

RITUAL AND RIVERSIDE SETTLEMENT:  
A MULTI-PERIOD SITE AT PRINCES ROAD,  
DARTFORD

PAUL HUTCHINGS

with contributions from

Mike Allen, Enid Allison, Robin Bendrey, Peter Couldrey,  
Nigel Macpherson-Grant, Stuart Needham, Rebecca Nicholson,  
Ruth Pelling, Ian Riddler, Val Rigby, Tania Wilson

The site lies in the valley of the rivers Darent and Cran near Dartford (NGR TQ 541732) (**Fig. 1**). Both rivers are to the east of the site, 450m and 100m respectively. Preliminary evaluation was undertaken by KARU in 1994. Subsequently the KCC specified the need for further archaeological work which was undertaken by the Canterbury Archaeological Trust (CAT) between December 1997 and January 1998 (Allen 1997). Following this, CAT carried out an archaeological excavation under the direction of the writer in Spring 1998 on the land to the south of the junction of Princes Road and Lowfield Street. The excavation area was approximately 230m<sup>2</sup>, measuring 22m N-S and 10-11m wide, encompassing the total area of the earlier evaluation trenches. Following the excavation, an archaeological watching brief took place during construction groundworks.

The valley of the river Darent rises gently to the east of the excavation area which is adjacent to the toe of a spur of land that extends down from the high ground of Dartford Heath. The natural topography over the excavation area appears to be a slope from the north-west (c. 6.14m OD) to the south-east (c. 5.37m), a distance of just over 22m. Machine excavations observed during the watching brief showed that the natural gravel [28] on the site, including those areas outside of the excavation, dipped substantially to the north of the excavation near the site boundary and rose to the west. This may have been the result of a water channel, possibly a tributary of the river Cran. The natural gravel and alluvium also dipped to the east and south which may have been due to water erosion. Substantial

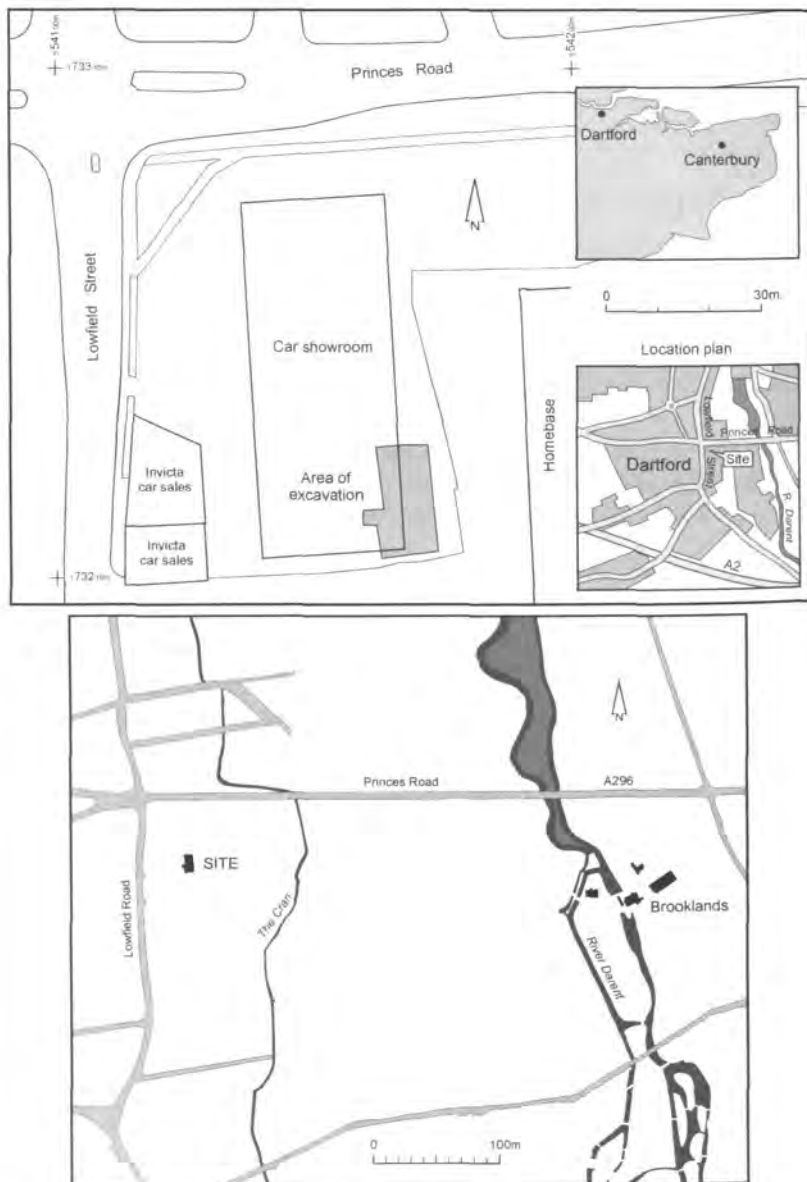


Fig. 1 Site location.

isolated depressions were also located possibly representing pockets in the bedrock collapsing.

The Dartford area is known for its well documented Lower Palaeolithic discoveries (Tester 1954; 1971; 1976). The Sites and Monuments Record (SMR) further records a Lower Paleolithic hand-axe (TQ 541728). There are no other prehistoric finds recorded in the immediate vicinity (but see lithics report below for sites nearby). The SMR data shows that there have been six, mainly Roman, excavations (and finds) within 500m of the site (Hutchings 2001, 117, fig.8). The main Roman imperial London to Dover Road (Watling Street) ran 0.75km to the north.

## THE EXCAVATION

Machining removed featureless medieval layers [1, 2, 3 and 4] which revealed a peaty deposit [5] that covered much of the excavation area. This was removed by hand and then a sampling strategy was implemented. This entailed two E-W aligned baulks, one to the north of the site and one to the south. A series of six sondages were excavated across the site on the same alignment as the baulks down to the natural gravel (**Fig. 2**). There were no discernible features of the Late Neolithic, but 664 residual flint tools and flakes were excavated (see Lithics report).

### *Phase I: Bronze Age*

In sondage F several indeterminate deposits were sealed by an organic peaty layer [29, not illustrated] 0.10-0.20m thick which covered the whole of this area. This contained two copper alloy pins of Bronze Age date – these are of particular interest being relatively uncommon in this country and are fully discussed below, pp. 63-64. Also found were occasional scatters of fire cracked flint, some charcoal flecks and animal bone. These finds probably represent occupation waste dumped into an area prone to flooding.

In the centre of the site a number postholes and stakeholes were encountered which are thought to have supported temporary structures although they formed no discernible pattern.

To the middle west of the excavation in the south facing section adjacent to the excavation trench was a feature [115] with a steep sloping side and a flat base some 0.30m deep (**Fig. 3**). Although it was badly truncated on most sides, it is nevertheless interpreted as some form of terracing. The fill was light grey clay with inclusions of occasional flint pebbles and contained finds of worked flint, burnt

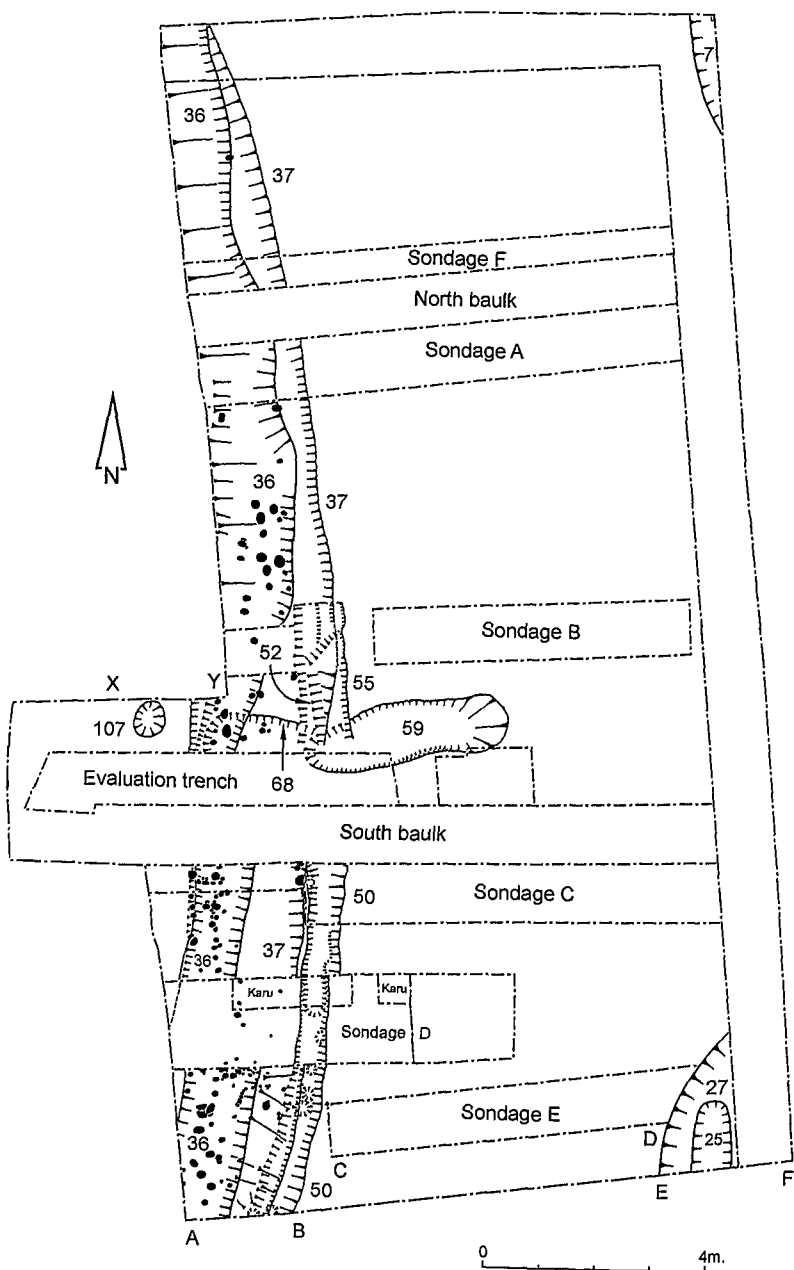


Fig. 2 Plan of the major features of all periods.

RITUAL & RIVERSIDE SETTLEMENT: PRINCES ROAD, DARTFORD

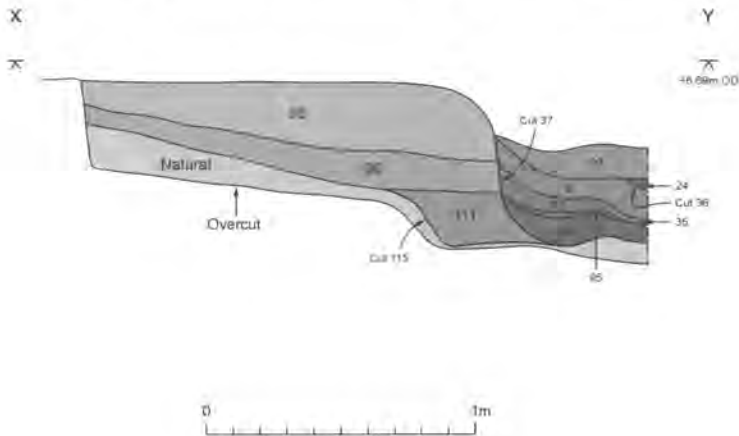


Fig. 3 Section X-Y to the west of the site showing cut [115].

flint, bone and a couple of scraps of undiagnostic pottery. A stakehole [109] was excavated slightly to the south of [115] and was truncated by a pit [107, Fig 2]. The fills of these were capped by deposits [95 and 98] which contained worked and burnt flint.

