

EXCAVATIONS AT KEMPSTON MILL, MILL LANE, KEMPSTON, BEDFORDSHIRE

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Hertfordshire Archaeological Trust (HAT) carried out archaeological excavations on land at on the south bank of the river Great Ouse at Kempston Mill, Mill Lane, Kempston, Bedfordshire (NGR TL 0234 4758) in November 2002 in advance of residential development. The excavations followed a trial trench evaluation that had revealed a late Iron Age ditch in addition to sparse early mediaeval ditches, the latter possibly associated with the medieval mills on the site.

The excavation revealed evidence for Saxo-Norman and medieval farming dating from the 9th to late 13th centuries. It revealed linear ditches which were probably part of a system of field boundaries and drainage ditches. Several pits were recorded, including one that appeared to be a pottery dump or rubbish pit, as it contained over 13kg of ceramics dated to the mid 9th to 12th century. The limestone foundations of a small medieval or post-medieval structure were also found.

INTRODUCTION

In November 2002 Hertfordshire Archaeological Trust (HAT) (now Archaeological Solutions (AS)) carried out an archaeological excavation of land at Kempston Mill, Mill Lane, Kempston, Bedfordshire in advance of residential development. The excavation followed an earlier evaluation that had revealed sparse ditches containing late Iron Age and medieval material (Keir & Ralph 2001). Informed by the results of this evaluation, two areas were targeted in the excavation. Area 1 (c. 768m²) was located in the southeast of the site, and Area 2 (c. 312m²) was located in the southwest of the site (Figs. 1 & 2).

The site lies northwest of Kempston and is located on the southern floodplain of the Great Ouse, adjacent to the river. It is situated on river terrace gravels interspersed with patches of sand and clay, overlying Oolitic limestone. Substantial modern disturbance, particularly in Area 2, ran thorough the soil matrix to the natural drift geology (Keir and Ralph 2001).

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The site lies in an area of the Great Ouse valley that has revealed evidence of extensive, multi-period occupation from the prehistoric period onwards (Dawson 2000).

In the Roman period, dispersed late Iron Age farmsteads were concentrated into one or two villa sites and a settlement was built on the southern bank of the Great Ouse at Kempston Church End, to the west of the site (HER 162). This was abandoned in the fifth century and succeeded by scatter of Anglo-Saxon hamlets. A significant cremation and inhumation cemetery was excavated in 1863-4 and 1913 east of the site at Up End (HER 258), indicating a well-established settlement (Kuhlicke in Carnell et al. 1966, 14; Wingfield 1995). Kempston was one of two important pre-Conquest estate centres in Bedfordshire, the other being Potton (Fowler 1922, 127).

By the time of the Domesday survey, Kempston had several mills and was divided between three manors. The medieval Kempston Mill probably lay in the northern portion of the site. Kempston Manor (HER 5484) lay *c.* 250m to the east and the site of a deserted medieval village lies south (HER 17019).

The site remained largely agricultural during the post-medieval period, with the exception of the mill. The parish was enclosed in 1804. Kempston Mill (HER 1081) was largely rebuilt in the nineteenth century, when it ground flour. In the twentieth century, the mill turned to steam and electrical power, rendering the complex of leats and sluices obsolete. It was badly damaged by fire in 1969 and abandoned. The mill race was largely backfilled in 1970 and the course of the river was considerably altered in the early 1980s.

THE EXCAVATION

Five principal phases of activity were recorded on site (Figs. 3 & 4). Features were phased on the basis of stratigraphic and ceramic evidence. Most of the features were open ditches and much of the pottery was abraded and re-deposited, which hindered precise dating. The ditches and pits probably relate to later Saxon and medieval agricultural land use (Hounsell and O'Brien 2002).

Area 1 contained stratified and complex features, including a sequence of ditches and a structure. Area 2 contained discrete and less well-dated pits, short gullies and ditches (Figs. 2 & 3). None of the Area 2 features can be clearly linked to features in Area 1. The features in Area 1 tallied with those found during the evaluation in Trenches 9, 10 and 6, although a ditch/pit revealed at the western end of Trench 6 was not present in the excavated area. The northern end of modern F2066 was noted in evaluation Trench 1, as was F2062. A pit or ditch across the middle of Trench 1 was not subsequently noted in the excavation (Fig. 2; Keir and Ralph 2001).

In the earliest phase of activity in Area 1, dated to the ninth to late eleventh century, two parallel linear ditches traversed the site on a southwest/northeast alignment. In Phase 2, dated to the tenth to early thirteenth century, one of these ditches was re-cut, and a further ditch is constructed on the same alignment. In Phase 3, dated to the tenth

to late thirteenth century, two further ditches are cut, parallel to the others and to the southeast. In Phase 4, dated to the thirteenth to fifteenth century, a large pit was cut. The first three phases consist of ditched field boundaries or drainage ditches moving to the southeast over time. Later activity consists of high medieval and post-medieval pits. An undated structure, probably dating to the thirteenth century or later, truncated the earlier ditches. In contrast, Area 2 only contained discrete Phase 1 and 2 pits and the terminus of a Phase 3 ditch, which lay on a similar alignment to the Phase 3 parallel ditches in Area 1 (Fig. 4).

Phase 1: ninth to late eleventh century (Area 1)

Area 1 contained two parallel ditches, F2003 and F2008. Four pits and gullies lay between the ditches. A large pit, F2040, lay northwest of the ditches.

Parallel-sided linear Ditch F2003 traversed Area 1 on a southwest/northeast axis. (Figs. 4 & 5). It contained two fills. The lower silty fill (L2004) which yielded pottery, including fragments of a cooking pot (401g; see Pottery Report below), mortar (9g), brick (2g), animal bone (18g) and oyster shell (3g). The upper silty fill, L2005, yielded pottery (136g) and slate (6g). Ditch F2003 was truncated by Phase 2 Pit/Ditch F2006 and by an area of modern truncation to the west.

Linear Ditch F2008 lay parallel to and *c.* 8.30m southeast of Ditch F2003 (Figs. 4 & 5). This ditch lay on the same alignment as later ditches F2014, F2016 and F2018. The full extent of the ditch was obscured both by the baulks and by a number of features that truncated F2008 at its northeastern extent, some of which were related to a later structure (see *Undated* below). Its single clayey fill, L2009, contained animal bone (8g), tile (49g) and pottery (53g). Segment A contained pottery (13g) and tile (49g). Segment B contained pottery (6g) and Segment C also yielded pottery (40g) and animal bone (8g). This ditch was truncated by a small Phase 1 pit at its southwestern end (F2027), the terminus of an undated perpendicular ditch at its northeastern end (F2048) an undated masonry structure (F2022). For most of its visible length, it was re-cut by Phase 2 Ditch F2020.

Sub-oval Pit F2027 cut Ditch F2008 at its southwestern end (Fig. 4). It measured between 1 and 1.25m in diameter and 0.32m in depth. Its silty fill, L2028 contained pottery (56g).

Linear Gully F2031 was situated between ditches F2003 and F2008 (Fig. 4). It also lay on a southwest/northeast alignment. Its fill yielded no finds, and the features has been dated to Phase 1 on the basis of its alignment and stratigraphic relationship with later Phase 1 features F2029 and F2033. Linear Gully F2029 cut Gully F2031 and lay perpendicular to it (Fig. 4). Its silty fill, L2030, contained pottery (182g) and animal bone (46g). Gully F2029 was truncated by oval Pit F2033 (Fig. 4), which yielded pottery (27g).

Oval Pit F2040 was located in the northwest of Area A, west of Phase 1 Ditch F2003 (Figs. 4 & 5). It was over 4.90m long, 3.50m wide and 0.72m deep. Its single fill, L2041, yielded pottery (148g) and animal bone (175g). This fill is likely to have been

contemporary with the primary fill of Ditch F2003, L2004. The northeastern side of Pit F2040 was cut by Phase 5 Pit F2042.

Phase 1: ninth to late eleventh century (Area 2)

The only Phase 1 feature in Area 2 was discrete oval Pit F2070. This lay on a northwest/southeast axis, perpendicular to the alignment of Phase 1 ditches in Area 1 (Fig. 4). Its clayey fill, L2071, contained pottery (37g; see Pottery Report below).

Phase 2: tenth to early thirteenth century (Area 1)

In Phase 2, two parallel ditches, F2020 and F2014, were cut through and to the south of Phase 1 Ditch F2008. These lay on the same alignment as the earlier Phase 1 ditches, but were close to each other. These Phase 1 ditches appear to have silted up and been backfilled by this phase, but the alignment of the ditches was still known. A further parallel ditch, F2010, was located north of the two parallel ditches, and a short gully, F2035, also ran along the same alignment.

Linear Ditch F2020 cut the line of southwest/northeast aligned Phase 1 Ditch F2008 for over 13m (Figs. 4 & 5). Its northeastern end fully truncated the fill of Ditch F2008. Its heavy silty fill, L2021, contained animal bone, tile and pottery. Segment A yielded pottery (42g), tile (79g) and animal bone (55g). Segment B contained pottery (180g) and animal bone (51g). Finds from Segment C also comprised pottery (22g) and animal bone (28g). This ditch was truncated by undated masonry Structure F2022 and undated perpendicular Ditch F2048.

Linear Ditch F2014 ran parallel to and *c.* 0.20m southeast of Ditch F2020 (Figs. 4 & 5). The fill, L2015, contained animal bone (68g) and pottery (79g; see Pottery Report below).

Linear Ditch F2010 lay parallel to, and *c.* 8.80m northwest of Ditches F2014 and F2020 (Fig. 4). Its western extent was obscured by undated F2044 and its northern side ran under the northern limits of the excavation. Its clayey fill yielded pottery (107g), brick (11g) and animal bone (86g).

Narrow Gully F2035 was located in the southwestern part of Area A (Fig. 4). It lay on a southwest/southeast axis, like the principal Phase 1 and Phase 2 ditches. It contained two fills, L2036 and L2037. Lower sandy, pebbly fill L2036 yielded no finds; its composition would have facilitated drainage. The upper silty fill, L2037, yielded pottery and tile. Finds recovered from Segment B comprise pottery (25g) and tile (16g). Segment C also yielded pottery (12g). The southwestern end of Gully F2035 was truncated by post-medieval Pit F2038.

Oval Pit/Ditch F2006 lay between Phase 1 Ditches F2010 and F2020 and cut Phase 1 Ditch F2003. (Fig. 4). It was aligned northwest/southeast, perpendicular to the ditches. Given this alignment, it may be associated or contemporary with undated perpendicular oval Ditches F2012 and F2048 (see *Undated* below). Both of these appear to post-date Phase 2, as they cut Phase 2 Ditches F2010 and F2020. This

change of alignment may indicate a significant change of land use on the site, which suggests that they were cut after Phase 3, which continued the alignments of earlier phases.

Although Ditch F2012 yielded residual abraded early Saxon to tenth century pottery, Pit/Ditch F2006 contained a large assemblage of relatively closely dated pottery. Its silty fill, L2007, yielded large quantities of pottery (13309g; mid-ninth century to AD1200, see Pottery Report below; Fig. 8), animal bone including crow (639g), tile (10g), an iron hook (145g, see Small Finds report below, Fig. 9.4), five iron objects (47g, see Small Finds report below), a large iron nail and fragments (66g, see Small Finds report below, Fig. 9.5), and SF1, an iron pin or needle (4g, see Small Finds report below, Fig. 9.3).

Phase 2: tenth to early thirteenth century (Area 2)

Area 2 contained two intercutting pit features dated to this period.

