EAST ANGLIAN ARCHAEOLOGY

Frontispiece:
Middle Bronze Age cremation burials *5137* and *5141*, looking north

Neolithic and Bronze Age Monuments and Middle Iron Age Settlement at Lodge Farm, St Osyth, Essex: Excavations 2000–3

by Mark Germany

with contributions from
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Cover illustration:
Early Neolithic causewayed enclosure ditch *13922*, looking south
Photo: Mark Germany

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The project was monitored by Pat Connell of the Essex County Council Historic Environment Management team, and Sarah May of English Heritage. The fieldwork was managed in turn by Philip Clarke, Hester Cooper-Reade and Owen Bedwin. The post-excavation analysis and reporting was carried out Mark Germany and was managed by Patrick Allen. The fieldwork was supervised by Mark Germany with the assistance of Jeremy Mordue. The following site assistants spent more than six months on site: Tony Blowers, David Budd, Holly Champion, Anthony Clifton-Jones, Richard Coe, Elizabeth Davis, Gareth Dean, Simon Dobinson, Chris Down, Laurie Driver, Stuart Gibson, John Hewitt, Sue Johnson, Tom Lyons, Tony Rogers, Ian Scrivener-Lindley, Dave Smith, Adrian Turner, Alec Wade, Peter Watkins and Leomie Willoughby-Ellis. The site survey data was located within the Ordnance Survey grid by Rachel Clarke. The finds were processed by Phil McMichael and catalogued by Ros Tyrrell. The cremation urns were cleared of their contents by Holly Champion. The data inputting was by Michael Elliot.

The plans and diagrams were drawn by Andrew Lewsey. The finds illustrations are by Iain Bell of Essex County Council Historic Environment Branch. Figures 42 and 43 are by Hazel Martingell. The published photographs were taken by Mark Germany, Jeremy Mordue and Adrian Turner.

Summary

An archaeological excavation was carried out in advance of gravel extraction at Lodge Farm, St Osyth, in the Tendring peninsula of north-east Essex. The excavation discovered a sequence of prehistoric monuments, including an Early Neolithic causewayed enclosure, an Early Bronze Age pond barrow and a Middle Bronze Age barrow group. Cropmarks indicate an Early Neolithic cursus monument to the south of the causewayed enclosure.

The site lies on a low spur of land, approximately 3km north of the sea and 5km east of the estuaries of Brightlingsea Creek and the river Colne. St Osyth Creek, a tributary of Brightlingsea Creek, runs along the north side of the spur.

The causewayed enclosure was bounded by up to three lines of concentric interrupted ditches; more than 100 Early Neolithic pits lay within its interior. Large groups of worked flint and pottery occurred more frequently in the pits than in the interrupted ditches. Radiocarbon dates indicated that the activity indicated by the pits was short-lived (perhaps with a duration as short as forty years) and took place in the mid-4th millennium BC. Pieces of Beaker and Grooved Ware in some of the latest deposits inside the interrupted ditches implied that some parts of the monument at least had still been visible during the Late Neolithic period.

The pond barrow lay within the causewayed enclosure and was a focal point for funerary and ritual activity. Near the outside edge of the feature were two cremation burials in Collared Urns, and a small Collared Urn in a large pit. Scorched ground and a scorched cremation burial pit inside the monument suggested that it had been used as a site for a pyre. The monument also contained two post-holes, one of which had been scorched by fire and contained the remains of a carbonised post. Radiocarbon dates showed that the pond barrow had been in use in the first half of the second millennium BC. The discovery of the pond barrow was particularly interesting because few have been found outside Wessex and the upper Thames valley.

The pond barrow was reused as a focal point for ritual activity, after a hiatus of *c*. 200 years. Cut into the uppermost recorded deposit were two certain and two probable Middle Bronze Age pits containing pottery vessels. Twenty-two ring-ditches representing barrows associated with the Ardleigh Group tradition formed an arc to the south and east of the pond barrow. The ring-ditches were associated with small pits containing cremated bone and Bucket Urns.

Rectilinear enclosures and trackways were laid out across the site in the Middle Iron Age. At some point during that period, an extensive settlement on a T-junction of ditched trackways developed across the earlier enclosures. The settlement contained nineteen round-houses and a minimum of sixteen post-built structures.

Résumé

Des fouilles archéologiques ont été entreprises avant l'extraction de gravier à Lodge Farm, dans la ville de St Osyth, qui se situe dans la péninsule de Tendring au nord-est de l'Essex. Ces fouilles ont permis de découvrir un ensemble de monuments préhistoriques comprenant une enceinte «causewayed», un tumulus funéraire du début de l'âge du bronze ainsi qu'un ensemble de tumulus de l'âge du bronze moyen. Des repères de cultures indiquent un monument de type cursus du début du néolithique au sud de l'enceinte «causewayed».

Le site est situé sur un éperon de terre peu élevé à environ 3km au nord de la mer et à 5km des estuaires de la Brightlingsea Creek et de la rivière Colne. St Osyth Creek, qui est un affluent de la Brightlingsea Creek, s'écoule au nord de l'éperon.

L'enceinte «causewayed» était entourée au maximum par trois rangées concentriques de fossés au tracé brisé. On a dénombré dans cet espace plus de cent fosses remontant au début du néolithique. On a plus souvent trouvé la trace de silex travaillés et de poterie dans les fosses que dans les fossés au tracé brisé. Les datations au carbone 14 ont révélé que les activités menées dans les fosses ont été de courte durée (sans doute pas plus de quarante ans) et se sont déroulées au milieu du quatrième millénaire avant notre ère. Des fragments de poterie Beaker et de Grooved Ware trouvés dans certains des dépôts les plus récents à l'intérieur des fossés au tracé brisé impliquaient que le monument était resté visible, au moins en partie, pendant le néolithique tardif.

Le tumulus funéraire était situé dans l'enceinte «causewayed» et représentait un point essentiel de l'activité funéraire et rituelle. Sur le bord externe du tumulus, on a trouvé la trace de deux inhumations avec crémation dans des urnes à col. On a également dégagé une petite urne à col dans une grande fosse. En outre, il semble que le monument a servi de site pour un bûcher funéraire car on y a trouvé plusieurs traces de terre brûlée, en particulier dans une fosse d'inhumation avec crémation. Le monument contenait également deux trous de poteaux, dont l'un présentait des traces de brûlure ainsi que les restes d'un poteau carbonisé. Les datations au carbone 14 ont montré que le tumulus funéraire avait été en usage dans la première moitié du deuxième millénaire avant notre ère. La découverte du tumulus funéraire fut particulièrement intéressante parce qu'on en a trouvé un nombre limité en dehors du Wessex et de l'upper Thames valley.

Après une interruption d'environ 200 ans, ce tumulus funéraire redevint un point privilégié de l'activité rituelle. On a ainsi dégagé dans la partie supérieure du dépôt qui a fait l'objet de fouilles deux fosses incontestables de l'âge du bronze moyen et deux autres fosses probablement de la même période qui contenaient des récipients en poterie. Vingt-deux fossés circulaires contenus dans des tumulus associés à la tradition du Ardleigh Group dessinaient un

arc allant du sud vers l'est. Les fossés circulaires étaient liés à de petites fosses contenant des os réduits en cendres et des vases funéraires.

Des enceintes rectilignes et des chaussées furent construites dans le site à l'âge du fer moyen. Pendant cette période, une implantation importante s'est établie dans les anciennes enceintes à l'intersection de chaussées bordées par des fossés. Cette implantation contenait dix-neuf maisons circulaires et au minimum seize structures construites sur des poteaux.

(Traduction: Didier Don)

Zusammenfassung

Bei Lodge Farn, St Osyth, auf der Halbinsel Tendring in Nordost-Essex wurde im Vorfeld eines Kiesabbaus eine archäologische Grabung durchgeführt. Bei dieser Grabung wurde eine Sequenz prähistorischer Monumente entdeckt, darunter ein frühneolithisches Erdwerk, ein eingetiefter Grabhügel aus der frühen Bronzezeit und eine Grabhügelgruppe aus der mittleren Bronzezeit. Bewuchsmerkmale weisen auf ein frühneolithisches Cursus-Monument südlich des Erdwerks hin.

Der Fundort liegt auf einem niedrigen Landausläufer, etwa 3km nördlich vom Meer und 5km östlich der Mündungen des Brightlingsea Creek und des Flusses Colne. St Osyth Creek, ein Nebenfluss des Brightlingsea Creek, fließt an der Nordseite des Ausläufers entlang.

Das Erdwerk war von bis zu drei Reihen unterbrochener konzentrischer Gräben umgeben, die mehr als hundert frühneolithische Gruben umschlossen. Größere Komplexe aus Feuersteinabschlägen und Tongegenständen waren häufiger in den Gruben als in den unterbrochenen Gräben zu finden. Radiokarbon- messungen deuten darauf hin, dass die durch die Gruben angezeigte Aktivität nicht von großer Dauer war (womöglich nicht länger als vierzig Jahre) und in der Mitte des 4. Jahrtausends v. Chr. stattfand. Bruchstücke von Glockenbecher- und Rillenkeramik in einigen der jüngsten Ablagerungsschichten innerhalb der unterbrochenen Gräben lassen darauf schließen, dass zumindest Teile des Monuments noch im Endneolithikum sichtbar waren.

Der eingetiefte Grabhügel lag innerhalb des Erdwerks. Er diente als Mittelpunkt für Begräbnis- und rituelle Handlungen. Nicht weit vom äußeren Rand dieser Struktur wurden zwei Leichenbrände in Kragenurnen und eine kleine Kragenurne in einer großen Grube gefunden. Verkohlte Erde und eine Leichenbrandgrube mit Brandspuren im Innern des Monuments deuten darauf hin, dass die Stätte als Scheiterhaufen verwendet wurde. Das Monument wies auch zwei Pfostenlöcher auf. Eins davon zeigte Brandspuren und enthielt Reste eines verkohlten Pfostens. Mittels Radiokarbonmessung wurde ermittelt, dass der eingetiefte Grabhügel in der ersten Hälfte des 2. Jahrtausends v. Chr. in Gebrauch war. Die Entdeckung des eingetieften Grabhügels erwies sich als besonders interessant, da bisher nur wenige solcher Strukturen außerhalb von Wessex und dem oberen Themsetal gefunden wurden.

Nach etwa zweihundertjähriger Unterbrechung stand der eingetiefte Grabhügel erneut im Mittelpunkt ritueller Handlungen. In die oberste verzeichnete Fundschicht waren zwei definitive und zwei mutmaßliche Gruben aus der mittleren Bronzezeit eingelassen, die Tongefäße enthielten. Zweiundzwanzig Ringgräben um Grabhügel, die der Tradition der Ardleigh-Gruppe zugeordnet wurden, bildeten einen Bogen in Richtung Süden und Osten. Den Ringgräben konnten kleine Gruben mit Brandknochen und kübelförmigen Urnen zugeordnet werden.

In der mittleren Eisenzeit wurden auf dem Gelände geradlinige Einhegungen und Wege angelegt. Irgendwann während dieser Zeit entstand eine ausgedehnte Siedlung an zwei T-förmig aufeinandertreffenden Wegen, die die früheren Einhegungen überlagerte. Die Siedlung bestand aus neunzehn Rund- und mindestens sechzehn Pfostenhäusern.

(Übersetzung: Gerlinde Krug)

1. Introduction

I. Introduction

(Fig. 1)

Essex County Council Field Archaeology Unit (ECC FAU) carried out the excavation of a large multi-period site at Lodge Farm, St Osyth from May to November 2000 and from August 2001 to February 2003 (Figs 1 and 2). The work was undertaken in advance of gravel extraction and the construction of an agricultural reservoir. It was funded by Sewells Reservoir Construction Limited, Essex County Council, and English Heritage via the Aggregates Levy Sustainability Fund. Essex County Council Historic Environment Management (ECC HEM) monitored the work. ECC HEM were joined by English Heritage in monitoring the excavation of the east third of the site, and the post-excavation work. Colchester Museum holds the site archive (Site code STOLF 00).

The excavation was preceded in October 1998 by an archaeological evaluation, which was monitored by ECC HEM and was undertaken in accordance with an archaeological brief. Sewells Reservoir Construction Limited funded the work, which was split into two parts. The first part, an assessment of the cropmark evidence, was carried out by Air Photo Services (APS). It discerned a major confluence of trackways and boundaries, probably associated with Iron Age or Romano-British settlement, but failed to identify the Neolithic causewayed enclosure, as had the National Mapping Programme (Cox and Palmer 1998). The second part of the evaluation, the excavation of ten trial trenches to investigate some of the cropmarks previously identified by APS, was undertaken by Archaeological Solutions (formerly Hertfordshire Archaeological Trust). It discovered Middle Iron Age features and finds, and a small amount

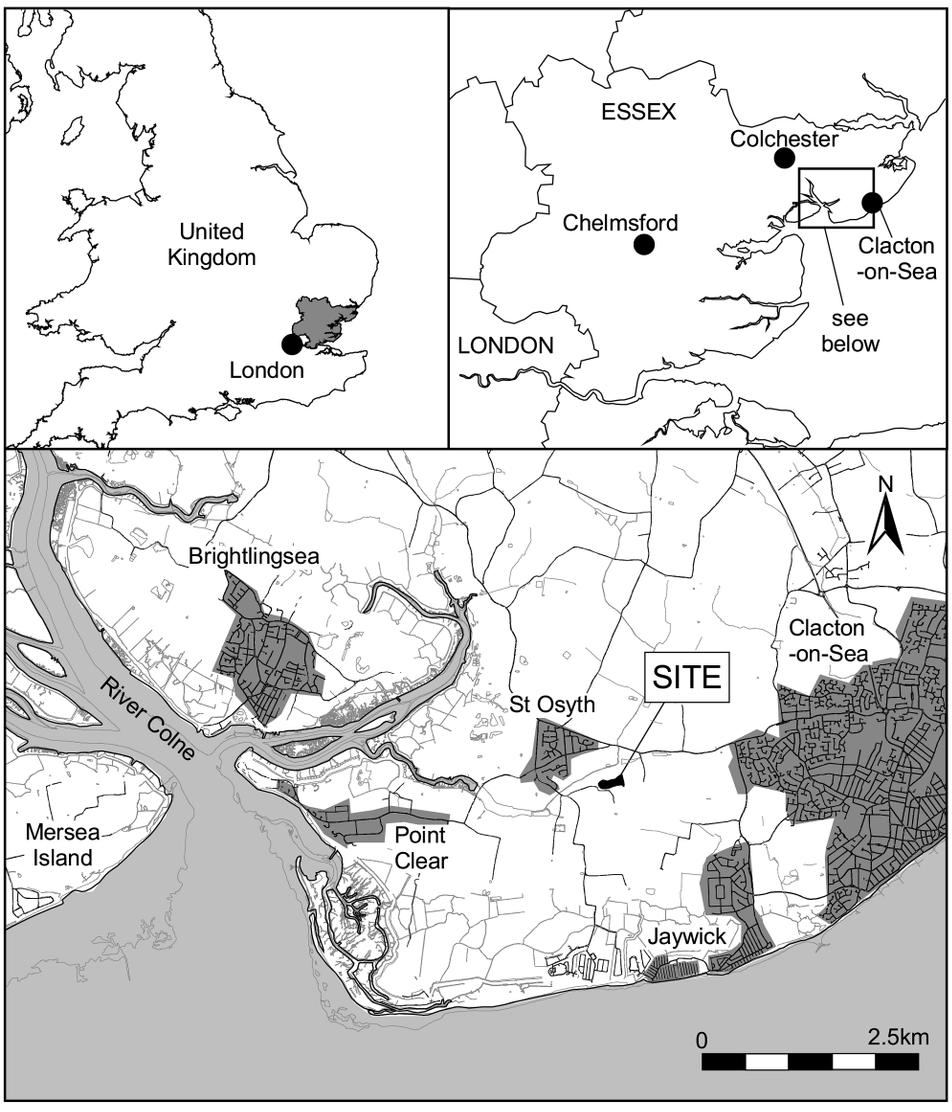


Figure 1 Location of St Osyth within the UK and Essex

of worked flint that was not closely datable (Murray and McDonald 1998).

The main discoveries of the excavation were an Early Neolithic causewayed enclosure, an Early Bronze Age pond barrow, a Middle Bronze Age barrow group, a Middle Iron Age settlement, Late Iron Age and Roman ditches, Early Saxon pits, and a 13th-century croft. The discoveries of the causewayed enclosure and of the pond barrow were both surprises, because the preceding evaluation had failed to detect them. The post-Middle Iron Age evidence from the site is to be published separately in *Essex Archaeology and History* (Germany in prep.); a summary of this body of evidence can be found in section VII, below. A more detailed account of the local cropmark evidence, which includes a possible henge and cursus (Fig. 5, A and B), is presented in section IV below.

II. Archaeological background

There is little direct evidence for Neolithic or Early/Middle Bronze Age settlement in north-east Essex. Investigations along the foreshore at Dovercourt, Walton-on-the-Naze and Clacton have found Neolithic hearths, pits with burnt flint and charcoal, and concentrations of Neolithic flint and pottery (Warren *et al*. 1936; Wilkinson and Murphy 1995). A possible Neolithic building, pits, well and enclosure, and a Bronze Age post-built structure have been investigated near Maldon in the Lower Blackwater Valley (Wallis and Waughman 1998). Deposits and pits containing Late Neolithic/Early Bronze Age finds have been recorded at Culver Street in Colchester (Crummy 1992).

Elsewhere in north-east Essex, putative Neolithic and Bronze Age monuments are prominent in the cropmark evidence. Large ring-ditches occur at Little Bentley, Great Bentley, Little Bromley and Great Wigborough. Previously regarded as possible henges, two of these four — Little Bentley and Great Bentley — are now known

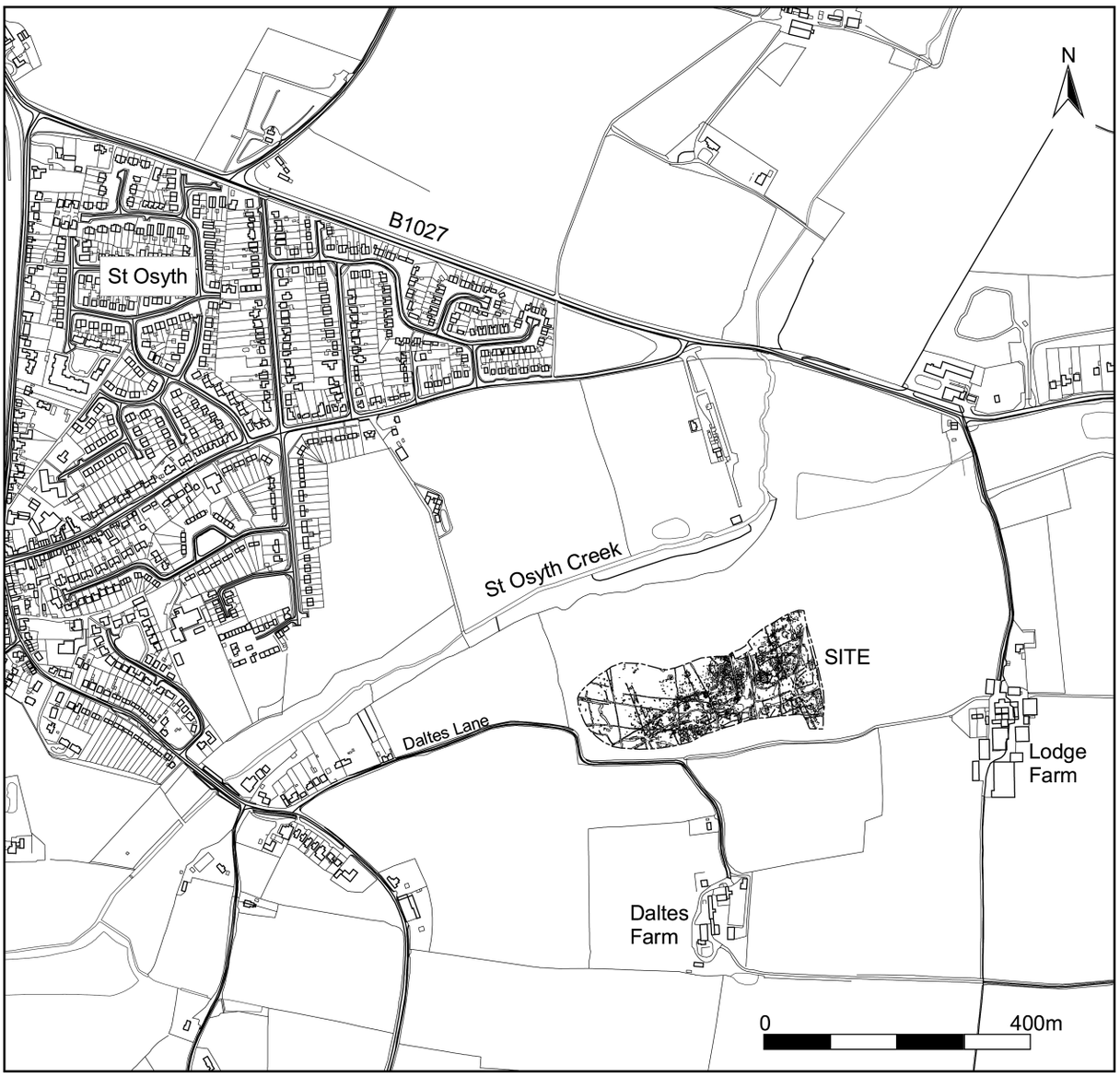


Figure 2 Location of Lodge Farm excavation area

to be medieval windmills (Brown and Germany 2002). While the ring-ditch at Great Wigborough is scheduled as a henge, the information obtained from Great Bentley and Little Bentley suggests that it is more likely to be another medieval windmill. A hengiform monument has been archaeologically investigated at Brightlingsea (Clarke and Lavender forthcoming).

Groups of ring-ditches and other prehistoric monuments have been recorded along both sides of the Stour Valley (Brown, Knopp and Strachan 2003). Monument groups elsewhere in Suffolk and Essex include a probable Neolithic concentric-ditched monument alongside a long barrow or mortuary enclosure at Rivenhall (Buckley *et al*. 1988; Brown and Germany 2002), and a causewayed enclosure in conjunction with a cursus monument at Springfield Lyons (Priddy 1988; Gilman 1989; Buckley *et al*. 2001). Ring-ditches and a possible long barrow occur at Dedham, and ring-ditches and a possible concentric Neolithic monument at Lawford (Brown, Knopp and Strachan 2003). A causewayed enclosure is present at Orsett (Hedges and Buckley 1978), and causewayed enclosures lie close to the Essex border at Sawbridgeworth in Hertfordshire and at Kedington and Freston in Suffolk (Oswald *et al*. 2001, figs 5.18, 5.21 and 3.14). The Orsett enclosure was archaeologically investigated in 1975. Beyond one short course of interrupted ditches little is known about the causewayed enclosure at Springfield Lyons, and there have been no excavations on the monuments at Sawbridgeworth, Kedington and Freston. Cropmarks indicate cursus monuments at Bures and Stratford St Mary (Brown, Knopp and Strachan 2003).

Two forms of closely associated Middle Bronze Age evidence appear to be exclusive to north-east Essex and south-east Suffolk. One of these is represented by the Ardleigh Group, a profusely decorated form of pottery in the Deverel-Rimbury tradition. Cremation cemeteries, represented by burials and large clusters of closely-spaced ring-ditches, comprise the other. Examples of the two together have been found and excavated at Chitts Hill, Ardleigh, Brightlingsea and Little Bentley (Crummy 1977, Brown 1999, Clarke and Lavender forthcoming, Clarke 2004). Cremation cemeteries and ring-ditches from the same tradition appear as cropmarks at Little Bromley and at Thorpe le Soken (Brown 1999). Pottery in the Ardleigh style has been found across Tendring, including Great Tey, Sheepen and Lexden (Cleary 2003; Brown 1995).

III. Location and topography

(Figs 1–3)

The excavated area covers 4.5ha and is located in the Tendring peninsula of north-east Essex, 4.5km west of Clacton-on-Sea (NGR: TM 1355 1545). It sits on a spur of 'high ground' in an arable setting, *c*. 15m above sea level. Along the north side of the spur is St Osyth Creek. St Osyth lies 1km to the north-west, Brightlingsea Creek and the estuary of the river Colne 5.5km to the west, and the sea 3km to the south (Figs 1–3).

The underlying geology — glaciofluvial drift over Eocene clay — comprises glacial sands and gravels interspersed with occasional bands and large areas of silt sand

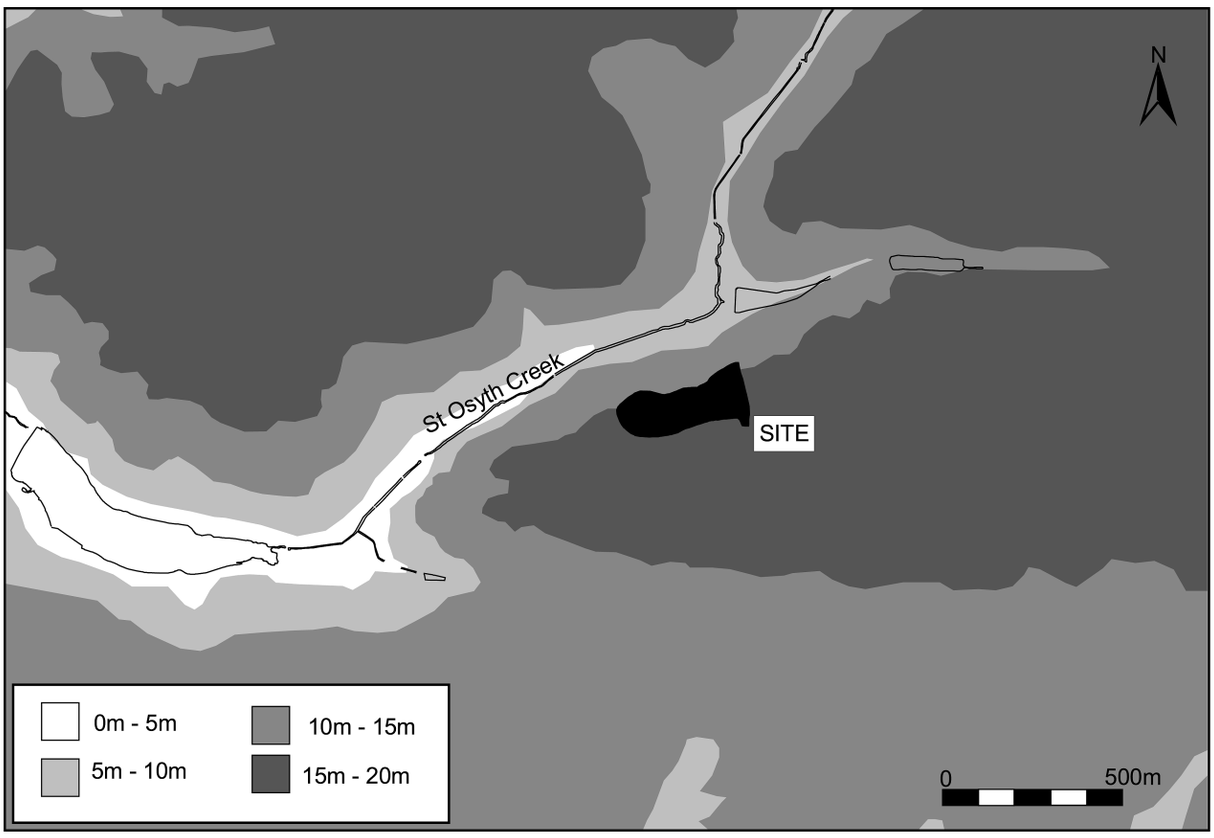


Figure 3 Topographical map showing Lodge Farm excavation area

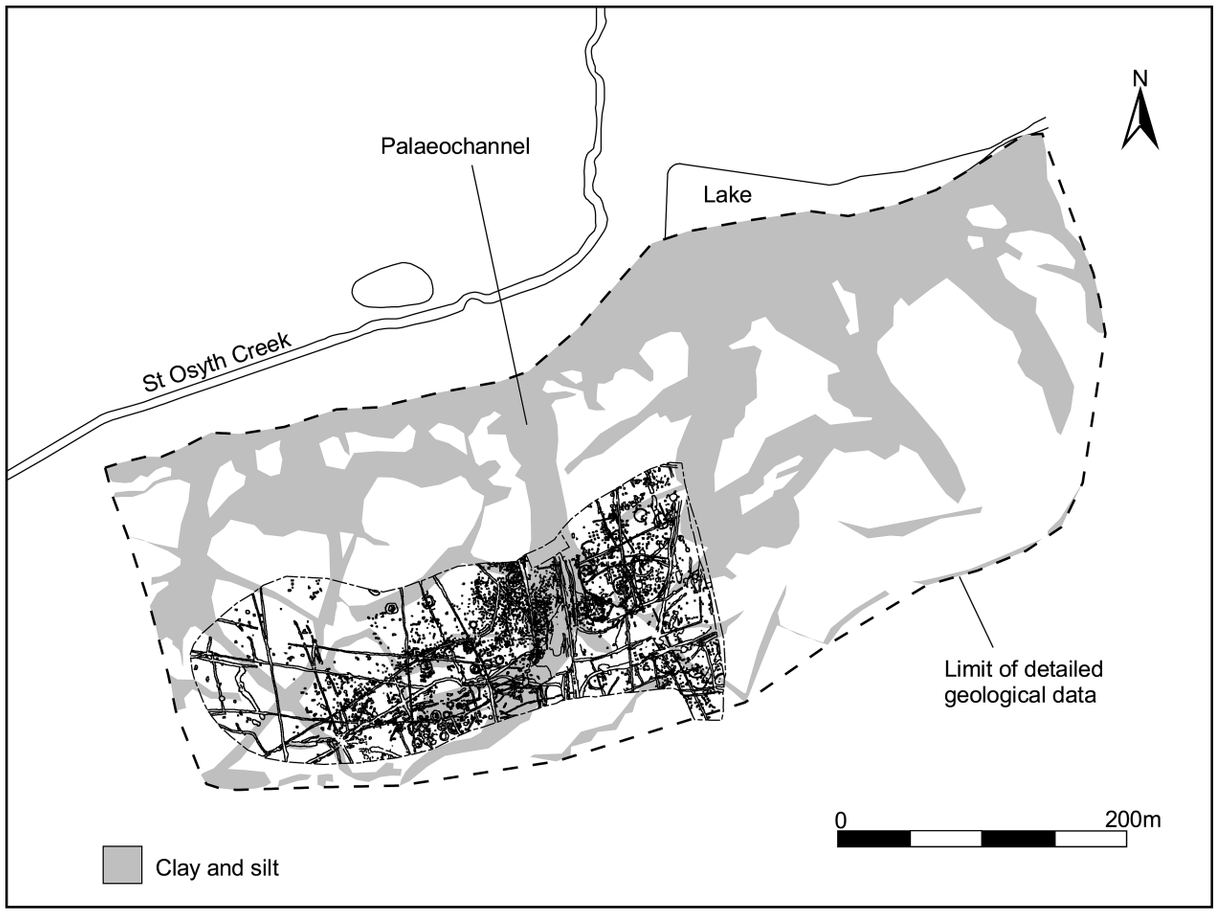


Figure 4 Lodge Farm excavation area, showing deposits of clay and silt

and clay. Palaeochannels of silt sand and clay run down the north side of the spur towards deposits of hillwash and/or alluvium along St Osyth Creek. The middle of the site is crossed by a palaeochannel *c*. 40m wide and up to 1m deep (Fig. 4).

The overlying silt-sand topsoil is *c*. 0.3m thick. It is fertile, well-drained and easy to plough, and is used to grow a wide range of crops. Deposits of marine alluvium, indicating former areas of salt marsh, begin 1km south of the site.

The water table was *c*. 1.2m below the stripped surface before quarrying began in October 2000, but soon fell away. In the far south-east corner of the site it remained at its original level until the end of the excavation in February 2003.

IV. Cropmarks

by Helen Saunders

Introduction

(Fig. 5)

The Lodge Farm cropmark sequence lies at the heart of an extensive cropmark complex and is a good example of a landscape being used for both ritual and domestic purposes over time. The cropmarks in this area have been assessed and mapped on a number of occasions; in the context of this project, however, it was felt that the aerial photographic evidence should be reassessed to ensure that all information had been extracted from it, as well as assessing any new photographs and the wider cropmark landscape.

Aerial photographic evidence is influenced and limited by a wide range of geological, seasonal, agricultural and environmental factors, all of which can affect how and what archaeology is visible (Wilson 2000; Riley 1987). In view of these factors, a range of photographs taken over several seasons with the site under different crop types is needed in order to maximise data recovery. Lodge Farm demonstrates this very well, with a variation in response to the crop over the site (from east to west).

The site lies on glacio-fluvial drift over Eocene clay (SSEW 1983) and is thus well drained and conducive to cropmark formation both from the palaeolandscape and archaeological features. Extensive palaeochannels and periglacial frost cracking are evident right across the site (Fig. 4) and often mask archaeological indications. These natural features have, in places, made it problematic to identify and interpret the archaeological features present.

Past work

(Fig. 5)

The aerial photographs have been assessed for both the Essex National Mapping Programme (NMP) and for an evaluation by Air Photo Services (APS).

The NMP mapping and interpretation of the site was completed in 1996 using manual transcription

techniques, with sites plotted onto 1:10,000 film sheets. These hand-drawn sheets have subsequently been scanned and georeferenced to enable viewing in GIS packages. Photographs from a number of sources (see below) were examined. Due to the scale of mapping some of the smaller details, such as the areas of pits, were not included. While the mapping should be accurate to *c*. 2–3m it has become apparent that in certain areas of the cropmark complex this is not the case, with discrepancies of over 20m being noted. Many of these errors will have been caused by the scale at which the features were mapped and the manual transcription techniques employed. Despite this, the NMP mapping gives a good indication of the larger features such as trackways, enclosures and a possible cursus (Fig. 5). The natural geological features visible were not mapped as they did not fall within NMP's recording criteria. The NMP mapped the surrounding area, which allows the Lodge Farm complex to be placed into a landscape context. The number and variety of cropmarks in the surrounding area, coupled with the excavated evidence from the site, gives a good indication of the extent and density of archaeological remains in the vicinity.

Air Photo Services Ltd was commissioned to carry out an assessment of the evidence in 1998. The mapping was undertaken at a scale of 1:2500 and all visible archaeological features were mapped (Cox and Palmer 1998, 3). Mapping was completed using the Bradford Aerial Photographic Rectification Software, Aerial 4.20 (Haigh 1993). It was considered that the mean control point error was ±2m. The archaeological evidence was then plotted using AutoCAD to produce a digital version.

The APS mapping and interpretation used the same range of aerial photographic sources as the NMP mapping. However, due to the scale that the features were mapped and because the mapping was completed by a different interpreter, there are variations in detail and interpretation. This interpretation of the aerial photographs includes more linear features and highlights areas of pits (though not individual pits).

Both sets of mapping have used a wide range of aerial photographs taken over several years with the site under various crop conditions. However, when compared to the excavation plans it becomes apparent that only a very small proportion of the site detail is visible from the air, even with the aid of a wide range of aerial photographs.

The aerial photographs have been re-examined in conjunction with the excavation plans, and it is clear with the benefit of hindsight that more archaeological features are visible on the aerial photographs than was at first believed. Of particular interest is the causewayed enclosure discussed below.

Sources

There are three main archive sources, with photographs taken between 1946 and 2000.

1. National Monuments Record (NMR). For both the NMP mapping and cropmark assessment a NMR cover search was completed which contained both vertical and oblique aerial photographs, all of which were assessed and archaeological features mapped. Several of the oblique photographs within the cover searches are held in the Essex Historic Environment Record (EHER) (see below) and were examined again during this current reassessment.
2. Cambridge University Collection of Aerial Photographs (CUCAP). The collection held at Cambridge was examined in 1996 and 1998. A small number of the Cambridge photographs have been reassessed as they also form part of the EHER collection. These photographs are all low-level obliques taken between 1969 and 1980.
3. Essex Historic Environment Record (EHER). All photographs within this collection have been reassessed as well as the County's collection of verticals (taken every ten years from 1960 onwards). The only additions to this collection since the 1998 assessment were the 2000 verticals and some low-level obliques of the site under excavation in 2000.

Cropmark evidence

(Figs 5 and 7)

Figure 5 shows a composite of the NMP cropmark plot, the Air Photo Services plot and the features which have been identified since excavation. The features were digitised on screen from the plots in Arc GIS 8. The appropriate aerial photographs with newly identified features were rectified (using the Bradford Aerial 5 rectification package (Haigh 1999) and the georeferencing and rectify facility in Arc GIS 8) and this information was then digitised directly into Arc GIS 8. As previously mentioned there was some discrepancy between the NMP plot and the 1998 assessment. In areas where the same archaeological feature had been mapped in both assessments, only the NMP interpretation (as the earliest) is shown in the combined plot.

The plot shows a high density of cropmark features which are fairly uninterrupted over a 1500m by 800m area. These features are often short linear sections, although extensive sections of trackway are visible. Some of these linear features are likely to have been in use at the same time, although some are much later and are marked on the First Edition OS map of the 1880s. The dense nature of the cropmarks makes interpretation difficult, although some of the elements such as the trackways can be traced across the landscape as relatively coherent cropmark features. Certain elements are of particular interest both within the excavated area and further afield. Discussed below are the cropmarks of a possible henge and cursus, the causewayed enclosure and isolated round barrows.

Causewayed enclosure

A causewayed enclosure with three lines of interrupted ditches was found during the excavation (Fig. 7). This monument was not originally identified or plotted during the earlier aerial photograph assessments, although with the benefit of hindsight a small number of ditches associated with it can be seen on several photographs. When examining these photographs in conjunction with the excavation plans it is possible to identify further interrupted ditches lying beyond the excavated area. It has proved more difficult to trace these in a full circuit, although two large ditches running roughly east-west do appear on the APS assessment. While these ditches could be evidence of a continuation the cropmarks appear fainter and are less well defined than others elsewhere on the site. The ditches identified to the north and east of the excavation site appear to be of a similar construction, produce a similar cropmark as those identified through the excavation, and are in approximately the correct position when drawing an arc from the known ditches to

the south. Many causewayed enclosures are not perfect circles or have incomplete circuits of ditches, and this site has similarities to other causewayed enclosures such as Salmonsbury (Gloucestershire) and Langford (Oxfordshire) (Oswald *et al*. 2001, figs 4.12 and 7.3). The general topography of the surrounding land is very flat, but the open north side of the monument does face down slope, which may be significant. While it is not clear if all of the courses of the causewayed enclosure were in use at the same time, it can be assumed that it was one of the earliest monuments in this landscape.

In the 1998 assessment, several cropmarks were considered to be natural or geological formations (Cox and Palmer 1998). After reassessing the aerial photographs this seems a fair conclusion, as the periglacial cracking produces a characteristic cropmark on this site. The lines of deeper soil have a different appearance to those representing known archaeological remains, but are similar in form to other obvious geological formations elsewhere on the site.

Bradley (1998, 71) points out that while the use of a site may not have been constant over time, the earthworks would have continued to be visible whether they were in use or not. This implies that the location and presence of larger monuments would have affected the location of subsequent monuments. This is certainly the case with the causewayed enclosure here, which has later features surrounding it.

Possible henge and cursus

A possible henge and cursus lie within the cropmark complex but outside the excavated area. Both monuments are potentially significant because they lie in close proximity to other ritual monuments.

The cursus monument (Fig. 5 A), visible on several photographs, is 300m to the south-east of the excavated area and measures *c.* 285m by 85m. The ditches of the cursus appear to be of varying character, with the east side of the monument more substantial and segmented. The ditch forming the north-east corner is a smooth curve like a playing-card corner; the breaks in the ditch have rounded terminals, and thus may indicate formal entrances. The northernmost stretch appears to be double-ditched, with a substantial outer ditch and a narrower internal one.

The west side of the monument does not have a substantial ditch; the sections are not straight and the breaks in the ditch are not clearly defined. There does appear to be an entrance (or at least a break in the ditch) at the north-west corner, which unlike the opposite side is not well defined.

Some sections of the monument are masked by geological formations but there does not appear to be any evidence for internal activity or sub-divisions within the monument. The site is very similar to cursus monuments such as those at Eynesbury (Cambridgeshire) and Bennybeg (Perthshire) (Malim 1999, 79; Ellis 2004, 5 and Brophey 1999, 126). If the present elongated enclosure is a cursus monument it would have 'cut off' the low promontory of land on which both the causewayed enclosure and cursus are situated. This could be significant if the water table was higher when the monuments were in use, as they could have been surrounded on at least two sides by wetter land. Interestingly it is assumed that the round barrows were later than the bigger monuments and it would appear that at least one of them is aligned with the possible cursus monument (Fig. 5 D). This alignment of a round barrow on a cursus monument can also be found at Springfield, Chelmsford (Buckley *et al*. 2001, 103).

The possible henge, which is 25m in diameter, lies to the west of the excavation area and is clearly visible on several aerial photographs (Fig. 5 B). It is one of the largest ring-ditches in the cropmark complex, as the others in the vicinity range from 18–22m in diameter. This places it among the smaller-sized class II henges sites in Britain, these features normally averaging *c*. 55m in diameter (Harding and Lee 1987, 55). The cropmark is bisected by a road, which gives it the appearance of a class II henge with two entrances. The ditch appears to go right up to the road boundary and there is no evidence for ditch terminals and/or entrances. This does raise the question of whether the road was constructed after the monument was ploughed level or took advantage of original gaps in the ditch/bank construction. The road is marked on the 1777 map of Chapman and Andre; however, there is no evidence for earthworks on the map. The cropmark of the ditch east of the road shows a very clear edge on the interior, whereas the cut of the ditch on the exterior appears rough. The ditches are not of a consistent width, as they appear to be 2–3m wide to the south of the site and narrower on the north side.

There does not appear to be any cropmark evidence for an external bank or for the secondary ditch which might be expected on a henge site. Recent experience in Essex has highlighted the difficulties in interpreting sites as henges on morphology alone. The Essex cropmark enclosures project examined four cropmark enclosures considered to be possible henge monuments, using excavation and fieldwalking. Two of the four were medieval windmills and only one site was of Neolithic date (Brown and Germany 2002). It is possible that the cropmark at Lodge Farm is in fact a windmill site with earlier origins, but this cannot be established from the aerial photographs alone.

Wider landscape

Among the several trackways visible is a 'crossroads' at the southern edge of the excavated area, from where one trackway follows an east-north-east direction for nearly 800m. There is some evidence of further settlement activity (in the form of possible pits and enclosures) to the north of this trackway. The aerial photographs on which these cropmarks appear are very dark, and this suggestion might in fact be an over-interpretation of geological marks.

To the west of the excavation, two trackways have been plotted; the first was traced over *c*. 300m and may join at the excavated crossroads, since it curves towards the recorded site. The second trackway has more interrupted ditches and is visible over *c*. 320m.

A trackway heading north runs for *c*. 170m before it is masked by field boundaries and trees. The discrepancies between the interpretations on the NMP and assessment are apparent in this area. The NMP plot shows the trackway, whereas on the assessment plot it is less clear. This is due to a dark area of geological cropmarks; the NMP plot does, however, appear to show ditches that are visible on the aerial photographs. Although there is no evidence that this trackway continued over the boundary,

Figure 5 Cropmarks in the vicinity of the excavation area

it could easily have connected with another trackway coming in from the north which would have joined this site to that of another cropmark complex to the north-west.

Middle Iron Age
On initial examination it would appear that very little of the settlement of this period is visible on the aerial photographs. However, with the aid of the excavation plans it is possible to detect further ring-ditches on the aerial photographs within the excavated area that had not been plotted. Any archaeological features to the north would probably have been masked by geological phenomena.

V. Archaeological features: condition and range

(Figs 4–6)

There was no upstanding or layered stratigraphy (*e.g.* layers, banks, walls, floors and other features) because ploughing had truncated all archaeological remains by *c.* 0.3m.

The range of features recorded was limited to ditches, gullies, pits, post-holes, ring-ditches, hut-circles and cremation burials. There were no hearths or kilns. A great many pits and post-holes in the eastern two-thirds of the site were mostly undatable (Fig. 6).

No deposits/features suitable for geoarchaeological analysis were found. There were no surviving occupation levels, and few features displaying complex stratigraphy. Most features outside the palaeochannel contained deposits of sand, silt sand and sand silt. Features cut into the top of the palaeochannel were filled by deposits of clay, silt clay and silt sand clay. The excavation found no prehistoric organic material, apart from charred plant remains and cremated bone, due to the sand and gravel soils, which are very acidic.

The prehistoric finds consisted of worked and burnt flint, pottery belonging to the Mildenhall style, Grooved Ware, Beakers, Collared Urns and Bucket Urns, and Middle Iron Age ceramics and triangular loomweights. The excavation found one piece of prehistoric metalwork, a small number of prehistoric baked clay objects and six fragments of saddle quern.

VI. Method

The removal of the topsoil took a month to complete and was carried out by the developer using a tracked excavator with broad toothless bucket. Extraction of the sand and gravel commenced five months later and progressed from west to east.

The archaeological excavation of a 10m-wide strip for a haulage road up against the north edge of the site was succeeded by the archaeological investigation of the remainder, which was carried out from west to east in order to keep one step ahead of the quarry works.

The fieldwork followed the archaeological brief for the excavation of the haulage road and the western two-thirds of the site, and a project design for the excavation of the final third. Investigation of the causewayed enclosure was the main priority during this final phase.

In general, the minimum sampling sizes for each feature were 50% and 10% respectively for discrete and linear features, 100% for cremation burials, 30% for ring-ditches and 40% for round-house gullies. The minimum sampling size for the excavation of the causewayed enclosure ditches was increased from 10% to 30% for the excavation of the final third of the site. Two of the causewayed enclosure ditches in the west part of the development area were not investigated because they were not identified until a post-excavation reassessment of the cropmark evidence (Fig. 22). A 3m-wide strip along the east end of the site and a 300m^2 block at the far north end of the palaeochannel were left unrecorded (Fig. 6).

Each context and feature group was individually numbered and recorded on pro-forma sheets. The context numbers ran in a continuous sequence from 1 to 14,142. Photographs were taken of work in progress, feature groups and significant archaeological features. Plans were drawn at 1:20 and sections at 1:10. Securely dated and well-stratified carbon-rich deposits were sampled for carbonised plant remains. A total station theodolite was used to tie the site to the Ordnance Survey grid.

VII. Phasing

The phasing process identified ten periods of activity, with the help of radiocarbon and pottery dating and recorded stratigraphic and spatial relationships (listed below). Sub-phases were identified in Periods 6, 7 and 9. Difficulties encountered during the phasing were due to a generally low number of finds, an absence of closely datable forms in the worked flint and prehistoric pottery, and a small number of contradictory (*i.e.* misinterpreted) stratigraphic relationships. Many features, particularly pits and post-holes, remain unphased and undated because they contained no closely datable finds and had no stratigraphic or spatial relationships with other features of known date. The project employed a cautious approach when it came to the identification of post-built structures as dense concentrations of post-holes, especially in the central part of the excavation area, made it impossible to identify individual post-built structures with confidence.

I. Mesolithic
Worked flint.

II. Early Neolithic
Causewayed enclosure, pits and ?ditches. Worked flint and pottery. Saddle querns.

III. Late Neolithic/Early Bronze Age
Causewayed enclosure ditches (topmost deposits). Pits. ?Ring-ditches. Beaker and Grooved Ware.

IV. Early Bronze Age
Pond barrow. Cremation burials. Placed deposit. ?Ring-ditches. Collared Urns.

V. Middle Bronze Age
Cremation burials, ring-ditches, Placed deposits and pits. Bucket Urns.

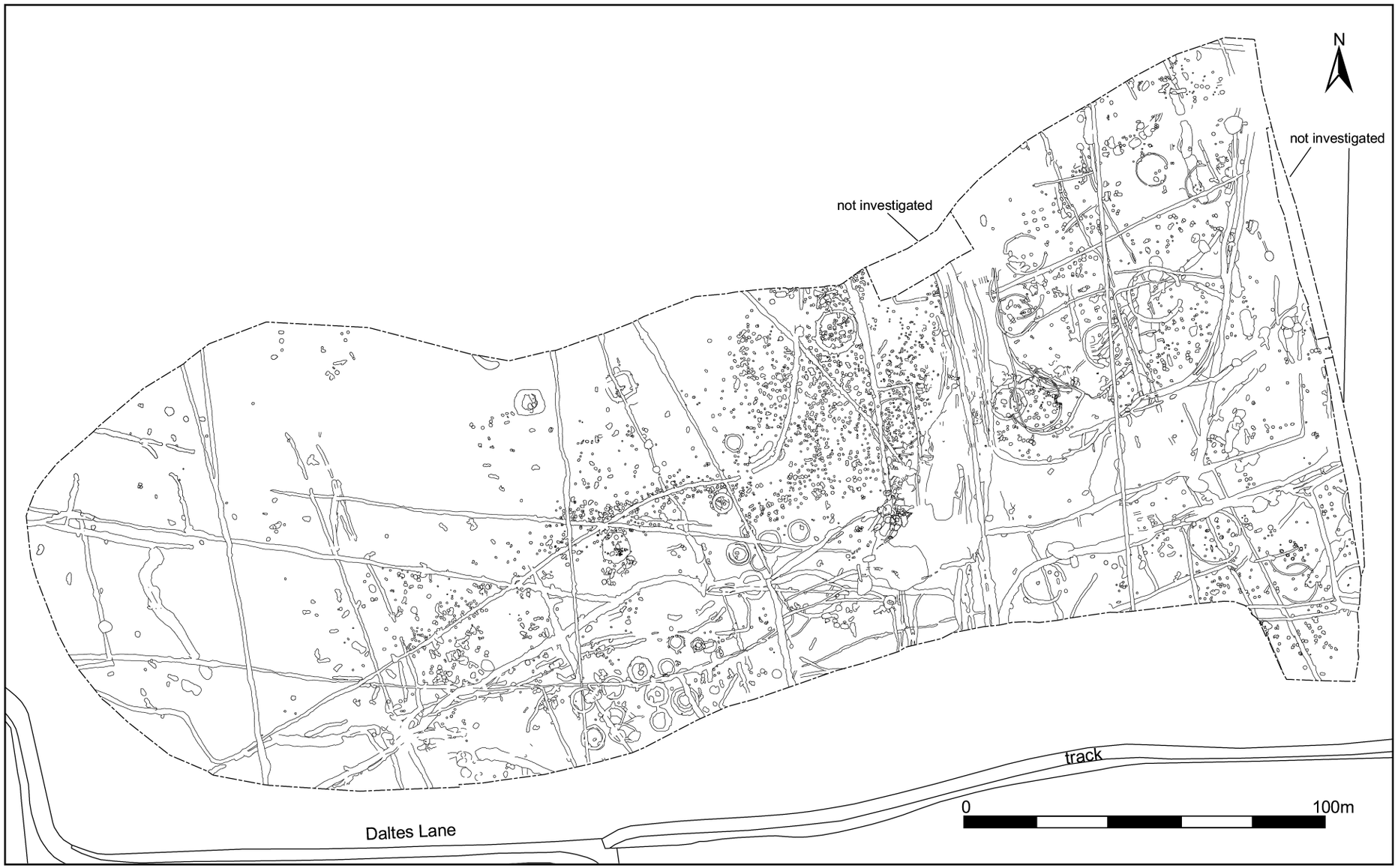


Figure 6 Site plan showing all archaeological features

VI. Middle Iron Age
VI.1. Field boundaries and trackways. Pit. Pottery and baked clay.
VI.2. Trackways, enclosures, round-houses, post-built structures. Granaries. Cremation burial. Pits and post-holes. Iron awl, pottery, baked clay and loomweights.

VII. Middle/Late Iron Age–Roman, and Roman
VII.1. Trackways, enclosures, post-holes and pits. Pottery and baked clay.
VII.2. Trackway. Pottery.

VIII. Early Saxon
Pits. Pottery. Knife.

IX. Medieval
IX.1. Post-built structure. Iron objects. Pottery.
IX.2. Pond, enclosures and pits. Pottery, iron-work, copper-alloy bowl, and baked clay.
IX.3. Post-built structure, well, enclosures and pits. Pottery and baked clay.
IX.4. Post-built structure and pits. Pottery, baked clay, quernstone and ironwork.

X. Post-medieval and modern
Field-ditches.

The post-Period VI evidence is summarised below. Germany in prep. will provide a more detailed account of the findings post-dating the Middle Iron Age. The site was probably from the end of the Middle Iron Age to the start of the 13th century.

Ditched enclosures and trackways covered the site in the Middle/Late Iron Age and Roman periods. The probable retention of the east and south arms of the Middle Iron Age trackway system was the only clear evidence for continuity between the Period VI (Middle Iron Age) and Period VII (Middle/Late Iron Age–Roman) layouts. In the Roman period the west arm of the Middle Iron Age trackway system was reinstated, albeit on a slightly different alignment. Remains of activity at the site during the Early Saxon period consisted of pottery and a small number of pits.

The excavation uncovered part of what was probably the 'backyard' of a 13th-century croft, including a small number of unusual features which might indicate that it had been engaged in some form of cottage industry, possibly tanning. Among the features were a group of intercutting box-like pits, and a very large rectangular pit. A pond, which was attached to the pit and in use at the same time, contained pottery and other finds from the first half of the 13th century. The imprint of what might have been a rectangular container or platform was found inside the pit. Two medieval timber buildings respectively pre- and post-dated the use of the croft. The function of these structures is not known. Field ditches crossed the site in the post-medieval and modern periods.

2. Excavated Evidence

I. Mesolithic

Five pieces of residual worked flint indicated activity within the area of the site during the Mesolithic (Fig. 42, 1–5).

II. Early Neolithic

(Plates I–IV; Figs 7–23)

Three lines of interrupted ditches representing elements of a causewayed enclosure were discovered in the east part of the site, with a single line of ditches in the south-west (Figs 7–12). Part of the inside course was defined by interrupted ditches *13920–13925* and possibly by *13915–13919*. The middle course was represented by *13926–13931*, and the outside course by *13932–13934*. The ditches were irregular in plan, and unevenly spaced. The excavation found no direct evidence for related constructional elements such as palisades and gateways or for ditch-side banks or mounds.

More than 100 Early Neolithic pits were recorded within the limits of the causewayed enclosure, mostly within the western half of the excavation area. Only one pit lay within the area of the palaeochannel, and none within 8m of the inside perimeter edge of a causewayed enclosure ditch. Early Neolithic features cut into two slight ditches (*13893* to the west and *14126* to the east), which were possibly in use at some point during this period.

Radiocarbon dates from charred plant remains from one of the interrupted ditches and ten of the pits indicate that the causewayed enclosure was constructed in the mid-4th millennium BC, and may have been in use for less than 40 years.

Most Early Neolithic finds from the site were of worked flint (Chapter 3, 59–62) and pottery associated with the Mildenhall style (Chapter 3, 62–9), although fragments of saddle quern and baked clay were also discovered. The excavation collected no finds from ditches *13893* and *14126*, and relatively few from the causewayed enclosure ditches. The larger groups of finds probably represent special deposits. Very large groups of worked flint in two neighbouring pits and a causewayed enclosure ditch terminal indicate a flint-working area in the north-east part of the site.

The environmental evidence from the site suggests that grassland predominated in the area surrounding the monument during this period (Chapter 3, 90). Crop production probably took place locally, but did not impinge upon the causewayed enclosure.

Causewayed enclosure

(Plates I–III; Figs 7–17)

Description

The causewayed enclosure appeared irregular in layout (Fig. 7). The ditches in each course did not keep to a regular line, and the distance between individual elements of the same concentric series of cuts varied between 1m and 35m. The distances between the inside course and the middle course, and the middle course and the outside course, were *c*. 27m and 40m respectively.

Interrupted ditches *13915* to *13919* in the south-west part of the site were less intensively sampled than those in the east part of the site because their age and significance were not appreciated until after they had been destroyed by the quarry (Figs 7–9). Four of the segments excavated across ditch *13915* were not bottomed. Two interrupted ditches in that part of the site were not identified until a post-excavation reassessment of the cropmark evidence (Fig. 22).

The excavated evidence, and the outline of the interrupted ditches in plan, indicated that the majority of them consisted of series of pits dug end-to-end (Fig. 13). Three of the interrupted ditches probably represented single pits (*13916*, *13920* and *13924*). Where investigated, it was found that the constituent pits were either separated by sunken causeways or that they overlapped and shared filling deposits, suggesting that they were open simultaneously (Fig. 14: *13646*, *13652*, *13670*, *13423*, *13482*, *13448* and *13455*). Pit *12753* at the north end of interrupted ditch *13929*, which had been cut just below the surface by adjacent pit *12607*, was the only recorded example of a pit which could be clearly seen to be cut by another pit (Figs 11 and 13C and D). At the opposite end of ditch *13929* a sudden upward step of 0.32m in the base of the feature marked the point where two cuts of different depth (*12521* and *12272*) had come into contact (Figs 11 and 13A and B).

The pits that comprised the interrupted ditches varied in form: some were elongated, others were short and broad (Fig. 13). They ranged in depth from 0.4m to 1.5m below the surviving top of the natural soil, and varied in width from 1.0m to 6.4m. It was not possible to establish the lengths of most of the constituent pits because only one of them (*12272*) was completely excavated and most of them overlapped. The inside course was represented by the largest pits, in terms of depth and width (Fig. 15). The constituent pits in interrupted ditch *13926*, which appeared to be comprised of the largest number of individual cuts, were atypically small (Fig. 13).

The majority of the pits forming the interrupted ditches shared a distinctive profile, with steep sides, and a broad, flat or slightly undulating or concave base (Figs 16 and 17). Many of the profiles featured gradual slopes or steps from the surface. The steps that surmounted the perimeter sides of the profiles were generally larger and slightly more common, and occasionally less steep and regular, than those that occurred on the opposite side of the cut (Fig. 16, *12679*, *12459*, *12646*, *10767* and *13068*; Fig. 17, *13685*, *12440* and *13354*).

The lower two-thirds of most component pits had been filled by deposits of sand and silt-sand similar to the surrounding natural soil. Many of these deposits lay slumped against the sides of the pits, and were often interleaved. Those slumped against the sides that faced outward from the centre of the causewayed enclosure were generally the most extensive (Fig. 16, *1018*, *12679*, *12646* and *13068*; Fig. 17, *13393* and *12440*). By contrast, fills that were generally siltier and darker were present in the topmost third of most pits, usually in 'depressions' — often slightly off-centre and with gradually sloping sides — which extended into the 'shelf' above the perimeter side (Fig. 16, *1018*, *12679*, *10767* and *13068*; Fig. 17, *13393*, *12607* and *12440*).

Few component pits that were excavated did not accord with at least one of these general rules. It was not possible to establish the nature of the profiles and fill sequences in some pits which had been recut or truncated by subsequent features.

Approximately one in seven of the constituent pits showed evidence for recutting, all of this noted in section rather than in plan. Some of the sections contained evidence for more than one recutting, and most re-excavation appears to have taken place while the underlying pit was

Plate I Causewayed enclosure ditch *13921*, looking south

Plate II Causewayed enclosure ditch *13929*, looking south

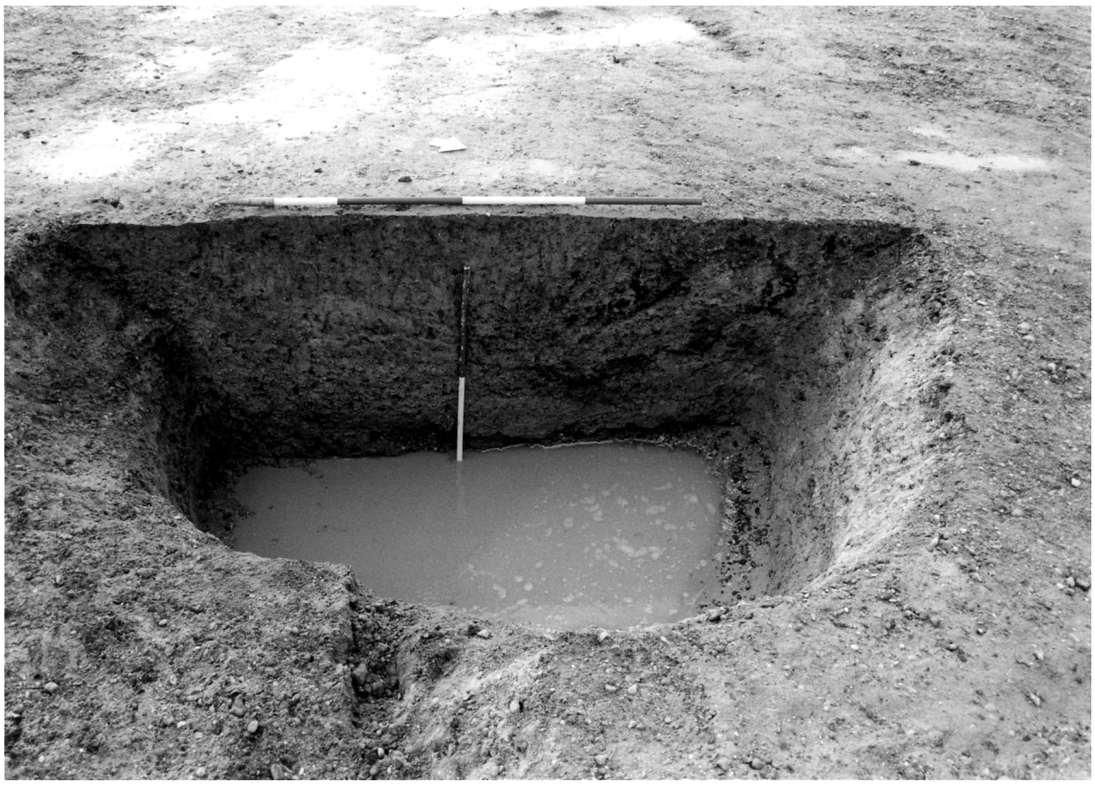


Plate III Causewayed enclosure ditch *13933*, looking south-west

still partly open. The recuts ranged in scale from small pits dug within half-filled-up earlier pits to almost-total 'clear-outs' (Fig. 16, *e.g. 10767* and *12459*, respectively). The majority, like most of the Early Neolithic cuts in general, had steep sides and roughly flat or slightly concave bases. There was no clear evidence for the co-ordinated recutting of an entire ditch or course.

In the south-east part of the excavation, some of the deeper constituent cuts provided indirect evidence that in antiquity the water table had lain at its (pre-quarrying) modern depth of 1.0–1.2m. The sides of some cuts displayed signs of undermining, possibly due to the action of standing water (Fig. 14, *13652* and *13670*). In some of the pits the primary fills were unusually grey and silty (Pl. III).

Radiocarbon dates were derived from two fragments of hazel nutshell from flint-rich, charcoal-rich deposit *251*, the third fill of a possible recut in the north end of causewayed enclosure ditch *13930* (Figs 11 and 17). Both fragments produced the same two possible dates: 3660–3620 cal. BC (61%) or 3560–3530 cal. BC (34%) (Chapter 4, 95). None of the other causewayed enclosure ditches saw radiocarbon dating, since they contained no clearly non-residual organic remains.

Finds

Nearly 90% of the constituent pits of the causewayed enclosure ditches produced few or no finds. Those that were present were widely dispersed throughout the deposit sequence within them.

Only in seven instances were large amounts of worked flint and/or Mildenhall style pottery found within constituent features. One group lay in cut *1312* at the west end of ditch *13918*, in the south-west part of the site (Fig. 9), and one in *13177* in ditch *13920* at the southern recorded limit of the inside course (Fig. 12). The other five groups occurred in the north-east corner of the site: three in ditch *13929* (*12521*, *12607* and *12753*) and two in neighbouring ditch *13930* (*298* and *12440*) (Fig. 11).

The 666g of pottery and single flint flake from feature *13920* were not confined to a single deposit but were dispersed throughout the fill sequence. There were no concentrations, and none of the material appeared to have been deliberately placed.

The second and third fills (*285* and *251*) of a possible recut (*215*) in constituent pit *298* in causewayed enclosure ditch *13930* (Fig. 17) contained 582g of pottery and nearly 1000 pieces of worked flint and worked flint debris between them. Third fill *251* contained abundant flecks and fragments of charred plant remains, and also a fragment of saddle quern — this was the only other type of find other than baked clay, worked flint or pottery to be found in a causewayed enclosure ditch. The flint largely comprised cores, chippings, and flakes and flake fragments, but also included many complete and broken retouched artefacts. From the fifth and topmost deposits of the recut came a combined total of seven blades and 45 chippings and flakes. Two Early Neolithic pits (Fig. 11, *96* and *103*) less than 5m north of the possible recut contained equally large amounts of worked flint and worked flint debris. Together, this evidence suggested that there had once been a flint-working area in the north-east part of the site. A fragment of saddle quern from pit *103* fitted the fragment from the third fill of the recut. The proximity of the large groups of flint and the two joining pieces of quernstone suggested that all three features had been in use at the same time.

The other five large groups of finds, from constituent pits *1312* (Fig. 9), *12521*, *12607*, *12753* and *12440* (Fig. 11), featured sherds from pottery vessels. These were loosely clustered in all five cases; pressure of time during excavation meant that their precise locations within each deposit were not recorded. The secondary fill of *1312* contained 110 sherds from the upper part of a large jar. From the third deposit within *12521* came 32 flint flakes and thirteen blades, along with 515g of pottery representing the remnants of at least three different vessels — this was the only one of these deposits that included flint as well as pottery. Roughly 60% of the pottery from *12607* came from the third fill, close to the north terminal. A large sherd *c.* 0.22m long from this deposit, accompanied by smaller sherds, probably represented the disturbed remnants of a single vessel. The rest of the pottery from the feature was dispersed across three different fill deposits: 86g of the pottery came from the primary fill. An assemblage of 768g of pottery was concentrated towards the base of the single fill of *12753*, which cut the north end of *12607*. In *12440*, the south terminal of ditch *13930*, 943g of pottery was recorded; more than four-fifths of it came from the fifth fill, with the rest coming from the fill immediately beneath it.