Two pits [68 and 59, Fig. 2] were excavated on an E-W alignment across the centre of the site between the evaluation trench and sondage B. The first was a heavily truncated elongated pit [68] 2m in length, 0.70m wide and 0.25m deep. The fill [67] contained bone fragments and flint tools. It was truncated to the west by a larger pit/ditch [59], which was 3.5m long, 1m wide and 0.35m deep and contained several peaty fills [56, 57 and 58]. The pits contained charcoal flecks, flint flakes, burnt flint and bone; both have been formed in wet conditions to aid drainage. Nevertheless such domestic activity would suggest that the ground was dry for at least some of the year.

Located in the south of the site were a number of Bronze Age deposits [e.g. 110]. Postholes and pits give further indication of the presence of structures and domestic activity in this area of the site (not illustrated). In sondage E one posthole [123] was cut into the natural, and in sondage D two intercutting postholes were excavated [103 was truncated by 97]. A small shallow pit [105] contained two classic knobbed Deverel-Rimbury sherds, burnt daub, charcoal fragments and burnt flint in its fill [104].

Capping [110] and posthole and pit fills [96 and 104] was a

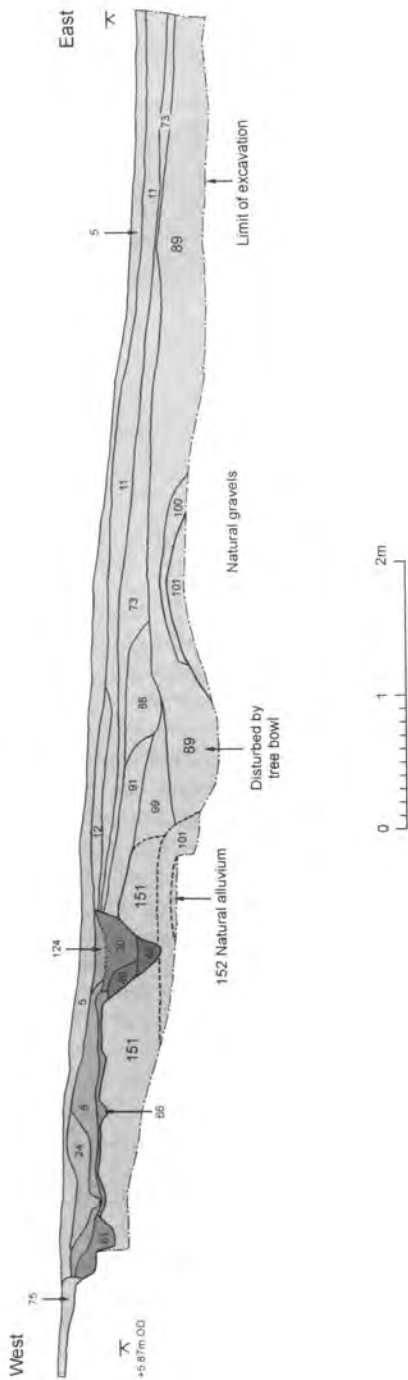


Fig. 4 Section in sondage C, south facing.

compact deposit [75] with gravel concentrations in which was found one of the three copper alloy pins, as well as charred grain. These compacted deposits are thought to have been thrown onto the boggy ground which was prone to flooding, as deliberately laid surfaces. In the north of the site the Bronze Age spreads were fewer and thinner. It is conjectured that the rising ground surface to the north-west would have obviated the necessity for such make-up layers.

A number of layers thought to be occupation waste were also noted in the section of sondage C (Fig. 4). Overlying the natural gravel here was a dump deposit [101/167] around 0.12m thick made up of fine sand and clay with some flint. Cut into this layer, grouped together but not in a line, were three stakeholes [112, not illustrated], up to 0.10m wide and 0.22m deep. It is possible that there were more underneath the unexcavated areas. The stakeholes were filled by an overlying clay dump [100]. This implies that they were removed as opposed to being left to rot *in situ*. Also partially overlying [101/167] was a sandy clay layer [151] which may have accumulated during periods of flooding.

A highly organic deposit resembling peat [89] overlay [100] and contained an articulated red deer leg and an edge ground blade. Overlying this layer was a heavily disturbed sandy clay deposit [99]. Covering the posthole fill [122] and partially capping [99] and [151] was clay [91/156] up to 0.15m thick. This layer may have been naturally deposited perhaps during a period of flooding. A fairly thick occupation debris deposit [88] contained a substantial number of flint finds including fire-cracked flint. These were then covered by another peaty layer [73]. A small circle of flints [74] was seen above [73]. They did not appear to be natural but they are thought to have been dumped after clearance.

Covering much of the southern end of the excavation was a highly organic silty spread [11/10]. This was grey black, slightly sandy silt with nearly 30 per cent charcoal. It was up to 0.10m thick in places and contained burnt flint, flint tools, 36 pottery sherds (including classic Deverel-Rimbury sherds) and some animal bone. Amongst the grain finds, particularly significant is that of spelt wheat (*Triticum spelta*). This is fully discussed below (p. 71).

Towards the top of this organic silty layer there were fewer charcoal flecks and more flint fragments and small nodules. Two radiocarbon dates of  $3240 \pm 60$  BP, calibrated 1645-1400 BC and  $3150 \pm 60$  BP, calibrated 1520-1275 BC (both at 95 per cent confidence), were taken from the base and top of this context respectively. These dates place the deposit securely in the Middle Bronze Age. It sealed the peaty layers below and in some places was quite compacted; and also

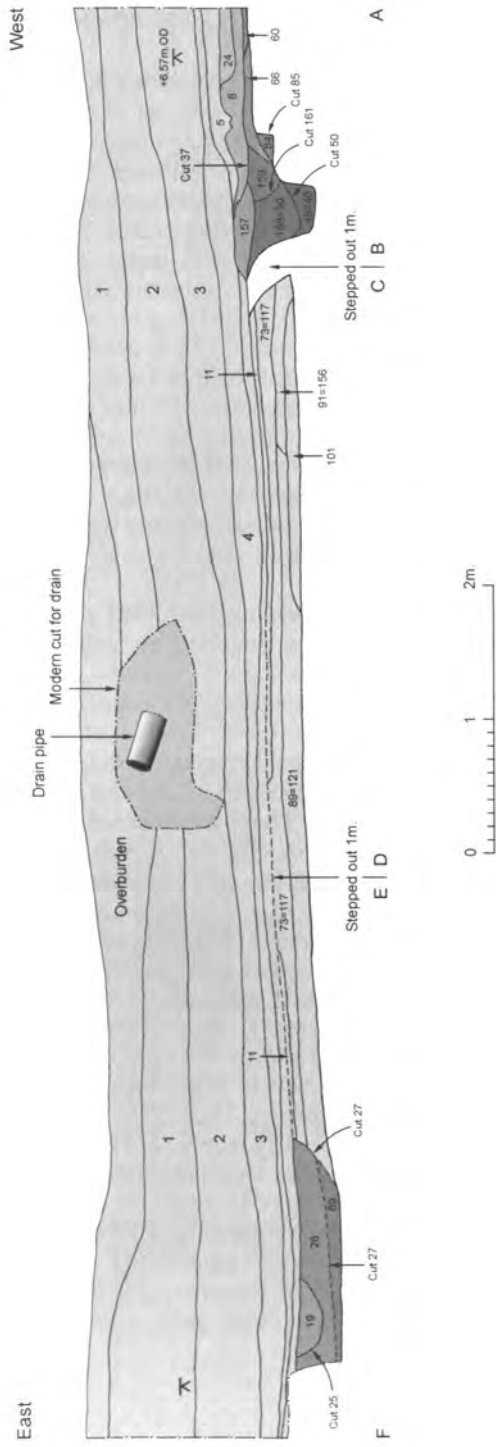


Fig. 5 Section at southern edge of site, including sondage E.



yielded a wealth of occupation waste, more substantial than any other. This midden would have been away from the main occupation areas of the settlement.

To the west of the site further probable Bronze Age features that were likely part of a domestic settlement were discovered during the watching brief; one pit [178] was located in a stanchion base 10m to the west of the south-west corner of the excavation. It measured 1.10m E-W and N-S (but its true size is not known) and was 0.68m deep. The fill [170] contained scraps of undatable pottery. Two further features [172 and 176] were seen in a stanchion base that was approximately 26m to the north of the excavation and 16m to the east. One [172] is thought to be the butt end to a ditch, its true shape being obscured by the north section and to the south by piling. It appeared to be E-W. The ditch contained two fills [171 and 177]; the secondary fill [171] was full of worked flint and some sherds of pottery which may be Middle Bronze Age or later. The sherds from this fill are of the same phase of activity represented by the two bronze pins from context [29]. Therefore these features were probably directly related to those in the excavation area. A posthole [176] 0.25m in diameter (cut into the south edge of 172) is assumed to be associated with the ditch; its fill contained no finds.

This Middle Bronze Age phase shows that the site had periods of flooding followed by stability. The features in the north of the site cannot be directly related to those in the south, but they are thought to have been formed or laid down during similar stages in the site's history. The features discovered during the watching brief suggest that the settlement may have been centred away from the main excavation area.

### *Phase II: probably early Roman*

In the extreme south-west of the site were the truncated remains of eighteen postholes and stakeholes [86]. These were cut into the natural and filled by the overlying deposit [66, Fig. 5]. Two shallow pits were seen in this area [85 was truncated by 63]. Apart from fire cracked flint neither contained any finds. Also cut into [66] were seventeen postholes [65]. A N-S ditch [50/55] which was cut during the Roman occupation runs next to these features (see Phase III), and in the southern section appears to truncate pit [85, Fig. 5]). It may be that these two phases of stake/postholes represent a boundary line which predates ditch [50/55].

Probably acting as part of a boundary line also at the very south-west of the site was a linear N-S palisade ditch [87, not illustrated]

that truncated the compacted Middle Bronze Age deposit [75]. It was up to 0.27m deep, 5.90m long, and up to 0.70m wide. It had a sharp sloping side to the west and was truncated to the east, although in places it was still visible. In the base of this linear feature were probable postholes [79, 81 and 83]; they were up to 0.35m wide and 0.25m deep and seem to have been deliberately placed in the base of the ditch, perhaps to give it greater physical presence and to enforce it as a boundary.

This boundary must have fallen out of use for a short time, because a deposit [61] of fine sand and small to medium gravel up to 0.17m thick was seen to have slumped into it from the higher ground on the west. Cut into this deposit was a posthole [77] 0.21m deep and up to 0.30m wide. This might represent an attempt, together with other unidentified postholes, to re-establish the palisade boundary [87].

