly in Cooke *et al.* (forthcoming) and Havis and Brooks (2004).

There was considerable continuity in the transition from the late Iron Age to the Roman period at Stansted. The excavations revealed an initial phase of settlement characterised by the reuse or expansion of several existing sites, such as the hilltop enclosure, which became a small early Roman settlement whose dead were cremated and then buried in two unenclosed cemeteries (Cooke *et al.* forthcoming). This contrasts with the later and far larger Roman cemetery, where clusters of cremation burials extended across 3 ha. (Havis and Brooks 2004). The presence of 'rich' grave goods, reminiscent of an antiquarian discovery at Takeley (VCH 1963), may indicate the presence of a wealthy elite whose burials have been found over much of north Essex, east Hertfordshire and southern Cambridgeshire (Havis and Brooks 2004). There is no evidence of Roman road-side settlement at Takeley, but the use of Roman brick and tile in the fabric of Holy Trinity Church (Cooke *et al.* forthcoming) suggests occupation in the vicinity. Roman remains have been found near the church and metal detector finds have been reported from land around Church Lane and from fields to the west of the site.

The arrival of the Romans appears to have precipitated a general shift in the clay uplands from the more pastoral economy of the late Iron Age to a mixed agricultural regime (Havis and Brooks 2004). However, with the exception of a field system excavated outside Great Dunmow (Lavender 1997), there is comparatively little evidence regarding arable farming on clay (Murphy 1996). There does, however, appear to have been a major change in the organisation of the landscape in the 3rd to 4th century, as an economic crisis precipitated the creation of large estates or *latifundia* whose owners may have instigated large-scale arable production (Going 1996). During the later Roman period, the settlement at Stansted was reorganised and new buildings constructed. These included a large post-built rectangular structure that has been tentatively identified as the managerial centre of a large estate (Cooke e*t al.* forthcoming).

Despite the appearance of small towns such as Great Dunmow (Wickenden 1988) and Bishops Stortford (Going 1996) and the presence of various Roman roads such as Stane Street, linking Roman centres at Verulamium, Braughing and Colchester, the area remained largely rural in character (Havis and Brooks 2004). A survey of the Stansted region (Medlycott and Germany 1994; Havis and Brooks 2004) revealed

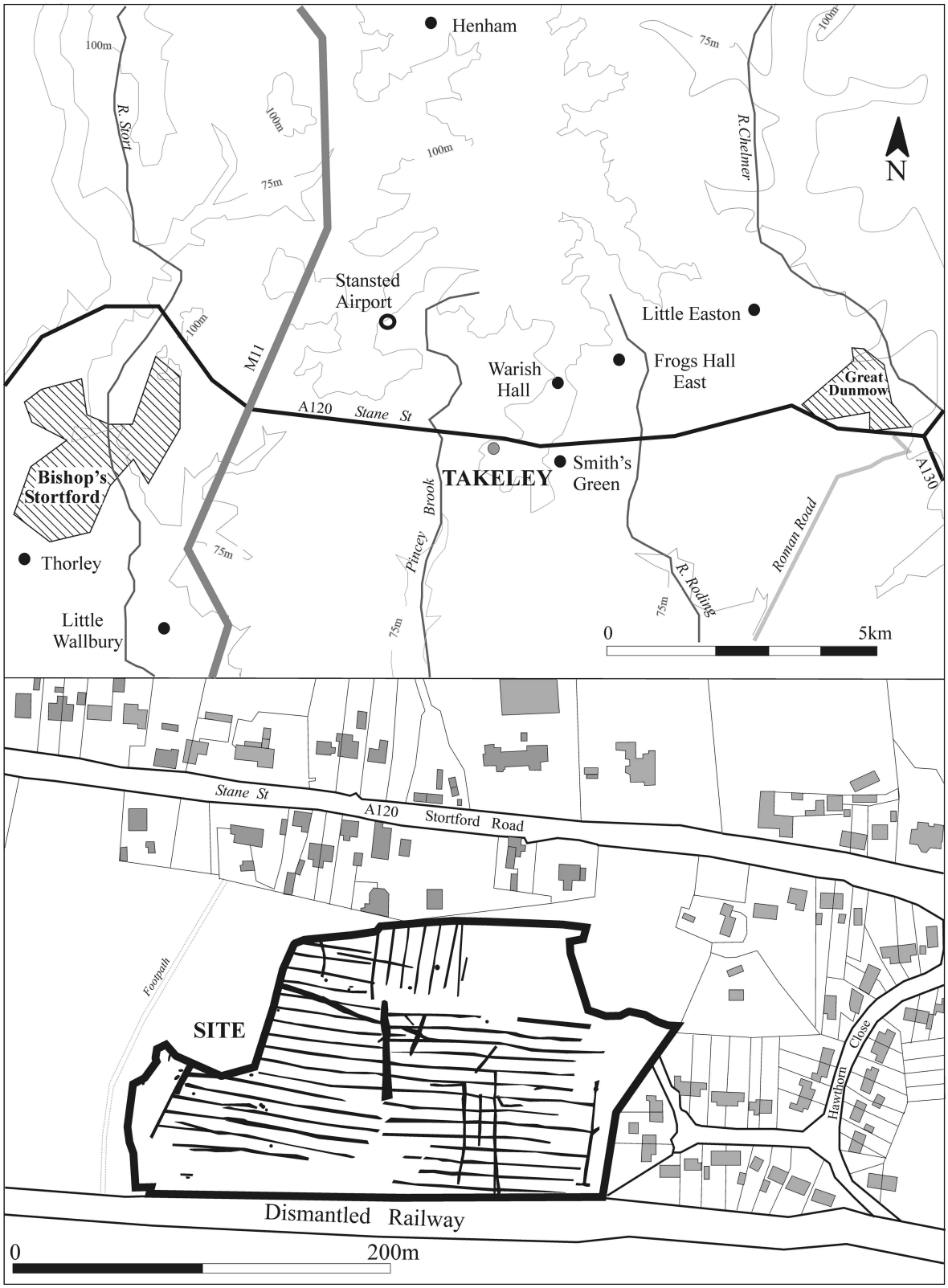

Fig. 1 Takeley: land south of the former A120. Site location © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

potential 'villas' at Little Hallingbury (Bennell 1991) and Henham (Havis and Medlycott 1990), in addition to an extensive spread of building debris at Little Easton (Ennis 1999). Rural farmsteads, such as at Smiths Green, east of Takeley, are more difficult to detect and classify, though they are assumed to have been numerous (Havis and Brooks 2004).

Excavation and recording

An open area archaeological excavation followed an archaeological evaluation by HAT (Crank and Grant 2002) and a desk-based assessment (Hawkins 2000) (Fig. 2). The evaluation revealed fragments of ditches and pits, which yielded later prehistoric and early Roman pottery and animal bone.

Topsoil and undifferentiated overburden were removed mechanically by a 360° mechanical excavator under archaeological supervision; thereafter all further excavation was undertaken by hand. Exposed surfaces were cleaned as appropriate and examined for archaeological features. Deposits were recorded using *pro forma* recording sheets, drawn to scale and photographed as appropriate. All work was carried out in accordance with the brief and specification.

Stratigraphic phases

Three main phases of activity were recorded. The features were phased using stratigraphic and ceramic evidence, and relate to the middle Iron Age and early Roman occupation of the site (Figs 2–4).

Phase I was the principal phase of activity on the site, and has been divided into three sub-phases. The initial sub-phase (Ia) comprised an extensive sequence of east/west aligned linear ditches radiating out from a central north/south ditch and extending across the site. A number of discrete pits and potential hearths were scattered across the site during this sub-phase. The second sub-phase (Ib) saw the extension of these east/west ditches to the west. The last sub-phase (Ic) comprised two north/south ditches that appeared to mark the eastern and western extent of the east/west ditch system. It also included several smaller pits and ditches in their vicinity. Phase II comprised a series of parallel linear ditches on a north/south axis in the north of the site that terminated before encroaching on the earlier Phase Ia system. Phase III consisted of long linear ditches in the south eastern area of the site that cut the earlier Phase Ia features. The undated features comprised glacial deposits and several ditches.

The excavation

Phase Ia: Late Iron Age to early Roman

The principal phase of activity saw the construction of 32 parallel east/west aligned linear ditches across the site, together with ten discrete pits and potential hearths scattered across the site (Fig. 2). In the central area of the site, they appeared to radiate from an earlier broad, shallow central ditch (F2007), whereas in the northern and southern areas the ditches terminated before reaching it. The general regularity in the dimensions of the ditches (between 0.32 to 1.58 m wide and 0.10 to 0.65 m deep) together with their consistently steep-sided profiles (45 to 80°) and concave bases indicates construction according to a specific plan. The uniformity in the *c.* 6m intervals between the ditches supports this notion but may also suggest that they were constructed within a relatively short period of time. The contents of these ditches do not range beyond occasional fragments of pottery, flint and building materials. A larger, though morphologically similar ditch, F2122, cut across two of the east–west linear ditches (F2124 and F2148) before terminating in Ditch F2007 (Figs 2–4). Ditch F2079 contained a fragment of a very late Iron Age neckless jar (Thompson below).

There were two distinct clusters of three pits in the west (F2099, F2101 and F2075) and north-west (F2120, F2118 and F2140) of the site, and four further pits/post-holes (F2156, F2106, F2154, F2072) were scattered across the site. The pits tended to be broad, shallow and charcoal-rich with varied contents, but generally included small quantities of pottery, flint and animal bone. Posthole F2072 yielded a fragment of an iron strip, possibly from a blade (Fig. 5.2). The higher concentration of charcoal and shallow depth of the pits in the north west suggests that they were probably hearths. Two of the larger pits (F2156 and F2106), set apart from the pit clusters appear to be exceptions to the pattern. Pit F2106 not only contained significantly greater quantities of pottery, animal bone, flint and fired clay, but also a loomweight fragment (Fig. 5.1), an iron nail and marine shell. In contrast, Pit F2156 contained a layer of compacted burnt stones and a loomweight fragment, overlaid by a layer of silty clay that contained a second loomweight fragment and a concentration of burnt flint (Fig. 4). The absence of any pottery, animal bone or associated features and the presence of loomweight fragments in both fills indicated that the pit may have had a different purpose from probable cooking Pits F2072 and F2154.

Phase Ib Late Iron Age to early Roman

In the south-west corner of the site, a secondary arrangement of east/west aligned ditches (F2091, F2081, F2077 and F2112) (Fig. 2) was constructed in order to extend the system towards the west (Figs. 2–4). These were comparable to the Phase Ia ditches in width (0.45 to 0.84m), depth (0.16 to 0.43m), profile and contents. They may have been constructed to aid drainage in the south-west of the site, which forms a natural basin. The presence of L2103, a deep layer of silty material, indicates a large amount of hill wash, and demonstrates that this area was prone to flooding in the past.

Phase Ic Late Iron Age to early Roman

The construction of ditches at the eastern (F2144) and western (F2087 and F2159) sides on a north-north-east/south-south-west axis appeared to denote the limits of the parallel ditch system (Fig. 2). Though Ditches F2144 and F2087 had comparable profiles, fills and contents, the extension of F2087 by broader, shallow Ditch F2159 represented a break in the pattern (Figs. 2–4). However, the presence of a gully at the base of Ditch F2159 indicates a continuing concern with drainage. These boundary ditches were associated with a number of smaller pits and ditches, two of which (F2089, F2164) extended beyond the limits of excavation. However, only one of these features, Pit F2142, located at the terminus of the eastern boundary side, actually cut the larger ditches. The dimensions of Pit F2142 at 2.23m in length, 2.05m in width and 0.48m in depth, together with the concentration of pottery (937g), daub (156g) and animal bone (324g) far exceed those of comparable features on the site.

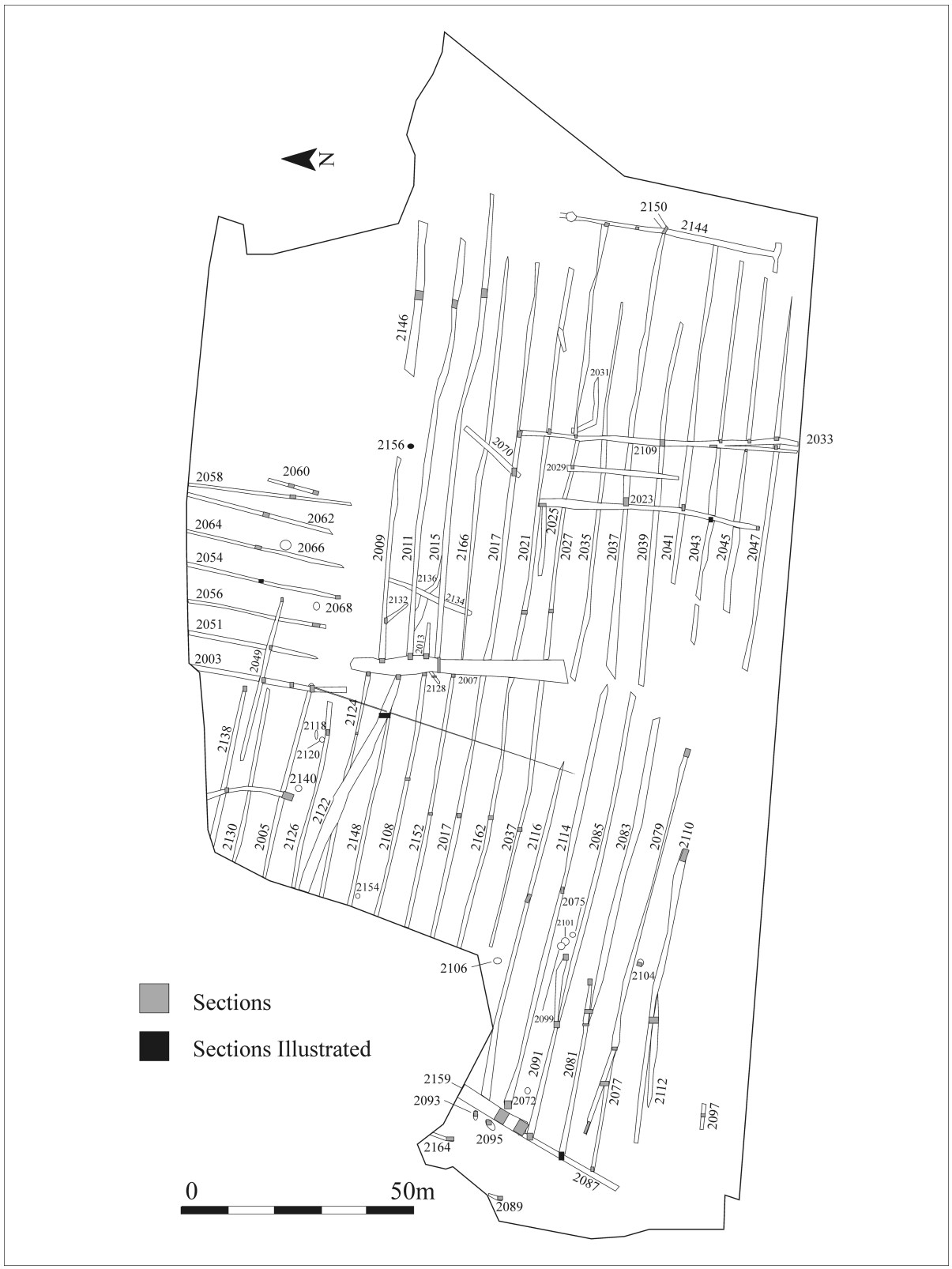

Fig. 2 Takeley: land south of the former A120. Plan of all features.

Phase II Late Iron Age to early Roman

Subsequent activity on the site comprised the construction of seven long, linear parallel ditches in the northern part of the site (Fig. 2). Their position appears to respect the earlier Phase I system, terminating rather than encroaching upon it. The ditches were *c.* 35m long, but continued to extend beyond the northern limits of the site. The ditches were relatively narrow (0.5 to 0.7m), shallow (<0.34m) and steep in profile (50° to 80°) with flat bases. The pottery (1g) recovered from Ditch F2054 (Figs. 2–4) constituted the only material found in the silty clay fills. On the western side, a shorter, similar ditch (F2060) and a shallow pit (F2066) were recorded.

Phase III Late Iron Age to early Roman

The final phase of activity comprised three north/south

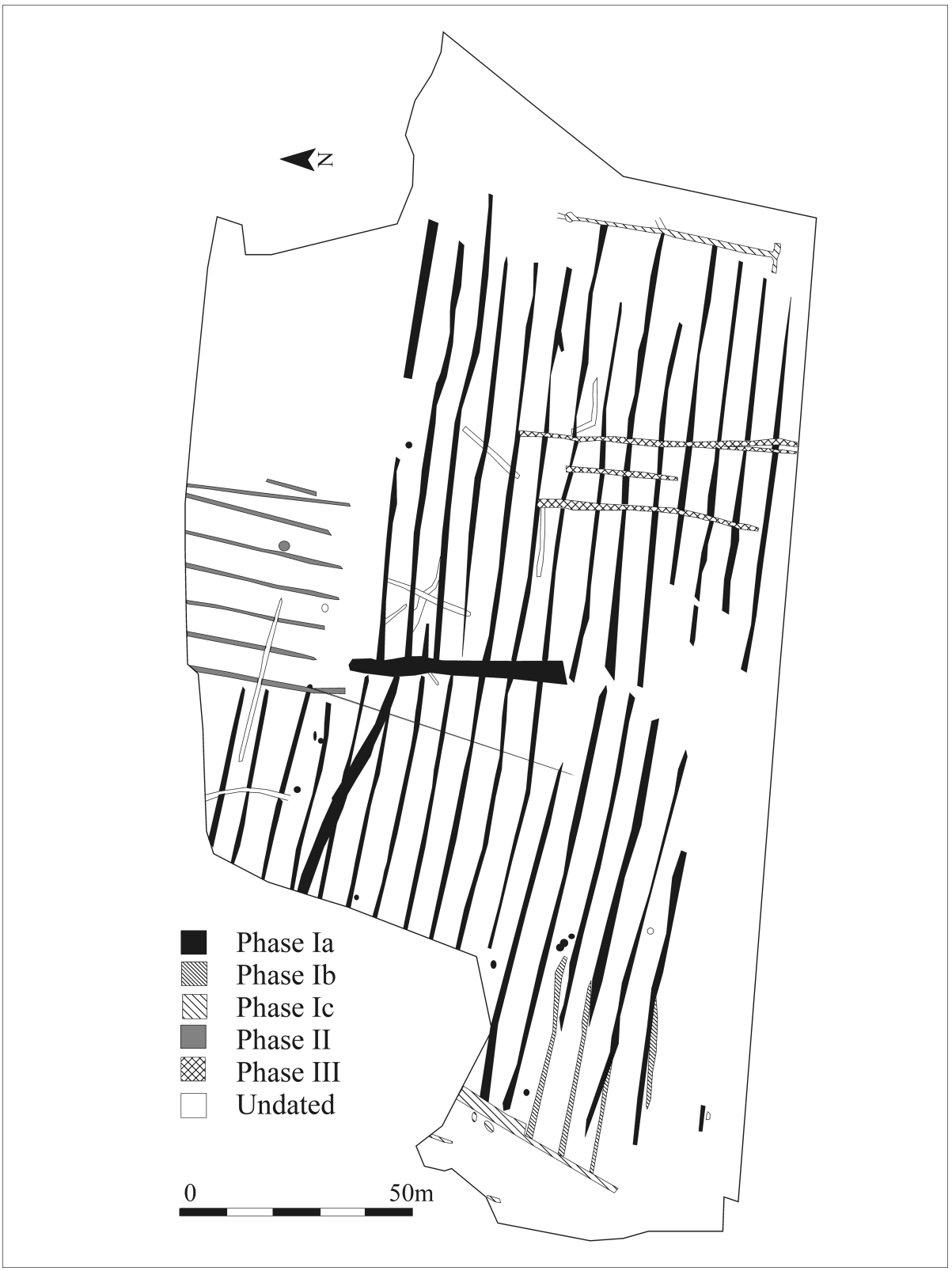

Fig. 3 Takeley: land south of the former A120. Phase plan.

aligned linear ditches (F2023, F2019 and F2029) that cut through the Phase Ia east/west ditches in the south eastern area of the site (Figs. 2–4). These features were slightly wider (0.55 to 1.0m) though of similar shallow depth (0.15 to 0.28m) when compared to previous phases. The longest of the ditches, F2019, split into a slightly broader linear ditch, F2033, before both continued beyond the limit of excavation. In common with the linear ditches of the previous phases, the contents of these features were limited to a few pottery sherds.

Undated

The excavation revealed extensive periglacial deposits or 'ice wedges' (L2053) which were generally thin, uneven linear features filled with mid brown-orange fine silty clay

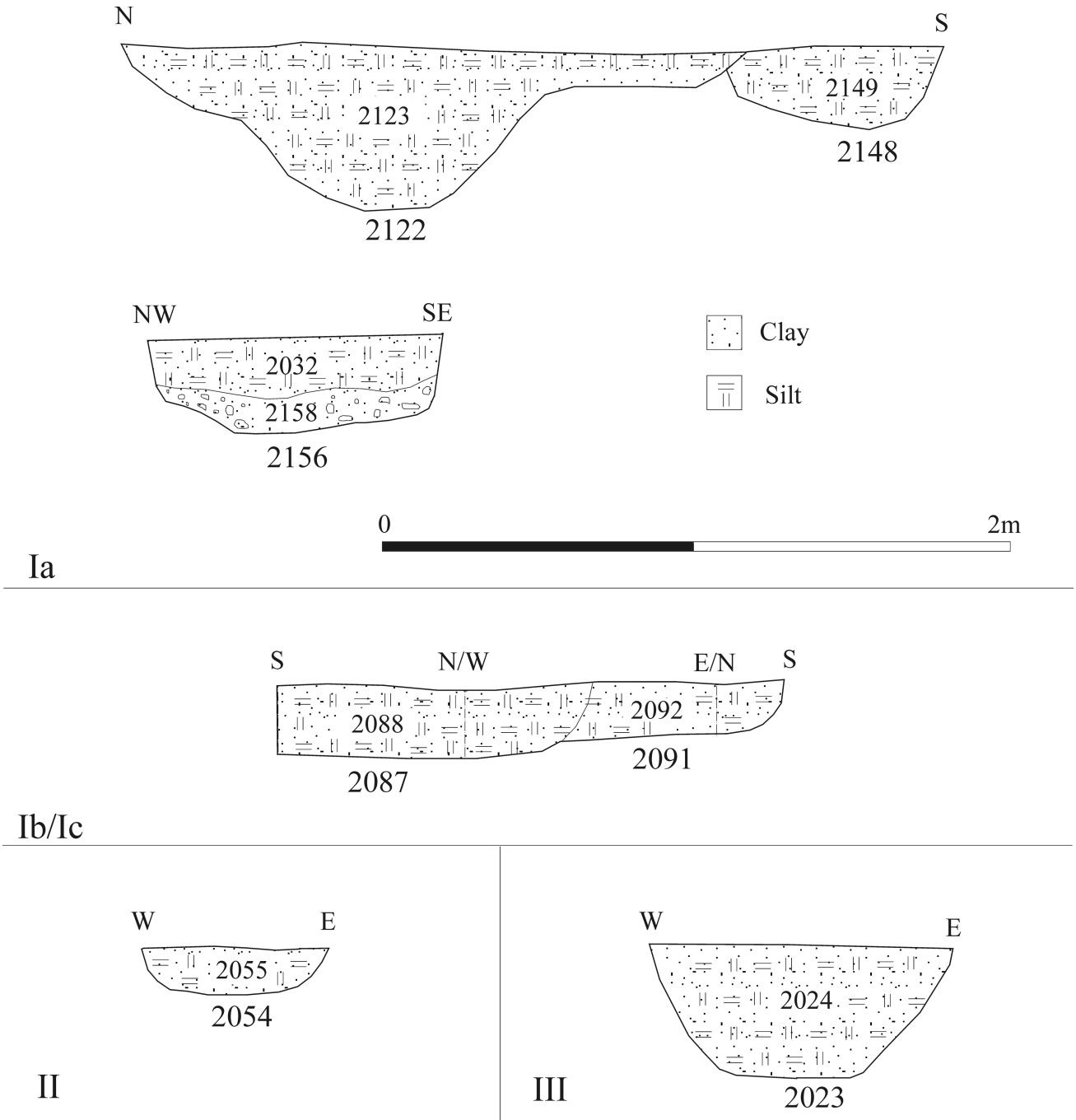

Fig. 4 Takeley: land south of the former A120. Selected sections.

to variable depths. There were also several other ditches that could not be phased (F2025, F2049, F2070, F2130, F2132, F2134, F2136 and F2150).

SPECIALIST REPORTS

The Pottery

Peter Thompson

Introduction

The excavation recovered 280 sherds from sealed contexts weighing 13, 580g: a further 13 sherds weighing 114g were recovered from unstratified contexts. The quantity of pottery from each type of archaeological feature is outlined below. Twenty-one of the features containing pottery were ditches. However, the bulk of the pottery came from three pits, F2075, F2106 and F2142, with *c.* two-thirds coming from the fill of pit F2142, containing 179 sherds (938g).

Feature type	Sherd Count	Sherd Weight (g)
Ditches	82	339
Pits	194	1012
Post-hole	4	7
Unstratified	13	114
Total	293	1472

Fabrics
All sherds were examined under a ×35 microscope and recorded on an Excel database. Five main fabric groups were identified and an additional Roman fabric was also recorded.

Fabric code	Main inclusions
F1	*Flint*. The predominant inclusions are coarse grits 0.5 to 5 mm across. These are predominantly flint but angular white quartz is also common either mixed with or replacing the flint. Sand and vegetal matter can also be present.
F2	*Sand*. Moderate to common sub-rounded or rounded quartz. This can be clear or opaque while rare pieces of larger rounded or angular white quartz can also be present.
F3	*Vegetal*. Sparse to common vegetal material comprising grass, stalks or chaff. This fabric might also contain fine to medium sand, white angular quartz, or dark sub-angular grog.
F4	*Grog*. Sparse to moderate dark sub-rounded or angular coarse to very coarse grog.
F5	*Shell*. Sparse to common shell or vesicular where the shell has leached out. Might also contain sparse, fine sand.
GRS Roman	*Roman*. Unsourced calcareous sandy grey ware

Table 1 shows the number and weight of sherds per fabric in each type of archaeological feature. Flint-tempered sherds account for 42.5% and 46.2% of the total assemblage by number and weight respectively, followed by sand (28.5% and 18%), vegetal (17.5% and 21.1%) and grog (9.6% and 12.6%) respectively.

Forms
The identification of diagnostic forms was impeded by the fragmentary condition of the assemblage. The ratio of bowls to jars appears approximately even. Remains of four small, thin-walled bowls or cups that might be termed round-bodied or hemispherical are present. Three globular or shouldered jars, one neckless jar and two other globular vessels were also noted. Rim types are also evenly distributed, with six simple or rounded rims and five flattened rims. Rims are generally upright with very short necks, although two are out-turned and three have external thickening. Bases are all flat. Rim and base sherds are catalogued in Table 2 below.

Decoration
With the exception of the black burnished rim sherd from Pit F2106, there were no decorated sherds from stratified contexts. A medieval green glaze sherd was present among the group of surface finds.

Discussion

Dating and affinities
The assemblage contains a single diagnostic profile in the form of the neckless jar with an everted, beaded rim from Phase 1a Ditch F2079. This grog-tempered vessel is of very late Iron Age date and can be paralleled to a similar example from Kelvedon in Essex dated to AD 10 to 65 (Clarke 1988, 34 and 36). It can also be identified as a precursor to two wheel-made examples of Claudian-Neronian date from Chelmsford (Going 1987, 23 and 43).

Attempts at any further dating rely on fabrics. Although the majority of fabrics with flint, sand and/or vegetal inclusions might easily be accommodated anywhere in the last 400 to 500 years of the Iron Age, some sherds do indicate a more refined chronology. Ditch F2087 yielded an F5 sherd containing common white crushed shell and vesicular surfaces reminiscent of Essex Shell-Tempered Ware. This fabric reached its floruit (and the northern half of Essex) at the end of the middle Iron Age and continued in use into the Roman period when it began a wheel-made tradition (Sealey 1996, 54 & 57).

Ditch F2122 contained three sherds with grey inner cores, oxidised margins and oxidised surfaces, together with a thin-walled sherd entirely pale grey with little sand inclusions. These also appear to date to the very late Iron Age. The presence of grog-tempered sherds (approximately 10% by number and 12% of the assemblage weight) is also indicative of late Iron Age fabrics, although none were wheel-made. Several

	Fabric											
	Flint		Sand		Vegetal		Grog		Shell		Total	
	Sherd count	Sherd weight	Sherd count	Sherd weight	Sherd count	Sherd weight	Sherd count	Sherd weight	Sherd count	Sherd weight	Sherd count	Sherd weight
Ditches	16	33	24	59	14	56	24	164	4	24	82	339
Pits	100	589	55	185	35	231	3	8	1	2	194	1012
Post-hole	3	6	1	1							4	7
Total	119	628	80	245	49	287	27	172	5	26	280	1358

Table 1 Amount of fabrics by sherd number and weight (g) contained in each type of archaeological feature.

Context	Feature type	Fabric code	Sherd type	Profile description
2080	ditch	F4	Rim	Neckless jar. Flattened, everted and externally thickened
2073	Post-hole	F1	Base	Small bowl or cup (wall 4 to 5mm)
2107	Pit	F1	Rim	Burnished, rounded, out-turned lip. Short neck, 0.6 cm across
2107	Pit	F1	Rim	Flat out-turned rim 0.5 cm across
2107	Pit	F1	Rim	Conjoining sherds of flat rim 0.6 cm across. Rim slightly thickened and pinched outwards
2107	Pit	F2	Rim	Small open bowl 0.6cm across with simple rim
2107	Pit	F3	Base	1 cm thick
2123	Ditch	F2	Rim	Rounded, upright rim 0.6 mm across
2143	Pit	F1	Wall	Neck sherd from small, thin walled bowl or cup (0.4 cm).
2143	Pit	F1	Rim	Conjoining sherds of fairly upright rounded rim 0.8 cm across from a shouldered or globular vessel.
2143	Pit	F1	Rim	Short upright rounded rim, slightly thickened on outside lip 0.6 to 0.8 cm across.
2143	Pit	F1	Rim	Conjoining sherds of an upright flattened rim 0.6 to 0.8cm.
2143	Pit	F1	Rim	Upright flattened rim thickened externally, 0.5 to 0.7 cm across.
2143	Pit	F1	Base	Flat base 0.9 cm thick.
2143	Pit	F1	Wall	Sherd 0.6 cm across from a globular or ovoid bowl. Could be same vessel as the rim above.
2143	Pit	F2	Base	Flat base 1.6 cm thick for coarse ware vessel.
2143	Pit	F2	Base	Flat base 0.8 cm thick, slightly pinched out
2143	Pit	F3	Wall	Conjoining wall sherds of a shouldered? jar
2143	Pit	F3	Rim	Conjoining sherds of a short upright, flattened rim to a shouldered or globular vessel 0.4 to 0.7 cm across.
2143	Pit	F3	Base	External surface oxidised orange.
2143	Pit	F4	Base	Slightly pinched out. Core pale brown.
2161	Ditch	F1	Rim	Simple rim 5mm across to a round bodied or globular vessel

Table 2 Catalogue of contexts containing rim or base sherds

probable Roman wheel-made sherds were also present. Ditch F2017 contained two thin conjoining sherds of sandy grey ware with occasional ovoid vesicles from dissolved shell. Ditch F2011 contained a small sherd of a pink homogenous fabric with common fine to medium rounded quartz. Pit F2142 also contained a small, fully oxidised sandy sherd containing sparse rounded quartz and rare circular vesicles from dissolved shell. The latter two fabrics were sufficiently small to be intrusive.

The residual surface finds are of mixed chronology. Five sherds are of flint or grog temper, similar to the fabrics from the bulk of the stratified assemblage. A further six are Roman wheel-made sherds, including the rim of an open dish or bowl in a very coarse sand fabric. The two remaining sherds are medieval, one hard and compact, with a homogenous brown core and surfaces, and the other, the green-glaze sherd mentioned above. There was no pottery from Fire Pits/Hearths F2118 and F2120. It is possible that some discrete features, or possible residual sherds within them, could be late Bronze Age or earlier Iron Age. Pit F2075 contained two sherds with very coarse angular flint-tempering which could, for example, date to the early Iron Age. However, the main evidence from the site indicates a late Iron Age date, particularly the very late Iron Age into the beginning of the Roman period.

Site use

The pottery sherds are all hand-made and generally in poor condition, being small and abraded with a mean weight of 4.8g per sherd. However, the mean weight of sherds from the ditches and posthole is 4g while those from pits is a little higher at 5.2g, although several sherds from Pit F2142 weigh between 20g and 65g. The smaller size and lower frequency of sherds from the ditches indicates that the pottery had spent more time in the open prior to deposition in the ditches. This, together with the lack of settlement evidence suggests the site was agricultural and the pottery was probably connected with associated practices such as manuring.

Larger amounts of pottery, both in number and size of sherds, came from two of the pits. Pit F2106 contained fabrics or forms from six vessels and Pit F2142 contained at least eleven. The bulk of the pottery from the whole site actually came from F2142 (approximately 69% by both sherd number and weight). This pit provided a terminal-point to a ditch running north to south which itself was an eastern terminal to several of the main group of east to west running ditches. The location and amount of pottery suggests it was may have been a structure deposit (Hill 1995). However, whether this was a ritual deposit connected with the fecundity of the land or a more domestic action connected with cleaning and

maintaining the site is not clear (Last and McDonald forthcoming, 109).

Nearly all the sherds are coarse wares, with one or two exceptions such as the burnished rim from pit F2016, indicative of a finer ware. However, the lack of late Iron Age wheel-made pottery is not necessarily a sign that the site was of low status as the use of 'Belgic' wares was selectively adopted in the late Iron Age. It was also most commonly associated with funerary contexts. This can be seen, for example, at Hinxton (Cambs) where wheel-made pottery was used for burial urns while the contemporary settlements were still using domestic hand-made forms (Bryant 1997, 26). At Wendens Ambo in Essex, 15 km north of Takeley, it was claimed that middle Iron Age styles of pottery making persisted right up until AD 43 (Sealey 1996, 55).

Conclusion

All pottery from stratified contexts is hand-made, with jars and bowls equally represented. Fabrics are predominantly of crushed flint or white quartz inclusions (over 40% by sherd weight and number). Sand, vegetal and grog-tempering follow in descending order. The only diagnostic form is the everted rim from Ditch F2079 of the neckless jar, dating to the very late Iron Age. Further dating depends on less reliable evidence from fabrics, but the presence of grog-tempering and a probable sherd of Essex Shell Tempered Ware also indicate a late Iron Age date. The wheel-thrown Roman sherds support the date of the neckless jar, in that the primary focus of activity on the site was probably towards the end of the Iron Age and into the beginning of the Roman period, *c.* AD 1 to 50. The nature of the generally sparse and abraded pottery set against its archaeological location, primarily parallel ditches with little evidence of associated structures, suggests a rural setting such as a field system. The location of Pit F2142 and the large amount of pottery present within indicate it could be a ritual deposit to help guarantee the fertility of the land. The presence of later Roman and medieval surface sherds indicates subsequent reuse of the land during periods when the climate was drier and drainage ditches not so necessary.

Loomweights and iron objects

Nina Crummy

This small assemblage consists of a few pieces from triangular loomweights and fragments of iron objects. Most are of Iron Age date, but the largest iron fragment is post-medieval or modern.

The triangular form of loomweight was first used in the middle Iron Age and did not die out until soon after the Roman conquest, therefore they cannot be closely dated other than by stratigraphy. All these examples come from Phase Ia. Their presence implies the use of an upright warp-weighted loom for weaving textiles, which in turn implies the keeping of sheep for their wool, though textiles may also be made of vegetal materials such as flax, hemp, or nettle. It has been argued that loomweights may sometimes be ritually deposited (Hamilton 1998, 29, 38, fig. 5), but the only instance of this in Essex belongs to the early Iron Age, when fragments of loomweights and baked clay slabs were used to construct a platform on which was set a late Bronze Age omphalos pot (Couchman 1977, 75; Major 1983).

An iron nail shaft fragment also belongs to Phase Ia and comes from the same pit as the largest loomweight fragment (F2106). A small fragment from an iron strip may be the tip of a blade, though its section appears to be almost lentoid rather than triangular. An unstratified iron object is probably from a later post-medieval or modern reaping hook.

Fig 5.1 (2107) F2106. Pit fill. Phase Ia. Fragment of a triangular loomweight with one perforated corner surviving. The fabric is unusual, a buff-coloured sandy clay, with many chalk inclusions, ranging from very small (1 mm) to large (18 mm). Very little of the external surface remains, showing that part of the core towards one face (the underside during firing) is reduced to a pale grey. Weight 476 g. Maximum dimensions 89 by 188 mm.

(2158) F2156. Primary pit fill. Phase Ia. Corner fragment from a triangular loomweight; insufficient remains to tell if it was pierced or not. The fabric is an evenly-fired reddish-brown sandy clay with a few inclusions of flint grit. Weight 111 g. Maximum dimensions 49 by 54 mm.

(2157) F2156. Secondary pit fill. Phase Ia. Three small loomweight fragments made in a sandy clay fired to reddish-brown externally but with a reduced core not far below the surface. Total weight 47 g. Maximum dimensions 28 by 41 mm, 17 by 30 mm, 19 by 31 mm.

Fig 5.2 (2073) F2072. Post-hole fill. Phase Ia. Small fragment of an iron strip, with one edge straight and one slightly convex. One end is broken, the other tapers to a point. The section is more or less rectangular, tapering to each edge. Possibly from the tip of a blade. Length 26 mm, maximum width 12 mm.

(2107) F2106. Pit fill. Phase Ia. Nail shaft fragment, of square section. Length 53 mm. Unstratified. Surface find. Curved object of cast iron, rectangular in section, with one end tapering to form a tang and the other end broken. There is a small flange on the outer edge near this break. The section begins to narrow at the point where the flange begins, suggesting it developed into a cutting blade. The tang is too short and set at the wrong angle for a sickle, but this may be part of a reaping-hook. Length 180 mm. The use of cast iron dates this to the later post-medieval or modern period.

Animal bone

Carina Phillips

The animal bone assemblage was of limited potential consisting of only 81 poorly preserved fragments. It was only possible to identify 27 fragments to species, these all came from domestic species; cattle (*Bos* sp.), sheep/goat (*Ovis*/*Capra* sp.), horse (*Equus* sp.) and pig (*Sus* sp.). Only one unidentifiable bone (a sheep/sized fragment of long bone) exhibited butchery evidence; having been smashed probably for marrow utilisation.

Charred plant macrofossils and other remains

Val Fryer

Introduction

Samples for the extraction of the plant macrofossil assemblages were taken from across the excavated area, and ten were submitted for analysis.

Sample No.	**1**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**11**	**13**
Context No.	2073	2107	2119	2121	2155	2157	2024	2016	2145	2008
Feature No.	2072	2106	2118	2120	2154	2156	2023	2015	2144	2007
Feature type	Post-hole	Pit	Fire pit	Fire pit	Pit	Pit	Ditch	Ditch	Ditch	Ditch
Phase	Ia	Ia	Ia	Ia	Ia	Ia	III	Ia	Ic	Ia
Cereals										
Cereal indet. (grains)				x						
Triticum sp. (grains)		x								
(spikelet base)			x							
T. dicoccum Schubl. (glume bases)			x							
T. spelta L. (glume bases)								x		x
Herbs										
Bromus sp.								xcf		
Other plant macrofossils										
Charcoal <2mm	xxx	xx	xx	xxx	xx	xxx	xx	x	xx	x
Charcoal >2mm	x			x	x	xx	x		x	
Charred root/rhizome/stem						x		x		
Indet.culm nodes				x						
Indet.seeds				x		x				
Other materials										
Black porous ‘cokey’ material			x	x						
Black tarry material		x						x		x
Burnt/fired clay						x				
Sample volume (litres)	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Key: Densities of material recovered were expressed as follows: x = 1 – 10 specimens, xx = 10 – 100 specimens and xxx = 100+ specimens.

Table 3 Plant macrofossils and other remains

Methods

The samples were bulk floated by HAT, collecting the flots in a 500 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to × 16, and the plant macrofossils and other remains noted are listed on Table 3 (above). Nomenclature within the table follows Stace (1997). All plant remains were preserved by charring. The plant material recovered was categorised as cereals, herbs and other plant macrofossils. The presence of other material types was also noted. Modern contaminants, including fibrous and woody roots, seeds and arthropods, were present throughout.

Results

Plant macrofossils

With the exception of charcoal fragments, which were common or abundant throughout, plant macrofossils were extremely rare and most were present as single specimens. Wheat (*Triticum* sp.) grains and glume bases of both emmer (*T. dicoccum*) and spelt (*T. spelta*) were recorded only in Phase Ia samples 3, 4, 5, 9 and 13, and a possible fragmentary brome (*Bromus* sp.) seed was also noted in sample 9. Preservation of this material was generally very poor; the grains were extremely puffed and distorted, probably as a result of high temperatures during combustion, and a high density of the charcoal fragments were severely abraded.

Other materials

Other material types were also extremely rare. The fragments of black porous 'cokey' material and black tarry material are probably derived from the combustion of organic materials at very high temperatures. A single small fragment of burnt or fired clay was noted in sample 9.

Conclusions

The severely abraded condition of the charcoal fragments may indicate that this material has been subjected to prolonged physical erosion, possibly by water. Such activity may have radically altered the original composition of the assemblages, and indeed, the density of material recovered is surprisingly low. Cereal production/processing may have formed part of the local economy, but as so few macrofossils were recovered, it is impossible to speculate further about either the source of the material or the intended function of any of the excavated features.

Discussion

Excavation revealed three distinct phases of linear parallel ditches and various smaller ditches, pits, hearths and cooking pits across the site. The nature of the features and the sparse pottery recovered from their fills means that the dating of the three phases is problematic and can only be defined as the middle Iron Age to early Roman period.

Phase I saw the creation of an extensive bounded system of east/west parallel linear ditches followed by two less intensive phases (II, III) of north/south linear ditches. The purpose of this initial ditch system appears to have been the drainage of water from this part of the heavy clay uplands. The land slopes down towards the south-western corner where the accumulation of silt testifies to the problem of flooding for agricultural activity. The ditches themselves were relatively shallow, and aligned in close proximity though regularly spaced. They contained similar fills of orange/brown silty clay. The extension of the ditches in the south western corner (Phase Ib), where the silt accumulation would have been heaviest, probably represents the maintenance and expansion of the drainage system. The water would have flowed down the east/west ditches and either into the larger central ditch, F2007, or off the land via the later western boundary ditches (F2087 and F2159) (Phase Ic). The abraded condition of environmental material (Fryer, above) confirms the likelihood of prolonged water erosion.

During Phase II, a series of similar north/south parallel linear ditches were constructed in the northern area of the site. These Phase II ditches do not appear to have been supplementary to the original Phase I drainage system, despite their location and respect for the earlier arrangement. Likewise, the four linear ditches in the south (Phase III) that cut though the earlier Phase Ia east/west ditches before continuing over the edge of the site do not seem to relate to the original system.

Though the purpose of the parallel ditches seems to have been to drain the heavy clay surface, the excavations did not provide conclusive evidence as to the reason behind this considerable investment in labour. Evidence in the form of faunal remains, enclosures and droveways at other middle to late Iron Age sites excavated on the boulder clay uplands points towards a pastoral economy (Havis and Brooks 2004). This contrasts with much of Essex, which saw the expansion of arable agriculture during this period (Murphy 1996). This therefore suggests that the land was apparently drained in order to create paddocks for livestock. However, the close proximity of the features would mean that the larger animals such as cattle would trample down the ditches whilst the smaller ones such as sheep and goats would find the surface hazardous. In any case, there is no evidence to suggest that such a scale of land drainage was required in order to manage livestock. The few fragmentary faunal remains deriving overwhelmingly from the pits, cooking pits and hearths do not support the notion that there was a significant concentration of livestock in the vicinity.

The explanation for the drainage of the land must therefore be related to the arable economy. The excavation of a comparable series of late Iron Age to early Roman parallel linear ditches on the clay uplands at Thorley, Hertfordshire led to various interpretations such as paddocks, lazy beds and vineyards (cf. Taylor 1975, 52; Last and McDonald forthcoming). Although the idea of long, thin paddocks for livestock has been discussed in the context of Takeley and assessed as improbable (above), the notion that these features are

associated with specialised arable activity such as growing of vines, fruit trees or even hops can be speculated upon. However, the sparse plant macrofossils recovered from samples were predominantly those of cereals, only present in samples from Phase Ia. However, three of these derive from pits or fire pits, and may represent cooking or domestic debris. The absence of any other environmental evidence, together with the inhospitable nature of the heavy clay soil renders any interpretation involving specialised crops marginal. This is further compounded by the occurrence of other comparable late Iron Age to Roman linear ditch systems in the area such as at the sites of Warish Hall and Frogs Hall East (Framework 2003) suggesting that this form of land management was widespread and therefore not consistent with specialisation. Therefore, the most likely explanation for the draining of the land would be for its use in basic arable agriculture during the middle Iron Age to early Roman period.

The presence of the pits, cooking pits and hearths can be interpreted as evidence of transient occupation. The location of the features in the areas between the ditches, and their content of cooking debris does not suggest that they had significance beyond this. Though loomweight fragments have been found in two these features (F2106 and F2156; Fig. 5.1), this provides insufficient evidence for a 'ritual' interpretation. However, the position of large pit, F2142, at the end of a boundary ditch terminus and the concentration of pottery, daub and animal bone provides a more plausible candidate for structured deposition (Hill 1995).

The labour involved in the creation and maintenance of the ditches, together with the sowing, tending and harvesting of the crops lends support to the notion that there are contemporary settlements nearby (Bryant 1995). The discovery of a roundhouse structure to the north of the site, at Parsonage Lane, dating to the early to middle Iron Age represents the only known example. There are several indicators of Roman occupation in the area, such as the numerous scatters of Roman pottery and building materials in the fields surrounding the village, together with the discovery of a 'rich' Roman burial near Holy Trinity Church, though this may well post-date the creation of the ditches. Ascertaining the relationship of Roman Stane Street to the ditches could provide more precise dating. The location of Stane Street to the north of the site raises the possibility of a situation similar to that at Little Waltham (Drury 1978) where the road cut through the late Iron Age field system. However, only further archaeological work could confirm this.

The parallel linear ditch systems revealed in this excavation are a fragment of the middle Iron Age to early Roman rural landscape that extended across much of present day north-west Essex and east Hertfordshire. The proximity of several similar ditch systems indicates that a degree of uniformity was present in the agricultural techniques employed to provide drainage for the land.

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Author: Ben Roberts, c/o Archaeological Solutions Ltd, 98–100 Fore Street, Hertford, SG14 1AB

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A Roman cemetery at Sampford Road, Thaxted

D. Stansbie, K. Brady, E. Biddulph and A. Norton

With contributions by D. Challinor, L. Howarth, H. Lamdin-Whymark, L. Loe, N. Márquez-Grant, C. Poole, I. Scott, L. Strid and H. Webb

An excavation in 2007 at Bellrope Meadow, Sampford Road, Thaxted revealed late Iron Age or early Roman enclosure ditches, and a cemetery comprising six cremation and five inhumation graves dating from the 1st to 3rd centuries AD. In addition, a ditch containing late-medieval to post-medieval building materials was discovered, suggesting that a building of this date existed in the vicinity of the site.

INTRODUCTION

In May and June 2007 Oxford Archaeology carried out excavations at Bellrope Meadow, Sampford Road, Thaxted, for CgMs Consulting on behalf of Charles Church North London. The site lay in the northern part of Thaxted (NGR TL 6115 3170) and was bounded by Sampford Road to the north, playing fields to the west, private housing to the south, and agricultural land to the east (Fig. 1). It was subject to an archaeological evaluation by Archaeological Solutions in October 2006 (AS 2006), which revealed evidence for an Iron Age/Roman-period settlement.

Geology and topography

The site was *c.* 1.5 ha in size and formerly a meadow; it lay at a height of *c.* 100 m above Ordnance Datum. The solid geology of the site was Upper Chalk overlain by London Clay and Woolwich and Reading Beds, which was in turn overlain by till (BGS Sheet 222, 1:50,000).

Archaeological background

Prehistoric and Roman settlement evidence at Thaxted has been of a somewhat amorphous nature, and little in the way of buildings or cut features have been found. Surface finds, including pottery, building tile, and personal items, including a gold ear-ring, have been recovered around Thaxted (VCH 1963, 187; Ecclestone and Medlycott 1993, 201), but the nature of this material has been uncertain. That said, there are hints of a concentration of Roman-period material north of Thaxted, and the possibility that a villa is represented cannot be discounted (Rodwell 1978, 31). Thaxted is recorded in the Domesday Book as a well-established and prosperous community. An Anglo-Saxon church is thought to lie beneath the existing late medieval church. The town expanded rapidly in the 14th century due to its thriving cutlery industry. Associated bone-working debris has been recovered from sites on Town Street and Weaverhead Lane (Medlycott 1999). French tokens have been found and indicate that the town had cross-channel trading links.

Excavation methodology

The work comprised the excavation of a *c* 0.4 ha area (Fig. 1). Following the discovery of an area of inhumation graves the excavation area was extended to the west in order to determine their full extent. Topsoil stripping was carried out by a 360° mechanical excavator under close archaeological supervision, and fitted with a toothless ditching bucket. Excavation proceeded by machine to the top of the natural geology, or the first archaeologically significant horizon. The archaeological features were cleaned by hand and the features sampled to determine their extent and nature, and to retrieve finds and environmental samples. Recording followed procedures laid down in the *OAU Fieldwork Manual* (Wilkinson 1992).

STRATIGRAPHIC DESCRIPTION

The late Iron Age or early Roman enclosure ditches (Fig. 2)

The excavations revealed two groups of ditches, which probably defined the south-western and north-western edges of an enclosure, most of which lay beyond the limits of excavation to the north-east. The internal area of the enclosure exposed during the excavations measured *c.*50 m from south-west to north-east by approximately 48 m from north-west to south-east. Its edges were defined by a number of ditches, which sometimes intercut and may therefore be seen as successive redefinitions of the same enclosure boundary. In addition, there were four pits, two of which (270 and 273) were situated between two of the ditches defining the south-western boundary of the enclosure, while the remaining two (162 and 236) were within the enclosure, 162 lying near the north-western boundary and close to the northern limit of excavation, and 236 being in the north-eastern corner of the site. It is not clear whether the two groups of ditches met to the south-west, or whether there was a gap between them in order to allow access into the enclosure. The southern terminus of ditch 259 was unclear in plan, and it is possible that the ditch

Fig. 1 Site location. © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

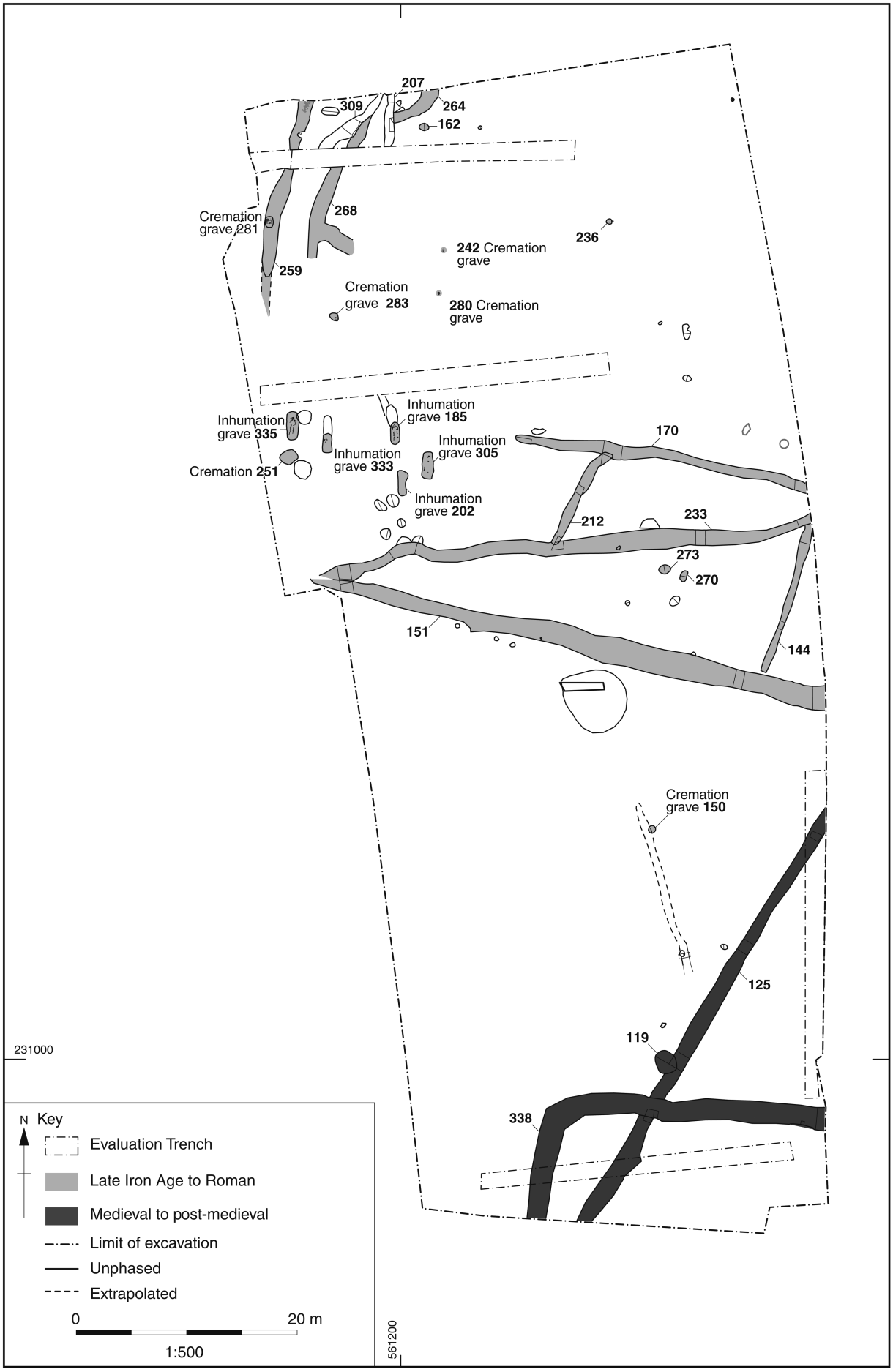

Fig. 2 Phased plan of excavation area

may have continued to the south-west to join up with ditch 151. In addition, the presence of burials (see below) in the south-western corner of the enclosure makes the presence of an entrance less likely. The enclosure ditches and pits are described in greater detail below.

Ditches aligned north-east/south-west

There were five ditches in the north-west corner of the site, which all continued beyond the northern limit of excavation. Ditch 259, the westernmost of these, was aligned NE-SW and measured approximately 20 m in length. It had a flat base and moderate to steep sides and measured between 1 m and 1.3 m in width and 0.5 m in depth. The earliest two fills lined the sites of the cut, suggesting that they were the result of natural silting. Cremated animal bone was recovered from one of the middle fills which was also very rich in charcoal. Above this fill was a layer of stone, which appeared to be deliberately deposited or dumped, and was in turn overlain by the upper fill. The southern extent of the ditch was not clear, and it may have extended beyond the western limit of excavation. The fills of the ditch produced 38 sherds of late Iron Age or early Roman pottery and a single sherd of residual late Bronze Age to early Iron Age material.

Ditch 268, situated *c.*3 m to the east of ditch 259, was aligned NE-SW and measured approximately 16 m in length, 1.1 m in width and 0.6 m in depth. Fourteen sherds of late Iron Age or early Roman pottery were recovered from the ditch fills. This ditch was cut by a short length of undated ditch 309.

Ditch 264 was *c.*2 m to the east of ditch 268 and measured approximately 5 m in length by 1.5 m in width and 0.45 m in depth. It was curvilinear in plan, curving from the northern limit of excavation to the west, where it was cut by undated ditch 207. The small quantity of pottery from its fills was late Iron Age or early Roman in date.

Ditches aligned north-west/south-east

Three ditches belonging to this phase were aligned NW-SE. Ditch 151 was approximately 48 m in length, and was quite irregular in width. At its widest, it measured 2.1 m, and at its narrowest 1.1 m and was 0.9 m in depth. The ditch fills produced a single gram of cremated human bone.

Ditch 170 was *c.*26 m in length by 1.24 m in width and 0.4 m in depth. It contained a single fill. Pottery recovered from throughout the ditch fills dated to the late Iron Age or early Roman period. The fill also contained fragments of smithing hearth bottom (225 g) and furnace fabric (5 g).

Ditch 233 was *c.*44 m in length and had a slightly concave base and steep sides. It varied in width from 0.8 m to 1.9 m and in depth from 0.14 m to 0.48 m. This irregularity was due to differing levels of truncation. Throughout most of the ditch there was a fairly homogeneous fill, but one intervention (262) also contained a cremation deposit in the top of the fill. Fragments of smithing hearth bottom (1.07 kg) were also recovered from this fill along with fired clay in the form of hearth floor and a triangular oven brick. Pottery recovered from the ditch fills dated to the mid 1st century AD.

North-east/south-west aligned ditches cutting ditches 170 and 233

Ditches 144 and 212, orientated north-east/south-west, cut ditches 170 and 233 and possibly represented internal subdivisions of the enclosure, or a later phase of activity after the enclosure had gone out of use. Ditch 144 was 14 m in length and contained 28 sherds of pottery dated to the late Iron Age or mid 1st century AD. The ditch was fairly uneven in width, measuring 0.85 m in the north and 0.48 m further south. The depth was also inconsistent, being 0.24 m in the north and 0.07 m in the south. This may be due to truncation.

Ditch 212 was *c.*9 m in length by 1 m in width and 1 m in depth; its fill did not produce any pottery, or other diagnostic finds.

Pits

Pit 162 was situated in the north-western area of the site. It was oval in plan and measured 0.8 m in length, 0.75 m in width and 0.2 mm in depth. Its fill produced two sherds of pottery dated AD 43–120.

Pit 273 was sub-circular shaped in plan with steep sides and a concave base. It measured 1.05 m in length, 0.82 m in width and 0.28 m in depth. Twelve sherds of pottery (138 g) were recovered from the single fill and dated to AD 43–60.

Pit 236 was situated in the north-eastern part of the site and was circular in plan, with near vertical sides and a flat base. It measured 0.5 m in diameter and 0.22 m in depth. The fill produced 12 g of burnt animal bone and three sherds of pottery dating to the late Iron Age or early Roman period. Environmental sampling of the fill produced charcoal of mixed species and some charred grain (wheat and rye), but this was not well preserved. It is possible that the fill of the pit represented a deposit of pyre debris.

Pit 270 was sub-oval in plan with fairly steep sides and a concave base. It measured 1.04 m in length, 0.62 m in width and 0.25 m in depth. One sherd of pottery was recovered from the single fill, dated AD 43–120.

The cemetery (Figs 2–5)

Lying within the south-western corner of the enclosure was a group of 11 burials. The cemetery comprised six cremation graves and five inhumation graves, one of which (cremation 281) cut ditch 259. In addition, small amounts of cremated bone, possibly representing pyre debris or incidental redeposition were recovered from the fills of ditches 151 and 233. Two graves belonged to the late Iron Age or mid 1st century AD, though most appear to date after AD 70, with at least two graves dating to the 2nd century and one belonging to the 3rd or later. The fact that the graves lay partly within the enclosure, combined with the stratigraphic relationship of at least one of them with the enclosure ditch, as well as the

slightly later emphasis of the ceramic dating, suggests that they may have been later than the enclosure, rather than contemporary with it. However, it is also possible that the inception of the cemetery was contemporary, or even earlier, with the laying out of the enclosure and that burials continued to be added to it after the enclosure itself had gone out of use.

Grave catalogue

Unurned cremation grave 150 (not illustrated)
Grave 150 was a sub-circular pit (147) measuring 0.68 m in diameter and 0.18 m in depth. Cremated bone (149) was deposited on the grave floor and overlain by a mid greyish brown silty clay backfill.

Cremated bone:
Undisturbed. Total weight 728 g. ?Adult male.

Pyre debris:
Quercus sp. oak; *Acer*/*Betula* type maple; *Arrhenatherum elatius*, onion couch grass.

?Grave furniture:
Iron nails (x2), fe plate fragment, unidentified fe fragments, possibly from a box.

Grave goods:
Iron hobnails, minimum of 43.

Date: Roman

Inhumation grave 185 (Fig. 3)
Inhumation grave 185 comprised a sub-rectangular grave cut (182) orientated N-S, with gently sloping sides and a flat base, and measuring 1.94 m in length, 0.8 m in width and 0.16 m in depth. It contained a skeleton (183) of which only 25–50% survived due to truncation. The grave was backfilled with a mid greyish-brown silty clay deposit.

Human remains:
Placed in an extended, supine position with the right arm extended and the left hand over the pelvis. Adult, male, 25–35 years.

Grave furniture:
Iron strip (SF 4).

Date: Roman

Inhumation grave 202 (not illustrated)
The skeleton (200) was contained within an irregular grave cut (253), orientated N-S, with irregular sides and an undulating base and measuring 3 m in length by 1 m in width and 0.8 m in depth. The skeleton was covered by a dark grey clay silt backfill (201) that yielded twelve sherds of black-surfaced ware pottery, apparently not deposited as a grave-good.

Human remains:
Undisturbed. Two skull fragments. Adult, age and sex indeterminate.

Grave furniture:
Iron nail.

Date: Roman

?Urned cremation grave 242 (Fig. 3)
The grave had been heavily truncated and therefore only a small part of the cremation deposit (240) remained; no cut could be discerned. The fragmented remains of a ceramic vessel and only a small amount of cremated human bone and charcoal was recovered. The grave fill was a mid grey brown silty clay deposit.

Cremated bone:
Heavily disturbed by truncation, total weight 3 g. Age and sex indeterminate.

Pyre debris:
Very small comminuted charcoal.

Grave goods:
Pot 241. ?Urn. Unidentified ceramic vessel in black-surfaced ware, possibly a jar. Not illustrated.

Date: Roman

Unurned cremation grave 251 (Fig. 3)
Cremation grave 251 was a sub-circular pit with moderate to steep sides and a slightly sloping base, measuring 1.43 m in diameter by 0.45 m in depth. The small quantity of cremated bone casts some doubt on whether this was a deliberate cremation burial, rather than redeposited pyre debris or a token burial, a view supported by the discovery of triangular oven bricks in the backfill (319 and 320). However, the possible grave goods comprising the fragmented remains of a minimum of three ceramic vessels suggests that the feature simply represents a disturbed burial (separate vessels were identified during pottery recording). The cremated bone and grave goods were all assigned to the upper fill of the pit (320) during excavation.

Cremated bone:
Disturbed, total weight 2.5 g. ?Adult, sex indeterminate.

Pyre debris:
Quercus sp. oak; *Fraxinus excelsior* ash; *Acer*/*Betula* type maple, *Conopodium majus* pignut

Grave goods:
Pot 320a. Necked jar (*Cam* 266), grog-tempered ware;
Pot 320b. Jar of indeterminate form, coarse grog-tempered ware. Not illustrated;
Pot 320c. Butt-beaker (*Cam* 113), North Gaulish fine sandy white ware.

Other finds/?grave-goods:
Fragments of sheep/goat femur, unburnt.
Fragments of triangular oven brick.

Date: AD 10–70

Urned cremation grave 280 (Fig. 4)
Cremation grave 280 was circular in plan and measured 0.15 m in diameter and 0.32 m in depth. It produced the cremated remains of one adult and a large amount of charcoal. These were covered by a mid greyish brown silty clay backfill (287). The urn was one of the latest ceramic grave-goods, indicating that the grave was a relatively late addition to the cemetery. The grave also yielded a burnt bone pin, perhaps from clothing on the body at the time of cremation.

Cremated bone:
Within urn. Total weight 82 g. Adult, sex indeterminate.

Pyre debris:
Quercus sp. oak; *Acer*/*Betula* type maple; *Triticum* wheat grain.

Pyre goods:
Bone pin.

Grave goods:
Pot 289. Urn. Oval-bodied necked jar (Going G24.1), sandy grey ware. AD 100–410;
Iron hobnails, minimum of 19.

Date: AD 100–410

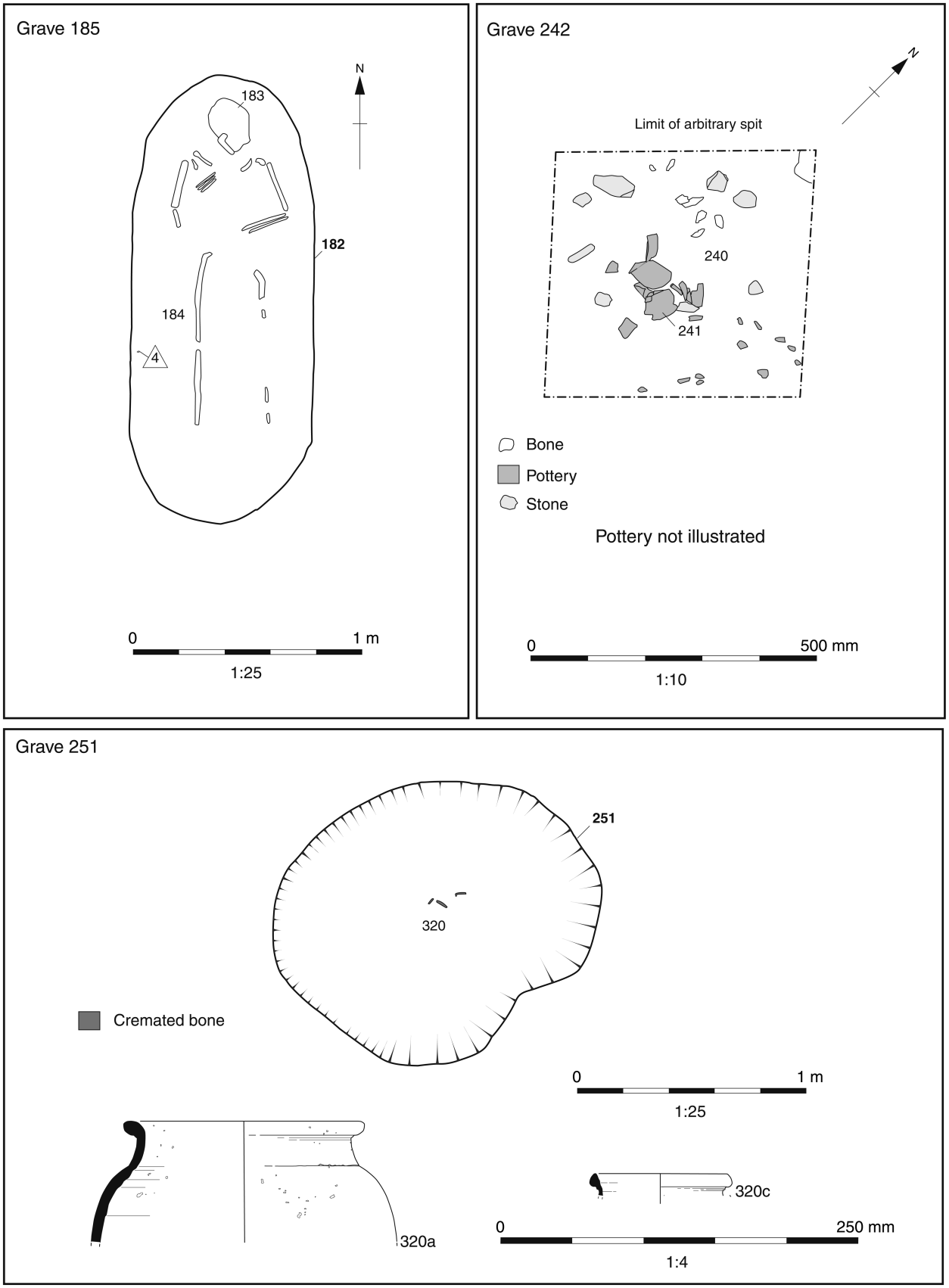

Fig. 3 Plans of graves 185, 242 and 251

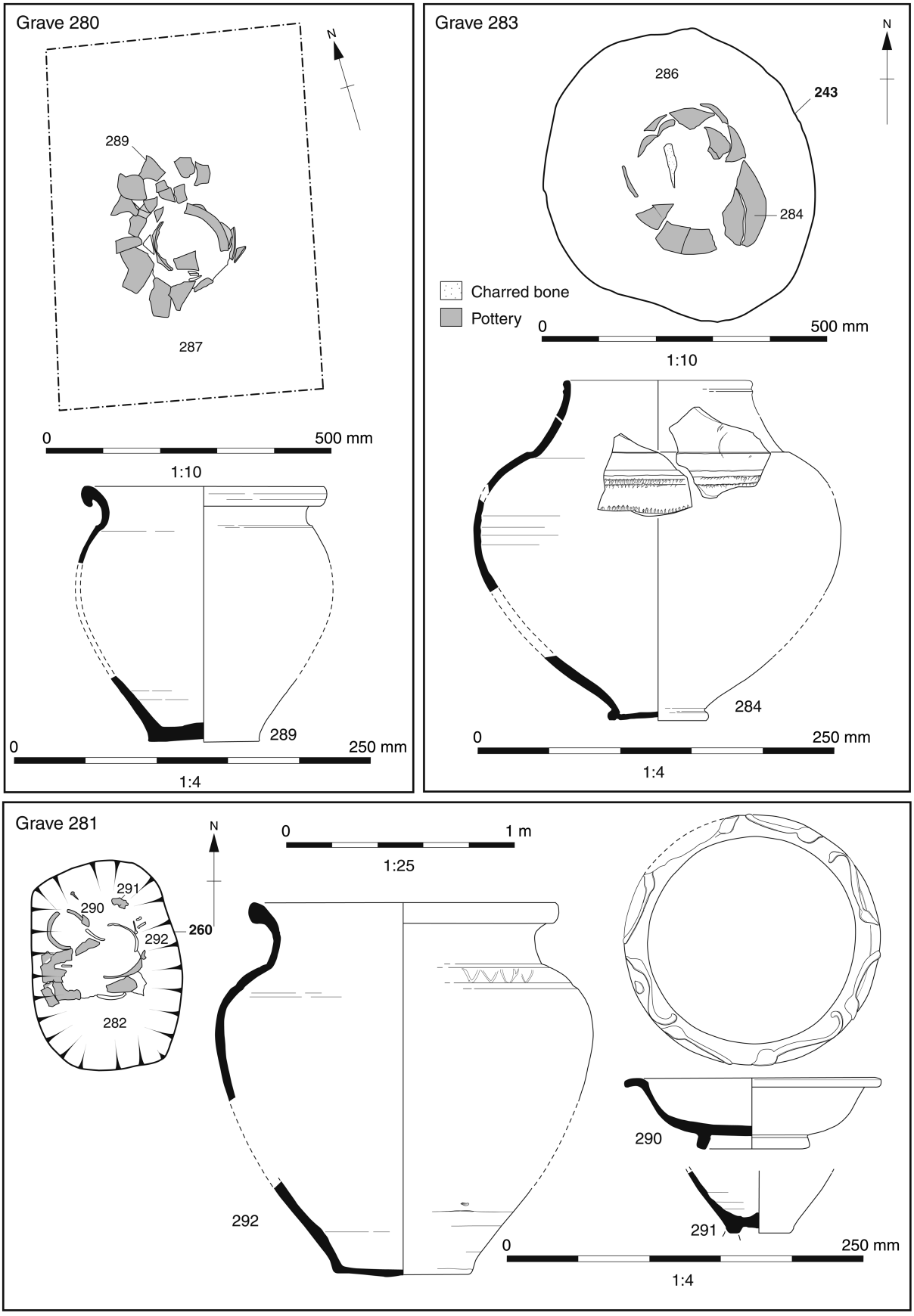

Fig. 4 Plans of graves 280, 281 and 283

Urned cremation grave 281 (Fig. 4; Plate 1)
This grave had been inserted into the top of the fill of ditch 259. The cut (260) measured 0.9m in length, 0.65 m in width and 0.15 m in depth, with irregular sides and a flat base. The grave was backfilled with a dark grey silty clay deposit (282).

Cremated bone:
Within urn. Total weight 213 g. Sub-adult 6–12 years, sex indeterminate.

Pyre debris:
Fraxinus excelsior ash; *Prunus spinosa* blackthorn; *Quercus* sp. oak; *Alnus*/*Corylus* alder/hazel; *Corylus avellana* hazel nutshell; *Cerealia* indeterminate grain and culm.

?Grave furniture:
Iron nails (x12) possibly from a box; Iron fragments (x4).

Grave goods:
Pot 292. Urn: necked jar with cordoned shoulders (Going G17), sandy grey ware, AD 43–120;
Pot 290. Dish (Drag. 36), Central Gaulish samian ware. 'Killed' vessel, chip deliberately removed from rim, AD 120–200;
Pot 291. Flagon, buff ware;
Iron hobnails (x14).

Date: AD 120

Urned cremation grave 283 (Fig. 4)
Grave 283 comprised a sub-circular pit (243), measuring 0.47 m in diameter by 0.30 m in depth. A very small amount of charcoal was recovered from the grey brown silty clay backfill (286).

Cremated bone:
Disturbed, total weight 344 g. Adult ?male.

Grave goods:
Pot 284. Urn. Globular beaker (*Cam* 408), sandy grey ware. AD 225–410.

Date: Mid 3rd century+

Inhumation grave 305 (Fig. 5)
The grave comprised a rectangular grave cut (252) orientated N-S. It had very steep sides and an undulating base, and measured 2.3 m in length, 1.04 m in width and 0.42 m in depth. The skeleton (299) was covered in a mid greyish brown silty clay backfill that produced 18 nails, possibly from a coffin.

Human remains:
Undisturbed; placed in extended, supine position. Skull and limb bones present. Adult, ?female.

Grave furniture:
Iron nails (SFs13–31) from ?coffin.

Date: Roman

Inhumation grave 333 (Fig. 5)
The grave was defined by a sub-rectangular grave cut (250), orientated N-S, steep sides and a concave base, and measuring 1.81 m in length, 0.85 m in width and 0.4 m in depth. The skeleton (317) comprised a few long-bone shaft fragments. The grave was backfilled with a dark brownish-grey silty clay deposit (318).

Human remains:
Undisturbed. Long bone fragments only. Adult, age and sex indeterminate.

Grave goods:
Pot 339. Jar, grog tempered ware.

Date: 50 BC-AD 70

Inhumation grave 335 (Fig. 5)
The grave was defined by a rectangular grave cut (247), orientated N-S, with steep sides and a concave base, and measuring 2.44 m in length, 1.16 m in width and 0.7 m in depth. The skeleton (337) was placed in an extended supine position with hands over the pelvis. A ceramic flask (336) was placed next to the head on the western side. The grave was backfilled with a light brownish-yellow silty clay deposit.

Human remains:
Undisturbed. Placed in an extended, supine position with the hands placed over the pelvis; the head was to the north. Adult, male, 35–45 years. Pathology: cribra orbitalia; osteoarthritis on left hip and left sterno-clavicular joint; possible fracture on right tibia malleolus; right tibia appears to be bowed medially at proximal end of shaft; small raised dense roundel of bone on distal right tibia, possible benign neoplasm or minor trauma; possible hyperostosis frontalis interna on frontal bone; periodontal disease.

Plate 1 Grave 281

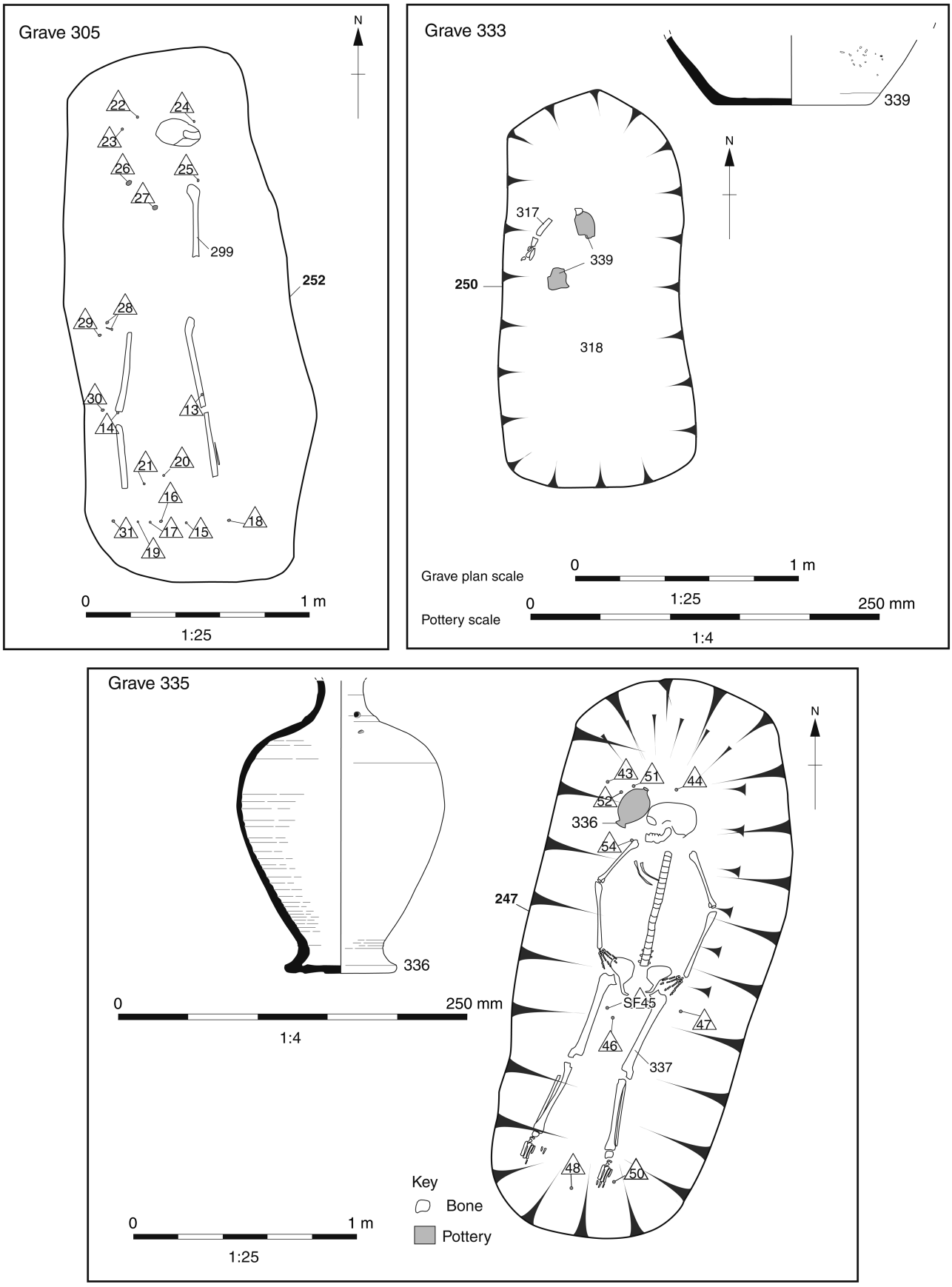

Fig. 5 Plans of graves 305, 333 and 335

Grave furniture:
Iron nails (SFs 44–48, 50–52 and 54) from ?coffin.

Grave goods:
Pot 336. Flask (Going G40), sandy grey ware. 'Killed' vessel, perforated twice at neck. Rim also removed, though uncertain whether this was through deliberate action or post-depositional truncation.

Date: AD 70–410

Late medieval to post-medieval features

(Fig. 2)

Two ditches (125 and 338) and a pit (119) of late medieval to post-medieval date were situated in the south-eastern corner of the site. Ditch 125 contained 15th-17th century floor and roof tile and brick. The ditch may have been part of an enclosure defining a building situated to the south-east of the excavation area. Ditch 338 produced no dating material, apart from a single sherd of Roman pottery, but cut ditch 125 and presumably, therefore, post-dated the demolition of the putative building. Pit 119 also cut ditch 125.

Ditch 125 was orientated NE-SW and measured 44 m in length by 1.10 m in width and 0.36 m in depth. Ditch 338 was orientated E-W, with a north-south return. It measured 35 m in length by 2 m in width and 0.58 m in depth. Pit 119 was sub-circular in plan and measured 2.2 m in diameter by 0.56 m in depth.

THE FINDS

The flint

H. Lamdin-Whymark

A total of 11 worked flints and 663 fragments (1.806 kg) of burnt unworked flint was recovered from the excavations. The flint was in relatively fresh condition with little evidence for post-depositional edge-damage. Most of the flakes were free from surface cortication, but two flakes exhibited a light bluish-white corticated surface and the denticulate scraper bore a mottled bluish-white and white surface with some light orange iron-staining. The burnt unworked flint was generally lightly crazed and red in colour, indicating it was burned at a relatively low temperature.

The flint assemblage, all residual in later deposits, comprised seven flakes, two blades, a denticulated side scraper and a scraper manufactured on a thermally fractured flake (Table 1). A single flake exhibited platform-edge abrasion and the irregular form of the flakes suggests a relatively uncontrolled reduction strategy. The two blades are both relatively irregular and appear to have been accidental by-products of a flake-based industry. It is difficult to accurately provide dates for limited flint assemblages, but the reduction strategy is most comparable to middle and late Bronze Age industries.

The late Iron Age and Roman pottery

E. Biddulph

Introduction

Some 900 sherds, weighing 9279 g, were recovered from the site. Much of this material was dated to the late Iron Age or early Roman period, though a number of 2nd-century or later vessels, mainly from the cemetery, were also present. Three sherds of residual flint-tempered ware, dating to the late Bronze Age/early Iron Age, as well as a few pieces of medieval pottery, were recorded. The assemblage was sorted, within context-groups, first into fabrics and then into 'sherd-families' – collections of sherds sharing certain characteristics, such as rims belonging to the same vessel or pieces with particular decoration, or simply a mass of undiagnostic body sherds. Each sherd-family was quantified by sherd count, weight (in grammes) and estimated vessel equivalence (eve), which records the surviving percentage of a complete rim. Eleven fabrics were recorded (Table 2). These were identified using the series devised by the Essex County Council Field Archaeology Unit (ECC FAU), ensuring compatibility with other Essex sites, and referenced where possible to the National Roman Fabric Reference Collection handbook (NRFRC; Tomber and Dore 1998). Form typology follows Going's Chelmsford series (1987, 13–54), supplemented by the *Camulodunum* typology (Hawkes and Hull 1947, updated in Bidwell and Croom 1999, 468–487) for the late Iron Age material. Normally, vessel types were identified only when a rim was present. However, vessels that belonged, or were likely to have belonged, to the cemetery were identified at least to broad vessel class (and function within the grave, such as urn), if not precise type, even in the absence of a rim. This introduced an additional means of quantification: count of ceramic grave goods.

Pottery from the cemetery

Eleven vessels were recovered from seven graves; the distribution by fabric and type is given in Table 3. Cremated remains in four graves were urned. The jars used as cinerary vessels were standard types recorded in

CATEGORY TYPE	Context									Total
	102	155	299	303	310	318	327	171	287	
Flake	1	2		1	1		1	1		7
Blade			1			1				2
Side scraper									1	1
Scraper on a non-flake blank	1									1
Total	2	2	1	1	1	1	1	1	1	11

Table 1 The worked flint by category type and context.