Oval Pit F2052 was located in the southeastern corner of Area 2 (Figs. 4 & 5), and was cut on a northwest-southeast alignment like Phase 1 Pit F2070. This alignment is perpendicular to that of most of the linear ditches in Area 1. Pit F2052 was filled with clayey L2053, which yielded pottery (155g), tile (207g), animal bone including a sheep (99g), an iron nail (8g) and the only slag recovered from the site (96g; see Slag Report below). Pit F2052 cut small Pit F2054 (Figs. 3 & 5). Pit F2054 contained clayey fill L2055, which yielded very sparse quantities of pottery (1g).

Phase 3: tenth to late thirteenth century (Area 1)

During this phase, two further parallel, southwest/northeast aligned ditches were cut in Area A. These were located in the southeast of the site, and were only partially revealed as they both ran under the limits of excavation to the south and east. The position of these and earlier ditches suggests that they were constructed on a similar alignment but each successive pair of ditches was cut further to the south east than previous ditches.

In plan, F2016 was another regular, parallel-sided ditch that lay *c.* 0.60m to the southeast of Phase 3 Ditch F2018 (Fig. 3). Ditch F2016 contained a single clayey fill, L2017, which yielded pottery, animal bone, a chalk tessera and a pottery roundel. Segment A yielded pottery (58g). Finds recovered from Segment B comprise animal bone including a horse metatarsal (115g), a redeposited Roman chalk tessera (11g, see Small Finds report below, Fig. 9.1), a possible worked ceramic roundel (27g, see Small Finds report below, Fig. 9.2) and pottery (5g).

Ditch F2018 ran parallel to Ditch F2016 (Figs. 3 & 5). It had a similar fill, to L2017, L2019, and finds consisted of animal bone (23g) and pottery (42g).

Phase 3: tenth to late thirteenth century (Area 2)

Area 2 contained deep Ditch F2050, which was constructed on the same alignment as the linear ditches in Area 1 (Fig. 3).

Linear Ditch F2050 was cut on a north-north-east/south-south-west axis. Its profile was 'V' shaped and its maximum recorded depth, 2.4m, was considerably deeper than that of the other ditches. Unlike other ditches, it rapidly filled with water upon excavation (Figs. 3 & 5). Its silty fill, L2051, yielded pottery, tile and animal bone.

Phase 4: thirteenth to fifteenth century (Area 2)

The only feature on the site that dated to the high medieval period was Gully F2062 (Fig. 3) in Area 2. Its clayey fill, L2063, yielded pottery (52g). It was truncated by modern features and a later undated pit, F2064, at its northwestern end.

Phase 5: Post-medieval / early modern - sixteenth to nineteenth century (Area 1)

Large oval rubbish Pit F2042 (Figs. 3 & 5) contained a single clayey fill, L2043, which yielded pottery (45g, see Pottery Report below) and animal bone (424g). This pit cut Phase 1 Pit F2040 and undated Pit F2044.

Smaller oval Pit F2038 was located in the southwestern corner of Area 1 (Fig. 3). Its silty fill, L2039, yielded pottery (113g), tile (138g), brick (35g) and animal bone (156g). It truncated the southwestern end of Phase 2 Gully F2035.

Undated features

Numerous features were undated, either due to a lack of chronologically diagnostic material or to the presence of clearly re-deposited material. However, it has been possible to suggest the general place of some of these features within the site sequence on the basis of their spatial relationship with phased features.

In Area 1, a large pit, F2044, lay in the northwest, and an undated posthole, F2025, lay in the central-southern portion. Two short ditches, F2012 and F2048, ran perpendicular to the sequence of earlier long ditches.

Undated features (Area 1)

Large oval Pit F2044 lay adjacent to and north of Phase 1 Pit F2040 (Figs. 3 & 5). It contained a single clayey fill, L2045, which did not yield any finds. However, it was cut by Phase 5 Pit F2042 to the south and by an area of modern truncation to the west, and cut Phase 2 Ditch F2010 to the east. This stratigraphic evidence indicates that it probably dates to between Phases 2 and 5.

Discrete small circular Posthole F2025 (Fig. 3) contained silty fill L2026, which did not yield any finds.

Short Ditch F2012 was located in the northeast of Area 1 (Fig. 3). Its northern terminal cut Phase 2 Ditch F2010. Its silty fill, L2013, yielded residual pottery (4g), brick (7g) and a fragment of copper alloy sheeting (3g, see Small Finds report below). The early medieval pottery in its fill is probably re-deposited and may have derived from Phase 2 Ditch F2010, which it cut. The feature appears to date to after Phase 2, like undated Ditch F2048, and like F2048 and Phase 2 Pit/Ditch F2006, it was constructed on a northwest/southeast axis. It is possible that these three ditches were cut towards the end of Phase 2, after the principal linear ditches had silted up and been filled in. This is likely to have happened in the early thirteenth century.

Ditch F2048 was aligned northwest/southeast (Fig. 3). Its southeastern terminus truncated Phase 2 Ditch F2020 and its western side appeared to be cut by the modern oval pit that had disturbed the eastern portion of Structure F2022 (see below). Its silty fill, L2049, yielded pottery (550g) and animal bone (182g). The pottery dates this feature to Phase 2 (tenth to early thirteenth century, see Pottery Report below). However, the feature appears to cut Phase 2 Ditch F2020. The pottery in Ditch F2048 may be redeposited, deriving from earlier Ditch F2020. However, a relatively high quantity of pottery was present, which may not have been residual. In any case, the particularly wide date range of Phases 1, 2 and 3 means that it is difficult to discern sub-phases and the use-length of features such as Ditch F2020.

Undated oval Pit F2046 was located in the southeastern part of Area 1 (Figs. 3 & 5). The southern portion of the pit was truncated by later Structure F2022. No finds were recovered from its silty fill, L2047.

Masonry structure F2022 was located in the east of Area 1, above Phase 1 Ditch F2008 and Phase 2 Ditch F2020 (Figs. 3, 4 & 5). It was rectangular in plan, and appears to represent the foundation cut and remains of a truncated and possibly robbed limestone-walled structure. In plan, the external extent of the structure was 4.5m x 2.2m, enclosing *c.* 3.7m x 1.6m. The foundation trench was 0.86m deep and 0.41m wide, with steep sides (90°) and a flat base. The foundation walling was of rough, random uncoursed limestone blocks (Fig. 5). The wall was not bonded, but the blocks were lain on and packed with natural sand. The fairly flat limestone blocks varied in size between 190 x 170 x 80mm and 360 x 350 x 60mm. The foundation trenches cut Phase 1 Ditch F2008, Phase 2 Ditch F2020 and undated Pit F2046. The feature was heavily disturbed by a modern oval pit (Fig. 3) that had truncated the northeastern corner and caused the southern and eastern walls to collapse inwards.

Undated features (Area 2)

Area 2 contained several discrete undated pit and posthole features, which contained no chronologically diagnostic finds. No finds were recovered from Posthole F2056 or Pit F2068. Shallow Pit F2058 yielded sparse tile (11g). The stratigraphic relationship of Pit F2064 with Phase 4 Gully F2062 indicates that it dates to the thirteenth to fifteenth century or later. No finds were recovered from the clayey fill of irregular shallow Gully F2060, which may represent tree rooting.

Modern activity

Ditch F2066 was located in Area 2 (Figs. 3 & 4) and contained modern material, including brick, tile, glass and plastic. This large modern ditch is relevant, as it traversed Area 2 in a north/south direction, an axis not encountered in any archaeological contexts on the site. A modern drain lay along its eastern side, aligned north/south and veering off to the northeast at the terminus of the ditch. These features both truncated an area of modern ground disturbance in the northeastern corner of Area 2. An area of modern truncation was also recorded in the northwestern side of Area 1. This, like modern Ditch F2066, appears to be aligned on a north/south axis.

THE FINDS

THE POTTERY

A. Peachey

Introduction

Thirty-three contexts contained pottery. A total of 787 sherds, weighing 15841g, with a total estimated vessel equivalent (r. eve) of 7.01 were recovered. The pottery is abraded, but with an average sherd size of 20.13g, the sherds are of a substantial size. It was not possible to reconstruct any complete vessels but there are many cross-joining fragments. While the r. eve is quite high for an assemblage of this size, 84% of the pottery is from one context. The majority of the pottery is late Saxon/Saxo-Norman and consists of coarse wares. Only three contexts contained medieval and post-medieval sherds. These are decorated with coloured glazes and slips.

Methodology

The pottery was examined using a x20 microscope, and recorded on *pro forma*. A description of the pottery fabrics is presented. The fabric codes are based on the system used for the Bedfordshire type series codes (Baker and Hassall 1979; Slowikowski 1995; pers comm).

Phasing

It proved difficult to assign narrow date ranges for features containing pottery because many of the features were open ditches. The assemblage contained small, abraded sherds of residual pottery, alongside the Late Saxon pottery. The two closely dated features are Pits F2006 L2007 and F2052 L2053.

Fabric Codes and Descriptions

C01 (1) Sand Tempered Ware (Thetford Type Ware).

Description: (Baker and Hassall 1979, 172; Denham 1985, 48) A sand tempered fabric with common, poorly sorted sub rounded/sub angular quartz (0.2-1mm), in clear, white, translucent, and some amber colours. Common fine mica, abundant hard fine black inclusions (iron ore?), sparse medium/large red iron rich grains, and occasional calcareous inclusions. The core is usually dark grey and the surfaces orange to red/brown with visible mica, however the surface is often obscured by soot or other signs of use (mainly cooking).

Date: Saxo-Norman, 850-1200.

Source: East Anglia.

Comments: 6 Rim sherds are undecorated, wheel thrown, everted and flat topped rims (Fig. 8.5) and three have thumb impressed decoration. Similar forms of rims were found at Chalgrave, Beds (figs. 7.4 and 8.19, Brine 1988). Sagging bases dominate, although flat bases may be present, but unrecognisable. None of the body sherds are clearly wheel thrown, so the vessels may have been hand made and finished on a wheel. This fabric makes up 27.2% of the assemblage, and the majority is from Pit/Ditch F2006 L2007.

B01a (1) Coarsely crushed shell tempered ware (St. Neots Type Ware).

Description: (Baker and Hassall 1979, 165) The fabric has a dark grey matrix dominated by coarse crushed shell (1-4mm). Fine black iron rich grains are occasionally present. Surfaces range from a pale orange to red and a dull red/brown. Sherds often appear to have a vesiculated surface where shell has been dissolved by soil conditions. Exterior surfaces are often obscured by soot.

Date: Early Saxon - c.1100, but small amounts continue to be produced throughout the early medieval period.

Source: St. Neots: Local and regional.

Comments: The fabric in this assemblage probably dates to the latter half of its date range as the rim sherds present are too developed for an earlier date. The bulk have clubbed or everted rims, but three are hooked/undercut, and two flat-topped. Two strap handles are present; one of which belonged to a jug or pitcher (Fig. 8.3). The fabric was hand made using coils of clay. This fabric makes up 41.1% of the assemblage with the majority from Pit/Ditch F2006 L2007.

B01a (2) St. Neots Type ware.

Description: (Baker and Hassall 1979, 165; Denham 1985, 47) A dark grey/brown matrix dominated by common - abundant coarse shell. Surfaces are slightly soapy (self-slipped) and usually purplish/dark brown in colour, although some sherds are slightly lighter being closer to a dark crimson colour. The fabric is generally slightly softer than B01a (1) and was probably fired at a lower temperature.

Date: 850-c.1100.

Source: St. Neots: Local and regional.

Comments: The fabric appears to have been hand made. Identifiable forms are limited to bowls and dishes, although soot stains on some fragments indicate that either some of these were used for cooking or that cooking pots were also made in this fabric. The complete profile of a bowl with angular sides and a sagging base was recovered from Pit/Ditch F2006 L2007 dating to the 12th century (Fig. 8.1).

B07 (1) Developed St. Neots ware.

Description: (Addyman 1973) This fabric has a mid/dark grey core and light brown/buff surfaces often vesiculated. Inclusions are dominated by poorly sorted crushed shell (1-3mm), sparse sand and grog are also present.