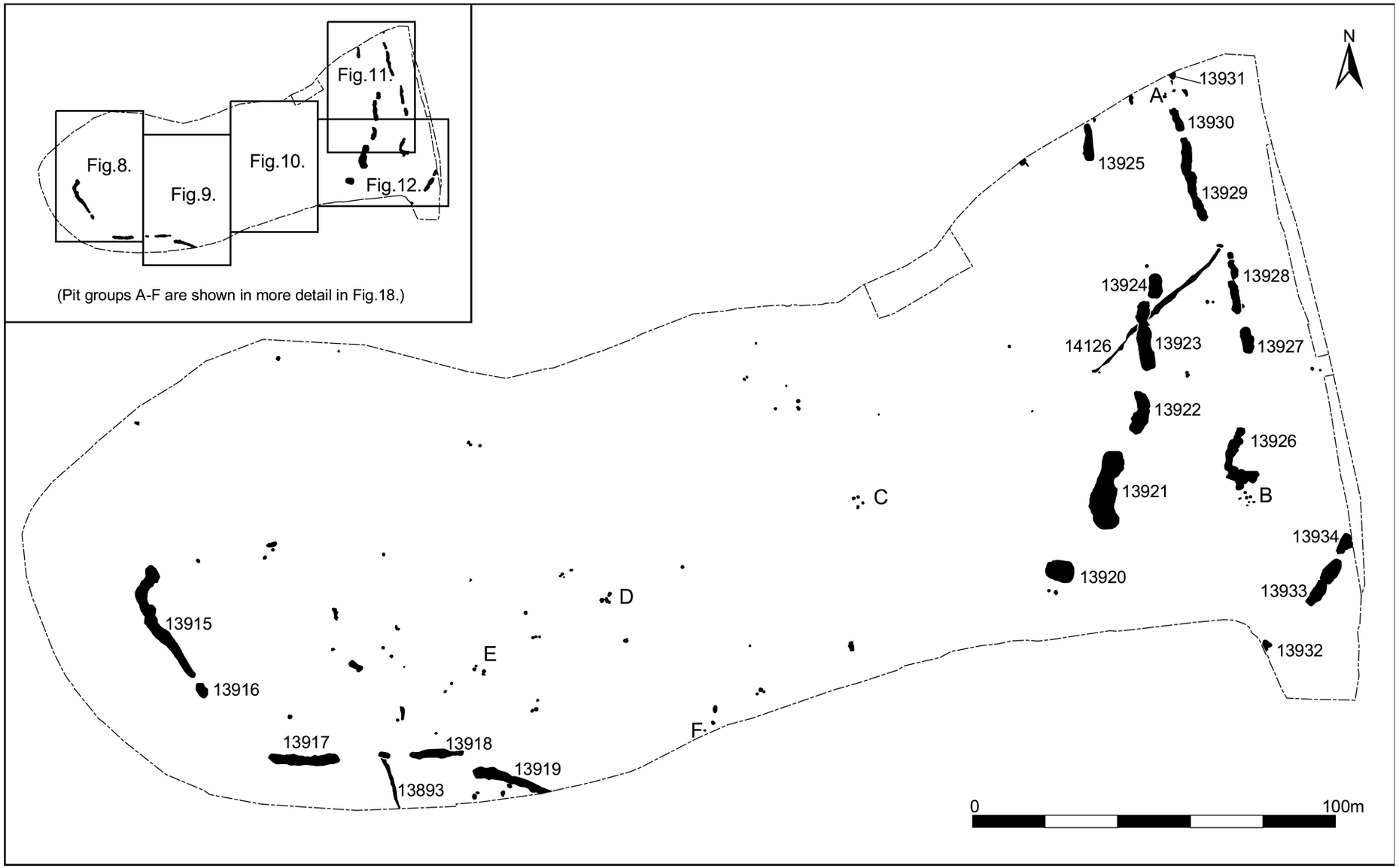


Figure 7 Early Neolithic phase plan

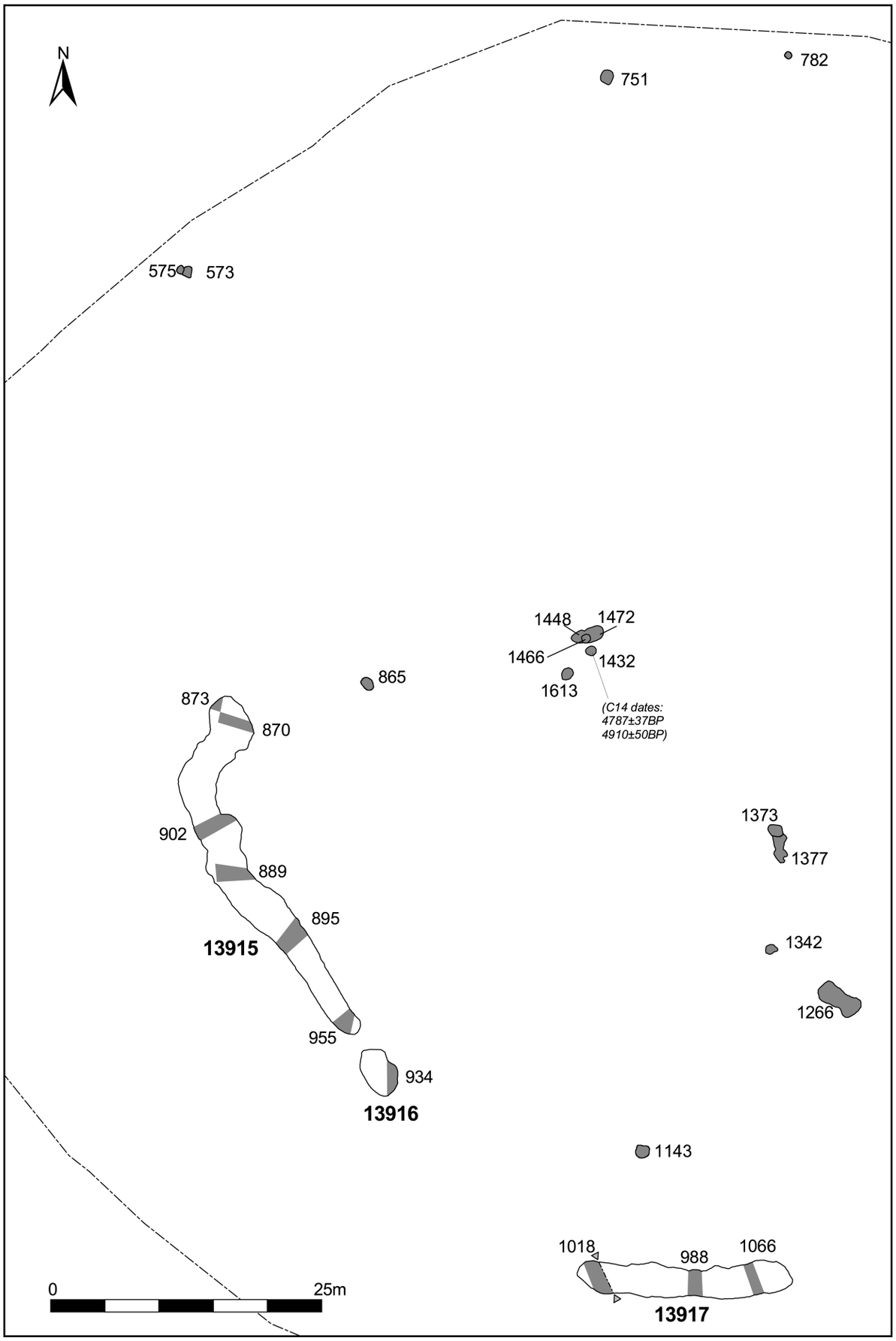


Figure 8 Early Neolithic: plan of features in west part of the excavated area

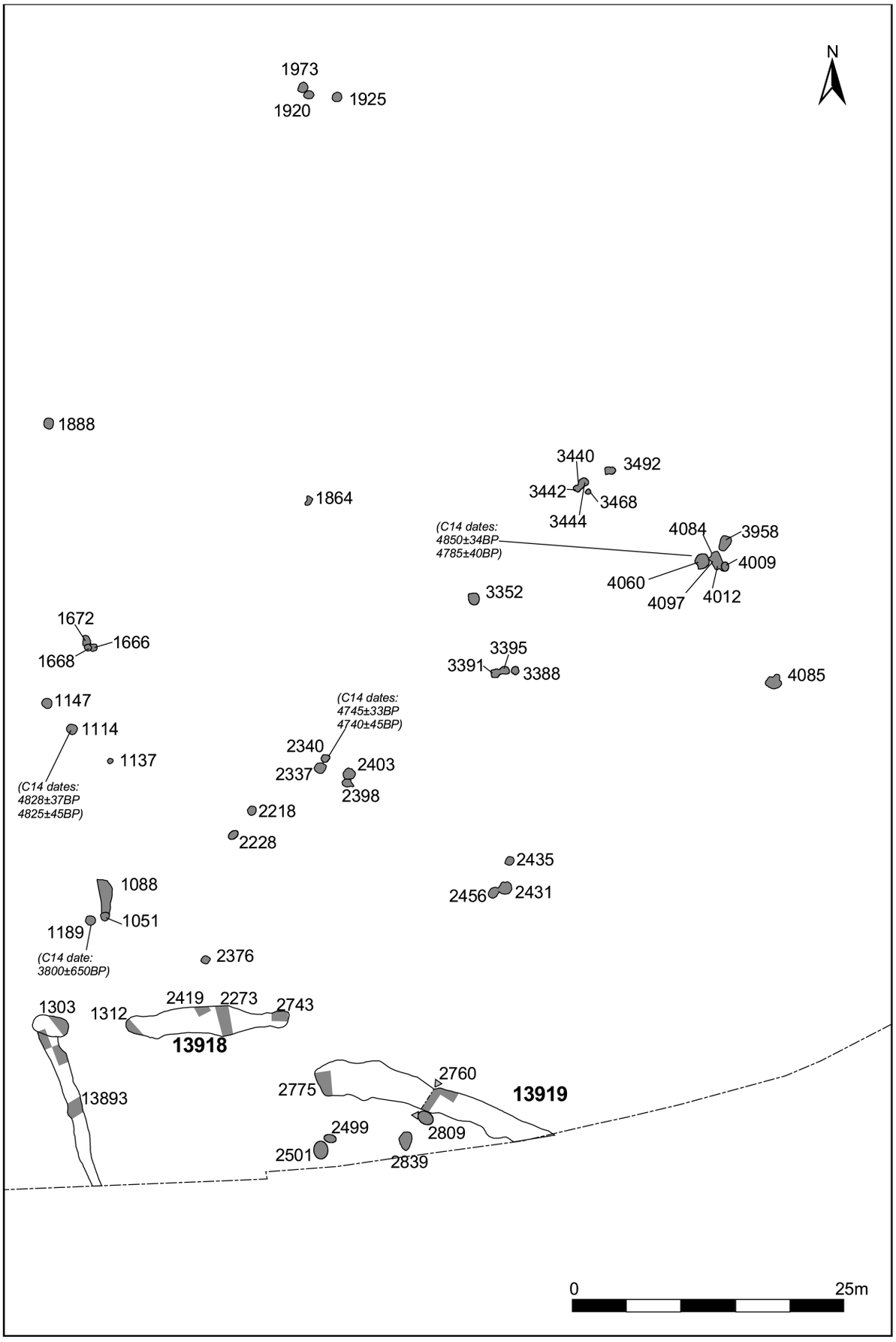


Figure 9 Early Neolithic: plan of features in mid-west part of the excavated area

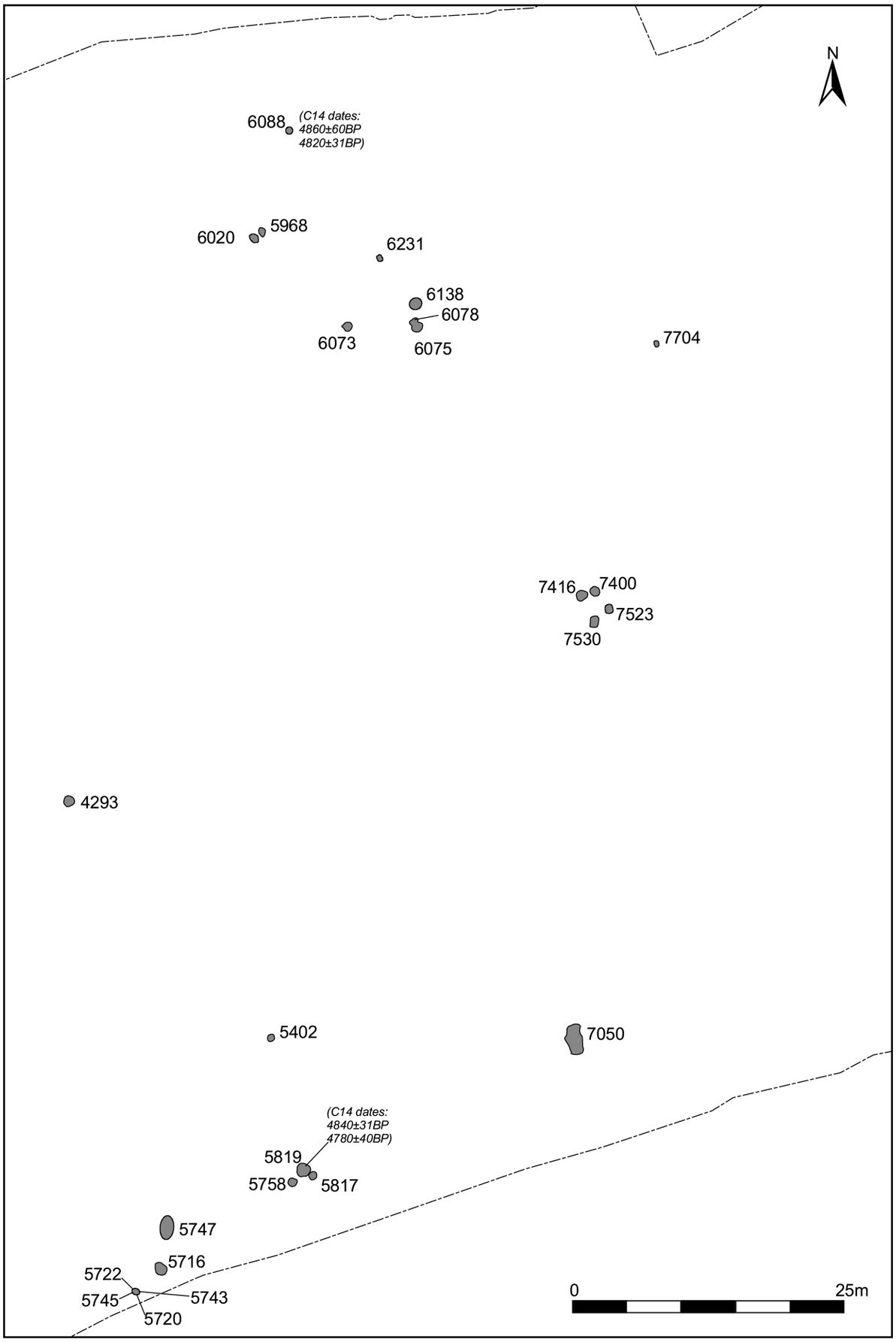


Figure 10 Early Neolithic: plan of features in mid-east part of the excavated area

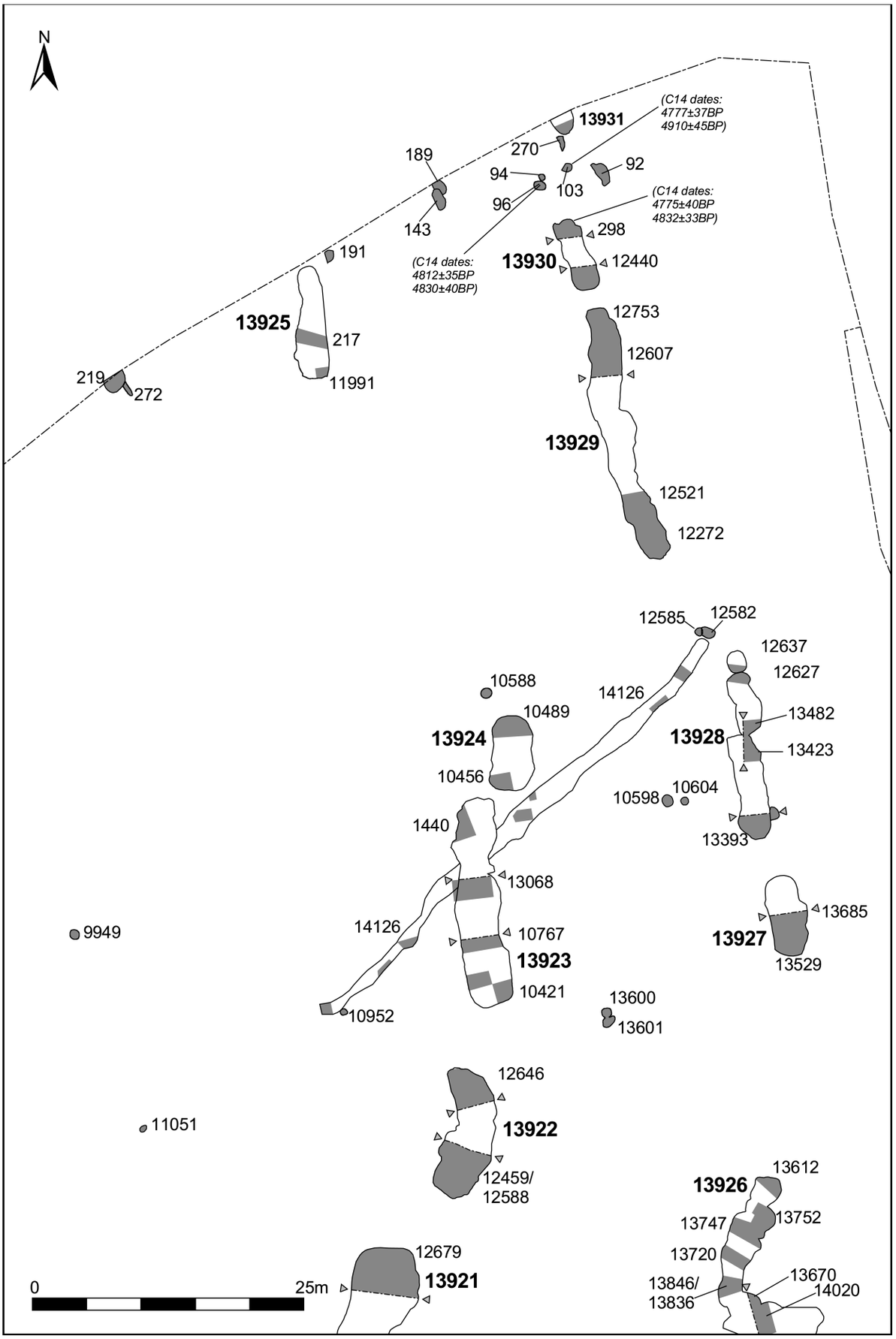


Figure 11 Early Neolithic: plan of features in north-east part of the excavated area

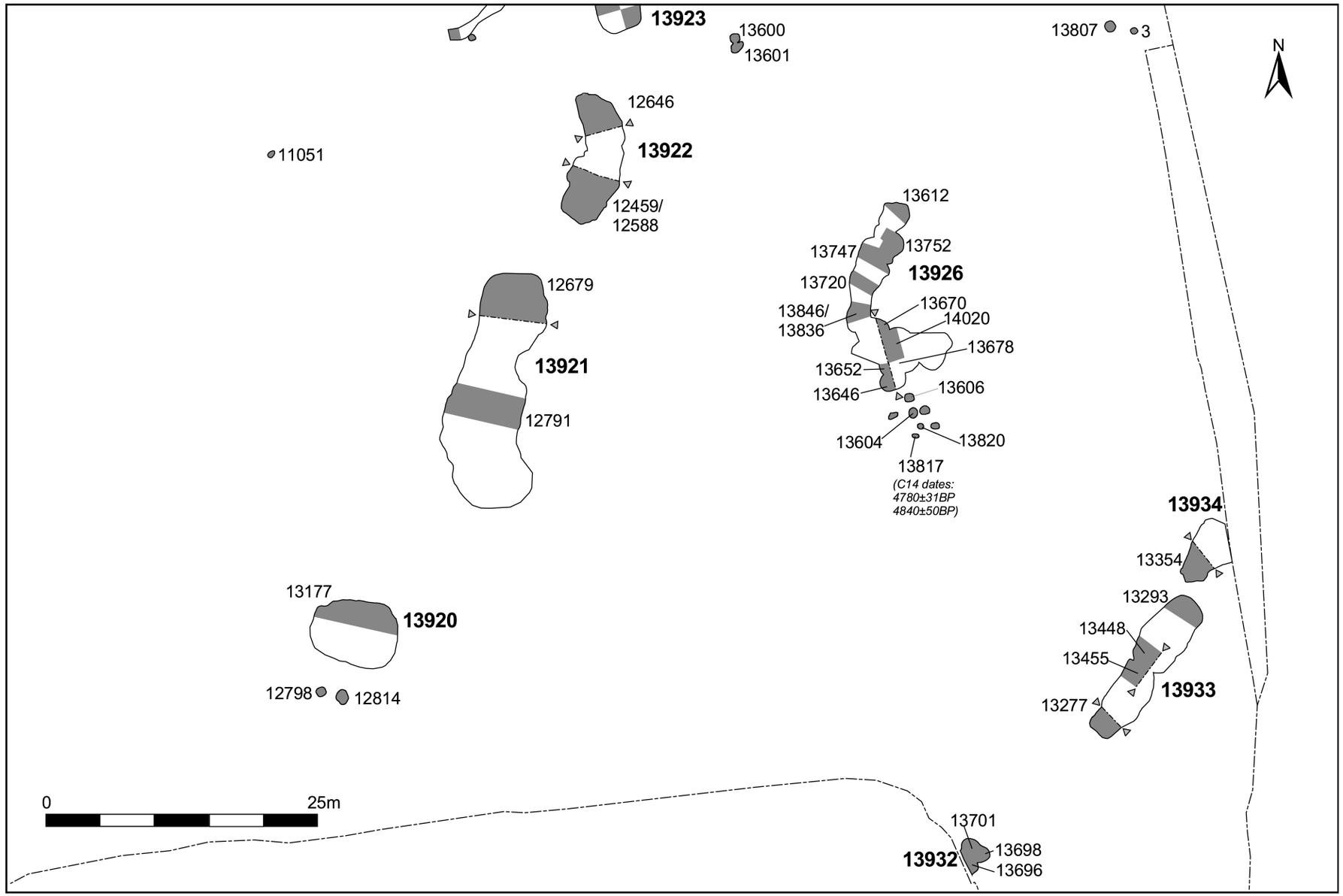


Figure 12 Early Neolithic: plan of features in south-east part of the excavated area

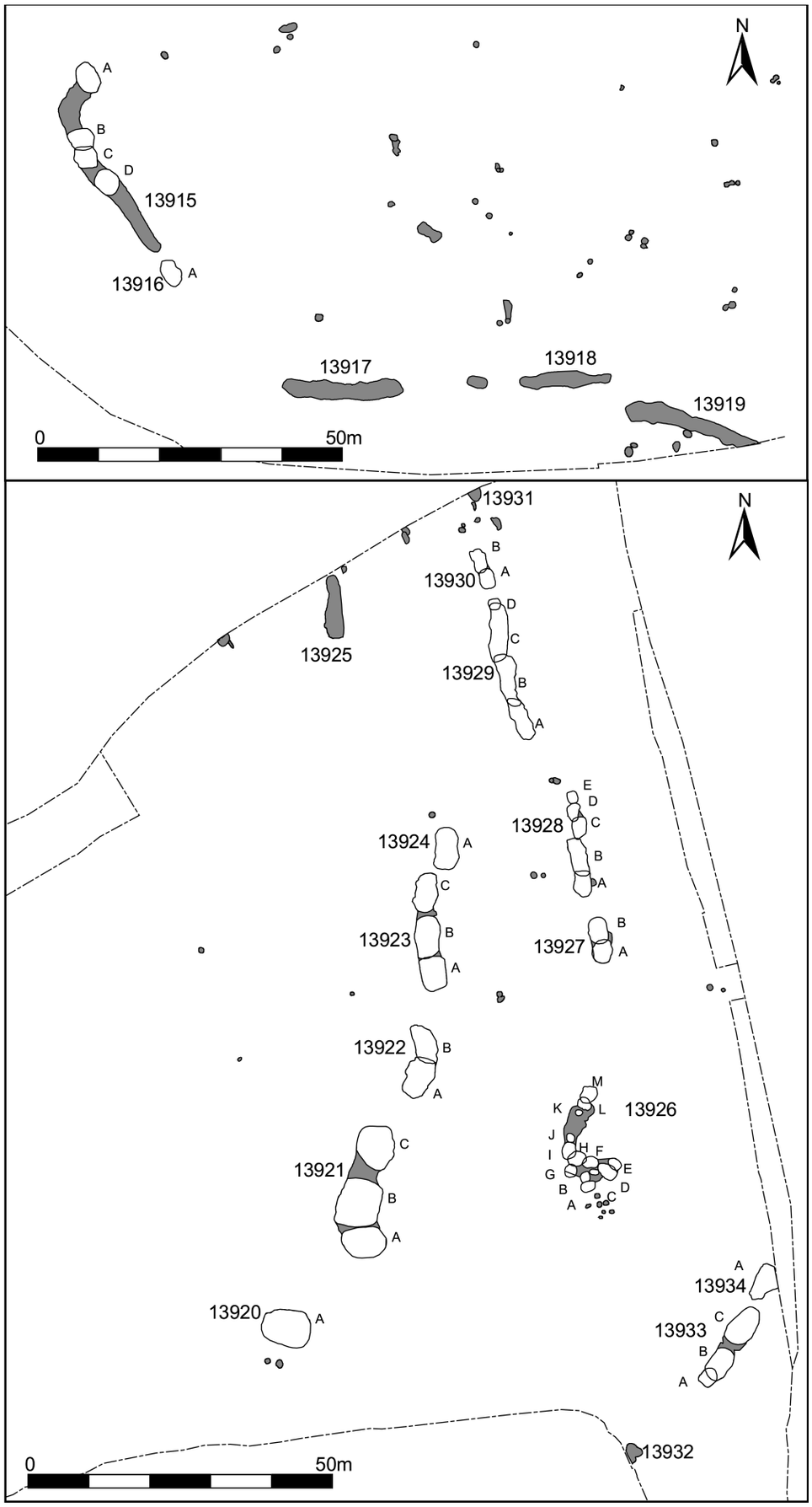


Figure 13 Early Neolithic: locations of identified constituent pits

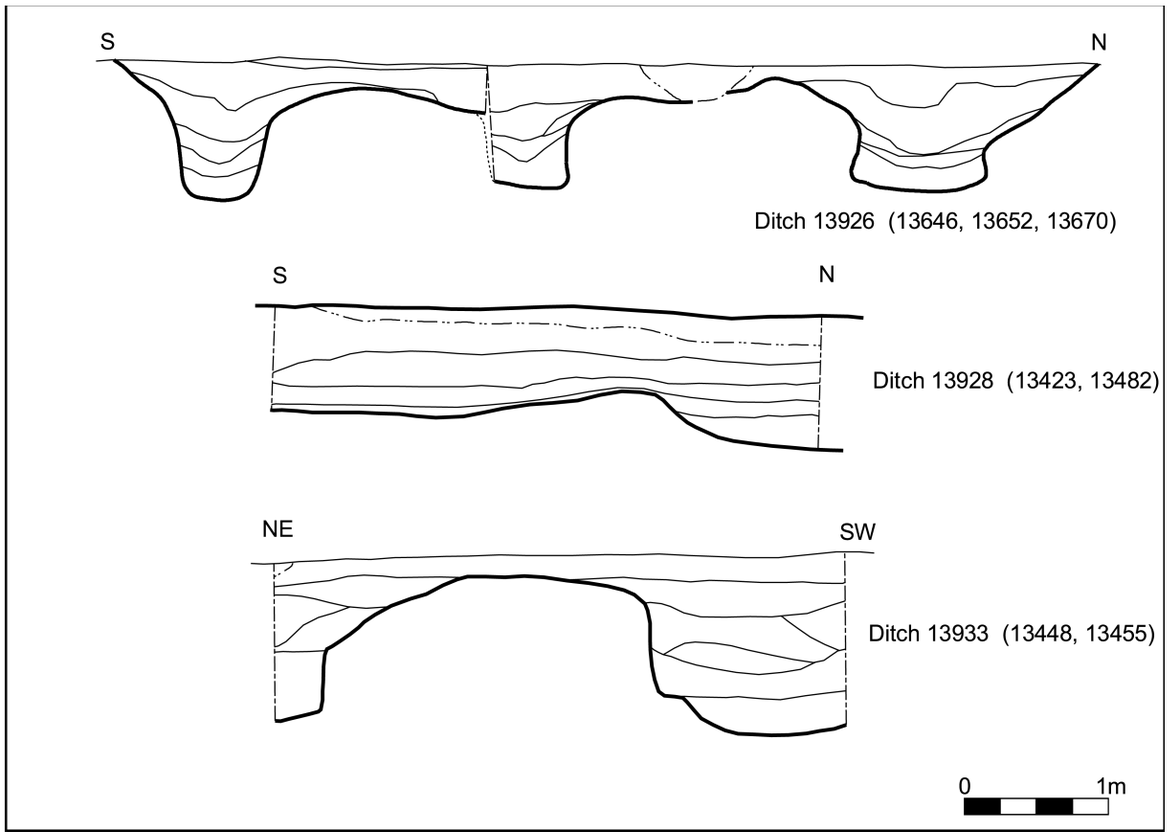


Figure 14 Early Neolithic: selected longitudinal sections across causewayed enclosure ditches

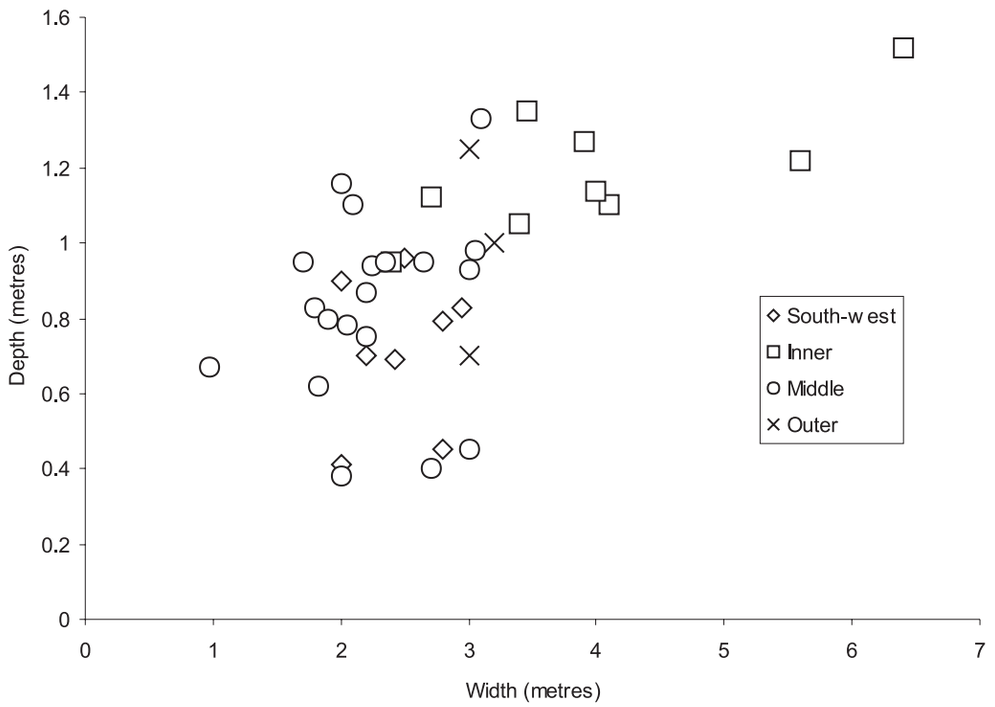


Figure 15 Early Neolithic: scatter plot of depths and widths of cuts with known dimensions within interrupted ditches forming south-west, inner, middle and outer components of causewayed enclosure

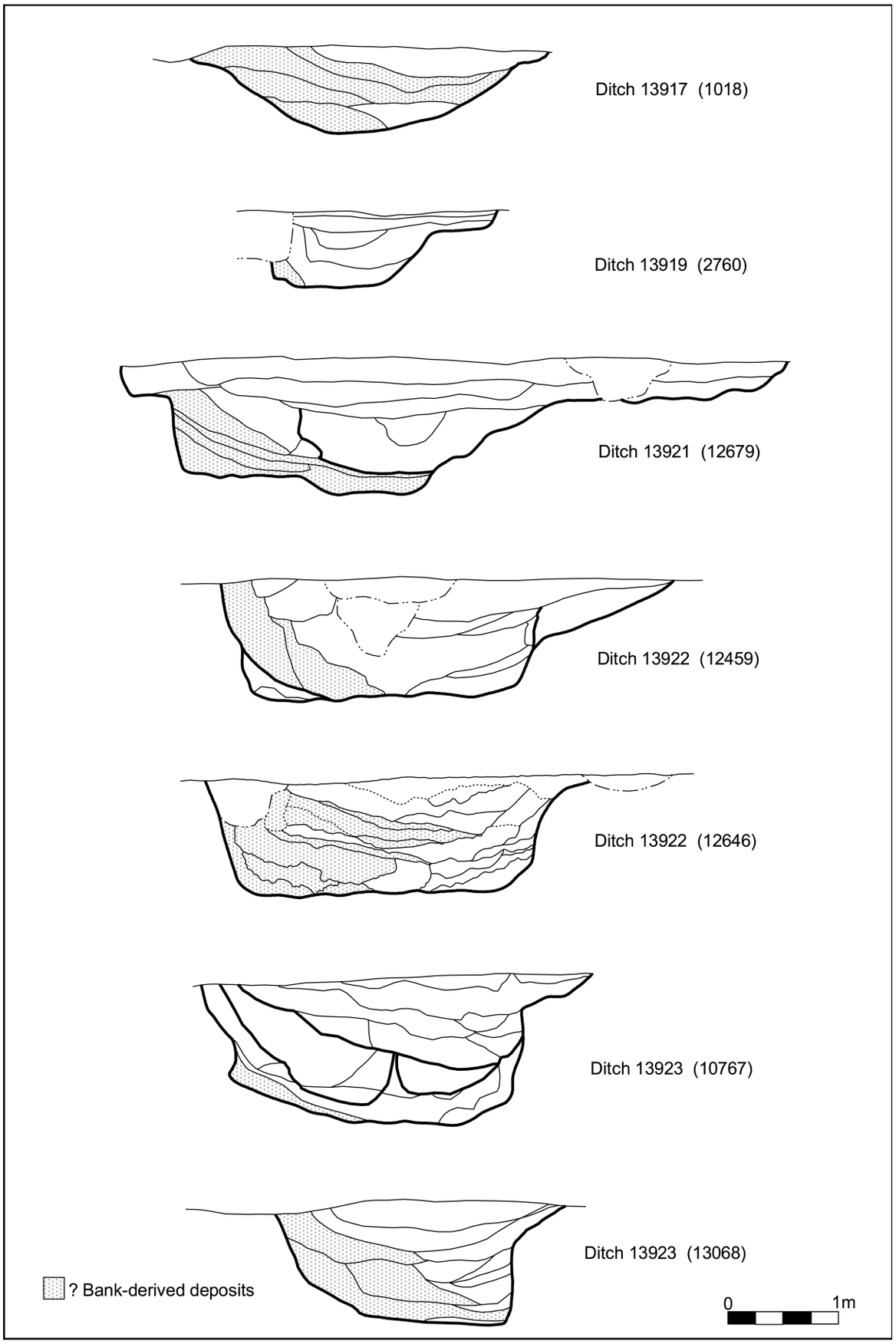


Figure 16 Early Neolithic: selected sections across causewayed enclosure ditches. Interior of monument to the left (some sections shown in reverse).

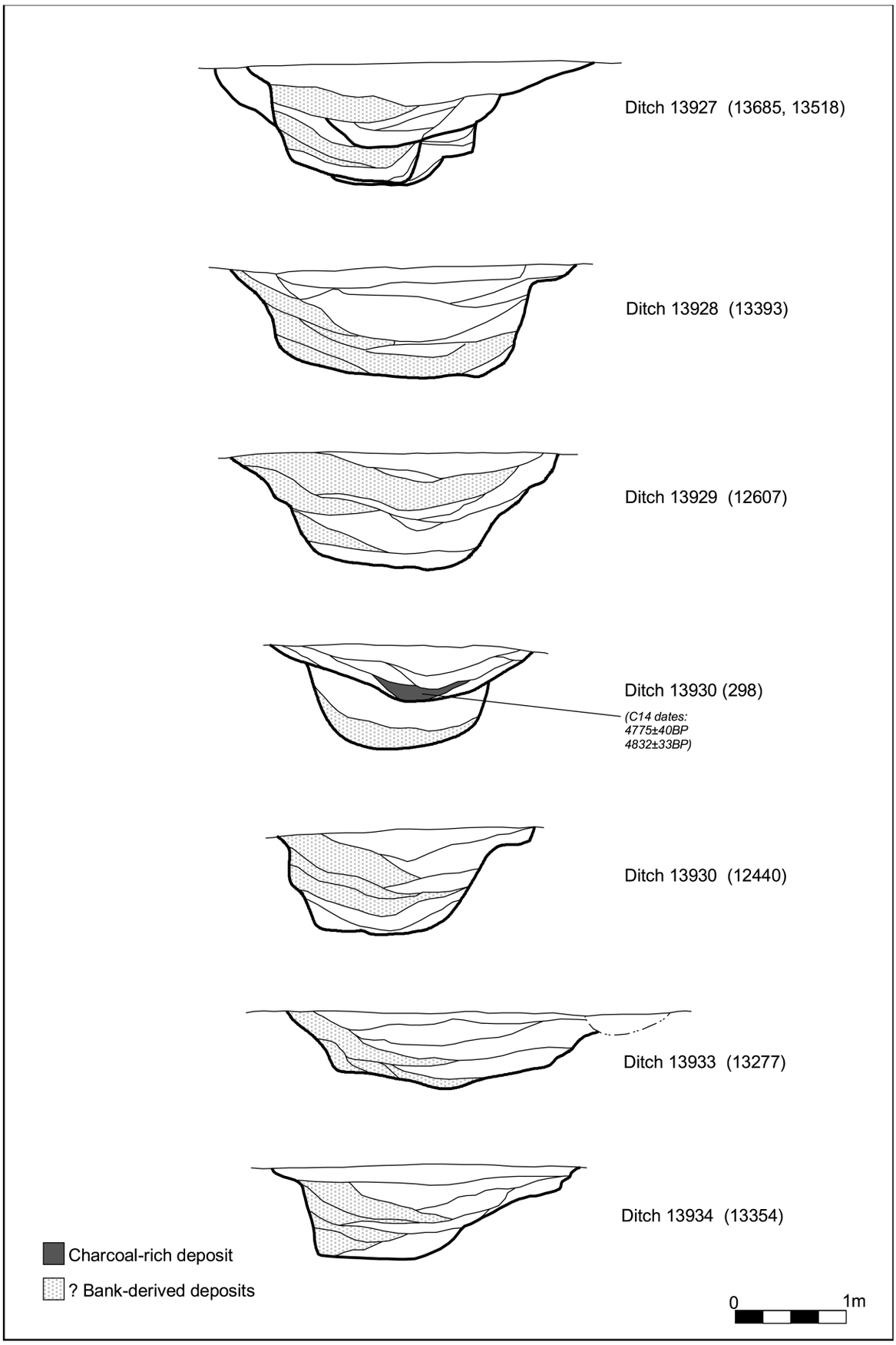


Figure 17 Early Neolithic: causewayed enclosure ditches, selected sections. Interior of monument to the left (some sections shown in reverse).

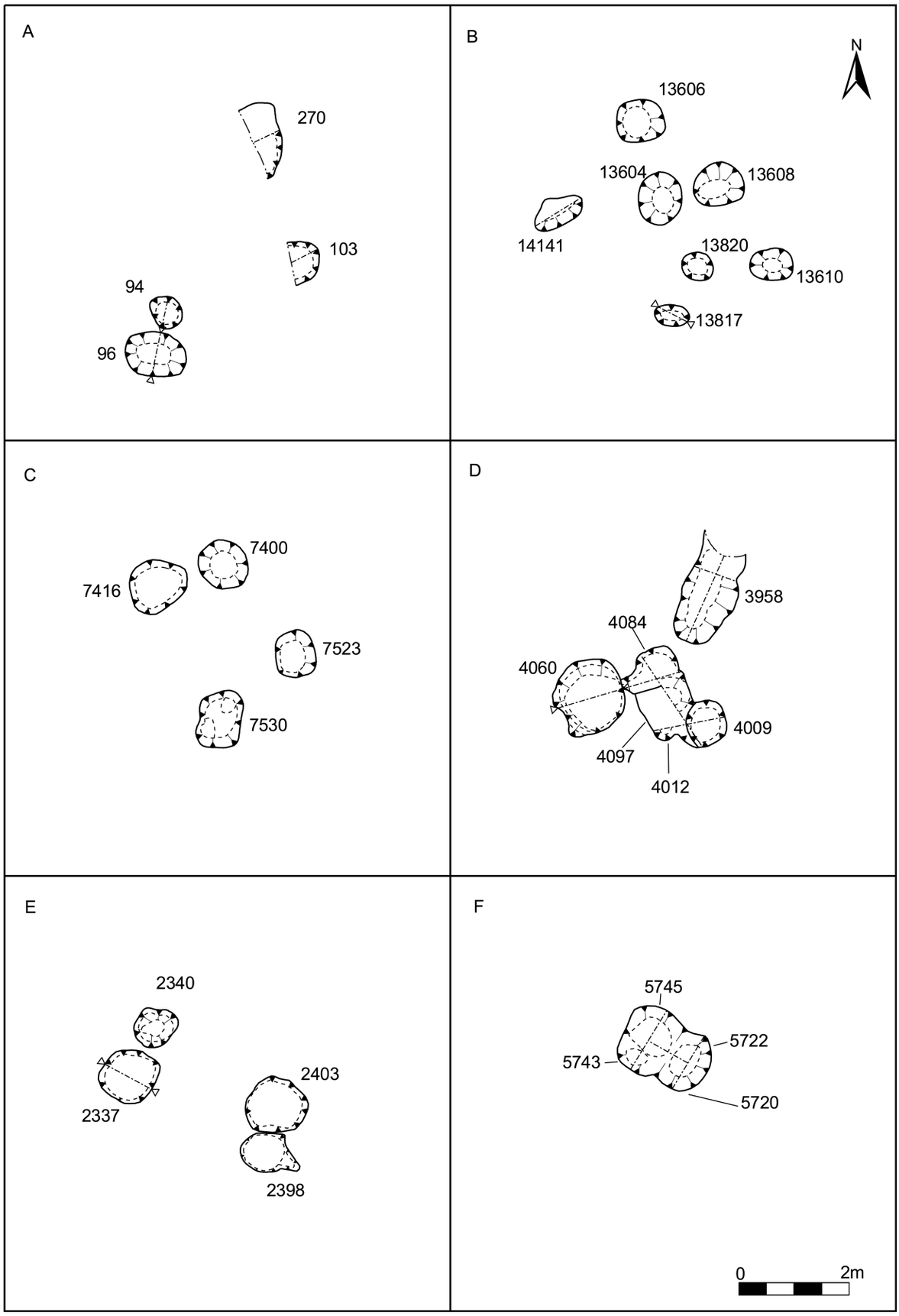


Figure 18 Early Neolithic: pit groups

Pits
(Plate IV; Figs 18–21)

Description
The excavation identified 117 Early Neolithic pits. Eleven of these contained no finds, or very few, but had been cut by Early Neolithic features.

The pits were found in all parts of the site, although the majority were concentrated in the western half and towards the south-west corner (Fig. 7). Pits were discovered in the areas between the circuits, and in the gaps between the ends of the ditches. There were no Early Neolithic pits within 8m of the inside perimeter edge of any causewayed enclosure ditch.

Some of the pits appeared to have been pairs, or to have been clustered together in small groups of four or more. The excavation identified six clear examples of this (A–F), although other less clear examples were also probably present (Figs 7 and 18; Table 2). Group A was situated between the ends of causewayed enclosure ditches *13930* and *13931*, Group B near the south end of causewayed enclosure ditch *13926*, and Group C in the middle of the site, immediately to the west of the palaeochannel. Groups D–F lay to the west of Group C, to the east and north-east of interrupted ditches *13918* and *13919*. Two of the groups (C and E) were very similar to each other, consisting of two pairs of two pits arranged in a block. Group B appeared to be a loosely-spaced continuation of the relatively small constituent pits that made up causewayed enclosure ditch *13926*. Pits *13608*, *13610* and *14141* may belong within this group, although this is not known for certain because they produced no finds and are therefore undatable. Group F comprised four intercutting pits. Group A included pits *96* and *103*, which lay within the probable flint-working area in the north-east part of the site. Relatively little worked flint occurred, however, in the other two pits in this group (*94* and *270*).

Plate IV Early Neolithic pit *1143*

Most of the Early Neolithic pits were circular or slightly oval, although a small minority were either irregular or elongated with rounded ends. A 'typical' pit (lying within the central 50% of the size distribution) was between 0.77m and 1.16m long, 0.65–0.98m wide, and 0.25–0.42m deep. No pit survived to a depth greater than 0.9m (Table 3).

The majority of the pits shared the distinctive profile displayed by most of those forming the causewayed enclosure ditches, albeit on a smaller scale (Fig. 19). Their sides were generally moderately to steeply sloping and the bases roughly flat or slightly concave. Some of the bases were stepped or irregular, however, and some sides were gently sloped.

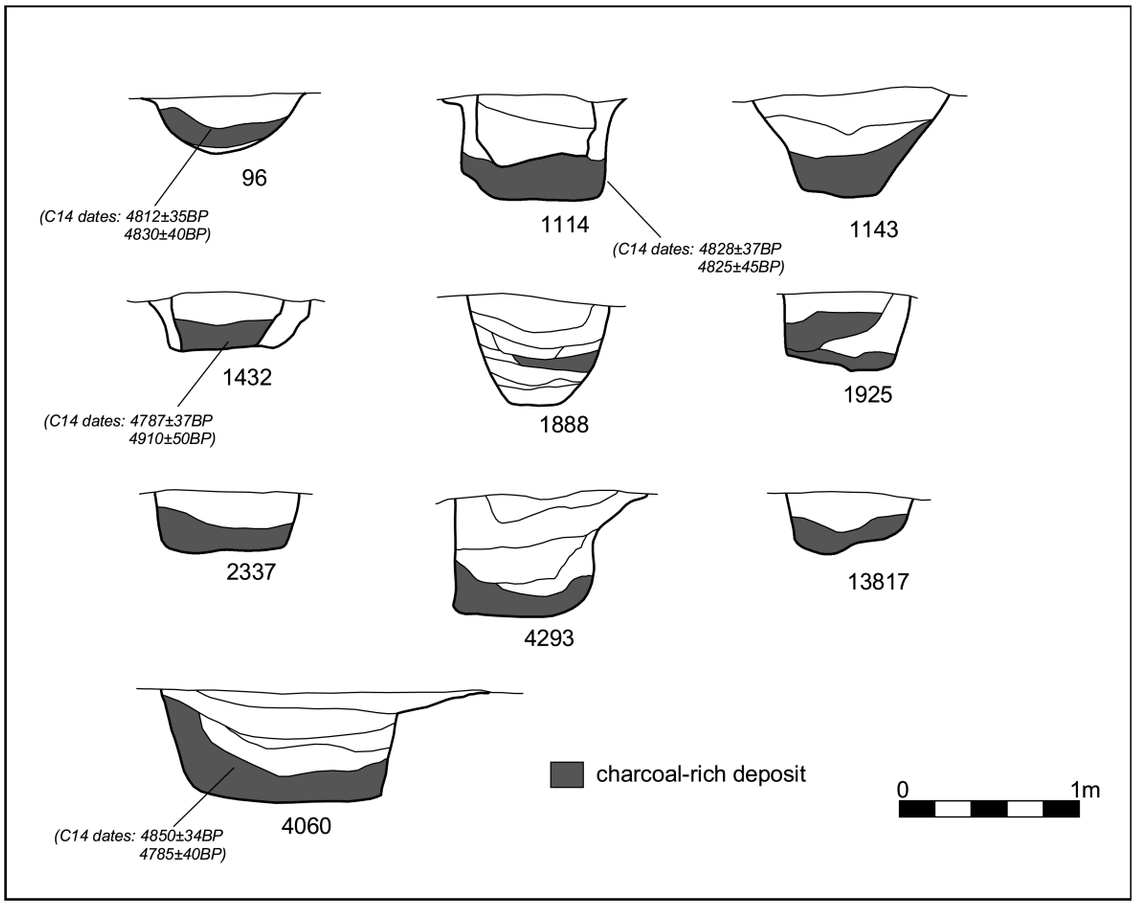


Figure 19 Early Neolithic: selected pit sections

Ditch	*Cut*	*Length (m)*	*Width (m)*	*Depth (m)*	*Comments*
13915	870	1.00+	3.50+	0.30+	33m long. ?Consists of at least four pits (A–D), ?linked by sunken causeways. Bases in 870, 873, 889 and 902 not exposed.
	873	1.09+	0.97+	0.25+	
	889	1.40+	3.40	0.24+	
	895	1.45+	2.80	0.45	
	902	1.35+	3.80	0.19+	
	955	1.50+	2.00	0.41	
13916	934	1.00+	3.00+	0.40	4.5m long. ?Represented by single large pit (A).
13917	988	1.30+	2.20	0.70	20m long. No clear evidence for individual component pits in plan or sections. Indirect evidence in fill sequence in 1018 for mound or bank along north side.
	1018	1.40+	2.80	0.79	
	1066	0.97+	2.94	0.83	
13918	1312	2.00+	2.00	0.90	16m long. No clear evidence for individual component pits in plan or sections. Possible evidence in section for recuts in 2273 and 2419. Special deposit identified in 1312. 1312 has uncertain shape and fill sequence due to truncation by MIA ditch 13894.
	2273	1.00+	2.50	0.96	
	2419	1.20+	1.30+	0.50	
	2743	1.50+	2.70+	0.46	
13919	2760	2.16+	2.43	0.69	More than 20m long. No clear evidence for individual component pits in plans or sections. Possible evidence in section for recut in 2775.
	2775	1.45+	2.30	0.22	
13920	13177	2.40+	6.40	1.52	5.2m long. ?Represented by single large pit (A). Feature is slightly truncated by undatable pits and MIA ditch 13937.
13921	12791	3.00+	4.80+	0.95	22m long. ?Consists of three large pits (A–C). Possible evidence for recuts in both cuts. Indirect evidence in fill sequence in 12679 for bank or mound along west side.
	12679	4.50+	5.60	1.22	
13922	12459	4.50+	4.10+	1.10	12m long. ?Consists of two large pits (A and B). 12588 is the same cut as 12459. Possible evidence in section in 12459 for a substantial recut. Indirect evidence in fill sequence in 12646 for mound or bank along west side.
	12588			As 12459	
	12646	3.80+	3.40	1.05	
13923	10440	3.00+	2.40+	1.20	19m long. ?Consists of three large pits (A–C). Cut 10767 is possibly the same cut as 13068. Evidence in section for recuts in 10767. Indirect evidence in fill sequence in 13068 for bank or mound along west side.
	10421	3.00+	4.00	1.14	
	10767	1.20+	3.45	1.35	
	13068	2.00+	2.70+	1.12	
13924	10456	2.20+	1.85+	0.81+	7m long. ?Consists of single large pit (A). Base in 10456 not exposed. Indirect evidence in fill sequence in 10489 for mound or bank along west side. Small pit (10508) found cut into base of 10489.
	10489	1.90+	3.90	1.27	
13925	217	1.20+	2.40	0.95	10.5m long. No clear evidence for component pits in plan or sections.
	11991	1.13+	0.73+	0.86	
13926	13612	1.50+	2.65	0.95	17.5m long. ?Consists of thirteen pits, separated into two groups of ten (A–J) and three (K–M) by 4m long sunken causeway, as represented by 13720 and 13747. Undermined sides in 13652 and 13670 suggest presence of standing water in pits in antiquity.
	13646	1.25+	1.70	0.95	
	13652	1.50	1.80	0.83	
	13670	0.90+	2.20	0.87	
	13678	0.80+	0.80+	0.62	
	13720	1.20+	2.70+	0.40	
	13747	1.70+	3.00	0.45	
	13752	1.30+	2.20	0.75	
	13797	1.00	0.97	0.67	
	13836	1.20+	2.25	0.94	
	13846	0.40+	1.83	0.62	
	14020	0.70+	2.00	0.38	
13927	13529	1.80+	3.00	0.93	7.5m long. ?Consists of two large pits (A and B) Evidence in section in 13685 for recuts.
	13685	1.00+	2.30+	1.10	

Ditch	*Cut*	*Length (m)*	*Width (m)*	*Depth (m)*	*Comments*
13928	12627	0.80+	2.00	1.16	15.3m long. ?Consists of four large pits (A–D). May also include pit 12637 (E) at north end. Indirect evidence in fill sequence in 13393 for mound or bank along west side. 13482 shares deposits with 13424. 12627, 13423 and 13482 are slightly truncated by LIA ditch 13941.
	13393	2.30+	3.05	0.98	
	13423	2.50+	1.50+	0.77	
	13482	1.35+	1.59+	0.92	
13929	12272	6.00	2.10	1.10	23m long. ?Consists of three elongated pits (A to C). Pit 12753 (D) cuts penultimate fill in north end of 12607. Special deposits identified in 12521, 12607 and 12753.
	12521	3.70+	2.05	0.78	
	12607	6.20+	3.10	1.33	
	12753	2.20	2.00	1.25	
13930	298	1.77+	1.66+	0.92	6.8m long. ?Consists of two elongated pits (A and B). Possible evidence for recut (215) in section in 298. Structured deposit and indirect evidence in fill sequence in 12440 for mound or bank along west side.
	12440	2.10+	2.35	0.95	
13931	239	0.80+	1.90	0.8	More than 2m long.
13932	13692	0.80+	2.70+	1.30	More than 0.8m long.
13933	13277	2.00+	3.00	0.70	15m long. ?Consists of three large pits (A–C). Sunken causeway between 13448 and 13455.
	13293	2.00+	3.00	1.25	
	13448	1.30+	2.50+	1.25	
	13455	1.50+	1.90+	1.30	
13934	13354	2.70+	3.20	1.00	More than 6m long. Consists of at least one large pit.

Table 1 Early Neolithic interrupted ditches, summary information

Approximately 40% of the pits contained single fill deposits, 35% two deposits and 25% three or more deposits. Nine was the maximum number of discrete deposits noted in any one pit (Fig. 19, *1888*); pits with more than four fills were rare.

Most of the pit fills appeared to fall into one of two types. One of these was charcoal-rich, with frequent to abundant flecks and fragments of charcoal and infrequent small fragments of burnt stone (Plate IV). These deposits were distinctively dark and occasionally quite silty. The other type of deposit contained very little charcoal and was usually similar to the surrounding natural sand. The charcoal-rich deposits tended to occur less frequently in the upper parts of the fill sequences (Table 4). Just under 50% of the pits contained one charcoal-rich deposit, and only one pit (Fig. 19, *1925*) contained more than one. The charred plant material in the sampled charcoal-rich deposits largely comprised hazel nutshells and fragments of hazel, oak, hawthorn and ash.

Evidence recorded in section suggested that 8% of Early Neolithic pits had been recut or re-opened (Fig. 19, *e.g. 1114* and *1432*). These re-diggings were usually centrally placed, although one or two were slightly off-centre. In a few cases, it was not possible to distinguish if a pit had been recut or re-opened or had been cut fortuitously by a subsequent pit.

Radiocarbon dating of carbonised hazel nutshell fragments and carbonised residues on pot sherds from nine different pits (*96*, *103*, *1114*, *1432*, *2340*, *4060*, *5819*, *6088* and *13817*) produced the same alternative date-ranges as those obtained from sample material from the causewayed enclosure ditch: 3660–3620 cal. BC (61%) and 3560–3530 cal. BC (34%).

Finds

Of the pits containing pottery and/or worked flint, 77% contained both, 16% just pottery, and only 7% just flint (Figs 20 and 21). Pits with large groups of pottery included *1114*, *1143*, *1432*, *2340* and *4060* (2013g, 1799g, 2217g, 2666g and 2249g each, respectively). In four out of these five features, the finds were not exclusive to one deposit but were spread between two to five discrete fills. The one exception to this was pit *2340*, which contained a single fill deposit. Pits with large amounts of worked flint were fewer in number and were restricted to the two pits (*96* and *103*) associated with the flint-working area in the north-east part of the site. 3281 pieces were found in *96* and 2108 pieces in *103*, although roughly 75% of the combined total of the two comprised waste flakes and chippings. The second of the three fills in pit *96* contained more than 90% of the flint from that feature. Pit *103* contained a single deposit. Included with the flint in pits *96* and *103* were 408g and 692g of pottery respectively. All of the other pits with worked flint contained fewer than 323 items each, with most containing less than 100 examples.

Stone objects and baked clay were the only other finds from the pits. In pits *96* and *103*, along with the worked flint and pottery were one definite and three putative fragments of saddle quern. Pits *1925* and *5819* contained probable pounders, *2340* a pounder or rubber, *2337* a hammerstone, and *1114* a hammerstone and a possible quern rubber. Small amounts of baked clay were found in eight of the Early Neolithic pits (*865*, *1114*, *1147*, *4009*, *4293*, *5743*, *6138* and *7704*); nearly all of the pieces came from charcoal-rich deposits. Pit *219*, in the north-east corner of the site, was slightly unusual in yielding 34 pieces of non-structural baked clay. A total weight of 600g was divided between the topmost and primary deposits. None of the deposits in this pit were charcoal-rich.

The charcoal-rich pit deposits tended to contain more finds than those resembling natural sand (Tables 5 and 6) — typically twice as much pottery and six times as much worked flint. The very large artefact groups already mentioned (above, 31) came from both types of deposit but were rare and exceptional. More normally, a charcoal-rich deposit contained 66–498g of pottery and between ten and 58 pieces of flint. The deposits which were low in charcoal mostly yielded between three and 20 pieces of worked flint and 27–228g of pottery.

Viewed as a group statistically, the flint and pottery assemblages from the Early Neolithic pits as a whole were heavily skewed towards high values by the small number of pits with very large groups of finds, which generally came from the primary and secondary fills. Unlike the pottery, which seemed more or less evenly distributed across the spectrum of pit fills, pieces of worked flint occurred less frequently in the upper fill sequences (Tables 7 and 8).

In no instance was it possible to show that an individual object or group of finds in an Early Neolithic pit had been deliberately arranged and placed. However, a disproportionate amount of the pottery appeared to consist of rim and upper body sherds, and this suggested that some of the pottery found in the pits had seen selection of some kind prior to deposition.

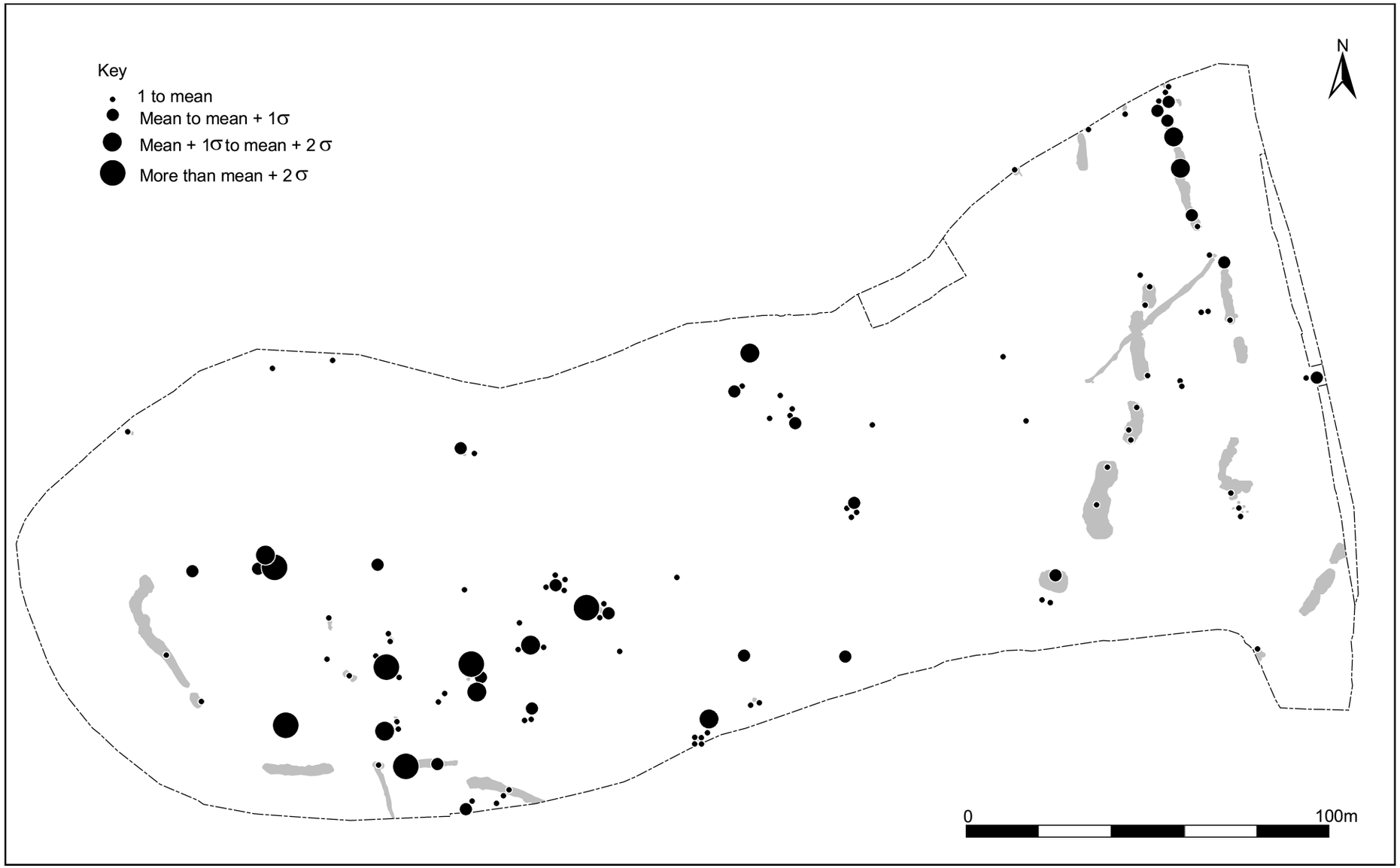


Figure 20 Early Neolithic: distribution of pottery by weight and standard deviation

Group	*Pits*
A	94, 96, 103 and 270
B	13604, 13606, 13817 and 13820; possibly 13608, 13610 and 14141
C	7400, 7416, 7523 and 7530
D	3958, 4009, 4012, 4060, 4084 and 4097
E	2337, 2340, 2398 and 2403
F	5720, 5722, 5743 and 5745

Table 2 Early Neolithic pit groups

	Length (m)	*Width (m)*	*Depth (m)*
Sample size	110	110	109
Mean	1.1	0.85	0.34
Minimum	0.26	0.26	0.07
First quartile	0.77	0.65	0.25
Median	0.92	0.8	0.33
Third quartile	1.16	0.98	0.42
Maximum	3.8	1.8	0.9

Table 3 Early Neolithic pit dimensions

Deposit type	*Number of deposits*	*Number of charcoal-rich deposits*	*%*
Primary/single	117	43	37
Secondary	67	13	19
Third +	62	3	5
All deposits	246	59	24

Table 4 Early Neolithic pits: distribution of charcoal-rich deposits

	Charcoal-rich deposits	*Charcoal-poor deposits*	*All deposits*
Number of deposits with worked flint	50	82	132
Number of deposits without worked flint	8	106	114
Number of pieces			
Sum	7136	1913	9049
Mean	143	23	69
Minimum	1	1	1
First quartile	10	3	3.5
Median	28.5	6.5	13
Third quartile	58	20	39
Maximum	3065	323	3065

The calculations exclude deposits with no worked flint

Table 6 Early Neolithic pits: worked flint by number of pieces and deposit type

	Charcoal-rich deposits	*Charcoal-poor deposits*	*All deposits*
Number of deposits with pottery	49	96	145
Number of deposits without pottery	10	91	101
Weight (grams)			
Sum	18,064	16,982	35,046
Mean	367	177	242
Minimum	1	4	1
First quartile	66	27	30
Median	166	86	96
Third quartile	498	228	332
Maximum	2666	1036	2666

The calculations exclude deposits with no pottery

Table 5 Early Neolithic pits: pottery by weight (g) and deposit type

	Primary deposits	*Secondary deposits*	*Third and later deposits*
Number of deposits	65	35	32
Sum	4328	3895	826
Mean	67	111	26
Minimum	1	1	1
First quartile	5	3	3
Median	17	13	6
Third quartile	49	29	20
Maximum	2108	3065	216

The calculations exclude deposits with no worked flint

Table 8 Early Neolithic pits: worked flint by deposit status and number of pieces

	Primary deposits	*Secondary deposits*	*Third and later deposits*
Number of deposits	77	36	32
Sum	20,133	8256	6667
Mean	261	229	208
Minimum	1	4	4
First quartile	29	27	36
Median	94	105	72
Third quartile	324	316	383
Maximum	2666	1202	688

The calculations exclude deposits with no pottery

Table 7 Early Neolithic pits: pottery by deposit status and weight (g)

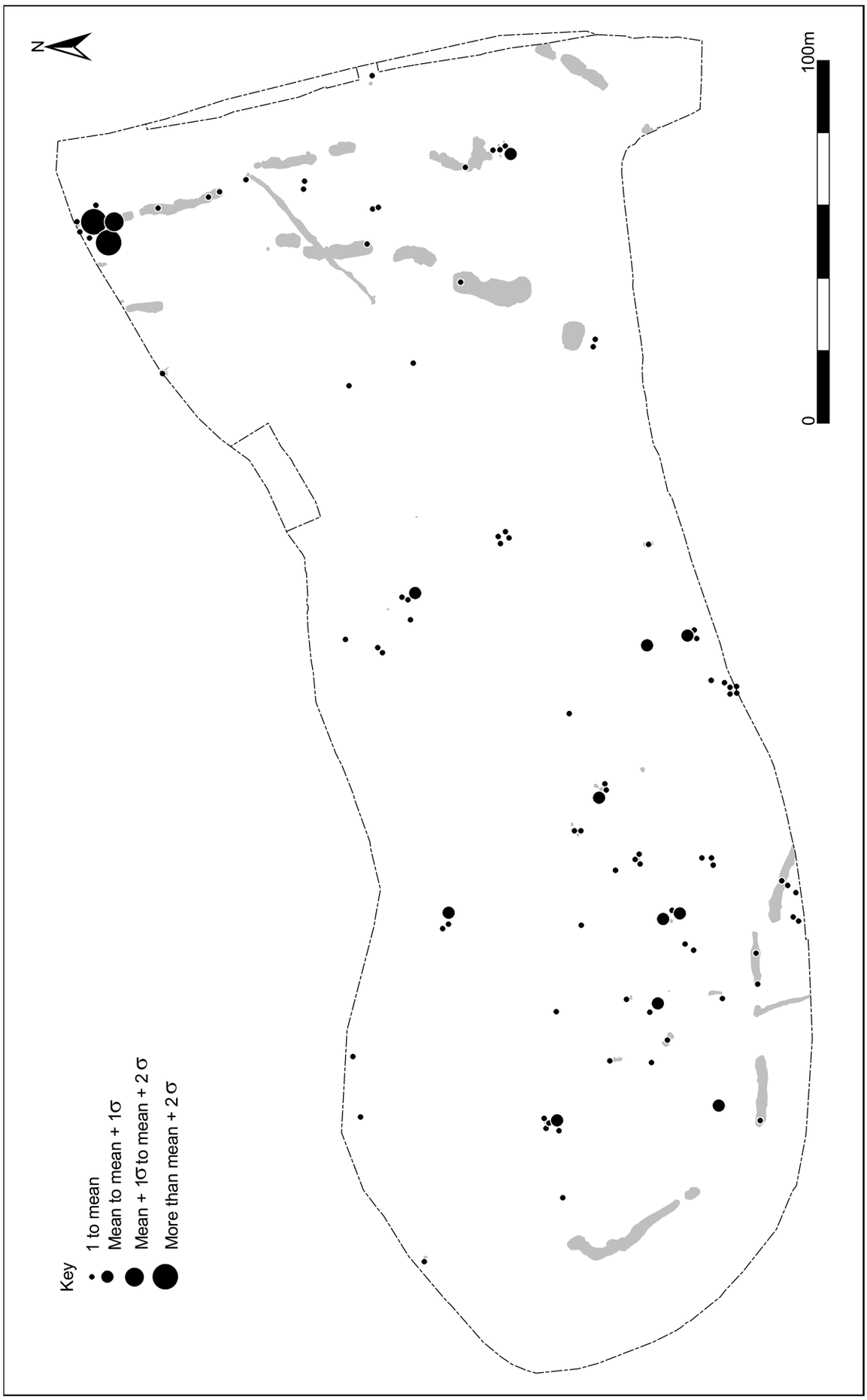


Figure 21 Early Neolithic: distribution of worked flint by number of pieces and standard deviation

Ditches

(Figs 9 and 11)

Sample excavation of ditch *13893* produced no finds, but the manner in which it had been cut by securely-dated Early Neolithic pit *1303* (Fig. 9) indicated a prehistoric date. It was sampled in three locations and was found to have moderate sloping, inward curving sides, and a slightly concave base. The two segments contained one and two deposits of silt sand apiece, and were 0.35m and 0.48m deep.

