EAST ANGLIAN ARCHAEOLOGY

Lines in the Sand: Middle to Late Bronze Age Settlement at Game Farm, Brandon

by Catriona Gibson

with Jonathan Last, Tom McDonald and Jon Murray

with contributions from
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Cover illustration:
Excavation of possible roundhouse in progress, enclosure ditch F1306 in foreground

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Summary

Excavation at Game Farm, Brandon was undertaken by Hertfordshire Archaeological Trust between August and November 1999, in advance of planned housing development by Persimmon Homes (Anglia) Ltd. The excavation followed an earlier evaluation by Suffolk County Council Archaeological Service, which had identified evidence for prehistoric settlement. Brandon lies on sandy Breckland soils in the valley of the River Little Ouse, close to the eastern edge of the Wash fenlands. The surrounding area is exceptional rich in prehistoric finds, particularly of Bronze Age metalwork, but has provided few opportunities for detailed study of contemporary occupation sites.

An extensive complex of prehistoric features, generally sealed below remnant buried soil layers formed by wind-blown sand, was recorded in the southern part of the development area. Late Neolithic (Phase 1) activity was represented by four irregular gullies, and by a small number of pits and structural features. Oak charcoal from a possible beam slot, associated with sherds of Peterborough Ware, was radiocarbon dated to 2190–1900 cal. BC (95% confidence).

Most recorded features dated to the Middle to Late Bronze Age (Phase 2). A complex and evolving series of enclosure ditches suggested at least four phases of ditch cutting/construction and re-cutting, with some changes in alignment over time. Associated with these were four probably sub-circular post-built structures and a number of other post-holes and pits. Radiocarbon dating places this occupation in the mid–late 2nd millennium BC. Some of the structures contained hearths, and evidence of 'activity surfaces' consisting of black organic soil with concentrations of pottery. An unusual sub-square, ditched feature may also date to the Middle to Late Bronze Age. At least two, possibly three, unurned cremations were identified, as well as a small number of possible token cremation deposits. Nearly all of the site assemblage of prehistoric pottery (14kg in total) was of later Bronze Age date.

There was no evidence for subsequent occupation. The remnant buried soil had been sealed by further deposits of wind-blown colluvial sand which contained post-medieval finds. More recent features included north-to-south aligned ditches filled with post-medieval material, cart tracks and fence lines.

Résumé

Hertfordshire Archaeological Trust (HAT) a entrepris des fouilles sur les terrains de Game Farm à Brandon (Site BRD 154, NGR TL 797 866) entre août et novembre 1999. Les travaux ont été exécutés au nom de Persimmon Homes SA (Anglia) avant le lancement d'un projet de construction de logements. Ces fouilles sont le résultat d'une première évaluation effectuée par le Suffolk County Council Archaeological Service Field Team qui avait constaté la présence d'une implantation préhistorique.

Les fouilles ont confirmé l'existence d'un large ensemble d'éléments préhistoriques dans la partie sud de la zone destinée à la construction des logements. Les éléments les plus anciens datent du début du néolithique. Les éléments de la période néolithique tardive (phase 1) correspondent probablement à quatre fossés irréguliers ainsi qu'à un petit nombre de fosses et de trous de poteaux. Un groupe de fosses pourrait également dater de cette période. La plupart des éléments découverts datent d'une période comprise entre le bronze moyen et le bronze tardif (phase 2). Généralement enfermés sous des restes de couches de terre enfouies qui ont été formées par le sable apporté par le vent, ces éléments se sont mêlés au sable naturel. Les activités liées à cette période comprennent plusieurs enceintes à fossés qui suggèrent l'existence d'au moins quatre phases de creusement puis de construction suivies d'un nouveau creusement accompagné de modifications dans l'alignement. Ces éléments étaient associés à plusieurs fosses et trous de poteaux ainsi qu'à quatre structures sous-circulaires probablement construites sur des poteaux. Certaines des structures contenaient des foyers et elles ont révélé la présence de 'surfaces d'activité' composées de terre organique noire avec des concentrations de poteries. Un fossé inhabituel de forme proche du carré pourrait également dater d'une période comprise entre le bronze moyen et le bronze tardif. Au moins deux, voire trois, crémations sans urne ont en outre été identifiées ainsi qu'un petit nombre de dépôts de crémation partielle.

Les restes de terres enfouies se trouvaient enfermés dans un dépôt irrégulier de sable colluvial apporté par le vent. Ce dépôt contenait des objets postérieurs à la période médiévale. Les phases les plus récentes découvertes sur le site comprenaient des fossés alignés du nord au sud où l'on a trouvé des empreintes de barrières, des traces de chemins pour charrettes et des objets postérieurs à la période médiévale.

(Traduction: Didier Don)

Zusammenfassung

Zwischen August und November 1999 unternahm der Hertfordshire Archaeological Trust (HAT) eine Ausgrabung auf einem zur Game Farm, Brandon, gehörigen Landstück (Ausgrabungsstätte BRD 154; NGR TL 797 866). Die Grabung wurde im Vorfeld des Baus einer geplanten Wohnsiedlung im Auftrag von Persimmon Homes (Anglia) Ltd durchgeführt. Vorangegangen war eine Evaluation durch das Suffolk County Council Archaeological Service Field Team (SCCAS FT), die Hinweise auf eine prähistorische Siedlung erbracht hatte.

Die Ausgrabungen bestätigten, dass im Südteil des geplanten Baugebiets ein umfangreicher prähistorischer Fundkomplex vorhanden war. Die ältesten Funde wurden auf die frühe Jungsteinzeit datiert. Als spätneolithische Merkmale (Phase 1) wurden vier wahrscheinliche, unregelmäßige Gräben und einige Gruben und Pfostenlöcher ausgemacht. Eine dichte Ansammlung von Gruben könnte aus der gleichen Phase stammen. Die meisten Funde gingen auf die mittlere bis späte Bronzezeit (Phase 2) zurück. Sie waren zumeist unter durch Flugsand entstandenen Paläobodenschichten versiegelt und in den Natursand eingegraben. Zu den Funden aus jener Periode zählte eine Reihe von Begrenzungsgräben, die auf mindestens vier Phasen beim Ausheben/Anlegen bzw. Neuziehen der Gräben und auf Veränderungen bei ihrer Ausrichtung hinwiesen. Sie standen in Verbindung mit vier womöglich fast kreisrunden Pfostenhäusern und einer Reiher weiterer Pfostenlöcher und Gruben. Einige der Gebäude enthielten Feuerstellen und Hinweise auf »Arbeitsflächen« aus schwarzem organischem Boden mit einer Konzentration von Töpfermaterial. Eine ungewöhnliche, von Gräben umgebene annähernd quadratische Struktur könnte ebenfalls in die mittlere bis späte Bronzezeit zurückdatieren. Darüber hinaus wurden mindestens zwei, möglicherweise sogar drei Brandbestattungen ohne Urne und eine geringe Zahl möglicher partieller Brandbestattungen identifiziert.

Der Paläoboden war durch verschieden starke Ablagerungen weiteren kolluvialen Flugsands versiegelt, der nachmittelalterliche Funde enthielt. Aus den jüngsten Phasen der Stätte stammten in Nord-Süd-Richtung verlaufende, mit nachmittelalterlichem Material verfüllte Gräben sowie Zaun- und Wagenspuren.

(Übersetzung: Gerlinde Krug)

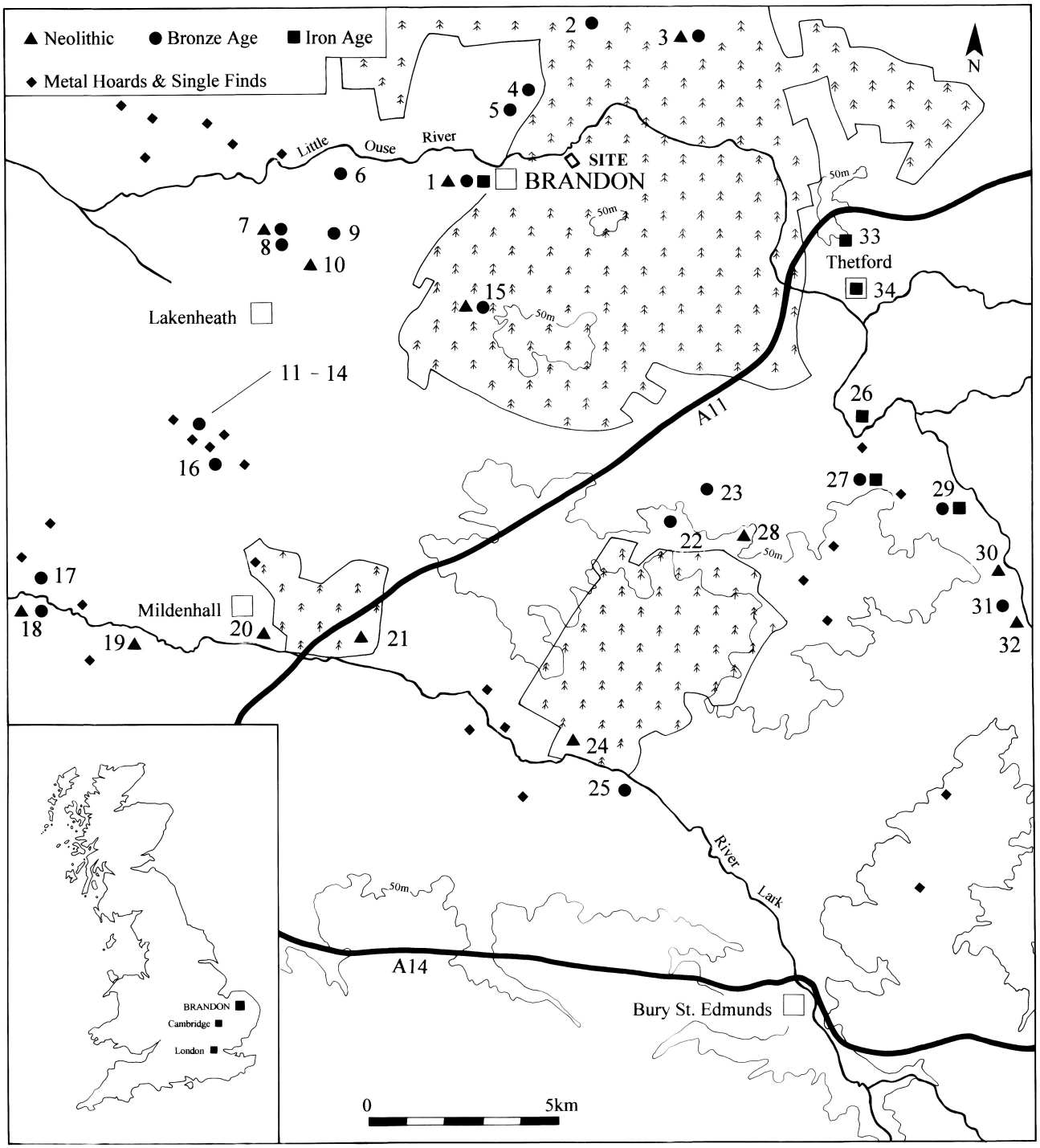


Figure 1 Prehistoric evidence from the vicinity of Game Farm

1 – Game Farm, Brandon
2 – round barrow, Weeting with Broomhill
3 – Grimes Graves flint mine
4, 5 – round barrows, Weeting with Broomhill
6 – round barrow
7 – flint scatter, High Fen
8 – LBA activity, North Fen
9 – flint scatter
10 – axes, Lakenheath North Fen
11 – stone axe, Wilton Heath
12 – beakers, Brandon Fields
13, 14 – arrowheads
15 – flint scatter
16 – settlements, Wilde Street, Mildenhall
17 – settlements, West Row Fen, Mildenhall
18 – pit site, Swales Fen, Isleham
19 – axes, Mildenhall
20 – greenstone axe, Mildenhall
21 – pot and flint scatters, Mildenhall
22 – ?settlement site, West Calthorpe Heath
23 – ?roundhouse on Icknield Way, Barnham
24 – Grooved Ware, West Stow
25 – ring-ditch, West Stow
26 – two hill settlements, Barnham
27 – settlement site, Barnham
28 – axe, West Calthorpe Heath
29 – ?ritual site, Fakenham Magna
30 – axes, Fakenham Magna
31 – burial site, Honington
32 – Grooved Ware site, Honington
33 – Fison Way enclosure, Thetford
34 – Iron Age fort, Thetford Castle

1. Introduction

I. Project background

Hertfordshire Archaeological Trust (HAT) undertook excavations on land at Game Farm, Downham Way, Brandon, Suffolk (NGR TL 797 866; site code BRD 154) during late summer and autumn 1999. The work was commissioned by Persimmon Homes (Anglia) Ltd in advance of proposed development. An earlier desk-based assessment and archaeological evaluation of the site had been carried out by Suffolk County Council Archaeological Service Field Team (SCCAS FT) in March 1999. This had identified the presence of prehistoric activity that was provisionally dated to the Iron Age.

II. Site location, geology and topography
(Figs 1–3)

The site is located on the eastern periphery of Brandon, near the border between Norfolk and Suffolk (TL 797 866). It covers an area of 3.5ha. Its eastern limit is situated on the parish boundary between Brandon and Santon Downham, and the southern edge of the site follows the line of Santon Downham Road, close to its junction with Thetford Road (Figs 1 and 2). Woodland bounds the site to the south and east and the Little Ouse River lies 140m to the north. The river lies at a height of around 5m AOD and the land rises southwards from the floodplain, reaching *c.* 15m AOD at the southern end of the site.

The geology of the area is characterised by sandy glacio-fluvial drift with deposits of peat and alluvium in the northern part of the site, which lies on the floodplain (Fig. 3). The subsoil is generally sand or chalk. An important feature of this area is the dynamic depositional environment that results from the accumulation of deposits of wind-blown sand; this problem has now been mitigated by planting large conifer hedges that stabilised the soil at the expense of the medieval landscape of open heaths and rabbit warrens. The area was part of the open field system of Brandon until the enclosure of the parish in 1809. The development of buildings around the site did not occur until after the medieval period.

The most important topographical features in the area of the site are the River Little Ouse and its valley. Brandon is situated on an ecozone at the junction of two very different environments — sandy soils on underlying dry chalk upland, and the wet peat fenland. The site is situated in the Breckland, to the east of the fenland basin. The Breckland is formed by chalk upland, cut by the Little Ouse valley. By the end of the Pleistocene glacial sands and gravels, including some till (Corbett 1973), covered the chalk. The cryoturbation of chalk and overlying deposits in periglacial conditions caused a widespread deposit of chalk–sand drift. It was from these deposits that wind-blown sand deposits were derived (Corbett 1973, 15–16). These have formed one of the most distinctive landscapes in East Anglia (Sussams 1996), made up of free-draining sandy subsoils which are traditionally drought-prone (Corbett and Dent 1994). Much of the area is now characterised by extensive conifer plantations, which prevent sand blows (Fig. 2).

Analysis of pollen from the sediments of Hockham Mere in the Breckland (Bennett 1983) has demonstrated that deciduous forest was established *c*. 9000 BP. This was broken only by small-scale, short-lived clearances until *c.* 2000 BP, when more extensive clearance and cultivation led to the establishment of heathland. The molluscan evidence from Grimes Graves confirms a similar environmental sequence (Evans and Jones 1981, 106-7), where woodland regenerated after the later Neolithic flint-mining activities. This area thus may have remained a patchwork of woodland and clearings throughout prehistory. Bennett (1983, 479) has proposed that lime may have been an important component of the tree cover from the early Neolithic period onwards.

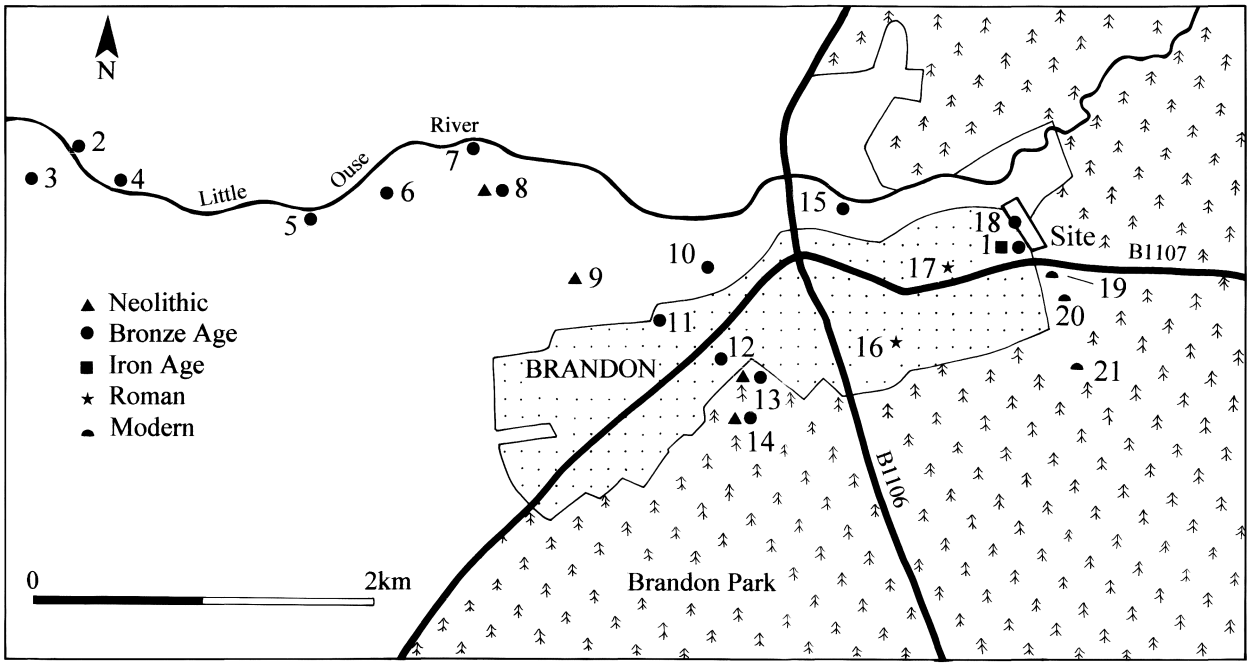
The soils of the Brandon area are relatively varied. The best agricultural land to the north of the river in Weeting comprises well-drained chalky Newmarket soils while to the south, in Brandon, glacio-fluvial drift and till soils of the Worlington association predominate. This is moderated towards the river by the heath-type Methwold soils; these supported bracken and broom before improvement, as implied by local place-names such as 'Broomhill'. The river margin is bordered to the north and south by fen peat, while a narrow tongue of glacio-fluvial drift and peat soils extends northwards towards Weeting Castle (Soil Survey of England and Wales 1983). Historically, these soils were susceptible to winter flooding and wind erosion.

III. Archaeological and historical background
(Figs 1 and 2)

As early as the 19th century the Brandon area was noted by antiquarians for its wealth of finds. Large numbers of artefacts were retrieved during peat cutting, drainage and cultivation in this region.

The Game Farm site lies in an area of significant prehistoric activity. Lower Palaeolithic deposits have been exposed at Barnham and High Lodge, Mildenhall, Suffolk, and rare Upper Palaeolithic blade assemblages recovered from Hockwold and Methwold, Norfolk. These sites all lie within *c.* 10km of Brandon (Dymond and Martin 1989). The major Mesolithic sites of Wangford and Lakenheath are also located nearby (Austin 1997).

The 'hummock-and-hollow topography' of this region provided a range of excellent settlement locations for groups in later prehistory exploiting both fen and upland environments (Healy 1995). Important sites include the earlier Neolithic site of Hurst Fen, near Mildenhall, a type-site for this period in eastern England (Clark *et al.* 1960). The Early Bronze Age settlement at West Row Fen is of national significance, boasting a rare domestic Collared Urn assemblage (Martin and Murphy 1988). Although the Brandon area has a lower density of recorded settlement remains than the Fen-edge sites



The site: 1 – Game Farm

Finds from River Little Ouse: 2 – sword; 3 – Ewart Park sword; 4 – deliberately broken sword; 5 – palstave; 6 – tip of spearhead; 7, 15 – spearheads

Other finds: 8 – flint scatter; 9 – axe; 10 – metalwork and flint from Staunch Meadow; 11 – awls/chisels; 12 – flint tools; 13 – flint scatter; 14 – flint and metal finds; 16 – bronze wine cauldron; 17 – puddingstone from Thetford Road; 18 – looped spearhead; 19 – rabbit warren; 20 – pick-marks at Taflin's Quarry; 21 – flint mines

Figure 2 Game Farm in its local context

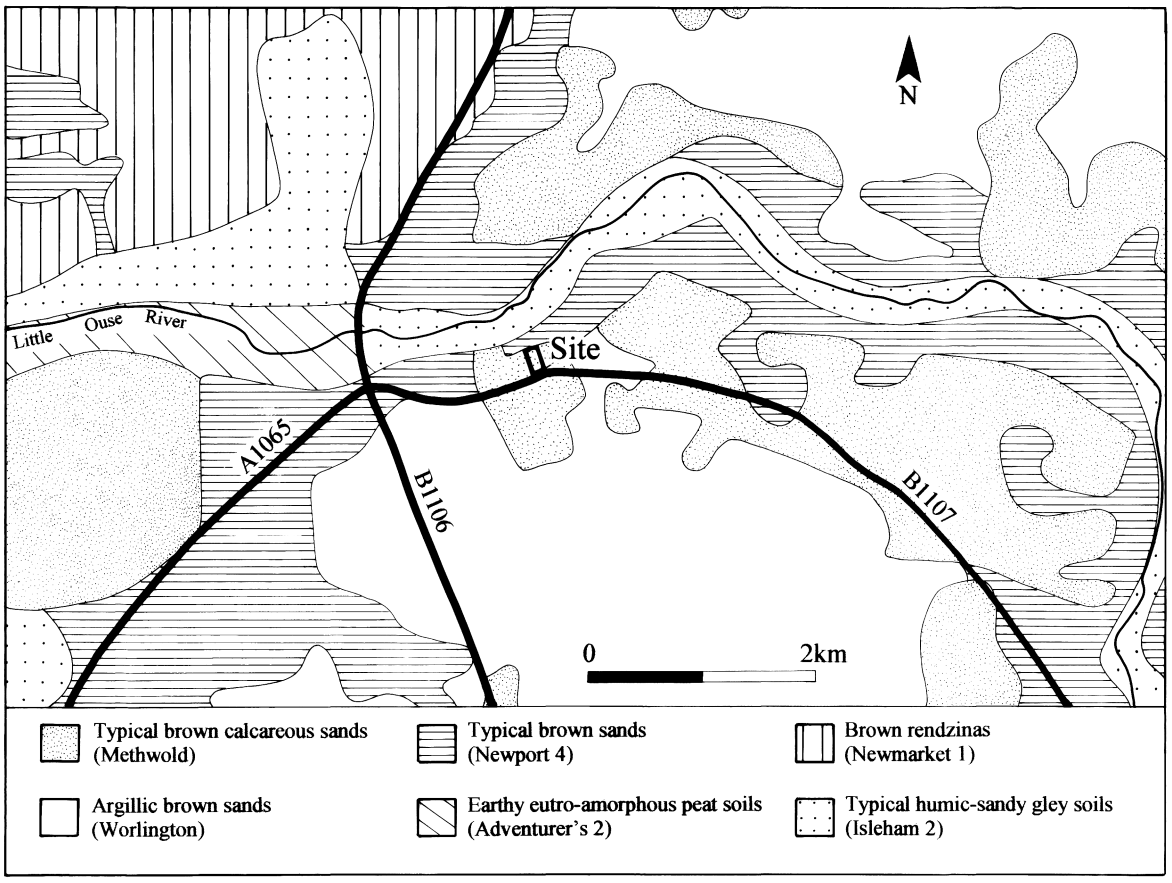


Figure 3 Geology and topography

further west, it would also have acquired significance by its proximity to the 'outstanding' (Brown and Murphy 1997) late Neolithic and Bronze Age flint mines at Grimes Graves, only 3.5km north-east of Game Farm (Fig. 1). This site, covering over 35 hectares, saw intensive flint mining during the later Neolithic and Early Bronze Age periods, with over 360 deep shafts exploiting the floorstone nodules as well as 1200 shallow pits (Mercer 1981).

Numerous sites dating to the Bronze Age and Iron Age have been discovered on the sandy soils of Lakenheath, south-west of Brandon, some of which were investigated by Lady Briscoe (Briscoe 1949; 1958; 1964). Within the region (Fig. 1), a number of ring-ditches and a considerable quantity of metalwork finds also attest to much activity in the earlier and later Bronze Ages respectively (Dymond and Martin 1989; Pendleton 1999). The Bronze Age barrows in the Norfolk/Suffolk border area show an uneven distribution, while one of the main concentrations of the known Norfolk barrow sites lies in the Breckland (Ashwin 1996, 5). They are not common in the areas of boulder clay and Lawson (in Lawson Martin and Priddy 1981) made a correlation between soil types and location of barrows, with an apparent preference for the lightest sandiest soils and with clusters near the River Little Ouse. The barrows at Weeting with Broomhill lie close to the site (Norfolk SMR 5617 and SMR 11279; Fig. 1).

Middle Bronze Age (MBA) evidence in the vicinity of Game Farm is limited to the large midden-like deposit in one of the disused shafts at Grimes Graves (Mercer 1981; Longworth *et al.* 1988). Although no settlement structures were detected, quantities of Deverel-Rimbury pottery, cereals and cattle bones suggest nearby occupation. In the region, other excavated sites include the unenclosed settlements at West Row Fen (Martin and Murphy 1988), Suffolk, and at Caistor St Edmund and Little Melton, Norfolk, which both lie north-east of Brandon (Ashwin and Bates 2000). An unurned cremation cemetery at Fison Way, Thetford, provides evidence for burial nearby in this period (Gregory 1991, Healy 1996).

It is the later Bronze Age isolated metal finds and hoards that are of particular significance in relation to the site at Game Farm. East Anglia as a whole is rich in later Bronze Age metal finds, and Rowlands (1976) argued that the south-eastern Fen-edge was a major metalworking area from the Early Bronze Age (EBA) onwards. During the MBA it may have become a specialist centre for the production of tools and weapons, in particular large spearheads. However, metalwork consumption reached its zenith in the Late Bronze Age (LBA). Much of the bronze work comes from the Fen-edge and a major concentration of hoards and single finds has been recorded west of Brandon. Evidence for LBA metalworking includes a hoard *c.* 2km south-west of Game Farm (Fig. 2, site 14), which included a large number of broken objects, a casting jet and three ingot fragments (Healy 1996, 47). Three swords came from the River Little Ouse at findspots west of Game Farm. One has been identified as belonging to the Carp's Tongue complex and another as of Ewart Park type, while one may have been deliberately warped (Fig. 2, sites 2–4).

Most of these metalwork finds have been made in isolation, and lack contextual association with Bronze Age settlements or burials. Very few LBA settlement sites are known in either Norfolk or Suffolk; some of the closest examples to this site would include those at Brettenham and Micklemoor Hill, West Harling, Norfolk, where occupation continued into the Iron Age (Clark and Fell 1953). The discovery of this Bronze Age settlement at Game Farm may provide some information about the domestic context of the local populations depositing the bronzes, and help develop interpretations of the contemporary landscape hinting at the nature of the social, ideological, economic and political developments during this time. However, although the settlement is located in the vicinity of metalwork deposits in the Little Ouse valley, the excavations produced no stratified metalwork or metalworking evidence, and radiocarbon dating suggests that it may have pre-dated the later LBA period of metalwork deposition.

Several defended sites dating to the Iron Age have been excavated nearby, including Barnham, on the Icknield Way to the south-east of Brandon (Martin 1993; Fig. 1, site 26), and Fison Way, Thetford, to the east (Gregory 1991). A Late Iron Age coin (BRD 090) and a hoard of 1st-century bronze vessels (BRD 037) were found less than 1km south-west of Game Farm (Fig. 2.16). Several authors have noted that there is significantly more settlement evidence hereabouts for the Iron Age and Roman periods than for the later Bronze Age (*e.g.* Healy 1996, 178).

By the Late Iron Age, the political development of a tribal system is indicated by the emergence of the Iceni tribe in Northern East Anglia. By this time, the landscape had become more intensively exploited, with the cultivation of spelt and barley. A number of coin finds and metal hoards may indicate commercial activity, but may also suggest the existence of complex power relations and systems of patronage (Davies 1996).

The Iceni were allied with the Roman forces until the rebellion of Boudica in AD 60. After this time, East Anglia became progressively more Romanised, as a 'Roman' infrastructure developed. Caistor St Edmund formed the regional centre of government . Evidence for Roman activity from the Brandon area includes the Weeting 'villa' (Norfolk SMR 5636) and numerous coin finds.

There is good evidence for the post-Roman development of the Brandon area, notably the substantial Middle Saxon settlement at Staunch Meadow. Situated north-west of the modern town, this featured timber buildings, a hall structure, and high-status domestic occupation (SMR 9826, 9827). By the 8th century, the Thetford and Ipswich potteries were flourishing. Over 420 Ipswich-ware-associated sites are known across the border in Norfolk alone, implying extensive long distance trade.

The nearby settlement at Weeting only appears in the historical record during the Late Saxon period. Its name, 'wet place' (Ekwall 1960, 503), suggests the presence of fen nearby; when it first emerged in the 10th century it was as an estate granted by Æthelwold, Bishop of Winchester, to the newly founded monastery of Ely. The development of Weeting is likely to have followed the commercial success of Brandon, and fishing was certainly of some importance. By the 12th century Brandon was prospering as a market and Hugh de Plaiz, a retainer of the Warenne family, constructed Weeting castle during the reign of King Stephen. During this period, both Norfolk and Suffolk saw a remarkable rise in prosperity, with intensive utilisation of the land, clearance of woodland and peat extraction.

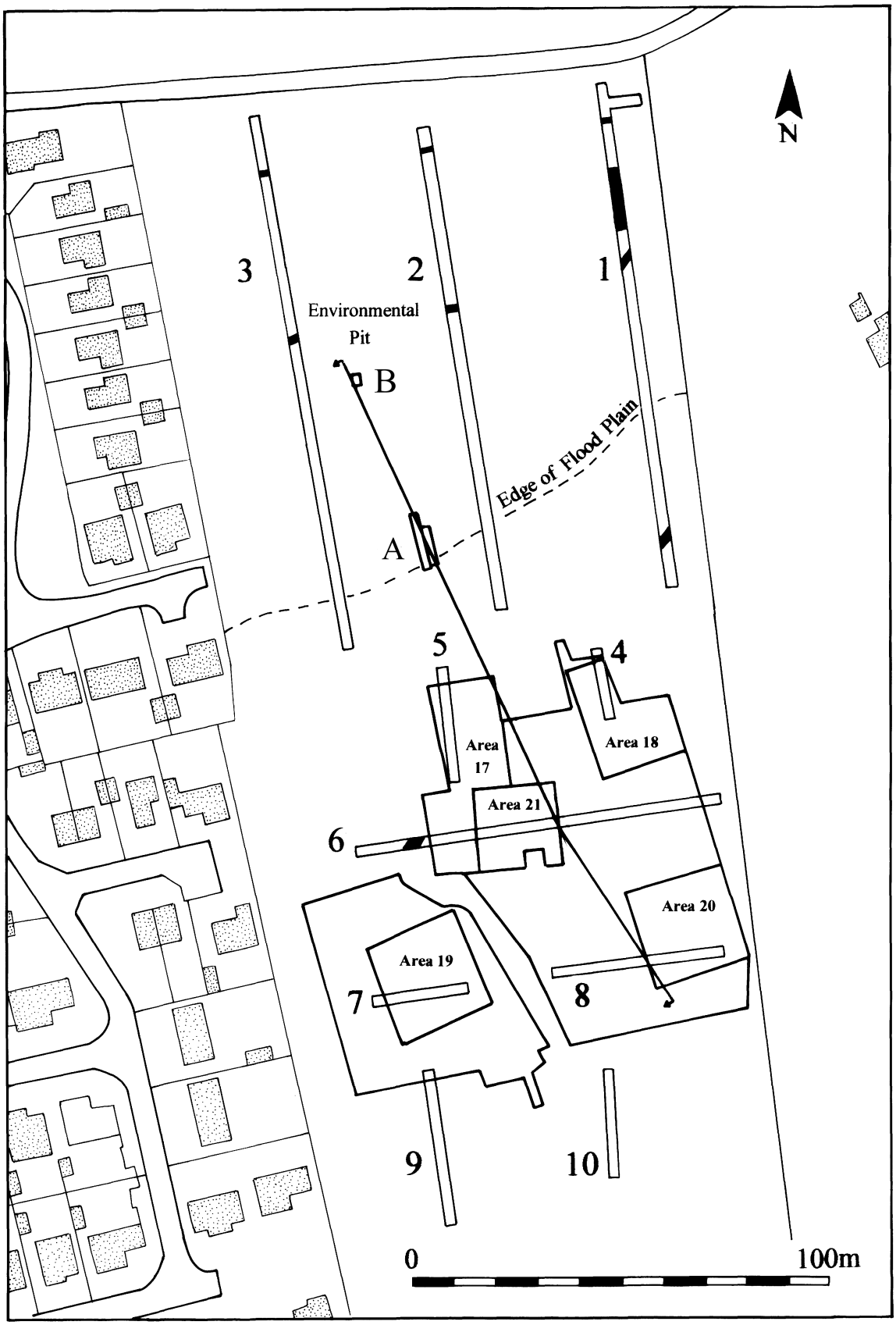


Figure 4 Location of evaluation and environmental trenches

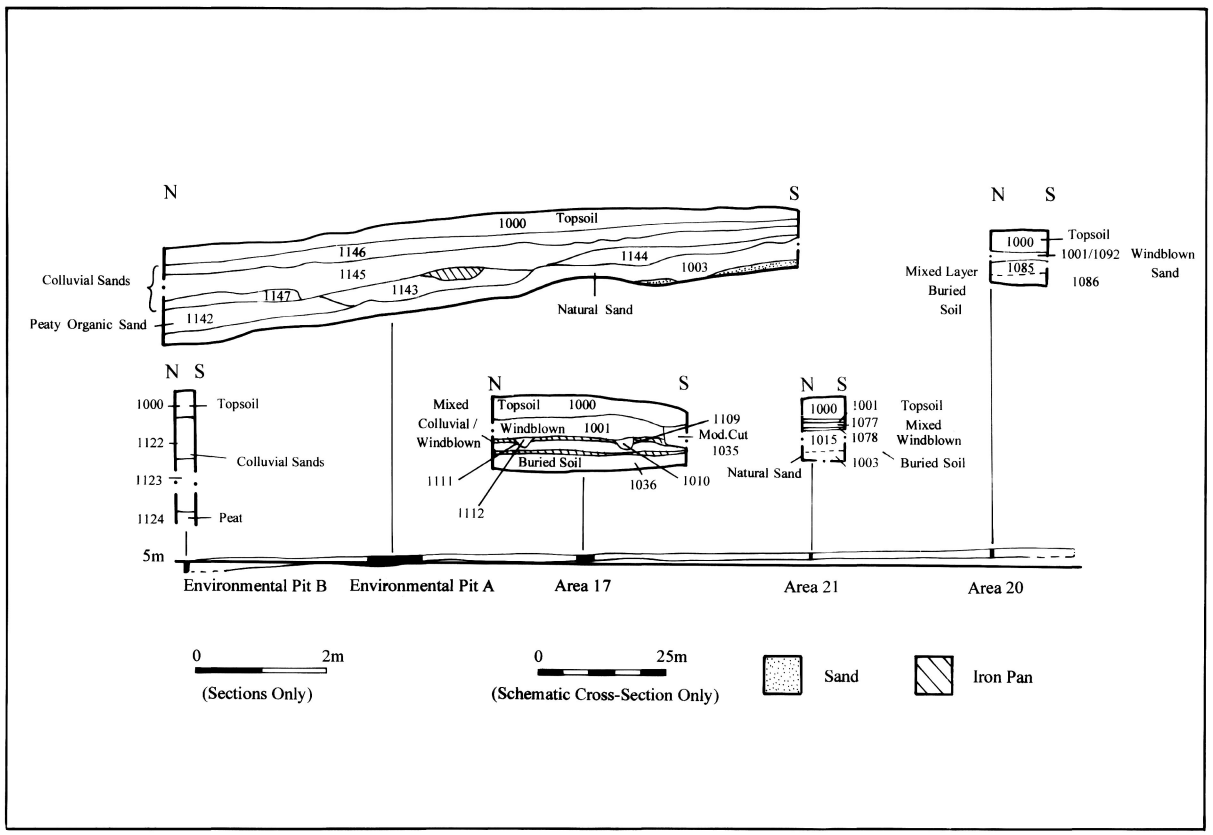


Figure 5 Soil profiles (for locations see Fig. 4)

Throughout the modern period, Weeting has existed as a modest, rural parish, while Brandon has experienced some prosperity but continuing local influence. The existence of a nucleated village clustering around the church at Weeting is suggested by old maps, though its exact history and later development are poorly understood. Post-medieval artefacts also hint at a second focus on the Forest Enterprise land to the east (Norfolk SMR 35352). Much of the evidence for these settlements suggests that they were swept away during the 1770s, when Weeting Hall was constructed and its park created. There are also references to a great sandstorm in the mid-17th century which buried a settlement near the Game Farm site.

Game Farm lies close to the Santon Downham Warren (STN 035), and to an extensive area of post-medieval gun-flint mines (STN 035) and rabbit warrens. Brandon was famous in more recent times for its gun-flint manufacturing industry. The tithe map for Brandon (1838) shows two fields and a small area of woodland in the area of the site. No buildings were present at Game Farm at this time. This had changed by 1905, when a map shows a driftway across the site and buildings at Game Farm.

IV. Excavation background and methods

(Figs 4 and 5)

In March 1999 an archaeological evaluation was undertaken in advance of building development by Suffolk County Council Archaeological Service. The field team opened ten linear trial trenches of varying lengths (Fig. 4), covering *c.* 3.5% of the site (a total of 1250m²: SCCAS Report 99/15). This work revealed the presence of what was thought to be a settlement of Iron Age date, represented by ditches and possible charcoal-rich occupation layers. The site was sealed and protected by a layer of windblown sand and buried topsoil (Figs 5 and 24). The prehistoric features covered the southern part of the site, reaching the edge of the floodplain. In the northern half of the site more recent ditches had cut through the wind-blown sand, which here sealed peat deposits and layers of waterlogged sand.