Date: Late 11th century - c.1200.

Source: Harrold, Bedfordshire, local and regional.

Comments: A ribbed rim of an upright-sided bowl was present in Pit/Ditch F2006 L2007 (Fig. 8.4) and a strap handle in Ditch F2048 L2049. The fabric is similar to that described by Denham (1985, 47) as transitional late Saxon fabric T1/2.

B07 (2) Sand and shell tempered ware (Developed St. Neots Ware).

Description: A hard fabric tempered with sparse - moderate coarse shell and fine sand. Sparse iron rich fragments and grog are also present. The core is dark grey and the surface red/brown. The surface sometimes has a soapy (self-slipped?) feel although often sand protrudes through the surface making it slightly abrasive.

Date: Late 11th century - c.1200.

Source: Harrold, Bedfordshire, local and regional.

Comments: The fabric was hand made probably from coils of clay, but the rim sherd in Pit/Ditch F2006 L2007 was finished on a wheel. The rim and base of this vessel are both present but do not join (Fig. 8.2); it is the only occurrence of this fabric in the assemblage.

C01 (2) Early Medieval ware.

Description: (Baker and Hassall 1979, 171) Coarse sand tempered ware with variable inclusions. A hand made fabric, with a grey core and red/brown surface.

Date: 11th century - c.1200.

Source: Local.

Comments: Only five abraded body sherds of this fabric are present

C01 (3) Coarse sand tempered ware.

Description: A coarser version of C01 (2), whose surfaces are generally more abrasive and fire to a redder colour. The core remains grey, but lighter margins may be present. Occasional flint and calcareous inclusions may also occur.

Date: 10th - 12th century.

Source: Local.

Comments: Fabric C01 (3) is very similar in style and structure to C01 (4) and from the limited number of sherds present, appears to have been from a vessel of similar form: a hand made, thick walled storage jar with an everted rim, and applied thumb decorated strips (Fig. 8.6). Like C01 (1), similar types of vessel and decoration have been found at Chalgrave, Bedfordshire, although no exact matches were present. The C59A and C59B groups at Chalgrave may be related to the C01 (3) and C01 (4) (below) fabric groups at Kempston Mill. The geological composition of the fabrics from Chalgrave and Kempston Mill are similar, but differ in that the Kempston Mill groups lack the moderate fine white (?limestone) inclusions of the Chalgrave examples (Brine 1988). Some of the Chalgrave examples were also wheel made, a method of manufacture not found on any of the Kempston Mill examples. This fabric was only found in Pit/Ditch F2006 L2007.

C01 (4) Sand (and organic?) Tempered ware.

Description: This is a coarse sand tempered ware with sparse elongate or rounded voids throughout the matrix. These voids may indicate the presence of an organic temper, probably chaff or dung (but probably not grass). However, it is unlikely that this was a deliberately added temper as it does not occur in sufficient amounts, and was probably picked up during the manufacturing process. Sparse red and black iron rich grains are also present. The core is dark/mid grey and the surface orange/brown.

Date: 8th - 11th century

Source: Local.

Comments: No rim sherds of this fabric were found, but sherds with applied thumb decorated strips were present. This form of decoration indicates a probable date in the latter half of the date range, as does the fabrics similarities to C01 (3) (above). This fabric was only found in Pit/Ditch F2006 L2007.

A02 Early/Middle Saxon

Description: A coarse black gritty ware, containing poorly sorted quartz and occasional calcareous inclusions. The fabric is hand made and some sherds have been burnished.

Date: c.400 - 900.

Source: Local.

Comments: Only thirteen very abraded body sherds of this fabric were recovered and are probably residual.

A05 Early/Middle Saxon

Description: A coarse black gritty ware with a highly micaceous fabric, poorly sorted quartz and sparse shell inclusions. The fabric is hand made and some sherds have been burnished. It is harder than A02.

Date: c.400 - 900.

Source: Local.

Comments: Only eleven very abraded body sherds of this fabric were recovered and they are probably residual.

A01 Early/Middle Saxon

Description: A reduced fabric with a fine matrix including medium quartz (<1mm), silver mica, and sparse black iron ore. The fabric has a mid grey core and dark grey/brown surface.

Date: c.650-850.

Source: East Anglia, possibly Ipswich.

Comments: Only 1 sherd of this fabric is present and is probably residual. A01 is similar to fabric 'S5' at Northampton (Denham 1985, 47).

C01 (5) Late Saxon/Medieval Sand tempered ware

Description: A coarse grey sand tempered ware with red/brown oxidised surfaces.

Date: c.850-1200.

Source: Possibly Thetford or Northampton.

Comments: Two sherds have been had their exterior surface burnished to give the fabric a brighter red appearance. Only seven very abraded body sherds of this fabric are present.

C01 (6) Late Saxon/Medieval Sand tempered ware

Description: A red firing fabric with a dark grey surface, and margins that fade between the two. The matrix is micaceous and contains common fine quartz (<0.3mm), sparse large quartz grains (0.5-0.8mm), and common fine black iron rich grains.

Date: 11th - 13th century

Source: Local or regional.

Comments: May be a coarser version of finer, sand tempered fabrics that occur throughout the medieval period. Only two sherds of this fabric are present

C03/?C12 Sand tempered ware

Description: This fabric has been tempered with fine sand and/or quartz, and also contains sparse black iron ore and mica (common on surface). The fabric has a reduced core and pale buff/cream surfaces.

Date: c.850-1200.

Source: Unknown, but possibly Stamford.

Comments: One sherd has a mottled yellow/green glaze on its exterior surface. Fabrics similar to this were produced in Stamford. Only four sherds of this fabric are present

E08 Sand tempered ware

Description: This fabric contains common fine quartz, sparse black iron ore and mica, and occasional red iron rich inclusions. It has been decorated with a dark blue/grey slip, with a pattern applied beneath it. This is possibly imitating (or actually is) the Metropolitan slipware style, more often seen on post-medieval red earthenware.

Date: 16th- 17th century.

Source: Unknown.

Comments: 1 rim sherd is present in Pit F 2042 L2043 Segment B and probably belongs to a bowl. The fabric does not occur elsewhere in the assemblage.

E01 Medieval grey ware.

Description: A hard, coarse sand tempered fabric that usually fires to a grey colour.

Date: 14th - 15th century.

Source: Varies.

Comments: The base of a pedestal-based beaker is from Gully F2061 L2063; the fabric does not occur in any other context.

C17 Hedingham Fine ware.

Description: (Baker and Hassall 1979, 174) A soft micaceous fabric, usually orange/brown in colour with a deep green mottled glaze. Some sherds have a cream/white slip under the glaze. Inclusions are dominated by pale coloured sub-angular quartz.

Date: Mid 12th - late 13th century.

Source: Sible Hedingham.

Comments: Only nine sherds of this fabric are present

P01 Post Medieval Red Earthenware.

Description: (Baker and Hassall 1979, 220) A very hard oxidised, sand tempered fabric. Sherds have a variety of glazes ranging from clear to red, and to black.

Date: 16th - 17th century.

Source: Regional.

Comments: Only three sherds of this fabric occur and they are all from Pit 2038 L2039.

P33 English Tin Glazed ware.

Description: (Baker and Hassall 1979, 222) An off white fabric with a blue and white patterned glaze.

Date: Late 17th - 18th century.

Source: Variable.

Comments: Only three sherds of this fabric are present in the assemblage, from Pit 2038 L2039.

Forms

Phase	Forms					
	Cooking Pot/Jar	Storage Jar	Bowl	Shallow Dish/Plate	Beaker	Pitcher/Jug
1						
2	20	4	7	1		1
3					1	
4			1	1		
Total	20	4	8	2	1	1

Table 2 Distribution of ceramic forms by ceramic phases

Early to Middle Saxon period

No diagnostic sherds are present in this period. ‘Black gritty’ fabrics A02 and A05 originate in this period, but their small size and abraded condition indicate that they are probably residual. Fabrics A01 and organic-tempered C01 (4) may derive from the later Middle Saxon period, but as they are associated with later fabrics they may also represent continuing traditions in pottery production. There too few sherds to suggest continuity of occupation between the Early and Middle Saxon periods. B01a (1) was also produced in this period, but the presence of developed rim sherds and the absence of simpler rims makes this unlikely proposition here.

Late Saxon/Saxo-Norman period

A substantial quantity of pottery from this period was present. The majority (84%) came from Phase 2 Pit/Ditch F2006 L2007. Other large groups of pottery came from Phase 2 Ditch F2020 L2021 Segment B and Pit F2052 L2053. The quantity of pottery from other contexts is negligible, although some rim sherds are present.

Pottery from Pit/Ditch F2006 L2007 has a r. eve of 4.45, and 65% of sherds are from cooking pots in Fabric B01a (1) (coarsely crushed shell tempered ware) and C01 (1) (Thetford type ware). Over 50% of these vessels exhibit soot stains from their original use. The cooking pots are undecorated although three display thumb-decorated rims and/or thumb-decorated applied strips. The plain cooking pot rims are all everted with either clubbed or flat-topped rims; the thumb-decorated vessels have everted rims that were probably flat topped before decoration. One cooking pot rim in B01a (1) is undercut, as is a storage jar rim in B07 (2) (Fig. 8.2). The rims of the storage jars in Pit/Ditch F2006 L2007 seem to be more developed than other vessels, being either under cut or in C01 (3) decorated with both vertical and horizontal thumb-applied strips (Fig. 8.6). The method of manufacture of vessels in Fabric C01 (1) notable because many of the vessels appear to have been hand-made with their rims either finished or entirely made on a wheel. There is a significant difference between the less even construction of the bodies, and the uniform, smooth rilling on the rims of several vessels. This method of finishing is common on sand tempered wares produced in the region. The more developed rims and this form of manufacture

may indicate a date in the latter half of this phase. The presence of a strap handle attached to a rim (Fig. 8.3) in Fabric B01a (1) supports this date.

The other fabric that can be firmly placed in the Late Saxon/Saxo-Norman period is St. Neots type ware B01a (2). The appearance of this fabric is distinctive, as is its form in this assemblage, as it occurs almost entirely as bowls. In Pit/Ditch F2006 L2007 the entire profile of a large angular sided bowl (Fig. 8.1) is present, and is comparable to an example found at Comberton, Cambridgeshire (Hurst 1956) and dated to the 12th century. Similar forms of bowls of varying size are also present in Phase 2 Ditch F2020 L2021 Segment B, Phase 1 Gully F2029 L2030, and Phase 2 Pit F2052 L2053, possibly indicating that a particular form that was exported to this area. B07 (1); developed St. Neots ware, is also present in five contexts with a ribbed rim of an upright-sided bowl present in Pit/Ditch F2006 L2007 (Fig. 8.4) and a strap handle in Ditch F2048 L2049. This is associated with the latter years of this phase and the early medieval period. The form of the handle is comparable to those present in B01a (1) (Fig. 8.3). Fabric B01a (1), B01a (2) and B07 (1) may be the products of the same industry with each fabric being used for particular forms, hence no cooking pots and only bowls in B01a (2), but there is not enough material to support this theory.

It has not been possible to reconstruct many pots partially or completely, although comparisons of the sherds indicate that many probably came from the same vessels (in Pit/Ditch F2006 L2007 probably less than 22 individual vessels). All of the fabrics associated with this phase were produced either locally or at regional production centres in East Anglia (St. Neots and Thetford type wares were produced at several locations in Norfolk, Suffolk, and possibly Essex), none of which are far from Kempston. The fabric assemblage for this period is comparable to pottery recovered from the motte and bailey castle at Chalgrave, Bedfordshire, which exhibits similar proportions of early medieval pottery, both by fabric types and vessel forms, and also small amounts of earlier (?residual) Saxon pottery (Brine 1988). Sites at St. Peters's Garden, Northampton (Denham 1985) and Lordship Lane, Cottenham, Cambridgeshire (Mortimer 2000) also exhibit comparable Saxo-Norman pottery assemblages

Medieval period

There is insufficient evidence from this period to suggest occupation or rubbish disposal. However, the presence of a wheel-turned base from a pedestal-based beaker in medieval grey ware, small sherds of glazed Hedingham fine ware, and possibly a yellow/green glazed sherd of Stamford ware (C03/?C12) indicate domestic activity in the vicinity. The limited material present is all fineware or tableware, rather than domestic cooking pots or storage jars.