Ditch *14126* may in fact have been a natural feature: it yielded no finds and its cut appeared somewhat ill-defined and amorphous, although its eastern end appeared more 'ditch-like' (Fig. 11). The feature was excavated in six locations and was found to have been cut by causewayed enclosure ditch *13923* and Late Neolithic/Early Bronze Age pit *10417*. Where the feature was well-defined, in its eastern part, it was 0.35m deep; it had moderate sides and a flat to concave base and each segment contained two or three discrete fill deposits.

Interpretation

(Figs 22 and 23)

The radiocarbon dates suggest that the causewayed enclosure only saw direct use over a period of 40 years or less (Chapter 4, 95–102). This began at either 3670–3630 BC or 3570–3540 BC and was over by 3640–3610 BC or 3560–3530 BC. The form of the monument as a whole cannot be established from the evidence currently available, but it is possible to speculate that the inside and south-west lines of interrupted ditches are elements of an inside oval circuit, *c*. 200m wide and 300m long (Fig. 22). A 'guestimate' suggests that the archaeological excavation investigated nearly 40% of the monument, although this assumes that the outside course forms a complete circle, and that the area covered by the causewayed enclosure is roughly 12ha.

The size of the causewayed enclosure, and the major human effort that is likely to have been needed for its construction, imply that it was a communal focus, possibly built and used for organised gatherings by small scattered communities from across the Tendring peninsula. It is likely that ceremony and the practise of religion were significant elements in the use of the monument, since the identified evidence is dominated by special deposits, and by features associated with them.

The fill sequences and surviving profiles of the constituent pits in the interrupted ditches provide indirect evidence for former banks or mounds alongside part or all of the inside perimeters of the enclosure ditch circuits. Large volumes of sand slumping and weathering into the ditches from inside perimeter banks or mounds probably account for the extensive fill deposits slumped against their outward-facing sides, the more eroded condition of the opposite (inward-facing) edges, and the locations of the shallow off-centre 'depressions' that characterise the topmost elements of many of the features' fill sequences (Figs 16 and 17; *cf*. Fig. 23). The absence of Early Neolithic pits within 8m of the inside perimeter edge of any causewayed enclosure ditch length also suggests the former existence of ditch-side banks or mounds.

The precise sequence of events that gave the monument its recorded form cannot be discerned from the evidence available. It remains impossible to determine if the construction and use of the ditches and enclosure courses took place successively, or if at any time they were all in use and open at the same time. The stratigraphic evidence suggests that the majority of the constituent pits in each individual ditch were open at the same time, and that they filled up together. If the pits in each ditch were not all cut at the same time, then the existing pits in each must have been kept open until the last pit had been dug.

The larger re-diggings that were recorded suggest the maintenance of the causewayed enclosure and/or the cleaning-out of an existing cut in preparation for a special deposit of some kind (*e.g*. Fig. 16, *12459*). It is likely that the smaller recuts (*e.g.* Fig. 16, *10767*) relate to the insertion of subsequent special deposits that have not survived; maybe these occurred after systematic maintenance of the causewayed enclosure had ceased. Distinctive grey silty primary fills and undermined sides in some of the ditches in the south-east part of the excavation area suggested that they were deeper than the surrounding water table. If this was the case, then either they were maintained or they were of short duration, as the combination of sandy soil and the high water table may have meant that they began to erode and collapse soon after cutting.

Specially placed deposits of artefacts, each including one or more (probably incomplete) pottery vessels, are implied by the clusters of sherds in constituent pits within causewayed enclosure ditches *13918*, *13929* and *13930* (Figs 9, 11 and 20). These deposits are likely to have been disturbed and fragmented during antiquity, because in some cases associated sherds were spread across adjacent deposits. Four of these five deposits came from non-primary fills, suggesting that before the finds had been placed the pits that received them had been open for some time. A clustering of special deposits in the north-east corner of the site, all within ditches of the middle course, appears significant.

The very large groups of worked flint from pits *96* and *103* and the north terminal of interrupted ditch *13930* indicate a flint-working focus in the north-east part of the site (Figs 11 and 21). The occurrence of this material in the three features probably related to the disposal of waste and the deliberate burial of finished and unfinished work for temporary safe-keeping. A ritual explanation for the deposition of this material cannot be discounted, although this is not unequivocal.

The Early Neolithic pits, with their generally steep sides and broadly flat bases, can be seen as small-scale versions of the constituent pits of the causewayed enclosure ditches (*cf*. Figs 16 and 17; Fig. 19). The location of pit group B implies a degree of relation between the two types of feature as it appears to have been a loosely-spaced continuation of the slightly larger constituent pits of causewayed enclosure ditch *13926*.

The large groups of finds from the Early Neolithic pits probably represent structured or special deposits of some kind. A preponderance of rim and upper body sherds in the pottery assemblage implies that the composition of each deposit was considered carefully prior to deposition. The high proportion of large groups of finds from primary and secondary fills indicates that most of these deposits were placed in the pits immediately or soon after the pits had been cut. Once cut, each pit may then have been left open as a small number of them are known to contain more than one large group of finds.

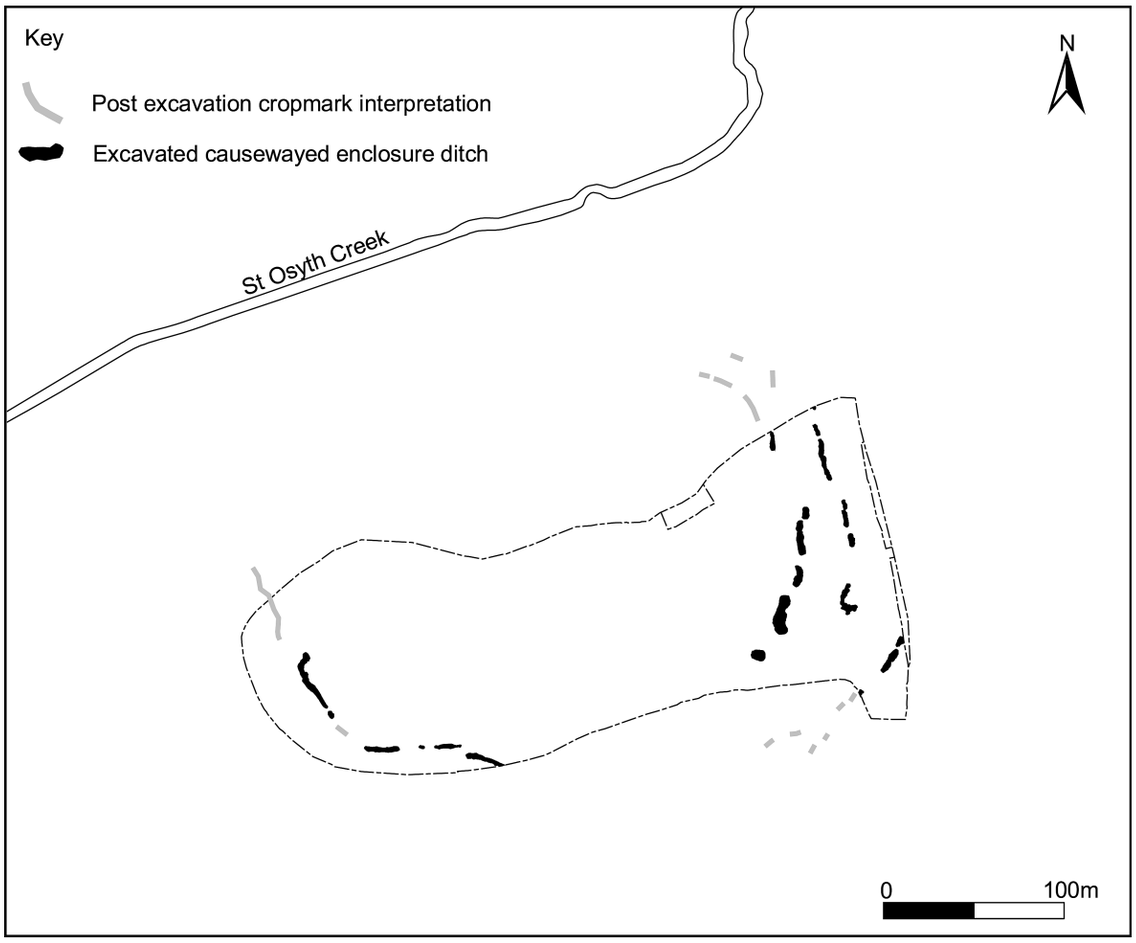


Figure 22 Early Neolithic: plan of causewayed enclosure, excavated features and cropmarks

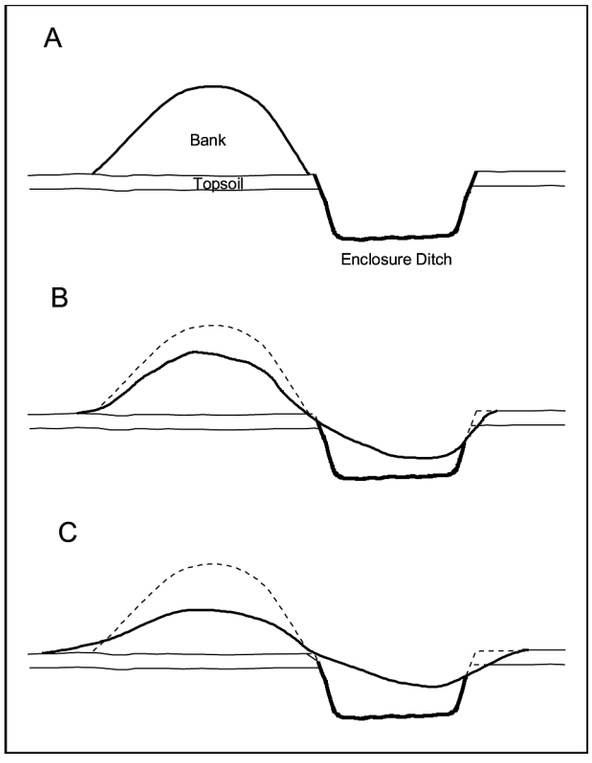


Figure 23 Early Neolithic: interpretative section illustrating formation process, interrupted ditches

The presence of charcoal-rich fills, and the fact that each one of them tended to contain more finds than its lighter-coloured counterparts, probably implies that when it came to the pits there were at least two different procedures for the placing of special deposits. Some association with fires seems undeniable; although it is possible that some finds were purified through fire before deposition, it is unlikely that this was a common occurrence as few of the finds are charred or scorched.

The pits and the ditches appear to have been used differently when it came to the placing of special deposits; considerably more finds come from the pits than the ditches and only one deposit (*251*) in the ditches was charcoal-rich. The reason for this is not known, although it is possible to suggest that whereas the placing of the special deposits in the pits happened in a domestic context, the placing of the ones in the ditches were perhaps carried out under circumstances which were more communal and public.

The repeated use of favoured pits and places within the interior area of the causewayed enclosure probably accounts for the groupings of pits, and their associated recuts (Fig. 18). The latter may relate either to the deliberate uncovering of an earlier deposit, or to the insertion of a subsequent one. Pit Group A contains a very large amount of worked flint, and represents a chosen site for the knapping of flint. The location of pit group B suggests that it was associated in some way with cause-

wayed enclosure ditch *13926* (Fig. 7). The nature of the constituent pits of ditch *13926* support this view, since most of them were atypically small: indeed, they looked more like components of a typical pit group than the constituent pits making up the other interrupted ditches (Fig. 13). The arrangement and similarity of pit groups C and E makes them significant, although the reason why they were both composed of two pairs of two features is not known. Pit groups D and F comprise intercutting pits, and both suggest the repeated use of favoured locations.

III. Late Neolithic/Early Bronze Age

(Figs 24 and 25)

Nine pits containing Grooved Ware and/or Beaker pottery (Chapter 3, 69–72) form part of the evidence for the Late Neolithic/Early Bronze Age (Fig. 24). Pieces of Grooved Ware were also discovered in some of the topmost deposits of the constituent pits of the causewayed enclosure ditches (*870*, *12440* and *13685*) and it is assumed that these features, and perhaps their associated banks, were still a visible part of the landscape, even if they were much degraded after *c*. 1500 years. A Middle Iron Age pit (*12406*) dug into the surface of causewayed enclosure ditch *13922* contained residual pieces of Grooved Ware, which probably came from the underlying ditch.

Four ring-ditches were also recorded (Figs 24 and 25). While none of these were closely datable, stratigraphy indicated that two of them at least were created prior to the Middle Iron Age. Three of these lay within the northern part of the excavated area; two were more square than round (*2151*, *2256* and *13857*). The fourth ring-ditch was situated towards the eastern end of the excavated area (*13868*).

Ring-ditches

Feature *2151* formed a rectangle, measuring 8.2m north to south by 7.8m east to west (Fig. 25). It was investigated in eight segments and was found to be typically 1m wide and 0.2m deep, with single deposits and generally moderate to steep sides and a flat to concave base. It produced no finds, but had been cut by Middle Iron Age ditch *13895*.

The square shape of *2256* to the west was not as pronounced as that of *2151* (Fig. 25). Measuring 8m east to west by 7m north to south, it had a shallow profile, *c*. 2m broad, and less than 0.3m deep. It was investigated in six locations, and was filled by less than three fills per segment. Three flint flakes and just over 100 flint chippings were found within this feature.

Ring-ditch *13857*, possibly the largest of the four, was first identified as a cropmark and was only partly exposed (Fig. 25). It had a projected diameter of *c*. 10m and was probably penannular, with a south-east entranceway. Moderate to steep sides and a flat to slightly concave base comprised the profile, with a depth of up to 0.62m. No indirect evidence for an associated bank or mound was found in the sections. All three of the excavated segments contained small amounts of undiagnostic prehistoric pottery.

Ring-ditch *13868* was oval, 10.2m east to west by 9.8m north to south (Fig. 25). It was excavated in seven places and was 1.12m to 1.5m wide and *c*. 0.2m deep. The profile displayed gradual to moderate sides leading down to a concave base. Single deposits were recorded in all seven segments. In segment *9981* on its east side were four sherds of Early Neolithic pottery and nine pieces of worked flint. There were no other finds. The ring-ditch had been cut by Middle Iron Age features. A pit containing a Collared Urn (*9705*) lay within the south-eastern quarter.

Pits

Late Neolithic/Early Bronze Age pits were dispersed across most of the recorded area of the site (Fig. 24). Pits *591* and *651* were present in the north-west corner, *10147*, *12382* and *12392* in the north-east corner, and *12933* and *12985* in the south-east corner. Pits *4759* and *6034* were situated in the middle of the excavation, close to the northern edge. Most of the other pits appear to be paired; *591* with *651*, *12382* with *12392*, and *12933* with *12985*. Pieces of Grooved Ware and/or Beaker were found in all of the pits. Two of the features contained small amounts of worked flint

Oval-shaped pit *591* (1.35m x 1.3m x 0.35m deep) had three deposits, with gradual sides and an irregular base. In the top fill of the feature were pieces of baked clay and Beaker.

Pit *651* had an elongated plan and rounded ends (2.2m x 1m x 0.33m). It was filled by three deposits and had moderate sides and a slightly concave base. A small amount of worked flint, more than 700g of Beaker and nearly 2000g of baked clay were collected from inside the feature. The secondary fill contained frequent flecks of charcoal and most of the finds.

In the top fill of pit *4759* were single Beaker and Grooved Ware vessels, which had been crushed and truncated and were heavily scorched. Underneath the vessels lay a primary deposit of dark sand silt. The surrounding oval-shaped pit was unscorched, by contrast, and had steep sides and a slightly concave base (0.83m x 0.73m x 0.2m deep).

Pit *10417* was the largest of the pits (1.65m x 1.3m x 0.22m deep). It was oval, with steep sides and a flat base. A thin and intermittent deposit of silt sand covered the base of the cut. Resting on top of this was a Beaker vessel, lying on its side. The uppermost third of the vessel had been removed by Middle Iron Age ditch *13944*, which had been cut into the south end of the pit. The rest of the pit was filled by the topmost deposit.

Single deposits occupied the five other pits (*6034*, *12382*, *12392*, *12933* and *12985*). Pit *12382*, the smallest, was 0.53m long, 0.48m wide and 0.12m deep, and pit *12392*, the largest, 1.08m long, 0.8m wide and 0.37m deep. All five features had bowl or dish-shaped profiles and were oval, apart from *12985*, which was circular. Pieces of Grooved Ware were found in *12933* and *12985*, Beaker in *6034* and *12932*, and Beaker and Grooved Ware together in *12382*. Quantities of pottery in *6034*, *12392* and *12933* were small, the total from each pit weighing less than 50g. The group of pottery from *12985*, by contrast, was particularly large and weighed more than 1kg. Pit *12382* contained a small amount of worked flint and four times much Grooved Ware (436g) as Beaker.

Interpretation

The ring-ditches, pits and finds suggest that ritual activity was occurring within the causewayed enclosure during the Late Neolithic/Early Bronze Age. The pieces of Grooved Ware in the latest deposits of some of the causewayed enclosure ditches imply that the monument was still partly visible.

The excavation has found no evidence to indicate the reinstatement of the causewayed enclosure. Few pits or finds were recorded, and no datable Late Neolithic/Early Bronze Age recuts in the interrupted ditches were apparent.

Close to the northern edge of the excavation, a group of five or more ring-ditches was recorded. Three of these lay within or partly within the area of the excavation, while two appeared as cropmarks to the immediate north (Fig. 24). Ring-ditch *13857* is likely to be the remains of a barrow, which has been levelled in antiquity by ploughing. Ring-ditches *2151* and *2256* might be barrows too, although this is less certain because of their unusual 'square' form. The ring-ditch group sits on the break of slope, as represented by the 15m contour line, and from this it seems likely that it was intended that it should face or be seen from the north side of St Osyth Creek. The date of all of the ring-ditches and the group as a whole is uncertain, although it is postulated that some or all of them were in use during the Late Neolithic/Early Bronze Age.

The arrangement of most of the pits in pairs may indicate ritual activity and the careful placing of objects. The deposit in Pit *4759* seems very likely to have been specially placed since it contained the unusual combination of scorched and unscorched sherds from each of two

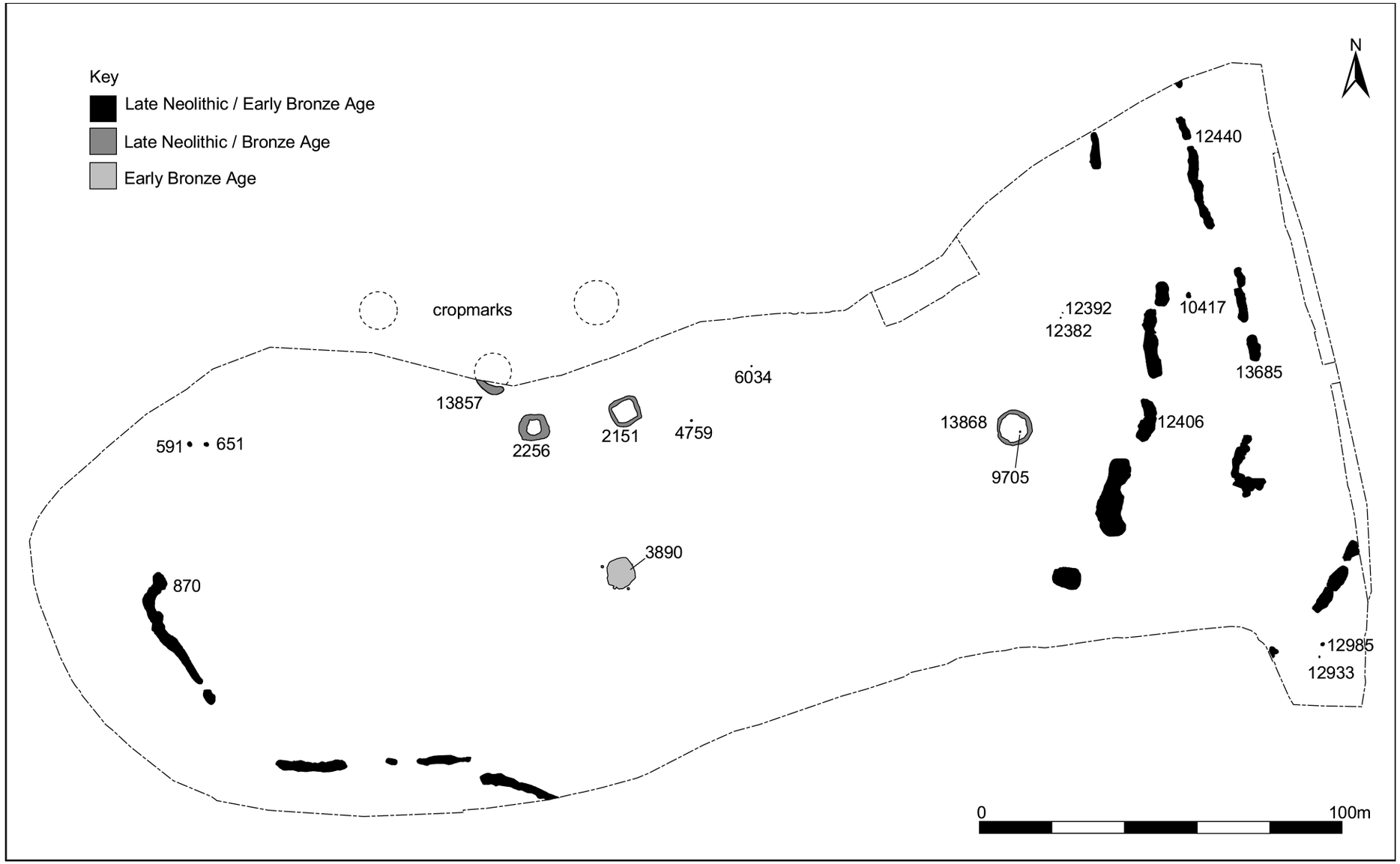


Figure 24 Late Neolithic/Bronze Age phase plan

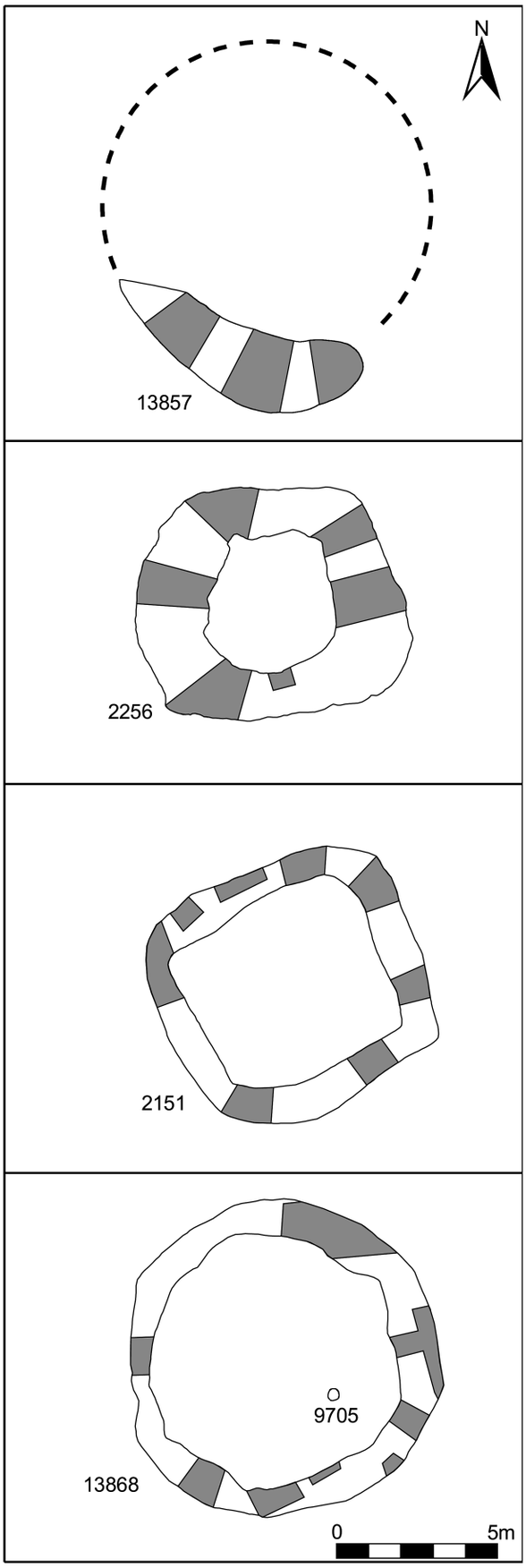


Figure 25 Late Neolithic/Bronze Age: plan of ring-ditches

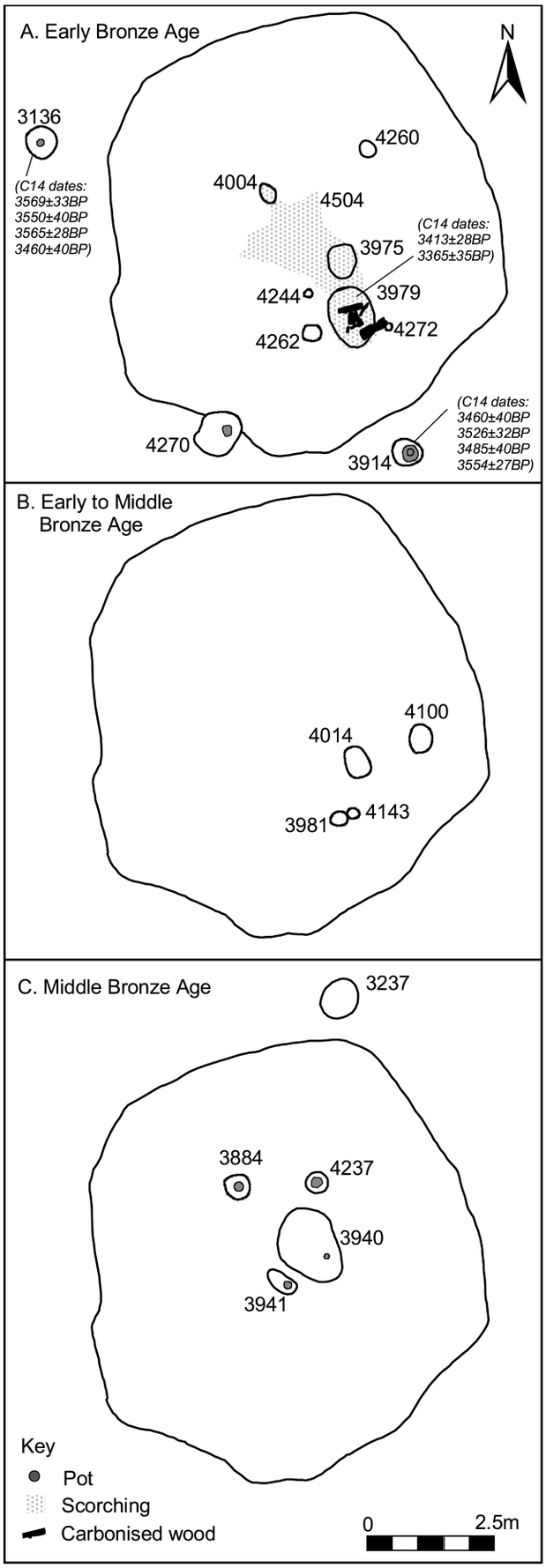


Figure 26 Early–Middle Bronze Age: plan of pond barrow *3890*

Plate V Early Bronze Age pond barrow *3890*, looking west

or more vessels. The sherds lay on a bed of charcoal, suggesting that here fire was an integral part of the ritual process.

The Beaker in pit *10417* is another structured deposit, albeit of a different kind, because it is probably the remains of a grave good. The pit is large enough to have held a crouched or flexed inhumation, although no bone was found to confirm this due to the acidic ground conditions.

IV. Early Bronze Age

(Pls V–VII; Figs 24–6)

The Early Bronze Age saw the construction of a pond barrow (*3890*) in the centre of the site, *c*. 50m south of the group of the possible Late Neolithic/Bronze Age ring-ditches (Figs 24 and 26A). Lying within this barrow were an irregularly-shaped area of scorched ground (*4504*), two cremation burials (*3979* and *4260*), one pit (*3975*), and four post-holes (*4004*, *4244*, *4262* and *4272*). Close to but outside the north-west and south-east edges of the monument were burial pits containing cremations in Collared Urns (*3136* and *3914*). Collared Urns were also discovered in pit *4270*, on the south-western edge of the pond barrow, and in pit *9705* in possible Late Neolithic/Bronze Age ring-ditch *13868* (Fig. 24). The pottery and cremated bone are reported on in Chapter 3 (72 and 81–5 respectively).

Plate VI Early Bronze Age cremation burial pit *3136*

Pond barrow

The pond barrow had very gradual sides and a broad, slightly undulating base, measuring 8.4m north to south, 7.6m east to west and 0.35m deep (Pl. V). Running east–west underneath the middle of the feature was a 4m wide band of natural silt clay. The scorching inside the pond barrow lay within the area of the natural silt clay, had a firm upper surface, and was orange-red in colour. There was no charcoal lying on top of the scorching. The excavation found no direct or indirect evidence to show whether the monument had ever been surrounded by a bank or a berm and a bank.

Plate VII Early Bronze Age cremation burial pit *3194*

Plate VIII Early Bronze Age pit *4270*

Two cremation burial pits (*3979* and *4260*), four post-holes (*4004*, *4244*, *4262* and *4272*) and one pit (*3975*) had been cut into the base of the pond barrow. The excavation found other features inside the pond barrow, but these were undatable; they produced no finds and it was not possible to determine if they had been truncated by the monument, or if they had been cut into its base. The base and sides of pit *3975* had been scorched by fire. The feature was 0.15m deep and held a single deposit containing frequent lumps and flecks of charcoal. At the north end of the scorched area, the mouth of post-hole *4004* also showed signs of scorching. Inside the single fill of that feature were large fragments of charcoal from a carbonised post, 0.38m long, 0.28m wide and 0.26m deep. Post-hole *4262*, near the southern end of the scorched area, had vertical sides and a diameter of 0.4m. Containing two deposits, it was nearly 0.5m deep. The primary fill of this feature was of black silt sand

with frequent flecks of charcoal and 1g of cremated bone. Pieces of charcoal were also noted in post-holes *4244* and *4272* to either side of cremation burial *3979*. Both features had steep sides and were less than 0.16m deep.

Cremation burials

The base and sides of cremation burial pit *3979* had been scorched by fire (Fig. 26A). It contained two deposits and was 0.23m deep. The primary fill of the feature — a very dark reddish brown sand-silt with frequent pieces of charcoal — was capped by an unscorched deposit of sand-silt. Within it lay the cremated remains of what may have been a young man, and some large pieces of charred wood.

Frequent pieces of charcoal and cremated bone from an infant were found in burial pit *4260*, in the north-eastern part of the pond barrow. The feature had a depth of 0.1m.

Cremation burial pit *3136*, close to the north-west side of the pond barrow, was 0.25m deep. The near-complete Collared Urn collected from this feature was positioned upright and held the cremated remains of a mature man (Pl. VI).

The Collared Urn in cremation pit *3914*, near the south-east side of the pond barrow, was inverted. The urn was intact and had not been damaged by later features or ploughing. Inside the vessel were the cremated remains of a mature person, probably a man. The surrounding burial pit was 0.6m wide and 0.5m deep (Pl. VII).

The charcoal from pits *3914*, *3979* and *4260* was subject to detailed analysis (below, 86). Radiocarbon dates derived from samples of charred wood and cremated bone from *3136*, *3914* and *3979* revealed that the Early Bronze Age use of the site for cremation burials began *c.* 2100–1810 cal. BC (95%) and ended 1760–1450 cal. BC (95%). The likely span of activity was thus 180 to 390 years. Feature *3979* probably held the latest of the three C14-dated Early Bronze Age cremations.

Pits

Pit *4270*, on the south-west edge of the pond barrow, had rounded corners and was approximately 0.98m square (Fig. 26A). It was *c.* 0.42m deep, with near-vertical sides and a flat, slightly stepped base. The Collared Urn recorded here was intact, although part of the rim on one side was missing. It contained no fill or finds and it sat on the base of the feature in an off-centre position. It rested on the missing part of its rim, so that it lay in the feature inverted at a slight angle. The pit had been backfilled with a single deposit (Plate VIII).

Pit *9705* was 0.37m long, 0.33m wide, and 0.15m deep and was located close to the inside south-east edge of ring-ditch *13868* (Fig. 25). Ploughing had truncated the upright Collared Urn that it contained. No cremated bone was evident in the single fill of the pit or the single fill of the vessel.

Interpretation

It is likely that the Early Bronze Age phase of the pond barrow saw two or more episodes of activity (Fig. 26A). The first of these was represented by pit *4270* and cremation burial pits *3136* and *3914* on the outside perimeter edge of the monument, and the second by post-holes *4004* and *4262*, pit *3975*, cremation burial pit *3979* and scorched ground *4504*. Cremation burial pit *4260* and post-holes *4244* and *4272* might have been part of the second episode, but this is less certain. In the first episode the pond barrow appears to have been used as a focal point for cremation burials and ritual activity, and in the second as the site for a pyre. The calibrated radiocarbon dates obtained from three of the Early Bronze Age cremations (Chapter 4, 100, Fig. 64) suggest that the use of the monument as the site for a pyre was the later of the two episodes. What took place inside the monument during the first episode is not known.

The use of the pond barrow as a pyre site during the later of the two episodes is suggested by the close association between cremation burial pit *3979* and the area of scorching. The burial pit, containing large pieces of carbonised wood and the partial remains of a cremated young man, had also been scorched.

While the use of the pond barrow as a site for pyres for other individuals cannot be ruled out, any such use must have occurred before that of the interment of the person in *3979* as the top fill of that burial pit is unscorched. Since the excavation found no charcoal on top of the scorched ground it seems likely that the pyre site was swept clean after the fire.

Post-holes *4262* and *4004* both contained carbonised wood, and the lip of *4004* had been scorched by fire, which suggests that alongside the pyre was a two-post structure. The purpose of the structure is not known, although it is possible that it was either part of the pyre or that its presence was not directly related to it and that its function was largely symbolic. It cannot be ruled out that the structure predates the second episode, or spans the two episodes, and that the cremation that took place alongside it represented an act of termination or closure.

Pit *3975* within the main area of scorching was also scorched, but contained no bone or other finds. The purpose of this feature — which must have been present beneath the pyre because of the scorching — is not known; perhaps it was used as a receptacle for grave goods or offerings.

V. Middle Bronze Age

(Figs 27 and 28)

To the south and east of the pond barrow lay 22 Middle Bronze Age ring-ditches, arranged in an arc (Figs 27 and 28). The ring-ditches occurred in two groups, one of thirteen (*3069*, *3173*, *3175*, *3176*, *3177*, *4123*, *5644*, *5702*, *5703*, *5750*, *5806*, *5807* and *13859*) and the other of eight (*3336*, *4933*, *4934*, *4975*, *5000*, *5353*, *5354* and *13858*). Penannular and concentric examples were present. One ring-ditch lay north of the eastern group in a slightly isolated position (*5035*).

Eleven Middle Bronze Age cremation burials (Chapter 3, 81–5) were interred in pits and one (*2820*) in the single fill of segment *2818* on the west side of ring-ditch *3177* (Fig. 28). Most of these were situated within and around the eastern group *(3226*, *3230*, *4284*, *4867*, *4877*, *4967*, *5057*, *5137* and *5141*). One (*3647*) lay close to the pond barrow, and two within and to the north-west of the southern group (*2820* and *3367*). Bucket Urns (Chapter 3, 72–4) contained the cremated bone in seven of the pits and in segment *2818*. Radiocarbon dates obtained from cremated bone and charcoal taken from most of the burial pits reveal that the Middle Bronze Age cremation cemetery came into use *c.* 1430–1300 cal. BC (95%) and ended in 1370–1200 cal. BC (95%) (Chapter 4, 95–102).

Cut into the topmost deposit of the pond barrow were four pits containing ceramic vessels (Fig. 26C, *3884*, *3941*, *4237* and *3940*). Pits containing pottery vessels were also found between the two groups of ring-ditches (Fig. 28, *5419* and *5462*) and in the south-eastern part of the site (Fig. 27, *12811*). Pits and a short ditch containing sherds of Middle Bronze Age pottery (Fig. 27, *14052*; Fig. 28, *2461, 3152* and *3237*) were recorded in the western part of the site, near the southern group of ring ditches, and near the north side of the pond barrow.

The radiocarbon dates indicate that the Early and Middle Bronze Age use of the pond barrow were separated by a hiatus of *c*. 200 years (Chapter 4, 102).

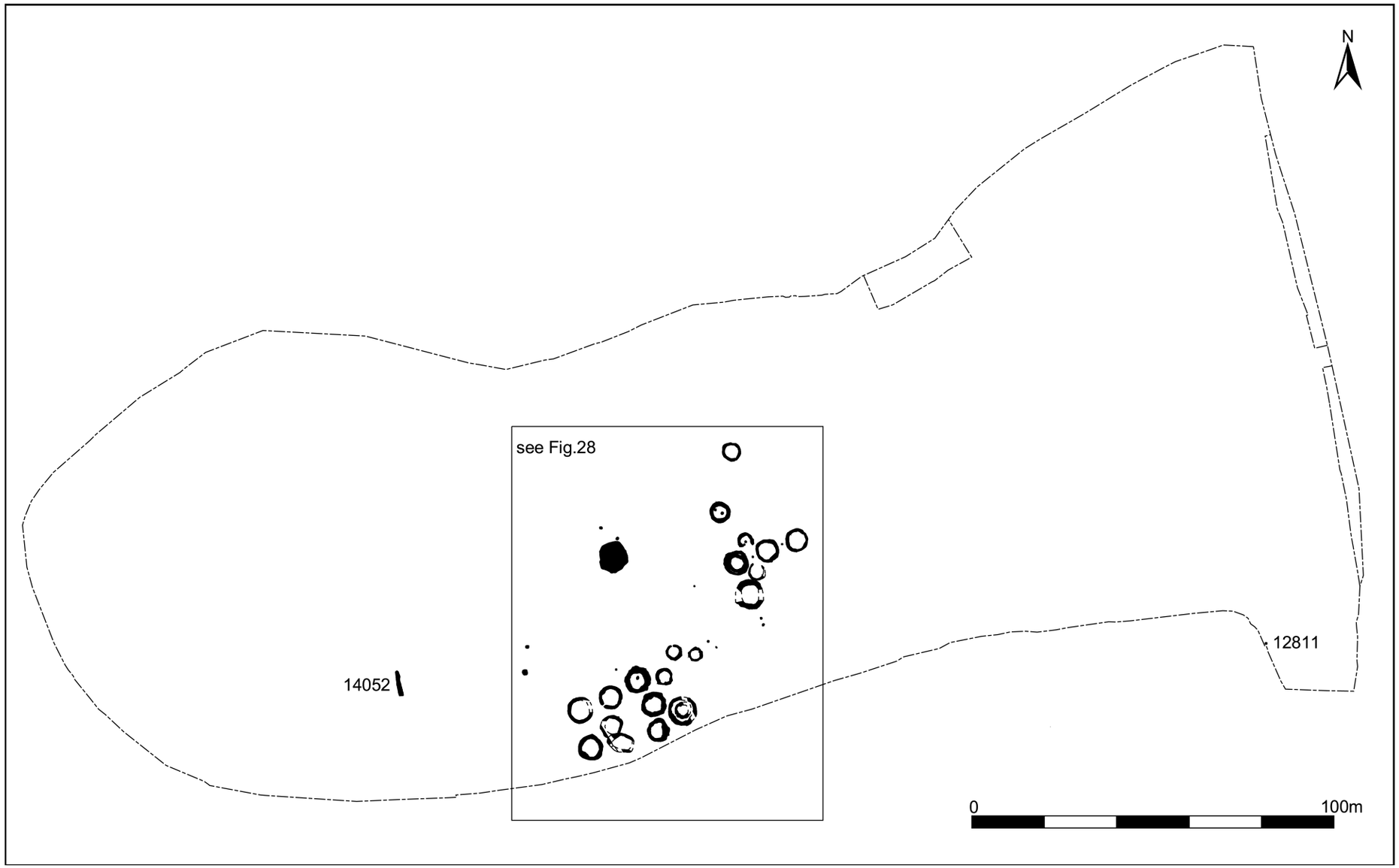


Figure 27 Middle Bronze Age phase plan

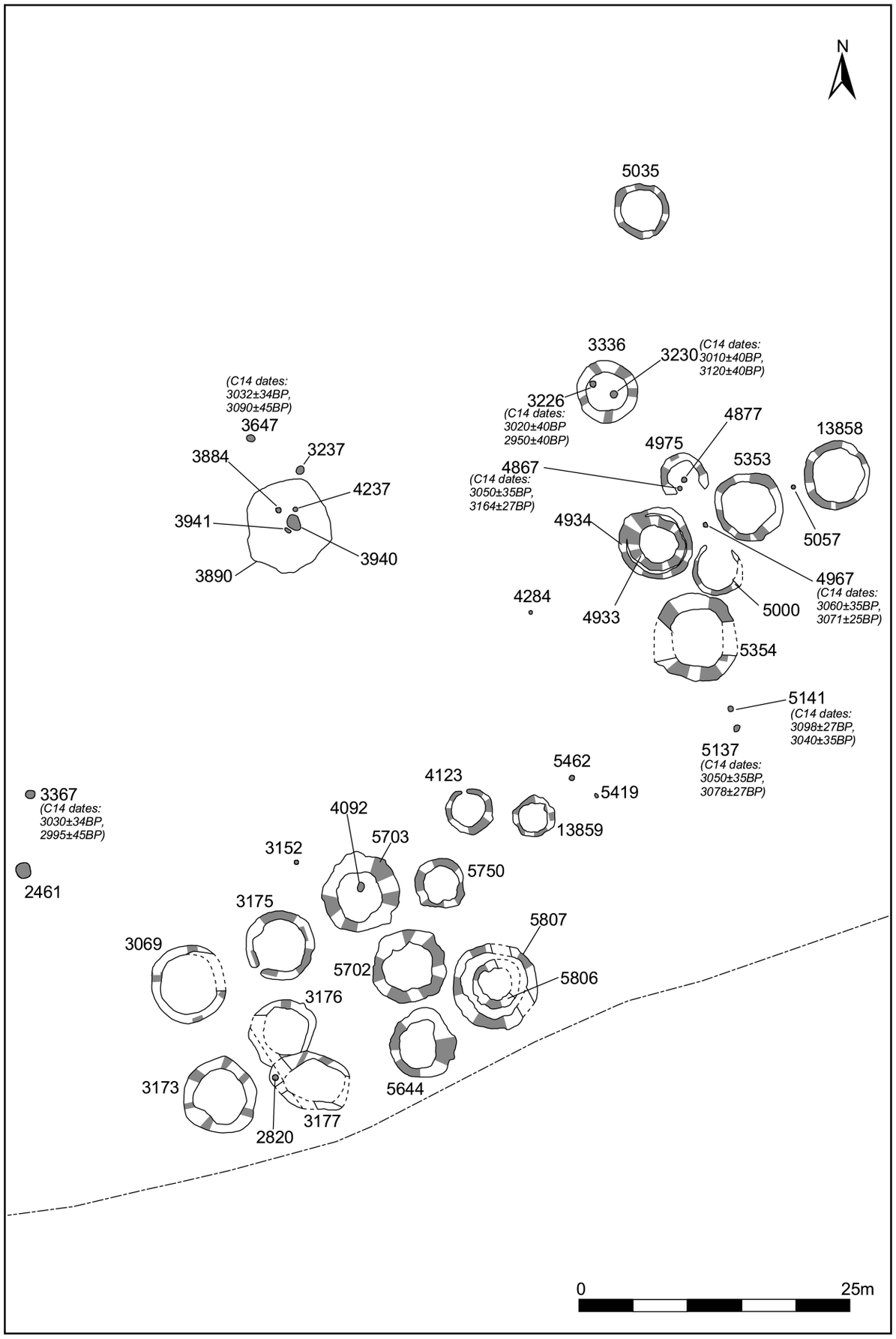


Figure 28 Middle Bronze Age: plan of features in south-central area

Plate IX Middle Bronze Age ring-ditches *4933* and *4934*, looking east

Pond barrow
Two shallow pits (*4014* and *4100*) and two small post-holes (*3981* and *4143*) were discovered at an intermediate level inside the pond barrow (Fig. 26B). The features yielded no closely datable finds, although the stratigraphy indicated that they must have been cut at some point between the Early and Middle Bronze Age.

Ring-ditches
The ring-ditches were closely spaced and arranged in two groups, forming an arc to the south and east of the pond barrow (Fig. 28). The majority were circular or slightly oval; one was elongated with rounded ends (*3177*). Some circuits (*e.g. 3069*, *5000* and *5354*) were incomplete due to truncation. There were two concentric pairs (*4933* and *4934*, and *5806* and *5807*) (Pl. IX), and several of the ring-ditches were probably penannular (*3175* and *4123*). One ring-ditch (*3173*) had been recut around its entire circuit. The diameters of the monuments ranged from 3.8m to 7.8m (Table 9). Four sub-groups indicated by ring-ditches of similar size appeared to be present (A–D):

- **A.** Three evenly spaced ring-ditches of a similar size arranged in a straight line (*4934*, *5353* and *13858*)
- **B.** Two small ring-ditches opposing each other to either side of group A (*4975* and *5000*)
- **C.** Three evenly-spaced ring-ditches with broad ditches (*5644*, *5702* and *5703*)
- **D.** Three small ring-ditches clustered together (*4123*, *5750* and *13859*).

The profiles, widths and depths of the ring-ditches were generally dissimilar. Most of the ring-ditches were shallow, and few contained more than one or two deposits per segment. No indirect evidence for associated banks or mounds was provided by the fill sequences. The excavation collected few finds from the ring-ditches and most of the finds that were recorded were not closely datable. Eighteen pieces of Bucket Urn lay divided between the two segments across the southern part of ring-ditch *13858*.

Cremation burials
All but two of the Middle Bronze Age burial pits were dated with the aid of finds and/or radiocarbon results (Table 10). The two undatable cremation burials are assumed to be Middle Bronze Age because of their apparent association with the adjacent ring-ditches.

Bucket Urns contained the cremated bone in seven of the features. Four urns were upright, and three were inverted. Each burial pit was only slightly larger than the pot it contained, and was rounded in plan and steep-sided in profile. Four of the burials had been severely truncated (*4260*, *4284*, *4877* and *5057*). Cremation burial *4877* contained fragments of pottery, although it was uncertain as to whether these had been part of a cinerary urn. Charcoal selected for analysis from three of the burial pits consisted of alder, ash, oak and blackthorn. Six burial groups appeared to be present because of their association with the pond barrow or one or more specific ring-ditches (Table 11, A–F).

Pits
Single pottery vessels were found in seven Middle Bronze Age or possible Middle Bronze Age pits. Cremated bone was not recorded in any of these pits, and most of them were only slightly larger than the pots they contained.

Four of the pits had been cut into the top fill of the pond barrow (Figs. 26C and 28, *3884*, *3940*, *3941* and *4237*). Bucket Urns were recorded in pits *3884* and *4237*. The vessel in *3884* was upright and the one in *4237* inverted. In *3940* and *3941* the pots lay in primary deposits containing frequent flecks and pieces of charcoal. Both pots were prehistoric, but not closely datable. The vessel in *3940* had been charred by fire before burial; the orientation of the pot was not recorded. That in *3941* was inverted.

Two of the seven pits were discovered close together, in the area between the two groups of ring-ditches (Fig. 28, *5419* and *5462*). Inside *5419* was a Bucket Urn, which lay on its side. *5462* contained an upright vessel, possibly a Bucket Urn.

One pit in the south-east corner of the excavation area, distant from the other Middle Bronze Age features (Fig. 27, *12811*), contained an upright pot — possibly a Bucket Urn — the top half of which was no longer present.

One short ditch and three other pits were associated with sherds of Middle Bronze Age or probable Middle Bronze Age pottery. The ditch and two of the pits lay near the southern cluster of Middle Bronze Age ring-ditches (Fig. 27, *14052*; Fig. 28, *2461* and *3152*), and one of the pits near the north edge of the pond barrow (Figs 26C and 28, *3237*). Pieces of Bucket Urn were collected from *2461*, *3237* and *14052*. A crushed, possibly Middle Bronze Age, vessel lay on the surface of pit *3152*. Infrequent pieces of burnt flint occurred in the top two of the three fills in *2461*. In the secondary fill of this pit were frequent flecks and fragments of charcoal.

Interpretation

The evidence suggests that the pond barrow saw reuse as a focal point for ritual activity in the Middle Bronze Age; the ring-ditches appear to have been deliberately arranged in an arc to one side of it, and the pits with the pots cut into the top fill of it appear to be intentionally placed (Figs 28 and 26C). The stratigraphic evidence and the radiocarbon dates suggest that the pond barrow continued to be regarded as a sacred place — one which was still closely associated with the interment of the dead — despite the *c.* 200 year hiatus in activity within the

Context No.	*Average diameter(m)*	*Width (m)*	*Depth (m)*	*Comments*
3066	6.9	0.7–0.86	0.2–0.43	Recut of 3173. Extends around entire circuit. No finds.
3069	7	0.76–0.98	0.25–0.32	East section no longer present due to truncation. No finds.
3173	6.35	*c*. 0.98	0.09–0.22	Cut by recut 3066. No finds.
3175	6.3	0.7–0.95	0.19–0.31	Penannular, 0.6m wide break on south-west side. Contains one piece of worked flint.
3176	6	0.48–0.61	0.22–0.3	Cut by ring-ditch 3177. West and south sections only partly present due to truncation. No finds.
3177	6.25	0.56–1.13	0.2–0.35	Cuts south section of ring-ditch 3176. East and west sections only partly present due to truncation. Contains cremation burial pit 2820.
3336	5.65	0.52–1.4	0.4–0.54	Contains 140g of prehistoric pottery which is not closely datable.
4123	4.1	0.33–0.67	0.06–0.34	Penannular, 0.4m break on north side. Ditch becomes progressively shallower towards entrance. No finds.
4933	5.1	0.6–0.97	0.12–0.22	Enclosed by ring-ditch 4934. Contains 60g of prehistoric pottery which is not closely datable.
4934	6.7	0.5–0.97	0.12–0.24	Encloses ring-ditch 4933. No finds.
4975	4.3	0.68–0.9	0.25–0.28	South section probably no longer present due to truncation. No finds.
5000	4.5	0.43–0.6	0.13 - 0.22	East and north sections no longer present due to truncation. No finds.
5035	5	0.45–0.54	0.13–0.3	Isolated from main groups. No finds.
5353	6.2	0.45–1.2	0.18–0.28	Contains 32g of prehistoric pottery which is not closely datable.
5354	7.8	1.06–1.52	0.24–0.42	Contains two pieces of worked flint and 38g of prehistoric pottery which is not closely datable.
5644	6.35	0.8–1.8	0.09–0.25	Contains 68g of prehistoric pottery which is not closely datable.
5702	6.5	0.9–1.8	0.13–0.26	No finds.
5703	7.3	1.0–1.9	0.24–0.42	Contains 256g of possible Middle Bronze Age pottery and 144g of prehistoric pottery which is not closely datable.
5750	4.3	0.65–0.73	0.14–0.23	Contains 90g of prehistoric pottery which is not closely datable.
5806	4.5	0.5–0.65	0.17–0.22	Enclosed by ring-ditch 5807, separated by a 1m-wide berm. No finds.
5807	7.7	0.65–1.45	0.17–0.22	Encloses ring-ditch 5806. Contains 6g of of prehistoric pottery which is not closely datable.
13858	6.2	0.51–0.75	0.15–0.27	South section contains eighteen pieces of Bucket Urn (846g), possibly from one vessel.
13859	3.8	0.4–0.65	0.1–0.25	Contains 34g of prehistoric pottery which is not closely datable.

Diameters measured from external edges

Table 9 Middle Bronze Age ring-ditches: summary information

Burial Group	*Context No.*	*Length (m)*	*Width (m)*	*Depth (m)*	*Comments*
A	3226	0.56	0.50	0.09	Adult, sex unknown, in upright Bucket Urn. Dated from urn and C14
	3230	0.62	0.61	0.30	Mature male in inverted Bucket Urn. Dated from urn and C14
B	4867	0.70	0.70	0.22	Young person. Unurned. Dated from C14
	4877	0.25	0.25	0.11	?Infant. ?Urned. Contains seven sherds of not closely datable prehistoric pottery. Dated from probable association with ring-ditch 4975
C	4967	0.50	0.50	0.20	Infant in inverted Bucket Urn. Dated from urn and C14
	5057	0.40	0.40	0.13	Young person. Unurned. Dated from probable association with ring-ditches 4934, 5353 and 13858
D	5137	0.66	0.42	0.25	Old male, young person and child in upright Bucket Urn. Dated from urn and C14
	5141	0.52	0.52	0.25	Two upright Bucket Urns, one inside the other. Adult female in larger vessel; infant in smaller. Small quantity of cremated bone in primary fill, underneath larger vessel. Dated from urns and C14
E	2820	-	-	0.27	Child in upright Bucket Urn in fill of segment 2818 across ring-ditch 3177. Dated from finds
F	3647	0.56	0.56	0.40	Adult female. Unurned. Dated from C14
-	3367	0.80	0.80	0.55	Young person. Unurned. Dated from C14
-	4284	0.30	0.30	0.20	Infant in inverted Bucket Urn. Dated from urn

Table 10 Middle Bronze Age cremation burial pits: summary information

Burial group	*Burial pits*	*Location*
A	3226, 3230	Within ring-ditch 3336
B	4867, 4877	Within ring-ditch 4975
C	4967, 5057	Between ring-ditches 4934, 5353 and 13858, aligned on east–west axis
D	5137, 5141	South of ring-ditch 5354, aligned on north–south axis
E	2820	Within west segment across ring-ditch 3177
F	3647	Near pond barrow
-	3367, 4284	Isolated

Table 11 Middle Bronze Age cremation burial pit groups

recorded limits of the site. Unlike those of the earlier period, the majority of the Middle Bronze Age cremation burials lay away from the pond barrow and were associated with secondary monuments.

The ring-ditches represent the remains of barrows which were subsequently levelled in antiquity by erosion and ploughing. Small mounds were probably present in the middle of each barrow, constructed from the spoil from each ring-ditch. Since the majority of them were closely spaced, it is unlikely that they had been encircled by banks. The concentric examples represent either elaborate single constructions or the elaboration of existing monuments.

Each burial group and each ring-ditch group and subgroup may correspond to a social unit based on kinship or status. Burial group D contained individuals from most age groups and both sexes (*5137* and *5141*) and this suggests that neither age nor gender were factors when it came to their interment. Burial group D was perhaps atypical as it is the only one of the burial groups to have contained burial pits holding more than one individual. The presence of more than one set of cremated remains in each vessel suggests either that the people interred all died at the same time, or that the burying of each pot and its contents was deferred until the death of the last individual.

VI. Middle Iron Age

(Figs 29–41)

Two main periods of activity took place within the recorded area of the site during the Middle Iron Age (Period VI.1 and Period VI.2). Field boundaries and trackways covered the site in Period VI.1 and an extensive settlement in Period VI.2 (Figs. 29 and 30). Neither period is closely datable.

Period VI.1

(Fig. 29)

In this period, shallow ditches defined field boundaries and trackways (Fig. 29). The boundary ditches formed long narrow fields and were arranged at approximately 90 degrees to St Osyth Creek. Ditch *13895* had been cut into a Middle Iron Age pit (*4592*). At an unknown point during this phase an open-ended enclosure (*13948*) was constructed against the west side of one of the ditched trackways *(13935* and *13936*). A later open-ended ditched enclosure (*13945*) had been cut into the east side of the first and overlaid the trackway. In the middle of the east side of this second enclosure was a 3m-wide break for an entranceway.

Enclosures and trackways

Period VI.2 features had been cut into all of the Period VI.1 ditches apart from *14107*, *14108* and *14110*, in the north-eastern part of the site (Fig. 29). Middle Iron Age pottery was recorded in *13899*, *13945*, *13948*, *14105* and *14107*. No closely datable finds were collected from the other ditches, although *13895* had been cut into pit *4592*, which contained baked clay and Middle Iron Age pottery. The placing of these ceramically undatable features in Period VI.1 is based on their stratigraphic relationships to other features and their shared alignment.

Period VI.2

(Figs 30–40)

In Period VI.2 a settlement developed on either side of a significant east–west trackway (Fig. 30). The trackway was very broad and formed a T-junction with a smaller trackway, which entered the recorded limit of the site from the south. North of the point where the trackways met was a large open area, containing roundhouses. All of the trackway ditches lay above and/or below Period VI.1 and Middle/Late Iron Age–Roman ditches.

In the north-eastern part of the settlement were nine roundhouses in a ditched enclosure (Fig. 33, *13861–13867*, *13869* and *14039*). Six roundhouses lay among smaller enclosures in the south-eastern part of the site (Fig. 35, *13871–13875* and *13939*) and four in the open area north of the T-junction (Fig. 31, *6677*, *13860*, *13969* and *14038*). Up to three small open-ended enclosures were noted in the mid-eastern part of the site (Fig. 31, *13898*, *14060* and *14077*); the latter two lay partly outside the excavated area.

Groups of four, five, six and nine post-holes representing post-built structures were recorded alongside the roundhouses in the north-east and south-east enclosures. In the north-east enclosure, one lay in the far north corner (*13955*), three lay close to roundhouse *13861* (*10185*, *13961* and *13963*), and a further eight to either side of roundhouse *13865* (*13956–13959* and *13982*, *13983*, *13998* and *13999*) (Fig. 33). In the south-east enclosures, post-built structures (*14016* and *14019*) were found within the footprints of roundhouses *13872* and *13874*, and two (*14008* and *14009*) next to roundhouse *13871* (Fig. 35). Charred plant remains suggested that post-built structure *14016* had been used as a granary (Fig. 60).

The excavation identified separate sequences of development in the north-eastern and south-eastern parts of the settlement (Figs 32 and 34A–C). The absence of close dating evidence and the lack of shared stratigraphic relationships between these two areas meant that it was not possible to link the two sequences. Over time, the north-east enclosure had been increased in size (apparently to provide room for more roundhouses); a previously-extended corridor-like south-west entranceway had been removed, and the west side of the enclosure had been extended outward (Fig. 32A–C). In the south-eastern part of the site, trackway ditch *13937* had been cut into several roundhouses (*13874* and *13875*), which themselves had been cut into Period VI.1 ditches. This suggested that the east–west trackway had not been defined by ditches from the outset (Fig. 34A–C). Some of the roundhouses were probably present in individual enclosures towards the end of the sequence.