Ware	Description	NRFRC	Sherds	Weight (g)
BSW	Black-surfaced ware		142	894
BUF	Misc. buff wares		165	155
CGSW	Central Gaulish samian ware	LEZ SA 2	1	304
COLB	Colchester buff ware	COH WH	10	64
ESH	Early shell-tempered ware		43	75
GROG	Grog-tempered ware	SOB GT	148	1525
GROGC	Coarse grog-tempered ware		26	1376
GRS	Sandy grey ware		285	4757
NGWFS	North Gaulish white fine sandy ware	NOG WH 2/3	5	45
RED	Misc. red wares		1	2
SGSW	South Gaulish samian ware	LGF SA	2	17
		TOTAL	828	9214

Table 2 Quantification and description of fabrics.

Fabric	Vessel class						
	Jar (ancillary)	Beaker	Flagon/ flask	Dish	Jar (cinerary)	Beaker (cinerary)	Total vessels
BSW					1		1
BUF			1				1
CGSW				1			1
GROG	2						2
GROGC	1						1
GRS			1		2	1	4
NGWFS		1					1
Total vessels	3	1	2	1	3	1	11

Table 3 Pottery from the cemetery. Quantification by vessel count.

the region and included an early Roman cordoned necked jar (G17) and an oval-bodied jar (G24). More unusual was a globular beaker (*Cam* 408) with rouletted decoration; beakers were only occasionally employed as urns in the region, but in this case, the vessel's jar-like size made it suitable for such use. Jars may also have been deposited as ancillary vessels, though the two vessels recorded – both from cremation grave 251 – had been disturbed, so any bone that was originally present had long been separated from them. Of course, a jar from inhumation grave 333 was certainly an ancillary vessel. Taken together, ancillary jars account for 27% of the cemetery assemblage. This is much higher than the five ancillary jars, representing 10%, at the nearby and contemporaneous cemetery at Strood Hall (Timby *et al.* 2007, table 3.2), but closer to the 33% seen at the Chequers Lane cemetery in Great Dunmow (Wickenden 1988, 12–23), *c.*10 km south of Thaxted. Given Thaxted's small assemblage, interpretation is necessarily speculative, but the strong representation of jars at both Thaxted and Great Dunmow ally the sites to a number of late Iron Age cemetery assemblages, like that from Great Chesterford (Wallace 1990, 13–16), that are biased towards cooking- or storage vessels. These appear to represent something of a traditional, indigenous, practice (continued into the Roman period at Thaxted and Great Dunmow), which stands in contrast to the functionally-varied Gallo-Roman traditions – being particularly strong on drinking- and dining-related forms – seen in high-status graves like those at Stanway, Colchester (Crummy 1993; 1998), and adopted at lower-order settlements like Strood Hall (Biddulph 2005, 40–42; Timby *et al.* 2007, 135).

That said, tablewares were also present at Thaxted. A Central Gaulish samian ware dish or bowl (Drag. 36) was recovered from grave 281. This was unworn and in good condition, except for a small chip on the rim removed in antiquity. The rim may have been knocked accidentally, though damaged rims occur with such frequency in cemetery assemblages in south-eastern Britain that the phenomenon can only have been deliberate. Three dishes or platters from Great Dunmow's Chequers Lane cemetery were mutilated in this way (Going 1988a, fig. 20), as were dishes at Strood Hall (Biddulph 2007, CD Rom chapter 3). The identification of open forms in these cases offers a clear association between the form and treatment, suggesting that the selection and action were quite deliberate. Other forms could be mutilated in different ways; a flask from grave 335 was perforated after firing through the neck by two small holes positioned opposite each other. A third hole further down the vessel appears to have been attempted, but not carried through. This recalls pierced liquid containers, like flasks and flagons, at Great Dunmow (Going 1988a, fig. 20), and again points to a strong relationship between form and treatment. One other flagon was recovered from Thaxted's cemetery: a buff ware vessel from grave 281. A rim fragment of a North Gaulish white ware butt-beaker was found in grave 251, but it is uncertain whether the rim was deliberately placed as a grave good,

either as a token rim or a subsequently-disturbed complete vessel; a North Gaulish white ware beaker base from ditch fill 233 may have been part of the same vessel.

Considered together, the pottery suggests that the first burials (250 and 251) were made during the 1st century AD, probably one or two decades either side of the Roman conquest. The pottery from the other burials is less clearly dated, but the Drag. 36 dish from grave 260 belongs to the 2nd century, while the globular beaker from grave 283 indicates that burial continued well into the 3rd century. Interestingly, the cinerary vessel used in grave 281 was a type out of production by the time it was deposited; the G17–type jar did not date later than AD 120, but the samian dish arrived between AD 120 and 200, although it is possible the burial dated not long after 120.

Pottery from other features

On balance the pottery recovered from ditches and, to a lesser extent, pits, dated to the mid 1st century AD (*c.* AD 43–70; Table 4). Two fabrics dominated: grog-tempered ware, which belonged to a regional tradition commencing in the mid 1st century BC and ceasing by AD 70 (Biddulph *et al.* 2007), and black-surfaced ware, a predominantly sand-tempered reduced ware that emerged by the mid 1st century AD, though was mainly used after the conquest. The transitional nature of this fabric – it also contained grog – led C J Going (1987, 9) to term it 'Romanizing ware' at Chelmsford, though pottery of black-surfaced ware tradition continued to be produced throughout the Roman period. At Thaxted, jars and bowls were recognised in grog-tempered ware but not identified to type, although a handle of a bowl or patera-like vessel (Fig. 6), probably copying a metal prototype, was collected from gully 144. Jars only were available in black-surfaced wares. These were necked high-shouldered types (G19 and G20) characteristic of the early Roman period. A neckless bead-rimmed jar (G3) was recorded in shell-tempered ware, and this was joined by a bucket-shaped jar (*Cam* 254) recovered from the subsoil, but overall the fabric is not well-represented. Sandy grey ware – ubiquitous across the region throughout the Roman period – is also relatively scarce in the non-cemetery assemblage, though was more common in graves. The difference is likely to be chronological; sandy grey ware made only a minor contribution to mid 1st-century groups in the region – it accounted for 5% of the mid 1st century assemblage by eve at Strood Hall, compared with 43% for black-surfaced ware (Biddulph *et al.* 2007, table 4.22) – but its presence expanded rapidly subsequently. (This incidentally suggests that, apart from 250 and 251, most graves date after AD 70.) A small amount of fineware and oxidised wares was recovered. Two south Gaulish samian cups join the North Gaulish white ware beaker as continental imports: Ritterling 9 is not likely to date beyond AD 60 (Webster 1996, 71), and a Dragendorff 27 cup, is represented by a body sherd.

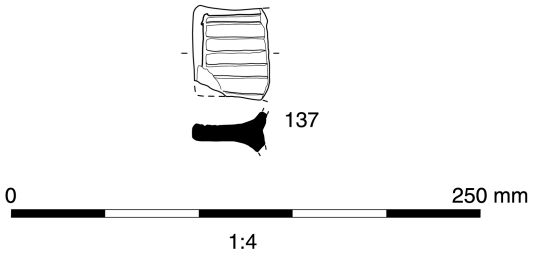

Fig 6 Ceramic handle

The ceramic building material

C. Poole

Introduction

The assemblage of ceramic building material amounted to 37 fragments weighing 3752 g. It was recovered from twelve contexts from pit, ditch and posthole fills. The material was moderately to heavily abraded and had a mean fragment weight of 101 g, reflecting the poor preservation of the group. No complete tiles were found and the only complete dimension measured was thickness.

Fabrics

Fabric A: orange with dark grey reduced core; fine clay, slightly laminated, containing a low density of fine-medium sand. This was used for post-medieval tile.

Fabric	Vessel type						
	Bowl	Jar				Cup	Total
	C unident.	G unident.	G19	G20	G3.2	Ritt. 9	Eve
BSW		0.28	0.28	0.14			0.7
BUF							⋆
COLB							⋆
ESH					0.04		0.04
GROG	0.03	0.26					0.29
GROGC							⋆
GRS		0.11					0.11
NGWFS							⋆
RED							⋆
SGSW						0.08	0.08
Total Eve	0.03	0.65	0.28	0.14	0.04	0.08	1.22

Table 4 Quantification by eve of pottery from non-cemetery features (fabrics marked with ⋆ were present, but as body or base sherds only).

Fabric B: orange, red; clay matrix contains common to frequent coarse, rounded sand of quartz and iron oxide grains. This was used for medieval and post-medieval tile. The density of sand can be quite variable, and some examples of tile have a high density of very coarse quartz sand (rounded), rose and white in colour; this variation was possibly used exclusively in medieval tile.

Fabric B1: a coarse sandy clay containing rounded quartz and iron oxide sand and occasional coarser grits of flint, ironstone and chalk 2–15 mm. These coarser grits only occur in the Roman tile; otherwise the clay matrix is essentially the same as the medieval – post-medieval fabric B.

Fabric C: orange clay containing moderate to high density medium – coarse rounded – sub-rounded quartz sand, predominantly white. This is similar to fabric B, but without the iron oxide grit. This was used for medieval tile.

Fabric D: orange fine silty clay containing occasional coarse iron oxide grits (or ferruginous siltstone) up to 10 mm and frequent buff rounded clay pellets 1–5 mm. This was used for Roman brick.

Fabric F: orange, red, brown silty clay, sometimes laminated containing a high density of poorly sorted sand, predominantly rounded – subrounded quartz with lesser quantities of iron oxide and rare chalk sand. This was used for medieval and post-medieval brick.

The Roman assemblage

Only two items were identified as Roman tile. One was a large brick fragment made in fabric D, measuring 38–50 mm thick by >295 mm long and was possibly part of a lydion. The second is probably part of the plain face of a box flue tile made in fabric B1. The brick was found in a context (223) of early Roman date, but the flue tile occurred residually in a medieval or later ditch fill (118). These are discussed in conjunction with the fired clay assemblage.

The medieval assemblage

Roof tile

All the roof tile was fragmentary and measured between 10 and 18 mm thick, most being 11–13 mm. A small number retained circular peg holes measuring 12 to 15 mm in diameter. The general quality and character of the roof tile suggests much of the tile is of late medieval or early post-medieval date (15th-17th century). A few pieces are probably of later post-medieval date (18th–19th century).

Brick

Two small fragments (context 116) with no complete dimensions in fabrics B and F were identified as deriving from bricks, probably of post-medieval date. One with some surface surviving had an 'ash glaze' to the surface.

Floor

A very abraded fragment with part of a straight cut chamfered edge measured >19 mm thick. On the surface were remains of white pipe clay overlain by yellow glaze. No pattern can be observed, but the surface finish is of the type found on medieval decorated floor tiles of 13th-15th century date.

Discussion

The assemblage is dominated by late medieval to early post-medieval roof tile. The few fragments of brick and floor tile are thought to be of the same date. The assemblage was found in the south-east corner of the excavation in the area of ditch group 125. Only one small fragment of roof tile was found outside this area at the northernmost extent of the excavation in the uppermost fill of an earlier ditch. The concentration of material suggests it may form the periphery of a scatter of building debris focussed on a structure outside the excavation area to the south-east, possibly enclosed by ditch 338. The dominance of roofing material suggests the building had a tiled roof, and the presence of a possible glazed floor tile may indicate a building of some status. However, the general paucity of other building materials does not support such a conclusion and it is more likely that the floor tile was recycled from another structure outside the immediate vicinity of the site. The condition of the tile suggests it had been subject to considerable abrasion, probably incorporated in the ploughsoil before finally coming to rest in ditch or pit fills.

The fired clay

C. Poole

Introduction

The assemblage of fired clay amounted to 415 fragments

Form	Numbers	Weight (g)	Fabrics	Comments
Roof tile	30	988	B, C, A, F	A few positively identified as peg tile. Both medieval and post-medieval
Brick	2	165	B, F	
Floor tile	1	128	B	?Decorated
RB brick	1	2080	D	?Lydion brick
RB flue	1	378	B1	
Unident.	2	13	F	?Post-medieval brick fragment
Total	37	3752		

Table 5 Ceramic building material.

weighing 1811 g. It was recovered from nine contexts from four ditches and four pits. The material was poorly preserved, reflected in the mean fragment weight of 4.4 g, and was moderately to heavily abraded. The assemblage is of late Iron Age to early Roman date and is thought to derive from small oven or hearth-type structures.

Fabrics
Three fabrics were identified:

FC A was a red laminated clay with cream or grey streaks and containing fine – medium quartz sand.

FC B was a red, reddish brown, grey sandy clay containing a high density of fine-medium quartz sand plus occasional scattered coarse quartz or quartzite sand and grit 1–2 mm, maroon-red rounded iron oxide grains 1–3 mm and rare angular flint c. 6 mm and shell.

FC E was a mottled orange laminated fine sandy-silty clay with pale creamy yellow, grey, or pink streaks. Fabric A forms the basis of the matrix of this fabric, which additionally contained frequent rounded-subrounded chalk grit 0.5–5 mm and occasional flint up to 7 mm.

Forms
A high proportion of fragments had only a single flat or sometimes curving smooth surface, occasionally with evidence of a second surface forming a base or edge, but insufficient to suggest a specific function, though all would be consistent with use in some form of oven.

Hearth
Two examples of possible hearth-floor came from contexts 167 (ditch 170) and 315 (ditch 233). Both were very similar in having a smooth flat surface, fired or burnt to dark grey and measuring 18 mm thick. The lower surface was flat and undulating probably reflecting the underlying surface on which it was laid.

Triangular oven bricks
Four examples of triangular oven-brick were found in grave 251, pit 273 and ditch 233. The small fragments from pit 273 retained no diagnostic characteristics, but their general character was consistent with this identification. The other examples, though better preserved were all fragmented and many pieces were amorphous, deriving from the core of the objects. However, the similarity of fabric and firing was such that the fragments recovered from each context derived from a single brick in each case. No complete dimensions survived, but that from context 319 (grave 251) has its total thickness estimated at 70 mm, which is average for these objects and suggests they were of a fairly standard size.

Characteristics were similar for all examples; a high proportion of pieces have a flat surface, occasionally rough and irregular, of which a substantial number are heavily burnt to dark grey-black. Red oxidised pieces appear to be core more often than surface pieces. Some pieces have two surfaces at right angles joined by a curved angle The only fragment with the diagnostic characteristic of a perforation piercing the surface at an angle came from context 319. From the others core fragments exhibited parts of perforations. Sizes of perforations were 9 mm, 10 mm, 13 mm and 14 mm in diameter.

Furnace or industrial hearth
Several pieces of heavily fired and slightly vitrified fired clay, were found in ditch 233, associated with a possible cremation deposit or pyre debris. The surface of these fragments was mainly reduced to a vesicular cinder layer 2–4 mm thick overlying a purplish red core of fired clay.

Fragments from context 315 (ditch 233) had a similar appearance to furnace-lining but were not as intensely heated and may have formed part of a furnace or hearth structure away from heat core. Mixed with the fired clay from this context were fragments of what appeared to be iron slag. There were also some fragments of furnace or hearth lining with possible iron slag attached associated with the triangular oven brick from context 320 (pit 251).

Discussion
The fired clay assemblage is limited both in size and function. The majority was concentrated spatially in the area bounded by ditches 170 and 151 with the largest groups to the west side of the area. All the fired clay is indicative of oven or hearth structures and furniture and the two fragments of ceramic building material are also likely to have been utilised in such structures. Brick and tile found on lower status Roman rural settlements were usually acquired in fairly small quantities and reused in small structures such as ovens, hearths or corndriers. The brick from ditch 151 was found in association with fired clay from an oven or hearth. There is little to indicate the presence of any form of complex superstructure and therefore the assemblage is most likely to represent open hearths for domestic, agricultural or industrial purposes.

The evidence suggests this assemblage may have had primarily an industrial function; both the group in ditch 233 of hearth-floor, furnace-lining, iron slag and a triangular oven-brick and in grave 251 of triangular bricks with small pieces of furnace-lining and slag may both represent debris from smithing activity. The presence of smithing bottom from ditch 233 noted by L. Howarth (below) supports such a possibility.

Form	Nos	Wt (g)	Fabrics
Furnace	23	117	A/B
Hearth	3	83	A
Triangular oven brick	258	983	E
Utilised	131	628	E, A, B
Total	415	1811	

Table 6 Quantities of fired clay forms.

Metalwork

I. Scott

The assemblage was scanned and rapidly quantified, assigned to functional groups and recorded. It was then assessed for group value, taking into account provenance and context type.

The metalwork assemblage comprises 226 iron objects (274 fragments) and one copper-alloy object. Hobnails, nails, and small unidentified fragments dominate the assemblage. Most of the metalwork is derived from burial deposits. The only identifiable objects, other than nails or hobnails, are a horseshoe fragment from a probable post-medieval context (122, pit 119), and part of jointed mouth bar from a curb bit from an early Roman context (pit 273). Other finds from non-burial contexts include an iron object of uncertain function and a fragment of copper-alloy sheet from context 114 (a probable post-medieval ditch fill).

The inhumation graves produced a number of nails, including 18 from grave 305. Most of the complete or near complete nails are of the common Type 1, and fall within the size range 50 mm to 78 mm. By contrast the cremations have produced all the hobnails, including a minimum number of 43 hobnails (75 fragments) from cremation 150, and 39 hobnails (43 fragments) from cremation 280. Cremation 150 produced two nails, and cremation 260, 12 nails. The ditch cremation deposit 315 produced no hobnails, but three nails, four small fragments of plate and numerous very small fragments.

Slag

L. Howarth

The size and morphology of the fragments suggests the likely origin is smithing. Some other less diagnostic material was also recovered and probably represents interactions between the furnace wall and the fuel. The

Stratigraphic group	Context	Function						
		Transport	Personal (hobnails)	Nails	Misc	Query	Unknown	Totals
Subsoil	210				1			1
Ditch 125	114					2*		2
Pit 273	279	1						1
Pit 248	312			4			1	5
Pit 119	120			4				4
	122	1						1
Grave 185	184					1		1
Grave 335	321			9				9
Grave 202	201			1				1
Grave 305	299			1				1
	300			1				1
	304			16			2	18
Grave 281	315			3	4		22	29
	282		14	12	2		4	32
Grave 150	148		2		1			3
	149		41	2		1	2	46
Grave 280	287		17					17
	288		14			20		34
	295		8				13	21
Totals		**2**	**96**	**53**	**8**	**24**	**44**	**227**

* includes one fragment of copper alloy

Table 7 Metalwork assemblage composition and provenance.

Context	Feature	Weight (g)	Comments
201	Grave 202	10	Fuel ash slag (FAS)
114	Ditch 125	110	Undiagnostic slag (possible bloom fragments?)
167	Ditch 170	225	Smithing bottom
139	Ditch 170	275	Undiagnostic slag (possible bloom fragments?)
167	Ditch 170	<5	FAS – from furnace fabric
102	Subsoil	75	Undiagnostic slag
315	Ditch 233	1075	FAS ×4 Smithing bottom fragments ×16

Table 8 Occurrence and identification of slag.

lack of hammerscale associated with fragments, however, does cast an element of doubt on this interpretation. Overall the assemblage of material probably represents the waste products of post-smelting refinement of blooms.

The cremated human bone

N. Márquez-Grant

Introduction

Osteological analysis was undertaken by following the recommendations set out by McKinley (2004). The MNI was calculated based on the duplication elements while taking into account differences in age and sex. Where preservation allowed, standard methods for age-at-death and sex determination were employed by following the guidelines set out by Ferembach *et al.* (1980), Buikstra and Ubelaker (1994) and Brickley and McKinley (2004). Non-metric traits, variations in skeletal morphology that may be inherited or environmentally induced, could not be scored due to the lack of skeletal parts available for examination. Pathological lesions were described with reference to standard texts (for example, Ortner and Putschar (1981) and Aufderheide and Rodríguez-Martín (1998). The report below is a summary of the full human remains report, which is held in the site archive.

Pyre technology and funerary practice

Overall, the representation of skeletal elements suggests that no priority was given to the collection of certain bones over others from the pyre for burial (Tables 9 and 10). In terms of the cremation burials, most anatomical regions of the skeleton were represented. The relatively high proportion of cranial fragments in the assemblage is largely due to the ease of identification of those elements, while the small quantity of fragments from the axial skeleton is most likely to be the result of preservation rather than deliberate exclusion (Table 11). Furthermore, the presence of small bones suggests that bone collection was undertaken with a certain degree of care.

Large fragment sizes were frequent in the assemblage (Table 11). The deposits that had the smallest fragments were from contexts that had been truncated. Thus, the fragmentation observed among these is more likely to be the result of modern activity than it is funerary treatment (cf. McKinley 1994). The overall white colour of the remains suggests that the cremated bone was well cremated at a temperature over 600–700°C (Holden *et al.,* 1995, McKinley 2000a, 404), with relatively even burning throughout. An efficient pyre technology that encountered no specific difficulties would seem to have been employed. One fragment, that of a femur (deposit 320) was weathered. This may indicate exposure of bone for a length of time prior to burial in the ground. Possibly it suggests that remains were not immediately buried following cremation. However, no other fragments were weathered and this may just be incidental.

Context	Group	Weight (g)
145	Ditch 151	1
148	Grave 150	17
149	Grave 150	728
167	Ditch 170	1
240	Grave 242	3
282	Grave 281	59.5
285	Grave 283	326
286	Grave 283	16
287	Grave 280	0.5
288	Grave 280	0.5
291	Grave 281	154
295	Grave 280	82
315	Ditch 233	5
320	Grave 251	2.5

Table 9 Weights (g) of cremated human bone by deposit.

The deposit with the largest weight (728g) was an urned cremation burial from grave 150 (Table 9). Adding the weight from another deposit in the same grave brought the total weight to 745 g. Investigations in modern crematoria have found that the average bone weight of a cremated adult individual is *c.*1000–2400 g (McKinley 2000a, 269). The weight of the urned burial does not even match 50% of the expected weight for a cremation burial (male or female). In fact, all deposits that were thought to represent adult individuals weighed less than 50% of the expected weight. This is similar to other Roman cemeteries in southern England and may be due to a number of factors such as loss of bones due to post-depositional disturbance by modern activity (Mckinley 1997, 250). It is very unlikely that this finding reflects superficial collection of bones by the mourners, as most parts of the skeleton were represented in the assemblage, including small bones. Other factors, such as heavy truncation by machining and the poor survival of spongy bone are more likely explanations for the lower than expected weights.

Minimum number of individuals, age and sex

A minimum of one individual was present in each deposit. However, it is likely that there were fewer individuals present if deposits that appear to relate to the same burial are combined (see Table 9), and it is more likely that the assemblage represents a minimum of nine individuals, rather than 14. Of these, five were from burials, including two possibly male adults. A further three individuals were recovered from ditch fills.

No pathological lesions were observed on the remains, and this may be significant (see Wood *et al.* 1992). However, the small sample size and the absence of specific skeletal parts (such as orbital roofs) have meant that an accurate assessment of pathology has not been possible.

The skeletal remains

H. Webb and L. Loe

Methodology

Standard anthropological and palaeopathological examination was undertaken in accordance with published guidelines (Brickley and McKinley 2004). Condition and

Anatomical region	Context and weight (g)													
	145	148	149	167	240	282	285	286	287	288	291	295	315	320
Skull	0	4	178	0	0	16	30	1	<0.5	<0.5	33	49	0	0
Axial	0	1	68	0	0.5	4	18	2	0	0	3	6	0.5	0
Upper limb	1	2	87	0	1	11	70	4	0	0	15	10	2	0
Lower limb	0	3	143	0	0.5	4	113	7	0	0	15	2	0	1
Unidentified	0	7	252	1	1	24.5	95	4	0.5	<0.5	88	15	3	1.5
TOTAL	1	17	728	1	3	59.5	326	18	0.5	0.5	154	82	5.5	2.5

Table 10 Weights (g) of cremated human bone by anatomical element.

Size	Context and weight (g)													
	145	148	149	167	240	282	285	286	287	288	291	295	315	320
>10 mm	1	0	158	0	0	3	144	5	0	0	56	14	0	2
10-5 mm	0	17	570	0.5	3	56.5	181	13	0.5	<0.5	98	68	5.5	0.5
<5 mm	0	0	0	0.5	0	0	1	0	<0.5	<0.5	0	0	0	0
TOTAL	1	17	728	1	3	59.5	326	18	0.5	0.5	154	82	5.5	2.5

Table 11 Bone fragment size by deposit.

Contexts	Type	Sex	Age
148, 149	Unurned cremation grave 150	Possible male	Adult
240	Urned cremation grave 242	No data	No data
282, 291	Urned cremation grave 281	Unknown	Subadult (6-12 years)
285, 286	Urned cremation grave 283	Possible male	Adult
287, 288, 295	Urned cremation grave 280	Unknown	Adult
320	Unurned cremation grave 251	Unknown	Possible Adult
145	Ditch 151, possibly redeposited burial	Unknown	Subadult
167	Ditch 170, possibly redeposited burial	Unknown	Unknown
315	Ditch 233, possibly redeposited burial	Unknown	Unknown

Table 12 Minimum number of individuals, age and sex.

completeness were assessed and an inventory was completed of all of the elements that had survived.

Overall, the preservation of the material, was good. There was limited erosion on cortical bone and joint surfaces, trabeculae were largely intact and most elements had retained their overall structural integrity. However, all the remains were highly fragmentary and incomplete. In particular, skeletons 200 and 317 were represented by a few fragments only. The full human remains report is held in the site archive.

Skeleton 183 (Grave 185)
Between 25% and 50% of the skeleton had survived. It was represented by fragments of cranium and mandible, the long bones of the arms (humerus, radius and ulna) and the legs (femur, tibia and fibula) and a few small fragments of pelvis, and vertebrae (including the atlas and axis, the first two cervical vertebrae). Based on the morphology of the occipital protuberance, it was estimated that this individual was possibly male. The age of the individual, estimated by observing the attrition on the molar teeth (Brothwell 1972; Miles 1962), was between 25 and 35 years.

Calculus (tartar) was present on many of the teeth. In most cases the severity was recorded (after Brothwell 1972) as only slight but there were rather heavy deposits on the buccal surfaces of the left maxillary molars. Calculus is formed by the mineralisation of organic material and bacteria and, as such, reflects the lack of importance (or perhaps inability owing to illness) given to maintaining healthy teeth. The fact that the heaviest calculus was present on the cheek side of the upper maxillary molars is not surprising, given that it develops most commonly on the teeth near the salivary glands (Roberts and Manchester 1997, 55).

Skeleton 200 (Grave 202)
Only two small fragments of bone were present. These are possibly fragments of calcaneus, probably of an adult. It was not possible to estimate biological sex or a more precise age based on these remains alone. No pathology was observed.

Skeleton 299 (Grave 305)
The skeleton was between 25% and 50% complete and was very fragmentary. Fragments of cranium, left humerus, femora, tibiae and fibulae had all survived to some degree. Based on the overall size and morphology of the bones, coupled with the fact that the cranial sutures appeared to be closed and almost obliterated in places, the individual was estimated to have reached adulthood. Examination of the sexually dimorphic features of the cranium suggested that the individual was female. No pathology was observed on the post cranial skeleton. However, the endocranial surface of some of the cranial fragments displayed changes that are consistent with bone inflammation. The lesions appeared as thin, plaque like deposits of new bone with a smooth surface, and were possibly caused by trauma, tumours, tuberculosis, syphilis, primary and secondary infections of the meninges, or vitamin deficiencies (cf. Lewis 2004, 93). Whatever the cause of the new bone formation in the present skeleton, the smooth appearance of the deposits indicates that the lesions had healed by the time the individual died.

Skeleton 317 (Grave 333)
Very limited material was present and included three right humeral shaft fragments (which could be reunited) and a further eight small long bone shaft fragments, possibly also from the humerus. The remains represent an adult but no diagnostic features were present that would allow a more precise age, or sex, to be estimated.

Skeleton 337 (Grave 335)
Despite being very fragmentary, this skeleton was the most complete of the assemblage, having more than 75% of its elements surviving. All areas of the skeleton, including the skull, limbs, pelvis, shoulder girdle, vertebrae, ribs, hands and feet, were represented. The sex of the individual was male, based on cranial and pelvic morphology; the metamorphosis of the auricular surface (Lovejoy *et al.* 1985) placed the individual at the upper end of the mature adult category. Of particular note were the large mastoid processes and extremely pronounced occipital protuberance – the latter giving attachment to the Ligamentum nuchae (Gray 1901, 56) – which is suggestive of a powerful jaw and neck.

A number of pathological lesions were recorded for this skeleton. On the distal portion of the right tibia shaft a small rounded area of raised, dense, slightly polished bone was present. It is probable that this lesion is simply a small benign tumour, such as a solitary exostosis or an osteoma (Aufderheide and Rodriguez-Martin 1998, 375), or the result of bony reaction to a minor trauma that happened a long time before death. The upper shaft of the right tibia appeared to be bowed medially, perhaps more than would be expected for a normal tibia. Such bowing may occur as the result of rickets, a disease caused by vitamin D deficiency during the growing period (Roberts and Manchester 1997, 173). However, the left tibia did not display any evidence for bowing, and other changes (for example, flared mataphyses) that are diagnostic of this disease were not present. It is therefore unlikely that rickets was the cause, and perhaps the bowing was simply morphological variation or the result of an old healed fracture. The distal articular surface of the left tibia displayed a linear groove that ran in a posterior-anterior direction, dividing the medial malleolus from the rest of the joint surface. While it is possible that this is a morphological feature (the right distal articular surface was incomplete so could not be examined for comparison), it is also a possibility that this is an old healed fracture, perhaps the result of a pronation or supination-adduction injury (Galloway 1999, 199–201), such as might be caused when falling and twisting an ankle.

Eburnation (polished bone), osteophytes (new bone growth on a joint margin or joint surface) and bony contour change were present within the left sterno-clavicular joint and in the left acetabulum (hip joint).

These changes are consistent with osteoarthritis (Rogers and Waldron 1995).

The left orbit of the frontal bone had a number of scattered, fine foramina (pits). Such lesions are representative of cribra orbitalia (Type 2) (Stuart-Macadam 1991, fig. 9.3a/b), which occurs as the result of iron deficiency anaemia. This may be due to an iron deficient diet, iron withholding as a result of increased pathogen loads or excessive blood loss, for example, through injury or chronic disease such as cancer (Roberts and Manchester 1997, 166). The ectocranial surface of many of the skull fragments, particularly the parietal fragments, was very pitted with fine pores, and this is likely to represent bone inflammation, possibly the result of a minor scalp irritation. The endocranial surface of the frontal bone also displayed bony change in the form of a few small, dense, not particularly pronounced, islands of bone. Such changes may be seen with a condition known as hyperostosis frontalis interna. However, this condition is found almost exclusively in women (Aufderheide and Rodriguez-Martin 1998, 419), and given that the skeleton is a male, the diagnosis is doubtful.

Dental pathology was also present in the form of periodontal disease, or alveolar bone resportion, observed around the right and left mandibular molars. The changes were accompanied by porous new bone that was located around the left mandibular margins and is indicative of bone inflammation. Slight calculus was recorded as present on many of the teeth. A carious lesion in the individual was relatively small and no abscess was visible on the external surface of the mandible.

	Cattle	Sheep/ goat	Horse	Medium mammal	Large mammal	Indeter-minate
Mandible	2					
Loose teeth	7	4				4
Atlas		1				
Axis		1				
Vertebra				45	13	
Rib				12	20	
Scapula	1					
Humerus	2*		1			
Ulna		2				
Metacarpal	1					
Pelvis		2				
Femur	1			1		
Tibia	3			1		
Calcaneus	1					
Astragalus	1					
Tarsal bones	2					
Metatarsal	4					
Phalanx 1	2	1				
Phalanx 2	1					
Long bone				23	19	
Indeterminate					2	198
Total (NISP)	28	11	1	82	54	202
MNI	2	1	1			
Weight (g)	1338	65	131	196	195	254

Table 13 Anatomical distribution of all species, including NISP, MNI and weight. Skeletal element used for MNI is marked with an asterisk.

ENVIRONMENTAL EVIDENCE

Animal bone

L. Strid

Introduction

The animal bone assemblage from the site comprises 378 re-fitted fragments from ditches and pits dated to the late Iron Age/early Roman period. The bones were recovered through hand collection and from wet sieved bulk samples (processed using a 500 m residue mesh). While 92.6% of the assessed bones derive from hand-retrieved contexts and 7.4% derived from sieved samples, the majority of the bones from the sieved contexts were very small (0.4% of the total weight) and mostly consisted of indeterminate fragments. A full record of the bone assemblage can be found with the site archive.

The assemblage

Forty bones (10.6%) could be determined to species (Table 13). The animals present included cattle, sheep/goat and horse. Most bones were in a somewhat poor condition. Traces of burning and animal gnawing were found on 39 and 2 bones respectively.

The predominance of domestic animals in the assemblage is typical for most archaeological sites from this period. The absence of pig is somewhat unusual, but is likely to be due to the overall small number of bones in the assemblage. Judging by epiphysial fusion, bone size and surface structure, the cattle, sheep/goat and horse bones mainly derived from sub-adult or adult animals. One juvenile cattle was present. Due to the small number of identified bones, a slaughter age pattern could not be discerned for the three taxa. Butchering marks were only found on a cattle metatarsal, which displayed cut marks on its distal shaft. The placement suggests skinning.

The wood charcoal and charred plant remains

D. Challinor

Introduction and methodology

This report presents the results of the full analysis of charcoal from two of the cremation burials (150 and 281), and the assessment of other samples which produced charred plant/charcoal remains. Standard analytical methods were applied to both the assessment and the analysis, in which the identifications from the assessment data are provisional, but those of the analysis were confirmed at high magnification.

Results: the cremation burials

The results of the assessment and analysis from the cremation burials are given in Table 14. Grave 242

produced no charcoal, while 280 and 283 produced a few fragments of *Quercus* (oak), *Fraxinus* (ash) and *Acer*/*Betula* type (maple/birch). The identification of *Acer*/*Betula* is tentative since there are several species with a similar diffuse porous pattern and the identification was not confirmed. However, it appeared that a single species was represented. Burial 251 contained a larger assemblage of the same range of species, but was not analysed since the integrity of the deposit was uncertain. However, it is notable that a single tuber of *Conopodium majus* (pignut) was also present.

Context 149 from the cremation deposit of grave 150 was entirely composed of *Quercus* charcoal, although a fragment of *Acer*/*Betula* type was noted in the backfill sample (148). Grave 281 was also clearly dominated by *Quercus*, with a quantity of *Fraxinus*. Other taxa were rare, with *Prunus spinosa* (blackthorn) roundwood fragments in context 282 and a single *Alnus*/*Corylus* (alder/hazel) piece in pot 290. The assessment of other samples within the same context (282) indicates consistency in the species distribution throughout the backfill of 281 and there were no significant differences in the composition of the ancillary pot fills and the main pit backfill. This fill also produced a couple of badly degraded cereal grains and a fragment of *Corylus avellana* (hazel) nutshell. The low incidence of non-charcoal remains suggests that their inclusion was probably accidental. However, the large quantity of *Arrhenatherum elatius* (onion couch grass) tubers from Grave 150 (context 149) is more significant.

Results: ditches and pits

None of the samples from ditches and pits was analysed in full, but the results of the assessment are presented in Table 15. The range of charcoal taxa was similar to the cremation burials, mainly *Quercus,* with *Fraxinus, Acer*/*Betula* type and *Prunus*, but there were other diffuse porous species as well. Generally the assemblages from the ditch samples were more mixed than the cremation samples, but the deposits may well represent mixed dumps of domestic and pyre debris.

Two contexts produced more significant charred plant remains. Contexts 238 and 315 produced assemblages with 30–50 degraded cereal grains, mainly *Triticum* (wheat) and some *Hordeum* (barley). There were also a few grains which had the superficial appearance of *Secale* (rye) but this identification was not confirmed. Chaff and weed seeds were scarce and limited to occasional crop weeds such as *Galium* (cleavers) and *Rumex* (dock) and uncharred *Fumaria* (fumitories). In summary, the grain was not well preserved and other remains, such as chaff and weeds seeds, were present only in small quantities.

Discussion

The cremation samples from Thaxted are consistent with the general picture from Roman Britain, and are strikingly similar to the samples from a cremation cemetery examined at Strood Hall, Essex (Challinor 2007). Oak, ash and maple dominated all the assemblages, from all categories of pyre deposit. The abundance of oak or ash in cremation deposits, compared with other species, may relate to the pyre structure. If the timber from these trees were providing the supports in a central position they would be less likely to have been totally reduced to ash (Gale 1997). The presence of occasional other taxa in the assemblages is likely to represent the remains of kindling.

		Grave	**150**	**251**	**280**	**281**				
		Context number	**148**	**149**	**320**	**287**	**295**	**282**	**290**	**291**
		Sample number	**101**	**102**	**137**	**121**	**123**	**125**	**128**	**153**
		% flot identified	**-**	**12.5**	**-**	**-**	**-**	**12.5**	**100**	**25**
		Charcoal								
Quercus sp.	oak		+	96hs	+++	+	+	71rs	26s	87rs
Alnus/Corylus	alder/hazel								1	
Prunus spinosa	blackthorn							12r		
Acer/Betula type	maple		+		+	+				
Fraxinus excelsior	ash				++			36hr	7	10
Indeterminate								2		1
Total				96				121	34	98
		Charred plant remains								
Triticum sp.	wheat grain				+					
Cerealia indet.	indeterminate grain							+		
Cerealia indet.	culm							+		
Corylus avellana	hazel nutshell							+		
Conopodium majus	pignut			+						
Arrhenatherum elatius	onion couch grass			+++						
Weed seeds								+		

Table 14 Charcoal and charred plant remains from the cremation burials. Samples highlighted in bold were analysed in full; the numbers represent fragment count and the crosses an estimate of abundance (r=roundwood; s=sapwood; h=heartwood; + = up to 5 items; ++ = 5–25; +++ = 25–100).

Group number	Fill of	Context	Sample	Charcoal	Grain	Chaff	Weeds
170	166	167	143	++ *Quercus, Acer/Betula, Prunus,* other diffuse			
259	174	171	103	++++ Predom. *Quercus* (roundwood), *Fraxinus*	+		
188	191	188	108	++++ Predom. *Quercus*			
233	214	213	142	+ *Quercus*			
315	261	315	147	++++ *Fraxinus, Quercus*, Maloideae, other diffuse	+++ *Triticum*, *Hordeum*	+ glume base	+
236	-	238	115	+++ Maloideae, *Quercus,* Fraxinus, *Prunus*. Lots roundwood	+++, *Triticum/ Secale.*		++ *Galium*

Table 15 Charcoal and charred plant remains from ditches and pits (+ = up to 5 items; ++ = 5–25; +++ = 25–100, ++++ = >100).

The presence of charred tubers, particularly onion couch, is not uncommon in cremation assemblages, where the grass may have been accidentally uprooted, or the pyre structure was on grass, or grass was used as packing (Challinor 2006). Another possibility is that the tubers were collected for food, although significant preparation would be required to ensure their edibility. This does seem the likely provenance for the pignut tuber in 251, since these tubers detach easily from their stems and are unlikely to have been uprooted accidentally (Moffet 1999).

The two samples which produced reasonable quantities of charred cereal grains are likely to have resulted from cooking or the accidental burning of stored products or the end cycle of crop processing. The chaff and weeds which would indicate earlier phases of crop processing activities are absent. The remains may also be mixed with feasting or ritual activities associated with pyre debris. The cereal remains from Thaxted were generally wheat grains which were consistent with Triticum spelta/dicoccum (spelt or emmer wheat) but the absence of chaff and the high degradation of the grains limited identification. It is likely that the main cereal crop was spelt wheat, which had largely taken over from emmer at other sites in this area in the late Iron Age (Carruthers 2007).

DISCUSSION

Prehistoric evidence

While no prehistoric features were uncovered, flint and pottery collected as residual finds in later deposits suggests that a Bronze Age settlement existed near the area of excavation. This material adds to the scatter of near-contemporaneous finds from other areas around Thaxted, for example Neolithic or Bronze Age pottery recovered from fieldwalking east of the town at Goddards Farm (Ecclestone and Medlycott 1993, 201), but little can be gleaned in terms of settlement character from it.

The late Iron Age or early Roman enclosure and cemetery

Chronology and regional context

Pottery recovered from the fills of the enclosure ditches and the pits dates to the 1st century AD, while that from the burials spans a broader period from the 1st to the 3rd century or later. This may be taken to suggest that activity can be divided neatly into two phases, with the enclosure going out of use before most burials were made, an interpretation supported by the insertion of one cremation grave (281) into the upper fill of ditch 259. However, the earliest graves (251 and 333) appear to date to the early or mid 1st century AD and it may be better to imagine that the enclosure and cemetery were established simultaneously around this time, with the enclosure serving to demarcate a space set aside for burial. The enclosure was then allowed to silt up relatively rapidly, probably by the late 1st century AD, while the cemetery continued in use through the 2nd century and into the 3rd century, as demonstrated by the pottery from grave 283.

The most obvious local comparisons for the cemetery are those from Strood Hall (Biddulph 2007, 117–138), Chequers Lane, Great Dunmow (Wickenden 1998) and Stansted (Havis and Brooks 2004). Of these three cemeteries, that at Great Dunmow, comprising 17 cremation burials contained within a sub-rectangular enclosure and abutting a trackway ditch is the most like Thaxted. However, here the cremations were all contained within the enclosure and no inhumation burials were present. The funerary pottery from Great Dunmow, along with that from Great Chesterford (Wallace 1990, 13–16), is also most like the material from Thaxted (see Biddulph above). While the Thaxted cemetery shares some characteristics with that at Strood Hall – both were defined by enclosures and were mixed-rite – the funerary pottery from Strood Hall differs from that of Thaxted, belonging to a Gallo-Roman tradition (Biddulph 2007, 135; and see above). There are also differences between Stansted and Thaxted, the former consisting of dispersed groups of cremations, which were not enclosed by ditches and produced a funerary assemblage of wealthy Gallo-Roman tradition, more akin to that at Strood Hall (Havis and Brooks 2004, 195). However, the long chronology of Thaxted's cemetery suggests that other burials exist nearby, which could point to a rather more dispersed pattern.

Of the other features at Thaxted, the distribution of ditches suggests the presence of a substantial enclosure, only the south-western corner of which was revealed during the course of the excavations. The presence of a

number of intercutting ditches, on slightly different alignments, suggests that the enclosure boundary was remodelled on several occasions, despite being relatively short-lived. Although the enclosure was probably constructed in order to define a burial area, the graves were not confined to its interior; grave 150 was situated to the south, while grave 281 had been cut into infilled ditch 259. This loose observance of boundaries is not uncommon in Roman-period cemeteries, as can be seen at the nearby site of Strood Hall where several burials lie outside the main enclosure (Biddulph 2007, 119).

Funerary and burial rites

The fragmentary evidence recovered from the cremation graves reveals that the deceased were generally cremated on oak- and ash-built pyres, which possibly rested on grassy fields. The fires were lit with the aid of kindling taken from alder or hazel, blackthorn, and maple, and cereal waste may have been used also. A burnt pin from grave 281 probably came from the clothing worn by the deceased on the pyre. The cremated remains were collected carefully, with no apparent bias towards any particular anatomical element, and placed in pots, or bags, or loose within the grave. Unburnt shoes, pots, and metal objects were then deposited. For the inhumation burials, unburnt bodies were placed in coffins within the grave, and occasionally accompanied by a similar range of grave goods. The presence of late Iron Age or early Roman inhumation graves at Thaxted could be seen as unusual in a period in which cremation dominated. However, the inhumation rite is by no means unknown during this time, and, indeed, where recorded, has been regarded as a survival of native Iron Age tradition (Philpott 1991, 57; Whimster 1981). The discovery of a rich grave at Kelvedon, in which a warrior was buried unburnt with his sword, shield and spear and drinking equipment in the 1st century BC (Sealey 2007), supports this view, and other high-status Iron Age inhumation burials are known further afield in Kent, for example at Deal (Parfitt 1995). Crucially, the Thaxted graves add to the growing list of late Iron Age and early Roman lower-status inhumation graves from the county – uncovered, for example, at Strood Hall, North Stifford, and West Ham (Timby *et al.* 2007, 124; Wilkinson 1988, 37; Hiller and Wilkinson 2005) – and help to define a more widely-distributed tradition.

As to the status of the deceased and the settlement from which they derived, the finds assemblage, and in particular the pottery, is too small to draw any firm conclusions, but its general character hints at a fairly lowly status, perhaps a rural settlement. But as the samian from the cemetery indicates, this is not to say that the inhabitants did not enjoy wider trading contacts or appreciate the use of continental-style ceramics. At the time that the burials were made, the town of Great Dunmow and, to a lesser extent Great Chesterford, provided markets for ceramics, and Thaxted doubtless also benefited from its proximity to the road that connected the two (Going 1988b, fig. 64). The residual Roman box flue tile and brick add to the building material known at Thaxted; the remains of a building, including tesserae and roof tile were found a just over a kilometre to the north near Bow Croft Wood (VCH 1963, 187). The Sampford Road site may have belonged to the hinterland of a villa, although Strood Hall, whose late Roman phase included an otherwise modest farmhouse that had a tiled roof, hypocaust, and glazed windows (Biddulph 2007, 112), reminds us that not all tiles are associated with villas.

The late medieval and post-medieval features

Chronology and character

The late medieval and post-medieval features are dated by floor and roof tile and brick from the fills of the earliest ditch 125. This material is likely to have come from a late medieval building, possibly somewhere in the immediate vicinity, perhaps to the south-east of the excavation area. Ditch 338 and pit 119 are assumed to date to the post-medieval period, by virtue of the fact that they cut ditch 125.

It is difficult to be certain of the function of these features, given that they were only partially exposed within the limits of the excavation. However, the presence of ceramic building material from the fills of ditch 125 suggests that it may have served as a boundary ditch defining a building. Ditch 338 may reflect post-medieval reorganisation of this boundary and pit 119 may have been associated with the same activity.

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Roman deposits at Lynmouth Gardens/Parkway, Chelmsford; excavations 2003

Kate Nicholson with Ben Roberts

With contributions from Jane Cowgill, Nina Crummy, Val Fryer, Andy Peachey and Carina Phillips.
Illustrations by Donna Cameron (finds) and Iain Williamson (archaeology)

Excavation at Lynmouth Gardens/Parkway, Chelmsford, revealed a Roman ditch together with six pits dating to c. AD 120–210. The waterlogged organic layers of the largest pit contained fragments of a wooden tablet with silver inlay, a woven basket and various leather shoe fragments amongst other debris. No evidence for the Roman road conjectured to pass through the site was found.

INTRODUCTION

Between January and May 2003, Archaeological Solutions (AS) carried out excavations in two stages on a site of *c.* 344m² at Lynmouth Gardens/Parkway, Chelmsford (centred on NGR TL 7122 0619; Fig. 1) The excavations revealed the presence of a ditch, a gully, six pits and an urned cremation; all features were found to be of Roman date.

Site description

Description of the site location, topography, geology and soils

The site is located between the Parkway to the north-east and Lynmouth Gardens to the south-west, in eastern central Chelmsford (Fig. 1). It comprises *c.* 1268m² and is situated on high ground at *c.*23.6m AOD overlooking the valley of the Chelmer to the north-east. It is underlain by First Terrace River Gravels of the Chelmer which rest on Eocene London clay.

Historical and archaeological background

The grandly named Roman town of *Caesaromagus* was located south of the river Can and modern Chelmsford, along the Roman London to Colchester road and the road which branched east from this towards Heybridge. Roman activity in the area is thought to have begun in the aftermath of the Boudiccan revolt, with the construction of a fort just south of the river Can on the site of a pre-Roman Iron Age farmstead (Wickenden 1996, 80–81). An annexe of the fort has been identified *c.* 150m to the south-east, on the Godfreys Mews site (Wickenden 1996, 80; Drury 1988, 128). This fort was short-lived, and when the London to Colchester road (whose line is preserved in the modern Moulsham Street) was gravelled in AD 65 it passed directly over its site.

The alignment of the fort's defensive features was retained in that of a series of enclosures of late first to early second-century date along the London to Colchester road, interpreted as a road station (Drury 1988, 56, 128–130). These in turn were superseded in the Hadrianic or early Antonine (AD120–150) period by a *mansio*, located to the east, within a large official precinct (Drury 1988, 130). The town expanded in the mid-second century (Drury 1988, 136). Defensive earthworks constructed in the Antonine period are thought to have been remodelled in about AD 200 but had been levelled by AD 220 (Drury 1988, 135; Wickenden 1996, 88). Activity at *Caesaromagus* appears to have ceased in the 5th century.

About 25m to the east of the inferred north-east boundary of the Roman town (Wickenden 1996, 89) is a Romano Celtic temple whose origins lie in the mid first century and which saw its final incarnation as an octagonal structure in *c.* AD 325 (Wickenden 1996, 82). The Lynmouth Gardens site lies *c.* 200m south-east of this, on the projected course of a Roman road running south-east from the London to Colchester road, parallel to the road to Heybridge.

The medieval town of *Chelmersford* was a deliberate creation of the Bishop of London; it was situated north of the river Can and was a site of prosperity and rapid economic growth. Although the hamlet of Moulsham (on the site of the Roman town) was incorporated into the *vill* of *Chelmersford* in 1199, cartographic evidence suggests that the Lynmouth Gardens area remained undeveloped until the twentieth century, though it may have been used for agricultural purposes.

Excavation, recording and phasing

The total area excavated during the evaluation and excavation was approximately 344m². The features identified were an urned cremation (F1005), six pits (F2006, F2008, F2010, F2012, F2020, F2025), a ditch (F2017) and a gully (F2004), all dated as Roman with the exception of the gully for which no date could be determined (Fig. 2).

The excavation

The cremation

A circular, near vertical sided, flat-based pit (23 cm in diameter and 26 cm deep), F1005, was revealed in the

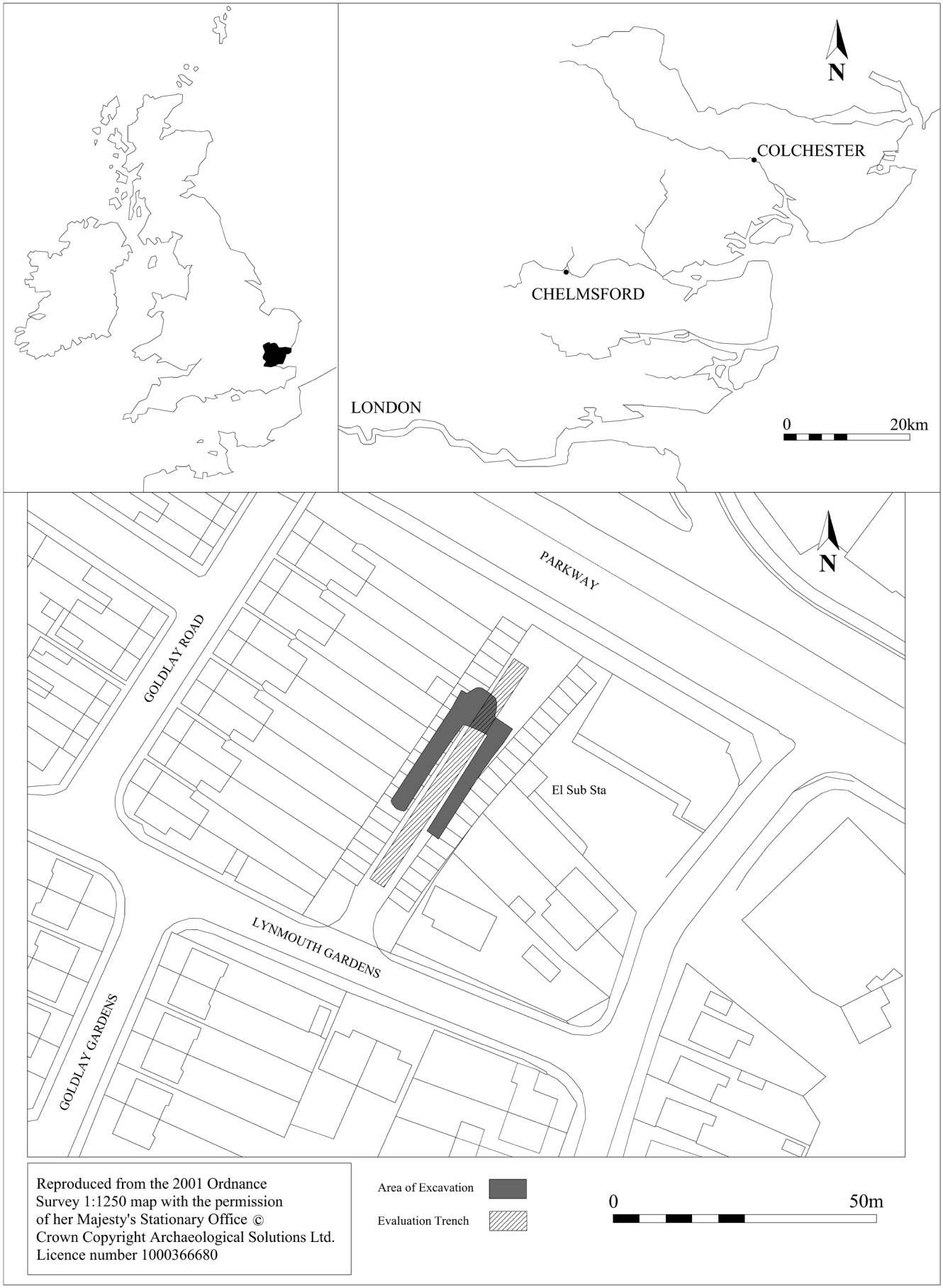

Fig. 1 Site location plan © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

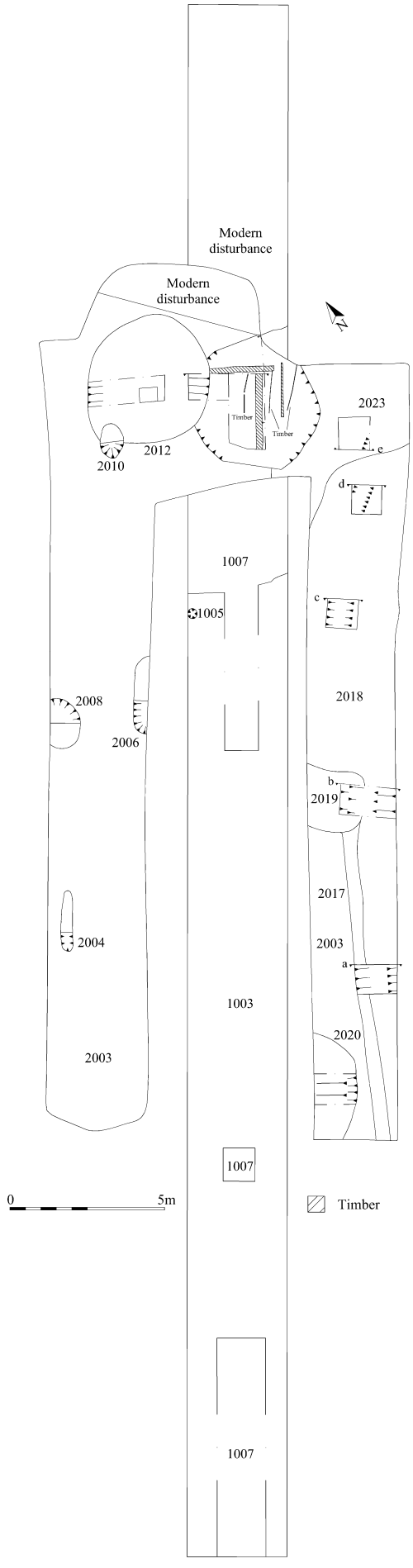

Fig. 2 Trench plan

central part of the excavated area during the archaeological evaluation (Fig. 2). It was found to contain an urned cremation. The fill of the pit was a grey mottled silty clay with occasional angular flint. The urn was in poor condition, with little remaining of its rim and body and so its precise date could not be determined; included in the cremation was the axial bar from a copper-alloy brooch dating to the 1st to 2nd century.

The ditch

F2017 was recorded as a ditch, located in the southern part of the site and running south-west to north-east (Figs 2–3). Apart from a depth of 0.75m, the dimensions of the feature could not be recorded as it extended beyond the excavated area in length and width. Its sides were steep and its base was flat with an additional dip possibly caused by ditch maintenance or water flow. F2017 had five fills (L2022, L2024, L2023, L2018 and L2019). L2022, which filled the base of the feature along its entire length, was a waterlogged silty clay gravel from which brick/ tile fragments (243g) and mid 2nd to mid 3rd -century pottery (1171g), including a mortarium, were recovered. An environmental sample taken from segment E of L2022 produced only indeterminate grain fragments, small charcoal fragments and an unidentified seed. L2018 and L2019 were sandy silts with frequent flint gravel, distinguishable by the grey colour of the former and brown colour and ferrous nature of the latter. L2018 overlay L2022 in all segments except segment E. Finds from L2018 comprise mid 2nd to mid 3rd-century pottery (3000g) and brick/ tile fragments (4483g); L2019 also yielded brick (435g) but the pottery found within it (132g) could be dated only as Roman. The distribution of L2019 suggests that it may be the fill of a shallow gully or pit or a water–caused depression in the top of L2018. L2024 lay between L2022 and L2018 in segments C and D, and was a heavily iron-panned layer of silt, sand and gravel, perhaps resulting from mineralization of L2018 and L2024. As well as a lava quern fragment (275g), finds from this layer include mid to late 3rd-century pottery (1224g) and tile (2042g). In segment E, L2018 was absent from the fill of F2017 and L2022 was overlain instead by L2023, an orange-brown sandy silt of very ferrous nature with moderate gravel, from which animal bone (68g) and Roman pottery (73g), including samian ware from eastern Gaul, were recovered.

The gully and pits

Gully F2004 and small Pits F2006 and F2008 were located in the western part of the excavated area. All three were filled by a dark to very dark brown silty clay with occasional to moderate gravel. The gully (1.90 × 0.35m × 0.09m) had straight, moderately sloping sides and a flat base; it yielded no finds and so could not be dated. Pit F2008 (1.40m × >1.10m × 0.28m) had moderately sloping, convex sides and a flat base. It contained early 3rd-century pottery (499g), brick/ tile (890g), burnt animal bone (1g), slag (22g) and an iron nail with a round, flat head and straight sided shank. The pottery

recovered from this feature includes eastern Gaulish samian ware and a plain rimmed beaker with a funnel neck from the Nene Valley; both of which date to the early third century. An environmental sample taken from L2009 yielded a small amount of barley grain along with charcoal, charred root/ stem and a black tarry material thought to result from the combustion of organic materials. Pit F2006 (2.00m × >0.44m × 0.44m) had steep, approximately straight sides and a concave base. It contained mid 1st to early 3rd-century pottery (72g), including southern Gaulish samian ware, and brick/ tile (28g). Large Pit F2020 (>2.80m × >1.50m × 0.49m), located in the south-west of the site, had concave sides and a sloping base, concave in the centre. It was filled by L2021, a mid brown-grey, iron-panned silty clay with moderate gravel. Finds from this feature comprise a copper alloy brooch pin (<1g), brick/ tile (789) and late 2nd-century pottery (546g) including a piece of samian ware from central Gaul bearing the partial maker's stamp **MA\ /IM**, probably attributable to Martius III of Lezoux (*c.*AD160 to 190). An environmental sample taken from L2021 was found to contain nothing but small charcoal fragments.

Pit F2010 (1.10m × 0.85m × 0.39m) had sloping sides and a concave base; it was filled by a dark greyish brown clayey silt (L2011) which yeilded mid 2nd to mid 3rd-century pottery (70g), ceramic building materials, cinder (<1g), struck flint (6g) and a Roman copper-alloy bell-shaped stud with an iron shank and a perforation (possibly for the attachment of a chain), identified as Allason-Jones's type 1. It cut through Pit F2012 (3.00m × 2.50m × 0.38m), which had sloping sides and a flat base. This pit had four fills, L2016, L2015, L2014 and L2013 in ascending order. L2016 was a compact, dark red-brown iron-panned gravel; L2015 was a light to mid grey, iron panned sand with moderate gravel inclusions; L2014 was a grey-brown iron-panned sand with gravel inclusions; and L2013 was a mixed black/ dark brown iron panned flint gravel. No finds were recovered from any of these contexts. Pit F2012 cut pit F2025.

Pit F2025 (= F1008 (Evaluation))

Pit F2025 (>4.05 × >3.70 × 1.60) was cut by Pit F2012 (Fig. 3). During the excavation five fills (L2030, L2028, L2027, L2029 and L2026) were recorded in this pit (Fig. 3).

L2030 was a light blue-grey, silty clay/ gravel from which pottery (512g) of early to mid 2nd century date was recovered. It was overlain by L2028, a thick layer of mid bluish grey waterlogged silty clay with horizons of black organic material within it. Along with horizons of twigs and leaf litter, L2028 contained large pieces of wood ranging from a plank to branches/ trunk sections. Other finds from L2028 include early to mid second century pottery (2652g), tile (3217g), animal bone (210g), four fragments of the slightly splayed iron hoops used to fix a stave-built wooden bucket (Fig. 4 No.5), an iron nail and modern glass (221g). The pottery recovered from this context includes sherds of southern Gaulish samian ware and central Gaulish samian ware including two bowls, one attributed to the potter Drusus I (AD100 to 120), the other with decoration in the style of Attianus (AD130 to 160). The most significant finds from this layer, though, were a fragmentary leaf from a stylus tablet of silver fir inlaid with silver strips (Fig.4 No.1), two fragments of basket work (Fig.4 No.2) and several

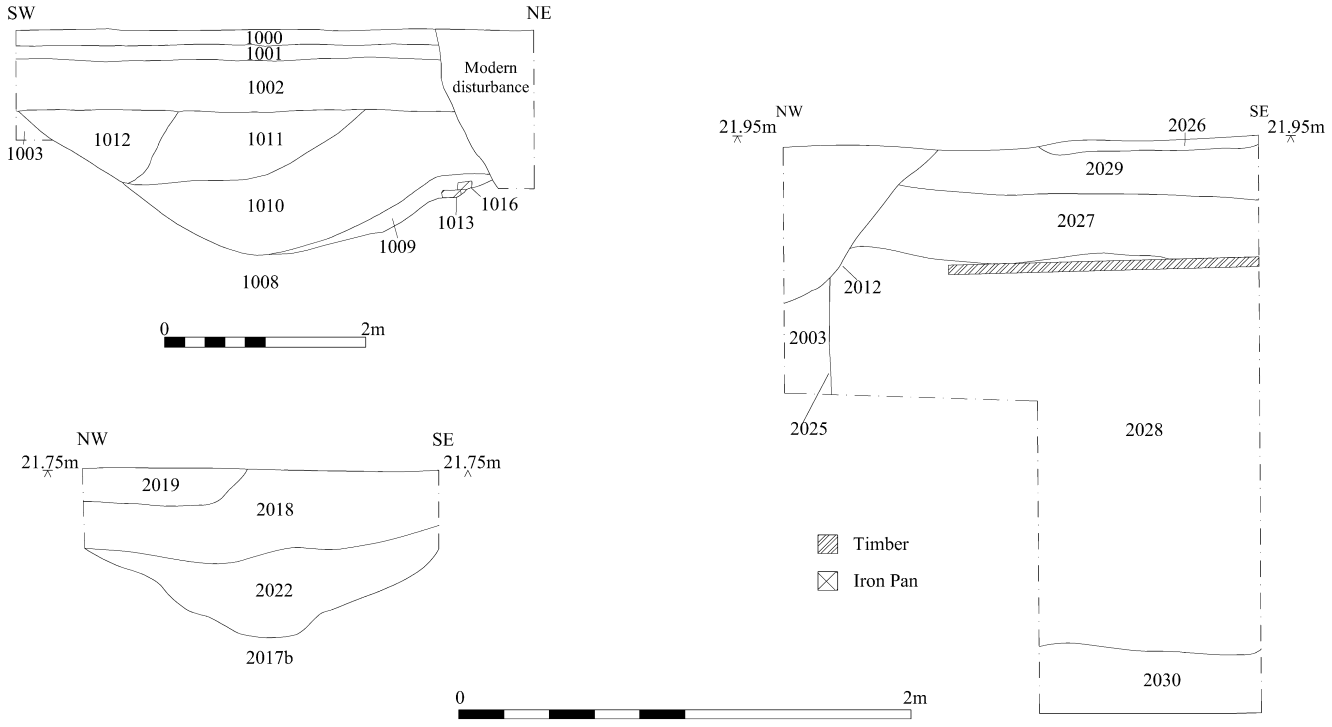

Fig. 3 Sections

fragments of leather shoes (Fig. 4 Nos 3, 4, 6); these are further described and discussed below.

L2027, which lay above L2028, was a dark brown to black silty clay which contained early to mid 2nd-century pottery (2139g), brick/ tile (1211g), animal bone (357g) and a fragment of a modern shoe (44g). Above this lay L2029, a mid-grey clayey silt with frequent ferrous inclusions which yielded early to mid 2nd-century pottery (3911g), tile (317g) animal bone (466g), oyster shell (23g), furnace lining (150g), a tuyère (150g) and the soles and insoles along with fragments of the uppers of a child's left and right shoes (Crummy, below). Pottery in L2029 included sherds of a Cologne colour-coated beaker of early to mid 2nd-century date (similar sherds in L2027 are likely to have come from the same beaker), as well as a mica dusted 'S'-shaped bowl from Colchester and a sherd of the body of an early 2nd-century mortaria, a rim sherd of which was found in L2027. The uppermost fill of F2025 was L2026, a thin spread of compact light blue-grey silty clay situated centrally within the feature; it yielded 2nd-century pottery (173g), animal bone (34g), three tuyères (76g, 20g, 155g) and furnace lining (261g).

It has not been possible to fully reconcile the fills of this feature recorded during the evaluation with those identified during the excavation. The lowermost of the evaluation fills (L1009), a brown silty clay which yielded mid 2nd-century pottery (706g), tile (76g) and four timbers (two planks, a branch-like piece and a stake embedded vertically in the pit side) which may have been part of a structure. Above this was L1010, a mid to dark grey silty clay which yielded mid 2nd-century pottery (3654g), tile (1409g), animal bone (214g), slag (5g) and part of a copper alloy snake's head bracelet (11g) (Crummy, below). L1011 sealed L1010, and was a mid-brown sandy clay with frequent gravel which contained late 2nd-century pottery (1110g), tile (631g), a possible quern stone fragment (63g), slag (33g) and a modern steel screw fragment (5g). L1012 was the final fill of this pit identified during the evaluation; it was a compact, hard and friable reddish brown gravel with moderate silty sandy clay inclusions and evidence of iron panning, it contained 2nd-century pottery (203g).

SPECIALIST REPORTS

The Romano-British Pottery

By Andrew Peachey

Introduction

Wherever possible reference has been made to published fabric descriptions and form types, principally the series compiled from sites in Chelmsford by Going (1987). Fabric descriptions were also compared with those published for the National Reference Collection (Tomber and Dore 1998). The fabric codes used in recording were based on this system, although full fabric names are used in this report. The pottery was examined at ×20 magnification and recorded on *pro forma*. The details recorded were fabric type, sherd count, weight, form type (including references to other site assemblages), estimated vessel equivalence (r.eve), state of preservation, and date. The *pro forma* will be deposited as part of the site archive. Form comparisons were made with published groups from Chelmsford (Going 1987), Colchester (Hull 1963), and London (Davies, Richardson, and Tomber 1994). Samian ware forms are referenced to the series compiled by Webster (1996).

Pit F2025 contained 51.76% (by sherd count) of the pottery recovered from Lynmouth Gardens. The average sherd size of the pottery from Pit F2025 (L2026, L2027, L2028, L2029, and L2030) is 25.94 grams (excluding storage jar fabrics). The pottery is only slightly abraded and is well preserved with the surface treatment (e.g. colour-coats and burnishing) on many vessels still completely intact. The pottery from the other features has an average sherd weight of only 12.67 grams (excluding storage jar fabrics). The pottery from these features is fragmentary and highly abraded with only small patches of original surface treatments surviving.

Samian

A total of 69 sherds of samian ware, weighing 975 grams, are present in the assemblage. With the exception of seven sherds from Pit F2025 (L2028), the samian ware is highly fragmented and abraded with only patches of red slip surviving and decoration is unrecognisable. The seven sherds from Pit F2025 (L2028) have a complete slip that has retained a high gloss. Southern Gaulish samian from Pit F2006 (L2007) (form 18R) and Pit F2025 (L2028) (form 18) may not be residual, despite the fact that these wares were not imported into Britain after the late 1st century. The assemblage from Pit F2025 (L2028) probably dates to the first half of the 2nd century, and the date for Pit F2006 (L2007) ranges between mid 1st to early 3rd centuries. It is possible that the vessels remained in use and were discarded with products produced at a later date. By sherd count, 84% of the samian ware was imported from Central Gaul, reflecting the predominantly 2nd-century date of the features. All but one sherd of these wares was probably manufactured in Lezoux, but abrasion has hampered the identification of some examples. Eastern Gaulish samian ware, from Argonne and Trier, was present in Pit F2008

Fabric Group	Pit F2025		All other features	
	% Sherd Count	% Weight	% Sherd Count	% Weight
Samian ware	2.67	2.20	7.03	3.49
Other imported fine ware	0.28	0.14	0.00	0.00
Romano-British fine ware	1.69	1.41	2.81	1.77
Romanising grey ware	24.61	22.57	19.13	10.94
Other coarse wares	12.38	9.06	12.38	9.69
Storage jar fabrics	9.85	20.49	6.47	17.24
Mortaria	0.28	0.36	0.42	0.64
Totals	*51.76*	*56.23*	*48.24*	*43.77*

Table 1 Distribution of fabric groups in pit F2025 compared to other features

Fabric Type	CHE Fabric*	Sherd Count	%	Weight (g)	%	r.eve	%
Romanising grey ware	45	311	43.7	5741	33.5	6.50	45.4
Sandy grey ware	47	73	5	1376	1	1.21	5
Fine grey ware	39	19	10.2	584	8.03	1.54	8.46
Micaceous grey ware		12	7	293	3.41	0.08	10.7
Black-burnished ware 2	41	38	2.67	393	1.71	0.92	7
Alice Holt/Farnham reduced ware	43	11	1.69	181	2.29	0.40	0.56
East Anglian reduced ware (mortaria)	49	2	5.34	61	1.06	0.10	6.43
Romano-British mica-dusted ware	12	9	1.55	323	0.36	0.16	2.80
Hadham reduced ware 1	36	5	0.28	66	1.89	0.07	0.70
Hadham oxidised ware	4	5	1.27	96	0.39	0.12	1.12
Hadham white-slipped ware	14	3	0.70	82	0.56	0.00	0.49
Red-slipped ware, probably of Hadham origin	18	1	0.70	11	0.48	0.06	0.84
			0.42		0.06		0.00
Cologne colour-coated ware	6	2	0.14	50		0.00	0.42
Colchester colour-coated ware 1	1	5		35	0.29	0.00	
Colchester colour-coated ware 2	1	9	0.28	53	0.20	0.17	0.00
Lower Nene Valley colour-coated ware	2	4	0.70	28	0.31	0.22	0.00
		1	1.27	14	0.16	0.00	1.19
Lower Nene Valley self-coloured ware	27	10	0.56	260	0.08	0.10	1.54
	21	6	0.14	48	1.52	0.00	0.00
Colchester white ware	44	116	1.41	6463	0.28	1.68	0.70
Miscellaneous oxidised ware			0.84		37.7		0.00
Unspecified grog and organic tempered ware (storage jar fabric)		2	16.3	80	2	0.17	11.7
		57	2	787		0.59	5
La Graufesenque samian ware		1		13	0.47	0.08	
Lezoux samian ware type 2		6	0.28	28	4.59	0.00	1.19
Les Martres-de-Veyre samian ware		3	8.02	67	0.08	0.13	4.13
Argonne samian ware			0.14		0.16		0.56
Trier samian ware			0.84		0.39		0.00
			0.42				0.91
Totals		711	100	17133	100	14.3	100

*Chelmsford Fabric Number (Going 1987)

Table 2 Quantification of fabric types

and Ditch F2017, indicating that activity continued on the site after the late 2nd-century.

Source	Form					
	18	18R	18/31	30	33	37
La Graufesenque	1	1				
Lezoux	2		2	1	2	3
Les Martres-de-Veyre	1					
Trier					1	
Total	*4*	*1*	*2*	*1*	*3*	*3*

Table 3 Samian ware forms

The form 18, 18R, and 18/31 group of plates/bowls dominate the range of forms. One vessel, probably a form 18/31 plate/bowl has a partial, abraded stamp, of which the first and last two letters survive. Four decorated bowls are present but only two are well preserved.

Stamped/Decorated Samian Ware

Pit F2020 (L2021). Central Gaulish (Lezoux). Partial makers stamp: [**MA\ /IM]**, probably of Martius iii of Lezoux. *c.* AD160–190.

Pit F2025 (L2028). Central Gaulish (Lezoux). Form 37. An ovolo (Stanfield and Simpson 1958, fig. 4.2) is above panelled decoration including a saltire. This is of the same components as Stanfield and Simpson's plate 11.131 and 139, but in a different arrangement. The seven bead rosette filler stamps are also characteristic in these arrangements. This was almost certainly the work of Drusus I (Potter X3; Stanfield and Simpson 1958). A partial figure in the next panel of decoration cannot be identified, as it is too incomplete. *c.* AD100–120.

Pit F2025, L2028. Central Gaulish (Lezoux). Form 37. The ovolo and panel border are in the style of Attianus (Stanfield and Simpson 1958, plate 86.10). The head and arm of a figure, possibly a dancer, cannot be identified further as it is too incomplete. *c.* AD130–160.

Fine Wares

Imported fine wares are limited to colour-coated beakers from Cologne and the Lower Rhineland decorated with roughcasting. The colour-coat was dark grey and visually identical to the slip on bag-shaped beakers with cornice rims from the Lower Nene Valley, produced from the mid 2nd century, although they do not appear to have arrived here until the late 2nd century. Sherds of early to mid 2nd-century Cologne colour-coated ware only occur in Pit F2025 (L2027 and L2029) and are probably fragments of the same beaker. Confirming the preference

for this type of beaker by the consumer at this location is the presence of Colchester colour-coated ware. Both by sherd count and weight this is the most frequently occurring fine ware. The only identifiable form in this fabric is a bag-shaped beaker with a cornice rim and roughcast decoration (Chelmsford type H20); probably the same form as the Cologne colour-coated ware. The only other identifiable beaker form is a plain rimmed beaker with a funnel neck (Chelmsford type H32) from the Lower Nene Valley, dating to the first half of the 3rd century, present in Pit F2008 (L2009).

In addition to colourcoated ware from Colchester, it is likely that mica-dusted wares were also supplied. An 'S'-shaped bowl with a bead rim was present in pit F2025 L2029, which alongside slipped products such as the flagon (Chelmsford type J4.1.1) in Hadham white slipped ware, probably formed a large proportion of the functional tableware of 2nd-century Chelmsford's population. The presence of these wares indicates how accessible regional fine wares were becoming to Chelmsford as the markets available to the town changed (Going 1987, 110). A red slipped ware is also present in a fabric virtually identical to the white slipped Hadham product, and may have superseded or complemented it at a later date.

Coarse Wares

The trade connection with the Hadham area is confirmed by the small presence of both oxidised (0.7% by sherd count) and reduced ware 1 (0.7%) that were manufactured there. Hadham oxidised ware is present in the form of a Chelmsford-type B6 flanged bowl, and Hadham reduced ware 1, by a bowl-jar (Chelmsford-type E3.4.2). It is unlikely that either of these products arrived earlier than the second half of the 2nd century, reflecting how Chelmsford lay outside the main distribution areas of the Hadham kilns (Going 1987, 112).

The only other non-local products appear to be two vessels in Pit F2025 (L2029), from the Alice Holt/Farnham potteries. The slightly metallic finish and density of the fabric differentiate these products from other fine grey wares from the site. One vessel is a cup that appears to be imitating the samian form 33, and the other is a carinated jar with the upper body and rim decorated to a very high quality burnish. The form matches examples previously found at Chelmsford (type G16.2.1) and in London (Davies et al 1994, fig. 85.542).

Fine grey wares of a similar type to Alice Holt/Farnham products are common in Chelmsford assemblages, but during the 2nd century their origins are unclear (Going 1987, 8). These account for 2.67% of the assemblage by sherd count and may have been supplemented by micaceous grey wares (1.69%) that could have been produced locally or travelled the short distance from the Wattisfield area in Suffolk (Fabric WAT RE, Tomber and Dore 1998). The forms of the fine grey wares are limited to cordoned jars with everted rims and burnished decoration. The burnished decoration may be as lines or latticework in a cordon (F2025, L2029 and L2027), or as an exterior burnish on the upper half of the vessel (F2025, L2028). Forms include Chelmsford types G14, G18.1, and H7.2.1. The latter is technically a large beaker but it could easily be at the small end of this range of jars. All date to the first half of the 2nd century. The only exception is a lid-seated bowl jar (Chelmsford type E2.2.1) in pit F2008 (L2009). This dates to the first half of the 3rd century and is probably a more developed form, as it is still decorated with an exterior burnish to the upper half of its body.

Romanising grey wares account for 43.74% of the assemblage by sherd count (33.51% by weight). While this was the most common fabric it was also the least well preserved, being highly fragmentary and abraded. The coarse and generally poorly-fired nature of the fabric mean that it does not survive as well as other fabrics in the soil. The most common forms in this fabric were Chelmsford G19, G20, and G24.2.1 jars. The rim of a lid (Chelmsford type K3.2.1) was present in Pit F2025 (L2029), as were two jar rims with heavy soot on the exterior. This fabric appears to dominate until the late 2nd century, but due to the limited size of the assemblage this is probably not an accurate reflection of the true composition of the pottery in use on the site in this period. Sandy grey wares account for a smaller proportion of the assemblage (10.27% by sherd count, 8.03% by weight) but the range of forms is limited to the same jars as Romanising grey ware. Decoration on jars in these fabrics is restricted to exterior burnishing on the neck and rim. A total of five dishes (Chelmsford types B1, B4 and B5) are present in Romanising grey ware and are undecorated. The range of forms is the same as for black-burnished ware 2. Two large bowls of Chelmsford type C16.2.2 were present in Pit F2025 (L2029). The fabric is indistinguishable from the better fired examples of Romanising grey ware, but the form is a characteristic product of the Brockley Hill kilns (Going 1987, 18), and may indicate a coarse ware supply from these kilns in first half of the 2nd century. A further unusual base occurs in Ditch F2017 (L2022B). It belongs to a tall pedestalled vase comparable to examples previously found at

Type of vessel	Pit F2025	All other features	Type Total
Dish	3	37	*10*
Bowl	4	0	*4*
Bowl-Jar	0	2	*2*
CHE* G19 and G20 jar	*22*	2	*24*
Other types of jar	29	11	*40*
Storage jar	2	3	*5*
Lid	1	0	*1*
Flagon	0	1	*1*
Beaker/Cup	1	2	*3*
Pedastalled Vase			
Total No. of vessels	*62*	*29*	

* Chelmsford type (Going 1987)

Table 4 Coarse ware vessels in pit F2025 compared to all other features

Colchester (Hull 1963, Cam207) and dated to the second half of the 2nd century.

Black burnished ware 2 dishes are limited to shallow and deep bead-rim dishes (Chelmsford types B2 and B4). Two examples of acute burnished latticework are present, as is one of crossing, burnished wavy lines. One everted rim jar with burnished latticework on the body (Chelmsford type G9.1.1) was present in Pit F2025 (L2027, L2029, and L2030). Fragments of this vessel join with fragments in each of the other contexts. This vessel is relatively well preserved and unabraded, and may have been deposited complete.

Grog and organic-tempered storage jar fabrics account for 16.32% of the assemblage by sherd count. The fabric is inconsistently fired with surfaces ranging between red, red/brown, and black. The inclusions are dominated by abundant grog (<6mm). The fabric appears highly vesiculated from burnt-out organic matter (<10mm) that occasionally remains as traces of charcoal. Forms are dominated by variants of the Chelmsford-type G44 storage jar. The form is usually plain but examples in pit fills L2027 and L2029 (probably from the same vessel, but do not join) have a crude cordon decorated with parallel lines of stabbing. Also probably from the same vessel in pit fills L2027 and L2029 is a lid-seated jar of Chelmsford-type G5.1.1. Very small rim sherds of smaller jars are present, but highly abraded. These appear to be from Chelmsford G19 and G20-style jars and are probably part of the same tradition as the more common examples of this form in Romanising grey ware (Going 1987, 10).

Mortaria

1 Ditch F2017, (L2022 segment D). White/buff ware, probably of Colchester origin. Chelmsford-type D2.1. No trituration grits remain on the interior of the vessel. Second half of the 2nd century.
2 Ditch F2025, (L2027; body sherd), (L2029; rim sherd). East Anglian reduced ware (Chelmsford fabric 49: Grey-green mortaria (Going 1987)). Type: Cam497 (Hull 1963). Trituration grits of flint (<8mm) and polycrystaline quartz (<5mm). First half of the 2nd century.

Conclusions

The composition of the assemblage from Lynmouth Gardens indicates that it can be associated with Phases 3 (c. AD120/125–160/175) and 4 (c. AD160/175–200/10) in the sequence of pottery supply to Chelmsford (Going 1987, 108). It is not possible to provide any further comment on pottery supply to Chelmsford because of the limited distribution of pottery in contexts, notably the large concentration of fabrics and vessels in Pit F2025 that dominates the assemblage. Pit F2025 does provide a good sealed group of pottery that dates to the first half of the 2nd century, including a range of fine and coarse wares in a good state of preservation, although mortaria are virtually absent.

Romano-British Building Materials

By Andrew Peachey

Introduction

The building materials recovered are highly abraded and very fragmentary. The material is entirely Roman in date, but a date range within this period cannot be suggested. The average fragment size for the assemblage is 101.42 grams, although this average is biased by the presence of heavy fragments of brick. The bulk of the fragments are lighter than the average weight. No complete forms were present and very few forms could be positively identified in the assemblage.

Fabrics

Four fabric groups were used in the manufacture of these building materials. The source of the materials is unknown. Fabric groups 1a and 1b probably derive from the same source and are divided on the grounds of their fired state, although this may represent misfiring or careless production.

Fabric 1a Red-orange, sometimes with a reduced core. A dense clay matrix with fine, sparse-common quartz (<0.2mm), and occasional flint (<5mm). The surfaces are smooth.

Fabric 1b Mid-dark grey surfaces, red-orange margins, and a reduced core. The inclusions are identical to Fabric 1a, except for sparse white flint (<2mm) that is present in some samples.

Fabric 2 Red-orange. A sandy fabric with common-abundant medium quartz and iron-rich inclusions (both <0.4mm), as well as occasional flint (5mm). The surfaces are slightly abrasive.

Fabric 3 Mid grey, reduced exterior and red-orange core. Common fine quartz (<0.2mm) and sparse voids (<0.5mm). The surface can be slightly powdery or abrasive.

Forms

The site yielded 16,835g (166 fragments) of building materials, of which only 39.04% could be assigned a form. Forms were classified after the definitions used by Brodribb (1987, 36–41). The *tegulae* were identified by the presence of a flange or cutaway. The flanges were too chipped and abraded to allow any further analysis of manufacturing technique or style. Fragments that could conceivably be body sherds of tegulae were grouped together in the miscellaneous flat roof tile category. The distribution of forms in fabric groups is outlined in Table 5.