The evaluation findings indicated that the site warranted full excavation. This was undertaken by HAT in stages, as required by the archaeological brief and agreed with SCCAS. Initially, five areas were opened. Four of these (Areas 17–20, Fig. 4) were mechanically stripped of topsoil, generally 0.20m deep, and together these covered an area of 2012m²: features cutting the wind-blown sand were planned, recorded and excavated. The fifth area (Area 21), of *c.* 400m², was stripped and partially hand-dug in order to reveal the profile of the windblown sand (generally 0.2m deep) and the underlying basal natural sand and features cutting it. After excavation in these two areas was complete, they were linked by additional mechanical excavation in the area in between to reveal a total area of 0.6ha, and the wind-blown sand deposits in the linking trench were mechanically excavated.

All discrete features were at least 50% excavated. Where potential for artefact or ecofact recovery was high, stratigraphic relationships required clarification, and/or where structural components were encountered, further excavation (up to 100%) was carried out. Ditches were

excavated in segments up to 2m long, placed to provide adequate coverage (generally 10–20% of their exposed lengths) in order to establish stratigraphic relationships and to obtain sample material and finds.

A programme of environmental sampling and analysis was undertaken in tandem with the excavations. Relevant specialists visited the site to comment on the soils and environmental profiles revealed. In addition, two trial pits (Fig. 4, **A** and **B**) were excavated on the edge of the floodplain to the north of the main excavation area, in order to record an environmental profile of the floodplain and deposits at its edge (Fig. 5). Neither produced evidence of prehistoric soil horizons. The presence of Roman potsherds in the peaty alluvial layers, however, suggests that they accumulated at a time when the area immediately to the south was unoccupied, although Roman sites are known in the vicinity (Briscoe 1958; Moore *et al*. 1988, 46).

Depth	*Type*	*Description*
0.00–0.20m	Topsoil	Mid brown silty sand with occasional flint/chalk and modern debris
0.20–0.40m	Wind-blown sand	Loose, light yellow to mid yellow/brown sand with occasional flints. Some post-medieval material in upper levels
0.40–0.60m	Buried soil	Dark grey moderately compact silty sand, occasional flint pebbles, struck flint and charcoal flecks and lumps
0.60m+	Natural sand	Loose, orange yellow gritty yellow sand, containing more coarse gravel components at the northern edge of the excavation area

Table 1 Generalised model of site stratigraphy

2. The Excavated Evidence

I. Phasing
(Fig. 6)

The majority of features recorded on the site were sealed by the dark sandy buried soil and cut the natural sand and gravel deposits (L1003). A number of separate phases of activity were identified and these will be discussed in temporal order, from earliest to latest (Fig. 6).

II. Natural features
(Fig. 6)

Natural features were characterised by irregular sides and bases. Most represent tree boles and burrows and a few contained residual struck and burnt flints. A small number were solution hollows or blow holes. It is possible, however, that some of the tree throws were associated with the earliest phase of activity, dating to the Neolithic period. The use of tree hollows as temporary shelters in the Neolithic has been documented in Cambridgeshire at Hinxton Quarry (Mortimer and Evans 1996) and Gamlingay (Murray with McDonald forthcoming). Since

Figure 6 Plan showing all features

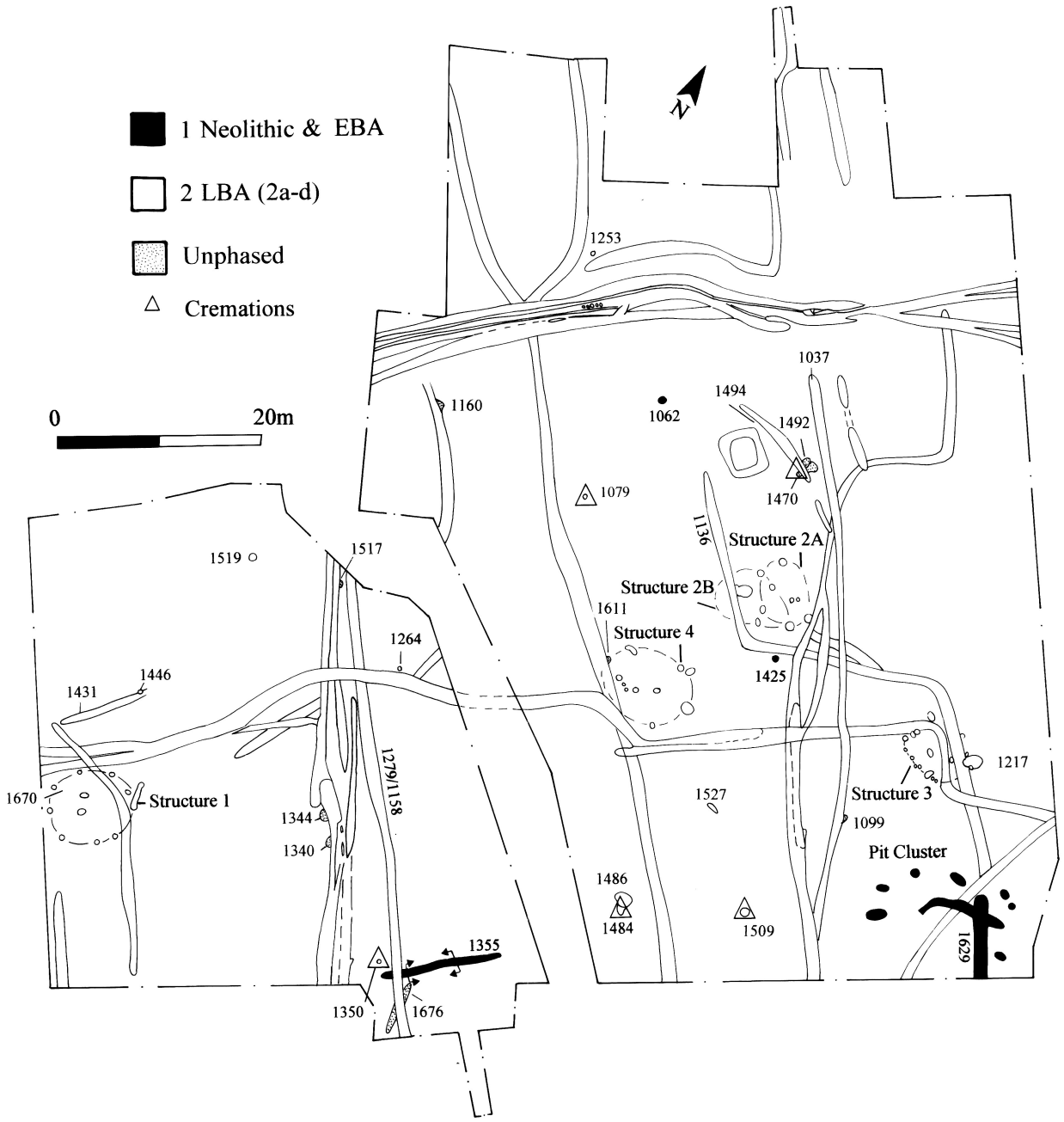


Figure 7 Phase plan of prehistoric features

Plate I Excavation of Phase 1 Neolithic feature F1355, view from west

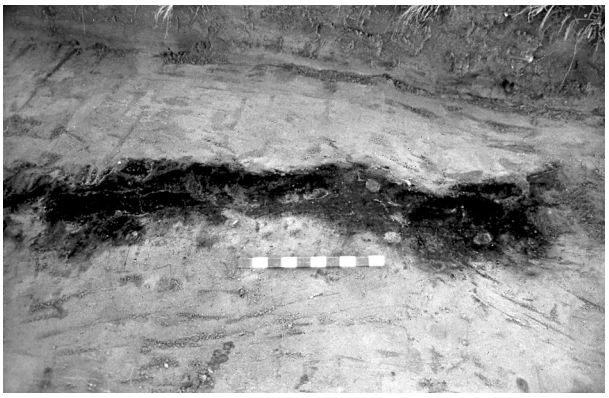


Plate II Charred oak deposit L1356 within Neolithic feature F1355, view from north

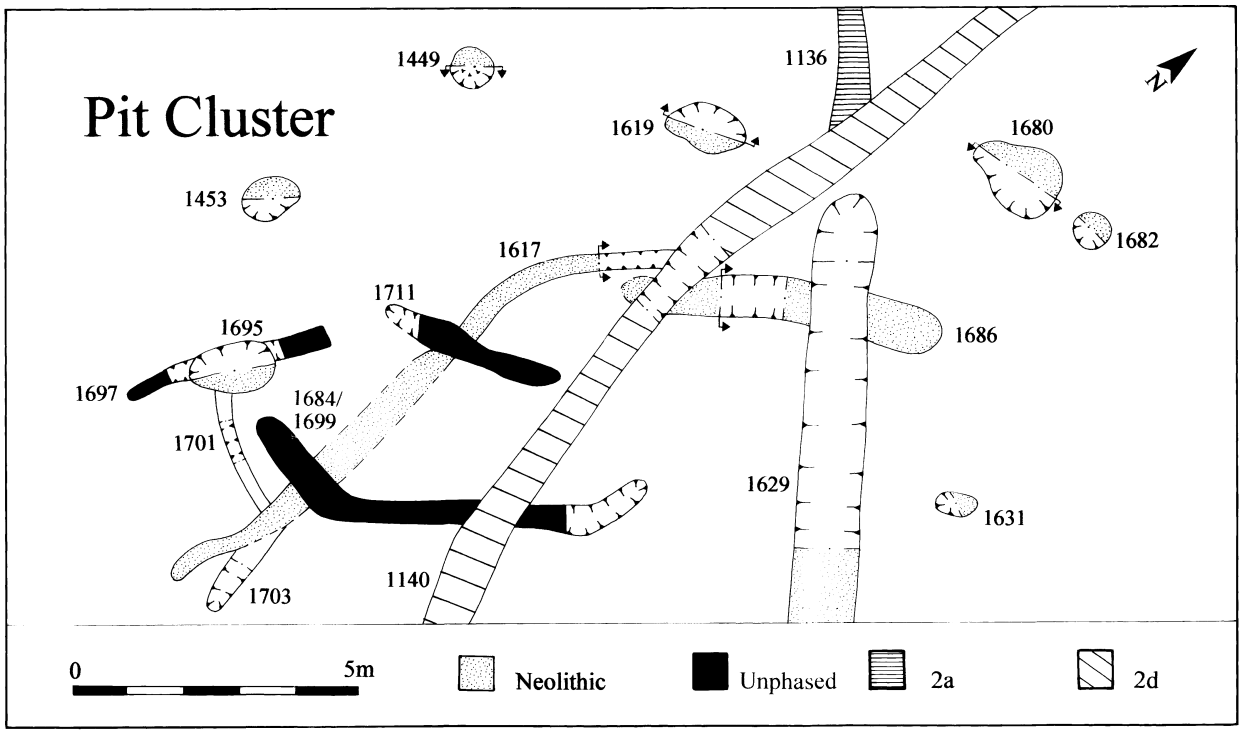


Figure 8 Neolithic pit cluster

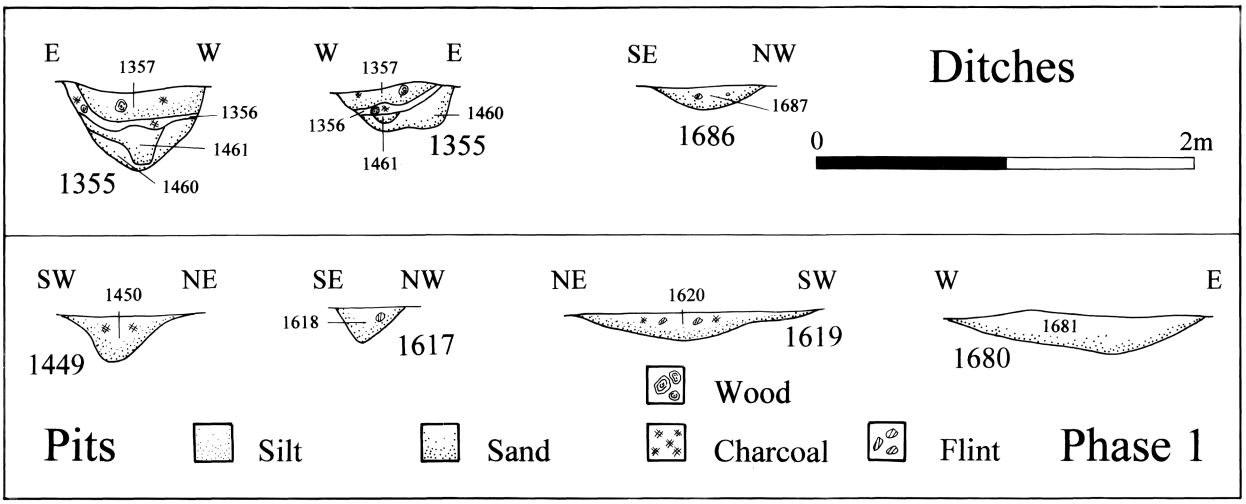


Figure 9 Neolithic and Early Bronze Age ditch and pit sections

Pit	*Diameter (m)*	*Depth (m)*	*Finds*
F1449	0.75	0.4	3 flakes with narrow platform; 50g burnt flint
F1453	0.45	0.35	96g burnt flint
F1619	1.20	0.17	7 flakes and 1 blade with narrow platform; 22g burnt flint
F1631	0.6	0.1	7 flakes and 1 blade with narrow platform and hinged fracture, 6 chips
F1680	1.2	0.15	-
F1682	0.6	0.1	-
F1695	0.8	0.3	-

Table 2 Possible Neolithic–Early Bronze Age pit cluster

one natural feature, F1167, contained small quantities of struck flint, it is possible that some of them were used for shelter by flint knappers during the Neolithic period. Alternatively, these hollows may have been convenient and safe places to dispose of dangerous waste.

III. Phase 1: Neolithic and Early Bronze Age
(Plates I and II; Figs 6–9)

Neolithic and Early Bronze Age features
A small number of features, mainly dispersed gullies and small pits/post-holes, were dated to the Mid–Late Neolithic or Early Bronze Age on the basis of ceramic evidence, or occasionally stratigraphic relationships. Most of the activity dating to this phase appeared to be located in the southern part of the site.

Dated features
The majority of Neolithic pottery came from linear feature F1355 (Plates I and II). This was aligned roughly east-to-west and was traced for a length of 15m in the south-central part of the site (Figs 7 and 9). It was 0.6m wide, 0.2–0.4m deep and contained four fills that produced 61 sherds (687g) of pottery (Fig. 27.2–3). These comprised several sherds that were probably from the same vessel, a Mortlake (Peterborough) Ware bowl (*Prehistoric pottery*, p.36). Since sherds from this pot came from all of the fills, the four layers may have been deposited in fairly close succession. The secondary fill (L1461) contained the largest quantity of pottery (sixteen sherds), along with 56 struck flints. The flint provided evidence of contemporary knapping activity very close by knapping activity, comprising 35 flakes (99 g) from a single core.

The profile of fill L1461 suggested the presence of a sill-beam slot (Fig. 9), and this context yielded quantities of charcoal. Large chunks of oak heartwood charcoal were identified in samples from L1356, and may indicate the *in situ* burning of a timber structural component (*Charcoal*, p.47). Although no other Neolithic structural features were recorded in the vicinity, LBA activity may have erased other related evidence, since F1355 itself had been truncated by Phase 2a ditch F1279. A sub-sample from L1356 was subject to radiocarbon analysis, which dated the deposit to 2190–1900 cal. BC at two sigma (Beta-178454, 3660±50 BP; *Radiocarbon dating*, p.51). These date ranges place the feature towards the end of the Neolithic period.

Neolithic pottery was also recovered from two isolated features situated in the central excavation area. Pit F1062 was 0.7m in diameter and 0.1m deep and yielded two sherds of Neolithic pottery, including possible Late Neolithic Fengate ware (Fig. 27.4), and some struck flint. Post-hole F1425 (0.35m in diameter and 0.41m deep) lay adjacent to the crook in Phase 2a ditch F1136, and produced one sherd of cord-impressed Neolithic pottery.

A wide, shallow ditch in the extreme south-east of the trench, F1629 (7.5m long, 1.2m wide and only 0.1m deep), produced 22 sherds of probable Late Neolithic/Early Bronze Age date, including incised, rusticated and finger-impressed decoration (Fig. 27.5–6). Although its alignment appeared to respect a Late Bronze Age (Phase 2a) ditch, F1136, it was wider and shallower than this latter feature (F1136 was only 0.4–0.6m wide and 0.4m deep). The profile of F1629 had more in common with that of Neolithic linear feature F1355. This suggests that ditches F1629 and F1136 were not related. Ditch F1629 also showed a clear terminus to the south of F1136, although the Late Bronze Age ditch might have respected the earlier orientation.

Probable Neolithic/Early Bronze Age features
A curvilinear gully, F1686 (5m long, 0.8m wide and 0.12m deep), did not contain any datable finds but was cut by possible Neolithic ditch F1629. Its fill, L1687, yielded diagnostically Neolithic struck flint flakes. A further length of narrow gully, F1617, lay adjacent to gully F1686. It may also date to this phase, although it only yielded two struck flints. Gully F1617 had been truncated by Phase 2d ditch F1140, as well as two unphased gullies (1684/1699 and 1711), and was over 10m long, 0.28m wide and 0.25m deep.

A group of small pits in the south-eastern corner of the excavation area may also have been of Neolithic/Early Bronze Age date, although none produced pottery to confirm this (Figs 6 and 7). Several factors, however, suggested that they dated to an earlier phase than the Middle to Late Bronze Age (M–LBA) Phase 2. These features were associated with a concentration of struck flint, most of it flakes of diagnostically Neolithic pattern (*e.g.* with narrow bulbs of percussion). Several were truncated by M–LBA ditches and lay close to features of Neolithic/Early Bronze Age date. These early features were also of a different character and appearance to pits of known M–LBA date at Game Farm, which were generally filled with a relatively lighter grey, more silty sand.

The pit cluster comprised seven small pits: F1631, F1682, F1680, F1619, F1449, F1453 and F1695 (Figs 7 and 8). They ranged from *c.* 0.45–1.2m in diameter and 0.14–0.4m in depth, and most were oval in plan (Table 2). They were situated 2.5–3m apart and formed an arc, although there was no clear regularity in their distribution. The small quantities of finds did not assist their functional interpretation.

IV. Phase 2: Middle to Late Bronze Age
(Plates III–IX; Figs 10–23)

The largest group of excavated features dated to the M–LBA. They included droveway and enclosure ditches, probable roundhouses represented by associations between post-holes and dark spreads of occupation debris, and a large number of pits and post-holes, either found singly or in small groups. Many of the ditches intercut, and four distinct phases were identified on the basis of a series of stratigraphic relationships recorded (Fig. 10). This suggests that this period saw complex restructuring processes at work on the site, with enclosure limits and possible areas of occupation changing as the character of the site developed. Since the site lay on sand, the nature of the soil may have meant that regular maintenance of the site was necessary as sheltered parts of ditches became clogged with windblown sand. The need for continual re-cutting of the ditches may have caused the alignments of enclosures to shift. The palimpsest represented by new and re-cut ditches therefore need not necessarily imply a particularly long period of occupation.

Radiocarbon dates from Phase 2 features suggest that pottery assemblages initially interpreted as LBA may actually belong to the MBA (*Prehistoric pottery*, p.40; *Radiocarbon dating*, p.51). For practical purposes, phases dated to the LBA ceramically and the MBA by radiocarbon have been assigned a 'Middle to Late Bronze Age' (M–LBA) date. Further absolute dating of pottery sequences in the region may clarify what appear at present as a chronological disparity.

The ditches
Ditches were the most numerous M–LBA features. The majority were aligned roughly north-west to south-east, although none were straight. All of them meandered, curved or included roughly right-angled bends. It would appear that this was deliberate and that some of the ditches perhaps avoiding earlier foci of activity, in particular the areas of former structures. Many of the ditches also had a 'braided' appearance, caused by the numerous re-cuts and parallel re-diggings displayed by several of the ditch lines. The overall impression offered by the ditches is not of a pre-planned and rigidly divided landscape, but of a relatively organic process of development, building continually on the lines and forms of the past.

The structures
Four possible structures were identified. Since none of them were well preserved, they were recognised by the occurrence of groups of post-holes and small pits in association with spreads of dark sand representing surfaces or occupation deposits. Another key to their identification lay in their location relative to other features, with the major enclosure ditches snaking around them (Figs 9–11). This is a common type of

position for LBA roundhouses, and has been noted at the settlements excavated at Hornchurch (Guttmann and Last 2000) and North Shoebury, Essex (Wymer and Brown 1995) and at Thorley, Herts (Last and McDonald forthcoming).

Although a sequence of four phases was identified on the basis of the stratigraphic evidence from the ditches, several factors may have inhibited the recognition of other ditch-cutting and re-cutting events. Firstly the intensity of ditching activity means that some of the original lines of ditches may have been obliterated or rendered ephemeral by subsequent re-cutting. It is possible that this complex mosaic of ditches meant that not all of the earlier cuts were necessarily visible during the excavation. This intensive re-working may have resulted from the need to keep ditches clear of windblown sand and to maintain the gradually-eroding lines of ditches cut into the friable sand below. Heavy burrowing by rabbits from the nearby warrens has blurred some stratigraphic relationships further.

Phase 2a

(Figs 9–13 and 17)

The main stratigraphic relationships within this phase were as follows:

1. Several post-holes of Structure 3 and the occupation surface of Structure 2 were truncated by Phase 2a ditch F1136.
2. Ditch F1136 was truncated by four ditches, the latest being Phase 2d ditches F1140 and F1468. Ditch F1468 also cut two other ditches (F1163 and F1138) belonging to separate phases, since F1138 cut F1163. In turn these two ditches cut F1136 (Plate III), thus allowing four separate phases to be defined on the basis of this complex sequence of intercutting.

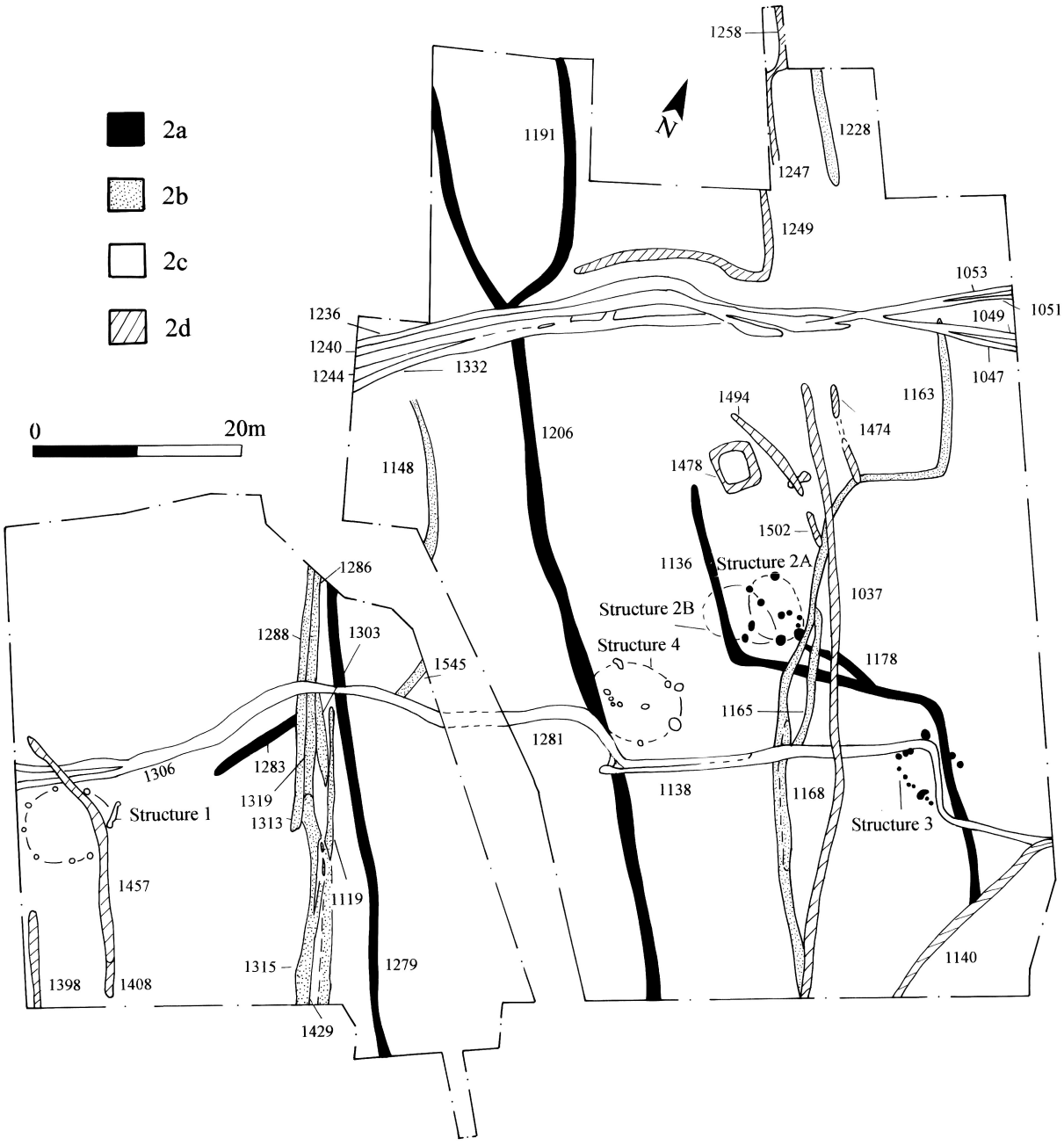


Figure 10 Plan showing Later Bronze Age features

In terms of phase definition, this was the most important stratigraphic relationship.

3. Phase 2a ditch F1279 was cut by ditch F1281/F1138 of Phase 2c.

The earliest M–LBA phase was represented by two possible roundhouses (Structures 2 and 3), both of *c*. 6–7m diameter. These were initially assigned to this phase on the basis of LBA pottery and stratigraphic and spatial associations (Figs 11 and 13). A sample from Structure 2 subsequently produced a radiocarbon age range of 1760–1500 cal. BC (Beta-178455; 3350±60 BP), assigning this phase to the MBA. A series of three roughly parallel linear ditches, two of which had offshoot branches, traversed the site on a north-west to south-east axis.

Structures
(Figs 11–13)

Structure 2

This post-built structure was noted in the central part of the site. Its true form was difficult to ascertain owing to the removal of many post-holes by later ditching. It was associated with an 'activity surface' or occupation layer of compact, dark grey silty sand (L1459), *c*. 6.5m in diameter and 0.1m deep, which was concentrated in the centre of the structure and in its western part.

The activity layer is not quite coincident with the post-holes that remain, suggesting that the original structure (or structures) may have been larger. Two possible permutations ('2A' and '2B'), invoking different sets of post-holes, may be advocated. The first of these, 2A, would have been a small sub-oval structure, roughly 6.5m x 5m, constituted by post-holes F1427, F1435, F1437, F1539 and F1643. Two internal post-holes (F1541 and F1543) and a large pit (F1172) may also have been associated with such a structure. The pit contained a sequence of five fills (L1173–L1177), comprising redeposited sand with cemented layers of ash, charcoal, large sherds of LBA pottery (of up to 16g) and

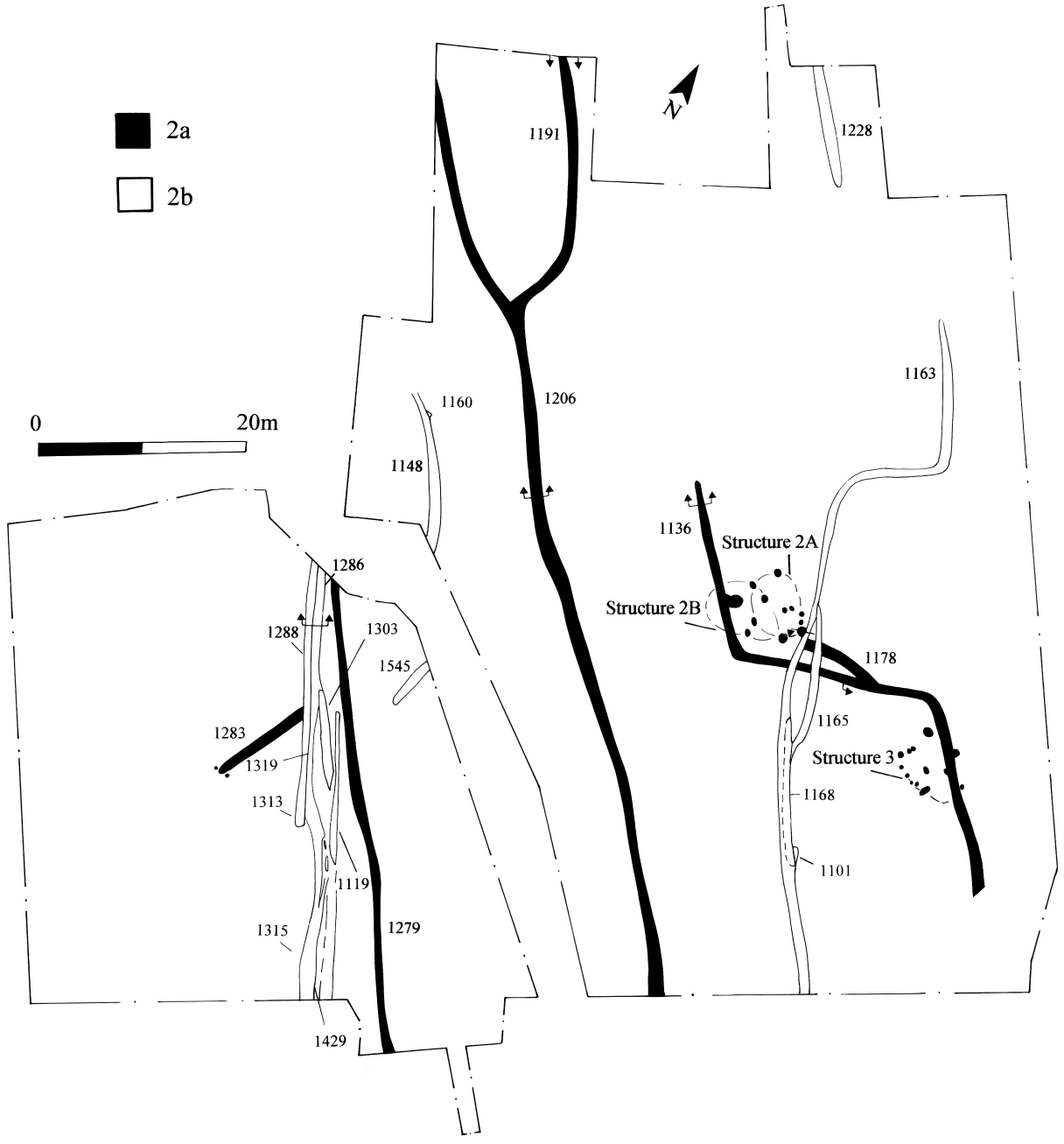


Figure 11 Features of Phases 2a and 2b

struck and burnt flint. The composition of these fills suggests that this material was refuse, akin to hearth dump material (Fig. 17).

The second possible reconstruction, Structure 2B, is small and sub-oval, with similar dimensions to 2A. It is suggested by the disposition of post-holes F1427, F1609, F1641 and F1643, as well as two possible heaths or industrial pits, F1637 and F1639. Both of the pits contained unburnt flint cobbles, and F1637 also had a possible burnt daub lining.

The post-holes representing either of these possible structures were poorly preserved, and most of the finds came from occupation layer L1459. The post-holes ranged from 0.3m to 0.56m in diameter and most were shallow, ranging from 0.06m to 0.25m in depth. None contained identifiable post-pipes. The features and finds are summarised in Table 3.

Structure 3

Another structure lay to the south-east of Structure 2, close to the crooks in ditches F1136 and F1138. Evidence for Structure 3 was rather ephemeral, and it proved difficult to determine its form due to its location and the limited chronological evidence available. The roundhouse was earlier than Phase 2a ditch F1136, and had been truncated by this ditch and ditch F1138. Although it was impossible, as a result, to define its original extent, a number of well preserved post-holes and pits outlined its southern side. These included F1093, F1095, F1189, F1202, F1208, F1211, F1213, F1215, F1217, F1219, F1224, F1262, F1266, F1270, F1273, F1275, F1291, F1295, F1297, F1299 and F1301. The structure was again clearly associated with a possible occupation layer of compact grey silty sand (L1088). This layer had been cut by several post-holes, and appeared to have accumulated within a slight hollow inside the structure. It may have been a deliberately constructed surface layer, or

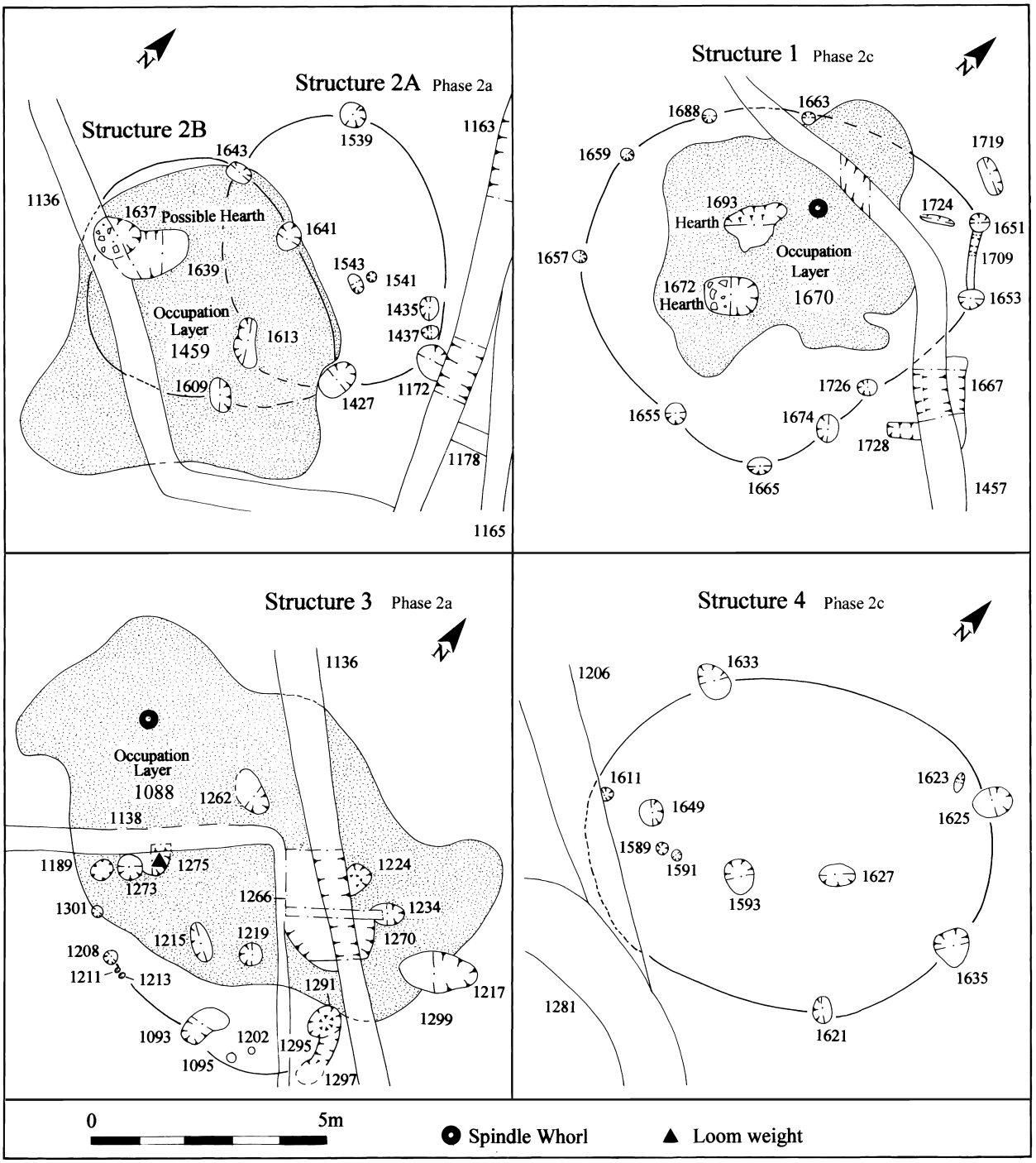


Figure 12 Plans of all structures

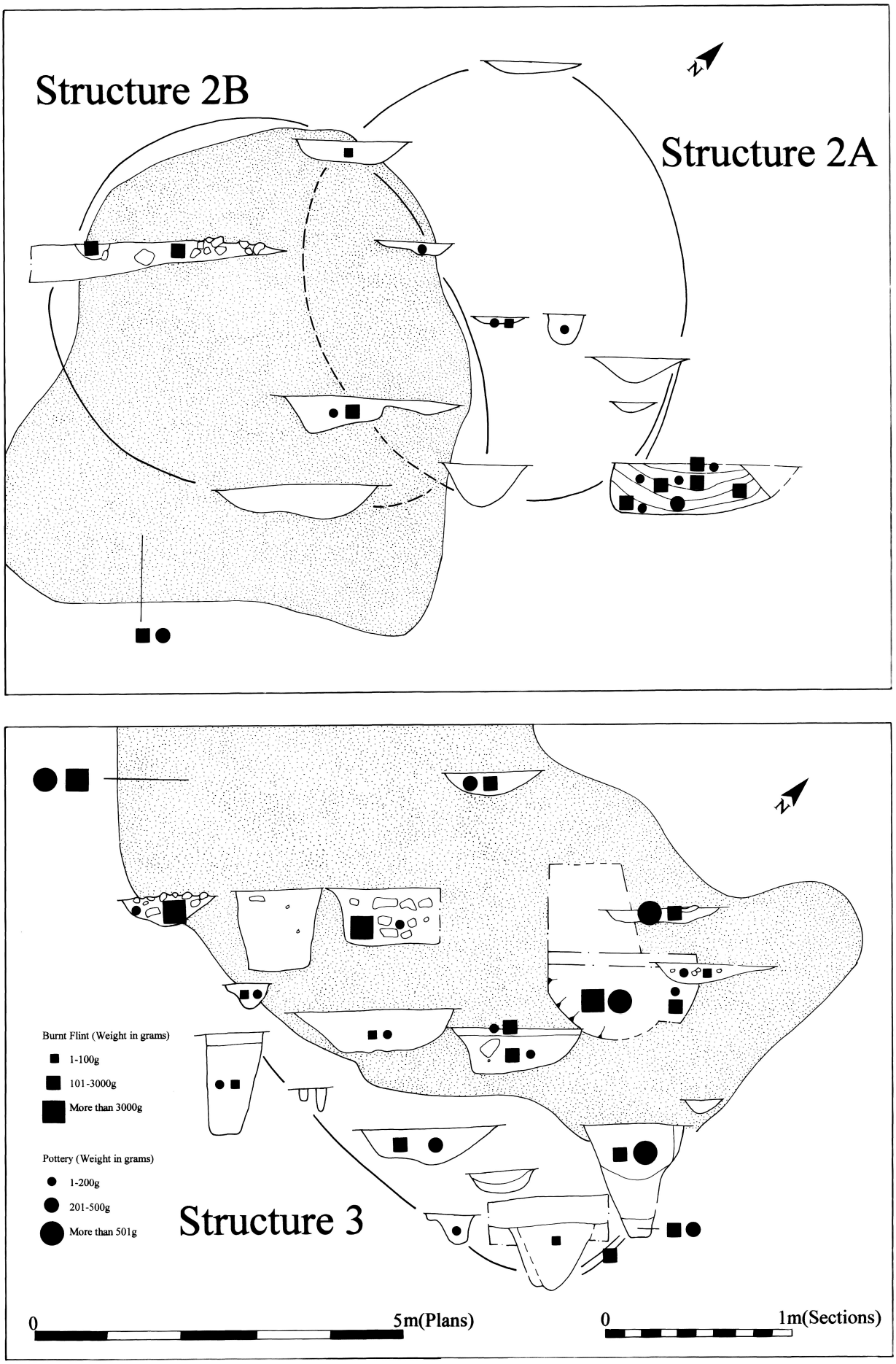


Figure 13 Plans of Structures 2 and 3 (Phase 2a), showing sections and relative quantities of flint and pottery in associated pits and post-holes