Although these features lack dating evidence they were probably the first attempts at establishing a N-S boundary in the early Roman period, possibly because the ground to the east of the site was still wet. Subsequently, the site seems to have suffered from minor flooding. An alluvial deposit of fine clay and silt [64] filled the group of postholes [65] and covered the fills of pit [63] and posthole [77]. This was then covered by a water-lain clay [60] resting in a naturally cut channel.

### *Phase III: Roman boundary ditch*

A N-S curved boundary ditch [50/55] ditch was then cut right through the west side of the excavation area, and is known from a previous evaluation to continue much further to the north (Fig. 6A). It cut through the dark organic deposit [11] and across pit/ditch [59]. It was up to 0.40m deep and 0.75m wide. The spoil [12] which was removed when the ditch was originally cut could be seen to the east of the feature partially covering the spread [10/11] (Fig. 4). This context had a radiocarbon date taken from it during the 1997-8 evaluation, giving a calibrated date BC 40-AD 235 at 95 per cent probability (1930 ± 60 BP). The primary fill [46/48] to the south of the south baulk contained worked flint and two residual worn pottery sherds one of which may date from the Late Bronze Age/Early Iron Age. The environmental evidence collected from a sample taken from this context suggested that grazing took place in the vicinity. A silt and gravel fill [44] containing fire-cracked flint, 0.10-0.20m thick, was seen in the lower part of the ditch, but not throughout the length of it. Slumping down from the east into the ditch was a silt and sand deposit [43] that was 0.10-0.25m thick with patches of clay. On the

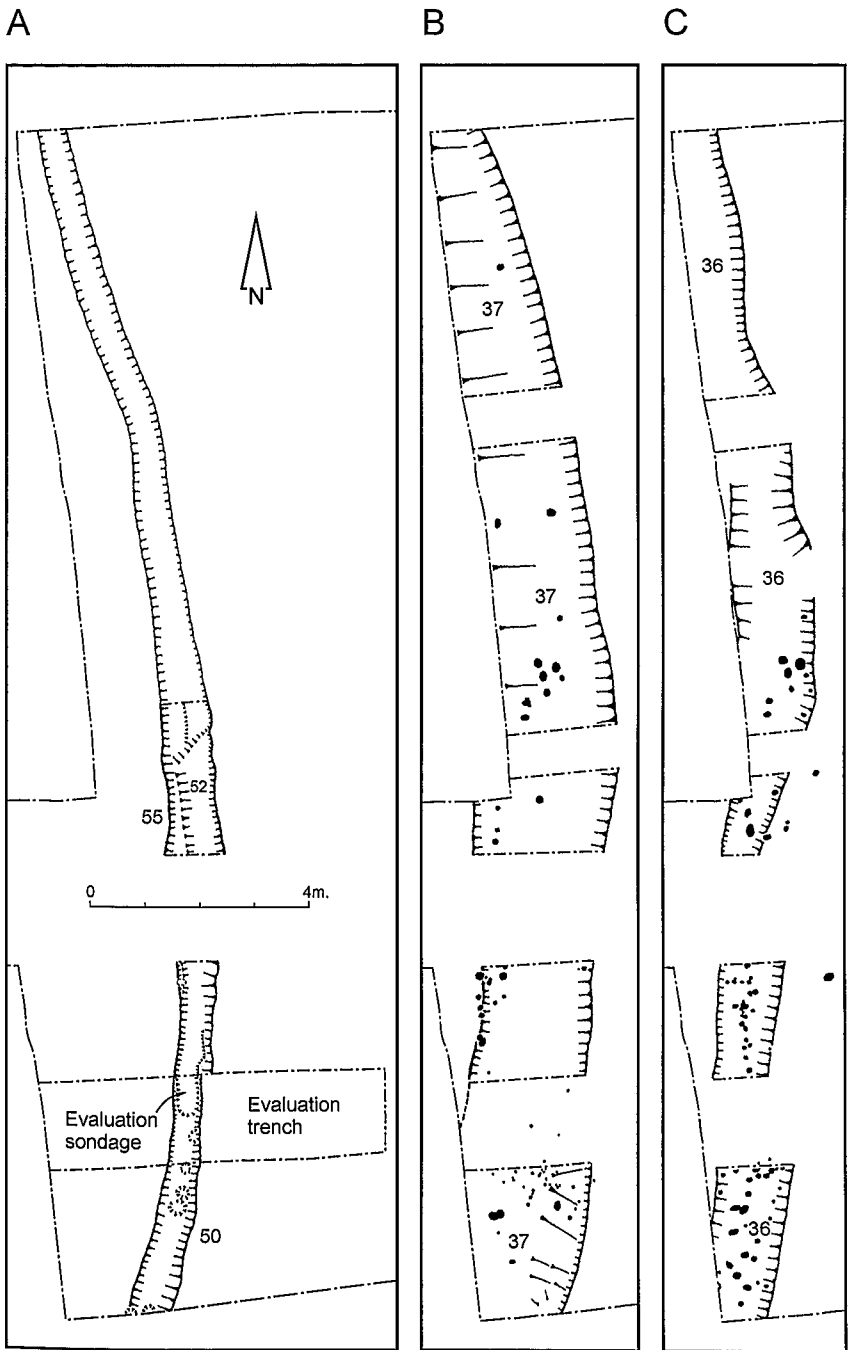


Fig. 6 (A) N-S ditch (50=55); (B) N-S sand filled ditch [37] with stake and postholes; (C) N-S sand filled ditch [36] with stake and postholes.

west side of the ditch was another slump deposit [45/49] of silty sand with a charcoal rich lens.

On the north side of the southern baulk, the primary fill of the ditch [50/55] comprising sand and silt [54] up to 0.30m deep contained burnt flint and an unworn sherd of grog-tempered pottery of mid-Roman date (Hadrianic to Antonine). It was here that a re-cut [52] had been made in an exceptionally stony area of the site. The re-cut was 1.40m N-S, 0.65m E-W and only 0.24m deep. The shallow depth of the N-S ditch in this area and the gravel may imply that the ground was harder to dig. Because it was so much shallower it would have been more susceptible to silting up and this may have been the reason for the re-cut occurring in this area only. The re-cut was then filled by a dark grey humic silt [47] up to 0.10m deep, which contained worked flint. These flints were probably residual from digging through earlier features. A sample taken from this deposit shows that the water in the ditch may have become stagnant and that duckweed accumulated in it.

Stratigraphically above these fills [45/49 and 47] was a mid-brown loose silt [30] with no inclusions that was up to 0.30m thick and 0.58m wide. A sample from it has shown the presence of mostly marine fish bones, implying either domestic waste or gull pellets. Two postholes [34 and 42] cut into silt [30]. One [34] was 0.30m deep and 0.27m wide and square in plan with a peaty fill [33] which contained a mid to late second-century sherd of pottery. The other [42] was 0.23m in diameter and 0.21m deep; its peaty fill [41] contained fragments of animal bone. These may have been an attempt to re-establish the boundary line; at the very least they seem to respect it. Seen slumping into the N-S ditch and overlying [30] was a silty peat deposit [66].

Two further ditches [25 and 27, Figs 2 and 5] cut into the Bronze Age deposits were excavated in the south-east corner of the site. The sherds from these features have been dated to the late first century to early third century. These, along with a couple of postholes in the same area, imply that another temporary period when the ground was dry enough to sustain a structure. One of these ditches [25] was butt ended, 0.70m wide and 0.15m deep, but only 1.20m could be seen of the length. The infill [19] was largely made up of a highly organic material, almost peat-like, containing charcoal flecks and one pottery sherd of the mid second to mid fourth century. This southern part of the fill [19] of this ditch was truncated by the second ditch [27]. Only one edge, measuring 2.60m, could be excavated, its fill [26] comprised mostly a naturally formed loose organic peaty substance. Both ditches are considered to have a drainage function. A sample

from ditch 25 containing fish bones implied the ditch may also have contained water.

In the south of the site and cut into the organic Bronze Age deposit [10/11] was a large posthole [21], bowl-shaped in section, with a depth of up to 0.22m and diameter of 0.47m. Truncating this posthole was an irregular feature [18] which measured 0.64m wide and had a depth of 0.17m at its deepest point in the centre. In section it appeared like a posthole with packing around the edge. Its fill [17] contained finds of one burnt flint, one small bone fragment and one small sherd dated to between the late first century to the early third century. The relationship of these postholes with the boundary ditch [50/55] is not known; however they may well have been contemporary with postholes [34 and 42] and therefore part of the re-establishment of the boundary line. Large postholes such as these could have supported quite substantial structures; if the ditch was just a boundary it would have been fairly prominent.

*Phase IV: re-establishment of the Roman boundary ditches*

Two shallow and wide ditches [37 and 36, Figs 2, 6B and 6C] aligned N-S with numerous postholes and stakeholes cut into the base seemed to respect the earlier Roman ditch [50/55]. Just to the west of and parallel to ditch [50/55], ditch [37] was cut [truncating 60], 0.45m deep in one section and 2.50m wide (Fig. 6B). Overlying the ditch was a clay silt [116/138] varying in thickness from 0.10-0.50m, which may have been trampled. Another layer [35] was also seen in this ditch and the molluscan evidence suggests that the ditch contained water for long periods which may have been the result of flooding. Cut into these silts were stakeholes [31] with very steep sloping sides ranging from 0.04-0.30m in depth. A number of other post and stakeholes [38] also cut into the underlying silts. These are thought to have been removed when the ditch was no longer needed. Fine sand [8] filled the remainder of the ditch and the stake and postholes. The only find from this deposit was a small fragment of lava quern common in the Roman and Anglo-Saxon periods. Overlying this to the west was a silty clay deposit [24], thought to have slumped into the subsided fills of ditch [50/55] after [8] had partially filled the N-S ditch (Fig. 4). It seems likely that ditch [37] was a late Roman re-establishment of the original boundary [50/55].

A second ditch [36, 0.30m deep and 0.30m wide] was in effect a re-cut, cutting into [8] (Fig. 6C). Cut into its base were seventy-two small circular and subcircular stake and postholes [9] ranging in depth and size and running approximately N-S (Fig 6C). Apart from

being sealed by a thin compact lens of sand they were either voids or filled by the sand [24, Figs 4 and 8] that filled the ditch. This deposit [24] was up to 0.30m thick and 1.5m wide; it had a coarse sandy texture which is thought to have been laid in one phase through high energy water. However, the presence of lenses within it would imply that it was deposited over a wet period as opposed to being deposited in one sudden event. It is likely that these features were contemporary being a ditch with a fence constructed along its length. Alternatively, the ditch may have been dug after the fence line fell out of use (i.e. as a replacement for it). Within the ditch [36], a natural silt 'slump' deposit [90], 0.13m thick appeared to be capping [24].

The two ditches [36 and 37] are likely to represent a re-establishment of the earlier boundary with the addition of a palisade in the later Roman period. Such a boundary could demarcate damper ground to the east which was unsuitable for habitation. Ditch [36] was the last time that the boundary was used and may represent the end of the permanent utilisation of the site in the late Roman or possibly early Anglo-Saxon period. This may have been the result of the immediate area becoming unsuitable for permanent habitation due to temporary periods of flooding.