Post-Medieval period

The material present from this period is present in the fill of two pits, Phase 5 Pit F2038 L2039 and Pit F2042 L2043 Segment B. None of the few small fragments appear to be from the same vessel and all appear to be isolated sherds. Sherds from Pit F2038 L2039 exhibit a range of plain coloured glazes and one sherd of patterned English tin glazed ware, but it is not possible to say more about such small sherds.

The E08 sherd in Pit F2042 L2043 Segment B may represent a local imitation of the Metropolitan slip-ware style, as the fabric is more similar to those found in 'upper' East Anglia and the Midlands, but the decoration very similar to that produced in Harlow, Essex, and other nearby production centres. However, it may just be a different Harlow product from the more common red-earthenware types.

Illustrated pottery

Fig. 8.1 *Pit/Ditch F2006 L2007*. The rim – base profile of a large, angular sided bowl in B01a (2) (Hurst 1956, fig. 3.10).

Fig. 8.2 *Pit/Ditch F2006 L2007*. The rim and base of a tall necked, globular storage jar with an undercut rim in B07 (2). The two sherds do not join.

Fig. 8.3 *Pit/Ditch F2006 L2007*. An everted rim and a strap handle in B01a (1), that probably formed part of a jug/pitcher. The handle joins the vessel at the top of the rim.

Fig. 8.4 *Pit/Ditch F2006 L2007*. The collared rim of an upright sided bowl in B07 (1). It is decorated with horizontal grooves (Addyman 1973, fig. 16.2).

Fig. 8.5 *Pit/Ditch F2006 L2007*. A flat topped, everted rim probably from a globular cooking pot/jar in C01 (1). The rim is wheel finished, the body appears to be hand made.

Fig. 8.6 *Pit/Ditch F2006 L2007*. An everted rim from a storage jar in C01 (3). The vessel has been decorated with vertical and horizontal thumb-impressed, applied strips.

STONE, CERAMIC AND METAL OBJECTS

N. Crummy

A stone object, a Roman chalk tessera was found in a Late Saxon or early medieval ditch (F2016) (Fig. 9.1). The frequent robbing of the walls and floors of Roman buildings for stone and other building materials in the early medieval period may account for its presence on this site.

The ceramic roundel from the same feature as the tessera may have been used as game piece or as a tally counter (Fig. 9.2). Four counters of similar size were found in Colchester, three of them also of similar date (Crummy 1988, 45). Unlike Roman pottery roundels, few of medieval date are well worked, suggesting they may have been more *ad hoc* in both their manufacture and use.

Nearly all the ironwork came from a single pit (F2006). Most of it consists of nails of various forms, together with a few small fragments of strips, possibly also structural. The exception is a possible pin or needle (Fig. 9.3), and a bent fragment possibly the shank of another. Both pins and needles of similar size have been found in the Anglo-Scandinavian levels of the Coppergate site at York (Ottaway 1992, fig. 215, fig. 300,

3800-1, 3805, 3811). One of the nails is stout and headless, and has been clenched to form a hook shape (Fig. 9.4). It may have been used where it was necessary to set the top of the nail level with the surface into which it was hammered. This may also be true of a nail with a small thin T-shaped head (Fig. 9.5). Similar nails occur in the Roman period (Manning 1985, 136, Type 3), but an example contemporary with this one has not been found.

A piece of sheeting is the only copper-alloy find (Fig. 9.6). It may be all that remains of a folded belt-plate.

Stone

Fig. 9.1 *Ditch F2016 L2017* A chalk tessera, with three well-worked surfaces, the others rougher. Maximum dimensions 21 x 19 x 18mm. Roman tesserae were rarely regular cubes, particularly where the demand for a curved line was uppermost, such as in or adjacent to guilloche, foliage, figures, birds, animals, or objects such as *canthari*.

Ceramic

Fig. 9.2 *Ditch F2016 L2017* A small roundel made from a base sherd from a early medieval ceramic vessel. The lower surface is abraded. The edge is generally well-shaped but rough in places and worn quite smooth in others. Maximum diameter 37mm, thickness 14mm.

Iron

Fig. 9.3 *Pit F2006 L2007 SF 1*. A thin round-section pin or needle. The head is malformed from corrosion. Length 64mm.

Fig. 9.4 *Pit F2006 L2007* A large hook, the thicker end terminating bluntly, suggesting it may be a headless nail. Traces of wood at the bend confirm this. Length (bent) 104mm.

Fig. 9.5 *Pit F2006 L2007* Fig 11.4 1) Large nail with small T-shaped head, one side of which is missing. Length 135 mm. 2) Not illustrated. Two small fragments. Maximum dimensions 25 x 18 by 9mm, and 16 x 12 x 6mm.

Not illustrated. *Pit F2006 L2007* 1) Nail with round flat head and square-section shank. Length 52mm. 2) Bent round-section shank fragment, possibly from a pin or needle. Length 43mm. 3-5). Small strip fragments, possibly from the same item. Lengths 42, 39, 32 mm, widths 21, 20, and 21mm respectively.

Not illustrated. *Pit F2052 L2053* Small nail, the tip missing. Length 30mm.

Copper-alloy

Fig. 9.6 *Ditch F2012 L2013* Fragment of sheeting, broken on one side at what appears to have been a bend or fold. The opposite side is broken irregularly, and the other two are finished. Maximum dimensions 23 by 32mm. Probably part of a folded belt-plate or similar fitting.

SLAG

J. Cowgill

Only one piece of slag was recovered from the site. This was a complete hearth bottom (96g) recovered from the fill of pit F2052, L2053 which has been dated by pottery to 10th century to c. 1200AD. The slag is a by-product of iron smithing, which is the production, repair or reuse of iron objects. The fuel used in the forge may have been coal but this an early date for its use for iron smithing, usually it is only found at East Coast ports or in coal mining areas in the early medieval period. It is uncertain whether the piece is actually abraded, the surface damage and current condition of the piece could be due to local post-depositional conditions within the pit.

Not illustrated. *Pit F2052 L2053* Complete hearth bottom, coal fuel? Abraded? Dimensions: length 50mm, width 80mm, height 30mm. Some small flint inclusions, slightly magnetic on one side.

ANIMAL BONE

Ian L. Baxter

Introduction

A total of 32 'countable' fragments of animal bone were recovered (see Methods below; *Table 3* below). Most derive from ditches and pits dated from the ninth to thirteenth centuries AD based on pottery spot dates. A much smaller quantity of fragments came from post-medieval sixteenth to eighteenth century pits. The condition of the animal bones was generally good.

Methods

All of the animal bones were hand-collected. Consequently an under-representation of bones from the smaller species is to be expected.

The mammal bones were recorded on an Access database following a modified version of the method described in Davis (1992) and Albarella and Davis (1994). In brief, all teeth (lower and upper) and a restricted suite of parts of the postcranial skeleton was recorded and used in counts. These are: horncores with a complete transverse section, skull (zygomaticus), atlas, axis, scapula (glenoid articulation), distal humerus, distal radius, proximal ulna, carpal 2+3, distal metacarpal, pelvis (ischial part of acetabulum), distal femur, distal tibia, calcaneum (sustenaculum), astragalus (lateral side), centrotarsale, distal metatarsal and proximal parts of the 1st, 2nd and 3rd phalanges. At least 50% of a given part had to be present for it to be counted.

The presence of large (cattle/horse size) and medium (sheep/pig size) vertebrae and ribs was recorded for each context, although these were not counted. 'Non-countable' elements of particular interest were recorded but not included in the counts. For birds the following were always recorded: scapula (articular end), proximal coracoid, distal humerus, proximal ulna, proximal carpometacarpus, distal femur, distal tibiotarsus and distal tarsometatarsus.

The separation of sheep and goat was attempted on the following elements: dP₃, dP₄, distal humerus and distal metapodials, using the criteria described in Boessneck (1969) and Payne (1985). Wear stages were recorded for all P₄s and dP₄s as well as for the lower molars of cattle, sheep/goat and pig, both isolated and in mandibles. Tooth wear stages follow Grant (1982) and are retained in the Access database. Only complete bones were measured. Measurements are retained in the Access database. These follow von den Driesch (1976).

Discussion

Saxo-Norman

This is a tiny assemblage and speculation regarding the economy and husbandry of the site is necessarily tentative. All the main domestic mammals are represented, with sheep in a majority. However, beef was probably the most commonly eaten meat. Pig is also present. A sheep metatarsal from Phase 2 Pit F2052 L2053 indicates a withers height of 59cm based on the multiplication factors of Teichert (1975). The pony sized

metatarsal of a horse around 12 hands high (based on the multiplication factors of Kiewewalter 1888) was found in Phase 3 Ditch F2016 L2017. Bird bones are relatively frequent and include domestic fowl, goose and duck. The geese are fairly small and could be domestic or wild species. The duck is either domestic or wild mallard. Fragments of marine fish indicate imports from the coast. The crow tarsometatarsus from Phase 2 Pit F2006 L2007 and the toad bones were probably accidental inclusions.

Post-medieval

The few post-medieval fragments include anterior dog mandible and pig cranial fragments. Some of the pig maxillary teeth are scorched suggesting leftovers from a roast.

Total	Period		Total
	Saxo-Norman	Post-medieval	
Cattle (<i>Bos f. domestic</i>)	7		7
Sheep/Goat (<i>Ovis/Capra f. domestic</i>)	10	1	11
Sheep (<i>Ovis f. domestic</i>)	(3)	(1)	(4)
Pig (<i>Sus f. domestic</i>)	+	1	1
Horse (<i>Equus caballus</i>)	2		2
Dog (<i>Canis familiaris</i>)		+	+
Domestic Fowl (<i>Gallus f. domestic</i>)	1		1
Goose (<i>Anser/Branta sp.</i>)	3		3
Duck/Mallard (<i>Anas platyrhynchos</i>)	+		+
Crow/Rook (<i>Corvus corone/frugilegus</i>)	1		1
Anuran (<i>Rana/Bufo sp.</i>)	3		3
Toad (<i>Bufo bufo</i>)	(2)		(2)
Fish (<i>Pisces sp.</i>)	3		3
Total	30		2

‘Sheep/Goat’ and ‘Anuran’ also includes the specimens identified to species. Numbers in parentheses are not included in the total of the period. ‘+’ means that the taxon is present but no specimens could be ‘counted’ (see Method above).

Table 3 Number of identified specimens (NISP).

DISCUSSION AND INTERPRETATION

The Kempston landscape

Kempston is located on the southern bank of the Great Ouse in a low-lying, slightly undulating landscape. The place name, recorded as *Camestone* in the Domesday Book (Morris (ed) 1977), reflects both this topographical position and the origins of the settlement. It is composed of the British root *carn* or *cam*, crooked, and the Anglo-Saxon *tun*, farm (Ekwall in Mawer and Stenton 1926, 76). The development of Kempston and the surrounding landscape is linked to its riverside position, as the parish benefited from water-power, river-borne trade, reed-beds and fishing and but also suffering from flooding and heavy waterlogged soils. The gravels and clay soils of the area were first exploited for agriculture, but were later used for intensive mineral extraction for brick and tile production.