Structure	*Feature No.*	*Feature type*	*Diameter (m)*	*Depth (m)*	*Finds*
Structure 2a	1539	Post-hole	0.5	0.06	1 struck flint
	1643	Post-hole	0.56	0.11	2 pot sherds, 1 struck flint and 54g burnt flint
	1427	Post-hole	0.43	0.25	1 struck flint
	1172	Pit	1.1	0.25	36 pot sherds, 8 struck flint, 4986g burnt flint and 3 burnt stone
	1437	Post-hole	0.3	0.04	none
	1435	Post-hole	0.47	0.13	none
Structure 2b	1459	Layer	6.0	0.1	36 pot sherds, 13 struck flint and 2692g burnt flint
	1643	Post-hole	0.56	0.11	32g burnt flint
	1641	Post-hole	0.6	0.07	1 pot sherd
	1543	Post-hole	0.54	0.08	2 pot sherds, 1 struck flint and 54g burnt flint
	1541	Post-hole	0.17	0.15	2 pot
	1427	Post-hole	0.43	0.25	1 struck flint
	1609	Post-hole	0.8	0.23	1 flint
	1637	Hearth	0.6	0.08	344g burnt flint
	1639	Hearth	1.8	0.15	300g burnt flint

Table 3 Features and finds relating to Structure 2

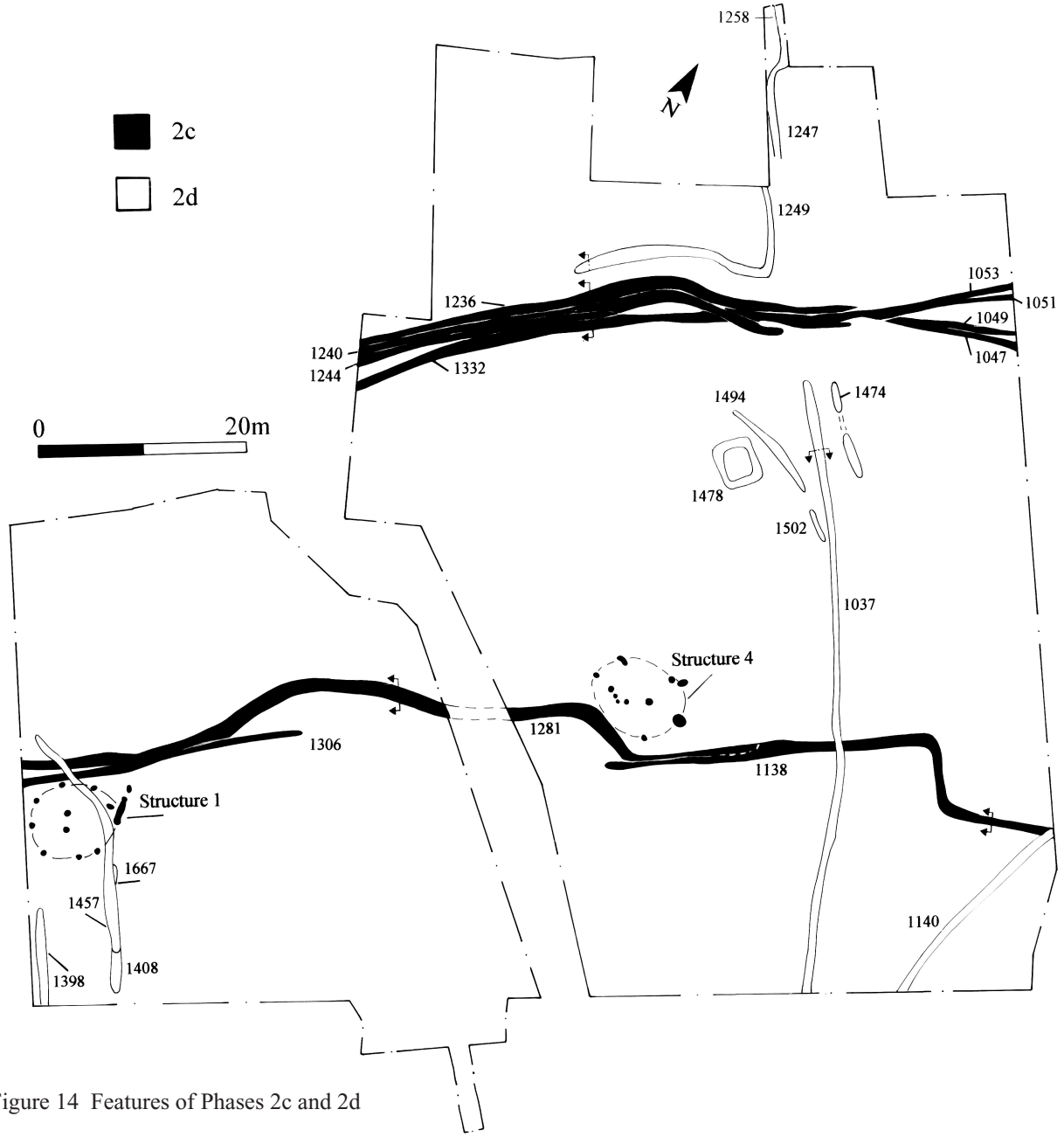


Figure 14 Features of Phases 2c and 2d

Feature	*Feature type*	*Diameter (m)*	*Depth (m)*	*Finds*
1088	Layer	6.0	0.18	307 pot sherds, 150 struck flint, 19,296g burnt flint, spindle whorl, flint axe fragment, burnt stone
1093	Pit	1.0	0.22	87 pot sherds, 10 struck flint, 184 burnt flint
1095	Post-hole	0.25	0.15	14 pot sherds
1189	Post-hole	0.42	0.17	1 pot sherd, 4848g burnt flint
1202	Post-hole	0.3	0.11	none
1208	Post-hole	0.35	0.6	2 pot sherd, 52g burnt flint
1211	Stake-hole	0.1	0.1	none
1213	Stake-hole	0.1	0.14	none
1215	Pit	0.8	0.25	3 pot sherds, 1 struck flint and 88g burnt flint
1217	Pit	1.85	0.28	32 pot sherds, 10 struck flint, 920g burnt flint and 2 burnt stone
1219	Post-hole	0.6	0.1	11 pot sherds, 2 struck flint, 274g burnt flint
1224	Post-hole	0.42	0.36	5 sherds of semi-complete pot, 3 struck flint, 406g burnt flint, 1 rubbing stone
1234	Pit?	0.6	0.1	2 pot sherds, 2 struck flint 60g burnt flint
1262	Pit	0.5	0.13	16 pot sherds, 3 struck flint, 174g burnt flint
1266	Pit	1.5	0.25	89 pot sherds, 7 struck flint, 5018g burnt flint
1270	Pit	0.6	0.3	3 pot sherds, 884g burnt flint, 2 burnt stone
1273	Post-hole	0.5	0.42	none
1275	Pit	0.7	0.31	SF10 ceramic loomweight; worked antler tine
1291	Post-hole	0.55	0.6	58 pot sherds, 5 struck flint, 1652g burnt flint
1295	Gully	1.5	0.25	294g burnt flint
1297	Post-hole	0.4	0.3	8g burnt flint
1299	Post-hole	0.2	0.05	none
1301	Post-hole	0.25	0.15	1 pot sherd, 38g burnt flint

Table 4 Features and finds relating to Structure 3

Ditch	*Shape of cut*	*Shape of base*	*No. of fills*	*Soil type*	*Finds*
F1279	U-shaped	Undulating	1	2	7 struck flint (232g); 108g burnt flint
F1158	East side vertical, west side gradual	Flat	1	2	9 struck flint (48g); 124g burnt flint
F1136 (N)	U-shaped	Rounded	1	1	2 sherds pottery (10g); flint scraper, 4 struck flint (92g); 348g burnt flint
F1136 (S)	U-shaped	Undulating	3	From earliest to latest 1, 2, 3	5 sherds pottery (50g); 3 struck flint (33g); 460 g burnt flint
F1206	Concave	Undulating	1	1	12 sherds (48g), 29 struck flint (394g), 278 g burnt flint
F1191	U-shaped	Irregular	2	2, 8	8 sherds (44g), 1470g burnt flint
F1178	Steep	Concave	1	4	none

Key to soil types for all features:

1 – dark brown/grey silty sand; 2 – light grey sand; 3 – mid-yellow sand; 4 – dark grey sand; 5 – red/brown compacted sand; 6 – black sand; 7 – orange silty sand; 8 – grey/brown silty sand; 9 – light grey silty sand.

Table 5 Phase 2a ditches

Ditch	*Length (m)*	*Width (m)*	*Depth (m)*	*Shape of sides*	*Shape of base*	*Finds*	*No. of fills*	*Soil type*
1148	12.5	0.57	0.35	Steep	Irregular	3 pot sherds, 124g burnt flint	1	2
1163	70	0.35	0.15	Vertical	Irregular	6 pot sherds, 640g burnt flint	1	2
1165	14	0.85	0.1	Shallow	Flat	38g burnt flint	1	2
1168	2+	0.9	0.25	Steep	Flat	74g burnt flint	1	2
1286	42	0.53	0.19	Steep	Concave	2 pot sherds, 280g burnt flint	1	8
1288	15	0.62	0.32	V-shaped	Flat	2 pot sherds, 274g burnt flint	2	9
1313	15+	0.75	0.31	Concave	Flat	120g burnt flint	1	8
1315	15+	0.9	0.45	Concave	Concave	5 pot sherds, 464g burnt flint	3	5
1319	5+	0.95	0.45	Concave	Flat	11 pot sherds, 478g burnt flint	1	9
1321	1+	0.8	0.54	V-shaped	Stepped	2g burnt flint	6	8-1
1545	5+	0.76	0.28	Concave	Irregular	3 pot sherds, 320g burnt flint, casting jet (SF 13)	1	8

Table 6 Phase 2b ditches

have been caused by a build-up of silty 'tread' and domestic debris. Its stratigraphic relationships with other features suggest that it would have been formed during the construction or use of the building, rather than during its disuse, collapse or destruction. The component pits and post-holes varied in size and shape, but were generally steep-sided and had cut the possible occupation layer. Several contained abundant finds, particularly large sherds of pottery and burnt flint (Table 4).

Occupation layer L1088 produced over 2000g of pottery and 19,000g of burnt flint. A spindle whorl (SF 2) and fragments of burnt and worked stone were also retrieved (Fig. 12). Evidence for weaving came from pit F1275, which produced a drum-shaped loomweight (SF 10; Fig. 29). This feature also contained a semi-complete red deer antler tine (Fig. 29). It is possible that Structure 3 was used for spinning and weaving.

Ditches

(Figs 11 and 17)

Two of the ditches, F1279 and F1206, lay approximately 20–25m apart, and the angled ditch F1136 relating to Structures 2 and 3 was located further to the east. The former two ditches may have defined a droveway along which animals could have been led to the river, just to the north of the site. The latter ditch, F1136, had two deliberate right-angled bends. The first change in direction may have been intended to avoid cutting through the debris of now-disused Structures 2 and 3 (Figs 11 and 17).

Ditch F1279 was traced over a length of at least 45m, and may have continued further to the north beyond the limits of the excavation area. It was 0.4m wide and 0.2m deep. Ditch F1206 could be identified throughout the whole north-to-south extent of the excavation area, and was at least 92m long. It forked at its northern end to form two ditches (F1191 and F1206). It is possible that F1191 (Fig. 17) was a re-cut of the main ditch that was established upon a different alignment. It is more likely, however, that the two ditches were contemporary features forming a small enclosure in this part of the site.

Ditches F1206 and F1279 tapered towards one another towards the north. Together, they may have marked the roughly parallel sides of a droveway 14m wide. This widened into a larger enclosure in the south (expanding to *c.* 32 m). Ditch F1136 may also have formed the eastern side of another short droveway bounded to the west by ditch F1206.

Ditch F1136 traversed the site over a distance of 57m, with a terminal at its northern end. Its southern end was truncated by Phase 2d ditch F1140, which might represent a re-digging of a 'vanished' north-east to south-west arm of ditch F1136. Ditch F1136 was also cut by six other ditches belonging to several later phases. It was *c*. 0.5–0.6m wide and 0.24–0.38m deep.

The Phase 2a ditches only yielded sparse finds (Table 5). With the exception of ditch F1136, they contained single fills of light grey sand or dark brown/grey silty sand. Ditch F1136 was excavated in four sections, two of which contained three separate fills, and two that contained only one fill (L1137; Fig. 17). The sequences of deposits recorded in segment 3 (in the southern section of the ditch) and segment 4 (in the northern terminus) do not suggest re-cutting, but indicate three different phases of infill and may relate to the truncation and redeposition of material from Structure 3 (for segment 3) and structured deposition (terminus of segment 4). These sections of the ditch contained the densest concentrations of finds, including five large sherds of pottery (50g) in the terminus and 180g of burnt flint in the section adjacent to Structure 3. Equally, while deliberate deposition may have been involved it is possible that natural processes, such as sand-blows, weathering and silting, led to the accumulation of relatively abundant debris in this ditch.

Phase 2a ditch F1136 cut Structures 2 and 3, indicating that they were earlier features. The structures were situated on either side of the ditch, which would have impeded communication and movement between them. The stratigraphic contexts and locations of these roundhouses suggest that they were not contemporary with each other, although pairs of roundhouses commonly occur on LBA sites. Objects associated with textile working, and possibly other craft activities, came from Structure 3, which suggests that it may have been an industrial rather than a residential building.

Phase 2b

(Figs 9, 10 and 17)

The main stratigraphic relationships of this phase were:

1. Ditch F1163 cut Phase 2a ditch F1136. In turn, this was truncated by Phase 2c ditches F1281 (to the south) and F1047/F1049 (to the north), and by Phase 2d ditch F1037.
2. Ditch F1288 was cut by Phase 2c ditch F1281

In Phase 2b, it appears that many of the Phase 2a ditches were re-established along slightly different lines, while still following a similar north-to-south axis. The ditches now defined an enclosed area with fewer divisions than were present in Phase 2a. It is possible that these north-to-south ditches articulated with contemporary east-to-west ditches beyond the limits of the excavation to form rectangular field enclosures. Earlier ditches, cut along the alignment of the later Phase 2c 'braided' complex in the north of the excavation area, may have been obliterated by the later ditch cuts and re-cuts of F1236, F1332, L1232, F1244, F1053 and F1049.

Ditches

At least three, and possibly four, main ditches belong within Phase 2b. These ditches reflect the north/south axis and rectlinear crooks of ditches in Phase 2a. Ditch 1163 appeared to curl around the by-then disused Phase 2a Structure 2, which had already been truncated by the later Phase 2a ditch F1136. The building might have been reduced to a mound of structural debris by this time: perhaps the ditch would have avoided its remains out of respect. The ditch was narrow and shallow (only 0.35m wide and 0.15m deep: Fig. 17), and was traced for 70m. Although no structures were associated with this phase, the locations of now-abandoned buildings may still have been respected and incorporated into the division of space during this period.

A series of intercutting ditches, defined primarily by ditches F1286 and F1288, ran roughly parallel to F1163. Situated roughly 48m to the west of F1163, this 'braided' ditch complex may define the western extent of a more extensive system that constituted two or more rectangular fields. It was traced for a length of at least 40m, but continued beyond the northern and southern limits of excavation. Ditch F1319 was probably part of the original, relatively narrow, cut, although there has been some truncation to the south where the presence of much later ditch 1119, filled by wind-blown sand (Fig. 24), has masked some relationships. Since this ditch system (F1286, F1288 and F1315) is situated only a few metres to the west of Phase 2a ditch F1279, it is likely to represent its renewal on a slightly different alignment.

The location of these two ditch systems may reflect a different use of space during this period from that seen in Phase 2a, and the opening up of the possible droveway into a wider enclosure. These two north-to-south orientated ditches may have defined the western and eastern limits of a large ditched enclosure at least 50m wide. None of the ditches relating to Phase 2b were particularly wide or deep (Table 6).

Phase 2c

(Plates III–VII; Figs 9, 10, 12, 14 and 15)

The most important spatial and stratigraphic relationships with regard to Phase 2c were as follows:

1. The two east-to-west aligned ditches F1236 and F1281 were roughly parallel, and lay on a different alignment from the ditches of Phases 2a and 2b.
2. Ditch F1281 cuts earlier Phase 2b ditches F1288 and F1168, as well as being cut by later Phase 2d ditches F1037 and F1140.

Phase 2c was represented by a marked re-orientation of land-use patterns, although it is likely that many of the original cuts of the ditch systems representing this period were associated with earlier episodes of activity.

Structures

Two possible roundhouses, Structures 1 and 4, were constructed during Phase 2c. They were situated on opposite sides of southern ditch complex F1138/F1281. These two structures may have been contemporary, although within the excavated area there is no obvious point of access across the ditch that would allow easy articulation between them. Evidence for textile production came from Structure 1. Like the Phase 2a structures, these two buildings may have functioned differently, with one being used for craft activities and the other as living space.

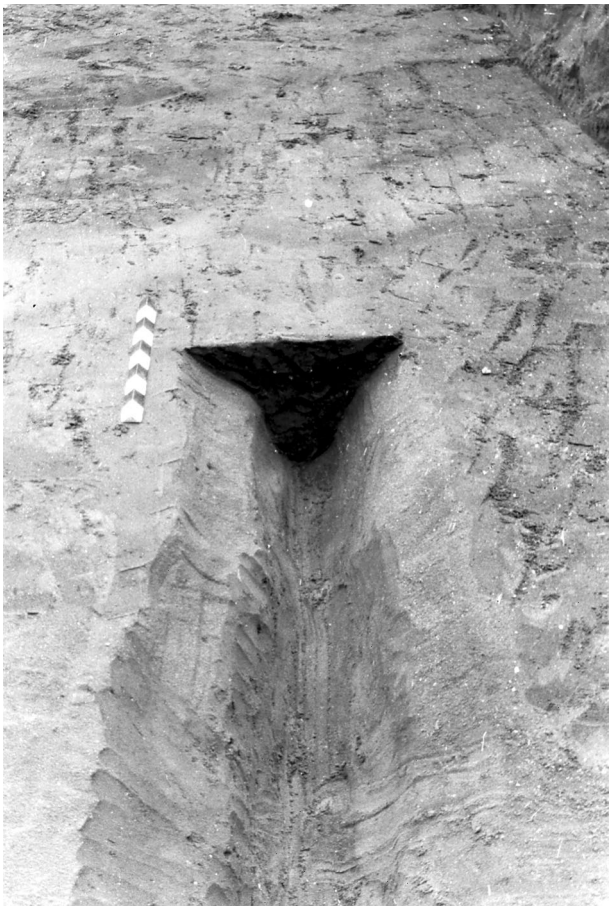


Plate III Phase 2c ditch F1138 (seen in section) cutting Phase 2a ditch F1136, view from east

Structure 1
(Plates IV–VII; Figs 9, 10, 12, 14 and 15)
A group of post-holes in the south-western part of the site may have formed a sub-circular or elliptical structure of *c.* 7–8m diameter. It comprised at least eight post-holes, placed between 1.5m and 4m apart (F1651, F1653, F1657, F1659, F1663, F1665, F1674 and F1688). Most were spaced around 2m apart; the wider gaps probably result from later ditch-cutting and other disturbance, which may have obliterated several post-holes (Fig. 12). A few other post-holes (F1655, F1726), pits (F1719) and gullies (F1667, F1709 and F1728) were probably related to this structure. The post-holes were generally of 0.3–0.5m diameter (average 0.4m), and ranged between 0.3m and 0.46m in depth. Most were circular, with near-vertical sides and concave bases, and were filled with grey/brown silty sand. Three of these (F1661, F1663 and F1674) contained traces of post pipes, indicating that the posts had been left to rot *in situ.*

Two further post-holes, F1651 and F1653, formed a probable paired post-setting linked by a small gully, F1709. The gully yielded 55 pottery sherds (Fig. 27.14–15), struck flint, burnt flint and a fragment of human toe bone (Table 8; *Human bone*, p.42). This structure might represent an entrance *c.* 1.2m wide facing north-east (Plate VII). A compact, dark grey occupation surface with frequent charcoal flecks, L1670, was present intermittently across the central area of the structure (Plates VI and VII). This 0.07m-thick floor surface was littered with finds including a spindle whorl, a flint scraper, *c.* 1500 g of burnt flint and 50 sherds of pottery. Interestingly, this layer also yielded two fragments of cremated human bone. This is an unusual location to find human remains, which are more often found in ditch terminals and pits, although this, like more common locations, is a 'liminal zone' (*e.g.* see Brück 1999, 2000 and Discussion, below). Cleaning in the area of the structure also yielded a snapped leaf-shaped arrowhead. Radiocarbon dating of material from L1670 yielded an age-range of 1760–1500 cal. BC (Beta-178455; 3350±60 BP; *Radiocarbon dating*, p.51).

Two hearths, F1672 (Plate IV) and F1693, were situated towards the centre of the structure, both cutting the occupation layer (Plates VI and VII). Hearth F1672 was sub-oval in plan (1m x 0.89m) and was 0.23m deep. It showed evidence of *in situ* burning, in the form of a blackened and reddened sand deposit in association with fire-cracked flint and charcoal, but did not yield any artefacts. The other hearth, F1693, was more irregular in plan (*c.* 0.9m x 0.5m) and only 0.1m deep. Its fill was less affected by heat than that of F1672, perhaps indicating that it had only been used once or twice.

Structure 4
(Figs 9, 10, 12, 14 and 15)
A possible fourth M–LBA post-hole structure lay in the centre of the excavation area. It was less well defined that any of the other structures, and lacked the characteristic dark grey/black silty occupation deposit. However, the curvilinear arrangement of post-holes situated in a 'typical' roundhouse location, in the angle of two enclosure ditches (F1281 and F1206: Fig. 10), may suggest that these features represent denuded structural remains. Ditch F1281 has a characteristic angled 'crook' in the vicinity of Structure 4, which may indicate that it was respecting or avoiding some structural feature here. This probable roundhouse was represented by at least five post-holes (F1621, F1625, F1633, F1635 and F1611), although another four post-/stake-holes (F1589, F1591, F1627 and F1649) and a pit (F1593) may have been associated with an internal structure. The post-holes were mainly sub-oval in plan, with relatively shallow profiles.

Ditches
During this phase, two 'braided' (as a result of a complicated series of re-cuts) and meandering ditch systems were established, running east-to-west across the site and situated *c.* 30–35m apart. The more southerly system (F1138/F1281/F1306) did not follow a single course throughout but appeared to have separated to follow two distinct parallel alignments across the central part of the excavation area, with the northern element (F1281) meandering somewhat. While F1138 was originally recorded as being cut by F1281 close to its western termination, it may have continued further west as F1306 (Plate V), with F1281 being a re-cut around a pronounced obstacle which extended the enclosure to the north in an irregular fashion. Both ditch elements were of similar width (0.45–0.58m). Ditch F1281 was identified as a separate cut which truncated 1306, and possibly contained another re-cut (F1422/F1433).

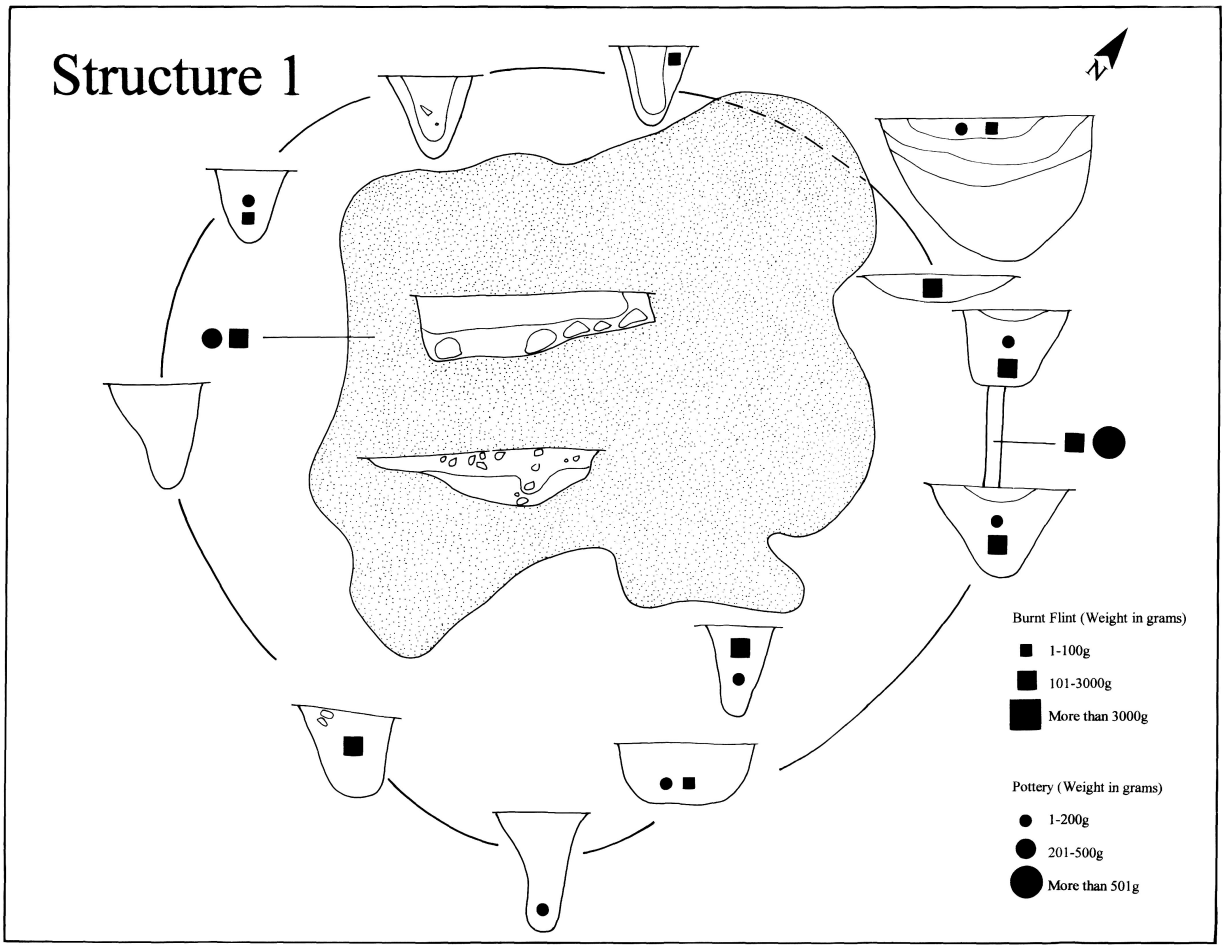
The northern Phase 2c ditch complex was further complicated by an area of animal burrowing in the north-eastern part of the site. The northernmost of the series of ditches, F1236, was the earliest. This had been re-cut as F1240, and subsequently as F1244 to the south (Fig. 17). Ditch F1236 continued as truncated ditches F1047/F1049 to the east, while the re-cuts continued as ditches F1051/F1053. A further ditch, F1332, represented a probable earlier phase of re-digging that had been truncated by F1244. Records indicate that ditch F1240 may have contained possible evidence for palisading, in the form of four small circular depressions along its base within the central segment excavated. However, no further information regarding this possible palisading was noted, and no similar evidence was recorded in any of the other segments excavated through this ditch.

Phase 2d

(Plate VIII; Figs 9, 11, 16 and 17)
The main stratigraphic relationships with regard to this phase were as follows:

1. Ditch F1037 truncated a number of the earlier ditches, principally the east-to-west ditch F1281 of Phase 2c, but also Phase 2a ditch F1136.
2. Ditch F1408 (along with re-cut F1457) truncated several post-holes within Structure 1, and also cut ditch F1281/F1306, both of Phase 2c.
3. Ditch F1140 cut Phase 2c ditch F1138 and Phase 2a ditch F1136.

In this final phase of ditch-digging activity, the boundaries became re-established on the dominant north-to-south axis seen in Phases 2a and 2b. Segments of at least four ditches have been attributed to this phase. Only one major north-to-south aligned ditch, F1037, was identified. This may have continued in the northernmost part of the site as F1258, with its re-cut F1247. Ditch F1037 was traced over a distance of at least 58m, but was less distinct in the central part of the site.



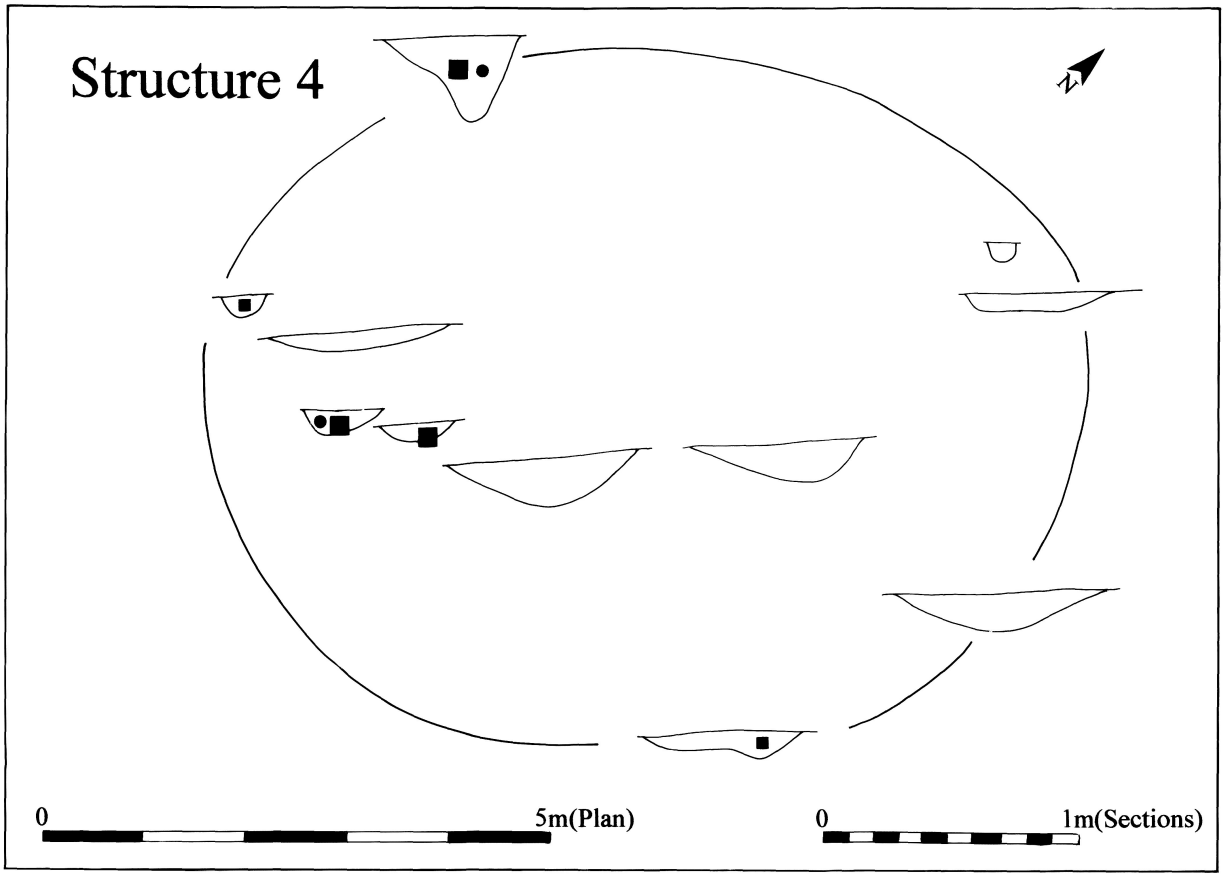


Figure 15 Plans of Structures 1 and 4 (Phase 2c), showing sections and relative quantities of flint and pottery in associated pits and post-holes

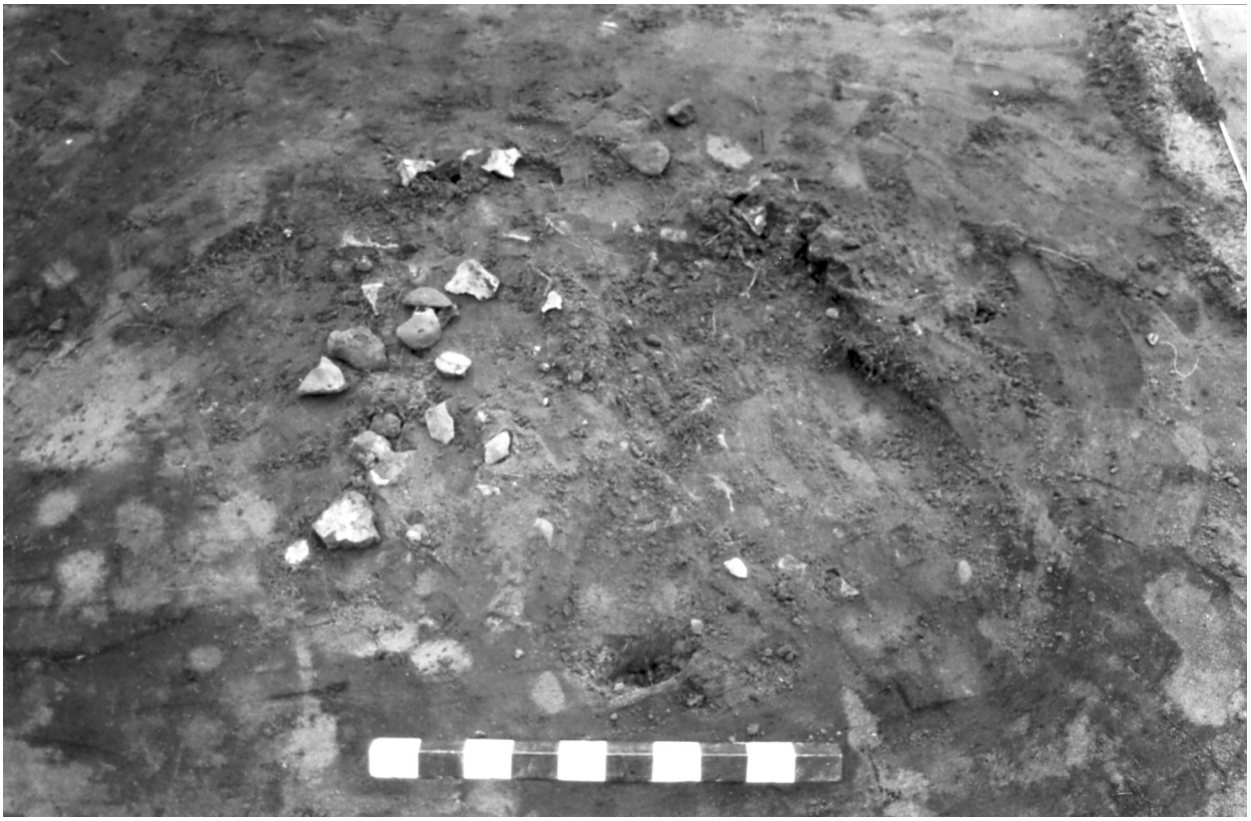


Plate IV Phase 2c Structure 1, hearth F1672, view from south

Plate V Excavation of Phase 2c Structure 1, with ditch F1306 in foreground, view from north

Plate VI Phase 2c Structure 1, dark occupation layer L1670 and excavation of hearth F1672, view from north

Plate VII Excavation of Phase 2c Structure 1 showing section through occupation layer L1670 and excavation of post-hole F1655, view from east

Ditch	*Length*	*Width (m)*	*Depth (m)*	*Shape of sides*	*Shape of base*	*No. of fills*	*Soil type*
1047	20+	0.3	0.12	V-shaped	Concave	1	2
1049	20+	0.3	0.12	Vertical	Flat	1	2
1051	20+	0.25	0.25	Vertical	Concave	1	2
1053	20+	0.3	0.1	Concave	Flat	1	2
1138	43	0.58	0.4	60° slope	Concave	1	8
1236	50	0.94	0.37	U-shaped	Undulating	3	8
1240	42	0.4	0.55	V-shaped	Irregular	3	8
1244	30	0.66	0.48	V-shaped	Concave	2	8
1281	40	1.09	0.47	V-shaped	Concave	2	4
1306	20	0.45	0.13	Concave	Concave	1	8
1332	36	0.25–0.53	0.08	Shallow	Concave	1	1
1433	10	0.65	0.3	V-shaped	No base	1	4