#### *Phase V Medieval*

Overlying most of the site was a dark brown peat-like layer with charcoal flecks [5/15], the thickness of which varied from 0.08-0.15m; to the west it could only be seen in patches. It contained one Middle Bronze Age sherd, some undiagnostic scraps and one sherd of probable twelfth-century, possibly early thirteenth-century, date. All of these are most likely to be residual and cannot therefore be used for dating the peat.

#### *Phase VI Medieval*

Cutting through the peaty layer [5] across the north-eastern corner of the excavation was a small section of a ditch [7] with a silty clay fill [6] which contained no finds. This was presumably dug to aid the drainage of the site. Cutting into [5] in the south of the excavation was a medium-sized posthole [40]. The overlying layer [4], which had been machined off, probably truncated it. The posthole appears to have cut a stakehole to the east.

#### *Phase VII Medieval*

Three stratigraphically distinct alluvial layers overlay [5] and its

associated features. The first of these was a grey layer of fine sand and silt [4] covering the entire site. It contained in patches large quantities of animal bone. This deposit undulated across the site from east to west being less than 0.10m thick in some places and nearly 0.20m in others. It contained a fragment of a ceramic spindle whorl thought to be of eleventh-century date, daub, slag, and medieval roof tile. These finds are indicative of nearby occupation. This deposit probably accumulated during a period of increased activity in the area when Dartford was expanding.

Overlying [4] was the second alluvial layer [3]. Once again this deposit undulated across the site being over 0.40m deep in the west to less than 0.20m in the east. This deposit contained ceramic building material (CBM) fragments, daub, shell, slag, stone, nine sherds dating between 1150-1225 and a copper alloy buckle dating between the twelfth and fourteenth century. Finally there was an alluvial layer of silty clay [2] 0.30-0.40m thick. It contained CBM fragments and a residual undiagnostic, probably prehistoric sherd. The finds in these spreads could have been from a nearby dwelling, and it may well be that this land was part of a farmstead throughout the medieval period.

## THE MATERIAL EVIDENCE

### Prehistoric Pottery by *Peter Couldrey*

A total of 67 sherds, weighing 351g, was recovered. The majority of these date to the Middle Bronze Age. This Deverel-Rimbury assemblage, although small in size, is an important contribution to regional studies. A few sherds show signs of occupation in the Late Bronze Age/Early Iron Age. All of the rims, bases and decorated sherds are illustrated in **Figs 7 and 8**.

Five fabric types were identified on the basis of the main inclusions present (see **Table 1**). Notes in the archive cross-refer these to the corresponding Kent-based fabric codes employed by CAT. The distribution of these fabrics is shown on **Table 2**. Most of the sherds came from the organic silty layer [10/11] and from the fill of pit [105]. Many of these are small and abraded, weighing an average of less than 2g each, but at least three vessels (Fig. 7, nos 1-2, Fig. 8, no. 3) are less worn and weigh 118g, 52g and 51g respectively.

Vessel 1 is a thick-walled jar with apparently vertical linear grooved decoration. Its interior is eroded but the exterior is smooth. Vessel 2 is a small biconical vessel with a scar near the rim. It is neatly made with an evenly smooth interior and traces of a possible light burnish externally. The small vessel (no. 3) has a neatly applied boss. Its wall is just 5-6 mm thick, but its surfaces are fairly lumpy and only summarily smoothed. Though the

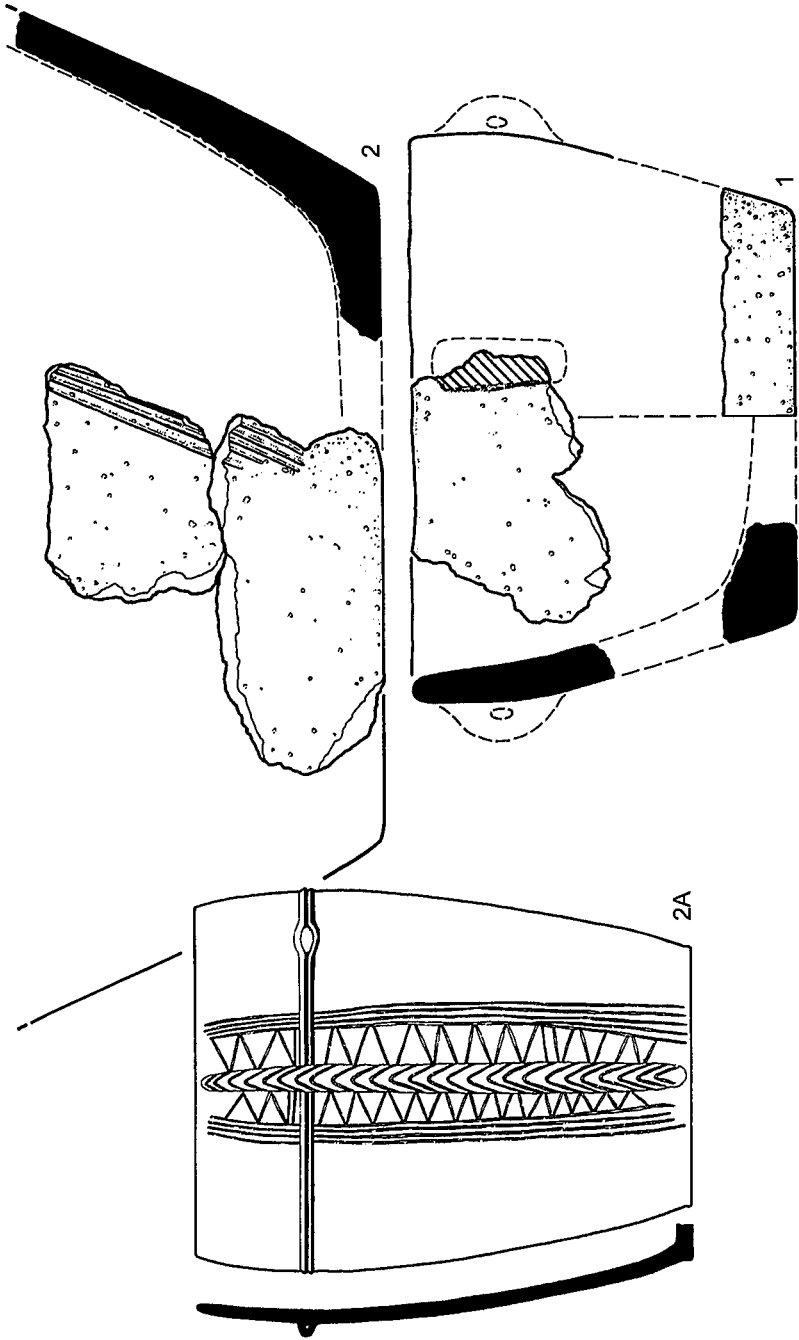


Fig. 7 Prehistoric pottery. Nos 1-2. (Scale 1:2) with suggested reconstruction (No. 2A).



TABLE 1. FABRIC TYPES

Fabric Code	Fabric Description
A	Flint tempered: moderate to common inclusions up to 1mm, sparse up to 2mm.
B	Flint tempered: moderate to common inclusions up to 2mm in moderate to profuse quartz sand.
C	Flint tempered: moderate to common inclusions up to 3mm and sparse inclusions up to 5mm.
D	Flint tempered: moderate to common inclusions up to 1mm, sparse up to 2mm and with moderate iron oxide up to 1mm.
E	Fine silt-grade matrix with sparse to moderate quartz sand.

boss on no. 4 (Fig. 8) is horizontal, that and the thin wall suggest it belongs to a small jar similar to no. 3. Most of the vessels have been fired in a reducing atmosphere with black cores and dark grey surfaces, though some show signs of having been refired.

Vessels 1-2, from the organic silty layer [10/11], are dated by two radio-carbon dates (both quoted at 2 sigma, 95 per cent probability): one of

TABLE 2. DISTRIBUTION OF FABRIC TYPES  
BY NO. OF SHERDS AND WEIGHT (G)

Context	A	B	C	D	E	Total
Peat deposit 5 [Fig. 8, 4]	-	1 (7)	-	-	-	1 (7)
Organic silty spread 10	7 (9)	-	-	-	-	7 (9)
Organic silty spread 11 [Fig. 7, 1,2]	23 (189)	-	-	-	6 (8)	29 (197)
Fill of ditch 50/55: 46 [Fig. 8, 5]	1 (8)	1 (3)	-	-	-	2 (11)
Fill of pit 105: 104 [Fig. 8, 3]	1 (1)	-	-	-	18 (51)	19 (52)
125	-	1 (1)	-	-	-	1 (1)
Fill of pit 178: 170	1 (1)	-	-	-	1 (1)	2 (2)
Secondary fill of ditch 172: 171	-	-	1 (16)	5 (56)	-	6 (72)
Total	33 (208)	3 (11)	1 (16)	5 (56)	25 (60)	67 (351)

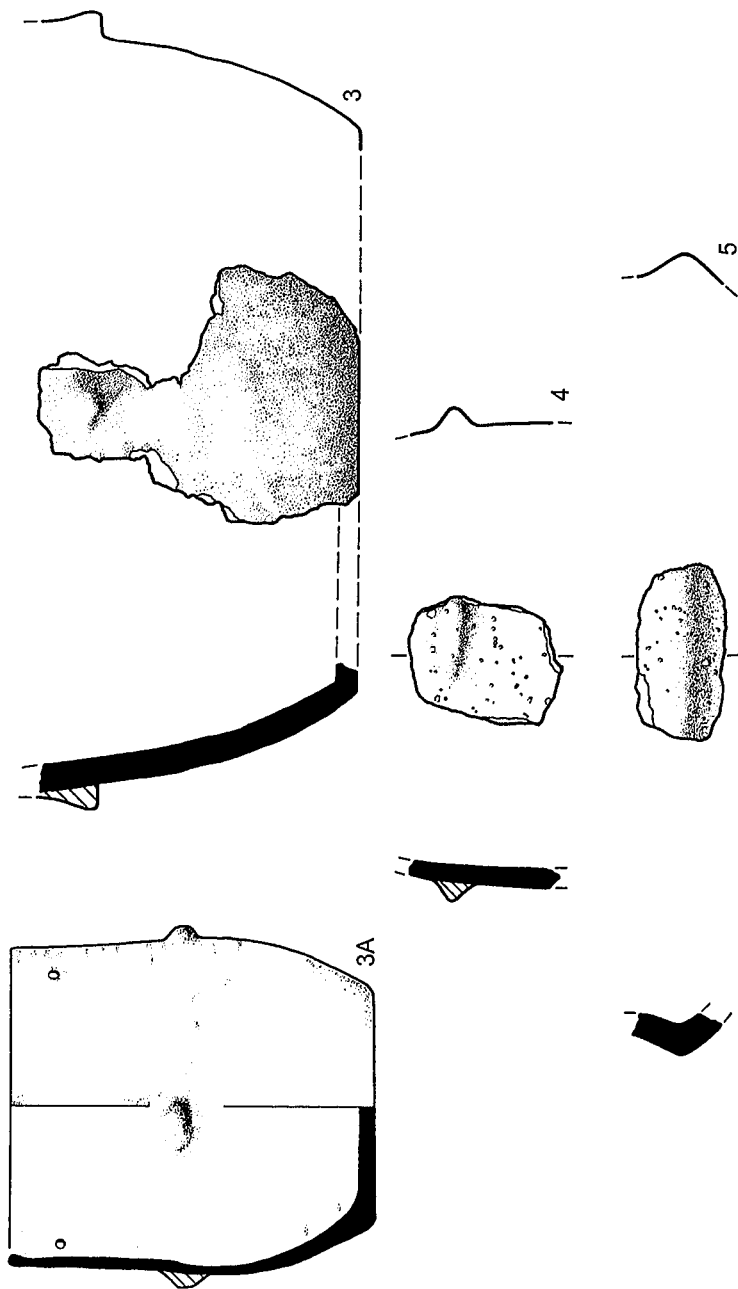


Fig. 8 Prehistoric pottery. Nos 3-5 (Scale 1:2) with suggested reconstruction (No. 3A)

1645-1400 cal BC from its base, and one of 1520-1275 cal BC from its top. Parallels to these vessels are readily found in Deverel-Rimbury assemblages of the Middle Bronze Age. The full design of the grooved decoration on no. 1 is incomplete, but it is broadly similar to that found on an example from Ardleigh (Erith and Longworth 1960, fig. 6.G1). The scar on no. 2 reflects the former presence of applied clay; its position near the rim suggesting that it could have supported a vertical rib, a knob or, possibly, a lug handle. All of these are known from Deverel-Rimbury contexts, for example at Kimpton, Dorset (Dacre and Ellison 1981), Ardleigh (Erith and Longworth 1960) and Grimes Graves (Longworth *et al.* 1988). These vessels fit well within the chronological range indicated by the radiocarbon dates.