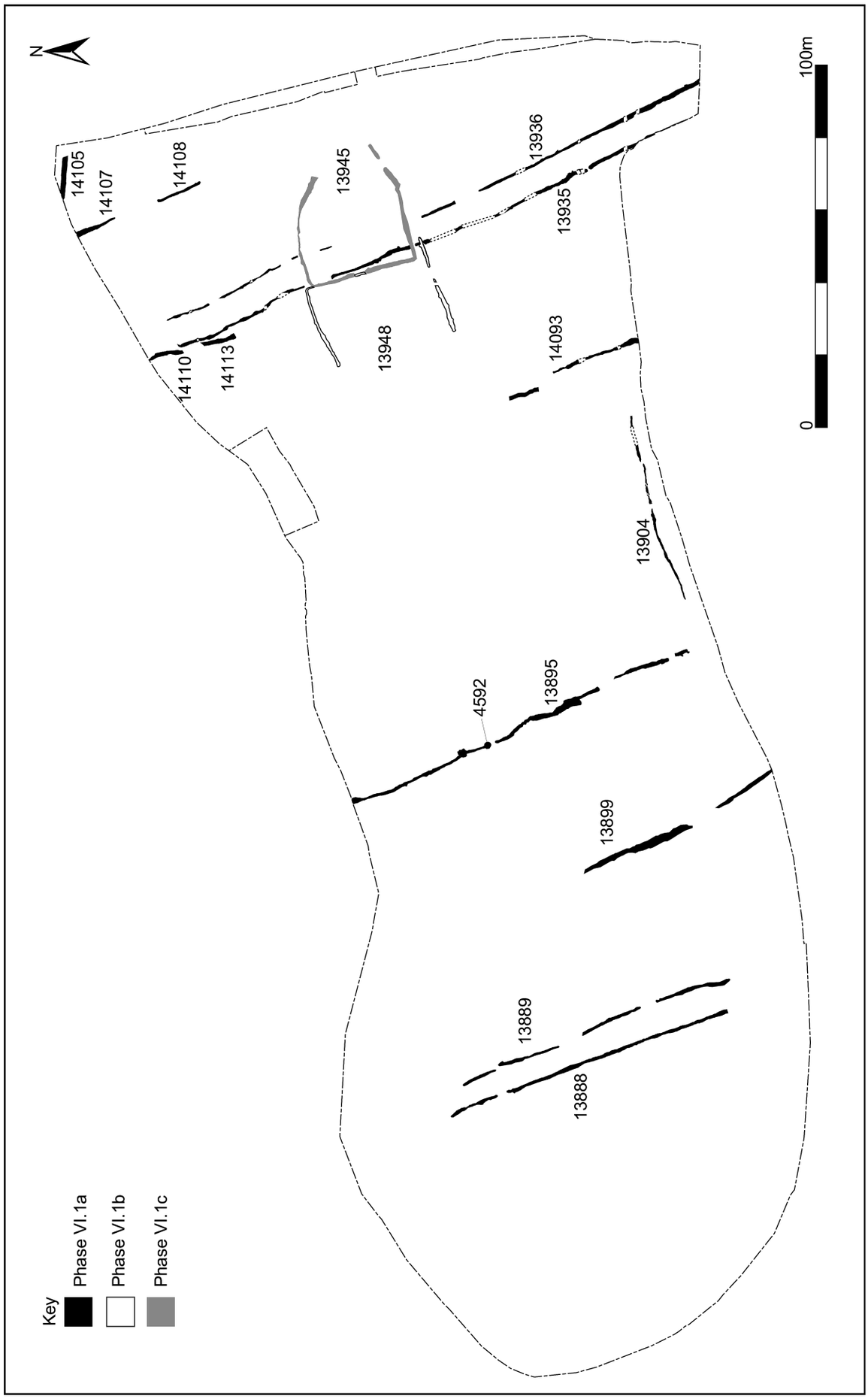


Figure 29 Middle Iron Age: plan of Period VI.1 features

Figure 30 Middle Iron Age: plan of Period VI.2 features

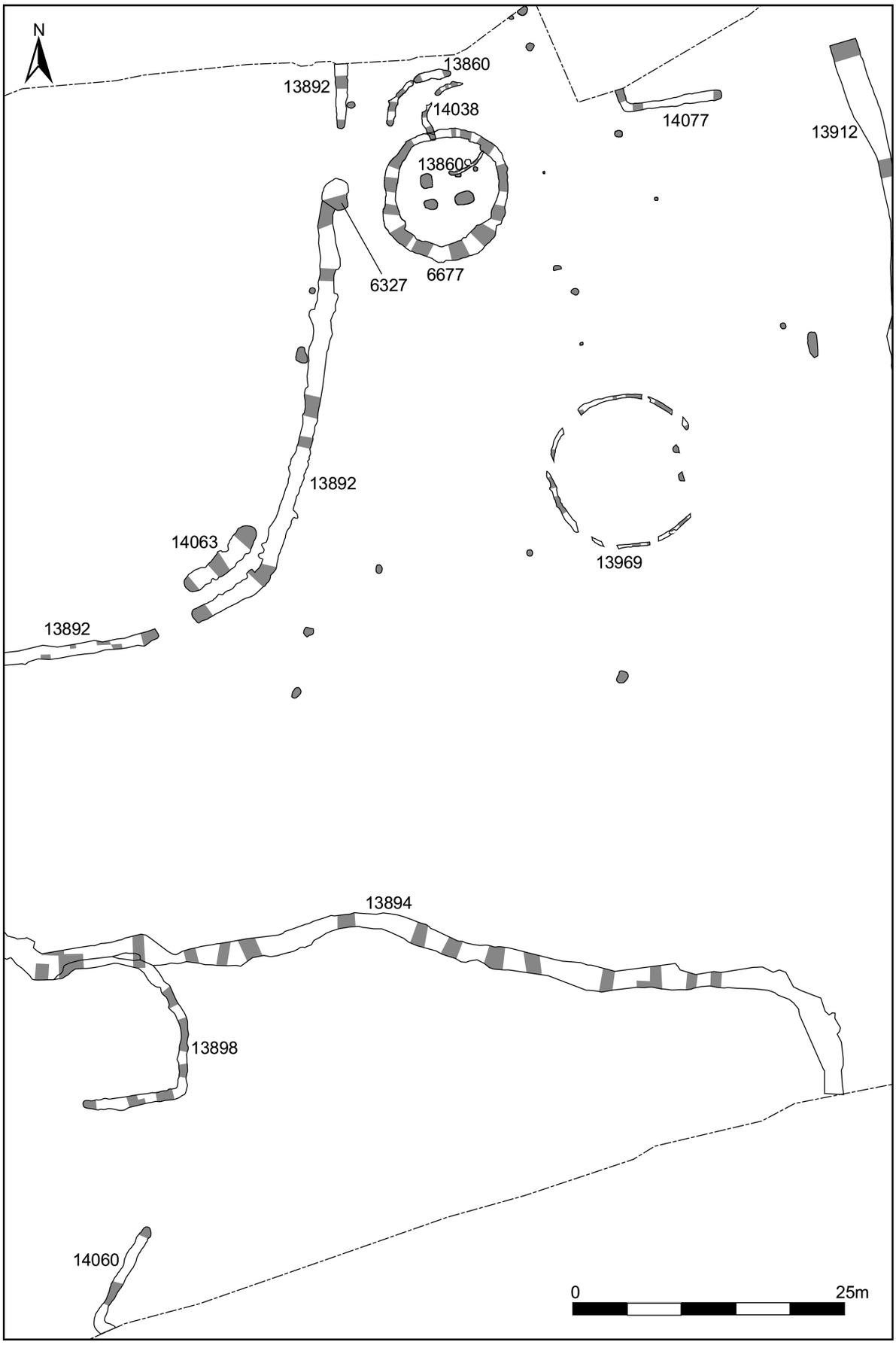


Figure 31 Middle Iron Age: plan of period VI.2 features in the mid-east part of excavated area

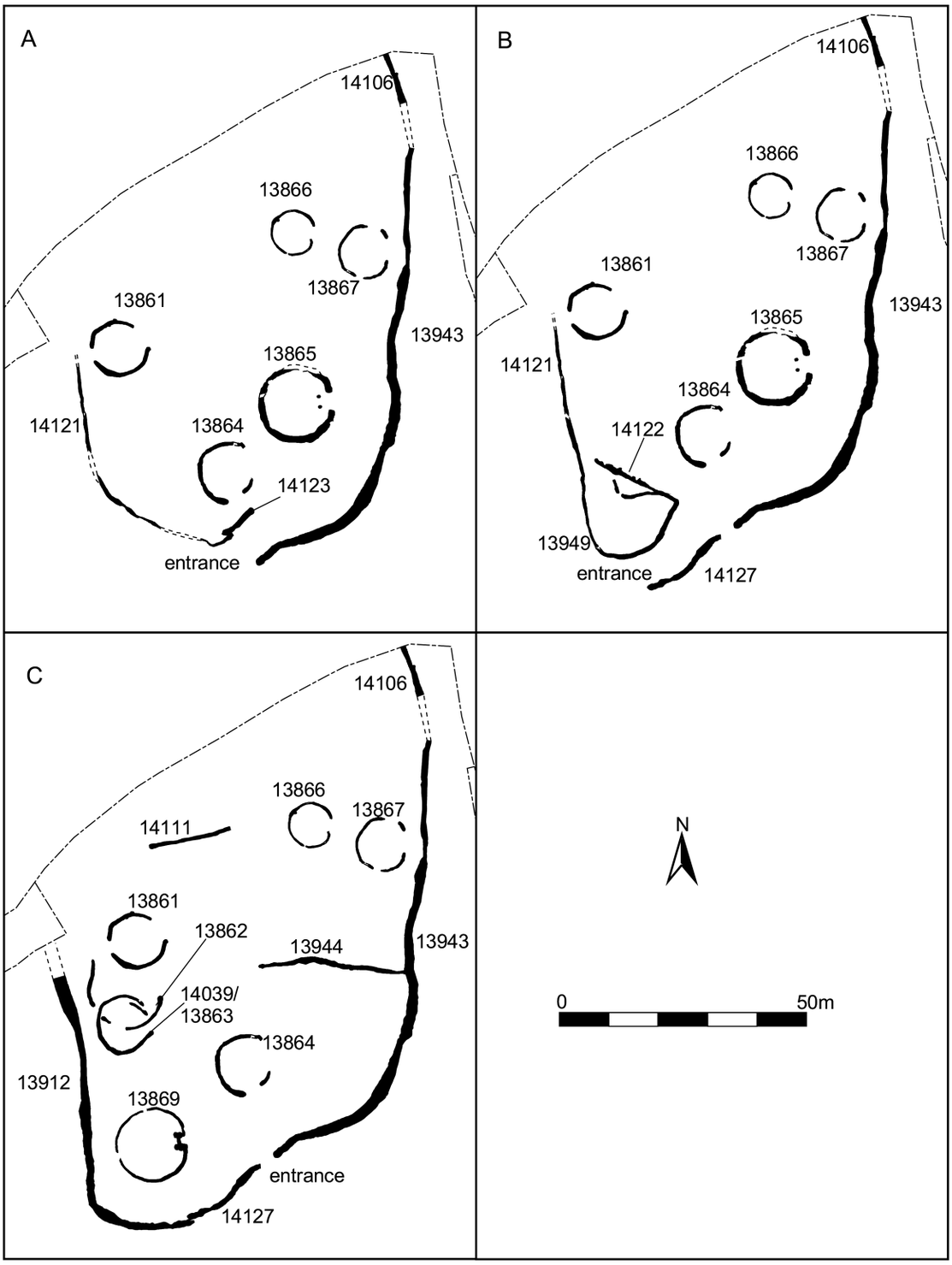


Figure 32 Middle Iron Age: plan of Period VI.2 features in the north-east part of the excavated area, sequence of development (A–C)

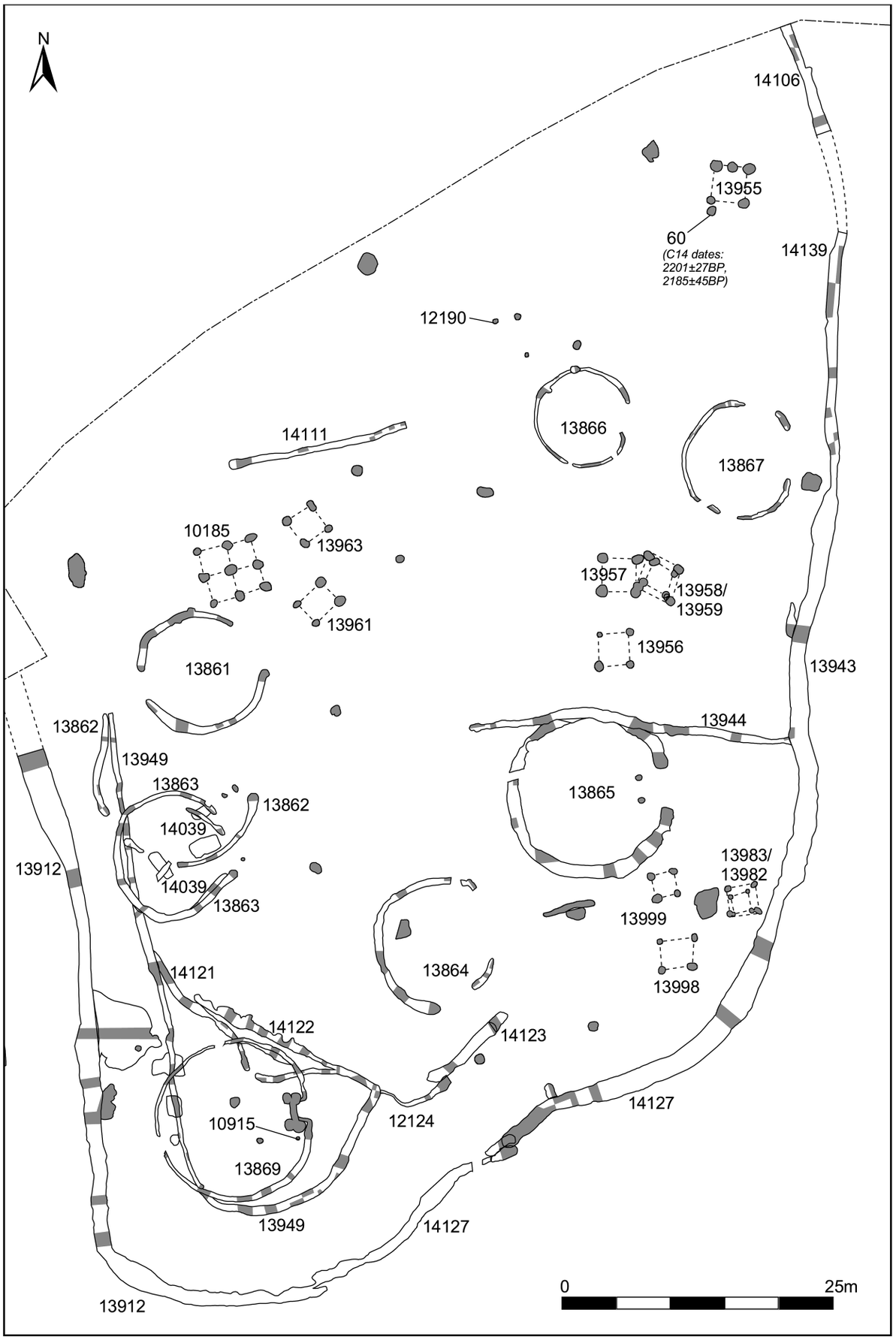


Figure 33 Middle Iron Age: plan of Period VI.2 features in the north-east part of the excavated area

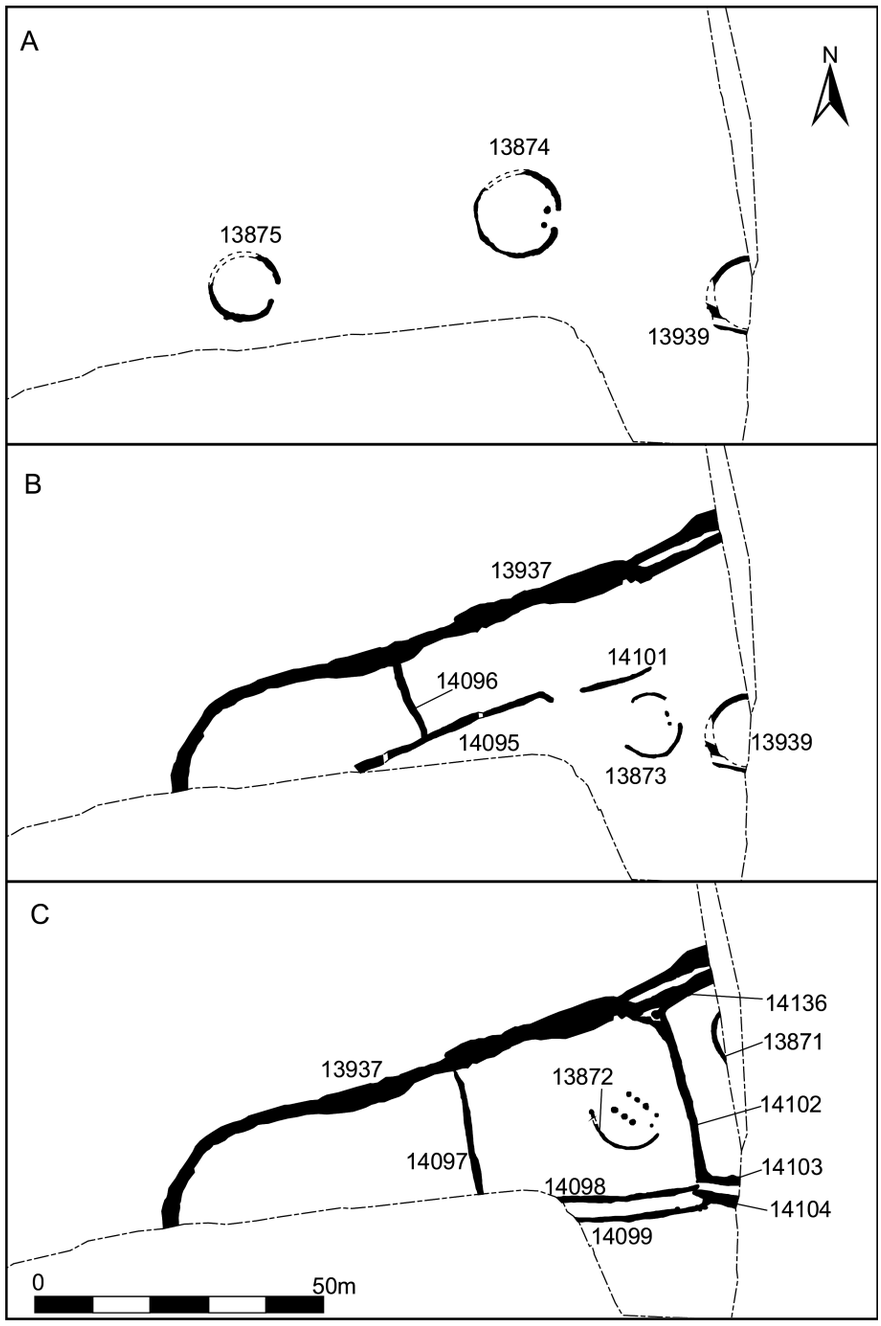


Figure 34 Middle Iron Age: interpretative plan showing sequence of development (A–C) of Period VI.2 features in the south-east part of the excavated area

Elsewhere, pits and post-holes containing fragments of Middle Iron Age loomweights and pottery (Chapter 3, 79–81, 74–7) were found to either side of the east–west trackway. In the north-east enclosure were pits (*60*) containing cremated fragments of human skull (*60*: Chapter 3, 85), and truncated pottery vessels (*12190* and *10915*) (Fig. 33).

Trackway ditches

Ditches *13892* and *13894* in the western half of the recorded site formed part of the trackway system (Figs 30 and 31). Ditch *13892* was interrupted by two entranceways along its eastern arm, and was *c.* 0.25m deep: roughly half the depth of *13894*. In the terminals to either side of its southern entranceway were more than 15kg of Middle Iron Age pottery. Middle Iron Age pottery also occurred in pit *6327* (Fig. 31), which had been cut by the ditch, and in ditch *14063*, which lay close to the southern entranceway. Ditch *13894* contained no closely datable finds.

Trackway ditch *13937* in the south-eastern part of the site had been cut into Period VI.1 ditches *13935*, *13936* and *14093* (Figs 30 and 35). It contained no closely datable finds, but is assumed to be a long-lived feature because it included many recuts which could be seen in section and (to some extent) in plan.

North-east enclosure

Stratigraphic evidence indicates the enlargement and the modification of the north-east enclosure (Figs 32A–C, and 33). Four different ditches defined its initial form (A), when it had a corridor-like south-west entranceway (*13943*, *14106*, *14121* and *14123*). The entranceway was lengthened in the following phase (B), and an internal enclosure was constructed in the south-west corner; one ditch was removed (*14123*),

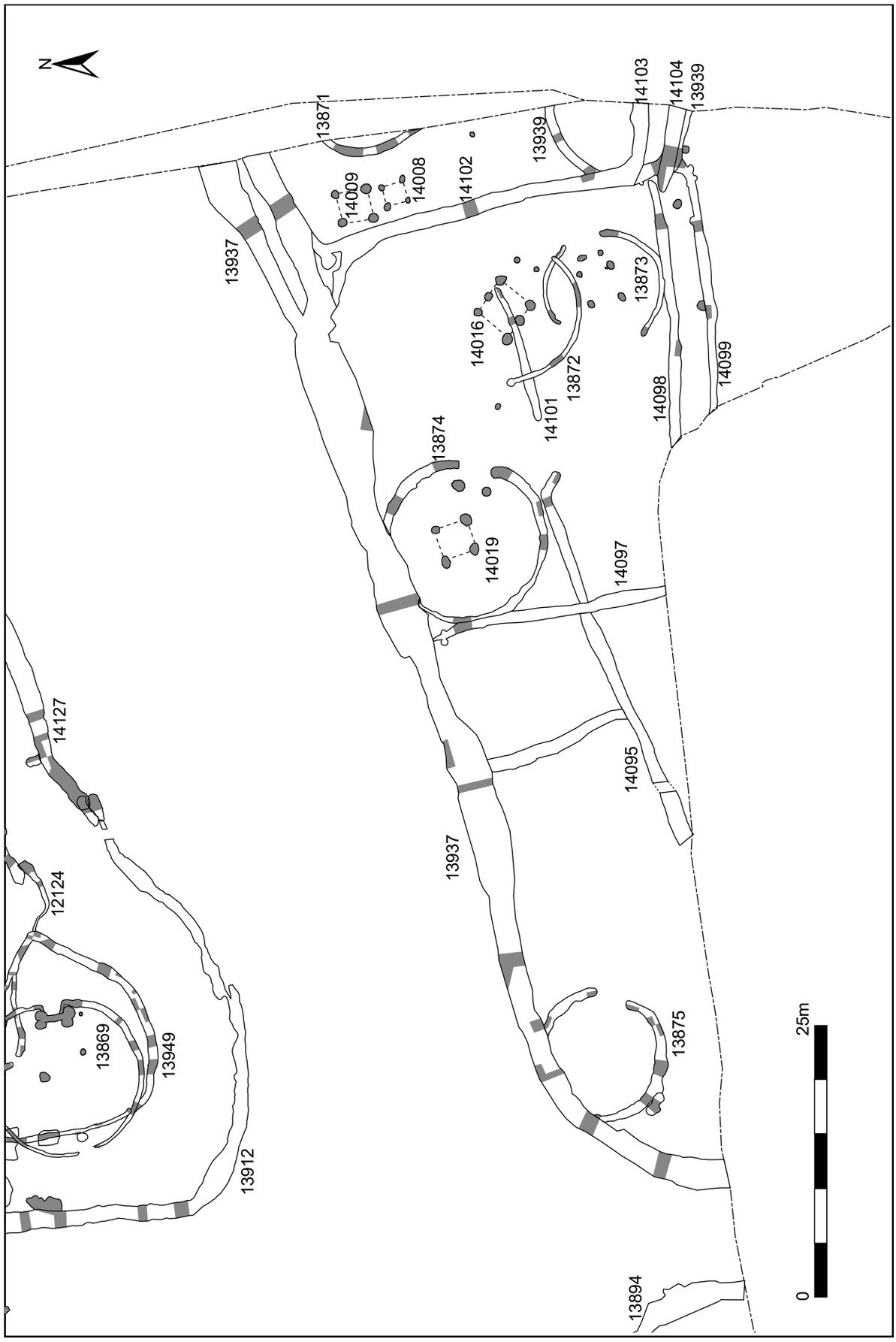


Figure 35 Middle Iron Age: plan of Period VI.2 features in the south-east part of the excavated area

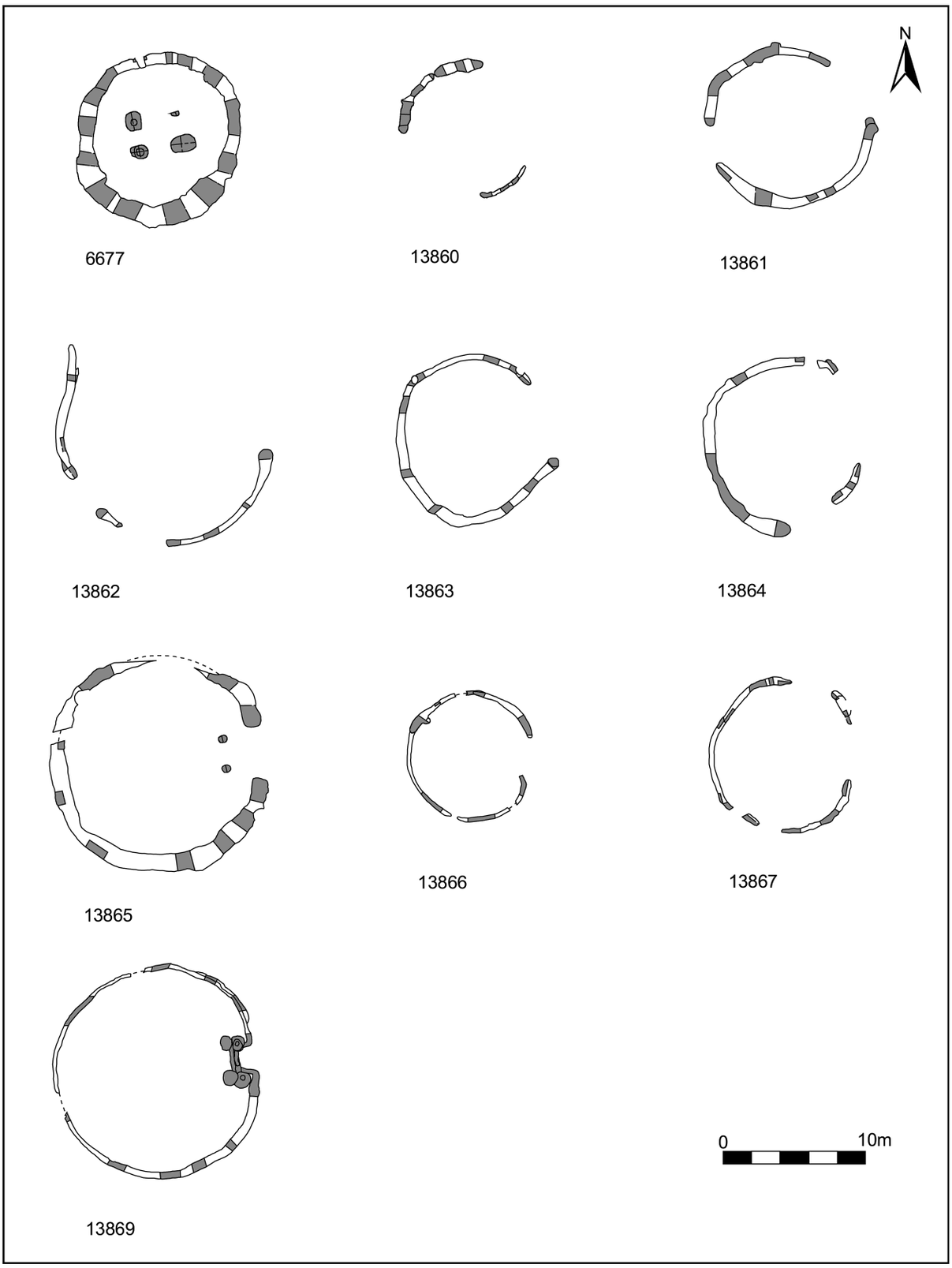


Figure 36 Middle Iron Age: plans of Period VI.2 roundhouses (I)

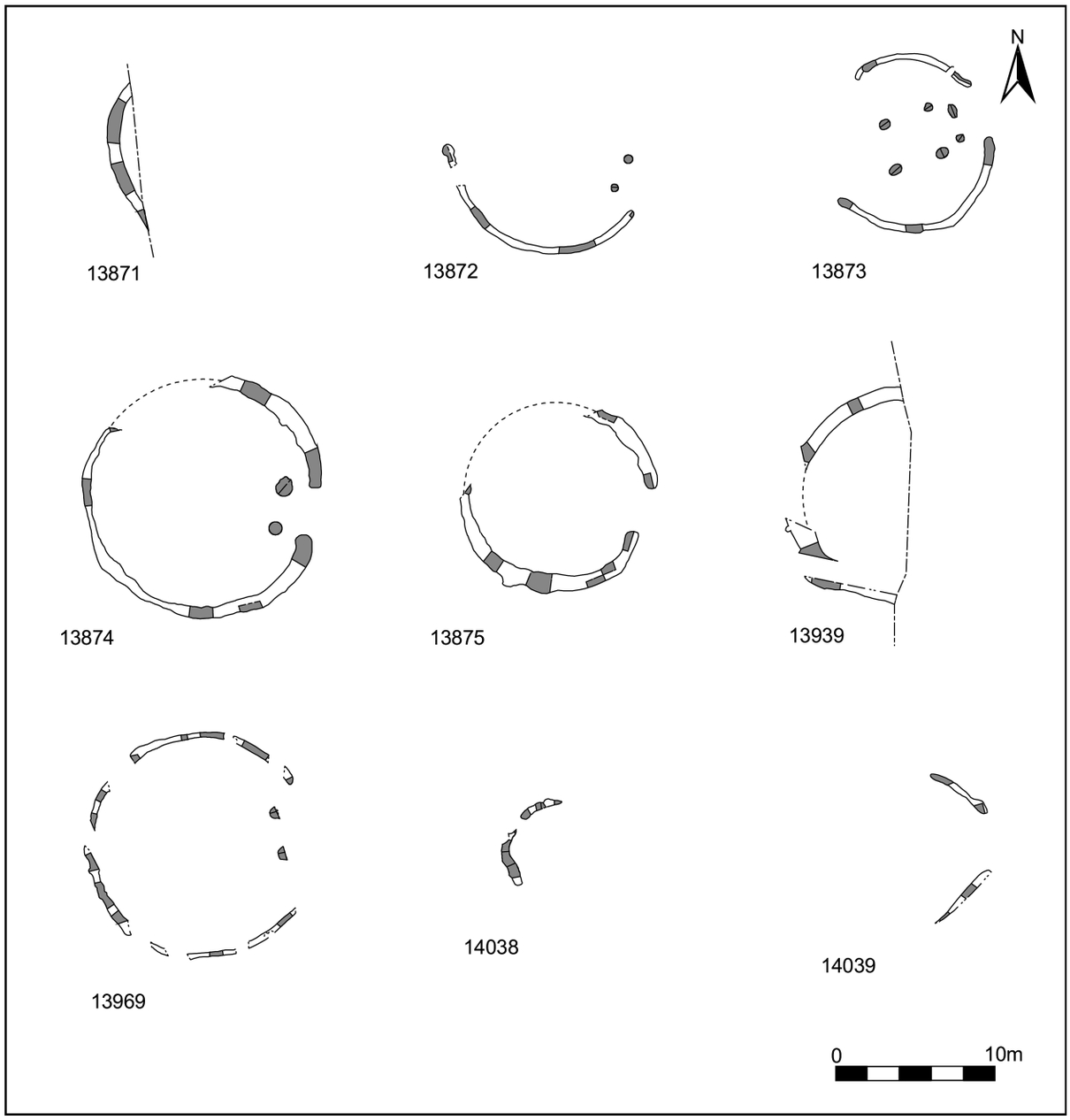


Figure 37 Middle Iron Age: plans of Period VI.2 roundhouses (II)

one added (*14127*), and one curved and extended (*14121*/*13949*). The sharp corner of ditch *13949* had been cut into the south-east end of ditch *14122*, which revealed that the north-east side of the internal enclosure had originally been straight. Towards the end of the sequence (C) the area of the north-east enclosure was extended, and further roundhouses (*13862*, *13863*, *13869* and *14039*) sited in this zone. The internal enclosure and the south-west entranceway were removed, and ditch *14121*/*13949* was replaced with ditch *13912*. A 4m gap between ditches *14127* and *13943* perhaps represents an entranceway into the enclosure during that time.

All the ditches that formed the north-east enclosure during its three phases were relatively shallow, varying in width and depth from segment to segment. The maximum depth of the deepest ditch (*13943*) was 0.88m. Pieces of Middle Iron Age pottery were found in *13912* and *13943*, on either side of the enclosure. The other ditches contained no closely datable finds. The excavation identified recutting in the sections across the south-western part of ditch *13943*, which was open throughout the sequence. Localised deposits of natural dark silt sand made sections of some ditches difficult to identify: for example, in the area between *13943* and *14106*, and also north of *14121* and *13912*.

Inside the north-east enclosure were two ditches (*13944* and *14111*), whose locations suggested that it had been sub-divided during one or more of the sub-phases (Figs 32C and 33). Both ditches contained Middle Iron Age pottery. Ditch *13944* had been cut into the north side of roundhouse *13865*.

South-east enclosures

In the south-eastern part of the site, it appeared that some of the roundhouses predated the east–west trackway (or the defining of the trackway by ditches), since two of them (*13874* and *13875*) had been cut into during the second (B) of the three phases in that area by trackway ditch *13937* (Figs. 34A–C and 35). During the second phase of the sequence (B), two small enclosures were defined by three ditches to the south of the trackway ditch (*14101*, *14095* and *14096*). From the final phase came evidence to suggest that some of the roundhouses at that time had been sited in individual enclosures; roundhouse *13872* lay in a square enclosure defined by ditches *14102* and *14097–14099*, and roundhouse *13871* in a rectangular enclosure partly revealed by cropmarks, and partly by ditches *14136* and *14102–14104*.

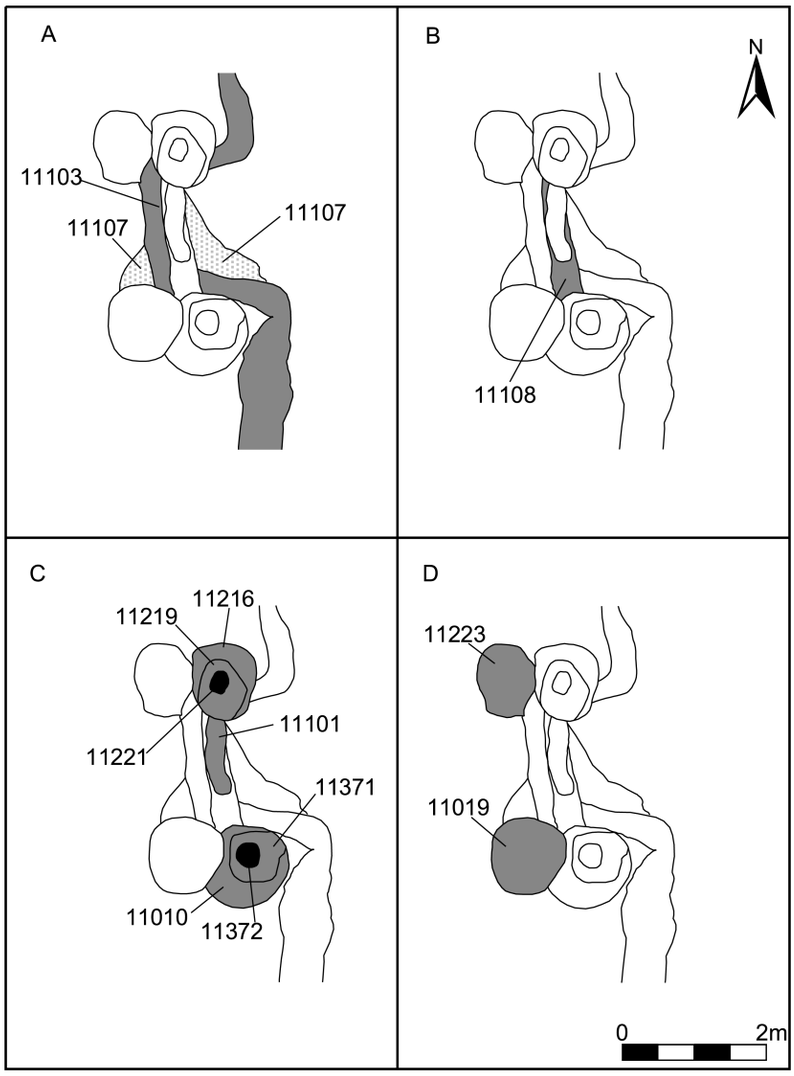


Figure 38 Middle Iron Age: Period VI.2 roundhouse *13869* entranceway, plan showing sequence of development

Since none of the ditches recorded in the south-east of the site yielded closely datable finds, stratigraphic relationships and spatial arrangement informed the phasing process. Ditch *14096* had been cut into roundhouse *13874*, and ditch *14097* into ditch *14095*. Roundhouse *13872* had been cut into roundhouse *13873*, and ditches *14102–14104* into roundhouse *13939*. Most of the ditches were between 0.3m and 0.45m deep.

In the central part of the site were one certain and two possible open-ended enclosures, defined by shallow ditches with right-angled corners (Fig. 31, *13898*, *14060* and *14077*). Enclosure *13898* was the only one of the three to be fully exposed. It had an unidentifiable stratigraphic relationship with trackway ditch *13894*, but had been cut into Period VI.1 ditch *13895*. It measured *c*. 9m by 12m and contained baked clay and Middle Iron Age pottery. No baked clay or datable finds were collected from *14060* or *14077*. The open-ended form of the enclosures was similar to that of enclosures *13948* and *13945* in Period VI.1, albeit on a slightly smaller scale (Fig. 29).

Roundhouses

Complete and incomplete circular gullies defined nine roundhouses in the north-east enclosure, six in the south-east corner, and four in the middle of the site, north of the east–west trackway (Figs 30–35). The gullies had diameters measuring from 6m to 13.6m, and depths and widths from 0.05m to 0.6m and 0.21m to 1.6m respectively (Figs 36 and 37, Table 12). Five of the gullies were generally shallow and narrow (*13866*, *13869*, *13872*, *13873* and *13969*), two (*13865* and *13874*) were deeper towards the east entranceway, and twelve varied in depth and width from section to section. In three cases, recutting on a piecemeal basis was partly responsible for the variable width and depth of the gully (*6677*, *13866* and *13867*).

It is unlikely that all of the breaks between the gullies were due to truncation because some of them ended abruptly. Some of the breaks formed east-facing entranceways (*e.g. 13865*, *13866* and *13874*). One gully made a complete circuit (*6677*). Where they were well-defined, the entranceway breaks ranged in width from 1.6m to 5.5m.

Shallow post-holes representing roof or doorway supports were evident in seven of the nineteen roundhouses (*6677*, *13865*, *13869*, *13872*, *13873*, *13874* and *13969*). The post-holes for the doorway supports occurred in pairs, 1.8m–2.6m apart and located 1m–1.6m back from the entranceways. In roundhouses *6677* and *13873*, post-holes for roof supports formed regular shapes measuring 2.2m by 3m and 3m by 3m respectively. Two of the post-holes in roundhouse *6677* contained square and circular post-pipes, *c*. 0.4m wide.

The stratigraphic evidence from roundhouse *13869* implied that it had been modified at least three times (Figs 36 and 38A–D). In the initial phase, the roundhouse gully turned inward at the entranceway towards a linear feature, which may have been the slot for a door frame and/or threshold (Fig. 38A, *11103*). The slot had moderate sides and was 0.33m deep. To either side of it lay a thin layer of sand silt (*11107*), which suggested that the entranceway into the structure had been deeply embedded. A slot for a replacement threshold had steep sides and was 0.38m deep (Fig. 38B, *11108*). In the third phase, a 0.08m deep linear cut (*11101*) for a threshold existed between two substantial post-holes (Fig. 38C, *11010* and *11216*). Both post-holes contained *c*. 0.20m wide post-pipes (*11221* and *11372*), which had been partly truncated by cuts for post-removal (*11219* and *11371*). In the final modification, two post-

holes for a replacement doorway were dug to the immediate west of the previous two post-holes (Fig. 38D, *11019* and *11223*). It could not be shown that the roundhouse gully outside the area of the entranceway continued in use beyond the first phase of construction.

Sherds of Middle Iron Age pottery occurred in all of the roundhouse gullies apart from *13866*, which was dated from its apparent association with the surrounding enclosure and buildings. Quantities of pottery were generally low, although large amounts were found in the gully entranceway terminals of *13874* and *13865*. Stratigraphic relationships indicated that the maximum number of roundhouses that could have been standing at any one time was fourteen. Roundhouses *6677*, *13860* and *14038* overlapped, as did *13872* and *13873*, and *13862*, *13863* and *14039*; roundhouses *13860* and *14038* had been cut into *6677*, roundhouse *13872* into *13873*, and roundhouse *13863* into *14039*.

The excavation discovered fragments of structural daub and triangular loomweight in some of the roundhouse gullies, although less than in some of the nearby pits and ditches (Fig. 39). In the gully entranceway terminals of roundhouse *13874* pieces of loomweight were relatively common.

Post-built structures

The excavation identified thirteen four-post structures, one four- or five-post structure, one six-post structure and one nine-post structure (Fig. 40). All lay alongside the roundhouses in the north-east and south-east enclosures (Figs 33 and 35).

The four- and five-post structures were approximately square, and were recorded in two different size ranges (Fig. 41): 1.7m–2.5m long and 1.7m–2.1m wide (*13959*, *13982*, *13983*, *13999* and *14008*), and 2.7m–3.1m long and 2.5m–3.1m wide (*13955* to *13958*, *13963*, *13998*, *14009*, *14019* and *13961*) respectively. This difference in size extended to the dimensions of the constituent post-holes, which were generally larger and deeper in the bigger structures (Table 13). Post-pipes or post-removal cuts were found in three of the post-holes in structure *14019*.

The six post-holes which defined structure *14016*, which was 3.6m square, were up to 0.38m deep, between 0.68m and 0.87 wide, and 0.8m to 1.02m long. Oval and irregular-shaped post-pipes or post-removal cuts were noted in each of the six post-holes.

Nine evenly-spaced post-holes defined structure *10185*, which was 5m long and 4.9m wide. The post-holes were up to 0.3m deep, between 0.64m and 0.9m wide and 0.7m–1.0m long.

Some of the post-built structures appeared to be grouped (Fig. 40A, B, C and F). It was also evident from the stratigraphy that not all of the structures had been in use at the same time. In two cases, it appeared that an earlier structure had been replaced by a subsequent one in the same location (*13958* and *13959*, and *13982* and *13983*).

Pieces of charcoal and charred grain in the post-pipes or post-removal cuts in structure *14016* and in the post-holes of structure *13957* suggested that both had been used as granaries, and that both had been destroyed by fire (Chapter 3, 90–4). Charred wheat and oak fragments were recorded in the south-east post-hole of *13957*, and charred wheat and brome in all of the post-pipes or post-removal cuts in *14016* (Fig. 60).

Small amounts of Iron Age or Middle Iron Age pottery were found in some of the constituent features of structures *13957*, *13958*, *14016* and *14019*. The constituent features of the other structures either yielded no finds or produced pieces of prehistoric pottery that were not closely datable. The attribution of the less well-dated structures is based on their apparent close association with the surrounding settlement.

Number	*Average diameter (m)*	*Width (m)*	*Depth (m)*	*Comments*
Fig. 36				
6677	9.7	0.75–1.6	0.3–0.6	Cut by roundhouses 13860 and 14038. Four post-holes in central location, two with post-pipes. Contains MIA pottery.
13860	8.5	0.21–0.74	0.1–0.4	Cuts internal post-hole in roundhouse 6677. Contains MIA pottery.
13861	10.2	0.46–0.87	0.09–0.35	East and ?west entranceways. Contains MIA pottery.
13862	*c*. 13.6	0.35–0.93	0.1–0.32	Occupies same space as roundhouses 13863 and 14039. Contains MIA pottery.
13863	10.3	0.4–0.85	0.14–0.37	East entranceway. Overlies roundhouse 14039. Occupies same space as roundhouse 13862. Contains MIA pottery.
13864	10.35	0.55–1.3	0.17–0.45	Contains MIA pottery.
13865	13.25	1.05–1.4	0.13–0.56	Two post-holes near east entranceway. roundhouse gully becomes progressively shallower towards west side. Contains MIA pottery, most in entranceway terminals.
13866	8.6	0.25–0.73	0.07–0.13	East entranceway. Contains evidence for partial recutting, but no datable finds.
13867	9.8	0.26–0.5	0.05–0.31	?East entranceway. Contains MIA pottery and evidence for partial recutting.
13869	14	0.26–0.61	0.1–0.4	Four phases of entranceway. Contains MIA pottery.
Fig. 37				
13871	*c*. 11.5	0.55–0.6	0.11–0.22	Extends beyond east edge of site. Contains MIA pottery.
13872	*c*. 12.4	0.34–0.4	0.12–0.26	Two post-holes near ?east entranceway. Cuts roundhouse 13873. Contains MIA pottery.
13873	9.85	0.4–0.64	0.11–0.24	Two post-holes near east entranceway. Four post-holes in central location. Cut by roundhouse 13872. Contains MIA pottery.
13874	13.5	0.35–1.03	0.14–0.35	Two post-holes near east entranceway. Roundhouse gully becomes thinner and shallower towards west side. Contains MIA pottery, most in entranceway terminals.
13875	10.5	0.8–1	0.28–0.46	East entranceway. Contains MIA pottery.
13939	*c*. 11.5	0.75–1.2	0.24–0.55	Extends beyond east edge of site. Contains MIA pottery.
13969	13	0.25–0.59	0.05–0.19	Two post-holes near east entranceway. Contains MIA pottery.
14038	*c*. 6m	0.3–0.66	0.19–0.3	Cuts roundhouse 6677. Contains MIA pottery.
14039	*c*. 8.8	0.4–0.62	0.16–0.35	East entranceway. Cut by roundhouse 13863. Occupies same space as roundhouse 13862. Contains MIA pottery.

Diameters measured from internal edges

Table 12 Middle Iron Age roundhouses: summary information

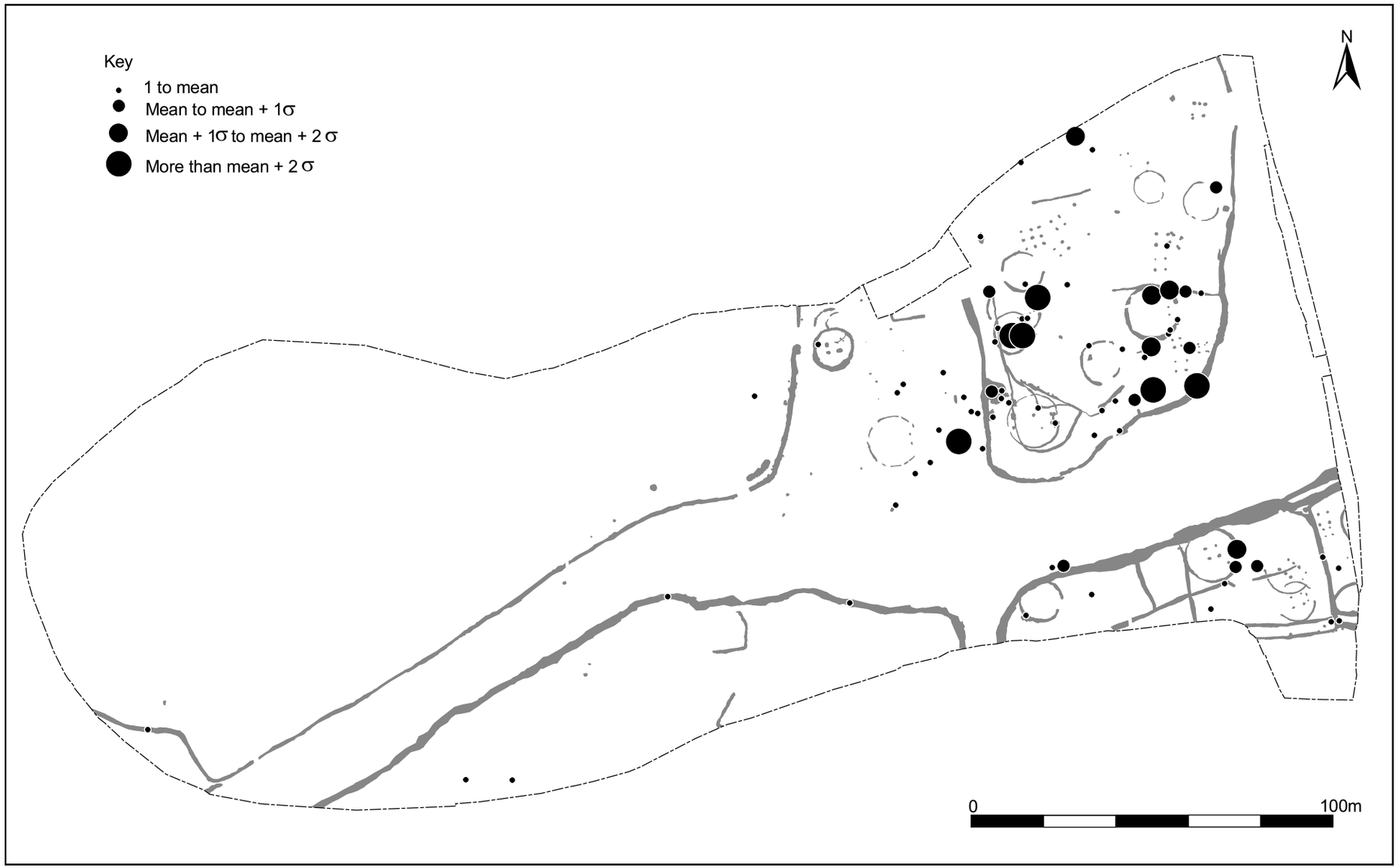


Figure 39 Middle Iron Age: plan of Period VI.2 features showing distribution of loomweight fragments by weight and standard deviation

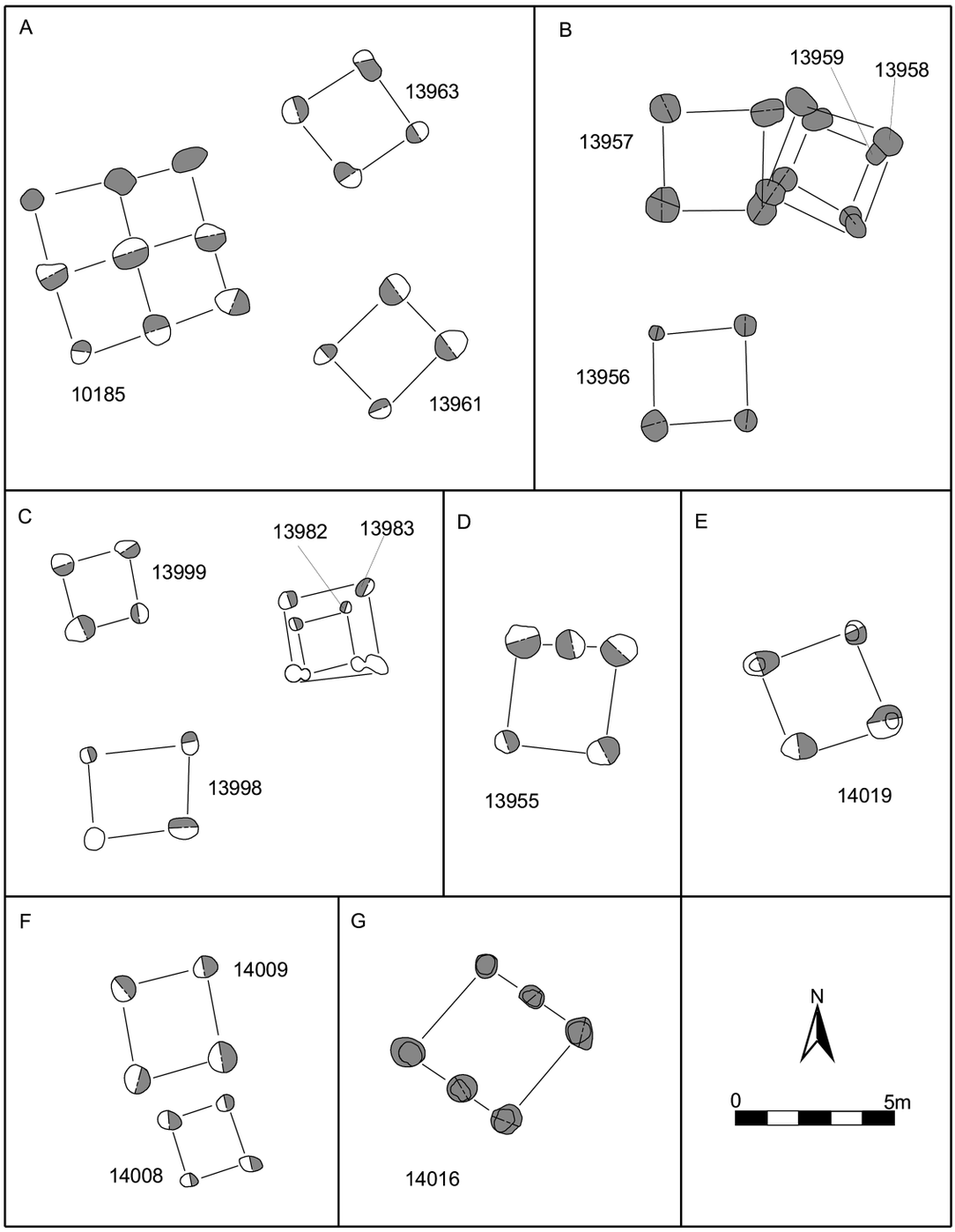


Figure 40 Middle Iron Age: plans of Period VI.2 post-built structures

Other features

Middle Iron Age pits and post-holes were discovered close to the roundhouses and along both sides of the east–west trackway (Figs 30, 31, 33 and 35). Pottery was recorded in all of these features, along with pieces of baked clay and loomweight. Since relatively few of the numerous undatable pits and post-holes along the north side of trackway ditch *13892* and in the open area between the ditch and the north-east enclosure (Fig. 6) encroached upon the Middle Iron Age trackways, the majority may have been dug during this period.

Among the pits and post-holes in the north-east enclosure were pits containing the cremated remains of a human skull (*60:* Chapter 3, 85), and the remnants of truncated single vessels (*10915* and *12190*) (Fig. 33). Pit *10915* lay near the entranceway in roundhouse *13869*, and *12190* north-west of roundhouse *13866*. The vessel in pit *10915* had been placed in the feature upright. The orientation of that in *12190* was not recorded. Pit *60* lay next to the south-west post-hole of post-built structure *13955*. It produced no finds, but was dated by radiocarbon dating to the 2nd to 4th centuries BC.

Interpretation

The Period VI.2 settlement probably grew from small beginnings, despite the fairly dramatic changes from Periods VI.1 to VI.2 apparent at first sight (Figs 29 and 30). Perhaps the Periods VI.1b and VI.1c open-ended enclosures *13948* and *13945* represent an early stage in the development of the VI.2 settlement, as *13945* terminates

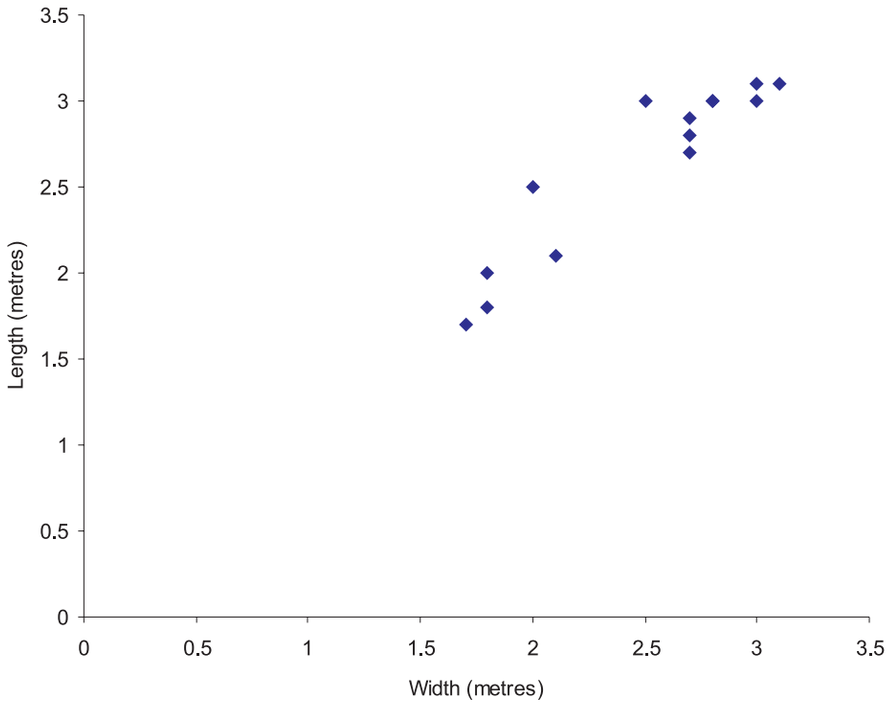


Figure 41 Middle Iron Age: dimensions of four- and five-post structures

	Small (m)	*Large (m)*
Depth		
Sample size	16	36
Mean	0.31	0.36
Minimum	0.2	0.15
First quartile	0.29	0.29
Median	0.3	0.35
Third quartile	0.35	0.44
Maximum	0.45	0.62
Length		
Sample size	17	35
Mean	0.52	0.83
Minimum	0.3	0.4
First quartile	0.4	0.7
Median	0.54	0.8
Third quartile	0.6	0.96
Maximum	0.9	1.5
Width		
Sample size	18	35
Mean	0.5	0.73
Minimum	0.3	0.4
First quartile	0.4	0.6
Median	0.5	0.74
Third quartile	0.58	0.8
Maximum	0.8	1.09

Table 13 Middle Iron Age four- and five post structures: dimensions of post-holes

one of the VI.1 trackways. Subsequent development of the VI.2 north-east enclosure around the VI.1 open-ended enclosures may have been concurrent with the establishment of the east–west route across the remaining VI.1 fields. Although the roundhouses outside the north-east enclosure may have related to subsequent episodes of expansion, stratigraphic relationships indicated that some of those must have been constructed prior to the formalisation of the VI.2 trackway (Fig. 34A).

It is likely that a mixed farming economy lay behind the VI.2 settlement. While the non-survival of animal bone deprives us of any evidence for animal husbandry, crop production was represented by probable granaries and carbonised plant remains. The east–west trackway appears, at first glance, to be unnecessarily broad; perhaps it was deliberately built in this form to facilitate the movement of livestock. Few VI.2 features lay within the route of the trackway and this suggests that it was maintained and respected. The trackway opened out onto two large open areas to either side of the north-east enclosure. Perhaps these open areas and the trackway were associated both with the safekeeping of sheep and/or cattle and with the transfer of livestock for regular episodes of care, milking and feeding. The charred plant remains imply that two of the post-built structures at least were used as granaries, and that the importance of cereal production to the economy of the settlement rested upon the well-drained local soils. Indeed, productive use of the geology of the immediate area is likely to have extended beyond these well-drained soils. While it appears that the inhabitants of the settlement were growing their crops on the sandier soils close to the site, perhaps they were grazing their livestock further afield in the areas of salt marsh to

the west and south, or along the length of St Osyth Creek on the areas of hillwash.

The nineteen roundhouses represent the dwellings of the settlement's inhabitants, and were mainly recorded in the north-east and south-east enclosures (Fig. 30). In roundhouses *13865* and *13874*, the preponderance of finds close to the entranceway terminals is suggestive of the casual discard of household waste, and gives support to the hypothesis that these buildings were essentially domestic. The ring-gullies of the nineteen roundhouses varied in depth, width and diameter, and some of the buildings displayed evidence for internal structures (Figs 36 and 37). East-facing entranceways appear to have been common, and roundhouse *13869* showed clear evidence of modification and/or reconstruction (Figs 36 and 38). The roundhouses were of broadly similar form but vary in points of detail, suggesting that although the essentials may have been prescribed or traditional, the construction method of the buildings still left room for informality and improvisation.

The evidence of the charred plant remains suggests that some, if not all, of the post-built structures were used as granaries. Each granary may have been elevated on wooden posts in order to increase surrounding air flow, and to minimise the likelihood of damp and fungal infestation.

The post-built structures all lay close to the roundhouses in the north and south-east enclosures. Within those enclosures, however, the distribution of the structures was not even, as most were recorded in small clusters. One cluster was sited north of roundhouse *13861*, one to each side of roundhouse *13865*, and one immediately west of roundhouse *13865* (Figs 33, 35 and 40A, B, C and F). Convenience and a desire to manage and safeguard harvested crops may be partially responsible for the occurrence of these two types of structure together. If the use of the granaries was not communal, then the apparent one-to-one relationship between specific roundhouses and individual clusters of post-built structures may represent a proprietary relationship, suggesting unequal levels of access, authority, wealth and/or status among the inhabitants.

The few types of Middle Iron Age find recorded, and the Middle Iron Age pottery assemblage which is characterised by a small range of forms, suggest that the inhabitants of the settlement were conservatively minded. The many fragments of loomweight imply that weaving featured in day-to-day life and much of that weaving is likely to have taken place close to the roundhouses in a domestic context (Fig. 39). The single piece of Middle Iron Age metalwork, a probable awl, may indicate either that metal was little used, or was too rare and valuable to be thoughtlessly discarded.

3. Artefactual and Environmental Evidence

I. Worked flint

by Hazel Martingell
(Figs 41–3)

Introduction

The total number of flint artefacts recovered during the excavation was 11,536, of which 274 were retouched tools (Table 14). Most of them are fresh and unpatinated, although some are fire damaged.

The artefacts come from a variety of features and are associated with pottery from different prehistoric periods. Three features have produced a great quantity of worked flint (over 50%) (pits *96*, *103* and recut *215* in causewayed enclosure ditch *13930*), and in these cases, mostly waste material in the form of fine chippings from the preparation of cores and retouch spalls from trimmed artefacts. There are also many thinning flakes, which suggest the preparatory knapping of laurel leaf points and axes, but neither of these artefacts were recovered during the excavations; it is possible that easily recognisable tools such as axes and large bifacial points were collected from the surface in earlier years.

The raw material

Most of the raw material appears to have been taken from the local gravel deposits, with a small amount of corticated black flint nodules amongst them. These nodules are usually considered to be erratics within the gravel, but these particular nodules have a fresh appearance in contrast to the rolled surfaces of the pebbles and cobbles in the gravel. It is possible that good quality flint was traded in raw material form.

Type	*St Osyth*	*Orsett F21*	*Orsett other*
Polished axe fragments	1	1	1
Notched blade/flake	1	1	2
Scrapers	51	4	22
Serrated flakes and blades (microdenticulates)	56	2	3
Retouched flakes and blades	89	5	24
Roughouts for bifacial tools	12	3	4
Cores	199	24	
Core rejuvenation flakes (core tablets)	15	1	
Blades, flake, waste (not chippings)	6350	276	
Arrowheads and fragment of arrowheads	30		4
Piercers	6		2
Microliths and truncated blade and scraper	5		
Other retouched	275		
Chippings	4446		
Total	**11,536**		

Table 14 Classification of flint artefacts recovered from Lodge Farm, compared with the flint artefacts recovered from the causewayed enclosure at Orsett

Feature assemblages

Pits *96* and *103*, and recut *215* in causewayed enclosure ditch *13930*

The three largest concentrations of worked flints were recovered from features *96*, *103* and *215*, with a total of 6481 pieces. These pits are situated in the north-east corner of the excavation, where it is likely that there was a knapping floor (Figs 11 and 21). The waste from this knapping deposited in the features consisted of flakes, blades, cores and chippings and included complete and broken retouched artefacts. Amongst the waste in pit *96* were two complete and two broken leaf arrowheads, a bifacial roughout, two scrapers and twenty-three retouched fragments. In pit *103*, there were four complete and twelve broken leaf arrowheads (Fig. 42.6–10), four bifacial roughouts, one scraper, one serrated blade (microdenticulate), one good piercer (Fig. 43.15) and three retouched pieces, as well as three Mesolithic artefacts (Fig. 42.1, 42.3 and 42.5). In recut *215*, there was one broken leaf arrowhead, one scraper and sixteen retouched fragments.

Mesolithic

One truncated blade and two microliths of Mesolithic type were recovered from pit *103* (Figs 42.1, 42.3 and 42.5). The flint of which they are made is different from most of the blade material in the pit and they are also less sharp. This suggests that although deposited at the same time as the rest of the waste material they could have been made earlier. One of the microliths is a hollow-based Horsham type (*pers.comm*. Jacobi, R) (Fig. 42.1). Another microlith, a complete, small, obliquely blunted one, was found in the primary fill of section *9359* across ditch *13912*, a Period VI.2 feature (Fig. 42.2). This flint is stained a red brown. A small end scraper on a blade was discovered in undated feature *8979* (Fig. 42.4).

Early Neolithic

This date is based on the percentage of good blades (20%) amongst the waste. These blades are generally fine, made of dark grey flint with an average length of 40mm. Any retouch is fine edged. It is also based on the arrowheads, all leaf-shaped, very fine and delicate and of Clark's Early Neolithic type (Clark *et al.* 1960). Two shapes predominate; a small pointed oval (Fig. 42.8, 9) and one with an extended point and rounded base (Figs 42.6, 7, 10 and 11).

Pits *1114*, *1143*, *1147* and *2398*

Three of these pits, which lay in the south-western part of the site, contained at least 100 artefacts each. Pit *1114* held 200 artefacts and this was the only one of the three with chippings, but all four contained waste flakes, blades and cores (Fig. 8, *1143*; Fig. 9, *1114*, *1147* and *2398*). A broken leaf arrowhead and six roughouts and fragments of arrowheads came from pit *1143* (Fig. 43.16, 17). The retouched element in the other three pits was markedly different from that in the north-eastern area. Pit *1114* contained two scrapers, three serrated/micodenticulates and one retouched blade. Pit *1147* had six microdenticulates (Fig. 43.12 and 19) and one denticulate and pit *2398* one microdenticulate and one retouched blade. An exceptionally fine Early Neolithic scraper came from another pit (*1189*) within this group (Fig. 43.14).

To the north of this south-western area were more pits with similar artefacts (Fig. 8, *865*, *1432* and *1613*). Pit *1432* had over 100 flints including three microdenticulates and three retouched pieces and three rough scrapers. Pit *1613* had 49 flints, one of which was a fine scraper (Fig. 43.13). Pit *865* yielded two partly polished axe fragments used for cores in light grey flint. There was also a rough scraper and four microdenticulate fragments.

Pits *5758*, *5817* and *5819*

This was another group of three pits with a considerable number of waste flints and a few retouched artefacts. Pit *5758* contained 49 flints including one scraper and one retouched flake. Pit *5817* had 61 flints, one of which was a concave scraper and there was also a piercer. Pit *5819* had 254 flints, 69 of which were chippings and there were six scrapers; three of them large with unprepared platforms which could

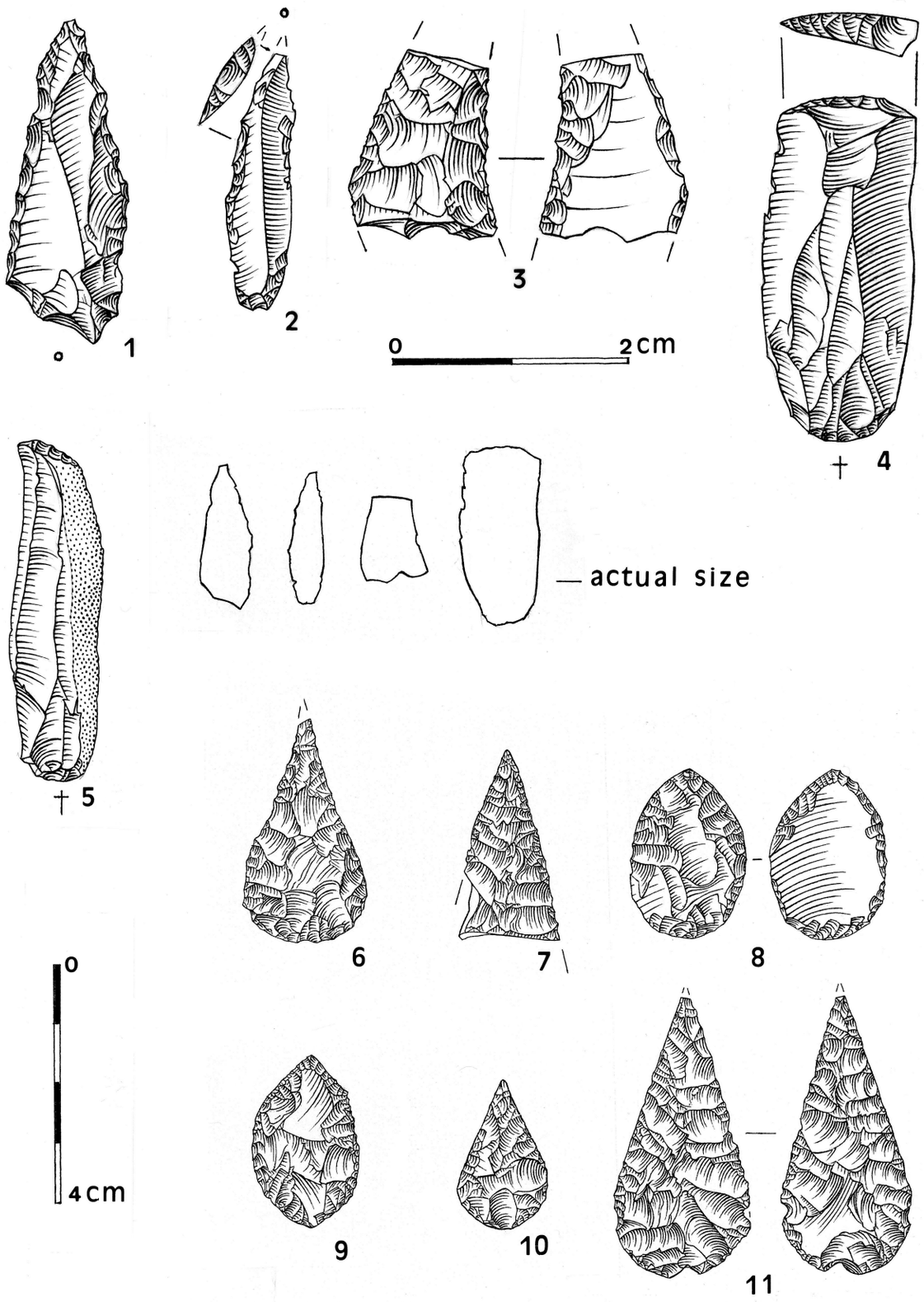


Figure 42 Worked flint (1–11)

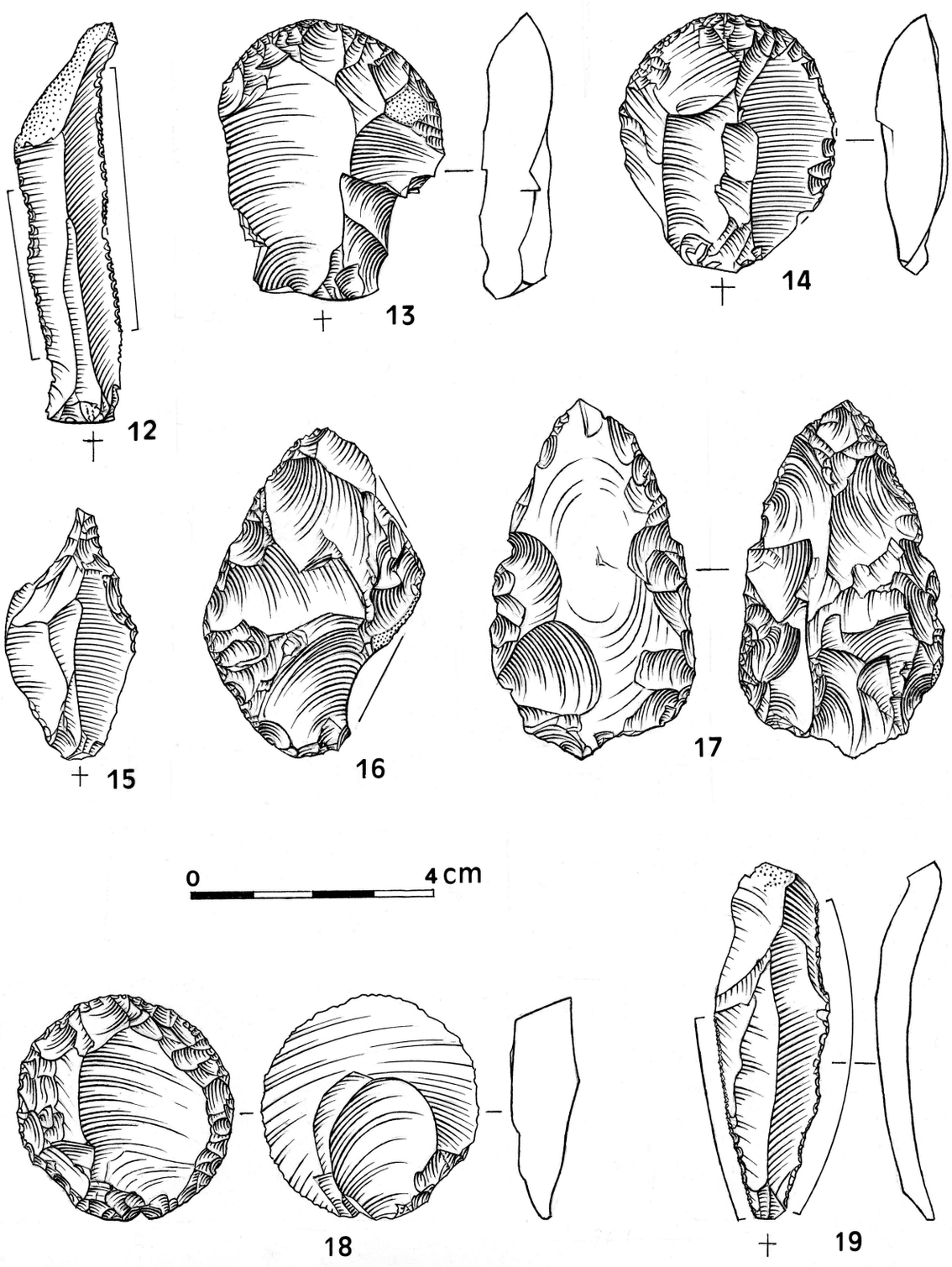


Figure 43 Worked flint (12–19)

be of later prehistoric date. There were also three microdenticulates and three piercers. All of the features were situated in the mid-eastern part of the site (Fig. 10). Pit *5402*, situated 20m north of this group, contained 189 flints, chippings and waste and three good scrapers and one microdenticulate (Fig. 10). The contents from these pits suggest a mixture of earlier and later prehistoric artefacts.

