



A Report on the Archaeological Excavations at Holy Trinity School, West Hill, Dartford, Kent

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A REPORT ON THE ARCHAEOLOGICAL EXCAVATIONS AT HOLY TRINITY SCHOOL, WEST HILL, DARTFORD, KENT

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with contributions by Luke Barber and David Dunkin

INTRODUCTION

Archaeology South-East (a division of the University College London Field Archaeology Unit) were commissioned by McCullochs plc to undertake an archaeological excavation at the site of the former Holy Trinity School, West Hill, Dartford. Planning permission for a residential development on the site had been granted by Dartford Borough Council in 1996. The site lies to the west of the modern and historic Roman and medieval centre of Dartford, on the south side of West Hill (Figure 1). The probable alignment of Roman Watling Street forms its northern boundary and the site of a medieval leper hospital is recorded to the east (SMR:TQ 57 SW 48). To the south is an outcrop of Boyn Gravel and a small number of Paleolithic handaxes have been found in the general area. According to the British Geological Survey 1:50,000 map the underlying geology is Head overlying Chalk.

Past excavations on the western end of the site by Dartford District Archaeological Group (DDAG) had revealed several east-west burials thought to be of medieval date. These, along with medieval artefacts and possible post-holes, were encountered at depths ranging from c.1.0 to 2.0m below existing ground surface. An archaeological assessment undertaken on the site by Archaeology South-East in April 1997 revealed a number of undated features but no additional burials (Stevens 1997). Following the assessment it was decided that full-scale excavation of the most archaeologically sensitive areas would be undertaken prior to the residential development. Excavation took place during July 1997 according to a Specification provided by Kent County Council.

Three trenches had been manually excavated by DDAG. Only the location of Trench 2 is shown on Figure 1 as Trenches 1 and 3 were fully encompassed by the subsequent Archaeology South-East excavation. The features located during the DDAG work appear as F1, F2 etc. in the text and figures. The area of the main excavation measured approximately 25m by 25m (Figure 2).

Topsoil was removed mechanically before the manual cleaning and excavation of features. An osteoarchaeologist was present on site at appropriate times to record basic skeletal data during the excavations of graves. Articulated skeletons were cleaned sufficiently to enable the alignments and arrangement of the skeleton to be accurately recorded. The site archive is held by Dartford Museum.

EXCAVATION RESULTS

DDAG excavations

DDAG discovered five features (F1 to F5) along the northern edge of the site. It has not been possible to locate F2, F3 or F4 on the plan because at least two of these (F2, a small post-hole and F3, a linear feature) were cut into overlying subsoil rather than the chalk. The deposits overlying the chalk were between 1.5 and 2.5m in depth. Feature F1 (Figure 2) was a square shaped pit dating to the nineteenth century while Feature F5 was an east to west grave containing a single inhumation.

Located towards the eastern end of the site were features F6 to F14. Features F6, F11, F13 and F14 were grave cuts, each containing single inhumations (Figure 2). Three pits (F8, F9, F10) were also located in this area but it was not possible to locate them accurately on the plan. Two of these, (F8 and F10) date to the eleventh and fifteenth centuries respectively. F8 and F9 were located slightly to the south-west of F11 and F10 was slightly to the north-west, equidistant between F11 and F6. F7 is not located on plans but it is thought that this feature was not of archaeological significance.

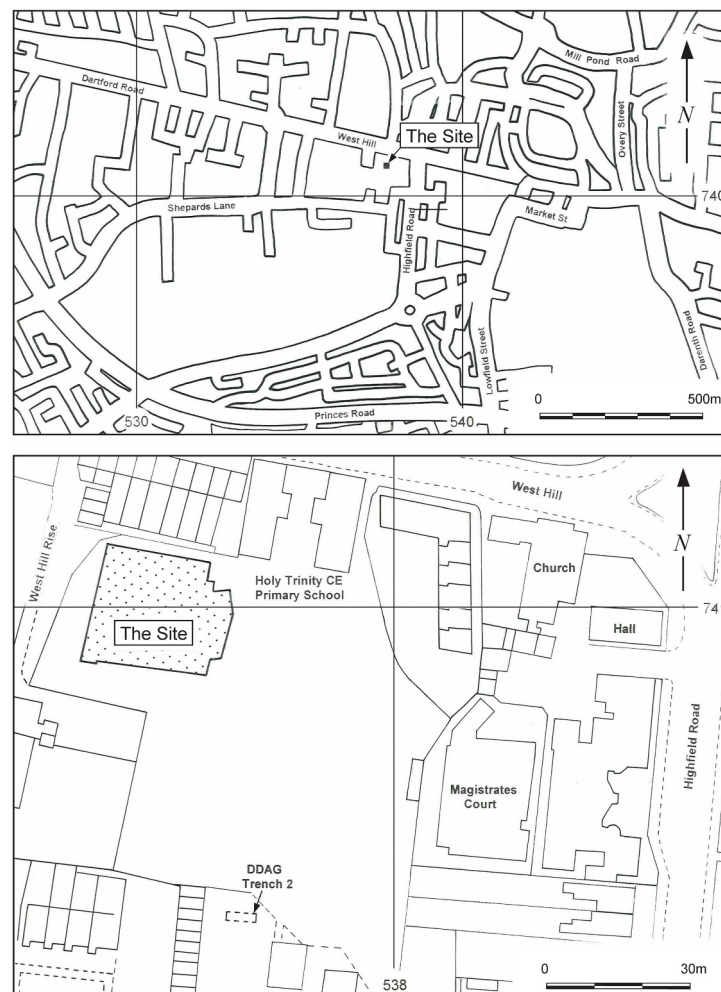


Figure 1. Site and trench location maps

The Archaeology South-East Excavation (Figure 2)

The area investigated during the main excavations incorporated DDAG Trenches 1 and 3 as well as several of the assessment trenches. A number of archaeological features were exposed after the area had been cleaned.

The Prehistoric Period

A single, shallow pit, context 96, may represent occupation of the site during this period (Figures 2 and 4, S2). Located towards the western boundary of the site, it measured approximately 700mm in diameter and 100mm in depth. The function of this pit, which has been dated to the Late Bronze Age to Iron Age, remains unclear.