No forms of brick could be positively identified but fragments in fabric groups 1a and 1b have a thickness of 40–50mm, indicating that bricks were present. The only fragment of box flue tile (*tubuli*) was present in pit fill L2029, and consisted of the right angled corner of a box-flue tile with a crude lattice inscribed into its exterior surface with a knife or similar instrument.

Discussion

The main concentration of the Romano-British building materials is derived from the fills of Ditch F2017 (46.31% by weight). The remainder is from layers or the

Fabric Group	*Tegulae*	*Imbrices*	Misc. flat Roof tile	Box Flue (*Tubuli*)	Unidenti-fiable Brick/tile	Fabric Totals	% Fabric Total
1a	1881	0	792	271	1182	4126	24.51
1b	0	0	0	0	2309	2309	13.72
2	1880	210	921	0	6493	9504	56.45
3	0	210	517	0	279	896	5.35
Form Totals	3761	310	2230	271	10263	16835	*100*
% Form Total	22.34	1.84	13.25	1.61	60.96	*100*	

Table 5 Quantification of building material fabric and forms by weight (grams)

fills of pits. It is not possible to associate the building materials with any structures. The highly abraded nature and low number of identifiable forms do not allow any further conclusions regarding the function of these building materials.

The small finds, leather work and iron work

by Nina Crummy.

During the evaluation, Pit F1008 (=F2025) (L1010) was found to contain part of a snake's head bracelet with only slightly stylised terminal. This probably dates to the 2nd, or possibly the early 3rd, century.

(1010) F1008. Pit. 2nd century. Fragment of a copper-alloy bracelet with snake's head terminal. These bracelets were oval internally, giving a maximum diameter for this example of about 65 mm, the size of bracelets found in adult inhumations. The hoop varies from 3 by 4 mm at the break to 3 by 7.5 mm behind the terminal, which has a maximum width of 11 mm. The head consists of a raised central section surrounded by a flange. The head is wrought, not cast, with the features shown by grooves cut into the metal. Two grooves at the sides represent the brows and eyes, one across the end forms the mouth, and two others cross on top of the head, though not neatly in the centre. The flange has nine small punched dots, four set on each side and one at the end. The scales of the body are shown by 'V'-shaped punch-marks which run for some distance along the hoop behind the head; viewed sideways on they form zigzags suggestive of movement.

Snake's head bracelets and rings are a long-lived form that became popular in Britain after the conquest. The Chelmsford bracelet is of type Bii, with a snake's head at each terminal (Johns 1996, fig. 3.3). First introduced into Britain as imports in the mid to late 1st century AD, they were soon in production here in both precious and base metal; over thirty silver examples were found in the Snettisham hoard, buried in the mid 2nd century (Johns 1997). Copper-alloy snake's head bracelets are not uncommon as general site finds, and also occur as late 3rd and 4th-century grave deposits in Colchester, though by then the snake-image was very stylised (Crummy 1983, fig. 44, 1693, fig. 45, 1710–1712; Crummy & Crossan 1992, table 2.67). Some debased examples may consist simply of an arrow-shaped terminal with notched decoration on the edges and a central cross, as on, for example, a fragment from Wanborough (Hooley 2001, fig. 31, 26). The degree of debasement can be extreme; the rudimentary decoration on some bracelets from Winchester and Colchester could be argued as related to the series, though the link may not be immediately apparent (*eg* Clarke 1979, fig. 96, 502 and 99, 561; Crummy 1983, fig. 44, 1684).

Though somewhat stylised, the Chelmsford snake's head is comparatively close to that of many on the Snettisham hoard rings and bracelets and is likely to be of 2nd, or perhaps early 3rd century date.

The assemblage recovered during excavation is dominated by the waterlogged material from Pit F2025. The other features produced only an iron nail and scrap (Pit F2008), a copper-alloy bell-shaped stud (Pit F2010), and a copper-alloy brooch pin (Pit F2020). The bell-shaped stud is Roman; the brooch pin may be.

The upper fill of Pit F2025 (L2026) contained a fragment of a modern shoe sole, dated by a stamped S and some surviving small iron tacks still in position near the toe. The lower fill (L2030) contained fragments of basketwork, still waterlogged, fragments of shoes and other leather scraps, some Roman and some probably medieval or later, and what is provisionally identified as a leaf from a wooden stylus tablet of silver fir (Fig.4 No.1). The latter is decorated in a unique style; set into its outer face are three groups of silver strips forming letters of unusual shape. There was probably a fourth group on the right-hand side which became detached when the leaf broke, and the left-hand group is also partly missing. The letters suggest the tablet is medieval, but it may be even later as wax tablets continued to be used into the post-medieval period.

The basketry is also unusual, but not unique (Fig. 4 No.2). Given the wide date-range of the other material from the pit, its date is uncertain. Some basketwork was found during the 1980s in London (Museum of London Archaeological Archive, unpublished), and excavations at the Roman fort at Newstead in the early 20th century produced two well-preserved items. One is a small fragment with simple fine weaving, the other is an unfinished basket made of hair moss, woven outwards from a central point (Curle 1911, 108, fig. 10, pl. 15). Basketwork containers were almost certainly more common in the Roman and medieval world than is apparent from the archaeological record, and some Roman square-lidded baskets, represented only as copies in marble, could be secured by a system of straps and an ingenious bone sliding lock (Feugère 2001; Gosten nik 2001). Though the lines of its weaving are curved, the Chelmsford fragments are essentially two-dimensional, which might be the result of crushing during deposition; they might, alternatively, have come from a round or oval mat. The floor of the rich late Iron Age grave from Welwyn Garden City was partly covered by a mat with an oak-bark frame around which was woven a grass-like material (Stead 1967, 40), while fragments of a medieval

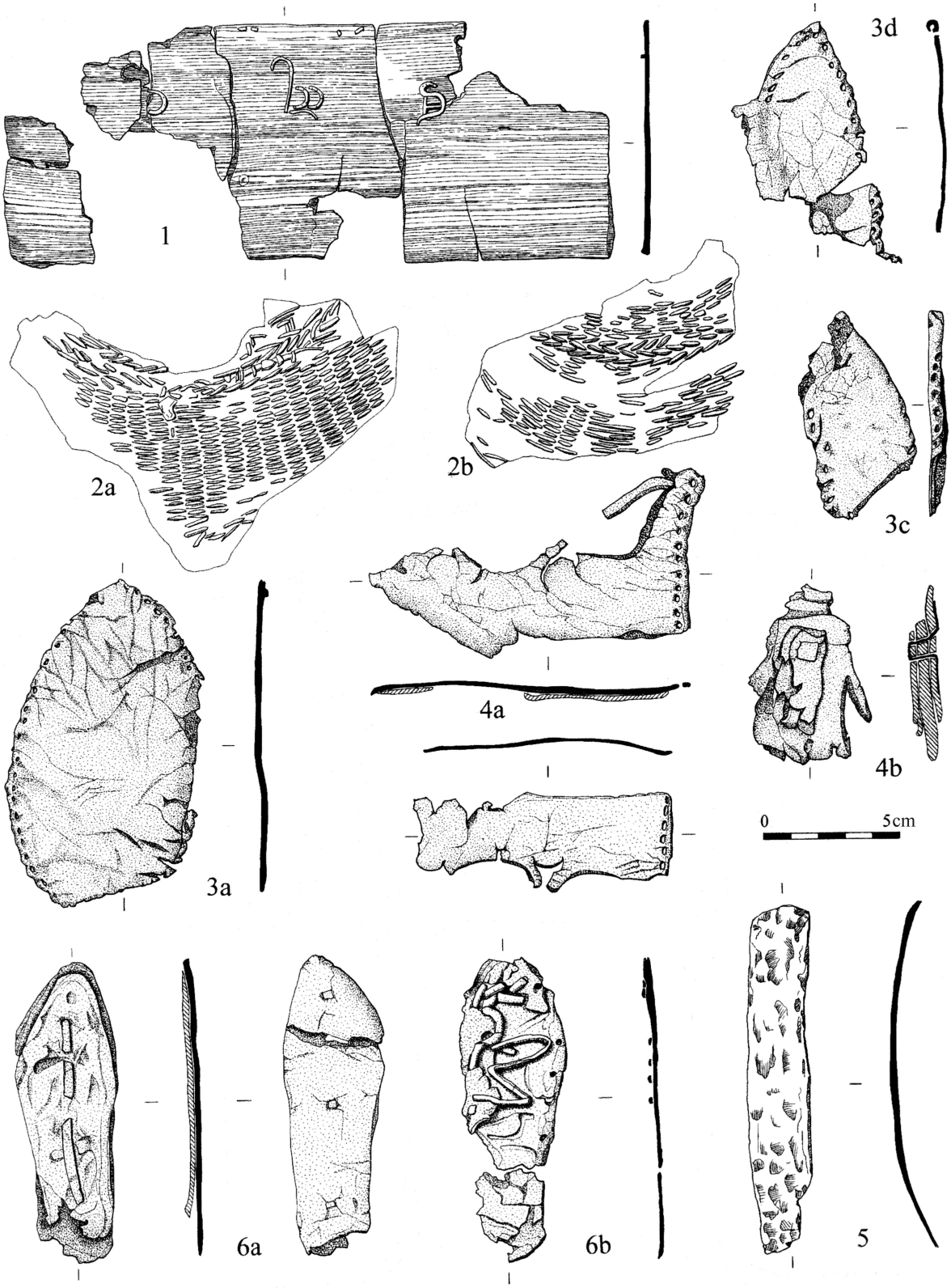

Fig. 4 Small finds

mat woven from hair moss have been found in London (Rhodes 1982, 90).

The Chelmsford pit has therefore added two very important items to the national assemblage of waterlogged organic material, and the tablet appears to be unparalleled in Britain.

(2027) F2025. Pit fill. a) Fragment of a man's modern right shoe sole with close-set grain/flesh tack holes around the edge; a few tacks remain in position. The toe is broad but pointed. Stamped into the leather close to the right edge near the toe end is the letter S; a U below the S may also be stamped, but it may also have been formed by fine cracks in the leather. A small St Andrew's Cross formed of four individual lines have been cut into the sole in the same area, with framing lines on two sides. Maximum length 142 mm, width 79 mm. b) A small fragment, probably from the same shoe. Maximum dimension 23 by 22 mm.

Fig. 4.1 SF 3. (2028) F2025. Pit fill. Fragmentary leaf from a wooden stylus tablet. Though no writing is visible, there are several round holes in the inner face, presumably made by a stylus. The wood is probably silver fir. There are five fitting and two non-fitting fragments. The latter both have a rebated inner face for wax, with the thicker frame 13 mm wide, and the larger piece, 39 by 31 mm, is a corner. The smaller piece measures 23 by 15 mm. The large section formed by the five fitting pieces has a finished edge on the long side, slightly thicker on the outer face, into which are set two pairs of iron pins, perhaps the ends of the arms of staple-like fittings, though one pair is much closer together than the other, 5 mm and 8 mm respectively. Oddly, the metal does not pass right through the wood. The precise purpose of these pins/staples is uncertain, but they must have been used to attach something to the tablet. Also set into the outer surface are three groups of silver strips forming unusual designs, similar, but not identical, to groups of letters. Due to the reduction of the wood through decay and shrinkage the metal now mostly stands proud of the surface. It was applied by being pressed into pre-cut grooves, and the slight nicks set randomly along the strips were probably caused by the tool used to push it down. A slight streak of red close to the finished edge suggests the surface may have been painted. The whole section measures 189 by 86 mm, with the width complete, the length incomplete. The absence of ledges on this section suggest it was several mm longer. The groups of silver strips are set more or less equidistantly, at 35 and 33 mm. The right hand group is about 60 mm from the edge on that side, the left hand one about 25 mm. There was a fourth group on the right hand side, indicated by the fracture lines of the wood, and easily accommodated in the space available.

Fig. 4.2 SF 4. (2028) F2025. Pit fill. a) Fragment of curving basketwork, still waterlogged. The weave is simple one-over-one on most of the fragment, but there is a strip of decorative plaiting on one edge. This is the narrower part of the strip, and may be the top of a basket with the mouth narrower than the girth, or it may be a decorative feature on a mat. Maximum dimensions 156 by 74 mm approximately. b) Similar fragment, but poorly preserved. The simple weave and decorative plaiting also occur on this piece, as well as patches of two-over-one weave. Maximum dimensions 142 by 68 mm.

Fig. 4.3 SF 8. (2028) F2025. Pit fill. a) Fragment of a shoe sole with grain/flesh stitching around the edge. Length 122 mm. The sole appears to have been of a single thickness, unlike the bottom units from children's shoes from L2029 in this feature, but the stitching shows it is not from a one-piece shoe like the upper fragments from L2028. It is likely to be medieval, as may be the other fragments from this group. b) Not illustrated. Similar fragment, with a split on one edge. Probably another sole, distorted because of the split. Length 122 mm. c) Fragment, with grain-flesh stitching on opposite edges. The lower edge is distorted as if from a shoe upper. Maximum dimensions 71 by 40 mm. d) Pointed fragment, with grain/flesh stitching on each side. Maximum dimensions 82 mm by 42 mm. e) Fragment, with grain/flesh stitching on one side. Maximum dimensions 36 by 34 mm.

Fig. 4.4 (2028) F2025. Pit fill. a) Fragments of a leather shoe upper, with a seam on the short edge, and decorative cut-outs on the adjacent upper edge. A few edge/flesh stitches remain on the other long edge. These pieces are from the seamed heel of a one-piece shoe, similar to those from Lower Thames Street, London (Rhodes 1980, 121–8). Maximum dimensions of the larger piece 108 by 63 mm, of the smaller piece 92 by 34 mm. b) Unidentified leather object consisting of a piece with a serrated end held between two narrower strips by a thong. Possibly a tassel. Maximum dimensions 66 by 44 mm. c) Not illustrated. Ten small pieces of leather, probably from a), and a few tiny fragments of leather and vegetable material, probably from the basket.

Fig. 4.5 (2028) F2025. Pit fill. Four fragments of the slightly splayed iron hoops used to fix a stave-built wooden bucket. Width varies from 18 to 23 mm; lengths 127, 129, 140, 225 mm. The degree of curvature varies, but that of the largest piece suggests it was about 270 mm in diameter and that of a shorter fragment is close to 260 mm. A bucket from Newstead, Borders, was about 300 mm high, and its diameter at the top about 267 mm, very close to the probable size of the Chelmsford bucket, and within the range of the bucket hoops in the collections of the British Museum (Curle 1911, 310, Pl. 69, 4; Manning 1985, 103). The Newstead hoops were fitted around the top and the base of the bucket, and were 21 and 14 mm wide respectively. A larger bucket from Gadebridge Park, Hertfordshire, was fitted with two hoops, one halfway down the staves and one at the bottom (Manning 1974, fig. 7).

Fig. 4.6 (2029) F2025. Pit fill. a) Bottom unit from a child's left shoe, consisting of a sole and middle sole or insole, joined by a single thong down the centre which shows at four points on the base of the sole. The sole is cracked across the thread, obscuring one of the four points. Length 108 mm. An adult shoe from Usk also has a thong which shows at four points on the sole (van Driel-Murray 1995, fig. 35, 4). b) Bottom unit fragment (in two pieces) from a child's right shoe, with parts of a low upper remaining, its top edge pierced and joined across the top of the foot by thonging. Length 79 mm. c-d) Not illustrated. Two small fragments from the upper, each with a short length of thong attached. e) Not illustrated. Other very small fragments.

ANIMAL BONE

By Carina Phillips

The animal bone assemblage was of limited potential due to its small size and poor preservation. Only 81 fragments of animal bone were recovered; 61 fragments were identifiable to species. 38 fragments were identified to cattle (*Bos* sp.). Sheep/goat (*Ovis*/*Capra* sp.) was the only other species to be identified, accounting for only two bone fragments. Butchery was observed on 28% of the assemblage; 16 fragments were smashed probably for marrow extraction, and 7 exhibited cut marks related to skinning and filleting.

Charred plant macrofossils and other remains

By Val Fryer

Introduction

Samples for the extraction of the plant macrofossil assemblages were taken from a fill of Ditch F2017 (sample 1) and from Pits F2020 (sample 2) and F2008 (sample 3).

Methods

The samples were processed, collecting the flots in a 500 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to × 16, and

the few plant macrofossils and other remains noted are tabulated below (Table 6). Nomenclature within the table follows Stace (1997). Although charred plant remains were predominant, un-charred roots/stems and seeds were noted in samples 1 and 2. It is not known whether these are contemporary with the contexts from which they were taken.

Sample composition

With the exception of charcoal fragments, which were common or abundant in all three samples, charred plant remains were extremely rare. A single fragmentary barley (*Hordeum* sp.) grain was noted in sample 3, and indeterminate grain fragments were also present in sample 1, along with an unidentified seed.

Other materials were also rare, consisting only of fragments of a very shiny black tarry material in sample 3. Small quantities of rounded white to mid-brown grit were present in each sample.

Conclusions

In summary, insufficient material was recovered to enable any conclusive interpretation. The few plant remains present would appear to be derived from low density scatters of refuse of unknown origin. The very rounded and abraded condition of the macrofossils may be indicative of either wind or water erosion, the latter possibly occurring after the deposition of the material.

Sample No.	**1**	**2**	**3**
Context No.	**2022**	**2021**	**2009**
Cereal indet. (grains)	x		x
Hordeum sp. (grain)			x
Charcoal <2mm	xxx	xx	xx
Charcoal >2mm		x	
Charred root/stem	x		
Indet. seed		x	
Black tarry material			x
Sample volume (litres)	**20**	**20**	**20**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**

Key: x = 1 – 10 xx = 10 – 100 xxx = 100+

Table 6 Charred plant macrofossils and other remains

Discussion

Dating

The pottery recovered from features across the site consistently indicates a date of *c.* AD120 to 210, with the continuity of activity beyond the late 2nd century being indicated by the presence of samian ware from eastern Gaul and a lower Nene valley beaker dated to the early 3rd century. The brooch axial bar recovered from the cremation shows it to be of slightly earlier (first to second century) date. Southern Gaulish samian ware, as recovered from L2028 and L2007, was not imported to Britain after the late first century; its presence may be residual, relating to an earlier phase of activity at the site, perhaps contemporary with the cremation, or these pieces may have continued in use into the second century and been deposited then.

The pottery recovered from the fills of Pit F2025 indicates an early 2nd century date for the feature; some of the small finds from this feature (the shoes from L2029, the bracelet fragment from L1010) corroborate this date, some have not yet been conclusively dated (the fragmentary leaf from a wooden stylus tablet, the basket work) and some (the shoes from L2028) refute the 2nd century date and appear to indicate a medieval date. The medieval date for the shoe fragments and possible medieval date for the stylus leaf fragments in L2028 does not make stratigraphic sense; if accurate it means either that all pottery recovered from this layer, from those overlying it within Pits F2025 and F2010, as well as the Roman shoe fragments in L2029 were residual, or that the fills of this feature had been disturbed so as to allow the intrusion of medieval objects into the lower layers.

The date of AD120 to 210 for activity at this site makes it contemporary with the construction of the *mansio* in *Caesaromagus*, and with the expansion of the town and construction of its defensive earthworks in the Antonine period. The cessation of activity at the site may coincide with the levelling of those earthworks, known to have occurred by 220AD.

Roadside activity

Although no evidence of a Roman road was found during excavation, this site lies close to the projected course of a road branching eastwards from the London to Colchester road and echoed by the present-day line of Parkway. The location of a cremation in the vicinity of such a road is consistent with known Roman mortuary practice. The large ditch runs approximately perpendicular to the projected course of this road and is likely to have formed part of a field boundary system on the roadside land.

Industrial activity

The recovery of tuyères from Pit 2025 (L2026 and L2029) is of interest as these small, fragile and brittle objects are rarely preserved in the archaeological record despite the frequency with which they would have been disposed of. Their presence at this site, where slag has been recovered only in small quantities (attached to the tuyères, 22g from F2008, 5g from L1010 and 33g from L1011), is especially surprising. One plate of hammerscale in the soil adhering to one tuyère confirms that, despite its very cindery appearance, the slag recovered does result from iron smithing.

Although very little slag was found during excavation, ferrous inclusions were recorded in several pit and ditch fills. It is possible that post-depositional processes associated with a high water table at the site have resulted in the diagenesis of iron smithing slag to the point where it was recognisable only by its ferrous nature and has thus failed to be identified during excavation.

There are too few features at this site for the distribution of iron panning/ possible slag to be informative about precisely where iron smithing took place in relation to the site. The distribution of iron panning/(possible) slag in stratigraphically successive contexts (L2023, L2029 and all fills of F2012 as well as L1010, L1011 and L1012) suggests that iron smithing was an activity carried out at the site over a long period of time. The lack of any other finds from Pit F2012 indicates that this pit (unlike the earlier contexts bearing evidence of slag disposal) was used purely for the disposal of slag, and may indicate an intensification in iron smithing.

The presence of an iron working site close to a main road out of *Caesaromagus* and outside of the town boundaries would be in keeping with the Roman preference for the positioning of such industrial activity outside of the town itself.

Domestic activity

The absence of evidence for slag disposal in the lower fills of Pit F2025 suggests that slag disposal was not the original reason for this pit being dug. It is possible that the timbers recovered from L2028 and L1019 formed part of an unidentified structure in the base of the pit, or that they were simply disposed of in the pit; the finds from these lower fills suggest the disposal of domestic refuse (a practice evidenced along side the disposal of slag in all features but Pit F2012, by large quantities of pottery). Animal bone (cattle and sheep/goat) was recovered in small amounts from Pits F2020 and F2025 and is likely to represent domestic refuse from cooking rather than butchery waste. The condition of surviving bone was poor, and it is likely that more bone was originally disposed of at the site but has not survived in the prevailing wet conditions. Environmental samples taken during excavation failed to produce significant assemblages or to offer insight into the nature of activity at the site; the few charred plant remains recovered seem to have originated from low density scatters of refuse of unknown origin.

Building materials were most concentrated in Ditch F2017, suggesting that any structure which may have existed in the site's vicinity would have been located to the south.

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The evaluation was directed by Wesley Keir and the excavation by Matt Sutherland and David Britchfield on behalf of AS; the project was managed for AS by Jon Murray. Finds were co-ordinated by Louise Wood. Roman pottery and building materials were examined by Andrew Peachey, small finds by Nina Crummy, slag by Jane Cowgill, environmental samples by Val Fryer, and animal bone by Carina Phillips. Illustrations are by Iain Williamson.

Authors: Kate Nicholson with Ben Roberts: Archaeological Solutions, 98–100 Fore Street, Hertford, SG14 1AB.

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Excavations at the former Shell Garage site, 84–88 Moulsham Street, Chelmsford

Leonora O'Brien with Ben Roberts

With contributions by Jane Cowgill, Nina Crummy, Andy Peachey and Carina Phillips. Illustrated by Iain Williamson

An extensive evaluation at a site adjacent to the route of the Roman London – Colchester road has revealed further evidence of extramural Roman plot divisions and peripheral activity south of Caesaromagus. A medieval cess-pit and a rubbish pit were also revealed, in addition to post-medieval rubbish pits and levelling deposits. Evidence from this site correlates with that from other excavations on Moulsham Street, indicating that the site lay on the edge of the Roman town during the 2nd century AD.

INTRODUCTION

In June 2003, an evaluation was undertaken at the former Shell Garage site, on the corner of St John's Road and 84–88 Moulsham Street, Chelmsford, Essex (NGR TL 7055 0602; 31m AOD; Fig. 1) in advance of residential and commercial development. The investigation was commissioned by Chelsteen Homes Ltd and carried out by Archaeological Solutions, under the direction of Phil Weston.

Extensive excavations carried out in Chelmsford since the 1960s have revealed the layout and development of the Roman military and civilian settlement of *Caesaromagus* (Drury 1972; 1988; Going 1987; Wickenden 1991; 1996). The site lay outside the defences of *Caesaromagus*, adjacent to the line of the London – Colchester road (Margary 3a). A number of excavations have been undertaken in the Moulsham Street area, which indicate development along the road in the late 1st to early 2nd century, with regular plot divisions and thatched timber buildings, including smithies and pottery workshops. This area seems to have contracted in the late 2nd century after the fortification of the town, although sporadic rubbish dumping continued. Excavations at Lasts Garage, on the corner of Queen Street and Moulsham Street, diagonally opposite the present site, found a probable post-early 2nd century roadside ditch, in addition to the remains of timber buildings and a horse burial (Wallis 1988, 45). Part of the present St John's Shell Garage site was excavated by Chelmsford and Essex Museum in 1964, revealing cremation burials and traces of occupation (unpub.; Wallis 1988, 40, Fn 1; Drury 1972, 12). *Caesaromagus* declined in the 3rd and 4th century and the road appears to have gone out of use in the Anglo-Saxon period.

In the early 12th century, the line of the Roman London-Colchester road was restored and this hollow way led towards the site of the planned new town north of the River Can. The hamlet of Moulsham was incorporated into the prosperous *vill* in 1199. Chelmsford was to become the centre of the later medieval legal and political administration of the county. The market town continued to prosper in the 17th and 18th century, and experienced dramatic suburban development in the mid-19th century.

Excavation and recording

The initial investigation comprised the opening of three evaluation trenches. An additional fourth trench (Trench 4) was subsequently excavated in the northern part of the site after two contiguous trenches (Trenches 1 & 2) were found to contain significant remains (Fig. 2). The three trenches excavated in the northern part of the site effectively formed a small open area excavation (Fig. 2). Roman, medieval and post-medieval features were recorded. These were cut into brickearth deposits, which lay above river terrace gravels and Eocene London Clay (SSEW 1983).

Phase I Roman

Roman activity comprised the construction of two sequential probable roadside ditches (F1017, re-cut F1014), parallel to Moulsham Street, in the late 1st to early 2nd century (Fig. 3). Ditch F1014 contained pottery including a Chelmsford jar, a Romanising grey ware bowl and a Colchester buff ware flagon.

A further parallel ditch to the rear of the plot was dated to the 3rd to 4th century (F1051). Some slumping had occurred in the original ditch, perhaps due to material being washed from the road. The channel was then dug deeper to clear this material, throwing up layers of re-deposited natural on either side. A densely packed revetment of pottery (6185g) and tile fragments (4728g) was then pressed into the upper part of the south-eastern side in order to support the newly cut side of the ditch (Figs 2 & 3). Two tree hollows were present between the ditches (F1054 & F1056). Both ditches contained refuse including pottery, animal bone, slag and two copper-alloy coins.

The Roman pottery assemblage was largely re-deposited in later contexts and was dominated by friable fragments of grog- and vegetable-tempered storage jar fragments and Romanising grey ware fabrics. Romano-

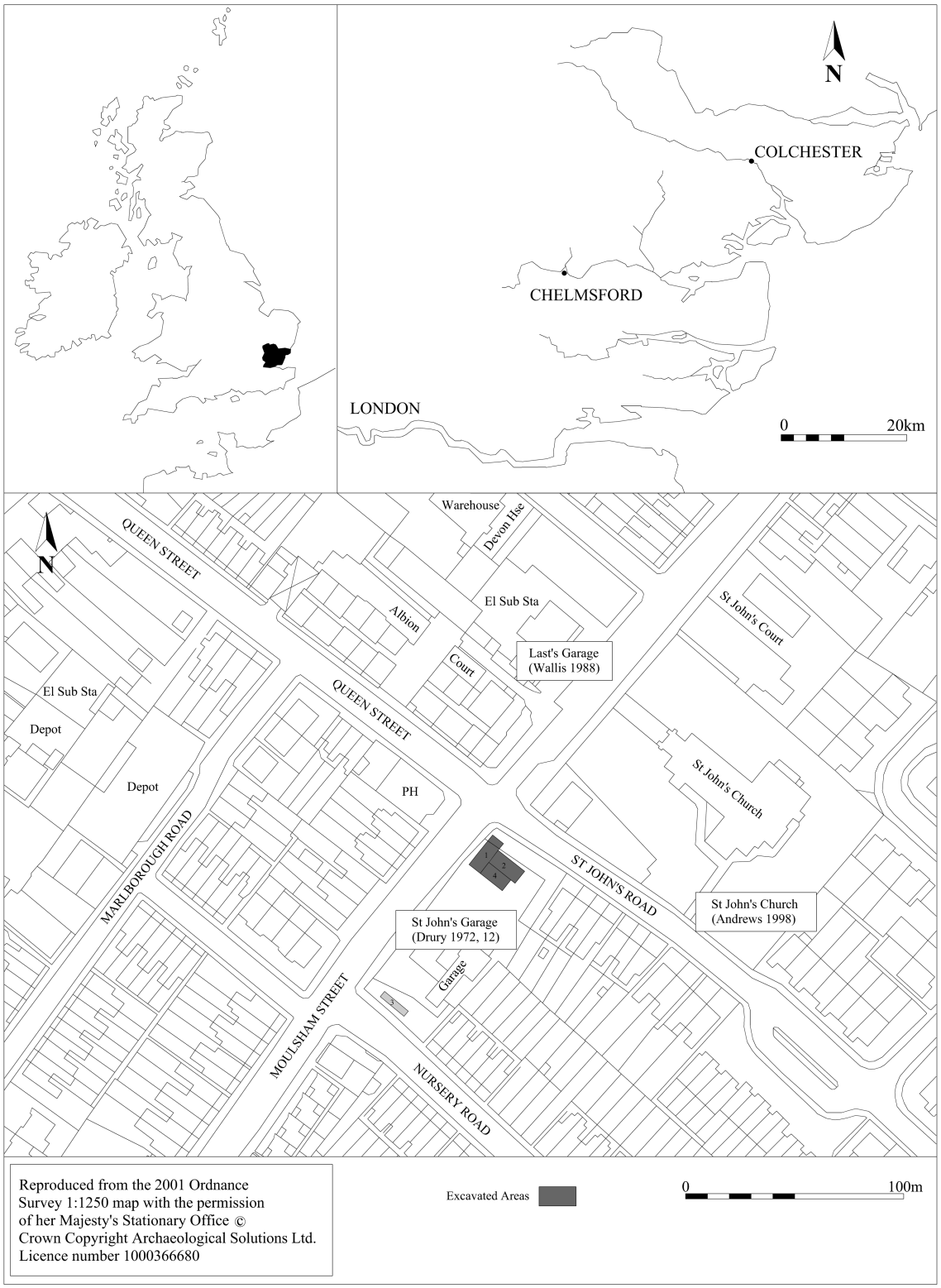

Fig. 1 Site location plan © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

British fine wares were represented by only two sherds of Lower Nene Valley colour-coated ware and one of Oxford red-slipped ware. Most of the sparse animal bone from Roman deposits derives from cattle. The elements are all butchery waste and the presence of foot bones is attributed to skinning. Fragments of sheep/goat, pig and horse were also recorded.

Phase II Medieval (12th to 15th century)

Medieval activity was restricted to two large 13th to 15th century pits (F1019 and F1030) located in the north-west of the excavation area, and possibly a heavily truncated 12th to 14th-century ditch (F1008). The fills of Pit F1019 suggest that it had originally been a brickearth quarry pit, which was subsequently used as a cess-pit and later as a domestic rubbish pit (Fig. 3). Pit

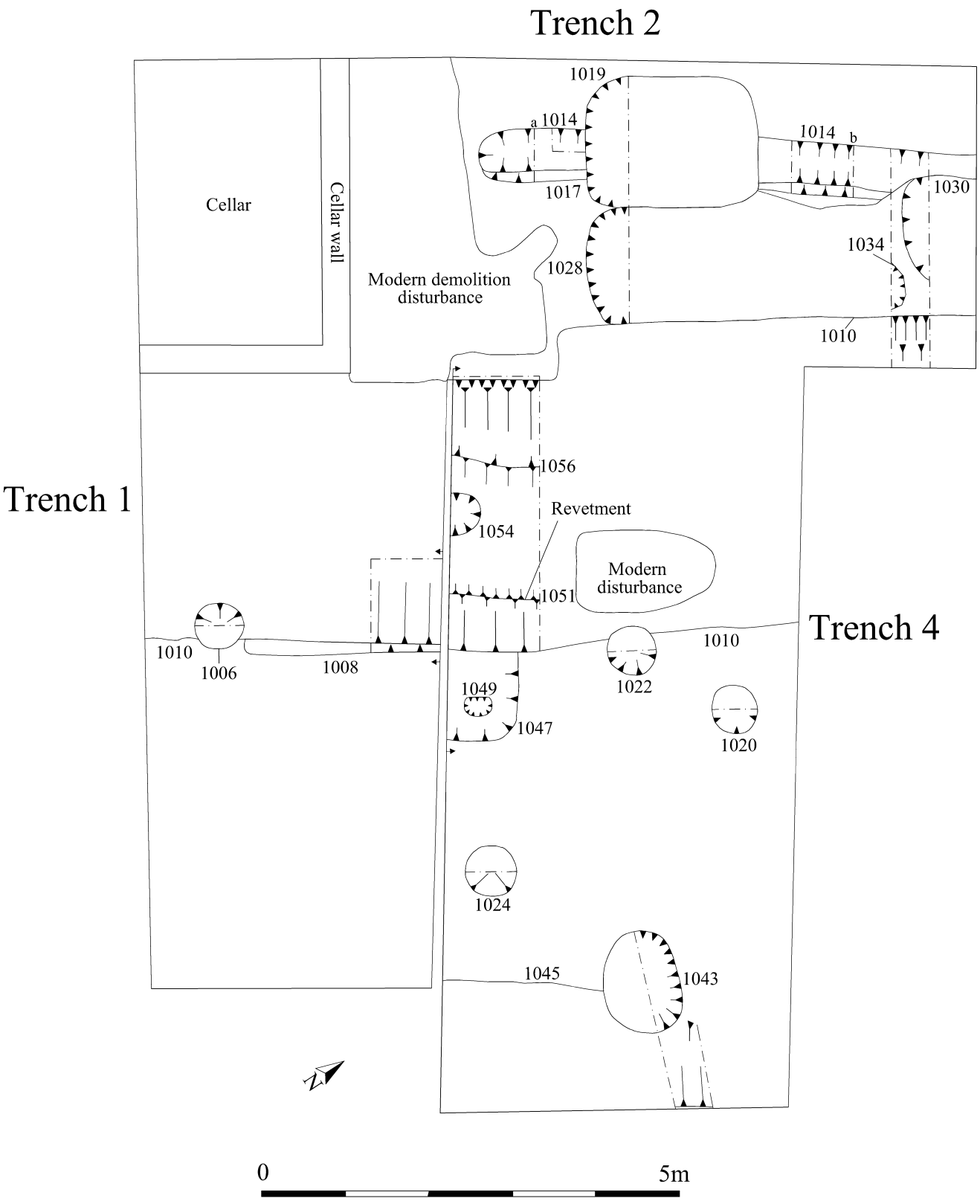

Fig. 2 Trench plan

F1030 yielded half a re-deposited Central Gaulish Samian cup. The medieval pottery assemblage mostly comprises sherds of highly abraded, green glazed wares in medium-coarse sand-tempered, oxidised fabrics. The only identifiable form is an unstratified lid-seated cooking pot with a green lead glaze. The sparse medieval faunal assemblage contains cattle, sheep/goat and pig, all of which show evidence of butchery on meat-bearing elements, suggesting domestic waste. Relatively high numbers of adult sheep/goat may reflect the importance of the wool economy (Grant 1984).

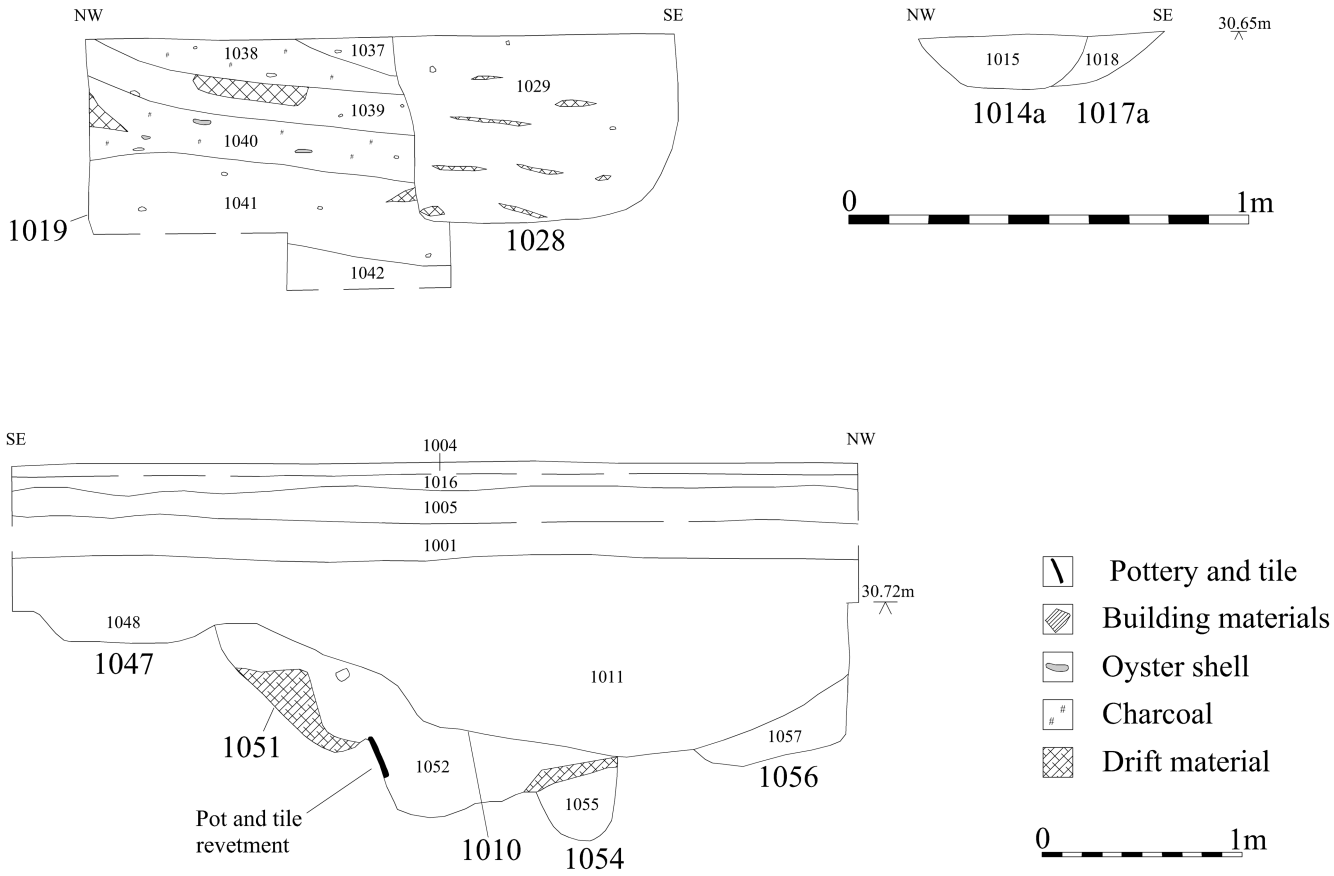

Fig. 3 Sections

Phase III Post-medieval (17th to 18th century)

A broad, linear building trench (F1010) was constructed parallel to the line of Moulsham Street. Its fill, L1011, seemed to relate to a levelling episode and only contained residual Roman domestic debris (Fig. 3). Although the ditch did not yield any diagnostic post-medieval finds, its stratigraphic position, cutting a late 17th to 18th-century posthole (F1049), provided dating evidence. The trench fill (L1011) sealed an earlier shallow square pit (F1047) which yielded further residual Roman pottery, building materials and animal bone.

A series of four postholes (F1020, F1022, F1006 and F1024) yielded small quantities of domestic debris. Two (F1022 and F1006) cut the south-eastern edge of the building trench (F1010). However, it is unlikely that these constituted the remains of a structure or fence-line, as they are located 5m apart. A shallow linear ditch (F1045) ran down the eastern limit of the excavation and, like the building trench (F1010), lay parallel to Moulsham Street. It contained pottery, building materials, glass bottle fragments and sparse clay pipe fragments. It was cut by a circular posthole (F1043), which contained domestic refuse, building materials and a copper-alloy buckle.

On the western side of the building trench (F1010) were two large, sub-circular steep-sided refuse pits (F1028 and F1034) which yielded domestic refuse including pottery, animal bone, glass bottle fragments and clay pipe fragments, as well as building materials, mortar, iron nail fragments and sparse slag. The post-medieval pottery assemblage is highly fragmentary and mainly comprises English tin-glazed ware with a small quantity of Staffordshire slipware.

SPECIALIST REPORTS

The Pottery

By Andrew Peachey

The site yielded 495 sherds of pottery weighing 13897g, from 26 contexts. The average sherd weight, excluding storage jar and amphorae fabrics, is 14.32g. The pottery was scanned and selected sherds were examined at ×20 magnification. Quantification was by sherd count and weight. The range of forms and fabrics spans the Roman, medieval, and post-medieval periods. With the exception of pottery from Ditch F1014, the general condition of the assemblage is highly fragmentary, very abraded, and was probably re-deposited in the post-medieval period (17th-18th century).

The pottery assemblage from Ditch F1014 was more homogenous in its composition than that from other features. Although fragmentary, there is a high proportion of cross-joining sherds from a small number of vessels, indicating that these vessels had not been substantially disturbed since they were deposited. Ditch F1014 dated to the Flavian period to the early 2nd century. Identifiable forms from Ditch F1014 include a

Chelmsford type G20.1.2 jar and a C12 bowl in Romanising Grey Ware and a J3.2.1 flagon in Colchester Buff Ware (Going 1987). The only other fragment of well preserved Roman pottery to be recovered from the site was approximately half a form 35 Samian cup (Webster 1996, 46) from Central Gaul (Les Martres-de-Veyre). This vessel retained a high gloss finish on its surfaces and was present as a single fragment recovered from Pit fill L1031, a medieval (13th – 15th century) context that cut Ditch F1014.

Friable fragments of grog- and vegetable-tempered storage jar fabrics and Romanising Grey Ware fabrics dominate the remainder of the Roman pottery. Body sherds in storage jar fabrics (possibly from one vessel) in Ditch fill L1052 and Pit fill L1041 were decorated with a cordon of stabbed decoration. The only rim sherd in Romanising grey ware that could be associated with a form type was a rim belonging to a Chelmsford type B6 flanged bowl (Going 1987). Two sherds of Lower Nene Valley colour-coated ware and one of Oxford red-slipped ware represented the only Romano-British fine wares present on the site. The Oxford red-slipped ware fragment was part of a cordoned bowl with rosette-stamped decoration identical to the Oxford red-slipped bowl found at Brampton (Green 1977, 84; vessel 241). None of the fine wares retain more than very small patches of their original colour-coats or slips. Rim fragments from Chelmsford type D2 and D6 mortaria (Going 1987) in Colchester Buff Wares were present but were small and highly abraded.

The medieval pottery is also poorly preserved. The green lead glazes had mostly been worn down to the surfaces of the original fabrics and were only present as sparse patches. The bulk of the glazed wares were manufactured using medium-coarse sand-tempered, oxidised fabrics. Exceptions to this were reduced grey wares in Pit fills L1035 and L1038. Iron pellets had been added to the lead glaze on these examples to achieve a mottled effect. The glaze on these sherds is harder and the fabric denser than the other medieval wares, leaving these fragments slightly less abraded. The only identifiable form in a medieval fabric is an unstratified lid-seated cooking pot with a green lead glaze.

The post-medieval pottery assemblage is well preserved but highly fragmentary. English tin-glazed ware with a small amount of Staffordshire slipware accounts for all the post-medieval pottery identified. Decoration on English tin-glazed ware is varied and largely comprises blue painted designs, although the rim of one fragment from Posthole fill L1027 has been decorated with a green wash. The Staffordshire slipware is decorated with a white glaze and trailed red slip that has been embellished with a comb on some body sherds. No forms can be identified in the post-medieval wares.

The Metalwork

by Nina Crummy

The assemblage ranges in date from Roman to post-medieval. The two coins are both Roman, as well as many of the nail fragments, with most of the Roman items deriving from Ditch F1051. Most of the other pieces are from medieval or early post-medieval contexts.

The majority of the nails, both Roman and later, have a more or less round flat head (Manning 1985, 134, Type 1b), though two of the smaller nails have a subrectangular head. One is unstratified, the other is from the medieval Pit F1019.

Copper-alloy

SF 1. (1052) F1051. Ditch fill. Copper-alloy *antoninianus* of Carausius, in two fragments. The emperor's bust, radiate, and -/CAR/- are visible on the obverse. Diameter 22 mm. Date: AD 286–93.

SF 4. (1052) F1051. Ditch fill. Copper-alloy coin, worn. The diameter, 27 mm, suggests that this may be an *as* of the 1st or early 2nd century.

(1044) F1043. Posthole fill. A rectangular copper-alloy buckle, lacking the tongue. There are two slight projections on the side nearest the strap, and the bar for the tongue is sunk slightly to accommodate it. A slight depression in the centre of the opposite bar provided a seat for the tip of the tongue when the buckle was closed. Length 27 mm, width 29 mm. A date contemporary with the pottery from the posthole is appropriate for this form.

Iron

(1007) F1006. Posthole fill. a-d) Nails, lengths 64, 81, 56, 51 mm. e-h) Nail shank fragments, lengths 63, 55, 51, 44 mm.

(1009) F1008. Ditch fill. a) Nail, clenched, tip missing. Length 31 mm. b-c) Nail shank fragments, lengths 39 and 25 mm. d) Small ?sheet fragment, maximum dimensions 29 by 21 mm.

(1011) F1010. Trench fill. Nail shank fragment, length 20 mm.

(1038) F1019. Pit fill. a) Nail, length 40 mm. Head subrectangular. b) Nail, length 72 mm. c) Fragment, possibly a nail head. Maximum dimensions 29 by 22 mm. d) Fragment, maximum dimensions 54 by 24 mm.

(1040) F1019. Pit fill. a-c) Nails, lengths 55, 51, and 36 mm. d-h) Nails with missing tips, lengths 53, 43, 40, 30, 21 mm. i-j) Nail shank fragments, lengths 56 and 37 mm.

(1041) F1019. Pit fill. Tongue-shaped object of rectangular section with a nail for attachment near the pointed end; the other end is broken. Probably a part of a strap-hinge from a wooden chest or other item of furniture. Length 98 mm, maximum width 31 mm.

(1041) F1019. Pit fill. Nail, tip missing. Length 37 mm.

(1021) F1020. Large fragmentary piece of delaminating flat sheet, with part of at least one edge remainng, though the general form is obscured by corrosion. Probably part of the blade or handle of a large tool. Maximum dimensions of largest piece 94 by 62 mm.

(1029) F1028. Pit fill. a) Large headed nail or T-clamp. Length 107 mm. b) Nail, clenched. Length approximately 86 mm. c) Nail, length 49 mm. d) Nail shank fragment, length 36 mm. e) Fragment, maximum dimensions 42 by 15 mm.

(1035) F1034. Pit fill. a) Nail shank fragment, length 35 mm. b-c) Two small scraps, both possibly nail heads. Maximum dimensions 15 by 18 mm and 22 by 22 mm.

(1050) F1049. Pit fill. Nail with small head, or nail shank fragment. Length 61 mm.

SF 2. (1052) F1051. Ditch fill. Nail, only the very tip is missing. Length 100 mm.

SF 3. (1052) F1051. Ditch fill. Nail with the tip bent up at an acute angle and part of the shank broken away at the bend. Length approximately 90 mm.

(1052) F1051. Ditch fill. Nail, clenched. Length 37 mm. b) Fragment, maximum dimensions 49 by 28 by 22 mm.

(1053) F1051. Ditch fill.a) Nail, tip missing. Length 41 mm. b) Curved fragment, maximum dimensions 38 by 26 mm.

Surface finds, unstratified. a) Nail, length 43 mm. Head subrectangular, as a) from context 1038. b) Nail, tip missing. Length 23 mm. c) Nail shank fragment, length 45 mm.

Slag Report

by Jane Cowgill

Methodology

The slag has been recorded on *pro forma* recording sheets. Each piece was visually examined and identified solely on morphological grounds. The records were entered directly into the catalogue below. A note of probable fuel type has been recorded when fragments were incorporated within the slags. The soil in the bags containing the slag pieces was checked with a magnet to establish whether any hammerscale was present.

Codes used in the catalogue below

CHARC	Charcoal
HAMM	Hammerscale
HB	Plano-convex slag accumulations (commonly known as hearth bottoms)
VITCLAY	Vitrified Clay
999	Surface Finds

Conclusions

This is a diverse group of iron-smithing slags – the by-products of forging objects, their repair or the recycling of iron. They do not form a single assemblage but are the result of a number of different smithing events. Small amounts of hammerscale are present on a few pieces but none was noted in the soil in the bags containing the slags. Both coal and charcoal seem to have been used as smithing fuels.

Catalogue of metalworking residues

Context	Type	Count	Weight	Fuel	Comments
999	SLAG	1	15g		HB fragment; large flint inclusion.
999	VITCLAY	1	8g		Reduced fired lump.
1023	CLINKER	1	18g		Partially burnt coal.
1029	HB	1	49g	COAL?	Elongated; mid-grey colour.
1035	HB	5	510g	CHARC	Fragments; totally covered in sand and iron-rich deposits.
1035	HAMMS				Incrustations covering slags?
1035	SLAG	1	4g		Totally covered in sand and iron-rich deposits.
1035	SLAG	4	9g		Very cindery; probably not associated with iron working.
1042	HB	1	349g	CHARC	2 layers; both plano-convex.
1052	HB	1	32g		Now 5 fragments; cindery; hearth lining attached.
1057	HB	3	138g		Fragments; totally covered in sand and iron-rich deposits.
1057	HAMMS				Large plate scale incrustation covering slag.

The Animal Bone

Carina Phillips

Analysis of the animal bone assemblage has been limited by the small size and poor condition of the assemblage. Only 79 fragments of animal bone were recovered in total; these came from both Roman and medieval contexts (Table 1). Only domestic species were identified in the assemblage. Cattle (*Bos* sp.), sheep/goat (*Ovis Capra* sp.) and pig (*Sus* sp.) were present in both periods and horse (*Equus* sp.) was identified in only the Roman assemblage. Butchery marks were present in small numbers in both phases (cattle in the Roman period and all species present in the medieval assemblage) in the form of chop, saw and cut marks suggestive of carcass dismemberment and skinning.

	Roman	Medieval	Unstratified
Cattle	8	3	0
Sheep/goat	6	5	0
Pig	2	4	1
Horse	1	0	0
Cattle sized	17	8	0
Sheep sized	2	5	2
Unidentified	13	2	0
Total	49	27	3

Table 1 Count of the identified fragments in each period

DISCUSSION

During the mid 1st to early 2nd century, linear roadside drainage ditches were constructed and maintained parallel to the London – Colchester road (Drury 1988, 76). The date of these ditches coincides with the initial construction of the road and the early settlement. Excavations at the Lasts Garage site (Wallis 1988) revealed a comparable probable roadside ditch along the western side of the road and a watching brief at St John's Church found a pit containing 2nd-century Roman pottery (Andrews 1998, 259). An early Roman

cremation cemetery extended along Moulsham Street (Wickenden 1996, 87) and unpublished excavations at St John's Service Station revealed cremations and traces of occupation in the immediate vicinity (Wallis 1988, 40; Drury 1972, 12). This was interpreted as the greatest southerly extent of the ribbon development along the London to Colchester road. This outlying area was abandoned and land reverted to pasture or waste in the late 2nd century, after the construction of the town defences and the apparent contraction of *Caesaromagus* (Wallis 1988, 45), although there is slight evidence for 4th century occupation nearby.

No cremations were found on the present site, but a 3rd to 4th-century field boundary was found parallel to the roadside ditch; such features are frequently found in the Moulsham area (Drury 1972, 11).

During the medieval period, this area lay beyond the southern limits of ribbon development along Moulsham Street. Two large pits were used for brickearth extraction, then as a cess-pit and for domestic refuse disposal. A ditch running parallel to the road may have been an agricultural drainage ditch or boundary feature.

During the post-medieval period, Chelmsford underwent extensive suburban expansion, particularly in the Moulsham area, reflected here in domestic refuse pits. Cartographic sources indicate that by 1860, the site was part of the northern gardens of 'The Laurels', a substantial pair of buildings fronting Moulsham Street (OS 1860; deeds, 1899). The 17th to 18th-century levelling episode and building trench are typical of the later archaeology of Moulsham Street, as the heights of plots on the street frontage were lowered to the level of the medieval hollow way and the post-medieval street, often truncating earlier deposits (Drury 1972, Fn. 39).

Acknowledgements

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Authors: Leonora O'Brien and Ben Roberts, c/o Archaeological Solutions, 98–100 Fore Street, Hertford, SG14 1AB

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Excavations at the former Dovercourt Motors site, Spital Road, Maldon, 2002

Ben Roberts

With contributions by Nina Crummy and Andrew Peachey. Edited by Leonora O'Brien and illustrated by Donna Cameron.

Excavation in advance of development at the former Dovercourt Motors Site, Spital Road, Maldon, Essex revealed a Roman ditch, and early and late medieval quarrying and refuse pits. None of the features were related to the Anglo-Saxon burh ditch which was conjectured to cross the western part of the site.

INTRODUCTION

In October 2002, Hertfordshire Archaeological Trust (HAT, now Archaeological Solutions Ltd) carried out excavations on a 0.28 hectare site at the former Dovercourt Motors Garage, Maldon, Essex (centred on NGR TL 8469 0691; Fig. 1).

The site is located on the western side of Spital Road, just west of the historic core of Maldon (Fig. 1), at *c.*35m AOD overlooking the river Chelmer, *c.* 500m to the north. The layer of glacial sand and gravel beneath a layer of clay (SSEW 1983) was the object of the medieval quarrying activity. The site is capped by a layer of made ground (RSA Geotechnics 2001, 8–13).

Archaeological and historical background

There was early Iron Age occupation at Maldon (Drury 1980, 47; Bedwin 1992; Sealey 1996, 47), leading to speculation that there was a hill fort on the hill top overlooking the estuary. Roman and early Anglo-Saxon occupation in the area was concentrated on the northern bank of the River Chelmer at Heybridge (Fig. 1), where a thriving Roman port and small town developed (Wickenden 1986, 61–64; 1996, 76; Drury and Wickenden 1982). In contrast, only sparse Roman remains have been discovered in Maldon. Settlement seems to have shifted across the river to Maldon hill in the Middle Saxon period (Webster and Cherry 1973, 140–1; Rigold and Metcalf 1984, 257).

The *Anglo Saxon Chronicle* states that Edward the Elder stationed his fleet and army at Maldon in 912 while Witham was being fortified (Rippon 1996, 120; Thorpe 1861). This suggests that it was a royal estate before the forward garrison of the Maldon *burh* was built in 916 to defend against Viking and Danish raids (Dodgson 1991, 170). The precise location of the *burh* ditch is not yet known and no extant landscape features provide obvious candidates. Antiquarian sources suggest that the earthwork enclosure was built on the hill at the west end of town (Salmon 1740, 419; Strutt 1774, 25, pl. 2), and have influenced archaeological research in Maldon (Brown 1986; Bedwin 1992).

A Norman castle may have been built at Maldon (Hunter 1999, 82) and the establishment of a mint fostered its growth as a market town. The town charter was granted in 1171 and a market developed, exploiting the town's position at the head of the Blackwater Estuary (Wickenden 1986, 61). Throughout the medieval period, fish, salt, mussels and oysters from the estuary were a lucrative resource (Hunter 1999, 76; Alsford 1998, 4). The three local religious establishments and their surroundings reflect the prosperity and dense settlement of Maldon at this time. However, Maldon declined in the later 12th century and was relatively impoverished and sparsely populated in the 13th and early 14th century. It expanded slowly in the later 14th century, following the fortunes of the wool and cloth industry (Ayers 1997, 61). The town was only incorporated in 1554, when the royal charter described Maldon as 'ruinous and decayed' (Alsford 1998, 5).

Excavation and recording

An open area archaeological excavation followed an archaeological evaluation (Crank and O'Brien 2002) (Fig. 3).

Three separate areas were excavated:

- Area A, an L-shaped area (*c.* 530m²) positioned in the northern and western areas of the site.
- Area B (25m × 3m), positioned to excavate the area beneath the former showroom.
- Area C (*c.* 14m × 6m), a rectangular area on the Spital Road frontage.

Stratigraphic phases

Three main phases of activity were recorded. The features were phased using stratigraphic and ceramic evidence, and they relate to the Roman and medieval use of the site and occupation in the vicinity (Fig. 4).

Phase I features comprised a Roman pit and a linear feature. A cluster of Saxo-Norman to early medieval pits formed Phase II. Phase III was characterised by the late medieval quarry pits. Saxon activity was only identified in the form of residual pottery sherds contained in a later medieval quarry pit. The post-medieval material was probably redeposited.

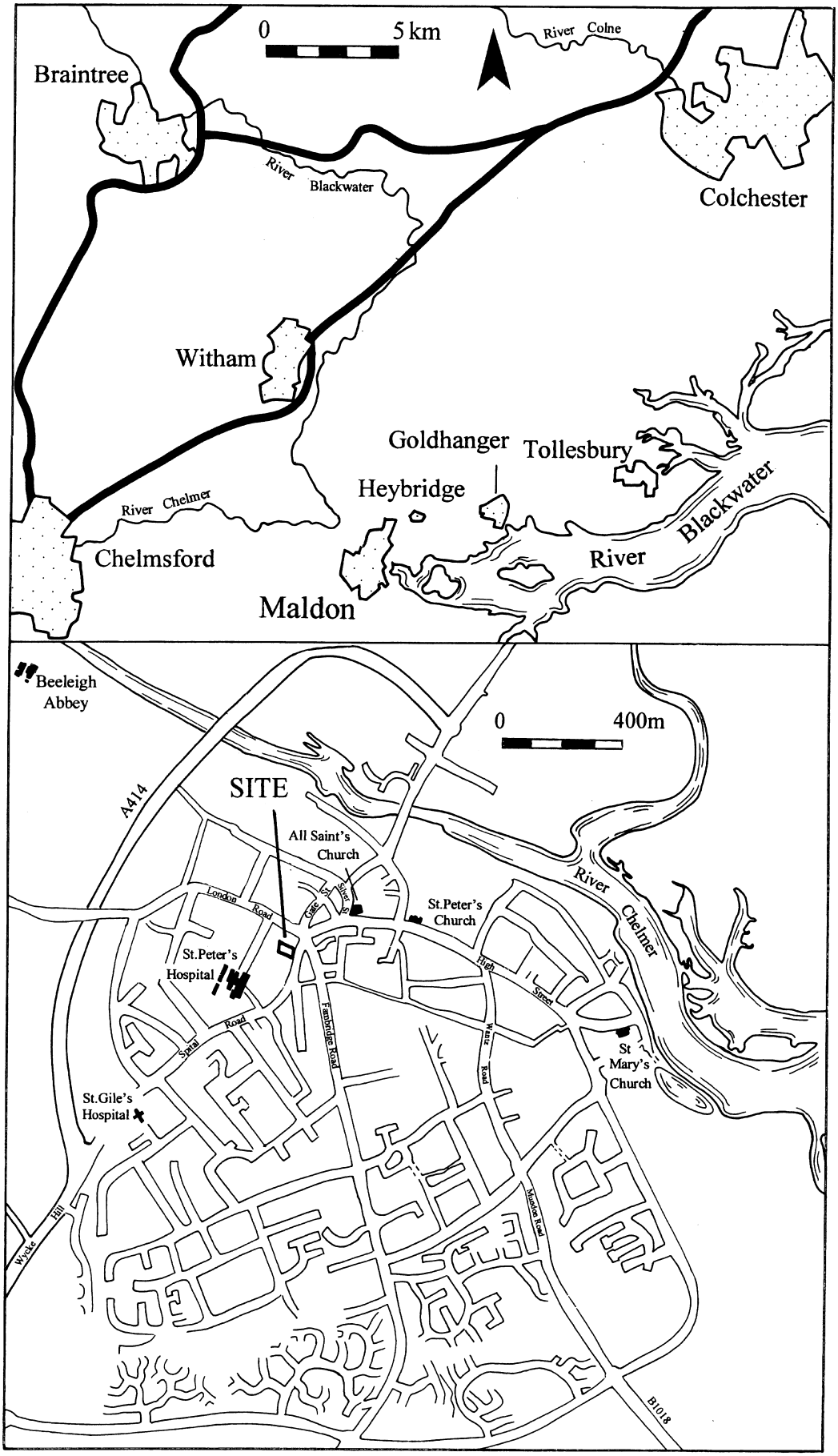

Fig. 1 Site Location Plan © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

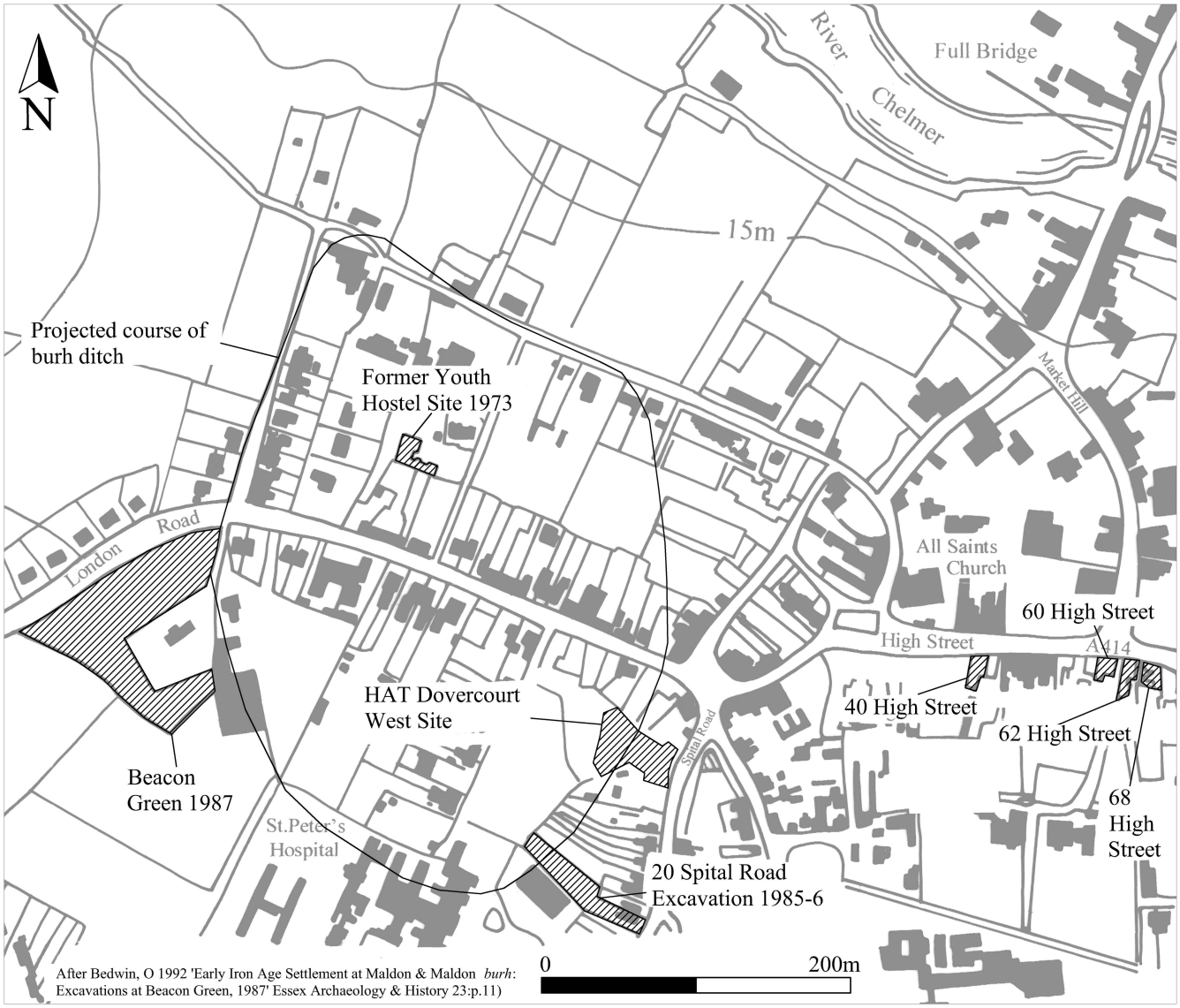

Fig. 2 Detailed Site Location Plan © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

THE EXCAVATION

Phase I Roman

A large feature, F1007, was initially excavated during the evaluation and was revealed to be a pit, F2027, during the full excavation. Pit F1007 was located on the eastern side of Area A (Figs 3 and 4) and measured 1.87m wide and 0.9m deep. Pit F1007 contained Roman pottery (24g), tile fragments (43g), animal bone (809g) and a worked stone fragment (1226g). This was the only unambiguous Roman feature to be excavated. Residual Roman pottery was found in upper fill (L1030) of Phase II Quarry Pit F2021 (see below).

Phase II Saxo-Norman to early medieval (9th to 13th century)

The only evidence of Saxon occupation was residual pottery dated to the 6th to 10th century in the fill, L2041, of later medieval quarry Pit F2021 (Fig. 3). There was no evidence for the Saxon *burh* fortifications, previously thought to run through the western part of the site, or indeed of any earlier Anglo-Saxon activity.

Phase II was dominated by the presence of large Quarry Pit F2021, measuring 34 m long, *c.* 9.5m wide and 1.5m deep and running along the western side of the site. It contained fourteen fills. The six lower fills (L2034, L2033, L2032, L2031, L2030 and L2035) were sealed by a series of later angled fills, some of which had apparently been tipped into the feature from the eastern edge (L2036, L2037, L2038 and L2039). The truncation of these fills by L2040 suggests that the pit was re-excavated before it was backfilled with L2041. The two upper fills, L2042 and L2043, may represent further levelling. Several of the fills were sterile deposits of slumped or redeposited natural gravel, and contained no dateable finds – these are suggestive of quarrying. However, L2040 contained quantities of oyster shells as well as animal bone, indicating that this deposit probably contained domestic rubbish. Pottery from the fills of Pit F2021 ranges in date from residual Roman pottery

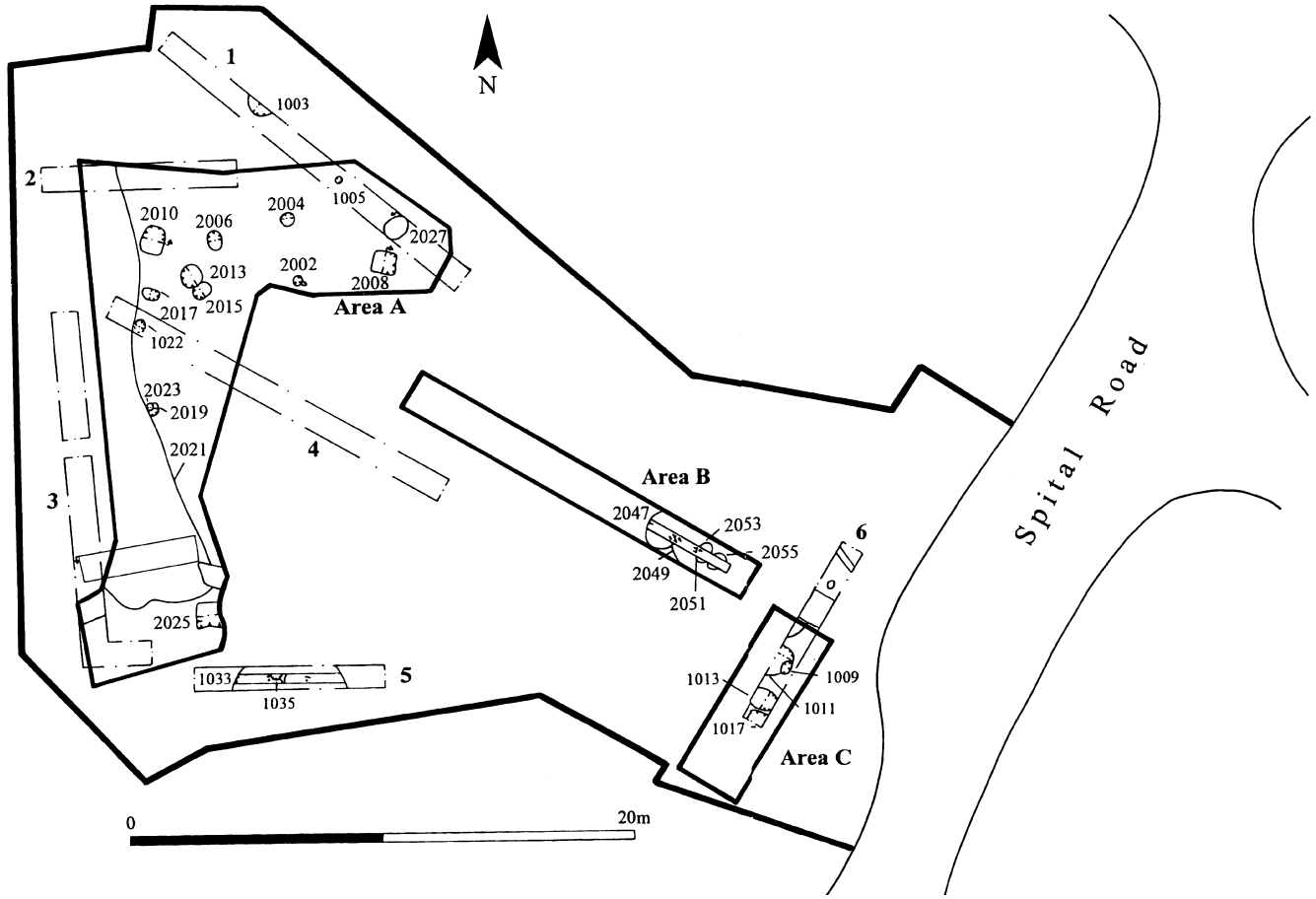

Fig. 3 Site Plan

(L2041), through the Saxo-Norman to early medieval period (L2040), to the latest (L2039), dated to the 13th to 16th century.

A cluster of circular and sub-circular pits in the western half of the site, ranging in size from 1m to 4m in diameter and 1.5m in depth (F1001, F1003, F1022, F1028, F2004, F2006, F2008, F2010, F2013) (Fig. 3) also belong to Phase II. Typically, these pits contained pottery fragments, animal bone, building materials and occasionally oyster shells. Pit F2010 contained quern fragments (Stone and Iron Objects Report below), two fragments of redeposited slag (below) and quantities of animal bone (421g). The few pits discovered in the eastern half of the site (F2047, F2049, F2051) were similar in morphology and contents (Fig. 3).

Phase III Late medieval (13th-16th century)

There is a degree of overlap in the early to late medieval phasing due to larger features with multiple fills such as Quarry Pit F2021. Despite this, a small group of late medieval pits were identified across the site (F1011, F1013, F1017, F2025 and F2053; Fig. 3). The size and contents of these features is comparable to their early medieval counterparts, except that a larger and more diverse selection of material was present. Whether originally created for refuse or gravel extraction purposes, the accumulation of animal bone, pottery and building material together with a selection of other finds, including fragments of copper-alloy and an iron fibre-processing spike, points to their final use as domestic rubbish pits.

Unphased

Numerous features on the site remain unphased. The small sub-circular and sub-rectangular pits (F2002, F2015, F2017, F2019, F2027, F2055 and F2057) probably date to the Saxo-Norman or early medieval phase due to their location, comparable morphology and fills as well as occasional stratigraphic relationships. Probable later medieval features include small Posthole F2023 and large Pit F2045.

SPECIALIST REPORTS

Pottery

Andrew J Peachey

Introduction

The excavations revealed fifteen contexts that contained Roman pottery. A total of 146 sherds, weighing 2475g with a r.eve of 1.22, are present. Generally, the pottery is abraded. The sherds are moderately-sized, with the average sherd weight being 16.95g, but for an assemblage of this size the number of diagnostic sherds and the r.eve (1.22) are low. The assemblage is partly decorated with glazes, and examples of both grooved and stamped decoration were found in association with glazed wares. The full ceramic catalogue is contained in the archive.

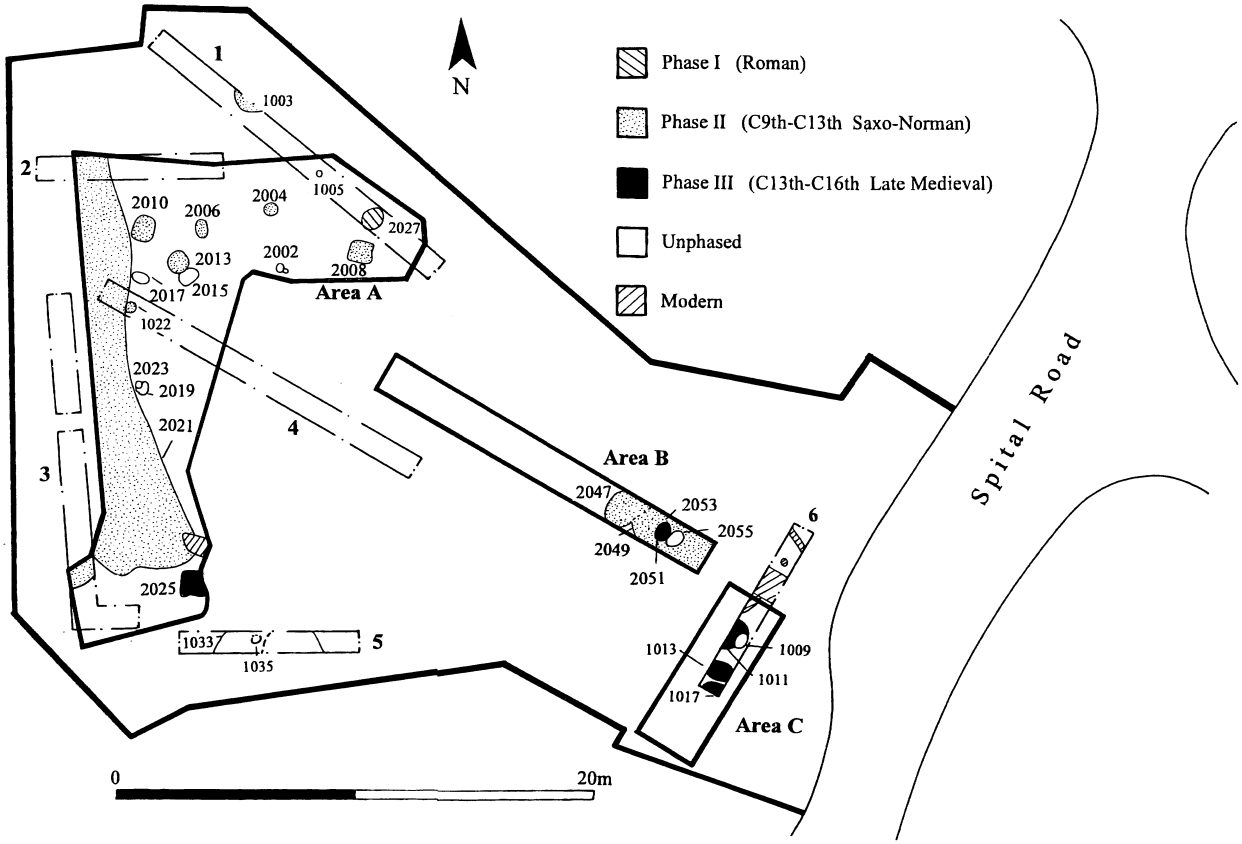

Fig. 4 Phase Plan

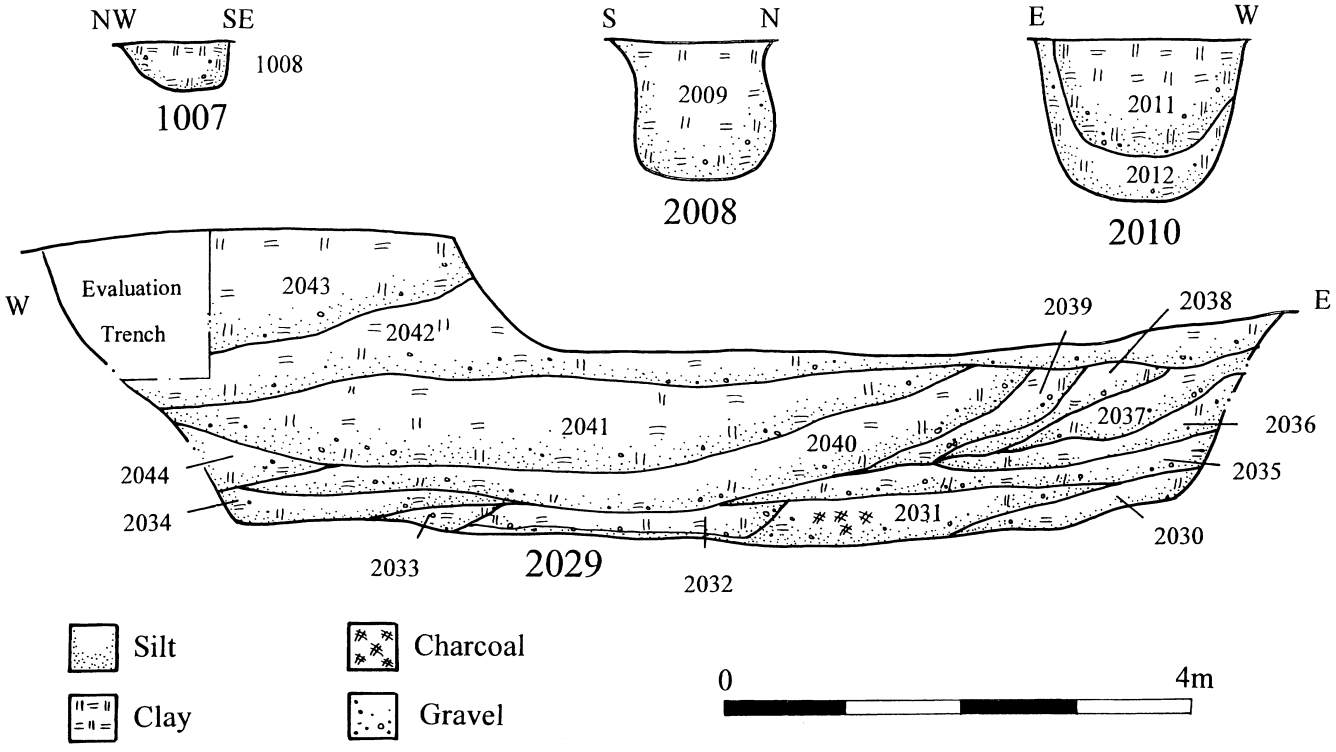

Fig. 5 Sections

Methodology

The pottery was examined using a ×20 microscope. Specific details of the pottery from each context can be found in the site archive. The fabric codes that have been employed are based on the system developed by Cunningham (1982; 1985) and used on the site of North Shoebury, Essex (Walker 1995). If a fabric did not fit into this system then it was designated a code according to the period of provenance, and/or its visual appearance.

Fabric codes and descriptions

F12A² Fabric 12A².
Description: (Walker 1995, 103), Coarse shell tempered ware. The fabric generally has a dark grey core with buff/brown surfaces. Inclusions are abundant crushed shell (0.4–2mm), sparse red oxides, carbonised material, and fine sand.

F12A³ Fabric 12A³.
Description: (Walker 1995, 103), Similar to 12A² but with sparse shell (1–2mm) and a higher frequency of fine sand.
Source: Local.
Date: For this assemblage the 11th to 13th Centuries, but both fabrics were probably being produced considerably earlier alongside other Saxon fabrics.
Comments: These fabrics occur in Pit F2005 L2005, Pit F2008 L2009 and Pit F2049 L2050. The only identifiable form is a sagging base cooking pot.

F13 Fabric 13: Early medieval ware.
Description: (Walker 1995, 103), the fabric has a dark brown/grey core, dark red/brown margins and dark grey surfaces. Abundant quartz and sand dominates the inclusions, although moderate red and black iron rich inclusions are present and mica is often visible, especially on the surface. Some sherds may have had a black slip.
Source: Local.
Date: 11th to 13th century.
Comments: Forms appear limited to jars and cooking pots but not to one particular style. Many sherds retain sooting from their original use. Most forms appear to have been handmade, but a minority may have been wheel made.

F13¹ Fabric 13¹.
Description: (Walker 1995, 103) As F13 but with a highly micaceous fabric and tempered with distinctive coloured (colourless, white, black, brown, and amber) sand.

F13² Fabric 13².
Description: A coarse version of F13 with sparse flint inclusions (0.5–3mm).

F20 Fabric 20: Medieval grey ware.
Description: (Walker 1995, 104) A hard sand-tempered fabric that typically fires to a grey colour. The fabric is often reduced.
Source: Local and/or regional.
Date: 12th to 14th century.
Comments: Forms include a jar, pedestal base beaker, and a pipkin/skillet. This fabric makes up 16% of the weight of the total assemblage.

F20C Fabric 20C: Mill Green coarse ware.
Description: (Walker 1995, 104) A micaceous fabric that is otherwise similar to F20. It tends to fire to a reddish brown rather than grey.
Source: Mill Green, near Ingatestone.
Date: Late 13th to 14th century.
Comments: Only two body sherds of this fabric were found in Pit F2025 (L2026).

F20D Fabric 20D: Hedingham coarse ware.
Description: (Walker 1995, 104) A micaceous fabric similar to F20. It contains abundant sub angular quartz (0.5–1mm), moderate iron rich inclusions and black iron ore, and sparse fine calcareous inclusions. Quartz and iron ore often protrude slightly through the surface giving the fabric a slightly abrasive feel.
Source: Hedingham.
Date: Mid 12th to late 13th century.
Comments: This fabric makes up 11% of the weight of the total assemblage.

F21 Fabric 21: Sandy Orange ware.
Description: (Walker 1995, 104) Any hard sand tempered oxidised fabric.
Source: Local.
Date: 13th to 16th century.
Comments: Only 1 body sherd of this fabric was found, in quarry Pit F2021 (L2039).

F21¹ Fabric 21¹.
Description: (Walker 1995, 104) As F21 but with a distinctive blue/grey core. It has a relatively smooth exterior, whereas sand protrudes from the interior surface, giving it a pimply texture.
Comments: Only one body sherd of this fabric was found, in Pit F2008 L2009.

F35 Fabric 35: Mill Green fine ware.
Description: (Walker 1995, 104) A very micaceous fabric with smooth surfaces. The fabric is brick-red with a grey core.
Source: Mill Green, near Ingatestone.
Date: 13th to mid 14th century.
Comments: Only one body sherd of this fabric was found, in Pit F2008, (L2009).

F35B Fabric 35B: Mill Green type ware.
Description: (Walker 1995, 104) The fabric is virtually indistinguishable from F35, although sometimes it is fully oxidised. The fabric often had a white/cream slip and green/olive slip applied. It is usually differentiated from F35 by is unusual decoration (see below).
Source: probably Mill Green, but it is also thought to have been produced at Rayleigh in the latter half of its date range.
Date: Mid 13th to 15th century.
Comments: This fabric is present as 6 sherds in Pit F2053 (L2054), one of which is decorated with a six-dot raspberry stamp.

GRIM Glazed Grimston type ware.
Description: A hard dark grey sand tempered fabric with sparse red and black iron rich inclusions. The fabric's interior and exterior surfaces are decorated with a red slip followed by a green/olive glaze.
Source: Grimston.
Date: Late 12th to 14th century.
Comments: One body sherd of this fabric was found, in Pit F2047 (L2048), and it is decorated with an intricate grooved pattern.

UPG Unprovenanced glazed ware.
Description: The fabric is identical to F20 but has been decorated with a dark lustrous exterior glaze.
Source: Local and/or regional.
Date: 12th to 14th century.
Comments: Two body sherds of this fabric were found, one in Pit F2025 (L2026) and one in Pit F2053 (L2054).