Table 7 Phase 2c ditches

Feature	*Feature types*	*Diameter (m)*	*Depth (m)*	*Finds*
1651	Post-hole	0.5	0.31	7 pot sherds, 3 struck flint, 150g burnt flint, 1 burnt stone
1653	Post-hole	0.5	0.32	3 pot sherds, 7 struck flint, 276g burnt flint
1655	Post-hole	0.5	0.46	2 struck flint, 178 g burnt flint
1657	Post-hole	0.38	0.4	1 struck flint
1659	Post-hole	0.3	0.29	4 pot sherds, 3 struck flint, 86g burnt flint
1661	Post-hole	0.3	0.3	1 pot sherd, 5 struck flint
1663	Post-hole	0.3	0.3	2 struck flint, 84g burnt flint
1665	Post-hole	0.4	0.33	1 pot, 7 struck flint
1670	Layer	5.0	0.07	50 pot sherds, flint scraper, 44 struck flint, spindle whorl, 2 burnt stone, 2 fragments of cremated bone
1671	Layer	4.0	0.03	5 pot sherds, 28 struck flint including leaf-shaped arrowhead, 220g burnt flint
1672	Hearth	1.0	0.23	none
1674	Post-hole	0.5	0.23	7 pot sherds, 3 struck flint, 32g burnt flint
1693	Hearth	1.2	0.1	none
1707	Post-hole	0.3	0.3	none
1709	Gully	1.55	0.44	55 pot sherds, 23 struck flint, 578g burnt flint
1726	Post-hole	0.34	0.35	14 pot sherds, 1 struck flint, 284g burnt flint

Table 8 Features and finds relating to Structure 1

Feature	*Feature type*	*Diameter (m)*	*Depth (m)*	*Finds*
1589	Post-hole	0.27	0.09	12 pot, 4 struck flint, 130g burnt flint
1591	Post-hole	0.36	0.07	6 struck flint, 164g burnt flint
1593	Pit	1.1	0.2	none
1611	Post-hole	0.2	0.08	30g burnt flint
1621	Post-hole	0.6	0.1	16g burnt flint
1623	Post-hole	0.48	0.09	none
1625	Pit	0.85	0.11	none
1627	Pit	0.7	0.2	none
1633	Post-hole	0.53	0.33	4 pot, 7 struck flint, 720g burnt flint
3601635	Pit	0.85	0.15	none
1649	Pit	0.79	0.13	none

Table 9 Features and finds relating to Structure 4

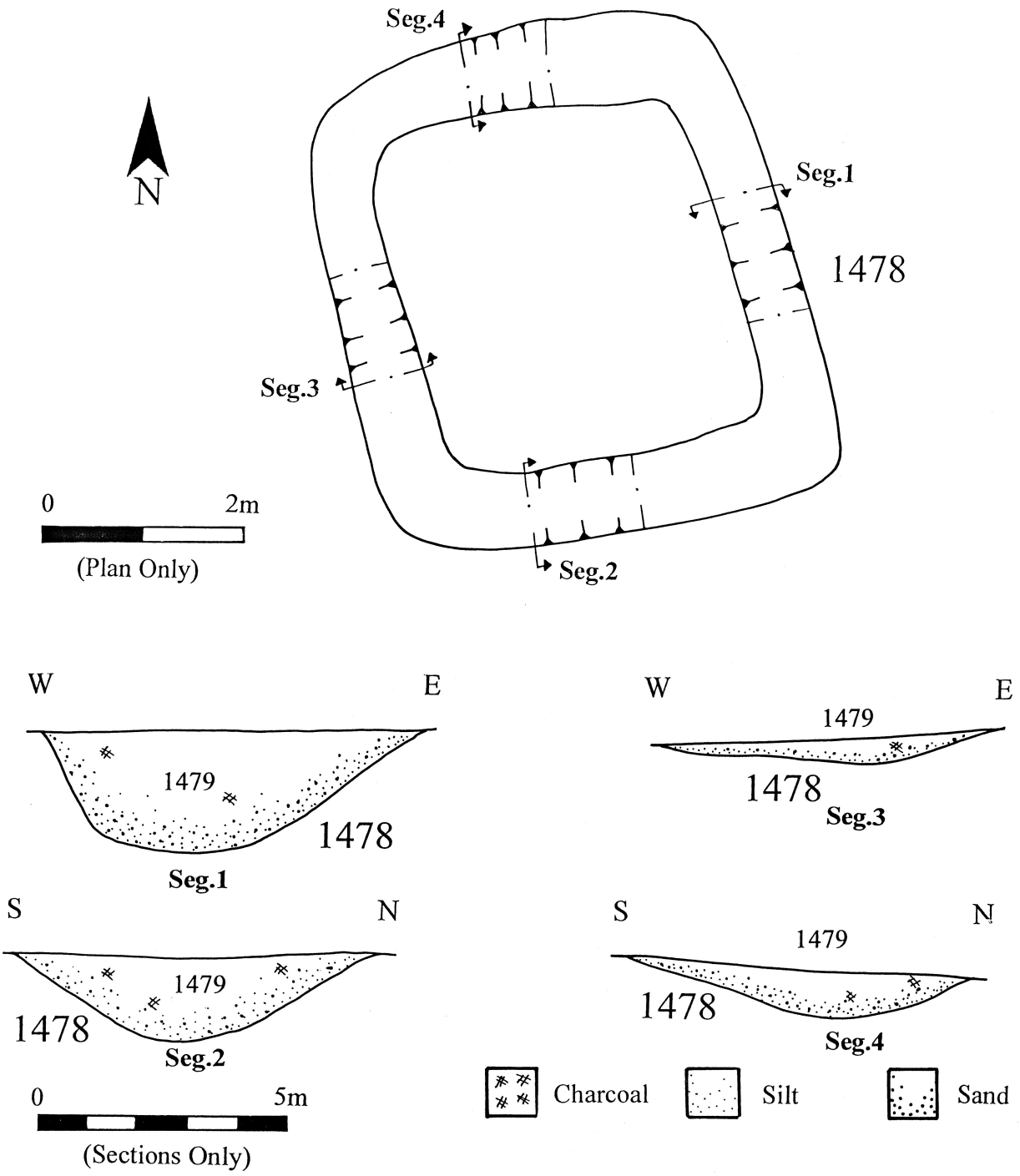


Figure 16 Plan and sections of square ditched enclosure F1478

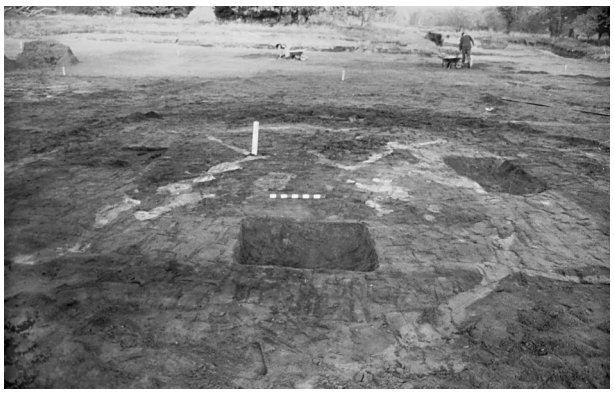


Plate VIII Square ditched enclosure F1478, view from south

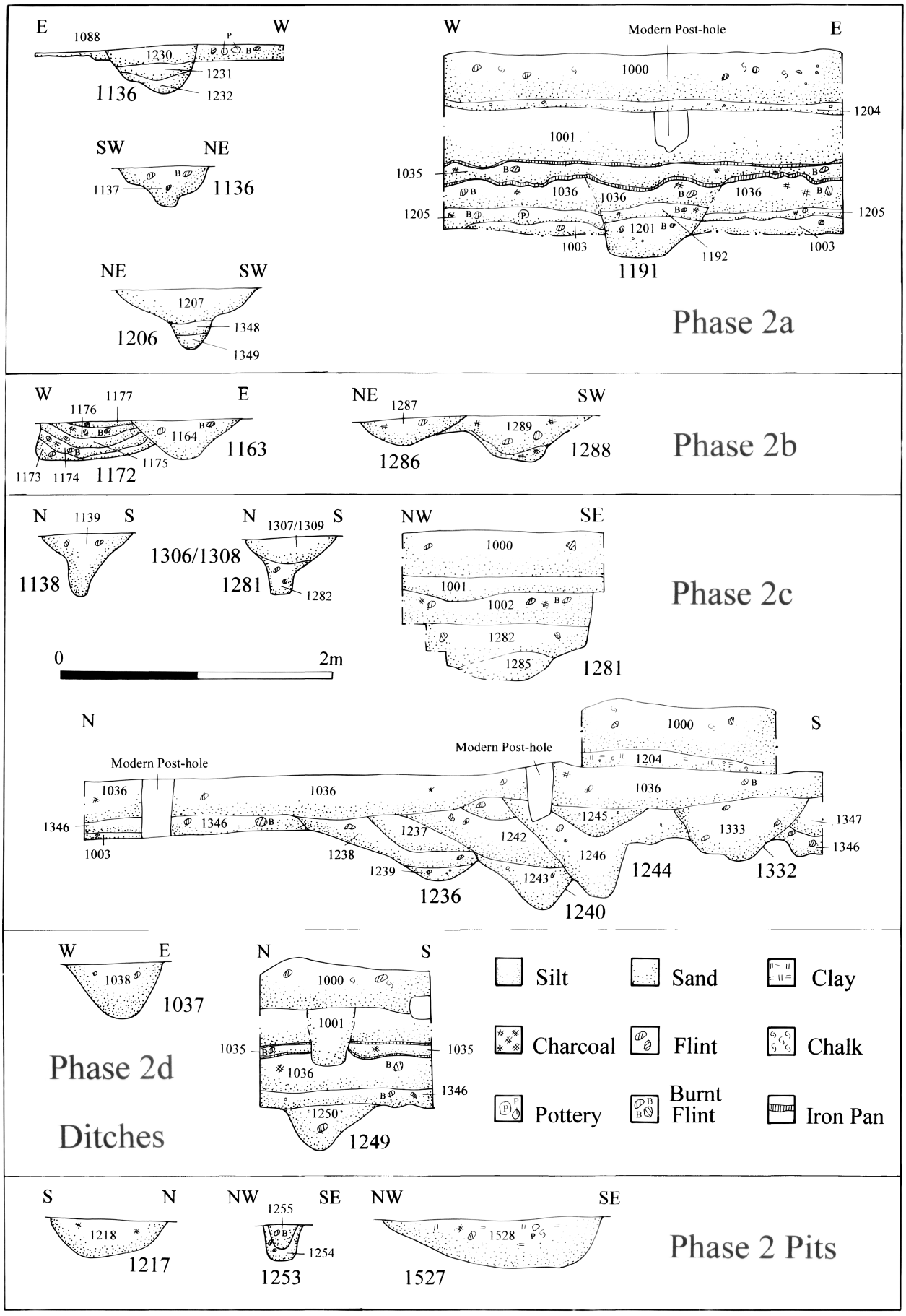


Figure 17 Sections through later Bronze Age (Phases 2a–2d) features

Ditch No.	*Length*	*Width*	*Depth*	*Shape of cut/sides*	*Shape of base*	*No. of fills*	*Soil type*
1037	58	0.55	0.38	U-shaped	Flat	1	8
1140	20	0.45	0.13	Gentle (30–40°)	Concave	1	8
1247	14	0.47	0.32	Steep but stepped on western side	Flat	1	1
1249	36	0.83	0.28	Concave	Concave	1	8
1398	9.0	0.5	0.3	Steep–shallow	Flat	1	4
1408	5.2	0.4	0.2	Steep–shallow	Concave	1	2
1457	26	0.48	0.22	Steep	Flat	1	2
1474	10	0.4–0.6	0.08	U-shaped	Concave	1	8
1494	10	0.5	0.11	U-shaped	Concave	1	8
1502	4.5	0.5	0.1	Shallow	Concave	1	4

Table 10 Phase 2d ditches

Segment	*Width (m)*	*Depth (m)*	*Sides*	*Base*
1 (east side)	0.86	0.26	Steep on west; shallow on east	Concave
2 (south side)	0.8	0.19	Shallow	Concave
3 (west side)	0.70	0.05	Shallow	Flat
4 (north side)	0.73	0.12	Shallow	Concave

Table 11 Ditch profiles through square enclosure F1478

In the south-western part of the site, short curvilinear ditch F1457 continued the line of ditch F1408, which it truncated. This suggests that F1457 was a re-digging of an earlier enclosure ditch, which may have continued to the north-west as a shallow, indistinct feature (Fig. 10). This ditch veered to the left and slightly truncated the remains of Structure 1, reinforcing the fact that this was no longer in use by this time. A section cut through the ditch at this point produced abundant LBA pottery, daub and struck flint, much of which undoubtedly derived from the remains of Structure 1.

Running parallel to ditches F1408/F1457, and 7m to the west, was ditch F1398. Although this was undated, it may have formed a narrow droveway along with these ditches, and was of similar dimensions. In the northern part of the site, ditch F1249 may have continued the line of F1247, and again both features were of similar dimensions. Although neither had stratigraphic relationships with other features on site, ditch F1249 respected and appeared to veer around Phase 2c ditch F1236, thus implying it was of slightly later date.

Part of another curvilinear ditch, F1140, was revealed in the south-eastern corner of the site. It was aligned north-east to south-west, but curved slightly towards the east. Although it was narrow and shallow, it cut a number of other earlier ditches, including F1138 (Phase 2c) and F1136 (Phase 2a).

Square ditched enclosure F1478

(Plate VIII; Figs 14 and 16)

No roundhouses were dated to Phase 2d, but this final stage of LBA activity may have seen the construction of a small square enclosure, measuring *c.* 5m². This feature, F1478, was situated in the north-central part of the site. Although it produced no datable finds and had no stratigraphic relationships with other features, its position appears to respect the Phase 2d ditch alignments. Ditches F1494 and F1502 to the east of the enclosure were morphologically similar, but divided by a short gap that could be interpreted as an entranceway. The enclosure and interrupted ditches F1494 and F1502 lie in the same area as the terminal of ditch F1037 and, unlike features in Phase 2c, lie on an approximate north-west/south-east axis. This alignment may respect the Phase 2d ditch alignments, in particular that of ditch F1037.

The enclosure was sub-square, with slightly rounded corners. The surrounding ditches were 0.70–0.86m wide and 0.05–0.26m deep. Generally, it had moderately steep sides and a flattish, concave base, although its profile varied throughout its length. It contained a single fill of mid-greyish brown silty sand with occasional charcoal flecks. Only the western ditch segment produced any finds, which amounted to one struck flint and 236g of burnt flint. No features or finds came from the enclosure. The enclosure had no obvious entrance, and the lack of internal features and finds restricts functional interpretation.

Ditches and ditch finds

(Figs 18 and 19)

The Phase 2a–d ditches contained sparse finds (Table 12). Significant quantities of pottery and burnt flint were only encountered when ditches had cut through the abandoned remains of earlier structures.

The ditches from all four sub-phases tended to be quite narrow and shallow — none exceeded 1.09m in width and 0.55m in depth (Table 13). General they had steep sides and concave bases.

Pits

(Figs 9, 17, 20–22)

Few pits were noted at Game Farm, in contrast to the dense concentrations of pitting noted at LBA sites such as Aldermaston Wharf, Berkshire (Bradley *et al*. 1980), or Lofts Farm, Essex (Brown 1988a). Although few pits here contained pottery (only 24 out of 97: Table 14), most could be dated by virtue of their location and associations to the M–LBA phases of activity. Several were truncated by M–LBA ditches (*e.g.* F1340, cremation pit F1470, F1472, F1494 and F1611), and the majority were located close to the roundhouses.

The pits tended to be rather small, with mean dimensions of 0.92m length, 0.68m width and only 0.22m depth. Most were sub-oval in plan and concave in profile, and ranged from 0.3m to 4.6m in diameter (Fig. 21). None exceeded 0.62m in depth (Fig. 22). Most contained only single fills, although five contained more complex sequences of deposits. With one exception, all of the latter pits were directly related to Phase 2 structures, in particular Structure 3 (Figs 12 and 13).

The nature of the pits was not consistent with the idea that they were used for storage. None exhibited the characteristic 'beehive' shape common at many LBA/Early Iron Age sites, such as North Shoebury, Essex (Wymer and Brown 1995). This could be due to the earlier date-range of the settlement at Brandon, or could reflect the character of the underlying soils: the sandy soils at Game Farm would have precluded successful excavation of deep storage pits. However, grain may have been stored in other types of structure, such as post-built platform granaries. Any post-holes that related to features of this kind may have been obliterated by the intense ditch-digging activity. Grain could equally well have been stored within the roundhouses, or in perishable woven baskets or leather containers.

Cereal remains, and the seeds and pollen of associated weeds, were unusually rare in the deposits sampled at Brandon (*Pollen*, p.46;

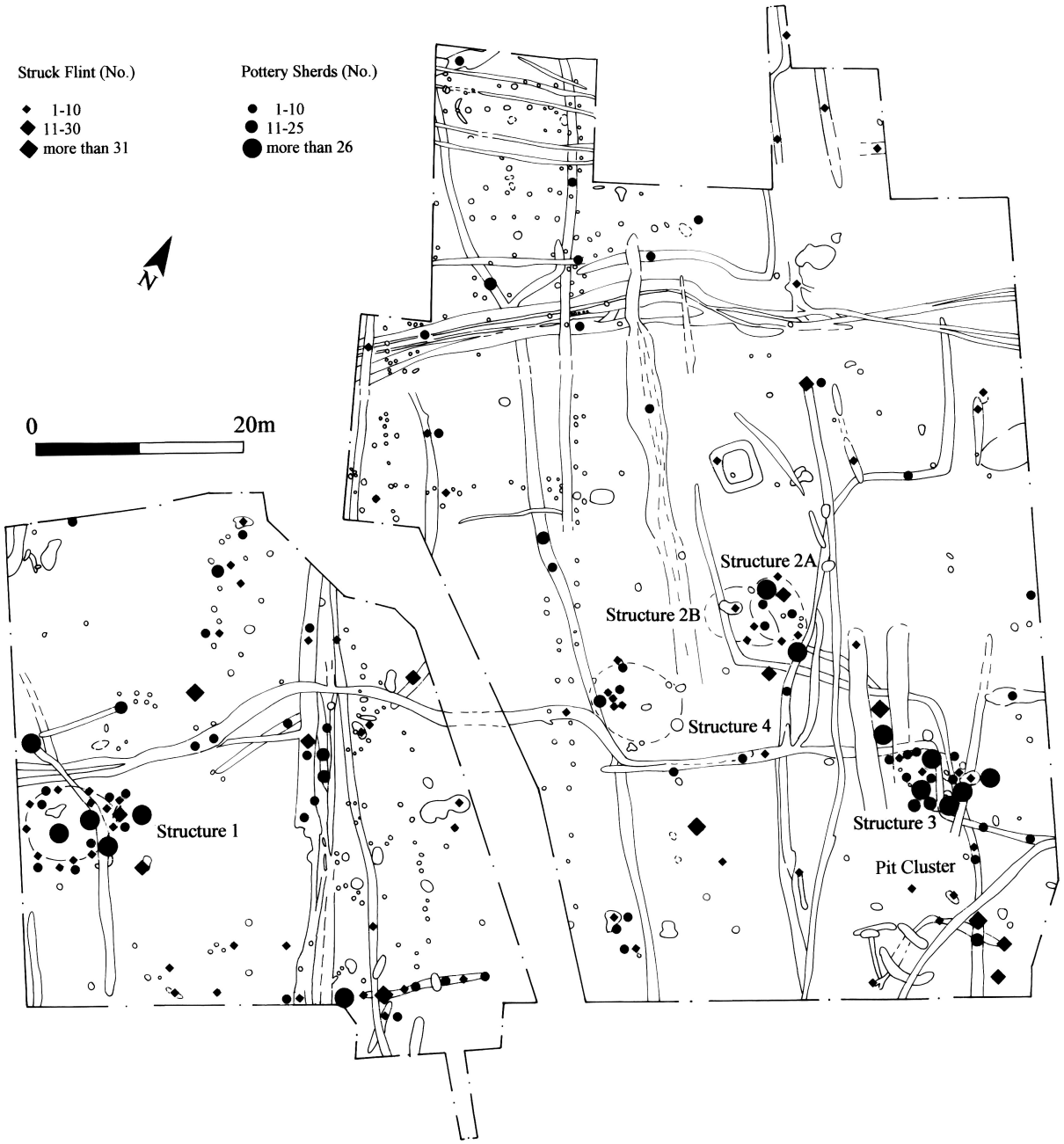


Figure 18 Distributions of struck flint and pottery

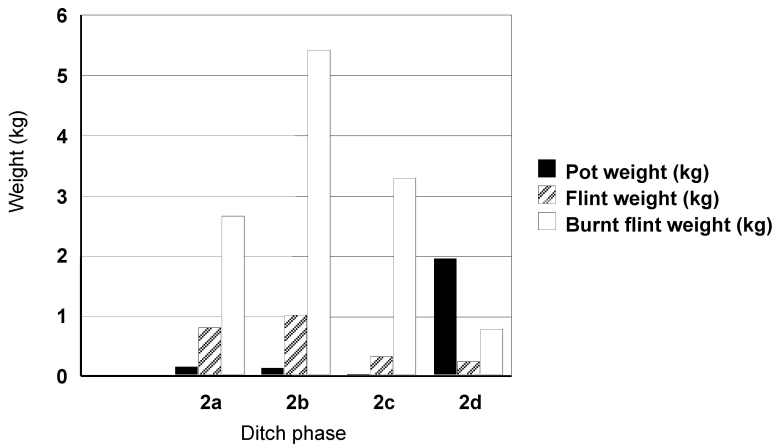


Figure 19 Finds by ditch phase

Environmental samples, p.47; *Charcoal*, p.47). It is possible simply that these plant remains had not survived in quantity, or that cereals were processed elsewhere. There was also little in the way of cereal-processing equipment, such as querns, nor was there evidence of chaff or carbonised cereal from the environmental samples. Analysis of pollen samples from the peat seemed to indicate a rise in levels of cereal pollen, including wheat and barley, and associated grasses and weeds in the Roman period, but did not show any significant quantities in the pre-Roman lower peat. The absence of cereal-related remains and the presence of extensive field systems and possible droveways suggest that the land was used for stock-keeping. However, like the floral assemblage, the faunal assemblage was very poorly preserved due to acidic soil conditions. Environmental evidence is too sparse to permit any analysis of agricultural land-use at Game Farm.

A large number of the pits contained burnt debris, although in most cases this represented dumped material rather than *in situ* burning. The fills of 52 pits, out of the total of 97, produced quantities of charcoal. Just under half (43%) of all the pits contained burnt flint, generally in association with blackened soil and fire-cracked stones. Little material, other than burnt flint, was retrieved from the pits (Table 14). Similar features have been noted at other LBA sites, such as Welland Bank, near Peterborough (Pryor 1998b, 121) and Knight's Farm, Berkshire (Richards in Bradley *et al.* 1980). Pryor was uncertain of the function(s) of the Welland Bank features and maintained that they were not obviously for boiling salt water, smoking meat or metalworking. At Knight's Farm, Richards concluded that many of the pits were specifically dug for rubbish disposal — in this case to bury the debris from ovens (1980, 258).

When the pits were plotted on the basis of their fill attributes and the finds they produced, an interesting pattern emerged. Most of the pits with burnt fills were closely associated with Structure 3, but also with Structure 2 (Fig. 13). A small concentration of pits with burnt material came from between ditches F1288 and F1206 (pits F1330, F1595, F1549 and F1551). Many of the pits with no burnt material in their fills were located around Structure 1. This arrangement of pits and their fills in relation to other features may indicate that some activities were restricted to certain parts of the site, or that the disposal of refuse from particular events took place in particular locations. The large concentrations of pits identified at Aldermaston Wharf also exhibited patterning in their fill composition. Pits with similar fills tended to be found together, and most contained specific types of refuse (Bradley *et al.* 1980, 224). It might be suggested that many of the pits at Game Farm were specifically dug for burying the debris (charcoal, ash and burnt flint) from hearths and ovens. Possibly this debris was kept in specific ('unclean') parts of the site. A more mundane explanation is that the dumping was simply carried out as near to the houses themselves as possible. If so, this implies that Structures 2 and 3 may have been dwellings, while Structures 1 and 4 did not have hearths.

Ditch Phase	*Pot no.*	*Pot wt (g)*	*Flint no.*	*Flint wt (g)*	*Burnt flint no.*	*Burnt flint wt (g)*	*Other*	*no.*	*wt (g)*
2a	27	149	51	799	209	2664	Flint scraper	1	
2b	41	144	125	1011	428	5438	Axe blade, cu alloy object and burnt stone	5	82
2c	10	27	40	318	159	3302	Flint blade and burnt stone	2	
2d	195	1958	28	240	30	784	Human bone (194 fragments where ditch cuts Structure 1)	1	2

Table 12 Finds from ditches

Dimensions		*Minimum (m)*	*Maximum (m)*	*Mean (m)*
Phase 2a	Width	0.4	0.9	0.68
	Depth	0.15	0.38	0.25
Phase 2b	Width	0.35	0.9	0.69
	Depth	0.1	0.35	0.24
Phase 2c	Width	0.4	1.09	0.61
	Depth	0.08	0.55	0.31
Phase 2d	Width	0.35	0.55	0.45
	Depth	0.1	0.38	0.19

Table 13 Ditch dimensions by phase

No. pot sherds	*No. of pits*	*No. of struck flints*	*No. of pits*	*Weight of burnt flint*	*No. of pits*
1	8	1	13	1–20g	6
2–5	9	2–5	14	21–50g	11
6–10	2	6–10	12	51–100g	6
11–15	2	11–15	3	101–150g	4
16–20	3	>15	2	151–200g	3
21–25	0	**Total**	**44**	201–300g	4
26–30	1			301–400g	2
31–35	1			401–500g	1
36–40	1			501–1000g	3
>40	3			1001–1500g	0
Total	**30**			1501–2000g	2
				2001–4000g	0
				4001–6000g	3
				6001–8000g	1
				>8000g	1
				Total	**47**

Table 14 Finds from the pits

Figure 20 Mid–Late Bronze Age pits and pit fills; distribution of cremations and possible ritual deposits

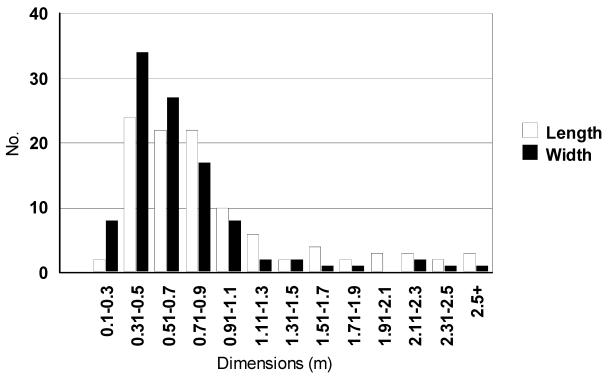


Figure 21 Mid–Late Bronze Age pit dimensions

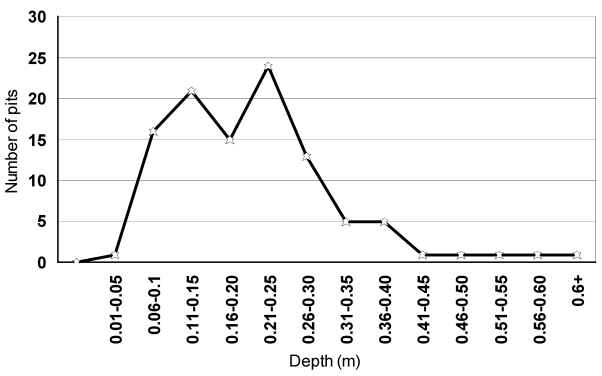


Figure 22 Depths of Mid–Late Bronze Age pits

Plate IX Cremation pit F1350, view from west

Unurned pit cremations			
Feature	*Context*	*Pyre fuel*	*Age*
1350	1351	Oak	-
1470	1471	Shrubs	Adult
1509	1510	Oak and hazel	-
Possible ritual cremation deposits			
Feature	*Context*	*Feature type*	*Age*
1484	1485	Pit	Juvenile
1037	1038/5	Ditch	Adult
-	1670	Surface	Adult
1079	1080	Pit	Adult
Unburnt human bone			
Feature	*Context*	*Feature type*	*Description*
1709	1710	Structure 1 gully	1 fragment unburnt adult toe bone

Table 15 Cremations and possible ritual deposits

Cremations and possible token cremation deposits
(Plate IX; Figs 20–3)

Fragments of burnt human bone were found across the site, either as formal unurned pit cremations (F1350, F1470 and F1509) or as 'token' cremations, or small deposits or spreads of human bone incorporated in the fills of other features. Possible token cremation deposits were found in a pit (F1484), a ditch terminus (F1037) and on an occupation surface of Structure 1 (F1670). Two of the pit cremations (F1350 and F1509) were located in the southernmost part of the site, while the third (F1470) came from a pit near the sub-square enclosure F1470. A single unburnt human toe bone was recovered from a soil sample from Structure 1 (gully F1709).

Pit F1350 was a shallow sub-circular pit situated only a few metres to the west of Phase 2a ditch F1279. It was 0.5m in diameter and only 0.10m deep (Fig. 23). It contained black compact sand in association with well-ground-up cremated bone (Plate IX). Cremation pit F1509 was situated *c.* 20m directly east of F1350, almost centrally between Phase 2a ditch F1206 and Phase 2b ditch F1163. It was a steep-sided oval pit 0.8m in diameter and 0.3m deep. A sample was taken from L1510, the fill of F1509. This was subject to charcoal analysis, which indicated that the deposit contained carbonised oak and hazel, possibly pyre fuel (*Charcoal*, p.48). A sub-sample was radiocarbon dated, placing the deposit in the range 1450–1260 cal. BC (Beta-178453; 3211±50 BP; *Radiocarbon dating*, p.51). The final cremation came from a slightly larger elongated pit, F1470, 1m in diameter and 0.26m deep.

Possible token cremation deposits were recorded in other features. They included fragments from small pit F1484, which cut a larger pit, F1486. Pit F1484 was sub-oval in shape, measured 0.75m x 0.45m in plan and 0.27m in depth. It was originally interpreted as a hearth dump,

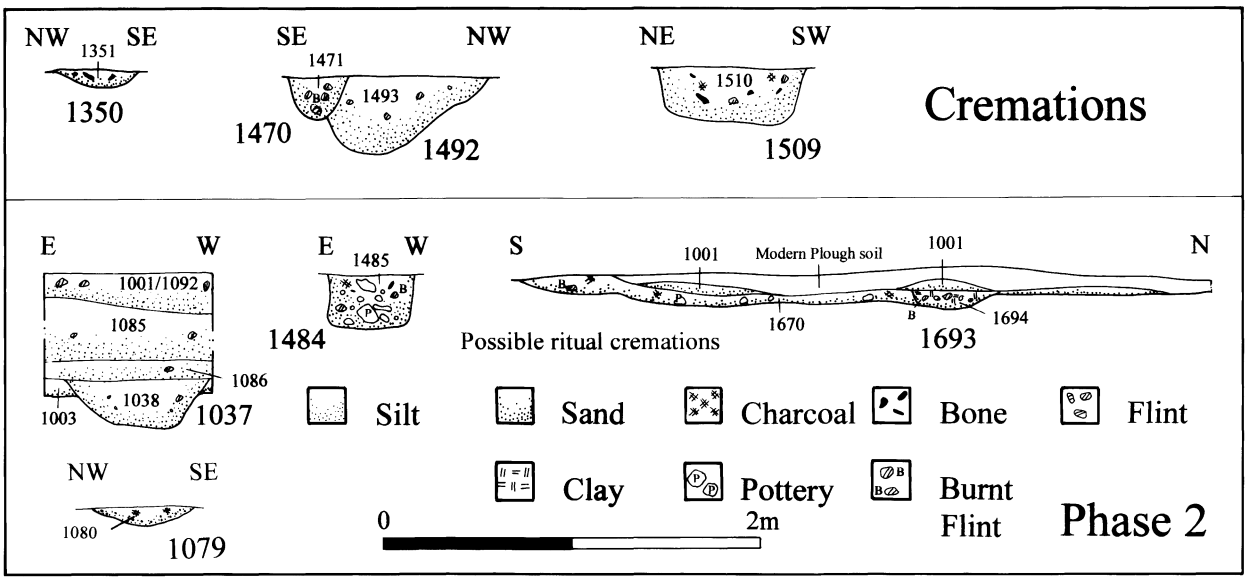


Figure 23 Sections through later Bronze Age cremation pits

owing to the large quantities of burnt flint in its fill. Other finds, however, suggest that it contained a carefully structured deposit. Sixteen fragments of cremated human long bone (12–71mm) came from the south side of the pit; on the opposing edge, the complete base of a pottery vessel had been inverted (Figs 23 and 28.30). The possible ritual cremation deposit from Phase 2d ditch F1037 (Fig. 17) may also have been a 'placed' deposit, since it came from the north terminus. The final cremation deposit came from a rather striking location: L1670, the floor of Structure 1. An unburnt human toe bone was recovered from gully F1709, which may have been the threshold of the possible north-eastern entrance of Structure 1.

Brück (1995, 256) has analysed finds of human remains from later Bronze Age settlements and argued that they are restricted to a small number of contexts, namely pits, ditches, ramparts, post-holes and middens. She concluded that human bone was rarely, if ever, found in hearths, yard areas or hut floors. At Hornchurch (Guttman and Last 2000) and Thorley (Last and McDonald forthcoming), cremated bone may have been deposited in a variety of structured ways, with different meanings inherent, and this may also have occurred on a smaller scale at Game Farm.

Probable Mid–Late Bronze Age features

(Fig. 7)

A small number of prehistoric features lacked clear dating evidence or obvious connections with the Phase 2 ditches and structures. It is likely that these are of M–LBA date, although the fact that all of the gullies and a number of the pits and post-holes (*e.g.* ditches F1097 and F1228; pits F1472, F1647 and F1649) contained struck flint possibly suggesting an earlier prehistoric (Phase 1) date. Many of the pits contained quantities of burnt flint and are likely to be associated with the M–LBA phases of activity.

Key stratigraphic relationships with respect to these features (Fig. 7) included the following:

1. unphased ditch F1431 was cut by unphased pit/post-hole F1446;
2. pits F1340, F1344 and F1517 were cut by Phase 2b ditch F1288/F1315;
3. pits F1470 and F1492 were truncated by Phase 2d ditch F1494;
4. LBA unurned cremation pit F1484 cut unphased pit F1486;
5. post-hole F1611 pre-dated Phase 2a ditch F1206;
6. post-hole F1160 cut Phase 2b ditch F1148;
7. post-hole F1099 was cut by Phase 2d ditch F1037;
8. ditch F1676 was cut by Phase 2a ditch F1279

V. Phase 3: the buried soil

(Figs 4, 5, 24 and 25)

The prehistoric features were sealed by a sequence of buried and colluvial soil layers. These were recorded in detail, particularly in Areas 20 and 21 (*Soils*, p.44). The deposit, identified *en bloc* using the umbrella descriptor L1002 (including L1007, L1015, L1018, L1019 and L1036), was described as a mid-greyish brown, slightly silty sand. Although its depth was variable it was present across the entire site, generally at thicknesses of 0.3–0.4m. This horizon resembled a dark windblown soil layer, rather than a true buried ploughsoil. Later prehistoric activity took place on biologically active brown soils that had accreted due to wind blow and colluvial activity.

The buried soil contained large, but locally variable, quantities of struck flint (329 fragments/4599g) and burnt flint (10/153g), along with smaller quantities of pottery (35 sherds/165g), daub (22g) and charcoal. All the pottery, with the exception of one small post-medieval sherd, was prehistoric and undoubtedly residual.

Deposit L1036, in Area 17, was the only buried soil horizon to produce a substantial assemblage of bone (543g). This dated to the post medieval period. The assemblage included butchered domestic cattle and sheep bone as well as part of a poorly preserved human skeleton of an infant under 3 months old. A small dog metacarpal was also recovered from this context.

A number of mixed sandy/colluvial layers intervened between the buried soil and the main deposit of wind-blown sand (L1001) above. One of these (L1035) produced a quantity of post-medieval material, including twenty clay pipe fragments, eleven sherds of pottery, bottle glass and 150g of brick and tile. This suggests a 17th–19th century date for the massive wind-blown sand accretion at Game Farm; a great sandstorm in the mid-17th century is documented (SCCAS Report 99/15). Clearly this major event would have been preceded by other phases of deposition since prehistory, however, explaining both the depth and the variable nature of the overburden sealing the archaeological features.