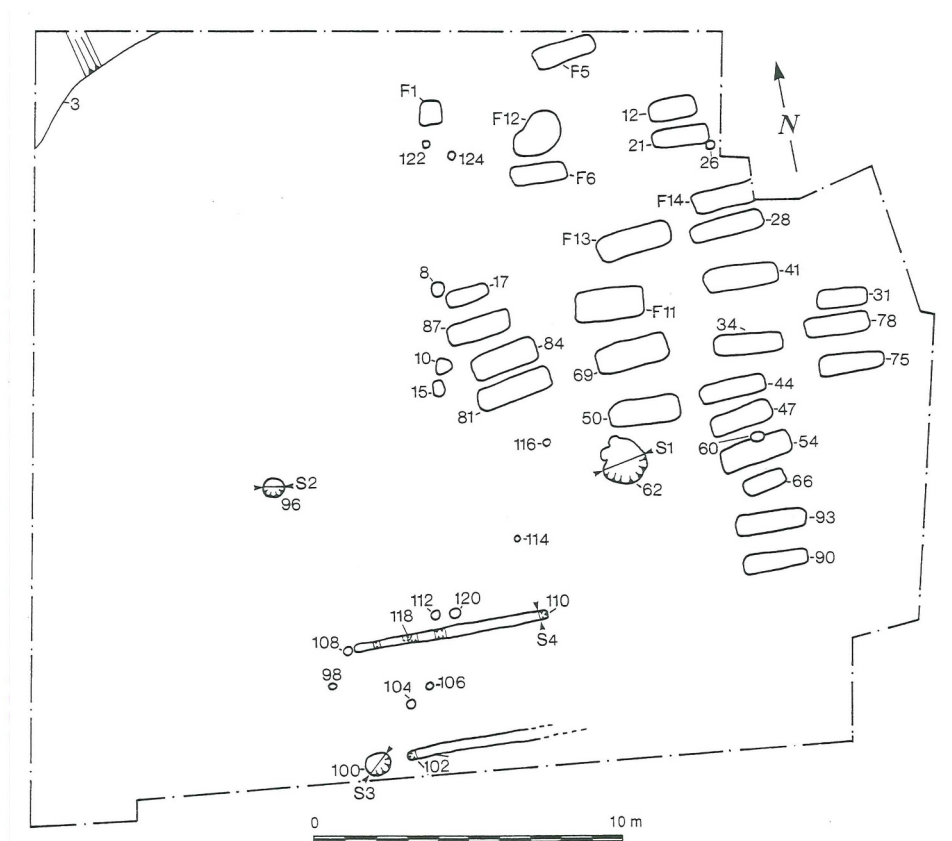


Figure 2. Site plan

The Cemetery

A total of 25 graves was present on the site. Five of these were located and excavated by the DDAG before the proposed development of the site at West Hill, with the remaining 20 located by Archaeology South-East. All of the graves were orientated east to west and positioned in four north to south rows (Figure 2). The graves were evenly spaced and there was no evidence of intercutting. This suggests strongly that the graves were marked in some way whilst the cemetery was in use although there was no archaeological evidence to support this. Graves 21 and 54 had post-holes at the base or half way along the longer edge of the grave cut but there was no associated dating evidence. These may represent settings for more substantial grave markers but their random positions are not in keeping with an otherwise neatly laid-out cemetery.

Graves were generally rectangular and cut directly into the chalk with depths of between 170 mm and 370mm. The graves ranged between 500mm and 820mm in width and 1.30m and 2.32m in length. Grave dimensions were influenced by the size of the associated inhumation, however, in eighteen cases the cut was 300 to 700mm too long for the inhumation. The extra length formed a space at the eastern (or foot) end of the graves. It is surprising that when cutting the graves into the chalk the excavators would have chosen to dig a larger grave than was necessary. One possible explanation is that the space was designed to hold grave goods, although no evidence for this was found during the excavation.

With one exception all burials were single inhumations. In grave cut 54 was a mature female but above her, placed over her chest, were the remains of a neonate. The neonate was within a distinct rectangular feature thought to be the remains of a coffin, and both burials are thought to be contemporary. Evidence suggests that both shrouds and coffins were used for burial. Copper alloy shroud pins were found in association with two burials (Graves 12 and F11). Coffins associated with three burials survived as dark soil stains and traces of mineralised coffin nails (Graves 17, 50, 54/7). Grave goods were located in a number of graves and these are fully described below (Figure 3).