EMGL1 Early medieval glazed ware 1.
Description: A hard grey reduced fabric with frequent quartz and sparse fine calcareous inclusions. It has been decorated with a white slip and a mottled green glaze. The fabric is similar to Fabric E1 at Rochford (Eddy 1984–5, 16).
Source: Regional. *Date*: 12th to 14th century.
Comments: One sherd of this fabric was found in Pit F2053 (L2054). It displays a small part of the rim and one stump of a handle.

SF1 Saxon Fabric 1.
Description: A dark grey/ black (organic?) coarse fabric with sparse large (1–3mm) flint inclusions, and sparse to moderate fine calcareous (shell).

Source: Local.
Date: 6th to 10th century.
Comments: The small abraded body sherds found in Pit F2008 (L2009) and Quarry Pit F2021 (L2041) are probably residual.

UNS WH Unsourced white ware.
Description: A uniform cream/buff colour throughout with moderate quartz, red and black iron-rich inclusions, and sparse mica.
Source: Regional?
Date: Could be medieval or residual Roman.
Comments: Only one very abraded base sherd of this fabric was found in Pit F2045 (L2046).

Discussion

Dating this assemblage proved difficult, because despite the relatively large average sherd size there are relatively few diagnostic sherds, and of those that are present most are coarse wares and harder to date than fine wares. However, all the contexts are from sealed pit groups, which makes it easier to assign a narrower date range and contamination is lower. Table 1 (below) illustrates the pattern of fabric and sherd distribution within the assemblage.

The assemblage can be broadly placed into the following categories:

Post-Roman and Saxon

The Saxon fabric from Pit F2008 (L2009) and Quarry Pit F2021 (L2041) is present in very small quantities and is highly abraded. Its presence in this assemblage is probably residual.

Early medieval

This period spans the 11th to 13th centuries and accounts for the majority of sherds. The fabrics that dominate the assemblage are the sand-tempered coarse wares (unsourced and from Hedingham and Mill Green), although the additional presence of unsourced shell tempered wares (F12A² and F12A³) indicates activity in the earliest years of this period. The forms that can be defined from the rim and base sherds of these fabrics are associated with domestic activity, mainly cooking judging from the soot present on many of the sherds (Table 2 below). Cooking pots from Pit F2008 (L2009) are comparable to examples from excavations at Pyrgo Park (Sellers and Ryan 1987, fig. 3.9) in F13, and from Colchester Castle (Drury 1982, fig. 26.15) in Hedingham coarse ware. Pit F2049 (L2050) contained a cooking pot comparable to an example from North Shoebury (Walker 1995, fig. 76.28) in F13. Other forms of note are from Pit F2008 (L2009) and include a flat pedestal base cup (chipped base present) and a pipkin or skillet (rim without pouring lip present), both associated with the latter half of this period.

Some of the fine wares (Mill Green fine ware, glazed Grimston type ware, and early medieval glazed ware) can be associated with the latter half of this period. They appear to be derived from the sand-tempered coarse ware traditions outlined above, but in terms of date could equally belong to the earlier years of the next later period. One small sherd of glazed Grimston ware exhibits a fairly intricate grooved pattern beneath its glaze, but apart from this there is no diagnostic decoration or rim sherds on the fine ware that can be associated with this period. The glazes are both lustrous and dark, or olive/green usually over a red slip.

Cooking Pot/ Jar	Handled Jar / Jug	Pipkin / Skillet	Pedestal base cup
6	1	1	1

Table 2 The forms present at Spital Road, Maldon

Context	F12A²	F12A³	F13	F 13¹	F13²	F20	F20C	F20D	F21	F21¹	F35	F35B	GRIM	UPG	EMGL1	SF1	UNS WH
2005		1															
2007			3		1												
2009	6	4	9	5	2	12		10		1	1					5	
2011			1	2	1			1									
2012					1												
2014					4	3		1									
2026			7			2	2							1			
2039									1								
2040			9														
2041																1	
2046																	1
2048			4	4									1				
2050	2		8			1											
2052			2														
2054			9			9						6		1	1		
Total	8	5	52	11	9	27	2	12	1	1	1	6	1	2	1	6	1
%Total	5.5	3.4	35.6	7.5	6.2	18.5	1.4	8.2	0.7	0.7	0.7	4.1	0.7	1.4	0.7	4.1	0.7
Total no. of sherds: 146																	

Table 1 Sherd distribution within contexts.

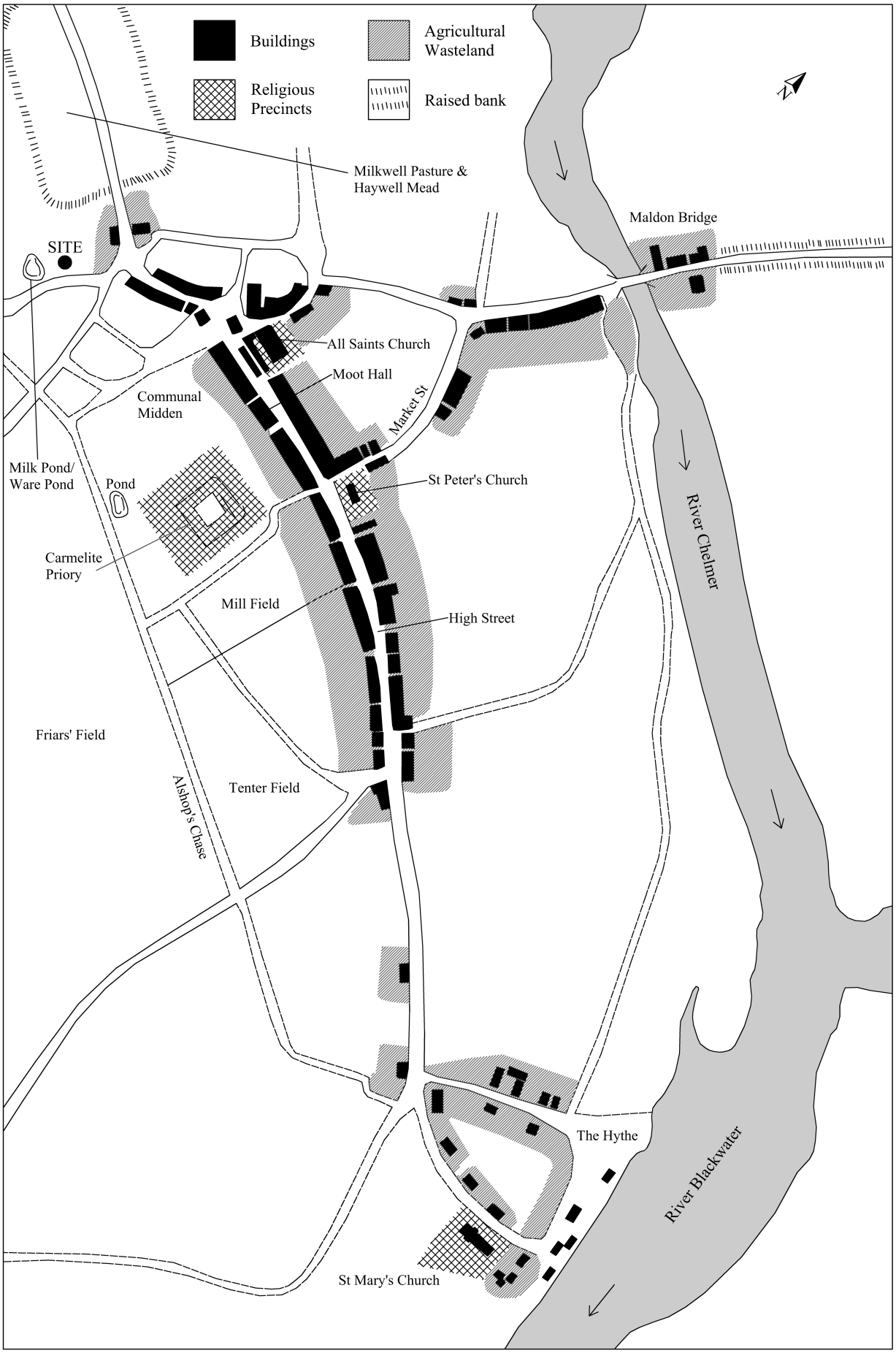

Fig.6 Medieval Maldon Plan © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

13th to 16th century
Only a few contexts can be firmly dated to later than the 13th century. Pit F2053 (L2054) contained the rim and shoulder of a storage jar with a distinctive thumbed cordon on its shoulder, comparable to examples found at Rayleigh Castle (Helliwell and Macleod 1981, figs 70/71).

The fine wares are noteworthy even if they are not diagnostic. A small rim sherd of early medieval glazed ware from Pit F2053 (L2054) exhibits one stump of a handle. It would have formed part of a handled jar or jug. Also from L2054, a body sherd of Mill Green-type ware exhibits a six-dot raspberry stamp as decoration. This is distinctive because raspberry stamps from other areas usually consist of seven dots. A comparable example of this decoration was found at a possible late medieval kiln dump at 77 High Road, Rayleigh (Walker 1990, fig. 36). Unfortunately, this raspberry-stamped sherd is not of a more diagnostic form or date. Like the early medieval assemblage, this small later assemblage is domestic. However, unlike the earlier assemblage, it contains sherds associated with tablewares rather than cooking.

Stone and iron objects
Nina Crummy

Stone objects
Pit F2010 (L2011) contained two small fragments from a quernstone of Mayen lava, 158g. One is thin (17mm), and retains two smoothly worked surfaces parallel to each other. The other is thicker and of irregular section (maximum 39mm), with one surface pecked, the other worn.

Quernstones made from this stone were imported into Britain in the Roman period, though the trade ceased sometime before the 5th century and was not to be revived again until the 7th century. Once re-established, it appears to have continued throughout the medieval period, perhaps even continuing into the early post-medieval period (Buckley and Major 1988, 36–9). Unfinished stones from late Saxon London show that they could be imported as blanks (Freshwater 1996).

Iron objects
Pit F2025 (L2026) contained an iron fibre-processing spike of circular section (slightly bent, 95mm).

Analysis of the very large number of fibre-processing spikes from Anglo-Scandinavian York has shown that it is difficult to distinguish between heckle spikes and wool-comb teeth, though those which, like this one, are round in section and between 90–110mm are most likely to be from wool-combs (Walton Rogers 1997, 1727–31).

Pit F2025 (L2026) contained an iron strip with central riveted stud for attachment. Length 93mm, width 14mm.

The function of this piece has not been established; it may be a box fitting or similar item.

Slag
Jane Cowgill

Two pieces of slag were recovered during excavation. These pieces of slag were recovered from the upper fill of Pit F2010 (L2011), which has been dated by the pottery to the mid 12th to mid 13th century. Both are the by-products of iron smithing, the production, repair or reuse of iron objects. The slags are exceptionally dense and heavy and are likely to be composed in the main of fayalite, an iron silicate ($2FeO.\ SiO_2$), although the fact that some areas are magnetic suggests that some magnetite, a metallic iron, may be present (Fe_3O_4). Charcoal is likely to have been the only fuel used in the forge. The similarity of the two pieces suggests that they may be the waste products of a single smith, but the fact that one is probably abraded suggests that they have been redeposited in this pit or have been weathered for some time on the ground surface. Both pieces have recent breaks and parts of both hearth bottoms are missing.

Pit F2010 L2011 (Upper fill). Hearth-bottom fragment, weight 80g, probably charcoal fuel, probably abraded. Very dense piece with a glassy top and fractured base, magnetic in places, several recent breaks.

Pit F2010 L2011 (Upper fill). Hearth-bottom fragment, weight 83g, charcoal fuel. Very dense piece, almost the density of tap slag, large cinder inclusion, few original surfaces survive. Several recent breaks.

Discussion
The excavations at Spital Road revealed part of a large Roman domestic refuse pit, in addition to early and later medieval activity in the form of gravel quarry pits and further domestic refuse disposal.

One of the principal results of the excavation is the complete absence of any archaeological evidence for the Saxon *burh* fortifications mentioned in documentary sources. Surviving earthworks and excavated examples elsewhere in southern England indicate that *burhs* were substantial defended sites, but with variable lengths of occupation (Haslam 1984). The construction and siting of the Maldon *burh* in a strategic position on a hill at the mouth of the Blackwater Estuary reflects the tactical necessity for significant defences against raiding (Bedwin 1992, 21). The high status of Maldon at this time is indicated by the fact that there were only two *burhs* in Essex, the other being at Witham (Haslam 1984; Hunter 1999, 73). On the basis of antiquarian reports, the *burh* ditch was conjectured to have passed through the western edge of the site (Fig. 2). The continuing search for the *burh* by archaeologists and historians means that the presence of any large earthwork or large ditch-like features in the area is often judged to be a missing segment until proved otherwise (Chalkley-Gould 1909; Brown 1986; Bedwin 1992).

Several previous excavations in the area have identified Iron Age activity (Sealey 1996, 47) for example at Beacon Green (Bedwin 1992), the Youth Hostel (Brown 1986) and 20 Spital Road (Brown 1986) (Fig. 2). As noted earlier, this has led to conjecture about the

possibility of a hillfort of that date, though no good evidence has yet been found. However, an Iron Age earthwork could have formed the basis of the putative Saxon *burh* defences.

There is little evidence for settlement within the *burh* (Webster and Cherry 1973, 140–1; Eddy and Petchey 1983, 63; Bedwin 1992, 21). Late Saxon and medieval occupation was focussed to the east, around the medieval church and market place, where traces of a late Saxon hall have been found (Rippon 1996, 120; Bedwin 1992, 21; Bennett and Gilman 1989, 151).

The defences may have been levelled in the medieval period, which might account for the quantity of finds dating to the 12th century and later, if the land use changed. The only Saxon evidence from Spital Road is sparse residual pottery. The *burh* ditch may have passed to the west of the Spital Road site, as a subsequent archaeological evaluation failed to reveal the ditch on the eastern side of Spital Road (Britchfield 2002).

The development of Maldon in the late Saxon, Saxo-Norman and medieval periods stemmed from its key position on trade and communication networks (Williams and Brown 1999, 18). The medieval pits must be placed in this context of expansion. Large Quarry Pit F1021 was the result of the extraction of gravel from beneath the layer of heavy clay. The smaller pit clusters confirm quarrying, given their irregular shapes and steep sides. Piecemeal, small-scale gravel extraction at Spital Road may have provided domestic building and road metalling materials supplying local demand. A subsequent archaeological evaluation on the eastern side of Spital Road also revealed a Roman pit and a number of 12th to 14th-century pits containing domestic refuse, but yielded little evidence for quarrying (Britchfield 2002).

The fills of the smaller pits and that of the larger quarry pit yielded mixed and fragmentary assemblages of animal bone, ceramic fragments, tile and oyster shell consistent with domestic waste. The relatively high proportion of oyster reflects the extensive exploitation of the coastal resources indicated in documentary sources. The presence of other domestic items found in the pits, such as the iron knife blades and nail (F1022, F1043), an iron fibre-processing spike and possible box fitting (F2026), copper-vessel fragment (F1011), lava quern fragments (F2010) and ceramic household cooking and table wares seem to confirm this pattern of domestic disposal. The presence of a single iron fibre-processing spike (F2026) is more indicative of domestic than specialised craft production.

The site was located to the west of the commercial and residential part of the medieval town, directly across the road from the communal midden, referred to as 'Town's End' (Fig. 6). This area was the medieval waste dumping ground, which would have had large dunghills. It is likely that the pits at Spital Road were initially created by gravel extraction and were subsequently used for the disposal of domestic waste.

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A pyramid seal matrix of Sir John Marney (1402–*c.*1471)

John Ashdown-Hill

INTRODUCTION

A pyramid seal matrix which, on the basis of its style, may be dated to the second half of the fifteenth century, and which is inscribed in Latin for 'John Marney, Knight' was discovered at St Osyth in 1945 (Plate 1). According to the records of the Friends of Colchester Museums the matrix was dug up in St Osyth,[1] but it is not recorded exactly where, nor by whom, it was found. Seven years later, in 1952, the matrix was purchased, and presented to Colchester Museums, by the 'Friends of the Museum'.[2] The museum report which records its acquisition describes the matrix as 'of Sir John Marney (died 1525)'. At the time of its purchase and presentation to the museum, the seal matrix was thus attributed to John Marney III (*c.*1493–1525), who in 1523 became the second Lord Marney.[3]

John Marney III was 'knighted at Tournay, 25 December 1513',[4] and between this date and the death of his father (24 May 1523) he would indeed have been known as 'Sir John Marney'. Subsequently, from 1523 until his death in 1525, he was 'Lord Marney' and would doubtless have used that title in preference to the lesser title of 'knight'. If the seal matrix was his, it must therefore have been made and used within the brief, ten-year period 1513–1523.

However, this seal matrix cannot have been made for John Marney III, for reasons which are examined in detail below.[5] Rather it must have belonged to his grandfather, Sir John Marney II (d.*c.*1471), a man about whom virtually nothing has been published; who, almost alone amongst the fifteenth-century Marneys of Layer Marney, has no recorded tomb; but whose life and career nevertheless present features which are of interest.

The Marney Family

The Marney family (Fig. 1) held Layer Marney from the twelfth century.[6] In 1264 William de Marney I[7] was empowered by Henry III to 'empark his wood of Lire [Layer] in the Forest of Essex'.[8] In 1330 his grandson, William Marney II founded a college for a warden and two chaplains in Layer Marney Church, where he also founded two chantries.[9] In 1377 'Sir Robert Marney was the owner of Warden's Hall in the parish of Willingale Doe; and in 1391 the same Sir Robert held the gift of South Ockenden. So that in the fourteenth century the name [Marney] assumed an important position in the county'.[10] In 1402 Sir William Marney III served as Sheriff of Essex and Hertfordshire. In his will, dated 1414, he desired that his body be buried in *choro ecclesiae de Marney*, and his tomb remained in the choir until the nineteenth century, when it was moved to a side chapel.[11]

In the sixteenth century the family reached both its apogee and its end. Sir William Marney III's grandson, Sir Henry Marney, 'became a Privy Councillor of Henry VII and Henry VIII, Captain of the King's Bodyguard, and Sheriff of Essex, and finally, shortly before his death in 1523, Keeper of the Privy Seal'.[12] Just six weeks before his death Sir Henry was also elevated to the peerage as the first Baron Marney. He was responsible for an ambitious rebuilding project at his home at Layer Marney which has left to posterity Layer Marney Tower. However, his grandiose plans were never completed. 'His son succeeded him, but died two years later, in 1525. The line was then extinct'.[13]

The future first Lord Marney, was born in or about 1457[14] His parents were Sir John Marney II (the younger of the two sons of Sir William Marney III) and Joan (or Jane) Throckmorton, daughter of John Throckmorton of Gloucestershire. It is the first Lord Marney's father, Sir John Marney II, who was the owner of the pyramid seal matrix which is the subject of this paper.

Sir John Marney II, owner of the seal matrix

It is possible to trace the career of Sir John Marney II, at least in part. His father, Sir William Marney III, died on 21 August 1414, just one week after John's twelfth birthday. The immediate heir was John's elder brother, Sir Thomas Marney. Thomas died on 22 March 1421 possibly killed at the battle of Baugé. He left no living children, but at the time of his death his wife was pregnant. On 14 August 1421 she gave birth to a daughter, Margaret. However, this child died on 15 November 1421, at which point the family estates devolved on Sir John Marney II.[15]

It seems that the fifteenth-century Marney family in general, and Sir John Marney II in particular, were politically Lancastrian.[16] Family ties had brought John's father within the orbit of those powerful Lancastrian Essex magnates, the de Veres, earls of Oxford. Sir William married Elizabeth Sergeaux, one of the four daughters and eventual coheiresses of Richard Sergeaux (or Cergeaux) of Colquite, Cornwall.[17] Elizabeth's younger sister, Alice Sergeaux later became the wife of Richard de Vere, 11th earl of Oxford (Fig. 2).

Receiver's accounts for 1423–1425 contain a description of the lands of John Marney in the county of Essex,[18] while in 1433 a surviving bond mentions John Marney esquire.[19] In 1444 the patent rolls refer to a John Marney who had then recently held the post of sheriff of

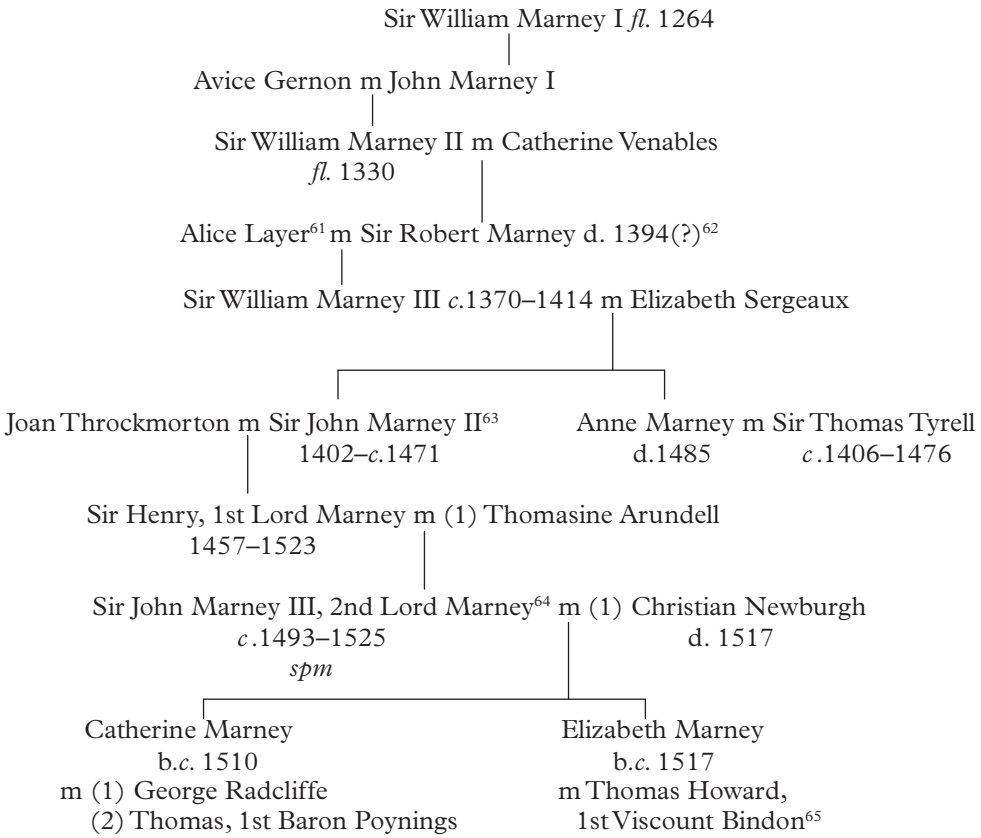

Fig. 1 The Marney family of Layer Marney

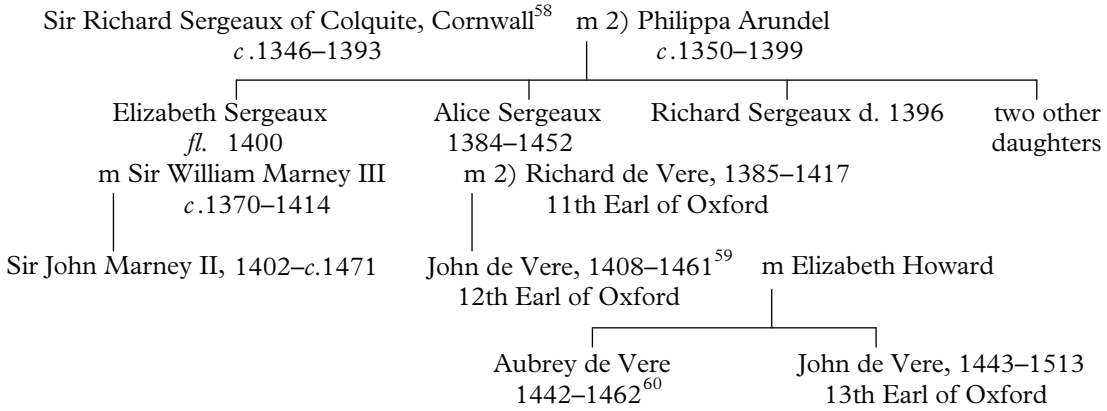

Fig. 2 Sir John Marney II's connections with the de Vere and Sergeaux families

Cornwall.[20] The location is far distant from Essex, and one might doubt whether this sheriff could be our John Marney, were it not for the fact that Sir John's mother came, as we have seen, from Cornwall. Moreover, his wife came from Gloucestershire, his future daughter-in-law, from Cornwall, and the latter's mother, from Dorset. John himself held land in the West Country, including his grandfather's manor of Colquite (which he inherited through his mother, Elizabeth Sergeaux).[21]

By May 1454 Sir John Marney[22] had left this island entirely, and was serving on the mainland of Europe as captain of Hammes Castle. This, together with the Castle of Guines, constituted the essential bastion of the English enclave of Calais.[23] Sir John's name continues to occur occasionally in surviving English records, as in a grant of 1458–1459.[24] His tenure as captain of Hammes lasted six years or more, and there are a number of passing references to it in the patent rolls. He was still in post on 6 December 1460,[25] just three months before the accession of Edward IV.

This fact is of interest, because Edward, as earl of March, spent the eight months from November 1459 to June 1460 in Calais, together with his key supporters, the Neville earls of Salisbury and Warwick.[26] Inevitably the young future king must have encountered Sir John Marney during this period. Presumably he was not

favourably impressed, for when Edward gained the throne Sir John Marney lost his post. The captaincy of Hammes was one of the many offices which Edward IV awarded to his cousin Richard Neville, Earl of Warwick (known as 'the kingmaker').[27] The reference dated December 1460 constitutes the last date at which Sir John is know to have been at Hammes Castle, although he was presumably not replaced until early the following year.[28]

On 10 June 1461 Edward IV granted a general pardon to John Marney, knight and his wife, Joan, for all offences committed by them prior to 1 May of that year. The granting of such a pardon was not particularly unusual, but it suggests that Sir John may have left his post at Hammes around the end of April and returned to England. Pardons were often requested by men leaving a post, to ensure that they could not subsequently be pursued legally for any irregularities in their administration which might later come to light.

There is no sign that Sir John was ever subsequently employed in any capacity by Edward IV, nor was he ever granted any emoluments by the new sovereign. In Yorkist England he seems to have been out of favour. The next reference to him in the patent rolls, occurs on 1 April 1472, on which date Edward IV made a 'grant during minority to the king's brother, Richard Duke of Gloucester,[29] of the custody and marriage of Henry Marney, son and heir of Sir John Marney, knight'.[30] This clearly implies that Sir John was then dead, and on Friday 7 August 1472, the patent rolls note specifically that he was deceased.[31]

Probably Sir John Marney died during the course of 1471. Since he was then sixty-nine years of age it is not impossible that sickness ended his life. On the other hand 1471 was the year of Edward IV's return from exile, and culminated in the battles of Barnet and Tewkesbury. Sir John's cousin, the young earl of Oxford, fought on the Lancastrian side at Barnet and Sir John Marney may have been with him.[32] Alternatively Sir John's West Country connections may have led to his presence at the battle of Tewskesbury. Involvement in either conflict might have resulted in his death. It is uncertain where Sir John Marney was buried. Both his father and his son have tombs in the church at Layer Marney, but this building houses no surviving monument either to Sir John himself, or to his elder brother, Thomas. We have already seen that Thomas may have been killed fighting in France, where doubtless he was buried. If John likewise died on a battlefield either at Barnet or at Tewkesbury that might well explain why he too appears to have no tomb at Layer Marney.

The notion that Sir John may have borne arms in the Lancastrian interest in 1471 gains credibility from surviving hints of his earlier activities. The patent rolls entry of 7 August 1472 informs us of more than John's demise. It notes that 'for divers trespasses and other offences committed by him in the year 8 Edward IV[33] [he] was fined £800'.[34] The entry, which is long and detailed, goes on to speak of Sir John Marney's 'treasons' and 'insurrections'.[35] The fine imposed upon him was enormous, and Sir John required the financial backing of various relatives including Sir Thomas Tyrell and John Throgmerton esquire in order to meet it.[36] He was also forced to enfeoff all his manors, including Layer Marney, to Sir Thomas Montgomery of Faulkbourne, Witham, and others. Sir Thomas Montgomery was the new Yorkist magnate in Essex, whose pre-eminence had replaced that of the de Veres.[37]

It is interesting to speculate upon the nature of Sir John Marney's treasons. In 1469 the earl of Warwick rebelled against Edward IV, and in 1470 Edward's Lancastrian rival, Henry VI, was briefly restored to the throne. 1468, on the other hand, tends to be thought of mainly as the year in which the king triumphantly married his sister Margaret, to Charles the Bold, Duke of Burgundy. Nevertheless, 1468 certainly witnessed disturbances. 'Throughout 1468 relations between Warwick and the king were steadily deteriorating',[38] partly as a result of Margaret's Burgundian marriage, which Warwick had opposed. In June, with French backing and men, Jasper Tudor landed near Harlech. Although he failed to relieve the besieged castle, he sacked Denbigh before returning to France.[39] Earlier 'a messenger had been arrested carrying compromising letters, and under torture, he had implicated many people. … For some months there were arrests, fines, pardons; two insignificant men were hanged without exciting much attention. ... During the autumn there were other alarms and arrests'.[40] Significantly, perhaps, among those who were briefly imprisoned we find Sir John Marney's cousin, John de Vere, Earl of Oxford. The earl of Devon and Lord Hungerford were also arrested, tried and condemned to death. Whatever they had done, it must have seemed a heinous treason, for they were not executed as aristocrats, but were hung, drawn and quartered. Somewhere in all this *mélange* of plots, Sir John Marney was either involved, or had the misfortune to be named by an informer. Perhaps he was implicated as an associate of the earl of Oxford. Ultimately, on 4 April 1469, he was granted a pardon by the king for all offences which he might have committed up until 29 March.[41]

The Pyramid Seal

The seal matrix is a fine die, 38mm in diameter, and made of a copper alloy (Plates 1 and 2). For the seal of a knight it is of impressive size and quality.[42] The seals of some peers were no larger.[43] On the back of the matrix a handle rises to a trefoil ring, from which the seal could be suspended. The die bears a coat of arms, displayed upon a shield *couché*, with bird supporters, beneath a winged helm. These arms comprise quarterly 1 & 4 Marney (*gules*, a lion rampant guardant *argent*, armed and langued *azure*);[44] 2 & 3 Venables (*azure*, two bars *argent*).[45] This achievement of arms is surrounded by the slightly abbreviated inscription: *Sigillu' iohis – marny militis*.[46] This pyramid seal matrix is not the only known seal of Sir John Marney II. Attached to British Library, Harley Charter 53.D.9,[47] there is a small signet impression of 1462.[48] This is of red wax, and imperfectly preserved. It shows a wing erect (the crest from the Marney arms) between the letters *i* and *m*.[49]

Plate 1 Pyramid seal matrix of Sir John Marney II © Colchester and Ipswich Museums COLEM 1952.67

The heraldry of the Marney family and of the seal

The ancient arms of the Marney family were *gules*, a lion rampant guardant *argent*, armed and langued *azure*. However, the marriage of Sir William Marney II with Catherine Venables in the fourteenth century introduced a new element, since Catherine was an heraldic heiress.[50] As a result of this marriage the couples' descendants were entitled to quarter the Marney lion with the arms of the Venables family: *azure*, two bars *argent*, producing the quartered shield shown on the present seal matrix. Descendants of an heraldic heiress were not obliged to marshal their arms with hers, and did not invariably do so. The tomb of William Marney III (d. 1414) at Layer Marney church now has blank shields on the tomb chest (though these may once have been coloured). However the surcoat shown on his tomb effigy displays only the Marney lion.[51] It therefore seems possible that Sir William Marney III did not quarter this with the arms of Venables (or at least, not always).

Sir William Marney III was the father of Sir John Marney II. William III married another heraldic heiress: Elizabeth Sergeaux, one of the daughters and eventual coheiresses of Richard Sergeaux. Since his mother was a Sergeaux coheiress one might have expected Sir John to place her arms in the second quartering of his shield. Both his son and his grandson subsequently did so. However, on the evidence of this seal matrix, John II omitted his mother's arms from his shield, and simply quartered Marney with Venables. As we have seen already, he was not obliged to quarter his mother's arms. Moreover, there may have been good reasons why he did not do so, for his grandfather, Sir Richard Sergeaux left a son, who subsequently died childless.[52] The tomb of Richard de Vere, 11th Earl of Oxford (d. 1417), another of Sir Richard Sergeaux' sons-in-law, displays a shield upon which the de Vere arms are shown impaling Sergeaux.[53] This suggests that at the time when his tomb was being prepared the heraldic heiress status of the Sergeaux daughters had not yet been formally established.[54] As with the Marneys however, later generations of the de Vere family, did quarter the Sergeaux arms.[55]

The fact that both the first and the second lords Marney later included the Sergeaux arms in the second quarter of their shield[56] is one of two factors which exclude the possibility that John Marney III (rather than his grandfather, John Marney II) was the owner of this seal matrix. During the period 1513–23 (when he was known as 'Sir John Marney') John Marney III would have borne the same arms as his father including the Sergeaux quartering. Later, during his own tenure of the baron's title (1523–1525) he is also known to have included the Sergeaux quartering on his shield. Yet, as we have already noted, this quartering is absent from the arms on the seal matrix.

Of even greater significance is the fact that identical coats of arms cannot be used simultaneously by two individuals (however closely related). For this reason, during the lifetime of his father John Marney III would have been required to display a cadency mark to 'difference' his coat of arms from that of his father. In the case of an eldest son and heir the cadency mark used is a label. 'This is removed when the son becomes the head of

Plate 2 Modern Seal impression of Sir John Marney II
© Colchester and Ipswich Museums COLEM 2002.68.326

the family through the death of the father'.[57] The arms on the seal matrix do not display a label, or any other cadency mark. It is therefore impossible that these represent the arms used by John Marney III at a time when he had already been knighted, but had not yet succeeded to the barony. Nor can this be a seal which he commissioned after succeeding to his father's title for, apart from the question of the coat of arms, at that period the inscription would certainly have included the title *dominus* ('lord'). In short, this seal cannot have belonged to the second Lord Marney. His grandfather, John Marney II, thus remains the only possible candidate for its ownership.

The date of the seal matrix

Since it describes John Marney as *miles* (a knight), this pyramid seal matrix must have been manufactured, and in use, between *c.*1450 and *c.*1471. It is difficult to define the date of its manufacture more precisely. Probably the matrix was deposited at St Osyth during the reign of Edward IV (1461–1483). It is possible that it was deposited there *after* Sir John Marney's death, at a period when it no longer served any practical purpose. It is improbable, however, that such an item would have been simply discarded. Its material had value. It could have been melted down and its metal recycled. Alternatively, it could have been re-engraved for Sir John's son. It is therefore unlikely that the matrix was deliberately abandoned. Probably it was accidentally mislaid. This could well have occurred during Sir John Marney's lifetime. Indeed, one might argue that the matrix was most susceptible to such accidental loss during the period when it was in current use that is to say, during the ten years from 1461 to 1471. This in turn would imply that the matrix saw only limited use; and indeed, the object shows few signs of wear.

Author: John Ashdown-Hill, 8 Thurlston Close, Colchester, CO4 3HF
email: louis-john@live.co.uk

Notes

1. 'A valuable bronze seal dug up at St Osyth in 1945 has been purchased and presented to the Museum. … This was the seal of Lord John Marney [*sic*], who died in 1525 and was buried in Layer Marney Church': *Third Annual Report of the Friends of the Colchester Museum and Art Gallery, 1951–52*, 'Gifts'. I am grateful to Patrick Denney, Honorary Secretary of the 'Friends', for the text of this note. The last Lord Marney was, of course, never addressed or referred to as 'Lord John Marney', that style being reserved as a courtesy title for younger sons of a duke.
2. *Report of the Museum and Muniment Committee*, April 1950–March 1954, 35, and 51, Plate VII A. The catalogue number of the matrix is COLEM : 1952.67 (see Plate 1). There is also an impression of the seal in sealing wax on card in the collection, labelled 'found at St Osyth, 1945'. (COLEM : 2002.68.326).
3. See Figure 3. The spelling 'Marney' has been used consistently throughout this paper, other than in quotations.
4. *Complete Peerage*, VIII, 524.
5. See below: 'The heraldry of the seal'.
6. Bettley & Pevsner, 2007, 526.
7. See Figure 1.
8. Hayward, 1862, 14.
9. Hayward, 1862, 14.
10. Hayward, 1862, 14. For details of Sir Robert Marney see Roskell *et al.*, 1992, vol. 3, 690–93.
11. Hayward, 'Architectural Notes', pp. 14–15. For details of Sir William Marney see Roskell *et al.*, 1992, vol. 3, 693–95.
12. *Oxford Dictionary of National Biography* Oxford, 2004, XXXVI, pp. 735–6.
13. Bettley & Pevsner, 2007, 526. There were, of course, Marney descendants in the female line (see Fig. 1). Probably there were also collateral male line descendants, for the surname is certainly not extinct.
14. 'He was aged 21 in 1478'. *Complete Peerage*, VIII, 523.
15. *Calendar of Inquisitions Post Mortem*, XXI, 260–61; XXII, 83, 331–32.
16. Sir John Marney certainly seems to have fared better during the reign of Henry VI than he did in that of Edward IV. Later, in his service to the Tudor regime, Sir John's son, Henry, would display a similar political orientation.
17. Colquite is 4 km north of Bodmin. For details of Sir Richard Sergeaux and his family, see Roskell *et al.*, 1992, vol. 2, 506–07, and *Calendar of Fine Rolls 1399–1405*, 100–01.
12. *ODNB,* 2004, XXXVI, 735–36.
18. TNA, SC 6/1246/5.
19. TNA, C 1/12/29.
20. *CPR, 1441–1446*, 313.
21. *CPR, 1467–1477*, 345. Elizabeth's sister, Alice Sergeaux, Countess of Oxford, is reported to have been born at Colquite.
22. He appears to have been knighted during the ten years from 1444 to 1454.
23. *CPR, 1452–1467*, 152.
24. TNA, CS C 148/43.
25. *CPR, 1452–1467*, 643.
26. Clive, 1973, 9.
27. Ross,1974, 70. Warwick also became captain of Guines and Calais.
28. The accession date of Edward IV was 4 March 1461.
29. The future Richard III.
30. *CPR, 1467–1477*, 329.
31. *CPR, 1467–1477*, 344.
32. John Paston II, in a letter to his mother written four days after the battle of Barnet, names some of those killed in the battle. Sir John Marney is not among them, but Paston observes that there were others killed 'off both parties to the nombre off more than a m^{l}' (Davis, 1971, 438).
33. 4 March 1468–3 March 1469.

34. *CPR, 1467–1477*, 344. The fine was imposed on 'the morrow of the Ascension, 9 Edward IV' (Friday 12 May 1469).
35. *CPR, 1467–1477*, 345.
36. Sir Thomas Tyrell was the husband of Sir John Marney's sister, Anne (*CPR, 1476–1485*, 13). John Throgmerton was presumably a relative of Lady Marney. The Tyrells were reputedly descendants of the man who shot King William II (Rufus) in the New Forest. Sir James Tyrell, a Suffolk cousin of Thomas, would later be executed by Henry VII for murdering the 'princes in the Tower', though this accusation, made twenty years after the alleged event, is suspect. In terms of allegiance the Tyrells were Yorkist.
37. The enfeoffment dated from 'the octaves of Holy Trinity' (Sunday 4 June 1469).
38. Jacob, 1961, 553.
39. Ross, 1974, 120; Clive, 1973, 132.
40. Clive, 1973, 133–34.
41. *CPR, 1467–1477*, 155.
42. COLEM : 2002.68.320, the seal impression of Thomas Tyrell (perhaps Sir John Marney II's brother-in-law of that name – see Fig. 1) is noticeably smaller.
43. Compare for example the seal impression of Lord Sudeley (Warwickshire County Records Office, L1/82) published in Ashdown-Hill, 2009, Fig. 25. Lord Sudeley's seal is 39mm in diameter.
44. In fact the lions rampant on the seal seem not to be guardant, due probably to their small size.
45. The matrix does not, of course, indicate the heraldic tinctures.
46. Expanded: *Sigillum iohannis marny militis* (The seal of John Marney, knight).
47. This is attached to BL, Harley Charter 53.D.9, an indenture whereby John Marny [*sic*] and Thomas Tyrell, knights, concede to Louis (Lodowicus) Baynard, son of Richard Baynard, and to Louis' wife Anne, the manor named Mauncelhall alias Baynard, and lands in the village of St Lawrence, together with the tenement named Clayhacche in Bradwell. Dated at St Lawrence, 21 May, 2 Edward IV [1462]. I am grateful to Julian Harrison of the Department of Western Manuscripts, British Library, for this information, and for confirming that the signet impression of Sir John Marney II comprises the greater part of a 'wing erect' between the letters i and m.
48. Diameter 13mm (½ inch).
49. Birch, vol. 3, 1894, 236 (no. 11625). Birch notes other extant Marney seal impressions as follows: 'Nos. 11626 [a seal of Robert de Marney, 1365]; 11631 [seal of William de Marny, 1407]'.
50. Chancellor, 1890, 20. See Figure 3.
51. Chancellor, 1890, Plate viii.
52. See Fig. 1. Sir Richard Sergeaux's daughters were apparently regarded as his heirs by 1426 (*CPR 1422–1429*, 349). There were probably also collateral male Sergeaux descendants: Sir Nicholas Sergeaux is mentioned in the patent rolls (1392), but his relationship with Sir Richard is unknown. There was also a priest at Sutton by Plymouth called Michael Sergeaux in the early fifteenth century (*CPR 1401–1405*, 103: 19 June 1402, by which date he was deceased).
53. Chancellor, 1890, Plate iv.
54. Normally the arms of a wife are impaled by those of her husband *except* when she is an heraldic heiress (when her arms are placed upon his in an escucheon of pretence).
55. Chancellor, 1890, Plate vi: tomb of John de Vere, 15th earl of Oxford (d. 1539); arms in a roundel at the foot of the tomb chest.
56. See the arms shown on their respective tombs at Layer Marney Church (Chancellor, 1890, Plates ix and xi). The shields on both tomb chests show Marney *impaling* Venables (which is heraldically idiosyncratic since neither lord Marney was married to a Venables). However, both effigies wear surcoats on which Marney is quartered with Venables and Sergeaux in an orthodox fashion.
57. Neubecker *et al.*, 1977 (1988), 97. The use of the label in English heraldry to distinguish the heir dates from the reign of Henry III (1216–1272), and was well-established by the fifteenth century.
58. Sir Richard Sergeaux also had another daughter, Philippa, who married Robert Passele and had a son, John (*CPR 1422–1429*, p. 349; *CFR* 1399–1405, p. 73).
59. Executed by Edward IV.
60. Executed by Edward IV.
61. Chancellor, 1890, 20, calls her Alice Lazar, daughter of Richard Lazar of Suffolk.
62. Chancellor, 1890, 20, states that Sir Robert was living in 1398.
63. Sir John Marney had an elder brother, Thomas (d. 1421).
64. The second Lord Marney had a brother, Thomas (*dsp*), a sister, Catherine, who married Thomas Bonham of Stanway, and a half sister (name unknown) who married Sir Henry Bedingfield (Chancellor, 1890, 20).
65. Son of Thomas Howard, 3rd Duke of Norfolk.

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CFR Calendar of Fine Rolls 1399–1405.

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TNA The National Archives

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The history of chimneys in Essex

Pat Ryan

INTRODUCTION

The history of smoke dispersal in the houses of Essex is examined and discussed. Information has been gleaned from archaeological excavations, surviving buildings, the historic buildings lists and other documentary sources e.g. wills, inventories, the Walker estate maps and the Hearth Tax returns.

Smoke dispersal in the Medieval period

Open hearths

In the medieval period, before chimneys came into general use, the only fireplace in most of the timber-framed houses of Essex was an open hearth, which was located near the centre of the hall, the main living room. The hearth had no chimney and the smoke drifted up into the roof space, finally escaping through an opening in the ridge by way of a timber or ceramic louvre, or through an opening in the apex of an end gable. Some houses, particularly the larger ones, had a detached kitchen with its own fireplace, again, usually an open hearth.

Evidence for the original existence of an open hearth can be seen most often in the roof, where the timbers have been smoke-blackened. The supporting structures for louvres survive at Tiptofts, Wimbish, Baythorne Hall, Birdbrook, and 2 High Gates, Gosfield (Walker 2007, 18–20). The remains of pottery louvres have been found on the sites of some medieval buildings. Fragments of a fine one were discovered close to Great Easton Hall. It has been reconstructed and is on display in Saffron Walden Museum. At Edgars Farmhouse, Lamarsh, and Weavers Cottage, Pebmarsh, a double collar indicates that the smoke exit was located in the apex of the gable *(Listed Buildings List)*.

Occasionally open hearths have been uncovered during building work or archaeological excavations (Plate 1). Several were found at Beeleigh Abbey near Maldon, when a house and its associated outbuildings were excavated in the field to the west of the abbey by the Maldon Archaeological and Historical Group (Punchard 2007, 26). Examples of hearths of this sort can be seen at No. 17 South Street, Rochford, an early 14th-century house, and at Cressing Temple where the open hearth from an earlier building was revealed when a new brick floor was being laid in the early 17th-century granary. These hearths were constructed of roof tile inserted into the ground vertically or at a slight angle from the vertical. Some are circular in shape and others are rectangular.

Stone chimneys

There are very few extant stone chimneys in the county; the oldest are the in the Norman castles at Colchester and Castle Hedingham, where fireplaces and flues were constructed in the thickness of the stone rubble walls. A stone rubble chimney stack can be seen in the late 15th-century guildhall at Ashdon. It has been suggested that the stone fireplaces in the parlour crosswing at Southchurch Hall are of an early date but a lease of 1754 indicates that *'two stone fireplaces had been lately affixed'* to the building (ERO D/DU 560/71/7).

Stone chimneys are mentioned in several 14th- and 15th-century building accounts. A 'stone-cutter' was employed to repair a chimney at King John's Hunting

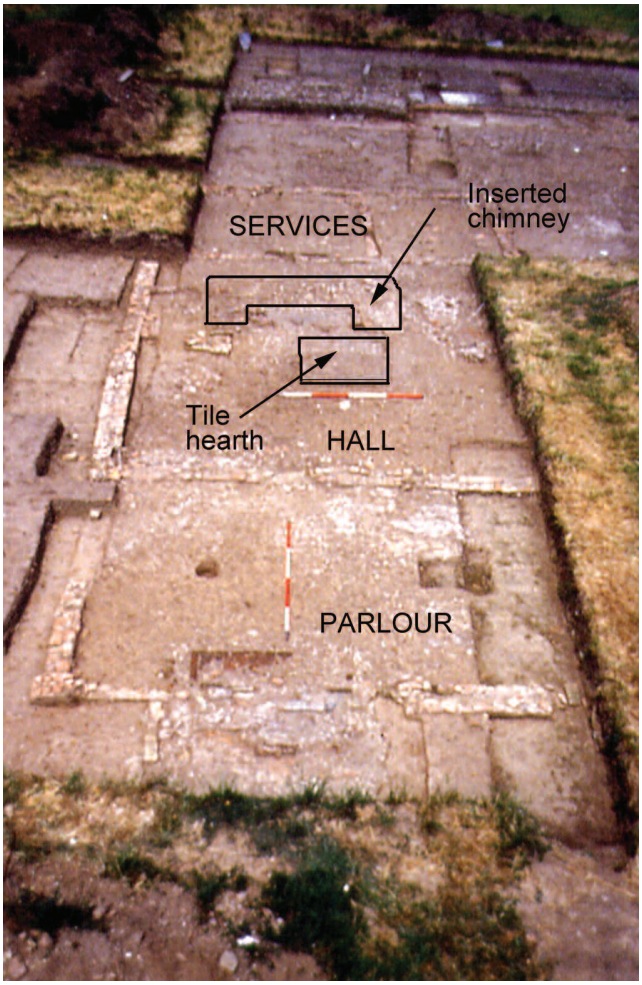

Plate 1 Hearth of house excavated by MAHG at Beeleigh Abbey (MAHG)

Lodge, Writtle, in 1376–7 (Rahtz 1969, 7 citing ERO D/DP M560). A mason replaced another chimney in the great chamber there in 1399, however, there is no indication whether it was built of brick or stone (Rahtz 1969, 7 citing ERO D/DP M202). In 1449–50, stone from an old chimney was used in the footings of a new building at Pleshey Castle (PRO D/L 29/74/1477).

Early brick chimneys (15th and early 16th centuries)

It is not known exactly when the first all-brick chimney stacks were built in Essex. Unusual bricks, thought to have been made for constructing polygonal chimney-shafts (the top-most section of some chimneys) have been excavated at King John's Hunting Lodge in Writtle and at Pleshey Castle (Rahtz 1969, 112–3; Drury in Williams 1977, 86–88; Ryan 1996, 38; Wickenden 2001, 168–77). Whether they were used to cap stone or brick stacks is uncertain, as is the date when the shafts were built. However, both properties were in the tenure of the Bohun family – Writtle from 1306 until 1521 and Pleshey from 1227 to 1420. The Bohuns were at the height of their wealth in the final decades of the 14th century when the heiress of the family married Thomas of Woodstock, the seventh son of Edward III. It seems very likely that the bricks date from this period (Ryan 1996, 39–40). All-brick buildings did not appear in England until the late 14th and early 15th century. Historians have noted the importance of European brickmakers and 'brick masons' (bricklayers) in connection with many of these (Thompson 1913–20, 193–345; Salzman 1967 (reprinted), 142–144; Smith 1985, 7, 10; Moore 1991, 214–5; Ryan 1996, 57). It is probable that continental craftsmen were also responsible for the earliest brick chimneys in Essex. Two brick-masons, Hugo Hugheson and Peter Ducheman, were employed to install chimneys in several of the service buildings at Pleshey Castle and in the lodge at Apchilds Park in 1449–1450 (PRO D/L 29 74/1477). The names of both men suggest that they were of continental origin. The draft of a letter, squeezed into the unused parts of a Havering-atte-Bower list of manorial precedents, demonstrates how highly these craftsmen were regarded in the mid-15th century (ERO D/DU 102/52). The writer requested assistance in finding a brickmason to build a chimney – *'Ye well ordeyne me a Mason that ys a ducher or a flemyng that canne make a dowbell chemeney of ye brykke .... & yf ye may no fflemynge have then I wold have an engelesche man & he were a yong man for a yonger man ys sharpest of witte & of cunnynge'*. English workers gradually learned the trades and skills of brickmaking and bricklaying from the migrant workers.

Features of early brick chimneys

Most of the early stacks, in Essex, were built either backing on to the cross-passage and to one side of the centre purlin of the roof, or on to the back or front wall of the hall.

Stenning has identified and catalogued a number of decorated brick stacks in timber-framed houses which he suggests were built in the 15th and early 16th centuries for the decoration is similar to that of the early all-brick mansions (Stenning 1989, 92–102). It can include crow-steps, corbel tables, diaperwork, crenellations, recessed panels and niches with trefoil-headed arches. Traces of painting have been found in a few cases.

Two of the stacks, listed by Stenning, were in houses that have been demolished and only survive as photographs. One, in Southend Museum, shows the stack which was in a house in East Street, Prittlewell. The other is in Colchester Castle Museum and is of the stack from the Old Tobacco House on the Hythe. Two more stacks from demolished houses have been re-erected in the museums. The stack from Reynolds House, West Street, Prittlewell, originally owned by the Jesus Guild, is in Southend Museum and the one from Little Baddcocks Farm, Easthorpe, is in Colchester Museum. Fine examples of exterior decoration can be seen at The Priest's House, Rotten End, Wethersfield, The Old Manor House, Chipping Hill, Witham, and Radwinter Grange.

Whilst some of the early stacks were inserted into open halls, others are in houses which were built with a contemporary first floor like Rayne Hall and the Bell Inn, Ingatestone. Long-wall jettied houses, were becoming popular in the late 15th century and some of these have a decorated fireplace in the hall, e.g. The Wheatsheaf, Castle Hedingham and Park Hall Farm, Thaxted. Two stacks in Kelvedon have decorated fireplaces on both floors, i.e. Bacons, Feering Hill, and 1 and 2 Templars Terrace, High Street where double chimneys heat several rooms with back-to-back fireplaces.

Decorated stacks have been found during building work like the one which was discovered in the 1980s in the hall at Pannel's Ash, Pentlow (Fig. 1). The decoration extends up into the room above as an upper floor was inserted at a later date. A segmental arch, over the fireplace, encloses blind tracery consisting of six cinquefoil-headed panels that have terracotta decoration and traces of painting. On either side is a small trefoil-headed niche and above is a crenellated coping. The rear of the stack is also intended to impress the visitor for it backs on to the cross-passage and is decorated with a

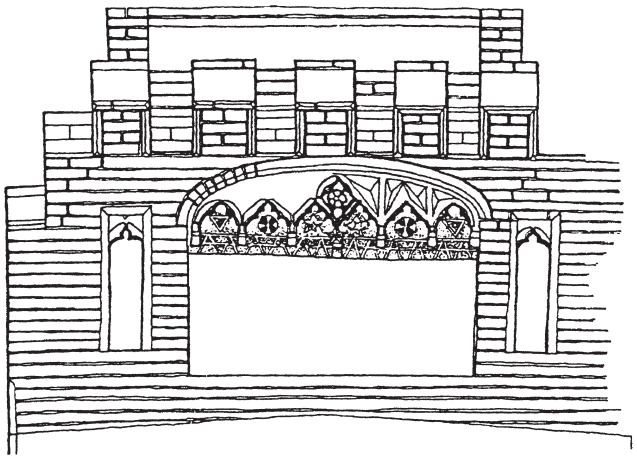

Fig.1 Decorated chimney stack at Pannel's Ash, Pentlow (D Stenning)

blind cusped recess and diaper patterning is incorporated in the brickwork. A chimney, decorated in a very similar style, was recorded by the Royal Commission on Historic Monuments in 1914 at the Post Office in nearby Foxearth, but the house has since been demolished. More recently, another decorated stack has been found at No. 2 Orchard Cottages, Foxearth. The similarity of these three chimneys suggests they may be the work of the same man. As the de Vere star is incorporated in the decoration of the Pannel's Ash chimney it is possible there may have been a connection with the de Vere family, who were building in brick at Castle Hedingham in the 15th century.

During recent restoration work at the Darcy Tower or Moot Hall in Maldon, a decorated chimney stack has been uncovered. It has two pairs of trefoil-headed niches above the fireplace opening. The brickwork shows traces of ruddling and the joints have been outlined in white. Built in the 1420s or 1430s by Robert Darcy, the Darcy Tower is the earliest all-brick building to survive in Essex (Ryan 1996, 53). Another recent discovery is a stack with trefoil-headed niches in the external side wall at No. 39, West Street, Rochford (pers. com. D.Andrews).

Undecorated or partly rebuilt stacks of this period, are much more difficult to identify.

Documentary research has shown considerable networking amongst the patrons of the 15th-century brickmasons. It is likely that the distribution of decorated stacks is related to the social and political connections of patrons rather than to geographical location. John Tyrell of Heron Hall, East Horndon supplied 5,000 *'flanderstyles'* [bricks] for chimneys at King John's Hunting Lodge, Writtle in 1422–23 (ERO D/DP M563). The following year, a man was sent from Writtle *'to Hatfield, Maldon and other places'* in order to make an agreement with a mason about repairing the chimneys with the *'flanderstyles'* (BL Eg. Rolls 1433). The Montgomery family were building their great brick mansion at Faulkbourne near Witham; the decorated stacks in the Witham/Kelvedon area are possibly the work of men employed there. It was to Witham that the Havering-atte-Bower correspondent sent his messenger when he was looking for a continental craftsman to build a double chimney (ERO D/DU 102/52). In the south-east of the county, the chimneys in the Rochford/Prittlewell area could be the work of either craftsmen employed by the Montgomery family as Sir Thomas Montgomery was the first master of the Jesus Guild of Prittlewell, or those associated with Robert Darcy of Maldon for he organised the contract with the brickmasons who were working at Rochford Hall between 1429–33 (pers. com. Andrews, D citing BL Eg. Rolls 1433).

Chimneys in the later 16th and 17th centuries

The proliferation of chimneys in the 16th century

Judging from the comment Leland made about Bolton Castle when he was writing about his journeys through England and Wales between 1535 and 1545, chimneys were not very common in the north of England in the early 16th century. He said '*One thinge I much notyd in the haulle of Bolton [Castle] how chimneys were conveyed by tunnells made on the syds of the wauls bytwixt the lights [windows] in the haull; and by this meanes and by no lovers [louvres] is the smoke of the harthe in the hawle wonder strangly convayed*' (Toulmin Smith, L ed. 1964, **5,** 139).

In 1577, William Harrison, parson of Radwinter, writing about the recent increase in chimneys in his *Description of England said* that the old men of his village commented on the increase in the number of chimneys. They reckoned that *'in their young days there was not above two or three, if so many, in most uplandish towns of the realm (the religious houses and manor places of their lords always excepted and peradventure some great personages'* (Edelen, ed. 1968, 201).

The Essex evidence seems to corroborate this statement. In the late 15th century a brick stack replaced the open hearth in the house excavated at Beeleigh Abbey (Plate 1); a lease of Theydon Garnon parsonage, dated 1507, described the parlour as having a chimney (ERO D/DGe T32). Abbot John Vintnor's new lodging at St Osyth Priory was built with brick chimneys in 1527. In the late 15th and early 16th centuries, new open halls were being built with brick chimneys in the rear walls of the manor houses of Panfield Hall and Horham Hall, near Thaxted, combining both the old and modem fashions. Horham Hall still has a pseudo-louvre in the roof.

Harrison was rather disparaging about the increasing numbers of chimneys – '*Now we have many chimneys, and yet our tenderlings complain of rheums, catarrhs and poses [colds]. Then had we none but reredoses, and our heads did never ache. For as the smoke in those days was supposed to be a sufficient hardening for the timber of the house, so it was reputed a far better medicine to keep the goodman and his family from the quack [hoarseness] or poses wherewith as then very few were oft acquainted*' (Edelen, ed. 1968, 276). Not everyone agreed with him. The benefit of a chimney, which removed the smoke from the inside, of the house and allowed an extra room to be created above the hall, was appreciated by many. Improvements and innovations are likely to be first introduced into the houses of the wealthiest and most powerful members of society but gradually the fashion for chimneys was adopted by those further down the social scale (Ryan 1996, 87; Gray 1934, 633). The new farmhouse, being built for a tenant of Beeleigh Abbey, was to have a chimney according to a lease of 1520 (PRO SC 6 Hen VIII). It had a first floor throughout. New chimneys were added to four of the tenants' houses on Sir Brian Tuke's estate at Pyrgo in Havering-atte-Bower before 1542 (PRO SC 11 190 34 Hen VII). A contract to build *'a loft or flower [floor] over the hall with joysts and bords'*, between the owner of Campers (Little Hyde Farm Cottages) and a carpenter, is recorded in the Ingatestone manor court roll of 1565 (ERO D/DP M99). This small farmhouse must have had some form of chimney.

The increase in the number of references to 'chambers over halls' in Elizabethan wills demonstrates

the growing popularity of the chimney at that time as does the number of inserted floors in surviving houses that can be dated to the later 16th century. Many houses had the hall block adapted or rebuilt to incorporate a chimney and a first floor room over the hall as it was at Whiteheads, Hatfield Broad Oak, in 1560. A transitional type, of house evolved. It was built with a chimney and a floor over the hall e.g. The Bell, Woodham Walter. The lobby-entrance type of house with a side-purlin roof became popular in the late 16th and 17th centuries. The chimney was built between the hall and the parlour and the front door opened into a lobby in front of the flank of the chimney.

These changes were gradual. Some houses were still being built with an open hall and central hearth in the mid-16th century. Broad Leys, Cornells Lane, Widdington, an early to mid 16th-century in-line house with a two-bay open hall, one-bay parlour/chamber end and one-bay service end has a simple, smoke-blackened, crownpost roof. Weffels, Purton End, Debden, is a mid 16th-century open hall house with a parlour/chamber cross-wing. It has a smoke-blackened, clasped purlin roof with a raised arch collar over the hall, serpentine wall bracing which intercepts the studs and an ovolo mullioned window *(Listed Buildings List revised 1984)*. In 1601 Thomas Hymele was presented at the manor court because he had no place to make a fire in the room he lived in, in Ingatestone. He was ordered to make a chimney or a *'reredhowse'* (ERO D/DP M101).

Cheaper alternatives: *smoke-bays, timber-framed chimneys and clay chimneys*

Those who could not afford a brick chimney endeavoured to control the smoke by various other means.

Some houses were built with one bay of the hall floored over and the other bay left open to the roof as at Snells, Great Henny; Crabbs Farmhouse, Kelvedon; Offins, Norton Mandeville and Wakeland Farmhouse, Steeple Bumpstead. In these houses only one bay of the hall roof is smoke-blackened (*Listed Buildings Lists*).

Another method of controlling the smoke was to add a smaller bay containing the hearth to an existing house or include an extra structural bay in a new house. The smoke-bay was partitioned off from the adjoining rooms on the upper floors and sometimes in the roof so that only the inside of the bay has been blackened by smoke e.g. The Old Forge, Radwinter; Wasses Farmhouse, Braintree Road, Terling; No. 60 Brook Street, Great Dunmow (remains of); Nos. 20, 22 and 24 High Street, Great Dunmow.

A more effective method of controlling the smoke was to build a timber-framed chimney in the hall. It had a tapering timber frame with wattle and daub infilling. The inside of the flue was well lined with daub and plaster in order to prevent it catching on fire. Very few of these chimneys survive. Those that have been found are usually in small cottages. Examples have been identified at Yeomans, Aythorpe Roding; Mashams, High Laver; Chophyns, Broomfield (Fig. 2); Lingfords, Great Canfield; Hurdle End, Hatfield Broad Oak; The Mill House, Ridgewell and Northys, Beasley End, Wethersfield. Generally, the fireplace and the section above the roof have been replaced with brick.

As the timber-framed stack did not form part of the main structure, once it has been removed there is often no trace of its former existence. However, in other cases, evidence for the earlier stack can be found. (See Appendix 1.)

Several possible clay chimneys have been identified in the area around Pleshey *(Listed Buildings List)*. In High Easter, a large section of one of the side walls of the ground floor fireplace is built of clay mixed with chalk and straw at Upper Harveys. The rest of the chimney appears to have been repaired and altered several times with brick. Ellis Farm also appears to have a clay chimney. The junction between the original chimney and the later brick upper part is just visible above the floor of the loft. This house was originally a one-storey building with a crown-post roof which was replaced by a gambrel roof in the late 18th century. Motts Green Farmhouse is also reported to have a clay chimney, as is Hockleys in nearby Margaret Roding. Motts Green Farmhouse and Upper Harveys both have two-storey hall blocks.

A cottage called Claychimney is marked on the 19th-century Ordnance Survey maps of Pleshey and on Chapmans and Andre's map of 1777, but nothing remains of the building now except fragments of roof and floor tile. In neighbouring Good Easter, Mudwalls is the name of a house marked on the 18th- and 19th-century maps. The walls around Pleshey Castle garden were built with a mixture of clay and straw and thatched according to the mid 15th-century building accounts. It seems there may have been a tradition of building with clay in the Pleshey area.

The replacement of timber-framed chimneys with brick

When bricks became more common and less expensive towards the end of the 16th century, many timber-framed chimneys were replaced with brick. (During the 16th century, brick mansions had been built in 66 parishes in Essex and evidence for brickmaking or brickmakers has been found in 27 additional parishes.) The maps made by the Walker family of West

		Brick	Timber	No. of houses
1586	Boxted	16%	84%	39
1591	Chelmsford (rural)	40%	60%	15
1591	Moulsham	32%	68%	40
1597	Terling	50%	50%	40
1598	West Horndon	8%	92%	37
1601	Ingatestone & Mountnessing	5%	95%	20
1615	E. Hanningfield	2%	98%	61
1616	Stock & Buttsbury	0%	100%	34
1616	Springfield	0%	100%	53

Table 1 Timber v brick stacks on the Walker maps

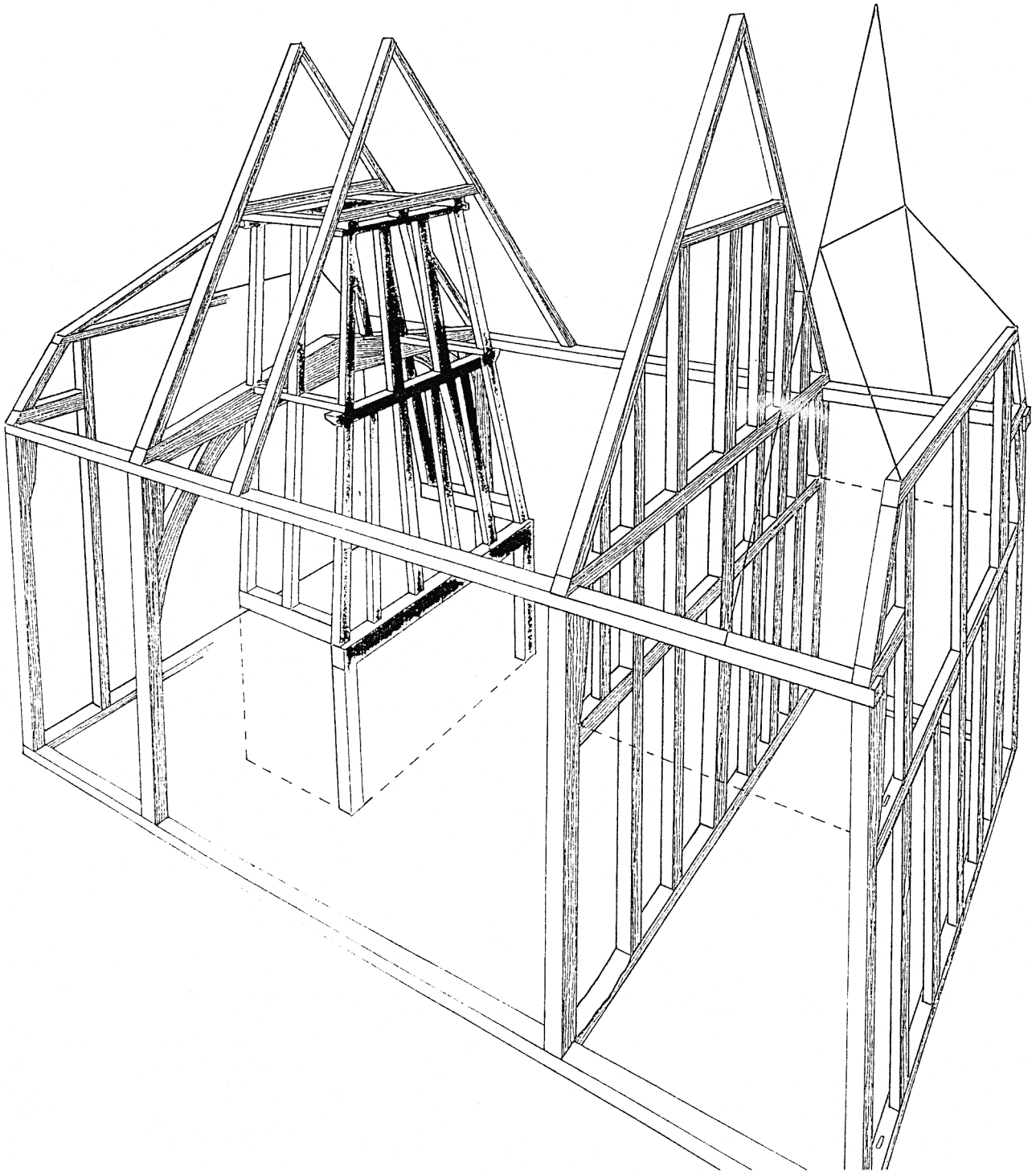

Fig. 2 Timber-framed chimney stack at Chophyns, Broomfield (M C Wadhams)

Hanningfield between 1586 and 1616 demonstrate the change in chimney construction very clearly (Table 1) Examination of some of the surviving houses has shown that small drawings of the houses are accurate depictions of the buildings as they were when the maps were made (Edwards and Newton 1984, 90–91). Brick chimneys are T-shaped and coloured red, and timber-framed chimneys or wooden louvres are shown as small brown squares. Recently, however the question has been asked whether all the red chimneys on the maps do represent complete brick stacks or whether some, at least, are brick caps to timber chimneys (Watkin 2002, 168–77).

All the houses shown with louvres or timber-framed chimneys were in-line single-storey buildings; those with cross-wings or two storeys throughout have brick chimneys.

The map evidence suggests that as the 17th-century progressed brick chimneys had been installed in most houses (Table 1). However, the process was a gradual one. Broad Leys in Debden did not have its brick

chimney and floor over the hall inserted until the 18th-century. A few timber-framed chimneys, although now with metal linings, are still in use.

The increase in the number of heated rooms in a house

The brick chimney, besides being less flammable, had the added advantage that back-to-back or 'double chimneys' could heat adjoining rooms and fireplaces could be built on every floor. Some houses, like Benedict Otes in Writtle, built in 1644, even had a fireplace in the attic (Plate 2). By the time of the Hearth Tax in the 1660s and 1670s, approximately two-fifths of the households in Essex had three or more hearths, one fifth had two hearths and two-fifths had one.

In the 16th and 17th-century house the principal fireplace was generally in the hall or main living room. Information from most of the 17th-century inventories suggests that cooking of family meals took place in the hall: pots and pans, spits and other cooking equipment were frequently listed in this room. The detached kitchen was reserved for major tasks like brewing, baking and washing clothes. It was only in the larger houses, where there was a brewhouse as well as a kitchen, that meals were cooked in the kitchen rather than the hall.

Features of late 16th and 17th-century chimney stacks

Cooking hearths tended to be about 6 to 10 feet wide, 2 feet 6 inches to 3 feet deep and 4 feet 6 inches to 6 feet high (2–3m × 1m × 1.5–2m). Most had a timber mantel beam. These fireplaces may have seats inside the jamb walls. Niches in the back wall were convenient and dry places in which to keep containers of salt or spices. Occasionally, some of these niches are L-shaped and have a section concealed behind the brickwork e.g. Lawns Farm, Great Leighs. Vent holes may also be found in the back of some fireplaces like the ones in the early 17th-century lobby-entrance house of Eyart's Farm (now The Maltings) at Terling and the late 17th-century Salters Folly in Woodham Mortimer. Sometimes the flues of larger fireplaces are divided into two by a central partition and are served by two shafts. Bread ovens were probably located in the detached kitchens rather than in the halls of the earlier farmhouses and in the brewhouses or bakehouses of later farmhouses. Those that survive are mostly found in the living room fireplace of 18th-century cottages.

Fireplaces in parlours and upper chambers were usually smaller and had either timber mantel beams or, more commonly, Tudor or four-centred arches of brick. Occasionally those in grander houses had surrounds of stone, like one in an upper room at The Abbey House, Coggeshall, or those at Broadoaks, Wimbish.

More unusual features associated with chimney stacks are priest holes. A well-documented one is accessed from a trapdoor in the hearth of the attic fireplace at Broadoaks, Wimbish, a house, which belonged to the Wiseman family.

How frequently the fireplaces in parlours and chambers were used is open to question. There is often quite a discrepancy between the number of hearths recorded for a household in the Hearth Tax returns and the number of rooms with fireplace furnishings in the inventory of the occupant. All the houses that can be analysed from the evidence of 76 Roxwell and Writtle inventories dated between 1662 and 1682 had a hall with firedogs or andirons and pokers, etc. but only seven parlours and nine chambers had fireside equipment.

The style of the section of the stack above the roofline has been suggested as a dating feature but it has not proved to be very satisfactory. This part of the chimney

Plate 2 Benedict Otes, Writtle, a 17th-century lobby-entry house. The chimney has a date panel inscribed TC 1644

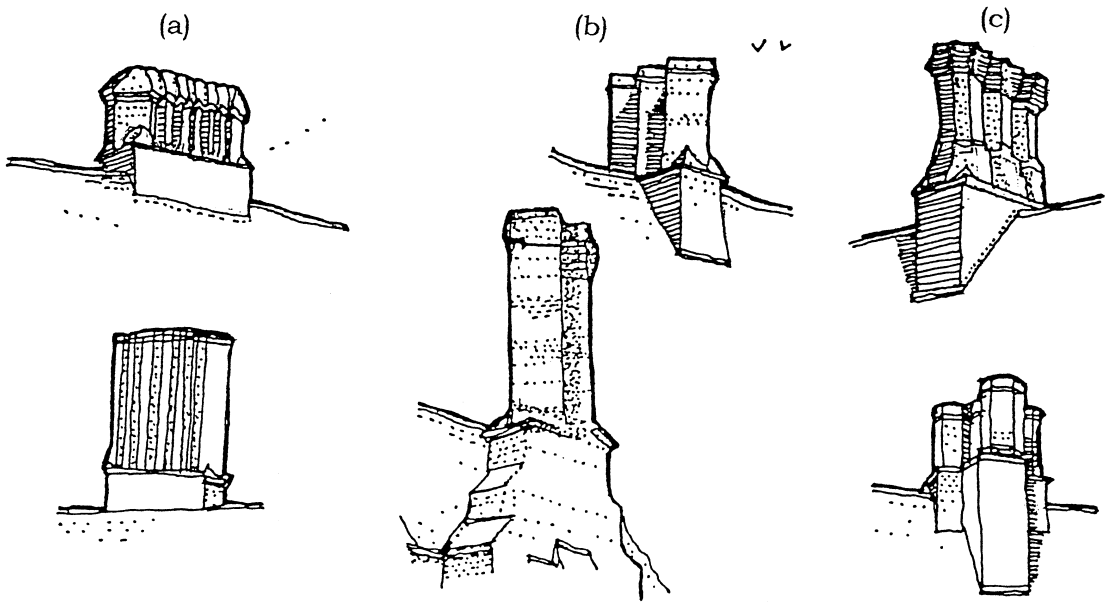

Fig 3 Types of chimney stack – (a) concertina stack, (b) square diagonally-set shafts, (c) octagonal shafts (D Stenning)

is very vulnerable to the weather and many of the tall Tudor chimneys have been shortened and others totally rebuilt at least once, if not more often. Rebuilt chimneys may not be replicas of the originals and decorative features of earlier architectural styles can become popular again. The rather short mock-Tudor decorated shafts on the chimneys of Lyons Hall, Bocking were built in the 19th century (RCHM Notes) and a 21st-century timber-framed house, near Good Easter, has a concertina stack. In general, however, decorated shafts, octagonal shafts, concertina stacks and square shafts, set diagonally, can be broadly dated from *c.* 1420 to the *c.* 1675 (Fig. 3). Observation suggests that, in Essex, the different styles of the chimneys of this period relate more to the status of the house or its occupants than to the date.

Elaborately decorated shafts with zig-zags, spirals and other patterns tend to be found on the grander mansions e.g. Nether Hall, Roydon (*c.* 1460); Layer Marney Tower (*c.* 1520); Little Warley Hall (early 16th-century); Leighs Priory (*c.* 1540); Panfield Hall (*c.* 1580).

Octagonal shafts are generally found on manor houses and the larger farmhouses but particularly fine ones can be seen on the front range of Moyns, Steeple Bumpstead, which was built *c.* 1580 (Plate 3).

Concertina stacks usually occur on farmhouses or houses occupied by artisans or shopkeepers from the mid 16th century. The term 'concertina stack' is a relatively recent description. The Royal Commission often described this type of chimney as having 'diagonal pilaster strips'. The zig-zag aspect of the concertina stack is constructed from the addition of diagonal pilasters at the junction of the diagonally-set shafts. A concertina stack was built at Whiteheads, Hatfield Broad Oak in 1560.

Square, diagonally-set shafts are found throughout the 16th and 17th centuries on all manner of houses.

Another possible dating tool may be the plan of the interior of large hearths. Rectangular hearths can be found in fireplaces of any date. Hearths with canted or splayed sides are occasionally found in buildings dated to the late 16th and early 17th centuries e.g. The Abbey House, Coggeshall and Eyart's Farmhouse (now The Maltings),

Plate 3 Front range, Moyns, Steeple Bumpstead (*c.* 1580)

Terling *(Listed Buildings List)*. Hoe Street Farmhouse in Roxwell has 1605 and James I coat of arms painted on the chimney breast of a fireplace with canted sides.

The way in which the house was used dictated the location of chimneys and this can give a broad indication of their date. The main chimney, in most houses of the 17th century or earlier, tended to be one third of the way along the roofline because the hall was the main living room of the whole household.

Chimneys from the from the late 17th century

During the later 17th century a major change in life-style affected the layout of many larger houses. The servants' working and living accommodation was segregated from the family's area. The hall became a vestibule and passageway. The classical style of architecture and symmetrical facades became fashionable. Chimneys were rectangular or square and much plainer and were often sited on the sides of the house. A change in the choice of fuel affected the design of the chimney itself.

Coal versus wood

Prior to the late 17th century, wood was the chief fuel in general use in most Essex houses. Coal has been found in medieval contexts in excavations at Rochford and there is historical evidence for a considerable coastal trade in coal from Newcastle, but it was used mainly for industrial purposes (pers. com. Andrews, D). A search of the Elizabethan *Essex Wills 1558–1603* series (transcribed by F G Emmison) produced ninety-eight bequests of firewood, three of charcoal and fifteen of coal. Eight of the coal bequests were made by blacksmiths and appear to have been associated with their trade as they were usually listed in conjunction with their supply of iron or workshops; two involved cargoes of coal and the other three were gifts to the poor of Barking, West Ham and East Ham (all on the Thames estuary); another was connected with a property in London and the final one was that of a Barking fisherman.

The inventories of the parishioners of Writtle and Roxwell, transcribed by F W Steer in *Farm and Cottage Inventories of Mid Essex, 1639–1749* (1969) were also searched for references to coal and wood. In the 248 inventories, wood, firewood, logs or roundwood are mentioned 33 times. Coal is listed only on eight occasions. In 1672 'a *grate for seacole in the sinkhouse*' is included in the inventory of Thomas Osbourne, yeoman. In the same year John Draper had 2 brass *'coale dishes'* but it is not possible to tell whether these were dishes heated with charcoal for keeping food warm or perhaps utensils for storing coal beside the fire. William Boosey of Writtle, yeoman, had 30 bushels of coal in his workhouse in 1675 and William Ginch, blacksmith, had *'coales'* listed after his anvil and bellows. In 1686, Thomas Crush, gentleman of Dukes, one of the larger houses in Roxwell, had a pair of racks and one coal dish in his kitchen and 40 bushels of coal in his yard.

As the 18th century progressed references in the inventories to coal became more frequent as did those to racks, grates, stoves and equipment associated with burning coal. In 1715, Isaac Day, blacksmith, had coal in his workshop. In 1724 Daniel Bridges, shopkeeper, had a chaldron of coals in his 'seller' and a pair of grates in his kitchen. In 1744, Theophilus Lingard had a *'stove grate'* in his *'best room'* and coal racks and a pair of iron *'cheeks'* in his hall. Both wood and coal were stored in his yard. In addition to the mid-Essex inventories nine other inventories dating from 1678 to 1787, include references to coal or the equipment necessary for burning it. These also highlight the use of coal by tradesmen and gentry and the increase in its use during the 18th century (See Appendix 2).

Whilst the better-off members of society were turning to coal as fuel, it is possible poorer folk may have still been very dependent on wood. In 1729, although Widow Margaret Haward of Writtle had a pair of grates in her hall, the only fuel in her yard was wood. James Deane, a Colchester builder, only included a wood store in his plan for a small cottage, in the early 18th-century (ERO D/DRc Z26).

The evidence suggests that prior to the last quarter of the 17th-century, sea-coal from the north-east of England was mainly used for industrial purposes in inland Essex. It may have been in more general use in the coastal areas, e.g. Colchester, Maldon and the Thames-side districts, where there was little added transport costs and less opportunity for acquiring firewood. Wood appears to have been the principal domestic fuel in the greater part of Essex, with coal, initially being used in the households of the wealthier members of society, and gradually becoming more common during the 18th-century.

In the 18th century the use of coal rather than wood is reflected in the design of the chimneystacks and fireplaces in new houses. The stacks are not so massive and, except for the cooking hearth, the fireplaces are much smaller and are fitted with the iron grates or stoves necessary for burning coal. Some 18th-century fireplaces have curved rear corners.

During the Napoleonic Wars the increasing population, along with the enclosure of some of the remaining areas of common land and the stubbing up of many woods in Essex resulted in a serious shortage of wood for fuel and the subsequent turn to coal as the main fuel.

By the end of the 19th-century even the smallest houses had coal fireplaces in all the main rooms, though many were probably only used on special occasions or in the case of illness. A distinctive feature of 19th-century terraced houses are the rows of chimneys surmounted by numerous chimney-pots like those of the houses on Great Baddow Road near the Army and Navy Roundabout, Chelmsford.

Fireplaces in the 'parlours' or sitting rooms tended to be slightly larger than those in most bedrooms, but all were fitted with an iron grate for burning coal. An iron cooking stove or range was installed in the largest fireplace in the kitchen which had become the main living room of many families. Sometimes the scullery or wash

house had a copper for boiling up the water and clothes for the Monday wash-day and Saturday bath night.

In the second half of the 20th-century the Clean Air Act and the introduction into most houses of central heating fuelled by smokeless fuels such as coke, gas, oil or electricity saw a dramatic reduction in the number and size of chimneys in new houses. Whilst some planning authorities insist on the erection of false chimney stacks on new houses for aesthetic reasons, the rooflines of many modern housing estates are generally chimney-less. However, the tradition of the hearth being the centre of the home is very persistent and some 21st-century home-owners install 'ornamental' or false fireplaces in houses which are built without chimneys (*pers. com.* Bairstow Eves, Danbury)

Conclusion

In the medieval period, many houses had only one fireplace, the open hearth in the hall, which supplied warmth and heat for cooking for the entire household. The more substantial houses also had a detached kitchen. By the 15th century when the first all-brick houses were built in the county, brick chimneys were introduced into the houses of the wealthiest and most influential members of society. As the 16th and 17th centuries progressed brick, timber-framed or clay chimneys became common. During the 18th and 19th centuries changes in life-style, architectural fashion, the decrease in supplies of wood and the change to coal for fuel resulted in further developments in chimney design. In the second half of the 20th century the introduction of central heating and the change to oil, gas and electricity for cooking and heating has resulted in the possible demise of the chimney.