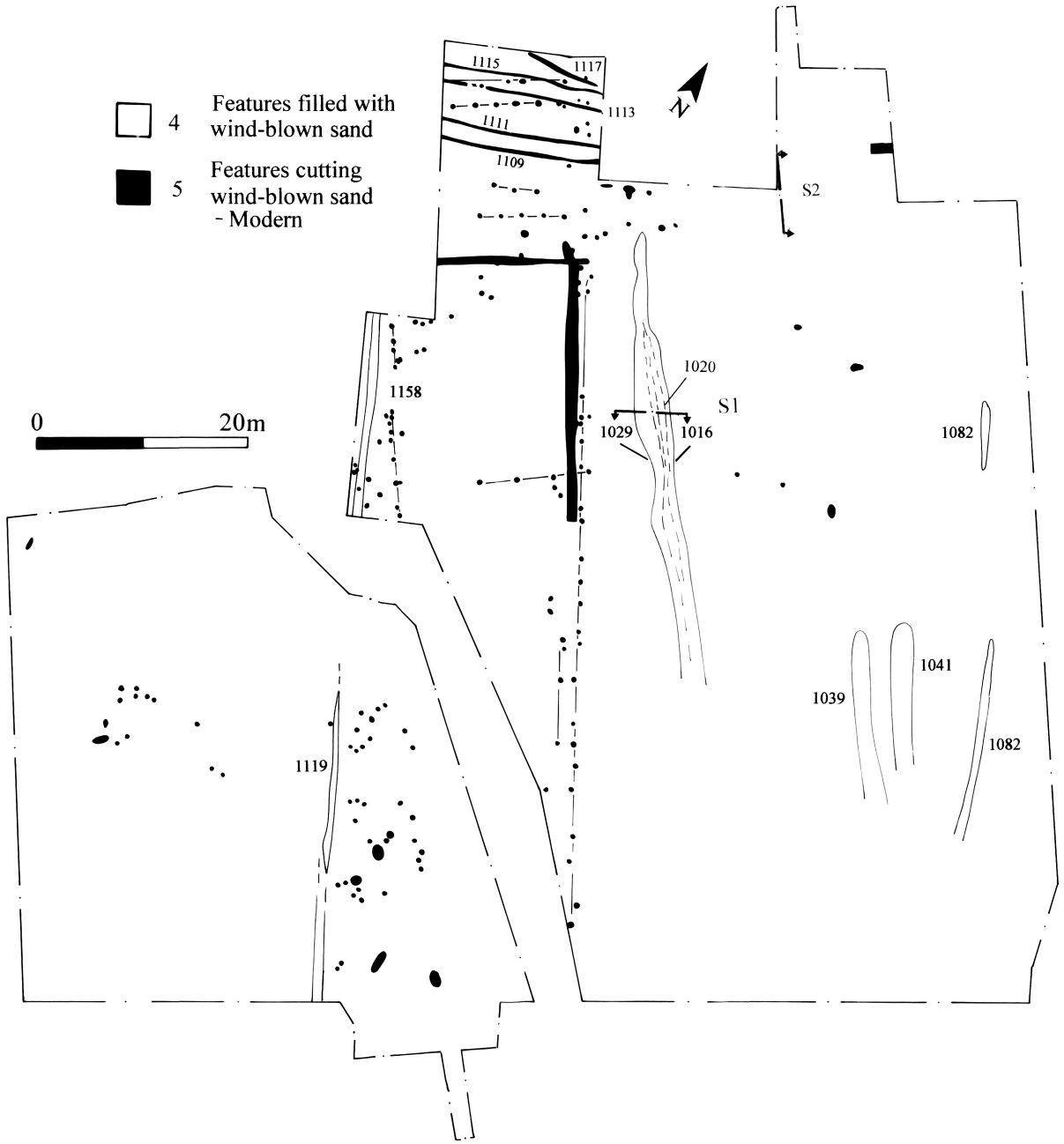


Figure 24 Phases 4 and 5, wind-blown sand and modern features

VI. Phase 4: features filled with wind-blown sand

(Figs 24 and 25)

The wind-blown sand (L1001) both filled and sealed a sequence of five narrow, broadly parallel ditches that ran north-to-south across the site. These may represent field boundaries or derive from other agricultural activity on the site. Dating evidence was sparse, although one ditch produced a fragment of coal. One of the ditches was truncated by a series of plough marks that yielded post-medieval finds.

Two wide parallel ditches (F1039 and F1041), were revealed in the south-eastern part of the site. They were recorded in Area 20 and became less distinct and shallower to both north and south, before petering out. They were up to 2.5m wide and 0.3m deep, and may have reflected the agricultural exploitation of the site.

Finds from the wind-blown sand (L1001) included post-medieval stonewares and earthenwares. Other material included local gun- and building flint and an iron knapping hammer.

VII. Phase 5: Modern features cutting wind-blown sand

(Fig. 24)

Following the deposition of the wind-blown sand, regular fence-lines were established on north-to-south and east-to-west alignments across the site, often in double parallel lines. These lines were present mainly in the central area of the site. The post-holes were often deep and

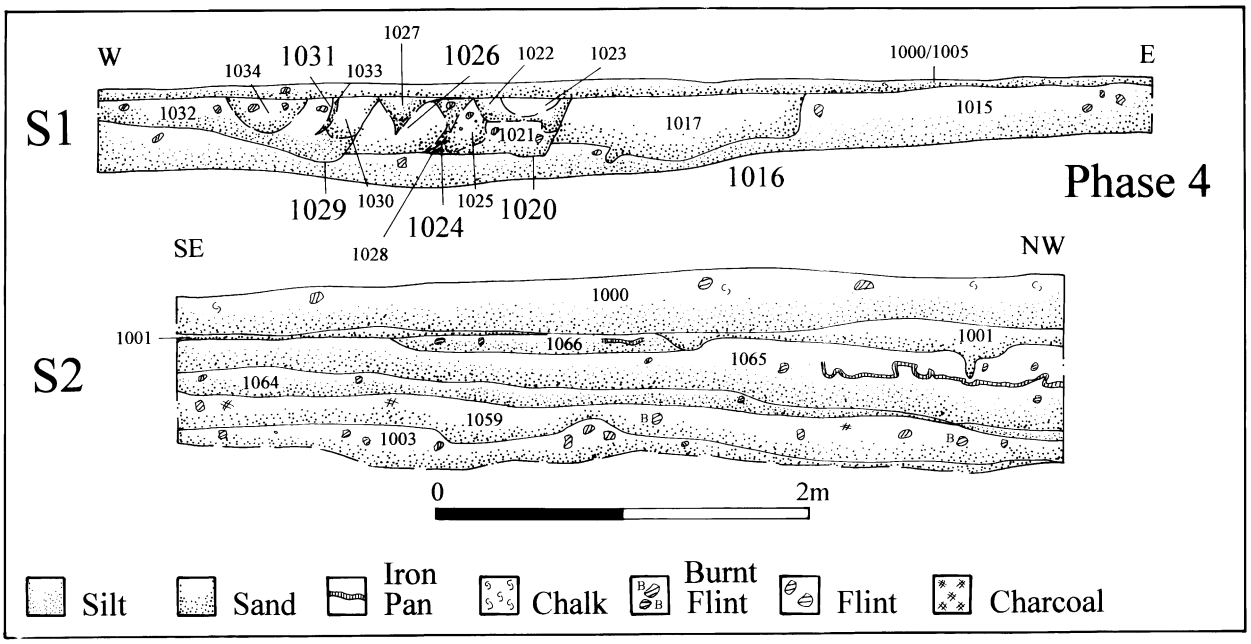


Figure 25 Sections showing wind-blown sand and buried land surface (locations on Figure 24)

square in plan, sometimes with remains of timber posts surviving. Clay pipe-stems were the most common finds.

Five roughly parallel narrow, shallow linear features (F1109, F1111, F1113, F1115 and probably F1117) were recorded in the northern part of the site. They probably represent cart ruts and cut the Phase 3 layer of mixed wind-blown sand and buried topsoil (L1035). These ran west-to-east across the site towards Santon Downham.

A number of modern pits were also present, presumably reflecting recent agricultural activity at Game Farm, along with two probable ditches (F1075 and one perpendicular to it). Finally, a number of plough furrows (F1004) were recorded in the north-central part of the site, with pottery dating to the 16th to 19th centuries, along with clay pipes, glass, iron and copper alloy objects.

3. Specialist Reports

by Ian Baxter, Alan J. Clapham, Nina Crummy, Rowena Gale, Jonathan Last, Richard Macphail, Tom McDonald, Leonora O'Brien, Robert G. Scaife and Tony Waldron

I. Flint

by Tom McDonald
(Fig. 26)

Introduction

Worked flint associated with the manufacture of post-medieval gun-flints was collected from across the site. Thick bands of wind-blown sand separated the earlier prehistoric industries from that of the post-medieval period. Only the struck flint from the earlier levels is examined here.

A collection of 1606 prehistoric flint pieces (including chips/spalls and burnt pieces) weighing 18,721g was recovered during the excavation, mostly during hand-excavation of layers and features. The remainder, mainly small chips/spalls, was retrieved from the residues of sieved samples taken specifically for the retrieval of knapping debris, and also from environmental samples.

The struck flint comprises finished tools found in association with un-retouched and non-utilised flakes, the by-products of flint knapping (Table 16). Broad and short flakes predominate, and 135 blades are present within the collection. Both blade and flake cores, mainly cortical, occur.

Typology	*Count*	*%*
Flakes	1164	72.5
Blades	135	8.4
Cores (including fragments)	37	2.3
Chips	242	15.1
Chunks	12	0.7
Burnt lumps	16	1.0
Total	**1606**	**100.0**

Table 16 Summary of worked flint assemblage

Core type	*Count*	*%*
Core fragment (bladelet)	1	2.7
Core fragments (flake)	7	18.9
Flake cores	6	16.2
Multi-platform blade cores	4	10.8
Multi-platform flake cores	11	29.7
Single platform blade cores	6	16.2
Single platform flake core	1	2.7
Opposed platform blade core	1	2.7
Total	**37**	**100**.0

Table 17 Flint core types

Raw material

The flint is mainly in hues of brown and grey, though some dark brown/black flint is also present, as well as a few pieces of red and yellow-brown chert. The majority of the flint is mottled, and grey-brown flint was favoured for tool production. Cortex, where present, is off-white, and a few pieces display brown staining. Few hairline fractures or frost fractures are apparent, and many of the pieces are flawless and unabraded, suggesting that quality flint was selected for knapping. The majority of the pieces are described as 'fairly sharp'. Where patination occurs it is generally white/light blue in colour. Some of the flint may have been derived from the late Neolithic and Bronze Age flint mines of Grimes Graves, some 3.5km to the north-east, although none has been positively identified as such. The pebble flint was sourced from the local glacio-fluvial drift.

Technology

Thirty-seven cores (including fragments) are present (Tables 17 and 18). They include a single bladelet core fragment, eleven blade cores, eighteen flake cores and seven flake core fragments. The majority of the cores (nineteen) are classified as 'not sharp', seventeen are 'fairly sharp' and one is rolled. Thirty-three of the cores are cortical and sixteen exhibit patination to varying degrees. Two single-platform cores and a multi-platform core indicate re-use of patinated flint. One flake core from pit F1266 displays several cones from mis-hits. An opposed platform blade core from pit F1584 has been retouched and utilised as a scraper.

At least four distinct industries are present within the collection:

Later Mesolithic

This material includes an opposed-platform core, a bladelet core fragment and a number of crested blades.

Earlier Neolithic

Includes multi-platform blade cores, core rejuvenation flakes and narrow-butted blades, and is represented also by the occurrence of parallel ridges on the dorsal surfaces of many of the blades.

Later Neolithic

This period is represented by the dominance of flakes within the assemblage (72.47%). These exhibit both wide and narrow platforms in conjunction with perceptible and pronounced bulbs of percussion, and suggest a mixed core reduction strategy utilising both soft- and hard-hammer technology.

	Count	*%*
Flakes		
Primary	16	1.4
Secondary	813	69.8
Tertiary	345	29.6
Total	1164	100.0
Blades		
Primary	1	0.7
Secondary	70	51.9
Tertiary	64	47.4
Total	**135**	**100.0**

Table 18 Flakes and blades

Retouched	*Count*
Serrated/notched blade	1
Notched flakes	29
Notched blades	7
Notched flakes with miscellaneous retouch	3
Leaf arrowhead	1
Tranchet arrowhead	1
Point/scraper on a flake	1
Scrapers (flakes)	40
Awls (flakes)	3
Miscellaneous retouch (flakes)	35
Miscellaneous retouch (blades)	3
Miscellaneous retouch on a chunk	1
Borer/point (blade)	1
Points (flake)	4
Deniticulated flakes	2
Denticulated blades	2
Double-sided serrated blade	1
Retouched core	1
Serrated blades	13
Serrated flakes	4
Fabricators (blade)	2
Total	**155**

Table 19 Retouched flint items

Bronze Age

Some deeply retouched scrapers, including a small button scraper and flakes with miscellaneous retouch (re-used as scraping tools), may date to the Beaker and/or Bronze Age periods. Beaker flintwork at Barrow Hills, Radley, Oxfordshire (Healy 1995; Bradley in Barclay and Halpin 1999) was hard-hammer-struck and, as at Game Farm, hinge fractures were common. Steeply-retouched scrapers have been found elsewhere in association with later Bronze Age pottery (Bradley in Holden 1972), and miscellaneous retouched flakes utilised as simple cutting and scraping tools have been found in association with later Bronze Age pottery at Broads Green (Brown 1988a) and Lofts Farm (Brown 1988b), both in Essex.

Examination of the assemblage suggests that those pieces attributed to the later Mesolithic and Early Neolithic periods are of high-quality flint. Pierpoint (1981) suggests that the occurrence of tertiary flakes and blades, cores, and core trimmers indicates the manufacture of good-quality flakes and blades.

Knapping debris from a single core was found in association with Neolithic Mortlake Ware in linear feature F1355, segment 1, radiocarbon dated to 2190–1900 cal. BC (Beta-178454; 3660±50 BP; *Radiocarbon dating*, p.51).

Many of the recognisable tool types — a tranchet arrowhead (ditch F1097), a snapped leaf arrowhead (L1671: Fig. 26.9), awls, notched flakes and serrated blades — are common Neolithic items (Table 19). Gloss on at least two serrated pieces may indicate the cutting and/or preparation of silica-rich plant materials (Keeley 1980).

The majority of the scrapers, the most common tool type, also are attributable to this period. The small number of notched blades probably belong to the Mesolithic and result from mis-hits occurring during the manufacture of microliths by the micro-burin technique (Wainwright 1972).

While is clear that more than one industry is represented, the majority of the material belongs to the Neolithic period. Pottery associations suggest that the bulk of the collection occurred residually within Bronze Age contexts.

Flint by period

Later Mesolithic–Early Neolithic

Evidence for an early blade-dominated industry occurred residually in fills of later features and in layers. One hundred and thirty-two blades and three bladelets were recovered. Most of the pieces displayed narrow butts and parallel ridges on their dorsal surfaces and a high proportion of the blades were snapped. Six single-platform cores, four multi-platform cores, a bipolar core and a fragment from a bladelet core provide evidence that knapping occurred across the site during this period. A high ratio of retouched to unretouched pieces was noted in the collection. Retouched items include thirteen long serrated blades, a double-sided serrated blade, seven notched blades, three miscellaneous retouched blades, two ?denticulate blades, a borer/point on a blade and a serrated/notched blade.

Middle–Later Neolithic

A small amount of struck flint was recovered from features containing both definite and speculatively identified Peterborough Ware. This included eight unretouched flakes, a chert flake and a thick chunk from pit F1425, a single unretouched flake and chip from ditch F1617, and five unretouched flakes and a single chip from linear feature F1355. Linear feature F1355 was cut by Phase 2a ditch F1279. Coherent knapping debris was present within ditch F1629, which cut through ditch F1617. This deposit produced 35 flint chips, 40 unretouched flakes, and retouched flakes include seven scrapers, two notched flakes, an awl and two miscellaneous retouched pieces (Fig. 26.6). Four blades and one retouched serrated blade are residual items.

Larger amounts of struck flint were found residually within LBA features, including eleven multi-platform cores, a single-platform core, six cores and seven core fragments. Retouched pieces include 29 notched flakes, four serrated flakes, four points, three notched flakes with miscellaneous retouch, three awls, two denticulate flakes, a leaf arrowhead (L1671) a tranchet arrowhead (L1097), a point/scraper on a flake, miscellaneous retouch on a chunk, and a retouched core used as a scraper.

Bronze Age

A significant proportion of the unretouched flakes are hard-hammer-struck, and many are short and squat. They display a high instance of hinged fractures, with wide striking platforms with irregular dorsal flake scar patterning; some display multiple bulbar scars, while some are snapped. Retouched pieces include 40 side/end scrapers, 35 miscellanous retouched flakes utilised as scraper tools and two fabricators. A retouched core utilised as a large scraper may also belong to this period. One flake core (L1267) displays several cones from mis-hits resulting from hard hammer strikes. An opposed-platform blade

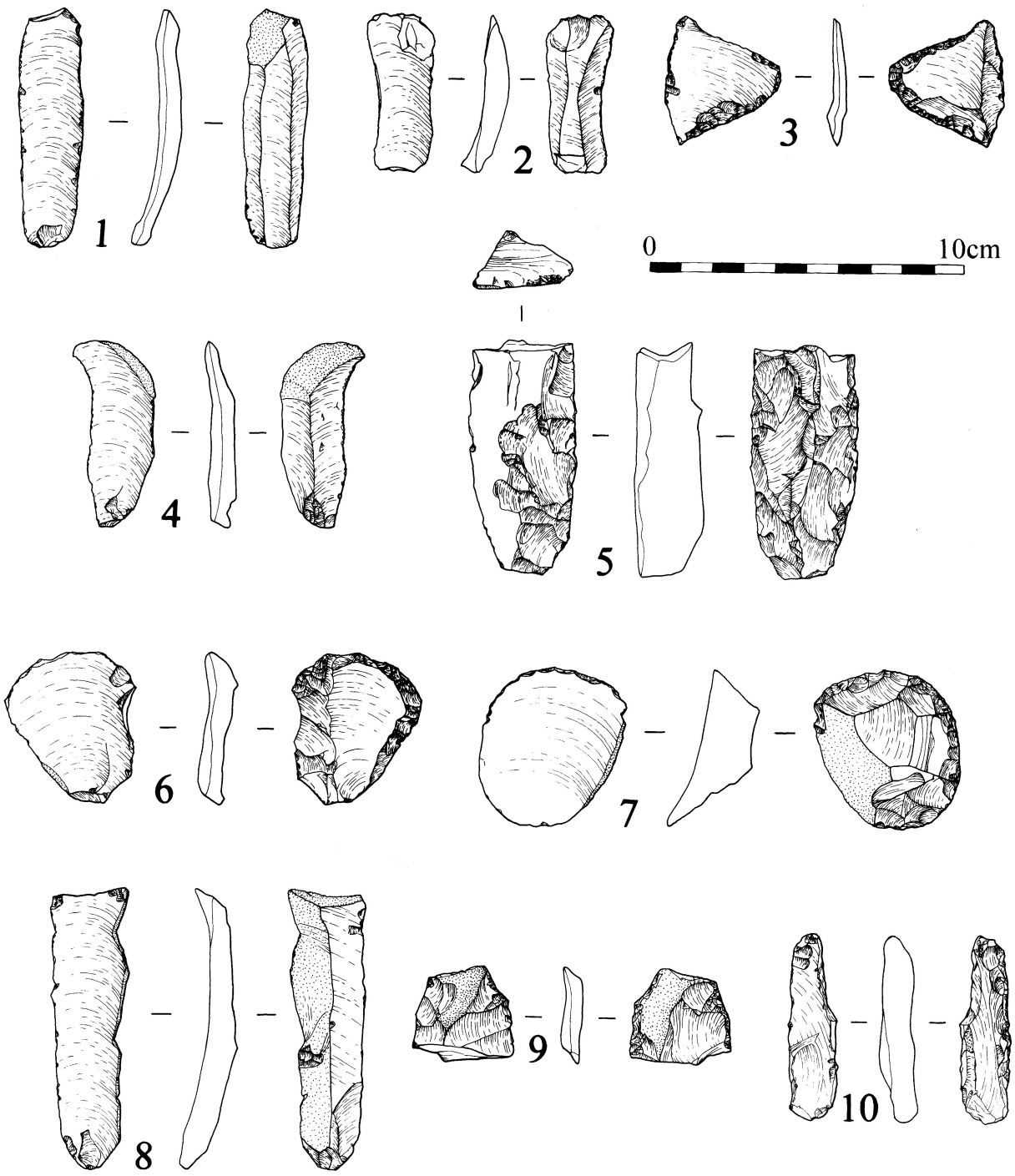


Figure 26 Worked flint

core (L1584) has been retouched and used as a scraper. Many of the flakes were found in association with LBA pottery.

A number of side scrapers, end scrapers and retouched flakes were found within the post-holes and remnant floor surface of Structure 1, and several of these display wide platforms. Other retouched pieces include a few notched flakes and a notched blade. Many of the flakes display hinged fractures and bulbar scars. Further struck flint was found within the structural components of Structures 2 and 3.

It was interesting to note how much of the struck flint was collected from perceptible 'zones' radiating out from Structures 1–3, and that struck flint was virtually absent within from the central (north-eastern) part of the site. This is distribution is mirrored in part by the distribution of the burnt flint.

Catalogue

(Fig. 26)

1. L1086, buried soil horizon. Unphased. Fine long serrated blade.

2. L1086, buried soil horizon. Unphased. SF5. Burnt and snapped serrated blade.

3. F1097 L1098, fill of ditch. Unphased. SF 4. Finely retouched tranchet arrowhead on a mottled grey tertiary flake.

4. F1281 L1282, upper fill of ditch. Phase 2c. SF 9. Finely serrated sickle on a cortical blade.

5. F1315 L1318, fill of ditch. Phase 2b. SF12. Part worked small-sized axe (snapped); re-used as a fabricator.

6. F1629 L1630, fill of ditch. ?Phase 1. Convex scraper on a mottled grey flake.

7. L1670, Structure 1 occupation layer. Phase 2c. SF 15. Horseshoe-type scraper on a heavily patinated thick cortical flake.

8. L1671, Structure 1 layer. Phase 2c. Long cortical blade.
9. L1671, Structure 1 layer. Phase 2c. Leaf arrowhead: laurel point, snapped distal and bulbar ends.
10. L1671, Structure 1 layer. Fabricator on a cortical blade.

Burnt flint
A large quantity of fire-cracked flint (84,158g) was collected from post-medieval and prehistoric contexts (Table 20), and occurred as a general background scatter over much of the site. Small to moderate quantities were present in many features and layers, while larger quantities were found in the component features of the four Phase 2 roundhouses. It is probable that these represent rakings from hearths. Other concentrations occurred within ditches F1191, F1193, F1457 and in post-holes F1291 and F1634, where large fire-cracked flints had been re-used as packing material. Much of the flint is cortical and generally large in size, though smaller pieces do occur. The larger pieces (*e.g.* from pit F1264) suggest that little secondary, post-heating fragmentation occurred (McDonald in Guttman and Last 2000). Few struck pieces are evident.

Period	*Pottery*	*Struck flint*	*Burnt flint*
Phase 1 (Neolithic/ Early Bronze Age)			
Features	1001g	850g	68g
Undated	16g	3g	28g
Total	**1017g**	**853g**	**96g**
Phase 2 (M–LBA)			
Phase 2a	102g	751g	2317g
Phase 2b	45g	298g	1248g
Phase 2c	94g	756g	5226g
Phase 2d	1958g	362g	3386g
Structure 1	1815g	1959g	3740g
Structure 2	951g	370g	8596g
Structure 3	6397g	3373g	33,894g
Structure 4	-	69g	146g
Enclosure	-	10g	236g
Total	**11,362g**	**8997g**	**58789g**
Unphased ditches and gullies	-	132g	698g
Unphased pits	335g	1118g	16,254g
Unphased post-holes	900g	486g	8113g
Unphased layers	8g	54g	148g
Natural layers	-	32g	60g
Total	**1243g**	**1822g**	**25,273g**

Table 20 Derivation of the pottery, struck and burnt flint (Phases 1 and 2)

II. Prehistoric pottery

by Jonathan Last
(Figs 27 and 28)

The assemblage

The assemblage consisted of 1368 prehistoric sherds (*c.* 14.02kg), with a mean weight of *c.* 10g. Most of this material can be dated to the LBA but there is a smaller, very distinctive group (43 sherds) of Middle/Late Neolithic Peterborough Ware in the Mortlake sub-style. A further 24 sherds from two contexts could belong to the Fengate sub-style. Twelve other sherds in a distinctive vesicular fabric may be Early Neolithic pieces or perhaps Late Neolithic Grooved Ware, which often occurs in a 'corky' fabric.

Neolithic
The plain vessel with a thick, rolled rim from Phase 2a ditch F1206 (twelve sherds; Fig. 27.1) is the only potentially early Neolithic pottery from the site, although it came from a section of the LBA field system. It is tempered with sparse coarse quartz but has heavily pitted surfaces, perhaps resulting from the leaching of calcareous inclusions. Some of the voids are plate-like and suggestive of shell temper, but others are more rounded. Shell is not an uncommon temper in Neolithic bowl pottery, and similar 'corky' wares accounted for 3.5% of the sherds from Hurst Fen (Clark *et al.* 1960).

Both the definite and the less certainly identified Peterborough Ware comes mainly from linear feature F1355 and ditch F1629, with lesser quantities from pits F1062 and F1425 and buried soil contexts L1002 and L1015. The sherds from linear feature F1355 probably belong to a single vessel (Figs. 27.2–3). This has an unoxidised fabric and interior but its exterior is partly oxidised. It is tempered with sparse to moderate coarse or very coarse crushed flint, which was often calcined though not necessarily pre-heated (see Cleal 1995, 187). The inclusions are angular and some have clearly been struck; the temper therefore appears to consist of crushed knapping waste. Rim fragments show a typical Mortlake bowl form, with an expanded rim and deep cavetto neck. Decoration is profuse and consists of 'maggots' of whipped cord in herringbone patterns on the rim, shoulder and body, as well as on the interior of the neck. The exterior of the neck is decorated with a row of well-spaced deep circular impressions (not finger impressions), one of which has pierced the vessel wall.

The more abraded sherds from buried soil L1002/L1015 show a different kind of impression, perhaps made with the finger. The fabric is similar, however, and they are probably also Mortlake Ware. The same goes for the single sherd with particularly fine whipped cord impressions from pit F1425, although this could also be later in date and perhaps from a vessel of the Fengate style. The presence of Fengate Ware is also suggested by two sherds in a similar fabric from pit F1062, one of which is decorated with incised triangle or chevron motifs (Fig. 27.4), and a group of 22 from ditch F1629. These have more sand in the paste but similarly sparse, extremely coarse flint inclusions. The abraded fragments retain traces of fingertip decoration (Fig. 27.5); there is also part of a thick, flat base and a body sherd with a combination of impressed cord and fingernail decoration (Fig. 27.6). Fengate seems a likely attribution, given the presence of the other definite Peterborough material, but these sherds could belong to Early Bronze Age vessels of uncertain type.

Mid–Late Bronze Age
The majority of the assemblage consists of flint-gritted sherds of LBA type. The fabrics are distinct from the Neolithic ones because the flint is generally finer (though poorly sorted), less angular and less frequently calcined. There is no evidence for the use of crushed knapping waste as temper. The forms and decoration suggest a post-Deverel Rimbury assemblage of the early 1st millennium BC. However, radiocarbon dating suggests that the deposits from which this pottery came generally date to the Middle Bronze Age (*Radiocarbon dating*, p.51).

Fabrics
Nearly all the sherds contain varying quantities (from sparse to common) of poorly sorted fine to very coarse flint. There is a continuum between the 'finer' and 'coarser' groups, with the presence of smoothed or burnished surfaces not clearly related to the density or size of the flint grits. In other words, sherds with 'fine' surfaces are not necessarily in a 'fine' fabric — although a minor fabric group (*c.* 2.5% of sherds) contains predominantly fine flint inclusions. The pottery also contains varying quantities of sand, and occasionally some grog or clay particles and vegetable matter. A few sherds are tempered primarily with sand (1%) or grog (1%). The latter temper is now acknowledged to occur in pottery of this period in the Midlands, but it is possible some of these sherds are residual Early–Middle Bronze Age items.

Forms
Useful groups of diagnostic sherds were associated with three of the possible structures, as follows (those with one or two rims only in brackets):

Structure 1: ditch F1457 (Fig. 27.7–8); layer L1670 (Fig. 27.9–11); gully F1709 (Fig. 27.14–15); pits/post-holes F1651 (base and bodies only – Fig. 27.12), F1667, F1674 (Fig. 27.13) and F1726 (Fig. 27.16).
Structure 2: layer L1459; pits/post-holes F1172 (Fig. 27.17–18), F1613 and F1641.
Structure 3: layers L1088 (Fig. 27.19–21), F1121; pits/post-holes F1093, (Fig. 28.22), F1224 (Fig. 28.23–5), F1266 (Fig. 28.26), F1291 (Fig. 28.27), F1217, F1219 and F1234 (Fig. 28.28); ditch F1136.

Ceramically significant features outside these groups include pits/post-holes F1446, F1519 (Fig. 28.31–32), unurned cremation pit F1484 (Fig. 28.29–30) and, to a lesser degree, post-hole F1633. Layer L1205 and ditches F1148, F1283, F1288, F1319, F1321 and F1505 all produced one or two rim sherds. The remaining contexts are deemed LBA on the basis of fabrics or body/base sherds only.

The rims indicate a variety of vessel forms. *Jars* have upright, concave (Figs 27.4, 5, 6, 8, 14, 15, 17, 20 and 21) or short, everted necks (Figs 27.7, 9 and 10; Fig. 28.27), or may be barrel-shaped (Figs 27.11 and 18; Figs 28.23, 24, 25, 29, 30, 31). *Bowls* can be globular, necked (Fig. 27.12; Fig. 28.32), or with more open profiles, either hemispherical (Figs 27.13 and 19), S-shaped or flaring (Fig. 27.16; Fig. 28.28). The shape of the rims themselves can be simple rounded or flattened, externally and/or internally thickened, or beaded; sometimes they have an internal bevel.

Bases are simple with an angular or rounded junction, or have a slight foot; the angle of the wall junction varies from *c.* 45° to almost 90° and base diameters from 80mm to 140mm. There is one possible omphalos (pit F1172) but no ring bases. A higher density of flint grits on the underside of some bases (Fig. 27.18 and Fig. 28.30) is typical of the LBA. This reflects the manufacture of the pot on a bed of crushed flint (Perkins *et al.* 1994), but would also have served to increase friction and resistance to abrasion.

A single handle fragment was found (Fig. 27.8), but little can be said about its form.

Decoration

Decoration occurs on a low proportion of the sherds. The large assemblage from Structure 3 occupation layer L1088 contains 305 sherds, of which only nine (3%) are decorated. This underestimates the proportion of decorated *vessels*, however, since six out of 32 rims (19%) were decorated. In other words, most of the decoration occurs on the rims of the vessels, or on the upper body just below the rim. However, only one vessel (from Structure 1 gully F1709; Fig. 27.14) has decoration on both areas — fingernail impressions on the rim and circular impressions at the base of the (short) neck zone.

As well as smoothing and burnishing of surfaces, decoration comprises:

fingertip impressions, occasionally raised or rusticated;
fingernail impressions, either narrow slashes or lenticular marks;
deep circular impressions not made with the finger, sometimes pressed right through the vessel wall as perforations;
parallel horizontal incised grooves.

Only in the last-named case (from Structure 3 occupation layer L1088, pit F1093 and post-hole F1291) is there more than a single line of decoration on the vessel body. One bowl (Fig. 27.16) has a zigzag line on the interior of the rim, shallowly incised through a burnished surface. This decoration is similar to that on an elaborately decorated bowl found during excavations at Boreham Interchange, Essex (Brown 1999, 13–14). These bowls may have been imports, as such vessels commonly occur in assemblages from northern France and Belgium (Nigel Brown *pers. comm.*, April 2002).

Use and deposition

A large number of sherds appear to have deposits of black 'soot', perhaps cooking residues, preserved on their internal surfaces.

The mean weights of the sherds from different deposits vary considerably. Mean weights greater than 30g are recorded from post-holes F1224 and F1291 and cremation pit F1484. The first of these contained three complete bases (Fig. 28.23–5), which may represent pots that had actually been set into the ground, the upper parts of which have been truncated. While pit F1484 also contained a complete base (Fig. 28.30) this was found inverted, perhaps deliberately placed thus, and was associated with cremated human bone. The presence of distinctive deposits of pottery, marked by large, reconstructable sherds (but rarely complete vessels), selection or exclusion of rims and bases, and vessel inversion has been recognised at other LBA sites such as South Hornchurch (Guttmann and Last 2000) and Thorley (Last and McDonald, forthcoming).

Other large sherds (over 16g) came from cut features including pits/post-holes F1172, F1215, F1219, F1291, F1519, F1613, F1633 and F1651, as well as ditches F1136 and Neolithic linear feature F1355. Most of the layers or buried soil deposits have small or medium sherds (4–9g): L1002, L1015, L1088, L1089, L1121, L1205, L1459 and L1670. The smallest sherds of all (<4g), however, nearly all come from cut features, many of them ditches, and presumably represent material that has been redeposited or eroded into them.

Distribution

Structure 1 and its associated features produced a total of 367 sherds. Of these, 142 were recovered from pits/post-holes, 46 from layers and 179 from ditch F1457.

Amongst the discrete features, only Structure 1 gullies F1667 and F1709 produced more than 20 sherds (32 and 55 respectively). All but four sherds came from the group of features between Structure 1 post-hole F1674 and pit F1719. Although no cross-context joins were found, sherds that may derive from the same vessel were noticed linking gullies F1667 and F1728 as well as post-hole F1726 and possible structural gully F1728. There is a similar link between the two sherds in post-hole F1659 and a group in occupation deposit L1670. This suggests that the material in the layer either derives from the same occupation phase or actually represents disturbance and truncation of the features.

Structure 3 and associated features produced a total of 667 sherds. Pits/post-holes yielded 326 sherds, layers 330 sherds, and ditches eleven sherds. Four of the discrete features (pits F1093, F1217 and F1266 and post-hole F1291) produced between 30 and 90 sherds; the remainder had less than 20. As with Structure 1, the greatest amount of pottery came from the south-eastern part of the structure. One cross-context join linked pit F1093 with occupation layer L1088, with the same implications as for Structure 1. Another direct join linked ditch F1136 (fill L1232) and pit F1266.

The smaller assemblage from Structure 2 was dominated by pit F1172, with 36 sherds in five fills. The same number came from occupation layer L1459. Pits/post-holes yielded 41 sherds, layers produced 36 sherds and ditches six sherds.

Other than in these structures, there were just three significant assemblages: in pit/post-hole F1446, 10m north of Structure 1; in cremation pit F1484, in the south-central part of the site; and in pit/post-hole F1519, 25m north-east of Structure 1. All of these contained a number of refitting sherds from individual vessels, which seems to imply either specialised activity or deliberate deposition. If the latter is represented, similar finds elsewhere suggest these deposits may have had ritual significance as markers on routes or boundaries (*cf.* Guttmann and Last 2000; Last and McDonald forthcoming).

There is little sign of any difference between the main assemblages that could be explained in chronological terms, such as variations in the frequency and type of decoration. The proportion of decorated rims is about 1:3 in each case, while all three structures produced assemblages with both pitted/perforated and finger-impressed decoration. The unusual bowl from Structure 1, however, is unique in both form and decoration.

Catalogue

(Figs 27 and 28)

1. F1206 L1207. Fill of ditch. Phase 2a. Bowl rim; part-oxidised; quartz and (dissolved) shell. Early Neolithic (redeposited).
2. F1355 L1461. Fill of linear feature. Phase 1. Decorated bowl rim; part-oxidised surfaces, unoxidised core; flint.
3. F1355 L1461. Fill of linear feature. Phase 1. Decorated body (probably same vessel as 24.2).
4. F1062 L1063. Fill of pit. Phase 1. Decorated body; oxidised exterior, unoxidised interior; flint.
5. F1629 L1630. Fill of ditch. ?Phase 1. Decorated body; unoxidised exterior, oxidised interior; flint and sand.
6. F1629 L1630. Fill of ditch. ?Phase 1. Decorated body; oxidised exterior, unoxidised interior; flint and sand.
7. F1457 L1458. Fill of ditch. Phase 2d. Decorated jar rim; oxidised exterior, unoxidised core and interior; flint.
8. F1457 L1458. Fill of ditch. Phase 2d. Lug/handle (broken); oxidised exterior, unoxidised core and interior; abundant flint.
9. L1670 Structure 1. Occupation layer. Phase 2c. Decorated jar rim; oxidised exterior, unoxidised core and interior; abundant flint.
10. L1670 Structure 1. Occupation layer. Phase 2c. Small jar rim; unoxidised; burnished exterior; flint.
11. L1670 Structure 1. Occupation layer. Phase 2c. Decorated jar rim; oxidised exterior, unoxidised core and interior; abundant flint.
12. F1651 1652 Structure 1. Fill of post-hole. Phase 2c. Decorated body; part-oxidised; flint.
13. F1674 L1675 Structure 1. Fill of post-hole. Phase 2c. Small bowl rim; oxidised exterior, unoxidised core and interior; sand and sparse flint.
14. F1709 L1710 Structure 1. Fill of gully. Phase 2c. Decorated jar rim; part-oxidised; flint.
15. F1709 L1710 Structure 1. Fill of gully. Phase 2c. Cordoned jar rim; part-oxidised; flint.
16. F1726 L1727 Structure 1. Fill of post-hole. Phase 2c. Decorated bowl rim; unoxidised; burnished interior; sparse flint.