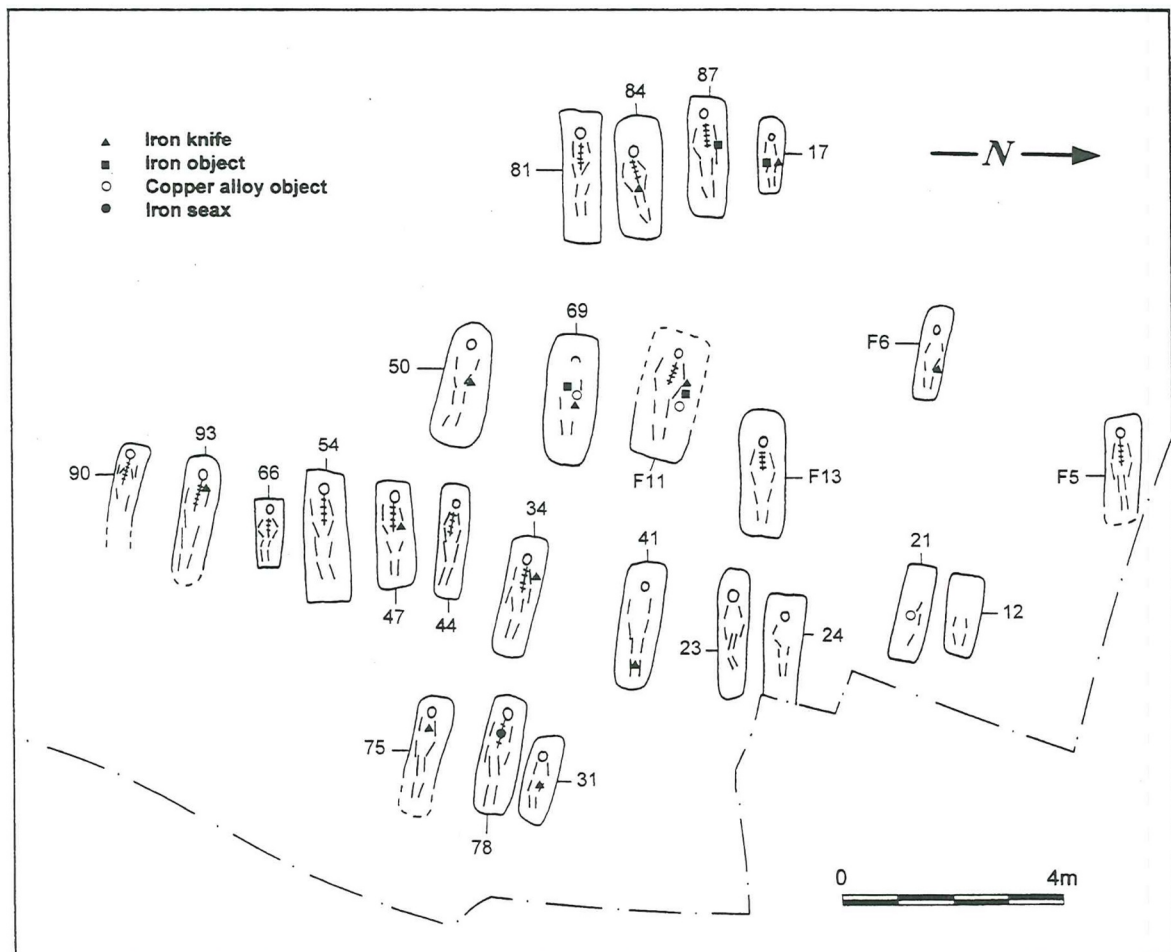


Figure 3. Plan of graves with associated grave-goods

All burials were placed extended and supine, with heads at the west end of the grave. Skeletons 29 and 32 (Graves 28 and 31) were lying slightly on one side but in the case of Skeleton 32 this was the result of skeletal deformation rather than differential burial practices (see skeletal analysis below). Arms were generally placed down by the sides of the body, but on five skeletons the left arm was slightly bent and placed across the body (Skeletons 32, 35, 51, 76, 82; Graves 31, 34, 50, 75 and 81). Skeleton 91 (Grave 90) was unique with arms completely bent and the hands placed beneath the jaw.

Saxo-Norman and later medieval activity

This period is represented by a concentration of features in the south-western corner of the site and one large pit to the north-east of the concentration (Context 62). The excavation recorded an undated, east to west linear feature, 330mm wide, 200mm deep, extending for approximately 6.5m in length (Context 110: Figures 2 and 4, S4). A parallel linear feature of similar dimensions, dating to the eleventh to early twelfth centuries, was located 3.5m to the south during the April assessment (Context 102). The morphology of these features suggests that they were probably beam-slots for a small building. No corresponding beam-slots were located at the eastern or western ends of the structure. It is possible that this was an open-ended building, but an alternative is that the north and south walls were weight bearing, and the supportive beams for the less substantial east and west walls were laid directly on the chalk.

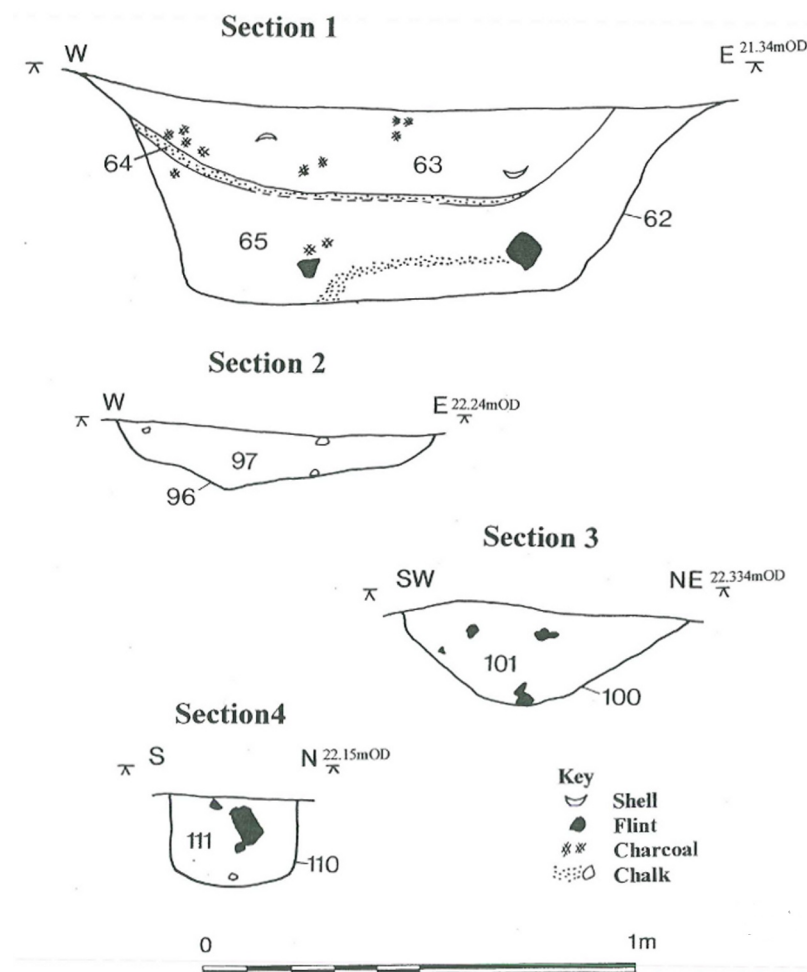


Figure 4. Section drawings

Three of the post-holes in close proximity to this structure (Contexts 100, 106 and 108) have been dated to the same period. Contexts 100 (Figure 5, S3) and 108 are likely to have been directly associated with the support of the building. The function of the remaining post-holes (Contexts 98, 104, 106, 112, 120) is less clear although it is possible that they too supported the building in some way or formed internal divisions (Context 104 and 106). One additional post-hole, Context 118, was cut directly through the beam-slot (110) to a depth of 367mm. This post-hole was probably an addition to the original structure, providing extra support. A single pit of this occupation phase, measuring 1.5m in diameter and 430mm in depth was located to the north-east of the building (Context 62: Figure 4, S1). This rubbish pit contained large quantities of shells and a number of eleventh- to twelfth-century pottery sherds.