Many more worked flints, including scrapers, arrowheads and other retouched pieces, came from pits and sections of features across the site. For example, the most complete and finest of the leaf arrowheads came from pit *7416* (Figs 10 and 42.11). Three good scrapers of Neolithic date were also discovered: one came from constituent pit *10421* in causewayed enclosure ditch *13923* (Fig. 11), and one from a medieval ditch (Fig. 43.18), while a third was unstratified.

Catalogue of illustrated worked flint

42.1 *102,* fill of *103,* microlith (Horsham point)
42.2 *9360,* fill of *13912,* microlith
42.3 *102,* fill of *103,* microlith fragment
42.4 *8980,* fill of *8979,* End scraper
42.5 *102,* fill of *103,* truncated blade
42.6 *102,* fill of *103,* leaf arrowhead
42.7 *102,* fill of *103,* leaf arrowhead
42.8 *102,* fill of *103,* leaf arrowhead
42.9 *102,* fill of *103,* leaf arrowhead
42.10 *102,* fill of *103,* leaf arrowhead
42.11 *7415,* fill of *7416,* leaf arrowhead
43.12 *1146,* fill of *1147,* microdenticulated blade
43.13 *1891,* fill of *1888,* round-ended scraper
43.14 *1191,* fill of *1189,* round-ended scraper
43.15 *102,* fill of *103,* piercer
43.16 *1144,* fill of *1143,* arrowhead roughout
43.17 *1144,* fill of *1143,* arrowhead roughout
43.18 *9591,* fill of *13887,* round scraper
43.19 *1146,* fill of *1147,* microdenticulated blade with curved profile

Discussion

In recent years, it has become a rarity for excavations in Essex to produce such a wealth of worked flint artefacts. It is of special importance to have complete knapping sequences in terms of the waste material, from primary flakes and blades to small chippings, as well as some of the finished tools. What is not unusual at such sites are the recognisable Neolithic, Bronze Age and later prehistoric flint artefacts.

No Palaeolithic artefacts were collected from the site and only a small amount of Mesolithic material: three microliths, a truncated blade and an end scraper on a small blade. This tends to be about the usual number found on mixed-period sites. It might be assumed that these Mesolithic piercers were lost at St Osyth before the construction of the enclosure.

Many Neolithic and Bronze Age habitation sites in Essex have been added to the records since the publication of the excavations at the Neolithic causewayed enclosure at Orsett, nearly thirty years ago (Hedges and Buckley 1978). Despite this, it is the Orsett assemblages that are most similar to those from St Osyth — and remarkably so. Table 14 shows a formal comparison. All the retouched artefacts described and illustrated from Orsett are repeated at St Osyth, with some additions, principally the arrowhead type with excavated point and rounded base. This type of arrowhead occurs at the classic site of Hurst Fen, Suffolk (Clark *et al.* 1960), considered by Clark to be Early Neolithic. The assemblages at Orsett were attributed to the Middle Neolithic by Bonsall (1978). An explanation could be that certain types of flint artefact continued to be used into this later period. The manufacture of blade tools declined towards the end of the Early Neolithic, which affected the production of serrated/microdenticulated blades. These artefacts are not uncommon on Early Neolithic sites and some can have patches of cereal gloss on the blade edge. At least one of the St Osyth microdenticulates has this gloss (Juel Jensen 1994).

The later prehistoric (Middle Bronze Age onwards) flint artefacts are difficult to identify with certainty. This is due to the casual nature of the knapping. The criteria were set out by Clark in 1953 (Clark and Fell 1953). The most common tool is a flake implement with little or no retouch, some resembling a scraper. At St Osyth there were a number of such artefacts, but further study of both the artefacts and the features they came from would be required before anything more can be said.

II. Prehistoric pottery

by Nick Lavender

Introduction

The excavations produced a large quantity of prehistoric pottery (14,688 sherds, weighing 186.149 kg), reflecting activity from the Early Neolithic to the Middle Iron Age. There are, however, no Neolithic Impressed Wares, and pottery dating from the Late Bronze Age and Early Iron Age comprises only 1.25% of the total assemblage by sherd count.

The 133 sherds (1326g) of pottery from the evaluation conducted by the Hertfordshire Archaeological Trust (now Archaeological Solutions) in 1998 are not reported on here. The pottery was described in the evaluation report (Murray and MacDonald 1998) as being 'no later than the Iron Age; the majority belongs to the Middle Iron Age'. Given the paucity of diagnostic sherds within this small assemblage, the present author would have to agree with this assessment.

As at the Orsett causewayed enclosure (Hedges and Buckley 1978) and most other sites in the region, the use of crushed calcined flint temper throughout the prehistoric period often precludes the accurate dating of undecorated body sherds. Thus, 4057 sherds — nearly 28% of the assemblage — cannot be assigned to any particular period.

Early Neolithic

4328 sherds (47.2kg) of Early Neolithic pottery were recovered from the site (31.5% by weight and 32.5% by sherd count of the entire prehistoric assemblage) (Table 15). The material was recorded using a system adapted from that used for later prehistoric pottery in Essex (Brown 1988, details in archive).

The condition of the pottery is generally good, although a number of sherds exhibit the ferromaganiferous concretions often found on gravel sites with fluctuating water tables (*e.g.* Brown 1988). Similarly, the surfaces show very little sign of abrasion, suggesting not only that the pottery was deposited shortly after breakage, but that it saw little use beforehand.

Cross-joins between vessels from different contexts were actively sought during the analysis of the pottery. Whilst these occurred in a number of cases within the same feature, no definite instances were found between the fills of more than one feature. Furthermore, the majority of sherds appear to come from the upper parts of vessels, and it may be that rims and decorated sherds were deliberately selected for deposition.

Identifiable vessel forms were restricted to simple bag-shaped vessels with simple, or more commonly,

Fabric		*% number*	*% weight (g)*
A	Flint, S 2 well sorted	1	<1
B	Flint, S–M 2	3	4
C	Flint, S–M with occasional L 2	6	2
D	Flint, S–L 2 poorly sorted	83	91
E	Flint and sand, S–M 2	<1	<1
F	Sand, S–M 2–3 with addition of occasional L flint	<1	<1
M	Grog, often with some sand or flint and occasional small rounded or subangular voids	2	<1
P	Largely temperless. May have sparse, very fine sand, occasional M–L flint or sparse irregular voids	<1	<1
Q	Flint, S–L, grog S–M 2	1	<1
V	Flint, S–M 1	<1	<1
X	Quartz sand S-L, some S-L flint 3	<1	<1
Z	Indeterminate	<1	<1

S – less than 1mm diameter; M = 1–2mm diameter;
L = more than 2mm diameter
1 – less than 6 per cm^2; 2 – 6–10 per cm^2; 3 – more than 10 per cm^2
Rim forms: A – open bowl, uncarinated; B – closed bowl, uncarinated;
C – open bowl, carinated; D – closed bowl, carinated;
E – bag-shaped vessel
1 – simple; 2 – rolled; 3 – externally thickened; 4 – expanded; 5 – t-shaped; 6 – inturned

Table 15 Early Neolithic pottery fabrics

rolled rims and open bowls with everted, often externally thickened rims. Only one example of a possible lug handle was recovered. A comparison of rim types with those from Orsett (Kinnes 1978), Hurst Fen, Mildenhall (Clarke 1960) and the Brightlingsea ring-ditch (Brown forthcoming a) is given below (Table 16) (percentages only for the Brightlingsea ring-ditch). This demonstrates a consistent preference for rolled and externally thickened rims.

The illustrated pottery represents the full range of form and decoration and includes all the largest diagnostic pieces and reconstructable forms. Approximately 30% of the rims and decorated sherds are illustrated.

Catalogue of illustrated Early Neolithic material
Descriptions for each illustration are ordered as follows: form/rim form; context, description/comments, fabric.

44.1 E/2, *1,* Rolled rim and joining sherd. Slightly abraded, although other pottery from this context is quite fresh, D
44.2 A/2, *2,* Flattened rolled rim of round-shouldered bowl, D
44.3 A/1, *98,* Large part of bowl with slightly everted rim, deep vertical neck and round shoulder, D
44.4 -/3, *102,* Abraded rim of open(?) bowl, D
44.5 A/2, *144,* Fine everted rim of straight sided bowl. Burnished, D
44.6 A/3, *144,* Very short, flattened rim of open bowl, D
44.7 A/2, *220,* Rim of open bowl, similar to 44.5, A
44.8 A/5, *220,* T-shaped/internally bevelled rim of small, round-bodied bowl, A
44.9 A/2, *251,* Rolled rim with joining shoulder of round-bodied bowl with part of horizontal lug handle, D
44.10 A/2, *781,* Rolled rim of straight-sided or slightly round-bodied open bowl, B
44.11 -/3, *783,* Externally thickened rim. The thickening of the rim is particularly marked in relation to the thin-walled body, V
44.12 A/2, *866,* Open bowl with slightly angled shoulder, D
44.13 C?/3, *1144,* Several non-joining sherds of the same rim (largest illustrated). Shallow incised decoration on top of rim does not continue onto interior or exterior of neck, D
44.14 C/3, *1129,* Large flat-topped S-profiled bowl rim, D
44.15 C/2, *1129,* Rim, vertical neck and shoulder of small carinated bowl, D
44.16 B/2, *1136,* Very flat top to rim. Well smoothed surface, firing spall missing from non-joining body sherd (not-illustrated), C
45.17 C?/3, *1190,* Two joining sherds. Flat-topped rim with pre-firing perforation on neck, D
45.18 E/2, *1315,* Large part of vertical-sided coarse jar, D
45.19 A/3, *1395,* Joining sherds. Burnishing on exterior and interior of neck. Ripple burnish on rim, B
45.20 A/3, *1395,* Very similar to Fig. 45.19 in decorative treatment. Physically, this bowl has a slighter rim and a more vertical neck, B
45.21 E?/2, *1433,* Scoring below very thin, poorly formed rim probably due to rim formation, D
45.22 C?/2, *1433,* Small bowl or cup. Possibly originally burnished exterior, D
45.23 C/2, *1433,* Small, round bodied bowl with sloping neck, D
45.24 C/-, *1433,* Carinated body sherd from open bowl with four rows of impressed dots below the shoulder, D
45.25 A/3, *1434,* Rim and shoulder of large bowl/possible jar, D
46.26 C?/2, *1449,* Rim and deep neck, probably from a carinated bowl, although no sherds from lower down were recovered. Burnished with ripple on rim, B
46.27 C/3, *1449,* Traces of lightly incised lines on rim, exterior and interior of neck. So slight that they were detected by touch, rather than sight, B
46.28 D/1, *1449,* Globular bowl with simple, out-turned rim, B
46.29 C/3, *1465,* Burnished. Light stroke pattern of vertical lines. One of very few examples to feature decoration on the rim and below the dots on the carination. There is a post-firing perforation below the rim, C
46.30 C/2, *1920,* Ripple burnish on rim continued down interior of neck. Exterior plain burnished, D
46.31 A/2, *1625,* Two joining sherds of round-bodied open bowl, D
46.32 C/3, *2436,* Burnt. Ripple burnished on rim, vertical lines on both inside and outside of neck. At least two rows of dots below slightly rounded shoulder carination, D
46.33 E/1, *2341,* Large part of rim and upper body of coarse, steep-sided bowl. Another sherd from the same vessel has a post-

	Simple	*Rolled*	*Externally thickened*	*Expanded*	*T-shaped*	*Inturned*	*Total*
St Osyth	43	85	52	2	4	1	187
Orsett	13	39	6	12	6	0	76
Hurst Fen	58	112	72	30	10	3	285
Or, as %:							
St Osyth	23.25	46	28	1	2	0.5	
Orsett	17	50	8	15.5	8	0	
Hurst Fen	20	40	25	10.5	3.5	1	
Brightlingsea	17	30	43	1	1	0	

Table 16 Comparison of ceramic rim-types from East Anglian sites

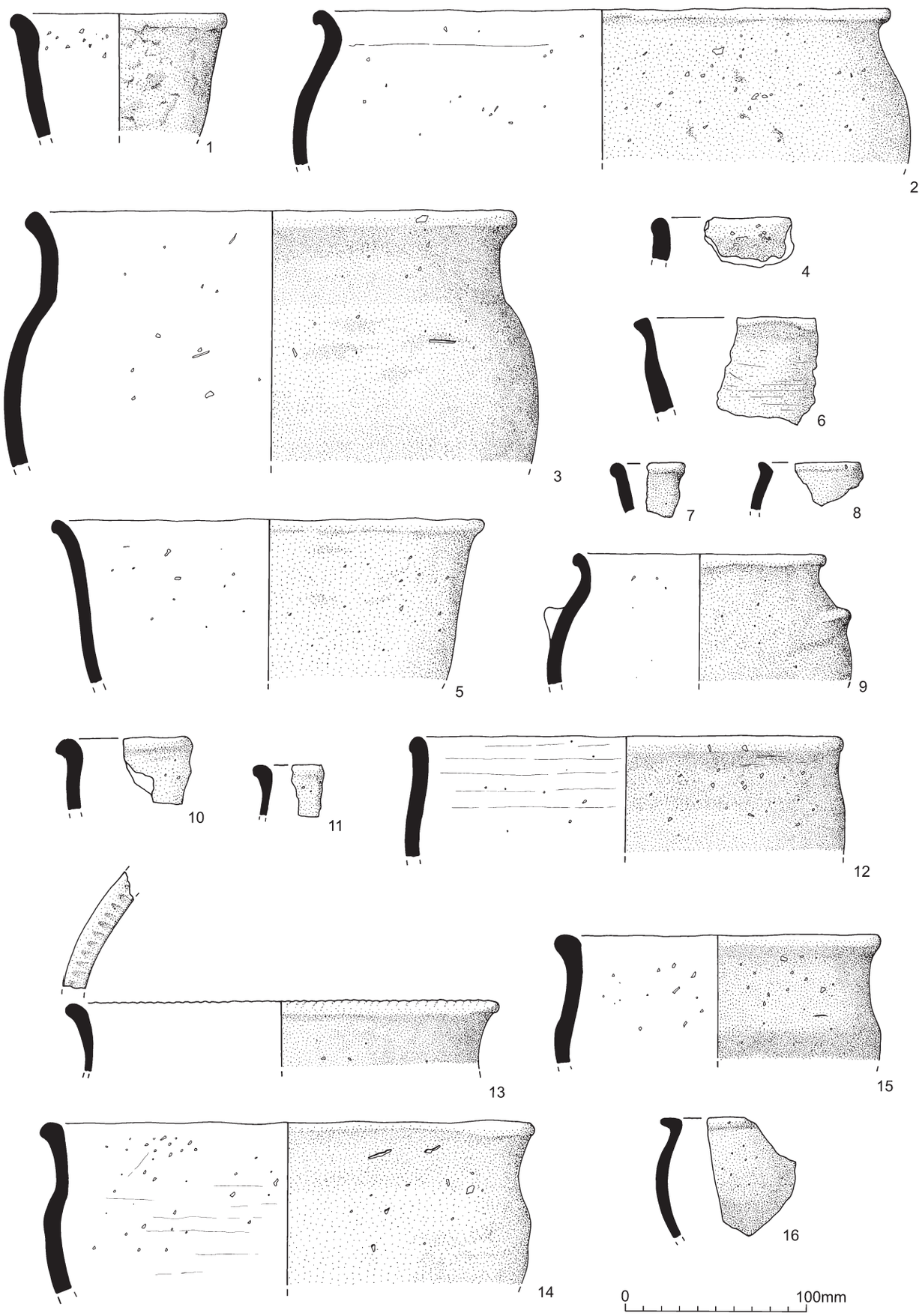


Figure 44 Prehistoric pottery (1–16)

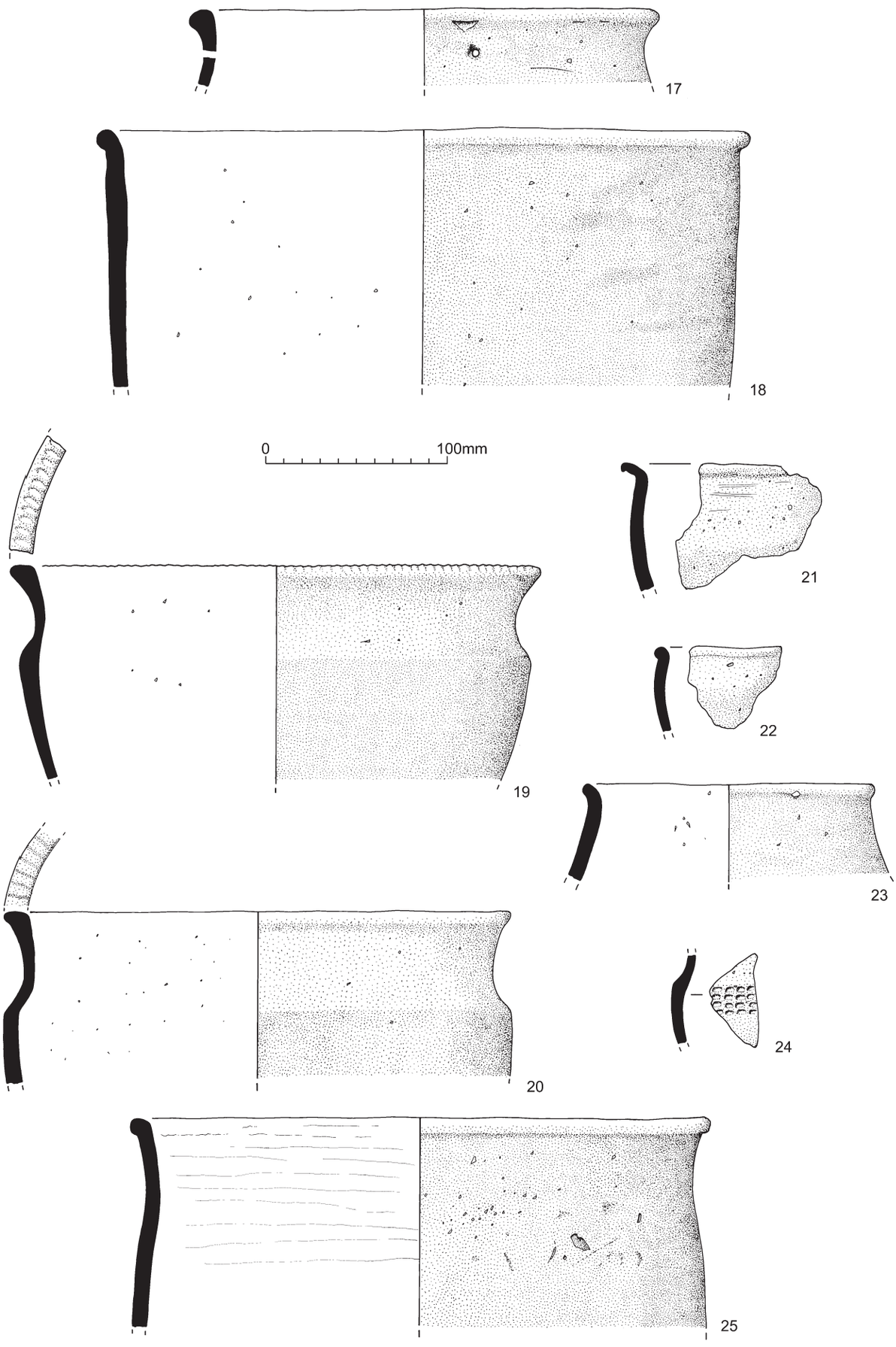


Figure 45 Prehistoric pottery (17–25)

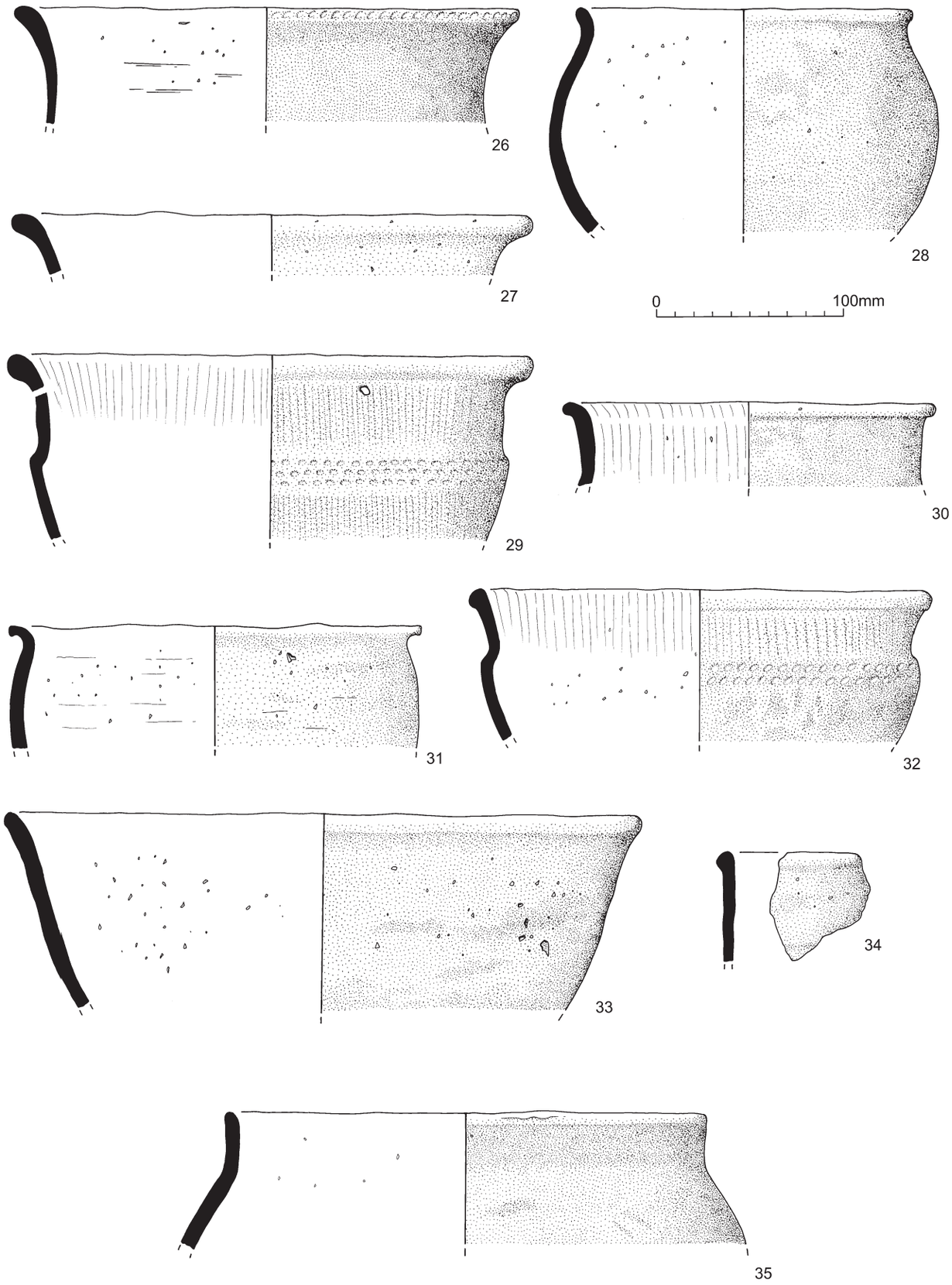


Figure 46 Prehistoric pottery (26–35)

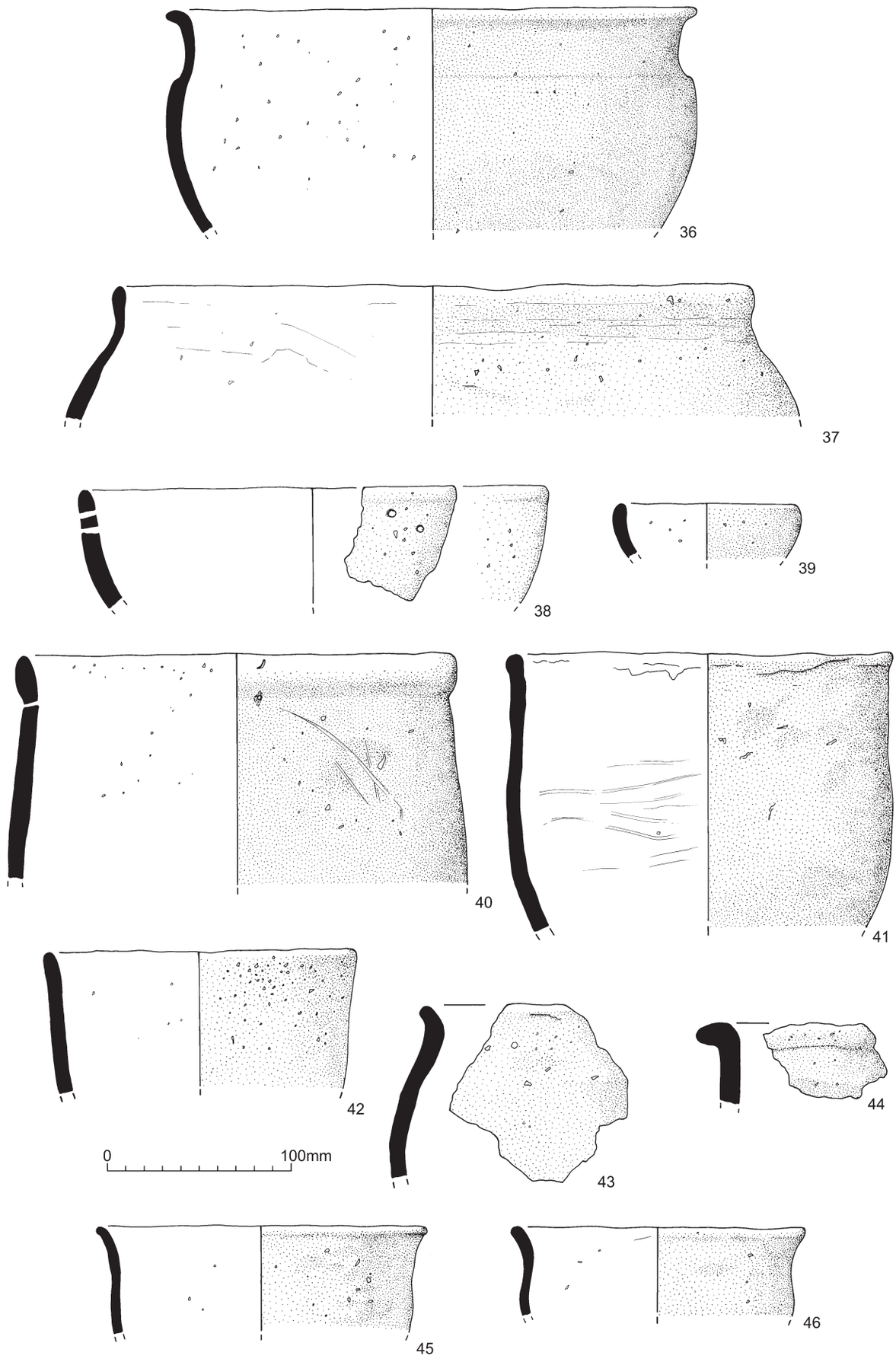


Figure 47 Prehistoric pottery (36–46)

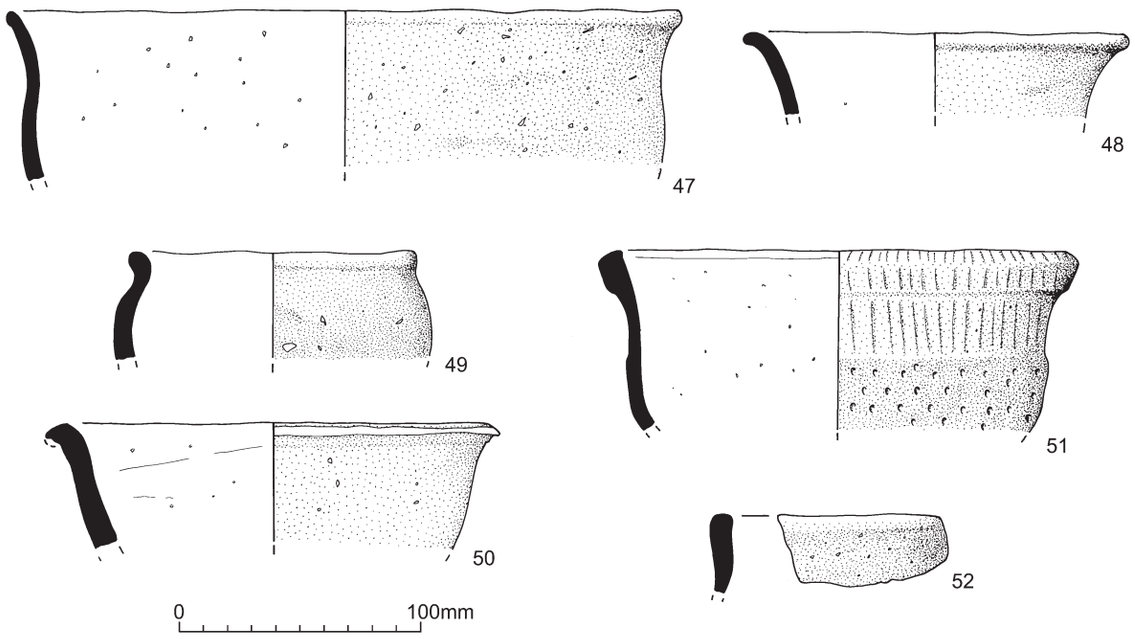


Figure 48 Prehistoric pottery (47–52)

firing perforation below rim (not illustrated), D

46.34 C/2, *2341,* Rim and vertical neck of bowl. Small non-joining sherd (not illustrated) has slight carination, D

46.35 A/2, *2341,* Simple upright rim of globular bowl, D

47.36 C/2, *2401, 2402, 2405, 2406,* Rim and most of the upper body. Most of lower body missing, D

47.37 A/1, *3396,* Simple upright rounded rim of large, coarse bowl or jar, D

47.38 A/1, *3396,* Simple rounded rim sherd with two pre-firing perforations below, D

47.39 A/6, *3396,* Inturned rim of small bowl or cup. The only example of an inturned rim from the site, D

47.40 E/4, *4082,* Jar with small, badly formed pre-firing perforation below rim. Some scoring of exterior, D

47.41 E/1-2, *4082,* Similar vessel to Fig. 47.40, but with crudely formed rim, D

47.42 E/1, *4082,* Straight-sided bowl or jar with simple, slightly outturned rim, D

47.43 A/2, *5404,* Rim of round-bodied bowl with several firing spalls separated, D

47.44 E/2, *5821,* Coarse, rolled rim of vertical-sided vessel, D

47.45 A/1, *5821,* Simple flared rim of open, slightly S-profiled vessel, D

47.46 A/1, *5821,* Similar to Fig. 47.45, but with more pronounced S-shaped profile, D

48.47 A/2, *5821,* S-profiled vessel, D

48.48 E/1, *5821,* Flared rim of open bowl, D

48.49 C/2, *6139,* Coarse small round-bodied bowl, D

48.50 C/2, *6139,* Shallow open bowl with flared rolled rim (now badly damaged), D

48.51 C/3, *13605,* Small carinated bowl with thick, flat rim. Short incised lines on exterior of neck and rim do not continue onto interior. Impressed dots below carination are not in rows, but appear more random than on other examples in the assemblage, A

48.52 C/3, *13605,* Small, simple rim from S-profiled(?) vessel, A

Almost the entire Early Neolithic assemblage was recovered from the causewayed enclosure and a large number of pits lying within its circuit (Table 17). The remaining *c*. 10% comprised abraded sherds from later, mainly Middle Iron Age features, many of which had been cut into the Early Neolithic contexts.

Finds of Early Neolithic pottery from the identified circuits of the enclosure are detailed in Table 18. The excavation strategy was such that approximately 80% of the Neolithic pits were fully excavated, including all those which had yielded finds from their first half. It is reasonable to assume, therefore, that almost all of the pottery from these features (apart from losses to ploughing) was recovered. However, it was only possible to excavate approximately 30% of the length of each ditch segment, and some sections were not fully excavated. Although the sections were placed at the terminals and centre of the segments (where possible), it must be assumed that much of the pottery from the ditches was not recovered and the *c.* 5:1 ratio shown in Table 17 is too high. However, it seems probable that at least twice as much pottery was originally deposited in the pits as in the ditches.

Furthermore, because of the shape of the excavation area, the identified circuits of the enclosure could not be evenly excavated. Very little of the outside circuit was available for excavation and produced only five sherds. The south-west circuit was excavated in five places and yielded 229 sherds, including 110 sherds (1345g) of a single jar from a special deposit in context *1315* in constituent pit *1312* in ditch *13918*. Whether or not this south-west circuit was a continuation of any of the three eastern circuits is unknown. Because of these factors, it is impossible to indicate a preferred location for the deposition of pottery, apart from stating that the pits were evidently preferred to the enclosure ditches. It seems probable that the pits were dug specifically to receive deposits of pottery and backfilled immediately.

The assemblage belongs to the Mildenhall style of the Early Neolithic (Longworth 1960) and the range of form and decoration can be paralleled at a number of sites throughout East Anglia. The forms represent a relatively limited repertoire of deep bowls with rim

	Number	*Weight (g)*	*% of total Early Neolithic sherds*	*% of total Early Neolithic weight*
Pits	3234	33,327	75	70.5
Enclosure ditch	659	9155	16	19.0
Total	3893	40,682	91	89.5

Table 17 Comparison of pottery quantities recovered from the pits and from the causewayed enclosure ditches

Circuit	*Number*	*Weight (g)*
South-west (13915–13919)	229	3764
Inner (13920–13925)	176	2048
Middle (13926–13931)	249	3283
Outer (13932–13934)	5	60
Total	**659**	**9155**

Table 18 Pottery from the circuits of the ditches of the causewayed enclosure

diameters of between *c*. 180mm and 340mm, together with bag-shaped jars of comparable size. A small number of pots have perforations below the rim (*e.g.* Figs 46.29 and 47.38) and one (from context *251*, Fig 44.9) has the remains of a lug handle.

Almost 90% of the identifiable bowls are of open form. Whilst there are a small number of globular and S-profiled vessels, most are either carinated or straight-sided with slightly flared rims. The preference for open forms may be a reflection of the deliberate selection of vessels and sherds deposited at the enclosure, and contrasts with the nearby site at Brightlingsea, where closed forms predominated (Brown forthcoming a). In this respect the St Osyth assemblage is more akin to those further south in the county (*e.g.* The Stumble, Brown forthcoming b; Springfield Lyons, Brown in prep.; and Orsett, Kinnes 1978), and less like those from further north in East Anglia such as Hurst Fen, Mildenhall (Longworth 1960) and Spong Hill (Healy 1988). Cleal (1992) has demonstrated the difficulty of attributing individual assemblages to the regional style zones used to classify earlier Neolithic pottery. In particular she has noted the variation in proportions of open and closed forms from one site to another, and the above sites suggest that this variation can be observed over a relatively small geographical area. Even when the sites are close together and are both of a similar 'ritual' nature (St Osyth and Brightlingsea are less than six kilometres apart) there can be significant differences in these proportions. This may suggest differences in the use of pottery in different contemporary communities, as well as in the selection of sherds for deposition.

Decorated sherds were recovered from 33 contexts, including three from the middle circuit and 21 from the internal pits. Decoration was limited to burnishing, including very fine ripple burnish on the rims of the open bowls, light stroke pattern and impression. A number of carinated bowls have vertical lines lightly incised on their necks and several of these vessels also carry two or more rows of impressed dots below the shoulder (*e.g.* Figs 45.24, 46.29 and 46.32). This scheme is a common feature of Mildenhall style assemblages (*e.g.* Longworth 1960, figs 25–6; Kinnes 1978, fig. 32.56; Healy 1988, fig. 70), although the use of vertical lines on the neck is rare and incised rim-top decoration common at Etton (Kinnes 1998, figs 175–96). In marked contrast to the Mildenhall assemblage from Etton, few of the St Osyth vessels had decoration other than ripple burnish on the rim itself. Identified sherds from lower parts of vessels were rare, and only one (Fig. 46.29) showed decoration, incised lines similar to those on the neck, below the shoulder carination, indicating that decoration was usually carried no further than the impressed dots below the shoulder. This feature is absent from other Mildenhall Ware assemblages, and appears to be unique. The suggestion regarding the Etton pottery, that the vessels 'were meant to be viewed from above' (Pryor 1998) seems to apply equally to the St Osyth assemblage.

This intriguing possibility also seems to be reflected in the selection of sherds for deposition within the pits and ditches of the enclosure. Identifiable sherds are almost entirely restricted to the upper part of the vessel. There are no sherds that could be reconstructed, or even identified as bases of Mildenhall style vessels. Very few sherds come from far below the shoulder, except where decoration extends into this area. Thus it seems that there was a policy of selection in operation which was strongly biased towards rims and decorated parts of the vessels for deposition.

The Early Neolithic date of the assemblage is confirmed by radiocarbon dates from seven of the pits (*96*, *1114*, *1432*, *4060*, *5819*, *2340* and *6088*) which place the filling deposits securely in the 4th millennium BC. A total of thirteen calibrated dates are associated with deposits of pottery within these features. A further pit, *1189*, provided a date of 3950–560 BC (OxA-12978). The remaining thirteen all suggest a date range of 3790–3370 BC, but this has been refined (below, 99–101) to provide posterior density estimates for these dates. These results suggest that Early Neolithic activity was confined to a period of forty years or less, commencing in 3670–3630 cal. BC (at 61% probability) or in 3570–3540 cal. BC (at 34% probability) and ending in 3640–3610 cal. BC (at 61% probability) or in 3560-3530 cal. BC (at 34% probability).

Generally the Early Neolithic pottery, whilst fragmentary, is fresh and unabraded. There are few signs of use such as that indicated by the heavy rim-top abrasion found at Brightlingsea (Brown forthcoming a) which would suggest a domestic assemblage. Furthermore, the nature of deposition with 75% of the sherds placed at the base of pits that appear to have been immediately backfilled, is not indicative of the informal disposal of domestic refuse. This indication is reinforced by the deliberate selection of decorated sherds and rim sherds for deposition.

Grooved Ware

A small quantity of Grooved Ware, comprising 116 sherds weighing 1662g, was recovered from the site. Apart from two sherds from context *13517* (which may be later) in causewayed enclosure ditch *13685,* all of the material was in soft grog-tempered fabrics and most showed some signs of abrasion (Table 19).

Catalogue of illustrated Grooved Ware

Descriptions for each illustration are ordered as follows: context, description/comments, fabric.

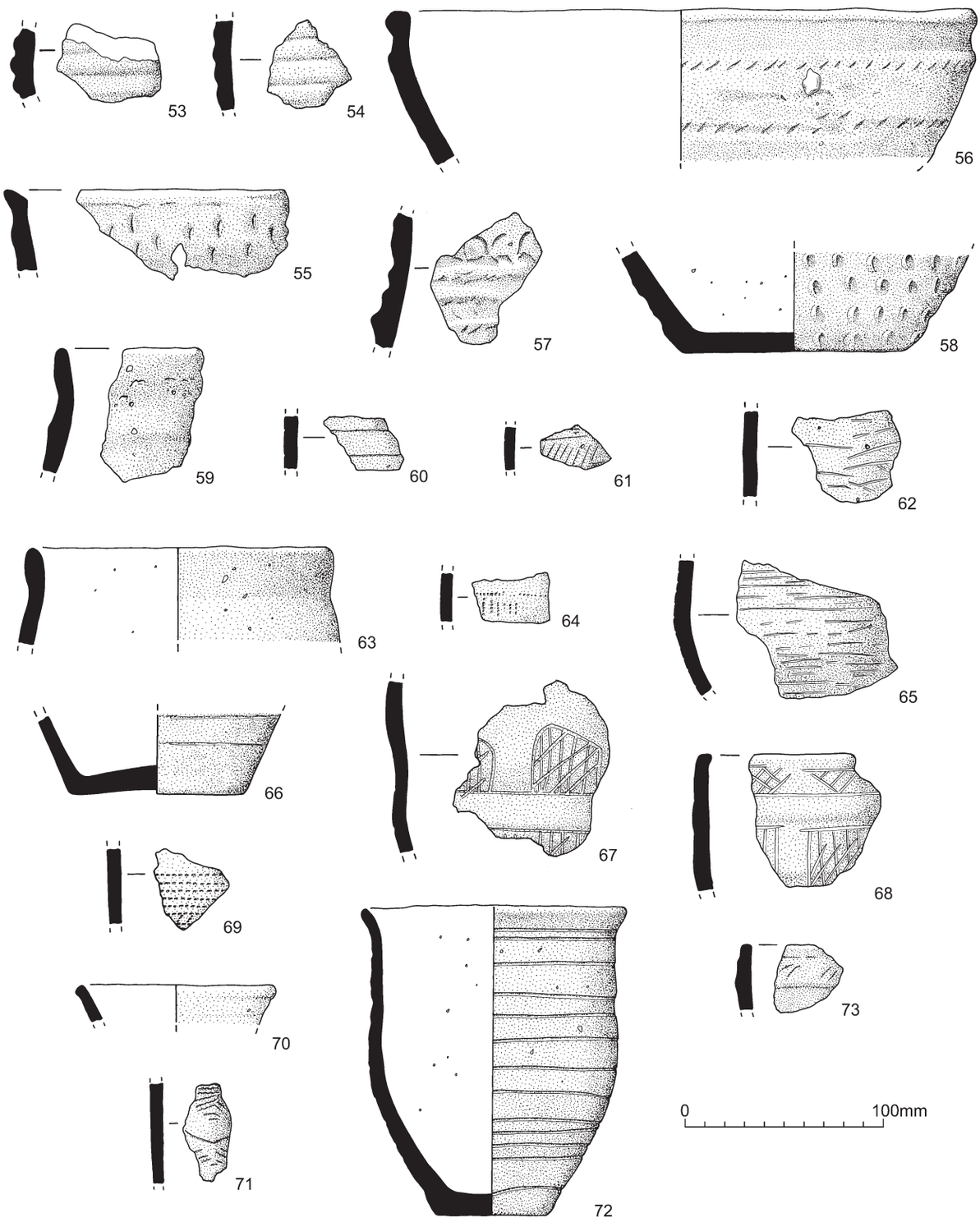


Figure 49 Prehistoric pottery (53–73)

Fabric		*% number*	*% weight (g)*
D	Flint, S–L 2 poorly sorted	1.5	1.5
M	Grog, often with some sand or flint and occasional small rounded or subangular voids	8	2.5
P	Largely temperless. May have sparse, very fine sand, occasional M–L flint or sparse irregular voids	5	2

Table 19 Grooved Ware fabrics

Fabric		*% number*	*% weight (g)*
D	Flint, S–L 2 poorly sorted	1.5	1.5
M	Grog, often with some sand or flint and occasional small rounded or subangular voids	8	2.5
P	Largely temperless. May have sparse, very fine sand, occasional M–L flint or sparse irregular voids	5	2
Q	Flint, S–L, Grog S–M 2	85.5	94

Table 20 Beaker fabrics

49.53 *869,* Body sherd with raised cordons. Light fingernail impressions visible between cordons. Abraded. M
49.54 *869,* Body sherd similar to the above, but less abraded. M
49.55 *8997,* Rim with slight internal bevel. Exterior decorated with fingernail impressions. M
49.56 *12383,* Rim and shoulder of tub-shaped vessel with fingertip/nail rustication. Q
49.57 *12383,* Body sherd with raised cordons and fingertip rustication. Q
49.58 *12986,* Base of tub-shaped vessel decorated with shallow raised cordons and fingernail impression. Q

The Grooved Ware, belonging to Wainwright and Longworth's (1971) Clacton substyle, is mainly in grog or grog-and-flint tempered fabrics, decorated with raised cordons and profuse fingernail rustication. Forms are limited to open tub- or bucket-shaped vessels either with vertical sides (Fig. 49.54, 49.57), or tapering towards the base (Figs. 49.56, 49.58). One rim sherd (Fig. 49.55) can be paralleled at Lion Point, Clacton (Longworth *et al.* 1971).

The material was recovered from the upper fills of the causewayed enclosure (contexts *869*, *12510* and *13517*), from the upper fills of shallow pits (contexts *594*, *652*, *653*, *12383*, *12405, 12933* and *12986*). The non-ditch contexts that contained Grooved Ware were all grouped away from the centre of the enclosure, in locations where the remains of the ditches may have been the only visible earthworks, forming a focus for activity and deposition. Most of the pottery was recovered from the eastern side of the site: given the small size of the assemblage, this may be coincidental.

Beaker

Beaker pottery was found in only slightly greater quantities than Grooved Ware (239 sherds, 2190g). Four fabrics were identified (Table 20).

Catalogue of illustrated Beaker material
Descriptions for each illustration are ordered as follows: context, description/comments, fabric.

49.59 *652,* Rim, neck and shoulder of coarse beaker. Abraded. P
49.60 *652,* Body sherd with incised horizontal lines. Abraded. P
49.61 *652,* Body sherd with incised diagonal lines. Abraded. P
49.62 *652,* Body sherd with incised/scored lines. P
49.63 *653,* Rim and neck. Abraded. P
49.64 *653,* Comb decorated body sherd. Slightly abraded. P
49.65 *653,* Shoulder with incised/scored lines. P
49.66 *8998,* Base with incised lines above. M
49.67 *8998,* Body sherd with zones of incised lattice. M
49.68 *8998,* Body sherd. Probably from same vessel as Fig. 49.67. M
49.69 *10406,* Body sherd with comb-impressed decoration. P
49.70 *10418,* Rim. P
49.71 *12383,* Body sherd with comb-impressed decoration. P
49.72 *10435,* Nearly complete beaker with incised decoration. Fine vessel. Q
49.73 *12393,* Rim sherd with comb-impressed decoration. C

Finds of Beaker were recovered from the upper fills of pits, including contexts *594*, *652* and *653*, which also contained Grooved Ware. The occurrence of the two pottery types together in the same context, as opposed to the same site, is a phenomenon previously noted in Essex only at the Orsett causewayed enclosure (Kinnes 1978, Couchman 1980).

The Beaker pottery tends to be in soft sandy and grog-tempered fabrics, and is consequently abraded to some extent. Decoration features incised lines or comb-impressed geometric patterns, but the assemblage is generally too fragmentary to discern any schemes beyond areas of triangular and possibly filled chevron motifs.

The fragmentary remains of at least two Beakers (recorded as vessel *8998*, from context *4760*) were found with Grooved Ware vessel *8997* in pit *4759*. Both *8997* and *8998* show signs of burning and had been badly damaged by ploughing, and the sherds had become mixed (a problem exacerbated by their being in very similar fabrics). These vessels were described by the excavator as 'crushed'. Examination suggests that they may have been subjected to a protracted process of destruction. Some sherds are so heavily sooted and fire damaged that they must have been within a fire, whilst others from the same vessels are not. It is possible that between breakage and deposition some sherds were separated and burnt. Whilst this may have occurred accidentally, it seems more likely that this was a deliberate part of the process of selection and deposition.

Context *10435* in pit *10417* produced an almost complete beaker belonging to Clarke's (1970) East Anglian sequence (Fig. 49.72). In profile (narrow base and almost imperceptible neck) the vessel resembles Case's Group D beakers (*e.g.* Case 1993, figs 16.7 and 16.8) and the incised parallel horizontal lines with which the vessel is decorated can be paralleled by East Anglian beakers from Rudston, Yorkshire (Clarke 1970, fig. 386) and from Boyton, Suffolk (Clarke 1970, fig. 420). The base of a second, similarly decorated beaker was recovered from context *4760* (vessel *8998*, Fig. 49.66). The more highly decorated sherds (Fig. 49.67 and 68), although recorded on site as vessel *8998*, are clearly not from the same pot as Fig. 49.66. The division of the decoration into zones by both horizontal and vertical blank areas suggests an affinity with Case's Southern Group B (Case 1993, fig. 12.4), but the sherds are too fragmentary to allow close comparison.

The quantities of Beaker and Grooved Ware are clearly indicative of a relatively substantial presence at the end

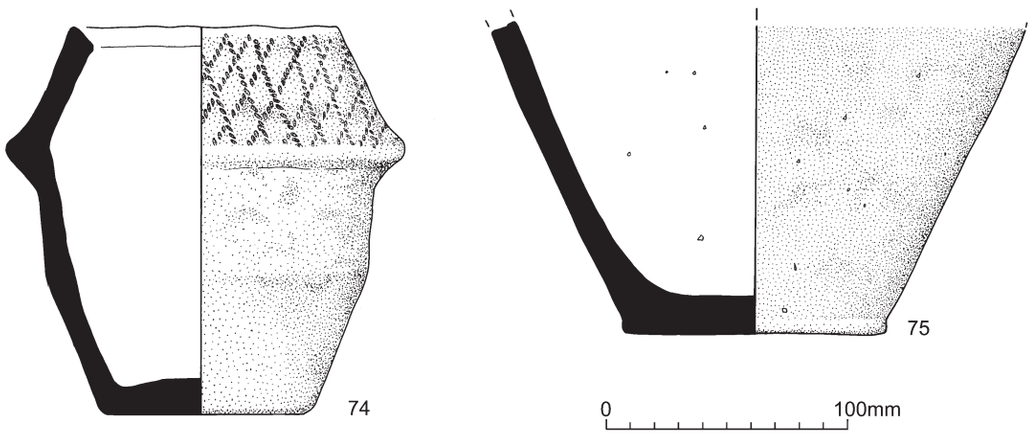


Figure 50 Prehistoric pottery (74, 75)

of the Neolithic. Since there appears to be no evidence of either domestic settlement or burials, it is probable that the activity was related to the causewayed enclosure and may have been ceremonial in nature. The absence of Middle Neolithic impressed wares suggests that this may have involved a 'rediscovery' of the monument following a long period of abandonment and neglect.

Early Bronze Age

(Fig. 50)

350 sherds (10.656kg) of Early Bronze Age pottery were recovered from the site (Table 21). All of the material is derived from four Collared Urns, which were deposited complete. Three of the urns (*3138*, *3917* and *8681*) were placed in pits (Fig. 26A, *3136*, *3914* and *4270* respectively) around the periphery of a pond barrow in the centre of the causewayed enclosure. Two of these (*3138* and *3917*) contained cremated human bone. The fourth (context *9703* in pit *9705*) was associated with an undated ring-ditch (Fig. 25, *13868*) to the north-east and contained no bone.

Catalogue of illustrated Early Bronze Age material
Descriptions for each illustration are ordered as follows: context (vessel no.), description/comments, fabric.

50.74 *8681,* Collared Urn, M
50.75 *9703,* Collared Urn, M

All vessels were in Fabric M. Despite truncation, it is evident that three urns were of significant size*;* the most complete (*3917)* being 350mm high. The fourth, *8681,* was much smaller at 160mm, with a rim diameter of 120mm. This vessel remains complete apart from approximately one third of the collar, which was not found in the feature.

Decoration consists of twisted and whipped cord impressions in either trellis or herringbone patterns on the collars, which are deep and heavy. *3138* (unfortunately too badly fragmented to be illustrated) has lost its collar, but has whipped cord impressions above the shoulder. Apart from this one example, none of the urns carry any decoration below the collar and none are decorated internally.

The heaviness of the collars on these vessels, taken with the use of whipped cord decoration and the absence of decoration below the shoulder or on the interior of the vessels, indicates that they belong to the later phase of the Collared Urn tradition (Longworth 1984; Burgess 1995). Three radiocarbon dates are associated with *3138* and five with *3917*, resulting in posterior density estimates of 1960–1860 cal. BC (61% probability) and 1890–1740 cal. BC (95% probability) respectively. There are no radiocarbon dates for the other two urns.

Fabric		*% number*	*% weight (g)*
C	Flint, S–M with occasional L 2	14.5	12
M	Grog, often with some sand or flint and occasional small rounded or subangular voids	31.5	33
P	Largely temperless. May have sparse, very fine sand, occasional M–L flint or sparse irregular voids	45	38.5
Q	Flint, S–L, Grog S–M 2	9	16.5

Table 21 Early Bronze Age ceramic fabrics

Middle Bronze Age

(Fig. 51)

1627 sherds (38,578g) of Middle Bronze Age pottery were recovered (Table 22). Most of this material comprises nine funerary vessels which were associated with a group of at least 22 small ring-ditches clustered around the Early Bronze Age pond barrow, mainly to the south-east. Whilst the Middle Bronze Age funerary vessels were all within the area of the barrow group, very few actually lay within ring-ditches (*3226* and *3230*). One funerary vessel, *2820*, was deposited in ring-ditch *3177*. Most were in the areas between, reflecting the situation at Ardleigh (Brown 1999), Chitts Hill (Crummy 1977) and Brightlingsea (Clarke and Lavender in prep.).

Select catalogue of Middle Bronze Age pottery
Descriptions for each illustration are ordered as follows: context, description/comments, fabric.

n. illus. *1077,* rim and upper walls of Bucket Urn. No decoration. Q, Q
n. illus. *2462,* part of rim of Bucket Urn with pre-firing perforations below. There is also a base sherd, probably from the same vessel. Q, U

Figure 51 Prehistoric pottery (76–82)

Fabric		*% number*	*% weight (g)*
C	Flint, S–M with occasional L 2	13.5	15
D	Flint, S–L 2 poorly sorted	35	50
E	Flint and sand, S–M 2	1	1.5
M	Grog, often with some sand or flint and occasional small rounded or sub-angular voids	40	27.5
Q	Flint, S–L, grog S–M 2	5.5	5
U	Flint, S-L 2 with occasional irregular voids	0.5	4.5

Table 22 Middle Bronze Age ceramic fabrics

n. illus. *2820,* base of Bucket Urn. Q, M
51.76 *3232,* row of pre-firing perforations below rim. The body is covered, apparently randomly, with comb-impressions. Q, D
n. illus. *4869,* part of rim of Bucket Urn. Q?, M
51.77 *5140,* base and lower body of Bucket Urn decorated with all-over fingertip rustication. Q, D
n. illus. *5143,* base and lower wall of Bucket Urn. Q, D
51.78 *5145,* base of Bucket Urn. Q, D
n. illus. *5226/5228,* highly fragmented sherds of Bucket Urn. Q, M
51.79 *5421,* small cup-sized vessel of Bucket Urn form. Q, D
51.80 *3228,* base of Bucket Urn. Q, D
51.81 *8682,* rim of a small Bucket Urn with finger-impressed applied cordon. Q, M
51.82 *5464,* bucket Urn. Base and small amount of walls. Highly fragmentary. Q, D
51.83 *8511,* small Bucket Urn or cup with slightly in-turned rim. Q, D
N. illus. *9113,* bucket Urn. Base and lower part of walls with no obvious signs of decoration. Q, M
N. illus. *9350,* bucket Urn. Base and lower walls, undecorated. Q, Q
N. illus. *12812,* base and lower wall of Bucket Urn with slashed decoration. Q, C

Although many of the vessels have been severely truncated by recent ploughing, the assemblage appears to be comprised entirely of straight-sided Bucket Urns in the Ardleigh style of the Deverel-Rimbury tradition (Brown 1999), of which a large number of vessels have been recovered from the Tendring peninsula. Decorative traits include applied cordons with finger impressions and fingertip rustication. One slightly unusual pot is decorated with an all-over pattern of seemingly random comb-point impression (Fig. 51.76). This form of decoration seems to be rare, but can be paralleled by a Bucket Urn from Ardleigh (Brown 1999, fig. 63.67). Pre-firing perforations below the rim occur (Fig. 51.76 and un-illustrated vessel *2462*) but are not common, since a large proportion of the vessels were buried upright and these have not survived truncation. The inverted horseshoe handles common within the Ardleigh group are also absent, although, again, the taphonomic conditions resulting in the loss of the upper part of most vessels may be responsible for this.

Ten radiocarbon dates have been obtained for the Middle Bronze Age funerary vessels, resulting in calibrated dates (95%) in the range of 1500–1260 BC and 1370–1000 BC.

Middle Iron Age
(Figs 52 and 53)
The excavation produced 3784 sherds (50.566kg) of pottery attributable to the Middle Iron Age (Table 23). In common with other contemporary assemblages in Essex, there was a diverse range of fabrics present.

Fabric		*% number*	*% weight (g)*
A	Flint, S 2 well sorted	<1	<1
B	Flint, S–M 2	1	1.25
C	Flint, S–M with occasional L 2	3.25	5.5
D	Flint, S–L 2 poorly sorted.	2.5	3.25
E	Flint and sand, S–M 2	5.25	4.5
F	Sand, S–M 2–3 with addition of occasional L flint	13.5	11.25
G	Sand, S 3	28	24
H	Sand S 2	2	1.5
I	Sand S–M 2–3	3	2
J	Sand with veg voids, particularly on surface	4	5.25
K	Quartz, flint and grog (often with deep rounded or subangular voids). S–L 1–2	<1	<1
M	Grog, often with some sand or flint and occasional small rounded or subangular voids	22	28.5
N	Vegetable temper	2.25	2.25
O	Quartz, Flint, and some sand, S–L poorly sorted	<1	<1
P	Largely temperless. May have sparse, very fine sand, occasional M–L flint or sparse irregular voids	<1	<1
Q	Flint, S–L, Grog S–M 2	7	6
U	Flint, S–L 2 with some occasional irregular voids	<1	<1
W	Flint, S–L 2, with some sand and veg. voids often on exterior	3	2
Z	Unclassifiable	<1	<1

Table 23 Middle Iron Age ceramic fabrics

Catalogue of illustrated Middle Iron Age pottery
Descriptions for each illustration are ordered as follows: context, description/comments, fabric.

52.84 *18,* rim and shoulder of Form D jar with slightly everted rim, F
52.85 *406,* rim of Form A jar with thickened upright rim, Q
52.86 *409,* base of jar with scoring on exterior surface, F
52.87 *409,* rim of Form A(?) jar, F
52.88 *409,* flat topped jar rim, D
52.89 *594,* fine jar rim, flared with a fine bead, C
52.90 *2219,* rim of small bowl or cup, D
52.91 *3473,* pedestal base of a jar, bearing finger impressions, F
52.92 *8234,* fine, flared rim, F
52.93 *8234,* rim and shoulder of Form E jar, D
52.94 *8234,* flat base, D
52.95 *8234,* round-bodied open jar with everted rim, D
52.96 *4425,* pedestal base of jar with steeply tapering walls. Finger wiping on exterior, E
52.97 *4593,* large part of round-shouldered jar with slightly everted rim and flat base, C
52.98 *4688,* rim of round-bodied open bowl, N
52.99 *4688,* round-bodied open bowl, N
52.100 *4688,* jar rim, N
52.101 *4688,* jar rim with crudely executed cable decoration, N
52.102 *4688,* everted rim of round-bodied open bowl, N
53.103 *4688,* T-shaped jar rim with cable decoration, N
53.104 *4690,* fine jar base. Burnished, P
53.105 *5314,* inturned rim of coarse Form A jar with fingertip decoration, E
53.106 *5314,* rim of coarse round-bodied bowl, E
53.107 *5314,* rim of fine bowl or jar with steeply tapering sides, E

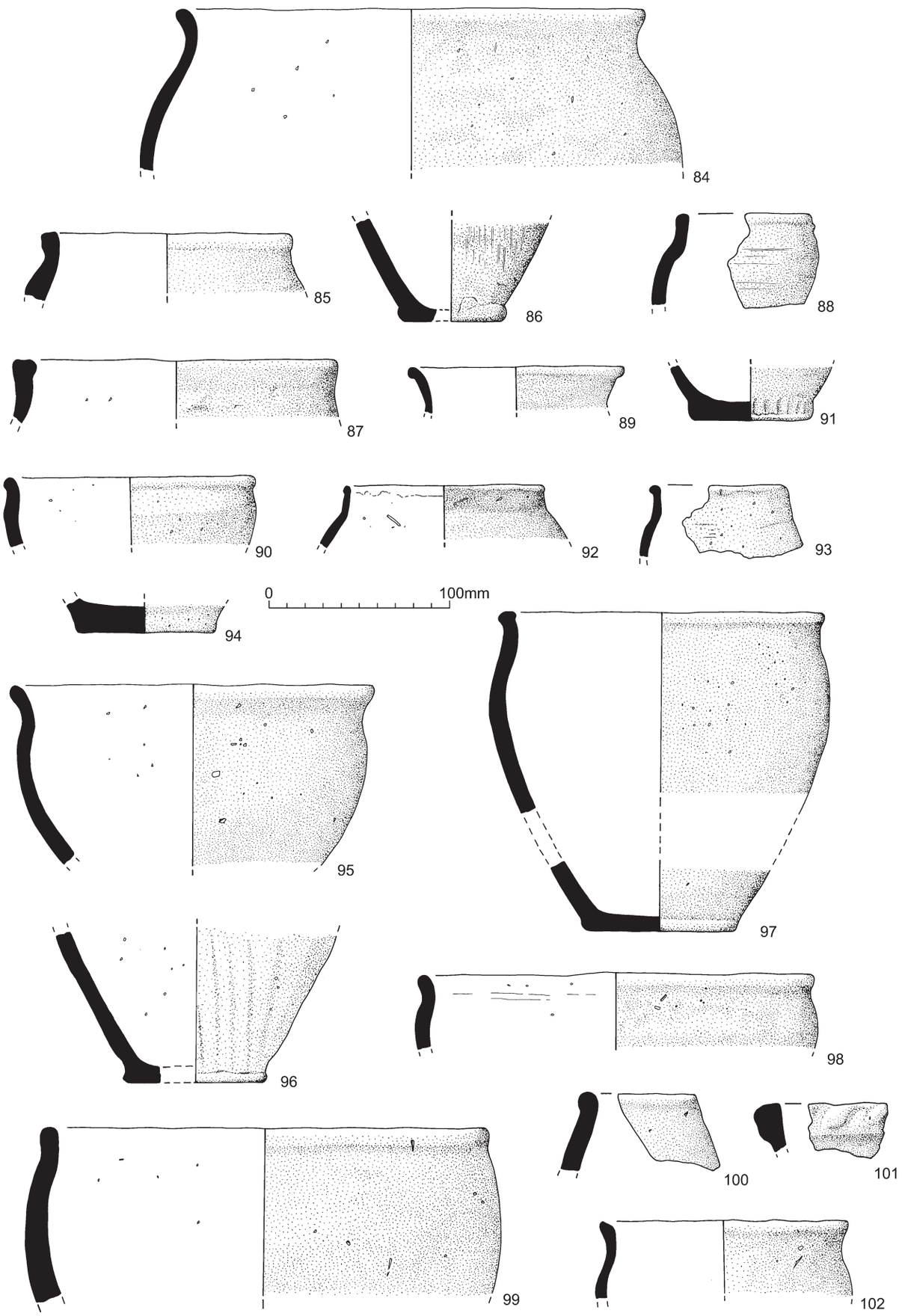


Figure 52 Prehistoric pottery (84–102)

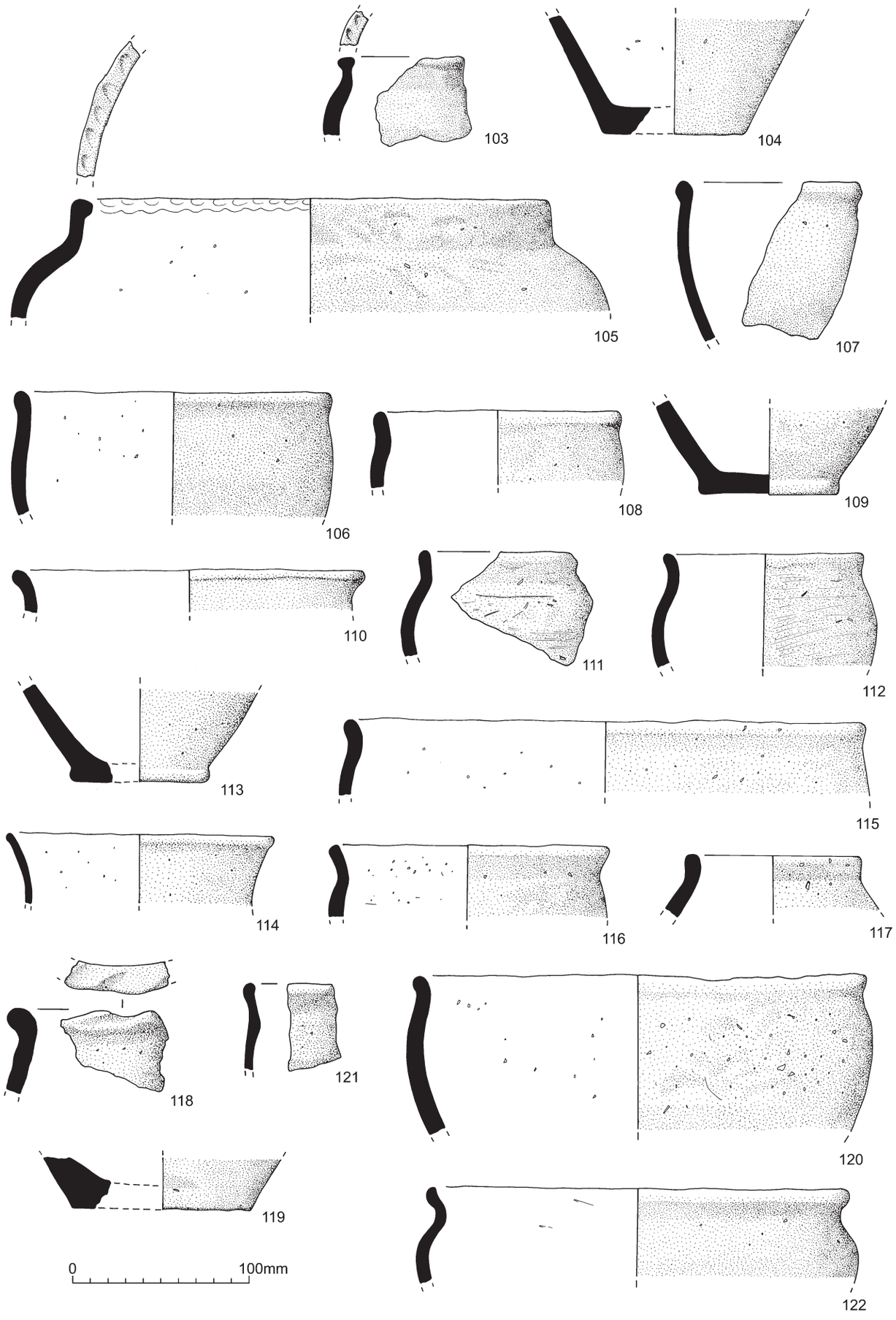


Figure 53 Prehistoric pottery (103–122)

53.108 *5314,* rim of fine jar, E
53.109 *5352,* pedestal base, E
53.110 *6332,* everted rim, G
53.111 *6332,* short upright rim from Form A jar with scored exterior, G
53.112 *6332,* everted rim and shoulder of Form A jar. Scored exterior, D
53.113 *6354,* pedestal base, G
53.114 *6826,* fine flaring jar rim, Q
53.115 *8182,* rim of Form A jar, F
53.116 *8183,* flared rim of Form A or D jar rim, C
53.117 *8183,* form A jar rim, C
53.118 *9355,* jar rim with cable decoration, D
53.119 *9642,* flat base, M
53.120 *9730,* round-bodied bowl with short everted rim, C
53.121 *9730,* jar rim, D
53.122 *9730,* everted rim and shoulder of round-bodied bowl, D

Most of the Middle Iron Age pottery was recovered from the area covered by the settlement itself; 40% (by weight) came from the roundhouse gullies and 24% from pits. Of the remaining pottery, approximately 30% was distributed among the trackway ditches and post-holes, with a small amount being intrusive in the upper fills of the causewayed enclosure.