Appendix 1

Evidence for timber-framed chimneys

1. A wide opening in the studding of the outer wall may be for a timber-framed chimney, particularly if there is wood-smoke staining on the wall plate – Plaistow Green Farmhouse, Halstead; Prentices Farm, Stow Maries (demolished).
2. A short bay (i.e. chimney-bay) that is wider than the later inserted brick stack and the infilling joists are secondary – Park Farmhouse, Doddinghurst; Timbers, Finchingfield; Kelvedon Grange and Old Kelevedon Grange, Kelvedon Hatch; September Cottage, Wethersfield; Stony Hills Farm, Great Warley.
3. The structure of the crown-post roof terminates either side of the chimney bay which is now occupied by an under-sized brick stack – Church Hill House, Wethersfield.
4. An interrupted tie-beam may indicate a former timber-framed chimney – Sunnyside, Ridgewell.
5. Smoke-blackening on part of a partition wall may also be evidence for a former timber-framed chimney – Bradfields, Toppesfield; Bulford Mill House, Cressing.
6. An over-sized trimming frame round a later brick stack – Hullets Farmhouse, Pilgrims Hatch, Brentwood; Brooks Farmhouse, Stisted; Langpits, South Weald.
7. The substitution of some joists because the original ones were too short when a brick chimney was built – September Cottage, Wethersfield.
8. Posts at the side of a brick chimney may be all that remain of the original timber-framed chimney – Cobham Oak Cottages, Feering.
9. Floor joists supported on a transverse beam, which is against the stack and not on it, are indicative of a former timber-framed chimney – Lealands Farmhouse, Wethersfield; Wrights Farmhouse, Wethersfield.
10. The transverse beam nearest to the stack is chamfered towards the room, and square, in whole or part, toward the chimney stack as the original timber-framed stack was larger than the later one – Rufus Leo, Stisted; Nichols Farmhouse, Shalford.
11. A mantel beam with mitred corners or moulding turning down at the ends is probably from a former timber-framed chimney – Old Tan, Stisted; Nos. 52 and 54 Church Street, Coggeshall; Springwaters and Tithings, Cressing.
12. Ancells's Farmhouse in Alphamstone, an early 16th-century, has a roof that is not smoke blackened and an inserted floor and a brick chimney of later 16th-century date, suggesting that it had a timber-framed chimney originally.

(Most of these examples have been taken from the descriptions in the Listed Buildings Lists.)

Appendix 2

Evidence of coal in inventories

1678 Christopher Child of Colchester – In the hall a pair of cole racks (ERO D/ACWb 46)

1679 Sir Henry Clarke of Pleshey – In the Hall 2 backs, 2 Brests, a pair of coale irons; in the Kitchen a Range, a pair of Cheeks (and other fire furniture]; all the wood, all the coale (ERO D/DSp F7)

1684 John Ennowe, tobacco pipemaker of Colchester – In the Hall a cole rack; in the Garret a parcel of small coles; in the Yard wood (ERO D/ACWb 46)

c. 1685 William Ridley of Colchester – a pair of cole racks (ERO D/ACWb 46)

1686 John Tayspill, webster of Colchester – In the garrett a shovel and a parcel of charcoale: in the buttery a parcel of coal; in the hall room a pair of coal racks (ERO D/ACWb 46)

1686 Richard Hammond, innkeeper of Colchester – In the hall a pair of cole racks, a back; iron about the chimney; in the cole house coal £6, faggott wood, stack of wood (ERO D/ACWb 46)

1744 Joseph Lorkin of Witham – In the hall Coal racks (ERO D/ACWb 51)

1780 Richard Bulley of Ashmans, Woodham Walter – In the back parlour a Bath stove & fender; in the kitchen a fireback, coal grate, fender (ERO D/ACWb [?])

1787 James Brown, shopkeeper. Woodham Walter – In the best chamber a brass fronted stove, in the keeping room a coal range, in the coal house 1/4 chaldron of coals (ERO D/ACWb 165)

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Author: Mrs Pat Ryan, 60 Maldon Road, Danbury, Chelmsford, Essex, Cm3 4QL

Abbreviations
BL – British Library
ERO – Essex Record Office
MAHG – Maldon Archaeological and Historical Group
PRO – Public Record Office (now National Archives)

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Location? location? location?: place, patronage and meaning of the wall painting of 'Jonah and the whale' at Waltham Abbey

Natalie Mears

INTRODUCTION

In 1892, during the demolition of a line of cottages on the south side of High Bridge Street in Waltham Abbey, a large mural painting was discovered under panelling, described as 'Jacobean', on a dividing wall between two rooms on the first floor (Plate 1). Thought to have dated from the mid-16th century and covered over with the panelling in the early 17th century, it depicted a scene from the biblical story of Jonah and the whale. The mural excited much attention for the uniqueness of the scene depicted, the state of its preservation, its size and its location: a rare example of a narrative painting in a domestic interior (Welch 1910, 111–14). However, since its discovery, mystery has surrounded the precise location of the building in which the painting was found and, as a result, it has been impossible to ascertain the circumstances of its creation, the reasons why it was commissioned and how it was supposed to be 'read'. Instead, a century's worth of myth and assumption has grown up around the painting. This is unfortunate because little research has been conducted to explain why householders below the status of the aristocracy and gentry commissioned murals, particularly more elaborate narrative scenes, other than for simply decorative reasons. The purpose of this article is to examine the conflicting and contradictory evidence about the location of 'Jonah and the whale'. It will then endeavour to identify the patron and explore how the painting might have been 'read'.

Description and Date

'Jonah and the whale', now owned by the Museum of London, depicts, in the centre, Jonah being thrown overboard by four muscle-bound seamen into the jaws of a huge, writhing eel-like whale, in the right foreground. The ship, steered by two further seamen forward and aft, is of an unusual and elaborate design, with a carved elephant's head and cornucopia at the front and a gargoyle-like carving at the stern, through whose mouth the ship's rudder appears to have been riven. The storm is signalled by the billowing sails, surging waves and wooden barrels bobbing on the surface. A second ship, flying the St George cross, sails in the background, middle distance left. The picture is framed by a *trompe l'oeil* wooden frame. It was executed in distemper on plaster and measures 943 × 1831mm.

We cannot date 'Jonah and the whale' precisely. When it was discovered, it was thought to date to the mid 16th century (Welch 1910, 112–17). However, it now appears to date from the late 16th or early 17th century. A *terminus a quo* can be established because, as Anthony Wells Cole has briefly noted, and as I discovered independently, 'Jonah and the whale' appears to have been copied from Maarten de Vos's 'Jonah cast into the sea' [Plate 2], the second of four engravings, executed by Antonie or Hieronymous Wierix, depicting the story of Jonah (Hollstein, *de Vos: Text*, 44–5 nos. 158–161; Hollstein, *de Vos: Plates*, 74; Hollstein, *Weirix*, 54–8). Jonah's position and his physical appearance, as well as those of the four sailors around him, are the same in both the painting and the engraving, as are the two seamen steering the ship, the position and form of the whale, the arrangement of the barrels in the sea and the ship in middle distance. Crucially, the striking design of the ship in the mural replicates that of de Vos's original.

Some details have not been executed as sharply in the painting as in the engraving: for instance, the bottom of the cornucopia. Others have been deliberately changed or omitted: the ship in the middle distance flies the flag of St George while the seaman struggling with the sails behind Jonah's assailants is absent. There is also no evidence that the room in which the painting was found contained the other three scenes from the series, though reports as to the precise location of the painting (an internal, partition wall between two rooms on the first floor) suggest that there was space. However, these differences do not invalidate the attribution as other examples of panel or wall paintings copied from engravings show that details were regularly changed or omitted (Aston 1993, 67–93; Wells Cole 1997, 211–14). Moreover, the similarities between the painting and 'Jonah cast into the sea' are much closer than with de Vos's two other series on Jonah: a six-plate series of circular designs, *c.* 1585, and engraved by Crispijn de Passe the elder (Hollstein, *de Vos: Text*, 41–2 nos. 148–153; Hollstein, *de Vos: Plates*, 75) and a smaller four-plate series, of rectangular design, also engraved by Anthonie Wierix (Hollstein, *de Vos: Text*, 42–3 nos. 154–157; Hollstein, *de Vos: Plates*, 73). Both demonstrate significant differences in the depiction of Jonah and his assailants, the position and design of the main ship, the position of its oar and the position or inclusion of the ship in middle-distance. Similarly, though there are broad similarities with other depictions of the parable, such as in George Whitney's *A choice of emblemes* (1586), differences between the respective designs of the ship in particular suggest that these were not the sources of the painting (Whitney 1586, 144).

Plate 1 'Jonah and the whale' (distemper on plaster; 943 × 1831mm; Museum of London). Reproduced by kind permission of the Museum of London.

Plate 2 Maarten de Vos, 'Jonah cast into the sea', engraved by Hieronymous or Anthonie Wierix, 1585, 190 × 245 mm (British Museum, Department of Prints and Drawings, 1937,0915.83). Reproduced by kind permission of the Trustees of the British Museum.

Thus, the Waltham Abbey painting can date no earlier than 1585 when 'Jonah cast into the sea' was first published. This was in Gerard de Jode's *Thesaurum sacrum historiarum veteris testamenti* (Hollstein, *de Vos: Text*, 44–5).[1] First published as the *Thesaurus veteri et novi Testamenti* in 1579, the *Thesaurum* was a collection of engravings by different artists and a 'popular quarry' for English artists in the late 16th and early 17th centuries (Hollstein, *de Vos: Text*, 44–5; Wells Cole 1997, 103–6).

Though many of its engravings had been published previously, the main modern catalogue of de Vos's engravings suggests this was not the case with 'The story of Jonah': it does not record an issue of the series as individual prints or a set (Hollstein, *de Vos: Text*, 44–5). We cannot establish a definite *terminus ad quem*, but it is unlikely that the painting was executed much later than the 1610s or 1620s. It was discovered behind panelling described as 'Jacobean' and, whilst this dating cannot now be verified, it would be supported by documented examples of wall paintings being covered by more fashionable 'wainscotting' or panelling between *c.* 1618 and *c.* 1632, notably those at Rothamstead Manor in Hertfordshire (Welch 1910, 112; Smith 1993, 66; HRO D/ELW/F22, back cover).

The Location

The painting was discovered by Messrs Glover and Flowers of Bethnal Green during the demolition of a line of cottages in Highbridge Street, Waltham Abbey in the autumn of 1892. No direct evidence remains about the precise location of the cottages. Unfortunately, Alfred Nye, a local resident who viewed the painting *in situ*, did not describe its precise location in his letter to the *Weekly Telegraph for Waltham Abbey, Cheshunt and Districts* in March 1893. He was more concerned to explain why he had neither secured the painting for the town nor investigated further its location. Similarly, the 'several gentlemen' to whom Nye spoke about the painting left no direct testimony, nor did Nye detail their evidence (*Weekly Telegraph* 10 March 1893, p.3 col. 5).

Hence, we have to rely on piecing information together from a number of indirect, and often contradictory, sources. The first of these is the paper given by Charles Welch, chief librarian of the Guildhall Library and Honorary Secretary of the London and Middlesex Archaeological Society, to the Society at Draper's Hall on 20 February 1893 and published nearly twenty years later in the Society's journal (Welch 1910, 110–18). Welch had seen the painting at Glover and Flowers's offices in December 1892 and, either before or after this date, purchased the painting from the contractors. After this, he visited Waltham Abbey but found the houses fully demolished and, according to one local, George Corble – whose own account is of note – 'no one could give him any information about it' (*Weekly Telegraph* 3 March 1893, p.3 col. 3). Why Glover and Flowers contacted Welch, rather than a local historian, is unknown and was the source of discontent for some locals (*Weekly Telegraph* 3 March 1893, p.3 cols. 3–4; *Weekly Telegraph* 10 March 1893, p.3 col. 5).

Welch's account of the painting prompted correspondence in the *Weekly Telegraph* in March 1893. These comprised, first, a letter by George Corble of Bridge House, Waltham Abbey, who brought the painting's existence to the town's wider attention and, second, letters by W. Winters, the town's leading local historian and, as noted above, Alfred Nye (*Weekly Telegraph* 3 March 1893, p.3 cols. 3–4; *Weekly Telegraph* 10 March 1893, p.3 col. 5). The *Waltham Abbey Church Monthly* for April 1893 also reported on the painting. Though their anonymous writer had viewed the painting at the Guildhall Museum, much of this account seems to have been based on Welch's speech and, judging by the similarity in phrasing, some of the letters in the *Weekly Telegraph* (*Waltham Abbey Church Monthly* 1893, unpaginated). Indeed, it is possible that the contents of Welch's speech were gleaned from Corble's own account of it in his letter to the *Weekly Telegraph* and of which the anonymous author was aware. A short note appeared in *Notes and Queries* in January 1898 to advertise the exhibition of the painting at Henry Southeran & Co. in Piccadilly but this contains no detailed information on the painting's original location or circumstances of its discovery (*Notes and Queries* 1898, 86–7). Waltham Abbey Historical Society owns a photograph of a series of cottages on the south side of Highbridge Street which are said to be those that contained 'Jonah and the whale' (EPPMS 1986.8.674.2; Plate 3); it has been published a number of times, including in K.N. Bascombe's *Britain in old photographs: Waltham Abbey* (Stroud, 1995). The Reverend G. Montagu Benton described the painting in an issue of this journal in 1942–5, quoting extensively from both the leaflet issued by the Society to coincide with the exhibition of the painting in Piccadilly and Welch's account (Benton 1942–5, pp. 1–4).

In his talk to the London and Middlesex Archaeological Society, Welch stated that the building in which the painting had been found was 'a group of five small gabled houses of one storey' situated on the south side of the street, five to six hundred yards west of the

Plate 3 Cottages on Highbridge Street, Waltham Abbey (south side), before 1892. (EPPMS 1986.8.674.2). Reproduced by kind permission of Waltham Abbey Historical Society.

Abbey church (Welch 1910, 111). Though Corble suggested that Welch had been unable to glean information about the buildings when he visited Waltham Abbey, Welch said that 'from careful inquiries' he had learned that the painting had been found in the building furthest to the west, which was one of two houses that were larger than the others and which he thought may have originally formed one building. He also noted that the house in which the painting was found was larger than its companion. Welch added two further, crucial, pieces of information. First, that the buildings were depicted in a watercolour drawing of the street, later identified to be by Mr Bailey of Powder Mill Lane. Second, that the last occupier of the house had been a local solicitor, Mr Allsup, whose family had owned the property for 'several generations' (Welch 1910, 111–13).

Welch's account highlights four important identifiers of the location that can be checked against other accounts and evidence: the distance from the Abbey church, the description of the buildings, the water-colour drawing and the identification of the last occupant, Mr Allsup. However, it is precisely these details that contradict each other or are contradicted by other sources.

If the building was located between five and six hundred yards from the Abbey Church, this would place it towards the far west of Highbridge Street, just east of Waltham Lock and Waltham Wharf, to the north of plot 60 on the Ordnance Survey Map of 1870 [Plate 4]. Here, there was a line of four or five buildings, joined together in a terrace, between, to the east, The King's Arms public house and the Eagle Brewery, and, to the west and divided by a garden wall, a large house in extensive grounds. Crucially, the large house was the home of none other than James Allsup, a solicitor (private correspondence with Peter Huggins, 12/05/2007). This compelling evidence, however, is contradicted by the Ordnance Survey map of 1897, taken five years after the building containing the painting was demolished [Plate 5]. It shows this line of buildings was still standing with precisely the same footprint as in 1870. Hence, it is unlikely that the painting was located so far west as Welch suggested.

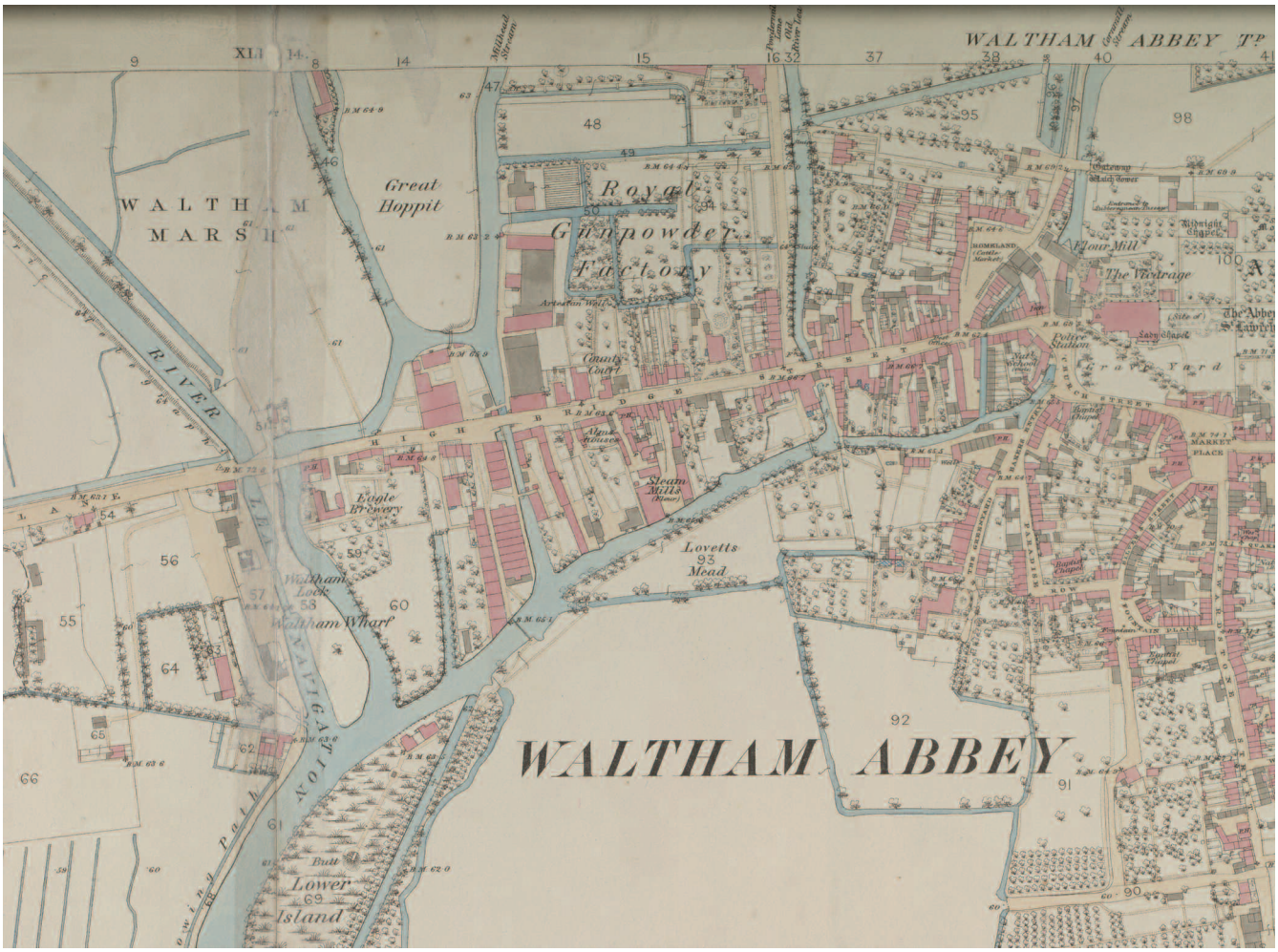

Plate 4 Waltham Abbey. Reproduced from the 1870 Ordnance Survey Map (sheet 57.2). © Crown copyright

Corble's account suggests a very different identity and location for the buildings, much further to the east: 'two old houses adjoining the house belonging to the War Department opposite Powder Mill Lane' (*Weekly Telegraph* 3 March 1893, p.3 col. 3). This would situate the buildings approximately two to three hundred yards west of the Abbey Church, to the immediate west of the Old River Lea, which ran parallel to Powder Mill Lane and under Highbridge Street, and in the northeast corner of plot 886a on the Ordnance Survey map of 1897. This was the site of the house for the Superintendent of the Royal Gunpowder Factory and, to its west, four cottages often referred to as workmen's quarters. Crawter's Town map of 1826 shows four small buildings, joined as a terrace, in this area next to a larger property situated between them and the Old River Lea (Plate 6; ERO, T/M 274/1). The Ordnance Survey map of 1870 depicts the same buildings, though provides more detail of the neighbouring, larger, property and its grounds.

There is much to recommend Corble's identification. First, and most importantly, it is not disputed by Alfred Nye who was the only person to have seen the painting *in situ* and given a written account. He talks of the 'Government Houses lately pulled down' and states he was shown the painting 'when *these* houses were in the process of demolition' (*Weekly Telegraph* 10 March 1893, p.3 col. 5, my italics). It is also supported by Winters's letter to the *Weekly Telegraph* and the *Waltham Abbey Church Monthly* (though, as noted above, this may have derived partly form Corble's account). Second, we know that this area was demolished in September 1892 because it was the subject of discussion at Waltham Holy Cross Local Board who were anxious either to delay the demolition or to get the Royal Gunpowder Factory to rebuild the entirety of the Superintendent's house further back from the road (the context is unclear) as part of a general improvement scheme on Highbridge Street (*Weekly Telegraph* 1560, 1892, p. 3 col. 1; see also 18 Nov. 1892, p.3 col. 2; 23 Dec. 1892, p. 2 col 7; 30 Dec. 1892, p.2 col. 4). Third, the Ordnance Survey map of 1897 shows this area had been redeveloped since 1870. The plot, marked as 886a, contains one large building in the northeast corner which has a different footprint from either the Superintendent's house alone, or in conjunction with the cottages to the west, as mapped in 1870. This would match evidence from the Local Board's meeting that 'certain of the War Department's houses were being pulled down, and…a portion of the official residence of the Superintendent…was also pulled down' (*Weekly Telegraph* 23 Sept 1892, p. 3 col. 1).

This identification also makes sense of Welch's reference to Allsup. Referring to the line of cottages next

Plate 5 Waltham Abbey. Reproduced from the 1897 Ordnance Survey Map (sheet 57.2). © Crown copyright.

to the Superintendent's house, Corble stated that James Allsup 'often pointed to the window of this house (he little knew what was behind the panelling) and told me he was born in that room, and his father and grandfather before him' (*Weekly Telegraph* 3 March 1893, p.3 col. 3). The poor rate book for 24 May 1804 shows a Mr Allsup occupying a house, previously occupied by the late Mr Wybrew. James was born in February 1805, so this is probably his father, also James (b. 29 Jan 1770, d. 7 Jan 1832) as his grandfather, William, had died in 1800. The property is not specified but is grouped with other rate payers John Jessopp, Mr Clayson and the 'late Mitchell' (ERO, D/P 75/11/30, unpaginated). We know from the Board of Ordnance's purchases between 1806 and 1816 that a Joseph Mitchell occupied the cottage furthest to the west of the Superintendent's house; Clayson occupied its neighbour to the east, itself neighboured further to the east by Jessopp. Thus, whilst we cannot pinpoint the property to which Allsup referred, and there are difficulties in tracing the pattern of occupation precisely (specifically the reference to the 'late Mitchell' and the implication that Clayson took over Mitchell's tenancy, though the latter is recorded as the occupier in 1816), it does appear that the Allsup family was resident in the vicinity of the properties identified by Corble as the site of 'Jonah and the whale'. However, Allsup's testimony is problematic and so, whilst it does seem to support Corble's account, we will need to re-examine it further later.

Corroborated both by contemporary witnesses and evidence from maps, Corble's identification of the painting's location in one of the cottages to the west of the Superintendent's house seems to be most likely and reliable. Moreover, we can identify exactly which cottage the painting was in as he stated it was found in 'the house farthest westward from the Government House' (*Weekly Telegraph* 3 March 1893, p.3 col. 3). This would locate it in the last cottage, furthest away from the Superintendent's house and which was referred to in 18th and 19th century court records as 'Swift'. Welch may have over-estimated the distance between the Abbey Church and the building that contained 'Jonah and the whale'. As will be explored below, this may have led him to identify Allsup erroneously as the previous occupant.

Unfortunately, Corble's identification cannot be verified against Bailey's watercolour painting of Highbridge Street, said to include the buildings in which 'Jonah and the whale' was found, because the picture cannot now be located. However, it may be significant that Corble described the watercolour as 'showing Highbridge-street and the Abbey, and commencing at and including the two old houses in question' (*Weekly*

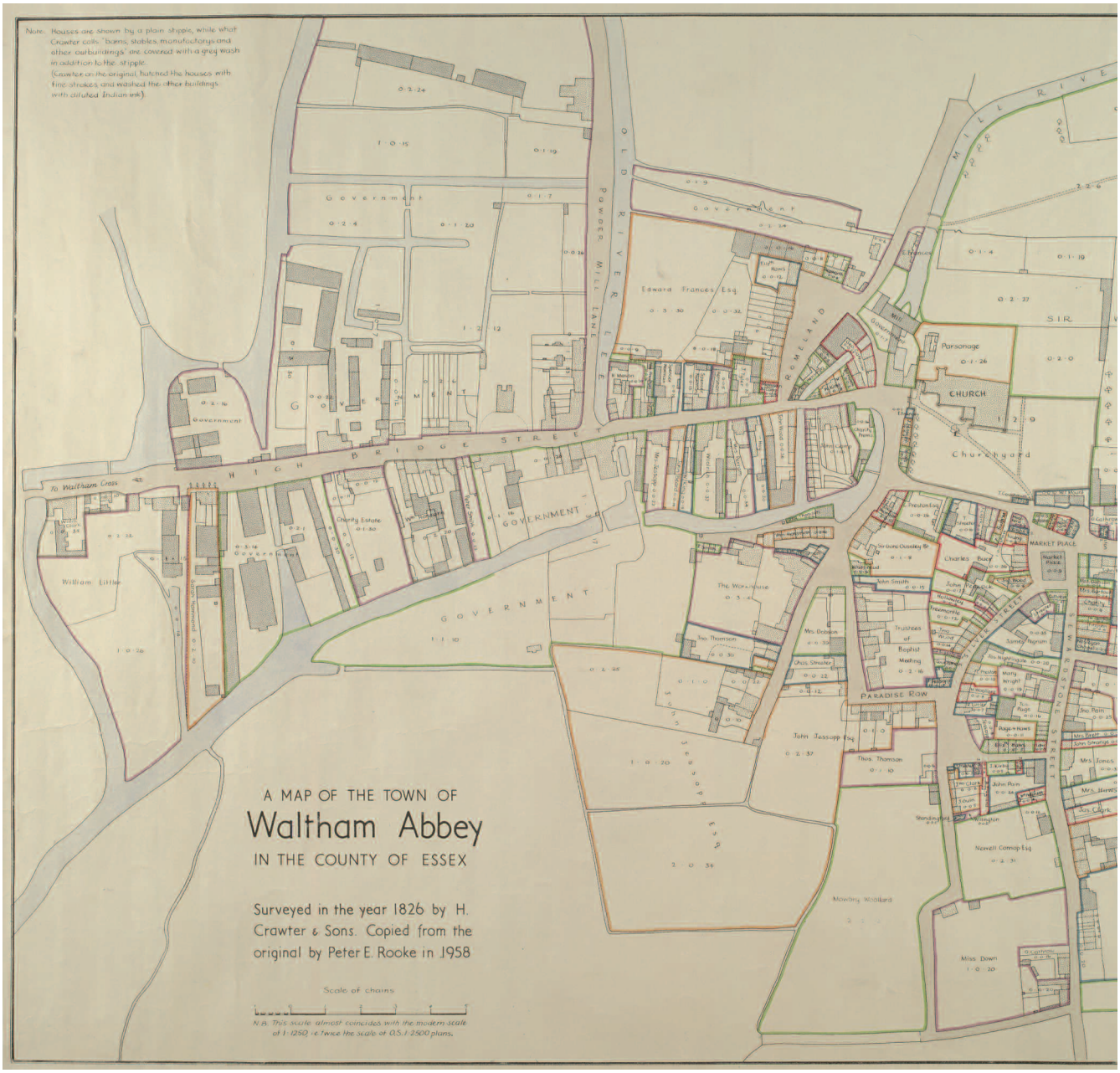

Plate 6 A map of the town of Waltham Abbey in the county of Essex, H. Crawter & Sons, 1826 (ERO T/M 273/1 and T/M 274/1). Reproduced by kind permission of Essex Record Office.

Telegraph 3 March 1893, p.3 col. 3). It seems unlikely that this could reasonably have depicted the houses if they were as far west as Welch suggested as this would have involved depicting the near entirety of the street, tightly packed with a considerable number of buildings.

The loss of the watercolour is doubly unfortunate because, without it, we are unable to verify claims that a photograph said to be of the cottages in which 'Jonah and the whale' was discovered is so (EPPMS 1986.8.674.2; Plate 3). The photograph is valuable because it potentially provides evidence on what the buildings looked like which may help us understand its original structure and purpose as well as the profession and status of its occupants when 'Jonah and the whale' was commissioned. Corble, in searching for a picture of the houses, stated that 'no one seems to have photographed it' (*Weekly Telegraph* 3 March 1893, p.3 col. 3). Indeed, this was why he, and Welch, relied on Bailey's watercolour. Yet, it is interesting that the frontage of the cottages in the photograph does correspond to the outline of the buildings as depicted on a map of the town dated 1879 (private collection, Peter Huggins). The photograph depicts a building with two jettied gables in the centre, one larger than the other, and suggestive of a cross wing. The ground floor below the jettied gables has been partially walled in so that this section of the building protrudes into the street. The eastern end of the building is fronted by a small wall and iron railings, flush with the ground floor of the jettied gables. The map shows that the centre of the building's frontage protrudes further into to the street than that as the western end. At the east, there is a short indentation, a double line which may

denote the recessed part of the building and wall or fence, as depicted in the photograph. The map also indicated that the centre part of the building – corresponding approximately with the gables in the photograph – is much deeper than the rest, perhaps pointing to the existence of a cross wing.

Though the photograph may give valuable information about what the buildings looked like, it is important to note that the caption that accompanies it in Bascombe's *Britain in old photographs* is misleading. It states that, 'During the 1892 demolition of the superintendent's house, which adjoined the above cottages to the east, this tempera painting was discovered' (Bascombe 1995). Both Corble and Welch clearly stated that the painting was located in the building furthest west from the Superintendent's house and not the Superintendent's house itself. Moreover, the report of the Local Board in September 1892 stated that only part of the Superintendent's house had been demolished, though further work may have been done on the house subsequent to the discovery of the painting which would account for the significant change in the house's footprint between the Ordnance surveys of 1870 and 1897 (*Weekly Telegraph* 23 Sept 1892, p. 3 col. 1).

If the painting was, as seems likely, located in 'Swift', we can also identify its precise location inside the property. Corble stated that 'Jonah and the whale' was found 'on the plaster of the bedroom' (*Weekly Telegraph* 3 March 1893, p.3 col. 3). This is corroborated by Welch who stated that it was on a 'dividing partition between two apartments on the upper floor' (Welch 1910, 111). It is unlikely, as is explained below, that the original function of this room was primarily as sleeping quarters. Not least because of the relative elaborateness of the decoration, it is more likely to have been a key reception room, such as a parlour. The reasons why this was situated on the first floor will be examined below, when the identity of the building and its owner have been ascertained.

Ownership

'Swift' corresponds to plot 1971 on Crawter's Town Map of Waltham Abbey of 1826 (Plate 6; ERO T/M 273). On the Tithe Map of 1843, it is included with two others (plots 1973 and 1974 on Crawter's map) to comprise plot 1415 (ERO, D/CT 381). The joining of 'Swift' with other properties, which also occurs on the Ordnance Survey Map of 1870, may be significant: Corble described the complete line of buildings as 'two old houses', suggesting they may have been two properties that were later sub-divided (*Weekly Telegraph* 3 March 1893, p.3 col. 3). This would also be supported by the visual evidence from the photograph that will be examined below.

'Swift', comprising of a messuage with yards and outhouses, was one of the last of the buildings to be purchased by the Board of Ordnance. It was secured on 25 June 1816 from its previous owner, Newell Connop senior, for £500 (NRO, Court Roll 18 (Box X.1810), 384–6). It had been occupied not by Connop but by John Carter, 'hogman' and then Joseph Mitchell (NRO, Court Roll 18 (Box X.1810), 384–6).

Who owned 'Swift' in the late 16th and early 17th centuries when 'Jonah and the whale' was painted? Unfortunately, it is not possible to trace ownership back that far, partly because the court rolls for Waltham Abbey are no longer extant for the 17th century and partly because the earliest extant records do not refer to the property by name. This makes it difficult to distinguish from other properties on Highbridge Street (or West Street as it was then known) especially when owners owned more than one property in the area. However, we can trace ownership back to the late 17th and early 18th century. Moreover, archaeological evidence of the property's use in the 16th century allows us to get some sense of the status and profession of the likely owners and/or occupiers in the 16th and early 17th century. This can enable us to situate 'Jonah and the whale' in the wider context of the commissioning of wall paintings by those below gentry status.

Newell Connop senior had been admitted to the property in May 1763, on the surrender of Richard Connop and his wife, Elizabeth. Newell was Richard's son by his first wife, Ann, and was a minor at the time – he was aged about eight (NRO, Court Roll 12 (Box X.1807), 140–3). Interestingly, the property came to the Connops not through their own family but through that of Richard's second wife, Elizabeth, née Stubblefield, daughter of Thomas Stubblefield, who retained a life interest in the property. She had inherited it from her grandmother, also Elizabeth, in 1738, when she was a minor (NRO, Court Roll 10 (Box X.1806), 120–2). The elder Elizabeth Stubblefield had inherited 'Swift' in 1720 from a kinsman, Daniel Payne (NRO, Court Roll 9 (Box X.1806), 183–8).

It is at this point that we lose sight of 'Swift' in the records. Payne is recorded as being admitted to a property in West Street, surrendered by Jacob (or James) Sumner, in June 1711, but it is unclear if this entry relates to 'Swift' as the property is not identified (NRO, Court Roll 7 (Box X.1805), 86–7). In 1692, Payne and his wife, Hester, were admitted to a property in West Street on the surrender of James Eaton. Interestingly, there is a blank left in the manuscript of the court record where the property's name has been omitted, raising the possibility that this was 'Swift' (NRO, Court Roll 5 (Box X.1804)). However, there are no further relevant references to Payne nor any trace of Eaton's property on West Street, apart from a conditional surrender to Thomas Hooker of Sewardstone in 1682, that allow ownership of 'Swift' to be traced back further (NRO, Court Roll 4 (Box X.1804)).

Archaeological evidence indicates that 'Swift' was not erected significantly earlier than this. Permanent structures, with brick foundations, were not built on the site until the late 16th-century when, using materials taken from the dissolved abbey, two messuages were constructed. The western one comprised of the property neighbouring 'Swift' to the east, but possibly also included of 'Swift' itself (AOC Archaeology 2005, 9.22,

9.29–30, 9.37–8). It underwent rebuilding in the 18th and 19th centuries, but enough of the original, internal structure was retained to enable the survival of the wall painting (AOC Archaeology 2005, 9.34–6, 9.40). Prior to this, from about the thirteenth century, the site had been used for tanning and for waste disposal (cess and rubbish) (AOC Archaeology 2005, 9.8–10, 9.13, 9.18). There is also evidence that, from 1550 and after the messuage was built, it was the site of a horn-works and that this continued to the mid-18th century. Indeed, this may have taken place alongside continued tanning (AOC Archaeology 2005, 9.31–3).

Archaeological evidence of the site's industrial use is reinforced by the documentary evidence about the occupants of 'Swift' in the 18th and 19th centuries. Though the occupier was not identified when Payne bequeathed 'Swift' to Elizabeth Stubblefield the elder in 1720, it is described as neighbouring Payne's tan-yard (possibly to the east) and Payne himself was a tanner (NRO, Court Roll 9 (Box X.1806), 183–8; NRO, Court Roll 7 (Box X.1805), 86–7). When both Elizabeth Stubblefield the younger (1738) and Newell Connop (1763) were admitted to the property one of the occupants was a butcher (NRO, Court Roll 10 (Box X.1806), 120–2; Court Roll 12 (Box X.1807), 140–3). When it was sold to the Board of Ordnance, it was occupied by two tenants, one of which was a hogman (NRO, Court Roll 18 (Box X.1810), 384–6). It may also be worth noting that Richard Connop, Elizabeth's husband and Newell Connop's father, was also a tanner (NRO, Court Roll 12 (Box X.1807), 140–3).

Thus, 'Swift' and its neighbouring property seem to have been built in the mid or late 16th century to provide permanent work space, and possibly living quarters, for tanners and hornworkers. Its industrial use continued throughout the 18th and 19th centuries.

The archaeological evidence also points to three other key pieces of information about the painting. First, evidence indicating that permanent buildings were not erected on the site until the mid or late 16th century corresponds with the projected dating of 'Jonah and the whale' (*c.* 1585–1630). Indeed, it raises the possibility that the painting may have been part of the decorative programme of a newly built property. Second, evidence indicating that only two messuages were built at this time suggests that the property was larger than the (sub-divided) tenements it became in the 18th and 19th centuries. This might be supported by the court records, the photograph of the cottages taken before their demolition and evidence from maps. Both Daniel Payne and Elizabeth Stubblefield the elder owned further properties in Highbridge Street. These may have been the neighbouring property to the east which, as an unnamed freehold property, is difficult to trace (NRO, Court Roll 9 (Box X.1806), 186–8; Court Roll 11 (Box X.1807), 149–50). James Eaton's surrender of a property on West Street to Daniel and Hester Payne in 1692 indicates this property, if it was 'Swift', was relatively substantial as it included a house, outhouses, stables, buildings and gardens (NRO, Court Roll 5 (Box X.1804). The evidence provided by the photograph is more problematic because it is clear from some of the architectural features, such as the windows, that the façade of the building has been altered in the 18th or 19th century (as is supported by archaeological evidence) and so does not provide untainted testimony of what the buildings looked like when first erected. However, it would appear that the eastern messuage comprised of a jettied building (the ground floor of which was later filled), with a large jettied cross-wing to the west and a smaller jettied porch added later (both also later filled), with the latter facilitating entry to the hall (to the east) and the cross wing (to the west). The western messuage, comprising 'Swift' and its neighbour, lacked a cross-wing but evidence from the town map of 1879 suggests it did have a projecting stack at its western end, itself a sign of wealth and status. Dividing the messuages this way also makes sense of the plot boundaries as recorded on the 19th-century maps, especially that of 1879. There is a straighter and more uniform plot boundary to the west of the cross wing, as well as more uniform boundaries with the road to the east and west of it respectively. If the building in which 'Jonah and the whale' was originally a larger messuage, this suggests that its owner may have been wealthier than later evidence might imply and hence more able to commission an elaborate wall painting, based on Dutch engravings.

Third, evidence of industrial use on the ground floor, including a shallow gully that may have been a drainage channel, might explain why the painting was on the first floor (AOC Archaeology 2005, 9.31). It suggests that the ground floor was a shop or working premises and the living quarters were situated on the first floor. As it was usual to have the most elaborate and expensive forms of decoration in the main rooms of a dwelling (halls and parlours), with cheaper or less elaborate forms used in chambers and servants' quarters, this would suggest that the room on the first floor at the western end of the building, where 'Jonah and the whale' was discovered, was the main room, or parlour, in the house. This might be supported by the evidence of a projecting stack at this end of the building.

Commissioning and the accessibility of Dutch illustrated books

If 'Swift' was a tanner's house in the 16th century, could such an owner have commissioned the painting, 'Jonah and the whale', that copied one of Maarten de Vos's engravings from Gerard de Jode's *Thesaurum sacrum historiarum veteris testamenti*? First, it is important to recognise that, whilst the patron may have taken the lead role in identifying the engraving to be copied and may have owned, or had direct access to, de Jode's work, it is equally possible that the book was owned by the artist himself. This seems particularly important when dealing specifically with de Jode's *Thesaurum* because, as Wells Cole has shown, both it and the earlier *Thesaurus veteri et novi Testamenti* were a 'popular quarry' for English craftsmen, used in a variety of decorative media across the country for nearly a century (Wells Cole 1997, 103–

106). This raises the possibility that the books circulated primarily amongst craftsmen rather than their patrons.

The *Thesaurum sacrum historiarum* was a substantial folio book that had to be imported from the Netherlands. We know that copies were available in England: the copy currently owned by St John's College, Cambridge, originally belonged to the poet, Edward Benlowes of Brent Hall, near Finchingfield, Essex (*c.* 1603–1676). It was common for the aristocracy and well-placed gentry to obtain continental books direct from abroad, but there were well-established avenues for obtaining these items closer to home and these could have been used by either the patron or the artist of 'Jonah and the whale'. A number of printers and booksellers in London had commercial contacts with Antwerp's leading printer, Christopher Plantin, who supplied them with books and prints from his own print shop as well as those from other printers in Antwerp, Paris, Lyons and elsewhere (Clair 1960, 208–11). Moreover, there is evidence that city and provincial stationers outwith Plantin's network were able to obtain both his works and those printed in other centres across Europe. John Wolfe and Thomas Purfoote dealt in prints, though they were principally booksellers (Rostenberg 1963, 3). Thomas Chard (or Chare) of London stocked works printed Antwerp, Basel, Frankfurt, Geneva, Ingolstadt, Leipzig and Paris in the 1580s (Jahn 1924, 234–5; Paige 1940, 29–30). Around the same time, Roger Ward of Shrewsbury stocked works from Anvers, Antwerp, Basel, Cologne, Ingolstadt, Paris and Venice while, a decade earlier, Robert Scott of Norwich stocked copies of Terence printed in Antwerp (Rodger 1958, 247–68; Barnard and McKenzie 2002, 676). Moreover, by the early 17th century, a number of specialist print shops had been established in London, selling prints by both domestic engravers, like Renold Elstrack and Francis Delaram, and continental ones, including Crispin and Simon van der Passe (Rostenberg 1963, 1–35).

Were such books affordable for those, like tanners and artists, who were of the 'middling sort'? Research on early modern book ownership has traditionally favoured the aristocracy, gentry and Oxbridge academics whose libraries, or inventories, have more usually survived and are easier to access. Less work has been done on those of the 'middling sort', whose engagement with books has to be gleaned from probate inventories. However, Peter Clark's pioneering study of book ownership in Kent has demonstrated that book ownership, particularly amongst the 'middling sort', increased significantly between 1560 and 1640. Drawing on probate inventories for Canterbury, Faversham and Maidstone he has shown that book ownership increased in all three towns from between 8–21% in the 1560s to 44–49% in the 1640s, with a spurt between the 1570s and 1590s (Clark 1976, 97–9). The greatest growth in book ownership was amongst the 'middling' sort, with some of the largest rises occurring in townsmen with inventorial wealth of £39 or below (Clark 1976, 100). Of particular relevance to the Waltham Abbey painting is that book ownership by those in the leather trades in Canterbury increased from approximately 19% in the period 1560–89 to 39% between 1620 and 1640. For those in the building trade (there is no separate classification for artisans such as painters and masons) the picture is similar: rising from approximately 22% to 36% over the same period. Figures for Faversham and Maidstone are either incomplete or are characterised by very small sample sizes which make statistical comparison less meaningful (Clark 1976, 100–101).

Probate inventories did not always identify the books Kentish men owned, though there is evidence that they included large illustrated texts, like John Foxe's *Actes and monuments* (commonly called the 'Book of martyrs'), which might support the possibility that the Waltham Abbey patron or artist could have owned de Jode's large *Thesaurum* (Clark 1976, 102–103). Much more work needs to be done on the ownership of large, domestic and continental illustrated books, but Elizabeth Evenden's and Thomas Freeman's careful reconstruction of ownership of the 'Book of martyrs' is instructive (Evenden and Freeman, forthcoming). Though many contemporaries complained about the cost – recorded prices vary from 38 shillings to an average of £3 in London alone between 1563 and 1640 – there is evidence to show that ownership was socially diverse and often defied wage rates and price indexes. In Norwich, for instance, they have identified two yeomen, one merchant and a haberdasher owning copies of Foxe. As Evenden remarks, 'the book cost more than most private individuals could afford, but nevertheless they purchased it anyway.'

The picture that Evenden and Freeman have painted of the 'middling sort' willing to buy large, illustrated books suggests that ownership of the *Thesaurum* by either the patron or the artist was not impossible. Tanners and butchers were relatively high status occupations within the middling ranks of society, commanding relatively good incomes and ranking high in the hierarchy of guilds. Indeed, Clark has argued this was partly why book ownership amongst these men increased so dramatically in the late 16th and early 17th centuries (Clark 1976, 104). Even if the owner of 'Swift' did not have a large disposal income, then Evenden's and Freeman's evidence of people buying the 'Book of martyrs' when, to a later historian's eye, they could not afford to do so still suggests that ways and means may have been found. Though they argue that the devotional significance of Foxe and its quasi-liturgical use may have encouraged people to invest in such an expensive book beyond their means, we could point the compelling professional reasons why the artist of 'Jonah and the whale' may have invested in the *Thesaurum*: Wells Cole has shown definitively how extensively it was used by artisans in a variety of decorative media in the late 16th and 17th centuries. It seemingly paid to own, or have access to, a copy (Wells Cole 1997, 103–6).

Cultural meaning

In his letter to the *Weekly Telegraph*, Winters argued that the choice of Jonah and the whale as the subject for the

painting could be explained by the likelihood that the building was a former Abbey property (*Weekly Telegraph* 10 March 1893, p. 3 col. 5). As we have seen, however, not only does the painting date from after the Abbey's dissolution but it was also probably commissioned by a member of the laity, possibly a tanner. Why would such a person choose to decorate his room with a scene from the parable of Jonah and the whale?

Exploring the cultural meanings of wall paintings is notoriously difficult, especially for those examples, like 'Jonah and the whale', in yeomen's and tradesmen's houses where it can be more difficult than in gentry and aristocratic cases to identify the owner/patron let alone discover much of their life. It is also unfortunate that the short inscription that apparently accompanied the painting was lost without any record being made, though this is most likely only to have been the biblical text that appeared on the engraving, or an English translation: '*A domino fugiens iactatur in æquora Ionas, Excepit hunc cæco bellua ventre ferox. Ionas. Cap. 2.15.*' ('Fleeing from the Lord, Jonah hurled himself into the waters, He was pulled from the dark belly of this savage beast'). What little work that has been done on cultural meanings has suggested that narrative paintings often served a didactic purpose. James Sutton has argued that the extensive decorative programme at Theobalds, home of William Cecil, Lord Burghley, served to inculcate political knowledge or ideas of virtue in his political heir, Sir Robert Cecil, later marquess of Salisbury (Sutton 1999–2000, 31–64). Tessa Watt's brief survey of wall paintings in yeomen's and tradesmen's dwellings stressed that paintings represented and taught general moral values. She also argued some served wholly decorative or entertainment purposes (Watt 1991, 203–9). It is also believed that yeomen and tradesmen may have adopted this form of decoration to ape their social betters, and thereby make claims about their social standing.

Whilst this emphasis on didacticism is supported by contemporary texts on decoration, such as Leone Battista Alberti's *De re aedificatoria* (first published in 1485), they neglect the fact that a number of domestic wall paintings, like that at Waltham Abbey, were of biblical or religious subjects and may have contained a specific Christian or confessional message. For instance, the painting of the prodigal son extant at Knightsland Farm in Hertfordshire may have been designed to reflect Protestant, and specifically puritan, ideas of divine mercy and salvation: that salvation was obtained by the grace of God alone and not through good works (Mears, in preparation; Calvin 1584, 491 [printed as 481], 493–4).

Can the same be said of 'Jonah and the whale'? The story of Jonah was a popular subject in contemporary printed literature, not only biblical commentaries, but also sermons and lectures. Indeed, George Abbot, later archbishop of Canterbury, lectured every Thursday morning in St Mary's, Oxford for five years on the book of Jonah publishing the resulting thirty sermons as *An exposition vpon the prophet Ionah* in 1600. Unsurprisingly, in thirty lectures, Abbot was able to gloss the story in many ways – from the importance of University divines preaching in neighbouring villages to whether a man could lawfully kill himself (Abbot 1600, 10–13, 125–6). But there were consistent readings of the story, especially of the key scene depicted in the painting when Jonah was cast into the sea. It taught lessons of man's sin and of God's wrath against those who disobeyed him; of God's 'wonderful and inspeakable mercy' and of man's repentance (Brenz 1570, sig. Av^{v}). First, Jonah was punished for forsaking his divinely-appointed vocation: though he fled his duty to preach to the Ninevites, he was unable to escape God's wrath as manifested by the tempest and which was only assuaged when Jonah was cast into the sea by the mariners (Hooper 1550, sigs. Bvi^{v}-Bviii^{v}, Dii^{v}-Diii^{r}; Gwalter 1573, 106–7, 116, 134–5; Brenz 1570, sigs. Av^{v}, Civ^{r}-Cv^{r}; Abbot 1600, 43–4). Second, by confessing his sin publicly, being contrite and willing to accept punishment – being cast into the sea – Jonah received God's mercy and forgiveness (Hooper 1550, sigs.Ev^{v}, Fiv^{v}-Fv^{v}, Iiii^{r}-Iiv^{v}; Gwalter 1573, 142–3, 148–51; Brenz 1570, sigs. Avi^{r}, Dii^{v}-Dv^{v}; Abbot 1600, 233–5).

Though less explicitly than in glosses on the parable of the prodigal son, English sermons on Jonah highlighted differences between Protestants and Catholics in their conception of divine mercy. Nowhere did preachers mention the importance of good works in obtaining salvation: mercy, and hence salvation, was achieved solely through contrition, public confession and acceptance of punishment. As Gwalter argued, 'by this confession he [Jonah] establisheth himself with sure confidence to haue his synnes remitted' (Gwalter 1573, 142). Abbot stated, 'The two wings of faith and repentance, do mount him vp into heauen, euen from the gates of hell' (Abbot 1600, 233–5). Moreover, Brenz made an explicit contrast with the Catholics: Protestants obtained God's mercy through these actions because they were the chosen people, whereas the Catholics were 'hypocrites' and 'enemies' of God (Brenz 1570, Dii^{v}-Diii^{r}; see also Abbot 1600, 76). This was combined with other anti-Catholic statements. Brenz likened the heathen mariners praying to their infidel gods to the Catholics who would pray to the saints rather than the true God (Brenz 1570, Cvi^{v}). Both Abbot and Hooper criticized this practice: Abbot argued 'for euerie day in the yeare, they haue an he Saint or a she Saint, as appeareth in the common Kalendar, for their swine a Saint, and another for their horses' while Hooper characterized it as idolatry (Abbot 1600, 72; Hooper 1550, sig. Cviii^{v}).

As we cannot establish the identity of the patron of the Waltham Abbey painting, we cannot make a firm connection between their religious faith and the possible reading of the biblical scene. However, we can say that the story of Jonah and the whale did not just represent a general moral message, but a specific one of God's mercy and man's salvation. Moreover, the dominant reading in late 16th and early 17th-century England, when the painting was executed, was one that emphasised Protestant readings – which located mercy in confession and faith rather than good works – rather than Catholic. At the least, therefore, 'Jonah and the whale' may have

acted as a reminder to the patron and viewer of, negatively, God's wrath and man's sin and, more positively, God's mercy and man's salvation. It may also have had a more specific, confessional dimension, representing ideas of *sole fide* rather than good works.

Conclusion

'Jonah and the whale' remains a remarkable example of late 16th- or early 17th-century narrative wall painting and a relatively rare survival of mural of a biblical scene located in a dwelling likely to have been occupied by someone of 'middling' status. Based on a late 16th-century Dutch engraving by Maarten de Vos, it forms part of a group of known panel and mural paintings in South-East England and East Anglia which used continental engravings as sources and part of a wider practice of decoration in a variety of media, utilising continental prints as models, evident across England. This article has attempted to locate the painting in its physical setting, suggesting that it was located on a partition wall in an upper floor room in a house known as 'Swift'. This building, possibly one of two larger buildings that were subsequently sub-divided into four smaller dwellings, was located to the west of the house belonging to the Superintendent of the Gunpowder Factory on the south side of Highbridge Street. Though we cannot identify the owner of 'Swift', and hence the patron of the painting, any earlier than the late 17th century, archaeological evidence points to the site being used as a tan-yard suggesting that the patron could have been a tanner. This would suggest that the first floor was used as living quarters, above the work and shop area, and that the room in which the painting was found was most likely, therefore, to have been the parlour. Similarly, though we cannot trace ownership of de Jode's *Thesaurum sacrum historiarum* in which de Vos's engraving was published, there is evidence not only to show that continental books were available from London and provincial booksellers, but that book ownership was increasing amongst the 'middling sort' in this period, including amongst those in the leather and building trades. Contemporary readings of the story of Jonah emphasise the specific Christian message about man's sin and God's mercy that it conveyed; some glossed the story in more a distinct Protestant vein, stressing *sole fide* over good works. This might point to the cultural meaning of the painting: that it was not a reminder of generic moral values but was specifically meant to be read by the viewer as a commentary on God's mercy and man's sinfulness and salvation.

'Jonah and the whale' opens up two key avenues for further research into wall paintings and other forms of interior decoration. First, it is clear that more work needs to be done on the circulation of the engravings and illustrated books that were regularly copied by craftsmen. Did they circulate primarily amongst patrons or the craftsmen themselves? This would enable us to understand more fully the process of commissioning and creation of wall paintings, particularly by people below the status of the gentry. Second, it raises questions about the wider use of biblical imagery in Elizabethan and Jacobean England. In her important and influential work on wall paintings and cheap prints, Tessa Watt has suggested that growing concern over visual imagery in protestant England lead to changes in what could be depicted and where. Figurative depictions of God and Jesus, as well as biblical figures associated with the devotion to saints, were replaced by Old Testament figures who were, in turn, replaced by parables from the Apocrypha and the histories of Josephus, reflecting a descending 'ladder of sanctity' (Watt 1991, 161–2, 185, 200–203). Visual imagery in parish churches became unacceptable, while that in a domestic setting was allowable (Watt 1991, 132). 'Jonah and the whale' suggests that this development was less uniform than Watt argues because it is a relatively late example of an Old Testament prophet being depicted visually. Further work needs to be done in this area, taking into account other forms of decoration such as plasterwork (where there is significant evidence of depictions of the life of Christ, the Annunciation and the stories of Moses and David), changes over time and variations in the social status of patrons (Wells Cole 1991, 106–111 and passim).

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Author: Natalie Mears, Department of History, University of Durham, 43 North Bailey, Durham, County Durham, DH1 3EX

Notes

1. Anthony Wells Cole states that de Vos's 'The story of Jonah' was first published in Gerard de Jode's *Thesaurus veteri et novi Testamenti* (Antwerp, 1579) (Wells Cole 1997, 103–104 and 310 fn. 34). However, the main modern catalogue of de Vos's work states the engravings were first published in the second edition of this text, *Thesaurum sacrum historiarum veteris testamenti* (Antwerp, 1585) and it is this dating I have followed (Hollstein, *de Vos: Text*, 44–5 nos. 158–161).

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EPPMS Epping Forest Museum.

ERO Essex Record Office.

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Grist to the mill: a history of the Wivenhoe mill from 1086 to the mid-twentieth century

Pat Marsden

INTRODUCTION

Wivenhoe is an attractive and historic riverside town, situated three miles south of Colchester, in Essex, on the east bank of the River Colne where it widens to form an estuary. Since the 1960s it has had close connections with the nearby University of Essex. A great deal of local literature has been published about its general history with particular importance being placed on its shipbuilding, fishing and maritime connections.[1] However, very little has been written about the mills in Wivenhoe which also played a key role in the rural economy. That there were mills in Wivenhoe from the eleventh century onwards, is clear from references cited in the *Victoria County History of Essex*.[2] Although this publication has a section devoted to Colchester mills,[3] there is only a brief paragraph relating to mills in Wivenhoe. There have also been a number of publications which have specifically tackled the subject of watermills and windmills in Essex, but none of these has explored the presence of mills in Wivenhoe, or the neighbouring village of Elmstead (which abuts onto the Wivenhoe parish boundary to the south-east), in any great depth. Hervey Benham lovingly compiled a detailed work referring to Essex watermills,[4] but there is scant reference to Wivenhoe or Elmstead; Rex Wailes, the key expert on the English windmill makes no mention of either a Wivenhoe or an Elmstead mill in his comprehensive paper on Essex windmills;[5] and Kenneth Farries, in his excellent series covering the windmills of Essex[6], refers to two mills in Wivenhoe and Elmstead, but only from the late seventeenth century onwards. The dearth of information may be due in part to the lack of archaeological investigation in the area before it became swamped by housing development during the last forty years. This paper attempts to redress the balance by re-examining the available documentary evidence to construct a more comprehensive history of mills in Wivenhoe and Elmstead covering the whole of the period from Domesday to the mid-twentieth century.

1. The Wivenhoe Watermill [pre 1086 – post 1641]

Where was the watermill located?

It is not possible to say when the first mills appeared in Wivenhoe and Elmstead, because the systematic recording of mills in England did not occur until the Domesday Book, compiled at the direction of William the Conqueror from 1086 to 1087. This record revealed that there were about 6,000 mills in England at that time, many of them believed to have been in existence from at least the 7th century onward. It is known that the Romans were familiar with mill technology[7] and there may well have been working mills in the Anglo Saxon period, although the earliest known reference to a mill in England appeared in the eighth century, and the earliest reference to an Irish mill in the seventh century.[8] By the time of Domesday it was clear how widespread this labour-saving technology had become and statistics comparing the number of mills in those areas that were recorded indicate that there was approximately one mill to every two vills (i.e. settlements or hamlets).

Domesday itself records two mills in the vicinity:[9] the mill in Wivenhoe, which was held by Robert Gernon, as part of his holdings of the barony of Stansted Mountfichet in the Hundred of Lexden;[10] and the mill in Elmstead, which was held by Swein of Essex as part of his holdings in the Hundred of Tendring. The locations are not cited but the records do give a snapshot of the parish economies at that time. It is interesting to note that Elmstead was the more prosperous holding consisting of thirteen villeins (villagers of higher economic status than a bordar), thirty-six bordars, and six slaves. It also had woodland for 500 pigs, twenty-two acres of meadow, pasture for sixty sheep, eighteen head of cattle, forty goats, five horses, eighteen ploughs, two hives of bees, a saltpan, and a mill[11] that had existed before the Domesday records were made. Wivenhoe on the other hand recorded a population of only five villeins, twenty bordars and two slaves[12] and had woodland for 100 pigs, twelve acres of meadow, pasture for sixty sheep, eight head of cattle, twenty goats, one horse, two ploughs and a mill[13] which existed at the time of Domesday, but not prior to this. This situation was reversed in later years as Elmstead dwindled, and by 1377 Wivenhoe was one of the most populous parishes in the Lexden Hundred, having a count of 167 people paying the Poll Tax.[14]

Almost all the subsequent records refer to a 'manorial' mill and the *Victoria County History*[15] suggests that they must be referring to the same watermill belonging to the manor of Wivenhoe[16]. The dilemma about whether this might be either the Wivenhoe or the Elmstead mill, referred to in Domesday, is complicated by the fact that, as Holt suggests, 'the English manor did not usually coincide with the village'[17] and indeed here this is illustrated by the fact that the manor of Wivenhoe, comprised not only the parish of Wivenhoe but also extended into the adjacent parishes of Elmstead[18] and

Greenstead. The boundaries between these parishes were in part naturally formed by streams on the north-west (between Wivenhoe and Greenstead) known as Salary Brook[19] and on the east (between Wivenhoe and Elmstead), known just as the [Wivenhoe] Brook, and it is this eastern stream,[20] which is the most obvious candidate for the siting of the Wivenhoe manorial mill. The *Victoria County History* suggests that it 'was probably the mill on the Brook in the south-east of the parish on the Elmstead border, ¼ mile from the river [Colne]'.[21] In the Middle Ages this meant that the watermill would have been positioned only a short distance away from the heart of the early settlement, which was concentrated in the south-west corner of the parish, around the quay, and near to the church, with the manor house situated just to the north of it on the west side of what is now Wivenhoe High Street.

The vestry minutes of St Mary's Church, dated 25 September, 1871 confirm that 'the old mill house commonly called Bobbitt's Hole'[22] still stood on the Brook in the nineteenth century.[23]

On a modern map it is estimated that the mill buildings would be situated where No's 36 and 38 Valley Road now stand with what once was the mill garden stretching out to the rear of these properties, parallel to Bobbitts Way.

The only other known record of what might be an early mill in Wivenhoe itself, is an archaeological report, dated 1975, referring to a ring ditch with a cruciform mark in the centre which is described as a 'mill mound' on Wivenhoe Heath. However no estimated date for this find is given and it is assumed from its description that this must be a later windmill.[24] The only other known references to a mill in Elmstead after Domesday are: a deed dated 1275 referring to a watermill and 'a meadow called le Pandmadwe [pond meadow?] adjacent';[25] a record dated 1628 which criticises the inhabitants of Elmstead 'for not mending the highway and securing the ditches from Elmstead Mill leading forth onto the bridge that parteth Elmstead and Wivenoll (sic) in Colchester Road';[26] and a deed of conveyance of 1660, relating to the manor of Wivenhoe, which refers to both a 'watermill in Elmstead', and a 'windmill lately erected' on 'Could Hall Field in Elmstead'.[27]

The present day resident might wonder how the Brook in Wivenhoe, barely a metre wide in some places, could ever have supported a watermill. Nevertheless, it has a constant flow of water, never dries up, and may well formerly have been a more substantial stream. This would not be unusual and many mills existed in the eleventh century in places where they could not possibly exist now.[28] Indeed many streams at the time were heavily embanked to improve the flow of water and extend milling to the top limits of the available power supply. Benham refers to Salary Brook, mentioned above, 'where an inconspicuous trickle of water ... provided power for three mills, all fulling cloth in the 18th century'[29] and to Birch Brook in Rowhedge, across the river from Wivenhoe, which also supported a fulling mill, where 'a trickle that passes under the Colchester to Fingringhoe Road, north of the Ipswich Arms public house' flows into the Colne.'[30]

What is known about the watermill?

The prime role of the watermill was to free the individual from the time-consuming task of grinding corn by handmill or quern. Because of the lack of archaeological evidence it is difficult to know exactly what the earliest Wivenhoe mill would have looked like and how it would have operated. One can imagine from what is known about other Essex river mills that it probably consisted of a small single-storey wooden building, working one of two pairs of stones, grinding small amounts of corn brought on a pack horse by a customer who waited to take away his meal in the same bag. The miller would take a toll of corn as his payment and there was no need for storage facilities.[31] In many manors the local villagers were obliged to use the manorial mill to grind their corn or they would be fined. This caused so much resentment however, that later some manors introduced a system of licensing independent mills for a fee.[32]

Since much of the available documentation cites the manorial mill as being in Elmstead, it must have been structurally positioned on the Elmstead side of the Brook, to the east of the parish border. This would particularly apply if the mill was built beside the stream with an external wheel rather than the alternative arrangement of straddling the stream with an internal wheel.[33] The earliest mill may very well have had a horizontal wheel with the force of the stream directed to one side.[34] All that was necessary was a vertical shaft to the mill-stone above. This system was commonly used until the thirteenth century, particularly by smaller-scale mills, because although the horizontal wheel's use of available water power was relatively inefficient, these types of mills were easy to construct and had low repair costs. It was only from the thirteenth century,[35] that the horizontal mills were replaced by more expensive and powerful vertical mills by those lords of the manor who could afford to do so. In Essex, these mills would typically either be driven by a breastshot wheel, a vertical waterwheel where the water enters at about the level of the wheelshaft, or an undershot wheel, which was driven by the impulse of water striking the floats at or near the bottom of the wheel.[36] There may have been a mill pond above the mill which would have been used to store water until it was required for use. Typically, Essex watermills had sluices to control the flow of water and some had a sluice to the back channel which allowed water to flow past the mill and sometimes the back channel sluice was so near to hand (as at Ardleigh and Colchester's Bourne Mill) that a by-valve (which by-passed the wheel channel) was not required.[37] This arrangement was usually only practicable for mills with pools on small brooks. It was also very likely that the manorial mill contained an eel trap, as it is known that eel fishing was an important secondary occupation for river millers and mediaeval mill rents were often partly paid for in eels, usually measured by the 'stick' of twenty-five eels. The trap would most probably have been sited immediately below the by-valve

or the back channel sluice. The season for catching eels was in the late summer as the eels migrated out to sea, and a sharp-eyed miller would be able to forecast the success of the catch by watching the number of elvers working their way upstream in the spring.[38] Even to the present day there is anecdotal evidence of eels in the Brook.

These early mills, being built almost entirely of wood, were notoriously short-lived, often collapsing or burning down, and having to be repaired or rebuilt. However, water mills were rarely moved from their original site although they may have been replaced or repaired several times in their life-time; it was unusual for a mill to last for more than 200 years. One such mill belonging to the manor of Wivenhoe (valued at six shillings and eight-pence), was flooded and ruined in 1393.[39] However, it must have been restored or rebuilt as there are several references to the mill in the sixteenth-century manorial accounts: William Symondes was described as a tenant at the 'ferme' of the watermill in 1562–3;[40] the watermill in the park[41] is mentioned in the baliff's accounts of 1585;[42] the watermill and brew-house are listed in the particulars of the Manor of Wivenhoe and Much [Great] Bentley of 1585–6;[43] and a letter from John Goodwyn, surveyor, to Roger Towneshend (sic),[44] the lord of the manor of Great Bentley, referring to an agreement to arbitrate, mentions a bid of £10 a year for the brew-house at Wivenhoe in 1586.[45] The mill was also still operating in the first half of the seventeenth century as there are references in the manorial accounts to the watermill and brewing house in a deed of 1614.[46] Repairs were also carried out to the watermill in: 1641, at a cost of thirteen pounds and six-pence;[47] 1647, at a cost of three pounds, one shilling and nine-pence;[48] and in 1653 at a more substantial cost of thirty-seven pounds, eight shillings and three-pence,[49] according to an itemised 'accompt' submitted by Edmond Dawber, one of the bailiffs of the manors of Wivenhoe and Great Bentley. A search in Essex Record Office provided details of the wills of five Wivenhoe millers who must have been tenants at the watermill from 1612–1670.[50] The watermill was also mentioned as formerly cited in the deed of conveyance of 1660 referring to the rights of John Dawbee (possibly Dawber) in the 'watermill at Elmstead'.

Many watermills in the early mediaeval period were converted into fulling mills from the thirteenth century onwards, after an imposition of a duty on the export of wool in 1347. This, together with the encouragement of immigration at the time, of Flemish weavers, fullers and dyers, is generally considered as marking the foundation of the English cloth trade.[51] There were several mills of this kind serving the nearby cloth town of Colchester.[52] There is evidence for fulling in Ardleigh, St Osyth, and Bourne Mill in Colchester, and by the eighteenth century, as previously mentioned, there were three fulling mills on Salary Brook (*Map 2*) and another in Rowhedge. However there is no evidence for fulling activity at the Wivenhoe watermill, other than an early reference of 1638, in which Johanne (Joan), the widow of Thomas Cawton the deceased bailiff, of the manor of Wivenhoe and Great Bentley, requests payment for 'monies paid for weaving, fulling, and oding of cloth' with two bills attached,[53] but it does not say where this work was carried out. It is most likely that, with the close proximity of other mills engaged in the fulling trade, the Wivenhoe watermill did not convert to fulling but continued to grind corn until its demise. The town itself would have continued with its traditional maritime industries of fishing and shipbuilding, and its main contribution towards the cloth trade would have been to continue to operate as a port for Colchester, as it had done since the sixteenth century. Indeed it is known that in 1713 two packet boats travelled weekly from Wivenhoe to London with cloth and returned with wool for the Colchester cloth industry.[54]

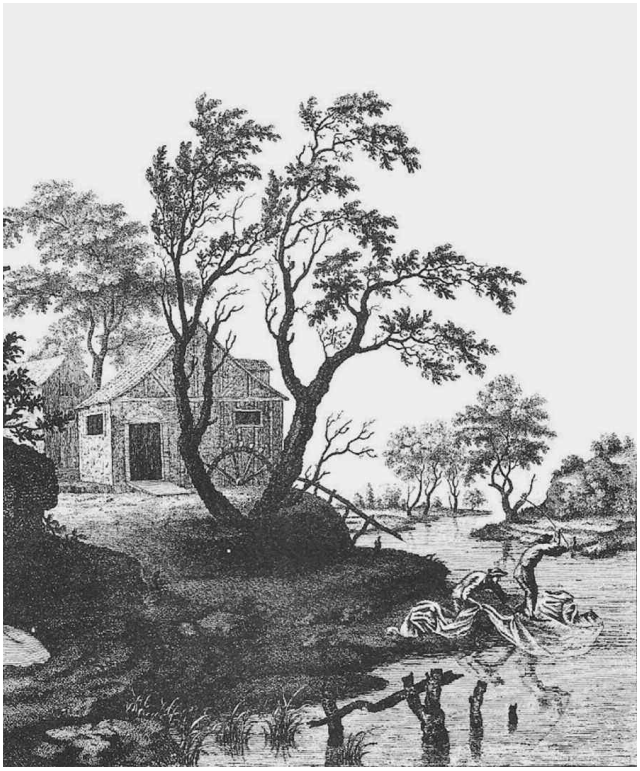

Fig. 1 A fulling mill as it appears on the title page of the 1777 Chapman and André map (reproduced by courtesy of Essex Record Office). It shows men beating the cloth in the nearby stream.

It is not possible to say exactly when the watermill ceased to function as a mill but it can be surmised that this occurred sometime between the last mention of the mill (in 1660) and a miller (in 1670) and the first cartographic record of the Wivenhoe windmill in 1678. However the mill house itself continued to stand for approximately another two hundred years. An unmarked building which may be the mill house, is shown on the Hayward Rush map of the parish of 1734.[55] It stands next to the plot which is described as the Mill Garden on a map of the manor of Wivenhoe dated 1799.[56] By 1771 the records show that the old mill house had declined in status and was just referred to as 'tenements'.[57] By the 1841 census it was occupied by a young agricultural labourer and his family and so it continued. It is referred

to in the vestry minutes of 1866 and 1871, when the state of the 'privy' at Bobbitts Hole was deplored as contributing to the pollution of the Brook. The mill buildings can clearly be seen on the 1874 Ordnance Survey Map (*Map 5)* but twenty years later they seem to have been abandoned and the site is shown as 'a ruin' on the 1894 Ordnance Survey Map.[58]

2. The First Wivenhoe Windmill [by 1678 – *circa* 1816]

Where was the first windmill located?

At some point in the third quarter of the seventeenth century the water mill was replaced by a windmill, not too far away from the watermill, and still in the vicinity of Bobbitts Hole. In the local oral tradition this name was used to refer, not only specifically to the site of the old mill house on the Brook, but also to the sloping sides of the valley (hence Valley Road) through which the Brook ran.[59] The new mill was sited approximately two hundred yards to the east of the watermill on high ground (now part of Dene Park estate) where it could make best use of the full force of the wind. The use of windmills had spread from the thirteenth century onwards, particularly in areas like East Anglia, where the water supply could be a problem. Benham refers to the introduction of windmill technology as the 'industrial revolution' of its day which enabled milling to be brought 'to areas where waterpower had been inadequate'.[60] Although there had apparently been a sufficient force of water to enable the Wivenhoe watermill to grind corn for bread for centuries, the supply may have dwindled. The lord of the manor may have decided that a new windmill would be more productive, and cope more effectively with the requirements of the increased population of the town, which had risen to about 197 households at this time,[61] following the death of many people from plague in the early seventeenth century. Possibly the watermill was becoming delapidated and it was not economically viable to repair it.

The first cartographic reference to a windmill appears on the Ogilby and Morgan map of 1678 (*Map 1*) located on the Elmstead side of the Brook. It is similarly marked on the Warburton, Bland and Smyth map of 1725.[62] The Colchester Poll Book for 1768 lists Jacob Agnis as the miller. By the early 1770s the first documented reference appears,[63] which confirms more precisely the situation of the mill. This is a deed of 1771[64] relating to the transfer of property and land belonging to the late Nicholas Corsellis[65] of Wivenhoe Hall (*Map 3*). The Corsellises were descendants of a London merchant and elder of the Dutch church who had come to England *c.* 1576. Subsequently they had become one of the wealthiest and most important families in Wivenhoe and in 1657 they bought the manor house and advowson for £15,700.[66] However, the 1771 deed shows that some of the family property was up for sale 'to discharge incumbrances'. Attached to this deed were two faint rough sketches of the estate, which appear to have been added sometime after the original document was drawn up[67] and these show the substantial acreage of land which lay in close proximity to both the original watermill and the first windmill. This land sat on either side of the Brook, and is named as the Little Mill Hangings (3 acres), Great Mill Hangings (5 acres), the Pump Fields (8 acres) in Wivenhoe; and land called the Great Mill Field (24 acres) in Elmstead.[68] The windmill is clearly marked in the south-eastern corner of the Little Mill Hangings (*Map 3*) and this must be the same windmill that is marked on the Chapman and André map of 1777 (*Map 2).*

What is known about the first windmill?

In 1772 the windmill is described for the first time as a 'large post windmill in very good repair', in a notice of sale which appeared in the Ipswich Journal.[69] This states that the occupier is Robert Fynn, and, that although the mill is sited in Elmstead parish, it is commonly known as Wivenhoe Mill. Included in the advertisement is the fact that the mill was situated 'within a quarter of a mile of a fine navigable river [i.e. the Colne], where ships go every week to and from London'; a detail which helps to confirm its location in relation to the course of the Brook.

In a post mill, one of the earliest types of mill, first introduced at the time of the Norman Conquest, the whole body of the mill containing the grinding machinery and grain storage was supported on a large central post. This enabled the body of the mill to revolve so that the sails faced into the wind. The whole rested on, and was braced to, crossed beams of great strength, kept off the ground by plinths of brick and stone. The sails were made of a lattice construction over which canvas was spread to catch the wind, similar to a sailing ship. These type of mills were even 'mobile' and were often jacked up and moved from one part of the country to another hauled by teams of horses or oxen.[70]

The fact that much of the land adjacent to the windmill, was referred to as 'Mill Hangings' in the Corsellis deed of 1771, is intriguing, and again raises the possibility that either the watermill or the windmill, at some point in their lives, might have been adapted for fulling purposes. After woollen cloth had first been woven, it had quite a loose weave and it would be taken to the fulling mill to be soaked and pounded, which compacted the material to make a firmer and more practical bolt of cloth.[71] Following this process it would be washed and hung out to stretch and dry (using tenterhooks) on racks in surrounding fields. These are usually described as 'tenterfields' but it has been suggested elsewhere[72] that the word 'hangings' in connection with a mill may also be used to describe the process of hanging cloth to dry in fields. It was quite common for Essex corn mills to be adapted for use as a fulling mill for some part of their life by the introduction of wheel-driven vertical stampers or heavy timber hammers,[73] and then to revert to grinding corn when the local fulling industry in Essex failed toward the latter part of the eighteenth century.

However, no evidence could be found to indicate that either the watermill or the windmill had ever been used

as a fulling mill and it was decided after consulting the Oxford English Dictionary that the name 'hangings'[74] referred only to the steep-sided slopes of the valley through which the Brook ran. Therefore it seems likely that the mill's main function at this time was to continue to produce flour to meet the constant demand for bread.

Another form of milling activity was also taking place at this time, as references to a manorial salt mill appear in the records for the first time since the reference to a saltpan in Elmstead in the Domesday Book. 'The Lord's Book' for 1766–1771[75] states that on 19 July 1776, the salt mill was leased to Thomas Martin, Esquire who paid seven shillings and two-pence to rent Fen Farm, in Elmstead, and eight shillings and eight-pence for the lands and tenure called Salt Mill. In later records there appears to be a connection between the (by this time) second windmill and the salt mill as the occupier of the windmill also paid the rent for the tenant of the salt mill.[76]

In 1793 the first windmill was mentioned in the will of Edward Stammers, a member of a prominent Essex milling family,[77] who owned a mill in the parish of Holy Trinity, Colchester. John Smith is named as tenant[78] but in the following year the executors put the windmill, together with Butt Mill,[79] Colchester, up for auction. By this time it appears that some improvements had been made to the mill as for the first time, it was described as a post mill with roundhouse.[80] It was common in the eighteenth century to add roundhouses to post mills to protect the substructure and act as a convenient store.[81] Fantails were often fitted at the same time so that the sails would automatically keep facing into the wind.

John Smith must have remained as tenant at the mill for some years, since on 21 January 1798, a notice of his wife Hannah's death appears in the Wivenhoe parish burial records,[82] and the address is listed as 'Elmstead Mill'. Details of his children also appear in the baptism records: his son John, baptised on 2 December 1792,[83] must be the same John Smith who followed in his father's footsteps and became a tenant at the second windmill in 1816. In the year following Hannah Smith's death the first windmill is marked on the Survey Map of the Manor of Wivenhoe of 1799[84] together with the Mill Hangings, and the old Mill Garden, all shown as being in the occupation of John Smith. The original 1805 Ordnance Survey one inch map still marks the 'mill' on this site.

According to Brown, the turn of the century was a period when many Essex millers, particularly those who had good access to trade with London, benefitted from the rapid growth in population and consequent expansion of the local market by enlarging and improving their premises.[85] Frequently they were seen as prosperous and important members of the parish and might serve as officers,[86] for instance as Overseers of the Poor, as did later Wivenhoe millers.

However, the period from 1793 – 1815 was also a time of war with France and the advantage the first windmill had of being situated in a good trading position near to the port of Wivenhoe, may have been something of a mixed blessing. Rumours were rife on this part of the north-east Essex coast that a French invasion might be imminent and Wivenhoe in particular was a focal point for the reception of sick and wounded soldiers returning from the war and heading for the now empty Colchester barracks.[87] These factors alone may have been sufficient to induce a feeling of general apprehension amongst the local population and in particular, local traders who had money and stock tied up in their various businesses. By 1801, Manester Cooper[88] who had taken over as the occupier of the first windmill, took the precaution of insuring the structure, machinery and stock for £100, with the Royal Exchange Assurance Company.[89] In the following nine years, while he was still in occupation, the mill was put up for sale again by auction in 1806, 1809 and 1810.[90]

Farries suggests that the evidence supplied by numerous bills that had to be paid towards the upkeep of the first post mill indicate that by this time the mill was 'a very old nag indeed' although this is contradicted by the bill of sale for September 1810 at the Falcon Inn, in Wivenhoe, where it is described as being 'in excellent repair'. Bearing in mind the tendency of a vendor to boost the condition of a property for sale, it does seem that Manester Cooper, at least, had decided to call it a day. The mill is described as 'A capital POST WINDMILL, with a large bricked roundhouse ... situate in the parish of Elmstead, near the port of Wivenhoe. Also at the same time will be sold, 100 flour sacks in lots, 2 sack barrows, 2 pairs of scales and beams, 8 half hundred, 4 quarter and 7 pound bloom weights, 51 mill bills, 2 iron crows and spaners, dressing flour mill complete, mill cart and harness, loading cart and harness, bay gelding, stack of hay, about 100 bushels of potatoes, 2 acres of wheat on the straw, lot of muck, and many other articles'.[91]

It may also be relevant to the demise of the first windmill, that by 1811, William Brummell (brother to the famous dandy 'Beau' Brummell), had purchased a large plot of land adjacent to land owned by Nicholas Corsellis, on which he erected Wivenhoe House, described as 'a handsome modern white brick mansion',[92] and laid out a landscaped estate. In the hand-drawn map accompanying the deeds, the windmill can be seen on land adjacent to that purchased by Brummell, marked as 'Mr Corsellis's Land' (*Map 4)*. It stands on the same spot indicated in the 1771 sketches, near a small turning towards the top of the 'Ballast Road', now known as Ballast Quay Road. The map also shows that the Brook, where it ran through the new park to the south of the site of the original watermill, had been transformed into a canal-like water feature with a small bridge in the centre. It is possible that the windmill may have been re-located because the Corsellises wished to enlarge the Ballast Pit from which gravel was being taken down to the river to be used as ballast for ships. Or it may have been thought to be inconveniently situated for the new owners of Wivenhoe House; although it was not on their property it may have been spoiling the view.

3. The Second Windmill and Steam Mill [*circa* 1816 – 1882]

Where was it located?

There may have been a gap between the demise of the first windmill and the erection of the second windmill, still described as a post mill with a brick roundhouse, and located at the corner of what is now Belle Vue Road and Rectory Hill (formerly known as the Brightlingsea Road). This new site was four hundred yards to the north of the watermill and first windmill, and (unlike them) in Wivenhoe parish. Two early nineteenth-century lease holders of the mill plot are referred to in a deed of covenant dated 1859:[93] James Taylor, who held the property until 17 April 1805; and Benjamin Stacey, who surrendered the property to John Smith as a copyhold tenant at a General Court Baron[94] held on 17 April 1816. Here there is some confusion: although this particular John Smith (born in 1791) was known as 'the elder', and will continued to be referred to as such in this paper, it is reasonably certain that he was the son of John Smith (born *c.* 1767) who was the tenant of the first windmill in 1793.

Although the two previous leaseholders of this plot are recorded, no mill building is referred to and no mill is yet shown on this site on the 1805 Ordnance Survey map (which was carried out *c.* 1803). The *Victoria County History* suggests that the mill may have been erected in 1816,[95] when Smith, a leading figure in the Wivenhoe milling industry up to the mid-nineteenth century, was admitted to the plot. This is the date carved over the door of the handsome Mill House, which can be seen to this day, but the house may have been built at a later stage than the mill itself. It is even possible that the first windmill was moved from its original site, following what looked like the closing down sale of 1810, to this new location, but no evidence of this has yet been found. Cartographically the mill is first shown on the new site on the North Sheet of C and J Greenwood's map of 1825.[96]

What is known about the second windmill and steam mill?

It is clear from the records that John Smith 'the elder' who occupied the second windmill for many years was also involved in the malting[97] and brewing industry in Wivenhoe. It was then normal for malting and brewing to be carried out on a small scale in each community, and certainly malting was being carried out in Wivenhoe[98] during the eighteenth and nineteenth centuries, as the 'House of Mr John Cardinal a Maltster' is shown on the Hayward Rush map of 1734. It was also quite common for mills to grind malt for brewing, and in the trade directories from 1826–1859, Smith is described in various combinations as a maltster and miller (1826–1827),[99] 'retail brewer, malster and miller' (1832–1834),[100] brewer and maltster (1845), and grocer and maltster (1848).[101] However, he clearly continued to grind corn to produce flour because the trade directories also describe him as a corn miller throughout this period.[102] It seems that he may have been something of an entrepreneur as he also appears to have had more than a passing interest in the salt trade, since the manorial deeds of 1832 refer to him paying the rent for the salt mill which was occupied by H Higginbotham.[103] He also paid the rent for Mr Higginbottom's (sic) wife who was listed as occupying the 'Orchard', part of a substantial Wivenhoe property known as 'Burrs', which often appears in the manorial records and seems to have a longstanding association with the salt mill. This is possibly a clue to its location although it is not known if the property was still functioning as a business at this time.[104]

On the Wivenhoe Tithe Map of 1838 Smith was still listed as the owner and occupier of the House, Mill and Premises, plus the field behind the mill, known during that period as the Mill Field. He had survived at least one of the frequent accidents that befell all mills, such as the time in 1833 (reported on in the local press) when the windmill had been struck by lightning and a ten foot splinter of wood was torn from the sails.[105] In the 1839 trade directory a second miller, John Pyman,[106] is listed, who presumably is working at the second windmill, but Smith is still listed in the 1841 census, as the main occupier of 'The Mill' with his family, including two sons, John (age 25) and William (age 19) who are also listed as millers. By this time Smith 'the elder' was serving the parish as a churchwarden.[107]

In 1848 when the lease was advertised again,[108] the mill was described as 'a post-windmill driving two pairs of stones, with a round house, piggeries and sixty acres'; a substantial amount of land, confirming Smith's prosperity. By 1850, John Whitaker Pertwee[109] had taken over the tenancy and was now described as the 'miller', although Smith was still listed in the trade directory for that year as working in association with Pertwee, as 'malster and brewer'. He may have decided to lease the mill and concentrate on what he may have seen as the more lucrative trade; the 1851 census lists eight inns and taverns and a number of beer-houses in Wivenhoe. The same census confirms that Pertwee, a bachelor aged twenty-four, was in residence at the Mill House. Smith's second son, William, who had by now abandoned working as a miller and was listed with the interesting occupation of an artist in musical intonation, was also present at the Mill House at the time of the census.