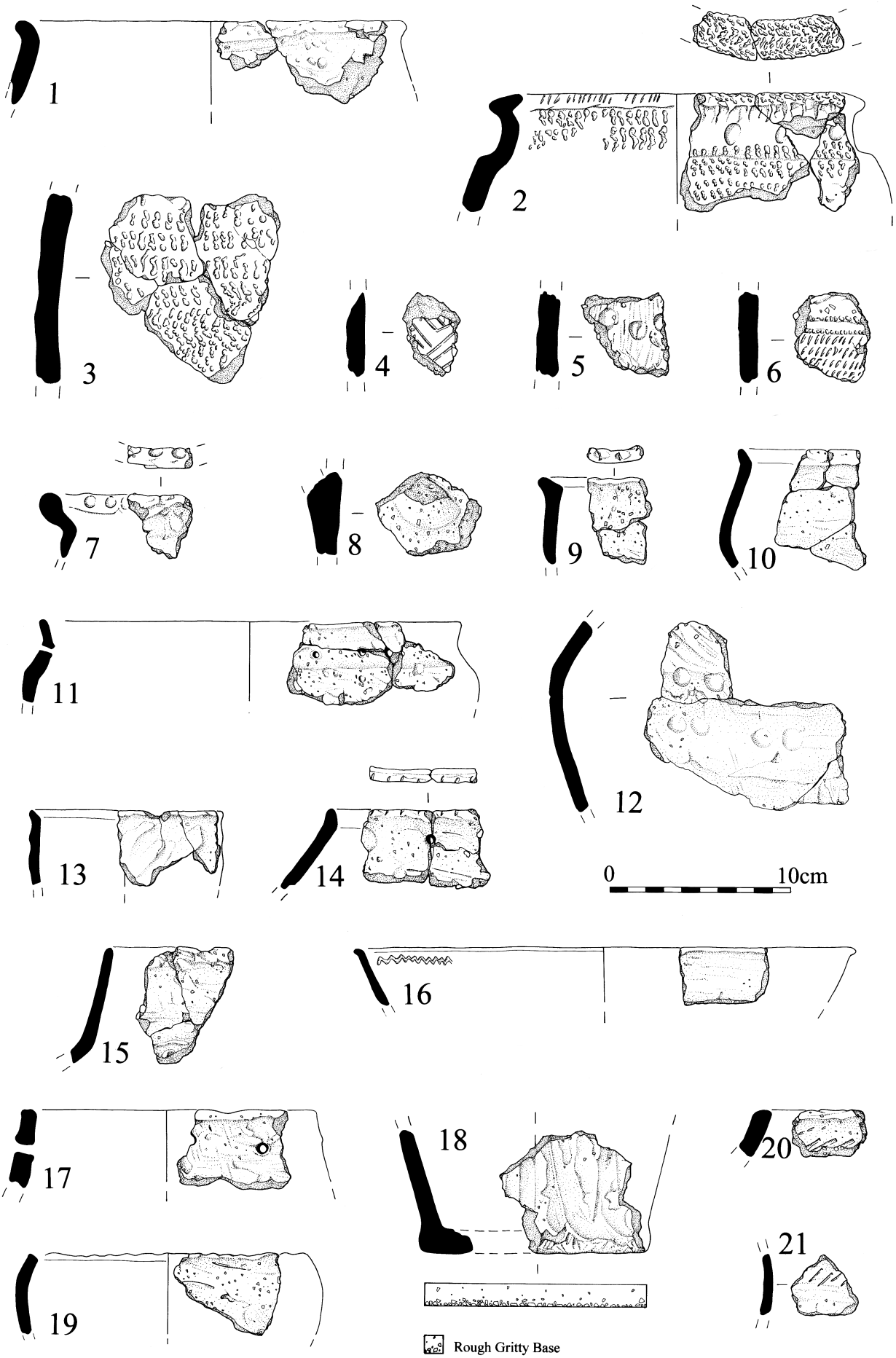


Figure 27 Prehistoric pottery (i)

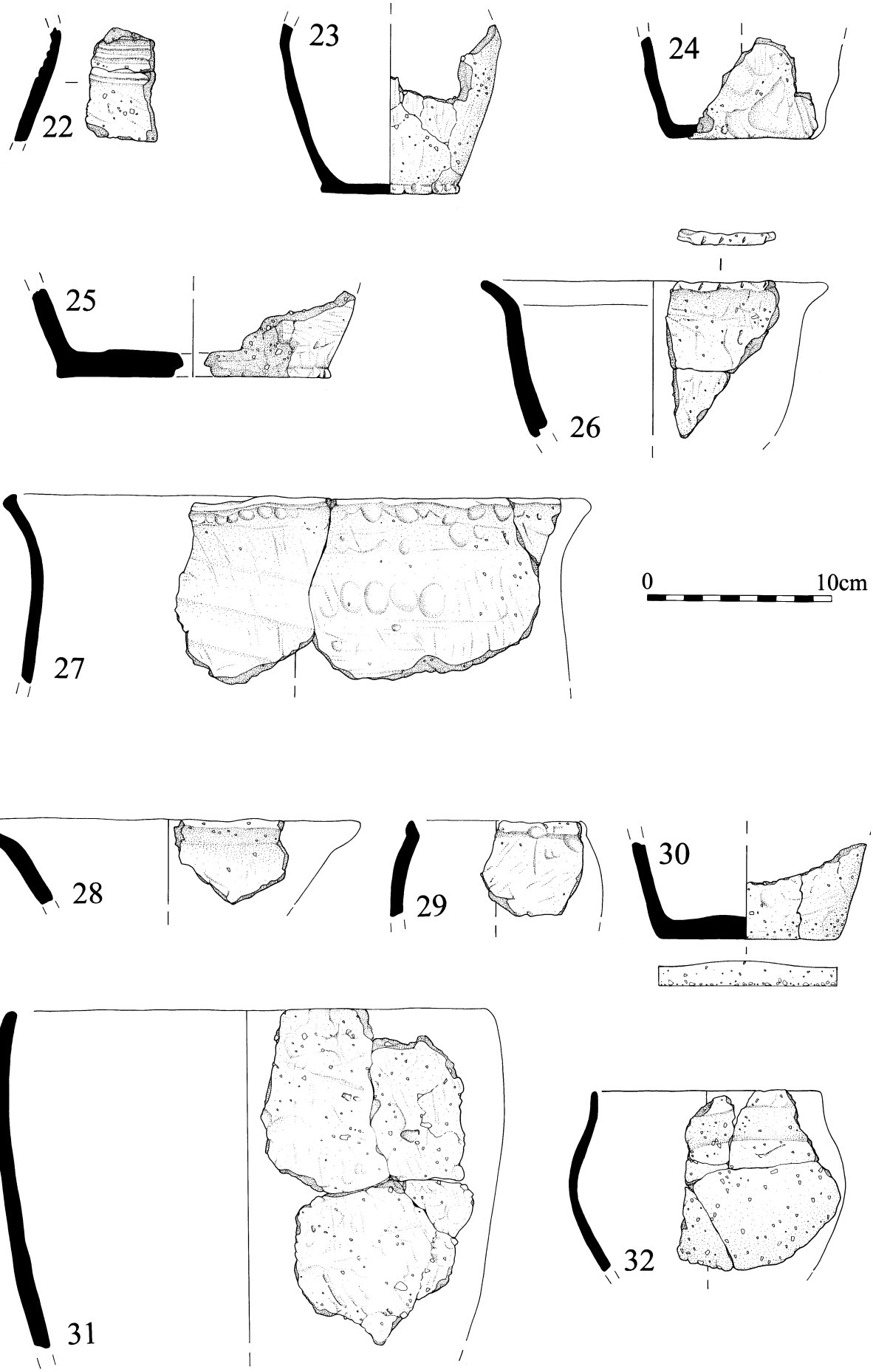


Figure 28 Prehistoric pottery (ii)

17. F1172 Structure 2. Fill of pit. Phase 2c. Perforated jar rim; unoxidised; flint.
18. F1172 Structure 2. Fill of pit. Phase 2c. Base; part-oxidised; flint with additional grits on underside.
19. L1088 Structure 3. Occupation layer. Phase 2a. Inturned bowl rim; part-oxidised; flint.
20. L1088 Structure 3. Occupation layer. Phase 2a. Decorated jar rim; part-oxidised exterior and core, oxidised interior; flint.
21. L1088 Structure 3. Occupation layer. Phase 2a. Decorated body (shoulder); oxidised; sparse fine flint.
22. F1093 L1094 Structure 3. Fill of pit. Phase 2a. Decorated body; unoxidised; burnished exterior; flint.
23. F1224 L1225 Structure 3. Fill of post-hole. Phase 2a. Jar base; part-oxidised; flint.
24. F1224 L1225 Structure 3. Fill of post-hole. Phase 2a. Jar base; mostly oxidised; flint.
25. F1224 L1225 Structure 3. Fill of post-hole. Phase 2a. Large base; part-oxidised; abundant flint.
26. F1266 L1267 Structure 3. Fill of pit. Phase 2a. Decorated jar rim; part-oxidised exterior, unoxidised core, oxidised interior; flint.
27. F1291 L1294 Structure 3. Fill of post-hole. Phase 2a. Large jar rim; part-oxidised; burnished exterior; flint.
28. F1234 L1235 Structure 3. Fill of ?pit. Phase 2a. Bowl rim; part-oxidised exterior, unoxidised core and interior; flint.
29. F1484 L1485. Fill of cremation pit. Unphased. Small jar rim; oxidised; sparse flint.
30. F1484 L1485. Fill of cremation pit. Unphased. Jar base; oxidised surfaces, unoxidised core; flint with additional grits on underside.
31. F1519 L1520. Fill of pit. Unphased. Bucket-shaped vessel rim; oxidised exterior, unoxidised core and interior; flint.
32. F1519 L1520. Fill of pit. Unphased. Globular bowl rim; part-oxidised; burnished exterior and interior; flint.

Discussion

Neolithic pottery

Peterborough Ware is broadly of mid–later Neolithic date (*c.* 3500–2500 cal. BC); a relatively early origin has recently been recognised as the result of a radiocarbon dating programme (Gibson and Kinnes 1997). The style has been recognised over a wide geographical area: forms comparable to that of the Mortlake pot from linear feature F1355 include one from Ogmore, Wales (Gibson 1995, fig. 3.2 no. 7). Frances Healy (1995) suggests the Mortlake style may have arisen from the coarser element of the Early Neolithic decorated bowl (Mildenhall Ware) tradition, which is well-known on sites near to Brandon, such as Hurst Fen (Clark *et al.* 1960); some Mildenhall-type vessels are similar in decorative style.

Radiocarbon dating has been applied to a sample from a sealed, charred fill of F1355 in order to ascertain the date of this relatively early feature and to add to the corpus of dating information regarding Mortlake Ware. A sub-sample from fill L1356 yielded a date range of 2190–1900 cal. BC (Beta-178454; 3660±50 BP), placing this feature in the Late Neolithic period (*Radiocarbon dating*, p.51).

Finds from the Breckland and the Fen edge area, as mapped by Cleal (1984, figs 9.2–3), include a fair concentration of Peterborough Ware (Mortlake and Fengate styles). This material was very rare around the Wissey Embayment to the west, however, where subsequently there was such a high density of Beaker sites; this is suggested to have been a 'real' absence, related to the period of the fen clay transgression (Healy 1996). Mortlake Ware has been found at Grimes Graves, but apparently was not directly associated with the flint mining (Cleal 1984, 150). Mortlake Ware flint industries seem rather unspecialised, with serrated flakes and unclassifiable tools predominant over scrapers, in contrast to the usual associations of Grooved Ware and Beaker assemblages. We know little about the nature of Peterborough Ware settlements and the association here with linear feature F1355 does little to clarify this — the ditch or slot could be interpreted as part of a Late Neolithic structure, but whether this was of a domestic or ceremonial nature is uncertain.

Bronze Age pottery

The current typological categorisation of LBA and Early Iron Age pottery in southern Britain was developed in the 1970s, principally by John Barrett (1980) and Barry Cunliffe (1978). Increasingly it looks in need of reassessment, especially given the number of large assemblages recovered since from developer-funded excavations which have not yet been fully assimilated. Key problems include the distinction between LBA 'plain' and 'decorated' assemblages, given regional differences in the incidence and type of decoration, and the dating of traits usually thought to mark the Early Iron Age, such as angular profiles and pedestal bases. The local Iron Age sequences have recently been summarised by Martin (1999), Needham (1996) and Percival (1999). A key point is the recognition of continuity from the LBA to EIA.

The lack of angular or bipartite forms and the predominance of flint temper suggest that this is a post-Deverel Rimbury assemblage of the 11th–8th centuries BC. Narrowing down the date further requires closer consideration of the decoration. In terms of quantity, the proportion of decorated vessels seems comparable with that in the large, mainly 9th-century, assemblage from the waterfront at Runnymede Bridge, Surrey (Longley 1991), where the figure is *c.* 15%. At Mucking North Ring, Essex, where most of the Brandon forms and some of the decoration can be paralleled, decoration reaches a maximum of 20% (of rims) in the latest phase, which may belong to the 8th century BC (Jones and Bond 1988, 36–7). Decoration was scarcer at Springfield Lyons (Essex), a site associated with Ewart Park sword moulds and radiocarbon dated to around the 10th century BC (Buckley and Hedges 1987). Hence the ceramic evidence suggests that the Game Farm site dates to the later, rather than the earlier, post-Deverel Rimbury period. However, radiocarbon dating has placed F1172, which contained 36 sherds of pottery interpreted here as post-Deverel Rimbury, in the date range 1620–1320 cal. BC (Beta-178456; 3200±70 BP), placing this deposit in a broad later MBA–earlier LBA range (*Radiocarbon dating*, p.51).

Few of the specific decorative traits are particularly diagnostic of date. An exception here may be the fineware bowl with zigzag incisions, although no precise parallel for this has been found. However, decorated finewares were added to the Runnymede repertoire during the 9th century BC, supplementing the burnished bowls also seen at Brandon. Internally bevelled rims also appeared around this time.

In Essex, some of the material from Orsett (Barrett in Hedges and Buckley 1978), which could be of the 8th century BC, is reminiscent of Brandon, although the very angular forms that developed around that time are absent here, as are later (6th–5th century) features such as foot-ring bases and scoring. At Runnymede, sharply carinated bowls appeared by the 8th century, while in northern East Anglia the best-known assemblage of this type comes from Darmsden in the Gipping valley; Martin (1999) suggests these may have entered use as early as the 9th century, though

this perhaps seems a little early. Closer to Brandon, West Harling, which probably dates to between the late 8th and 6th centuries, displays many similarities in vessel forms and decorative styles, including external rim decoration. Needham (in Jackson and Potter 1996) suggests that this trait began in the 8th century, but generally, the quantity of decoration of LBA/EIA pottery, extending to the bodies and bases of vessels and including frequent impressed cordons, is not matched at Brandon; neither are the more angular forms, particularly among the bowls. However, these later decorative traits may be absent at Game Farm due to the relative antiquity of the site. Radiocarbon dating has produced absolute dates significantly earlier than those derived from ceramic cross-dating, ranging from the 17th to the 14th century BC (*Radiocarbon dating*, p.51).

Perhaps the published assemblage most closely comparable to that from Brandon is that from Stonea Grange, Cambridgeshire (Needham in Jackson and Potter 1996), which features specific parallels such as pitting on the necks of vessels and a form like that of the Brandon incised bowl (although the Stonea vessel is undecorated). Needham suggests the bulk of this pottery dates to the 9th and 8th centuries BC. More locally, the so-called 'Early Iron Age' pottery from the sandy wastes at Maidscross, Lakenheath, Suffolk, has strong similarities to Brandon. Lady Briscoe (1949) compared them to the finds from All Cannings Cross, which is now dated to the 8th and 7th centuries BC. Her finds from Wangford, however (Briscoe 1958), and Gell's finds from Pashford Wood (1949) include ring-bases, scoring, and vessel forms more reminiscent of Middle Iron Age sites such as Little Waltham (Drury 1978).

Cross-dating evidence from the site is sparse. The cylindrical loomweight from F1275 is traditionally seen as a MBA form, although they do turn up on earlier LBA sites including Cole Green, Hertford, which is dated to the 10th–9th centuries BC (McDonald forthcoming), and Knight's Farm, Burghfield, Berks, where a roundhouse was dated to the 9th century (uncal.) BC (see Bradley *et al*. 1980). However, in the light of the radiocarbon dates it is possible that the Game Farm loomweight is indeed MBA, and that the dating of regional pottery sequences needs to be revised in the light of developments in absolute chronologies.

In conclusion, while the pottery analysis suggests the late post-Deverel Rimbury period — *i.e.* the 9th or 8th centuries BC — as the most likely date for the occupation at Brandon, the small finds analysis and radiocarbon dating indicate the MBA and the 17th–14th centuries BC. Although there is no direct link between the deposits of Ewart Park metalwork in the Little Ouse Valley and the settlement at Game Farm, the site none the less yielded evidence for formal deposits of other material, including pottery and human remains. These deposits may provide a means of linking people's domestic routines with the practices that led to the deposition of metalwork in the wider landscape.

III. Small finds

by Nina Crummy
(Fig. 29)

This small assemblage contains loomweights and spindle whorls, and two fragments of worked stone. The former provide evidence for weaving and spinning on the site, while the latter may have been used as rubbing stones in a variety of activities, such as sharpening tools or weapons or dressing hides. A single casting jet provides evidence for the manufacture of moulded bronze objects in the vicinity.

Drum-shaped loomweights of baked clay such as those from pit F1275 (Fig. 29.1) are of Middle and Late Bronze Age date (Adkins and Needham 1985, 38). They have a wide distribution across southern Britain, from Cornwall in the west (ApSimon and Greenfield 1972, fig. 24a.1) to Essex in the east (Barford 1988, 37, fig. 26.6).

The weights were for use on warp-weighted looms, with ten found in association with part of a burnt loom frame in a pit at Cock Hill, Sussex (Ratcliffe-Densham and Ratcliffe-Densham 1961, 86, 100–1, pl. Xib), and one found close to a pair of loom post-holes in a house at Trevisker, Cornwall (ApSimon and Greenfield 1972, 341, 353). The latter weight has a groove made by a suspended rope on one side of the perforation. They are often, as at Cock Hill, found in some numbers, with thirteen coming from Itford Hill, Sussex (Burstow and Holleyman 1957, 200) and twenty from Bishopstone, Sussex (Bell 1977, 119).

As here, few drum-shaped loomweights are complete, making comparison by size and weight difficult, but diameter comparison suggests that at least one of these pieces is from a weight at the larger end of the recorded range. At 121mm across, it can be compared with weights of 114mm diameter from Kingston Buci, Sussex (Curwen 1931, 208–9), 110mm from Winnall Down, Hampshire (Bates and Winham 1985, 90), 114mm and 116mm from North Shoebury, Essex (Barford 1995, 125), and 125mm from Mucking, Essex (Barford 1988, 49).

Late Bronze Age spindlewhorls are generally biconical, rather than of the rounded shapes represented here, though Cotton and Frere noted some evidence of variability of form by site (1968, 216). This pair show considerable uniformity in size, though their shapes differ slightly (Fig. 29.2–3). Their rounded form may indicate that they belong late in the period, or to the Early Iron Age, but radiocarbon dating indicated that the date range of deposit L1670 was 1760–1500 cal. BC (Beta-178455; 3350±50 BP), placing it in the MBA (*Radiocarbon dating*, p.51). The spindles would have been made of wood and very slender, as shown by the diameters (6mm and 5mm) of the spindle holes.

One of the worked sandstone fragments comes from a Bronze Age context (Fig. 29.4), but the post-hole from which the other derives contained no dating evidence, and this piece need not necessarily belong with the rest of the assemblage (not illustrated).

A casting jet with single feeder came from Phase 2b ditch F1545 (Fig. 29.5). Similar examples occur often on LBA sites and also in hoards (*e.g.* Cuddeford and Sealey 2000, figs 64–6). They can have more than one feeder, and occasionally show signs of wear consistent with secondary use (Needham 1990, 71).

In addition to these items a number of metal objects were recovered from post-medieval contexts and have been listed for the site archive. Most are nails, but also included are an iron key and an iron hammer for knapping flint.

No fired clay or daub fragments were recovered.

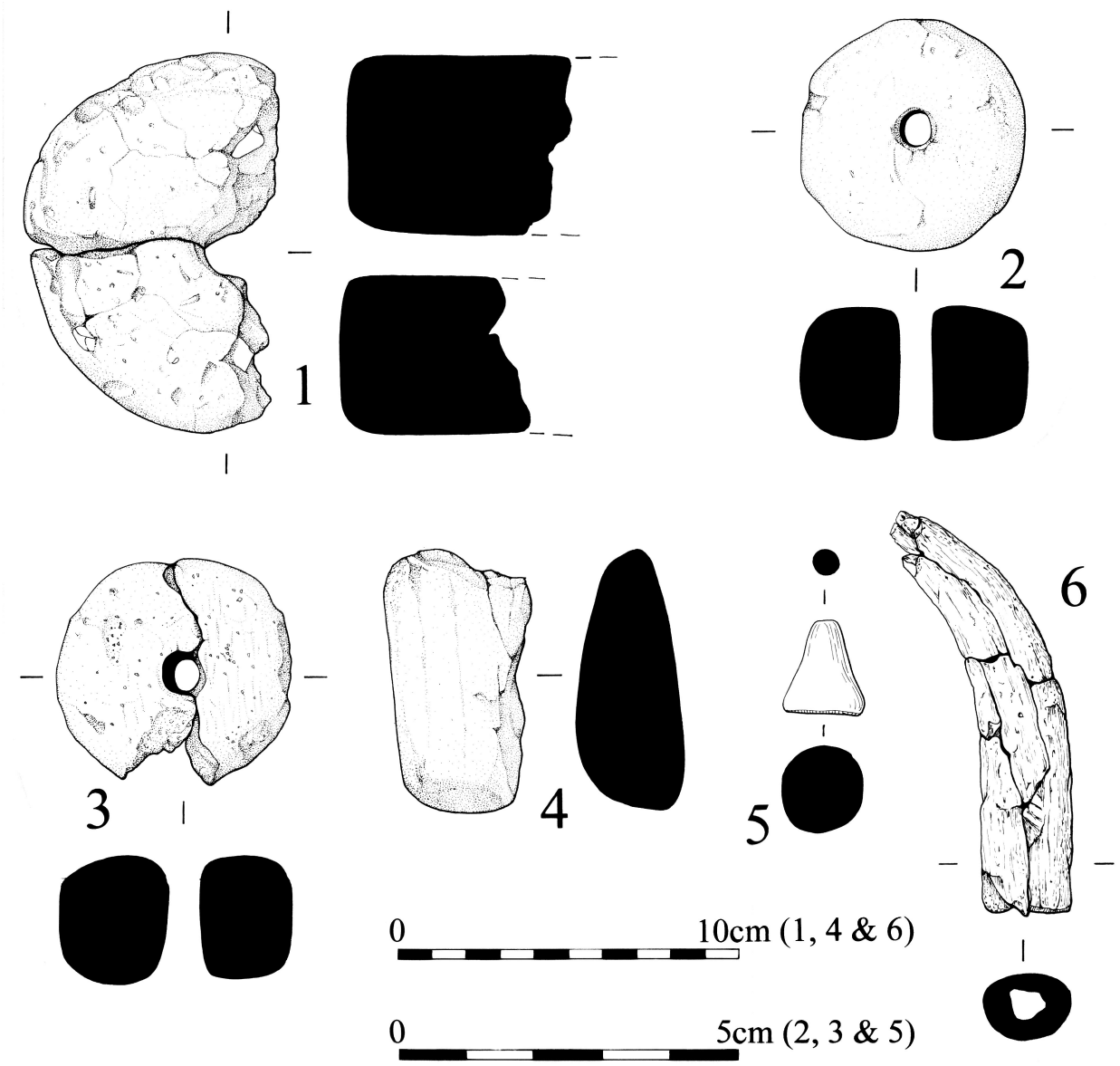


Figure 29 Small finds

Catalogue
(Fig. 29)

Illustrated

1. F1275 L1276 SF 10. Structure 3. Fill of pit. Phase 2a. Two drum-shaped loomweight fragments. Both are in a coarse fabric fired externally to brown and containing crushed flint and large flint fragments. The larger has small orange and yellow patches. 1) Diameter approximately 121mm, maximum surviving height 68.5mm, weight 321g; diameter of perforation 11mm. 2) Diameter approximately 109mm, maximum surviving height 59.5mm, weight 153g; diameter of perforation 13mm.

2. L1088 SF2 Structure 3. Occupation layer. Phase 2a. Bun-shaped ceramic spindle whorl, spalled on one edge. The fabric is fired brown and contains fine crushed flint. Diameter 33.5mm, height 20mm, weight 24g; diameter of spindle hole 6mm.

3. L1670 SF14 Structure 1. Occupation layer. Phase 2c. Two fitting fragments of a doughnut-shaped ceramic spindlewhorl in a soft fabric, fired brown/brown-orange, with crushed flint. Diameter 35mm, height 17mm, weight 17g; diameter of spindle hole 5mm.

4. L1121 SF 6. Structure 3. Cleaning layer. Phase 2a. Fragment of a quartzose sandstone tool, probably a water-worn pebble adapted for use as a rubbing stone. The surviving end, 75mm across, is squared off, with two contiguous incomplete edges at right-angles, maximum length 43mm. The section is sub-rectangular, tapering to one incomplete edge but higher close to the end, maximum height 31.5mm.

Not illustrated

F1125 L1126 SF 8. Fill of post-hole. Undated. Fragment of quartzose sandstone with one very smooth surface. Maximum dimensions 89 x 64 x 57mm.

5. F1545 L1546 SF 13. Fill of ditch. Phase 2b. Casting jet with single feeder, broken across small vesicles in places around the reservoir. Weight 5g. Height 13mm. The reservoir is flat-topped, diameter 12mm. The feeder is more or less circular in section, and 5mm in diameter at the tip.

6. F1275 L1276, Fill of structural pit. Phase 2a. Red deer (*Cervus elaphus*) antler tine fragment, semi-complete. It has been cut off the beam and represents craft waste.

IV. Human bone

by Tony Waldron and Ian Baxter

The partial skeleton of a post-medieval infant inhumation was recovered during excavation of a buried post-medieval soil horizon. Cremated human remains were identified in the residues of samples from unurned pit cremations F1350, F1470 and F1509, and of samples

from pits F1484 and F1079, ditch terminus F1037 and Structure 1 occupation surface L1670. Unburnt bone was recovered from residue from a sample from Structure 1 gully F1709. Details are summarised in Table 15 (p.29) and the prehistoric cremations and possible token deposits are further discussed at the conclusion of this report section.

An infant inhumation burial was found in post-medieval buried soil horizon L1036. Twenty-seven friable bone fragments were recovered. The infant was under three months old and the cause of death was not ascertained. The bones were found in the same layer as butchered domestic cattle bones and a small dog metacarpal. This represents only a small proportion of a complete skeleton and no unfused epiphyses were recovered. The sex is indeterminate due to the individual's youth.

Human remains from the sample residues are briefly described below.

F1037 L1038. Fill of ditch terminus. Phase 2d. A single bone fragment 54mm in length. The surface was badly damaged but it could be identified as a mid-shaft fragment of the right radius of an adult of undetermined sex.

F1079 L1080. Possible token cremation deposit in pit. Undated. Six very small fragments of cremated trabecular bone such as may have come from the head of the humerus or femur, or perhaps from vertebrae. It was not possible to identify these fragments to anatomical site but they were probably human, and most likely from an adult cremation.

F1470 L1471. Fill of cremation pit. Undated. Six long bone fragments, ranging in size from 12–30mm, and a number of very much smaller fragments. All were black/white in colour; none could be identified to anatomical site but they were probably from an adult human cremation.

F1484 L1485. Fill of cremation pit. Unphased. 16 long bone fragments ranging in size 12–71mm. They were white/black in colour but none could be positively identified as to anatomical element. Two of the fragments were from epiphyses, suggesting that the cremation was that of a juvenile.

L1670 Structure 1. Occupation layer. Phase 2c. A number of small cremated bone fragments, none greater than 14mm in length and with a total weight of less than 10g. The fragments were grey/black in colour and seemed mostly to be from long bones, but none could be positively identified further. They were probably from an adult human.

F1709 L1710 Structure 1. Fill of gully. Phase 2c. There was a single fragment of human bone in this residue with a concave articular surface, probably part of the proximal end of the first proximal phalanx of the toe. The bone is certainly from an adult human.

During the Bronze Age, human remains were rarely deposited as 'normal' burials — in fact, whole burials are virtually absent from the archaeological record (see Brück 1995). Instead, selected parts of the human body, burnt or unburnt, may have been used, displayed and then sometimes placed in specific deposits within settlements. A complete modern adult cremation weighs about 3000g. Usually, only a fraction of the cremated remains are found within a cremation deposit; on average, such a burial will weigh only 800g. None of the unurned cremations from Game Farm weighed more than 100g, so we can assume that even this material in more 'formal' burial contexts had been chosen highly selectively.

V. Animal bone

by Ian Baxter

A total of 671g of bone was recovered from the site, representing 203 fragments. The assemblage is dated to the Mid–Late Bronze Age and to the late/post-medieval periods. Only the prehistoric material is discussed here. The highly acidic nature of the sandy soil in this region has resulted in a small animal bone assemblage, with little potential to provide detailed information concerning the economy of the site.

All the bone was examined and where possible identified to species with the exception of vertebrae and rib fragments, which have been recorded as large mammal (cattle/horse size) and medium mammal (sheep/pig size).

The only identifiable fragment from the Bronze Age deposits is a red deer (*Cervus elaphus*) antler tine fragment from Structure 3 pit F1275 L1276 (Phase 2a). This has been cut off the beam and represents craft waste (Fig. 29.6).

The remains of lagomorphs, both hares (*Lepus europaeus*) and rabbits (*Oryctolagus cuniculus*), dominate the assemblages from many more recent contexts. A total of seventeen cattle or cattle-sized fragments and six sheep-sized fragments were found associated with the human infant skeleton in undated buried soil horizon L1036 (*Human bone*, above). Cattle vertebra centra are fused, and derived from beasts aged over five years. The fifth metacarpal of a dog, of a size smaller than a fox (*Vulpes vulpes*), was recovered from the same context.

Area 18		*Area 21 (17)*	
Level (mm)	*Soil description*	*Level (mm)*	*Soil description*
0–280	Ap: brown (10YR 4/3) sand, with few gravel and stones	0–220	Colluvial yellow sands, becoming more finely bedded with depth with a sharp horizontal boundary
280–330 (440)	Clean yellow (10YR 7/8) sand – possibly blown	220–320	bAp: brown and pinkish grey (7.5YR 6/2–5/2) sand, with iron pans marking the top and base; possible plough furrows at base
330 (440)–660	bAp?: greyish brown and brown (10YR 5/2 and 7.5YR 4/4) sands with gravels and stones (iron pans separate the blown sand from the Ap and also distinguish areas within the Ap accumulation)	320–550+	bBhs: dark reddish brown (5YR 3/3) cemented sands
660–700	bAh?: black (7.5YR 2/0) moderately cemented sand		
700–920	bEa: pinkish grey (5YR 6/2) weak sand		
720–1000+	bBhs: dark reddish brown (5YR 3/2) strongly cemented sand with frequent gravel and stone patches		

NB All Munsell values taken as dry colours

Table 21 Soil sequence

VI. Soils
by Richard I. Macphail

Soils from Areas 18 and 21 (17) towards the raised field boundary, and Areas 19 and 20 in the southern half of the site towards rising ground, were studied to Assessment level during the trial trench evaluation of the site. Sandy glaciofluvial drift containing gravel, colluvium, clean yellow sand and buried podzolic soils were present (Figs 4, 5 and 24). Similar sequences were noted in Area 18 and in the north-eastern corner of Area 21 (17) (Table 21).

In Areas 19 and 20 at least 300mm of modern topsoil was present over 500mm of brown (colluvial) sand. Little evidence was noted in these areas of the podzolisation (Ah, Ea and Bhs horizons) that characterises the ancient soils present in Areas 18 and 21 (17).

Discussion

Five possible soil development/land-use phases were identified. The earliest related to early Holocene, possibly Neolithic, brown soil formation, where earthworms may have worked flint scatters into the soil (*NB* the burnt flint scatter in Area 21 (17) subsoil Bhs). This may account for the presence of artefacts in the dark brown subsoils. The second phase was acidification and podzolisation of the soils, which may have occurred in the Bronze Age (*cf.* Macphail 1987; Perrin *et al.* 1964). The third phase was related to the LBA occupation and development of the ploughsoil (Ap horizon) in the top of podzols and/or truncated podzols. This may have been associated with a contemporary rise in the water table and/or preferential drainage into the 'hollow area' of Areas 18 and 21 (17), with runoff from the northern high ground forming periodic ironpans along soil boundaries (Ap and underlying soils).

Phase 4 is represented by a windblown sand and colluvial episode(s) sealing and marking the end of the prehistoric occupation of the site. This occurs in two forms. In Area 18 it is seen as a massive deposit of clean natural sand sealing the Ap, while in Area 21 (17) it occurs as a laminated (pondy) sandy colluvium (Farres *et al.* 1990). The deposition of clean sand with fine gravel implies earlier deep soil stripping of the rising landscape to the south. In the last phase, post-prehistoric arable erosion and colluviation affected large areas of the site, especially in the south.

VII. Waterlogged plant macrofossils
by Alan J. Clapham

Introduction

A section of 45cm depth was obtained from a buried palaeochannel and sampled for plant macrofossil remains and pollen during the site evaluation (Fig. 4, **A**). Most remains were preserved by waterlogging, although charcoal fragments were recorded throughout the profile. The results of the plant macrofossil analyses are displayed in Table 22.

Method

The profile was obtained with a JCB bucket. This was necessary due to the unstable conditions of the test pit. The peat associated with the palaeochannel was buried beneath a substantial depth of sand, which, being waterlogged, became liable to collapse and therefore prevented sampling *in situ*. Four samples were obtained from the excavated profile and covered all the visible sedimentary layers. All samples were sorted in water using a low-powered (x40 magnification) stereomicroscope. All critical taxa were identified using the modern plant reference collection housed in the George Pitt-Rivers Laboratory, Department of Archaeology, University of Cambridge. All plant nomenclature follows Stace (1997).

Results

The profile of a total depth of 45cm was sampled and can be described as follows:

0–7cm	sand
7–25cm	reed peat (Roman pottery found within this horizon)
25–43cm	reed peat mixed with gravel
43–45cm	bottom gravels.

A sample from each profile was assessed. 500cm^3 was analysed from the bottom gravels, 400 cm^3 from below the reed peat and 300 cm^3 from the reed peat and the upper sand.

The bottom gravels (45–43cm)

This sample consisted of fine monocotyledon roots and stems, but the gravels dominated. Other taxa were present (Table 22) but less common. The presence of the *Phragmites australis* rhizomes, the fathen, stinging nettle, white campion, rushes and sedges most likely represent the bankside vegetation, where the water table was high enough to support the rushes and sedges and not too waterlogged so that the fathen, orache, white campion and stinging nettle can grow. The damp environment of the bank may also be indicated by the presence of moss fragments.

The presence of charcoal within the sample may suggest some human activity within the area, such as burning of the local vegetation, resulting in the charcoal being washed into the watercourse.

Below the reed peat (43–25cm)

This sample was dominated by the presence of monocotyledon roots and stems and *Phragmites australis* rhizomes. Very few other taxa were recorded and charcoal fragments were also rare. The remains suggest that the watercourse was dominated by a reed bed, allowing few other species to grow. The reduction in the presence of the charcoal fragments is most likely due to the reed bed acting as a filter, preventing any fragments from entering the deposit.

Reed peat (25–7cm)

This sample is the richest of those discussed so far in terms of taxa recorded. Monocotyledon stem and root fragments were present, but the sample was dominated by fragments of reed rhizomes. Other species present include lesser spearwort (*Ranunculus flammula*), water crowfoot (*Ranunculus* subgenus *Batrachium*), cinquefoil (*Potentilla* sp.), bramble (*Rubus fruticosus*), thistle (*Cirsium* sp.), rushes and sedges. Charcoal fragments were again common, as were worm cocoons. Insect remains, in the form of fly puparia, were present.

The environment represented by this sample is one of a reed bed. Unlike in the previous sample, however, other species are also present, including a variety of bankside taxa. A more aquatic species was also identified, water crowfoot, and this could have been growing in the shallow waters beyond the reed bed. The increase in the presence of charcoal fragments may suggest increased human activity in the area, and this is supported by the presence of Roman pottery in the section. The presence of fly puparia, although not common, may also suggest an increase in human activity, and they may have fed on waste dumped by the watercourse. The presence of worm cocoons may suggest that the local water table was lower at certain times of the year.

The upper sand (7–0cm)

This sample was dominated by the presence of pinnules of bracken (*Pteridium aquilinum*). Other common taxa included *Chara* sp. oogonia, parsley-piert (*Aphanes microcarpa*), stinging nettle, common spike-rush (*Eleocharis palustris*) and water flea (Cladoceran) epiphyia. Less common species included bell-heather (*Erica cinerea*), leaf fragments, small nettle (*Urtica urens*), violet (*Viola* sp.), woody nightshade (*Solanum dulcamara*) and common ragwort (*Senecio jacobea*). No *Phragmites* rhizome fragments were recorded from this sample.

The presence of the bracken pinnules and the bell heather leaf fragments suggests that a more heath-like habitat was present within the area than at present. Since this horizon is composed mainly of sand, the more acidic soil conditions produced would have sustained such an environment. The abundance of parsley-piert achenes also suggests that a sandy substrate was present. The association of common ragwort along

Sample location	*Bottom gravels*	*Below reed peat*	*Reed peat*	*Upper sand*
Depth (cm)	*45-43*	*43-25*	*25-7*	*7-0*
Volume (cm³)	*500*	*400*	*300*	*300*
Species				
Chara oogonia (stonewort)	++	-	-	+++
Pteridium aquilinum (bracken)	-	-	-	+++
Ranunculus flammula (spearwort)	-	-	+	-
Ranunculus subgenus *Batrachium* (water crowfoot)	-	-	+	-
Silene latifolia (white campion)	+	-	-	-
Chenopodiaceae indet (goosefoot)	++	-	-	-
Chenopodium album (fathen)	+	+	-	-
Viola sp.	-	-	-	+
Atriplex sp.	+	-	-	-
Aphanes microcarpa *(parsley-piert)*	-	-	-	+++
Potentilla sp. (cinquefoil)	-	-	+	-
Rubus fruticosus (bramble)	-	-	+	-
Erica cinerea leaf fragments (bell heather)	-	-	-	+
Urtica urens	-	-	-	+
Urtica dioica	+	+	-	++
Solanum dulcamara (woody nightshade)	-	-	-	+
Senecio jacobea (common ragwort)	-	-	-	+
Cirsium sp. (thistle)	-	-	+	-
Juncus sp.	+	-	++	-
Eleocharis palustris (spike-rush)	-	-	-	++
Carex spp.	+	-	++	-
Phragmites australis rhizomes	++	+++	+++	-
Monocot. stems and leaves	+	+++	+++	+
Small Poaceae	+	-	+	+
Moss stems and leaves	v. rare	-	-	-
Charcoal fragments	++	+	++	+
Worm cocoons	++	-	++	+++
Fly puparia	-	-	+	
Insect remains	v. rare	-	-	+++
Cladoceran epiphyia (water flea)	-	-	-	++

+ – present; ++ – common; +++ – very common

Table 22 Small plant, insect and invertebrate remains

with the parsley-piert suggests that there were pockets of more open landscape within this bracken-dominated environment allowing these species to thrive. Parsley-piert is a low-growing species, suggesting that the open areas consisted of low grassland, and grasses (Poaceae) are also represented in this sample. The presence of small nettle suggests that there were areas that had been disturbed, possibly by burrowing animals or agriculture.