An isolated feature dating to the thirteenth century (Context 3) was located in the north-west corner of the site, but extended beyond the limits of the trench to the north and west. Although the dimensions could not be ascertained the shape and profile of the cut suggests it may have represented a boundary ditch enclosing the main area of the site. With a thirteenth-century date it is possible that it may have enclosed land associated with the medieval hospital. The line of the ditch also seems to correspond to the position of a boundary located on a modern Ordnance Survey (OS) map. This boundary however is not present on the earlier 1868 OS map of the area.

Although these excavations did not produce additional evidence for later medieval occupation on the site, the finds recovered during the DDAG excavations suggest a considerable presence in the vicinity at this time. Their manual excavation of the 2.0m of overburden on site recovered large quantities of pottery, the majority of which dates to the thirteenth and fourteenth centuries.

THE FINDS

The Pottery by Luke Barber

Introduction

The excavations at the site have produced a small assemblage of pottery of various periods. The majority of sherds are from the earlier excavations carried out by the Dartford and District Archaeological Group (DDAG). Most of this material is from unstratified overburden deposits and as such was not studied in any detail. However, an inspection was made of all these sherds in order to gain a general overview of the site's occupation and to correlate the ceramics with those of the more recent Archaeology South-East investigations. The pottery from the latter excavations forms a much smaller group, undoubtedly due to the mechanical removal of the overburden, but consists solely of material from features.

The DDAG assemblage

The 750 sherds of pottery from the DDAG excavations came predominantly from Trench 3 (558 sherds). DDAG Trench 1 produced 191 sherds while Trench 2 produced only a single sherd. This single sherd, from the topsoil in Trench 2, is in

a fine sand-tempered ware of mid fifteenth- to sixteenth-century date. The pottery from Trench 1 is virtually all from overburden layers resting above the chalk. The material is generally of a small to average sherd size and shows fairly extensive abrasion suggesting the associated layers (topsoil and subsoil) have been extensively reworked, possibly as the result of cultivation. The presence of pottery of a wide date range in all layers, with no apparent chronological stratification, reinforces this theory.

The Trench 1 material includes eight sherds of Romano-British date. However, the majority is of the medieval period. There is a little eleventh- to twelfth-century abundant coarse shell-tempered ware but sand and moderate shell-tempered wares of the thirteenth to early fourteenth century are far more numerous. Other medieval coarsewares consist of local sand-tempered wares which appear to span the mid thirteenth to mid fifteenth centuries as well as a few sherds of Surrey Whitewares (Pearce and Vince 1988). As well as the cooking pots a number of jug sherds are also present. These are of a similar date range to the coarsewares and consist of Surrey Whitewares, white-slipped green-glazed jugs of Mill Green-type ware (Pearce et al 1982) and a little Saintonge material. In general the majority of the material from this trench appears to be of thirteenth- to fourteenth-century date with fifteenth-century material constituting a smaller part of the assemblage. The only sherd from a feature in the trench was of an undiagnostic earthenware of sixteenth- to eighteenth-century date from Feature 2 (a post-hole - not illustrated).

Of the 558 sherds from Trench 3 only four were from features, the remainder coming from the topsoil/subsoil overburden. The composition of this unstratified assemblage is similar to that from Trench 1. A small number of later prehistoric (possibly Late Bronze Age to Early Iron Age) and Romano-British sherds are present, the latter including grog-tempered and Upchurch wares. A little coarse shell-tempered ware of eleventh- to twelfth-century date appears to be the earliest medieval material present, however, the vast majority is of thirteenth- to fourteenth-century date. The coarsewares of this period again consist of sand and sand and shell-tempered wares as well as a little Surrey Whiteware. The fineware jugs of the period include Mill Green-type wares as well as lesser quantities of Surrey Whiteware and French products. There are also several fragments from a possible Scarborough Knight jug. A number of finer sandy-ware sherds, some with grog inclusions, are of a fifteenth- to early sixteenth-century date. Several sherds in these fabrics have been fired to a noticeably higher temperature and as such fit well with a later fifteenth- to early sixteenth-century date range.

The material from the overburden in this trench correlates well with that in Trench 1 in that it suggests some limited prehistoric and Romano-British activity in the area. Although both areas produced some eleventh- to twelfth-century pottery the majority of activity, as represented by the disposal of domestic rubbish, appears to relate to the thirteenth and fourteenth centuries with decreasing activity throughout the fifteenth century. This material does not appear to be associated with underlying pits and is likely to have been dumped on the surface either as a surface midden or during intensive manuring of a heavily cultivated plot of land. The presence of some fifteenth- to sixteenth-century material suggests cultivation continued for a short while into the post-medieval period. This undoubtedly resulted in the redeposition and abrasion of earlier material.

Only two features in the DDAG Trench 3 produced pottery. A thirteenth-century sand and shell-tempered sherd was recovered from Feature 8 (a pit - not illustrated). However, two further coarse shell-tempered wares from the same feature are of probable eleventh- to twelfth-century date and it is therefore possible the later sherd is intrusive. Feature 10 (a pit - not illustrated) produced one sherd of fine sand-tempered ware of probable fifteenth-century date.

The 1997 assemblage

The later excavations at the site produced 64 sherds weighing 629g from ten different contexts. The small size of the assemblage precludes any detailed analysis: by far the largest assemblage, from Pit 62, consisting only of 40 sherds weighing 447g (Contexts 63 and 65). Despite the relatively large quantities of thirteenth- to fourteenth-century pottery found in the overburden, only one feature of this date (Ditch 3) was located during the 1997 work. This feature produced two bodysherds of thirteenth- to early fourteenth-century date.