Summary of excavation results

Excavations at Kempston Mill revealed a number of parallel late Saxon and medieval ditches and gullies, as well as a number of pits. Substantial levels of modern intrusion were encountered during the evaluation and the excavation. The site was characterised by open, intercutting ditches, which contained re-deposited material from earlier phases. Furthermore, the pottery assemblage has proved difficult to date with any precision, as many of the fabric types are non-diagnostic and/or characteristic of more than one period.

No evidence for Saxon occupation was found, though sparse quantities of undiagnostic, residual Anglo-Saxon pottery were recovered. The principal linear ditches were revealed in Area 1. Here, activity appears to have begun in the ninth to late eleventh century, when two parallel ditches and several minor, apparently unrelated features were cut. These ditches, on a southwest/northeast alignment, lie parallel to the present course of the Great Ouse river.

During the second phase, dated to the tenth to early thirteenth century, further ditches were cut along this axis. In the same time period, but after the disuse of the southwest/northeast aligned ditches, three northwest/southeast aligned short ditches crossed the site. However, by Phase 3, dated slightly later than Phase 2, the southwest/northeast alignment was re-instated with two further ditches. A further Phase 3 ditch on this alignment was recorded in Area 2. An undated structure with limestone foundations was probably constructed after the early thirteenth century, but does not appear on any nineteenth century maps. There is little evidence for any activity between the late thirteenth century and the sixteenth to nineteenth century, when two pits were cut.

The morphology and layout of archaeological features excavated at Kempston mill reflect its marginal, wet environment. Three features, Pits F2040, F2044 and Ditch F2050 were particularly wet, and upon excavation, rapidly filled with water. These may have been water pits or drainage sumps.

Large pits were located in both Areas 1 and 2 (Fig. 3). These were not as deep as the wet features, and may have been used for small-scale gravel quarrying or rubbish disposal. There is little evidence for medieval gravel working in the area, but post-medieval clay and gravel extraction are documented at Box End and Green End in 1625 and 1629 (Wood 1984, 66; BCRO PE 466/2 m. 8, 11 and PE 466/3). Gravel pits and brick and tile works were established in the area in the 18th and 19th century.

Local environmental conditions in the medieval period

Paleoenvironmental remains recovered during the excavation indicate that this area has been part of the Great Ouse floodplain since at least the late Saxon period. The possible wildfowl species present on the site are reflected in its position on the edge of the Great Ouse, which would have provided shallow water, water plants, grasses and sedges and a long shoreline for ducks and geese. Frogs and toads were also present. The remains of largely ground-feeding rooks or crows may indicate the proximity or presence of meadows or ploughed fields which would have provided them with grain and grubs.

There is little evidence for any industry or craftworking on the site. The only two features to yield iron nails, iron objects or slag were Phase 2 Pit/Ditch F2006 and Phase 2 Rubbish Pit F2052. This sparse smithing and construction debris suggests that the site lay some distance from the forge.

Medieval land use and trade contacts

The nature of medieval land use on the site is not clear from the archaeological evidence. Land along the riverbank to the west of the site, upstream from the mill, was criss-crossed with a number of water management features, including channels, leats, sluices and dams associated with the mill (Fig. 6). It is likely the site, located downstream from the mill, did not contain such features. However, the floodplain would have provided lush summer grazing and hay crops. The small animal bone assemblage from Kempston contained all the main domestic mammals, with sheep in a majority. The remains of domestic fowl were also recovered. Equally, the top dressing of silt provided by winter flooding would make the land suitable for summer cereal crops (King 1969). By 1804, land to the south of the mill, west of Mill Lane, contained cottages and gardens. Land to the west and south east of the mill was described as the 'mill homestead and pightle' belonging to the miller, James White. He also owned land east of the mill on the riverbank, described as the 'first allotment on Mill Green' (BCRO MA 18 Inclosure Map and award).

It is possible that this riverside site was affected by the climatic instability and widespread flooding of the late 13th to 14th century, which resulted in livestock disease and harvest failures (Dyer 2002, 254). Such external climate change may have been a factor in the rural stagnation and decline of the manorial system, nucleated villages and open fields in the 14th century (Dyer 2002, 263). Documentary sources indicate that Kempston fared badly at the time of the Black Death, reflected in the decreased value of the manor in 1358 (VCH 1912 (1920), 298).

It is likely that disease, climatic and economic changes resulted in a considerable decline in the population of the parish in the 14th and 15th centuries. It may be that the apparent hiatus in activity on the site at this time was related to these changes, which may also have affected the neighbouring deserted medieval village to the south (HER 17019). At this time, towns in southern Bedfordshire, located closer to London and major trade routes, grew at the expense of Bedford and its hinterland. Kempston appears to have maintained a mixed farming system despite early enclosure in the parish, in contrast to other areas that adopted sheep farming and profited from the late medieval wool trade (Wood 1984, 53).

The pottery assemblage from the site suggests a largely self-sufficient, inward-looking economy in the Saxon and medieval periods. However, the site was located close to road and river communications. Marine fish bone was recovered from soil samples, indicating that fish was imported from the coast along the Great Ouse river. This coastal trade is corroborated by the presence of sparse quantities of mussel and oyster shells in adjacent Phase 1 Ditch F2003 and Pit F2040. It is likely that the fish remains were primary deposits, as delicate bones would probably not have survived re-deposition; however, it is possible that the more durable shells derived from earlier Roman consumption and disposal.

The medieval manors of Kempston

Archaeological excavation has revealed a late Saxon settlement at Kempston manor, east of the present site, where Roman and medieval finds were also recovered (Crick & Dawson 1996). This Saxon estate centre may have been the site of an earlier Roman villa estate. Such land units may have remained fairly stable despite extensive changes in culture and ownership (Wood 1984, 29-30; Jones 1986, 153-4). Roman building materials recovered from the present site comprise re-deposited fragments of Roman brick, roof and floor tile and a chalk tessera recovered from medieval features. Two fragments of cracked, burnt tegula suggest that a Roman building with a tiled roof and tessellated floors may have been located in the vicinity of the site. The scatter of abraded and re-deposited material is consistent with the manuring of fields or rubbish disposal on a Roman farming estate, which may have been located on the site of the present Kempston manor (Crick & Dawson 1996).

The identification of medieval building materials is more tentative. These comprised fragments of daub and abraded, coarse flat tile in addition to the large iron nails found in Phase 2 Pit/Ditch F2006. The remaining building materials comprise intrusive limestone blocks derived from the construction and collapse of masonry structure F2022.

It is likely that the medieval landscape featured scattered hamlets or 'endships', centrally administered by Kempston manor. The study of the date, spatial distribution, degree of nucleation and interrelationships of these rural settlements is a key research theme for the period (Wade 2000, 24). The Domesday Book indicates that Kempston manor was the centre of a large and valuable estate, held by Countess Judith, niece of William the Conqueror (Morris (ed.) 1977). Although the full extent of the estate is unclear, it appeared to have had relatively little pasture land, but had large areas of

ploughland. A survey of open field systems in the parish has confirmed its extent (Wood 1984, Map 1).

The manor was subject to a series of divisions after 1237, when John le Scot died without issue and it was divided between his three sisters. The principal manor, later known as Kempston Daubeny, stood on the site of the present manor in Kempston East End (HER 5484) and a medieval moat or conduit lay immediately to the south west (HER 3396). Kempston Brucebury manor stood at Green End, and Kempston Greys manor was at Box End (Fig. 7). The Snagge family bought the manor of Kempston Daubeny in 1562, but lived at Moat Farm. This may have been located just west of the site of Kempston mill, at the site of a square moat (HER 5828) shown on the 1804 inclosure map (Wood 1984, 37; Bell 1966; Fig. 7). They sold the manor in 1659, but apparently continued to inhabit Moat Farm until 1712 (Wood 1984, 37; Bell 1966). Kempston manor had declined in importance by the eighteenth century and Kempston Greys and Hardwick became the principal manors.

Medieval mills on the Great Ouse in Kempston parish

Four mills were recorded in Kempston parish in the Domesday Book (Morris (ed.) 1977). The location of these mills is uncertain, but they are likely to have been located at Box Mill (HER 8131) at Box End, at the Nundams (HER 8177) at Church End, at Kempston Mill close to the present site (HER 1081) and at Ford Mill (HER 11514) close to Ham Ford and Honey Hill. It is likely that Kempston mill was the site of Countess Judith's mill (Wood 1984; Fig. 7).

The course of the Great Ouse river at Kempston has been subject to alterations for centuries. The northern branch of the river, the 'Old Ree' or Back Brook, forms the parish boundary with Biddenham to the north, but is now fairly sluggish and marshy. The southern branch, which has been scoured for centuries to provide a good head of water for the mill at Kempston, is now the main course of the river (Wood 1984, 14). A number of subsidiary channels and sluices existed upstream from Kempston mill (Fig. 6).

Kempston mill

Documentary research and archaeological excavation suggest that the complex arrangements of dams, mill races and leats on the Ouse at Kempston mill probably date back to late Saxon times (Fig. 6). These were rendered obsolete in the 20th century when the mill ceased to be powered by water and eventually went out of use. Recent alterations to the course of the river diversions of the early 1980s have further altered the river, filling in the medieval mill race and the complex arrangement of leats and sluices.

Finds made in 1919 when the mill wheels were replaced by a water turbine were identified as Roman (Wood 1984, 63). Given the background late Iron Age and Roman material found during the present excavations, and also found during excavations at Kempston manor (Crick and Dawson 1996), a watching brief at King William Close (HER 14853) and at the Cutler Hammer Sports ground to the south

west, it is likely that Roman artefacts may have been present, although this does not necessarily indicate the presence of a Roman mill here.

The mill may have belonged to Countess Judith, owner of Kempston Manor, when the Domesday Book was compiled (Morris (ed.) 1977). Countess Judith had founded and endowed Elstow Abbey by 1086. When the abbey's lands in Kempston were confirmed in 1165-74, they included a mill at Kempston worth 100 shillings a year, and also Box Mill. In 1410 the abbey estate included '... rents of ... 13s 4d in Box End in Kempston payable at Midsummer only out of three water-mills in Kempston' (VCH 1912, 257, 296-305; *Cal Misc Inq* vol 7 no 407 file 288 (10)).

The property went to the crown at the dissolution and the lease of the mills, the millhouse and rectory was granted to Edmund Harvey in 1541 (Carnell et al. 1966, 41). The mills were granted by Letters Patent, along with most of the other property of Elstow Abbey, to Sir Humphrey Radcliff of Elstow, Edmund Harvey's son in law, in 1553 (BCRO FAC1 SC6/Henry VIII/6070. X435 (Uncat) Pearson Family, bundle 5).

In 1601 the three mills were sold to bought by the Fitzwilliams, lords of the manor of Kempston Greys, expanding their property in the parish (Wood 1984, 37, 64). It is likely that this was in fact one mill, with three sets of grinding stones each powered by a separate wheel, as when the Fitzwilliam estate was bought by William Cater in 1624, it included:

'Three mills well housed standinge upon a verrie good Streame, three furlongs distant from the mancion house, and a mile distant from the Towne of Bedford, *with two acres of meadow adjoining*, being well customed' (BCRO: PE 466/7/3)

It is likely that the adjoining meadow consisted the site or of land to the south of the mill. Another set of stones had been added by 1636, when the mill was leased by Edward Cater to Ralph Hooton. The tenant was 'to repair the mills, water-course, mill dams, 'lowe shottes, fludgates', barn and cottage, for which the landlord provided materials' (Wood 1984, 65; BCRO X165). The maintenance of the mill machinery was the responsibility of the tenant, and fishing rights were excepted from the lease (BCRO X165). The estate was extended and built up in 1802 (Wood 1984, 65; BCRO X254/32). In 1832, the Quaker miller Joshua Ransome of Hitchin acquired the mill. In the nineteenth century it suffered a fire and was substantially rebuilt. The remains of water channels associated with the nineteenth century mill were observed during the archaeological evaluation (Keir and Ralph 2001). In the early twentieth century steam power was introduced, and one of the wheels was replaced with a turbine in 1919.