The assemblage is dominated by short, upright jar rims and everted rims, probably from round-bodied bowls which can be paralleled in a number of Essex assemblages, most notably that from Little Waltham (Drury 1978). Bases, where present, are either flat or pedestal in form and there are no foot-rings. Some vessels have cable or fingertip decoration on the rims, notably the large jar from *5314* (Fig. 53.105) and bowls from *4688* and *9355* (Figs 53.103 and 53.118), but otherwise the assemblage is entirely plain. Some attention has been given to the surface treatment of the vessels; occasionally there are traces of scoring on the exterior (Figs 52.86 and 53.112) and many pots have vegetable or finger wiped exteriors (*e.g.* Fig. 52.96).

Fabrics are mainly sandy, with some grog and a very small quantity (less than 3%) of vegetable-tempered sherds. The pottery is likely to have been locally manufactured, despite the absence of good potting clay in the immediate vicinity. There is no evidence for traded pottery; chalk-tempered fabrics and the 'glauconitic' fabrics (probably of Kentish origin) often found at sites further south in the county such as Little Waltham or North Shoebury (Brown 1995b).

The only truly large assemblage of MIA pottery from Essex comes from the settlement at Little Waltham (Drury 1978), where 500kg were excavated from a series of roundhouses adjacent to the River Chelmer: the vast majority of material from this site was from the roundhouse gullies, there being comparatively few other features within the excavated area. Despite the distance — 42km in a direct line — between the two sites, the St Osyth assemblage conforms very closely to the range of vessels identified by Drury at Little Waltham, with round-shouldered, everted-rimmed vessels dominating. A mid 3rd–2nd century BC date, therefore, seems appropriate for the St Osyth assemblage.

In sharp contrast to the earlier pottery from the site, the Middle Iron Age material clearly belongs to a domestic assemblage and shows a typical pattern of refuse disposal, mainly in the roundhouse gully terminals and pits, although other ditches and the surviving depressions of earlier features were evidently seen as suitable dumping areas.

III. Iron objects, utilised stone and baked clay

by Hilary Major
(Figs 54–6)

Iron

1. (Not illus.) Rod, pointed at both ends. The X-ray is very faint, and there appears to be little good metal surviving. This is probably a small awl, suitable for use in leatherworking. One end would have been inserted into a wood or bone handle; examples of similar small tools from Danebury have traces of the handle surviving (Sellwood 1984, 354). L. 45mm, max. W. 6mm. *SF22*, Fill *13144*, gully segment *13143*, roundhouse *13874*, Middle Iron Age (VI.2)

Saddle quern

(Fig. 54)

Six fragments of saddle quern were found, two of which were joining pieces of the same quern, though from different features. Three of the five features containing saddle quern were close together, comprising a re-digging (*215*) of the terminal of one of the ditches (*13930*) forming the causewayed enclosure, and two adjacent pits, also Neolithic (*96* and *103*) (Fig. 11). The joining pieces came from *215* and *103*. The other two features containing querns were pits *9971* and *10592*, about 80m south of the other contexts. It is possible that all the saddle quern fragments from the site are Neolithic; *10592* is undated, the quern being the only find from the context, while *9971* had a small amount of undiagnostic prehistoric pottery which could be Neolithic.

None of the fragments were large enough to reconstruct the original shape and size of the querns, and only the largest piece is illustrated. The stones used were probably all suitably sized natural boulders of sandstone and sarsen, split to give a flat or slightly concave grinding surface, with some modification to the edges and base. The boulders used were probably from local secondary geological sources (*i.e*. glacial erratics), though they could have been brought from further afield.

There is only one other definite saddle quern fragment of Neolithic date from Essex, from the cursus at Springfield, Chelmsford (Major 2001). It came from a carefully-placed deposit, together with other possible quern and utilised stone fragments, and a small amount of cremated animal bone (cattle, sheep and pig). There were several possible quern fragments of Neolithic or Early Bronze Age date from the causewayed enclosure at Orsett (Hedges and Buckley 1978, 290), and a possible quern fragment from the causewayed enclosure at Springfield Lyons, Chelmsford (Major in prep.). Most of these querns are in stone types similar to those from St. Osyth.

1. Quartzitic sandstone. A fairly large piece of saddle quern, made from a natural boulder. The original shape is uncertain, and the underside has flaked off. The grinding surface is pecked and worn. Wt. 3170g. Max. surviving th. *c.* 110mm. Fill *10951*, pit *10952*, not dated. Fig. 54.1

2. (Not illus.) Quartzitic sandstone. Two joining fragments of a saddle quern, with wear round the edge, and slightly worn pecking in the middle. Wt. 402g. Max. th. 48mm. Fill *102*, Pit *103* and Fill *251*, Recut *215*, part of causewayed enclosure ditch *13930*, Early Neolithic.

3. (Not illus.) Quartzitic sandstone. Edge fragment, with no full thickness. Wt. 130g. fill *98*, pit *96*, Early Neolithic.

4. (Not illus.) Sarsen. Probable saddle quern fragment, with a worn surface. No edge present, and no full thickness. Wt. 94g. Fill *102*, pit *103*, Early Neolithic.

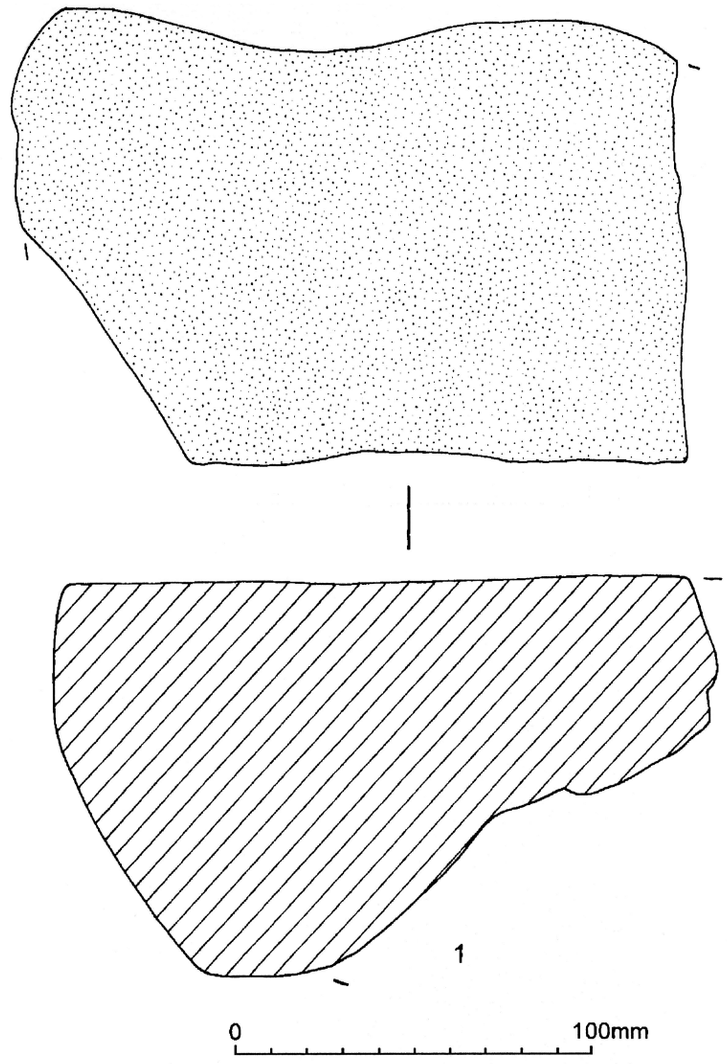


Figure 54 Saddle quern

5. (Not illus.) Made from a natural sandstone boulder. The grinding surface is pecked, with slight wear. It was probably fire-shattered. Wt. 1546g. No full thickness, max. th. 110mm. Fill *9972*, pit *9971*, prehistoric.

Other worked stone

(Fig. 55)

The other worked stone from the site was all from Neolithic contexts, and consisted of six modified boulder or pebble fragments, probably all of local origin. One flint pebble had been used as a hammerstone, as, possibly, had one of the sandstone pebbles. Some pieces may be quern rubbers, but these are difficult to identify from small fragments; the best that can be said is that they have traces of wear consistent with a rubbing or pounding action.

These pounders/rubbers come from scattered contexts towards the west of the causewayed enclosure, away from the area of deposition of the saddle querns. It is possible that this is significant, and the saddle quern fragments were being specifically chosen for deposition on the east side of the site, or in contexts closely connected with the enclosure ditches. Alternatively, the distribution could be indicative of different areas of activity within the enclosure.

6 (Not illus.) Quartzitic sandstone. Boulder fragment with probable wear to one surface. Possibly a quern rubber, as the worn surface is slightly convex. Wt. 234g. Fill *1116*, pit *1114*, Early Neolithic.

7 (Not illus.) Quartzitic sandstone pebble. Some surface damage, probably used as a hammerstone. Wt. 430g. Fill *1129*, pit *1114*, Early Neolithic.

8 (Not illus.) Quartzitic sandstone boulder fragment, with one worn face. Probably used as a pounder; the edge may have been deliberately trimmed to fit the hand. Wt. 248g. W. of worn face 66mm. Fill *1929*, pit *1925*, Early Neolithic.

9 (Not illus.) Flint pebble. The surface is damaged due to use as a hammerstone. Wt. 382g. Unstratified find from pit *2337*, Early Neolithic.

10 Rounded stone with a flat facet on one side, worn through use as a pounder or rubber. The object may have been deliberately shaped. Wt. 216g. Fill *2341*, pit *2340*, Early Neolithic. Fig. 55.10.

11 (Not illus.) Sarsen pebble, with one worn, slightly concave surface. The object appears complete, and is roughly oval, *c.* 80x54mm, and *c.* 38mm thick. Probably used as a rubber. Wt. 224g. Fill *5821*, pit *5819*, Early Neolithic.

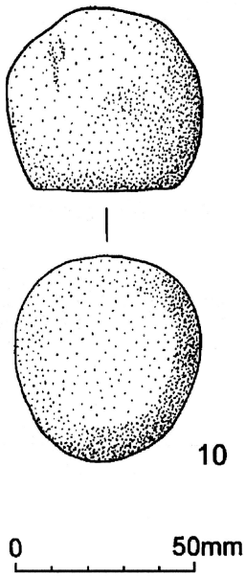


Figure 55 Utilised stone

Triangular loomweights
(Fig. 56)
Triangular loomweights, used to weight the warp threads on vertical looms, are in a typical Iron Age form used from the Early Iron Age until about AD 120. The distribution of the type in Essex was discussed in Major (1982). At the time, twenty sites with triangular loomweights were known; the total is now over 60, a reflection of the large number of archaeological sites that have been excavated in the county in the last twenty years. In 1982, the distribution was concentrated in the Thurrock area, but it is now evident that the distribution is much more uniform. Gaps in the distribution represent areas where there has been little archaeological activity, such as the north-west of the county.

498 fragments of triangular loomweight were found, with a total weight of 25,934g. This represents the remains of between about 113 and 122 loomweights, one of the larger groups of loomweights from the county. The bulk came from Middle Iron Age contexts, and it can be assumed with some confidence that those from later and undated contexts are also Middle Iron Age. Roman or later clay pit *14137*, in particular, contained a scatter of loomweight fragments (26 fragments, weighing 2,128g), presumably derived from earlier features disturbed by the pit. There were also fragments from three Neolithic ditches, and from one possible Neolithic pit. Some of these fragments were quite substantial, and must either be intrusive (in unrecognised later features), or an indication that parts of the causewayed enclosure persisted as landscape features.

	No. of measurements	*Range*	*Average*
Thickness	32	50–98mm	69mm
Side length	6	142–210mm	169mm
Hole diameter	35	7–18mm	12.3mm

Table 24 Dimensions of triangular loomweights

The loomweights are in a variety of fabrics, but predominantly in a fairly fine clay with moderate sand temper, occasional pebbles, and occasional iron-rich blobs. Vegetable temper is sometimes present, but not in large quantities. The clay used was probably local, the variations in fabric resulting largely from differences in the type and amount of added tempering.

There is no indication that the form of triangular loomweights varied over time, and these Middle Iron Age examples are indistinguishable from earlier or later Iron Age ones. The dimensions of the weights are summarised in Table 24, and are within the normal range for the type. Triangular loomweights can have between one and three perforated apices, and the six weights from this site which were complete enough to be certain of the number of perforated apices all had three perforations. However, there were a small number of fragments with unperforated apices, and a large fragment which may have had only one perforated apex. Eleven weights had saddled apices, with 26 non-saddled. The bulk of the loomweight fragments derived from pits and ditches next to the main areas of settlement, with relatively little from roundhouse gullies (Table 25; Fig. 39). Structural daub, however, was more concentrated in pits. A larger proportion of the non-specific baked clay came from post-holes. This may be due to the baked clay having been incorporated into the fills of the post-holes from surface deposits, where the material would have become abraded prior to burial, removing distinguishing features.

The pattern of deposition of all types of baked clay appears to differ from that of the Middle Iron Age pottery, a much larger proportion of which came from the roundhouse gullies.

1. Moderate sand. One apex missing, all corners perforated. Wt. 2030g. Side L. 175mm, th. 77mm, hole diam. 14mm. Fill *13578*, segment *13577*, ditch *13943*, Middle Iron Age (VI.2).

2. (Not illus.) *c.* 60% of a large weight, with one face spalled. All apices are perforated. The complete weight would have weighed *c.* 2.5kg. The context also contained fragments from at least one other loomweight in the same fabric. Wt. 1500g. Th. *c.* 95mm, side L. 170mm, hole diam. 12mm. Wt. 1500g. Fill *9813*, pit *9811*, Middle Iron Age (VI.2).

3. (Not illus.) *c.* 50%. of a weight, with all apices perforated. The thickness is variable, and the weight rather wedge-shaped. The only spindlewhorl from the site came from this context. Wt. 1426g. Th. 75–90mm, side L. *c* 165mm, hole diam. 17mm. Fill *9832*, gully segment *9831*, roundhouse *13862*, Middle Iron Age (VI.2).

4. (Not illus.) Joining fragments of apex and side, and a non-joining apex, not definitely the same weight. One apex is definitely unperforated, and the detached apex was probably unperforated. The weight tapers towards the perforated apex. Fairly sparse sand and vegetable temper. Wt. 842g. Side L. 142mm, th. 71–81mm, hole diam. 10mm. Intrusive in fill *10464*, segment *10456*, causewayed enclosure ditch *13924*.

Other baked clay objects
(Fig. 56)
A small number of objects other than loomweights came from Middle Iron Age or possible Bronze Age contexts (Fig. 56).

A single lentoid slingshot came from pit *9973*, which also contained indeterminate prehistoric pottery. The object is probably Middle Iron Age, and is a very unusual find for the area. In their discussion of the distribution of clay slingshot, Elsdon and Barford (1996) note that they

are virtually absent from the areas where grog-tempered 'Belgic' pottery was in use. Their list of sites includes only one in Essex (Mucking), although it should be noted that the list was produced in 1984. There is a second one, about twice the size of the St Osyth slingshot, from the Middle Iron Age hillfort at Chipping Hill, Witham, Essex (Rodwell 1993, 103); Rodwell considers the type to be pre-Belgic. The presence of only a single example implies that clay slingshot was not very much used at St Osyth. An alternative, of course, would be the use of suitably shaped natural pebbles, and given the ubiquity of such pebbles in the gravels of Essex, they were, no doubt, used in preference to fabricated slingshot. However, unless a cache of such pebbles was present, it would be virtually impossible to identify them specifically as slingshot.

5. Fragment with a curved surface, forming *c.* 30% of a cylinder, both ends broken, and two other fragments, probably from the same object. Possibly a cylindrical loomweight, in which case it would be residual, though the hole would be very small. Wt. 278g, Diam. *c.* 90mm, L. 75mm. Fill *255*, pit *254*, Middle Iron Age (IV.2).

6. Lentoid slingshot in a reduced, rather streaky fabric, surface abraded. Wt. 15g, L. 19mm, max. diam. 12mm. Fill *9974*, pit *9973*, prehistoric.

7. Cylindrical spindlewhorl in a fairly sandy fabric. Wt. 55g, Diam. 38mm, ht. 32mm, hole diam. 8mm. Fill 9832, gully segment *9831*, roundhouse *13862*, Middle Iron Age (VI.2).

8. (Not illus.) Possibly part of a rod-shaped object of variable section, slightly flared at one end, broken laterally (*i.e.* section now D-shaped). The surfaces are abraded, so the shape could be fortuitous. Wt. 22g, Diam. 25–30mm, L. 39mm. Fill *9815*, gully segment *9814*, roundhouse *13862*, Middle Iron Age (VI.2).

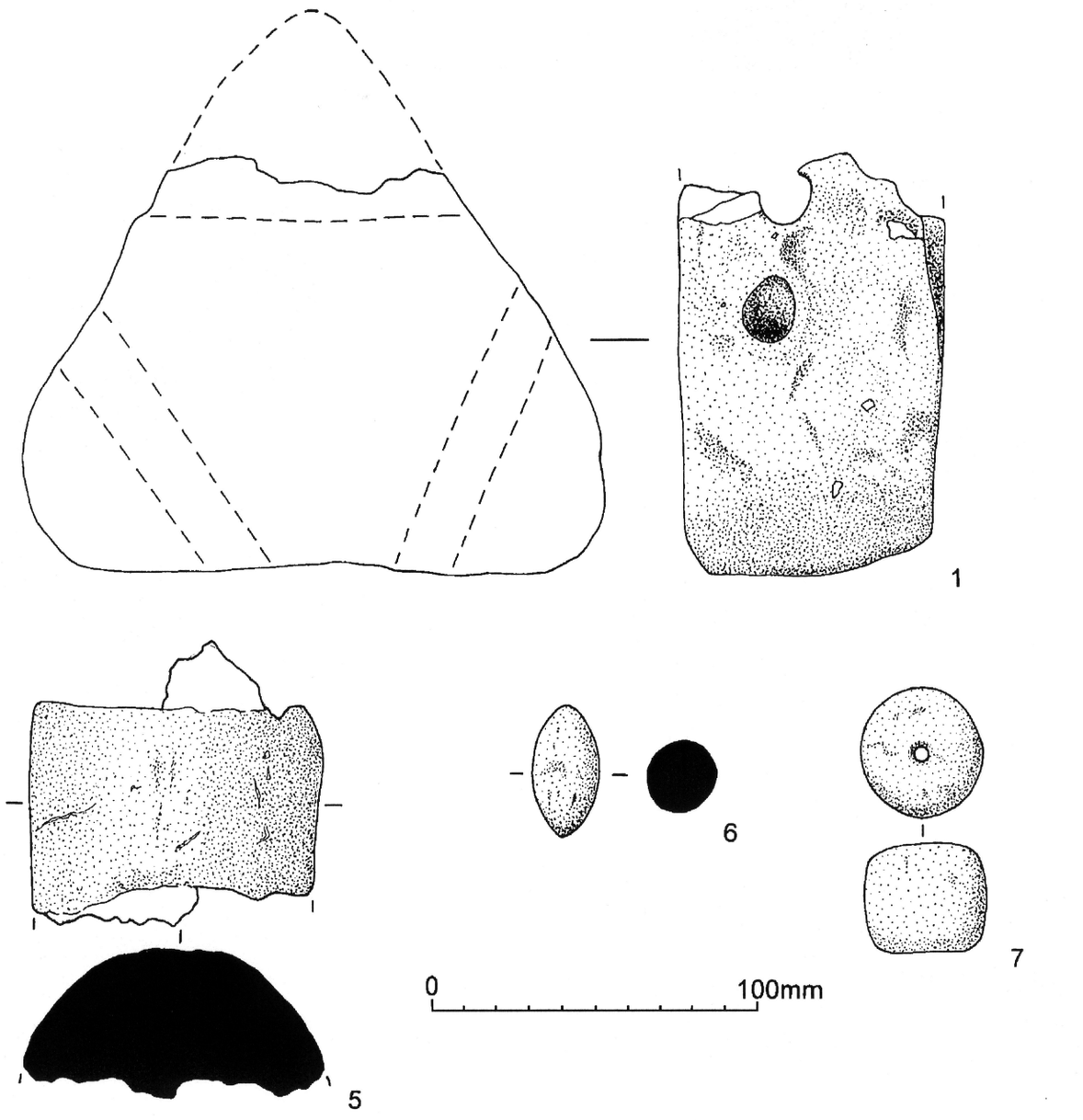


Figure 56 Baked clay

Feature type	*Loomweights*	*Structural daub*	*Other baked clay*
Roundhouse gully	16.7	8.9	15.1
Post-hole	3.1	17.2	29.7
Pit	38.2	57.8	27.0
Ditch/gully	41.0	16.1	23.7
Unknown/other	0.9	-	4.5

Table 25 Baked clay: percentage of total weight within each group by feature type (Middle Iron Age)

9. (Not illus.) Moderate sand. Irregular lump, surfaces probably as buried. It has a non-perforating hole which may not be significant. This is probably just a large, accidentally fired squidge, rather than an object. Wt. 695g, *c.* 90 x 80 x 80mm. Fill *12805*, gully segment *12804*, roundhouse *13875*, Middle Iron Age (VI.2).

10. (Not illus.) Sherd with a flat surface and one possible edge, no full thickness present. Possibly part of a slab. Grass-marked surface, common vegetable temper. Wt. 37g. Fill *12854*, pit *12851*, ?Bronze Age.

Structural daub

The bulk of the prehistoric structural daub was from Middle Iron Age contexts, with small amounts from a possible Early Iron Age context, and from prehistoric contexts with no close date (Table 26). The daub from undated contexts is most likely to be Middle Iron Age, as there was very little Late Iron Age or Roman daub, and the medieval daub has no wattle impressions and is in a different fabric. There was no definite daub from Neolithic contexts. The fragments from the ?Early Iron Age feature (post-hole *557*) have a finely striated surface, similar to pieces from one of the Late Iron Age contexts (and also one of the 'prehistoric' contexts), suggesting that the post-hole may be later than its postulated date.

The larger groups of daub came from pits and ditches, with minor amounts from the ring-gullies of roundhouses *13865* and *13874*. The largest group comprised 4056g from pit *4592*, the only Period VI.1 feature to contain structural daub. The material from the context had been poorly fired, with no wattle impressions, and probably represents a secondary coat of daub, *c.* 15mm thick, applied over a pre-existing layer. A number of pieces of daub from Period VI.2 contexts have wattle impressions, mostly very slight. The most extensive, from pit *299*, has the impression of woven withies, about 15mm in diameter and 35mm apart, overlying a larger rounded timber of about 60mm in diameter.

Most pieces are in the same fabric with moderate sand temper and occasional iron-rich blobs, similar to the fabric of the loomweights, but rarely with vegetable temper or pebbles.

Period	*No. of fragments*	*Wt (g)*	*No. of contexts*
EIA?	70	526	1
MIA	454	7651	10
Prehistoric	121	1243	5
Undated	157	2316	6
Total	**802**	**11736**	

Table 26 Quantities of structural daub from Middle Iron Age contexts

IV. Cremated bone

by Sue Anderson
(Figs 57–59)

Introduction

This report examines the cremated bone from four Early Bronze Age burials in pond barrow *3890*, twelve Middle Bronze Age burials associated with ring-ditches, and one isolated Middle Iron Age burial.

Method

Collection methods varied depending on the size and type of deposit. Three groups of cremated bone from urns (*3139*, *10190* and *3233*) were collected in spits of up to 4cm in depth. The remainder were collected as single groups of bone, unless they were seen as distinct groups on excavation (burial *3230* which was disturbed during machining, burial *5141* which contained two vessels, and burial *3367* which had two fills). With the exception of a few fragments which were hand-collected on site, all groups of bone (including separate spits) were wet-sieved and sorted into fractions <2mm, >2mm and >4mm prior to analysis. The smaller fractions were mixed with pea-grit; fragments from the >2mm fractions were separated by hand during analysis so that the bone could be weighed. However, this task was very time-consuming and in four cases the amount of bone was simply estimated from a sorted sample, with the remainder being scanned for recognisable fragments.

The >2mm and >4mm fractions were sorted into six categories: skull, axial, upper limb, lower limb, unidentified long bone, and unidentified. All fragments in the first five categories were counted and weighed to the nearest gram, those in the sixth were weighed only. This allowed an average fragment weight to be calculated. Measurements of maximum skull and long bone fragment sizes were also recorded for the >4mm fragments. These data are listed in the archive.

Observations were made, where possible, concerning bone colour, age, sex, dental remains and pathology. Identifiable fragments were noted. Age of juveniles was estimated from tooth eruption and/or epiphyseal fusion where possible, age of adults from degenerative changes. Sexing of adults was based on size and robusticity. Methods used follow the Workshop of European Anthropologists (1980) and McKinley (1994 and 2004). A catalogue of burials is included in the archive.

Quantification, identification, collection and survival

Table 27 shows the bone weights, percentages of identified bone from each burial, and the proportions of bone identified from four main areas of the skeleton (skull, axial, upper limb, lower limb). Expected proportions are provided in the first row.

This shows that skull fragments are always over-represented amongst the identifiable material, and that occasionally other areas of the skeleton may be. For example, the proportion of axial remains is higher than expected in Middle Bronze Age group D burial *5137*, and in four cases the lower limb is over-represented. It has been suggested that 'it should be possible to recognise

Group	*Burial*	*Total wt/g*	*% identified*	*% Skull*	*% Axial*	*% U limb*	*% L limb*
*Expected**				*18.2*	*20.6*	*23.1*	*38.1*
EBA	3136	754	50.4	45.3	5.8	13.9	35.0
	3914	2030	52.8	22.8	12.5	16.2	48.5
	3979	374	39.3	27.2	6.8	12.9	53.1
	4260	44	47.1	100.0	-	-	-
MBA A	3226	238	21.0	86.0	2.0	2.0	10.0
	3230	2149	37.5	27.9	26.6	10.5	35.0
MBA B	4867	302	10.6	96.9	3.1	-	-
	4877	3	0.0	-	-	-	-
MBA C	4967	505	45.1	50.9	16.2	9.2	23.7
	5057	60	28.3	35.3	11.8	5.9	47.1
MBA D	5137	5908	26.3	49.5	22.4	11.0	17.0
	5141	991	29.9	54.1	10.1	9.8	26.0
MBA E	2820	43	20.9	100.0	-	-	-
MBA F	3647	225	35.6	52.5	1.3	23.8	22.5
Isolated	3367	1363	40.4	27.8	10.2	26.5	35.6
	4284	11	27.3	100.0	-	-	-
MIA	60	294	46.6	39.4	2.2	19.7	38.7

*expected proportions from McKinley 1994, 6

Table 27 Percentages of identified fragments out of total identified to area of skeleton

Burial	*Deposit*	*Type*	*Age*	*Sex*	*Av. ident. frag. wt/g*	*Notes*
3136	3139	Urned	Mature	Male	0.8	Large pieces, well-preserved; sexing based on large mastoid processes and occipital crest; osteoarthritis present.
3914	10190	Urned	Mature	Male?	1.6	Very large pieces, several smaller bones complete; humerus and femur heads appear large, but sciatic notch may be wide; slight degenerative changes.
3979	4200/ 3980	Unurned	Young?	Male?	1.6	Large fragments, well-preserved; hamate is large; no signs of new bone growth on axis odontoid process.
4260	4261	Unurned	*c*.2 yrs	-	0.1	Small, abraded fragments; one fully formed deciduous ?incisor tooth root; includes a few adult fragments.

Table 28 Summary of Early Bronze Age cremation burials

any bias in the collection of certain areas of the body after cremation' (McKinley 1994, 6). However, there is also some bias inherent in the identification process. McKinley notes the ease with which even tiny fragments of skull can be recognised, and conversely the difficulty of identifying long bone fragments. These figures can therefore provide only a rough guide to what was originally collected.

It is clear from the total weights of bone that the majority of these burials are substantially incomplete. Mays (1998, table 11.2) notes that the combusted weight of an adult skeleton has a mean of around 1500g for females and 2300g for males. Only two of the individual burials in this group, *3914* and *3230*, are within this range. One other, *4967*, was a small child and may also be fairly complete. *5137*, which is roughly double the expected weight for an individual, actually contained the remains of at least three people. Of those which were less than complete, six had been truncated by ploughing and seven were un-urned.

The cremation burials

Early Bronze Age

Four burials were excavated in and around pond barrow *3890*. These are summarised in Table 28.

The three adult burials of this date each represented a single individual, but adult fragments also occurred with the remains of a child. These are too few to indicate a separate individual and they may well have been collected and included in error if the pyre site had been used previously. Alternatively, they may have been included deliberately to accompany the child. However, as they could be fragments from one of the other individuals, the minimum number of individuals (MNI) for this group is four. All three adults were probably male, but given the size of the group, the significance of this is uncertain.

Both of the mature males in this group showed evidence for degenerative changes. Grade II osteoarthritis was present in *3136*, possibly at the knee. Small osteophytes were present on some of the lower vertebrae of *3914*. This individual also had two dental abscesses in the left maxilla.

As noted above, *3914* is probably fairly complete, whilst post-depositional loss due to truncation or lack of a robust container is likely to have affected the survival of the other three.

Two of these burials were excavated in spits and this allows for the relative proportions of the four main skeletal areas to be compared. Figures 57 and 58 show the results of this (based on percentages of identified fragments by weight in the >4mm fractions) for those spits containing more than 10g of identifiable bone. There is a degree of

patterning in the distribution. For example, upper limb bone is particularly well-represented towards the top (E) of *3136*, decreasing towards the base (A), whilst skull fragments show a slight increase towards the base at the expense of lower limb bones. Axial fragments are better represented in the top and bottom spits than in the centre of the vessel. In *3914* there is a very clear decrease in the proportion of skull towards the base (D), with an increase in lower limb bone, the other areas remaining fairly constant throughout.

Whilst this may suggest a degree of sorting during collection, the fact that elements from all parts of the body are represented throughout the vessels suggests that convenience is a more probable explanation than any ritual patterning. *3914* was clearly very thoroughly collected, many of the small bones of the feet being present, for example. The evidence from this urn suggests that the collector simply started at the feet and worked up; the opposite may be true for *3136*, but the pattern is much less clear.

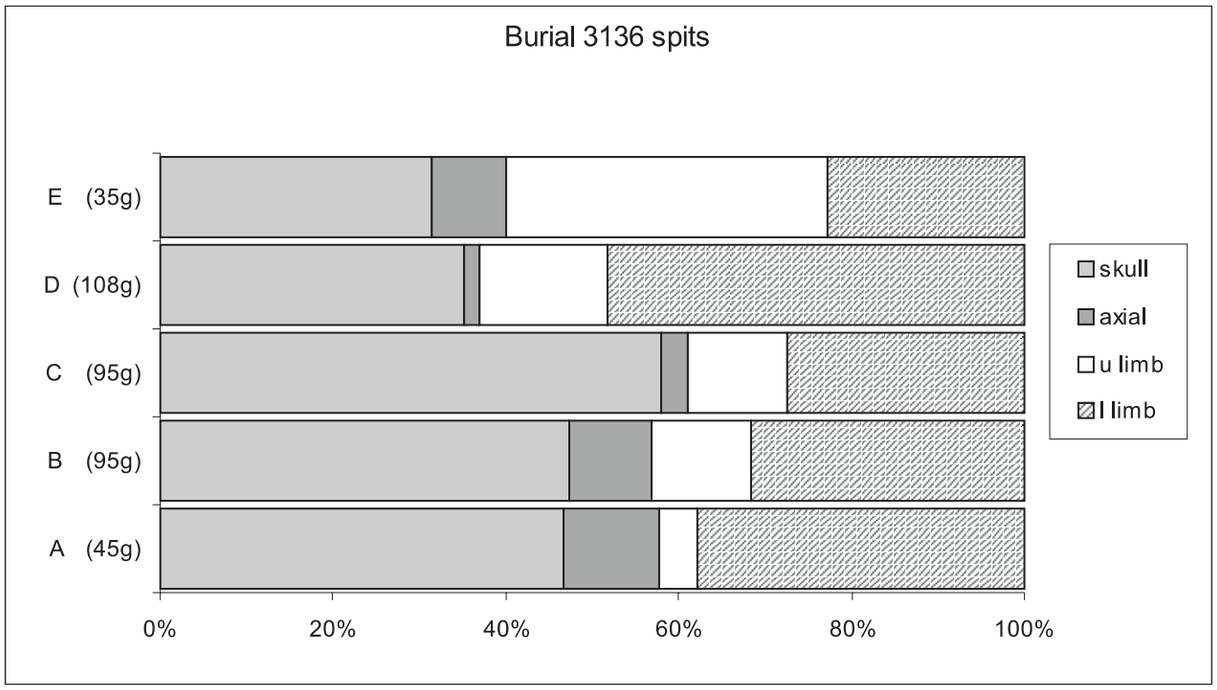


Figure 57 Proportions of skeletal area by spit from cremation urn in burial pit *3136*

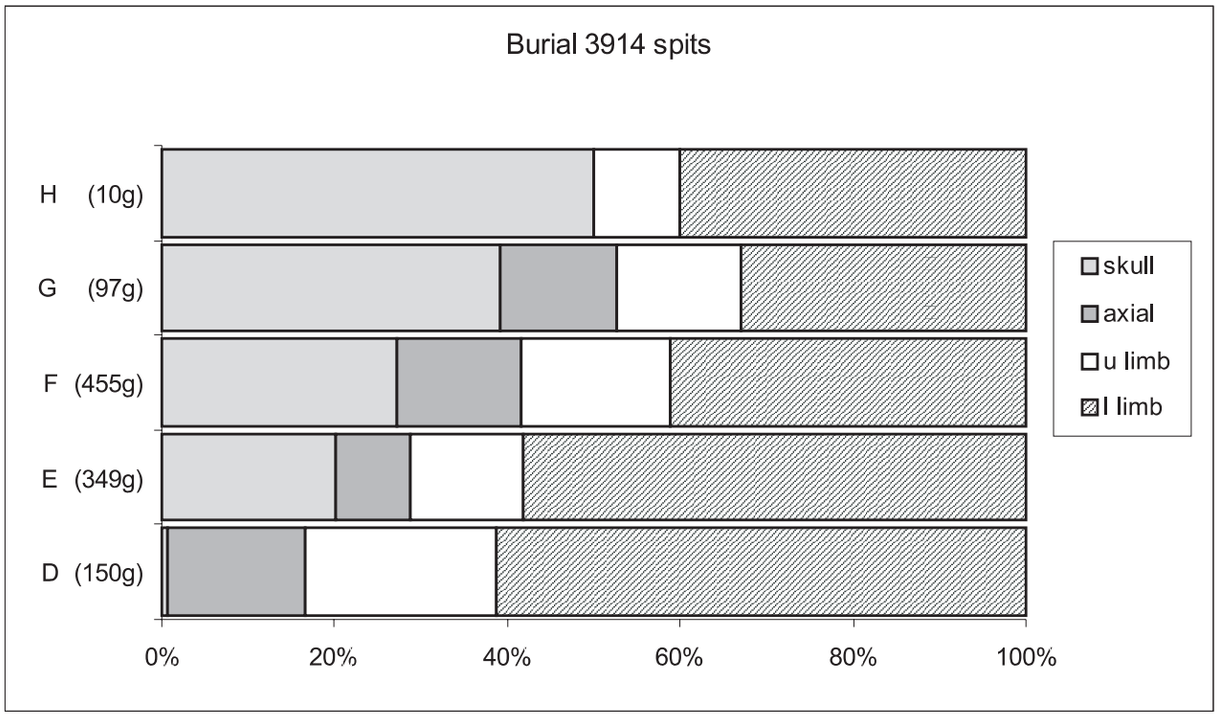


Figure 58 Proportions of skeletal area by spit from cremation urn in burial pit *3914*

The degree of fragmentation, based on average fragment weight, can also be compared between the spits in these two vessels. In *3136*, the largest skull fragments were towards the top of the vessel, whilst the converse was true of the axial fragments; all limb fragments were larger in the central spits. The largest fragments of all skeletal areas in *3914* were located in spits D and E, towards the base. This may partially be a result of inverting the vessel for burial, as smaller fragments might be expected to work their way down through air gaps following deposition. However, the difference in size is quite marked and does tend to suggest that the larger fragments were collected first, which is slightly at odds with the suggestion of meticulous collection from the feet upwards, as suggested by the patterning of body parts.

The majority of bone in this group was fully oxidised and cream to white in colour, although a few fragments from the two more complete burials were grey, indicating incomplete oxidation. The presence of a high proportion of white bone indicates firing temperatures in excess of *c*. 600° C (McKinley 2004, 11). However, at Ardleigh, Mays (1999, 159) noted that uniformity of colour in surviving bone may be due to poor survival of less well-cremated bone. This does not appear to be the case here, at least for burial *3914* which, based on its weight, is near-complete. The colouration of these bones therefore may suggest a degree of uniformity in the firing.

Based on the radiocarbon dates of three of these deposits, the two urned burials lying outside the central depression appear to be earlier than burial *3979*, which had been cut into it. This central area was burnt and may have been used as a pyre. The child burial is undated but might be expected to be later than at least one of the other three, if the inclusion of adult bone with this individual were accidental.

Middle Bronze Age

The twelve Middle Bronze Age cremation burials have been placed in six groups associated with ring-ditches, plus two isolated burials. Table 29 summarises the information collected during the study of these burials.

The MNI for this group is fifteen. All but the two burials in group D appear to be of separate individuals, with the possible further exception of isolated burial *3367* which may contain more than one adult. Of those adults which could be sexed, two were male and two female. The six children were all quite young, probably all under five years old at death, and both sub-adults were close to adult size. This demographic spread is not particularly unusual for the period; other Bronze Age sites in the region, such as Bixley and Harford Farm in Norfolk (Mays 2000) and Ardleigh in Essex (Mays 1999) have yielded cremated remains of adults of both sexes and children of all ages.

Two individuals, probably both older males (*3230* and *5137*) showed signs of degeneration in their spines, and one of these (*5137*) also had evidence for physical stress on the spine in the form of depressions known as Schmorl's nodes. Dental abscesses were present in the maxilla of one young adult (*5057*), and the mandible of another (*3367*). Wormian bones — extra-sutural bones of the skull which may have a genetic component in their presence, or which can be related to stress during development — were present in two burials, *3230* and *5137*.

The majority of these burials were far from complete, only urned burial *3230* reaching the weight range for a complete cremated skeleton (Table 27). However, the weight of urned burial *5137*, although it contained remains from three individuals, was high enough to suggest that it was also fairly intact.

One burial in this period group was excavated in spits, group A burial *3230*. Figure 59 shows the proportions of skeletal areas by spit (based on percentages of identified fragments by weight in the >4mm fractions) for those spits containing more than 10g of identifiable bone. This vessel was inverted so spit A was at the base, spit D closest to the rim. There is no clear patterning in the skull and axial distribution, but there does seem to be a high proportion of limb bone fragments in spit D, whilst more upper limb occurs in C. This could simply be due to the presence of a single piece of bone which was fragmented after deposition.

In this urn, the largest fragments of skull were in spit B, but average weights were fairly consistent in spits A–C for the other skeletal areas. The smallest pieces were generally in spit D.

It is also worth noting that the average fragment weights for the Middle Bronze Age group as a whole are generally lower than those for the Early Bronze Age group (Tables 28 and 29). This might indicate a deliberate attempt to fragment the bone more in the later period, but it is more likely to be due to the greater degree of disturbance and generally poorer preservation in this group.

Colouration for the Middle Bronze Age cremated bone is again fairly uniform and generally indicates full oxidation and high firing temperatures. Perhaps the least well-fired, based on the overall beige colour and the presence of a few black fragments, was the mixed burial group D 5137. Could this be a result of burning all three individuals at once?

Middle Iron Age

A single burial was dated to this period and is summarised in Table 30.

This individual is very incomplete, the majority of fragments consisting of cranial vault. Several of these show evidence for pitting and thickening of the outer table, probably along the line of the lambdoid suture on the parietals. This may indicate an inflammatory response to an infection of the scalp, or it could be related to iron deficiency anaemia.

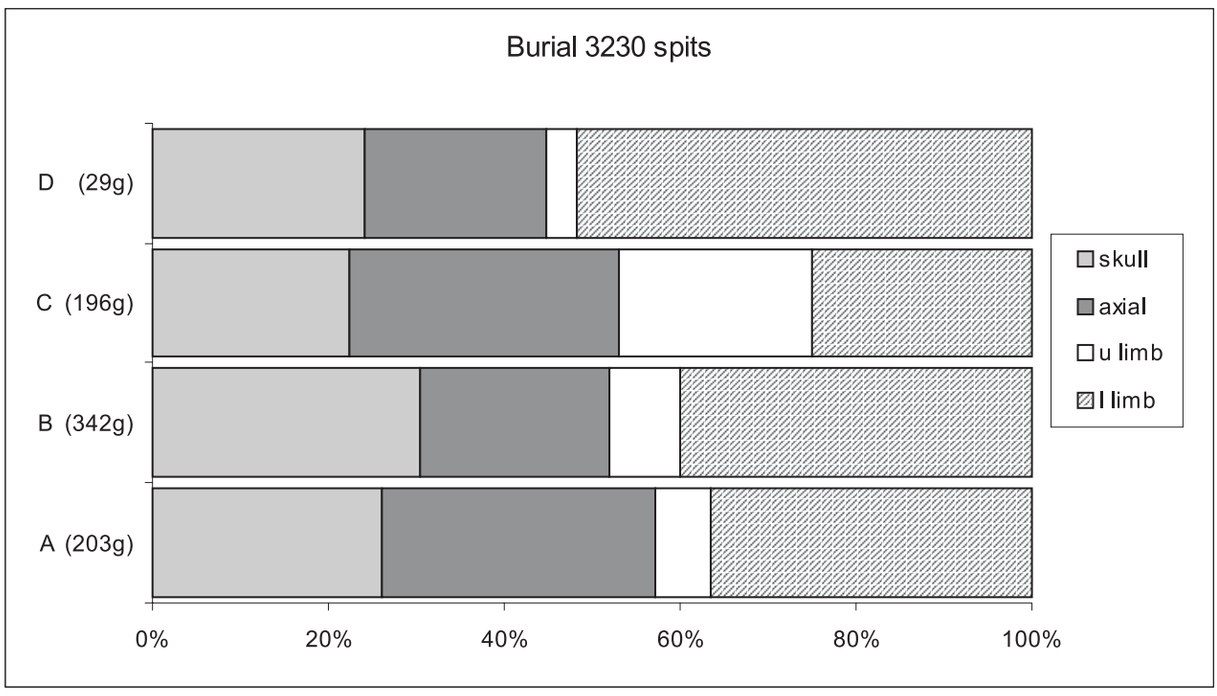


Figure 59 Proportions of skeletal area by spit from cremation urn in burial pit 3230

Group	*Burial*	*Deposit*	*Type*	*Age*	*Sex*	*Ave. ident. frag. wt/g*	*Notes*
A	3226	3229	Urned	Adult	Un	0.5	Large skull fragments, rest fairly fragmented
	3230	3233/ 3242	Urned	Mature	Male	1.0	Well preserved, many large fragments; sexing based on robusticity; some degenerative changes to vertebrae
B	4867	4869	Unurned	Sub-adult	Un	0.3	Very fragmented; unfused epiphyses, near adult sized.
	4877	4878	Unurned	Infant?	-	0.1	Very poor condition
C	4967	10188	Urned	*c.*3 yrs	-	0.4	Some large fragments including epiphyses
	5057	5058	Urned?	Young	Un	0.3	A few well preserved fragments
D	5137	5138	Urned	1. Old 2. Sub-adult 3. Child	Male Un -	1.0	Very well preserved, large pieces, duplication of several skeletal elements; age and sex based on size, epiphyseal fusion, degeneration
	5141	5144/ 5146/ 5154	Urned	1. Adult 2. *c.* 3 yrs	Female -	0.9	Large fragments, some mixing, but largely separated into two urns; adult skeleton gracile, child has fused metopic suture and some teeth
E	2820	2829	Urned	Child	-	0.1	Very fragmented, some intrusive material
F	3647	3636	Unurned	Adult	Female	0.6	Fairly fragmented; gracile bones
isolated	3367	3364/ 3365	Unurned	Young	Un	1.1	Well preserved, could be two individuals; possible recent fusion of epiphyses
	4284	10186/ 4285	Urned	*c.*3–6m	-	0.1	Very small fragments; some unerupted tooth crowns

Table 29 Summary of Middle Bronze Age cremation burials

Burial	*Deposit*	*Type*	*Age*	*Sex*	*Ave. ident. frag. wt/g*	*Notes*
60	62	Unurned	Adult	Un	0.9	Fairly well preserved, some large fragments; pitting to outer table of skull

Table 30 Summary of Middle Iron Age cremation burials

Miscellaneous small groups of cremated bone
Twenty other features (22 contexts) produced small quantities of possible burnt and calcined bone from samples, much of it chalky and abraded. Most groups weighed less than 1g and consisted of tiny fragments too small to identify to species. Some were identified as possibly or probably animal. Fragments from Early Bronze Age post-hole *4262* (Fig. 26 A) and undatable pit *9811* were identified as possibly human. A full list is included in the archive.

Discussion
Seventeen cremation burials were examined from three phases of site use. These contained the remains of at least four Early Bronze Age and fifteen Middle Bronze Age individuals, and one Middle Iron Age individual, a total minimum number of 20.

The Early Bronze Age group consisted of three adult males and a young child. The Middle Bronze Age group included two men, two women, three unsexed adults, six young children and two older sub-adults. The Middle Iron Age burial contained an unsexed adult. Comparison with other local Middle Bronze Age groups suggests that the demographic distribution for this period at least is normal. As is generally the case in cremated assemblages, there is little information on the daily stresses and strains of life which leave their mark on the skeleton, but a few individuals had clearly suffered from the aches and pains which are associated with increasing age, particularly in the spine, and a few had been affected with infections of the teeth and jaws.

Some insight into the cremation ritual may be gleaned from the three vessels which were excavated in spits, and from the colour of the bone and the degree of fragmentation. The three spit-excavated urns provide conflicting evidence for post-cremation collection practices and may simply indicate variety in the thoroughness and attention to detail of those who collected. Most of the bone from the site indicates that firing reached the high temperatures normally associated with cremation, but one multiple burial may not have achieved this fully. There may be some evidence for a higher degree of fragmentation in the Middle Bronze Age than in the earlier period, but this could simply be due to later disturbance. Alternatively, it may be related to the distance which the cremated bone had to travel from the pyre site to its final destination, since the Early Bronze Age burials appear to occur adjacent to their pyre.

V. Charcoal
by Rowena Gale

Introduction
The excavation of the prehistoric and later features produced a large assemblage of charcoal. Sixteen of the 67 samples were selected for full analysis and represent the following periods:

Early Neolithic: pits *782*, *2376* and *6020.*
Early Bronze Age: cremation burial pits *3914, 3979* and *4260.*
Middle Bronze Age: cremation burial pits *3230, 4284* (x2) and *4967* (x2) and pits *5419* (x2) and *5462.*

Middle Iron Age: post-hole *10692* (granary *13957*) and post-hole *11010* (roundhouse *13869*).

The analysis was undertaken to obtain environmental data and evidence of the economic use of woodland resources for (?domestic) firewood, pyre-wood and structural timbers. The results of this analysis are discussed within the present report. Ritual selection of specific wood species for funerary purposes is also discussed.

Method

Bulk soil samples were processed by ECC FAU by flotation and sieving using 0.5mm meshes. The resulting flots and residues were scanned under low magnification and the charcoal separated from plant macrofossils. Hand-picked charcoal was also collected from deposits in cremations *4284*, *4967* and *3230* and pits *5419* and *5464*. Intact segments of narrow roundwood were rare. Charcoal fragments measuring >2mm in radial cross-section were considered for species identification. Large samples were sub-sampled prior to identification as follows: sample 42 – 50%; sample 197 – 25%.

The condition of the charcoal varied from firm and well-preserved to poor and friable. Standard methods were used to prepare the samples for examination (Gale and Cutler 2000). The anatomical structures were examined using incident light on a Nikon Labophot-2 compound microscope at magnifications up to x400. The taxa identified were matched to prepared reference slides of modern wood. When possible, the maturity of the wood was assessed (*i.e*. heartwood/ sapwood).

Results

The taxa identified are presented in Table 31. Classification follows that of *Flora Europaea* (Tutin *et al.* 1964–80). Group names are given when anatomical differences between related genera are too slight to allow secure identification to genus level. These include members of the Pomoideae (*Crataegus, Malus, Pyrus* and *Sorbus*) and Salicaceae (*Salix* and *Populus*). When 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, and exotic species of trees and shrubs were introduced to Britain from an early period (Godwin 1956; Mitchell 1974). The anatomical structure of the charcoal was consistent with the following taxa or groups of taxa:

Betulaceae: *Alnus glutinosa* L., Gaertner, European alder

Corylaceae: *Corylus avellana* L., hazel

Fagaceae: *Quercus* sp., oak

Oleaceae: *Fraxinus excelsior* L., ash

Rosaceae (Subfamilies):

Pomoideae, which includes *Crataegus* sp., hawthorn; *Malus* sp., apple; *Pyrus* sp., pear; *Sorbus* spp., rowan, service tree and whitebeam. These taxa are anatomically similar; one or more taxa may be represented in the charcoal.

Prunoideae. *Prunus spinosa* L., blackthorn.

Salicaceae: *Salix* sp., willow, and *Populus* sp., poplar. In most respects these taxa are anatomically similar.

Early Neolithic

Pit 782

This feature was situated in the west half of the excavation, near the northern boundary of the excavated area (Fig. 8). The large quantity of charcoal associated with the primary deposit (*783*) was 50% sub-sampled. The taxa identified included mostly oak (*Quercus* sp.) but also hazel (*Corylus avellana*) and the hawthorn/*Sorbus* group (Pomoideae). Hazel nutshells were also present (**p. 000**).

Pit 2376

Pit *2376* was sited near causewayed enclosure ditch *13918* in the south-western part of the excavation area (Fig. 9). Charcoal from the single fill (*2377*) of the pit was rather sparse but included hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/*Sorbus* group (Pomoideae) and oak (*Quercus* sp.).

Pit 6020

This pit was sited more centrally towards the northern boundary of the site (Fig. 10). Five deposits were recorded within the pit and charcoal was examined from the primary fill (*6021*). The charcoal included hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/*Sorbus* group (Pomoideae) and oak (*Quercus* sp.).

Early Bronze Age

Cremation burial 3914

The cremated remains of a mature male were deposited in an inverted collared urn (*3917*) in an oval pit near the southern edge of the pond barrow (Fig. 26 A). The vessel contained a large amount of charcoal and was excavated in 4cm spits. The charcoal consisted exclusively of oak (*Quercus* sp.), including both heartwood and sapwood (Table 32).

Cremation burial 3979

The un-urned cremation deposit of what was probably a young male occurred in a steep-sided pit with scorched sides, which cut through the base of the pond barrow (Fig. 26 A). Almost 300g of charcoal were recovered from large pieces of carbonised wood (*3980*) contained within the primary fill (*4200*) of the pit. The wood consisted of fast-grown heartwood and sapwood from oak (*Quercus* sp.).

Cremation burial 4260

This un-urned cremation deposit was located in a small oval pit which cut through the base of the pond barrow and was sited due north of the central area of scorching (Fig. 26 A). The pit contained a single fill (*4261*), which included the remains of a young child. The charcoal-rich deposit consisted exclusively of alder (*Alnus glutinosa*).

Middle Bronze Age

Cremation burial 3230

An inverted urn (*3232*), placed in a circular pit within Middle Bronze Age ring-ditch *3336*, contained the remains of a mature male (*3233*) (Fig. 28). Associated charcoal was excavated from the vessel in 3cm and 4cm spits. The charcoal was mostly very fragmented and degraded but indicated that the pyre fuel included alder (*Alnus glutinosa*), blackthorn (*Prunus spinosa*) and the hawthorn/*Sorbus* group (Pomoideae).

Cremation burial 4284

This cremation, found between the pond barrow and the Middle Bronze Age ring-ditches, is probably that of an infant (Fig. 28). The inverted urn *(8682*) was severely truncated. Associated charcoal was sparse and identified as alder (*Alnus glutinosa*).

Cremation burial 4967

The deposit was interred in an inverted urn (*4969*) in a small circular pit between ring-ditches *4933*/*4934* and *5353* and included the cremated remains of an infant (Fig. 28). The charcoal included alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), oak (*Quercus* sp.) and blackthorn (*Prunus spinosa*).

Pit 5419

This oval pit, close to the east outside edge of Middle Bronze Age ring-ditch *13859*, included what appeared to be a placed deposit: a Bucket Urn *(5421*) placed on its side (Fig. 28). Cremated bone was not apparent although the backfill included flecks of charcoal. The charcoal was infrequent and included alder (*Alnus glutinosa*), oak (*Quercus* sp.) heartwood and the hawthorn/*Sorbus* group (Pomoideae).

Sample	*Context*	*Description*	*Alnus*	*Corylus*	*Fraxinus*	*Pomoideae*	*Prunus*	*Quercus*	*Salicaceae*
Neolithic									
42	783	Primary fill of pit 782	-	10	-	2	-	22h, 36s	-
102	2377	Single fill of pit 2376	-	4	6	12	-	6h, 6s	-
224	6021	Primary fill of 6020	-	2	12	1	-	24h, 2r, 3s	6
Early Bronze Age									
197	3980	Primary fill of unurned cremation pit 3979	-	-	-	-	-	10h, 121s	-
199	4261	Single fill of unurned cremation pit 4260	82	-	-	-	-	-	-
-	10190	Single fill of vessel 3917 in cremation pit 3914:	-	-	-	-	-	3h, 11s	-
		Base–20cm			Insufficient charcoal for identification				
		20–24cm	-	-	-	-	-	5h, 7s	-
		24–28cm	-	-	-	-	-	34h, 16	-
		28–32cm	-	-	-	-	-	27h, 10s	-
		32–35cm (rim)	-	-	-	-	-	32h,3r,17s	-
Middle Bronze Age									
201	10186	Single fill of vessel 8682 in cremation pit 4284	3	-	-	-	-	-	-
-	4285	Single backfill of cremation pit 4284	12	-	-	-	-	-	-
209	4968	Backfill of cremation pit 4967	2	-	-	-	-	1h	-
-	4970	Fill of urn 4969 in cremation pit 4967	21	-	1	-	2	-	-
217	5420	Single backfill of pit 5419	21	-	-	2	-	1h	-
-	5422	Single fill of vessel 5421 in pit 5419	13	-	-	-	-	-	-
-	3233	Single fill of vessel 3232 in cremation pit 3230:	13	-	-	1	12	-	-
		Rim							
		7–11cm	8	-	-	-	6	-	-
		11–15cm	1	-	-	-	3	-	-
		15–19cm			Insufficient charcoal for identification				
-	5465	Single fill of vessel 5464 in pit 5462:	-	-	-	-	-	14	-
		0–4cm							
		4–8cm	-	-	-	-	1	41s	-
		8–13cm	-	-	-	-	-	1h, 13s	-
Middle Iron Age									
271	10613	Primary fill of post-hole 10692, part of structure 13957	-	-	-	-	-	67h, 18s	-
283	11095/96	Primary fill of post-pipe 11372 in post-hole 11010, part of roundhouse, 13869	-	-	-	1	-	115h, 18s	-

Key: h–heartwood; r–roundwood (diameter <20mm); s–sapwood (diameter unknown). The number of fragments identified is indicated.

Table 31 Charcoal

Pit 5462
This pit was adjacent to pit *5419* (see above) and was similar in character, except that the urn was upright. The fill (*5465*) of the vessel (*5464*), which included charcoal, was excavated in 4cm and 5cm spits. The charcoal was predominantly oak (*Quercus* sp.), with a small amount of blackthorn (*Prunus spinosa*).

Middle Iron Age

Roundhouse 13869
A circular post-pipe (*11372*) was present in post-hole *11010*, which formed part of the entranceway (Fig. 38 C). The primary fill (*11095*) of the post-pipe included small fragmented pieces of charcoal (sample 283), identified as almost entirely oak (*Quercus* sp.), including heartwood from largewood, with a small amount of the hawthorn/*Sorbus* group (Pomoideae). The origin of the charcoal is not clear since it could represent either the remains of fuel used within the structure or, in view of the almost exclusive presence of oak, from the post. If from the post, there are two possibilities. The residual charcoal represents either the remains of a burnt post or the basal area of a post, charred prior to insertion in the post-hole to preserve the post from rot.

Granary 13957
Charcoal was recovered from post-hole *10692*, which formed part of what was apparently a granary (Fig. 40 B). Three fills were recorded in the post-hole. The charcoal from the primary fill (*10613*) consisted

Context	*Description*	*Gender*	*Age*	*Alnus*	*Fraxinus*	*Pomoideae*	*Prunus*	*Quercus*
Early Bronze Age								
3980	Unurned cremation burial 3979	?	Adult	-	-	-	-	10h, 121s
4261	Unurned cremation burial 4260	?	?Juvenile	82	-	-	-	-
3917	Urned cremation 3914, fill of vessel	Male	Adult	-	-	-	-	101h, 61s
Middle Bronze Age								
3233	Urned cremation burial 3230	Male	?Adult	22	-	1	21	-
4285	Urned cremation burial 4284	?	?Infant	15	-	-	-	-
4968/4970	Urned cremation burial 4967	?	Child	23	1	-	2	1h
5420/5422	Pit 5419, with vessel 5421	-	-	34	-	2	-	1h
5465	Pit 5462, with vessel 5464	-	-	-	-	1	15h, 54s	-

Table 32 Taxa recorded from Bronze Age cremation burials and structured deposits. The number of fragments identified is indicated. Key as Table 31

entirely of oak (*Quercus* sp.) from largewood. The high frequency of carbonised grain associated with the granary may imply its destruction by fire, which in turn suggests that the charcoal may originate from an oak post burnt *in situ.*

Discussion

Neolithic

Pits *782*, *2376* and *6020* were all dated by pottery and were located some distance from each other in peripheral parts of the site. The origin of the charcoal is unknown although fuel debris, possibly from domestic hearths, seems a strong possibility. Apart from hazel nutshells in pit *782*, evidence of food was rare. The taxa identified indicated the use of firewood predominantly composed of oak (*Quercus* sp.), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*) and the hawthorn/*Sorbus* group (Pomoideae), with some use of willow (*Salix* sp.) and poplar (*Populus* sp.). The oak was obtained from trees with moderate to fast growth and included largewood.

Early Bronze Age

The pond barrow (*3890*) in the central area of the enclosure became the focus for cremation burials and a structured deposit. Scorched natural soil was noted in the pond barrow and in the pit containing un-urned cremation burial *3979* sited in the south-east quadrant of the pond barrow. The charcoal-rich deposit in burial *3979* demonstrated the apparently exclusive use of oak in the construction of the pyre.

Two further cremation deposits associated with the pond barrow were examined. These included un-urned cremation deposit *4260* in the north-east quadrant, probably of a juvenile, for which the pyre appears to have been constructed solely of alder (*Alnus glutinosa*), and urned cremation *3914* sited to the south of, and close to, the barrow. This deposit included the remains of an adult male, whose pyre had been constructed of oak (*Quercus* sp.).

In general, most of the charcoal associated with cremation burials or pyre sites originated from the burnt remains (often scooped up and buried with the cremated bones) of the pyre structure itself, with some small proportion possibly representing artefacts, *e.g*., the funeral bier and wooden grave goods. In order to support the weight of the body, the pyre is likely to have been constructed from substantial pieces of wood, perhaps large branches or trunks of small trees. Evidence from the analyses of charcoal residues from Bronze Age cremation burials in other parts of the country indicates the occasional use of single wood species for the pyre structure, often associated with strategically placed burials, *e.g*. a primary interment in the centre of a ring barrow/ditch. Although at present this practice is not fully understood, it does imply a ritual element in the selection of the pyre wood, which may refer to the status, age or gender of the dead person (Smith 2002). The most favoured wood appears to have been oak (*Quercus* sp.), examples of which have been recorded at Barrow Hills, Radley, Oxfordshire (Thompson 1999), Westhampnett, West Sussex (Gale forthcoming), Gayhurst Barrow Cemetery, Buckinghamshire (Gale unpublished a), Coton medieval village, Warwickshire (Gale, unpublished b), Carsington, Derbyshire (Gale, unpublished c), Brackmills Link Road, Northamptonshire (Gale, unpublished d), Eye Kettleby, Leicestershire (Gale, unpublished e), Risely Farm, Berkshire (Gale, 1992). The use of other species included ash (*Fraxinus excelsior*) at Yeovilton, Somerset (Gale, unpublished f) and at Eye Kettleby (*ibid.*), and also alder (*Alnus glutinosa*) at the last-mentioned site.

At Lodge Farm, evidence from the Early Bronze Age suggests a similar pattern of use (Table 32) but here we have a little more information which shows that oak (*Quercus* sp.) was used for adult cremations *3979* and *3914*, whereas alder (*Alnus glutinosa*) was chosen for the cremation of a ?juvenile. However, there is no obvious correlation in species selection between urned and un-urned burials. The evidence from Lodge Farm is roughly comparable to that recorded at the Bronze Age cemetery at Eye Kettleby, which included a large number of urned and un-urned cremation burials, some of which provided evidence for the single use of oak (*Quercus* sp.) and alder

Sample No.		*261*	*262*
Context No.		*10547*	*10550*
Granary		*13957*	*13958*
Cereals	Common name		
Avena sp. (grains)	Oat	22	18
Cereal indet. (grains)		138	56
(floret base frag.)		-	1
Hordeum sp. (grains)	Barley	98	70
H. vulgare L. (asymmetrical lateral grains)	Six-row barley	18	6
Secale cereale L. (grains)	Rye	4+1cf	-
Triticum sp. (grains)	Wheat	820	760
(glume bases)		4	12
(spikelet base)		-	6
T. dicoccum Schubl. (glume bases)	Emmer wheat	2+4cf	4cf
T. spelta L. (glume bases)	Spelt wheat	30	20
(spikelet fork)		-	1
Herbs			
Bromus sp.	Brome	1	-
Chenopodium album L.	Fat hen	2	1cf
Small Poaceae indet.	Grasses	2	-
Large Poaceae indet.		2	4
Polygonaceae indet.		1	2
Other plant macrofossils			
Charcoal <2mm		xx	xx
Charcoal >2mm		xx	-
Indet.seeds		-	1
Other materials		-	-
Vitrified material		x	-
Sample volume (litres)		12	12
Volume of flot (litres)		0.1	<0.1
% flot sorted		100%	100%

Key: x – 1–10 specimens, xx – 10–100 specimens, xxx – 100+ specimens. fg – fragment. coty – cotyledons

Table 33 Charred plant macrofossils and other remains from Middle Iron Age (VI.2) granaries *13957* and *13958*

(*Alnus glutinosa*), and also ash (*Fraxinus excelsior*). Here again, there was no apparent pattern in the selection of species, either spatially or temporally, or in the type of burial (Gale, unpublished e). The gender and age of those cremated is unknown.

Middle Bronze Age

The ritual use of the pond barrow and adjacent areas continued in the Middle Bronze Age with the construction of ring-ditches and further cremation burials and structured deposits. A cluster of urned deposits dated to this period was recorded to the east of the pond barrow. These included burials *3230* (mature male), *4284* (infant) and *4967* (infant). Charcoal was not as plentiful in these contexts as in those of the Early Bronze Age but the evidence from cremations *3230* and *4967* suggests the use of multiple species for pyre fuel including alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), the hawthorn/*Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*) and oak (*Quercus* sp.). Charcoal was very sparse in cremation burial *4284* (infant) and although alder (*Alnus glutinosa*) was the only species recorded, the sample was too small to provide secure evidence of single species selection.

Charcoal was also recorded from adjacent pits *5419* and *5464* which were located south of the pond barrow and roughly midway between two groups of ring-ditches. These deposits both included Bucket Urns, but since there was no evidence of cremated bone, they have been interpreted as specially placed deposits. The charcoal included alder (*Alnus glutinosa*), the hawthorn/*Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*) and oak (*Quercus* sp.). The origin or function of the charcoal is not clear; perhaps it was gathered from a cremation site or it may represent some other type of ritual burning event. There does not appear to have been any specific selection of species known to have been of ritual importance in the prehistoric period, *e.g.* oak (Green 1991; Davidson 1964).

Middle Iron Age

Charcoal examined from post-hole *11095* at the entrance of roundhouse *13869* was almost exclusively oak (*Quercus* sp.), with a single fragment of the hawthorn/*Sorbus* group (Pomoideae). The high concentration of oak could imply origins from a post either burnt *in situ* or from the remains of an oak post that had been charred

at the base to enhance its durability in the soil. However, an origin from the build-up of household debris at and around the entrance to the roundhouse cannot be entirely ruled out.

Similar structural origins also apply to a deposit of charcoal obtained from post-hole *11095* from the granary structure *13957* and identified as exclusively oak (*Quercus* sp.) from largewood. In this instance, the granary may have been destroyed by fire.

Environmental evidence

The site was located on a low spur of land, roughly 3km from the North Sea coast, on soils of sand and gravel. The full range of woodland species identified from the site (including those named in the assessment report) included field maple (*Acer campestre*), alder (*Alnus glutinosa*), *cf.* birch (*Betula* sp.), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), the hawthorn/*Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*), oak (*Quercus* sp.), lime (*Tilia* sp.), willow (*Salix* sp.) and/or poplar (*Populus* sp.) and gorse (*Ulex* sp.) and/or broom (*Cytisus scoparius*).