The two knobbed vessels, no. 3, from the fill of pit [105], and no. 4, which was residual in the peat deposit [5], are also paralleled in Middle Bronze Age contexts. While such decoration can appear on large urns, the appearance of smaller knobbed vessels and cups is common (Brown and Bartlett 1984-5, fig.16.1; Couchman 1975, fig. 2.1A; Ellison 1988). Their distribution spreads from central southern England to East Anglia (Ellison 1988, figs 18-19) and their Essex distribution has more recently been mapped by Brown, who has argued that their appearance in the south of that county may represent a late development (1995, fig. 12.5A). Small vessels with knobbed decoration are found rarely during the Late Bronze Age: examples with a base diameter of between 100-120mm, similar to those from Dartford, were found at Kimpton from phase E, which saw the first arrival of pottery with post Deverel-Rimbury characteristics, and one from phase G, which contained a higher proportion of Late Bronze Age forms and coarser fabrics than the earlier phases (Davies 1981, Dacre and Ellison 1981). At Kingston Hill, Surrey a small squat cup with a rim diameter of 50mm, a thick wall and base, decorated with eight or nine crude knobs was found 'in or near the top of' a post Deverel-Rimbury jar (Field and Needham 1986, fig. 4.22). The form of this vessel however, the large number of knobs, its small size and relatively thick walls, clearly distinguish it from the Dartford examples. Thus, while vessel 3 is not directly associated with the radiocarbon dates, it is likely that both it and vessel 4 belong to the same phase of occupation as nos 1 and 2, though a later date towards the end of the second millennium, cannot be discounted altogether.

A single worn sherd from a shoulder (Fig. 8, no. 5) was found in context [46], the fill of the Roman ditch [50/55]. This is likely to date between c. 900-350 BC. In addition, two vessels of coarse flint tempered pottery (fabrics C and D) were recovered from the secondary fill of ditch [172]. These are not closely datable, but are mentioned here because they could belong to the Middle Bronze Age phase or later.

### Roman and Medieval pottery by *Nigel Macpherson-Grant*

Just three sherds of Roman pottery were recovered: an unworn black-burnished ware dish fragment from pit 18 (Phase III), the rim of a sandy ware bowl from the fill of feature [34], and a fairly large unworn sherd of Romanised native grog-tempered ware from ditch [50/55].

With the exception of one possible later eleventh- to twelfth-century sherd from the latest peat layer [5], most of the post-Roman pottery came from context [3]. It includes a number of Early Medieval North Kent shell-filled sandy ware sherds, datable to between *c.* 1150-1225, and a few Medieval London and Mill Green Ware sherds. No ceramics post-dating the mid fourteenth century were recovered.

### Lithics by Tania Wilson

A total of 664 struck flint artefacts were recovered. Additionally, one shattered lump with a natural perforation, and some 573 fragments of burnt flint weighing 18.5kg were recovered. The assemblage composition is summarised in **Table 3**.

Flint artefacts were recovered from most deposits on the site and occur throughout every phase of activity. Just over half of the assemblage was recovered from deposits within features (14 per cent) and deposits thought to contain occupation debris (39 per cent). Deposits laid down after the ditches fell out of use produced a further 17 per cent of the assemblage, and the remainder of the artefacts were recovered from the alluvial sediments. Hence the majority of the assemblage is residual. A full description of the assemblage is held with the site archive.

Apart from the well-documented Lower Palaeolithic mentioned above and two stray finds: a Mesolithic axe (Broadfoot 1974, 241-242) and a Neolithic polished stone axe (Tester 1960, 209), Mesolithic and Neolithic activity has also been recorded 2km away at Darenth (Mynott 1976, 60-61; Philp *et al.* 1998).

Truly diagnostic pieces within the present assemblage are relatively sparse, but the presence of the edge-ground implements (**Fig. 9**, no. 1) suggests a late

TABLE 3. LITHIC ASSEMBLAGE COMPOSITION

Identification	Quantity
Blades	33
Chips	43
Chunks	25
Cores and struck nodules	25
Denticulate	1
Edge-ground blade	1
Flakes	496
Hammer-stone	1
Miscellaneous retouched pieces	8
Notched flakes and blades	2
Points	3
Edge-ground scraper	1
Scrapers	17
Utilised flakes and blades	8

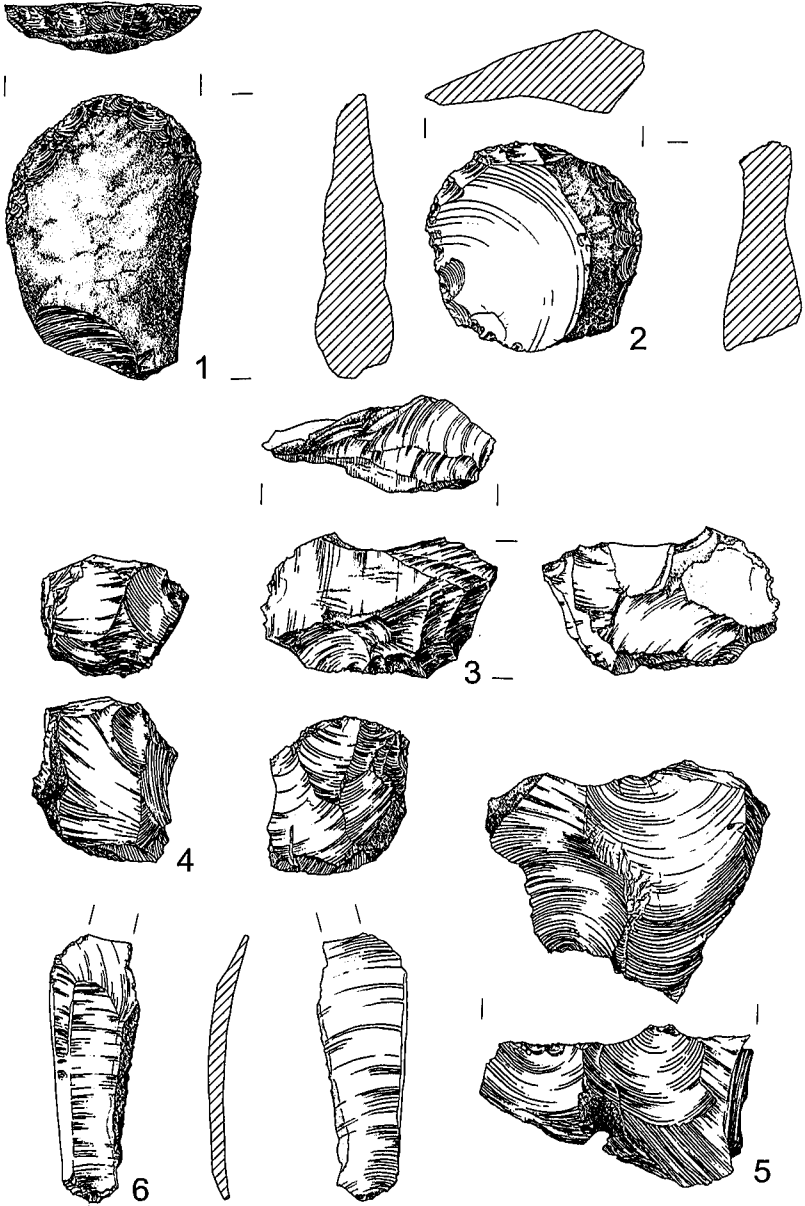


Fig. 9 Struck flints 1-6. Scale 2:3.

Neolithic date; the frequency of scrapers and the fact that several of the more extensively retouched examples are symmetrical in form (Fig. 9, no. 2), are also considered to be traits of this period (Edmonds 1995, 96). In addition, Healy (1988, 46) has shown that a wide range of retouched forms including denticulate pieces, along with a high frequency of multi-platform cores (58 per cent of the complete systematically flaked examples, Fig. 9, nos 3-5) are often noted in assemblages of this date. Furthermore, whilst it has been shown that flakes become increasing broad and squat towards the later Neolithic (Saville 1981, 40-4), blades and blade-like flakes continue to be present, albeit in lesser quantities (Healy 1988, 46), a fact that is consistent with this assemblage.

Inspection of the assemblage composition and consideration of the local environment leads to the suggestion that two main activities are represented. The significant quantity of debitage along with the cores and the fragment of a hammer-stone, demonstrate that flintworking was taking place within the vicinity. In addition to this, a number of refits were found from a range of contexts. Context [88] produced two refitting flakes and a group of flakes which were almost certainly detached from the same nodule. Context [11] produced four refitting pairs of flakes and one group of three refitting flakes. Two further pairs of refitting flakes were also found from later contexts. Given more time, it is likely that more refits would have been found. However a lack of smaller knapping debris (only a relatively small number of chips were retrieved from sieved contexts) suggests that any flintworking is unlikely to have taken place within the excavated area.

Given that the flint knapping probably took place elsewhere, it would imply that the artefacts were transported to and subsequently deposited at this location by other means. It is unlikely that the artefacts would have reached this location through natural processes, as the relatively sparse occurrence of patination and a lack of evidence of water rolling shows. The fact that much of the struck flint was recovered from deposits which also contained burnt flint, animal bone and pottery might initially suggest that the flint was deposited along with dumps of domestic debris. However, the artefacts recovered from the earliest sequence of deposits taken together with the environmental evidence indicate deliberate deposition. The latter shows that there was a period of gradual accumulation of river alluvium at the site, which was also subject to occasional flooding. Additionally, during this period, there were a number of episodes of peat formation (Green 1998, 8).

