ANGLO-SAXON AND MEDIEVAL SETTLEMENT AT THE FORMER POST OFFICE TRAINING ESTABLISHMENT, WOLVERTON MILL, MILTON KEYNES

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An early Anglo-Saxon sunken-featured building is dated to the 5th century. Further sunken-featured buildings and post-built houses may be 7th or early 8th-century in date. A small pit containing a hoard comprising two iron spearheads, a seax, a lava quern, two bone combs and a wool-combing heckle, may have been a deposit of curated artefacts. In the middle Anglo-Saxon period, perhaps the mid-8th century, a large rectangular ditched enclosure was created and later remodelled. Only the northern end lay within the excavated area, but it was probably 200m long by 150m wide, encompassing some 3ha, perhaps serving as an animal corral for an estate centre. Late Saxon ditched boundaries and a hollow-way shared the same alignment as the middle Saxon enclosure, but did not impinge upon it, suggesting continuity of either function or status. In the late Saxon/Saxo-Norman period plots were laid out as part of the village, including a number of small post-built houses, two wells and a malting/drying oven. This area of settlement had been abandoned by the end of the 12th century, although pit digging continued to the 14th century, with the core of medieval Wolverton then lying to the north. A sequence of boundary ditches alongside the hollow-way can be traced through to the present day. Some limestone quarrying took place in the 17th-19th centuries, but otherwise the site became farmland.

INTRODUCTION

Desk-based assessment and evaluation on the northern part of the former Post Office training establishment at Wolverton Mill, Milton Keynes (NGR SP 802 409, Fig 1), established a sequence of occupation from an Anglo-Saxon sunken-featured building to later pits and ditches, with less activity from the medieval and post-medieval periods (OAU 2002a & b). The Archaeological Officer for Milton Keynes Council indicated that these remains could not be preserved *in situ*, and Northamptonshire Archaeology was commissioned by Bloor Homes to undertake an open area excavation of *c*1.4ha in 2004 ahead of residential development.

The client report describing these excavations (Thompson *et al* 2011) has been deposited with the Milton Keynes Historic Environment Record and is available online through the Archaeology Data Service (ADS). The site archive has been deposited with Buckinghamshire County Museum, Accession Number 2004.13 (Site Code: WM04). The published report is a condensed and edited version of the client report.

Topography and geology

The site lies adjacent to Great Monks Street, south of Stratford Road and about 1km south of the River Great Ouse. The excavation comprised two adjacent plots of land divided by a tree-lined