The Ransome and Horn milling firm was bought by Mr Clover in the early twentieth century. The complex series of medieval and post medieval leats, sluices and the mill race (Fig. 6) were gradually rendered obsolete as the mill turned to electrical power. In the 1952 it began to grind animal feed rather than wheat. Milling ceased in 1968 and the building was destroyed by fire in 1969. In the early 1970s the mill race was largely filled in. The site was subsequently occupied by small businesses and the course of the river Ouse was diverted away from the site in 1980 (Wood 1984, 66).

Conclusion

The medieval settlement at Kempston was the centre of a fairly wealthy agricultural parish and lay adjacent to a manorial estate with roots in the Roman period. The site at Kempston mill was located on the northern periphery of the village, on the floodplain of the Ouse, north of the village core and its arable open fields.

Finds recovered during the excavation of the ditches and pits at Kempston Mill indicate a fairly inward-looking and self-sufficient medieval community, with sparse quantities of pottery imported from East Anglia and significantly more locally produced wares. However, there is evidence for some trading along the Great Ouse river.

The site lies southeast of the complex of leats and sluices that once powered the medieval mill. The sequence of linear ditches recorded during excavation probably represent the shifting field drains of a late Saxon and medieval water meadow on the southern bank of the Great Ouse river. The land may have been used either as a meadow for hay and summer grazing or as a small allotment. Later documentary sources suggest that it was probably part of the mill estate, maintained by the tenants, and later, the owners of Kempston Mill.

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The archive records and finds are held by Bedford Museum.

Abbreviations

BCRO Bedfordshire County Record Office

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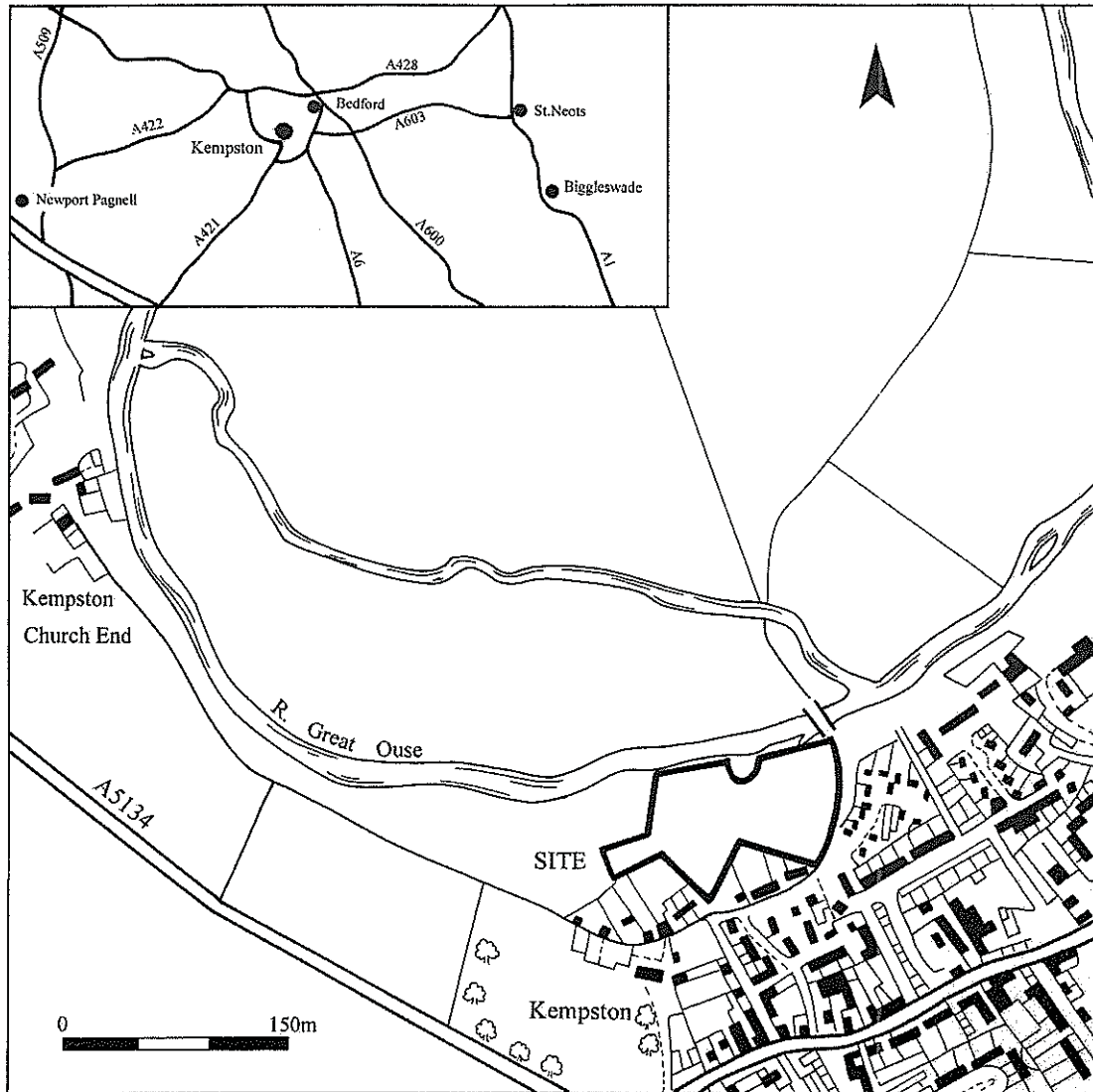