It is possible that during these latter episodes, when the land surface would have been relatively stable, the area was visited and some of the artefacts were deposited. These early phases of deposition consist in the main of flint artefacts alone, with the notable exception of the articulated red deer leg. The edge-ground blade (Fig. 9, no. 6) was amongst the assemblage recovered from this early phase. We can therefore see a very different behavioural pattern emerging. Edge-ground artefacts are often associated with a special set of circumstances surrounding their deposition, such as in burials, hoards and other formal deposits (Edmonds 1995, 97). The blade in particular, is clearly a prestigious object and as such is unlikely to have been simply discarded, especially given its association with the articulated deer leg. A similar implement was found at Radley in Oxfordshire, where it was placed

in a grave close to the head of an adult female burial; the grave also contained the remains of an adult male with a jet belt slider and a leaf-shaped arrowhead (Bradley 1992, 136).

However, the remainder of the assemblage (33 per cent) was recovered from the later and more significant episode of peat formation in the Middle Bronze Age represented by contexts [10 and 11]. In addition to the struck flints these two deposits also contained some 11.5kg of burnt flint, along with animal bone, daub and pottery. One explanation for the presence of Neolithic flints in these contexts is that they were present in the topsoil of the Middle Bronze Age occupation and were inadvertently collected during the gathering up of domestic waste. However, a significant number of retouched pieces (13) and cores (9) were recovered from these deposits, which may imply that these artefacts were already in place when the later material was dumped. This is further endorsed by the fact that the edge-ground scraper was also collected from these deposits. It is suggested therefore that these deposits may in fact represent a palimpsest of material, with perhaps other isolated deliberate deposits gradually becoming incorporated with later dumped material as the organic peat layer formed over time.

It appears that the site was visited at intervals over a period of time and deposits of artefacts were made. The purpose of this remains unclear, but based upon the more 'exotic' artefacts present it is suggested that these deposits were of more importance than simply the dumping of waste and it has been suggested elsewhere that such activities were associated with rites or celebrations (Edmonds 1995, 97).

In addition to the evidence for deliberate deposition during the later Neolithic, there also appears to be some evidence for flintworking taking place within the vicinity. However only further discoveries will show whether this may represent a relatively isolated knapping incident or perhaps a settlement of some kind.

The value of the discovery of this assemblage lies in the evidence it provides for previously unknown activity in this area during the later Neolithic. Little is yet understood about Neolithic activity in Kent, but when considering this riverside location it is tempting to make comparisons with better understood areas, for example the Fens in Cambridgeshire, Lincolnshire and Norfolk where the Fenland Survey has shown strong Neolithic links with riverside locations (Coles and Hall 1997, 835).

### Small Finds – the roll-headed copper alloy pins *by Stuart Needham and Val Rigby*

Roll-headed pins have a straight shank which terminates at one end with a simple open roll. Typically, the shank is made from a round-section rod about 3mm in diameter, one end was hammered flat for about 20mm and then curled for one complete revolution over a former 4-5mm in diameter. The size of the 'roll' is limited by the diameter of the rod and so it is not surprising that the type appears unusually standardised.

Roll-headed pins (including the very similar 'spiral-headed' form) are still rather infrequent finds in Britain, but examples have been found at Ivinghoe

(Bucks), Symond's Yat (Herefordshire), Heathery Burn Cave (Durham), High Down Hill (W. Sussex) and three from the Thames at Sion Reach, London (Needham 1990, 623, fig. 14, 8). Those from more or less secure contexts are datable to the Late Bronze Age and the transition to the Earliest Iron Age (Needham 1990), a period when they also abound in the Alpine lake-side settlements (e.g. Audouze and Courtois 1970, nos 241-296). New British finds have come from Flag Fen (Coombs 1992), the 'Batheaston hoard' (British Museum P&EE, unpublished find) and Potterne (Gingell 2000, 190). However, the form is very simple and, in some parts of the Continental mainland, was rather long-lived, having earlier origins (O'Connor 1980, 200). This gives at least the theoretical possibility that the Dartford examples could be earlier than the others from Britain. Indeed, 'settlement' contexts are still throwing up surprises in terms of the types of bronzes, particularly ornaments, in circulation in Britain and their periods of currency.

Roll-headed pins from Lower Saxony are found in contexts dating from Tumulus contexts onwards, datable in absolute terms to the fifteenth-fourteenth centuries BC (Laux 1977). While Lower Saxony is not immediately proximate to Britain, both regions then fell within an axis of high flux exchange, extending from Pomerania in the east to Brittany and southern England. The transmission of ideas along this axis was responsible for the adoption of some common ornament forms ('Ornament Horizon' in Smith 1959) and similarities in the decorative schemes on metalwork. It is not impossible that roll-headed pins would have been disseminated alongside the more flamboyant pins of this horizon – 'Picardy' pins.

Another Continental find relevant to this discussion is the hoard from Villethierry, (Yonne, France) of some 850 objects contained within a pot dominated by pins of a variety of types, including roll-headed (Mordant *et al.* 1976). The best dating of the hoard appears to be *Bronze Final 1*, broadly contemporary with Penard metalwork in Britain, c. 1300-1150 BC.

Roll-headed pins are clearly not diagnostic of any particular phase of the Bronze Age, finding widespread usage and may have been a very basic functional item – the roll-head serving to attach a safety cord.

### *Catalogue (Fig. 10)*

1. A bronze roll-headed pin, with circular shaft and typical flattened and rolled terminal.  
Condition: incomplete, the point is missing, old damage, the fracture edge is corroded; the shaft is bowed from straight almost certainly due to use rather than burial; the brownish green surface patination is relatively glossy and good.  
Dimensions: surviving length 98mm, width of head 5mm, diameter of roll 4mm, shaft diameter 2.5mm.  
Sf 4; Context 75; Phase I; Light to mid grey compacted mixed silt.
2. A bronze roll-headed pin. Two longitudinal fine grooves on the outer face of the roll and one on the opposite face of the shaft may be simple decoration, but are more likely striations caused by the fabrication processes.



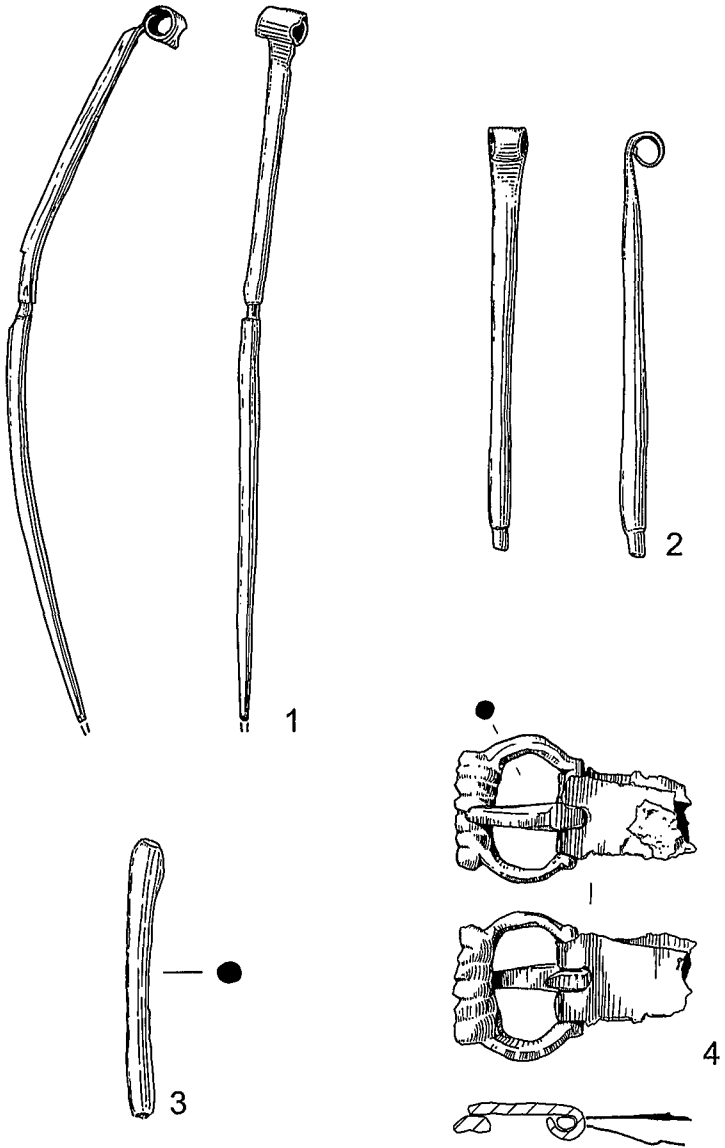


Fig. 10 Copper alloy pins 1- 3. Scale 1:1.  
Copper alloy buckle (No. 4). Scale 1:1.

Condition: damaged, the point is missing, with a fresh fracture edge; much of the shaft is encrusted in iron pan, below it the metal is in relatively good condition.

Dimensions: surviving length 52mm, width of head 5mm, diameter of roll 4mm, shaft diameter 3mm.

Sf 3; Context 29; Phase I; Organic, peaty layer.

The dimensions of the terminals of the two pins are almost identical, although the shaft of no. 2 is slightly thicker.

3. A length of round sectioned bronze shaft, definitely broken at one end and possibly also at the other, although here the shaft appears to thicken into what may be a plain rounded terminal; due to the effects of corrosion, it is not possible to be certain. Although there is not a definite join, its context, diameter, iron-pan corrosion and condition are consistent with it being part of no. 2. Furthermore, when added the surviving lengths leave sufficient leeway within the typical length of 120mm for the addition of a third pointed fragment to complete the pin. If however the thickening is functional and not due to corrosion then it represents one end a third simple pin or tool; such pins are known on the Continent and are considered *Bronze final IIIb* (Audouze and Courtois 1970, Group R, pl 18, 506515). Dimensions: surviving length 34mm, shaft diameter 3mm. Sf 2; Context 29; Phase I; Organic, peaty layer.

### Other Small Finds by Ian Riddler

The incomplete *copper alloy buckle* (Fig. 10, no. 4) from the silty clay layer [3] is of a common thirteenth-century type, which is relatively small, with moulded decoration in the form of lobes about the pin rest (Fingerlin 1971, 65-70; Egan and Pritchard 1991; Margeson 1993, 24 and fig 13.130). It has a rectangular, sheet metal buckle plate.

A fragmentary *ceramic spindle whorl* (Fig. 11) came from the early medieval sand and silt layer [5] that was seen across the entire site. It is discoidal in shape with two flattened surfaces and rounded edges. It extends to 50mm in diameter, which places it beyond the size of most spindle whorls, but not all of them. It is compared for its diameter with the contemporary series of siltstone spindle whorls from Dover, Townwall Street (Riddler and Walton Rogers forthcoming). The shape of the whorl allows it to be classified as type B (Walton Rogers 1997, 1736). In northern England, spindle whorls of this type were in use from the late tenth to the early twelfth century. The situation in southern England is not quite as clear as yet, although a similar date range is likely. Type B whorls are rare, in comparison with other shapes. Twelve examples came from Winchester, for example, from a sample of 136 spindle whorls; they formed less than 9 per cent of the assemblage (Woodland 1990, 216).