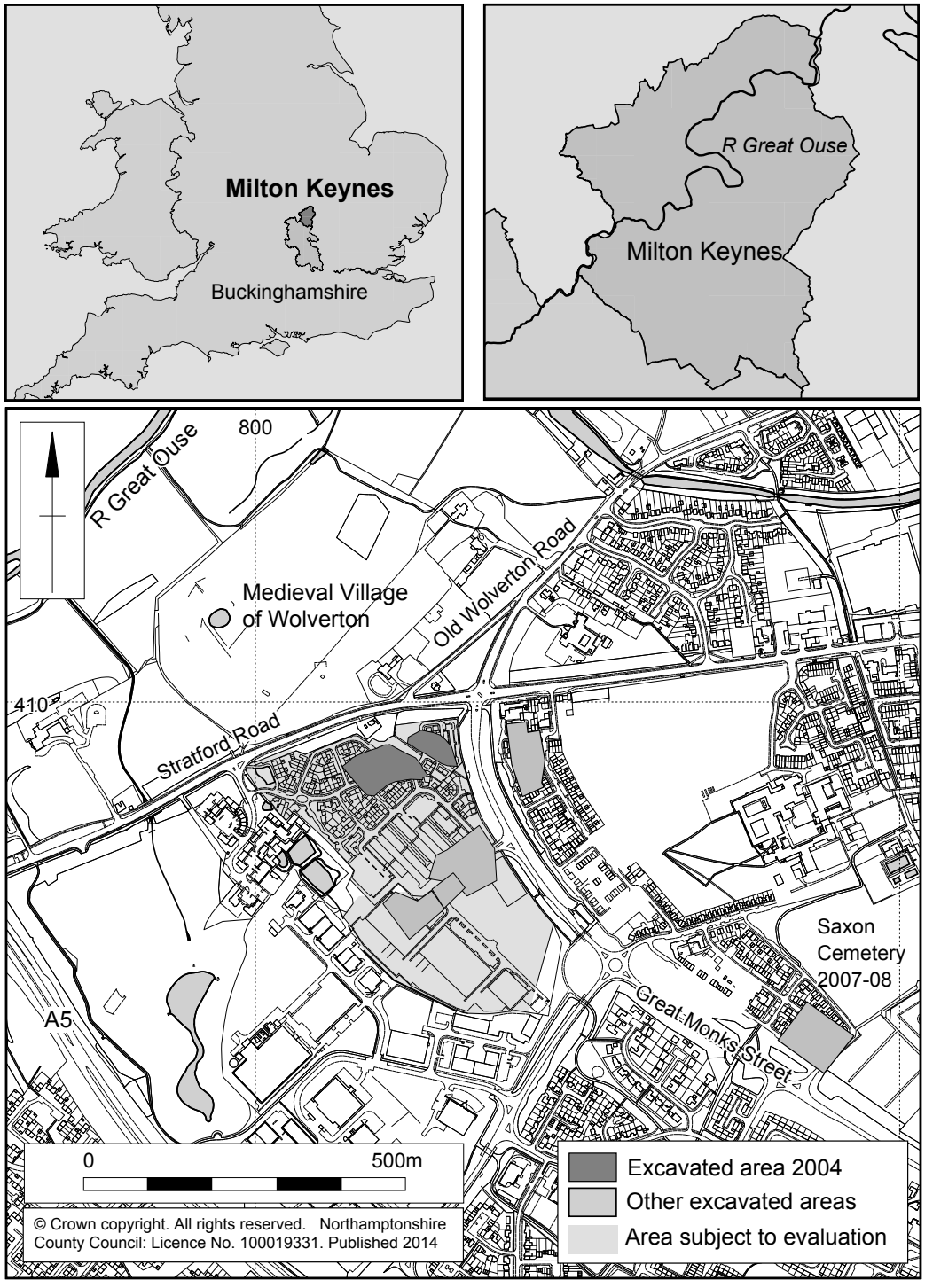

FIGURE 1 Site location

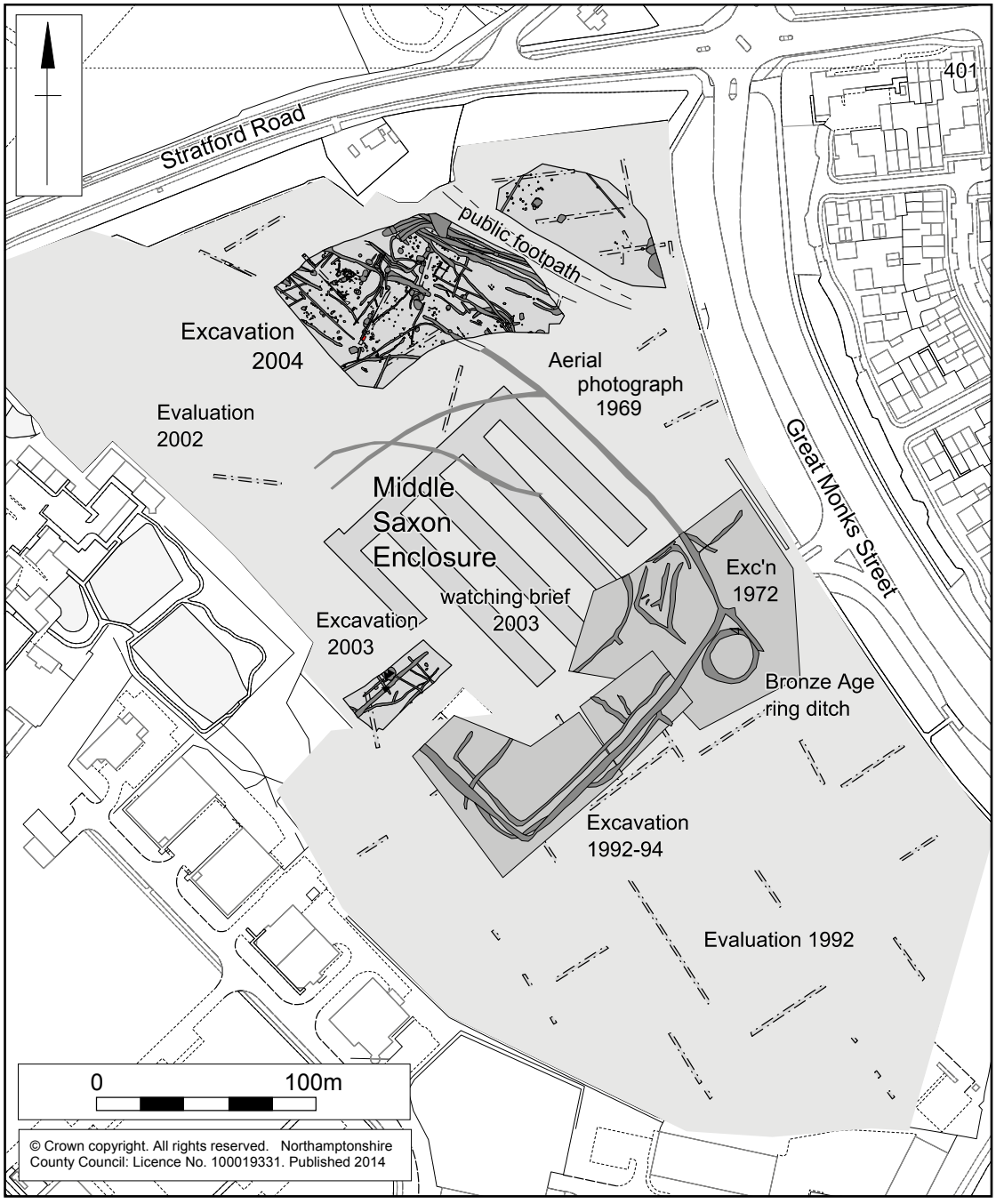

FIGURE 2 Excavations at Wolverton Mill

boundary and public footpath following a former medieval/post-medieval hollow-way (Fig 2). The extent of the deep terracing for the Post Office buildings defined the western edge of the excavation. The northern boundary was a tree belt and a cottage. The Stratford Road separates the site from Old Wolverton deserted medieval village. The smaller site was within a triangular plot of land in the angle of Great Monk's Street and Stratford Road. The ground sloped down evenly from the south-east to the north-west by 8m, from 78.1m to 70.0m aOD.

The underlying geology is Blisworth Limestone Formation, part of the Middle Jurassic Great Oolite Group.

Archaeological and historical background

A ploughed-out ring ditch 200m to the south, dating to the late Neolithic/early Bronze Age, was excavated in 1972 and 1992 by Buckinghamshire County Museum (BCM 1991) (Fig 2). Postholes, pits and finds dating to the Bronze Age were found in the adjacent excavations by Thames Valley Archaeological Services (TVAS 1994).

A possible Roman enclosure was recorded below part of the middle Saxon enclosure in 1994 (TVAS). An area of Roman settlement was excavated at Radcliffe School, 200m to the east, in 2007 by Archaeological Services and Consultancy (Hancock, this volume).

The southern end of a large middle Saxon enclosure was excavated in 1972 after identification in aerial photographs (unpublished). Between 1991–2 trial trenches and open-area excavation recorded additional areas of the enclosure and possibly later gullies within it (BCMAS 1992, Carstairs 1992). The excavation of the southern end of the enclosure was completed in 1994 (TVAS). The area north of these excavations was destroyed by the industrial buildings, but the aerial photograph showed that the ditches continued into the current site area. No structural features were found within the enclosure (Fig 2).

Excavation by Northamptonshire Archaeology in 2003 did not locate the expected western arm of the enclosure ditch, perhaps suggesting the presence of a wide entrance. A substantial ditch was the first of several phases of Saxon/Saxo-Norman boundaries, indicating that there was later incursion onto the middle Saxon enclosure (Taylor 2006).