By 1855,[110] when Smith was aged sixty-four, his eldest son, John Smith 'the younger' had taken over the role of 'brewer and malster' from his father, while Robert Beckwith, who was described as a 'farmer and miller', managed the mill. Four years later the mill had diversified its activities, and by 1859, with its two pairs of French stones was now operating a well-established flour and bread trade.[111] A deed of covenant on conditional surrender dated January 1859, suggests that Smith 'the elder', while still the copyhold tenant for the mill,[112] had been leasing the mill to other tenants, while retaining an overall interest. The 1859 deed refers to a transaction between Smith 'the copyhold tenant'[113] and 'Benjamin Page Grimsey of Ipswich in the County of Suffolk', whereby he surrenders 'out of Court according to the custom of the said manor' and in consideration of £300

paid to him by Benjamin Grimsey, the parcel of land consisting of about three quarters of an acre, together with the mill house and windmill, which had formerly been in his occupation, and then in Robert Beckwith's and currently in the occupation of his son, John Smith, 'the younger'. The remaining quarter of an acre had been sold to the Burial Board for the parish of Wivenhoe for use as a cemetery on the east side of Belle Vue Road.

One month later, at a property auction held at the Anchor Inn, in February 1859, the tenancy of the mill, described as currently being in the occupation of a tenant whose tenancy expired at Michaelmas last, was up for renewal and a substantial auction of land which appears to be part of the previously advertised sixty acres of property attached to the mill was also up for sale. By now the mill was described as a 'A Capital post Windmill with Roundhouse, Buildings including Bake Office, Ten Bushel Oven, Granary Counting House, Stable, Cartlodge and Piggery, Complete with a Substantial Brick and Slated Residence'.'[114] There seems to have been some wheeling and dealing as the mill premises were bought for £490 by Cooper of Messrs Daniell and Cooper, brewers, who at the same seemed to be divesting themselves of the Maltings, which they had owned up to that point, and in which John Smith also appears to have had an interest. This was for sale at the same auction described as a valuable freehold business premises, comprising a 'Malting, 10 quarter steep,[115] with Barley and Malt Chambers above, Brewhouse (sic), Stores, Stable, Chaise House, Piggeries', a large yard complete with a 'roomy and convenient dwelling house ... fitted up with every convenience for a respectable family'. Most of the other parcels of land auctioned off in 1859 (many of which fronted onto the Brightlingsea Road), were described as plots of land suitable for building purposes, and it was also noted that at least two of these had a good supply of brick earth 'conveniently situated for carrying on the brick trade'. Two other parcels of land, one described as a valuable piece of land now used as a market garden, and the other described as a 'productive kitchen garden' were purchased by John Smith 'junior', now referred to as a miller and a porter merchant in the 1859 trade directory. Whether the money for this was raised from the mortgage agreement made with Benjamin Page Grimsey is unclear, but both John Smith 'junior' and his sister, Mary Maria were forced to surrender certain copyhold hereditaments, including the Maltings Office, to Grimsey a few years later when they failed to keep up the mortgage repayments. The property was eventually bought by the local builder John Eade, who pulled it down *c.* 1866 and sold the land on for building plots.[116]

By the 1861 census, Smith 'the elder', aged seventy-one, now widowed, and described as a retired miller, was living in Wivenhoe High Street with his unmarried daughter, Mary Maria and his son, William who by now was described as a 'Professor of Music'. Joseph Francis, described in the same census as miller and baker, was now in residence at the mill, presumably having taken over the lease following the 1859 auction. Smith 'the younger' was also now living in the High Street, aged forty-five, with his wife, Thirza and young family. He was again described as a malster and porter merchant, but he cannot have maintained his involvement with the malting industry in Wivenhoe for long after the Maltings Office was sold, and by 1871 he had moved with his family to Barking.

The second windmill continued to operate under Daniell and Cooper's ownership, with Joseph Francis, as the miller for at least two years, from 1862 onward. He was succeeded by Joseph Balls, who was listed as the miller in 1866 and 1867. The mill must have continued to prosper as according to the Vestry Minutes for St Mary's Church in February 1865, Balls was chosen as a Constable of the Parish and his name was included in a 'List of Substantial Householders' delivered to the Justices of the Peace with the suggestion that he should be thereby appointed as one of the Overseers of the Poor. This position was also taken over by a relative, James Balls (sic), who was cited as the 'miller' from 1866–1867.[117]

At some point in the late nineteenth century a steam mill complemented the second windmill on the same site. This was quite a common step for rural millers to take, since from 1850 they were facing increasing competition from steam-powered town mills which used roller mills, a Hungarian invention, which were more effective at producing whiter flour than the traditional mill stones. It has not been possible to ascertain the exact date when the steam mill first appeared, and the situation is also complicated by the fact that when Charles Mortlock, the miller who eventually took over the running of the second mill site *c.* 1874, is first listed as residing in Wivenhoe in 1871, the records state that he is living in the High Street. A reference in some recently discovered local deeds suggests that he was then leasing a 'freehold messuage with steam flour mill and premises formerly a Malting situate in High Street, Wivenhoe' which as previously mentioned had been purchased from Benjamin Page Grimsey in 1864.[118]

This seems unlikely, but if this reference is correct it raises the possibility that a steam flour mill may have been operating at the site of the Maltings for some time in the mid-nineteenth century. However, there is no reference to a steam mill at either the Mill site or the Maltings site in the previously mentioned deeds of 1859 so it must have been constructed after this time and before the former Maltings premises were resold in 1871, but no other evidence has been found to confirm its existence. This may be supported by the fact that the Mill House at the corner of Belle Vue Road and Rectory Road was reportedly 'uninhabited' at the time of the 1871 census. It is possible that it was following the sale of the High Street property in November 1871 that Charles Mortlock moved to the Mill House where he proceeded to modernise the second windmill site by the addition of a steam mill.

Certainly by the time of the 1881 census Charles Mortlock (by now described as a baker and miller) was firmly in residence at the Mill House at the corner of

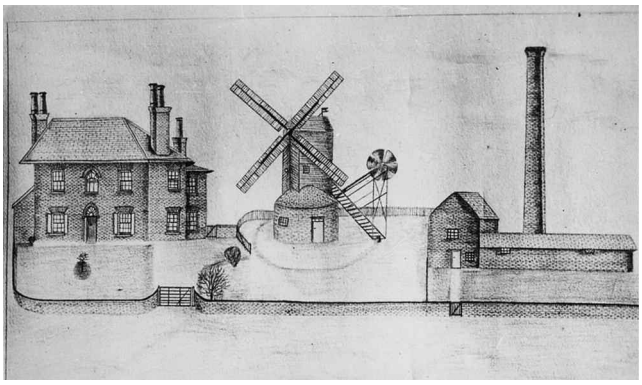

Fig. 2 An artist's impression of Wivenhoe Mill prior to the fire (reproduced by courtesy of Essex Record Office)

Plate 1 The Mill House, Wivenhoe. Photograph reproduced by courtesy of the author

Belle Vue Road. From that time on, he and successive members of his family remained in occupation until the nineteen-thirties. The windmill continued to suffer from occasional disasters and in November 1882 it caught fire,[119] destroying all but the roundhouse, although the steam mill survived (Fig. 2).

The steam mill continued to function through the turn of the century. In the 1886 to 1902 trade directories, the mill is described as 'water' but this is clearly an error and actually refers to the steam mill. Charles Mortlock died in 1887,[120] but his widow carried on the business until the First World War when her sons, Charles William and Albert Edward Mortlock took her place, just as John Smith's sons, at first, had followed in their father's footsteps. The 'Mill Field' itself (the northern half of the 'Great Mill Field' of the 1771 plan), took on a new lease of life at about this time and was used for sports and recreational purposes, cricket matches,[121] firework displays,[122] and other public events. During the First World War the Mortlock family billeted 99 soldiers on the Mill Field[123] and a regimental sports day was held there on 29 April, 1915.[124] According to Bill Eborn (pers. com.), one of the twentieth-century occupants of the Mill House, Dora Sparling, the grandaughter of Charles Mortlock also continued with the business until her health deteriorated and she was no longer able to manage the heavy work of moving sacks of grain.

Mills generally, went into a decline at this time, because of the shortage and high price of materials and because many of the skilled millers and millwrights who were able to maintain and repair the mills failed to return from the war.[125] The Wivenhoe steam mill continued to operate but must have undergone further changes, because from 1914 onward it was described as an 'oil' mill in Kelly's Trade Directory. This must have referred to the means of powering the mill, almost certainly by a version of the solid injection oil engine[126] which was invented in the late nineteenth century and patented by Herbert Akroyd Stuart and Charles Richard Binney in 1890.

The mill was still producing grain during the inter-war years and into the 1940s, but its owners must have found it difficult to continue after the deprivations of yet another war. This was a common occurrence and the number of rural mills still working by wind alone, for example, was reduced from about three hundred and fifty in 1919 to fifty by 1946.[127] Eventually, following a decision that the mill was no longer a viable enterprise, the mill buildings were demolished to make way for new housing and Dora Sparling, the last Wivenhoe miller, retired to the bungalow that she had built on the site of the old windmill. The Mill House (Plate 1), still stands on the corner of Bellevue and Rectory Road.

Conclusion

This research was undertaken to try and recover the 'lost' history of the Wivenhoe mill. It developed from a shorter study of the history of the Brook in Wivenhoe which uncovered some intriguing references to a 'Wivenhoe' mill. This led to a closer study of some local and national maps and plans from the eighteenth and nineteenth centuries. It soon became obvious, as a colleague remarked, that 'something more was here': that something was the watermill, and from there this present investigation commenced.

There is a strong oral tradition in Wivenhoe, but most local residents are completely unaware that there was a watermill on the Brook until the last quarter of the seventeenth century, and that it stood on the site that was later referred to as Bobbitts Hole. This is surprising because the site remained virtually untouched until the 1960s. Bobbitts Hole *is* remembered by older residents, but only as a wonderful place for children to play – 'we spent a lovely lot of time there, picnicking. And there was a garden with apple trees and a brook, and the Brook was lovely, we used to paddle in it and we used to catch frogs and put them in our mugs and then let them hop'.[128] Nor do they know that the watermill was succeeded by the first windmill, erected high on the sloping sides of the valley on what is now Dene Park estate, to catch the strong east wind. It is just remembered as a tremendous place in winter – 'where the ground goes right the way down to the Brook and that was magnificent when the snow was about. Everybody in Wivenhoe made a sledge'.[129]

Only the existence of the second windmill and steam mill next to the 1816 Mill House at the corner of Belle Vue Road and Rectory Road, which operated until the mid-1940s, is recalled. Sue Kerr (pers. com.), for instance, who was born in 1934, remembers grain and animal feed being run to the mill in a pony and trap, 'there was a long, low series of barns which smelled lovely of grain and flour – just a wonderful countryside smell. I used to stand on the scales to keep a check on my health and growth. They were huge – huge sacks of grain could be weighed on them'.[130]

Apart from this the memory of the Wivenhoe mills lives on only in the mill associated names that are still used in the town. When new housing was built in the late 1960s and early 1970s, 'Bobbitts Way' was one of the names chosen for a road that ran close to where the old mill had stood. The mill fields themselves had long ago been amalgamated and subdivided to form new fields, which in their turn were submerged under successive housing developments. In 1981 Millfields School was opened in the vicinity[131] but few people will be aware of the real history of the Wivenhoe mills that gave the school its name. It is hoped that this paper has helped to fill a gap in Wivenhoe's local history and that it will remind people of the part the mills played in the social and economic development of the town.

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Particular thanks to Diane Clarke, Bill Eborn, Sue Glasspool, Peter Kay, Ben Marsden, John Stewart, Chris Thornton, Geoff Wood and the Essex Record Office, who all made it possible in various ways to produce this article.

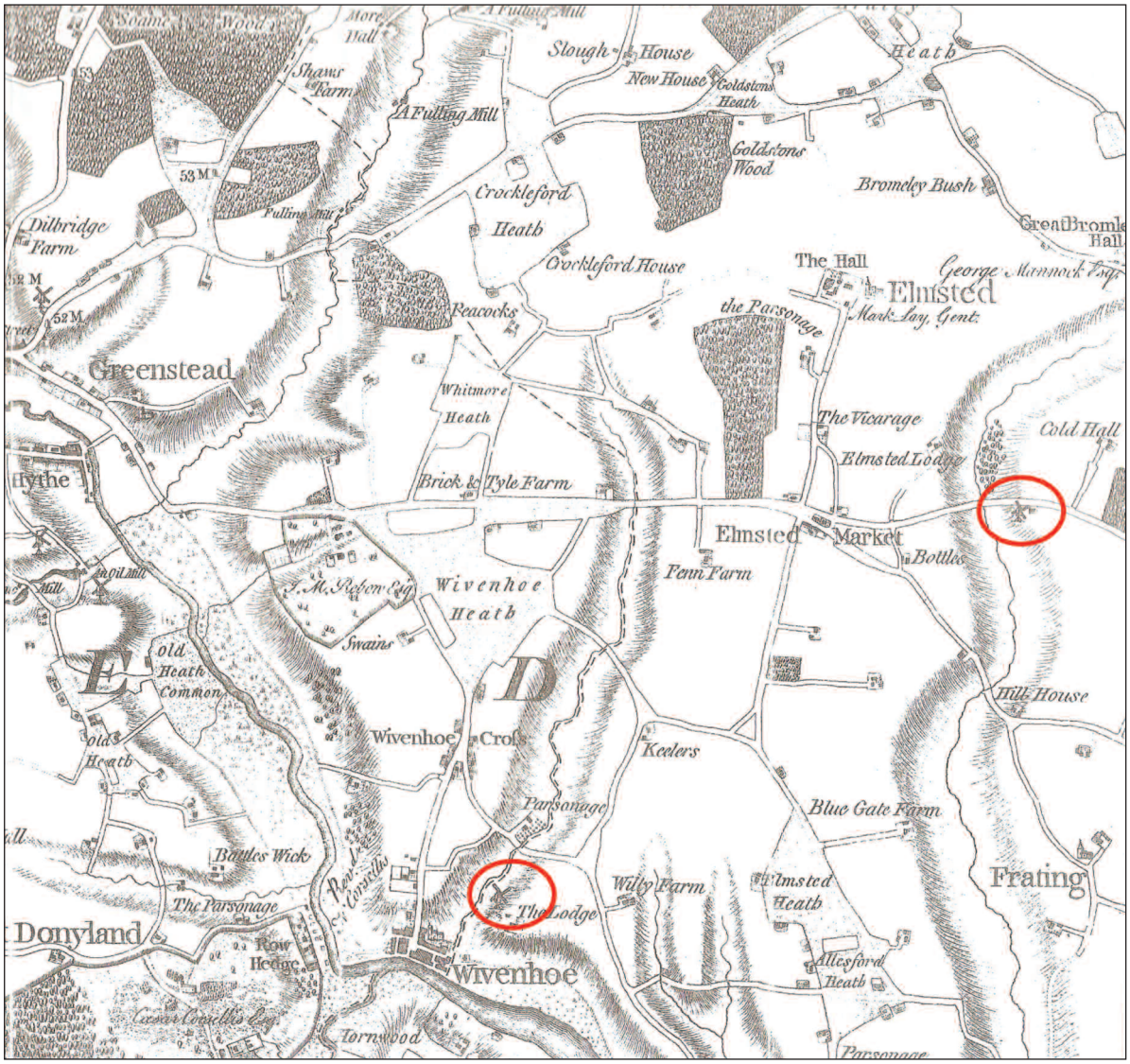
Author: Pat Marsden, 26 Queens Road, Wivenhoe, Essex, CO7 9JH.

Notes

1. N. Butler, *The Story of Wivenhoe*, Wivenhoe 1989.
2. V.C.H. *Essex*, X. 284–285.
3. V.C.H. *Essex*, IX. 259–264.
4. H. Benham, *Some Essex Water Mills*, Colchester 1983.
5. R. Wailes, 'Essex Windmills', *Transactions* 31 1958, 153–180.
6. K. G. Farries, *Windmills, Millers and Millwrights*, 5, Weston-super-Mare 1988.
7. O. Wikander 'Archaeological evidence for early water-mills', *History of Technology*, 10, 1985, 155–6, 163–4.
8. R. Holt, *The Mills of Mediaeval England*, Oxford 1988, 3.
9. It is usually assumed that the Domesday records are correct but as Holt remarks 'the likelihood of some degree of error has to be admitted', Holt, 107.

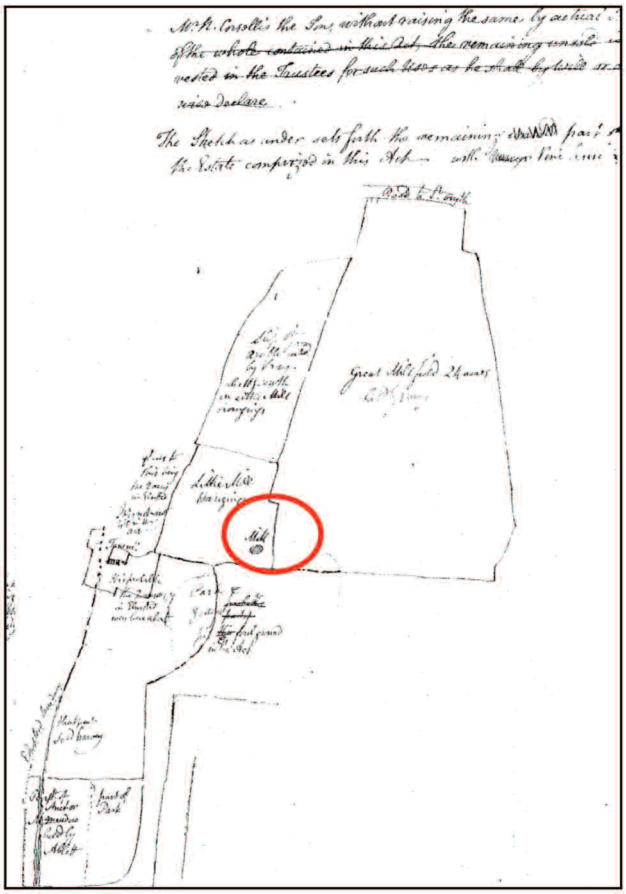
Maps

Map 1 Ogilby & Morgan map of 1678 (reproduced by courtesy of Essex Record Office)
This map shows the Wivenhoe windmill encircled above, situated on the Elmstead side of the parish boundary.



Map 2 Chapman & André 1777 (reproduced by kind permission of Phillimore & Co. Ltd, Chichester, West Sussex)
This extract from the map shows the first Wivenhoe windmill, and the 1660 Elmstead windmill in the vicinity of Cold Hall Farm, both encircled above. It also shows the three fulling mills on Salary Brook to the west which formed part of the parish boundary between and Greenstead.

10. In 1204 the Sheriff of Essex granted the Lexden Hundred to Ralph Gernon, and this grant was confirmed to Ralph and his heirs in 1207. The manorial estate changed hands frequently in the Middle Ages and was acquired by the de Vere family, Earls of Oxford, by marriage in 1425, V.C.H. *Essex*, X. 5.
11. A. Williams & G. H. Martin (eds), *The Domesday Book, A Complete Translation*, London, 2002, 1005.
12. Ibid, 1436.
13. *The Domesday Book*, 1019.
14. V.C.H. *Essex*, X. 277.
15. Ibid, 284.
16. The manorial system was in wide use by the time of Domesday.
17. Holt, 108.
18. The deer park, for instance, recorded in 1427, which seems to have been in the south-east of the parish, extended into Cockaynes in Elmstead, Essex Record Office (ERO) D/DBm M507.
19. V. Clarke, *Essex River Colne: its Tributaries and Creeks*, Halstead 1991, 17.
20. This is the Brook which originated on the former Wivenhoe Heath at the northern side of the present day Elmstead Road. It still runs (although much of it has now been culverted away beneath modern housing developments) down the whole of the eastern side of Wivenhoe to the Pump House on Queens Road and then out via Brook Street to the river marshes, *see* detailed article on the Brook at http://queensroadresidentswivenhoe.blogspot.com/
21. V.C.H. *Essex*, X. 284.
22. Nicholas Butler says that he was told that Bobbitts Hole was owned by William Bartlett and this was how one young member of the Bartlett family tried to say the name 'Robert', Butler, 356.
23. Letter of 25.09.1871, ERO, D/P 277/8/2.
24. Essex County Council, SMR 2641, map reference TM043238.
25. ERO, D/DRg 1/18.
26. ERO, Q/SR 261/28,29.
27. ERO, D/DHt/F45. The mill is situated in the vicinity of Tenpenny Brook, as it runs under the Bromley Road leading out of Elmstead, on its way down to Thorrington. In modern maps we can also see that both Mill Meadow and a Mill Farm are indicated in the vicinity, Clarke, 23.
28. Benham, 2.
29. As shown on the Chapman and André Map of 1777.



Map 3 One of two very faint rough sketches attached to Nicholas Corsellis's Deed of transfer of 1771 (reproduced by courtesy of Essex Record Office)

Map 4 Plan attached to Deeds of Wivenhoe House 1811-65 (reproduced by courtesy of Essex Record Office)

These two maps show the position of the first Wivenhoe windmill encircled above, in the vicinity of the later Ballast Quay Farm (*Map 5*). The rectangular building which is indicated to the west of the windmill on the site of the original mill house on *Map 3* is by this time marked as 'Tenements'. *Map 3* also shows some of the substantial acreage of fields in the vicinity of the mill, i.e. Great Mill Hangings; Little Mill Hangings, the Great Mill Field, etc. Note the unusually shaped long field on both maps which has a rectangular piece taken out of the top north-west segment. This helped to identify the position of both the watermill and the first windmill.

30. Benham, 13.
31. Ibid, 11.
32. Holt, 45.
33. Benham, 13.
34. Ibid, 11.
35. Holt, 118–9.
36. M. Watts, *Watermills*, Princes Risborough 2006, 52–3
37. Benham, 13
38. Ibid, 13
39. With particular thanks to Dr Chrisopher Thornton for searching out the original V.C.H. notes for this elusive record, National Archives (formerly Public Record Office), C136/82/7.
40. ERO, D/DU 65/72A, 24.
41. Wherever this is referred to it is not to be confused with Wivenhoe Park, to the north of the town (where the University of Essex now sits). This land was purchased by the Rebow family in 1734 and the house was built and the park laid out from 1759 onward, ERO, D/DHt B1.
42. ERO, D/DCM M8.
43. ERO, D/DAc 386.
44. Edmund de Vere, 17th Earl of Oxford, was licensed to sell the manors of Wivenhoe, Battleswich and Great Bentley to Roger Townshend in 1587 and the manor of Wivenhoe was sold by his family, in 1657, to Nicholas Corsellis.
45. ERO, D/DU 318/1.
46. ERO, D/DK/T94.
47. ERO, D/DA M4.
48. ERO, D/DA M4.
49. ERO, D/DA M4.
50. Thomas Clarke, 1612 (D/ACW 6/213); Geoffrey Buntinge, 1617 (D/ACW 8/75); Geo. Bryhte, 1618 (Q/SR 221/47, 48); Jeffrey Buntinge, 1620 (National Archives, PROB 11/135); William Pears, 1670 Q/SR 423/105).
51. Benham, 21.
52. Ibid, 21.
53. ERO D/DA M4.
54. V.C.H. *Essex*, 10. 276.
55. ERO, D/DU 27/1.
56. ERO, T/M 374/1.
57. ERO, D/DU 457/13.
58. 30.08.1866 and 21.09.1871, ERO, D/P 277/8/2.
59. Ibid, 98, 103.
60. Holt, 144.
61. ERO, D/P 277/1/1

Map 5 Reproduced from the 1874 Ordnance Survey (1:2,500) (First Edition) © Crown copyright. This map shows the site of what is believed to be the watermill at what is now Nos 36, and 38 Valley Road (encircled), the first windmill at what is now part of Dene Park Estate (encircled), and the second windmill at the corner of Belle Vue and Rectory Road (also encircled). The old mill house (Bobbitts Hole) is conspicuous on the eastern side of the Brook and the plot marked 246 is the site of the 'Mill Garden' occupied by the earliest named John Smith in 1799. This map is used as it clearly shows the relevant sites, which are built over by new housing in contemporary maps. Note the unusually shaped field which also appears on *Maps 3* and *4*.

62. D/DBY,10
63. There is another reference in the Wivenhoe Minute Book of 1742–1756 to a request to the court of the Lord of the manor 'to take down a windmill from his copyhold ... in Wivenhoe Street' at the Angel Tavern in April 1751 but no other documentary or cartographic reference to either this mill or this tavern has yet been found, ERO, D/DEt/M12.
64. ERO, D/DU 457/13.
65. There were five generations of the Corsellis family in the parish, Butler, 42.

66. Ibid, 27.
67. ERO, D/DU 225/10.
68. ERO, D/DU 457/13.
69. *Ipswich Journal*, 14.03.1772.
70. R. Thurston Hopkins, *Old Watermills and Windmills*, n.d., 17, and R. Wailes, 'Removals', *The English Windmill*, London, 1954, 168–173.
71. Lighter worsted cloth did not require fulling, but the heavier woollen cloth did, Benham, 21.
72. In an item referring to early textile production in Manchester it is suggested that the 'Hanging Ditch' is thought to have been named after the practice of hanging cloth out to dry by fullers, 'History and Heritage of Manchester', www.manchester2002–uk.com/history/history1.html. Benham also somewhat obliquely, refers to 'hanging' in a fulling connection, Benham, 76, 103.
73. Watts, 43.
74. OED definition refers to 'A steep slope or declivity of a hill'
75. ERO, D/DEt/M10, 256.
76. D/DBm M508.
77. H. Benham, 100.
78. ERO, D/A BR 28, 43.
79. Situated on the west side of Butt Road in Colchester, 'Colchester: Mills', V.C.H. *Essex*, IX, 263.
80. *Chelmsford Chronicle*. 14.3.1794
81. Wailes, 1954, 29.
82. ERO, D/P 277/1/20.
83. ERO, D/P 277/1/20.
84. ERO, T/M 374/1.
85. A.F.J. Brown, *Prosperity and Poverty: Rural Essex 1700–1815*, Chelmsford, 1996, 174.
86. Ibid, 68–9.
87. Ibid, 163
88. Cooper, may have been a member of the Cooper brewing family who later became involved with the mill.
89. Farries, 99.
90. Ibid, 100.
91. *Ipswich Journal*, 10.09.1810.
92. T. Wright, *History and Topography of the County of Essex*, 1836, quoted by Butler, 92.
93. ERO, D/DE1 T173.
94. The Court Baron was the principal type of manorial court, and was the court of the chief tenants of the manor.
95. V.C.H. *Essex*, X. 285
96. C. & J. Greenwood, *North Sheet*, D/DU 35/105.
97. Malt could be milled to produce a fine mixture of flour and husks before moving on to be mashed as part of the brewing process.
98. P. Kay, *Wivenhoe Pubs*, Wivenhoe 2003, 7.
99. *Pigot's & Co's London & Provincial New Commercial Directory, 1826–7*.
100. Diane Clarke, the present owner of the Mill House, says that beer used to be served to the public through a side window of Mill House, which looked out onto Rectory Hill.
101. W. White, *History, Gazetteer and Directory of the County of Essex, 1848*.
102. Smith is often listed twice, both as a 'corn miller' under the general section of each trade directory and again as 'maltster' under the 'Grocers' section.
103. D/DBm M508.
104. D/DBm 509.
105. *Essex Standard*, 29.06.1833.
106. *Pigot's Trade Directory* for 1839.
107. ERO, Q/SBb 543/70.
108. *Essex Standard*, 04.02.1848.
109. *Kelly's Trade Directory*, 1850.
110. *Kelly's Trade Directory*, 1855.
111. Farries, 100.
112. ERO, D/DEI T173.
113. Copyhold tenure was a form of landholding peculiar to manors. Copyhold tenants were restricted in what they could do with their land and needed permission from the manorial court to inherit, sell, sublet, buy or mortgage their copyhold property. The land was held by copy of the court roll, http://www.nationalarchives.gov.uk.
114. ERO, B1925; Essex Standard, 04.02.1859.
115. A vessel where barley is soaked in cold water and allowed to germinate.
116. Abstract of the Title deeds of Mrs Elizabeth Eade, drawn up in 1879 by Howard Inglis & Keeling of Colchester.
117. ERO, D/P 277/8/2.
118. Deed of Conveyance beween Mrs Elizabeth Eade and Mr J S Barnes dated 1 November 1879.
119. *Essex Standard*, 18.11.1882.
120. D. Barton, *Wivenhoe – Its Attractions, Pleasures and Eccentric Natives*, Colchester, 1975, 15.
121. Butler, 113.
122. Ibid, 202.
123. Barton, 67.
124. Butler, 212.
125. Wailes, 1954, 180.
126. Ibid, 179.
127. Ibid, 180.
128. P. Thompson, *Sea-Change: Wivenhoe Remembered*, Stroud 2006, 98.
129. Ibid, 103.
130. Ibid, 59.
131. Ibid, 202.

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Maps

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1825 Greenwood, C J, *Map of Essex*, North Sheet
1838 Tithe Award maps for Wivenhoe and Elmstead.
1876 Ordnance Survey 1:2.500 Map, (First Edition, surveyed 1874)

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The archaeology of a siege: *Camulodunum* reconsidered

John Mabbitt

INTRODUCTION

The late Iron-Age and early Romano-British industrial site at Sheepen is justly famous for its rich collection of artefactual and structural evidence for the period of transition between Iron-Age and Roman Britain. The archive from these excavations also offers an important opportunity to revisit Hawkes and Hull's epic achievements, published in 1947 as *Camulodunum*, and better understand the later occupation of Sheepen during the siege of Colchester in 1648.

BACKGROUND

The New Model Army's circumvallation of the town was an offensive siege work consisting, at its completion, of a series of forts and gun batteries at fairly regular intervals joined by a continuous ditch. It stretched from the River Colne at Sheepen in an arc around the southern part of the town to East Bridge, cutting off the town from supply or relief. North of the River Colne, the siegeworks were completed as large detached forts. The fullest evidence for this circumvallation is the contemporary, or near contemporary broadsheet map, held in the library of the Society of Antiquaries of London and reproduced in the *Victoria County History* (Cooper 1994, 74). This map shows the circumvallation constructed by the New Model Army in some detail, and while there are some notable errors, the overall picture presented by the map ties in with documentary sources for the siege and seems to represent a fairly accurate picture of the circumvallation during the later stages of the siege (Mabbitt 1998).

Hawkes and Hull reported archaeological evidence of the occupation of the site during the siege; these were published in the *Camulodunum* report primarily as truncations:

> '…the floor… had unfortunately been dug away for a camp-fire by the Cromwellian troops...' (Hawkes and Hull 1947, 84)

> '…the causeway was overrun by a ditch made by the Cromwellian troops encamped here in 1648, with a narrower trench branching S. from it.' (Hawkes and Hull 1947, 118)

The *Camulodunum* archive held by Colchester and Ipswich Museums consists of eight foolscap box files of notes, mostly correspondence and finds lists. There are also a few working and draft publication plans in vertical storage. No identifiable Civil War features other than the campfire and ditches described in the published report were listed in the archive. The few working plans available suggest that the field records had been comprehensive, recording modern features such as sewers, but none of the records available for study record identifiable Civil War period features as such. While there is nothing to show that substantial features or groups of features were present, the finds records include references to 'Cromwellian' material, suggesting that other features may have been observed.

The attribution of artefacts to the siege is difficult. Any post-medieval material observed could be described as 'Cromwellian', though by no means all was, and almost all of this appears to have been discarded on site, with finds records endorsed with comments including 'all Cromwellian rubbish-discarded'. Identifications of apparently military material, such as musket or pistol balls and powder flask nozzles can be fairly confidently ascribed to the siege, but the bulk of the material, consisting of pottery, clay pipe and bottles could derive from many other sources such as manuring scatters, or chance loss, even if a mid-seventeenth century date is accepted. Only a small proportion of the pottery was described beyond a sherd count, and even this is not always given. A precise quantification cannot be made, so any statistical analysis is difficult; the only way to quantify the material is by the number of records of finds. This may underestimate the quantity of finds, but at least allows proportions of materials to be compared. Without the material to hand, its identification cannot be reassessed and the confidence with which it can be ascribed to the siege is dubious.

Conversely, not all that was recovered was fully recorded on site. Three complete pots (see Cotter 2000, 218–9 for full discussion), a 'number' of lead musket balls, part of a steel cuirass and a lobster-pot helmet from the Sheepen excavations were donated by the Colchester Excavation Committee to the Colchester and Essex Museum. These items are absent from the site finds records in the archive, being recorded in the Museum accessions register for 1931 and the annual report of the Borough Muniments Committee (Hull 1932, 51–3). A second group of material, apparently from the 1932 season, including musket balls (accession number 1973.195), spurs (acc. 1973.122) and fragments of window glass and part-melted lead cames (acc. 1973.200) were retrospectively accessioned in 1973, while a spur (acc. 1973.221) and an entrenching tool

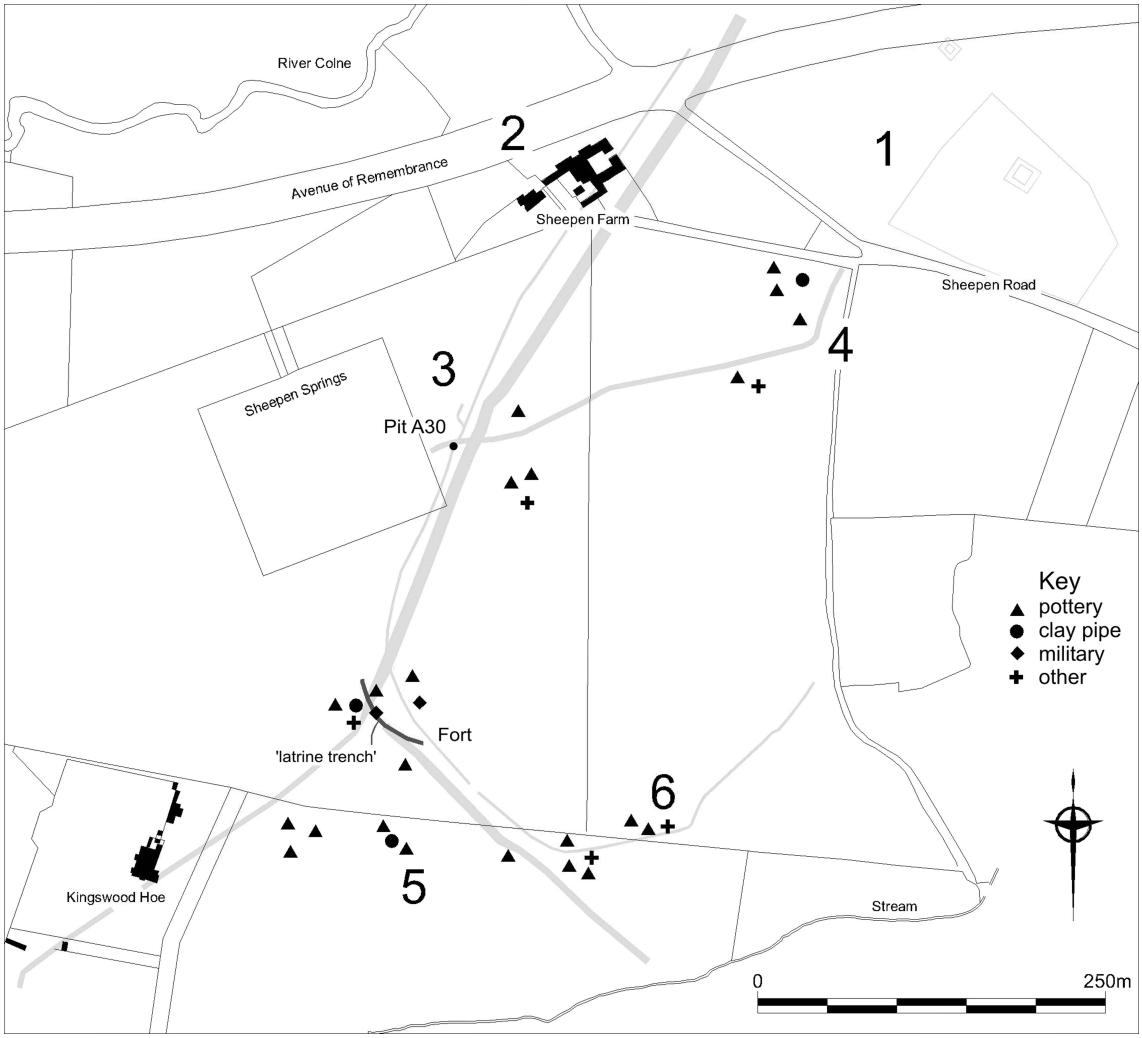

Fig. 1 Plot of individual finds records from the Camulodunim archive (after Hawkes and Hull 1947) © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

(acc. 1973.222), apparently from the excavations, were gifted to the Museum in the same year. The note 'fort' was appended to these later records in the accession, presumably in retrospect. A group of musket balls and a spur (acc. 1942.153) were recorded as coming from a 'new' sand pit. These objects appear to form the bulk of the smaller items published in the popular history of the siege published by Colchester and Essex Museum (Clarke 1975).

The locations of most finds and archaeological features, including the Roman material, were recorded as distances from a trench origin and depth from the surface. Without the original site survey drawings, the majority of the material could not be accurately located. Only around one third of the post-Roman finds could be referenced to occupation sites or to features shown on the published plans. Plotting these suggests three clusters of material (Fig. 1): around the fort site on the crest of the hill (Area G), the southern edge of Fort Field (Area Y) and on the hillside falling away to the north and east (Area L).

Area	Number of records	Percentage of total
A	46	57
C	2	2.5
F	1	1.5
G	6	7
K	7	9
L	6	7
Y	11	13.5
Z	2	2.5
Total	81	

Fig. 2 Finds by area

Despite the difficulty of quantifying this material, it is possible to group the finds by area and to compare these with the clusters described above (Fig. 2). This shows that the most productive area in terms of post-medieval material was Area A, representing over half of the material recovered. Significantly, the 'Cromwellian

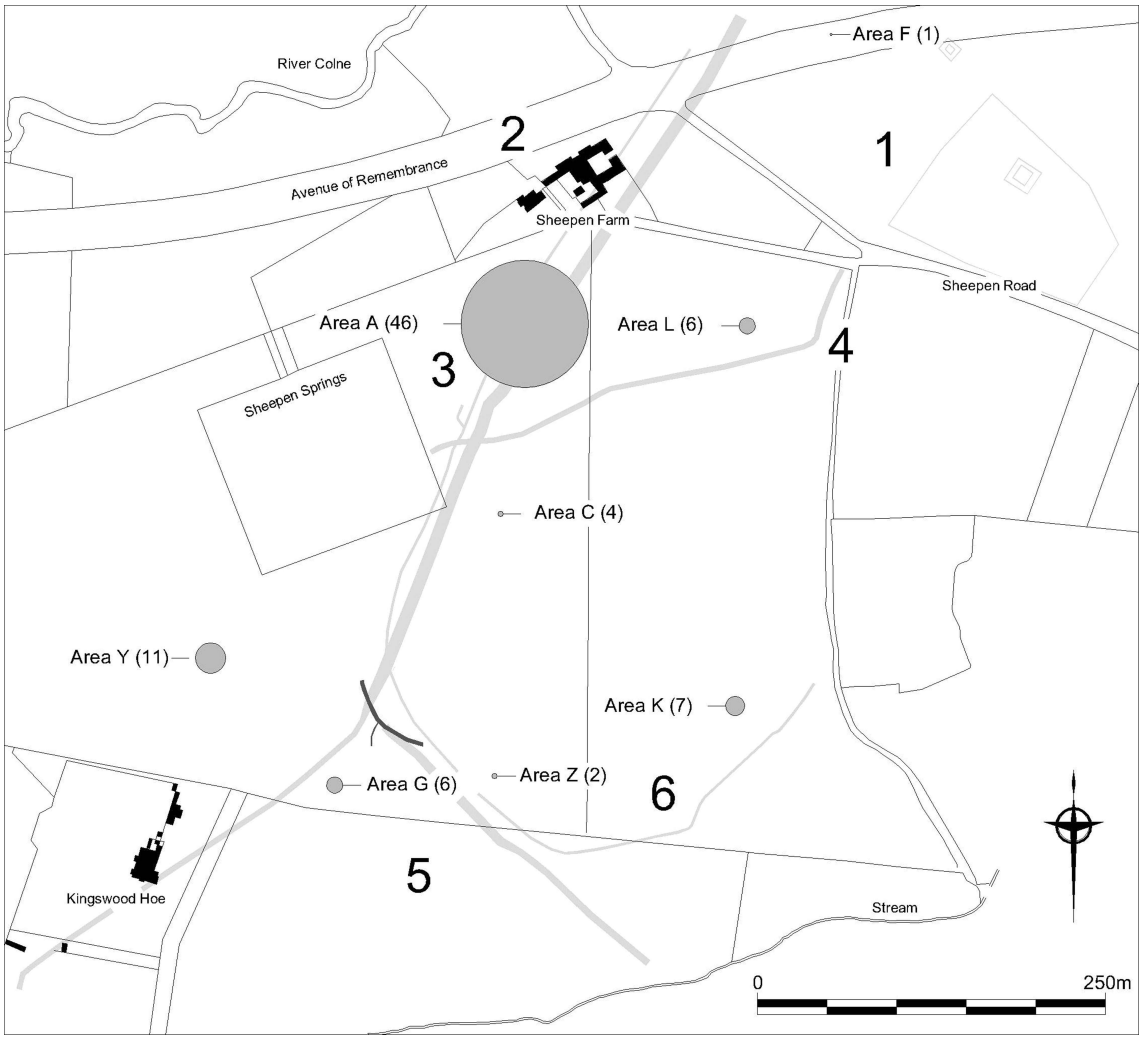

Fig. 3 Plot of finds by region (after Hawkes and Hull 1947) © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

campfire' (Hawkes and Hull 1947, 84) was observed in this area and there are records of at least twelve 'Cromwellian' potsherds, a coin and further unspecified 'Cromwellian' material being recovered from pit A30. There are also records of four lead nozzles from powder flasks from this area. The finds in this area that can be plotted represent a small fraction of the assemblage of post-medieval material that was recovered from this area. This is because the majority of post-medieval material from this part of the site was recorded by location within a trench, rather than being referenced to a specific feature.

By contrast, only around 10% of the post-medieval material was recovered from the vicinity of the fort in Area G, although this area did have the highest proportion of specifically military objects, including bullets found at a depth of 3' 6" (1.07m).

The southernmost work in the Sheepen area shown by the siege map is the four-pointed 'star fort' that can be confidently identified with the length of curved ditch published in *Camulodunum* as 'ditch of 1648' and 'latrine trench of 1648' (Hawkes and Hull 1947, 118). The form of this work with bastions to all four corners is consistent with a detached fort that was later incorporated within the circumvallation, and is possibly the fort built in the first week of the siege on the hill called 'the warren' (Carter 1650, 138; Anon. 1648). Geophysical survey work undertaken by the Colchester Archaeological Trust and the late Peter Cott in 1998 suggested that the shallow 'latrine trench' was actually the rear face of the north-west bastion of this fort. The shallow depth of this trench need not be seen as a problem; Hawkes and Hull noted severe erosion, or denudation, in this area and excavation of the circumvallation at Newark by the Royal Commission on Historic Monuments showed a relatively shallow ditch, around 1m deep (RCHM 1964, 39). The interpretation of the form of the ditch leading north from the fort (Hawkes and Hull 1947, 118) is more difficult; the published plan is not easily reconciled with the siege map, but it appears to have been the circumvallation trench extending to the north.

As Sheepen was excavated over several seasons, the dates of finds can be used to locate some of the accessioned, but otherwise unrecorded material within individual regions of the site. This approach lacks precision, but provided one significant finding. Around

half the post-medieval material, including the breastplate, helmet and group of almost complete pots was recovered during the 1931 season. The areas excavated in 1931 were Area F, the Bypass north of Sheepen Farm in Region 2 (Hawkes and Hull 1947, 70) and Area A in Region 3, on the north-facing slope (Hawkes and Hull 1947, 77; a working plan of these excavations survives in the archive). With the preponderance of material from Area A, and the apparent almost total absence of recorded post-medieval material from the foot of Sheepen Hill, confirmed by the absence of post-medieval features within the areas excavated in 1970 (Niblett 1985), Area A seems to be the most plausible location for these finds. As the largest observed feature dating from the siege here, the star fort at Sheepen has always been assumed to be the most likely source of the material in the Castle Museum (cf. Cotter 2000, 218), but this was first investigated in 1932 (Hawkes and Hull 1947, 108) and cannot be the source of this material, though it remains the probable source for the later material.

Colonel Ewer's Leaguer is shown on the siege map to the south east of a group of buildings, probably Sheepen Farm. It was probably built after Ewer's arrival at the town with the artillery train between 17 and 20 June. Its name suggests a fortified camp, and it was probably the 'Great Work at the top of the Hill' built shortly after Ewer's arrival (Rushworth 1721, 1157). The siege map location would place this work in Area L, where there was a relative absence of post-medieval material. However, just to the south west of Sheepen farm was the large concentration of post-medieval material in Area A, which occupied Great Fort Field (ERO D/CT 220A/B). The siege map does include some notable errors outside the area shown by Speed, whose map was used as its main source (Mabbitt 1998, 4–5), and this discrepancy should not be seen as too significant. While clear features associated with this work have not been observed, the concentration of excavated material suggests this as a possible location of Colonel Ewer's Leaguer.

Conclusions must remain tentative; the caution with which the evidence from this archive must be treated cannot be overstated. However, two definite conclusions can be drawn. Firstly, in that there was a clear concentration of post-medieval military material at the site of the known fort, a substantial element of the excavated material related to the siege can be shown to have related to excavated archaeological features from that period. It seems reasonable to extrapolate from this to suggest that archaeological features related to the siege may still exist in the areas where the majority of the post-medieval material was recovered, not from the published fort, but from Area A, within Great Fort Field. Whether this means that the name of the field comes from the location of Colonel Ewer's Leaguer, the 'Great Work at the top of the Hill' remains to be seen, but this remains the exciting possibility that is suggested by the records left by Hawkes and Hull.

Acknowledgements

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Author: John Mabbitt, University of Newcastle.

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Archaeology in Essex 2006

Edited by Alison Bennett and Richard Havis

This annual report, prepared at the request of the Advisory Committee for Archaeology in Essex, comprises summaries of archaeological fieldwork carried out during the year. The longevity of many projects often results in a lengthy post-excavation and publication process. The publication of these summaries therefore provides a useful guide to current archaeological research, and the opportunity to take an overview of significant advances. This year 185 projects were reported to the Historic Environment Branch, of which 125 are reported here (Fig. 1).

Sites are listed alphabetically by parish; the directors of excavations, organisations involved and information regarding the location of archives, including finds, are listed where known. Projects continuing from previous years are indicated by reference to previous summaries in the relevant 'Archaeology in Essex …. '.

Contributors are once more warmly thanked for providing information. The illustration is by: Alison Bennett

The original summaries, and any associated limited circulation reports, have been added to the Essex Historic Environment Record (EHER) held by the Historic Environment Branch, at Essex County Council, Planning Division, County Hall, Chelmsford CM1 1QH. Regarding sites in the London Boroughs of Barking and Dagenham, Havering, Newham, Redbridge, and Waltham Forest enquirers should contact the Greater London SMR, English Heritage London Region, 1 Waterhouse Square, 138–142 Holborn, London, EC1N 2ST

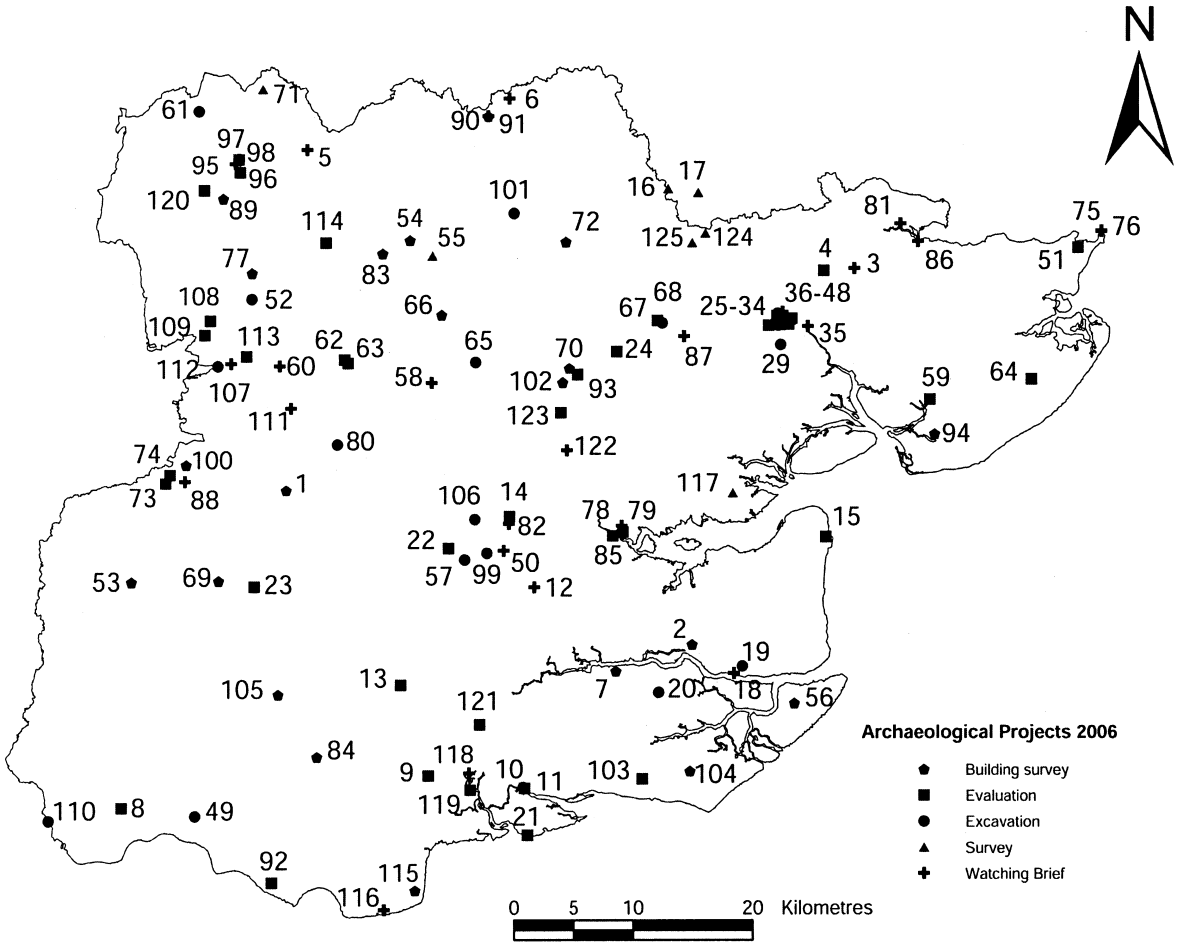

Fig. 1

PROGRESS IN ESSEX ARCHAEOLOGY

Introduction
This year the total number of summaries reported here is 125. This includes 45 evaluations and 18 excavations. There have been 21 building surveys. Fourteen projects followed on from work in previous years. This year nine projects have been carried out by local societies. Only the most significant summaries are mentioned in the following period paragraphs.

Prehistoric
At Dovercourt (51), a test pit revealed Palaeolithic artefacts and mammalian fossil fragments. Continuing work at the Beam Washlands reservoir, Dagenham (49) has revealed a probable Pleistocene channel and early Mesolithic flints from alluvial deposits. An evaluation at Wickford (121) has revealed unusual in situ Mesolithic deposits together with Mesolithic flintwork. Evidence of activity in the form of worked flint and pottery of the Mesolithic period and Bronze Age was found at Basildon (9). Neolithic pits and ditches and two Bronze Age ring ditches were found at Boreham (14). Possible later Neolithic or Early Bronze Age flints were found at Harlow (73). At Sandon (99) Late Bronze Age cremations, pits and elements of a field system were excavated. A succession of Iron Age farmsteads was excavated at Ardleigh (4). At Great Notley (65) a Late Iron Age probable farmstead was excavated, which showed continuity into the early Roman period. Iron Age/Roman salt producing sites were identified ar Bradwell (15), provisionally also at Canvey Island (21), at Battlesbridge (90) and at Vange (118). Late Iron Age/Roman features were excavated at the Sheepen site at Colchester (46).

Roman
Further work has been carried out at the site of the Roman circus in Colchester (29), revealing more features. Within Colchester town, evidence was found of Roman building foundations (26, 34), the Roman town wall (28, 43), a gateway (30), a monumental arch (31), and cremation burials (40, 49). Cremation burials were also found at Boreham (14). A pottery kiln was found at Great Dunmow (63). Features relating to a Roman villa were found at Wendens Ambo (120).

Saxon
Saxon features were found at Benfleet (10). A possible Saxon fish-trap has been found at Canvey Island (21). A possible inhumation grave was found at Saffron Waldon (95). Small finds and pottery came from Basildon (9), Boreham (14), Great Tey (67), Harlow (73) and Springfield (106).

Medieval
A later medieval possible hard for beaching boats was found at Benfleet (11). At Colchester further evidence for the house of the Crouched Friars was found (27), and a possibly medieval cobbled road surface was observed (45). Medieval features were excavated in Harwich (76). Medieval property boundaries were recorded in Maldon (85). In Saffron Walden (96) part of the inner bailey castle ditch was excavated.

Post-medieval
Evidence of a timber quay was found at the Hythe in Colchester (35). At Great Saling (66) a group of farm buildings dating from the medieval, post-medieval and the 19th century were recorded. A complete 19th-century planned farm with 18th-century elements was recorded at Greensted Green (69). At Shortgrove Hall in Newport (89) a farm put in during 18th-century landscaping of the grounds was recorded. Building recording was also carried out at St Osyth Priory (94) where post-dissolution were examined. Excavation in Stratford (110) found evidence for the former 18th-century Bow China Works.

1 Abbess Roding, outbuilding at Longbarns Cottage, School Lane (TL 5784 1094)

A. Letch, E.C.C. (F.A.U.)
An outbuilding in the grounds of Longbarns Cottage was recorded prior to conversion for residential usage. During the survey, the outbuilding was identified as a cart shed and stable that had been much altered during conversion to a garage/storage area, believed to be *c.* 1997. Its standard of décor and location close to the house, suggest it was primarily of domestic rather than farm usage, although it possibly served both functions.

Archive: E.C.C.
Report: E.C.C. (F.A.U.) Report 1665

2 Althorne, Stokes Hall (TQ 9180 9800)

A. Letch, E.C.C. (F.A.U.)
A programme of archaeological building recording was undertaken in advance of redevelopment on the late 18th century building. The report is currently in preparation.

Archive: E.C.C.

3 Ardleigh, St Mary's Chuchyard (TM 0539 2955)

B. Hillman-Crouch, E.C.C. (H.E.M.)
A watching brief was set on a soakaway which was obviously sited in the raised ground of the churchyard close to a double headstone. Connected to this was a drainage trench 400mm deep and a further trench led off to the side gate to provide piped water.

Three definite graves were identified. That of an aged woman, a younger man and an unidentified person. Disturbed remains of a child and another adult were also found.

The absence of gravestones and the absolute decomposition of the coffins and their metalwork would indicate that these were old graves. Other stones close-by dated to *c.* 1700. Likely date would be the early 18th century.

4 Ardleigh, Wick Farm (TM 0283 2939)

M. Germany, E.C.C. (F.A.U.)

Archaeological evaluation by trial-trenching of the proposed site for a reservoir extension identified five probable Iron Age sites, and medieval/post-medieval ditches. The evaluation investigated *c.* 40ha and comprised 184 trenches.

The Iron Age sites are surmised to be the likely remains of enclosed and unenclosed farmsteads. They differ in age and location and suggest an expanding and shifting pattern of settlement, beginning in the Early Iron Age and carrying on through until the late 1st/early 2nd century AD. The most notable site is Late Iron Age and is likely to comprise one or more round-houses and other associated features in a large D-shaped enclosure. Some of the Late Iron Age ditches contain large groups of pottery and other material characteristic of domestic settlement, including baked clay and charcoal.

The remains of more recent ditches overlie the Iron Age features and many of these appear to precede and be associated with the existing pattern of field division. Across the west end of the proposed reservoir, the trial-trenching found the remains of a ditched trackway, which was probably in use during the 13th to 19th centuries. The trackway ran north-south and probably linked Crown Lane and Wick Lane to the north. Further work is anticipated prior to construction commencing.

Archive: C.M.

5 Ashdon, Elm Trees, New House Lane (TL 596 395)

M. Atkinson, E.C.C. (F.A.U.)

Archaeological monitoring was undertaken on site clearance and foundation trenches for a new house on the site of a possible moated enclosure. The monitoring identified a single large medieval pit; however, the position of ditches on the site seems to indicate that this was probably a medieval moated site.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1548

6 Ashen, Claret Hall, Ovington Road (TL765 438)

A. Mundin, A.S.

The original mid 16th-century wooden built Claret Hall was destroyed by fire in the 1920's, and was then rebuilt to form the basis of the existing dwelling. The Tudor house is only known from descriptions in the 1916 RCHM Inventory. The existing dwelling dates to 1921, with the northern arm of the former moat surrounding it extending as a water-filled pond 10m wide and 3m deep. There is evidence that a southern pond was filled in only recently, and a scarp to the east of the house suggests the course of the eastern extent of the moat.

Archaeological monitoring and excavation at Claret Hall were undertaken to the north of the existing dwelling which identified four distinct phases of activity. The first of these consisted of 16th-century walls: the constructional remains of the original Claret Hall. A midden pit and its recut, located immediately to the east of the Phase 1 walls constituted Phase 2, as well as two postholes and a stakehole. The midden pits contained 17th- to 18th-century pottery and one posthole produced some 16th- to 17th-century pottery giving an overall date for Phase 2 of the 16/17th to 18th centuries. The third phase of activity consisted of an 18th- to 19th-century extension to the earlier Hall and a floor surface internal to the extension. Pottery from the floor surface dated it and the extension to the Hall to the 18th – 19th centuries. Phase 4 was representative of the reuse of the site following the destruction of the original Hall by fire in the 1920's and consisted of levelling layers and service trenches associated with the extant building.

Archive: A.S.

7 Ashingdon, Brickhouse Farm, Fambridge Road (TQ 8542 9577)

E. & B. Watkin

This investigation was undertaken to assess the remaining part of an unlisted farm complex due to be converted and rebuilt to provide domestic accommodation. The buildings on the site consisted of a barn with various attachments, a remnant of an 18th-century brick building to the west of the barn and a milking parlour to the south of the brick range. The barn is possibly from the early 18th century and has a rare stone threshing floor. The 18th-century brick building appears to only have small sections of original walling in place with modern infill, supports and roofing. The milking parlour was some one hundred years old of brick with concrete detailing.

8 Barking, 96 North Street (TQ 4405 8432)

A. Brown, A.S.

Forty-four archaeological features were identified during the excavation, which followed initial evaluation. The features have been initially sub-divided into four dated phases, but post-excavation work is continuing. Two pits and residual pottery indicated that the site had been occupied during the early medieval period but the majority of the features were sand quarry pits dated to the late medieval/post-medieval period. Three early modern features were also recorded. Twenty-one archaeological features produced no dateable finds and could not be phased.

Although sparse in nature, Phase 1 (13th to mid 14th century) activity is possibly indicative of settlement activity in the earlier medieval period. The 15th to 17th century (Phase 2) saw a shift in land-use to industrial activity, represented by the nine dated quarry pits. An additional three undated pits of similar morphology may also be associated with this period of activity. The three Phase 2 rubbish pits may also be directly associated with quarrying. Quarrying appears to have ceased by the 17th-19th century (Phase 3) and the high concentration

of CBM and a possible boundary ditch suggest the site was reoccupied around this time.

Archive: M.L.

9 Basildon, Dry Street (TQ 697 870)

H. Brooks, C.A.T.

Trial trenching on this large potential development site identified a wide range of multi-period archaeological deposits. Sporadic activity in the Neolithic period and Bronze Age was evidenced by finds of worked flint and pottery. The earliest notable features dated from the late Iron Age and illustrate the creation of a ditched rectangular field system. The small finds are suggestive of occupation in the vicinity throughout the Iron Age and Roman and into the early Saxon Period.

Archive: undecided
Report: C.A.T. Report 375

10 Benfleet, 21 High Street (TQ 7762 8601)

A. Letch, E.C.C. (F.A.U.)

Excavation at the above site prior to residential development revealed a range of archaeological deposits. In addition to cut features of Roman date, a large deposit of ceramic Roman building material was discovered. This may relate to the re-use of Roman building material in the construction of the nearby medieval church or imply a significant Roman building in the vicinity. Later cut features produced small amounts of interesting late Saxon pottery confirming activity in the area during the 10th/11th centuries.

Archive: S.M.

11 Benfleet, 75–77 High Street (TQ 778 859)

G. Priestley-Bell, A.S.E.

Excavation on the site of a former car sales plot recorded a sequence of medieval deposits. The feature of most interest was a compacted surface tentatively identified as a 'hard'. Dating from the later medieval period this would have been used for beaching boats while undergoing storage or repair.

Archive: S.M.
Report: A.S.E. Report 2491

12 Bicknacre, Priory Field (TL 785 027)

T. Ennis, E.C.C. (F.A.U.)

The hand-excavation of a foundation trench for a new footbridge across the stream forming the north-west edge of Priory Field was monitored. The field is the former site of a Priory of Augustinian canons which was founded in *c.* 1175 and ceased upon the death of the last canon in 1507.

A patchy surface of medieval tile was uncovered by the trench, finds recovered from this surface included a fragment of Tudor or 17th-century brick, the base of a 15th- or 16th-century pottery vessel and the base of a glass pedestal beaker dating to the second half of the 16th century or later. The surface may be part of a path, perhaps leading to a bridge, or possibly a deposit laid down to firm-up a boggy area next to the stream. The combination of finds suggests that the surface dates to the early post-medieval period, perhaps towards the end of the 16th century or early in the 17th. However, in the 18th century, material from the priory ruins was used in local road repair and the standing remains were incorporated into farm buildings and therefore it is feasible that the excavated tile surface was actually contemporary with these activities.

Previous summaries: Bennett & Roy 2004, 133
Archive: Ch.E.M.
Report: E.C.C. (F.A.U.) Report 1604

13 Billericay, St. Mary Magdalen (TQ 674 946)

Heritage Network

Evaluation within the church prior to new floors being installed revealed brick footings for earlier walls within the church. These may represent an earlier phase of the church or a previous building on the site. The main phase of archaeological work is yet to begin.

14 Boreham, Old Hall and Generals Farm (TL 7650 0870)

A. Robertson, E.C.C. (F.A.U.)

Archaeological evaluation consisting of seventy four trial trenches in advance of construction of an agricultural reservoir identified a range of multi-period archaeological deposits. The earliest included pits and ditches of probable Neolithic date and two ring-ditches dating from the Bronze Age. Roman remains included an unurned cremation burial and further spreads of material. The evaluation also produced evidence for Saxon and medieval activity on site and a further phase of archaeological work is anticipated prior to construction of the reservoir.

Archive: Ch.E.M.
Report: E.C.C. (F.A.U.) Report 1568

15 Bradwell Wind Farm (TM 030 070)

Foundations Archaeology

Evaluation on the site of the proposed wind farm at Bradwell identified the remains of a well preserved 'red hill' or prehistoric/Roman salt production site. On the basis of the evaluation the position of one of the proposed turbines has been re-sited in order to allow *in situ* preservation of the deposits should the development go ahead.

16 Bures, Dunstead House (TL 898 362)

J. D. & A. M. Black, C.A.G.

Magnetometry survey of part of a paddock, overlooking the River Stour, that had previously been the source of various finds of Roman origin.

17 Bures, Little Ropers Farm (TL 923 359)

J. D. & A. M. Black, C.A.G.

Magnetometry survey of part of field adjacent to farm, to find the location of the original farmhouse, revealed a magnetic anomaly that was subsequently resurveyed, using a resistance meter, by members of the Colchester Young Archaeologists Group.

18 Burnham-on-Crouch, Burnham Wick Farm (TQ 960 962)

M.A.H.G.

Excavation was restricted to eight trial trenches to determine: the nature of the rectilinear anomaly; the character of a possible ditch running north/south forming the western boundary of a potential track way or similar feature; a ditch line to the south of the rectilinear anomaly; and a large pit-like anomaly located to the south-west of the rectilinear anomaly and towards the southern end of the track-like anomaly. A small quantity of pottery sherds were found, mostly prehistoric flint-tempered fabrics. Two sherds were databale to the Middle Iron Age.

19 Burnham-on-Crouch, Warners Hall (TQ 9530 9560)

M. Pocock, E.C.C. (F.A.U.)

Archaeological monitoring during redevelopment at this site on the High Street identified a range of domestic debris including a small assemblage of late16th-/17th-century pottery but no significant archaeological features.

Archive: C.M.

20 Canewdon, St Nicholas (TQ 89 94)

B. Hillman-Crouch, E.C.C. (H.E.M.)

Improvements to the church included the addition of toilet facilities within the tower at the western end of the church. A huge septic tank was to be buried in the south-western corner of the churchyard immediately adjacent to the current western gated entrance. The hole excavated was 7m × 4m × 3.7m deep and oriented north-south.

The excavation unearthed the burial of a man encased in a wooden coffin with iron handles and ornamental studded decoration probably of the 18th century. The cellar of a house known in 1840 as Churchyard House was discovered apparently built of 18th century brick and still extant as two dwellings until at least 1922.

21 Canvey Island, Calor Gas Terminal (TQ 78 82)

R.P.S.

In addition to extensive desk based assessment with regard to this site, an initial programme of non invasive evaluation has taken place on the seaward side. Geophysical survey in the form of sidescan sonar, sub-bottom profiling and magnetometry has been used to examine the marine archaeological potential of the area of seabed likely to be affected. A total of six sites of archaeological potential were identified including two possible salterns and a potential timber fishtrap. Additionally the existence of an extensive peat layer or former (now submerged) land surface was confirmed. Geophysical survey over approximately 7 hectares of the landward study area returned 'noisy' data effectively masking the responses of any surviving *in situ* archaeological features.

22 Chelmsford, Army and Navy Public House, (TL 713 060)

K. Trott, A.S.

The evaluation here revealed two early Roman pits, one containing a disturbed cremation vessel, and also a large 'channel' or ditch and plough soils of Roman date. Medieval cultivation soils were evident and a ditch containing possibly discarded domestic material of this period was also recorded. A dark grey subsoil layer was dated to the post-medieval period and the southern bank and silted fills of the 19th-century course of the River Can or its tributary were recorded. A probable prehistoric layer, containing a single flint core and flake, represents the earliest activity at the site. No evidence for the Roman road to Heybridge which is conjectured to pass through the site was found.

Archive: Ch.E.M.
Report: A.S. Report 2063

23 Chipping Ongar, Land to rear of 73–81 High Street (TL 5518 0281)

A.O.C.

An archaeological evaluation, consisting of two trenches, was carried out on the site of proposed residential development on land to the rear of 73–81 High Street, Chipping Ongar. Only Trench 2, at the eastern end of the area, contained three features; a modern ditch and two post-medieval pits. The ditch was probably a footing for a wall and was filled with modern ballast, mortar and brick fragments. Both pits contained very ashy fills as well as post-medieval tile and animal bone. The southernmost of the pits contained 17th-century pottery while the only dating evidence retrieved from the other was residual 12th- to 13th-century pottery. Both pits were likely to have been *c.* 17th century rubbish pits for the disposal of domestic waste at the rear of the properties on the High Street. The recovery of residual medieval pottery in these pits is not surprising given the known medieval occupation of Chipping Ongar. However, no primary evidence of occupation or land-use of this date was encountered.

24 Coggeshall, 74 East Street (TL 8549 2261)

M. Pocock, E.C.C. (F.A.U.)

Trial trenching was carried out prior to a residential development at the eastern edge of medieval and post-medieval Coggeshall, and also on Roman Stane Street. Survival of the archaeological features and deposits was generally poor but the evaluation identified a medieval ditch and two pits near the East Street frontage, dating to the 12th-13th centuries. Evidence for nearby occupation

came from hearth material and charred cereals and other food remains from samples taken from the ditch and one of the pits. There was evidence suggesting flooding during the medieval period, and a pond probably infilled in the 15th-16th centuries was recorded in the south-east of the site. Plant remains from samples from all the medieval features suggest a generally damp environment.

Medieval features at the East Street frontage were truncated by a ground clearance and a levelling-up of the ground surface dated to the late 14th to 16th centuries. This was almost certainly related to a house depicted on Samuel Parsons' map of 1639, which does not appear on a later map of 1853, when the site area was shown as pasture. The only physical evidence of the house is a spread of demolition rubble and, to the rear of the frontage area, a brick-lined well constructed in the 16th or early 17th century and infilled in the late 16th to 17th centuries. A rough yard surface at the southern limit of the site is also dated to the late 16th to 17th centuries, and contained residual late medieval pottery and other artefacts, most notably a bone knife-handle. This site is important because it has identified further evidence of both medieval and post medieval Coggeshall.

Archive: Bt.M.
Report: E.C.C. (F.A.U.) Report 1516

25 Colchester, Balkerne Passage and Balkerne Gardens (TL 9928 2523)

H. Brooks, C.A.T.

This site lies immediately north-east of the Balkerne Gate, in Insulas 17a and 17b of the Roman town. In connection with the rebuilding of the Mercury Flats residential block, a watching brief was held on the excavation of two pipe trenches. These revealed a number of Roman wall lines, floors, and gravel surfaces. Later, the site of the lift-shaft pit for the new Mercury Flats building was hand-excavated. A Roman wall foundation and a gravel surface were identified. Finds were plentiful, and included a significant quantity of late Roman pottery. This shows that the Balkerne Gardens site has the potential to yield stratified late Roman deposits in the future. Although we are not yet able to reconstruct exactly the ground plans of the Roman structures (presumably town houses) which stood here, sufficient is now known to define them as parts of Buildings 208 and 209 in the numbered series of Colchester buildings.

Archive: C.M.
Report: C.A.T. Report 395

26 Colchester, Colchester Castle (TL 9988 2527)

L. Pooley, C.A.T.

A watching brief was carried out during groundworks near to the south-east corner of Colchester Castle to add a small extension to the pre-existing floodlight bunker located there. The extension measured 2.8m by 1.25m and revealed a modern topsoil layer, a post-medieval subsoil layer, a modern (2001) cable trench and a post-medieval pit. Interestingly, a small quantity of human bone was identified both unstratified and within the post-medieval subsoil layer. This bone is likely to have been disturbed from a medieval grave associated with the chapel which was located immediately to the south of the castle keep.

Archive: C.M.
Report: C.A.T. Report 397

27 Colchester, 38–40 Crouch Street (TL 9913 2495)

M. Gorniak, D. Shimmin, C.A.T.

During an archaeological evaluation at this extra-mural site, further evidence was found for the medieval house of the Crouched Friars. This included a large stone-and-mortar foundation, 0.65m below modern ground-level. An early post-medieval foundation may have resulted from the conversion of some of the friary buildings into a private residence. Surprisingly, there was no definite evidence for medieval burials, although a probable Roman inhumation was discovered at the rear of the site.

Previous summaries: Bennett 2005
Archive: C.M.
Report: C.A.T. Report 390

28 Colchester, 19 Eld Lane (TL 9977 2502)

L. Pooley, C.A.T.

A trench dug at the rear of the property showed that the remains of the Roman town wall lie at a depth of about 0.45m below the modern ground-level and that the inner face survives at a depth of 1.0m. Although only a small part of the wall could be exposed, that part appeared to be post-Roman in date, which suggests that this part of the wall was affected by the repair programme carried out in the late 14th and early 15th centuries (Crummy 2003).

Archive: C.M.
Report: C.A.T. Report 398

29 Colchester, Colchester New Garrison and Urban Village Redevelopment (TL 992 232 c)

L. Pooley, B. Holloway, P. Crummy, H. Brooks, C.A.T., R. Masefield, R.P.S.

Continuing the Colchester Garrison and Urban Village redevelopment a series of evaluations, excavations and a watching brief were carried out in association with RPS Planning Transport and Environment and on behalf of Taylor Woodrow, in 2004–6, on Areas Abbey Field, C1, C2, E, J1, O, P1, Q and S1. Each area is summarised below (including the Time Team trenches and the Alienated Land watching brief).

Abbey Field, south of Circular Road North (TL 9931 2427)

Prior to the construction of a new car park, three evaluation trenches (total of 60m long) were excavated adjacent to the Abbey Field athletics track, south of

Circular Road North. Fifteen features were identified, seven of which were modern and likely to be of military origin. The remaining eight features consisted of six ditches, one of which was a continuation of one side of a double-ditched trackway first excavated on Area J South in 2004. The trackway ditch contained Roman pottery and cremated human and animal bone.

Abbey Field sports pitches, Circular Road North (TL 9957 2454 –TL 9932 2433)
A trench 245m long and 300mm wide was excavated by contractors under archaeological supervision to lay replacement electricity cables in an older cable trench. Four archaeological features were observed. Three of these features are associated with the Roman circus previously identified on this site: the in situ remains of the southern outer cavea wall foundation and the robbed-out wall lines of the central barrier or 'spina'. The excavation of the original cable trench in 2000 had damaged the upper level of the outer wall foundation, and appears to have removed all traces of the inner cavea wall foundation.

Area C1 (TL 9960 2460)
Area C1 was a 0.32ha triangular area in the angle of the crossroads between Flagstaff Road and Napier Road, west of Flagstaff House. Three evaluation trenches totalling 74m in length and an area excavation totalling 292m^2 revealed a short section of the Roman circus found in 2004. Other archaeological activity included Late Neolithic features, three Late Iron Age/early Roman field boundary ditches, and a Roman road.

Area C2 (TL 9975 2447)
Area C2 was a 0.68ha area located within the angle of the crossroads between Napier Road and the Circular Road East, south of Flagstaff House. The area included tarmac and grassed areas, single-storey military huts and other facilities which were demolished ahead of the archaeological investigation. Two World War II air-raid bunkers located on the site were also demolished ahead of the investigation (C.A.T. Report 319). Three evaluation trenches (70m) and an area excavation totalling 1950m2 revealed a large late Roman cemetery and a short section of the remains of the Roman circus. Other archaeological activity included a single Late Neolithic pit, and a Roman droveway/track.

Area E (TL 9986 2427)
Area E was a 1.32ha area located on a sports field to the west of Mersea Road, east of Circular Road East and the Abbey Field. Four evaluation trenches (213m) revealed a series of field boundary ditches and a Roman enclosure containing a small villa/farmstead, and the remains of a post-medieval ditch possibly associated with siege works constructed during the English Civil War.

Area J1 (TL 9925 2445)
Area J1 was a 5.44ha located between Butt Road, Le Cateau Road, Circular Road North and the Cavalry Barracks. The area covers the southern half of Le Cateau Barracks, first set out in the 1860s. The original barracks building comprised a central Officers' Mess facing onto the Abbey Field, with two parallel rows of three stable blocks. Seventeen evaluation trenches (581m) and four area excavations totalling 8,565m2 revealed a large Roman cemetery (J North). J east was dominated by the remains of the Roman circus, whilst a wide Roman road and smaller droveway were located in the J south, where a much smaller burial plot was also encountered. There were also a small number of Late Bronze Age features, Roman field boundary ditches and road, and a number of modern/military features.

Area O (TL 9953 2389)
Area O was a 6.917ha area located on the S side of Circular Road South and the W side of the now-removed Ypres Road. The site previously contained the extensive buildings of Sobraon Barracks and the Military Hospital both of which were demolished in the later 20th century One 50m evaluation trench contained a single Roman field boundary ditch.

Area P1 (TL 9970 2380)
Evaluation on a site previously occupied by the Colchester Garrison married quarters revealed modern foundations in two of the three trenches. The only significant archaeological feature was an undated but probably prehistoric or Roman ditch.

Area Q (TL 996 244) Area Q was a 6.84ha area located east of Berechurch Road, approximately 400m N of Roman Barracks and immediately north of Area 10 (excavated in 2003). The land was recently in arable cultivation. Four evaluation trenches (200m) and an area excavation of approx 1 ha revealed Late Iron Age/Roman field boundary ditches, a prehistoric four-post structure, and three Roman graves.

Area S1 (TL 9978 2213)
Area S1 was a 10.27ha area located north of Berechurch Hall Road and E of the perimeter wire of Roman Barracks. Five evaluation trenches (159m in length) successfully located the ditch and rampart of Berechurch Dyke.

Time Team trenches (TL 9949 2453)
Seven trial-trenches, funded by Channel Four's Time Team programme, were dug on the edge of Area J1 East, (i.e. grounds of the Sergeants' Mess, Army Education Centre, and Garrison sports pitch) over the site of the Roman circus. The trenches totalled 49m in length. The Time Team trenches successfully located part of the walls of the Roman circus, the starting gates and the spina.

Watching brief (TL 9966 2453)
A watching brief was carried out during service works along Circular Road East, Circular Road North, Le Cateau Road, Flagstaff Road, and Napier Road. Exposed remains included three prehistoric pits, three sections of

the Roman circus (which included two sections over the outer and inner cavea walls, an entrance and part of the spina comprising a probable monument base), a single Roman burial, several medieval robber trenches, and a number of post-medieval features.

Previous reports Havis 2006, Bennett 2005, Bennett & Roy 2004,137.
Archive: C.M.
Reports: C.A.T. Reports 358, 361, 393, 403

30 Colchester, Head Street to Southway (TL 9940 2510)

D. Shimmin, C.A.T.

During the digging of a BT cable trench from Head Street to Southway, the central pier of the south-west gate into the Roman town was uncovered close to the modern surface. Other Roman and later remains in the trench included foundations, road metalling and pits.

Archive: C.M.
Report: C.A.T. Report 394

31 Colchester, rear of 95–96 High Street (TL 9987 2524)

H. Brooks and D. Shimmin, C.A.T.

This site is in insula 22 of the Roman town, and straddles the line of the arcade on the south precinct wall of the Temple of Claudius, close to the presumed position of its central gateway. A trench on the north edge of the vacant plot at 96 High Street revealed Roman masonry (5.7m wide north-south) at 2.0m below modern ground. The depth below modern ground and the flat top of the exposed masonry suggest that the trench position actually coincided with the passageway through the centre of the gateway. There was some damage to the north edge of the masonry, and the modern nature of the deposits sealing the Roman masonry suggests that the excavated layers may simply be the soils tipped back into Rex Hull's 1931 excavation trench (Hull 1955, 1958). It is possible that one of the excavated soil layers is part of the Norman bank built over the top of the partially-demolished Roman arcade when Colchester Castle's earthworks were being created. It is speculated that the west side of the Roman gate arch should survive west of the trench position and very close to modern ground-level (under the road known as Crowther's Entry). It is not certain whether the east side of the gate survives. The south face of the foundation was uncovered in a second evaluation later in the year.

Archive: C.M.
Report: C.A.T. Reports 360 and 380

32 Colchester, 107 High Street (TL 9980 2524)

K. Orr, C.A.T.

Six trial holes/boreholes were dug in and around the exterior of the Conservative Club as part of a structural investigation which confirmed that the building overlies the fill of the castle bailey ditch (which was causing subsidence). At its deepest point, the ditch was approximately 5.25m deep. A profile of the ditch was constructed using the borehole data.

Archive: C.M.
Report: C.A.T. Report 386

33 Colchester, south of 136–137 High Street (TL 9962 2522)

L. Pooley, C.A.T.

A trench, 3.75m long, 2.5m wide and 1.4–1.5m deep, was dug in advance of the construction of a new toilet block outside Angel Court, High Street. The area had been disturbed by many modern service trenches, but two medieval/post-medieval features were identified. These were part of a floor/path and a cut feature of uncertain type. It is possible that both of these features are associated with the remains of the now-demolished St Runwald's church (which used to stand to the south of this point).

Archive: C.M.
Report: C.A.T. Report 396

34 Colchester, Central Clinic, High Street (TM 0002 2532)

H. Brooks, C.A.T.

The site lies in Insulas 23 and 24 of the Roman town, and part of it is scheduled (Essex SAM 1). An evaluation by six trenches showed that the north-south-running gravel street separating Insulas 23 and 24 was well preserved on the north side of the site, but heavily truncated on the south side. As was expected in the Roman town, there were Roman structures on either side of the street (presumably town-houses). The remains of these included three wall lines, patches of tessellated and mortar floors, and areas of gravelling (yards or paths). The Roman remains were heavily truncated by post-medieval and modern pits and service trenches, especially on the south side of the present clinic buildings.

Archive: C.M.
Report: C.A.T. Report 372

35 Colchester, 28 Hythe Quay (TM 0150 2472)

K. Orr, C.A.T.

The site occupies the possible location of the medieval quay. Four test-pits were machine-dug next to the quay retaining wall, mainly dug through rubble containing 18th- to early 19th-century bricks and post-medieval pottery. From the base of the first test-pit, a timber stake was retrieved. Modern metal tie-rods fixed into large concrete structures were exposed in three of the test-pits. A large timber located at the base one of the concrete structures is possibly part of an earlier post-medieval timber quay. Estuarine clay was reached at 1.2m and

2.8m below ground-level in two of the test-pits. There was no evidence of Roman or medieval activity.
Archive: C.M.
Report: C.A.T. Report 388

36 Colchester, 11 Maldon Road (TL 9913 2487)

H. Brooks, C.A.T.

The site lies to the south-west of the Roman and medieval town, in the area of extensive Roman cemeteries, and also close to the precinct of the Crouched Friars friary (*CAR* **9**, 245–57). Eighteen Roman burials and the remains of a Roman building were found 40m north of this site in 1971 (*ibid.*, 237–44). An evaluation trench in the garden to the rear of the property revealed 0.8m-1.0m of post-medieval topsoils sealing three post-medieval pits, the largest of which may have been a quarry-pit. Roman pottery and tile was found in a residual context in later features, but there was no evidence of Roman burials (presumably because of destruction caused by the post-medieval quarrying).

Archive: C.M.
Report: C.A.T. Report 359

37 Colchester, 71 North Station Road (TL 9935 2589)

K. Orr, C.A.T.

A limited watching brief on a rear extension to the former Globe Hotel should have exposed the robbed-out Roman walls of a building previously seen in an evaluation in 2003, but they were not seen. Finds were limited to one piece of Roman painted wall-plaster.

Archive: C.M.
Report: C.A.T. Report 355

38 Colchester, Osborne Street/St Botolph's Street (TL 9988 2488)

D. Shimmin, C.A.T.

This evaluation is part of a long-term fieldwork programme prompted by a need to assess the archaeological implications of the proposed Vineyard Gate regeneration scheme. An evaluation on the EDF Energy site at the at the junction of Osborne Street and St Botolph's Street revealed significant deposits of medieval and later date, including foundations and a wood-lined drain. Roman remains probably survive in the northern half of the site, but were below the depth to which it was possible to excavate. However, a quantity of Roman finds was recovered in later levels as residual material.

Archive: C.M.
Report: C.A.T. Report 378

39 Colchester, 3 Oxford Road (TL 9883 2486)

C. Crossan, C.A.T.

The site lies approximately 0.5km to the south-west of the walled Roman town, on the projected course of the major Roman approach road to the Balkerne Gate. An evaluation in the garden of the property revealed Roman road metalling and adjacent structural features with indications of several phases of early activity. The investigation was too limited to establish the function of the structures, but possible interpretations include roadside houses, workshops and monuments.

Archive: C.M.
Report: C.A.T. Report 362

40 Colchester, Park Road (TL 982 248)

T. Ennis, E.C.C. (F.A.U.)

An archaeological evaluation was carried out ahead of redevelopment of a site lying on the western outskirts of the Roman *colonia*. Eight evaluation trenches were excavated across a 2.1ha area of which 0.95ha was currently accessible.