Fired clay spindle whorls were not common in England between the Late



Fig. 11 Possible early medieval ceramic spindlewhorl. Scale 1:1.

Iron Age and the early post-medieval period. Antler, bone and stone were preferred as raw materials. Some of those from east Kent identified as fired clay are, in fact, made from siltstone (Blockley 1988, 146, nos 108-9; Driver *et al.* 1990, 206 nos 208-9). They occur occasionally in Anglo-Saxon and early medieval deposits, as at Mucking and *Sandtun*, for example (Hamerow 1993, 65 and fig 106; Riddler 2001, 237-40).

A small fragment of a basalt lava *quern*, weighing 66g, came from a sand deposit [8]. Basalt lava was one of the most common stone types used for querns in Kent, both in the Roman and Anglo-Saxon periods (Riddler forthcoming, a and b). No original surfaces survive on this piece to enable its dating to be established with any precision.

#### Mammal Bone by Robin Bendrey

521 fragments of animal bone were recovered by hand-excavation, of which 137 (26.3 per cent) have been identified to species (Bendrey 2000). The assemblage is generally poorly preserved. Cattle is the most common taxon, being present in all groups, though is probably over-represented due to the conditions of preservation. Cattle is also the most common taxon by number of bone fragments in each individual group, except for the Bronze Age organic spread [contexts 10 and 11] and the possibly medieval latest peat layer [5 and 15] where sheep bones are more common. The assemblages are too small for detailed analysis and the quantities of bone from individual groups are too limited to allow an accurate assessment of relative species abundance.

The earliest contexts (possibly of Late Neolithic/Early Bronze Age date) produced bones of cattle, sheep and red deer. Red deer is represented by a partial articulating foreleg (radius, three carpals and metacarpal), possibly discard from a butchered carcass.

In the Roman period contexts cattle, horse and dog have been identified. A dog humerus provides a reconstructed shoulder height of 428mm, calculated following Harcourt (1974).

Medieval deposits produced the most bone, and the greatest variety of species. Cattle and sheep bones predominate. Other species present include:

goat, pig, horse, dog, cat and red deer. The presence of adult cattle and sheep dentition suggests that these animals were kept for secondary products, such as milk and wool and for traction. An immature cattle mandible is present, indicating that meat production was also important. A complete cattle metacarpal gives an estimated withers height of 1.14m, calculated following Fock (von den Driesch and Boessneck 1974). Adult horses were kept for working. The presence of dog and cat suggests pet or feral animals associated with human habitation. Red deer is solely represented by antler, which is not evidence for hunting as antler was collected for working.

Small quantities of fragmented burnt bone were derived from bulk sieved samples consistent with occupation spreads in several periods. Samples from some Bronze Age contexts produced loose teeth of woodmouse, *Apodemus* sp., and bank vole, *Clethrionomys glareolus*. The poor preservation of the bone could explain the presence of only loose teeth, or possibly that the small mammal remains are from carnivore scats. If the small mammal bones did derive from predators then they may have come from some distance, and so would not represent the immediate site ecology.

#### Fish Remains by Rebecca Nicholson

Fish bones were recovered from the fills of two Roman ditches. Because of the size and type of skeletal elements represented, and the fragmentary state of some bones, identifications were only possible to family level. Three wrasse bones and one of a cottid (either bullhead *Cottus gobio*, father lasher *Myxocephalus scorpius* or sea scorpion *Taurulus bubalis*) were identified from context [30] in ditch [50/55]. The rest of the fragments were unidentifiable. Single bones of a clupeid (herring or sprat) and a ?gadid (cod family) were recovered from context [19] in ditch [25].

All the bones were from fish less than 150mm in length, and most were under 100mm. With the possible exception of the herring/sprat it seems unlikely that they were of economic or dietary significance. The cottid may be a freshwater fish (*C. gobio*), but all other identified specimens were marine. Small wrasse and other cottids inhabit the littoral zone, while herring/sprat are pelagic shoaling fish found in coastal waters during spawning. Analysis of invertebrate remains shows that the ditches contained freshwater. Since at least the majority of the identified fragments were from marine fish, the most plausible explanation for their presence in the ditch fills would be that these bones were contained in the guts of some larger but unrepresented marine fish discarded as food waste, or that they originated in gull pellets.

#### Invertebrate Remains by Enid Allison

Waterlogged deposits, including peat, had originally been present on the site, but subsequent drying out had led to the degradation of much preserved plant and invertebrate material (Allen 1997). Charred plant remains were common in a dump of occupation material dated to the Middle Bronze Age, however, and insect assemblages were recovered from two Roman ditch fills. The

latter, and a small group of snails, have been used to characterise environmental conditions in the ditches.

*Insect Remains (by Enid Allison)*

Insects were recovered from the fills of ditch 50 and a subsequent recut 52, dated to the Roman period. The lower fill of ditch 50 (context 46) produced a small insect assemblage including the aquatic beetles *Hydraena testacea*, *Hydrobius fuscipes*, *Helophorus* spp. and *Agabus* or *Ilybius* sp. The first two of these are most often found in stagnant fresh water although *H. testacea* also occurs in muddy streams (Friday 1988, 149) and *H. fuscipes* can be found in slowly moving streams (Hansen 1987, 176).

Few of the plant feeding insects could be identified closely enough to provide details of vegetation growing either in or beside the ditch, but a nymph of *Trioza urticae* indicates the presence of nettles (*Urtica*) close to the ditch. The small decomposer component includes four individuals of *Megasternum obscurum* usually found in decaying vegetable matter, and *Onthophagus* sp. which feeds on herbivore dung, suggesting grazing land in the vicinity.

The insect assemblage from the primary fill of ditch recut 52 (context 47) also contained aquatic beetles including *Coelostoma orbiculare* found in vegetation at the edges of stagnant water (Hansen 1987, 128). The presence of *Tanysphyrus lemnae* shows that duckweed (*Lemna*) grew on the water surface. A diverse collection of plant feeders was present: *Brachypterus* sp. is found on nettles (*Urtica*), *Gymnetron pascuorum* is a grassland species which breeds in the heads of ribwort plantain (*Plantago lanceolata*; Hansen 1965), *Acalles turbatus* is found in dead twigs, and *Scolytus rugulosus* is a bark beetle found on *Prunus* and *Rosa*. Other plant-associated taxa were less closely identified. They included at least two species of froghopper (Auchenorrhyncha), *Altica* sp., several *Apion* species, *Ceutorhynchus* sp., and unidentified weevils (Curculionidae spp.).

To summarise, the ditches contained still or slowly flowing fresh water with aquatic vegetation, and duckweed on the surface of the water. The condition of the insect remains suggests that the fills remained permanently waterlogged in antiquity. Grassland vegetation with stands of nettles, and *Prunus* and/or *Rosa* trees grew close to the ditch. Dead twigs may have accumulated in the ditch. The taxa recorded from both samples are given in Table 4.

TABLE 4. INSECT REMAINS FROM ROMAN DITCH FILLS

Taxon	Context 46	Context 47
<i>Aphrodes</i> sp.	+++	+
Auchenorhyncha sp.	+++	-
<i>Trioza urticae</i> (Linnaeus) nymph	+	-
Carabidae sp.	+	-
Hydroporinae sp.	-	+
<i>Agabus</i> or <i>Ilybius</i> sp.	+	-
<i>Helophorus</i> spp.	++	+
<i>Coelostoma orbiculare</i> (Fabricius)	-	+
<i>Megasternum obscurum</i> (Marsham)	++	+
<i>Hydrobius fuscipes</i> (Linnaeus)	+	-
<i>Hydraena testacea</i> Curtis	+	-
<i>Acrotrichis</i> sp.	-	+
<i>Tachyporus</i> sp.	+	-
Aleocharinae sp.	+	+
Pselaphidae sp.	+	-
<i>Aphodius</i> sp.	-	+
<i>Onthophagus</i> sp.	+	-
Elateridae sp.	-	+
Cantharidae sp.	+	-
<i>Brachypterus</i> sp.	-	+
<i>Anthicus</i> sp.	-	+
Chrysomelinae sp.	+	-
? <i>Longitarsus</i> sp.	+	-
<i>Altica</i> sp.	-	+
Chrysomelidae sp.	-	+
<i>Apion</i> spp.	+	+++
<i>Tanysphyrus lemnae</i> (Paykull)	-	+
<i>Acalles turbatus</i> Boheman	-	+
<i>Ceutorhynchus</i> sp.	-	++
Ceutorhynchinae sp.	+	-
<i>Gymnetron pascuorum</i> (Gyllenhal)	-	+
<i>Gymnetron</i> sp.	++	-
Curculionidae spp.	+++	++
<i>Scolytus rugulosus</i> (Muller)	-	+
Coleoptera spp. (misc.scrap)	+++	+++

Nomenclature follows Kloet and Hincks (1964-77)  
+ single individual; ++ 2 - 4 individuals; +++ 5 or more individuals

*Molluscs (by Mike Allen)*

Few diagnostic mollusc fragments were found in the sample from ditch 37. Two taxa were identified, both typical of bodies of water or wet and damp habitats. The presence of *Succinea/Oxyloma* may be accounted for by damp grassland habitats but planorbids require standing bodies of water suggesting that the ditch may have been permanently wet, or have received overbank flood waters. The presence of ostracods supports the interpretation that the ditch contained water for at least some of the time.

*Charred plant remains by Ruth Pelling*

The on-site sampling and bulk flotation programme produced two exceptional samples from the organic spread context 11 (Table 5). Two radiocarbon dates from the top and base of the deposit place it firmly in the Middle Bronze Age (3240 and 3150 ± 60 BP, or calibrated 1680-1260 BC at 95 per cent confidence). The dried 500µm flots were sorted under a binocular microscope at x10 to x20 magnification for charred seeds and chaff. Identifications were made in the usual way using modern reference material held at the Oxford University Museum. Nomenclature and taxonomic order follow Clapham *et al.* (1989).

Both samples 8 and 10 produced a high concentration of charred seeds and chaff (67.1 and 132 items per litre). Sample 8 however produced mainly chaff, particularly *Triticum* sp. glume bases which formed 98 per cent of the assemblage, while sample 10 produced large numbers of cereal grains, weed seeds and chaff. Preservation of the grain was variable, as reflected by the level of identification, while preservation of the chaff was generally very good.

Two species of *Triticum* were identified on the basis of grain and the more reliable component, the glume bases. *Triticum dicoccum* (emmer wheat) was identified in sample 10, as might be expected for the Middle Bronze Age. More surprisingly *Triticum spelta* (spelt wheat) was also present in large numbers in sample 10 and was the only positively identified *Triticum* species in sample 8. Occasional hexaploid *Triticum* rachis internodes are also likely to be of *T. spelta*, from the lower tougher part of the ear. Tough *T. dicoccum* rachis was also noted. *Hordeum vulgare* (barley) was identified in large numbers in sample 10 and from a single grain and rachis internode in sample 8. A hulled 6-row variety is suggested by the number of very angular grains, some retaining fragments of lemma and palea, and the number of asymmetrical lateral grains. Both rachis and grain were numerous, although grain out-numbered rachis by about 3:1, the ratio expected for unprocessed ears of 6-row *Hordeum vulgare*. Additional species of economic potential were *Corylus avellana* (hazel nut), *Linum usitatissimum* (flax), a large legume (pea, vetch or bean) and *Prunus* cf. *spinosa* (possible sloe).