The assemblage from Pit 62 consists entirely of shell-tempered wares. These can be divided into two groups based on their tempering agents although they both share many characteristics and appear to be contemporary. The most common type (32 sherds) consists of a low-fired fabric tempered with abundant coarse shell (up to 5mm) and patchily fired to produce dull orange to brown surfaces. Cores are usually grey. The other fabric is much rarer (eight sherds) and consists of a harder-fired fabric tempered with moderate coarse shell (to 5mm) and abundant medium sand. The colours are similar to the previous fabric. Finger-impressed out-turned rims from cooking pots are present in both fabrics suggesting a Saxo-Norman date for these fabrics (Figure 5, No.2). The unusual in-turned rim from Context 63 (Figure 5, No.1) is similar to Iron Age types, however, this form is also known from the Saxo-Norman period (McCarthy and Brooks 1988, No.236 and Jennings 1981, Nos 186 and 188). An eleventh- to early twelfth-century date seems most likely for this feature.

The remaining pottery is only present as single sherds or in very small groups. Eleven small undiagnostic sherds in a low-fired flint-tempered fabric are likely to be of later prehistoric (Late Bronze Age/Iron Age) date (Context 97). The remaining pottery-producing features, with the exception of Context 101, all produced a single sherd each (Contexts 103, 107 and 109). The three sherds from Context 101 consist of two in a medium sand-tempered ware with iron ore inclusions to 2mm and a single sherd of the abundant coarse shell-tempered ware. The former are well-fired to a grey or patchy dull orange colour throughout and are similar to Thetford products. However, it is equally possible they may be from Canterbury or France (Cotter 1997). The only rim in this fabric is from a lid-seated cooking pot/squat pitcher (Figure 5, No. 3) which can be paralleled with Thetford-type products from Norfolk (Jennings 1981, Nos 110-111), Pound Lane products, Canterbury (Cotter 1997, Fig. 26) and Brittany products (Cotter 1997, Fig. 64, No. 30). It is likely that the other similar sandy sherds from features in this area (Contexts 103 and 107) are from the same source. The remaining sherd in Context 101 is from an out-turned cooking pot rim with finger-tip decoration in the abundant coarse shell-tempered ware. A similar sherd from Context 63 is shown in Figure 5, No. 2. The presence of this sherd of eleventh- to twelfth-century pottery correlates well with the eleventh-century date for the Thetford-type ware from the features.

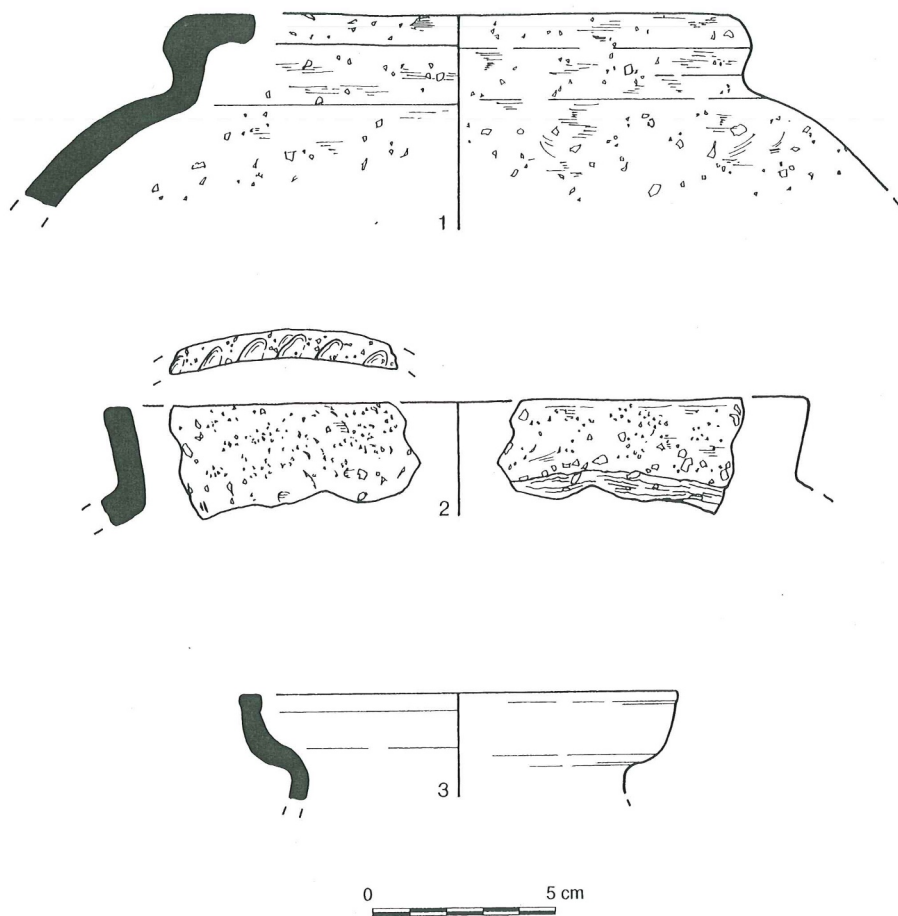


Figure 5. Pottery

The Metalwork by Luke Barber

Introduction

All the ironwork from the site had suffered heavy corrosion and in some cases appears to have become totally mineralised. Due to the heavy encrustation of corrosion products all ironwork, as well as copper alloy, was x-rayed in order to clarify function. The x-ray plates form part of the archive.

Metalwork not associated with burials

Four items of metalwork were recovered from non-burial features during the 1997 excavations. These consist of an iron nail, an iron clench bolt and a copper alloy strip of sheeting from Context 4 (Ditch 3) and an iron nail fragment from Context 101. None of these pieces are diagnostic of date. A full description forms part of the archive. In addition, the DDAG excavations uncovered a copper alloy medieval bell along with a copper alloy (with lead infill) clothing hook of fifteenth- to sixteenth-century date. Both of these items were from the overburden and are therefore not described here in detail.

Metalwork associated with burials

Fifteen out of the 26 burials on the site were accompanied by grave-goods (Figure 3). These are fully listed by burial below. The majority of grave-goods consist of knives (twelve examples) and in nine cases this was the only object within the grave. Three iron buckles, including one with a copper alloy buckle plate, were also present. Other objects included a pair of shears, a key and seax in iron as well as a strap distributor and pin in copper alloy.