Plant macrofossil evidence suggests that during the Neolithic and Bronze Age the area was probably dominated by open grassland. This suggestion is supported by evidence from the charcoal assessment, in which 21 of the 28 Neolithic samples examined included the hawthorn/*Sorbus* group (Pomoideae) and it seems probable that scrubby species such as hawthorn were common. Oak may either have been relatively infrequent or have had a rather sporadic distribution, perhaps in open or scattered woodland or in small stands. Interestingly, alder (*Alnus glutinosa*) becomes more frequent in charcoal deposits from Middle Bronze Age contexts, which could suggest that increasingly wet or waterlogged soils prevailed at or close to the site at this time. However, since the frequency of alder in the charcoal seems to be associated mainly with pyre fuel, this may reflect selection specifically for cremation rather than the general distribution of alder in the environment. Wetlands would also have supported willow (*Salix* sp.) and, perhaps, poplar (*Populus* sp.).

Oak (*Quercus* sp.) also occurred regularly in the charcoal deposits throughout the Neolithic, Early and Middle Bronze Age and Middle Iron Age periods and the frequency of moderate to fast-grown fragments of largewood infers that oak woodland was open or marginal, thereby allowing optimal conditions for growth. Ash (*Fraxinus excelsior*), field maple (*Acer campestre*) and possibly lime (*Tilia* sp.) may have been associated with oak woodland.

Woodland resources

Timber, fuel and other woodland resources (*e.g.* hazel nuts) would almost certainly have been drawn from local supplies, which, as indicated above, included a broad spectrum of species in the prehistoric period. The current excavation has demonstrated different types of land-use for each major phase of occupation.

Charcoal deposits dumped in Neolithic pits within the causewayed enclosure probably originated from hearths, although we do not know whether these were for domestic, agricultural, ritual or other activities. Firewood consisted predominantly of oak (*Quercus* sp.) and the hawthorn/*Sorbus* group (Pomoideae) and probably reflects the dominance of these species in the environment.

During the Early and Middle Bronze Age the site was used extensively as a cemetery and for votive offerings. All of the Early Bronze Age cremations appear to be associated with the pond barrow. The site of the associated settlement of dwellings is unknown and may have been close by. Local woodland, however sparse, may therefore have supplied resources for both domestic and ritual (cremation) use. It is worth noting that a pyre for an adult human requires about one ton of wood if it is to consume the body (McKinley 1994). However, despite the high fuel consumption associated with the relatively large number of cremations that occurred here, if these took place over quite a long time span they probably made little impact on the woodland community. Probably the most interesting and important data obtained from the analysis relates to the use of single species of wood for pyre construction in the Early Bronze Age. This is all the more relevant when the maturity and, sometimes, gender of the people cremated is known.

By the Middle Iron Age the explicit religious/ritual aspect to activity at the site would appear to have faded. There must have been considerable pressure on woodland resources for building materials and fuel at this time, especially if the environment was as sparsely wooded as suggested by evidence from the earlier periods. The two charcoal samples examined were obtained from post-holes associated with roundhouse *13869* and post-built structure *13957* and suggest the structural use of oak (*Quercus* sp.). Oak heartwood is one of the strongest and most durable of British timbers.

VI. Charred plant macrofossils

by Val Fryer
(Fig. 60)

Summary

An assessment of the plant macrofossil assemblages showed that although the site was complex, key aspects of its successive use and changing nature could be highlighted. Grassland was predominant during the Neolithic and Bronze Age periods, and although some cultivation for crop production was probably being undertaken locally, it appears not to have impinged upon the causewayed enclosure itself. People using this structure still gathered wild fruits and nuts, some of which were accidentally or deliberately incorporated into its pits and ditches. By the Middle Iron Age, agriculture formed a considerable component of the local economy, with cereals being stored in purpose-built granaries. Cultivation appears to have been concentrated on the lighter soils which were more easily tilled.

Introduction

Of the original 199 plant macrofossil assemblages assessed from features of Early Neolithic to medieval date, the following eleven were selected for analysis from features of Middle Iron Age date.

Sample 261
Post-hole *10544*, part of post-built structure *13957*

Sample 262
Post-hole *10548*, part of post-built structure *13958*

Samples 319, 322, 323, 324, 325, 326, 327, 328 and 380
Post-holes *13147*, *13151* and *13155* and post-removal cuts *13195*, *13243*, *13145*, *13149*, *13153* and *13352*, part of granary *14016*

Sample No.		*319*	*322*	*323*	*324*	*325*	*326*	*327*	*328*	*380*
Context No.		*13196*	*13245*	*13146*	*13148*	*13150*	*13152*	*13154*	*13156*	*13353*
Cereals	Common name									
Avena sp. (grains)	Oat	92	352	180	1	136	26	76	30	27
(awn frags)		-	-	-	1fg	-	-	-	-	-
A. sativa L. (floret base)	Cultivated oat	-	-	-	-	1	-	-	-	-
Cereal indet. (grains)		412	608	684	24	172	128	404	142	90
(detached embryos)		-	-	-	1	-	-	4	-	3
(basal rachis nodes)		8	-	-	-	-	-	-	-	-
(floret base frag.)		-	16fg	-	-	-	-	-	-	-
Hordeum sp. (grains)	Barley	208	1288	138	3cf	92	10cf	96+20cf	38+4cf	74
H. vulgare L. (asymmetrical lateral grains)	Six-row barley	16	88	-	-	8cf	-	16	-	8
Triticum sp.(grains)	Wheat	2908	4040	3858	229	1376	586	2132	704	411
(glume bases)		44	-	-	-	-	-	8	-	13
(spikelet bases)		12	-	12	2	8	-	8	6	9
(rachis internode frags.)		-	-	-	-	-	-	-	-	3fg
T. dicoccum Schubl. (glume bases)	Emmer wheat	1cf	-	1cf	-	4cf	-	-	-	-
T. spelta L. (glume bases)	Spelt wheat	40	32	78	4	28	4	68	24	35
(spikelets)		12+1cf	24	-	1	-	2	-	4	-
Herbs										
Anthemis cotula L.	Stinking mayweed	-	-	-	1cffg	-	-	-	-	-
Atriplex sp.	Orache	4	-	-	-	-	-	-	-	-
Bromus hordeaceous/secalinus	Lop grass/rye-brome	592	1344	1052	67	740	94	884	262	70
Chenopodium album L.	Fat hen	8+4cf	24	12	-	8	-	4	2	3
Chenopodiaceae indet.		-	-	-	-	-	-	-	-	4
Malva sp.	Mallow	-	16	-	-	-	-	-	-	-
Persicaria maculosa/lapathifolia	Persicaria	-	-	-	-	-	-	-	2	1fg
Small Poaceae indet.	Grasses	-	8	-	-	4	4	4	2cf	2
Large Poaceae indet.		-	16	-	-	-	-	-	-	-
Plantago lanceolata L.	Ribwort plantain	4	-	-	-	-	-	-	-	-
Raphanus raphanistrum L. (siliqua)	Wild radish	-	-	-	-	4	-	-	-	-
Rumex sp.	Dock	-	24	-	-	-	-	8	-	1
Stellaria sp.	Chickweed type	-	-	-	-	-	-	-	-	1
Tripleurospermum inodorum (L.)Schultz-Bip	Scentless mayweed	-	8	-	-	-	-	4	-	3
Vicia/Lathyrus sp.	Vetch/vetchling	1cf	-	6	-	-	-	-	-	-
Wetland plants										
Montia fontana L.	Blinks	-	-	-	-	-	2	-	-	-
Tree/shrub macrofossils										
Corylus avellana L.	Hazel	-	-	-	-	1cffg	-	-	-	1fg
Other plant macrofossils										
Charcoal <2mm		xx	xx	xx	x	x	xxx	xx	x	xx
Charcoal >2mm		xx	xx	xx	-	x	xxx	x	xx	xx
Charred root/rhizome/stem		-	-	-	x	-	-	-	-	x
Indet.seeds		-	16	-	-	1	-	-	-	2
Other materials										
Black porous 'cokey' material		-	-	-	xx	xx	x	-	-	-
Black tarry material		-	-	x	x	-	-	-	x	-
Siliceous globules		x	-	-	-	x	x	-	-	x
Sample volume (litres)		12	14	12	12	12	12	12	12	14
Volume of flot (litres)		0.4	0.5	0.4	<0.1	0.3	0.2	0.3	0.2	0.1
% flot sorted		100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 34 Charred plant macrofossil and other remains from Middle Iron Age (VI.2) granary *14016*. Key as Table 33.

Samples 261 and 262
These were taken from two four-post structures in the north-eastern part of the excavated area (Figs 33 and 40 B, *13957* and *13958*). The remaining samples were from a six-post granary in the south-east corner of the site (Figs 35 and 40 G, *14016*). All samples contained grain rich assemblages possibly derived from catastrophic fires within granary structures, and it was hoped that analysis would highlight specific aspects of cereal production and storage on the site during the Middle Iron Age period.

A further three samples from features of Late Iron Age/Roman and medieval date form the basis of a report in *Essex Archaeology and History* (Fryer in prep.).

The samples were bulk floated and the flots collected in a 500 micron mesh sieve. The dried flots were sorted under a binocular microscope at magnifications up to x16, and the plant macrofossils and other remains noted are listed in Tables 33 and 34. Identifications were made by comparison with modern reference specimens. Nomenclature within the tables follows Stace (1997). For the purposes of this analysis only embryo ends or complete cereal grains and large grass seeds were counted. Abbreviations used in the tables are explained at the end of the text section.

Results

Cereal grains/chaff and seeds of common weed plants were present at varying densities in all samples. Preservation was moderately good although a proportion of the cereal grains had become puffed and distorted during combustion and could not be specifically identified.

Cereals
Oat (*Avena* sp.), barley (*Hordeum* sp.), rye (*Secale cereale*) and wheat (*Triticum* sp.) grains were recorded, with wheat being predominant throughout. Wheat chaff, including single keeled emmer (*T. dicoccum*) and double keeled spelt (*T. spelta*) glume bases, was present in all samples, and whole spelt spikelets with the grains still tightly encased within the glumes were noted in five samples from granary *14016*.

Barley was generally rare, although it did account for 19% and 12% of the assemblages from samples 322 and 380 respectively. Asymmetrical lateral grains of six-row (*H. vulgare*) barley were noted in both samples from granaries *13957* and *13958* and in five samples from granary *14016*, but barley chaff was entirely absent.

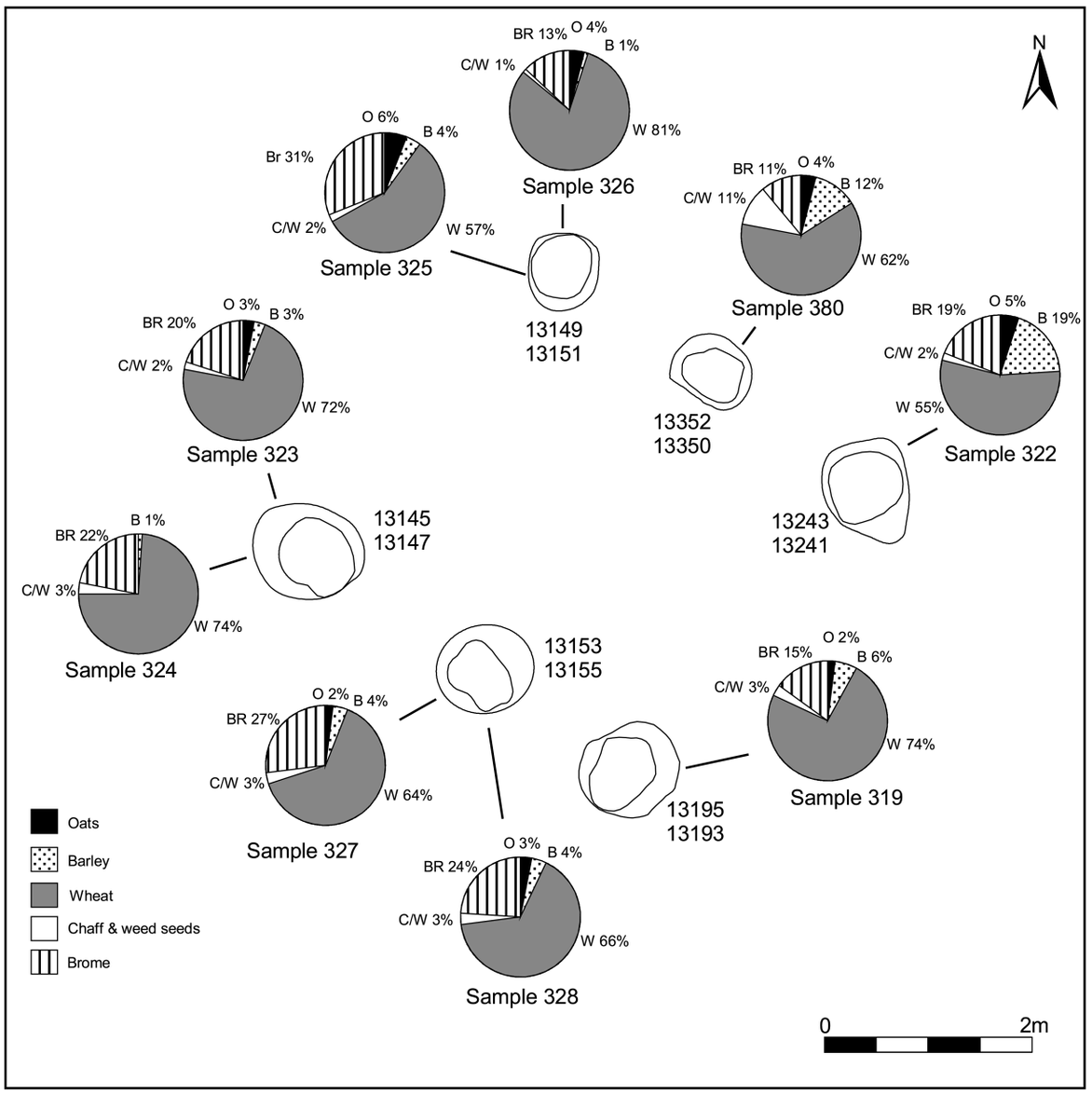


Figure 60 Granary 14016: composition of the plant macrofossil assemblages

Oat grains were present in all samples, and in most instances were more abundant than barley. Although a single cultivated oat (*A. sativa*) floret base with a diagnostic straight basal abscission scar was noted in sample 325 from granary *14016*, in the absence of further floret bases it was not possible to ascertain whether wild or cultivated types were present.

Rye grains were only recorded at a very low density (<0.5% of total assemblage) in the post-hole from granary *13957*.

Wild flora

Seeds/fruits of weeds common on disturbed ground were present in all samples. Fruits of lop grass or rye-brome (*Bromus hordeaceous*/*secalinus*) were particularly abundant in all samples from granary 14016, forming between 11% and 31% of the total assemblages (Fig. 60). Similar high densities of brome have been noted in other contemporary grain deposits at, for example, Asheldham Camp, Essex (Murphy 1991), and Suddern Farm and Nettlebank Copse in Hampshire (Campbell 2000a and 2000b respectively), although in these instances the brome was always associated with high densities of chaff and weed seeds. Seeds of fat-hen (*Chenopodium album*), indeterminate grasses (Poaceae) and dock (*Rumex* sp.) were also moderately common within the *14016* assemblages, with other taxa recorded including mallow (*Malva* sp.), scentless mayweed (*Tripleurospermum inodorum*) and vetch/vetchling (*Vicia/Lathyrus* sp.). In contrast, only a single seed of brome type (*Bromus* sp.) was found in sample 261 from four-post structure *13957*, and other weed seeds were also very rare.

Other plant macrofossils

Charcoal fragments were present throughout along with a small number of unidentifiable seeds and indeterminate pieces of charred root or stem.

Other materials

Other material types were extremely rare. The fragments of black porous 'cokey' material, black tarry material and the siliceous globules are probable residues of the combustion of organic materials, including cereals and straw/grass, at extremely high temperatures.

Discussion

Samples 261 and 262 (Table 33) are from the intercutting post-holes of two four-post structures to the north-east of the excavated area. The earlier structure (*13957*) has a north/south axis and measures approximately 3m by 3m. This was replaced by structure *13958*, which is set at a slight angle (north-east/south-west) to the original and has less regular proportions (3m x 2.8m) (Fig. 40 B). The south-eastern post-hole of the original structure had been cut into by the south-western post-hole of the replacement. During assessment of the samples it was noted that the assemblages from the *13957* post-holes all contained some grain and weed seeds, with a concentration occurring in sample 261. Analysis has shown that this material is probably derived from stored grain (predominantly wheat) which may well have been burnt during a catastrophic fire, which probably destroyed the whole structure. The concentration of material in one post-hole may be indicative of a store of grain in one corner of the building, although it could equally be a result of clearance of material after the fire. In contrast, sample 262 from the replacement building (*13958*) was the only assemblage from this structure which contained any significant quantity of material. It appears most likely therefore that despite the effort involved in replacing the destroyed granary, the second structure was little used. The reason for this is not known. The material within sample 262 is probably largely residual within its context, being principally derived from the re-cutting of the earlier post-hole.

The occurrence of stored grain within *13957* is particularly significant, as although four-post structures are frequently interpreted as grain stores, the assemblages recovered from the post-holes seldom contain cereal remains, thereby casting doubt on this functional interpretation. However, an increasing number of similar contemporary structures (for example at Hauxton Road, Cambridge: Fryer 2002) are now producing charred grain assemblages and it would appear most likely that, along with a range of other 'agricultural' type buildings, four-post structures were multi-functional, with cereal storage being only one of their possible uses.

The remaining nine assemblages (Table 34 and Fig. 60) are all from the fills of post-holes within granary *14016*, a six-post structure situated to the south of the main east–west trackway. As with contemporary four-post structure (*13957*), it seems most likely that this building and its contents were destroyed by fire. Grain (predominantly wheat) is the main component of the assemblages, although significant densities of brome are present throughout. This is of particular interest given the very low density of other contaminants in the form of chaff or weed seeds. Although it could be argued that some weeds and chaff may have been destroyed during combustion, thereby creating an artificial bias towards the large seeded species, the abundance of brome within the assemblages does appear to indicate that it was either deliberately cultivated for fodder (as suggested by Campbell (2000c) in relation to the Danebury sites in Hampshire), or was tolerated as an impurity, being overlooked during processing as it did not affect either the storage properties of the cereal or detract from its quality as food/fodder.

The composition of the grain assemblages appears to give some indications about local agricultural practices and may even suggest zonal use within granary *14016*. Although a number of the wheat grains cannot be closely identified due to distortion during charring, a significant proportion appear to be of a 'drop form' type typical of spelt, thereby indicating that this was probably the principal grain utilised by the occupants of the site. These findings are paralleled at other contemporary sites within the eastern region where spelt production increased throughout the Iron Age period to the detriment of emmer. Chaff and grains of emmer are indeed rare from the current site, possibly indicating that it was present as a volunteer weed or persistent contaminant of the main spelt crop. Oats and barley are also possibly present as main crop contaminants, although the samples from the eastern end of the granary (particularly 322 and 380) do contain a noticeably higher density of barley and may indicate a small store of this grain at this end of the building. Although a number of complete spelt spikelets were recovered, the number is probably insufficient to be definitely indicative of spikelet storage. Spelt was often stored as semi-cleaned spikelets, as this prevented rotting of the grain (*cf.* Carruthers 2002, 46), but fully processed batches of grain are also known (for example from Dunstons Clump, Nottinghamshire (Jones 1987)).

Although small, the weed seed assemblage is paralleled by material from Asheldham Camp to the south of St Osyth, and is consistent with cultivation based on the local well-drained soils (Murphy 1991). There is little or no evidence for contemporary expansion onto heavier clay land or marginal wetland areas. The predominance of brome, which flowers between May and August, probably indicates that most crops were autumn-sown.

Conclusions

Four-post structure *13957* was almost certainly used for crop storage until it was destroyed by fire. For some reason structure *13058*, which replaced it, appears to have been little used. Stored cereals were also contained within granary *14016*. Spelt wheat, some possibly stored as whole spikelets, appears to have been the main crop utilised on site, although a small quantity of barley may have been stored in one corner of the building. Cereal production appears to have been almost entirely based on the local well-drained soils. Brome fruits were present at a sufficient density to indicate that they were either deliberately cultivated or tolerated as a contaminant of the main wheat crop. It appears most likely that granary *14016* and its stored contents were also destroyed by a catastrophic fire.

4. Radiocarbon Dating

by W. Derek Hamilton, Alex Bayliss, Chris Bronk Ramsey, John Meadows and Hans van der Plicht

I. Introduction

(Fig. 61)

Forty-nine radiocarbon measurements have been obtained from archaeological features at Lodge Farm. Thirty-six carbonised plant remains were dated by the Oxford Radiocarbon Accelerator Unit and the Centre for Isotopic Research at the University of Groningen, The Netherlands (nineteen and seventeen samples dated by each, respectively). In addition, the laboratories dated ten cremated bone samples (four and six samples respectively), and the carbonised residues on three sherds of pottery (two and one samples, respectively). The dating of all 49 samples took place between 2003 and 2004.

General approach

A Bayesian approach has been taken to the interpretation of chronological data from this site (Buck *et al.* 1996). This is a mathematical modelling technique which combines the radiocarbon dates with chronological information provided by the archaeological evidence, such as the relative dating provided by stratigraphy. This allows more precise dating to be provided by determining which parts of the simple calibrated radiocarbon date ranges are unlikely because of the known relationships between samples, and results in a reduced date range, known as a *posterior density estimate* (shown in black in the figures). These distributions are based on probability, and are shown in italics when expressed as date ranges in the text. The posterior density estimates are not absolute; they are interpretative *estimates*, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives.

The technique used is a form of Markov Chain Monte Carlo sampling, and has been applied using the program OxCal v3.5 (http://units.ox.ac.uk/departments/rlaha/), which uses a mixture of the Metropolis-Hastings algorithm and the more specific Gibbs sampler (Gilks *et al.* 1996; Gelfand and Smith 1990). Details of the algorithms employed by this program are available from the online manual or in Bronk Ramsey (1995; 1998; 2001), and fully worked examples are given in the series of papers by Buck *et al.* (1991, 1992), Buck, Litton *et al.* (1994), and Buck, Christen *et al.* (1994). The algorithms used in the models described below can be derived from the structure shown in Figs 61 and 62.

Replicate radiocarbon measurements on the same sample have been combined before calibration by taking a weighted mean, and the consistency of groups of results which are, or may be, of the same actual age has been tested using methods outlined by Ward and Wilson (1978).

The following section concentrates on the archaeological context and significance of the results — particularly on the reasoning behind the interpretative choices made in producing the models presented. These archaeological decisions fundamentally underpin the choice of statistical model.

Objectives

The principal aims of the dating programme were as follows:

1. To determine the dates of construction and use of the causewayed enclosure.
2. To date the Neolithic pits, and to determine whether they were contemporary with the causewayed enclosure.
3. To provide absolute dates for the Early Neolithic pottery.
4. To date the Early Bronze Age pond barrow, and apparently associated cremation activity.
5. To date the Middle Bronze Age cremation cemetery, associated with ring-ditches and Bucket urns, and also to determine whether or not the Middle Bronze Age activity at this site was continuous with the preceding Early Bronze Age activity.
6. To date a number of unurned cremations, and determine to which period of activity they should be attributed.

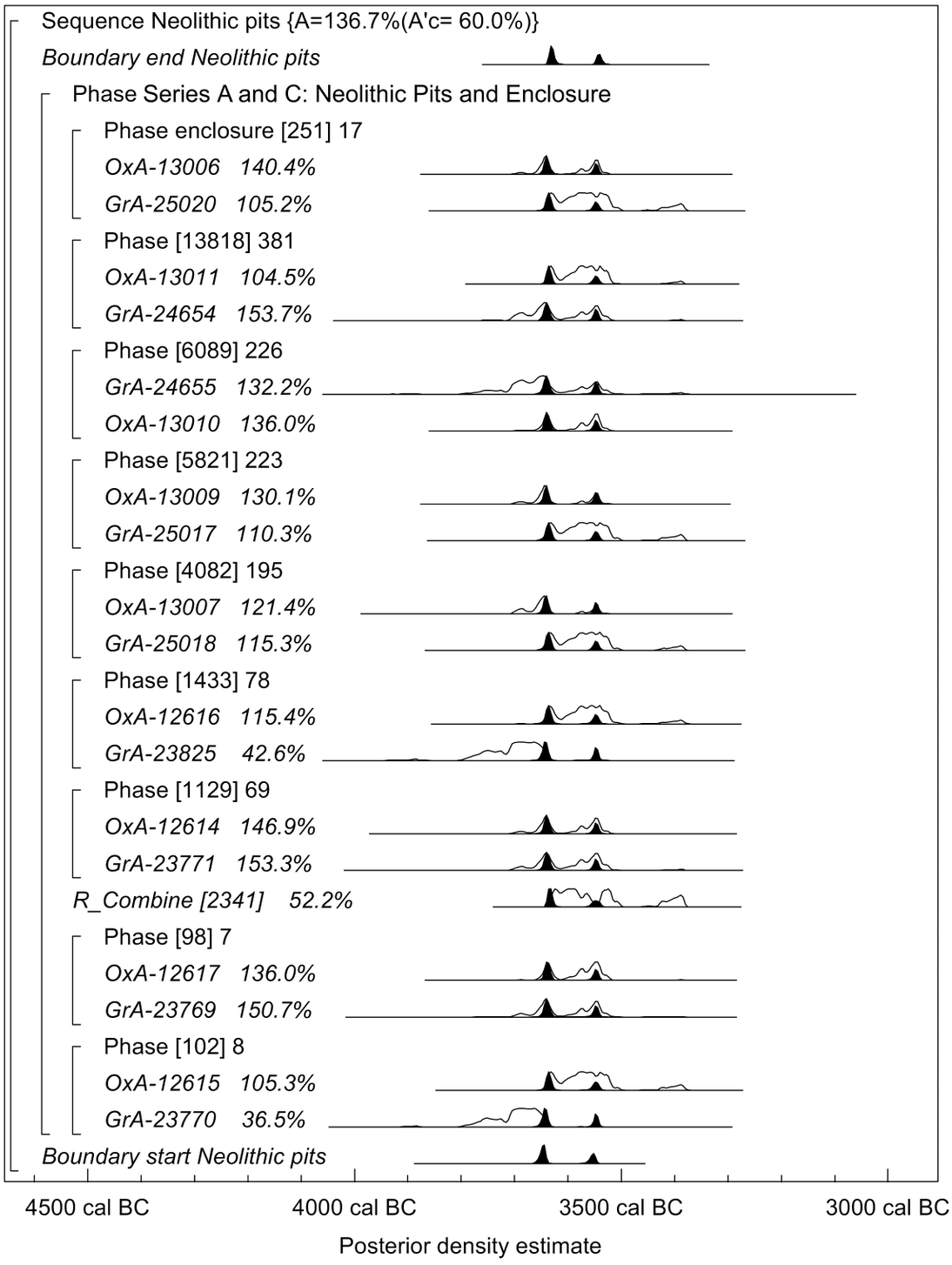
It was decided to concentrate resources on questions relating to earlier prehistoric activity, rather than to attempt to refine the dating of the Middle and Late Iron Age activity on the site. This decision was led by a dearth of Iron Age contexts with probable non-residual, short-lived material suitable for dating, and by the relative significance of the Iron Age evidence, which was felt to be insufficient to justify a substantial programme of radiocarbon dating.

II. Sampling

The initial step in sample selection was to identify short-lived material that was probably not residual in the context from which it was recovered. All of the samples consisted of single entity samples of carbonised material (Ashmore 1999).

The following materials were dated:

1. Charred hazelnut shells, and carbonised residues adhering to the interior face of Early Neolithic sherds, from the fills of Early Neolithic pits within the circuit of the causewayed enclosure.
2. Charred hazelnut shells from an artefact- and ecofact-rich deposit at the base of a recut within the middle circuit of the causewayed enclosure ditch.
3. Fragments of charcoal, charred seeds, and calcined human bone from cremation deposits.



Not included: OxA-12978 (3800–650BP, 3950–560 cal. BC). The model structure, which is exactly defined by the square brackets and OxCal keywords at the left of the diagram, assumes only that all the samples belong to the same continuous phase of activity. The distributions in outline represent the calibration of each result by the probability method (Stuiver and Reimer 1993). The solid distributions are posterior density estimates for the calendar date for each sample.

Figure 61 Bayesian model of radiocarbon results for Series A (Neolithic pits) and C (causewayed enclosure)

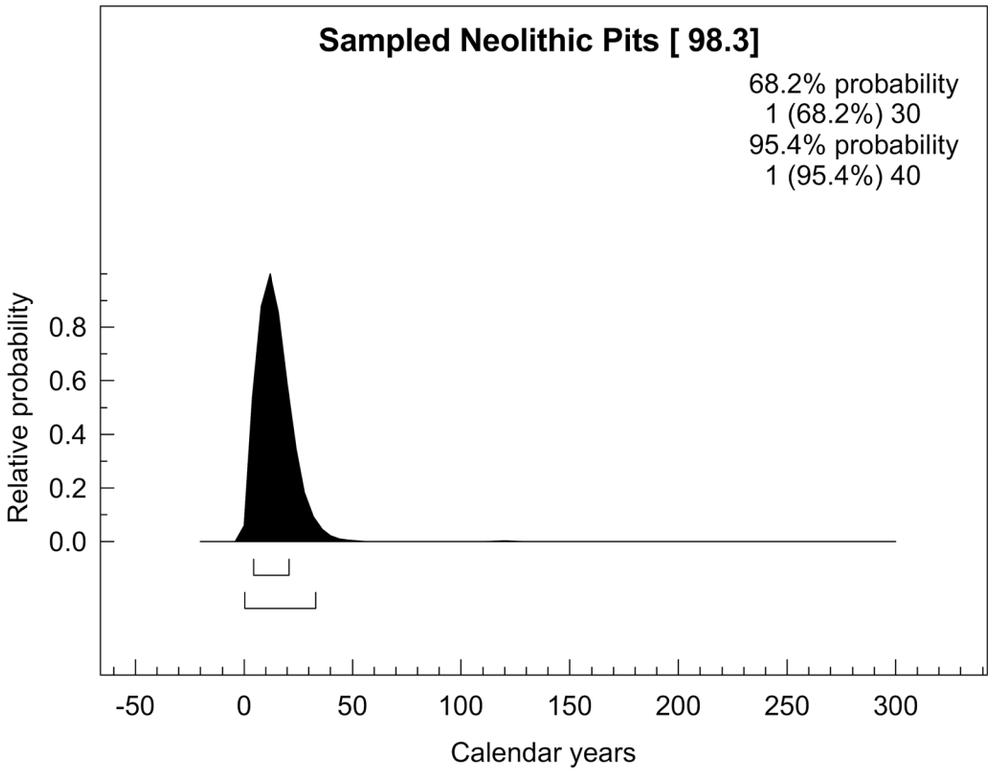


Figure 62 Probability distribution of radiocarbon dating results showing the overall span of the Early Neolithic activity derived from the Bayesian model in Fig. 61

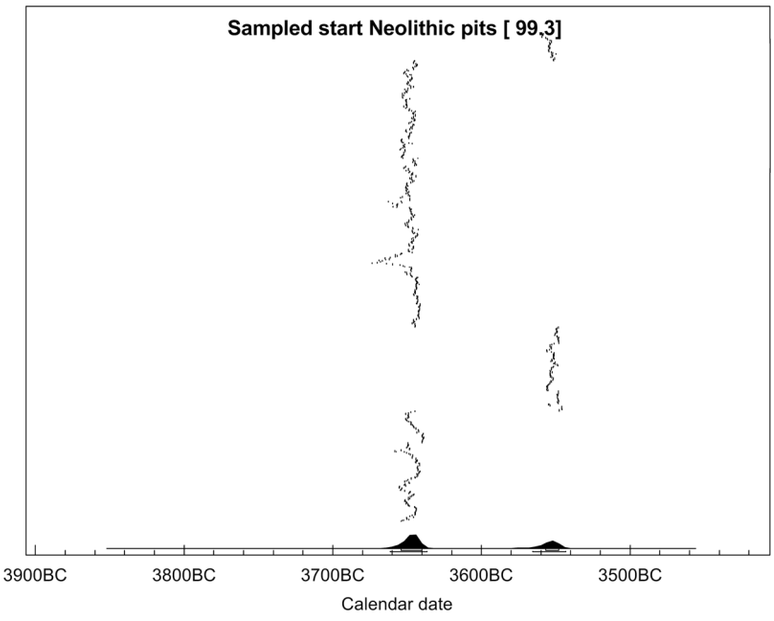


Figure 63 Distribution of radiocarbon dating samples representing the start of the Early Neolithic pitting, showing how the sample concentrates on one or two areas of the calendrical axis

Laboratory code	*Sample*	*Material*	*$\delta^{13}C$ (‰)*	*Radiocarbon Age (BP)*	*Calibrated Date (95% confidence)*	*Posterior Density Estimate (95% probability)*
Series A: Neolithic pits						
OxA-12617	(98) 7A	hazelnut shell	-25.3	4812±35	3660–3520 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-23769	(98) 7B	hazelnut shell	-25.6	4830±40	3700–3520 cal. BC	*3660–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-12615	(102) 8A	hazelnut shell	-25.3	4777±37	3650–3380 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-23770	(102) 8B	hazelnut shell	-27.0	4910±45	3790–3630 cal. BC	*3660–3630 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-12614	(1129) 69A	hazelnut shell	-23.0	4828±37	3670–3520 cal. BC	*3660–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-23771	(1129) 69B	hazelnut shell	-24.5	4825±45	3700–3520 cal. BC	*3660–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-12616	(1433) 78A	hazelnut shell	-23.7	4787±37	3650–3380 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-23825	(1433) 78B	hazelnut shell	-22.5	4910±50	3790–3630 cal. BC	*3660–3630 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-13007	(4082) 195A	hazelnut shell	-23.0	4850±34	3700–3530 cal. BC	*3660–3630 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-25018	(4082) 195B	hazelnut shell	-23.2	4785±40	3650–3380 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-13009	(5821) 223A	hazelnut shell	-25.0	4840±31	3670–3530 cal. BC	*3660–3630 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-25017	(5821) 223B	hazelnut shell	-28.3	4780±40	3650–3380 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-24655	(6089) 226A	hazelnut shell	-25.0	4860±60	3770–3520 cal. BC	*3660–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-13010	(6089) 226B	hazelnut shell	-24.5	4820±31	3660–3530 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-13011	(13818) 381A	hazelnut shell	-22.5	4780±31	3650–3380 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
GrA-24654	(13818) 381B	hazelnut shell	-26.7	4840±50	3710–3520 cal. BC	*3660–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-12978	(1191)	carbonised residue	-28.4	3800±650	3950–560 cal. BC	-
OxA-13008	(2341)A	carbonised residue	-27.3	4745±33	3640–3370 cal. BC	-
GrA-25022	(2341)B	carbonised residue replicate	-29.0	4740±45	3650–3370 cal. BC	-
mean	(2341)	(T'=0.0, í=1, T'(5%)=3.8)	-	4743±27	3640–3370 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
Series B: cremations						
OxA-12599	(62) 4A	barley grain	-21.2	2201±27	380–170 cal. BC	*370–170 cal. BC*
GrA-23795	(62) 4B	wheat grain	-20.7	2185±45	390–90 cal. BC	*390–110 cal. BC*
GrA-24841	(5138) 214	cremated human bone	-	3050±35	1410–1130 cal. BC	*1390–1260 cal. BC*
OxA-13058	(5138) 214	charcoal, *Prunus spinosa*	-24.5	3078±27	1420–1260 cal. BC	*1400–1260 cal. BC*
GrA-24827	(5144) 211	cremated human bone	-	3040±35	1410–1130 cal. BC	*1390–1260 cal. BC*
OxA-13059	(5144) 211	charcoal, *Corylus avellana*	-22.7	3098±27	1430–1260 cal. BC	*1400–1290 cal. BC (91%)* or *1280–1260 cal. BC (4%)*
GrA-24828	(10188)	cremated human bone	-	3060±35	1420–1130 cal. BC	*1390–1260 cal. BC*
OxA-13055	(4968) 209	charcoal, *Betula* sp.	-20.4	3071±25	1410–1260 cal. BC	*1390–1260 cal. BC*
GrA-25026	(3233)	charcoal, *Prunus spinosa*	-25.2	3010±40	1400–1120 cal. BC	*1390–1250 cal. BC*
OxA-13111	(3233)	cremated human bone	-23.6	3120±40	1500–1260 cal. BC	*1400–1290 cal. BC (91%)* or *1280–1260 cal. BC (4%)*
GrA-25289	(4869) 208A	charcoal, *Betula* sp.	-26.8	3050±35	1410–1190 cal. BC	*1390–1260 cal. BC*
OxA-13056	(4869) 208B	charcoal, unidentified bud	-23.1	3164±27	1520–1320 cal. BC	*1520–1390 cal. BC*
GrA-25027	(3229)	charcoal, *Betula* sp.	-26.1	3020±40	1400–1120 cal. BC	*1390–1250 cal. BC*
OxA-13039	(3229)	cremated human bone	-24.3	2950±40	1370–1000 cal. BC	*1380–1230 cal. BC*
OxA-12623	(3365) 179A	charcoal, *Alnus glutinosa*	-26.1	3030±34	1400–1130 cal. BC	*1390–1240 cal. BC*
GrA-23797	(3365) 179B	charcoal, *Alnus glutinosa*	-26.7	2995±45	1390–1050 cal. BC	*1380–1240 cal. BC*
OxA-12622	(3636) 188A	charcoal, *Alnus glutinosa*	-25.0	3032±34	1400–1130 cal. BC	*1390–1250 cal. BC*
GrA-23798	(3636) 188B	charcoal, *Alnus glutinosa*	-25.8	3090±45	1440–1210 cal. BC	*1400–1260 cal. BC*
GrA-24843	(10190)	cremated human bone	-	3460±40	1890–1660 cal. BC	-

Laboratory code	*Sample*	*Material*	$\delta^{13}C$ (‰)	*Radiocarbon Age (BP)*	*Calibrated Date (95% confidence)*	*Posterior Density Estimate (95% probability)*
OxA-13041	(10190)	cremated human bone	-24.9	3526±32	1950–1740 cal. BC	-
mean	(10190)	T'=1.7, í=1, T'(5%)=3.8	-	3500±25	1890–1740 cal. BC	*1890–1740 cal. BC*
GrA-25021	(3917)A	charcoal, *Quercus* sp. sapwood	-23.0	3485±40	1920–1680 cal. BC	*1890–1680 cal. BC*
OxA-13054	(3917)B	charcoal, *Quercus* sp. sapwood	-19.7	3554±27	2010–1770 cal. BC	*1950–1860 cal. BC (51%)* or *1850–1770 cal. BC (44%)*
OxA-13040	(3139)	cremated human bone	-22.8	3569±33	2030–1770 cal. BC	-
GrA-24844	(3139)	cremated human bone	-	3550±40	2020–1740 cal. BC	-
mean	(3139)	T'=0.1, í=1, T'(5%)=3.8	-	3561±25	2010–1770 cal. BC	*1960–1860 cal. BC (60%)* or *1850–1770 cal. BC (35%)*
OxA-13057	(3139)A	charcoal, *Prunus spinosa*	-21.4	3565±28	2020–1770 cal. BC	*1960–1860 cal. BC (61%)* or *1850–1770 cal. BC (34%)*
GrA-25025	(3139)B	charcoal, *Prunus spinosa*	-24.2	3460±40	1890–1660 cal. BC	*1880–1680 cal. BC*
OxA-13060	(3980) 197	charcoal, *Quercus* sp. sapwood	-21.8	3413±28	1860–1620 cal. BC	*1870–1840 cal. BC (7%), 1810–1800 cal. BC (1%),* or *1780–1630 cal. BC (87%)*
GrA-24838	(4200) 198	cremated human bone	-	3365±35	1750–1520 cal. BC	*1860–1840 cal. BC (2%)* or *1750–1600 cal. BC (93%)*
Series C: causewayed enclosure						
GrA-25020	(251) 17A	hazelnut shell	-22.7	4775±40	3650–3380 cal. BC	*3660–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*
OxA-13006	(251) 17B	hazelnut shell	-22.1	4832±33	3660–3530 cal. BC	*3650–3620 cal. BC (61%)* or *3560–3530 cal. BC (34%)*

Table 35 Radiocarbon measurements from Lodge Farm, St Osyth

The sixteen samples from Series A (Early Neolithic pits) were charred hazelnut shells, with a further three samples in this series consisting of carbonised residues on pottery sherds. Series B (cremations) samples comprised two charred grains, two charred hazelnut shells, ten pieces of cremated bone, and sixteen pieces of charcoal. Series C (causewayed enclosure) samples were two charred hazelnut shells.

Radiocarbon analysis and quality assurance

Samples processed at the Oxford Radiocarbon Accelerator Unit were prepared using methods outlined in Hedges *et al.* (1989) and measured as described by Bronk Ramsey *et al.* (2004). Samples processed at the University of Groningen were processed and measured as described in Aerts-Bijma *et al.* (1997, 2001) and van der Plicht *et al.* (2000). Samples of calcined bone were prepared in both laboratories following procedures described in Lanting *et al.* (2001).

Both laboratories maintain continual programmes of quality assurance procedures, in addition to participation in international inter-comparisons (Scott 2003). These tests indicate that the measurements presented here should be free of any significant laboratory offsets, and that the precisions quoted are realistic.

III. Results

(Figs 61–63)

The results are given in Table 35, and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977).

Calibration

The calibration of the results, which relate the radiocarbon measurements directly to the calendrical time scale, are given in Table 35 and in outline in Figs 61 and 63. All have been calculated using the datasets published by Stuiver *et al.* (1998) and the computer program OxCal (v3.5) (Bronk Ramsey 1995, 1998, 2001). The calibrated date ranges cited within the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outward to ten years. The ranges in Table 35 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986); all other ranges are derived from the probability method (Stuiver and Reimer 1993). Those ranges printed in italics in the text and tables are *posterior density estimates*, derived from the mathematical modelling described below.

IV. Analysis and interpretation

(Figs 64 and 65)

The analysis of the radiocarbon dates has been separated into two main chronological sections. The first represents the Early Neolithic pits found within the causewayed enclosure and the second the cremations, which date primarily to the Early and Middle Bronze Age.

Earlier Neolithic

Samples from a total of eleven contexts thought to date to the Early Neolithic period were submitted. Ten of these contexts were from pits (Fig. 8, *1432*; Fig. 9, *1114*, *1189*, *2340* and *4060*; Fig. 10, *5819* and *6088*; Fig. 11, *96* and *103*; Fig. 12, *13817*) within the area of the causewayed enclosure. The eleventh came from the lower fill (*251*) of

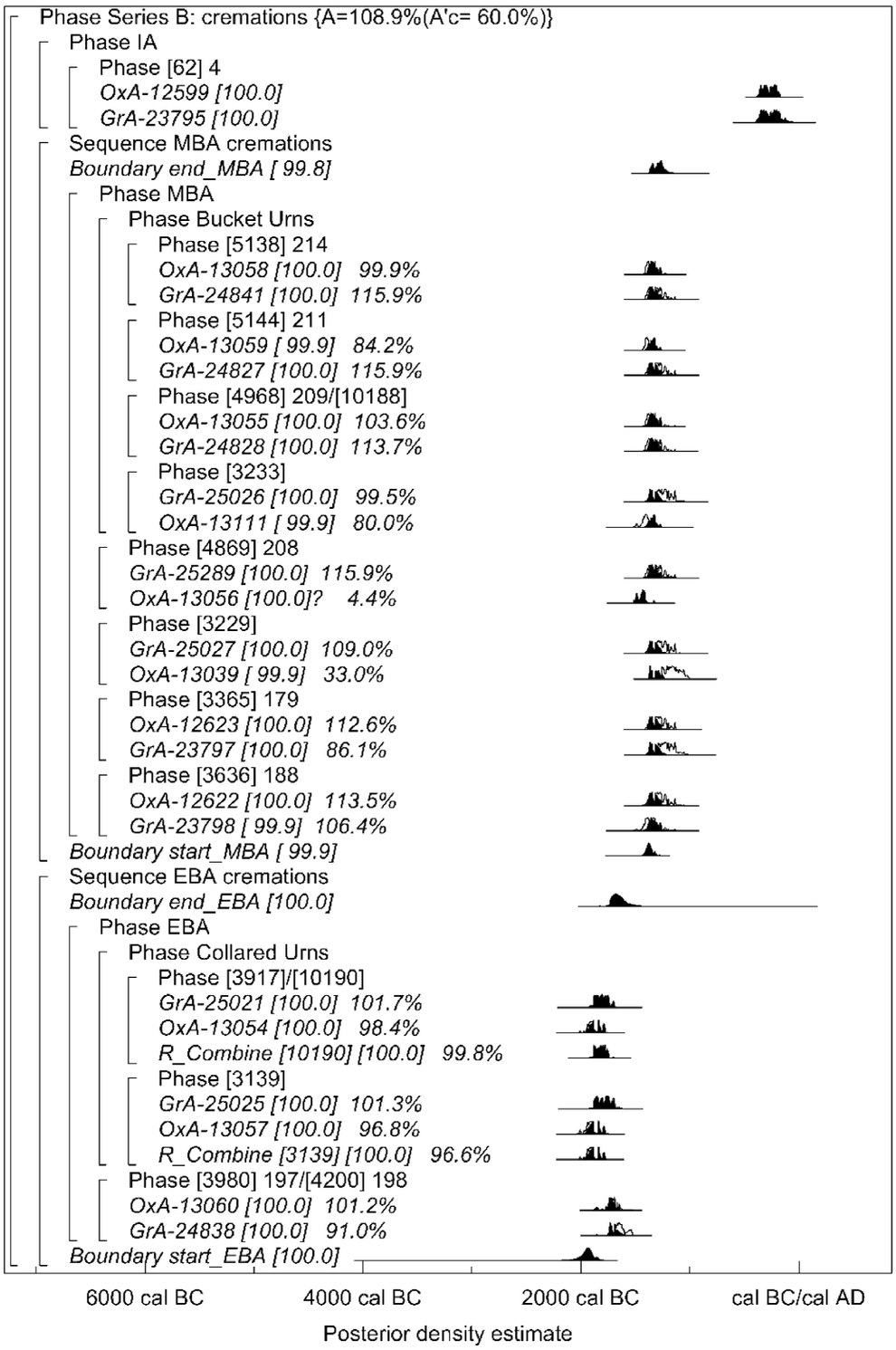


Figure 64 Bayesian model of radiocarbon results for Series B (cremations)

a recut in the middle circuit of an enclosure ditch (Figs 11 and 17, *215* in *298* in *13930*). Two samples were submitted from each of the eight features dated using hazelnut shells. Since the taphonomy of this material is uncertain, the production of consistent measurements might suggest that the material was close in age to the deposition of the context from which it was recovered (since residual material is unlikely to be of a consistent age). Two sherds of pottery were dated using the carbonised residues found on their interior surface. Although the goal here was to date the occurrence of pottery associated with the Mildenhall style at the site, the fragility of Neolithic pottery means that the sherds are not likely to have been residual items in their context, and so these

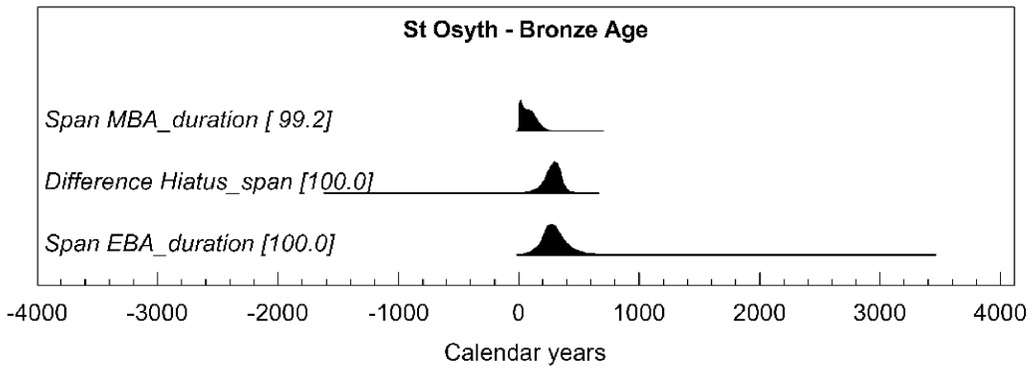


Figure 65 Probability distribution radiocarbon estimates of the duration of the Early and Middle Bronze Age activity at Lodge Farm, and of the hiatus between those two phases, derived from the model defined in Fig. 64

samples also provide dates for the two pits from which they were recovered.

Two hazelnut shells were dated from each of eight Early Neolithic pits and the recut in the enclosure. The pairs of measurements from six of the pits and the recut are statistically consistent (context *98* in pit *96*: T'=0.1, ν=1, T'(5%)=3.8; context *1129* in pit *1114*: T'=0.0, ν=1, T'(5%)=3.8; context *4082* in pit *4060*: T'=1.5, ν=1, T'(5%)=3.8; context *5821* in pit *5819*: T'=1.4, ν=1, T'(5%)=3.8; context *6089* in pit *6088*: T'=0.4, ν=1, T'(5%)=3.8; context *13818* in pit *13817*: T'=1.0, ν=1, T'(5%)=3.8; context *251* in recut *215* in segment *298* in enclosure ditch *13930*: T'=1.2, ν=1, T'(5%)=3.8: Ward and Wilson 1978). This suggests that no residual material was dated from these features.

The pairs of measurements from two pits are not statistically consistent (context *102* in pit *103*: T'=5.2, ν=1, T'(5%)=3.8; context *1433* in pit *1432*: T'=3.9, ν=1, T'(5%)=3.8: Ward and Wilson 1978), suggesting that residual material may have been dated in these contexts. However, the final model does not suggest that the material is residual. Although these pairs fail a $\chi 2$ test at 95% confidence, they pass at 99%, and the results are likely to represent outlying measurements.

A carbonised residue was dated from a single sherd of pottery recovered from context *1191* in pit *1189* (OxA-12978). The radiocarbon measurement on this sherd is 3800±650 BP. The large error associated with this measurement was due to the low carbon content of the graphitised sample. This result has not been used in the analyses and mathematical modelling, as it is so imprecise that it is not useful.

One other carbonised residue, on a single sherd of pottery, was dated by both laboratories (OxA-13008 and GrA-25022). The sherd was recovered from context *2341* in pit *2340*. These results were statistically consistent (T'=0.0, ν =1, T'(5%)=3.8), and so the measurements from this sample were combined, as described in Ward and Wilson (1978), before calibration, using the *R_combine* function in OxCal (v3.5).

The chronological model for the Early Neolithic activity from Lodge Farm is shown in Fig. 61. There are no stratigraphic relationships between deposits producing samples, and so the model simply incorporates the assumption that the Early Neolithic activity on the site formed a single, continuous phase of occupation. This mathematical assumption counteracts the statistical scatter on the radiocarbon measurements, which would otherwise make it appear that the activity started earlier, ended later, and continued for longer than was actually the case (Steier and Rom 2000; Bronk Ramsey 2000). As there was no stratigraphic relationship discernable between any of these features, all paired measurements were placed into unordered phases (rather than a stratigraphically ordered sequence) by context number.

Figure 61 shows that the posterior density estimates produced by the model are strongly bi-modally distributed. In each case, the first peak represents approximately 61% of the probability and the later peak approximately 34% of the probability. The probability distribution for the number of years during which the Neolithic activity took place is shown in Fig. 62. This distribution has a single peak, and suggests that all of the activity dates to either the earlier or later peak, but not to both. If some of the pits dated to the earlier peak and others to the later peak, a bi-modal distribution would be expected for the duration of the activity.

In order to ensure that the results of the chronological model are stable, over 28 million iterations were required. This is because the sampler concentrates in two discrete areas of the calendrical axis (Fig. 63), producing the bi-modal probability distribution shown in Fig. 61. This bi-modality is caused by the pronounced wiggle in the calibration curve around 3600 cal. BC. The large number of iterations enables the model to pass the convergence testing included in OxCal (Bronk Ramsey 1995, 429).

The duration of Early Neolithic activity on the site is 1–40 years (at 95% probability; Fig. 62). This span, in conjunction with the bi-modal distribution, suggests that the pits and associated recutting of the causewayed enclosure all date to one or the other peak in the posterior density estimate. The results also suggests that Early Neolithic activity at the site began either in 3670–3630 cal. BC (at 61% probability) or in 3570–3540 cal. BC (at 34% probability; start Neolithic pits: Fig. 61) and ended either in 3640–3610 cal. BC (at 61% probability) or in 3560–3530 cal. BC (at 34% probability; end Neolithic pits: Fig. 61).

Bronze Age

Twelve cremations were sampled for radiocarbon dating. These were thought, based upon spatial analysis and associated urns in some of the burial pits, to date to the Early and Middle Bronze Age.

There are three cremation burials with radiocarbon measurements that place them in the Early Bronze Age (context *3917*/*10190* in *3914*, context *3139* in *3136*, and context *3980*/*4200* in *3979*). All three of these cremations are in the vicinity of the Early Bronze Age pond barrow, with *3915* and *3136* containing Collared Urns and *3979* having been cut into the barrow (Fig. 26 A).

The resultant measurements from context *3980*/*4200* are statistically consistent and suggest that no residual material was dated (T'=1.1, ν=1, T'(5%)=3.8: Ward and Wilson 1978). The two Collared Urn cremations each had two pieces of charcoal and two pieces of calcined bone submitted for radiocarbon measurement. The measurements on two pieces of calcined bone from one individual from context *3139* are statistically consistent (T'=0.1, ν=1, T'(5%)=3.8: Ward and Wilson 1978) and so were combined in OxCal (v3.5) prior to calibration. All four measurements from this context are also statistically consistent (T'=5.5, ν=3, T'(5%)=7.8: Ward and Wilson 1978), suggesting that no residual material was dated from this context. The measurements from the two pieces of bone from one individual from context *3917*/*10190* are also statistically consistent (T'=1.7, ν=1, T'(5%)=3.8: Ward and Wilson 1978) and so were combined in OxCal (v3.5) prior to calibration. All four of the measurements from this context are statistically consistent (T'=4.6, ν=3, T'(5%)=7.8: Ward and Wilson 1978), suggesting that no residual material was dated from this context either.

As a result of the radiocarbon dating programme and subsequent analysis, eight of the cremation burials can be placed within the Middle Bronze Age (Fig. 28, context *5138* in *5137*, context *5144* in *5141*, context *4968*/*10188* in *4967*, context *3233* in *3230*, context *3229* in *3226*, context *4869* in *4867*, context *3365* in *3367*, and context *3636* in *3647*). The first four cremation burials recovered were in Bucket Urns, while the urn of the fifth had only the base and sides remaining. The first six cremation burials were all spatially associated with the Middle Bronze Age ring-ditches. Cremation burial *3367* was un-urned and lay midway between the ring-ditches and the pond barrow, making it impossible to separate it into a time period stylistically and spatially. The final cremation burial in this group, *3647*, was also un-urned but lay near the pond barrow, suggesting that it might also be Early Bronze Age.

Two cremation burials had paired measurements made on two pieces of charcoal. In both cases, the measurements are statistically consistent (context *3636*: T'=1.1, ν=1, T'(5%)=3.8; context *3365*: T'=0.4, ν=1, T'(5%)=3.8: Ward and Wilson 1978), and suggest that no residual material was dated from these contexts.

Five cremation burials had one piece of charcoal and one piece of calcined bone measured. In all five of these cases, the measurements are statistically consistent (context *3229*: T'=1.5, ν=1, T'(5%)=3.8; context *3233*: T'=3.8, ν=1, T'(5%)=3.8; context *4968*/*10188*: T'=0.1, ν=1, T'(5%)=3.8; context *5144*: T'=1.7, ν=1, T'(5%)=3.8; context *5138*: T'=0.4, ν=1, T'(5%)=3.8: Ward and Wilson 1978). Not only does the consistency of these paired measurements suggest that no residual material was dated in these cremation burials, but it also supports the functional interpretation of charcoal as pyre fuel, and further shows the reliability of dates on calcined bone.

The measurements on two pieces of charcoal from context *4869* are not statistically consistent (T'=6.6, ν=1, T'(5%)=3.8: Ward and Wilson 1978), suggesting that either intrusive or residual material was dated. It is more likely that OxA-13056 is residual and so this result was removed from subsequent mathematical modelling.

The final cremation burial, (Fig. 33, context *62* in burial pit *60*), was isolated from the rest of the group and although thought possibly to date to the Bronze Age, along with the others, actually dates to the Middle Iron Age. Two pieces of grain (one barley and one wheat) were dated from context *62*. The measurements are statistically consistent (T'=0.1, ν=1, T'(5%)=3.8: Ward and Wilson 1978), and suggest that no residual or intrusive material was dated from this context.

The chronological model for the later prehistoric cremation activity at Lodge Farm is shown in Fig. 64. Again, no stratigraphic relationships between samples have been included in the model, although continuous, discrete phases of activity have been assumed for both the Early and Middle Bronze Age cremation cemeteries.

The cremations at Lodge Farm fall discretely into the Early Bronze Age, Middle Bronze Age or Middle Iron Age. The Early Bronze Age use of the site for cremation began in 2100–1810 cal. BC (at 95% probability; start_EBA) and ended in 1760–1450 cal. BC (at 95% probability; end_EBA: Fig. 64). The span of Early Bronze Age use of the site is 70–550 years (at 95% probability; EBA_duration: Fig. 65). As this duration forms a unimodal distribution, and is only slightly skewed to the left, it is more likely that the overall span for the Early Bronze Age activity is 180–390 years (at 68% probability: EBA_duration).

The Middle Bronze Age cremation activity began in 1430–1300 cal. BC (at 95% probability; start_MBA; Fig. 64*)* and ended in 1370–1200 cal. BC (at 95% probability; end_MBA: Fig. 64). The span of the Middle Bronze Age use of the site is either 1–200 years (at 95% probability) or 1–110 years (at 68% probability; MBA_duration; Fig. 65*)*. This distribution is highly skewed toward the lower end of the range.

The radiocarbon modelling shows a clear hiatus in activity between the Early and Middle Bronze Age. The hiatus lasted 90–430 years (at 95% probability; Hiatus_span: Fig. 65). As the probability distribution for the hiatus is skewed to the right, it is likely that the hiatus that occurred between phases of Bronze Age cremation activity on the site lasted for several centuries.

The Iron Age is also represented in this group of cremations by one isolated burial (context *62* in pit *60*, Fig. 33). This burial probably dates to between the 2nd and 4th centuries cal. BC. It is likely to be associated with the Middle Iron Age activity noted on submission forms and during the excavation but not included in this dating programme.

5. Discussion

I. Introduction

(Fig. 66)

The cropmark and stratigraphic evidence indicate that prehistoric monuments successively occupied the low-lying spur south-east of St Osyth (Fig. 67). The causewayed enclosure is the most significant monument, with a putative henge and cursus also identified from cropmarks. Other monuments in the complex include possible Late Neolithic/Bronze Age ring-ditches, an Early Bronze Age pond barrow, and a Middle Bronze Age barrow group. Evidence obtained elsewhere in Essex suggests indirectly that the large ring-ditch which appears as a cropmark near the south-west corner of the site is either a henge or a medieval windmill (Fig. 5B; Brown and Germany 2002). The local topography and the legacy of the preceding monument(s) were clearly important factors in the siting of each construction.

The radiocarbon dates show that activity occurred within the causewayed enclosure over a period of 40 years or less, around 3600 BC. It is assumed that the cursus succeeded the causewayed enclosure and that it was in use during the second half of the 4th millennium BC. The pond barrow and Middle Bronze Age barrow group are dated to the first and second halves of the 2nd millennium BC respectively. The radiocarbon dates indicate that the period of separation between the Early and Middle Bronze Age activity was *c*. 200 years.

Elsewhere in East Anglia, concentrations of prehistoric monuments comparable to that at St Osyth have undergone archaeological investigation at Springfield Lyons, Ardleigh, Rivenhall and Brightlingsea in Essex (Buckley *et al*. 2001; Brown 1999; Buckley *et al.* 1988; Brown and Germany 2002; Clarke and Lavender forthcoming), Eynesbury and Etton in Cambridgeshire (Ellis 2004; Pryor 1998; French and Pryor 2005) and Caistor St Edmund in Norfolk (Ashwin and Bates 2000). Causewayed enclosures are included amongst the monument groups at Etton and Springfield Lyons, cursus monuments at Springfield Lyons, Etton and Eynesbury, and individual barrows and barrow groups at Ardleigh, Brightlingsea, Etton and Caistor St Edmund. Successive attempts by Neolithic and Bronze Age people to interact with and to find substance and meaning in natural phenomena, and/or in existing man-made constructions, are probably represented by the sequences of monuments of disparate date and type at most of these sites, including St Osyth. The St Osyth Middle Bronze Age ring-ditches and associated pottery form part of the 'Ardleigh Group', a Middle Bronze Age ceramic and funerary tradition that appears to have been unique to north-east Essex and south-east Suffolk (Brown 1995a; 1999).

North-east Essex was probably conducive to prehistoric settlement because it is rich in natural resources and has soils that are well-drained, fertile and easy to plough. It is similarly likely that extensive areas of salt marsh that formerly lay along much of the Essex coastline were valuable areas for the grazing of livestock. The North Sea and the estuary of the River Colne would have represented a rich source of fish, shellfish and wildfowl. It is assumed that during prehistory the North Sea and the Colne were used to facilitate communication and trade. It is also assumed that paths were used to facilitate cross-country travel and that the navigation of these was assisted by the recognition of natural and man-made landmarks, including at St Osyth the creek, the spur and the causewayed enclosure. The carbonised plant remains suggest that the immediate landscape was mostly grassland when the causewayed enclosure was in active use. It is unfortunate that no animal bone has survived from which to make any connection between the presence of this grassland and the keeping of cattle. By contrast, the Middle Iron Age landscape appears to have been largely agrarian, represented by enclosures and fields.

The stratigraphic and dating evidence show that the use of the spur as a site for monuments came to an end between *c.* 1400 and *c.* 250 BC; the Middle Iron Age enclosures disregarded the locations of the earlier monuments, and the trackways and roundhouses paid no heed to the causewayed enclosure or the Bronze Age ring-ditches. During the Late Bronze Age, the region in general saw a transferral of ritual activity, monumentality and the disposal of the dead to riparian and domestic contexts, and it is probable that the use of the spur as a site for monuments came to an end during that period.

II. Causewayed enclosure

(Fig. 67)

Four lines of interrupted ditches represented the causewayed enclosure, which lay on the top of the spur and extended down the north slope (Fig. 67). The stratigraphic and dating evidence are insufficient to reconstruct the development of the monument or to show if the interrupted ditches were all open at the same time.

The residual pieces of Mesolithic flint imply activity across the spur prior to its use as the site for the causewayed enclosure. It is not known if the siting of the monument was influenced by this preceding activity.

Activity within the interior of the monument was represented by more than 100 recorded pits, many containing large groups of worked flint and pottery. Analysis of the radiocarbon dates suggests that the pit-digging took place over a period of *c.* 40 years or less, around 3600 BC. Two radiocarbon dates obtained from causewayed enclosure ditch *13930* suggest that the monument was in active use at the same time.

Location and form

The interrupted ditches in the eastern part of the site suggest that this was a monument with three widely-spaced concentric circuits. It is assumed that the interrupted ditches in the western part of the site were part of the inside circuit. The monument 'tilted' towards

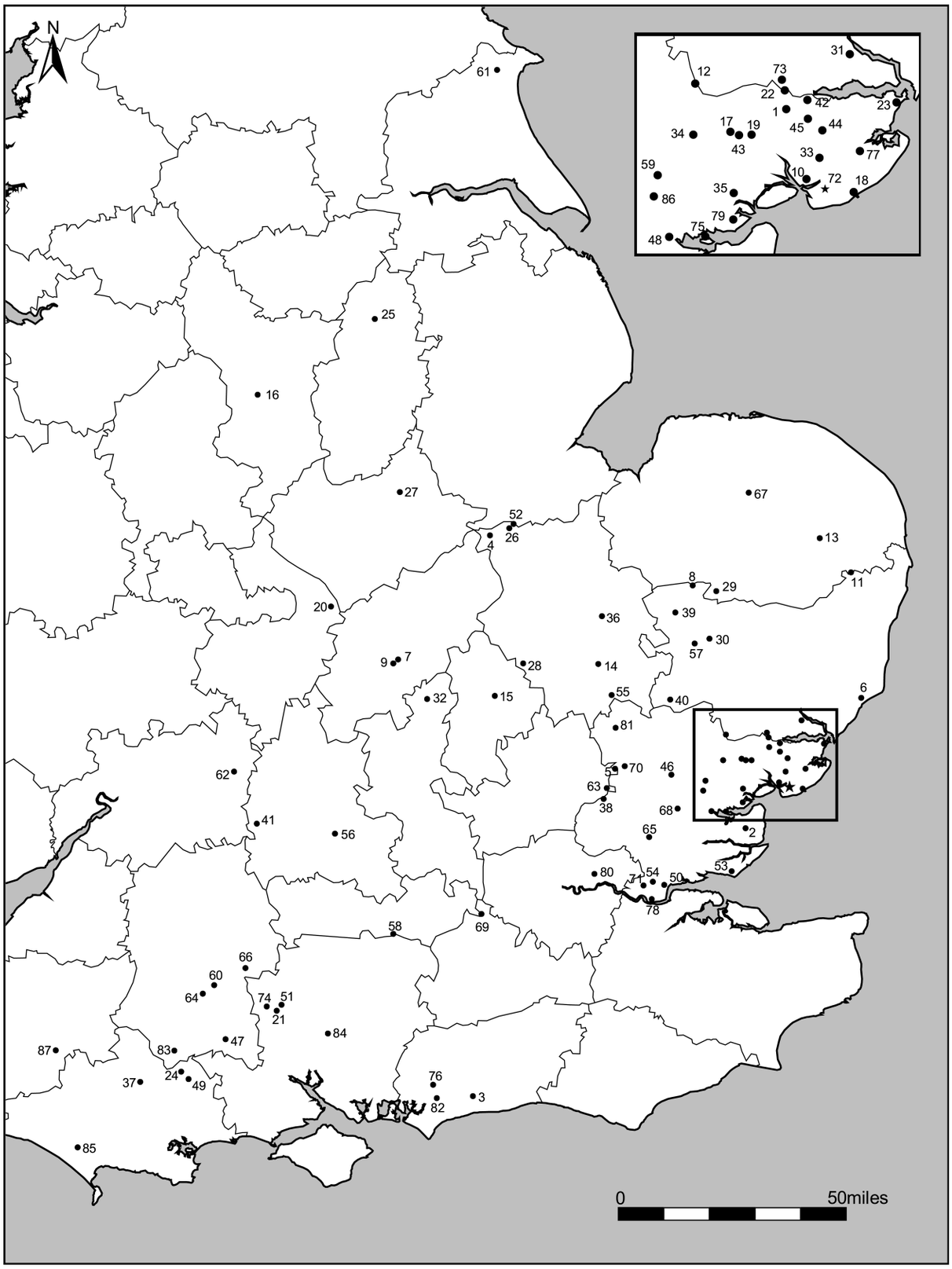


Figure 66 Location of other sites mentioned in the text

Key to sites shown on Fig. 66

1. Ardleigh, Essex
2. Asheldham Camp, Essex
3. Barkhale Camp, West Sussex
4. Barnack, Cambridgeshire
5. Birchanger, Essex
6. Boyton, Suffolk
7. Brackmills Link Road, Northamptonshire
8. Brandon, Suffolk
9. Briar Hill, Northamptonshire
10. Brightlingsea, Essex
11. Broome Heath, Norfolk
12. Bures, Essex
13. Caistor St Edmund, Norfolk
14. Cambridge, Cambridgeshire
15. Cardington. Bedfordshire
16. Carsington, Derbyshire
17. Chitts Hill, Essex
18. Clacton, Essex
19. Colchester, Essex
20. Coton, Warwickshire
21. Danebury, Hampshire
22. Dedham, Essex
23. Dovercourt, Essex
24. Down Farm, Dorset
25. Dunstans Clump, Nottinghamshire
26. Etton, Cambridgeshire
27. Eye Kettleby, Leicestershire
28. Eynesbury, Cambridgeshire
29. Fison Way, Norfolk
30. Fornham All Saints, Suffolk
31. Freston, Suffolk
32. Gayhurst, Buckinghamshire
33. Great Bentley, Essex
34. Great Tey, Essex
35. Great Wigborough, Essex
36. Haddenham, Cambridgeshire
37. Hambledon Hill, Dorset
38. Harlow, Essex
39. Hurst Fen, Suffolk
40. Kedington, Suffolk
41. Langford, Oxfordshire
42. Lawford, Essex
43. Lexden, Essex
44. Little Bentley, Essex
45. Little Bromley, Essex
46. Little Waltham, Essex
47. Little Woodbury, Wiltshire
48. Maldon, Essex
49. Monkton Up Wimborne, Dorset
50. Mucking, Essex
51. Nettlebank Copse, Hampshire
52. Northborough, Cambridgeshire
53. North Shoebury, Essex
54. Orsett, Essex
55. Pampisford, Cambridgeshire
56. Radley, Oxfordshire
57. Risby, Suffolk
58. Risely Farm, Berkshire
59. Rivenhall, Essex
60. Robin Hood's Ball, Wiltshire
61. Rudston, Yorkshire
62. Salmonsbury, Gloucestershire
63. Sawbridgeworth, Hertfordshire
64. Shrewton, Wiltshire
65. Slough House Farm, Essex
66. Snail Down, Wiltshire
67. Spong Hill, Norfolk
68. Springfield Lyons, Essex
69. Staines, Surrey
70. Stansted, Essex
71. Stifford Clays, Essex
72. St Osyth, Essex
73. Stratford St Mary, Suffolk
74. Suddern Farm, Hampshire
75. The Stumble, Essex
76. The Trundle, West Sussex
77. Thorpe le Soken, Essex
78. Tilbury, Essex
79. Tollesbury Creek, Essex
80. Uphall Camp, Essex
81. Wendens Ambo, Essex
82. Westhampnett, West Sussex
83. Windmill Hill, Wiltshire
84. Winnall Down, Hampshire
85. Winterbourne Steepleton, Dorset
86. Witham, Essex
87. Yeovilton, Somerset

the creek and presented itself to the opposite side of the valley. Alluvial and/or colluvial deposits of clay and silt alongside the creek obscure the north half of the monument from air photography (Figs 4 and 67).