Two Roman cremation burials were excavated in the south of the area investigated. One burial, dated to the later 2nd century, was well-preserved and consisted of a large jar covered by an upturned dish. The second burial was probably contemporary and comprised the lower half of a large jar truncated in antiquity. Two large east-west aligned ditches and a smaller northwest-southeast aligned ditch may also date to the Roman period.

Two post-medieval or later ditches corresponded with a field boundary depicted on the 1st edition Ordnance Survey map. Other linear features and a raised area in the north-east of the property could be attributed to landscaping and garden activities during associated with the late 19th century Altnacealgach House.

Archive: C.M.

41 Colchester, 1–3 Queen Street (TL 9995 2522)

M. Gorniak, C.A.T.

This property is currently the Colchester Visitor Centre. A watching brief was maintained on nine trenches excavated by the building contractor. In places, the works provided very limited exposures of the remains of a substantial but robbed-out Roman wall, and Roman demolition debris.

Unfortunately, the archaeological investigation was very restricted, making it difficult to draw firm conclusions about the structural development of the standing building. However, its fabric shows No. 1 to be a late 18th-century, red-brick two-storey house with attic. Nothing appears to survive above ground of its predecessor. No.2 is also mainly a rebuilt red-brick edifice of the late 18th century. However, there is evidence indicating a late medieval origin, and showing that this house was once part of No.3. The southern part of the Visitor Centre (No.3) was erected in the 15th or possibly early 16th century. Originally it was a three-storied, jettied, half-timbered building with a narrow carriage archway at its southern end. A large red-brick chimney was inserted into Nos. 2 and 3 in the early 17th century.

Archive: C.M.
Report: C.A.T. Report 376

42 Colchester, Queen Street (TM 0007 2507) and former Bus Park (TL 9995 2514)

K. Orr, C.A.T.

Monitoring on a sewer trench in the southern part of the former Bus Park and on three test-pits dug for a bus shelter in Queen Street revealed a layer of late Roman demolition or robbing debris. In the test-pits in Queen Street, the Roman levels were sealed by 1m of modern material, with no intervening post-Roman layers. None of the groundworks were deep enough to expose Roman foundations (which should be present here).

Archive C.M.
Report: C.A.T. Report 385

43 Colchester, Roman town wall at Roman Road (TM 0017 2538)

M. Gorniak, C. Lister, K. Orr, C.A.T.

This project included detailed archaeological drawing of the upstanding north-eastern section of Colchester's Roman town wall, and the excavation of two trial-holes at the exterior of the wall to the east of Roman Road. The work was commissioned by Colchester Museums in advance of a programme of conservation of the wall, which is a scheduled ancient monument. The trial-holes confirmed that survival of the foundations varies. Where they have not been robbed away, the foundations extend up to 2.1m or so from the existing exterior face of the wall and are in a sound state of preservation. Above ground, the survival of the wall is very patchy. Up to 2.4m width of the wall has been lost and nothing of the original exterior facing of the wall survives, only the core. The majority of what is standing has been refaced in brick or stone or completely rebuilt in brick.

Archive: C.M.
Report: C.A.T. Report 356

44 Colchester, 8 St Botolph's Street (TL 99870 24965)

B. Holloway, C.A.T.

This is one of a series recent exploratory trenches in the Vineyard Gate area of Colchester. The site lies 55m S of Colchester's Roman and medieval town wall. A small exploratory trench in the rear yard of the property revealed a gravel surface at a depth of 1.3m. The date of the surface is uncertain but it may be associated with similar material, thought to be Roman, previously noted in an evaluation at nearby Arthur Street (C.A.T. Report 269). The surface had been cut on its northern edge by a post-medieval feature.

Archive: C.M.
Report: C.A.T. Report 364

45 Colchester, St John's Street and Crouch Street (TL 9932 2496–TL 9990 2490)

K. Orr, C.A.T.

This site lies to the south of the Roman walled town. A trench for a replacement gas-main was machine-excavated (typically 1.0m-1.7m deep) from Stanwell Street, up St John's Street and as far along the old Odeon cinema on Crouch Street. Below 1m of modern fill, the soil contained a very small amount of residual Roman pottery and tile. The only feature observed was a section of cobbled surface 0.9m below ground-level, outside 26a St John's Street. This is assumed to be the old (possibly medieval) road surface of St John's Street. Outside the old Odeon cinema and beneath 1.7m of backfill, a dark brown clay silt with brick and tile fragments sealed a cobbled surface at 0.9m below ground-level. Underneath the surface was 700mm of dark brown clay silt with tile fragments and occasional oyster shell. Like the cobbled surface recorded in St John's Street, this may be a remnant of a medieval road surface.

Archive: C.M.
Report: C.A.T. Report 354

46 Colchester, Colchester Institute car parks, Sheepen Road (TL 989 256).

K. Orr, C.A.T.

The seven-hectare Colchester Institute site is located to the north of Colchester town centre and on the eastern edge of the Late Iron Age and Roman site at Sheepen. Six evaluation trenches were excavated at the staff and student car-parks prior to the redevelopment of the site. Fifteen cut features, principally quarry pits and ditches dating from the Late Iron Age to the 1st century and the later Roman period, were identified. A spread of Roman pottery and building material indicate the site of a Roman building nearby, although no structural features were present. Some of the features were within the date range of the pre-conquest phase of the Sheepen site (c AD 5–43) and could be considered to be part of the pre-Roman site. These are significant because no definitely pre-conquest features have previously been recorded from the Sheepen site.

A later evaluation by nine further evaluation trenches revealed a network of Late Iron Age to 1st-century AD features typical of activity on the Sheepen site. These included pits and ditches, a possible burial, a likely floor and wall to a building, a trackway and a possible continuation of the Sheepen underground aqueduct. In some of the eastern trenches archaeological features were buried under more than a metre of hillwash.

Archive: C.M.
Reports: C.A.T. Reports 368, 382

47 Colchester, St Helena School, Sheepen Road (TL 9895 2580)

K. Orr, C.A.T.

Excavation and monitoring of the foundation trench for an

extension to the drama block revealed pits, ditches and a gully all dating from circa AD 5–60, sealed by between 600 mm and 750mm of topsoil. The type of pottery and the presence of animal bone, slag, daub and Roman tile suggest domestic and industrial use similar to that identified as a result of the previous investigations at Sheepen.

Archive: C.M.
Report: C.A.T. Report 384

48 Colchester, Colchester High School, 17 Wellesley Road (TL 9901 2481)

K. Orr, C.A.T.

This site lies to the south-west of the Roman town, in the Roman cemetery area. Excavation of footings trenches for a new extension suggests that this was an open area used for rubbish-disposal in the Roman period. There was one possible Roman inhumation burial, and the discovery of burial pots in later deposits suggests that there were other burials here. Several patches of gravel may be metalling for a Roman trackway. A watching brief was subsequently carried out after the extension was built, but no further archaeological features were observed.

Previous summaries: Havis 2006
Archive: C.M.
Report: C.A.T. Report 373

49 Dagenham, Beam Washlands (TQ 502 836)

B. Ford, O.A.

In July and August 2006, Oxford Archaeology continued a 'strip, map and sample' excavation at Beam Washlands reservoir, Dagenham on behalf of Halcrow Group Ltd. The Phase 2 area measured 14,033 square metres and was located south-east of the Phase I area excavated in 2005.

Alluvial deposits alongside the Wantz stream yielded worked flints of early mesolithic date. This alluvium lay sandwiched between a layer of peat and the natural silty clays. Enclosure ditches in the far south east of the area may represent field boundaries related to the Roman-period rural settlement identified to the north-west in the Phase 1 excavations. A Roman cremation cemetery was identified, comprising 13 cremation burials of both urned and unurned type. Several of these contained copper alloy or iron items, possibly including brooches. The previously identified post-medieval ditch defining the edge of the stream was revealed along the western and southern extent of the site. Many pits and postholes were uncovered, but a lack of finds meant that most of these remained undated.

A further phase of fieldwork was carried out in October and November, which comprised three elements: a strip, map and sample excavation along the northern edge of the Phase 2 area, which revealed pits associated with the landscaping of grounds of the modern hospital; a trench dug to mitigate the effects of creation of a pond adjoining the south-eastern corner of the Phase 2 area, in which the northern edge of an earlier, probably Pleistocene, channel was identified; and a watching brief conducted during the creation of two further ponds, though no archaeological finds or features were observed.

Previous summaries: Havis 2006
Archive: M.L.

50 Danbury, St. Cleres Hall Quarry (TL 760 058)

Phoenix Archaeology

Monitoring of topsoil strip prior to extraction revealed a single, well preserved Romano-British kiln. The kiln contained a number of vessels from its last firing probably around 1800 years ago. Some of the vessel types were very unusual and are the subject of ongoing study and analysis.

Archive: Ch.E.M.

51 Dovercourt, Spring Meadow School (TM 241 313)

D. Bridgeland

Three test pits were excavated in an area originally known as Gants Pit, a rich source of Palaeolithich artefacts, handaxes and mammal fossils (Wymer 1999). One test pit showed evidence of a buried soil overlying an *in situ* gravel with a number of artefacts and mammalian fossil fragments. Silty/clayey sand in another test pit was strongly suggestive of an estuarine environment.

52 Elsenham Quarry (TL 550 270)

T.V.A.S.

Excavations carried out at Elsenham quarry have revealed archaeology ranging from the prehistoric to Roman period. Evidence of prehistoric activity has been found including 10 cremation burials, prehistoric gullies and ditches indicative of a settlement. The settlement is situated on higher ground on top of a ridge which slope downwards towards the centre of the development area where little activity has been identified.

A Roman settlement, comprises a series of complex ditch systems defined by an outer ditch was found on a second ridge. Two isolated inhumations were revealed probably associated with the settlement. Prehistoric occupation comprising a possible roundhouse and associated pits was also found inside the enclosed settlement area. This is likely to indicate a continuation of occupation of this site.

53 Epping, Bury Farm, Bury Lane (TL 4490 0320)

A. Letch, E.C.C. (F.A.U.)

Recording of a late 18th/early 19th century planned farm complex was undertaken prior to residential conversion. The buildings comprised an early 18th-century barn and U-shaped group of ranges open to the south-east to the north of the grade II listed 15th-century farmhouse. The site has Saxon origins as the location of 'Epping Bury.'

The earliest structure was the barn, originally built single-aisled with a possible porch lean-to on the rear (1838 tithe map). In the mid-late 19th-century this was replaced with a second aisle. Framing comprises a significant amount of reused timbers from a 15th-century aisled barn, medieval hall house, and perhaps other medieval structures. Queen post trusses, primary braced framing and brick plinth wall are all contemporary with the original build. The early 19th-century animal ranges are arranged in an inverted U-shape, open to the south-east and incorporating reused queen post roof trusses. Large areas of primary braced walling were rebuilt in the modern period when the ranges were converted to stables. This action either removed or obscured earlier fixtures and fittings. Bury Farm is an early example of a planned Essex farm, whose owners, the Copped Hall estate in Epping, were able to use their wealth to 'improve' their farmstead in lines with high farming ideals in the early 19th century. Although not a model farm as such, the layout of cattle ranges set around a central yard open southwards was an established form that was built onto throughout the Victorian period. It was not until the middle and later parts of the century that the planned farm became widespread in Essex.

54 Finchingfield, Little Winsey Farm (TL 682 319)

A. Letch, E.C.C. (F.A.U.)

Building recording was undertaken at Little Winceys Farm which was reputedly established in 1780 with the building of a timber-framed barn/granary and farmhouse. It may have been associated with the site known as Great Wincey to the west of the farm, a former house with medieval origins set within a moat. In the middle part of the 19th-century the farm was improved and timber-framed animal sheds and houses built around an enclosed yard already established by the main, 18th-century, structures. A first floor was added to the granary and numerous other structures built that were demolished some time ago. In the 20th-century, the shelter shed was converted to stables and then to piggeries, when large scale pig-rearing and battery hen housing was introduced in the post-war period. Extra sheds were added for up to 8,000 pigs. The farm closed in 1991. The farm is typical of many improved Essex farmsteads where existing agricultural structures were incorporated into a new courtyard layout with the introduction of cattle-rearing in the mid 19th-century. Unlike many, the barn/granary has an exact build date of 1780 which will be a important benchmark in future surveys of late 18th-century structures.

55 Finchingfield, Kell Field, Petches Yew Farm (TL 7006 3060)

C. Lister, C.A.T.

A metal-detecting survey was carried out prior to the removal of topsoil ahead of the construction of a proposed reservoir. The site was systematically surveyed, with all archaeological material plotted with a Total Station. The survey recovered abundant quantities of modern material, which was discarded on site, as well as fifteen items of potential archaeological interest. These included six lead objects, six iron objects and three coins, of which one is Roman. This last find is in keeping with the overall Roman character of the site, the rest of the material detected from the topsoil is not. It should be noted that, as this survey was limited to the topsoil only, other archaeological finds may still be present within the subsoil.

Previous summaries: Havis 2006
Archive Bt.M.
Report: C.A.T. Report 392

56 Foulness, Rectory (TR 0037 9310)

B. Crump, F.C.A.S.

Investigation was carried out of a brick structure on an east-west alignment at the northern side of the Rectory. This appeared to be a water cistern that would have been used to supply water to the kitchen, which is located on the north side of the rectory. The cistern was recorded and the Rectory, in order to identify the phases of development on this site. The cistern dates to the first quarter of the 18th century. The kitchen is known to date from 1793, when it was rebuilt. The current rectory itself fits into the first phase of brick building on Foulness from the late 17th to early 18th centuries, and dates from 1846.

57 Great Baddow, 16 High Street (TL 7273 0504)

T. Ennis, E.C.C. (F.A.U.)

Excavation prior to residential development recorded a number of archaeological features, none of which could be dated with certainty. However, a small amount of Roman building material was recovered which attests to Roman occupation in the near vicinity.

Archive: Ch.E.M.
Report: E.C.C. (F.A.U.) Report 1591

58 Great Bardfield to Shalford Green, Anglian Water pipeline (TL 6997 3103 – 7128 2707)

K. Orr, C.A.T.

Archaeological monitoring and limited excavation along the line of a 5.25km water-main replacement pipeline running from near Petches Bridge (Great Bardfield Parish) to Shalford Green (NW of Braintree) produced evidence for Late Bronze Age, Roman, medieval and post-medieval activity including a Roman burial, a kiln producing Hedingham ware pottery from the earlier 13th to earlier 14th century, and a medieval stock-pen was recorded. Also, archaeological evidence from the central southern part of the pipeline in Shalford Parish corresponded with cartographic evidence for the now-vanished hamlet known as 'Park End'.

Archive: Bt.M.
Report: C.A.T. Report 374

59 Great Bentley, Dead Lane (TM 117 186)

H. Brooks, C.A.T.

An evaluation on the site of the new West Clacton reservoir and pumping station revealed an area of prehistoric and Roman occupation dating from the Middle Iron Age to the Roman period (not necessarily continuously), which is probably marginal to cropmark sites to the east and west. Later, a field system defined by medieval and post-medieval ditches was laid out over the site. There is no strong evidence for medieval or later settlement here, and an origin for both the finds and the ditches may be found in the farms and areas of settlement to the west and north of the site.

Archive: C.M.

60 Great Canfield, The Hall (TL 593 178)

M. Germany, E.C.C. (F.A.U.)

Archaeological monitoring was undertaken on a new conservatory at The Hall, as it lies within the Scheduled Monument area of Canfield Motte and Bailey. The Hall itself is a timber-framed manor house dating to the late 16th century. No archaeological features were identified however, pottery of early to mid 13th century was recovered.

61 Great Chesterford, All Saints Church (TL 5058 4276)

M. Germany, E.C.C. (F.A.U.)

Excavations on a church extension uncovered a masonry wall of medieval date. The wall stood 0.2 metres high and 0.8m wide comprising of stone and flint nodules in a lime mortar. The position of the wall and its east west alignment suggests it was part of the north wall of the north aisle preceding the collapse/demolition of this part of the church in *c.* 1400. The excavations were important because they have provided an insight into the layout of the church prior to the fifteenth century.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1672

62 Great Dunmow, Saracen's Head (TL 6271 2193)

A. Letch, E.C.C. (F.A.U.)

Archaeological monitoring was carried out on groundworks adjacent to the Saracen's Head Hotel. Previous trial-trenching had recorded stratified medieval and post-medieval cess and rubbish pits sealed beneath up to 1.0m of overburden. However, discussions with the developers resulted in alterations to the construction technique to allow the majority of the archaeological deposits to be preserved *in situ*. The majority of the foundation trenches did not penetrate to medieval levels, but three features originally identified in the evaluation; a medieval rubbish pit and two post-medieval cess pits were impacted on. These features would have been located in the building plots behind nos. 10–16 High Street, which still includes listed buildings dating to the 15th and 18th centuries. Medieval features and deposits, as identified in the evaluation trenching, survive largely intact beneath the new building, with disturbance from deep piling estimated at less than 4% of its total area.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1693

63 Great Dunmow, 83 High Street (TL 6300 2165)

P. Weston, A.S.

Three trial trenches and a small open area excavation centred on Trench 2 revealed five pits, three postholes, one ditch, a pottery kiln with a surviving flue and one feature of unknown function. Dating evidence indicated three phases of activity: Romano-British, medieval and modern. Phase 1 features dated to the 2nd-4th century and comprised the pottery kiln, indicative of an industrial site located on the periphery of the small Roman town. Two pits and a ditch are assigned to Phase 2 and date to the 12th-14th century. These probably represent back land features associated with roadside occupation as the medieval market town developed along the High Street. Two pits were of modern date and a pit and three postholes remain undated.

Archive: A.S., to go to S.W.M.
Report: A.S. Report 2099

64 Great Holland, Pork Lane (TM 202 203)

H. Brooks, C.A.T.

An evaluation by seven trial-trenches on the site of the new East Clacton reservoir and pumping station revealed four ditches, two pits and four natural features. Although the features are undated, the fills and alignment of the ditches suggest a post-medieval or modern origin. One of the pits may be of a similar date.

Archive: C.M.
Report: C.A.T. Report 402

65 Great Notley, Skyline 120 Business Park (TL 7366 2171)

B. Holloway, C.A.T.

An excavation of 0.68 ha identified an enclosure, probably a farmstead, which was established in the Late Iron Age and enlarged by the addition of an outer ditch in the later 1st or early 2nd century AD. The farmstead probably continued in use into the 2nd century AD, when its east side was cut by a ditch on a different alignment. This probably indicates that the settlement had been abandoned by that time, and the land given over to agricultural or pastoral farming. Subsequent subdivision of the landscape is suggested by the field boundary ditch which must be at least post 2nd century AD (but probably later) cut at right-angles to the 2nd century Roman field ditch. Finds other that pottery were not plentiful, but the presence of loomweights, briquetage and structural clay suggest a domestic settlement based on an agricultural economy. Heavy plough damage probably accounts for the absence of any identifiable

structures apart from a few pits and post holes, the latter probably forming parts of fence lines.

Previous summaries: Havis 2006
Archive: Bt.M.
Report: C.A.T. Report 367

66 Great Saling, Piccotts Farm barn and outbuildings, Piccotts Lane (TL 7083 2567)

A. Letch, E.C.C. (F.A.U.)

Building recording was undertaken at Piccotts Farm which retains a large Grade II* listed medieval barn and Grade II post-medieval animal byre alongside 19th-century cart and shelter sheds. The barn is aisled with a crown post roof and dates to *c.* 1440. Some repairs were made in the post-medieval period, but otherwise the barn has not been structurally altered. The byre is dated between 1550 and 1600 and may have been built initially as an oxhouse, which is a rarity. At the time of the survey, the byre and sheds were being converted or rebuilt for residential usage.

The barn formed the centrepiece to the Piccotts estate which in the 15th-century comprised approximately 300 acres. It has a sturdy oak frame and panels of wattle and daub, low catslide roofs over the aisles and diamond mullioned windows to both the bays and gable ends. The timbers were plastered over when repairs were carried out to the aisle roofs and some of the bay walls; a time when timber-framing was out of fashion. At another stage, possibly during the 19th-century improvement phase, plaster was exchanged for weatherboarding. The fate of the byre was similar.

The built group represents developments in farming from the medieval to 19th-century periods. The barn was built to accommodate the harvest from the estate. Although there are several famous examples in Essex, barns dating to the medieval period are rare in the country as a whole. Archaeological monitoring was undertaken on underpinning works and during the excavation service trenches. No important archaeological remains were found, apart from an unprovenanced 19th-century brick wall footing.

67 Great Tey, Tey Brook Farm (TL 893 250 and TL 890 246)

W. J. Mallinson, C.A.G.

Earlier work on this site had indicated the presence of a BA ring ditch, within the perimeter of which were 14 urned and unurned cremation burials. A linear ditch which cut the southern quadrant had been identified as of Roman date.

Removal of a large mound of top-soil which had covered part the northern half of the ring ditch enabled complete excavation of the ring ditch. No further features were found. Further excavation of the Roman ditch yielded significant quantities of Saxon pottery from the upper fill.

Aerial photography had revealed the presence of a trapezoidal crop mark on this site. Two evaluation trenches were dug over 2 of the four linear anomalies. These trenches established the existence of two V shaped ditches that pottery finds date to the Middle Iron Age, and which form part of an enclosure approx 0.16 ha. in area.

Previous summaries: Bennett 2005
Archive: C.M.
Report: C.A.G. Bulletin 46 2006

68 Great Tey, Warren's Farm (TL 889 252)

W. J. Mallinson, J. D. & A. M. Black, C.A.G.

Crop marking, and earlier excavations have identified a three track Roman road running north from the A120, and traceable to a point south of the above point. Attempts to trace the continuation of the road by magnetometry and excavations have so far proved inconclusive. A series of surfaces, containing large quantities of Roman building materials have been uncovered at various levels, but none have been conclusively identified as road surfaces. Work continues.

Previous summaries: Bennett 2005

69 Greensted Green, Little Thorbens, Toot Hill Road (TL 5220 0330)

A. Letch, E.C.C. (F.A.U.)

A complete 19th-century planned cattle farm containing probable 18th-century elements was recorded prior to residential conversion. Based on the enclosed courtyard plan, the group contains open shelter sheds to the south-west side and loose boxes, stores and possible stables to the north-west site. The group stand opposite Little Thorbens, a Grade II Listed 16th-century cross-wing house.

The enclosed group replaced an earlier L-shaped farm layout, partially adopted in the new plan form. A former shelter shed, adapted in the 19th-century, remains virtually intact from this phase alongside parts of a second structure, which appears to contain thick primary-braced wall framing and reused timbers from the early phase. Construction of the 19th-century buildings is typical and largely uniform, in standard machine-sawn primary-braced timber. Apart from some modern roof rebuilding, little has changed from the original built form, except, in a parallel to the past, one of the later shelter sheds was enclosed in the 20th-century to form a workshop. Apart from a feeding trough, few fixtures and fittings remain.

Little Thorbens is an unusual and significant Essex farm for several reasons. Firstly, its 19th-century vernacular form has been retained as a small agrarian group and not been added to, except for some rebuilding to the roofs. Secondly, it is rare in a county with good agricultural land to find a farm dedicated to livestock rather than mixed usage in the 19th-century. In terms of trends in agriculture, however, it fits into the 19th-century movement for planned 'improvement' in Essex in the middle to later part of the 19th-century.

70 Halstead, Greensted Green Farm (TL 815 212)

A. Padfield

This barn was recorded in response to a planning condition and comprises farm buildings dating from the 16th century through to the 20th century. A full historic building analysis is due in early 2007.

71 Hadstock, Banton Meadow (TL 559 446)

GSB Prospection/Hadstock Society

Magnetic survey has established that the ditch identified during the first phase of geophysical work runs the whole width of the present field. At the northern end, which is near the church, there are suggestions of settlement type responses. However, they are highly fragmented and that may be the result of ploughing. Two candidates have been found for the in filled ditches in the west part of the field, although few anomalies of archaeological interest are apparent in the area between them. Three broad responses have been found that may be linked to the soil marks, but there is no evidence that they are definitively associated with any of the anomalies with archaeological potential.

72 Halstead, The Howe (TL 8122 3178)

A. Letch, E.C.C. (F.A.U.)

A historic building survey was undertaken on stables and outbuildings at The Howe, an early 19th-century (*c.* 1825) Grade II listed mansion house built on the site of Howe Farm, of which little is known. The survey followed a planning application by the owners to convert the south-west wing of the stable and all of the attached outbuildings to residential use, while repairing and retaining the main block and north-west wing of the stables for use by the house. Thus the standards for recording were set differently depending on the extent to which the built elements were subject to alteration: a RCHME Level 2–3 record of the areas to be converted and a Level 1 photographic record of the areas to be retained.

The stables were built to a high quality of design and architectural display contemporary with the house. Their structure is heavily influenced by Classical design and proportion, with a two-storey pedimented main block with dovecote and single-story wings either side. Unusually for such a structure, it is built from coursed flint rubble with brick dressings, originally beneath a lime render. Inside, original features of the stables remain; principally the stalls, exhibiting a high standard of architectural embellishment.

73 Harlow, Gilden Way (TL 4815 1225)

T. Haines, O.A.

In August 2006, Oxford Archaeology carried out an archaeological field evaluation on land off Gilden Way, Harlow, Essex on behalf of CgMs Consulting. Flints recovered during the evaluation may indicate later Neolithic/Early Bronze Age activity, although no features of this date were observed in any of the trenches. Further possible evidence for Bronze Age activity came with a single ditch fill containing flint-tempered wares, although this pottery may date to the early Iron Age. The central and eastern parts of the investigation area, where extensive trackways and enclosures were uncovered, provided the main focus of activity dating from the later Iron Age to late Roman period. Although no Saxon features could be determined from the results of this evaluation, the presence of Saxon pottery in areas of Roman activity may indicate continuity of occupation or land use. Medieval activity related to agricultural division of the land.

Archive: H.M.

74 Harlow, Mulberry Green House, Old Harlow (TL 4779 1152)

A. Robertson, E.C.C. (F.A.U.)

An archaeological evaluation, consisting of four trenches, was carried out to the rear of Mulberry Green House. Only two archaeological features were identified, both of which were probably Victorian in date. A deep pit, uncovered on the western edge of the development, with post-medieval brick and pottery at its base was probably a planting hole, with material placed to aid drainage. The second feature was located in a trench on the eastern edge of the development and was part of a planting bed; the fill of which contained a high humic content, suggesting that the soil had been improved. Both of the features were probably related to the garden of Mulberry Green House, dating to the 18th century.

Archive: H.M.
Report: E.C.C. (F.A.U.) Report 1584

75 Harwich, 57 Church Street (TM 2606 3264)

K. Orr, C.A.T.

A watching brief was carried out during the excavation of two footings trenches at the rear of this 16th-century building. This showed that the foundation of the southern wall was 750mm deep and made of septaria chips set into lime mortar and clay. Beneath the foundation was a possible occupation layer pre-dating the current building.

Archive: C.M.
Report: C.A.T. Report 389

76 Harwich, 43–44 Kings Head Street (TM 2606 3267)

T. Ennis, E.C.C. (F.A.U.)

Archaeological monitoring was carried out at the site of a residential development, eight sample sections were recorded within the footprint of the new building and one at the rear of the development area.

A build-up of deposits 2m in depth was recorded from the top of the present road surface down to natural yellow sand. Although, little dating evidence was recovered it is likely that the bottom 1.5m of deposits may have been of medieval date. Further medieval stratigraphic sequences of between 0.4m and 1m in

thickness were recorded throughout the new building footprint. Two pits and two layers dating to the 13th to 14th century were recorded. Evidence of internal occupation surfaces were revealed towards the front of the property and a garden soil containing 14th- to 15th-century pottery was identified to the rear. Undated septaria surfaces on the Kings Head Street frontage may represent previous road surfaces. Thick deposits of redeposited sand were recorded that may have been deliberately dumped to raise the ground surface, an occurrence previously recorded at previous excavations in Church Street. Some smaller deposits of sand may have resulted from episodes of flooding.

Archive: C.M.
Report: E.C.C. (F.A.U.) Report 1597

77 Henham, Henham Lodge Barns (TL 5501 2917)

P. Weston, A.S.
Building recording and trial trenching was undertaken in advance of the conversion of a series of farm buildings to residential use. East Anglia was of major international importance in the development of the 'Victorian High Farming tradition' when new ideas culminated in significant alterations in the design and layouts of buildings and thus it is important to record these buildings before their conversion. Trial trenching was undertaken as Roman material is recorded from the farm. No archaeological deposits were identified.

Archive: S.W.M.

78 Heybridge Cemetery (TL 859 079)

E.C.C. (F.A.U.)
On going monitoring of new graves at the cemetery has identified significant quantities of Late Iron Age/Roman pottery associated with cut features visible in the excavations. This exercise is providing more valuable information on the late prehistoric and Roman topography of the Heybridge area.

79 Heybridge, Chalet Site, Hall Road (TL 859 077)

D. McConnell, A.S.
Excavated in late 2006 prior to residential development on site and following evaluation earlier in the year, the Chalet site has revealed a multi-period site of great interest.
The earliest features are two complete ring ditches, the remains of burial mounds dating from the Bronze Age, around 2000–800BC. Three interrupted ring-gullies are thought to represent Iron Age roundhouses, evidence for a pre-Roman settlement on site. Little evidence of Roman activity was identified but approximately 80 urned cremation burials were excavated which appear to date to the Early Saxon period sometime in the 6th century AD. One of the cremations was encircled by a penannular ditch with post settings, possibly the remains of a shrine or memorial structure. Approximately 20 of the cremation vessels were decorated and post excavation work is currently underway on the material remains of what is so far the largest early Saxon cemetery identified in the Maldon District.

Archive: C.M.
Report: A.S. Report 2094

80 High Easter, Chapel Field House (TL 621 148)

M. Pocock, E.C.C. (F.A.U.)
Archaeological evaluation and limited excavation were undertaken in advance of the construction of three houses in the core of historic High Easter. Seven trial trenches were excavated with those towards the road frontage identifying late medieval and post-medieval archaeological deposits. These comprised a 13th- to 14th-century well and series of later 15th- to 17th-century ditches. The evidence indicates that the northern part of the site has always been under agricultural cultivation and the southern part adjacent to the present road contained features such as the well but had never had residential properties on it.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1616

81 Lawford, Cattawade Marshes (TM 0922 3330)

B. Hillman-Crouch, E.C.C. (H.E.M.)
A causeway built of the remains of Bendall's foundry was deposited on Lock Piece in the 1970's. Many of the ditches were backfilled by machine to accommodate the formation of a small airfield at the same time. A huge raft of building waste was tipped on the Saltings in the 1970's during the building of the estates in Lawford. No ancient remains were discovered due to the shallowness of the excavations. (500mm max on the reed beds).

82 Little Baddow, Church of St. Mary the Virgin (TL 76440807)

M. Germany, E.C.C. (F.A.U.)
Excavation of a two test pits within the church revealed a sequence of deposits relating to the construction of the tower. The test pits were excavated in advance of remedial work undertaken within the church itself.

Archive: Ch.E.M.

83 Little Bardfield, Church Hall (TL 6591 3081)

A. Letch, E.C.C. (F.A.U.)
Building recording was undertaken at Little Bardfield Church Hall during residential conversion works. The structure is brick-built with a scissor-frame roof, and displays fine gothic-style architectural treatments. Research and survey works established the Hall was built in 1871 by Bernard's Charity as a Church of England school for local poor children. The charity had been founded in the village in 1774 to provide almshouses for

poor widows and single women and supply a schoolmistress to teach local poor children. The school was more recently used as a village hall. The structure contains a high level of original external architectural ornamentation and some internal fixtures, many of which are of quality design and build. The elaborate design of the former church school, including the quality and survival of important fixtures and fittings, marks it out as a significant building to the county.

84 Little Warley, Hall Farm (TQ 6040 8860)

A. Letch, E.C.C. (F.A.U.)

Little Warley Hall is a Grade II* listed Tudor brick house and the farm appears to have grown up around it in the post-medieval period. The main surviving structure is a transitional phase barn that incorporates characteristics of medieval and post-medieval carpentry techniques. Unlike many Essex farms, Hall Farm remained a modest, mostly unplanned concern throughout the golden age of agricultural improvement in the 19th-century and did not expand appreciably until it became a livery stables in the 1950s.

Report: E.C.C. (F.A.U.) Report 1709

85 Maldon, Old Mill Close, High Street (TL 8515 0707)

M. Germany, E.C.C. (F.A.U.)

Trial trenching on the site of a new residential development to the rear of the High Street revealed a number of ditches which marked property boundaries laid out during the medieval period. Four ditches aligned at right angles to the High Steet were shown to date to the late12th/early13th century and are therefore later than the initial foundation and development of the town.

Archive: C.M.
Report: E.C.C. (F.A.U.) Report 1697

86 Manningtree, Stour Street (TM 107 318)

K. Trott, A.S.

Monitoring and excavation at the site of the Old Slaughterhouse revealed a series of intercutting late medieval pits containing an assemblage of well dated late medieval pottery. Such a group is likely to provide much information on trade and trade links between the town and continental Europe during the 15th/16th centuries. Residual finds of Roman date indicate activity in the area during this period.

Archive: E.C.C.
Report: A.S. Report 2135

87 Marks Tey, St Andrew's Church, Church Lane (TL 9113 2388)

H. Brooks and K. Orr, C.A.T.

A watching brief on the lowering of the floor levels throughout the church exposed a stub of septaria wall line under the present chancel arch. This may mark the position of an earlier east end, or an earlier and narrower chancel arch. Internally, the lowering of the floor showed no internal offset or foundation, but an external offset of approximately 0.2m was exposed on either side of the south doorway (in the porch).

Four vaults were exposed in the chancel, but not broken into. These are almost certainly to be associated with four grave slabs, one to Peter Wright and the others to members of the Bree family, which had recently been stored in the west tower.

A number of objects were found tucked under the old church floorboards (which were removed in the current work). One was a very fine Purbeck marble grave slab with a brass indent. Mr. Martin Stuchfield has identified this as the previously identified but recently missing slab of Robert de Teye and wife Katherine, dated 1360. Mr. Stuchfield will prepare a report on this slab for the Monumental Brass Society. A second was a blank piece of Purbeck marble which may or may not have been a grave slab. The remainder were a number of pieces of window tracery, mostly derived from the replacement or repair of church windows in the 19th or 20th century. However, three pieces without glazing grooves may be part of a missing stone rood screen. The grave slabs are to be reset in the new church floor, and a sample of the tracery pieces will be kept in the church.

Archive: C.M.
Report: C.A.T. Report 400

88 Matching Tye, Moor Hall stables (TL 4940 1170)

M. Germany, E.C.C. (F.A.U.)

The topsoil/overburden strip for a horse ménage was monitored for archaeological deposits, features and finds. The footprint of the ménage was terraced into a gentle east-facing slope; the topsoil was 0.12m thick and overlay 0.27m of greyish brown silt clay, containing occasional fragments of modern brick, tile, glass, coal and slate. Beneath this overburden lay the natural chalky clay till, which was only exposed in the western two thirds of the ménage because of the terracing. The only discovery was a pit containing a large cache of .303" ammunition from the Second World War.

Archive: H.M.

89 Newport, Shortgrove Hall Farm (TL5260 3540)

M. Wotherspoon, A. Goldsmith, K. Henry, A.S.

A programme of historic building recording was undertaken at Shortgrove Hall Farm prior to the conversion of a range of buildings for residential use. The buildings are located within the Shortgrove Park to the north of the main house. Documentary evidence indicates that the 18th century was a time of change at Shortgrove, with landscaping being carried out in the grounds by Capability Brown and associated building work. The map evidence indicates that the farmyard was not in existence until the mid 18th century. The earliest building on the farm is a later 18th-century dovecote. By

this time dovecotes were as much ornamental as an actual source of food and the dovecote is well placed in the centre of the farmyard and decorated with vitrified headers and a surmounting cupola. Brick walls on the south, east and west of the farmyard also appear to date to the 18th century and have been incorporated into later buildings. A long range of animal shelters was added to the farmyard in the later 18th to the early 19th century. This correlates to the improvements in livestock breeds brought on by scientific research in the late 18th to the early 19th century and the agricultural depression that followed, which increased livestock farming in the county. A granary and cart shed were added to the east of the animal shelters in the early 19th century.

In the earlier to mid 19th century, a garden range was added to the east of the farmyard and a barn or shelter was added to the north of the site in the mid to later 19th century. This opens away from the farmyard, suggesting it was used as a shelter for carts and machinery rather than animals.

Archive: E.R.O.

90 North Battlesbridge Tidal Defence Improvements (TL 7473 4232)

T. Ennis, E.C.C. (F.A.U.)

Monitoring of groundworks associated with tidal defence improvements identified two small fire-pits or hearths of probable prehistoric or Roman date. It is possible that these are related to the ancient salt making industry known to have existed around the River Crouch.

Archive: Ch.E.M.
Report: E.C.C. (F.A.U.) Report 1659

91 Panfield, Farm buildings at Panfield Hall (TL 739 250)

A. Letch, E.C.C. (F.A.U.)

Recording works at Panfield Hall present a picture of a mixed farm adapting to changes in agriculture during the past 450 years. The hall itself is of national importance architecturally and historically, a grade I listed Tudor brick-built great house. An elegant stable/loose box range nearby appears to share a similar build date. Other timber and brick-built barns and animals sheds, sited around two yards, represent development during the period of Victorian 'high farming', when improvements in farming methods and increased demand for basic foodstuffs in the towns and cities led to an expansion in the farming industry. Unlike many Essex farms, the farm buildings at Panfield Hall have been left largely unaffected by modern mechanised agriculture and retain their historic fabric and character.

92 Purfleet, High House (TQ 566 780)

T. Bradley, P.C.A.

Three evaluation trenches were excavated to assess the proposed residential development at High House. All thre trenches showed extensive disturbance and no surviving archaeological deposits. However, a Second World War Spigot Mortar base was identified surviving in the garden of the present house on the site. It is hoped that this structure can be preserved as it is a rare survival of Second World War defences in Thurrock.

Archive: G.M.

93 Rivenhall Airfield Recycling and Composting Facility (TL 822 207)

E.C.C. (F.A.U.)

An archaeological evaluation comprising 53 evaluation trenches were excavated across 10.3ha of the 25.3ha proposal area. A variety of features and deposits dating to the prehistoric, medieval and post-medieval to modern periods were excavated and recorded. A single large pit, dated to the Middle Iron Age And containing a high quantity of deliberately buried charcoal and burnt flint, was investigated. No other prehistoric features were identified. More archaeologically significant was the identification of remains of a possible medieval enclosure system, dating to the late 12th or early 13th century, identified in the west of the site. Deposits and post-holes within the system of ditches may be evidence of agricultural or settlement activity. A second area containing possible later medieval remains was identified in the northeast of the site, close to the former route of Woodhouse Lane. A programme of excavation will be required if the facilitiy is given permission.

94 St Osyth, The Tithe Barn and Brewhouse, St Osyth Priory (TM 1210 1570)

A. Goldsmith, A.S.

In May 2006, Archaeological Solutions Ltd conducted a programme of historic building recording on the tithe barn and brewhouse at St Osyth's Priory prior to the conversion of the buildings for residential use. The buildings are located within the scheduled ancient monument of St Osyth's Priory which dates to the early 12th century and may be situated on the location of an earlier Saxon nunnery. The priory was dissolved in 1539 and by 1558 had been acquired by Lord Thomas Darcy.

The construction of the barn is indicative of a later 16th century date and can most likely be attributed to the period of modification and rebuilding by Lord Darcy. Its size suggests that it was used for the collection of tithes and much of the building survives remarkably intact.

The brewhouse is of three main phases, of which the earliest most likely dates to the later 16th century. The upper part was rebuilt in the late 17th or 18th century in brick and in the 19th century a lean-to was added at the rear of the building.

Archive: E.R.O.
Report: A.S. Report 2040

95 Saffron Walden, United Reform Church/Salvation Army Hall, Abbey Lane (TL 5360 3830)

M. Pocock, E.C.C (F.A.U.)

Archaeological monitoring was undertaken on graveyard

clearance ahead of the construction of building extensions to the church hall at the rear of the United Reform Church. In total, 41 burial plots were encountered and the exhumation of 117 individuals observed and recorded within the footprints of the building extensions, supplementing the burial records of the United Reformed Church. The work also verified the widespread presence of a deep and uniform stratified archaeological sequence comprising graves cut into made-ground that in turn overlies the original buried land-surface/cultivation soil of the lower valley slope on the south side of the River Slade. A single inhumation grave, probably of Roman or Saxon date, and several isolated potential archaeological features were observed at the bottom of this sequence that may constitute outliers of the settlement and burial activity of this date previously excavated in near by Gibson Close.

Previous summaries: Havis 2006
Archive: S.W.M.

96 Saffron Walden, The Chapel, Castle Street (TL 5390 3870)

A. Letch, E.C.C. (F.A.U.)

Trial trenching and historic building recording was undertaken on the former chapel site on the corner of Castle Street and Castle Hill. The site lies within the scheduled inner bailey of Saffron Walden Castle.

A single trial trench excavated at the northern end of the site revealed brick foundations to a probable late 19th-century street frontage building. Further excavation showed an unusual vaulted brick foundation pier. This had been built to support the south-west corner of the structure whose rear wall lay close to the edge of a postulated cellar to a possible medieval structure. In turn this cut through the presumed north-east curve of the inner bailey castle ditch, which was badly truncated.

The chapel was probably built in the late 19th century (between 1877 and 1897) by the Primitive Methodists, although a build date of 1836 has been published. In form and architecture it is a sombre but attractive building, with austere Georgian proportions and late Victorian detailing. The construction is in red brick with gault brick dressings. Sometime after the Second World War the chapel closed and the building was used for commercial purposes. The exterior was changed by painting some elevations and adding extra windows, but retains much of its original character.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1652

97 Saffron Walden, 4 Castle Court, Castle Hill (TL 539 387)

M. Atkinson, E.C.C. (F.A.U.)

Archaeological monitoring and recording was undertaken on development less than 2.5 metres from the north-east corner of Saffron Walden Castle Keep. A probable pre-castle land surface remains largely intact buried below 0.5m of re-deposited material associated with material excavated at the time of the castle construction.

Of additional interest was a fragment of flint walling that has been incorporated into the south wall of the existing dwelling. The wall contained several lines of black glass bottles and a carved piece of shelly limestone, possibly a lion's head spout derived from the castle. Further fragments of the wall were identified in the monitoring indicating they probably represent the remains of the rear boundary wall of the 18th century properties that once fronted onto Castle Street. The monitoring work on this site provided a rare opportunity to examine archaeological survival near to the Scheduled Monument of Saffron Walden Castle.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1655

98 Saffron Walden, Friends School (TL 5400 3760)

A. Goldsmith, P. Ilson, A.S.

An archaeological evaluation comprising trial trenching and impact assessment was undertaken on a proposed residential development at Friends School. The historic building impact assessment was undertaken on Gibson House (former sanatorium) and the Octopus gallery (former water storage reservoir). The reservoir dates to the mid – later 19th century and is associated with the Saffron Walden Corporation Waterworks which was established in Saffron Walden in the mid 19th century to provide the town with clean water. The reservoir first derived its water from a well which was sunk in 1830, but in the late 19th or early 20th century a new well was bored close to the existing steam pumps and a red brick water tower was erected adjacent to the reservoir.

The reservoir was cited as a factor in the decision to relocate the Friends' School to the site in 1879; it was hoped that the ready supply of clean water would help maintain the health of the children. Nevertheless, by the early 20th century, outbreaks of scarlet fever and German measles at the school highlighted the need for a new sanatorium, which was completed in 1913 to the design of architect Edward Burgess. Its layout conforms to the principles which were behind the development of the 'pavilion' plan hospital which was introduced to England from the Continent in the mid 19th century. The pavilion plan advocated a higher degree of separation and segregation, with patients housed in wards that could be cross-ventilated.

Trial trenching was undertaken in areas which were recorded as previously producing evidence of Late Iron Age activity. The only archaeological features recorded were plough scars. Several layers of made ground were interpreted as 19th/20th-century landscaping after the establishment of the school. Other features recorded were either modern or of natural origin.

Archive: E.R.O./S.W.M.

99 Sandon, Park and Ride Extension (TL 746 056)

C.A.T.

Excavation on the site of the extension for the Sandon Park and Ride facility revealed extensive evidence for activity during the Late Bronze Age. A number of both urned and unurned cremations were excavated along with several large pits and elements of a Bronze Age field system, throwing new light on the landscape and land use in the area around 3000 years ago.

Archive: Ch.E.M.

100 Sheering, Sheering Hall Barns, Sheering Rd (TL 495 131)

A. Letch, E.C.C. (F.A.U.)

Two 17th-century grade II aisled barns and a possible 18th-century unlisted wagon lodge were recorded in the curtilage of Sheering Hall prior to residential conversion. Structural analysis of the timber-framing of both barns found that each build incorporated whole bays removed from earlier buildings that contained elements of late medieval carpentry. Although post-medieval barns often incorporate earlier timbers within their construction is unusual to include whole parts of buildings, reassembled and jointed to the new structure. Some of the older parts may represent elements of an earlier farmstead contemporary with the hall, which comprises a pair of hall houses dated to date to the late 15th and early 16th-centuries respectively and is itself grade II* listed. The wagon lodge is clearly later in date but of equal build quality to the barns. It was adapted to become an enclosed cart shed in the 19th-century.

101 Sible Hedingham, flood alleviation scheme, Wethersfield Road (TL 7687 3416)

M. Germany, E.C.C. (F.A.U.)

Archaeological evaluation by trial-trenching and open-area excavation was carried out in advance of the construction of a lagoon for a flood alleviation scheme. The fieldwork uncovered part of the former Langthorne Brickworks, which was in operation between 1883 and 1911. Samples of bricks made by the brickworks were recovered and the remains of four or five buildings and five ancillary structures identified and investigated. The buildings included an engine house, the west end of a drying shed, and the north end of a possible administrative building or workshop. The boiler house contained the remains of a furnace and the support for a brick-mill. Ancillary structures included two beam impressions and traces of a narrow gauge railway. Other features comprised pits and drainage gullies and ditches. Some of the buildings found by the excavation correspond with those recorded on the 1898 Ordnance Survey map. The archaeological remains were well-preserved and were cut in to made ground, which implied that clay extraction and backfilling had taken place prior to the construction of the features and buildings.

Archive: Bt.M.
Report: E.C.C. (F.A.U.) Report 1576

102 Silver End, Boars Tye barn (TL 8094 2003)

E. Watkin

Building recording was undertaken on a threshing barn which appears to have been built in about the middle of the 17th century. It has a good timber frame part oak and part elm. The barn of five bays and a midstrey on the middle bay is unusual in its framing system. The barn finished its farming life in th 1920's when the industrial town of Silver End was built.

103 Southend, 255 Victoria Avenue, Prittlewell (TQ 8762 8674)

M. Pocock, E.C.C. (F.A.U.)

A single trial trench was excavated immediately to the south of the standing building, a restored medieval timber-framed house dating to the early 15th century.

The trial trench did not recover any evidence of an extension to the standing building, as the relevant levels had been disturbed by a succession of later ground clearances, but it did identify at least one phase of earlier medieval occupation. Although undated, a large ditch parallel to Victoria Avenue (and its medieval predecessor North Street) may have been the original medieval street-side ditch. It was cut by a timber building with a shallow sunken floor surface and hearths. Pottery recovered from the building has a broad date range, but most likely dates to the 12th or 13th centuries. Hearths and floor surfaces yielded evidence of cereal processing waste and fish bones. A rubbish pit of uncertain relationship to the building is dated to the first half of the 13th century.

A short length of greensand-and-tile foundation with a related brick floor was aligned with the back wall of the 15th-century house, and probably represents the rear wall of Deeds Cottages, thought to have been built in the 17th century. Further remains of the cottages were comprehensively removed by later ground clearances.

Archive: S.M.

104 Southend, Bournes Green (TQ 9162 8739)

M. Pocock, E.C.C. (F.A.U.)

A pillbox located on the southern side of Southend Road at Silchester Corner, was recorded in advance of road works undertaken in conjunction with the construction of a golf course. Since it was recorded the pillbox has been demolished to meet a requirement for a clear line of sight along the realigned Southend Road.

The recording confirmed that the pillbox was a modified example of the type FW3/22 design produced by Branch FW3 of the War Office Directorate of Fortifications and Works and part of a stop line extending from the Thames estuary to the river Roach, protecting the Southend peninsular from a landing to the east. The pillbox was hexagonal in plan with gun embrasures on five sides and an entrance on the sixth. Unusually, the pillbox had been modified by the addition of a thick concrete skirt up to the base of the gun embrasures,

around which steel plates were added both externally and internally. A second example of a modified type FW3/22 pillbox survives at the southern limit of the proposed Bournes Green golf course.

Archive: S.M.
Report: E.C.C. (F.A.U.) Report 1590

105 South Weald, Tower Arms Barn (TQ 5716 9382)

A. Letch, E.C.C. (F.A.U.)

A multi-phase group of timber-framed former farm structures were recorded in the centre of South Weald, on land formerly owned by the Tower Arms public house. All are curtilage listed with the pub. The most prominent of these was an 18th-century barn, built in primary bracing with a dovecote over the porch. A 19th-century attached cart shed was also recorded. However, the most significant structure was a small 16th-century animal byre with herringbone brick floor. This is an important relic from an earlier farm. Building works are being monitored to record further timber framing details and remains of any other early structures.

106 Springfield Business Park (TL 7360 0845)

M. Pocock, E.C.C. (F.A.U.)

Two further phases of evaluation have taken place on site during 2006. No archaeological remains were identified in eight of the nine evaluation trenches. A large area across the west and centre of the development area had been disturbed during recent construction works immediately to the north-west, while parts of the south and south-east had been disturbed by a series of ponds and drains. Archaeological features were identified in a single trench in the north-east of the evaluation. Excavation of an open area around the trench recorded a boundary ditch aligned north-south, most likely of Late Bronze Age date. Post-holes and root-holes were also recorded, some of which contained single sherds of Late Bronze Age pottery. Several Mesolithic and Neolithic flints were recovered as residual finds in later contexts. The edge of a pond investigated at the south end of the excavated area contained two sherds of Early Saxon pottery, but the pond is not firmly dated and may in fact be relatively recent.

The Late Bronze Age boundary ditch is thought to be a continuation of a linear cropmark recorded to the east of the Late Bronze Age enclosure at Springfield Lyons. If so, it would have been part of a wider Late Bronze Age landscape around the enclosure, forming a major boundary running along the eastern edge of the boulder clay plateau, and along the top of the valley slope of the river Chelmer.

Archive: Ch.E.M.
Report: E.C.C. (F.A.U.) Report 1605

107 Stansted Mountfitchet, Airport (Site 600), Taylors End (TL 5454 2221)

G. Chaffey, Fr.A.

An archaeological evaluation consisting of 6 trenches was undertaken on an area thought to have a high potential of prehistoric and medieval remains. Fourteen archaeological features were identified, of which only one could be securely dated to the Middle to Late Bronze Age. It was also clear that the northern part of the area had been heavily truncated. Following discussion with the developers and archaeological contractors a design has been agreed which preserves the identified archaeology *in situ*.

Archive: Fr.A., to go to S.W.M.

108 Stansted Mountfitchet, Mont House (TL 515 252)

M. Pocock, E.C.C. (F.A.U.)

Trial trenching was carried out on the site of a proposed residential development on the valley slope opposing Stansted Mountfitchet castle; elements of 19th-century terracing still survive in the northern part of the development area. The southern end of the lower terrace had been heavily landscaped in recent years and trenching in this area identified no significant archaeological deposits. The majority of the trial trenches were located around the central terrace. Here, heavy rooting had disturbed much of the area and generally the evaluation confirmed evidence of recent removal of trees and other large vegetation. Archaeological remains comprised modern garden structures and isolated pits associated with the recent occupation of Mont House and these either overlay or cut into the embanked material that formed each terrace edge. It appears that occupation did not extend this far along High Lane until the construction of Mont House itself perhaps around the 17th century.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1614

109 Stansted Mountfitchet, Rochford Nursery (Western Half) (TL 5105 2415)

S. Turner, M.o.L.A.S.

Archaeological trial trenching over the western half the Rochford Nurseries housing development site found few surviving archaeological deposits. Evidence has been found of the previous use of the site as nurseries with extensive disturbance in some areas. Several features were found on the western edge of the site which will require investigation prior to the development of this area. A building record was also made of one of the residential structures on the site. These were workers' cottages dating to the late 19th century probably associated with the nursery, one with its original water reservoir as the roof.

Archive: S.W.M.

110 Stratford, Bow China Works, 14–26 High Street (TQ 3797 8322)

S. Holden, P.C.A.

The excavations on the north side of High Street, Stratford, near Bow Bridge incorporated the western side of the site of the former 18th century Bow porcelain factory. Evidence for the factory was recorded together with information on the use of the site prior to its inception and following its decline. At the time of writing, analysis of the data is in progress and the dating of the resultant material is therefore provisional. Towards the northeast corner of the site, a steep-sided inlet (probably man-made) spurred perpendicularly from the tidal Bow Back River and terminated with a vertical post and plank revetment that is likely to have been in use as a dock in the 17th century. Four hooped cask barrels were found located adjacent to the revetment within the former dock, their purpose being somewhat enigmatic. One suggestion is that they were used as tanning pits, the waterlogged nature of the area providing a good environment for this process, although little leatherwork was found in the immediate vicinity. Farther to the south, a collapsed timber frame built over a cut and almost completely submersed in sawdust was recorded. The presence of off-cuts of timber suggests that this was a semi-sunken sawpit also of 17th century date. Two buildings of brick construction post-dated the sawpit and underwent a number of phases of remodelling, one having probable oven structures built into an extension partway through its lifespan. In 1744, Edward Helyin, a merchant from Bow, and Thomas Frye, a recognised portrait painter, engraver and mezotintist took out a patent for a recipe for soft-paste porcelain. In partnership with John Wetherby and John Crowther they set up for production in 1747 on the Essex side of the River Lea, known as the 'New Canton Works'. They were pioneers in the production of English Porcelain and concentrated on manufacturing wares for common use. The business thrived throughout the 1750's, however in 1759 Frye was forced to retire through ill health and subsequently died in 1762. As the major driving force of the operation, his departure initiated the decline of the business which struggled on for a further 12 years before finally being sold. The archaeological record indicates that redevelopment of the eastern side of the site (within the boundaries of the former New Canton Works) took place within a few years either side of 1750 with consolidation of the land and the construction of several buildings. This is likely to represent either the initial occupation of the site by the factory, or one of the alterations/expansions indicated in the insurance documents that survive for the company. Large dumps of unfired porcelain wares and of wasters and kiln furniture were found across these buildings and elsewhere on the eastern side of the site, being used as make-up for buildings erected in the late-18th or early 19th century. This material included examples of the sprig moulded blanc de chine wares, underglaze-blue Chinese imitations, enamelled wares, cutlery handles and of the figurines that were also produced. Examples of the moulds used for the sculpting of the artefacts, as well as those for applying decoration were also recovered. The sale documents following the closure of the factory mention a dock and although a timber-faced dock was revealed within the excavation area, it appeared to be of 19th century construction and could be a rebuild of the earlier feature. Masonry elements of the limekilns that were present on the site in the early-19th century were recorded, together with evidence of other later developments of the 19th and 20th centuries.

Archive: M.L.

111 Takeley, Priors Green (TL 5730 2140)

A. Robertson, E.C.C. (F.A.U.)

As part of an ongoing programme of archaeological works, further evaluations and monitoring was carried out at a number of sites across the development area during 2006.

Priors Green, Balancing Pond 2

Monitoring of geotechnical test pits in and around the area of the proposed balancing pond recorded an east-west aligned palaeochannel approximately 2.5m below the current ground surface. Three trial trenches excavated in the vicinity of palaeochannel uncovered an undated posthole and a number of natural hollows. Excavation is proposed in the area of the post hole whilst the Palaeochannel will not be affected as it lies too deep to be affected by the construction programme.

Priors Green, Spine Route South

Trial trenching was carried out on the southern part of the spine road traversing the development. Of the original ten trenches it was only possible to excavate six; the remaining four will be integrated into a later phase of the development. No archaeological features or deposits were identified in any of the trenches, nor any artefacts collected.

Priors Green, former nursery site

This part of the development area lies to the west of the 2005 excavations, running north from the B1256 to Jacks Lane. At the north end, adjacent to Jacks Lane, is a moated enclosure, though this was outside the area currently investigated. Monitoring of geotechnical test pits did not record any significant archaeological deposits.

Priors Green, Pallet Yard

The pallet yard is located further to the west of the former nursery site and fronts onto the B1256. Monitoring of test pits showed much of the area to be highly truncated. Two trial trenches excavated along the eastern edge of the site encountered less evidence of truncation, but uncovered no archaeological features.

Priors Green, Jacks Lane crossing

Running to the north and roughly parallel with the B1256, Jacks Lane is believed to have a medieval origin.

Trenching at the point where the spine route crossed Jacks Lane did not provide a date for the establishment of the route and its flanking ditches, but indicated that it had an extended history of maintenance and repair.

Priors Green, Phase II
Phase II works comprised trial trenching of the former nursery and orchard and an area west of Broadfield Wood along the northern side of the B1256. The trenching was a follow-up to the archaeological monitoring of geotechnical test pits previously undertaken on the former nursery and orchard. A total of 30 archaeological trial trenches were excavated. Three north–south ditches and a single modern gully were uncovered. Although only one of the ditches was positively dated, it is likely that they are all post-medieval and represent further field divisions. All the ditches uncovered during the trenching were parallel to the extant north – south boundaries, as well as to each other. This suggests that they may originally have been contemporary with the extant field boundaries, which are known to pre-date the 1875 1st edition ordnance survey map. This suggests that this area of the Priors Green development was divided into long narrow fields during the post-medieval period. However, there is little evidence for any substantive earlier activity and none of the remains identified within the adjacent Phase I of the Priors Green development were seen to continue into this phase.

Previous summaries: Havis 2006

112 Takeley, Thremhall Priory (TL 5215 2140)

A.S.
Large scale excavations have taken place in advance of the redevelopment of the existing listed building and large site to commercial offices. The excavations at Thremhall Priory have shown extensive surviving archaeological deposits of multi-period date. The archaeological excavation revealed evidence of a large medieval building, probably one of the Priory structures comprising clunch and mortar pads for columns, robbed out walls, flint cobbles and tiled floor surfaces and demolition rubble. Archaeological research for the final report will hopefully identify the function of the building.

Underlying the foundations and floor levels of the 18th-century house were the wall foundations of an earlier building which appeared to post date the dissolution of the Priory in 1536. The cellar of the 18th-century house and the foundations of the post dissolution building contained numerous masonry blocks and column fragments robbed from the original Priory masonry structures. Post-excavation work will unravel the many phases of the structure and may be able to provide an indication of the nature of the original Priory structures from the surviving re used stone work.

Previous summaries: Havis 2006

113 Takeley, Thremhall Priory (TL 5325 2160)

D. Dodds, O.A.
An archaeological watching brief was carried out at Thremhall Priory Barns during conversion groundworks. The watching brief revealed widespread evidence of demolition debris (principally brick fragments) probably associated with the dissolution of the Priory. This had been heavily disturbed and truncated by 20th -century ground reduction. The truncated foundations of an agricultural building of *c.* 19th-century date were also observed.

114 Thaxted, Bellrope Meadow (TL 6180 3167)

C. Hallybone, P. Weston, A.S.
The archaeological evaluation revealed twelve archaeological features consisting of a pit/ditch terminus, a possible plough furrow, seven ditches, two pits, and a probable modern geotechnical pit. Dateable artefacts recovered included late Iron Age and early Romano-British pottery. The dating of the site is of interest as it suggests that a late Iron Age phase of activity was superseded by an early Romano-British phase, and it is possible that there was a degree of continuity between the two periods.

Archive: S.W.M.

115 Tilbury, Methodist Church (TQ 6859 7733)

A. Padfield
The historic building survey report of the Methodist Church, was received in 2006. The church was to be demolished and replaced by a house. Built in 1856 as a result of the spread of village Methodism in the early to mid 19th century, the original church cost £167. It was constructed in greyish stock bricks with a shallow pitched slate roof. It was quite plain, with double doors in the centre of the west gable for direct entry from the road. It had a panel with METHODIST CHURCH and an illegible date (probably 1856) painted on. The windows in the west wall had 'Early English' arches, and all the windows of the main church contain coloured glass decoration set in lead. The interior had boarded and plastered walls. The recording of these structures is important because many are now being demolished or converted for residential use.

116 Tilbury, Biosolids Dryer (TQ 6600 7570)

O.A.
Archaeological monitoring was undertaken on development at the Anglian Water Sewage Treatment Works. The watching brief identified made ground on top of a layer of peat and alluvial deposits. A range of archaeological features were identified relating to farm buildings that had been on the site prior to the water treatment works.

117 Tollesbury, Carrington Farm (TL 952 107)

J. D. & A. M. Black, C.A.G.

Magnetometry survey, on behalf of Maldon Archaeological Group, of approximately ¾ hectare of farmland adjacent to village.

118 Vange Marsh North (TQ 731 872)

T. Ennis, E.C.C. (F.A.U.)

Monitoring of ground works associated with the formation of the new wildlife reserve was undertaken at Vange Marsh North. The ground works comprised the excavation of a new sluice and linking ditch to the north-east of the marsh and the excavation of a major boundary ditch (*c.* 8m wide by 700m long) around the western side of the marsh. A range of archaeological features dating to the Roman, medieval and modern periods were revealed.

Part of a possible red hill was exposed and preserved *in situ*. It was comprised of layers containing frequent small fragments of baked clay and occasional flecks of charcoal. A pit, located 280m to the east of the red hill, may also have been involved in this activity. Although neither feature contained dating evidence it is likely that they are of Roman origin.

Layers and infilled water channels containing medieval pottery were identified indicating localised activity upon buried land surfaces, during the 12th to 13th century. An extensive carbonised grain deposit was investigated, perhaps the result of accidental combustion of a wheat field or grain store. The grain indicated arable farming in the vicinity, probably on the drier land in the north of the marsh. Other infilled water channels were undated or date to the modern period. Some of these were replacements for medieval channels.

Archive: S.M.
Report: E.C.C. (F.A.U.) Report 1613

119 Vange Wick Reservoir East (TQ 732 858)

M. Pocock, E.C.C. (F.A.U.)

An evaluation was carried out prior to construction of a reservoir for a wildlife reserve on land to the south of Vange Creek. Trial-trenching uncovered boundaries of several smaller post-medieval fields that were utilised for grazing sheep until the 19th century. These have been incorporated into a larger area for cultivation by 1841 and are no longer visible on the surface as they have been levelled and ploughed. Drainage channels identified within an earlier walkover survey conducted by the ECC Historic Environment Branch survived as shallow depressions within the topsoil, *c.* 0.30 m wide. These may represent more modern drainage attempts that have been softened by plough action. Hand augering, undertaken in conjunction with the trial trenching identified estuarine deposits overlying London Clay. No palaeosols, buried land surfaces, cut features or peat deposits indicative of archaeological horizons survived at depths that would be impacted by the reservoir. A minor deposit containing carbonised plant remains was observed in a localised area within a hollow in the London Clay *c.* 2.76 m below the ground surface.

Archive: S.M.

120 Wendens Ambo, Duck Street (TL 510 361)

T. Ennis, E.C.C. (F.A.U.)

Three archaeological evaluation trenches were excavated to inform a planning application for residential development. Extensive archaeological remains were identified dating predominantly to the Roman and medieval period, although both prehistoric pottery and flint work and an early Saxon pottery sherd were also recovered.

The earliest Roman features were a series of ditches and gullies dated to the 1st century AD. It is possible that some of the gullies were features with a structural function. Also of a 1st-century date was a metalled surface, perhaps part of a yard or area of hard standing. A subsoil deposit containing mid 2nd to mid 3rd-century pottery was excavated and 4th-century deposits were found overlying the metalled surface in an area of concentrated activity in the east of the field. The deposits potentially relate to the Roman villa complex identified at Wendens Ambo (adjacent to the M11) which is a Scheduled Monument.

The medieval features ranged in date from the 12th to the 16th century. Two ditches dated to the 12th to early 13th century and a pit and a ditch to the 14th to early 15th century. The latest feature investigated was a metalled yard or track, aligned north-east/south-west, and dated to the 15th to 16th century. The medieval features may indicate the presence of medieval occupation at the junction between Duck Street and Rookery Lane. If development proceeds on this site the whole area will require full excavation before development proceeds.

Archive: S.W.M.
Report: E.C.C. (F.A.U.) Report 1595

121 Wickford, Nevendon Road (TQ 740 913)

E.C.C. (F.A.U.)

Archaeological evaluation by trial-trenching of the site south of Wickford revealed a range of highly significant archaeological features. Very unusual *in situ* deposits of probable Mesolithic date were identified along with quantities of Mesolithic flintwork. Originating from a transient hunter-gatherer population before the introduction of settled farming, such evidence is extremely rare both in the county and nationwide.

A further range of evidence relating to Early Iron Age occupation was discovered. Once again, surviving deposits of this date are rare within Essex and are of some significance. Further archaeological work is expected on the site prior to any development.

122 Witham, NEACC Complex Phase 2, Spinks Lane (TL 8130 1430)

T. Ennis, E.C.C. (F.A.U.)

Archaeological monitoring was carried out during groundworks for the second phase of development at the North Essex Adult Community College (NEACC) complex. One Middle Iron Age pit was identified and two undated features were identified in floodlight foundation pits along the south-western edge of the new all-weather sports pitch. It is possible that all three are contemporary with the remains of Middle Iron Age occupation activity identified close to Spinks Lane in Phase 1 of the development and which are believed to be located within the Witham Lodge Earthwork enclosure. Although some truncation appears to have occurred beneath the new all-weather sports pitch when the grass playing fields were constructed, this does not seem to have disturbed the underlying archaeological remains which were subsequently buried beneath up to 1m of levelling deposits.

Previous summaries: Havis 2006
Archive: Bt.M.
Report: E.C.C. (F.A.U.) Report 1529

123 Witham, Faulkbourne Farm, Cressing Road (TL 8080 1750)

M. Germany, E.C.C. (F.A.U.)

Archaeological trial trenching and subsequent excavation were undertaken in advance of the proposed construction of a sand and gravel processing plant. Fieldwork uncovered prehistoric worked flint, Middle Iron Age features and finds, a small amount of Late Iron Age/Roman pottery, and two post-medieval/modern field ditches. The Middle Iron Age features and finds lay dispersed in two separate areas; the features comprised pits and post-holes, and the finds worked and burnt flint, pottery and animal bone. It is conjectured that the remains of a Middle Iron Age settlement lie either within or in the vicinity of the development area. The Late Iron Age/Roman pottery was small in quantity and was found in a ditch, which must have been Late Iron Age/Roman or later.

Archive: Bt.M.
Report: E.C.C. (F.A.U.) Report 1586

124 Wormingford, Lodge Hills (TL 929 325)

J. D. & A. M. Black, C.A.G.

Magnetometry survey, looking for the site of 16th century hunting lodge.

125 Wormingford, Wormingford Hall (TL 918 317)

W. J. Mallinson, C.A.G.

A field walk of a large field containing the above location on a north facing spur of land above the River Stour, confirmed a heavy localised concentration of Roman brick and tile. Reddened patches of soil associated with the finds, tend to suggest that this may the site of one or more Roman tile kilns.

Report: C.A.G. Bulletin 46 2006

Abbreviations

A.O.C.	AOC (Archaeology) Ltd
A.S.	Archaeological Solutions
A.S.E.	Archaeology South East
Bt.M.	Braintree Museum
C.A.G.	Colchester Archaeological Group
C.A.T.	Colchester Archaeological Trust
C.M.	Colchester Museum (formerly Colchester and Essex Museum)
Ch.E.M.	Chelmsford and Essex Museum
E.C.C.	Essex County Council
E.C.C. (F.A.U.)	Essex County Council (Field Archaeology Unit)
E.C.C. (H.E.M.)	Essex County Council (Historic Environment Management)
E.R.O.	Essex Record Office
F.C.A.S.	Foulness Conservation and Archaeological Society
Fr.A.	Framework Archaeology
G.M.	Grays Museum
H.M.	Harlow Museum
M.L.	Museum of London
O.A.	Oxford Archaeology
P.C.A.	Pre-Construct Archaeology Ltd
R.P.S.	R.P.S. Planning Transport and Environment
S.M.	Southend Museum
S.W.M.	Saffron Walden Museum
T.V.A.S.	Thames Valley Archaeology Services

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CAR **9** see Crummy & Crossan 1993

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Shorter Notes

A Late Iron Age and early Roman site at Coleman's Farm, Rivenhall End: excavation, 2003

Mike Roy

with contributions by Joyce Compton and Helen Saunders

Small-scale excavation on the line of a gas pipeline alongside the A12 revealed a site dated to the Late Iron Age and the period immediately after the Roman conquest. Boundary ditches, gullies and pits were recorded at the south end of the pipeline, suggesting a probable settlement alongside the Roman London–Colchester road at this point.

Introduction

In July and August 2003, a small-scale archaeological excavation was carried out on behalf of Transco before construction of a gas pipeline alongside the A12 north-west of Coleman's Farm, Rivenhall End (Fig. 1). The excavation concentrated on a 150m length at the south-western end of the pipeline (Fig. 2), which ran parallel to the A12 some 40m from it (TL 83173 15757 to TL 83262 15889). The remaining 750m length of the pipeline, towards Rivenhall End, was monitored for archaeological features and artefacts, but none were found. This report summarises the main results; further details can be found in the client report, lodged in the

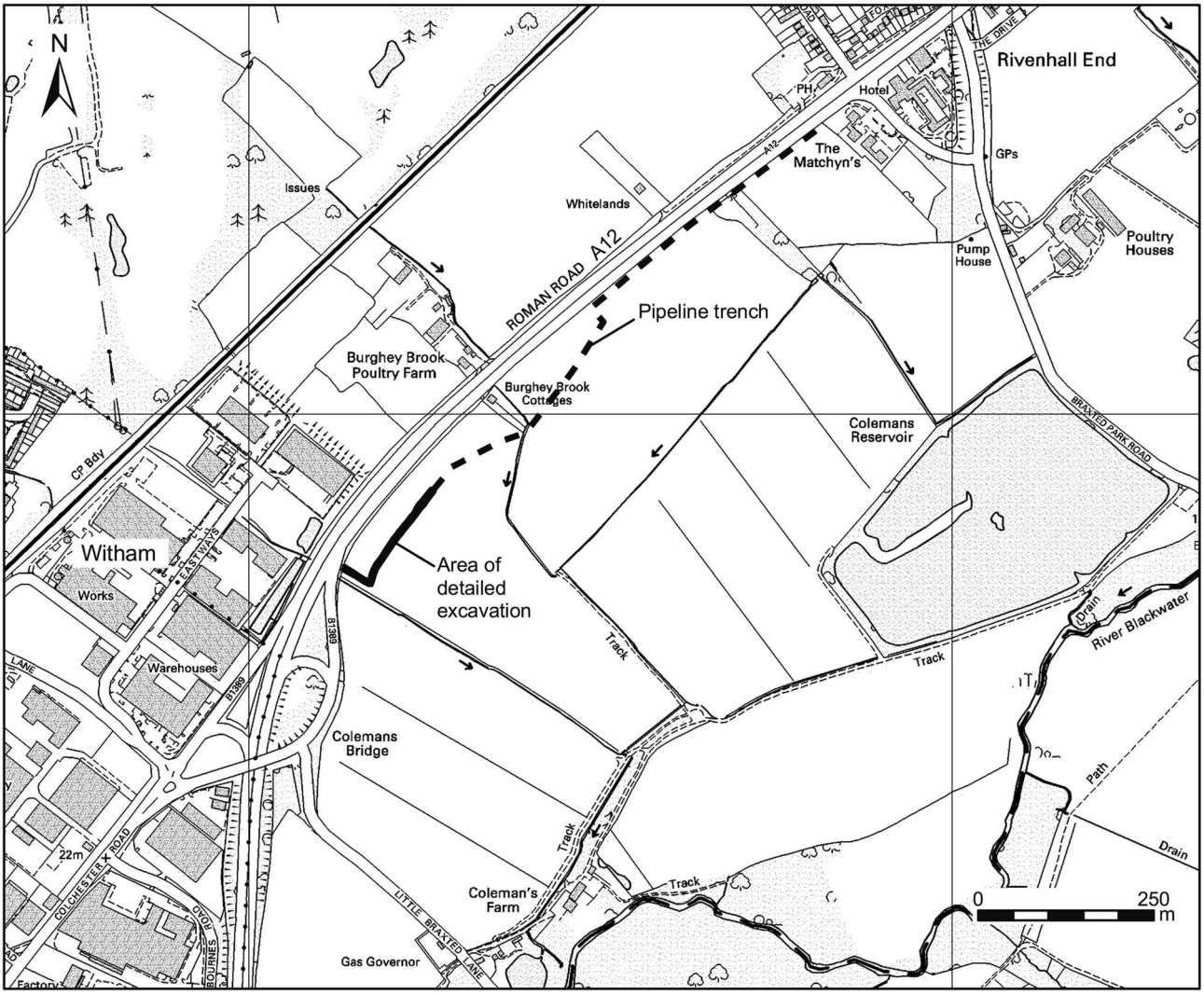

Fig. 1 Coleman's Farm, Rivenhall End. General site location. © Crown copyright and/or database right. All rights reserved. Licence number 10001 4800

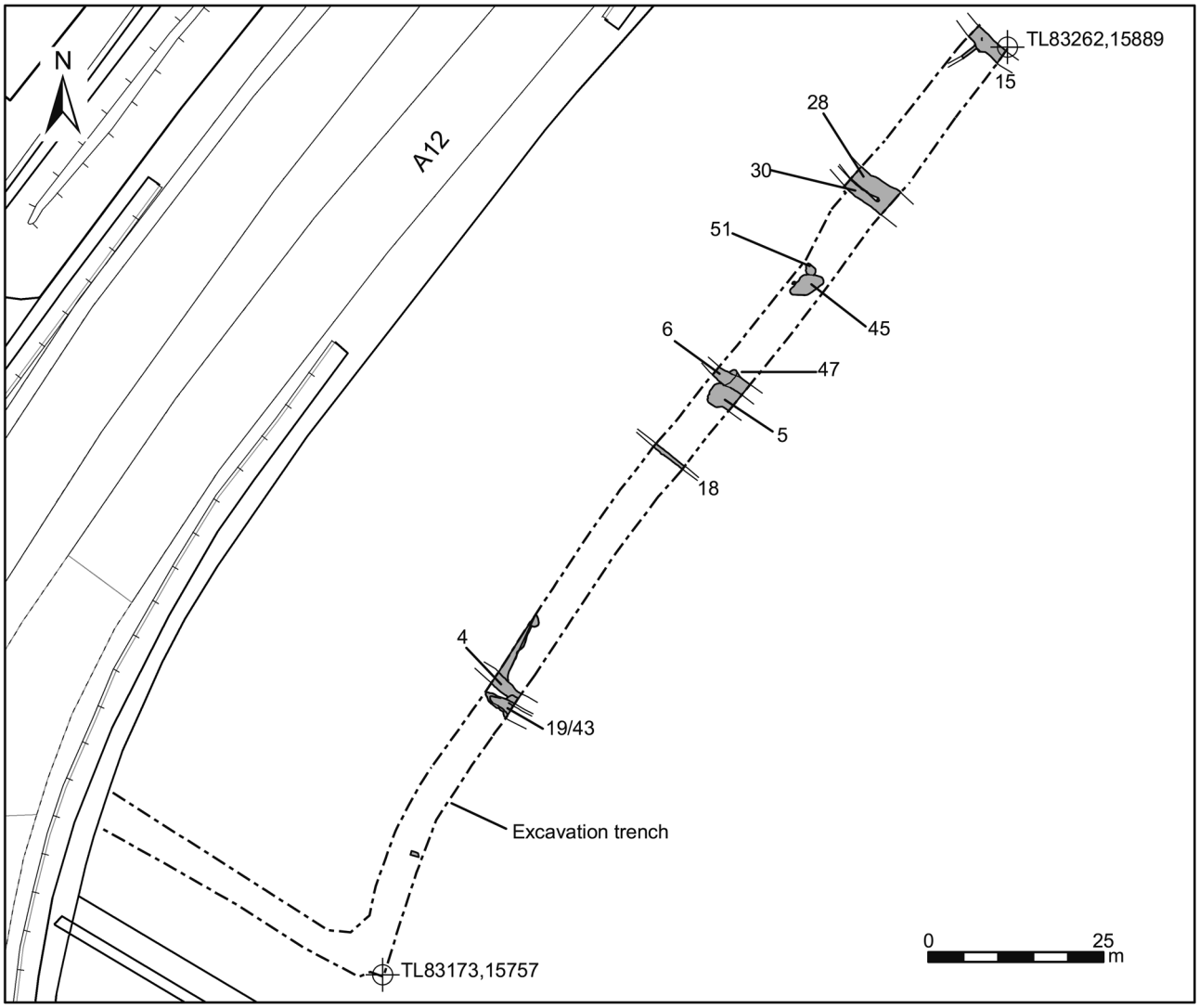

Fig. 2 Coleman's Farm, Rivenhall End. Plan of all features.

Essex Historic Environment Record, EHER (Roy 2003).

Following the excavation, a magnetometer survey of the field through which the pipeline had been constructed identified a ditched enclosure, with a possible annex, and a number of linear features.

Topography and archaeological background

The excavated length of the pipeline lies in an arable field at around 18m OD, near the top of a gentle slope down to the south-east to the river Blackwater (Fig. 1). The drift geology of the area consists of glacial sands and gravels. The site lies on the Roman road between London and Colchester, mid-way between two known Late Iron Age and Roman sites, the settlement and shrine at Ivy Chimneys, Witham, and the small town of Kelvedon. Aerial photographs in the EHER (EHER 8297) have identified a set of cropmarks between 0.5 and 1.2 km to the south-east of the pipeline, on either side of the Blackwater. These include ring-ditches, a trackway, enclosures, field boundaries and numerous smaller features, suggesting intensive activity in the river valley from prehistoric times. Over several years the landowner, Mr Simon Brice, has found artefacts in the vicinity of the pipeline, ranging from Palaeolithic to medieval, including numerous worked flints (EHER 8850), and Roman and medieval pottery sherds (EHER 8031, 8032).

Late Iron Age/early Roman activity

Archaeological features were first exposed by machine-clearance of topsoil and cutting of the pipe trench, and a strip 1.5m wide on either side of the pipe trench was then further cleaned by machine to define the features more clearly for detailed recording and excavation (Fig. 2). All features were cut into the natural subsoil and were overlain by plough-soil, 0.30–0.35m thick.

Late Iron Age/early Roman features were recorded in an area 120m across, bounded by ditches to the north-east (15) and south-west (4/19/43). The north-eastern ditch formed a major boundary, with no further features to the north, while a depression filled with natural silts lay beyond the south-eastern boundary ditch. This ditch had been recut at least twice (19, 43), suggesting a

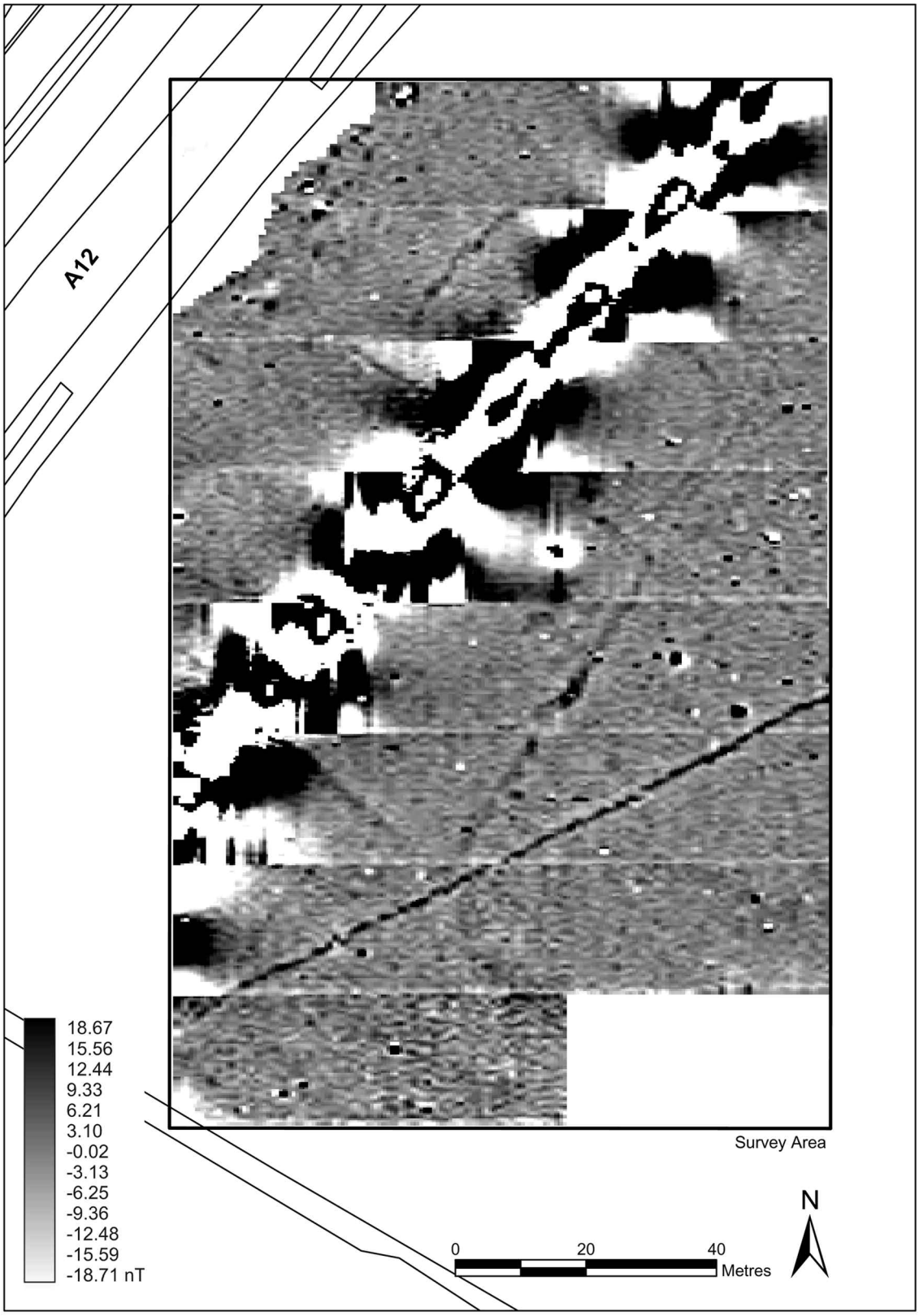

Fig. 3 Coleman's Farm, Rivenhall End. Geophysical plot; the major anomaly, oriented lower left to upper right, is the backfilled pipeline trench. Other archaeological features appear as darker grey.

relatively extended period of use. The features bounded by these ditches include two groups of shallow parallel ditches (28/30 and 5/6), quarry or rubbish pits (51, 45 and 47), and a gully (18). The fills of these features consistently contained pottery dating to the late 1st century BC to mid 1st century AD, pointing to a single period of occupation, bridging the Late Iron Age and early Roman transition. The pottery is mainly grog-tempered, but includes a few sherds of Romanised wares of the mid 1st century. A small number of residual

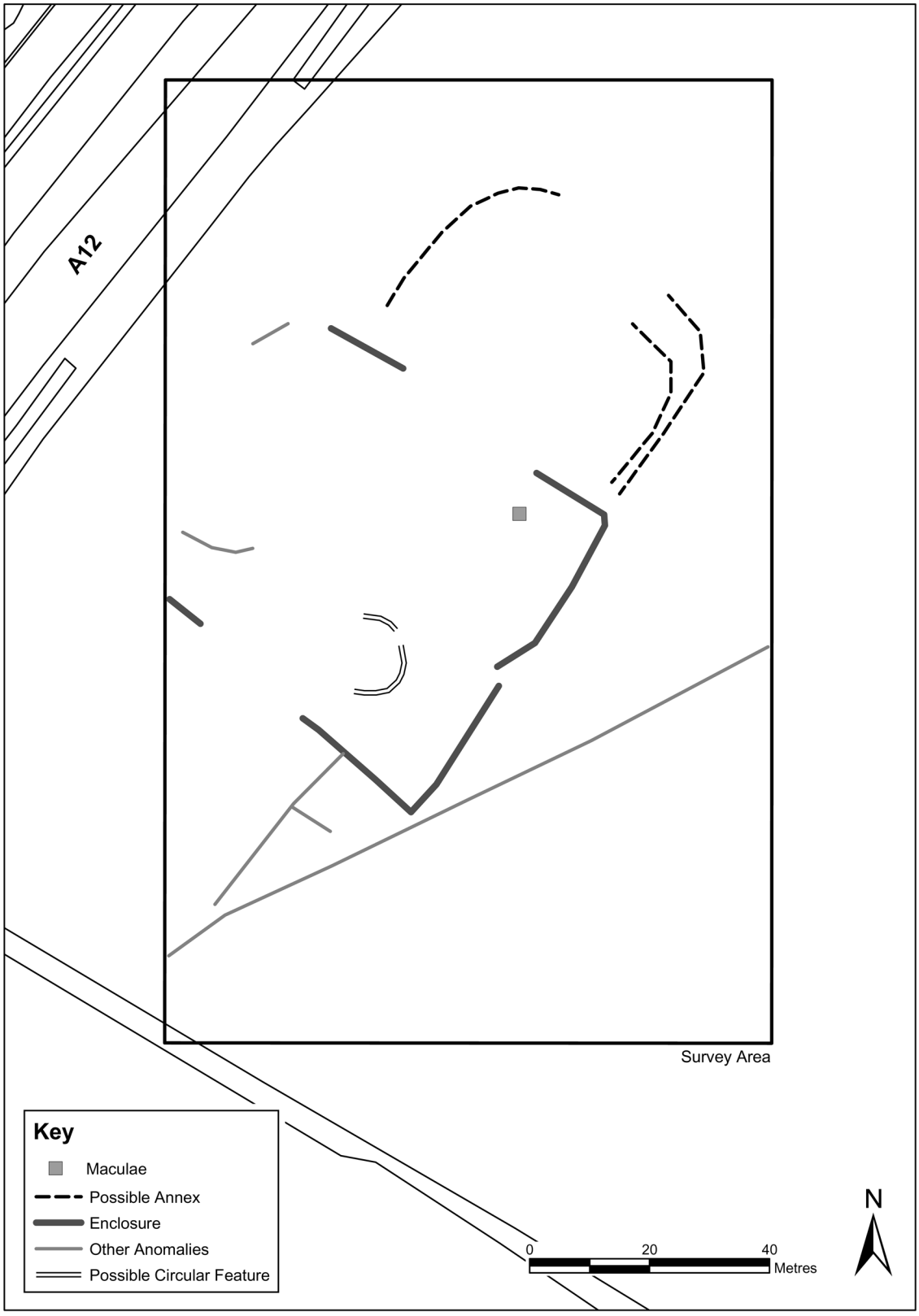

Fig. 4 Coleman's Farm, Rivenhall End. Interpretation of the geophysics plot in Fig. 3.