There is no pattern to be noted in the distribution of grave-goods, both spatially within the cemetery or between age and sex of burials. Not surprisingly the seax was buried with an adult male, however, the knives appear in burials of both males and females as well as children. Rather surprisingly two of the three buckles were recovered from children's graves. The iron shears were located in the grave of a female of indeterminate age (Skeleton 88; Grave 87). Unfortunately the burial accompanied by the iron key, knife and copper alloy pin could not be sexed, however, the nature of the objects would suggest a female burial (Skeleton in F11).

The grave-goods, along with the burial rite, are at present the only tools for dating the period of the cemetery's usage. The knives, where discernible, all appear to be of Böhner Type C (Böhner 1958) and can be paralleled at numerous cemeteries including that at Polhill where a seventh- to early eighth-century date is suggested (Hawkes 1973). Similarly, although the seax could be of a sixth-century date, similar examples from Polhill have been ascribed a seventh-century date and this weapon form appears to become more common during this period. The presence of shears, as located with Skeleton 88 (Grave 87), are again considered less common before the seventh century (Hawkes 1973, 198). The copper alloy pin in F11 is also of a seventh-century type. It seems likely therefore that, based on the associated artefacts, the excavated burials are of seventh- to early eighth-century date. The lack of brooches and the Christian orientation of burials certainly suggests that a date before this is extremely unlikely. However, many of the grave-goods could be of a slightly later period.

Inventory of grave-goods

Note: All object positions are related to the burial. i.e. by left arm means the left arm of the burial, not left as from observer's viewpoint. * indicates an illustrated artefact.

Skeleton 19 (Grave 18) - *Iron buckle with elongated oval frame and remains of the pin. Heavily corroded. A similar example has been found from the Apple Down cemetery in West Sussex (Down and Welch 1990, Grave 2, No. 1). Figure 6, No.1. Small iron knife? Surviving length 67mm.

Object location: Buckle on right side of pelvis, knife by left side of pelvis.

Skeleton 23 (Grave 21) - *D-framed iron buckle with copper alloy buckle plate. The iron frame and remains of the pin are almost totally mineralised. The buckle plate, which is formed by a single folded sheet, has the remains of two iron fixing rivets. Similar examples have been found at Polhill (Philp 1973, 206, No.497) where they have been dated to the seventh century. Figure 6, No. 2.

Object location: Buckle on left side of pelvis.

Skeleton 32 (grave 31) - Iron knife fragment. Surviving length 72mm.

Object location: Knife by left femur.

Skeleton 35 (Grave 34) - *Iron knife with straight cutting blade and back of blade tapering down to point. Böhner Type C? (Böhner 1958). Length (including tang) 145mm. Dated seventh to early eighth century. Figure 6, No. 3.

Object location: Knife by left humerus.

Skeleton 42 (Grave 41) - Iron knife. Böhner Type C. Length 135mm.

Object location: Knife between lower legs.

Skeleton 48 (Grave 47) - Fragment of heavily corroded curving iron object, possibly a knife.

Object location: By left pelvis.

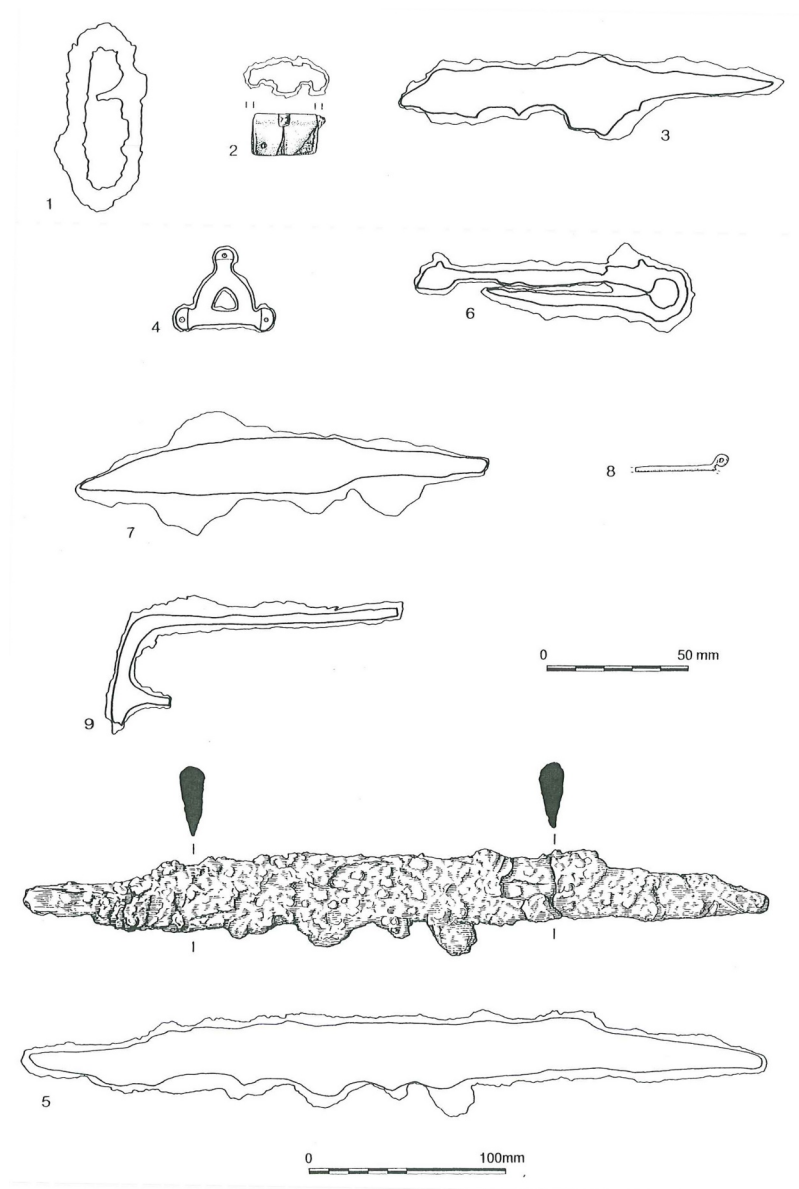


Figure 6. Metalwork

Skeleton 51 (Grave 50) - Fragment of iron knife. Surviving length 100mm.