Excavations in 2007–8 at Radcliffe School, 200m to the east of the middle Saxon enclosure, uncovered an extensive Anglo-Saxon cemetery in use in the 7th to early 8th centuries, most likely for the people who occupied and utilised the enclosure and settlement at Wolverton Mill (Fig 1; ASC 2008). There were some 81 inhumations and two cremation burials in plain urns and a possible unurned cremation burial. They include adults, juveniles and children, and one individual had been decapitated. Many of the inhumations were accompanied by just a simple knife, but others had a number of grave goods, including one individual with a sword.

Wlverintone probably derives from the Saxon place name meaning *Wulfhere's settlement* or *clearing* (Hyde 1945, 7). Wolverton lay within the Kingdom of Mercia. At some time in the reign of King Edward the Elder (AD 901 to 925) Wolverton was apparently an outpost of the invading Danish forces at Bedford. At the time of the Norman Conquest it was on the highway between Bedford and Buckingham (*ibid*).

The first historical document which relates directly to Wolverton is the Domesday Survey (Williams and Martin 2002, 418):

> *Buckinghamshire XLIII The Land of Mainou the Breton in Seckley Hundred Mainou himself holds Wlverintone. It is assessed at 20 hides, and there are 5 ploughs …*
> *… This manor three thegns held. One of these Godwine, a man of Earl Harold had 10 hides and another, Thorir, a housecarl of King Edward had 7½ hides, and the third* Ælfric*, a man of Queen Edith [wife of King Edward] had 2½ hides.*

Hyde (1945) and Croft and Mynard (1993) have summarised the medieval history from which the following is compiled.

In 1066 Maino the Breton held this manor and others in Buckinghamshire from his motte and bailey castle at Wolverton, 1km north-east of this site. The manor passed to the de Longueville family in 1351, at which point it ceased being a barony. The manor was sold in 1713 to John Radcliffe who bequeathed it to the University at Oxford. These structures were demolished in 1718. In the 15th century 25 acres of common land was enclosed as parkland for the de Longuevilles for hunting. This land, between Old Wolverton Turn, Warren Farm

and Wolverton House, seems to have included the site area.

These factors eventually resulted in early enclosure of the land in 1654, and the division of former demesne land into five farms; Manor, Warren, Stonebridge, Stacey Hill and Brick Kiln Farms. The costs of enclosing fields and the dispossession of the villagers of their right to the land contributed to the abandonment of the surviving village on the north side of the Stratford Road. The remaining villagers settled in Home Park east of the vicarage and the abandoned area became known as Old Wolverton.

The chronological sequence

The site shows a continuous sequence of settlement from the early Anglo-Saxon to abandonment by the end of the 12th century (Table 1), with minor activity both before and after this.

Prehistoric and Roman activity

A broad shallow palaeochannel, 28-48m wide and *c*0.30-0.45m deep, crossed the north-eastern side of the site (Figs 3 & 4). A small flint assemblage distributed sparsely across the site broadly dates to the Neolithic/Bronze Age. There are two residual finds of copper alloy objects and four coins of Roman date.

Early Anglo-Saxon Settlement (5th Century AD)

A sunken-featured building, SFB 144, at the western end of the site (Fig 4), produced the only four sherds of decorated Anglo-Saxon hand-built pottery from the site, indicating that it dated to the middle of the 5th century. The absence of any decorated pottery dated to the 6th century suggests that it had fallen out of use by then.

The structure was rectangular, aligned west-east, 3.70 × 3.30m and 0.20m deep, with a largely flat but uneven base. There was a single posthole to the west but two to the east, indicating that it was rebuilt (Figs 5 & 6). The pit fill comprised dark greyish-brown silty clay with frequent fragments of limestone.

This may have been an isolated structure, as the other SFBs and posthole groups produced only a little plain pottery, and this can only be broadly dated to the early/middle Saxon period (450–750AD), so the precise chronology remains uncertain. Other structures, particularly the nearby SFB 468 and posthole scatter 1257, might have been part of a more extensive early Saxon focus, or a