Fig. 1 Site location

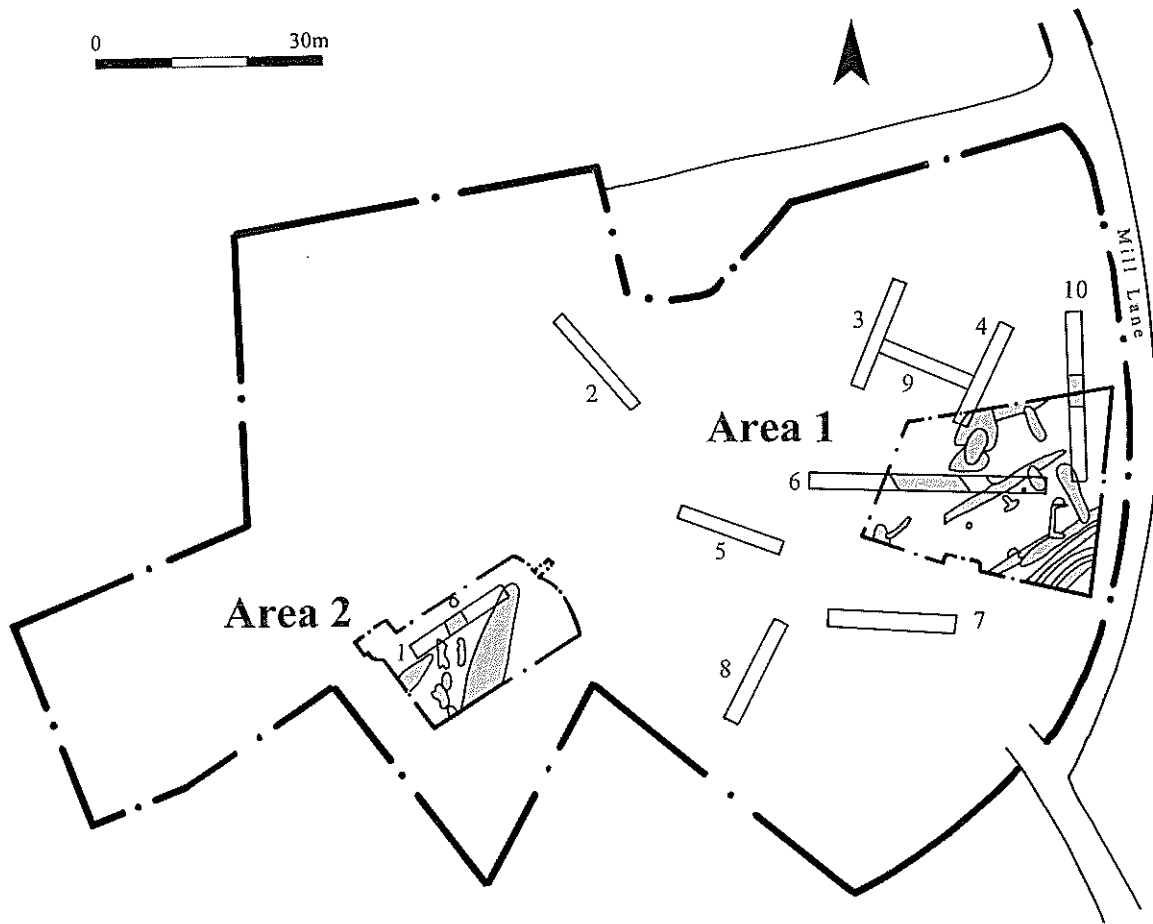


Fig. 2 Evaluation trench and excavation area plan

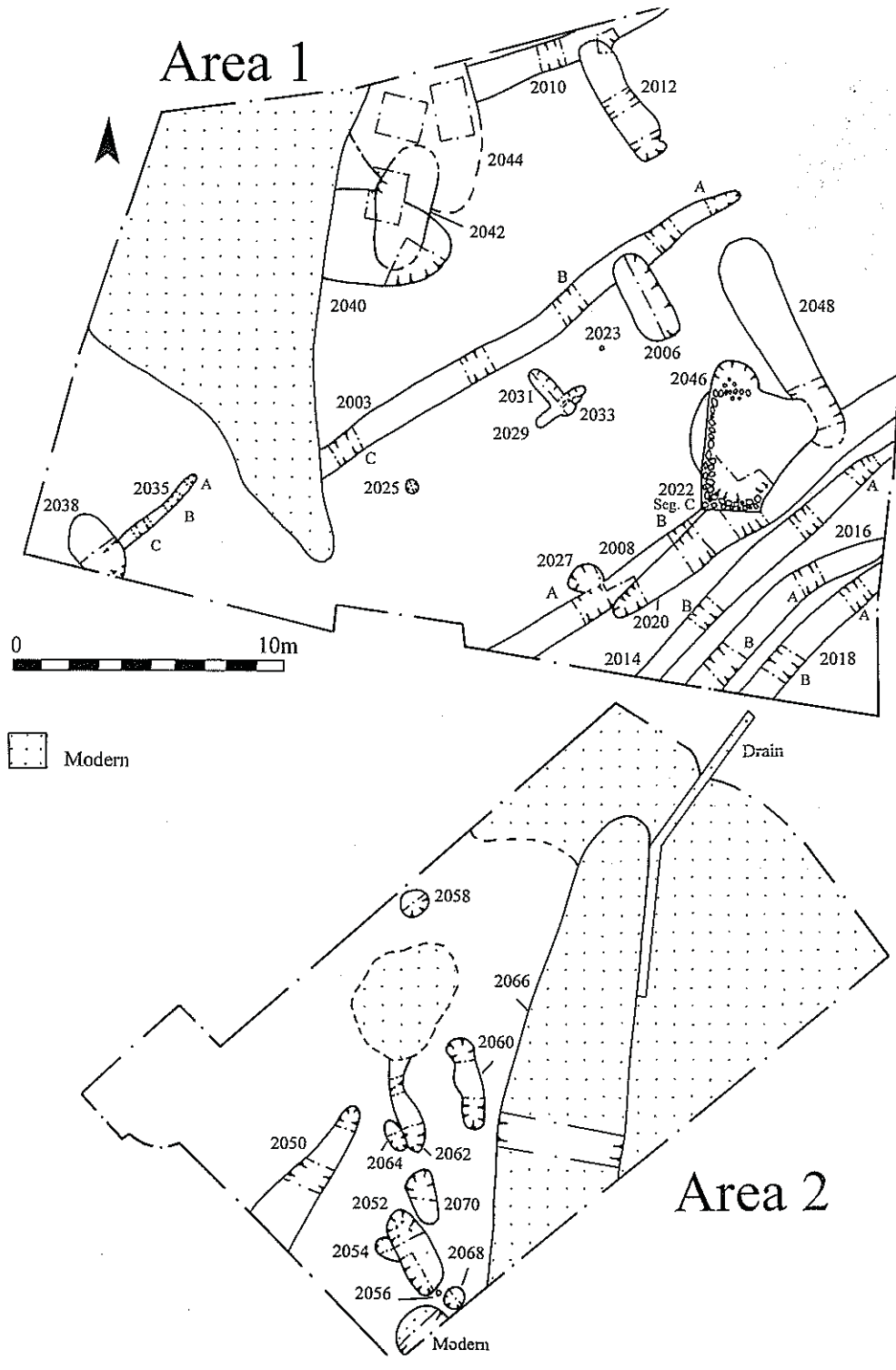


Fig. 3 All features plan

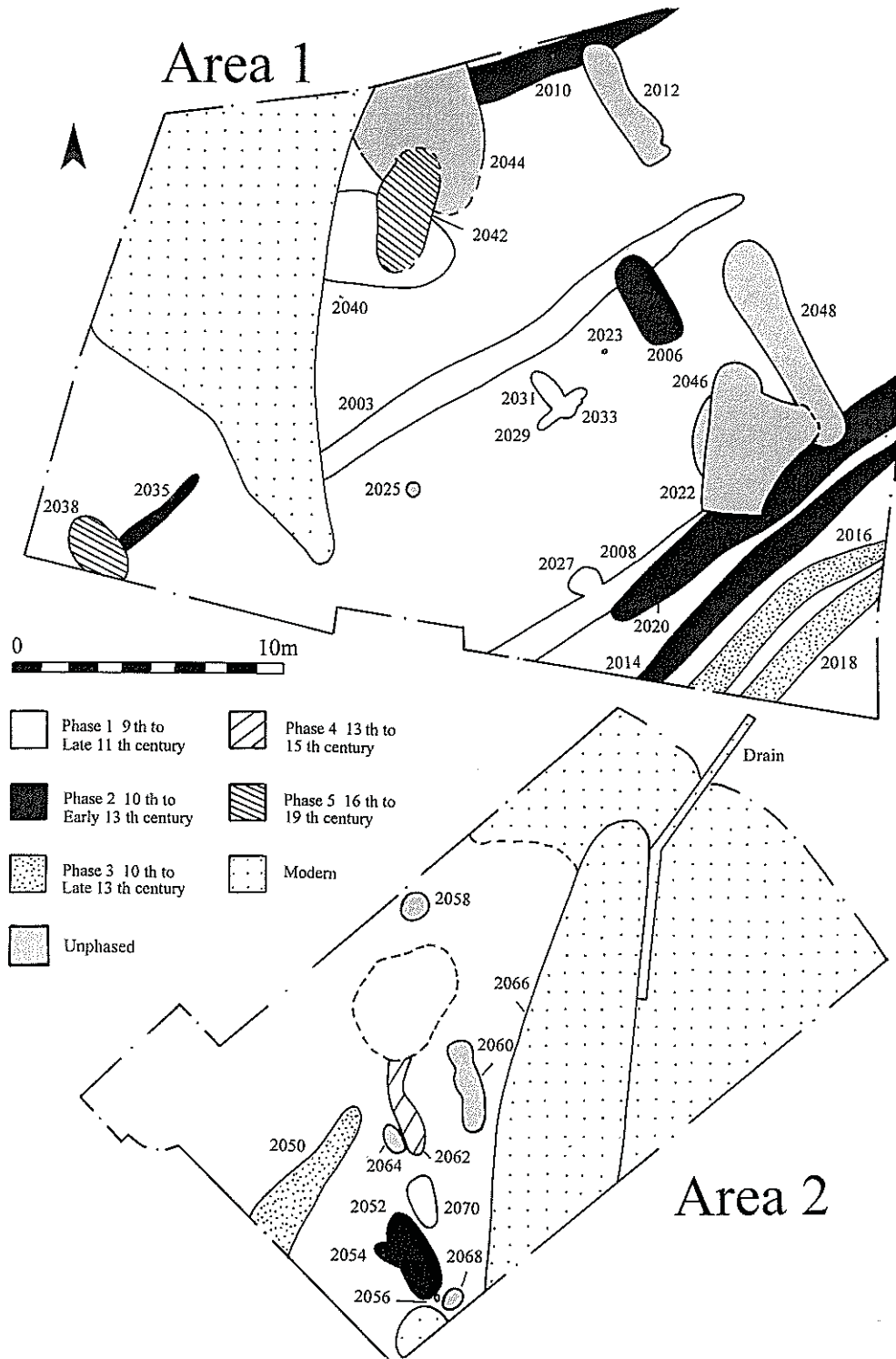


Fig. 4 Phase plan

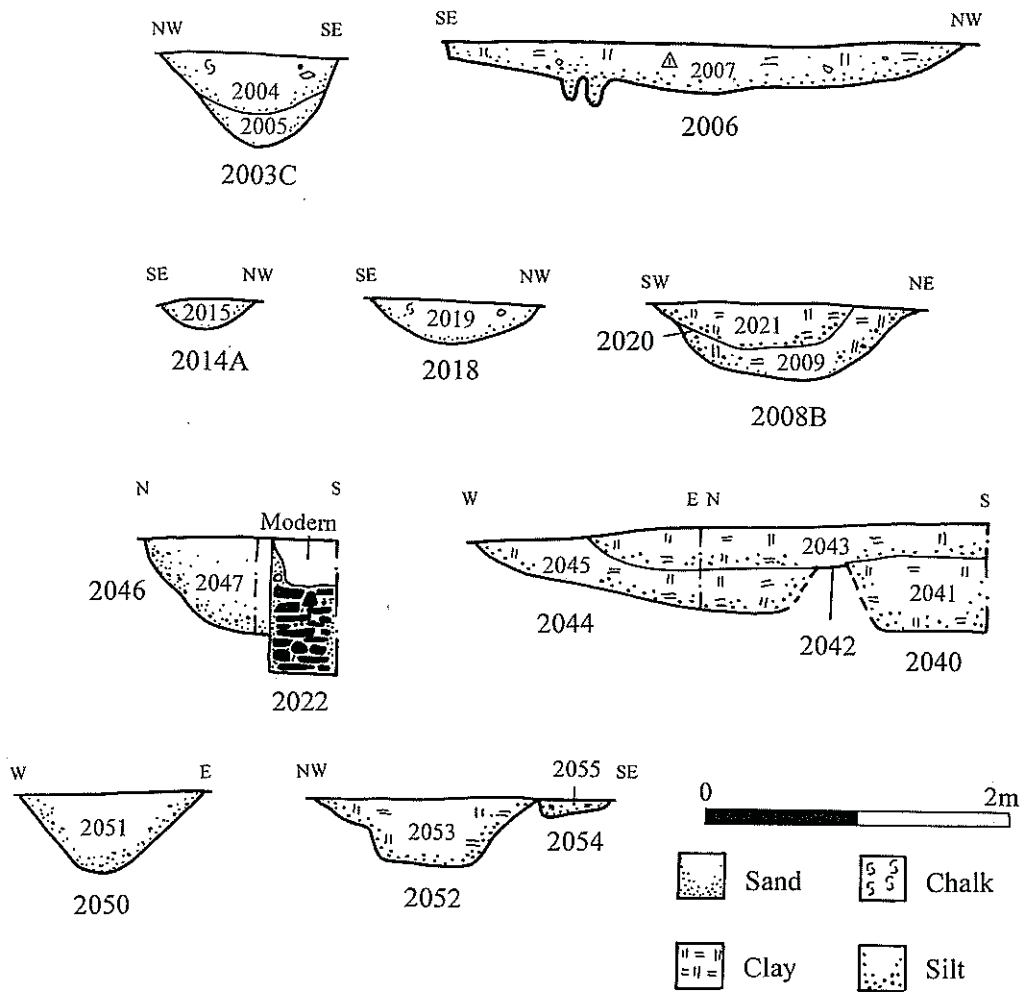


Fig. 5 Sections

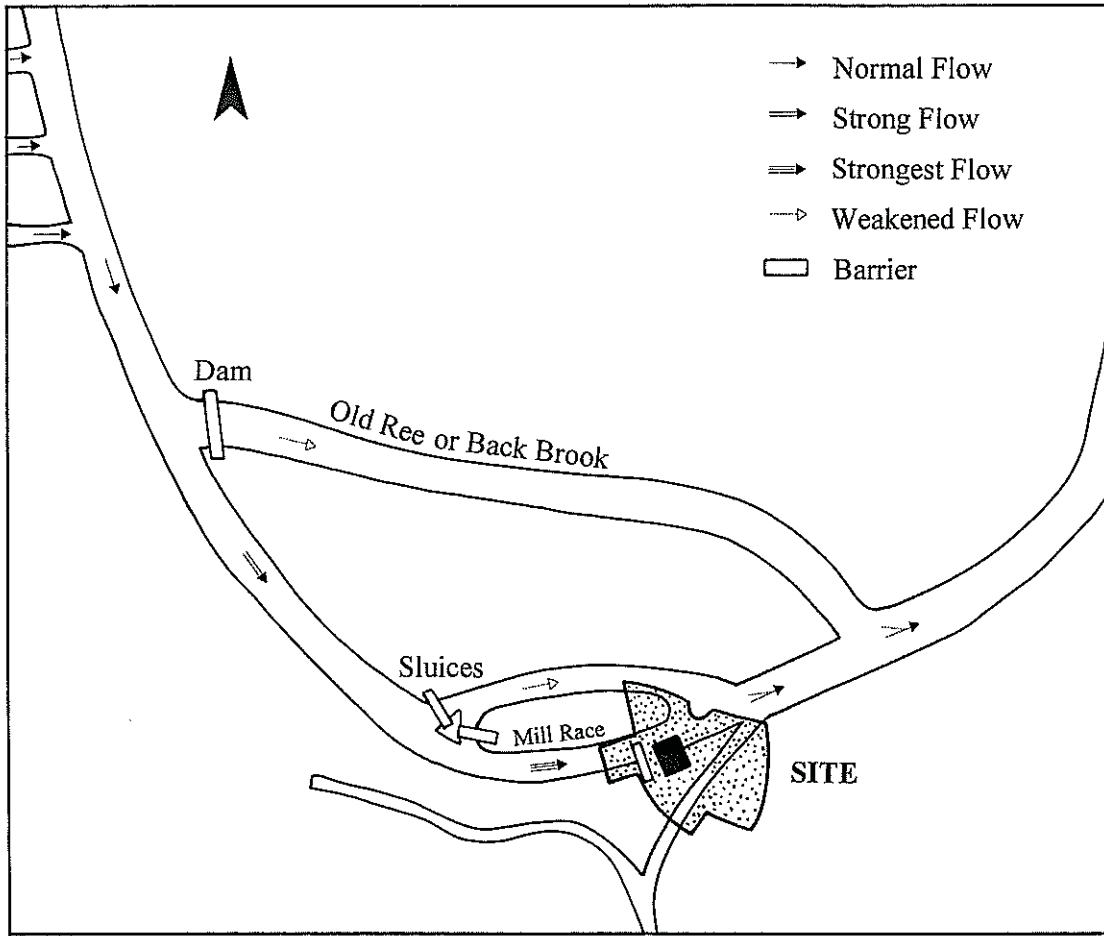


Fig. 6 Schematic diagram of water management at Kempston Mill

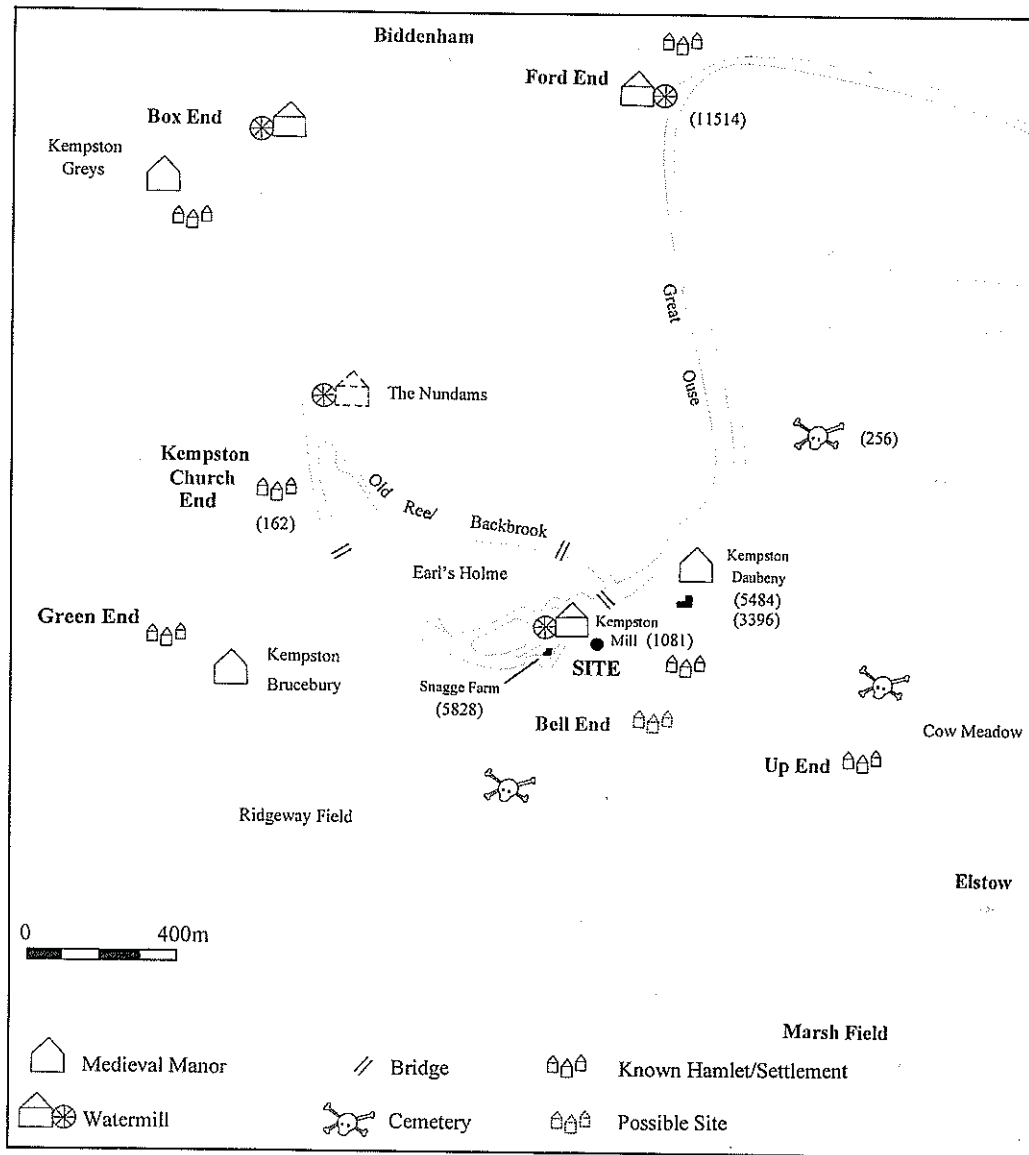