Object position: Knife by left arm/pelvis.

Skeleton 70 (Grave 69) - Fragment of iron knife. Surviving length 110mm.

D-framed iron buckle with iron plate and pin? Totally mineralised. Frame measurements - 51x26mm? Similar to an example from Polhill (Philp 1973 , No. 495).

*Copper alloy three-way mount/strap distributor. A small fixing hole is located in each of the three terminals. Heavily corroded. No parallel for this object has been located. Figure 6, No. 4.

Object position: Mount by lower left arm, buckle on pelvis, knife by left femur.

Skeleton 76 (Grave 75) - Fragment of iron knife. Surviving length 124mm.

Object location: beneath left ribs

Skeleton 79 (Grave 78) - *Iron seax with short tang, broken in three. Overall length 380mm with back of blade 18mm wide. Figure 6, No. 5.

Object location: below ribcage with point facing NE.

Skeleton 85 (Grave 84) - Iron knife of Bohner Type C. Length 115mm.

Object location: by lower left arm.

Skeleton 88 (Grave 87) - *Heavily corroded pair of small iron shears. Most of the thinner parts of the blades have corroded away completely. A similar pair of shears was located at the Polhill cemetery (Philp 1973, Grave 41, No. 542) where they were dated to the seventh century. Figure 6, No. 6

Object location: by left elbow.

Skeleton 94 (Grave 93) - *Iron knife of Bohner Type C. Length 145mm. Figure 6, No. 7.

Object location: below chest.

Burial F6 - Iron knife fragment. Surviving length 60mm.

Object location: left side of body.

Burial F11 - *Large iron key fragment. Similar, but slightly smaller examples have been located at Polhill (Philp 1973, fig. 56, No. 548). Figure 6, No. 9.

Iron knife fragment. Surviving length 90mm.

Object location: left side of body

*Part of copper alloy spiral headed pin. The pin is formed by plain wire with its head formed by splitting the pin down the middle and curling the two resultant strips inward in simple spirals. An identical example from Porchester is dated to the seventh century (Cunliffe 1976, fig., 136, No. 46). The Porchester example is complete and measures 50mm in length. Figure 6, No. 8.

Object location: foot of grave.

Human Osteological Analysis

All grave cuts contained inhumations, the majority of which were in a reasonable state of preservation.. The osteological analysis recorded basic demographic information and established the presence of skeletal pathologies. A full report and record of all observations made during the analysis is housed with the site archive

Individuals were placed into one of six age categories (FE:Fetus/before birth, NE:Neonate/birth-11mths, 1:infant/1-5yrs, 2:Infant/6-11yrs: 3:Juvenile/12-17, 4:young adult, 5:Prime adult, 6:Mature adult) and one of five sex categories (M:male, M?:probable male, F:female, F?:probable female, ?:unknown). The adult age categories employed (young, prime, mature) make no reference to chronological age, but instead refer to the biological manifestations of age in the skeleton. This is felt to be necessary as a result of recent studies which have demonstrated the inaccuracies of some adult ageing methods (Molleson & Cox, 1993, Start & Kirk, 1998).

The number of skeletons located on the site, 26, is too small for meaningful statistical analysis to be carried out but some general observations can be made. The sub-adults constitute a large percentage of the population, 31per cent (8/26). By proportionally redistributing the adult individuals whose age estimates cover a range of categories it is evident that mature adults, not surprisingly, comprise 79.4per cent of the adult population. The single neonate was buried with a female and although familial relationships can not be established from the skeletal remains alone, the possibility exists that they were mother and child. Both sexes are equally represented with males comprising 31per cent of the buried population and females, 27per cent.

Skeletal Pathologies

There was minimal evidence for dental disease amongst the population but teeth showed considerable signs of wear. Ten individuals had lost teeth ante-mortem and the teeth of only two individuals had carious lesions. Osteoarthritis was evident in six adult skeletons but was limited to the spine in five of these. The sixth skeleton also had of mild osteoarthritis of the knee.

Two skeletons showed unusual skeletal pathologies (Contexts 32 and F13).

CONTEXT 32

The crouched and twisted position of this adult female in the grave showed that she was suffering from gross skeletal deformity. This deformity was evidenced primarily in the shoulder and pelvic girdles, and the ribs. Both scapulas have a 'curled' appearance. Whilst the acromion, coracoid and glenoid cavity appear normal, the blade has undergone extensive re-shaping with thickened medial and lateral edges. The anterior surface of the left scapula is markedly concave whilst the anterior surface of the right is markedly convex.

The innominate bones are similarly deformed. The iliac wing of the left innominate is curled inwards, anteriorly. Both pubic rami are bent laterally, and would have been pushed together, projecting forward. The acetabular floors also appear to be

protruding inwards. Both forearms displayed evidence for healed fractures. Both ulnae have healed fractures to the proximal end of the shaft. The right radius has a healed mid-shaft fracture.

The most spectacular deformation was displayed by the ribs. All ribs had completely lost their 'normal' shape and appearance. Instead they appear to have been broken several times resulting in at least one 'S' shape curve in each rib. The sternum is bent severely forward and forms a 90 degrees angle. This individual was suffering from kyphosis resulting in severe curvature of the spine. Despite the fusion and reshaping of vertebral bodies in the thoracic region, the spine does not deviate laterally. Instead it has resulted in an arched back which would have positioned the head in front of the upper thorax.

It seems likely that this individual was suffering from osteomalacia. In osteomalacia the vitamin D deficiency which causes rickets in childhood is compounded by malnutrition, deficiency in protein and fat and low intake of calcium. This disease is particularly prevalent in females between 20 and 40 who have perhaps experienced several closely spaced pregnancies. All bone matrix formed during the disease remains uncalcified resulting in structurally weak and less dense bone, in turn resulting in fractures and deformation. Typical osteomalacic deformities are a kyphotic spine, a laterally narrowed and high thorax, resulting in less curvature in the ribs and an angulated sternum. In severe cases the ribs may show inward bending laterally due to the weight of the arms. Osteomalacia pertaining to childbirth also results in a greatly deformed pelvis (Ortner & Putschar, 1981:280-283).