TABLE 5. THE CHARRED PLANT REMAINS (ORGANIC SPREADS)

	Sample	8	10
	Context	11	11
	Volume	8	24
<i>Triticum dicoccum</i>	Emmer wheat grain	-	11
<i>Triticum cf. dicoccum</i>	cf. Emmer wheat grain	-	6
<i>Triticum spelta</i>	Spelt wheat grain	-	38
<i>Triticum spelta/dicoccum</i>	Spelt/Emmer wheat grain	-	71
<i>Triticum sp.</i>	Wheat grain	-	48
<i>Hordeum vulgare</i>	Barley, hulled asymm. grain	1	5
<i>Hordeum vulgare</i>	Barley, hulled grain	-	87
<i>Hordeum vulgare</i>	Barley grain	-	99
Indet	grain	1	453
<i>Triticum dicoccum</i>	Emmer wheat glume base	-	307
<i>Triticum cf. dicoccum</i>	cf. Emmer glume base	-	41
<i>Triticum spelta</i>	Spelt wheat glume base	141	138
<i>Triticum cf. spelta</i>	Spelt wheat glume base	1	5
<i>Triticum dicoccum/spelta</i>	Spelt/Emmer glume base	360	1199
<i>Triticum dicoccum</i>	Emmer wheat rachis	-	1
<i>Triticum sp.</i>	Hexaploid wheat rachis	24	-
<i>Triticum sp.</i>	Wheat rachis	-	1
<i>Triticum sp.</i>	Wheat, basal rachis	1	-
<i>Hordeum vulgare</i>	Barley rachis	1	65
Cerealialia indet	Basal rachis node	-	3
Cerealialia indet	Rachis node	-	9
Cerealialia indet	Culm node	-	4
<i>Corylus avellana</i>	Hazel nut shell fragments	-	8
<i>Linum usitatissimum</i>	Flax seed	-	4
<i>Vicia/Pisum sp.</i>	Vetch/Bean/Pea	-	1
cf. <i>Prunus sp.</i>	Sloe/Plum etc., stone/fruit	-	1
<i>Pteridium sp.</i>	Bracken fronds	-	4
<i>Ranunculus subsp</i>	Buttercup	-	1
<i>Ranunculus</i>			
<i>Ranunculus parviflorus</i>	Small-flowered Buttercup	-	1
<i>Stellaria media</i>	Chickweed	-	8
<i>Stellaria gramineae</i>	Lesser Stichwort	-	1
<i>Montia fontana subsp</i>	Blinks	-	19
<i>chondosperma</i>			
<i>Chenopodium album</i>	Fat Hen	1	112
<i>Atriplex sp.</i>	Orache	-	6
Chenopodiaceae		-	11



	Sample	8	10
	Context	11	11
	Volume	8	24
Leguminosae	Legume, small seeded	-	17
<i>Vicia/Lathyrus</i> sp.	Vetch/Vetchling	-	29
Umbelliferae		-	1
Polygonaceae		-	3
<i>Polygonum aviculare</i>	Knotgrass	-	6
<i>Polygonum persicaria</i>	Persicaria, Red Shank	-	17
<i>Fallopia convolvulus</i>	Black Bindweed	-	20
<i>Rumex acetosella</i>	Sheeps sorrel	-	36
<i>Rumex</i> sp.	Docks	1	4
<i>Urtica dioica</i>	Stinging Nettle	-	1
<i>Alnus glutinosa</i>	Alder	-	1
Solanaceae		-	11
<i>Plantago media/lanceolata</i>	Plantain	-	15
<i>Galium aparine</i>	Goosegrass	-	1
<i>Galium</i> sp.	Goosegrass/Cleavers	-	7
<i>Tripleurospermum inodorum</i>	Scentless Mayweed	-	5
<i>Juncus</i> sp.	Rush seed head	-	1
<i>Eleocharis palustris</i>	Common Spikerush	-	55(1)
<i>Carex</i> spp.	Sedges	-	38
<i>Arrhenatherum elatius</i>	False Oat-grass tuber	-	12
<i>Poa annua</i> type	Annual Meadow-grass	4	10
<i>Bromus</i> subsect <i>Eubromus</i>	Brome grass	-	9
Gramineae	Grass, small seeded	-	64
Gramineae	Grass, large seeded	-	1
Indeterminate		1	34

Items recorded are seed, nutlet, etc., unless otherwise stated. Items in brackets are silica skeletons.

### DISCUSSION by Ruth Pelling

The site lies in a marginal location which was liable to flooding (at least every five years), as witnessed by alluvial and peaty deposits as well as by the environmental evidence. The evidence indicates the fringes of a multi-period settlement. Although there were no features dating to the Neolithic period, there was ample evidence in the form of tools and debitage to point to occupation in the vicinity. In addition, there are tools which are associated elsewhere with ritual contexts. Occupation evidence has been identified for the Middle Bronze Age, Late Bronze Age/Early Iron Age, the Roman and the medieval periods.

In the Middle Bronze Age there is evidence of both dumped domestic debris, possibly with the intention that floodwaters would wash it away, as well as possibly deliberately placed compacted surfaces, making wet ground more habitable, and drainage ditches. Postholes also indicate elusive structures. The three copper alloy roll-headed pins (two from a peaty deposit and one from a compacted possibly deliberately placed deposit) may have been deliberately placed in the floodwater (or on its margins) as votive offerings. Such deposition in liminal contexts is well-attested in the Bronze Age (Bradley 1990). Middle Bronze Age bossed Deverel-Rimbury sherds (of regional significance) denote a settlement, the centre of which may have been on the slightly higher ground which rises sharply just a few metres to the west.

Features found during the watching brief proved that there was indeed activity on the higher ground to the west of the site; this may have been because of the wet conditions to which the lower ground was frequently subjected. There is some indication that intermittent activity here could have continued into the Late Bronze Age/Early Iron Age. There was no evidence for occupation in the Middle or Later Iron Ages and identifiable occupation evidence resumed with the Roman period.

The excellent preservation of charred seeds and chaff from the radiocarbon dated organic silty spread [11] is of particular significance. Both emmer and spelt wheat were identified, as was barley. Hazel nut, flax, a large legume possible sloe were also present. The cereal remains expand our knowledge of the Bronze Age economy of Kent and extend our known distribution of early records of spelt wheat. *Triticum dicoccum* (emmer wheat) is still the principal wheat species recorded from Middle Bronze Age sites. Increasing evidence now suggests that *Triticum spelta* (spelt wheat) was being cultivated in several areas by the Late Bronze Age and there are Middle Bronze Age records from Black Patch, East Sussex (Hinton 1982) and Brean Down, Somerset (Straker 1990). Two particularly early and large deposits of spelt wheat have produced dates comparable to those from Princes Road, one from Yarnton, Oxfordshire (calibrated date of 1740-1410 BC at 95 per cent confidence) (Robinson *pers comm*) and one from Godmanchester, Cambridgeshire (1670-1420 BC at 95 per cent confidence) (Murphy *pers comm*). The closeness of these dates would suggest that spelt wheat could have been introduced via the Thames Estuary and spread rapidly along the River Thames and its major tributaries.

More generally the Dartford material does suggest that the cultivation of cereals in the Middle Bronze Age in this region was on a

scale comparable to that in the Middle and Upper Thames Valley. The dominance of glume bases over grain in both samples indicates that a large proportion of the deposits are derived from the by-products of cereal processing, particularly from the late fine sieving stage (Hillman 1981), while the barley might be derived from whole, unprocessed ears. The range of remains would suggest that the by-products of more than one cereal processing episode are represented in addition to other possible domestic or dietary waste, fuel, residues etc. Emmer and spelt wheat may have been cultivated together, possibly even treated as a single crop of wheat, although one sample appears to represent a separate dump of spelt wheat which would suggest that spelt wheat was also grown as a crop in its own right.

The evidence of Roman settlement on the site is largely confined to the N-S ditch [50/55] which is thought to be a boundary ditch. Although there were finds pre-dating the Roman period from the fills to this ditch they are most likely to be residual from digging through earlier features. This ditch demonstrates that the site was on the borders of a probable Roman farmstead/villa, possibly even part of the villa excavated at the *Orange Tree* public house c. 1km to the south of the site. The N-S boundary ditch would seem to respect the flood level of the river, perhaps demarcating the extent of the boggy ground. This ditch and the later ones on the same alignment would certainly have had periods when they contained water and their function would not just have been as boundaries but also as drainage and perhaps as temporary barriers to the floodwater.

All the environmental evidence points towards the ground being wet and the ditches containing still or slowly-flowing water. The sedimentology report concludes that up to the construction of the wide shallow N-S ditches there was seasonal flooding but at some point around this time there may have been an attempt to create an artificial barrier between the site and the river, encouraging ponding of surface water and changing the pattern of surface water movement on the floodplain. This may have been an attempt at irrigation perhaps to help the cultivation of grazing land which has been attested by the insect remains indicating grassland with stands of nettles as well as possible fruit trees. It is also possible that the postholes and stakeholes in the shallow N-S ditches were constructed to act as a wild fowl decoy.

Despite extensive traces of Anglo-Saxon occupation along the Darent valley there is no evidence for occupation or utilisation of the site during the Anglo-Saxon period.

Consecutive layers built up over the site in the medieval period, the first [5] being cut into by a possible irrigation channel. The total

depth of the layers dating to this period is as deep as all the earlier deposits down to the natural. This illustrates how quickly the area silted up especially once attempts at irrigation or drainage were abandoned. It is known that the River Cran was prone to severe flooding in the post-medieval period. In 1866 Lowfield Street 'took the appearance of a river' and in 1878, 'the river Cranpit in Lowfield street begun to overflow into the meadow later it flowed heavily in Lowfield street' (Keyes 1933). But the rivers also supplied good sources of food and Dunkin (1844) mentions that there was a fishery in Dartford creek (the part of the river to the north of Dartford town) belonging to the lord of the manor, and in the reign of Queen Elizabeth I salmon were frequently caught in this part of the river. He says that once boats came up the Cranpit stream along Hythe Street to the fish market. These events were by no means isolated; it appears from this excavation that there were many times through history when the site became flooded. In 1966, after severe flooding, precautions were taken to avoid a similar event in the future.

The finds and the archaeology all point towards the excavation site being utilised as a place where occupation debris was dumped during the post-medieval period. The Cran had served as the town's sewer in the medieval period. The excavation showed that this form of refuse disposal may also have been practised in the Bronze Age. If the pins are votive offerings then they substantiate the suggestion that there was a close link between the area and the river.

The nature of the finds, features and the location of the site with its liability to periodic flooding would suggest that the centre of the occupation was probably only a few metres to the west of the excavation area. It can also be shown by the processing waste of crops found in deposits and the animal bone that farming was taking place nearby. The site gives evidence for occupation over several millennia which may be attributed to its economically strategic location close to the Thames estuary providing links both inland and to the Continent. In particular the pins and the spelt wheat point to a Bronze Age settlement with a stable and developing economy, possibly based on farming with trading links with other settlements perhaps both in this country and abroad.

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