Figs 22 and 67, and analogy with causewayed enclosures elsewhere, suggest that the monument was near-oval or oval in plan. If it is assumed that the outside circuit was continuous all the way round the perimeter, or that the monument is partly defined by the edge of the present-day flood plain, it may have measured *c.* 320m north–south by *c.* 420m east–west (enclosing an area of *c*. 10–11ha). Causewayed enclosures with four concentric circuits are rare (*e.g.* Northborough, Cambridgeshire: Oswald *et al.* 2001, fig. 5.16), and it is unlikely that an undetected fourth circuit lay beyond the edge of the recorded monument here.

The causewayed enclosures at Haddenham in Cambridgeshire, and at Freston and Fornham All Saints in Suffolk (Oswald *et al.* 2001, figs 3.14, 4.25 and 4.11) are comparable in size to the St Osyth example. The Freston monument lies on a narrow promontory between the Rivers Stour and Orwell and is the nearest of these sites to St Osyth. It may be significant that nearly 50% of the identified causewayed enclosures in East Anglia are exceptionally large (*cf. ibid.*, fig. 4.24, 72–5).

The presence of the monument close to a water course is not in itself unusual, since the margins of present-day flood plains border or partly define one in three of the identified causewayed enclosures in Britain (Oswald *et al.* 2001, 91). Local examples of this include the Sawbridgeworth and Kedington causewayed enclosures in Hertfordshire and Suffolk (*ibid.*, figs 5.18 and 5.21). The close association between many causewayed enclosures and streams and rivers suggests that proximity to a watercourse was often integral to their significance, construction and use. It is possible that the St Osyth monument was built next to the creek because it was regarded as sacred, and/or had a significant ritual role. Alternatively, easy access to the creek may have been required for the watering of cattle or to facilitate communication and trade. Reasons such as these may well explain why prehistoric monuments in Essex are often in close association with a stream or river (Holgate 1996). Neolithic and other prehistoric monuments occur along the River Stour (Brown, Knopp and Strachan 2003), a hengiform monument overlooks the river Colne at Brightlingsea (Gilman and Bennet 1995; Clarke and Lavender forthcoming), and a causewayed enclosure and cursus lie close to the River Chelmer at Springfield Lyons (Priddy 1988; Gilman 1989; Buckley *et al.* 2001).

Construction

The monument displayed no unusual constructional features. Indeed, the steep-sided flat-bottomed ditch profiles and the construction of the ditches through the piecemeal excavation and amalgamation of large end-to-end pits are among the defining characteristics of causewayed enclosures. The categorisation of the spacing and lengths of these ditches is an unrewarding exercise, because these can vary from just a few metres to almost continuous circuits (Oswald *et al.* 2001, 36). It is not known why steep-sided, flat-bottomed profiles were favoured, although they might be explained either by technological limitations or because they facilitated the display of specially placed deposits of artefacts. The *c.* 1–2m depth of most of the ditches is also fully characteristic of these monuments (*ibid.*, 40). Evidence for re-cutting is often observed in causewayed enclosure ditches and this is usually regarded as evidence for reinstatement, maintenance and/or the further placing of special deposits (*ibid.*, 36–37). Another feature of many causewayed enclosure ditches is sunken causeways (*e.g.* Fig. 14, *13926* and *13933*; Hedges and Buckley 1978, fig. 11), although it is not always clear whether these

were created intentionally or were simply a by-product of the construction process.

The asymmetric fill sequences in many of the St Osyth interrupted ditches imply the former presence of ditch-side banks. Asymmetric fill sequences within some of the ditches of the Orsett, Staines and Briar Hill causewayed enclosures (Hedges and Buckley 1978; Robertson-Mackay 1987; Bamford 1985) have been similarly regarded as indirect evidence for the former presence of ditch-side banks or spoil heaps. Surviving earthworks provide direct evidence for banks at a small number of causewayed enclosure sites, including Robin Hood's Ball in Wiltshire, and The Trundle and Barkhale Camp in West Sussex (Oswald *et al.* 2001, 43–6, figs 1.4, 3.10 and 8.6). Nearly all causewayed enclosure sites with extant earthworks have banks or spoil heaps running alongside the inner edges of most of their ditches. Evidence for the former presence of banks on the outer edges of causewayed enclosure ditches is rarer, although it is seen in the fill sequence of the inside circuit of the Windmill Hill causewayed enclosure near Avebury, Wiltshire (*ibid.*, 43). No earthworks have survived at St Osyth and consequently it is impossible to tell if the banks of the monument corresponded with the lengths of the ditches. Banks extending between causewayed enclosure ditches are represented by surviving earthworks at The Trundle and Robin Hood's Ball, but are otherwise rare (*ibid.*, 43).

The St Osyth causewayed enclosure shows no clear evidence for formal entranceways, palisades or revetments: either these were never present, or the evidence for them has not survived, or has not been exposed or identified. Formal entranceways indicated by inward- and/or outward-turning ditch terminals, by contrast, appear within the site plans of the Haddenham and Sawbridgeworth causewayed enclosures (*ibid.*, figs 4.11 and 5.18). It is known that a substantial timber-built entranceway lay on the north side of the causewayed enclosure at Etton in Cambridgeshire (Pryor 1998), and that palisades were part of the causewayed enclosures at Orsett, Freston and Haddenham (Oswald *et al.* 2001, figs. 3.14 and 4.11; Hedges and Buckley 1978). Evidence for timber revetments in the context of causewayed enclosures is rare, but has been recorded at Hambledon Hill in Dorset (Mercer 1988).

Function

Conjectured functions of causewayed enclosures include defence and settlement, and as sites for social intercourse, manufacturing and trade, religion and ritual, and the keeping of cattle (Oswald *et al.* 2001, 123–31). It is likely that causewayed enclosures had a variety of functions, in a context within which religious belief and ritual were integrated into everyday life. In the following section, it is concluded that settlement and ritual activity took place within the St Osyth causewayed enclosure. It is also suggested that activity was intermittent — possibly seasonal — and that the monument was used as an assembly place by small groups of itinerant people who were ordinarily widely dispersed. If other activities took place within the monument, then the evidence for it has either not survived or not been identified.

A poor defensive position, a permeable form, and a piecemeal mode of construction all make it unlikely that the causewayed enclosure represented a fortification. Its use as an enclosure for securing cattle is possible, although acidic soil conditions have ensured that the excavation has found no animal bone to confirm this. The carbonised plant remains provide indirect evidence for the herding and grazing of cattle since they suggest that much of the immediate landscape was grassland. The evidence for the use of the monument for trade and manufacturing is slight. There is no direct evidence to indicate that pottery was made on site, although suitable pockets of clay occur locally in the sand and gravel. The large amounts of worked flint and flint-working debris found in two pits and an adjacent interrupted ditch in the north-east corner of the site are evidence for a flint-working area in this part of the causewayed enclosure. However, it is not known whether the manufacture of the flint artefacts was for trade and/or personal use. The saddle quern fragments and most of the worked flint are made from stone that occurs locally and neither provide firm evidence for the trading or exchange of goods. Included amongst the flint are a small number of corticated black flint nodules, which have a 'fresh' appearance and appear to suggest that some of the flint may have been traded in raw material form.

The use of the monument for settlement is implied indirectly by the recorded pits, the charcoal-rich deposits and the many artefacts. Clusters of pits, often containing charcoal-rich deposits and large groups of finds similar to those at St Osyth, have been found at Hurst Fen in Suffolk, Broome Heath, Kilverstone and Spong Hill in Norfolk, and Lofts Farm in Essex (Clarke *et al.* 1960; Wainwright 1972; Garrow, Lucy and Gibson 2006; Healy 1988; Brown 1988). Additional examples may be represented by the Early Neolithic finds, hearths and pits found by Warren along the foreshore of the north-east Essex coast in the late 1920s and early 1930s (Warren *et al.* 1936). Perhaps implicit in the evidence from St Osyth, Broome Heath, Spong Hill and other sites is a shifting pattern of seasonal occupation, and the repeated exploitation of familiar sites (Brown and Murphy 1997). It is likely that some places were more significant and favoured than others and that some, like the spur at St Osyth, were formalised and emphasised through the construction of monuments.

The hypothesis that the area of the monument saw episodic settlement is not negated by the absence of identifiable evidence for Early Neolithic buildings within the excavated area. Few excavated interiors of causewayed enclosures contain unequivocal evidence for Early Neolithic buildings, and much of the evidence for these structures often comprises partial and irregular arrangements of largely undatable post-holes (Oswald *et al.* 2001, 124–6). Early Neolithic buildings were probably once present within most causewayed enclosures, and at other types of Early Neolithic settlement site, but they may be difficult to detect archaeologically because they were largely non-intrusive and slight, being built in a manner according with intermittent settlement and a semi-nomadic, seasonal way of life.

The form of the causewayed enclosure probably had a ritual rationale, since it is conjectured that the constituent pits of the interrupted ditches were receptacles for the placing and display of ritual deposits. As the causewayed enclosure appears to have been constructed in a piecemeal manner it seems likely that ritual deposition events — involving the excavation of additional constituent pits

in the recorded complex — were also intermittent, and that consequently the form of the monument was seldom static. The formation of the causewayed enclosure in an *ad hoc* manner through repeated visits over a period of *c.* 40 years may accord with the conjecture that the monument was created by people who were seasonally mobile.

Ritual activity may also account for the pits within the interior of the monument, since they appear to be small-scale versions of the constituent pits of the interrupted ditches. Indeed, some of them look like small-scale, widely-spaced continuations of the constituent pits (*e.g.* Fig. 7, ditch *13926* and adjacent pit group B), and most of the interior pits and constituent pits share characteristic steep-sided flat-bottomed profiles. These interior features probably represent more than one episode of digging; like the constituent pits forming the perimeter, it is likely that they were the product of individual events spread over many intermittent episodes of settlement.

Despite these similarities in feature form, however, close examination of the contents of the interior pits and those that make up the ditches suggested that they were not used in the same manner. Only one charcoal-rich deposit occurred in a ditch-component pit, whereas they were common in the interior pits. Large groups of finds are more often present in the pits than in the ditches, and are more likely to occur in charcoal-rich deposits. The presence of the charcoal-rich deposits — and, by implication, fires and hearths — together with their close association with large groups of finds might imply that the pits were generally used for the deposition of domestic rubbish, albeit in a ritual context. Signs of a pre-deposition selection policy, evident in the disproportionate number of upper body sherds in the pottery assemblage, suggest a ritual rationale behind the deposition of artefacts in both the pits and the ditches. It is somewhat puzzling that only a small proportion of the constituent pits recorded within the causewayed enclosure ditches contained finds, although it is possible that some of the finds had been removed or had not survived, or that some pits were dug but never used.

The observation by Gibson *et al.* (2006) that Early Neolithic pits in the region exhibit considerable variability is upheld by the St Osyth examples. By contrast to the St Osyth pits, most of those at Kilverstone contained single fills and most were charcoal-rich. Groups of small clusters of pits were present as well but, unlike at St Osyth, these were relatively frequent and are more often clearly defined. The practice of digging pits for the ritual deposition of artefacts is likely to have been common, although the way in which it could be done appears to have varied from site to site. This variability may well express the individual preferences of largely autonomous groups of people and/or changes in the way in which it was carried out over time.

The use of causewayed enclosures for many kinds of ritual deposition is evidenced elsewhere and is not unique to St Osyth. The allocation of different areas or

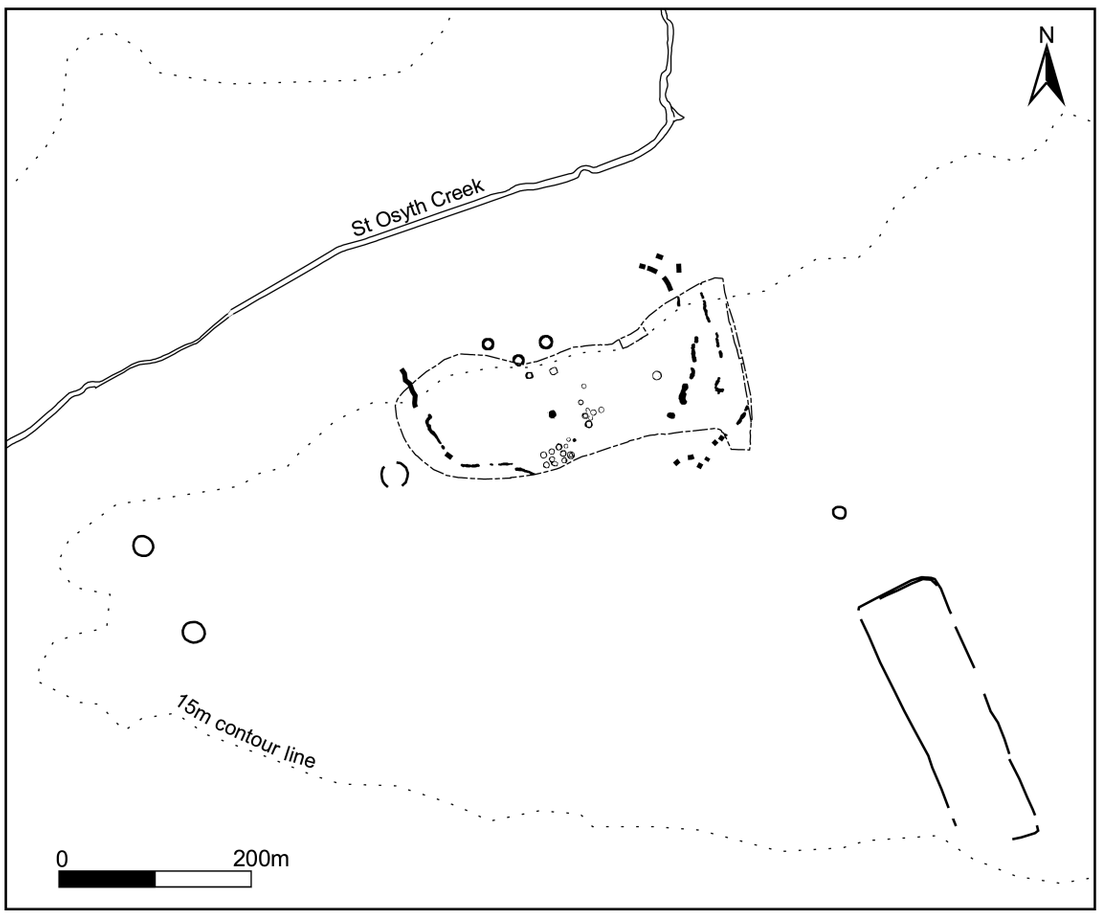


Figure 67 Neolithic and Bronze Age landscape

components of each monument and monument complex for distinct types of deposition and ritual activity appears to have been a common feature of all recorded examples. At Hambledon Hill, for example, there appears to have been an association between different types and sub-types of finds and distinct parts of the overall monument complex (Healy 2004); Pryor (1998) concludes that the Etton causewayed enclosure was separated into funerary and non-funerary halves by an east–west division.

III. Late Neolithic/Early Bronze Age: cursus, pits and ring-ditches

The cursus and some of the ring-ditches imply that the spur persisted as a site for monuments from the Early Neolithic into the Late Neolithic/Early Bronze Age era. These later monuments were accompanied by a small number of pits containing evidence for structured deposits in the form of Beaker and/or Grooved Ware. There was no evidence to indicate that the causewayed enclosure was reinstated, or was in active use, during this period.

Cursus

The cursus, measuring *c.* 85m by 285m, has seen no archaeological excavation but has been identified from cropmarks on the basis of its context, size and form (Figs 5A and 67). Long mortuary enclosures and long barrows are often similar in cropmark form to cursuses but are normally smaller, typically less than *c.* 25m x 150m (Harding and Barclay 1999). Priddy and Buckley (1987, pl. XIII) regard the St Osyth cursus as a possible Neolithic mortuary enclosure or cursus-related monument. Cropmark and excavated evidence suggest that small cursuses were a feature of the river valleys of East Anglia and the East Midlands (Harding and Barclay 1999; Last 1999). Cursuses broadly comparable in size to the St Osyth example occur at Barnack (25m x 120m) and Eynesbury (77m x 316m) in Cambridgeshire, and at Stratford St Mary in Suffolk (60m x 290m) (Pryor *et al.* 1985; Ellis 2004; Brown *et al.* 2003). It is unlikely that the causewayed enclosure was in active use at the same time as the cursus since C14 dating at a number of sites has revealed that cursuses were largely a phenomenon of the second half of the 4th millennium BC (Barclay and Bayliss 1999). Sherds of Late Neolithic/Early Bronze Age pottery in the latest deposits of some of the interrupted ditches, however, imply that the causewayed enclosure was still present as an earthwork when the cursus was built.

Since both types of monument are relatively infrequent occurrences, the juxtaposition of the cursus and the causewayed enclosure is unlikely to be coincidental. There are few instances of cursuses occurring in close association with causewayed enclosures, and there are no known examples outside East Anglia and the East Midlands. Fornham All Saints in Suffolk and Etton in Cambridgeshire are two sites where there are clear instances of cursuses occurring in close association with causewayed enclosures (Oswald *et al.* 2001, figs 4.25 and 8.2; Pryor 1998). The cursuses at both of these sites imply an acknowledgement of pre-existing causewayed enclosures, either kinking or terminating within them, or deviating towards them. At Cardington in Bedfordshire and Springfield Lyons in Essex (Oswald *et al.* 2001; Buckley *et al.* 2001) there are possible examples of cursuses whose sites acknowledge those of causewayed enclosures, although the physical distance between the two types of monument at both of them is more than 1km and the relationship between them is therefore less explicit.

The relationship between the St Osyth cursus and causewayed enclosure is not as direct as at Etton and Fornham All Saints, but seems clearer than at Cardington and Springfield Lyons. The implication is that the siting of the cursus was partly decided by a legacy of meaning left by, and inherent within, the remains of the causewayed enclosure. The construction of the St Osyth cursus might represent the formalising and partial monumentalisation of a long-established path through the landscape (*cf.* Last 1999). It is possible that this path was strongly associated with the causewayed enclosure. Many cursuses occur close to water courses and it is probable that proximity to a stream or a river was integral to their import and function.

Pits and ring-ditches

A small number of pits containing what are probably specially-placed or structured deposits of Grooved Ware and/or Beaker indicate continuing ritual activity across the area of the causewayed enclosure during the Late Neolithic period and the Early Bronze Age (Fig. 24, *591*, *651*, *4759*, *6034*, *10417*, *12382*, *12392*, *12933* and *12985*). Four undated ring-ditches might represent Late Neolithic/Early Bronze Age monuments (Figs 24 and 25, *2151*, *2256*, *13857* and *13868*). Other ring-ditches appear as cropmarks north of the site and on the west tip of the spur (Figs 5 C and E, and 67). A large ring-ditch near the south-west corner of the excavation area may indicate a henge, but is more likely to be a medieval windmill (Figs 5B and 67).

The majority of the finds in the pits appeared unstructured and probably represent informal deposition of domestic rubbish in a ritual context. By contrast, the finds group in pit *4759* was clearly selected or contrived, and included an unusual combination of scorched and un-scorched sherds from each of two or more vessels lying on a bed of charcoal. The Beaker in pit *10147* was similarly deposited, and was probably a grave good. The pit was large enough to have held a flexed or crouched inhumation, and the acidic soil conditions that prevail across the site probably account for the absence of human bone. Excavations have uncovered relatively few Beaker inhumations in Essex, and acidic soil conditions have ensured that most are represented only by grave goods. Two Beakers and a bowl lay in a grave at Orsett Cock, a Beaker has been recorded in a grave at Ardleigh, and a Beaker and eleven flint arrowheads were found in a grave at Mucking (Milton 1984–5; Jones 1973; Brooks 2001). Human bone was recorded alongside the finds at Mucking, but not at Orsett Cock and Ardleigh.

The spur probably attracted those who sited the ring-ditches on account of its prominent relief, and also the remains of the causewayed enclosure which were probably still visible. The siting of a group of five ring-ditches on the north break of slope in the spur's relief, as represented by the 15m contour line, is clearly intentional since it would have enabled the monuments both to overlook and to be seen from the opposite side of the valley (Figs

24 and 67). It is probable that a conspicuous location was considered important, since cropmarks show two other ring-ditches in prominent locations on the west tip of the spur (Figs 5C and 67). The siting of the group of five in the approximate centre of the causewayed enclosure acknowledged the earlier monument, and suggests that it was still visible as an earthwork when they were built. Two separate episodes of construction are possibly represented by the group, as the square 'ring-ditches' *2151* and *2256* are not the same as the other three. Neither of these latter features were dated, although stratigraphic evidence suggests that one of them at least pre-dated the Middle Iron Age. A square enclosure at Brandon in Suffolk is similar in size and form, and is surmised to be Late Bronze Age (Gibson *et al.* 2004, figs 10 and 16).

IV. Pond barrow

(Figs 68 and 69)

Stratigraphic evidence and radiocarbon dates indicate that a pond barrow was built in the middle of the site in the first half of the second millennium BC. The excavation has identified no clear evidence that the causewayed enclosure was still visible as an earthwork after the Late Neolithic/Early Bronze Age.

The remains of the pond barrow appear to represent two episodes of Early Bronze Age activity. During the first of these it was a focal point for the placing of a structured deposit and two cremation burials in Collared Urns (Fig. 26A, *4270*, *3136* and *3914*); during the second it was the site for a pyre, a pit, one or two un-urned cremation burials and a two-post structure (Fig. 26A, *4504*, *3975*, *3979*, and *4260*, *4004* and *4262*). This interpretation of the evidence is supported by the radiocarbon dates, which suggest that cremation burial *3979* post-dated cremation burials *3194* and *3136*.

The corpus of pond barrows excavated to modern archaeological standards includes one each at Pampisford in Cambridgeshire, Snail Down in Wiltshire, Winterbourne Steepleton, Down Farm and Monkton Up Wimborne in Dorset, and two at Radley (barrows *4583* and *4866*) in Oxfordshire (Pollard 2002; Thomas 2005; Atkinson *et al.* 1951; Barrett *et al.* 1991; Green 2000; Green *pers. comm*.; Barclay and Halpin 1999) (Figs 68 and 69). Harlow Museum and West Essex Archaeological Group have excavated a pond barrow next to the Romano-British temple at Harlow, but this remains unpublished. The evidence from St Osyth accords with the consensus view that pond barrows were funerary monuments and focal points for ritual activity. The radiocarbon dates obtained from the Down Farm and Radley (*4866*) pond barrows broadly concur with those from St Osyth; together, the dates suggest that this class of monument was a phenomenon of the first three-quarters of the second millennium BC.

The cremation burials and the scorched features and ground surfaces demonstrate the use of the monument for funerary activity. Figures 68 and 69 illustrate the manner in which cremation and inhumation burials are often associated with pond barrows and normally lie close to the perimeter and/or in or close to the middle. The extent of the scorching suggested that the use of the monument as a pyre site was associated with the cremation represented by burial pit *3979* from the second episode of Early Bronze Age activity. The top fill of the burial pit was un-scorched, probably implying that the associated cremation was the only, or last, one to take place within the pond barrow.

Excavation has uncovered minimal evidence for pyre sites within pond barrows, although scorched ground and/or features occurred within those at Harlow and Monkton Up Wimborne. No calcined bone and charcoal were found on top of the scorched ground, and it is possible that the putative pyre site was swept clean following the funerary fire. Instances of pyre sites within mounded barrows, by contrast, are plentiful and largely comprise centrally or near-centrally placed areas of calcined bone, scorched ground and charcoal, as at Risby, Suffolk, and Shrewton, Wiltshire (Vatcher and Vatcher 1976; Green and Rollo-Smith 1984). The sealing of the remains by construction of an overlying mound shortly after the funerary fire (Thomas 2005, 289) probably accounts for the common survival of *in situ* pyre remains at many of these sites, by contrast to pond barrows.

The two-post structure and the presence of the Collared Urn in pit *4270* imply that not all activities at the pond barrow were overtly funerary. The inverted urn lay on one side of its rim and is probably the remains of a votive deposit. Although it is possible that the two-post structure was part of the pyre, it is more likely that it had a symbolic function and was somehow integral to the monument. Evidence for post-built structures with similar functions occurs within and/or alongside the Down Farm, Snail Down, Pampisford and Monkton Up Wimborne pond barrows. The Down Farm pond barrow included three post-holes in an east line and four post-holes in a central location. The Pampisford pond barrow contained a central post-pit and five post-holes in a line, maybe indicating a backdrop, while the central post-pit was emphasised by a surrounding circle of un-quarried gravel. Green surmises that two post-holes on the south edge of the Monkton Up Wimborne pond barrow represent a formal entranceway (Green, *pers. comm*.). The importance of the central part of the Monkton Up Wimborne pond barrow was re-stated during the Middle Bronze Age by the construction of a flint platform. Stake-holes encircle the perimeter of the Snail Down pond barrow, although it is possible that these were part of a retaining fence for the surrounding bank.

The excavation has found no clear evidence that pre-existing monuments influenced the choice of the pond barrow's location, although there is evidence from Down Farm and Radley that this sometimes took place. The Down Farm pond barrow was associated with the many other monuments of Cranborne Chase while the alignment of the three post-holes extending from its east side acknowledged the adjacent Dorset Cursus. Radley pond barrow *4866* was incorporated into the alignment of the Barrow Hills complex and lay near the Abingdon causewayed enclosure.

The St Osyth pond barrow displays few unusual features except for its indirect association with a causewayed enclosure and its use as a pyre site. The absence of evidence for a surrounding bank (Fig. 68, *cf.* Snail Down and Winterbourne Steepleton) is not considered significant and may result from truncation. The depression and the middle part of the monument are probably the most important parts of the pond barrow, because they are emphasised by the two-post structure and are further

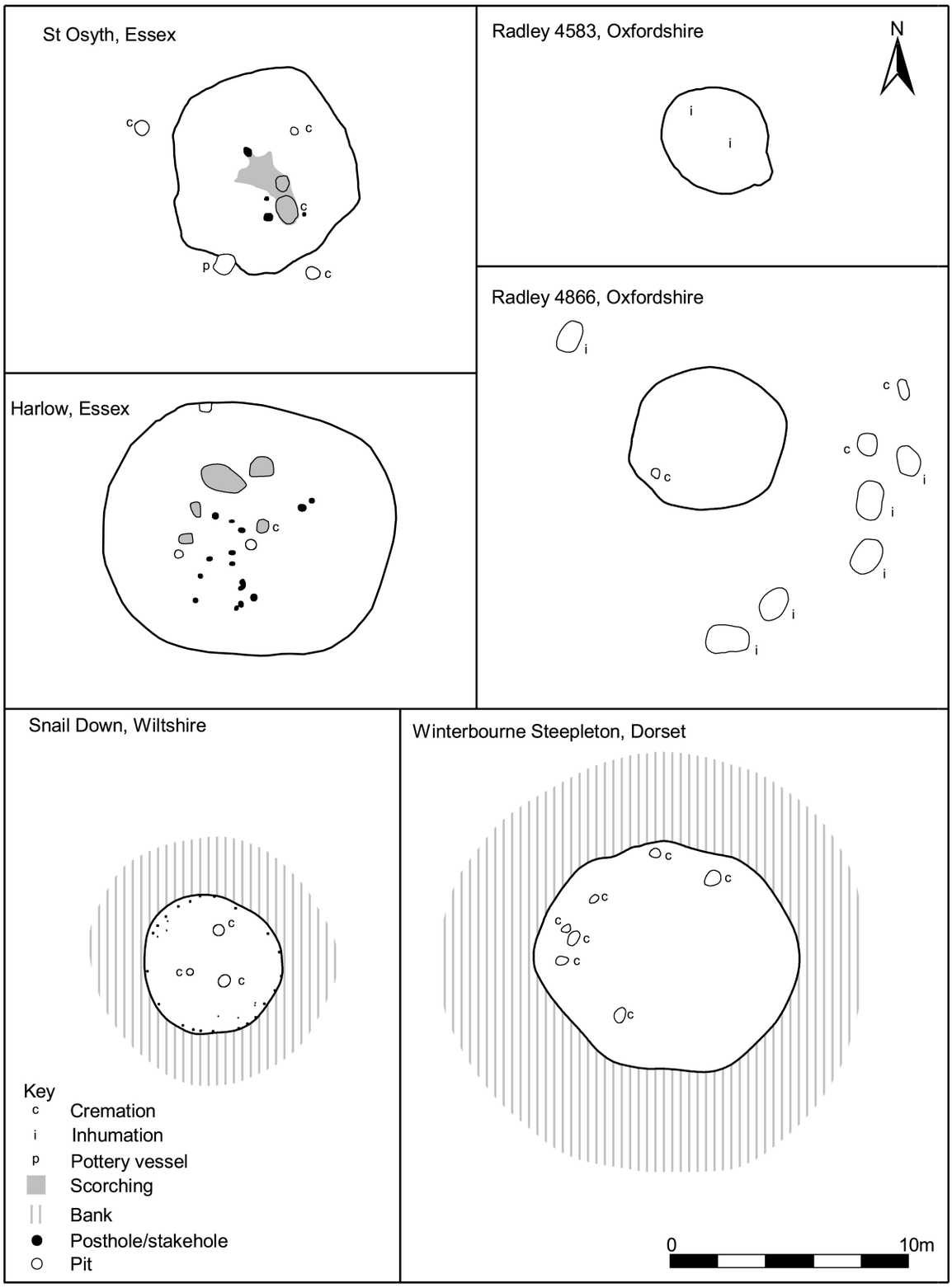


Figure 68 Comparative plans of pond barrows (I)

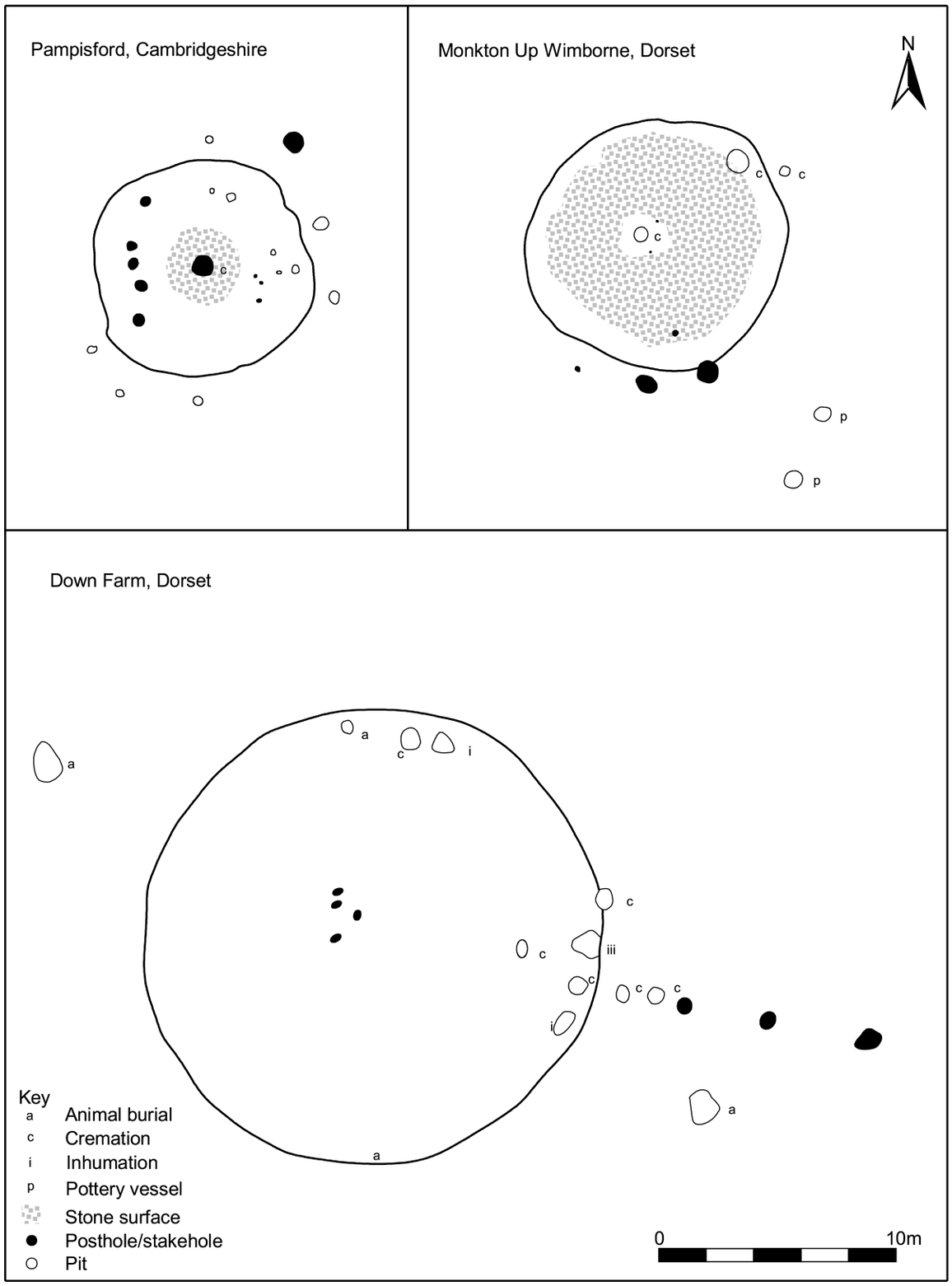


Figure 69 Comparative plans of pond barrows (II)

accentuated by the pyre site and associated cremation burial *3979*. It is suggested that the destruction of the structure through the use of the pyre represented a terminal act, and that the pond barrow then lay largely undisturbed until its resurrection *c.* 200 years later as a focal point for votive deposits and the Middle Bronze Age cemetery. Cremation burials and/or wooden or stone structures often occur centrally within monuments of this kind, and support the hypothesis that the depression and central area were considered the most important parts of the pond barrow (Figs 68 and 69). Deference towards the centre and what it contained and signified is perhaps reflected by the 'excluded' burials and other forms of structured deposit that occurred on or near the perimeters. It is probable that an 'exclusion'/'inclusion' dichotomy was often reinforced by the presence of a formal entranceway and a surrounding bank. The evidence suggests that the St Osyth pond barrow was a memorial, a place of commemoration and a site for funerals. The possible evidence for exclusion/inclusion is interesting, and may indicate that these monuments need to be interpreted in the context of social division of some kind.

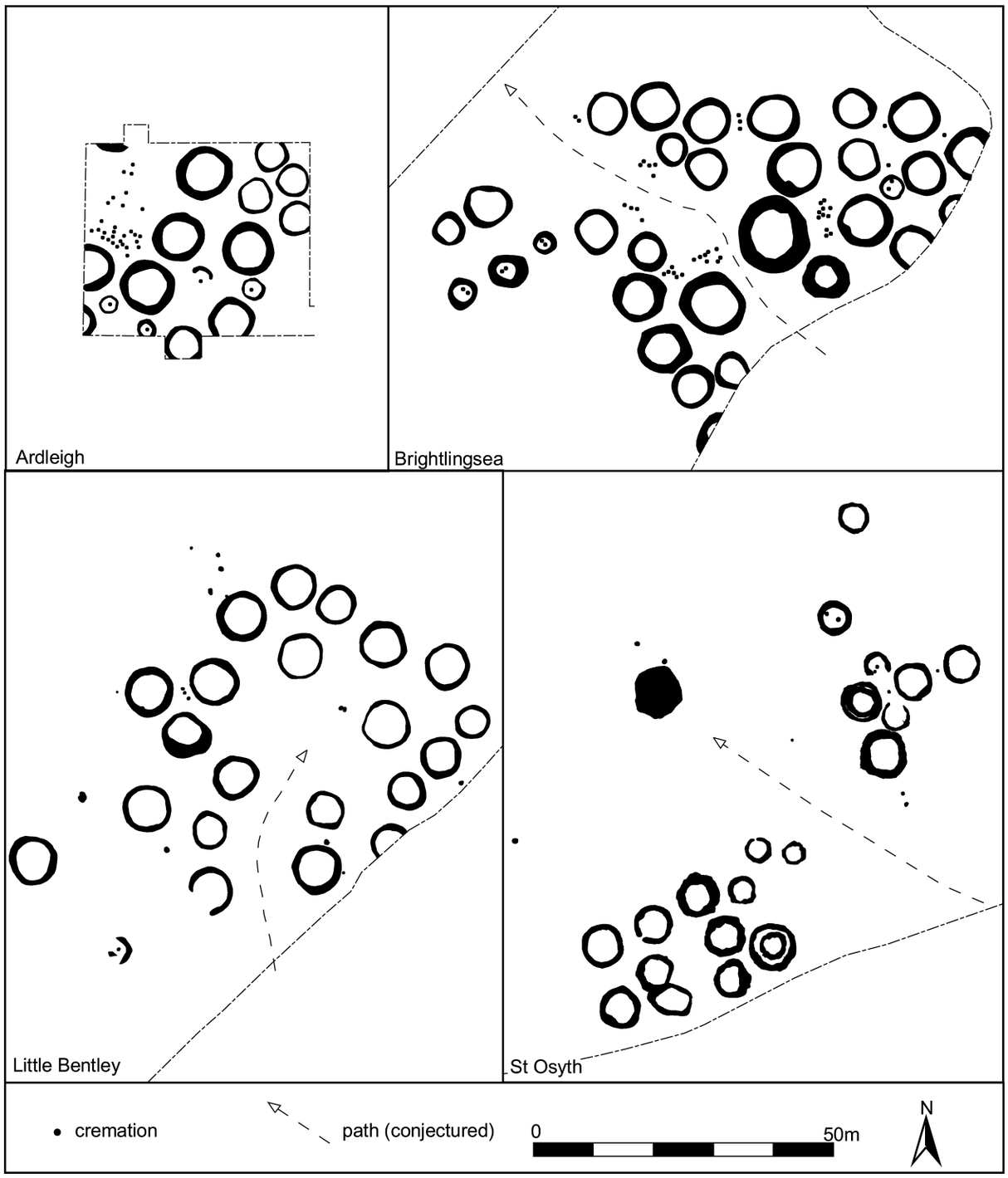


Figure 70 Comparative plans of selected Middle Bronze Age ring-ditch groups in north-east Essex

V. Middle Bronze Age

(Figs 70–3)

Twenty-two ring-ditches and eleven cremation burials interred in pits succeeded the pond barrow, apparently following a hiatus of recorded activity at the site spanning *c.* 200 years. The ring-ditches occurred in two clusters, lying in an arc to the south and east of the pond barrow (Figs 27 and 28). Cut into the top of the pond barrow were four pits containing carefully-placed deposits that probably date to the Middle Bronze Age (Fig. 26C). The spatial and stratigraphic evidence implies that the pond barrow was still visible and was reused as a focal point for ritual activity. The reuse of pond barrows has been noted at other sites, including Monkton Up Wimborne in Dorset and Radley in Oxfordshire (Green, *pers. comm*.; Barclay and Halpin 1999). A Middle Bronze Age flint platform was recorded at the former, and two Late Bronze Age inhumations at the latter (Figs 68 and 69).

The ring-ditches and cremation burials may be situated within the 'Ardleigh Group', a Middle Bronze Age ceramic and funerary tradition that appears to have been confined to north-east Essex and perhaps south-east Suffolk. The main characteristics of the tradition are large clusters of small, closely-spaced ring-ditches and cremation burials in straight-sided Bucket Urns in the Ardleigh style of the Deverel-Rimbury tradition (Brown 1995a; 1999). Pottery vessels of this style are often distinguished by profuse decoration, including finger-tip rustication and 'horseshoe' handles.

Excavations have identified Ardleigh Group cemeteries at Ardleigh, Chitts Hill, Brightlingsea and Little Bentley, while cremation burials in Deverel-Rimbury vessels in the Ardleigh style are known from Great Tey, Sheepen and Lexden (Brown 1999; Crummy 1977; Clarke and Lavender forthcoming; Clarke 2004; Cleary 2003). However, archaeologists have yet to discover evidence for directly associated settlement sites. Ardleigh Group ring-ditches occur as cropmarks at Thorpe le Soken and Little Bromley (Brown 1999). The majority of the sites listed here lie in the Tendring peninsula of north-east Essex, and occur in prominent locations close to the Holland Brook (Little Bentley, Little Bromley and Thorpe le Soken), or the River Colne or its tributaries (St Osyth, Chitts Hill, Brightlingsea and Ardleigh).

The examinations of the St Osyth and Little Bentley Middle Bronze Age cemetery sites have both taken place since Brown's published review of the evidence for the Ardleigh phenomenon (Brown 1999), and represent a significant enlargement of the available dataset. All of the excavated sites listed above are broadly similar to each other and conform to the defining characteristics of the Ardleigh Group tradition. However, variations noted between individual sites suggest that the tradition was informal in some respects. Radiocarbon dates obtained from some of the St Osyth and Brightlingsea cremation burials suggest that the tradition was largely active during the third quarter of the 2nd millennium BC. C14 dates obtained from some of the Ardleigh cremation burials are possibly contaminated and therefore unreliable. Unfortunately, the St Osyth and Brightlingsea C14 dates are too few and too broad in range to indicate whether the tradition changed over time and, if so, whether this change was responsible for some of the variation noted between the various Ardleigh Group sites.

Evidence that the presence of earlier monuments influenced the siting and form of an Ardleigh Group cemetery is not confined to St Osyth, but has also been

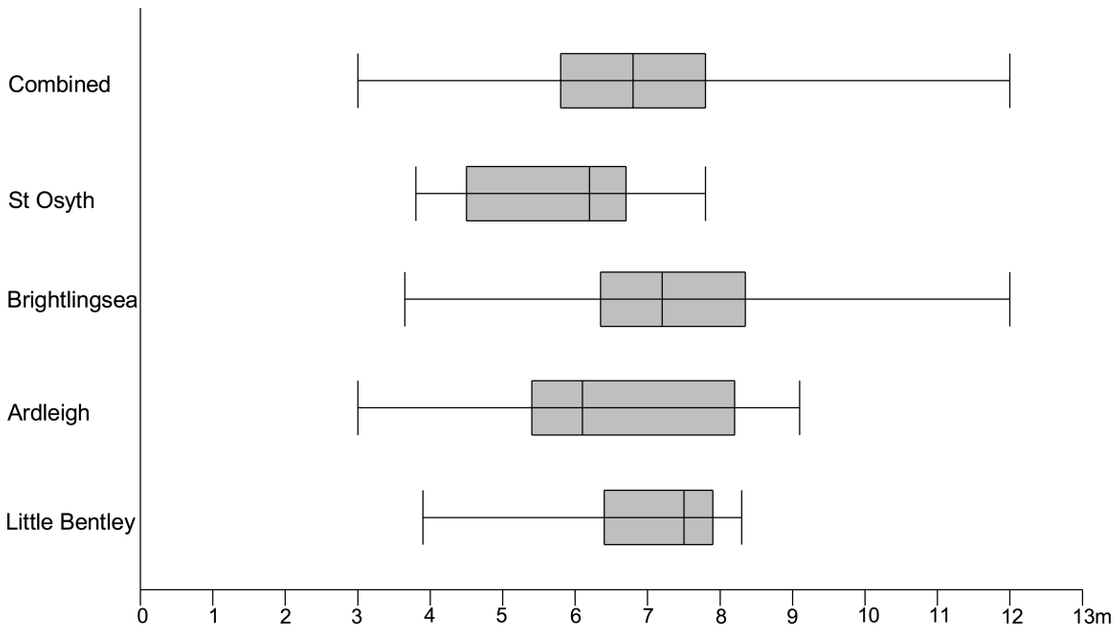
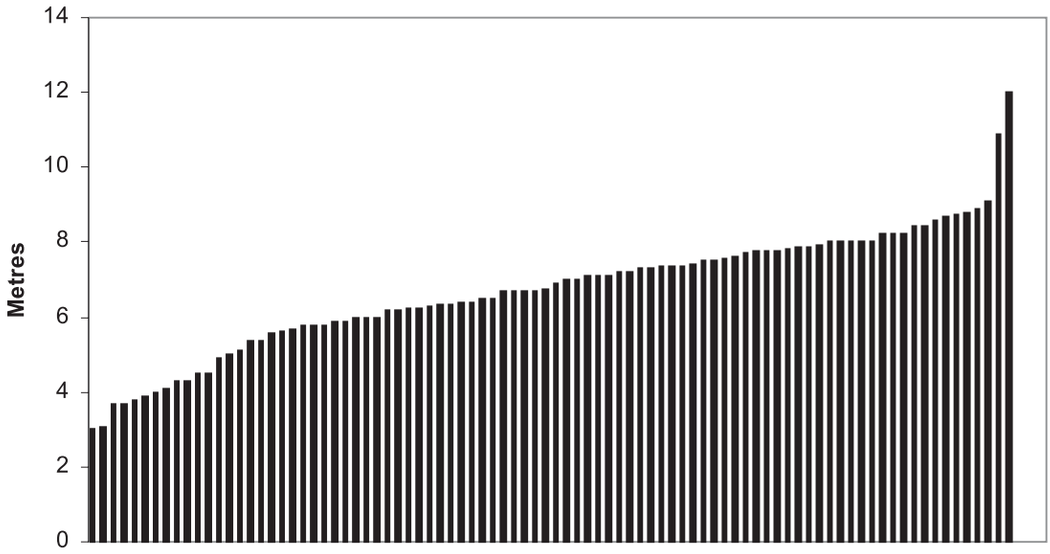


Figure 71 Box-plots indicating range of diameters of ring-ditches from four Middle Bronze Age sites in north-east Essex



Diameters measured from external edge to external edge. The two atypically large ring-ditches in the middle of the ring-ditch group at Brightlingsea are on the extreme right.

Figure 72 Diameters of eight-eight Middle Bronze Age Ardleigh Group ring-ditches

observed at some of the other sites mentioned. Cropmarks show a large ring-ditch close to the ring-ditch group at Little Bromley: the ring-ditch itself looks rather like a henge (Harding and Lee 1987), although recent work on similar ring-ditches elsewhere in north-east Essex suggests that it is more likely to be the remains of a medieval windmill (Brown and Germany 2002). Cropmarks indicate that the Thorpe le Soken ring-ditch cluster had been sited opposite a large concentric monument on the opposite side of the valley (Brown 1999). It is likely that the Brightlingsea ring-ditch group was constructed around earlier monuments because at its centre lay two undated ring-ditches, both of them atypically large for an Ardleigh Group site (Figs 70 and 72). The Brightlingsea hengiform monument lies *c.* 350m north-west of the cluster and was another possible influence. The present writer conjectures that a monument or some other form of symbolic feature which no longer survives may have lain in an otherwise inexplicable empty plot in the centre of the Little Bentley ring-ditch cluster.

The occurrence of the St Osyth ring-ditches in two groups, as well as analogy with the morphology of the Brightlingsea site, suggests that a path formerly ran towards the pond barrow in a north-westerly direction (Fig. 70). A narrow gap ran between the two groups of excavated ring-ditches at Brightlingsea, and the present writer suggests that it represents the route of a path. This is perhaps supported by the distribution of the cremation burials, as many of them lay alongside the narrow gap. The paths at both sites appear to have been associated with earlier monuments and it is possible that they were already in use prior to the formation of the Ardleigh Group cemeteries: the St Osyth path headed towards the pond barrow, while the Brightlingsea path ran between the two large central ring-ditches. Evidence for an association between Ardleigh Group cemeteries and paths was also recorded at Little Bentley, albeit in a slightly different form. In that case, a corridor-like gap bisected five of the ring-ditches, and headed towards the 'empty' plot in the centre. All of this evidence gives support to the hypothesis that the St Osyth and Brightlingsea Ardleigh Group cemeteries were configured around existing routeways and monuments.

The inter-site variation noted between Ardleigh Group cemetery sites extends to the form, size and spacing of the ring-ditches, and the number and distribution of the cremation burials. Figures 70 and 71 indicate that the St Osyth ring-ditches are smaller than average within the Ardleigh Group. Further, the concentric and penannular forms that occur at St Osyth have not been recorded at the other excavated Ardleigh Group sites. The wide spacing and consistent size of most of the ring-ditches at Little Bentley make this site, too, slightly unusual. Sub-groups of ring-ditches occurred at St Osyth and Ardleigh, but were less apparent at Brightlingsea and Little Bentley. Relatively few cremation burials were found at St Osyth and Little Bentley, by contrast to Chitts Hill, Brightlingsea and Ardleigh, where numerous examples were present in large clusters. The distribution of the St Osyth burials and burial groups appears to be more carefully contrived and structured than those that occur at the other Ardleigh Group sites, and perhaps argues against any suggestion that the low number of burials recorded here was due to truncation. Cremation burials occur infrequently within ring-ditches at all of the sites, but tend to lie within the smaller examples.

It is difficult to compare the St Osyth calcined bone with the bone from the other Ardleigh Group sites, since the Brightlingsea bone is very fragmentary and the Chitts Hill and Little Bentley bone has not been analysed. It is clear, however, that the twelve Middle Bronze Age burial pits contained the remains of at least fifteen people. Up to ten of the twelve occurred in small, structured groups which may have represented social units, possibly families. This is especially striking in the case of *5137* and *5141*, which occurred as a pair and contain the remains of at least five individuals: three children, one woman and one old man (Fig. 28 and Frontispiece). The remains

of the woman and a child of approximately three years of age were found in individual vessels, one inside the other, in burial pit *5141*, and suggest a mother–child bond. Burial pits containing calcined bones from more than one individual also appear at Ardleigh and are therefore not unique to St Osyth (Couchman and Savory 1983; Brown 1999): either the interment of the bone was deferred until the death of the last individual or perhaps more than one individual was cremated simultaneously. Brown (1999) surmises that death during childbirth accounted for some of the shared burial pits at Ardleigh, since they contained the remains of women and children.

The variation evident between the recorded Ardleigh Group cemeteries may reflect the range of traditions and habits exhibited by the different communities that created them. Both the care taken in the siting of individual burials and the presence of the ring-ditch sub-groups may reflect the complexity of relationships between individual social units within each of these communities. Reverence for earlier monuments appears to be expressed by some Ardleigh Group sites, and is probably implied by the 'inclusion' of the pond barrow at St Osyth and possibly of the two atypically large ring-ditches in the centre of the excavated ring-ditch cluster at Brightlingsea. It is likewise possible that more physically and temporally distant monuments were also regarded as significant symbols, including the hengiform monument at Brightlingsea and the large concentric ring-ditch on the opposite side of the valley at Thorpe le Soken. The precise significance of the causewayed enclosure and the cursus at St Osyth to the users of the Middle Bronze Age ring-ditches there is uncertain, because it is not known if either monument was still visible in the landscape during that period. What is likely, however, is that the ring-ditches represent the final act in a long sequence of intermittent events and that successive generations over a long period of time were occasionally inspired and motivated by the constructions of their near-immediate, if not distant, predecessors to re-establish and renew the use of the spur as a site for monument construction and ritual activity. An absence of direct evidence for associated Ardleigh Group settlement sites implies that day-to-day living and the commemoration of the dead were kept separate. Paths linking the domestic and funerary theatres of activity must have been existed, however, and may have been detected in the archaeological record at both St Osyth and Brightlingsea. The routes taken by such paths may have been of considerable symbolic importance (Barrett 1994).

VI. Middle Iron Age

A complex of linear ditched enclosures was succeeded by a settlement represented by roundhouses lying across the spur to either side of a trackway T-junction (Figs 29 and 30). The stratigraphic evidence does not suggest that the previous monumental use of the spur had influenced the development of the settlement. Iron Age and/or Roman remains overlying, and apparently disregarding, causewayed enclosure sites have been recorded elsewhere, as at Cardington in Bedfordshire, Orsett in Essex, and Langford in Oxfordshire (Oswald *et al.* 2001, 143). Recorded Iron Age sites that clearly reference the remains of underlying causewayed enclosures are mostly hillforts (*e.g.* The Trundle, Sussex; Maiden Castle, Dorset: *ibid.*, 139).

Settlement morphology

The corpus of excavated Middle Iron Age sites in Essex appears to represent a cross-section across a settlement hierarchy. They include, amongst many, the hillforts at Asheldham and Uphall Camp (Bedwin 1991; Merriman 1990), the village-like settlements at Little Waltham and Slough House Farm (Drury 1978; Wallis and Waughman 1998), and the farmsteads at Ardleigh, Orsett Cock, Birchanger, Wendons Ambo and CIS Stansted (Brown 1999; Carter 1998; Medlycott 1994; Hodder 1982; Havis and Brooks 2004). The latest stage of Middle Iron Age settlement at Mucking is harder to categorise and was represented by numerous roundhouses and post-built structures dispersed across a wide area (Going 1993). The majority of these recorded settlements lay within single-ditched enclosures although there are exceptions to this, including the village-like settlement at Little Waltham which remained unenclosed until the late 2nd century BC. The Mucking settlement was open, but includes instances of single roundhouses within individual enclosures. Examples of both enclosed and unenclosed Middle Iron Age settlement forms have been found during archaeological excavations along the course of the A120 from Braintree to Stansted Airport (Timby *et al.* forthcoming). The closest published analogies to the St Osyth settlement are the village-like sites at Slough House Farm and Little Waltham Period II. The Middle Iron Age phases of settlement at Little Woodbury and Winnall Down in Wiltshire and Hampshire respectively (Bersu 1940; Fasham 1985) offer parallels from further afield.

The form of the St Osyth settlement is complex, and reinforces Sealey's view that Middle Iron Age settlement morphology in Essex is characterised by diversity (Sealey 1996), illustrating that Iron Age settlement morphology cannot be understood in terms of a simple dichotomy between 'enclosed' and 'unenclosed' sites. The St Osyth settlement (Fig. 30) consisted of roundhouses lying within more than one enclosure and appears to have been partly contingent upon the T-junction of trackways. The county's Middle Iron Age settlements exhibit a wide range of forms, offering support to the opinions of Willis and Hill (Willis 1997; Hill 1999), who reason that a range of simple and complex forms, incorporating both contingent and deliberate considerations, were represented within the different regions of the Iron Age landscape.

Economy

The stratigraphic and environmental evidence suggests that the economic basis of the settlement was a combination of arable and pastoral farming. The evidence for the arable component comprises charred grain, granaries and the Phase VI.1 enclosures. The evidence for the pastoral component, by contrast, is indirect and is suggested by the loomweights and the morphology of the trackways and settlement. Both components are explicable in terms of the local environment. The excavation recovered no animal bone due to the acidic soil.

The soils of the site and its environs are fertile, well-drained and easy to cultivate. The charred plant remains reveal that Middle Iron Age crop production was almost entirely based on well-drained locally occurring soils and concentrated upon spelt wheat, with smaller amounts of

rye, barley and oats. Much of the charred plant material originated from two of the post-built structures, implying that they were used as granaries and thus further confirming the significance of crop production to the Middle Iron Age economy here (Fig. 60). Post-built structures possibly representing granaries are often uncovered during excavations of Middle Iron Age sites in the region and have been found at Mucking, CIS Stansted, Slough House Farm and Little Waltham (Going 1993; Havis and Brooks 2004; Wallis and Waughman 1998; Drury 1978). Grain storage pits are less common but have been found at Wendons Ambo and Rectory Road, Orsett (Hodder 1982; Wilkinson 1988), and in Norfolk at Fison Way, Thetford (Gregory 1991).

By contrast, the wetter clay/silt soils alongside St Osyth Creek and the salt marsh of the nearby coast are more likely to have been productively used for the keeping of livestock. There is no direct evidence for the use of the Essex salt marsh for grazing during the Iron Age, although historical records indicate that it has served this purpose at other times in the past, and that it was once profitable for the keeping of sheep (Darby 1971, fig. 63; Wilkinson and Murphy 1995; Sealey 1995). The many pieces of loomweight associated with the settlement (Fig. 39) suggest that wool production was significant. The east–west trackway was unusually broad, perhaps to facilitate the transfer of livestock. Open areas adjoining the trackway to either side of the north-east enclosure may have been used as holding areas for sheep and cattle.

The excavation identified no evidence for metal-working, trading activities, or the local production of salt or ceramics. There was no briquetage to indicate salting, nor was there direct evidence in the form of kilns or wasters for the on-site production of loomweights or pottery. If the production of ceramics occurred on site then the evidence for it has either not survived or has not been identified. Evidence for the production of salt during the Late Iron Age/Roman period in Essex is generally plentiful (Fawn *et al.* 1990), although it is slight for the preceding Middle Iron Age, being represented only by a red hill at Tollesbury Creek (Germany 2004) and fragments of Early–Middle Iron Age briquetage from Gun Hill near Tilbury (Drury and Rodwell 1973). The absence of briquetage at St Osyth is unexpected but may offer further evidence that Iron Age salt production, utilising red hills along the Essex coastline, did not become widespread until the 1st century BC.

The range of Middle Iron Age finds recorded by the excavation is low, and is largely confined to pottery and loomweights. The pottery is matched by that at Little Waltham, and is typical for Middle Iron Age settlement sites across much of the county other than the Thames Estuary area east of London, where Middle Iron Age pottery assemblages resemble those from Kent (Sealey 1996). The minimal evidence for variation in artefact repertoires across a wide area suggests a society that was averse to, or cut off from, artistic and technological innovation and change, but was nevertheless stable and conservative-minded.

The total amount of Middle Iron Age finds produced by the excavation is small in comparison to the equivalent excavation at Little Waltham, which uncovered ten times as much pottery and twenty-six items of metalwork (Drury 1978). Part of the reason for this undoubtedly lies in the fact that the features at Little Waltham were more intensively sample excavated, although the area of the St Osyth excavation was considerably larger. The amounts of Middle Iron Age finds produced by the Slough House Farm and CIS Stansted excavations are broadly comparable with that from St Osyth; that the quantity of artefacts recorded at the Little Waltham site is unusually high seems a fair (if unscientific) conclusion to draw. Why this should be so is not known, but it is possible to speculate that the Little Waltham settlement was longer-lived and/or more prosperous, or that it lay closer to centres of production.

Roundhouses and post-built structures

Most of the St Osyth roundhouses were represented by ring-gullies, ranging in diameter from 6m to 13.6m (Figs 36 and 37). Some of the ring-gullies did not describe complete circles, and perhaps represented curved sections of fencing. Pryor (1984) surveys a range of possible reconstructions for semicircular structures. Breaks in some of the ring-gullies indicated east-facing entranceways, and post-holes in some of the roundhouses suggested roof and door supports. The entranceway into roundhouse *13869* was well preserved and had been renewed on three occasions (Fig. 38). The ring-gullies contained no post-pipes or post-settings to indicate that they represented foundation trenches for walls. The excavation found datable artefacts in most of the ring-gullies and in some of the interior post-holes, although there was comparatively little structural daub. It is notable that finds occurred more frequently towards the entranceway terminals of roundhouses *13874* and *13865*.

The roundhouses are similar to those recorded at Little Waltham and Slough House Farm (Drury 1978; Wallis and Waughman 1998), although they differ from these in certain details. The ring-gullies are generally less complete and vary more in diameter than those at Little Waltham. Post-settings in some of the ring-gullies at Little Waltham indicate that they had been foundation trenches for walls. If the St Osyth ring-gullies fulfilled this function too, then the evidence for it has either not survived or has not been identified. In two or three of the Little Waltham roundhouses there were polygonal arrangements of post-holes representing evidence for roof supports and internal construction. This form of internal construction was not seen within the St Osyth roundhouses, but has been recorded within a Middle Iron Age roundhouse at Great Dunmow, which is not far from Little Waltham (Lavender 1997). Door supports, indicated by pairs of post-holes set back from the entranceway terminals, appear to have been present in at least two of the Little Waltham roundhouses, but were not interpreted as such in the published report (Drury 1978: *e.g.* C4 and C6, figs 17 and 20). Post-hole pairs of this kind are a common feature of Middle Iron Age roundhouses in Essex, with numerous examples found at Mucking (Clark 1993). Post-holes occurred within many of the Slough House Farm roundhouses, but their layout appeared unstructured. East-facing entranceways are an almost standard feature of Iron Age roundhouses and may reflect either a concern with the rising of the morning sun, or a wish to present the rear of the house to the prevailing (south-westerly) wind (Parker-Pearson 1996; Oswald 1997). Large quantities of finds in the entranceway terminals are also common, and suggest the

casual discard of household rubbish and/or acts of ritual disposal (Hill 1995, 80–1).

The excavation identified thirteen four-post structures, one six-post structure and one nine-post structure. The distribution of these buildings was uneven, as many lay in groups and appeared to have been associated with specific roundhouses. The presence of carbonised grain in post-holes associated with two of the structures indicated that they were used as granaries. Plotting the dimensions of the four-post structures suggested that they occurred in two ranges of sizes (Fig. 41). Since four-post structures at other Middle Iron Age sites in Essex do not appear to exhibit the same division, this result may be a product of chance or else reflect a specific characteristic of the St Osyth settlement. The Little Waltham four-post structures were generally larger than their St Osyth counterparts. The evidence for pairing (*e.g.* Fig. 40F) is matched at CIS Stansted, where one very large and one very small four-post structure lay together alongside a roundhouse within a small enclosure (Havis and Brooks 2004). The dimensions of the Slough House Farm four-post structures are generally consistent, but lie half way between the St Osyth size ranges. If it assumed that the size division is meaningful, then it can be surmised that the smaller buildings were used for a different purpose to the larger ones, for example to store a different type of crop. Evidence for six-post structures appears less frequently, but has been recorded at Slough House Farm. Unlike St Osyth, none of the sites mentioned above have produced evidence to indicate that post-built structures had been used as granaries. Large numbers of four-, six- and nine-post structures lay within the latest phase of Middle Iron Age settlement at Mucking (Clark 1993), but these have yet to be published in detail.

The inter-site variability exhibited by the Middle Iron Age roundhouses and post-built structures further supports the view that much of what was constructed during the Iron Age, and during prehistory in general, was shaped by specific local needs, resources and taste. Informality and convenience probably exerted major influences, and it is likely that the construction work was carried out by non-specialists. It is interesting that the inter-site variability discussed here does not extend to the Middle Iron Age pottery assemblages recovered, probably implying that pottery manufacture lay in the hands of a skilled minority.

Ritual

Ritual activity within Iron Age settlement sites in the region is represented by deposits of artefacts and by probable shrines and other structures, often associated with burials (Sealey 1996; Bryant 1997, 27). The Middle and Late Iron Age settlements at (respectively) Little Waltham and ACS Stansted included probable shrines, represented by rectangular structures lying in the middle of the settlements (Drury 1980; Wait 1985; Havis and Brooks 2004).

Evidence for ritual activity at St Osyth was represented by pit *60* and possibly by structure *13955* and pits *10915* and *12190* (Figs 33 and 40D). The structure is undated, but is assumed to be Middle Iron Age because of its immediate context. It had an idiosyncratic five-post form and lay in the north-east corner of the north-east enclosure. Pit *60* contained the calcined remains of a human cranial vault and lay near the south-west post-hole. Radiocarbon dates indicate that it was dug between the 2nd and 4th centuries BC. Excavations have uncovered little evidence for cremation during the Iron Age prior to *c.* 50 BC, and the occurrence of the cremated bone is therefore very unusual. There is no evidence for any associated cemetery. If the juxtaposition of the pit and the structure is not coincidental, then it is possible that the structure was used as a shrine. The occurrence of human skulls and skull fragments in Iron Age ditches and pits is not unknown, and is conjectured to have been related to head-hunting and the display of martial prowess (Wait 1985, 120; Sealey 1996, 50–1). Examples of such Middle–Late Iron Age finds from Essex include fragments of skull in a ditch at Stifford Clays, and in a pit outside a roundhouse at North Shoebury (Wilkinson 1988, 99; Wymer and Brown 1995, 34). Further examples include skull fragments in a Middle Iron Age ditch at Birchanger and part of the skull of a young man in a Middle Iron Age ditch at Wendons Ambo (Medlycott 1994, 28; Hodder 1982, 40).

Pit *10915* and *12190* both contained single ceramic vessels: *10915* was situated within roundhouse *13869*, and *12190* lay north-west of roundhouse *13866* (Fig. 33). Both vessels are incomplete and had been truncated by ploughing. They either represent embedded storage jars or votive deposits. Similar examples of single pots in pits occurred in two of the Little Waltham roundhouses and were interpreted either as mouse traps or as votive deposits (Drury 1980, 30 and 125). As three of these four examples lay within roundhouses, it seems likely that they occurred within a domestic context.

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