CONTEXT F14

This individual displayed an abnormality of the left shoulder girdle. The left clavicle was fused to the coracoid of the scapula. The position of the coracoid is normal but the clavicle has rotated 40° anteriorly so that the medial end is pointing towards the anterior of the skeleton and the lateral end posteriorly. The glenoid cavity is abnormally large and porotic, displaying irregular new bone growth around the margins of the articular surface. The porotic nature of the glenoid cavity is mirrored on the left humeral head. The fusion of the clavicle to the coracoid would have caused considerable deformation and it is hard to believe that this deformation would not have been detrimental to the normal functions of the left shoulder. The porosity and new bone growth present on the glenoid cavity and the humeral head may result from the unusual strains placed upon this joint.

There is no evidence for trauma associated with this deformation. All surfaces associated with the clavicle/coracoid junction are remarkably clean and smooth and this, in combination with the lack of evidence for traumatic injury suggests that it may be a congenital abnormality.

Animal Bone

The animal bone report is summarised below, the full report is housed with the archive. A total of 46 animal bones was recovered from the site and 44 of these were from two contexts (Contexts 63 and 65). These contexts are the primary and

secondary fills of pit 62, dating to the eleventh to early twelfth century. Ovis ammon (sheep) and Bos taurus (Cattle) dominate the assemblage (83per cent). Also represented, but by two or three fragments only, are horse, cat and fish. The assemblage includes those elements of the skeleton which would have been discarded during the earliest stages of food preparation as well as main meat joints. Only one butchery mark was evident, a single, neat cut through the base of an Ovis horn core. Gnawing by small carnivores is evidenced on a small number of bones from Context 63.

Shell by David Dunkin

The results of the shell analysis are summarised below. The full report is housed with the site archive. Small quantities of oyster were recovered from contexts 4 and 5 (Ditch 3), 63 and 101 but the much larger quantity of oyster recovered from Context 65 confirms the use of this shellfish as an important supplementary food resource. The mature age of the oysters and the equal numbers of upper (67) and lower (72) valves further substantiates this. The distorted nature of most lower valves, together with the fact that some had infant oyster adhering to the shell, further suggests that the molluscs were harvested from an extensive, overcrowded colony. The presence of barnacles adhering to the shell of an oyster from Context 65 suggests that they were from an intertidal zone, the most likely source being in the Lower Thames Estuary.

The very small quantities of mussel and the one common cockle recovered from the above contexts, suggests these were not an important food resource. However, their association with the oyster shells infers that an estuarine intertidal zone was the source of the shellfish of all the types represented.

The Other Artefacts by Luke Barber

The excavations produced very small quantities of finds in other categories, none of which were associated with the burials. Tile is represented by two medieval fragments from Ditch 3 (Context 4), two Romano-British fragments and an undiagnostic fragment from Context 7. Six pieces of worked flint were located at the site. With the exception of a single side scraper all are waste flakes with no sign of retouching. All are residual or unstratified with the exception of two flakes from the prehistoric feature (Context 97). The whole assemblage is probably of Bronze Age date but more diagnostic material would be needed to confirm this assumption.

Environmental Samples

Two soil samples were taken from Pit 62 (Contexts 63 and 65). Wet sieving of both produced numerous small shell fragments and small undiagnostic pieces of large mammal bones. Carbonised material was limited to moderate numbers of charcoal pieces. With the exception of a few badly damaged possible cereal grains, no seeds were noted. Due to the limited nature of the samples no further work was undertaken and the full details are housed in the archive.

Radiometric Dating

A sample of bone from the site was submitted to Beta Analytic for radiometric dating. A left femur from burial 69 (Figure 2) was selected. This burial was chosen due to the central location of the grave within the cemetery, perhaps providing a more accurate date for the cemetery than a grave on the edge. The results of the analysis are outlined below.

Context 69 (Ref: Beta-118381)

Conventional radiocarbon age 1300+/- 60 BP

Calibrated to one sigma (68per cent probability) cal AD 665 to 785

DISCUSSION

The presence of a single prehistoric feature and unstratified pottery and flint suggests moderate activity in the area. Activity during the Romano-British period is similarly represented but these finds are likely to be the result of manuring from a nearby settlement during arable cultivation. The cemetery appears to represent the first substantial activity on the site.

The presence of grave goods with the burials would suggest a pagan origin for the graves and the types present suggest a seventh- to eighth-century date. However, the consistent east to west orientation of the burials indicates Christian influence. The burial ground therefore appears to represent a transition period, between paganism and Christianity. The results of the radiocarbon dating, placing burial 69 in the seventh or eighth century, would support this date for the cemetery. The cemetery seems to fit the Final Phase model proposed by Boddington (1990). Eight characteristics are highlighted as belonging to this period between paganism and Christianity and at least four are present at Holy Trinity School:

- The burials are entirely inhumation
- Orientation is consistent west to east
- The proportion of graves without artefacts or with only knives is high
- Artefacts relate predominantly to utilitarian clothing or are small personal tokens.

It is possible, however, that the twenty-five burials may represent only a small proportion of a larger cemetery and the presence of these characteristics should be interpreted with caution. It is also possible that the remaining four characteristics, including the presence of barrow burials and the proximity of the burials to settlement may relate to this cemetery but this is not ascertainable from the area investigated.

With the exception of the seax and copper alloy pin, it is not possible to date the metalwork closely. The knives appear to be of seventh-century date but similar types continue into later centuries. This can be said similarly for the shears and the latch lifter/key. The dating must therefore rely on the presence of these artefacts deliberately placed within the graves, traditionally a pagan rather than Christian practice.

The positioning of the eleventh- or twelfth-century building, respecting the burials, suggests that the graves were either visible or known about centuries after the cemetery's use. The function of the building is uncertain but the presence of the nearby rubbish pit (Context 62) of the same date suggests some domestic usage. With the exception of the possible boundary ditch (Ditch 3), no features date to the period following this eleventh- to twelfth-century occupation. The thirteenth to sixteenth centuries are almost exclusively represented by the pottery assemblage recovered from the overburden. It is possible that this material was associated with the nearby hospital, however, sherds from a number of high status vessels were also recovered and it is possible that these originate from a higher status dwelling. Future work in the vicinity might clarify this premise.

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