The presence of the high-water table taxa such as the common spike-rush, and the aquatic stonewort oogonia suggest that surface water may have been present, possibly appearing as upwellings through the sand. This is supported by the finds of waterflea epiphyia (eggs), and vegetation often associated with this type of environment (woody nightshade and stinging nettles). It is difficult to determine whether this area of upwelling represented part of a watercourse, or a spring or pond. The charcoal present in this sample was well rounded, suggesting that it had been transported from further afield. The frequent worm cocoons again suggest that the water table was lowered for some time during the year, most likely summer. Insect remains were also very common.

Conclusions

The bottom gravels (45–43cm) represent the flowing stream/watercourse, and conditions lacking in nutrients (as demonstrated by the presence of the stonewort oogonia). The other species evident may represent open bankside vegetation, while the presence of worm cocoons may indicate that the water table dropped for part of the year. Above this, at 43–25cm but below the reed peat, the sample is very poor in taxa. Dominated by fragments of reed rhizome and monocotyledon stem and root fragments, this may represent the early development of a reed bed that was dense enough to prevent any other species from growing. In fact, reeds may have choked the whole watercourse.

The reed peat horizon at 25–7cm, is more species-rich, suggesting that the reed bed was no longer as dense as it was in the previous sample and allowed other species to grow. This is demonstrated by the presence of more aquatic species such as the water crowfoot. The bankside vegetation may have become more enclosed with the presence of taxa such as bramble, although the water table was still high enough to support rushes and sedges. The occurrence of the worm cocoons may suggest a lowering of the water table at some points during the year. Human occupation of the area during the formation of the reed

peat may be indicated by the finds of pottery in this horizon.

From the profile description it appears that the reed peat was then buried by a layer of wind-blown sand (7–0cm). One would expect this horizon to be devoid of any plant macrofossil evidence. This level, on the contrary, was by far the richest in terms of the number of taxa recorded. The sample was dominated by pinnules of bracken, the oogonia of stoneworts and the achenes of parsley-piert. These remains indicate a variety of environments. A heath-like environment is represented by the finds of bracken and bell heather, whilst a more open grassland habitat is represented by parsley-piert, common ragwort and grasses. Some areas may have been disturbed by burrowing animals, or even by agriculture, permitting the small nettle to grow.

The presence of the oogonia of *Chara* sp. and waterflea eggs suggests that open water was present, possibly percolating up from below through the sand. The appearance of other species, including the common spike-rush, woody nightshade and violet, suggests a marshy area similar to that found at the upwelling of springs. Pools of water would be attractive to waterfleas and other insects, and their remains were very common in this sample. At certain times of the year, such as the summer months when the water supply is reduced, the lower local water table would permit earthworm reproduction, as indicated by the presence of worm cocoons in the samples, except that at 43–25cm.

Overall, the profile assessed here shows the development of reed peat that was then covered by a sand horizon. A damp environment is still represented here due to the upwelling of the water through the sand producing a damp, marshy area. Human activity is represented by the presence of charcoal throughout the profile and the finds of pottery within the reed peat horizon. The charcoal from this sample, however, was well-rounded, suggesting that it had been transported from further afield.

VIII. Pollen

by Robert G. Scaife

Introduction

Pollen analysis was carried out on the 0.36m thickness of peat stratigraphy recorded from the base of the valley to determine the presence or absence of sub-fossil pollen and spores in this peat horizon, which might provide information concerning the local vegetation and environment, with specific concern for any evidence of human impact.

Peat was overlain by a substantial thickness of clean, coarse sand with little organic content. The peat core itself was largely homogenous, although a little stratigraphic variation was observed.

Method

Monolith profile tins were used to take the samples. One of the profiles was sampled for pollen analysis at 4cm intervals throughout its depth. Standard techniques were used for extracting the sub-fossil pollen and spores (Moore and Webb 1978; Moore *et al.* 1991).

Pollen zonation

Three tentative pollen zones have been recognised which relate to local environmental changes that took place during the timespan represented by the peat accumulation. These local pollen assemblage zones (l.p.a.z.) have been delimited as follows:

l.p.a.z. 1 (36–26cm). Basal peat with silt. This zone is characterised by higher values of shrubs, with *Corylus* type (to 19%), *Calluna* (to 30%) and *Erica* (to 5%). Trees include *Betula*, *Quercus*, *Tilia*, *Fraxinus*, *Fagus* and *Alnus*, all present in small numbers. Herbs are dominated by Pocaceae (to 58%); cereals, including *Secale cereale*, are present (to 5%). Marsh taxa comprise Cyperaceae (to 10%) with occasional *Typha Angustifolia/Sparganium* type.

l.p.a.z. 2 (26–6cm). There is a reduction in the trees and shrubs noted in zone 1, with *Corylus* type and Ericaceae declining to low levels. There is a substantial increase in herbs with Lactucae attaining high values (to 60% at 21cm), along with Poaceae, throughout (30–40%). *Plantago lanceolata* becomes increasingly important from 16cm (to 16%). There is a moderately diverse range of herbs. Marsh taxa remain similar to zone 1, with Cyperaceae the most significant taxon.

l.p.a.z. 3 (6–0 cm). This zone has been recognised through the expansion of tree and shrub pollen at the top of the profile. *Quercus* (7%), *Corylus* type (to 10%), *Erica* (9%) and *Calluna* (to 16%) are of greater importance than in the preceding zone 2. Conversely, there is some reduction in herb totals and especially Lactucae (to 5%). Poaceae remain important (60%). Cereal pollen, including *Secale cereale*, is noted. Cyperaceae also attains its highest values at 4cm (to 47%).

Pollen preservation was generally good: this included the majority of Lactucae grains, a taxon usually associated with poor pollen-preserving conditions. A small percentage were, however, also degraded. Absolute pollen values were greater in the two basal pollen zones, with values to 136,000 grains/ml. Only between 12cm and 4cm were totals lower (to 31,500 grains/ml).

Discussion

This analysis provides some information on the character of the local environment and land use. Romano-British pottery in the profile at 14cm provides useful dating evidence for this peat unit.

Overall, the pollen results are commensurate with the dates suggested by the pottery. Although there is some evidence of trees and shrub growth in the lowest and upper levels (zones 1 and 3), the majority of the profile demonstrates an open herbaceous flora. It is likely that the pollen flora reflects the vegetation growing on the adjacent valley-side interfluves.

There is evidence present for both pastoral and arable agriculture, especially in zone 2. Whilst the former is less easy to differentiate in pollen spectra, the substantial values of Poaceae, Lactucae and *Plantago lanceolata* are evidence for local grassland and possibly pastoral agriculture. Arable cultivation is evidenced by cereal type pollen (*Triticum*, *Hordeum* and *Secale cereale* types) plus weeds of disturbed ground — *Sinapis* type, *Spergula* type and Polygonaceae spp. The evidence may indicate a response to increased land-use pressure during the Roman period.

In zones 1 and 3, there is evidence of more woodland/scrub, including elements of heathland. In zone 1, there is a greater prevalence of heathland taxa, which include *Erica* (heather) and *Calluna* (ling). This is perhaps not surprising given the locally acidic/sandy soils. Tree/shrub taxa present in these zones include a number of taxa which are poorly represented in pollen spectra (*Tilia*, *Fraxinus*, *Fagus*). These are enigmatic: pollen of these trees may have come from sporadic but near-site growth or, alternatively, from more extensive woodland growth further afield but from which pollen has been transported over a greater distance.

IX. Environmental samples
by Robert G. Scaife

Introduction
Samples from pits, ditches and roundhouse floor layers were taken for environmental analysis with the aim of reconstructing local vegetation, agricultural activity and diet. This report presents the results of the microscopic examination of 21 samples taken from the most significant contexts.

Method
Samples of 10 to 20 litres volume were taken from all of the main contexts excavated, and especially where these exhibiting obvious charred remains. Botanical remains were extracted using flotation (Siraf tank) with the flot collected in nested sieves down to 0.5u. Residues were kept and examined for non-floating material and scanned for other archaeological material. Examination of both elements and identification of the plant remains was carried out using a Wild M3c low power binocular microscope (x6–x40). Material obtained from flotation comprised largely charcoal, with surprisingly little evidence of cereal crop remains or seeds of associated weeds. All of the samples were examined and the relative quantities of the different environmental categories estimated on a scale of * (sporadic) and on a subjective scale of 1 to 5 (abundant). All nomenclature follows that of Stace (1997).

Results
Substantial quantities of charcoal (*Charcoal*, below) were recovered from various features including pits (F1330 L1331, F1376 L1377, F1595 L1596, F1446 L1447 and F1439 L1441), cremations (F1350 L1351, F1509 L1510 and F1470 L1471) and burnt areas (L1167), fills of linear feature F1355 (L1356) and the floor of roundhouse Structure 1 (L1670). Sub-samples from F1172 (L1174), F1355 (L1356), F1509 (L1510) and L1670 were also subject to radiocarbon analysis (*Radiocarbon dating*, p.50).

There were few seeds (grain) of cereals or of weeds. Only a single *Chenopodium* seed (post-hole F1189 L1190) and of *Prunus* sp. (layer L1167), and *Corylus avellana* (hazelnut fragments) from L1080 (fill of pit F1079), were found. The latter probably relate to the wood charcoal also recovered from these pits.

Cereal remains were extremely sparse, with no chaff remains found in any sample. Only small numbers of *Triticum spelta* type (emmer and spelt wheat) were found in Structure 3 pit F1266 L1269, and unidentified grain fragments in post-hole F1189 L1190 and Structure 3 pit F1266 fills L1267 and L1269. This (glume) wheat type is more typical of Iron Age and Romano-British sites. This, and the absence of associated weed seeds, was disappointing in terms of understanding agrarian activity at this site. It seems that chance did not permit the preservation of cereal grain and the residues of crop processing (threshing and winnowing). Alternatively, these remains were not burnt and thus not preserved, or if so, they were disposed of elsewhere.

It is clear that that the charcoal found relates to domestic fires, cremation pyres or industrial use. The absence of molluscs at this site is due to the acidity of the bedrock lithology and soils.

Conclusion
Charcoal was the primary component of the flots obtained from the fills of the various pit and ditch fills and floor spreads (below). Unfortunately, there were few cereal remains or weed seeds present from which local agriculture and environment can be reconstructed.

X. Charcoal
by Rowena Gale

Introduction
Charcoal was examined from a range of contexts including Neolithic and Bronze Age cremations, pits, and post-holes and layers associated with roundhouses. Although charcoal was frequently abundant, other charred plant remains were unusually rare (*Environmental samples*, above). Therefore, the most important environmental evidence came from the analysis of charcoal from soil samples, and the pollen and waterlogged plant macrofossils (*Waterlogged plant macrofossil remains*, p.44) from a core sample from a palaeochannel (Fig. 4, **A**). The charcoal study also provided evidence for the economic use of woodland resources.

Materials and methods
Bulk soil samples were taken from 22 features which were either of stratigraphic significance or in which charcoal was visible. Following the assessment stage, twenty samples were selected for detailed analysis. Charcoal identification was undertaken to obtain environmental data and to indicate the use of local wood resources. Given the (usually) good preservation of the charcoal, the paucity of other charred plant remains in these contexts was surprising.

The condition and quantity of charcoal varied considerably from sample to sample, but it was generally well preserved. Several samples included fragments measuring up to 25mm in longitudinal axis. Charcoal fragments measuring >2mm in cross-section were considered for species identification. Charcoal-rich samples 13, 17, 18 and 20 were sub-sampled for identification. In most instances the charcoal was too fragmented to include intact radial segments of roundwood.

Samples were prepared for examination using standard methods (Gale and Cutler 2000). The fragments were supported in washed sand and examined using a Nikon Labophot-2 microscope at magnifications up to x400. The anatomical structures were matched to prepared reference slides. When possible the maturity (*i.e.* heartwood/sapwood) of the wood was assessed. It should be noted that stem diameters may be reduced by up to 40% during carbonisation.

Results
The results of the charcoal analysis are summarised in Table 23. Where anatomical differences between related genera are too slight to allow secure identification to genus level, group names are given. Where a genus is represented by a single species in the British flora this is named as the most likely origin of the wood, given the provenance and period, but it should be noted that it is rarely possible to name individual species from wood features (Godwin 1956). Classification follows that of *Flora Europaea* (Tutin in Heywood *et al*. 1964–80).

The anatomical structure of the charcoal was consistent with the following taxa or groups of taxa:

Aceraceae	*Acer campestre* L., field maple
Aquifoliaceae	*Ilex aquifolum* L., holly
Corylaceae	*Corylus avellana* L., hazel
Ericaceae	*Erica* sp. and *Calluna vulgaris*, heathers and ling. Many members of the heather family are anatomically similar.
Fagaceae	*Quercus* spp., oak
Rosaceae	Pomoideae: these taxa are anatomically similar, and one or more taxa may be represented in the charcoal: *Crataegus* spp., hawthorn; *Malus* sp., apple; *Pyrus* sp., pear; *Sorbus* spp., rowan, service tree and whitebeam. Prunoideae: *P. spinosa* L., blackthorn; *?P. padus* L., ?bird cherry. Rosoideae: *Rosa* sp., briar; *Rubus* sp., bramble and raspberry

Phase 1: Neolithic
A large quantity of oak (*Quercus* sp.) charcoal (samples 19 and 20, L1356) was recovered from linear feature F1355. The origin of the charcoal was not clear but it has been attributed to the remains of a burnt structural component, possibly a sill-beam (Plate II). The charcoal consisted of large chunks of heartwood (up to 30mm in radial cross-section), probably from wide roundwood or trunkwood. A 20% subsample from sample 20 was examined. A single piece of bramble (*Rubus* sp.)/briar (*Rosa* sp.) stem (diameter 10mm) was also present. The character of the wood and the absence of other taxa tend to support the suggestion that these were indeed structural remains. The inclusion of bramble/briar stem may have been incidental to the burning, or possibly represented binding materials. Stripped stems have traditionally provided useful bindings and ties (Edlin 1949). Radiocarbon analysis of a sub-sample of Sample 20 provided a date ranges of 2190–1900 cal. BC (Beta-178454; 3660±50 BP), placing the feature in the Late Neolithic period (*Radiocarbon dating*, p.51).

Sample 1, from L1058, related to a natural feature and may have been the remains of a tree-bole. The sample contained numerous small fragments of oak (*Quercus* sp.) heartwood and sapwood.

Sample	*Context*	*Description*	*Acer*	*Corylus*	*Ericaceae*	*Ilex*	*Pomoideae*	*Prunus*	*Quercus*	*Rosoideae*
Neolithic										
	1356	Fill of linear feature 1355	-	-	-	-	-	-	91h	-
20	1356	Fill of linear feature 1355	-	-	-	-	-	-	108h	1r
?Neolithic										
1	1058	Natural feature, ?tree bole	-	-	-	-	-	-	2s,41h	-
Later Bronze Age										
16	1471	Pit fill – cremation	-	27	9	-	29	32	5r, 10h	-
17	1510	Cremation	-	1	-	-	-	-	116h	-
Structure 1, Phase 2										
22	1670	Roundhouse floor	4	-	-	-	1	-	1r,12h	-
Structure 2, Phase 2										
13	1428	Post-hole/ pit fill	-	-	-	-	-	-	124h	-
23	1174	Pit fill	-	1	-	-	-	2	9s,17h	-
Structure 3, Phase 2										
3	1088	Layer	-	-	-	1	-	-	8h	-
6	1225	Pit fill	-	-	-	1	-	1	2s, 7h	-
7	1190	Pit fill	-	-	-	-	1	-	1s, 6h	-
8	1267	Pit fill 1266	-	-	-	3	1	-	43h	-
9	1269	Pit fill 1266	-	-	-	-	3	6	13s, 5h	-
Unphased features										
4	1100	Post-hole	-	-	-	-	-	-	25r, 84h	-
5	1167	Layer	-	-	-	-	-	-	103h	-
10	1331	Pit fill	-	-	-	-	-	-	59h, 9rt	-
12	1377	Pit fill	-	-	-	-	-	-	97h	-
14	1441	Pit fill	-	-	-	-	-	-	5k	-
15	1447	Burnt area	-	-	-	-	1	-	23h	-
18	1596	Pit fill	-	-	-	-	-	-	111h	-

h – heartwood and wood of unknown maturity; k – knotwood; rt – rootwood ; r – roundwood (diameter <20mm); s – sapwood.

Table 23 Charcoal from Neolithic and Mid–Later Bronze Age features

Phase 2: Mid–Late Bronze Age

Most of the charcoal examined related to occupation of the site during the M–LBA. The use of the site during Phase 2 was probably limited to a relatively short period of time, which was dated from pottery finds to the 9th–7th centuries BC but by radiocarbon to the 16th–15th centuries BC. Charcoal was examined from features associated with roundhouses 1, 2 and 3 and from cremations; also from several unphased features from more discrete locations that were less securely attributable to this phase.

Cremations

Unurned cremation F1509 was one of two such deposits in the south-east part of the site. Sample 17 (L1510) included a large quantity of very fragmented charcoal. A 50% subsample was examined and identified as predominantly oak (*Quercus* sp.) heartwood (along with wood of unknown maturity), with a very small quantity of hazel (*Corylus avellana*). A sub-sample of Sample 17 was subject to radiocarbon analysis, which provided a M–LBA date range of 1450–1260 cal. BC (Beta-178453; 3100±50 BP; *Radiocarbon dating*, p.51).

A burnt pit, F1470, located to the north of Structure 2, was associated with a cremation deposit. The charcoal from sample 16 (L1471) was very fragmented. In contrast to cremation F1509, oak (*Quercus* sp.) (heartwood and roundwood) was comparatively infrequent and mixed with a range of shrubby taxa including blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*), hawthorn/*Sorbus* group (Pomoideae) and heather or ling (*Erica* sp. or *Calluna vulgaris*) stems. The charcoal from this feature included the most diverse range of species in all the samples examined (Table 23), and also differed from the others in that oak was not the dominant taxon.

Roundhouses

Structure 1 was situated on the western boundary of the site. Small fragments of charcoal (sample 22) from the possible occupation layer L1670 included oak (*Quercus* sp.) (roundwood and heartwood), maple (*Acer campestre*) and a member of the hawthorn/*Sorbus* group (Pomoideae).

Charcoal was recovered from the fills of two associated features, post-hole F1427 and pit F1172, on the eastern side of Structure 2. The large quantity of charcoal recovered from L1428 (fill of F1427) was 50% subsampled for examination and consisted entirely of oak (*Quercus* sp.) heartwood, with some fragments up to 30mm in length. Charcoal was considerably sparser in Structure 2 pit F1172 L1174, which, in addition to oak (*Quercus* sp.), included blackthorn (*Prunus spinosa*) and hazel (*Corylus avellana*).

From Structure 3, charcoal was examined from three pit/post-hole fills (F1189, F1224 and F1266) and from occupation layer L1088. Charcoal from the latter included oak (*Quercus* sp.) and holly (*Ilex aquifolium*). Post-hole F1224 and pit F1266 (contexts L1225, L1267 and L1269) lay close together on the eastern side of the structure. Both contained oak (*Quercus* sp.), holly (*Ilex aquifolium*) and blackthorn (*Prunus spinosa*), and pit F1266 also included the hawthorn/*Sorbus* group (Pomoideae). Sample 7 from post-hole F1189, located on the west of the structure, included oak (*Quercus* sp.) and the hawthorn/*Sorbus* group (Pomoideae).

Unphased features

Charcoal was also examined from seven unphased features, probably of M–LBA date, from selected areas of the site. These included:

Sample 4 Post-hole F1099, fill L1100, sited on a linear ditch to the west of Structure 3. Oak heartwood and sapwood with some large knotty pieces, and narrow stems (diameter 4mm) from an unidentified herbaceous plant. The latter was structurally collapsed and vitrified (probably from exposure to high temperatures), but such structure that was visible was consistent with that of a monocotyledon (*e.g.* a reed or sedge). The latter could represent either kindling or some other artefactual use, for example for roofing, flooring or basketry.

Sample 5 Layer L1167 in Area 20. The large volume of charcoal mostly consisted of thin slivers that were too narrow for identification. The material examined (over 100 fragments) was identified as oak (*Quercus* sp.).

Sample 10 Shallow, charcoal-rich pit F1330, fill L1331. The charcoal consisted of large chunks of oak (*Quercus* sp.) heartwood up to 35mm in length and 20mm in radial cross-section, and several pieces of oak root (diameter 5mm), the latter very vitrified.

Sample 12 Pit F1376, fill L1377, sited some metres to the east of Structure 1. This charcoal was also abundant and consisted of thin slivers of oak (*Quercus* sp.).

Sample 14 Pit F1439, fill L1441. The sample consisted of lumps of very degraded knotty oak (*Quercus* sp.).

Sample 15 Small pit F1446, fill L1447, to the north of Structure 1. Charcoal was sparse but included oak (*Quercus* sp.) heartwood and a member of the hawthorn/*Sorbus* group (Pomoideae).

Sample 18 Elongated pit F1595, fill L1596, in the central part of the site. The abundant charcoal was 50% subsampled for examination and consisted of oak (*Quercus* sp.), with some pieces from trunks and/or branchwood which exceeded 15cm in diameter.

Discussion

The Neolithic and Bronze Age settlements were sited on sandy soils and alluvium slightly above the level of the Little Ouse floodplain. An enduring phase of widespread peat formation during the Iron Age subsequently reduced the region to bog.

Phase 1: Neolithic

Charcoal from Neolithic contexts included the fill of linear feature F1355 and a possible tree throw F1057 (the latter only provisionally dated to the Neolithic period). Charcoal was abundant in both features and identified as oak (*Quercus* sp.). Large chunks of charcoal were recovered from the gully and were tentatively attributed to burnt structural remains, possibly a sill-beam. Its essential elements of strength and durability have promoted oak as the prime building material in Britain for millennia, particularly for outdoor work and (possibly as in this context) for structural components in contact with the ground.

Phase 2: Mid–Late Bronze Age

The bulk of the charcoal related to Phase 2 occupation of the site, and particularly to Structures 1–3. Hearths were present in Structure 1, and possibly Structure 2 also. Charcoal from the structures was generally recovered either from the probable occupation layers or where it had been redeposited into pits or post-holes. By association, it could be argued that charcoal from these structures most likely represents fuel debris. Firewood was gathered mostly from oak (*Quercus* sp.), although a number of other taxa were also used including maple (*Acer campestre*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*), the hawthorn/*Sorbus* group (Pomoideae) and *Prunus.*

Interestingly, holly occurred in three of the four contexts examined from Structure 3 but was not identified elsewhere on the site. This seems to imply a fairly regular but discrete use of holly in this structure only. The local distribution of holly trees or bushes at the site might explain this disparity — perhaps these grew conveniently closer to this structure than to the others. Although it is impossible to explain the real significance of holly in these features, other interpretations should also be considered. The waxy wood makes good firewood and can be burnt green (unseasoned), but in the author's experience it is rarely identified in fuel residues. Holly leaves have provided winter fodder in historic times (Jones 1989; Spray and Smith 1977) and they would undoubtedly have been used for the same purpose in prehistory. Once the woody stems had been stripped of leaves they would have provided useful kindling and firewood. As one of the few evergreen trees in Britain, holly has enjoyed numerous cult and ritual attributions since the prehistoric era, and its status was enhanced by the production of red berries in winter (Grigson 1958; Hora 1981).

It is not known whether the charcoal from unurned pit cremations F1509 and F1470 represents pyre fuel or a special (ritual) deposit of charcoal. However, it is likely that pyre fuel would have been gathered up with the cremated remains. The charcoal from F1509 was predominantly oak, although a small quantity of hazel was also present. By implication, the pyre was constructed with oak poles/trunks or branches mature enough to have contained a high proportion of heartwood. Hazel may have been used as kindling or infill, or was possibly of artefactual origin. Radiocarbon analysis of the fill of pit F1509 placed this cremation in transitional period between the Middle and Late Bronze Age. Oak appears to have been especially important for cremation in Bronze Age Britain, although other species were also used for fuel. Current knowledge on this subject is still scant but there does seem to be some evidence that the type of wood used may have been related to age, sex or status (Campbell forthcoming). Similar rituals were still practices elsewhere in Europe several centuries later: Tacitus, writing in the 1st century AD, refers to the German practice of selecting specific taxa for pyres, although he does not name them. Since oak was identified as the dominant taxon in all the charcoal samples examined from Game Farm, and evidently grew abundantly at the site, it is difficult to separate practical applications (the general use of oak as fuel) from ritual and symbolic practise.

The unurned cremation deposit in pit F1470 proved equally interesting, since the character of the charcoal differed from that in all other contexts. The charcoal was fairly abundant, although comminuted, and consisted mainly of shrubby species, while the proportion of oak was much smaller. Heather has numerous economic uses, such as bedding, fodder, thatching, packing and fuel. Although it was probably widely available on the sandy soils around the site, it was not identified in charcoal samples from other contexts. The question therefore arises as to whether this charcoal originated from some type of activity or function for which brushwood or shrubby species were preferred. If, as suggested, the charcoal represents a cremation deposit it could imply that the type or status of the cremation was different to that from pit F1509.

Charcoal from other undated contexts (feature fills and a layer) thought to relate to Phase 2 occupation was frequently very abundant, and was almost exclusively of oak. Most of these contexts included household debris, such as pottery sherds and burnt flints, so it feasible that the charcoal accrued from dumped domestic fuel debris. These sample assemblages were more or less comparable to those from Structures 1, 2 and 3, although in the last-named there was more evidence of the use of other taxa, albeit sporadically.

Overall, it is clear that oak was the preferred fuel and was sufficiently abundant to fulfil most requirements. There was no evidence to indicate the use of coppiced

wood; indeed, the frequency of heartwood suggests that firewood was mostly obtained from wide poles/trunks or cordwood. It is possible that the small quantities of other species represent their use for kindling, rather than as firewood. In addition, oak would almost certainly have been used for major structural work on site, as suggested by the possible sill-beam in Neolithic linear feature F1355.

The woodland context

Peat cores extracted from a buried palaeochannel in Trench A, in the base of the valley (Fig. 4), provided waterlogged plant material and pollen (*Waterlogged plant macrofossils*, p.44; *Pollen*, p.46) from which it was possible to establish a general picture of the local environment from pre-Roman times until the present day. Roman pottery (dated to the 1st–2nd century AD) found at a depth of 14cm provided a useful date marker. Apart from blackberry (*Rubus* sp.) the waterlogged plant fragments consisted of herbaceous plants mainly associated with wet or dank soils. Pollen provided evidence of trees and shrubs from the lowest levels of the core sample (26–36cm), from which the most diverse range of taxa was recorded. These included hazel (*Corylus avellana*) and ericaceous species, which made up some 54% of the tree and shrub layer, and other arborescent species, present only in small numbers, such as birch (*Betula* sp.), oak (*Quercus* sp.), lime (*Tilia* sp.), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*) and alder (*Alnus glutinosa*).

The palynology provides a baseline picture of the trees and shrubs that were present before the onset of peat formation in the Iron Age, and which were probably growing at the site during the Neolithic and Mid–Late Bronze Age occupation. Comparison between the results of the two studies demonstrates that the selection of fuel or firewood was strongly biased in favour of a few preferred species (mainly oak), despite the apparent availability of ash, birch and beech, which all provide high-energy fuels.

Evidence from the charcoal and pollen studies suggests that the Bronze Age landscape was reasonably well-drained, and dry enough to support a diverse range of woodland trees and shrubs. Deciduous oak woodland probably dominated and incorporated ash, maple, beech, birch, lime and holly, perhaps with hazel, bird cherry and members of the hawthorn/*Sorbus* group. Smaller trees and shrubby species such as blackthorn, hazel and hawthorn probably occurred in woodland margins, open areas or recolonised cleared patches of land, with ericaceous species on sandy or impoverished soils, and alder on boggier ground, probably on the floodplain.

The wide-scale exploitation of oak and other species during the Bronze Age, perhaps combined with land clearance and rising water-levels, probably contributed to the more open and scrubby heathland of hazel and heather that characterised the area prior to peat formation during the Iron Age.

XI. Radiocarbon dating

by Leonora O'Brien

Introduction

Four samples were submitted to Beta Analytic Inc, Miami, Florida for radiocarbon dating analyses. Radiocarbon dates (Table 24) were obtained in order to provide absolute dates for the Neolithic and Bronze Age pottery and to contribute to the dating of regional type series to provide a more refined date for occupation, and to help chronological definition of the environmental sequence. Samples were chosen on the basis of the quality and quantity of available material, and their potential contribution to understanding the development of the site and its cultural and ecological context.

Sampling strategy

A purposive environmental sampling strategy was followed. The environmental samples were taken from sealed deposits, and subsamples were selected for carbon dating at the post-excavation stage. This was done on the basis of the perceived significance of the source feature in relation to phasing and other features and feature types across the site, and the usefulness of absolute dating with regard to associated finds and environmental material.

Sample 17 was taken from L1510, the fill of F1509, an isolated, unurned adult cremation. This feature had not been truncated and its fill contained a high proportion of oak charcoal, possibly used as pyre fuel. The sample was subject to radiocarbon dating in order to allow comparison of cremation deposit date ranges between this sample and Sample 22 (below).

Sample 20 was taken from L1356, a sealed context containing a possible burnt oak sill beam in linear feature F1355. This context yielded Peterborough Mortlake Ware. Radiocarbon dating was undertaken in order to establish a date range for Phase 1 and provide further dating evidence for Mortlake Ware, contributing to wider initiatives to establish and confirm absolute pottery chronologies.

Sample 22 was taken from L1670, the occupation floor layer of Structure 1 (Phase 2c). This layer yielded a possible 'token' human cremation, fire-cracked flint and a relatively large quantity of sherds stylistically identified as later post-Deverel Rimbury pottery (*Prehistoric pottery*, p.37). It was hoped that radiocarbon dating would

Laboratory number (Beta-)	*HAT sample number*	*Analysis*	*Radiocarbon age*	*Calibrated results: 2 sigma calibration (95% probability)*	*1 sigma calibration (65% probability)*	*Intercept of radiocarbon age with calibration curve*
178453	17	Radiometric standard delivery	3100±50 BP	1450–1260 cal. BC (3400–3210 cal. BP)	1420–1310 cal. BC (3370–3260 cal. BP)	1390 cal. BC (3340 cal. BP)
178454	20	Radiometric standard delivery	3660±50 BP	2190–2170 cal. BC (4140–4120 cal. BP) and 2150–1900 cal. BC (4100–3850 cal. BP)	2130–2030 cal. BC (4080–4030 cal. BP) and 2060–1950 cal. BC (4010–3900 cal. BP)	2030 cal. BC (3980 cal. BP)
178455	22	Radiometric standard delivery (extended count)	3350±60 BP	1760–1500 cal. BC (3710–3460 cal. BP)	1700–1530 cal. BC (3650–3480 cal. BP)	1630 cal. BC (3580 cal. BP)
178456	23	Radiometric standard delivery (extended count)	3200±70 BP	1620–1360 cal. BC (3580–3310 cal. BP) and 1360–1320 cal. BC (3300–3260 cal. BP)	1520–1410 cal. BC (3470–3360 cal. BP)	1450 cal. BC (3400 cal. BP)

Table 24 Calibration of radiocarbon age to calendar years

refine the date of Bronze Age occupation and contribute to the absolute chronology of LBA/EIA pottery sequences in East Anglia.

Sample 23 was taken from L1174, a sealed fill of F1172: this was a large rubbish pit or post-hole associated with Structure 2 (Phase 2a), which yielded ash, charcoal, flint and LBA pottery. Radiocarbon dating was carried out in order to refine the date range of occupation at the site and to compare this to the date of Structure 1 (Sample 22). This would provide information regarding the longevity of settlement at Game Farm and contribute to the phasing of the site, as well as to the refinement of pottery sequences.

Method

The four samples provided ample carbon for accurate measurement. All material was charred and pre-treated with acid/alkali/acid. Calibrated date ranges were based on the internationally recognised maximum intercept method (Stuiver and Pearson 1986). This calibration curve is generally agreed upon back to *c.* 2500 BC, thus covering the period in question. Calibrations were compiled using a recent calibration database (Stuiver and van der Plicht 1998; Stuiver *et al.* 1998; Talma and Vogel 1993). Multiple probability ranges apply in the cases of samples 20 and 23, due to short-term variations in the atmospheric carbon-14 content during certain time periods (Hood 2003).

The samples were not known to have been contaminated by groundwater or disturbed by later archaeological activity. The environmental samples contained a relatively high proportion of carbonised heartwood or wood of unknown maturity, with a long life-span, which raises that possibility that dated subsamples may be biased by the presence of re-used timbers or fossil wood. This would produce a deceptively old date range.

Discussion

Relatively few samples were submitted for radiocarbon dating, allowing little internal comparison of date ranges. However, the selected samples were chosen to reflect internal relative sequences of feature types and phases. The only relative control available was the pottery sequence, which tallied with the anticipated date range in the case of Neolithic pottery but did not in the case of the post-Deverel Rimbury Ware.

Environmental analysis suggested that the Phase 2 occupation took place on dry, well-drained land supporting species-rich deciduous woodland that was probably exploited for construction timber and fuel (*Pollen*, p.46; *Charcoal*, p.50). Radiocarbon dating indicates that this woodland was present in the 17th–14th centuries BC.

Phase 1: Neolithic

Sample 20 was from linear feature F1355, which contained a possible burnt oak sill beam. This context also yielded rim and body sherds of Peterborough Ware in the Mortlake style, which had been dated broadly to the Middle to Late Neolithic period (*c.* 3500–2500 cal. BC: Gibson and Kinnes 1997; *Prehistoric pottery*, p.40). The radiocarbon date range of 2190–1900 cal. BC (3660±50 BP) suggests a relatively late context for Mortlake Ware here, and places Phase 1 in the transitional period between the Late Neolithic and Early Bronze Age.

Phase 2: Mid–Late Bronze Age

Sample 22 came from floor layer L1670, which yielded a relatively large quantity of sherds identified as post-Deverel Rimbury pottery. The sample gave a date range of 1760–1500 cal. BC (3350±60 BP). This places Structure 1 (Phase 2c) in the Middle, rather than the Late, Bronze Age and appears to conflict with the 9th–8th century BC dating initially suggested by the pottery (*Prehistoric pottery*, p.37). It is possible that this pushes back the date range for post-Deverel Rimbury pottery in East Anglia quite significantly. However, it is also possible that the radiocarbon dating result is misleading, or that the pottery itself has been misinterpreted. Layer L1670 may have built up over a period of time; it also contained a possible 'token' cremation, which could have been curated. Such factors may have 'aged' the deposit. The inherent difficulties of accurate radiocarbon dating can be particularly problematic in the Bronze Age, when time periods are traditionally distinguished by changing and overlapping material culture and wide absolute date ranges can prove to be of less value than relative chronologies.

Sample 23 was taken from a fill of pit or post-hole F1172, which contained LBA pottery. The sample yielded a date range of 1620–1320 cal. BC (3200±70 BP), indicating that Structure 2 and Phase 2a date to the MBA. Again, this places pottery that was initially regarded as LBA in the MBA. This sample came from a sealed deposit that is likely to have formed rapidly and is unlikely to have been subject to the same degree of possible archaeological contamination as Sample 22.

Sample 22 (Phase 2c) gave an intercept date of 1630 cal. BC, and Sample 23 (Phase 2a) gave 1450 cal. BC. Initially this may appear problematic, placing Phase 2c before Phase 2a; the calibrated date ranges overlap, however. The proximity of the calibrated dates tallies with the conjectured short use-span of the site in the Bronze Age (Chapter 4, p.56). The contiguity of portions of the date ranges suggests either that there is a common laboratory error or bias, or that the ranges themselves are fairly accurate. If the latter is the case, the MBA date ranges of Sample 22 and 23 may indicate a significantly earlier date range for post-Deverel Rimbury pottery in the region than has previously been accepted.

Sample 17 came from cremation F1509 fell within the range 1450–1260 BC (3100±50 BP), placing the cremation towards the end of the MBA. This formal cremation may have been a carefully placed deposit, located in a position between Phase 2a and 2c boundary features. Given the relatively young date range of the sample, it could be further interpreted as a possible 'closing' deposit rather than a 'foundation' deposit, perhaps marking the end of Bronze Age settlement at this site.

Radiocarbon dating has been used in Bronze Age contexts since the 1970s and has become increasingly important, notably in pushing back the beginnings of the Early Bronze Age and shifting material traditionally classified as Iron Age into the Bronze Age (Gibson and Woods 1997, 3). The radiocarbon dates for Game Farm seem to fit into this pattern, suggesting that the presently accepted dating scheme for post-Deverel Rimbury Ware in East Anglia needs to be moved back.

4. Discussion

I. Introduction

The significance of the site at Game Farm can be appreciated by viewing the site within its wider regional context. Three significant factors can be highlighted immediately. Firstly, thanks to the dynamic soil conditions of the area, part of a predominantly M–LBA landscape consisting of ditched enclosures and dispersed structures was sealed and preserved below thick layers of windblown sand. Secondly, this site is a settlement. Thirdly, it is unenclosed.

Our knowledge of later Bronze Age settlements in Norfolk and Suffolk is particularly patchy and incomplete (Lawson 1986), especially in comparison to other parts of East Anglia such as Essex and east Cambridgeshire (*e.g.* Brown and Murphy 1997) The main factor here was the problem of differentiating LBA from Early Iron Age pottery. It is now clear that LBA sites do indeed exist, but have been overlooked due to their being labelled as 'Iron Age'. The lack of recognition of such sites is also a reflection of problems of archaeological visibility, resulting from the massive impact of arable farming. Another contributory factor is the fact that the region's LBA repertoire does not seem to include the prominent land-divisions and other features that characterise sites of this period in some other regions of Britain. Few later Bronze Age sites have been systematically excavated in northern East Anglia. Until now, archaeologists have predominantly relied upon data from two Early–Middle Bronze Age sites in the region — West Row Fen, Suffolk (Martin and Murphy 1988) and Grimes Graves, Norfolk (Mercer 1981).

The limited evidence from Suffolk suggests that sites were located in the main river valleys or close to meres and on the lighter soils, particularly in the sandy Breckland (Bryant 1999). The best known LBA–Early Iron Age site in the area is that at West Harling, just across the border in Norfolk, although this was excavated 50 years ago (Clark and Fell 1953). The presence of cremation burials (either urned or unurned) at Game Farm is quite a rare occurrence for this period, although at least one has been documented nearby at Maidscross, Lakenheath (Needham 1995). Other examples from the region include a LBA cremation cemetery (with both urned and unurned deposits) from East Carleton, Norfolk (Wymer 1990). The dearth of LBA settlement and burial evidence in the vicinity of Brandon contrasts markedly with the large body of contemporary metalwork (both single finds and bronze hoards) that has been found in the region.