Middle Iron Age pottery sherds, and fragments of worked and burnt flint, indicate earlier activity. The most notable find was an early to mid 1st-century AD copper-alloy brooch from the fill of boundary ditch 4, while fragments of loomweight and animal bone found in pits and ditches suggest domestic activity nearby.

Magnetometer survey

After the excavation was complete, a magnetometer survey of the field through which the pipeline had been constructed was carried out in October 2004 (Saunders and Clarke 2004).

A number of anomalies were detected, including a rectangular enclosure, possibly with an annexe, and some

rectilinear features (Figs 3 and 4). The main excavated features line up well with the geophysical anomalies; thus ditches 4/19/43 and 5/6 in Fig. 2 correspond to the south-west and north-east sides of the rectangular enclosure, and ditch 28/30 matches the north-east edge of the ditched annexe.

Conclusions

The excavation demonstrated the survival of a group of features dated to the late 1st century BC to the mid 1st century AD, the Late Iron Age and the very early Roman period. The majority of these were ditches and gullies lying perpendicular to the line of the present A12. This route overlies the Roman road between London and Colchester, and it is likely that the ditches were boundaries related to a pre-Roman phase of the route. The precise character of the Late Iron Age/early Roman activity could not be defined from the limited excavation. However, the additional information provided by the magnetometer survey, plus the recovery of a wide range of finds by the landowner, noted above, strongly suggests the presence of a late Iron Age/early Roman settlement, within a rectangular enclosure with a possible annexe to its northeast.

Acknowledgements

Essex CC would like to thank Transco for commissioning and funding the project, particularly David Giles, the Transco Operations Manager, for his help in facilitating the excavation. Thanks are also due to the landowner, Simon Brice, for his help and interest, and for commissioning the magnetometer survey. The FAU Project Manager was Patrick Allen, while the ECC HEM monitoring officer was Vanessa Clarke, who provided useful advice in advance of and during the fieldwork. The finds and environmental report was produced by Joyce Compton and Figs 1 and 2 were created with the assistance of Andy Lewsey: Figs 3 and 4 were by Helen Saunders. The site archive has been deposited at Braintree Museum, and the finds have been retained by the landowner.

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An Anglo-Saxon silver strap-end from High Easter

Michael J. Cuddeford

This object (Fig. 1) was found with the aid of a metal detector in the early 1990s, prior to the passing of the Treasure Act. It was reported to the Coroner at the time, but was not deemed as likely to qualify as Treasure Trove and was not made the subject of an inquest. It has not previously been formally published.

The findspot is an arable field in the parish of High Easter (TL6215), within which is located a discrete scatter of Late Iron Age and Romano-British pottery and a corresponding scatter of coins and other artefacts of the same periods. A number of other such scatters have been recorded in the parish and are presumed to represent occupation sites. None have been excavated. The strap-end was found within the compass of the LIA and RB material, which included a 4th century AD gold and glass finger ring, but no other early medieval finds were recovered.

The strap-end measures 48mm long × 17mm wide and weights 14.03g. The body is made from silver, one end divided for the insertion of a strap, which would have been secured by the two *in situ* silver rivets. Decoration is by engraving, possibly enhancing cast features. There are thirteen panels of gold set into the body, each decorated with stippling. Some niello is evident in linear elements of the engraved design, and is presumed to have been present in all engraved features. The strap-end terminates with a zoomorphic mask, having two round ears and two apertures for the eyes. On the Strickland brooch (see below) the animal head motifs are set with blue glass 'eyes' and as other strap-ends are known with similar apertures that contain coloured glass inserts, it would seem likely that these would have been present on the High Easter strap-end also. The sides of the mask have fine engraved lines and a small engraved wedge-shaped element perhaps indicating a mouth. The central area is edged with a beaded border, and in addition to the gold panels there are eight engraved panels of foliate decoration. The decorative features are asymmetrical; there are nineteen ovoli on one edge as opposed to twenty-four on the other, and the style of the motifs on the central panels differ. The rivets are also of different sizes. This might indicate that more than one individual was employed at different times on the object's production, or it may simply reflect a non-symmetrical approach by one craftsman. The back of the object is plain.

Strap-ends appear to be multi-purpose objects, and were used during the Roman period, continuing with occasional use until the 7th century AD. In the late 8th century they seem to have enjoyed a revival, and developed into a ubiquitous type found throughout Britain in the 9th century. A considerable number are known, and many have been published in various journals and catalogues. However, only one comprehensive corpus has so far been produced, an unpublished doctorial thesis (Thomas 2000) listing some two thousand examples, and two data sheets deriving from it (Thomas 2003 and 2004). One of the most significant finds of metalwork from the early medieval period was made at Trewhiddle in Cornwall in 1774, when a large group of objects was found by tin-workers. Associated coins suggested a deposit date of *c.* AD 875. The hoard is now in the British Museum, and the

Fig. 1 Anglo-Saxon silver strap-end, High Easter, Essex.

decorative motifs on many of the objects provide a reference source for comparison to other finds.

The majority of 9th century strap-ends found in Britain are of copper-alloy, occasionally with silver inlay. Silver examples are less common, but still not infrequent finds. Many of these latter are of similar form to the High Easter example, classified by Thomas as Class A, Type 1 (Thomas 2003 nos. 1–4) and are also often enhanced with niello. Stippling is known on a number of other strap-ends as well as hooked tags, but applied to design elements and not gold inserts. Two matching silver strap-ends from Ipsden in Oxfordshire and now in the Ashmolean Museum, are unusual in having a sheet gold panel inset into their respective bodies, the panels themselves being decorated with filigree work. However, there is only one piece of early medieval metalwork so far traced that uses stippled gold inserts comparable to the High Easter find, known as the Strickland Brooch The Strickland Brooch is an 11.2 cm diameter disc brooch of sheet silver, inlaid with stippled gold panels, niello and blue glass. It has no known findspot, but was in the possession of the Strickland family of Yorkshire until 1949, when the British Museum acquired it. It has been dated on stylistic grounds to the mid 9th century.

In examining the two pieces side by side, it is possible to observe a number of similarities but also differences. Both employ Trewhiddle-style decoration, but that on the Strickland Brooch is zoomorphic whilst the High Easter strap-end employs foliate motifs. Another significant difference is that the ears of the animals on the Strickland Brooch are of a 'comma' type more often associated with northern metalwork of the period, whilst the High Easter strap-end has typical 'southern' rounded ears. The beading of the Strickland Brooch is incorporated into the outer edge, but this is smooth on the High Easter strap-end. The stippling on the gold panels of the High Easter strap-end was carefully applied with a round-pointed tool, whilst on the Strickland Brooch it is more random using a crescent-shaped point. The inserts in both pieces have been formed to fill spaces in the respective designs, but in both cases are of similar size – although a much larger object, the Strickland Brooch does not have significantly larger inserts.

Given the extreme rarity of metalwork employing this distinctive element of stippled gold insets, and taking into account the other similarities, it seems highly likely that the two pieces are of the same school and date range. Quite why there should appear to be a 'north-south divide' where zoomorphic ears are concerned is a matter for speculation, but it seems little reason to regard these two products as unrelated. Both pieces may reasonably be described as 'high status,' the strap-end presumably being part of a set. The presence of such a single strap-end within a Romano-British scatter in High Easter is presumably chance, with accidental loss being the most likely explanation. It is also conceivable that it was lost elsewhere and arrived on the site through the deposition of manure, or just possibly was concealed at that location as an item of stored wealth. Whatever the explanation it is a remarkable piece.

The strap-end remains in the possession of the finder, with ultimate donation to the British Museum intended.

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An early medieval hanging bowl mount from Good Easter

Michael J. Cuddeford

This object (Fig. 1) was found with the aid of a metal detector in 2004, and is published here for the first time. The findspot is an arable field within the parish of Good Easter (TL6212). The field in question contains a discrete scatter of Late Iron Age and Romano-British pottery and a corresponding scatter of coins and other artefacts of the same periods. Several other such scatters have been recorded in this parish. None have been excavated. In addition to the LIA and RB material, the wider area has produced two small and dispersed groups of Late Bronze Age metalwork, a small scatter of late Roman *solidi*, and a scatter of middle Saxon metalwork comprising several early pennies ('*sceattas*') and a plated Merovingian *denier*, together with decorated copper-alloy pin-heads and strap-ends. These latter finds all fall within a 7th to 9th century AD date range, and suggest occupational activity.

Early medieval hanging bowls are an enigmatic class of object, the majority of known examples coming from England, with the remainder from Scotland, Ireland and northern Europe. A typical hanging bowl has a diameter of between 250 to 350mm, with a re-entrant in the base forming a raised platform inside. Most have three suspension loops around the rim mounted on escutcheons, and may have additional decorative appliqués on the exterior, and sometimes on the base, both internal and external. One of the best known, from the Sutton-Hoo ship burial first excavated in 1939, also has an enamelled model of a fish mounted on a pedestal set into the interior base.

The most significant aspect of this type of hanging bowl is that the applied decoration is in the native 'Celtic' style prevalent in Ireland and northern Britain during the early medieval period, rather than reflecting the artistic traditions of the Anglo-Saxon kingdoms. Much

Fig.1 Early medieval hanging bowl mount, Good Easte, Essex

speculation has ensued concerning the use to which they were put, with no conclusive result. Their presence in richly-furnished graves implies that they enjoyed a high status, and the predominance of English findspots suggests that they were probably acquired peaceably rather than as loot – were this not the case one would expect more findspots to be within the 'Celtic fringe.' The figures published by Rupert Bruce-Mitford (Bruce-Mitford R, 2005) are largely based on pre-metal detector finds, so the statistics are not skewed by circumstances of discovery method and reporting bias as with some other types of find. Bruce-Mitford suggests that some English bowls may have been made locally, but in the native style not Saxon, which raises interesting questions as to how they were regarded and used. As far as dating goes, the majority of those with enamelled mounts would seem to have been made during the 6th and 7th centuries AD.

Fig. 2 Early medieval hanging bowl mount, Benniworth, Lincolnshire

This hook-escutcheon fragment comprises the lower section only, and represents around 30% of the whole object. The surviving piece measure 37mm high by 39mm wide. The complete fitting would have been sub-ovoid, culminating in a hook which would have fitted over the rim of the bowl and would have retained a suspension ring. The body of the fragment has a raised decoration of spirals, with a somewhat asymmetrical rendition adapted to fit into an oval rather than circular field. The result has lent a somewhat ornithomorphic appearance to two of the motifs, which may be intentional given the overall bird-like shape of the complete object. The outer surface of the escutcheon has traces of tinning or silvering evident, the field contains the remains of a creamy-yellow enamel. It is difficult to assess how near this is to the original hue, but yellow would be plausible in an overall polychromatic scheme of things. The back of the object is plain with a very slight raised step around the outer edge.

As regards parallels, this example is particularly interesting, as only one example out of nearly 200 listed by Bruce-Mitford comes close. The majority of enamelled hook-escutcheons are round, but one found at Benniworth in Lincolnshire in 1933 (Fig. 2) differs only in minor stylistic details from the Good Easter specimen. Its overall length is 80mm, making it slightly smaller than the Good Easter example when complete would have been, although it is thicker in cross-section. Other 'ornithomorphic' examples, including those on a complete bowl from Lincoln, avoid the problem of fitting triskele-type motifs into sub-circular fields by using linear designs. The Benniworth specimen has been dated to *c.* AD 650–700, which if applied to the Good Easter find would place it within the same date range as the early medieval coinage from the site.

The Good Easter hook-escutcheon is to be donated by the finder and landowner to the Chelmsford Museum.

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Excavation at Hadleigh Castle, 2004

Trevor Ennis and Mike Roy

Introduction

In March 2004, excavation was undertaken by the ECC Field Archaeology Unit at Hadleigh Castle in order to investigate deposits and features at risk of destruction above a major area of landslip within the castle bailey. The excavation, commissioned by English Heritage, took place in advance of proposed consolidation works to the bank in the area of further potential landslip.

Hadleigh Castle is built upon an unstable cliff-line that has been subject to recurring land movement over several millennia. Land movement appears to have continued during the life of the castle and subsequently. The south side of the castle has suffered most, in particular, the ruinous remains of the southern curtain wall which have been displaced about 4m to the south of their original position. Significant parts of the north-east tower have also been lost since 1948.

In the period 2001/2, landslip occurred within the castle in two areas in the south of the bailey. In March 2002, an initial programme of survey, commissioned by English Heritage, was carried out by the ECC Field Archaeology Unit to locate the position of the latest landslips and record potential archaeological deposits in the exposed sections (Clarke 2002). This was complemented by a geophysical survey undertaken to identify any buried remains likely to be affected by future slippages. Subsequently, a programme comprising an excavation in the area of the larger landslip followed by regular monitoring of the landslip faces and associated cracks in the ground was implemented.

Location, topography and geomorphology

Hadleigh Castle (SAM 26306) is located in a defensive position above Hadleigh Marsh on the north shore of the Thames Estuary, *c.* 5km west of Southend-on-Sea (NGR TQ 81005 86022). It is situated on a narrow spur of London Clay that forms part of a cliff line, shaped by the Thames about 27,000 years ago, extending *c.* 5km west from Leigh-on-Sea. The cliff is unstable and has been subject to various periods of landslide throughout the post-glacial period; the most recent of which occurred in 2001/2. A detailed geomorphological study had previously been carried out which includes a full description and history of the degradation of the cliff (Hutchinson and Gostelow 1976).

History

The following summary of the historical background is based on a more detailed account of the history and archaeology of the castle that can be found in Drewett (1975).

Hadleigh Castle was built in the 1230s by Hubert de Burgh, Earl of Kent and Justiciar of England, following the grant of a licence by Henry III. His tenure was short lived as by 1239 Hubert had become disgraced and the castle was confiscated by the king. Subsequent surveys indicate that the castle went through periods of poor repair and an extent of the Manor in 1274–5 reported it as being badly built and decayed.

Minor modifications and repairs are recorded in the late 13th and early 14th centuries. However, no major remodelling works were undertaken until the decade *c.*1360–70 when large parts of the castle were rebuilt by Edward III.

In 1552 Edward VI sold the castle to Lord Riche for £700, who appears to have begun the systematic demolition and robbing of the castle and buildings within it, after which it fell into ruin. In the late 19th century the castle was bought by the Salvation Army and, in 1948, it was placed in the guardianship of the Ministry of Works. The castle is currently administered by English Heritage.

Archaeology

Systematic excavations within the castle were undertaken by H. Montague King in 1863, when both trenching and area stripping was employed. These excavations investigated various areas of the castle and located, amongst other features, the kitchen range and parts of the hall buildings.

As little was known about the interior of the castle, key areas within the bailey were excavated during 1971–2

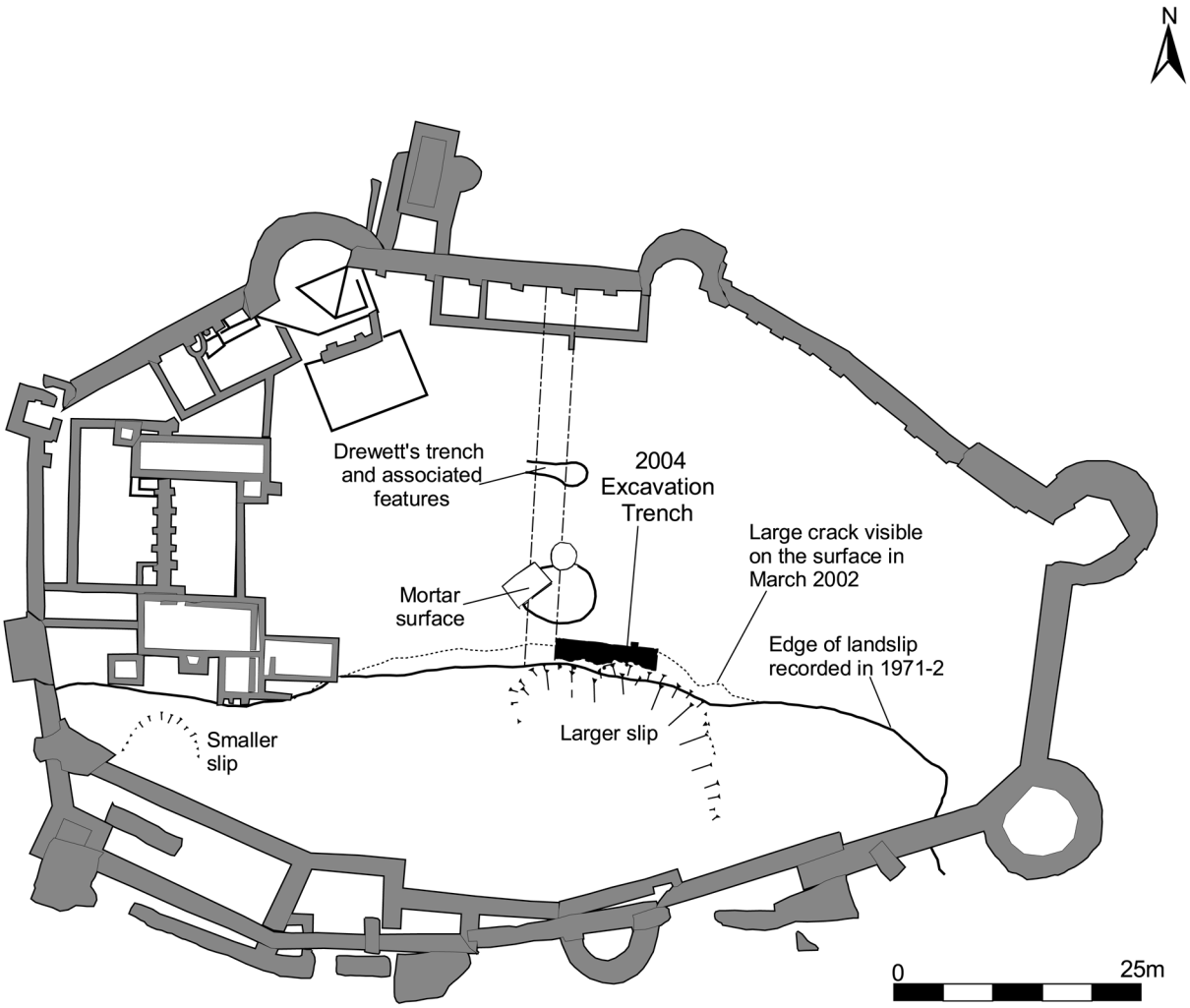

Fig. 1 Hadleigh Castle showing excavation trenches and areas of slippage

(Drewett 1975). This work was given greater urgency following landslips in the winter of 1969–70. The excavations concentrated on the three phases of hall and the barbican entrance, with an additional exploratory trench orientated north/south across the bailey (Fig.1).

The 2002 survey undertaken by the Field Archaeology Unit identified two areas of slippage: the larger towards the central part of the castle bailey and the smaller to the immediate south of the medieval halls in the western part of the castle (Clarke 2002). *In situ* archaeological deposits were visible in both areas of slippage. The results of the geophysical survey, by resistance meter and magnetometer, showed considerable disturbance, possibly from demolition debris deposition, within the castle bailey. Several anomalies were identified, tentatively interpreted as possible ditches, pits and structural features (Clarke 2002).

Excavation results

A single trench was opened in the area of the larger landslip (Plate 1). The removal of the turf and topsoil revealed archaeological deposits and features throughout the trench. At its west end, the archaeological deposits had been removed by Drewett's 1971–72 north/south-aligned exploratory trench across the bailey. Elsewhere the natural clay subsoil lay at a depth of between 0.35 and 0.50m beneath the existing surface. The recovered finds assemblage included small quantities of pottery, animal bone and shell and an abundance of fragments of roof tile. Full finds reports are included in the archive deposited in Southend Museum.

At the base of the excavated sequence the natural reddish clay subsoil was cut by an irregular north/south aligned gully (79) (Fig. 2d). The clay fill of this gully contained oyster shell, animal bone and single fragments of Roman brick and medieval roof tile. The roof tile would suggest that this gully is medieval in date. The Roman brick was probably a discarded piece of building material, as other brick of this date has been recorded in the walls of Hadleigh Castle (EHER 9533). The presence of Roman remains in the vicinity is likely given that Roman pottery has been recovered from the Salvation Army estate, just 300m to the north (EHER 9616).

Overlying the backfill of this gully and the undisturbed subsoil were a series of fragmentary make-up and levelling deposits that were spread throughout the excavation area (Fig. 2c). Earliest in the sequence were thin deposits of reddish brown silty clay (68 and 81 – not illustrated) over 2m in length, in the east and west of the trench, which contained occasional animal bone, tile and mortar fragments. These were overlain by further deposits of brown to yellow silty clay (59, 66, 69, 70, 71 and 72), up to 0.16m deep, some of which contained gravel (59), sand (69) and fragments of lime mortar (66, 70, 71 and 72). The small quantity of diagnostic pottery recovered indicated that these ranged in date from the 13th to 14th century.

Deposits 69 and 71 were truncated by a shallow, irregular north/south aligned hollow (75) (Fig. 2c). This contained a pebbly silty clay fill, which may represent deliberate levelling prior to the construction of an overlying structure. In the east of the trench, layer 69 was partly overlain by a deposit of dark greyish brown silty clay (65) containing numerous fragments of Kentish ragstone. Similar stone is visible in the remaining walls of the castle.

The levelling deposits were sealed by a substantial layer of lime mortar with shell inclusions (53) (Fig. 2b). The layer was 0.18m deep and covered an area of 8.5m east/west. Its surface was very uneven and covered by deep ruts and there was no evidence for an overlying cobbled or paved surface. On the eastern side of the layer a linear spread of weathered yellow, slightly sandier, mortar (55) might indicate the former position of a timber sill beam of a structure built upon the mortar. The western limit of the structure may have been delineated by gravel deposit 59.

Plate 1 Excavation on the landslip edge

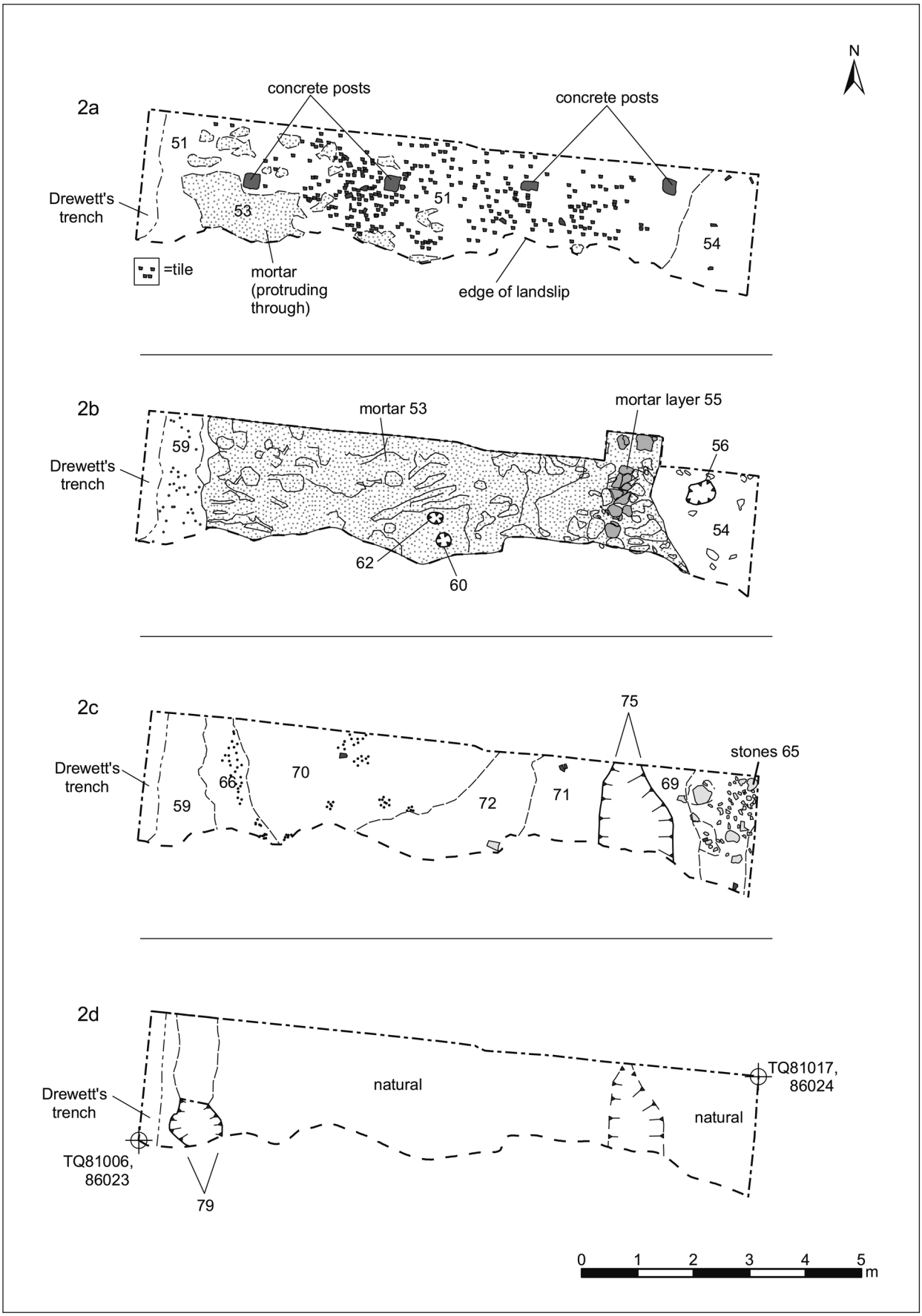

Fig. 2a-d Stratigraphic plans of excavation trench

Two small hollows, 60 and 62, perhaps the remains of post-holes, cut the surface of 53. To the east of mortar 53 was a deposit of clay (54) that might represent a contemporary ground surface. This was cut by a well-defined, sub-rectangular post-hole (56), 0.19m deep, which contained stoney clay packing material at its base.

If layer 53 does constitute the floor of a timber structure, the lack of an underlying uniform bedding layer and the rough nature of the deposit, might indicate it was a temporary structure erected for use during repair/construction work on the castle. When no longer required the superstructure could have been removed leaving the mortar open to the elements as part of the general yard surface. The opening of a small trench extension revealed that the structure as represented by mortar layer 53 and linear mark 55 continued northwards.

Overlying this redundant floor was an extensive deposit of mid to dark brown silty clay (51), 0.14m thick, containing shell, animal bone and abundant fragments of broken roof tile presumably derived from demolished structural elements of the castle (Fig. 2a). Almost 146kg of small tile fragments were recovered from this context, a number of which were mortared on all surfaces, perhaps indicating that they had derived from hearths or building string-courses rather than roofs. Many tile fragments were overfired and warped and may be 'seconds' intentionally procured for purposes other than roofing. In addition, many peg holes were not completely formed and some did not pierce the full thickness of the tile. Deposit 51 contained pottery dating to the later 14th to early 15th century and may have resulted from a deliberate attempt at this time to level and firm-up the yard surface using demolition rubble. It is also conceivable that this material is associated with the probable mid-16th century dismantling of the castle and that the pottery is of a residual nature.

In the east, deposit 51 was overlain by a dumped clay layer (52 – not illustrated) containing small stones, tile and oyster. At the top of the sequence, the dark brown loam topsoil had been disturbed by the insertion of four concrete post-bases in modern times. These formed a fence line that is presumed to have previously demarcated the landslip edge. The topsoil contained a miscellany of metal, ceramic and glass objects deposited through casual discard and loss by visitors to the site over the last century.

Discussion

The excavation identified a sequence of levelling deposits, apparently ranging in date from the earlier 13th century to the later 14th century. Several of the levelling deposits contained loose mortar fragments and flecks that might suggest their creation during construction/repair work known to have taken place at various times following the construction of the castle. However, a general paucity of dating evidence meant it was not possible to firmly link deposits with documented episodes of building activity.

The mortar surface and possible wall-line may indicate the position of a timber structure, perhaps erected for temporary use during building works. Nearby spread of Kentish ragstone fragments may be associated, though they appear to belong to an earlier phase and may simply constitute a dump of building rubble. Pottery from the overlying levelling deposit suggests that the timber structure might date to the latter half of the 14th century and be associated with the rebuilding works of Edward III in the 1360s. A similar timber structure, believed to date to the first half of the 13th century, was recorded about 7m to the north in the trench excavated across the bailey by Drewett (1975, 108). This structure had a rectangular crushed mortar floor; a concentration of Kentish ragstone in the same area was interpreted as the remains of levelled footings.

In addition to tile, animal bone and shell were both substantial components of the finds assemblage. Most of the bone was fragmentary and surface condition was poor. However, butchery marks were evident and there were some instances of bone–gnawing by dogs. Most of the major food animals were present, as were deer bones and antler fragments. The latter is not unsurprising in a royal castle. The majority of the recovered shell was oyster, although cockle, mussel and whelk were also present. The bulk of the shell was found in deposit 51, and it is probable that shell was being used in the production of mortar in the locality. There was a striking difference in size and condition between the shells found above mortar layer 53 and those found below. The shells above were small, but those below were twice the size, in a fresh condition and probably represented the incidental inclusion of food waste remains in the levelling layers for the mortar floor.

No evidence of paving or cobbling was found within the castle courtyard which concurs with the evidence from the 1970s excavations. Drewett (1975, 108) suggested that occupation debris was utilised to 'level up puddles in a muddy courtyard', which would correspond with the various levelling spreads recorded in the 2004 excavation. The tile-rich demolition deposit (51), also containing shell, animal bone and pottery, equates well to the layers of 'mixed brown soil with demolition material and domestic rubbish' identified in Drewett's trench (1975, 110, Section *U-V*).

The excavation has confirmed the presence of significant stratified and datable archaeological deposits and features in the areas under threat from the encroaching landslides. Although only limited evidence for medieval structural remains was recorded, the ongoing processes of ruin and repair that characterised the life of the castle have been further elucidated. The results of the excavation demonstrate the obvious archaeological potential of the site and emphasise the need for further investigation of imperilled areas of the castle grounds and structure before more evidence of the castle's history is lost.

Acknowledgements

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undertaken by the authors, with the assistance of Jo Archer and Adrian Turner. The preliminary survey was overseen by Rachel Clarke. Rob Wardill undertook the geophysical survey. Finds were processed by Phil McMichael and reported on by Joyce Compton and Helen Walker. The illustrations were created by Andrew Lewsey.

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Post-medieval remains at the chapel of St Thomas-a-Becket, Brentwood: archaeological investigations 1997

Richard Havis

Introduction

In January 1997, a watching brief was carried out at the Chapel of St Thomas-a-Becket, Brentwood (TQ 5947 9377) by Essex County Council's Archaeology Advisory Group, in response to an environmental improvement scheme initiated by Brentwood Borough Council. This included the excavation of a tree pit and a Christmas tree anchor point within the precinct (presumed churchyard) on the north side of the chapel (Fig. 1). The site of the now ruined chapel occupies a central position in the town, bounded to the north by the High Street (Medlycott 1999).

The chapel of St Thomas-a-Becket was founded *c.*1221, when Brentwood was already an established small town. The town's existence has been recorded in a series of late 12th and early 13th-century documents, beginning in 1176. The chapel was built as a subsidiary chapel to the South Weald Church and in plan consists of a late 14th-century chancel nave with a tower in the north-west corner, and a porch on the north side opening onto the High Street. The building served as a chapel until 1835 and as a Boys School until 1869, when it was largely dismantled with only part of the west end of the nave and north-west tower surviving.

Archaeological Recording

This was confined to the north end of the site within the improvement area, where between 30–40cm of deposits had previously been disturbed by successive pedestrianisation schemes in the High Street. At the time of the investigation, consolidated hardcore had already been laid over the majority of the site, which precluded further investigation of this area. However, two test pits (approximately 1m^2) for the planting of a tree and the town's Christmas tree anchor point were excavated by hand.

Test Pit 1

The excavation of test pit 1 (Fig. 2) revealed the remnants of layer 1, surviving between 16 and 20cm thick and comprising dark grey brown sandy clay loam with

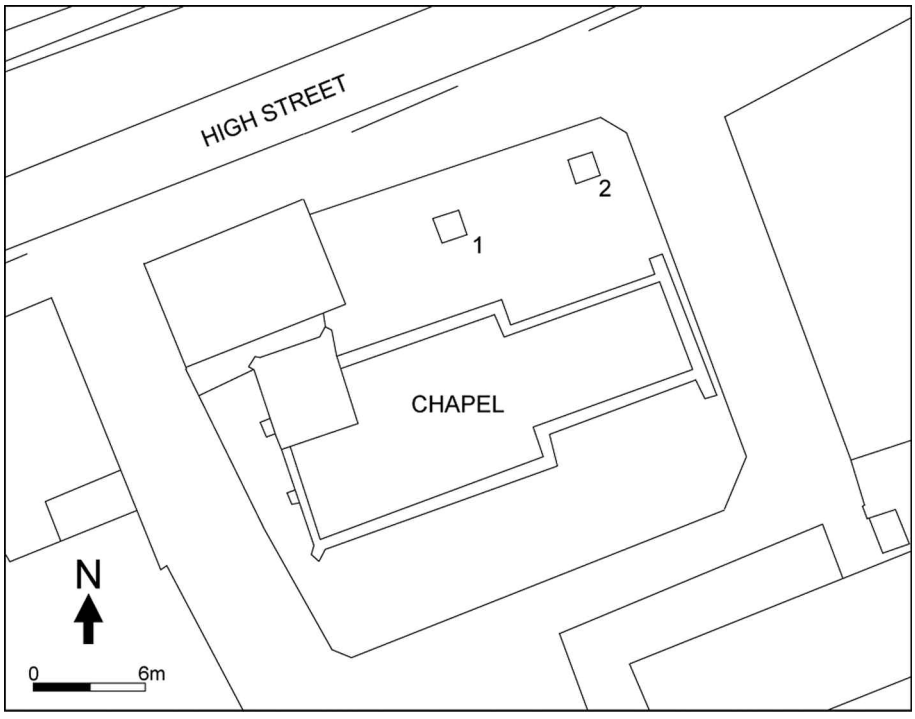

Fig. 1 The chapel of St Thomas-a-Becket, Brentwood. General site plan, showing test pits 1 and 2.

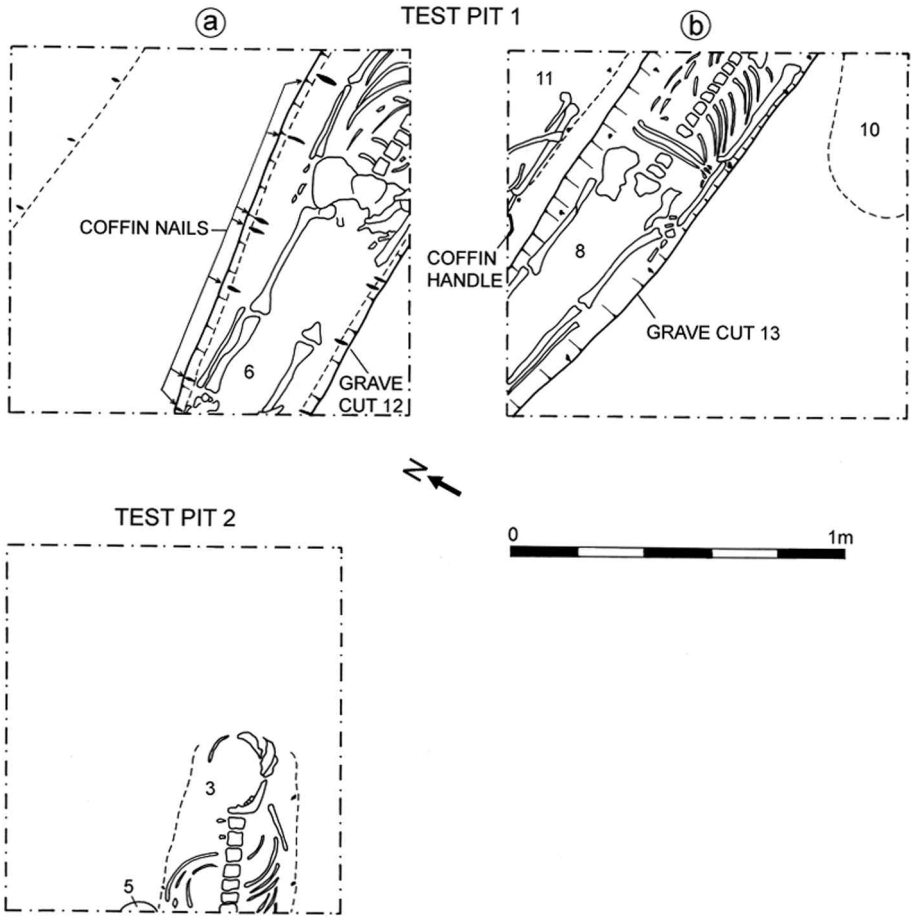

Fig. 2 The chapel of St Thomas-a-Becket, Brentwood. Plan of test pits 1 and 2, with human burials.

common amounts of sub-rounded and sub-angular flint pebbles, 18th-century clay-pipe fragments, bone, brick and tile fragments. The deposit also revealed residual early post-medieval red earthenware from the 17th-18th century, slip painted and black glazed wares and part of an 18th-century English stoneware tankard. Layer 1 was distinct from 2 which consisted of 55cm of mid grey brown sandy clay loam, containing peg tile, bone fragments and 17th to18th-century black glazed wares.

Below this layer a number of grave cuts were identified. Grave cut 6 contained a well preserved adult articulated inhumation in a supine position lying east west, 1.40 metres below pavement level (Fig. 2a). Traces of a coffin were evident with an iron nail still *in situ*. The grave cut (12) was steep-sided and U-shaped in profile. It cut an earlier grave (13).

A second burial (8 in Fig. 2b) lying east-west, 1.15 metres below ground level to the south had been cut by grave 11, see below; the latter had removed the upper right arm of 8. The burial comprised an adult inhumation in a supine position with the lower right arm crossed above the waist. The burial was in a good state of preservation, but with a green oxidised stain on the left clavicle. The stain probably resulted from the decay of a copper-alloy object, perhaps a pin from a burial shroud, tied at the shoulder, coming into contact with the body during decomposition. No evidence of the pin survived. Traces of a coffin were present with iron nails still *in situ*. The fill (9) consisted of a mid-grey brown sandy clay loam but with no datable finds. The grave cut 13 was shallow and U-shaped in profile.

Two further burials (10 and 11), lying immediately north and south of 8 were left *in situ* as any further disturbance could be kept to a minimum. The left ulna and radius of (11) was visible, and iron coffin screws and a handle were evident in the north side of the test pit.

Test Pit 2

A second test pit (Fig. 2 Test pit 2), revealed a similar sequence to test pit 1. Layer 2 contained peg tile, 18th-century clay pipe fragments, animal bone fragments, occasional charcoal flecks and clay `lumps`-derived from the upcast of the burial deposit. It also produced a residual sherd of Frechen stoneware and slip-painted wares of the late 16th century, a Nuremberg jetton (trading token) *c.*1600 and lead waste material probably associated with the casting of leaded lights on the site for window glass of the chapel.

The excavation of test pit 2 revealed an adult articulated inhumation (3) aligned east-west in a poor state of preservation lying 1.10 m below the present pavement level. Traces of a coffin were evident, with dark stains appearing on both sides of the burial and iron

coffin nails still *in situ*. A second burial (5), lying less than 90cm below the present ground level was identified, the skull appearing in the east section of the test pit while cleaning and was left *in situ*. This burial had cut and partially distributed inhumation (3) which accounted for its poor state of preservation. This test pit was only excavated to a depth of 1.10 m.

Discussion

Brentwood was a `new town`, deliberately planted (Medlycott 1999) on the edge of South Weald parish. The town's origins may be earlier, but by the late 12th century the monks of St Osyth, who had been given leave to assart natural woodland in 1177 and 1184 at Brentwood, had created a small thriving town. The town is presumed to have originated along the south side of the High Street, due to the location of the chapel. Building on the north side of the High Street is thought to have been sometime after 1234.

The Chapel's location in the town adjacent to the High Street was deliberate and designed to derive its income from gifts from travellers and pilgrims on the busy London to Colchester road on their way to Canterbury. The chapel was also restricted, as a subsidiary of South Weald Church to the services it provided and the means of income it generated. It was not allowed to receive any christenings or burials, which would generate and divert revenue away from the mother church; the priest was required to take an oath to such an effect (Larkin 1906). However, the archaeological excavation confirmed the existence of burials within the churchyard on the north side of the Chapel. The coffin furniture and type evident on the site inferred from recent funerary studies in archaeological and vault examinations at Christchurch, Spitalfields, Hinton St George, Somerset, and other suggests a date of the late 17th-18th century for the burials. Burials 6 and 11 which produced iron screws to secure the coffin, also containing post-medieval tile with the grave fill 7, can be dated to the 18th century (Litten 1991). It is likely that both coffins were constructed of a single-break, flat-lidded design with the base board fitted within the coffin, screwed into position through the sides. The sides were then screwed to the head and foot ends of the coffin and the lid spanned the sides (Litten 1991). The remaining burials were probably buried in base board constructed nailed coffins. Burials appear to have been interred at the Chapel from at least the 17th century, probably up until the late 18th century. This is supported by John Larkin (1906), who noted that a few graves still existed on the north side of the Chapel when he was a boy (*c.*1860). It is probable that restrictions were removed regarding the burial of the towns parishioners to be interred within the churchyard and possibly the Chapel, due to a general increase in the population at Brentwood, the town being described in a petition to James the First in 1616, as `great market town consisting, of many households, situated together`.

The excavation of the test pits produced no medieval evidence. Large quantities of post-medieval peg tile were recorded and this is likely to derive from successive re-roofing and demolition schemes of the chapel, the last in 1869. The north end of the churchyard was also cleared sometime after 1869, when a kitchen and other rubbish was removed so that the view of the Chapel from the road could be enjoyed by the townspeople (Larkin 1906). It is at this time, that the surviving graves were probable levelled and any markers removed.

Examination of the test pits did not reveal any archaeological trace of a deep trench and wooden fence, which was constructed around the Chapel during a siege in 1232, when Henry III starved Hubert de Burgh, Earl of Kent into submission, after de Burgh took sanctuary in the Chapel.

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A study in Georgian Colchester: 12 and 13 St Botolph's Street

Philip J Wise

Today St Botolph's Street is a busy thoroughfare on the eastern edge of Colchester town centre, lined with small shops and other businesses. Amongst these are two properties on the west side of the street, No. 12, a dental surgery, and No. 13, a family butchers, which share a common facade of three storeys, the upper two being of red brick with stone quoins, and which have shop fronts at ground level separated by a passageway (Pl. 1). Although of early 19th century date there is the possibility that these two buildings may contain parts of earlier structures (Hugh Fielden, pers. comm.). To the rear there are a number of outbuildings, several of which pre-date the buildings on the present street frontage. An extensive series of deeds survive for both No.12 and No. 13, which provide the basis for this study of Georgian Colchester (Appendix and Table 1).

The earliest surviving document relating to Nos 12 and 13 St Botolph Street is the will of Stephen Goslin, drawn up on 17 September 1742, in which he left the bulk of his property to his wife Elizabeth (Allen 1). Stephen Goslin was a fellmonger or dealer in dead cattle and hides[1] and this first source establishes the artisan character of the area. Goslin is known to have become the owner of the St Botolph's Street property in 1703 according to a now lost document quoted in a later source (Allen 17). Thus, when Stephen Goslin died shortly before 13 April 1743 it was after some forty years of living in St Botolph's Street. At first, it is possible that his widow was able to live off the income from her property. However, by 1752 Mrs Goslin was beginning

Plate 1 St Botolph's Street at the beginning of the 20th century (Colchester and Ipswich Museum Service).

MESSUAGE 1	MESSUAGE 2	MESSUAGE 3	MESSUAGE 4	MESSUAGE 5	MESSUAGE 6
STEPHEN GOSLIN (owner 1703-43) ↓					
ELIZABETH GOSLIN (owner 1743-57) ↓					
James Brockwell	James Inman (Wm Boys the Younger)	Benjamin Knock (Widow Knock)	Widow Eagle (Hannah Eslin)	John Dykes	William Barrell
FREDERICK HOFFGAARD (owner 1757–59) ↓					
James Brockwell	John Popps	Benjamin Knock	Thomas Ralph	John Thompson	James Robinson
SARAH HOFFGAARD (owner c. 1765) ↓					
Mrs Butterys	vacant	Daniel Brown	vacant	William Cresswell	vacant
HOFFGAARD SHOOBRIDGE ←(owner 1796)→ ↓					
SAMUEL CLARK (owner) →		**ISAAC YOUNG** (owner) ←		**SAMUEL TAYLOR** (owner) ↓	
STEPHEN MATTHEWMAN (owner 1799) ↓					
Widow Hoffgaard (Peter Cross)	Daniel Brown (Edward Gadd)				
THOMAS & MARY CHALLIS (neé Matthewman) ↓					
DAKING BARE (owner 1837)				**JAMES HITCHCOCK** (owner 1837)	

Table 1 Ownership and tenancy of 12 and 13 St Botolph's Street.

to run short of money and on 29 January of that year she borrowed £80 from Samuel Wall, described as a 'gentleman' of Colchester (Allen 2). Further loans followed of £20 on 2 November 1753 (Allen 3), £20 on 6 August 1755 (Allen 4) and £21 on 22 February 1757 (Allen 5). Finally on 17 August 1757 Elizabeth Goslin borrows a final sum of £27 from Samuel Wall (Allen 6). In all over five years she had borrowed £168 (£16,567 in modern terms[2]) against the collateral of her late husband's property.

The main source for Mrs Goslin's financial activities is a mortgage of 17 August 1757 (Allen 6) which lists all the previous transactions. This mortgage also gives a brief description of Elizabeth Goslin's property and its occupants in 1757: 'those six several messuages or tenements and dwelling houses situate lying and being in Buttolph Street ... Four of which messuages then late were in the several tenures of James Brockwell James Inman Benjamin Knock and the widow Eagle and then or then late were in the several occupations of James Brockwell William Boys the Younger the widow Knock and Hannah Eslin ... and the other two in the several tenures of John Dykes yarnmaker and [William] Barrell and in the occupation of John Dykes only '. Of these names the most interesting is that of John Dykes; not only is his the only occupation given, that of a yarnmaker, a petty capitalist who organises spinners (Andrew Phillips, pers. comm.), but his presence in St Botolph Street may be found in later documents. As will become apparent this early division of the six tenements into four and two is crucial to the understanding of the later development of the site.

The next major transaction is the sale by Elizabeth Goslin of her property in St Botolph's Street to a Mr Frederick Hoffgaard, a brewer, on 26 October 1757 for only five shillings (modern £25) (Allen 7 and 8). The same six messuages appear, although now there has been some change in occupancy with the current occupants being John Popps, Benjamin Knock, James Robinson, James Brockwell, John Thompson and Thomas Ralph. Of these six as before the occupation of only one individual is known, John Thompson, who is described elsewhere as a distiller (Allen 20) and he, Thompson, is a link in a developing chain. Frederick Hoffgaard died in December 1759, leaving his property to his widow Sarah who herself died shortly after 8 December 1765 when she made her will. The property then passed to Frederick and Sarah Hoffgaard's daughter, another Sarah.

Sarah Hoffgaard the younger was a wealthy heiress according to a surviving settlement of her real and personal estate dated 14 and 15 March 1766 (Allen 10); as well as the six messuages in St Botolph Street, she also owned the inn known as the *Crown and Shears* in Magdalen Street [3] and property at Magdalen Green, the Hythe and Great Wigborough. However, she appears to have been anxious to protect this inheritance against a claim from her late father's relations in Norway or Sweden or from seizure by the Crown should, as was thought, these relations prove to be aliens. Therefore, she took the step of 'selling' for the sum of five shillings for one year the St Botolph's Street property to Francis Freshfield of Colchester, a merchant, and Samuel Bolt of Feering (Essex), a farmer.[4] At this date (1766) only three of the messuages were occupied: by Mrs Butterys, William Cresswell and Daniel Brown. Again one of these is of particular interest as both his occupation and place in the developing sequence is known. William Cresswell was a butcher, the first of several to be recorded in this part of St Botolph's Street.

At an unknown date Sarah Hoffgaard married Richard Shoobridge, a cabinet maker of Chelmsford, and they had a son Hoffgaard Shoobridge. On 1st April 1796 Hoffgaard Shoobridge sold off his property in St Botolph's Street to three individuals, each gaining two tenements and resulting in the break-up of what had been until then a single ownership: Samuel Taylor, a butcher of Colchester, purchased no. 12 (Allen 18), Samuel Clark, a shopkeeper of Hatfield Peverel, purchased half of no. 13 (Allen 14 and 16) and Isaac Young, a mason of Colchester, the other half (Allen 13 and 15). At an unknown date Samuel Taylor's property passes to James Hitchcock, a plumber and glazier. By 1799 Isaac Young had sold his property to Stephen Matthewman, a butcher. In this year Matthewman also purchases Clarke's property to create the single butcher's shop we know today.

Details of the properties at the very end of the 18th century are recorded in a later document of 1837, which most helpfully describes the complex ownership history of 12 and 13 St Botolph's Street and includes a detailed plan (Allen 20) (Fig 1). In particular a list of occupants for one of the messuages is given commencing with John Dykes, the yarnmaker (there in August 1757), John Thompson, the distiller (October 1757), William Cresswell, the butcher (March 1766), Samuel Taylor, another butcher (April 1796) and finally James Hitchcock, a plumber and glazier (November 1837). Hitchcock's property is shown on the 1837 plan as lying to the north of a 'cartway and passage'. This still exists today with no.12 St Botolph's Street to the north and no.13 to the south. In other words we are able to identify who was living on the site of what is now No. 12 from 1757 to 1837. [5]

The 1837 indenture contains other clues as to the situation in the late 18th century. In April 1796 Stephen Matthewman, a butcher,[6] purchased an area of land from Samuel Taylor which is described as 'being north of the present [1837] bullock yard and upon part of which certain stables and other buildings are now standing' as well as a further area of land subsequently sold on to William Nevill and occupied in 1837 by William Griffin. This transaction explains the present (2008) layout of the rear part of no. 12 which extends behind no.13 and demonstrates that this L-shaped form has been in existence for over two hundred years. It is also apparent that some of the buildings shown on the 1837 map still survive, in particular the 'stable' and the 'shed', and these are potentially important sources of evidence for utilitarian buildings in Georgian Colchester.

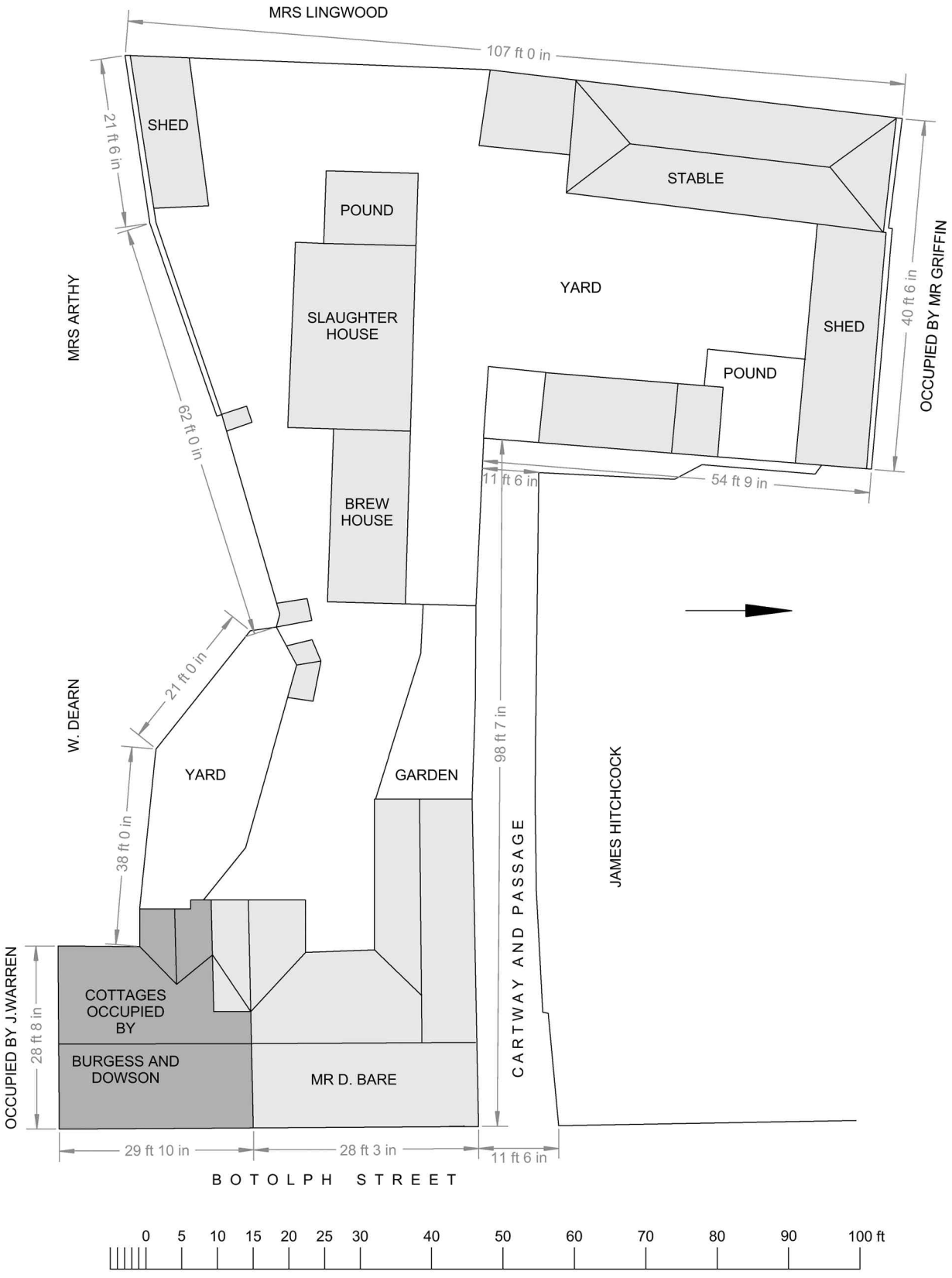

Fig. 1 Sketch map of 12 and 13 St Botolph's Street in 1837 re-drawn from Allen Document 20. (Drawn by Maureen McDonald, Colchester Archaeological Trust).

By another transaction in 1799 Stephen Matthewman purchased two messuages and accompanying 'two slaughter houses, a pound, piggeries and other buildings' from Samuel Clark to add to his existing landholding. These messuages, soon to be converted into a single butcher's shop, were located immediately south of the cartway as may be shown by the fact that the property was subsequently purchased in 1837 by Daking Bare, also a butcher.[7] This proves that the cartway was in existence at least as early as 1799

(and probably in 1796).[8] These two messuages were previously occupied by the Widow Hoffgaard (presumably Sarah Hoffgaard the elder) and Daniel Brown, and subsequently by Peter Cross and his 'undertenant' Edward Gadd. The 'slaughter house' is another building which still stands today.

Taken together the 1837 map and the list of occupants would suggest the following: that the modern 12–13 St Botolph Street was once the site of six individual properties, four south of the passageway and two north. One of the northerly tenements has a sequence of occupants from 1757 to 1837 and from at least 1766 was a butcher's shop. In 1799 this usage is also found south across the passageway when Stephen Matthewman was the first of a line of butchers continuing to the present day who had a shop at what is now 13 St Botolph's Street.

This study in Georgian Colchester has provided an insight into the character of part of the town – namely a short stretch on the west side of St Botolph's Street. Evidence has been found for the type of property on the site of what is now nos 12–13, who lived there at various times from the beginning of the 18th century until 1837 and in some cases their occupations. Information has also been presented on landowners during the period under study and how and under what circumstances property changed hands. Although this was always an area of Colchester lived in by artisans, it is clear that successive owners of the property were of some standing in the community and could be quite wealthy with considerable financial interests in the surrounding area and beyond. As a result a wider picture emerges as Colchester changes from essentially a late medieval town to a recognisably modern urban centre.

Appendix Documentary Sources

Allen Documents (12 and 13, St Botolph's Street)

1. 1742 (17th Sept) Will of Mr Stephen Goslin.
2. 1752 (29th Jan) Mrs Elizabeth Goslin to Mr Samuel Wall Mortgage for £80.
3. 1753 (2nd Nov) Mrs Goslin to Mr Wall Mortgage for £20.
4. 1755 (6th Aug) Mrs Goslin to Mr Wall Bond for £20.
5. 1757 (22nd Feb) Mrs Goslin to Mr Wall Bond for £21.
6. 1757 (17th Aug) Mrs Goslin to Mr Wall Mortgage for a further sum of £27.
7. 1757 (26th Oct) Mrs Goslin to Mr Frederick Hoffgaard Lease.
8. 1757 (27th Oct) Mrs Goslin to Mr Hoffgaard Release.
9. 1757 (27th Oct) Mr Wall to Mr James Waynman Assignment of mortgage to attend the inheritance in trust for Mr Hoffgaard.
10. 1766 (14th-15th March) Attested Copy of Settlement of the real and personal estates of Sarah Hoffgaard Spr.
11. 1796 (19th and 20th January) Mr Hoffgaard Shoobridge to Mr Joseph Lowton Lease and Release.
12. 1796 (12th February) Exemplification of recovery.
13. 1796 (1st April) Mr Shoobridge to Mr Isaac Young Lease.
14. 1796 (1st April) Mr Shoobridge to Mr Samuel Clark Lease.
15. 1796 (2nd April) Mr Shoobridge to Mr Young Release.
16. 1796 (2nd April) Mr Shoobridge to Mr Clark Release.
17. 1796 (2nd April) Mr Clark to Mr Young Deed of covenant for the production of deeds.
18. 1796 (1st and 2nd April) Mr Shoobridge to Mr Samuel Taylor Lease and Release.
19. 1796 (9th April) Mr Taylor and his wife to Mr Samuel Daniell Mortgage of a messauge in Colchester for £60 and interest at £5.
20. 1837 (14th Nov) Thomas Challis Esq and wife [Mary Ann Challis, nee Matthewman] to Mr Daking Bare conveyance of a freehold Butcher's Shop in St Botolph's Street.

Danesh Documents (12, St Botolph's Street)

1. Indenture of 18th April 1850 between Mr William Hitchcock and Mr Stephen Chamberlain Rand.
2. Conveyance (of sale) of 19th June 1875 between Mr Rand and Mr Samuel Bloomfield.

Acknowledgements

I am grateful for the assistance of Andrew Phillips, Professor Michael Wise, Dr Simon Collcutt and Hugh Fielden with the research for this study and would like to express my thanks to Mr John Allen and Mr and Mrs Danesh for granting me access to the deeds to their respective properties.

Author: Philip J. Wise, Heritage Manager, Colchester and Ipswich Museum Service, Museum Resource Centre, 14 Ryegate Road, Colchester, Essex, CO1 1YG.

Notes

1. Waters C 2002 *A Dictionary of Old Trades, Titles and Occupations*. Newbury: Countryside Books, 114.
2. Officer Lawrence H, 'Comparing the Purchasing Power of Money in Great Britain from 1264 to Any Other Year Including the Present' Economic History Services, 2001. URL: http://www.eh.net/hmit/ppowerbp/ (accessed 18.11.2005)
3. The Crown and Shears is mentioned in the alehouse recognisances from 1764 to 1780 (Jephcott J A 1995 *The Inns, Taverns and Pubs of Colchester*, 118). This present reference may be the first time that its location in Magdalen Street has been identified.
4. The legal document (Allen 10) by which this transaction was undertaken was witnessed by, amongst others, F Smythies. F or Francis Smythies, the Elder (d. 1798) was a highly influential figure in Georgian Colchester. As well as being the town clerk

he was also the legal adviser and agent of the gentry and tradesmen, including in this case the heiress Sarah Hoffgaard. His role as a witness confirms Sarah Hoffgaard's significant position in Colchester society (See *The Victoria History of the County of Essex: Volume IX: The Borough of Colchester* (1994) 157).

5. The ownership sequence for No. 12 continues into the Victorian period (and beyond). James Hitchcock had died by 1850 leaving his property in St Botolph Street to his nephew, William Hitchcock of Bedford Street, Mile End, Middlesex, who was a tailor and draper. William Hitchcock sold his inheritance to Stephen Chamberlain Rand of Colchester, a pipe maker, on 18 April 1850 (Danesh 1). Rand in turn sold the property to Samuel Bloomfield of Berechurch, Colchester, whose occupation is given as 'a farmer' on 19 June 1875 (Danesh 2).
6. Stephen Matthewman is listed as a butcher in St Botolph's Street in *Pigot's 1823/4 Directory*. By 1837 he had died, leaving his butcher's shop to his daughter Mary Ann Challis.
7. Daking Bare is already listed as a butcher in St Botolph's Street in *Pigot's 1832/4 Directory*. It is possible that he was renting the premises at No. 13 at this date. In 1837 he paid £1550 for the freehold of his shop.
8 The St Botolph's Street entrance to the cartway is shown on the 1837 property map as 11' 6", but today is only 10' as a result of the straightening of the side wall of No. 13 which has encroached into the cartway. Likewise the shop frontage in 1837 was 28' 3", which is very close to the modern measurement of 27' 8".

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Book Reviews

A Late Iron Age Warrior Burial from Kelvedon, Essex by Paul R. Sealey. East Anglian Archaeology No. 118, 2007. Colchester Museums. ISBN: 978 0 9501781 72. Paperback, £10

The publication of this Iron Age burial excavated in 1982 is an important addition to the small number of known warrior burials in Britain. The death of the excavator in 1994 and the meagre excavation documentation has meant that the report has had to be compiled from the finds, evidence from the farmer and his farmhand who were extracting gravel with a mechanical excavator to make up a farm-track, and notes made from a conversation between the excavator and an archaeologist of the Chelmsford Archaeological Trust soon after the discovery.

The burial appears to be a locally isolated one, not associated with a cemetery or nearby burials other than one satellite burial. The site on a hillside overlooked what later became the small Roman town of Kelvedon, *Canonium*. The region at the period to which the burial is assigned supported an apparently thriving community, and a warrior element within that community, as attested by Late Iron Age pottery with warrior decoration and a somewhat later pot graffito discovered locally.

With the limited evidence of context available, it is inevitable that the bulk of this report should be a consideration of the finds. The sword, made from just five rods of iron welded together, was dated to the 1st century BC from the form of the banding. The front and back plates of the scabbard survived along with the chape, the terminal of the scabbard, made from cast lead-bronze. The bronze scabbard is of particular interest in that the tin strip applied longitudinally to the (front?) plate is rare amongst known Iron Age scabbards. The strip would have produced a distinct colour contrast with the bronze to which it was applied. The tin may also have had a functional purpose of a suspension loop which could be attached to the warrior's belt, but the loop had not survived on the Kelvedon scabbard.

A double-edged short sword or dagger was represented by a broken iron fragment. A bent and now-broken spear blade, about 53 cm. long, apparently had an ash shaft which fitted into an oval socket of the iron spear point. A fragment of mineralised ash survived inside the socket. The Kelvedon spear was unusual in having a socketed iron ferrule which would have fitted over the butt end of the shaft so it could be stuck into the ground, or so that the spear could be used as a weapon at both ends. The shield was represented only by part of the central iron boss. The iron band-shaped form is unique to mainland Britain but has been found on the continent and in the Channel Islands.

Among the other artefacts recovered were a copper-alloy tankard handle and two copper-alloy fragments which would have fitted around the rim of the wooden tankard. With a diameter of only 9 cm. the tankard was small in comparison with others found elsewhere – perhaps our warrior was not a great ale-drinker! The author draws attention to the comparison of the beading on the tankard handle with that of the Colchester I mirror published in 1948 and suggests that a north-east Essex craftsman might have made both. The form is important for it helps to date the making of the tankard and therefore the subsequent burial, to the 1st century BC.

Fragments of a bronze bowl show it to have been known from Roman comparisons from the 1st century BC to the early 1st century AD. Its presence supports the evidence for trade with Roman sources on the continent. Two or three iron clamps (used to fix together wooden boards had mineralised wood attached to them, perhaps indicating a wooden board above or below which the body was laid. Two tall pedestal pottery urns typical of late Iron Age forms but with unusual bases date from the 1st century BC into the 1st century AD; a cordoned pot of Aylesford-Swarling type which can hardly predate 75 BC was recovered from the satellite grave.

The Specialist Reports will be particularly appreciated for the contribution that scientific methods originally developed by industry for the purposes other than archaeology can make to a fuller understanding of origins, construction methods and structure.

X-ray of the sword revealed that the pieces of iron had been welded together from surface to surface rather than from cutting edge to cutting edge. Similar techniques have been shown in swords from Anglesey, Canterbury and from Cambridgeshire. The smith had used the stronger less slaggy pieces for the cutting edges, and similar low-carbon iron used for the central ridge core gave the sword a distinct reflective pattern when polished which would have been a unique signature for this sword.

The scabbard, its chape and the bronze bowl were subjected to electron probe microanalysis and spectrometry. This detects the different chemical elements and their respective concentrations in the artifact. Allowance has to be made for the products of corrosion. The tin-bronze of the scabbard showed impurities which are matched by mid-1st century

bronzes from a wide area in north-western Europe, including Britain. The terminal scabbard chape has been made by the lost-wax process whereby the shape is formed in wax, covered in clay and hot bronze poured through a filling-hole into the clay, dissolving the wax and taking up the shape of the resultant cavity as it cools. The metallurgical analysis showed its composition matched other bronzes found in southern Britain including Maiden Castle (Dorset) from the 1st centuries BC and AD.

The Roman tin-bronze bowl is characteristic of pre-2nd century AD bronzes, after which time brass, a zinc-copper alloy, was preferred. A small quantity of textile was present on the sword. Microscopy showed the fibre to be flax or hemp, not wool as has been found at St Albans and Billericay. A similar plain weave in flax has been found in Ashford, Kent and in Guernsey, but this rare survival makes it a significant addition to a small number of finds.

A general Essex readership might have welcomed a fuller comparison with the well-publicised but later Stanway warrior burial which included gaming pieces, spear, shield, glass, copper-alloy jug and pottery, though this monograph will be appreciated by a wider and more specialist audience. The author allows himself speculation based on the limited evidence available from Britain about the nature of Iron Age tribal communities, warfare, warriors and their funerary rites. Given that Iron Age Britons were not Celts in the continental sense he uses comparisons with northern and western Europe with caution, but points to the similarities of the artefacts of Gaulish examples, perhaps brought back from there by a warrior who had fought on the continent and returned to his native Trinovantian homeland now an elite. These latter chapters give colour and context to the burial. The careful and detailed discussion throughout this monograph explaining each conclusion and drawing inferences from comparative materials is the product we have come to expect and appreciate from this author. This and the addition of the specialists' reports ensure that this will remain a much-referenced work in the future.

James Kemble

Medieval Mercenary: Sir John Hawkwood of Essex by Christopher Starr. Chelmsford Essex Record Office. 2007. ISBN: 978 1 898529 27 9. 92 pp with many illustrations. Paperback, £9.99

Although one of the county's most famous sons, Sir John Hawkwood is better known in Italy where the significant part of his career was spent. Today he is probably best known for Paolo Uccello's representation of him in Florence cathedral as the emblematic *condottiere* or mercenary captain. Somehow he made the transition from being the younger son of minor gentry from Sible Hedingham in north Essex to one of the most successful and prestigious of the mercenaries who ran riot in Italy in the 14th and 15th centuries in the employ of the numerous city states and often ending up as lords or *signori* of them. Despite his fame, there have been few studies of Hawkwood. The standard biography by Temple-Leader and Marcotti of 1889 has only recently been supplemented by F. S. Sanders *Diabolical Englishman* published in 2004. What this attractive slim book, a worthy addition to the Essex Record Office's list, achieves is to rectify this oversight by examining Hawkwood's origins and family links. His Italian career is outlined briefly and accessibly, but it is Sir John *of Essex* who is the subject of this study.

Apparently of unfree status in the 13th century, the Hawkwoods were minor gentry by the 14th. Sir John's father Gilbert de Hawkwood is usually said to have been a tanner of Sible Hedingham, but if so, then he must have been a successful capitalist as he was the seventh highest taxpayer in the village in the 1327 lay subsidy, and in his will he left land in Hedingham, Halstead, Gosfield and Bocking, some of which it seems is identifiable with the Gosfield manors of Gosfield Hall and Park Hall. These passed to his eldest son John. As a younger son, the future Sir John went off to seek his fortune in the Hundred Years War, presumably in the retinue of one of the local nobility such as the De Veres or Bourchiers. Out of work as a result of the Treaty of Brétigny of 1360, Hawkwood and others transferred their activities to Italy. There he was in the pay variously of Pisa, Florence, Perugia, Milan and the Pope, often fighting against those who had most recently employed him. In 1375, Florence felt it to be judicious to agree a non-aggression pact with him, backed up by an annual pension. In 1377, Donnina, daughter of Bernabò Visconti of Milan, became his second wife. Quite what were the secrets of his success and considerable reputation remain unclear, but charisma, military competence, and perhaps above all punctiliousness in paying his troops, were all factors. It is suggested that he benefited from English skill with the longbow, and also made early use of artillery.

Hawkwood acquired castles and lands in Italy. Had he been Italian, he might have set himself up as *signore* of a minor city state. Remarkably, he also assembled an estate in England, the equivalent presumably of a pension fund, concentrated mainly in Hedingham, Gosfield, and Halstead, and including Leadenhall market in London. That this was possible seems to be because he maintained contact with a network of local Essex gentry, especially the De Coggeshall family, one of whom, William, was his son-in-law, as well as his elder brother John. At the end of his life, he wanted to return to England, an ambition denied him when he died in Florence in 1394. His English lands passed to John, his son by Donnina, who died childless *c.*1412. What little is known of this son, and the fate of the Hawkwood properties, is traced in the final chapter.

With the publication of this book, the English side of Hawkwood's life, his family and patronage networks, now seems convincingly mapped out, though manorial records might yet provide more information. The material evidence might also have secrets to reveal. There has been a debate, as yet unresolved, as to whether the

wall tomb in Sible Hedingham church is a cenotaph or a tomb, and indeed whether it commemorates Hawkwood or a member of his family. He was buried in Florence cathedral, but Richard II requested the return of his bones, to which Florence agreed. Whether this actually took place is unknown. There is a tradition that Sible Hedingham church was built by Hawkwood. Conventionally dated *c.*1350, it could be later. Recent discoveries suggest that Robert de Vere, duke of Ireland, may have had a hand in its construction (see *Essex Archaeology and History* 2005). Gosfield church presents similar problems. It is usually attributed to Thomas Rolf (obit 1440), who inherited much of the Hawkwood property for reasons as yet unclear. Yet ambiguous heraldry in the church raises the possibility that it was rebuilt by John, Sir John's elder brother. Two houses which bear the name Hawkwoods, the 'manor' in Sible Hedingham and Hawkwoods Farm in Gosfield, would repay further investigation. The former may have fabric of the 14th century; the latter is thought to date from the 15th. In these buildings Hawkwood and his family have left their mark on Essex.

David Andrews

Progress by Persuasion: the Life of William Smith 1756–1835 by Jenny Handley and Hazel Lake. Hazel Lake, 2007. ISBN: 978 0 9527599 1 1; 432 pp, with many illustrations, some references, biographical notes and subject index

William Smith MP had a home in Parndon, Essex from 1785 and this was where his large family of children was brought up, one of whom was Florence Nightingale's mother. He was the son of a London grocer, a Unitarian educated at the Daventry Academy but, thanks to a legacy, able to devote his energies to politics rather than dry goods. Beginning as MP for Sudbury (Suffolk) in 1784 and of Norwich from 1802 he quickly attached himself to reforming causes such as attempting to repeal the Test and Corporation Acts, to abolish slavery and cruel sports, to avoid war with France and to reform Parliament. He numbered many eminent men among his friends from Wilberforce to Wordsworth and Sydney Smith to Malthus. During his long political career he saw the abolition of slavery, the emancipation of Catholics and nonconformists and the Reform Act of 1832. So why has his contribution been forgotten, only attracting one other study besides this one?

Progress by Persuasion does not answer this question directly, and it provides so much information around and beyond the busy detail of Smith's life and so relatively little analysis that his real contribution remains obscured. Many chapters begin with a general overview of contemporary British and Foreign affairs, followed by a paragraph or two on Smith's activities shortly to be elbowed aside by an extract from 'young Fanny's journal' or Joanna Smith's pocket book. In this case more is less as Mr Smith has to share the limelight not only with more famous men but also with his womenfolk's rather dull diaries, letters and memoirs. For quite long periods in the book it's possible to forget that William Smith is supposed to be the subject.

Maybe this is Mr Smith's own fault? We are told that "unlike Clarkson and Wilberforce (Smith) did not suffer either from an obsessive urge to achieve his goals immediately or from a constant sense of guilt when he was enjoying himself". This probably means he was less driven and more sociable than his more famous colleagues in the anti-slavery campaign and he was in the habit of dividing his time too much "between an increasing number of political, social and business commitments". As a committee man he was cautious and he seems to have left oratory to others. Nevertheless, every campaign needs men like Smith who can be relied upon to do the donkey work quietly and efficiently and without heroics. This seems to be the best explanation we have for his not being a household name among eighteenth-century social reformers.

Jane Pearson

Mister Pink: the Architectural Legacy of W.F. Crittall by Robin Carpenter. Essex County Council, 59 pp, A4 format, 2007

Most readers of this review will be familiar with the distinctive modernist houses built by the Crittall Manufacturing Company for their workers at Silver End near Braintree, though not all will realise the national significance of their design. Even fewer of us will be familiar with the role of W. F. ('Pink') Crittall, second son of Francis Crittall, in that design, and in a range of other contemporary architectural landmarks. Robin Carpenter's book seeks to put that record straight.

Walter Francis Crittall, born 1887, attended Uppingham and the St John's Wood Art School. He joined the family firm with reluctance, designing first its catalogues and eventually their celebrated metal window frames and the 'Universal section', still the basis of metal window design today. Beyond this, Walter Francis, known from childhood as Pink (we are not told why), was an innovative designer of buildings, patron and pioneer of the Modern Movement style, working with some of the leading architects of the inter-war period. He designed houses for his family and the firm's employees and was responsible for the appearance of Silver End and the 'unit house' (1918), the earliest example by ten years of a Modern, as apposed to a traditional, house in Britain. The firm flourished, and in the 1930s, on the basis of its now standard window designs, proved immensely profitable, undertaking such landmark constructions as Broadcasting House and the Adelphi and Shell House in London. It was at this period that Silver End was conceived and built.

Increasingly thereafter Pink distanced himself from the family firm, becoming a leading advocate of the Modern Movement and the Design in Industry Association, devoting time to his painting, pottery and design work at his Old Farm Studio at Walberswick on

the Suffolk coast. He was also a talented designer of furniture, much of which was built by E.W. Beckwith the Coggeshall cabinet maker. In his late middle age Pink Crittall suffered frequent bouts of depression and died in 1956 largely forgotten.

After a useful short history of the Crittall firm, foregrounding the role of its metal window, the book looks at three key houses designed by Pink Crittall: Southborough House and the White House, both in Chelmsford and built with the architect C.H.B. Quinnell, and the revolutionary Unit House of 1918, built with the idea of meeting the need for mass housing after the Great War. Considerable coverage is then given to the building of Silver End Garden Village between 1928 and 1932 and the role of its several architects. A balanced chapter then assesses the problems associated with the conservation of Silver End today. After a look at Pink Crittall's later houses, further sections consider his furniture, the Design in Industry Association, and a selection of Pink's architectural illustrations.

From the above it can be seen that this is a wholly comprehensive work, filling a much needed and unmerited gap in the often rehearsed story of Silver End. The author clearly has a great command of his subject and the text is lucid, balanced, never discursive, and always informative. It is generously but thoughtfully illustrated, and a long bibliography underlines the quiet scholarship which underpins an important work. Congratulations are also due to Essex County Council for publishing it, with a willingness to use colour where that is needed.

Andrew Phillips

Essex Bibliography

A Bibliography of Essex Archaeology & History January – December 2007

Both monograph and periodic literature are included; articles published in journals (e.g. Essex Journal) or festschrifts devoted exclusively to Essex are not included. Items which have been overlooked in previous bibliographies are added for comprehensiveness of coverage.

Schreve, D.C., Harding, P., White, M.J., Bridgland, D.R., Allen, P., Clayton, F., Keen, D.H. and Penkman, K.E.H., 2006. 'A Levallois knapping site at West Thurrock, lower Thames, UK: its Quarternary context, environment and age', *Proc. Prehist. Soc.* 72, 21–52.

Essex, R., 2006. '"They obey all magistrates and all good laws.... and we think ourselves happy to obey them": migrants, crime control and stability in early modern English towns', *Urban History* 34 (Pt 1), 64–75 [includes Colchester].

Shepherd, J. and Potter, R., 2007. 'The Roman villa in Wanstead Park', *London Archaeologist* 11 (No. 9), 227–30.

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Compiled by Andrew Phillips

OBITUARY

Geoffrey Martin, 1928–2007

Professor Geoffrey Martin had a very distinguished academic career, and his wide range of interests included medieval chronicles, intellectual history, urban history, bibliography and the history of archives. Though his work took him far from East Anglia, he retained a strong interest in local and regional history. His PhD dissertation was on the medieval history of Ipswich; and in the 1950s, with Norman Scarfe, he founded the Suffolk Record Society, leading to his involvement with the publication of over 50 volumes over the next half century. He also contributed to the compilation of one of the indexes of the then Essex Archaeological Society's Second Series Transactions, published in 1954, and was a Vice-President of the Essex Society for Archaeological History from 1985 until his death. He was very keen on the idea of an Essex biographical dictionary and, in recent years, made some helpful suggestions to the Society. He promoted a similar venture in the Cumberland and Westmorland Antiquarian and Archaeological Society of which he was President from 1999 to 2002. Two years after his retirement in 1988, when many would have sought a quiet life, he renewed his links with his county of birth by taking up a teaching post in the Department of History at the University of Essex.

His most important public appointment was that of Keeper of the Public Records from 1982 to 1988. This was a surprising and unusual choice, as he had had no experience of the Civil Service from whose ranks this post was usually filled. The reputation of the Public Record Office (PRO), now the National Archives (TNA), was at a particularly low ebb at that time. Geoffrey Martin had two priorities: firstly to establish strong links between the PRO and the academic world, and secondly to promote the PRO to the wider general public. In both he was outstandingly successful. Though not suited by temperament to bureaucratic demands on targets and performance indicators, he kept the PRO on track without sacrificing its primary fuction of looking after its vast resources, and making them much more accessible to academics and non-academics alike.

Some members may remember him from his contributions to the Certificate course in local and regional history run by the University of Essex, others from his vivid account of the life of Philip Morant delivered at the 1998 Morant dinner. A chill settled on the room as he described the Essex historian's last journey down the Thames in 1770, where he contracted the illness from which he was to die. Though Geoffrey Martin was a distinguished academic, he never lost his ability to bring historical events to life. His unstinting support for the study of local history was a great encouragement to this Society, and to everyone who came in contact with him.

Michael Leach
Hon. Secretary, Essex Society for Archaeology and History

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   Atkinson, M. 1995 'A Late Bronze Age enclosure at Broomfield, Chelmsford', *Essex Archaeol. Hist.* 26, 1–23
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   Hawkes, C.F.C. and Crummy, P. 1995 *Camulodunum 2,* Colchester: Colchester Archaeological Report 11
   Medlycott, M., Bedwin, O. and Godbold, S. 1995 'South Weald Camp – a probable Late Iron Age hill fort: excavations 1990', *Essex Archaeol. Hist.* 26, 53–64
   RCHM Essex 1923 Royal Commission on Historical Monuments, *An inventory of the historical monuments in Essex. Vol. IV. South-east Essex*, London: HMSO
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