Fig. 7 Known Anglo-Saxon and medieval sites in the vicinity of Kempston Mill

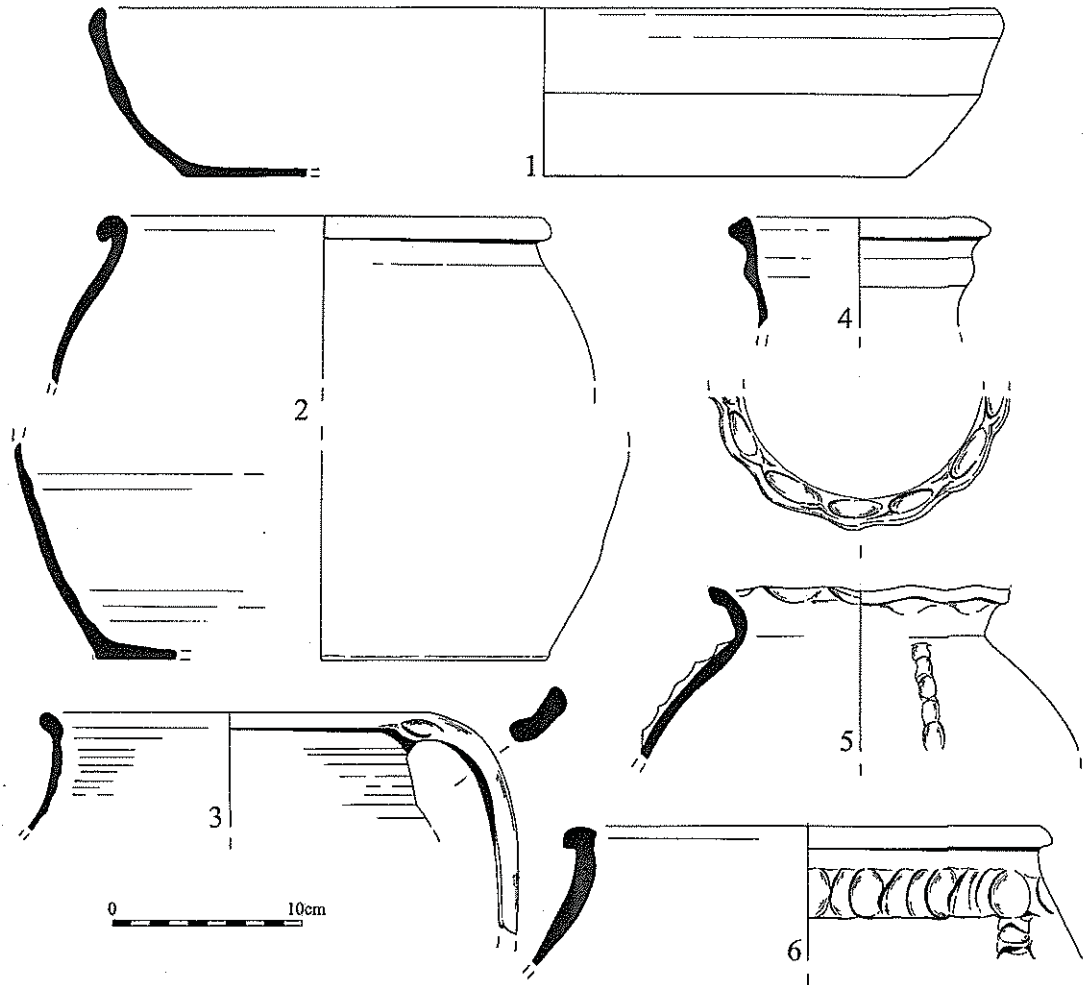


Fig. 8 Saxo-Norman and medieval pottery (F2006 L2007)

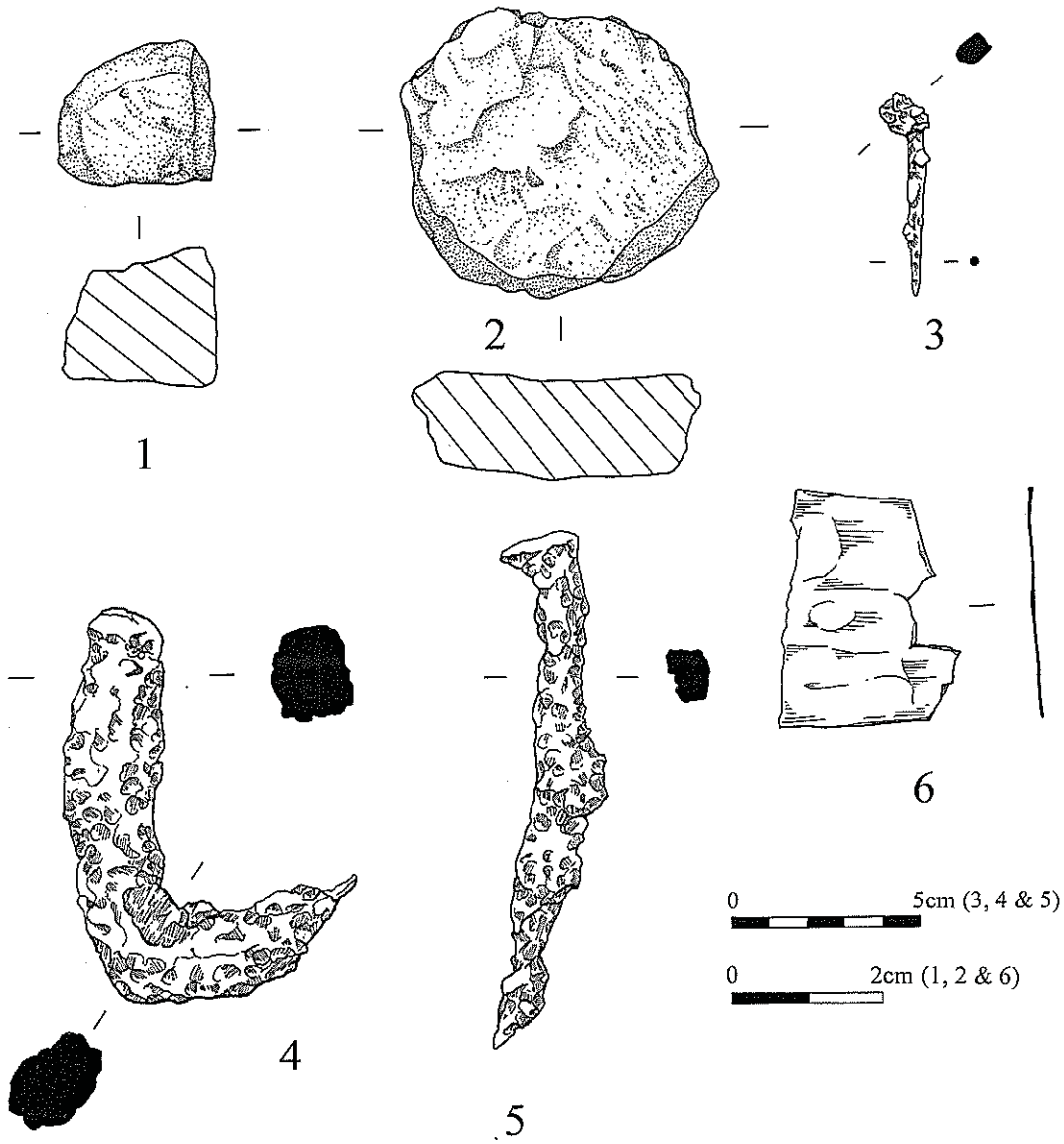


Fig. 9 Small finds-

1. Roman chalk tessera (F2016 L2017)
2. Ceramic roundel (F2016 L2017)
3. Iron pin or needle (F2006 L 2007)
4. Large iron hook or headless nail (F2006 L2007)
5. Large nail with T-shaped head (F2006 L2007)
6. Fragment of copper-alloy sheeting (F2012 L2013)