In their contribution to the East Anglian Research Framework, Brown and Murphy (1997) admit that much of our knowledge of later Bronze Age settlement sites comes from southern and central Essex, and that even here there has been a bias towards the excavation of enclosed, rather than unenclosed, settlements. Game Farm, by contrast, is an unenclosed settlement situated on the Norfolk/Suffolk border, one of the regions where there is little archaeological knowledge of domestic settlement. Background research for this site highlights the fact that archaeologists are often forced to restrict their studies to one or other side of the modern county boundaries (*e.g.* Ashwin 1996; Davies 1996; Healy 1996; Martin 1993). The Game Farm evidence may help to elucidate wider regional developments and patterns with respect to settlements and their social, spatial, economic and even ideological organisation. A number of significant research questions can be addressed, and some of these relate to regional research agendas (*e.g.* Ashwin 1996, 58–60):

1. reasons behind the choice of settlement location;
2. changes in settlement pattern through time;
3. nature of the economy;
4. settlement structure and distribution of domestic spaces and activity areas;
5. wider regional concerns in the Middle to Late Bronze Age: economy, ritual and settlement organisation;
6. spatial relationships between monuments and settlements, attempting to bring together an archaeology of the landscape;
7. changes in burial customs;
8. lithic, ceramic and metalwork typology.

II. Phase 1: Neolithic features and finds

Activity at this site goes back to at least the Neolithic period, if not to the Mesolithic. The few Neolithic features were located in the southern part of the site, on higher land away from the present fen edge. They were restricted to a complex of pits and a linear feature, which could be interpreted as a beam slot for a horizontal wooden sill-beam foundation. Charred oak heartwood and part of a possible bramble binding were recovered from the stepped slot in addition to sherds of Peterborough Ware; a radiocarbon range of 2190–1900 cal. BC (Beta-178454; 3660±50BP) indicates the Late Neolithic period. The structural evidence is insufficient to allow comparison with other known Neolithic buildings (Darvill 1996). However, significant quantities of Neolithic finds, particularly struck flint, were retrieved from the site.

Much of the struck flint assemblage, which includes fragments of axes, serrated sickle blades and scrapers, occurred residually in later features. However, its distribution across the whole site suggests that Neolithic activity was not limited to the area of the pits or the linear feature, but could have been both quite intense and widespread. The limited data suggests that it may have been linked to seasonal and/or industrial activities, and possibly occupation. The flint assemblage does indicate that some knapping occurred on site, and it is possible that other structural or occupation evidence associated with this period has been destroyed by the later Bronze Age activity.

The importance of the Breckland for the collection and mining of flint since the Neolithic period is well known. There is clear evidence that flint was being transported from the Breckland to Fen-edge sites in the region (Brown and Murphy 1997), although these extensive mining, quarrying and grubbing sites still require further analysis

within their wider context. The nearby extensive flint-mining complex of Grimes Graves was predominantly worked during the Late Neolithic period, as evidenced by radiocarbon dating and the presence of Grooved Ware, and the Early Bronze Age. The prehistoric periods represented at Game Farm attest to occupation before and possibly during and after the main period of activity at Grimes Graves. Although much of the Neolithic flint work was found residually in later features, one of the gullies that contained Peterborough ware also produced *in situ* evidence of knapping (*Worked flint*, p.34).

III. Phase 2: The later Bronze Age occupation

The occupation landscape
(Figs 30 and 31)
The majority of features were of M–LBA date. A small settlement was set within a complex and continually changing field system. At least four phases of M–LBA activity were identified, defined by ditches, enclosures and droveways that permitted the movement and control of stock. Four dispersed roundhouses were set within this agricultural landscape, and two of these yielded evidence for craft activities.

The picture of the landscape revealed during the excavation was, by its nature, fragmentary and incomplete. However, the features exposed can provide some information about the ways in which the inhabitants viewed their environment and moved around within it. The changing patterns in the division of space highlight elements of both continuity and change as successive generations re-ordered and restructured their worlds. Although the site may have been surrounded by ground-stabilising woodland areas, the lightness of the soil would have meant that regular maintenance of easily eroded ditches was necessary. The complexity of the palimpsest of new and re-cut ditches need not imply a particularly long period of occupation.

The earliest phase, Phase 2a, was represented by a series of ditches on an approximate north-to-south axis (Fig. 11). Two of these may have defined a droveway along which animals could have been led to the river, just to the north of the site. Two possible roundhouses, Structures 2 and 3, were also assigned to this phase. These pre-dated the construction of the ditches.

In Phase 2b, it would appear that many of the Phase 2a ditches were re-established along slightly different lines, but again generally following north-to-south axes. The ditches now defined a more open enclosed area. No recorded structures were associated with this phase: one of the Phase 2b ditches truncated Structure 2, signalling its abandonment.

Phase 2c was represented by a marked reorientation of the site (Fig. 10). Two meandering systems of field ditches were created, running east-to-west across the site and situated *c*. 30–35m apart. Both ditch complexes were very 'braided' and almost tendril-like in appearance as a result of a complicated sequence of re-cuts. Two possible roundhouses, Structures 1 and 4, were constructed during this phase. Both appeared to have been situated in the corners of opposite sides of the southerly ditch. These two structures may have been contemporary, although there was no obvious crossing point across the ditch to allow easy access between them.

In Phase 2d, the final phase of ditch-cutting activity, the boundaries were once again established upon predominantly north-to-south lines. One of the ditches slightly truncated Structure 1, indicating that it was no longer in use by this time. This phase may be associated with a sub-square enclosure in the northern part of the site. Although it contained no datable finds, its position and associated interrupted ditches may have respected the Phase 2d ditch alignments.

Although the field boundaries can be phased by examining the way in which they were dug and re-cut, such a neat chronological ordering may create an artificial impression of the real nature of the construction and maintenance of these enclosures. Some of the ditches had been subject to so much re-digging that it was difficult to distinguish between the original cuts and subsequent phases of activity. Furthermore, the available information is restricted to the small palimpsest of activity captured within the excavation area. The terminals of most of the ditches — those of Phases 2a and 2c in particular — lay beyond the limits of excavation. Undoubtedly, further ditches relating to all the phases were present in the immediate vicinity of the site. Knowledge of their relationship with those ditches exposed during this excavation would better define the nature of land division here. In spite of the impression given by the phase plans of predominantly north-to-south oriented boundary lines, with something of a change in emphasis in Phase 2c, the ditches probably formed components of a grid-like field system. What may have begun as broad linear droveways reaching down to the Little Ouse River became progressively more complex over time as more and more ditches criss-crossed the landscape. The landscape became divided up into a series of large fields, and, during two distinct phases, small roundhouses were incorporated into the corners of these enclosures.

This landscape of change was also a landscape of continuity. Some of the ditched boundaries would appear to have been more significant or durable than others, and we can evaluate this on the basis of the number of times they were re-cut. Two main lines were redefined especially heavily — one to the west (including ditch F1288) and one to the north (F1236). These may have been established from Phase 2b onwards. The southern east-to-west line (dominated by F1281) was also re-cut but to a lesser extent, while the eastern boundary appears to have been the least fixed. Rather than defining one main spatial zone, it shifted from the centre of the excavation area (F1206) further to the east (F1163/1168). The northern and western boundaries appear to have been of some significance to the inhabitants of the site — these lines did not fade away but were constantly renewed. The fact that the northern and western boundaries had a longer duration than the southern and eastern lines may suggest that they enclosed different use zones, some of which may have required more effective boundaries than others. Alternatively, these durable boundaries could be linked to ideas of increasing permanence within the landscape, and to the sculpting of territory.

Another aspect of the ditch-cutting activity may also be related to this new creation and moulding of place rather than space —the creation of a more fixed identity for communities within the landscape. None of the ditch lines are straight, although some (in particular F1136, F1138, F1163 and F1457) meander more than others. It is

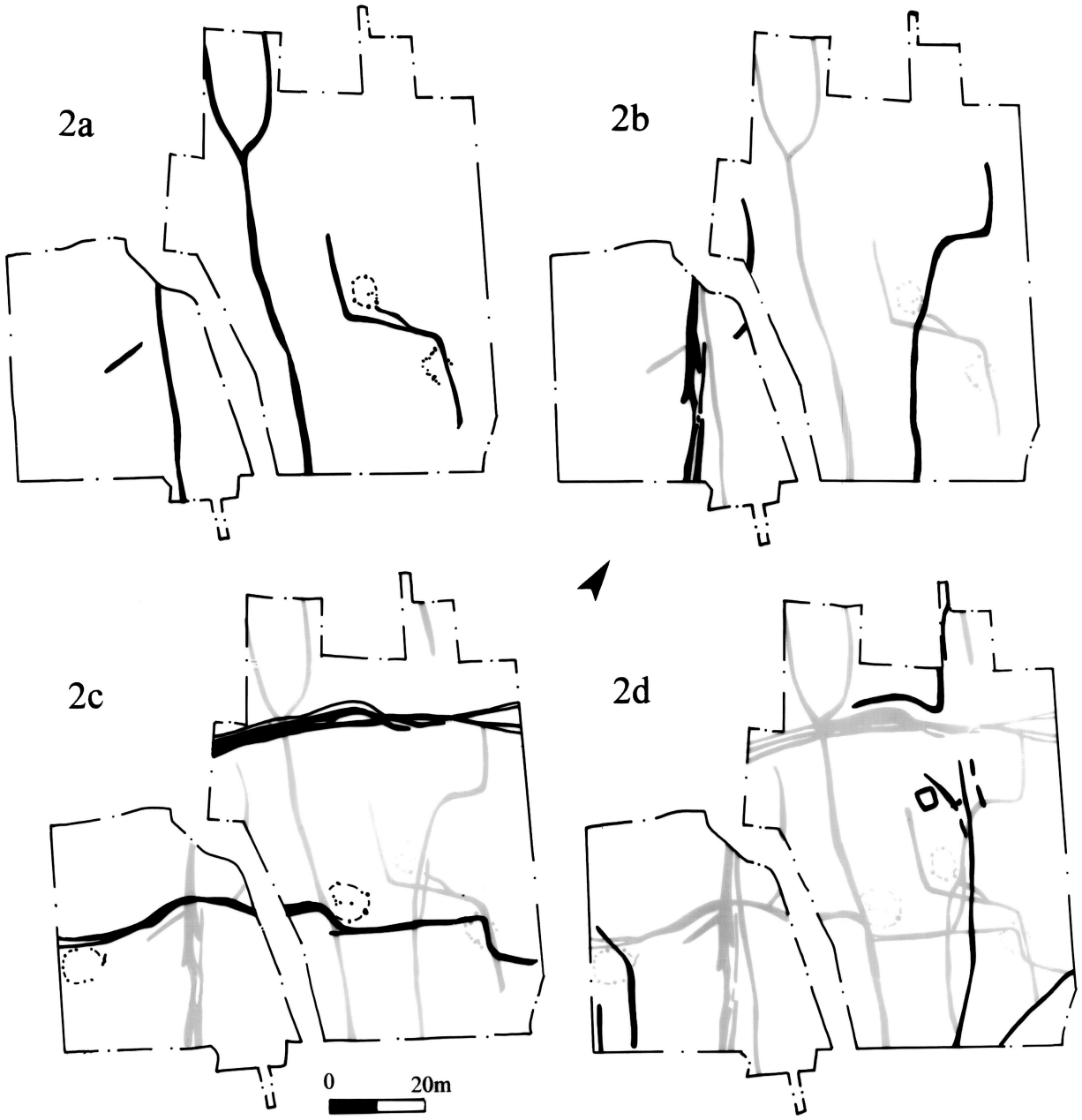


Figure 30 Phases 2a–2d: development of the Bronze Age settlement

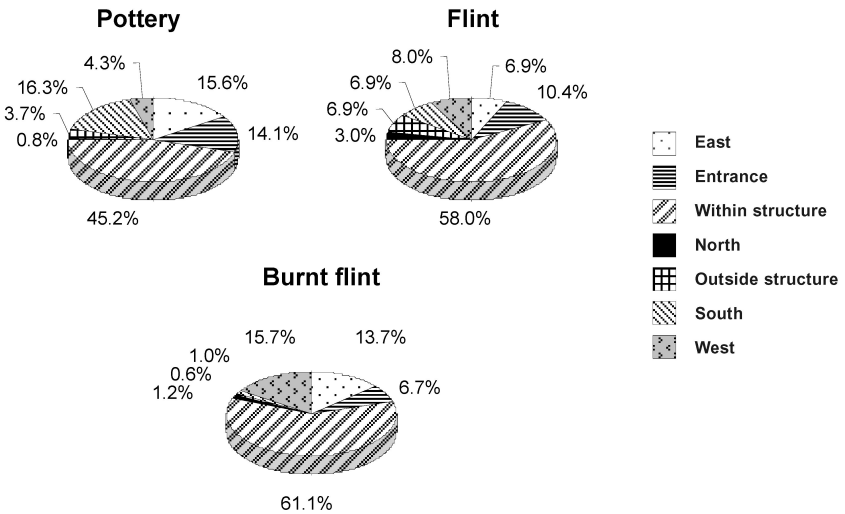


Figure 31 Orientations of the roundhouses and their finds distributions

precisely *where* these ditches bend that is interesting — they all change direction where they coincide with earlier structures. Although it could be argued that new lines of ditches were simply avoiding mounds of structural debris it is possible that they were deliberately respecting these roundhouses, arcing around them so that they would not be destroyed completely. These structures were residues of the past and may have had significance as (for example) the domain of the ancestors. The meandering ditch lines and the enclosures they created were inclusive, rather than exclusive, of earlier features. It is as if the past provided a framework for the future, with the new divisions respecting and being created upon and around earlier features.

Game Farm in relation to wider developments

The evidence from Game Farm can be viewed in the light of wider developments occurring in southern England during the Middle and Late Bronze Age. This allows for elaboration of some of the primary concerns of this period, particularly those relating to society, economy and ideology.

In much of central southern England, the end of the Early Bronze Age is marked by the appearance of archaeologically visible farmsteads and field systems, coupled with the disappearance of burials and monuments from the archaeological record. These changes have been interpreted as reflecting a transition from a landscape that revolved around ritual activities to one dominated by mundane economic concerns. The later Bronze Age has been interpreted as a time when more attention was given to agricultural, practical and technological matters (Drewett 1982; Fowler 1983).

In areas such as Kent and Essex, LBA field systems appear to have been organised around earlier alignments of barrows (Bradley 1978; Yates 1999), extending the sacred and ancestral dimension to embrace settlement and the wider landscape. In southern England, this period saw the emergence of more permanent settlements in association with field systems, pathways, paddocks, dykes, reaves and even 'ranch boundaries' in both upland and lowland locations. This was associated with the deposition of large quantities of bronze in strategic locations. This overt division of the landscape, and the increasing focus upon settlements and the ritual consumption of bronze, suggests a major transformation within society, not only in terms of physical, but also of socio-economic and ideological organisation.

Northern East Anglia differs from most of southern England, however, in that the LBA does not appear to have been distinguished by such an increase in settlement stability and the rise of prominent land-divisions, possibly due to poor archaeological visibility and the effects of more recent arable erosion. Nevertheless, there is evidence for dynamic later Bronze Age activity here, in the form of metalwork deposition and environmental change. It is possible that this region, in common with others, experienced a different later Bronze Age from the 'classic', allegedly de-ritualised Late Bronze Age characteristic of sites in southern England.

In recent decades, archaeologists have begun to question the reality of this apparent 'doing away with ritual' in the later Bronze Age, instead emphasising continuity and the synthesis of domestic and ritual activities (Bradley 1984; Barrett 1993, 1994; Brück 1995, 1999). The evidence from Game Farm seems to support these ideas. Although ritual monuments went out of use and the disposal of the dead took place in a far less conspicuous manner than before, other facets of the evidence point towards the centrality of ritual activity to LBA societies. Some elements of this may have been less obvious than the conspicuous construction of enormous tombs and ritual enclosures, but this more subtle character to ritual activity need not imply that it was any less important than before to the functioning of society.

The emergence of stable, divided agricultural landscapes in southern England in the later Bronze Age has been taken to reflect a need to intensify agricultural production (Barrett 1980, 90; 1993, 148; Bradley 1984, 94). However, the changing landscape may also have fostered and reflected the changing symbolic and ideological viewpoints of society. During this period there may have been an increased investment in the land, through new technological strategies such as plough agriculture, coupled with an increased emphasis upon maintaining soil fertility and productivity (Goody 1976; Barrett 1994). This longer-term investment could have meant that land become a more valuable resource. As a result, population groups may have become more sedentary with more permanent settlements, greater importance placed upon territory and, eventually, a more enclosed landscape. This appears to have been coupled with a heightened concern with both real and surrogate warfare, reflected by an increase in weapons and defensive structures and settlements (Harding 2000), and perhaps related to expressions of tension engendered by these new, more permanent landscapes.

In the Neolithic and the earlier Bronze Age, the only permanent fixed points for society, in spatial terms, were the monumental ritual complexes (standing stones, cursuses, megalithic burials, stone circles etc.). Since settlement was more fixed and predictable in later Bronze Age landscapes, it could now form the focus around which life revolved. More overt ritual components were no longer necessary. Barrett has argued that during the LBA and the Iron Age, 'it is as if the house and the settlement eventually replaced the cemetery as the physical manifestation of biographical continuity' (1994, 95–6).

At Game Farm, the roundhouses would have formed the focus of the settlement — this was where the inhabitants sheltered, slept, lived and worked. Although the overall plans of the structures were hard to define convincingly, this was because later ditches had partially destroyed related post-holes and pits. None of the buildings conformed to any of the well-known roundhouse types with double rings of post-holes and displaying axial symmetry. From the plans that could be determined, the structures averaged 5–6m in diameter. These dimensions compare well with roundhouses from other sites, including Mucking (3–5m in diameter: Jones and Bond 1988) and Springfield Lyons (5–7m in diameter: Buckley and Hedges 1988), both in Essex. Larger examples exist elsewhere, however: a structure from Lofts Farm, also in Essex, measured 11m x 10m (Brown 1988a, 258).

Despite fortuitous protection by wind-blown sand, the preservation of the roundhouses at Game Farm was not good. However, they still yielded large quantities of finds, both from the internal occupation layers or 'activity surfaces' and from the associated pits and post-holes.

Patterns were discernible within the deposition of material within the structures. Oswald (1997) has demonstrated that most Bronze Age roundhouses have a southerly (or south-easterly) orientation. Parker-Pearson (1996) has suggested that houses that face west rather than east might be deliberately associated with darkness, death and barrenness: a consistent minority of structures at Fengate (Pryor 1984) show this alternate orientation.

When they were plotted, the artefacts from the Game Farm structures did not fully reflect these patterns (Fig. 31). Although some of the larger potsherds came from pits and post-holes on the south and east sides of the structures (Figs 12 and 15), the greatest concentrations of material came from the north-east (Structure 2A), north (Structure 3), north-east (Structure 1) and west (Structure 4) sides. Although a post-hole in the possible southern doorway of Structure 1 contained large fragments of a semi-complete pot, the possible northern threshold gully also yielded comparatively large quantities of pottery as well as a human toe-bone. A south-eastern facing entrance area was tentatively identified in Structure 3 (Figs 12 and 13).

It is likely that some of the material was swept towards post-holes or pits during cleaning, so concentrations may reflect either the handedness of the cleaner (Fitzpatrick 1994) or the direction of the entranceway. However, it is likely that some material was ritually deposited, in particular the toe bone in the possible entrance gully and the cremated human remains in floor surface L1670. The large sherds of pottery do not appear to have been structurally functional, as they were not arranged as post-packing or in a drainage bed. They may have been deliberate incorporations, particularly where they were found in conjunction with human remains, or surviving in particularly large or contiguous fragments which would have been too large to have incorporated 'accidentally' within floor sweepings.

It is hardly surprising that some structured deposition may have taken within the roundhouses, as the domestic arena probably formed the centre of the social, economic and ideological domains of the M–LBA inhabitants. The idea that roundhouses were constructed on the basis of contemporary cosmological frameworks, describing the nature of the universe and the order of life within, it has been advocated by several archaeologists (Barrett 1994; Parker-Pearson and Richards 1994; Bradley 1998). It is possible that, through ritual offerings and structured events of consumption, deliberate attempts may have been made to ensure the success and continuity of the inhabitants' surrounding environment, upon which they depended . The apparent preoccupation with entrance areas may have been ideologically significant. Specific deposits in these areas could have been related to rites of liminality and zones of transition — points of danger, entry and exit, spaces charged with death and renewal.

This brings us on to the question of the lifespan of the settlement and the number of structures in use at any one time. Peter Reynolds has suggested a life span of *c*. 30–75 years for small roundhouses (Reynolds 1979). However, others have estimated a life span of only 25–30 years for small timber roundhouses (Drury 1978; Brück 1995). At Brandon, it is possible that the use-history of the structures was to some extent influenced by the elements, and by the harsh dust and sandstorms that may have engulfed the site — and perhaps even drowned it in sand — on a regular basis. Structures 2 and 3 were only in use during Phase 2a, while Structures 1 and 4 only functioned during Phase 2c. Given current estimates (Brück 1999; Drury 1978), it is unlikely that either of these phases was of a duration longer than 30 years. In sum, the four phases of activity on the site might have spanned only 100 years, or possibly even less, probably around the 14th and 15th centuries BC (*Radiocarbon dating*, p.51).

The excavation did not yield any evidence to indicate how these structures were decommissioned. They do not appear to have been dismantled, as there is evidence of posts rotting *in situ*. There is no stratigraphic evidence to suggest that they were physically 'closed' or buried (Nowakowski 2001), as the dark floor surfaces were compact, beaten layers constructed before the insertion of post-holes, rather than loose collapse or aerated fill piled up over or around a disused structure.

Often, LBA roundhouses are found together in paired associations, with one for living and another for specialist activities or storage. Although Structures 2 and 3 of Phase 2a are unlikely to be exactly contemporary the finds recovered from Structure 2 suggested general domestic activities, while those from Structure 3 suggested a possible workshop, linked with spinning, weaving and other craft activities (represented by a spindle whorl, loomweight and a worked antler tine). Evidence for textile manufacture also came from Structure 1 and this suggests that woollen cloth production, associated with sheep, may have been important at this site. Thus the settlement evidence, of which we only have a partial glimpse, suggests that the site may have been occupied by small households dispersed throughout a field system. Although environmental and faunal evidence is sparse, the inhabitants may have lived and worked in a predominantly pastoral environment.

The ditches: boundaries and transformation

While the roundhouses formed the focus of the settlement, it was the ditched enclosures that delimited the site. Other examples of later Bronze Age settlements set within field systems (*e.g.* South Lodge, Dorset: Barrett *et al*. 1991) tend to suggest that roundhouses were established within pre-existing field systems. At Game Farm the development may have occurred the other way round, with the construction of at least one of the Phase 2a structures being followed by the creation of the first elements of the field system.

These ditches moulded the form and character of the settlement, and created order within the space. The enclosures and their articulation with other features on the site may have helped to maintain the proper places for people, animals and objects. The ditches could have acted as barriers and have channelled movement and communication in particular directions. It is difficult to ascertain the routes of movement that they would have promoted or hindered, since the excavation area exposed few obvious openings or entrances within the ditch systems. However, in Phase 2c, ditch F1281 would certainly have impeded communication and access between the two contemporary roundhouses, since they were situated on opposite sides of the boundary that it marked. Most of the ditches were aligned north-to-south, and would have meant that more deviations were necessary during east-to-west travel across the site. The ditches created boundaries and may have maintained the separation of different zones and areas of activity.

The ditches were constantly being reworked, with some lines disappearing while others were maintained. However, the ditches were not substantial. On average they were *c*. 0.6m wide and 0.25m deep, with none more than 1.1m wide or 0.55m deep. They gave the impression of being only minor features, almost gullies. Such dimensions might be in keeping with the idea that they fulfilled as much a symbolic as a functional role, an argument that has been made for a number of Iron Age enclosures (*e.g.* Bowden and McOmish 1987). We should not, of course, exclude the possible presence of physical features such as hedges and banks that would not necessarily have left any trace (Chowne 1979).

Most of the ditch profiles do not give the impression that they had degraded or slumped, which may suggest that the ditches were only open for short periods of time. While they may have been deliberately backfilled, it is more likely that they were repeatedly filled by sand-blow, and then perhaps re-cut along similar lines. As time elapsed the area, shape and form of the enclosures changed, but the action of enclosing space appears to have remained important. Possibly the re-cutting of the ditches was even bound up with the cyclical time rhythms of the settlement, events that concurred with the changing of the seasons, or rites of passage, such as the birth or death of members of the community.

The ditches were markedly devoid of finds, except for sections that cut through earlier roundhouses, and there was no evidence of specific deposits being placed within their fills. However, specific deposits, particularly cremations, did appear to exhibit spatial associations with the ditches and may have held structured and symbolic relationships with them, discussed below. Such special deposits located along routes and boundaries may have reaffirmed the contested or ambiguous nature of some of these land divisions.

Undoubtedly, the ditches also fulfilled practical functions, and would probably have been used for the control and movement of animals. Although the acidic soil has destroyed any faunal evidence that once existed, the design of the site suggests stock-keeping. The layout could be interpreted as that of a pastoral landscape, with long droveways directed to the water's edge and fields or enclosures broken up into paddocks, possibly to segregate livestock and control grazing animals.

The presence of on-site wells has been used elsewhere as evidence of pastoral farming, as at Loft's Farm, Essex (Brown 1988a, 294). Although no wells were present at Game Farm, the settlement was located close to the River Little Ouse, which would have provided water for the animals. Yates (1999) has proposed that pastoralism was highly relevant to the communities using the later Bronze Age field systems along the valleys of the upper and middle Thames. The networks of enclosures at Game Farm, as at other sites, may have played a part in a system of rotating grazing areas. They might, on the other hand, reflect the dynamic nature of land tenure, with changing boundaries reflecting negotiated and contested ownership. It is therefore possible that the complicated sequence of ditch construction and re-cutting reflects not only practical concerns and perhaps patterns of inheritance or land division, but also political and symbolic considerations.

At Fengate, a rather elaborate set of field systems had been used to manage stock through droving, batching, confining, inspecting and sorting animals (Pryor 1998a, 98). It did not prove possible to detect any such elements at Game Farm. However, it was interesting that some roundhouses were situated in the corners of the ditched enclosures. There was no evidence for any specific divisions between the putative animal paddocks and the areas of human occupation. One might imagine that the animals could thus potentially 'wreak havoc' across the site. Pryor (1998a) has argued, however, that cattle were organised on a more communal basis than sheep. Since they were simpler to manage, the layout of the site at Game Farm may suggest that cattle, rather than sheep, were the mainstay of the economy here. However, the presence of spindle whorls and a loomweight suggests that sheep may also have been kept, perhaps for their wool and milk.

Archaeologists have frequently argued that the agricultural cycle of sowing crops and reaping harvest served as a metaphor for structuring life in the later Bronze Age (Barrett 1989; Williams 1999). However, there is little evidence for arable production, storage and consumption here, and the settlement's economy may not have revolved around plants but animals. In this context, the role of animals may have structured the lives of the inhabitants, but in a different way to those of people living within a predominantly arable-based economy. Rather than using the physical remains or the memory of ancestors to guarantee regeneration and increased fertility of the land, they may have used livestock to negotiate rights to larger tracts of territory for pasture. Animal-based economies and meat-eating were closely linked to feasting. Perhaps feasting events brought the wider community together and encouraged group interaction and social cohesion. Livestock may have been used as a vehicle to 'bank' agricultural surpluses. Yates (1999) has suggested that an increasing reliance on pastoral economies in the later Bronze Age may have provided communities with a form of indirect social storage that could provide a buffer against poor farming years, as well as being employed in social exchange. Such interaction could have involved the gift exchange of metalwork in return. Possibly this might help to explain the intense consumption of bronze weapons and tools in the immediate vicinity of Brandon.

Deposition of the dead

It was not only the roundhouses that contained structured deposits of an undoubtedly ritual nature. Other specific types of careful deposition were noted on site and these involved the use of human remains as a symbolic resource, a practice that has been noted at Late Bronze Age sites including Runnymede Bridge, Surrey (Needham 1992) and Hornchurch, Essex (Guttmann and Last 2000). A number of cremations and possible ritual deposits of burnt bone were identified within the settlement, so it is worth considering how the dead and the living might have interacted with each other. During the later Bronze Age, human remains were rarely deposited as 'normal' burials *per se* — in fact whole burials are virtually absent from the archaeological record (Brück 1995). Instead, selected parts of the human body, burnt or unburnt, may have been used and displayed by the living, and then sometimes placed in specific deposits within settlements. A complete modern adult cremation weighs about 3000g. Usually, not all the remains from a cremation are included in a later

Bronze Age cremation deposit, however, and on average such a burial will weigh only *c.* 800g. None of the unurned cremations from Game Farm weighed more than 100g, making clear that the collection process was highly selective.

Cremation F1350 did not exhibit any obvious relationships with particular spaces or structures, but was located between two major linear divisions of different periods — the Phase 2a ditches of F1279 and the major Phase 2c ditch F1288, with its complex series of re-cuts. This is an important location and it may be that this burnt body metaphorically symbolised the transition from life to death and decay. This location could have reinforced the ditched boundaries, and may have been appropriate to a liminal zone between different physical and symbolic spaces. Cremation pit F1509, situated 35–40m further to the east, might have complemented the location of F1350, lying in the space between enclosure ditches of different phases.

The fact that the third pit cremation, F1470, had been cut by the terminus of ditch F1494 might indicate that this location, too, was significant. Furthermore, this ditch may possibly have been associated with the sub-square enclosure F1478 (p.25). A number of similar enclosures excavated in Norfolk, like F1478, rarely produced finds or evidence for associated features or access causeways. These have been tentatively dated to the Iron Age, and it has been suggested that the absence of finds or other activity evidence points to their funerary or ritual use (Ashwin and Flitcroft 1999; Ashwin and Bates 2000, 137–8). The deposit of human bone lay close to a possible access route to this enclosure (Fig. 20), which may have been partially 'enclosed' to some extent by up to three sets of linear boundaries, F1474, F1037 and F1494 — the cremation was situated at the putative access point across the third of these. Brück's analyses (1995, 1999) of the symbolic deposition of human remains in the later Bronze Age has noted that they are frequently associated with points of access and articulation within settlements. She suggested that the disposal of the dead in these liminal contexts was a metaphor for such states of transition, as seen in excarnation and decomposition processes. Thus, the body symbolised these 'transitional' qualities through its transformation from flesh to bones, and carefully sited deposits provided a metaphor for social, moral or other types of transition, such as cycles of change and renewal.

The three possible token cremation deposits from Brandon may also have been deposited in meaningful locations, as has been seen elsewhere. At Runnymede, skulls were found in pits at the entrance to the site (Needham and Spence 1996). Placing parts of the family ancestors in specific spots may not only have marked out boundary transitions, and thus symbolised liminal states, but also have reinforced community identity. An unusual urned cremation burial from a small LBA cemetery at Shouldham, Norfolk (Wells 1976) contained the remains of at least five individuals (at least three juveniles and two adults). The bodies had been differentially burnt; this suggests that they had been cremated on separate pyres, possibly over a long period of time. The practice of depositing multiple cremations may confirm suggestions that this reinforced ancestral and community identity. The remains of several individuals might have been collected in a vessel and kept in a house, and perhaps occasionally handled, before eventually being interred.

While the human bone from the unurned pit cremations at Game Farm was well-ground-up and fragmented, that from the token cremation deposits tended to be composed of much larger pieces. These included some rather large fragments from a small pit, F1484, which was originally interpreted as a hearth dump. Not only did the feature contain large pieces of burnt bone on its south side, but a complete inverted pot base lay on the opposite edge of the pit. This feature was somewhat isolated and exhibited no direct association with any nearby features (other than with pit F1486, which it cut), although its position between two other cremation deposits, F1350 and F1509, might be significant. Other possible token cremation deposits came from the northern terminal of Phase 2d ditch F1037, from the fill of pit F1080, from the occupation floor L1670 of Structure 1 and from gully 1709, the possible north-eastern threshold of Structure 1. The deposit from ditch F1037, like the cremation from pit F1470, might also have been associated with demarcating access routes to the sub-square enclosure.

Possible examples of carefully-sited deposits of human bone have been noted at other sites. At a LBA farmstead site at Thorley (Herts), Last has suggested that the dead (bodies) and potsherds (broken vessels) played analogous roles in different contexts (Last and McDonald forthcoming). Here, burials were frequently found close to areas of grain storage, represented by features such as pits and four-post structures, and may have had a role as guarantors of agricultural fertility. At Game Farm, both the unurned pit cremations and the possible token cremation deposits may have had a similar relevance to the functioning of the settlement, but may have performed different roles. Here though, the metaphor was not necessarily structured around 'sowing the seeds of the ancestors' to re-fertilise the ground (Brück 1995, 2001), since the site appears to have been devoted to pastoral rather than arable farming. However, the location of the dead in possibly significant locations around the site may have evoked memories of the past, helping the inhabitants to make sense of their new world, and, through their ancestors, to legitimise new rights to access and territory within the landscape.

By viewing the Game Farm settlement in its regional context, it is possible to elaborate upon this idea, and to consider its role in the creation of new territories through respecting and legitimising current or previous rights to the old. The impressive Neolithic and earlier Bronze Age flint mines of Grimes Graves lie only 3.5km to the north of the settlement. The mine shafts here had extensively altered the landscape, and 'culturalised' it with deep depressions, pits and high mounds. Although the mine had fallen out of use by the later Bronze Age, it could have acted as an important reference marker to the inhabitants of the area. Along with other local communities, the population of the settlement at Game Farm would probably have known about this site, and perhaps even have established their own settlement in the context of some kind of perceived relationship with it.

IV. Final conclusions: drawing lines in the sand

In the later Bronze Age, people ceased to construct large monuments, although many were still used for burial and remained prominent in the landscape. The era has sometimes been interpreted as a time when more concern was given to agrarian, mundane and practical matters, rather than ritual activities. However, the appearance of farmsteads and field systems need not have negated the centrality of ritual activity to these societies — indeed, this was a period that saw the complex and structured consumption of metalwork in a variety of possibly ritual contexts (Bradley 1990). It would appear that settlements such as Game Farm replaced henge and barrow sites as loci for material and ideological investment. There was a movement towards more fixed settlement locales during this time; as well as by physical features, the settlement and field boundaries with which they were associated were demarcated by specific deposits of material culture and human remains.

The evolution of the M–LBA settlement and field systems at Game Farm should not be studied in isolation. They must be understood within a view of the wider landscape that considers the consumption of bronze, the disposal of the dead and the creation of new forms of identity. No direct evidence for metalworking was identified, with the exception of a small casting jet. However, it is possible that the inhabitants and their neighbours were involved in the large-scale structured consumption of bronze tools and weapons nearby, such as the warped Carp's Tongue swords in the vicinity of the site. Until now, there has been little settlement and burial evidence that might tie in with the deposition of these bronzes in the Little Ouse.

It is possible that these deposits of bronzes, marking out strategic points of entry or exit in the landscape, may have been made in order to demarcate settlement boundaries or territories. Natural features such as rivers, and their crossing points, may have represented liminal or transitional zones that had to be negotiated. To some extent the landscape around Game Farm may have been 'created' and defined by metal deposition. At other sites such as Flag Fen, Peterborough (Pryor *et al.* 1986), very striking patterns of metal consumption were associated with watery places, and many weapons were ritually 'killed' or sacrificed through deliberate warping before they entered the river.

The many changes that occur in the later Bronze Age, seen in the archaeological evidence for the settlement pattern, economy, disposal of the dead, ideology and increased bronze deposition, can best be explained by linking these various developments together. It is through understanding possible relationships between settlement and burial practices that we can begin to appreciate the changing relationships between later Bronze Age societies and how their landscapes became increasingly 'culturalised'.

During the later Bronze Age, the development of new land divisions changed the morphology of the landscape. Control over land and territory may have become increasingly relevant to these societies (Bradley *et al*. 1980, 65; Ellison 1980). The creation of field enclosures may have served to emphasise the differentiation between 'inside' cultured space and the world outside: perhaps land became private property for the first time (Thomas 1998, 9). Although this was partly a result of economic and social concerns, including climatic deterioration and increased pressure on land and resources, it may also reflect symbolic and ideological factors. Bradley has argued (1998) that the creation of a more enduring and permanent sense of time and space through defined ditches and enclosures enabled communities to adapt to the rigours of a sedentary and ideologically different existence. It may be possible to discern ritual practices by analysing the overall settlement layout of the site at Game Farm. Rather than being randomly placed, the houses, pits, deposits, cremations and ditches may all have had intrinsically meaningful locations.

Further archaeological survey and excavation work in this area may provide more evidence regarding the changing layout of landscape divisions and settlements in this period, shedding light on the finely balanced environmental and cultural relationships in this marginal area. However, such evidence is particularly vulnerable. Although the dominance of acid soils resulted in the particularly poor survival of environmental evidence at Game Farm, archaeological remains had been protected from damage by recent cultivation by a blanket of blown sand. Few sites are so fortuitously protected. Heavy arable exploitation and the depredations of rabbits continue to threaten many archaeologically fragile areas of East Anglia.

At Game Farm the ditches — like the roundhouses, the settlement itself and the people who inhabited it — were subject to cycles of decline, decay, reproduction or renewal. Ditches were repaired or re-cut over time, but at this site these universal cycles may have been accelerated by the forces of nature and the results of periodic abrasive sandstorms. Perhaps the inhabitants of the site structured their daily lives and routines, as well as their cosmological perceptions, around the surrounding natural world. Each time the site was buried in sand, the inhabitants made a commitment not to abandon the place and move on elsewhere. This place was important to them. New landscapes were moulded, but each refashioning showed respect for earlier patterns. Like lines drawn in the sand, the ditched landscape — and therefore the settlement itself — was relatively ephemeral and transient, and it was only consistent effort on the part of the inhabitants that stopped it from fading away.

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