Table 1 Summary of site chronology

Period	*Description*
Prehistoric and Roman activity	Palaeochannel, residual Neolithic/Bronze Age flint Residual Roman metal finds
Early Saxon settlement (5th century)	Sunken-featured building
Middle Saxon settlement and enclosure (7th/8th to mid 9th centuries)	Sunken-featured buildings, post-built structures. Pit with seax, spearheads, quern, bone combs Large sub-rectangular enclosure, possibly a stock corral External boundary systems/enclosures
Late Saxon/Saxo-Norman nucleated settlement (mid 9th to 12th centuries)	Creation of rectangular ditched plots as part of a nucleated village settlement, with post-built structures, pits, wells and malting oven, adjacent trackway and open fields to the south
Medieval open fields (early 13th-14th centuries)	Settlement abandoned Major boundaries retained, particularly the hollow-way
Post-medieval to recent	Boundaries adjacent to the hollow-way maintained 17th-19th centuries, quarrying for limestone

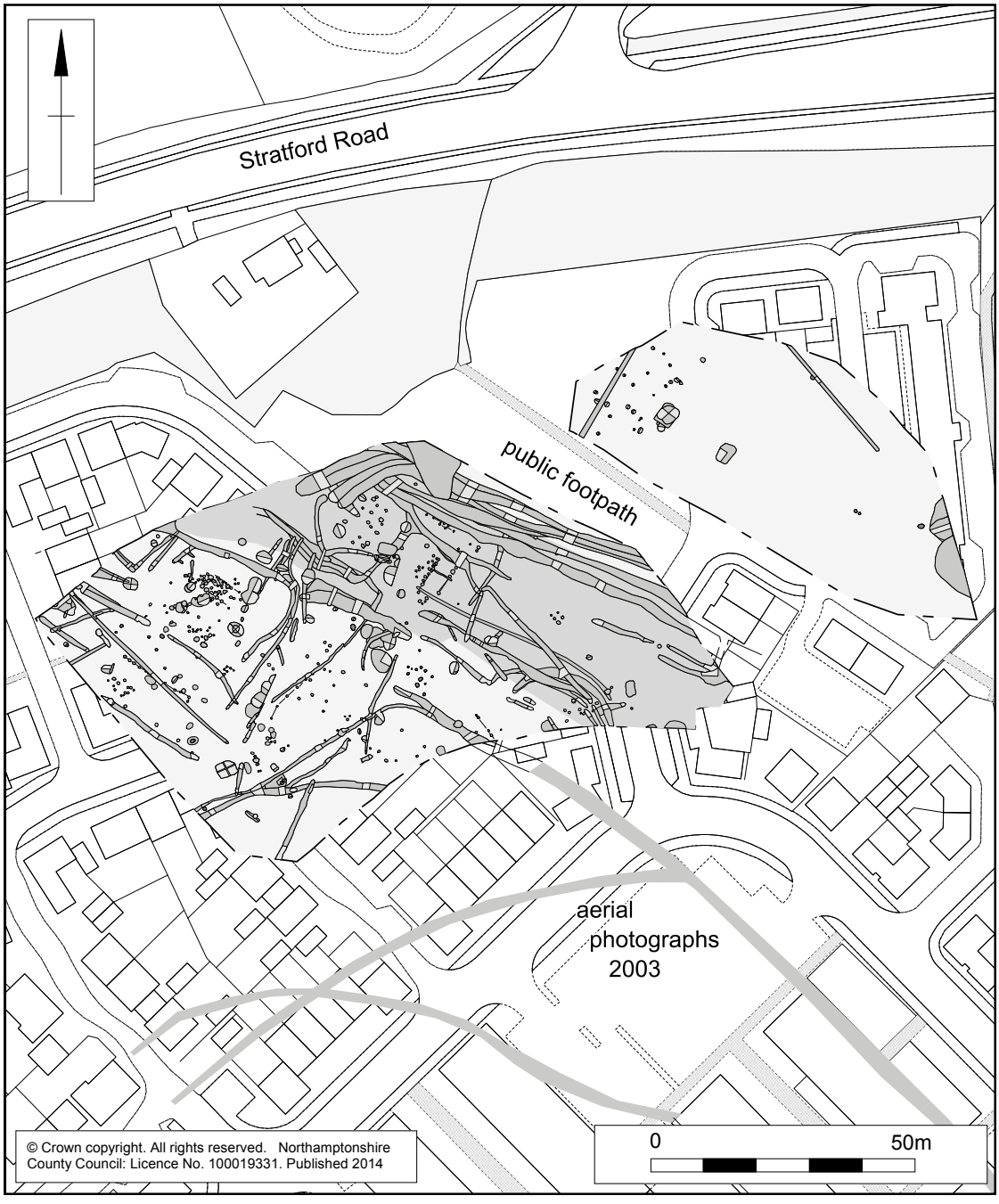

FIGURE 3 General site plan

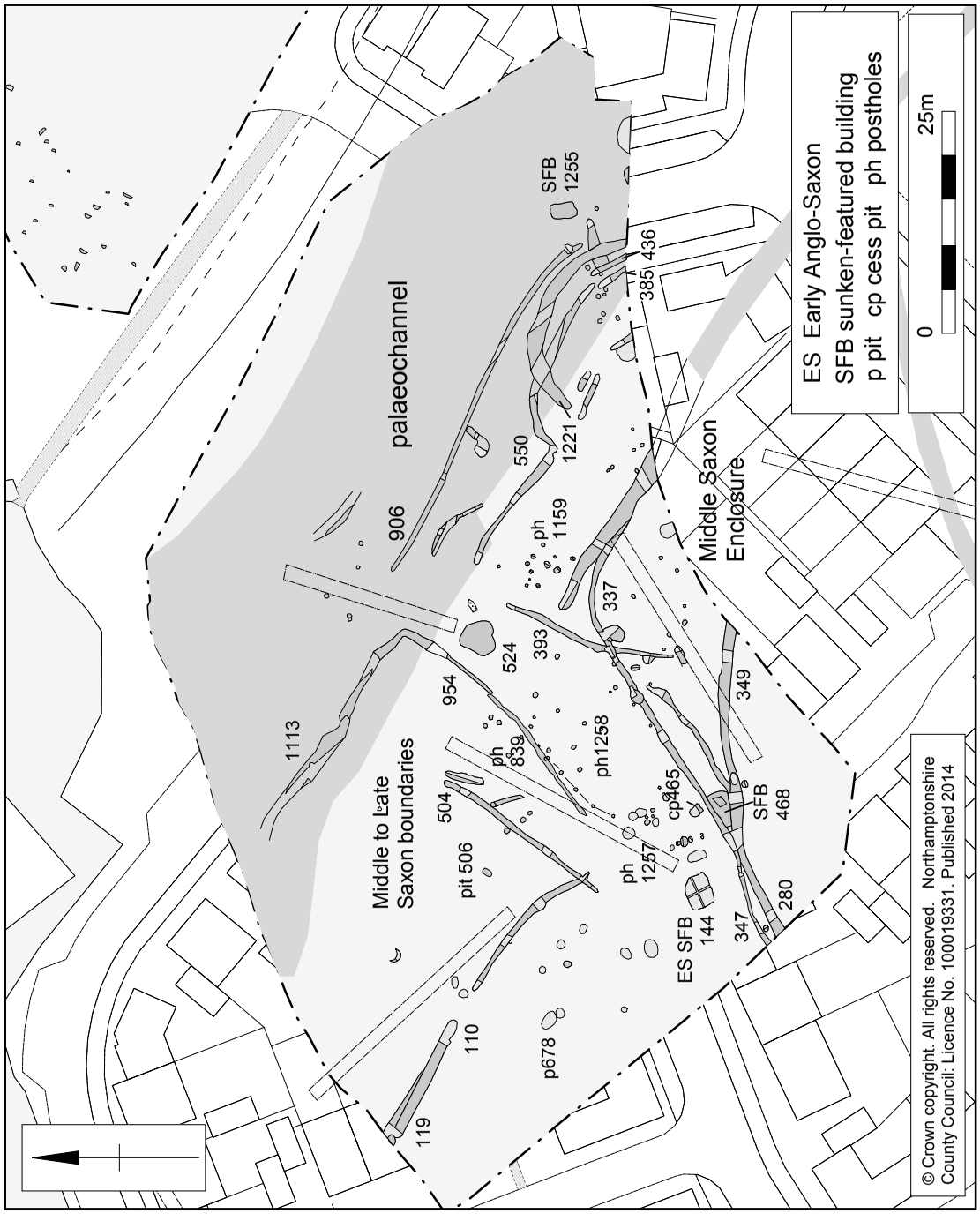

FIGURE 4 Early and early/middle Saxon settlement

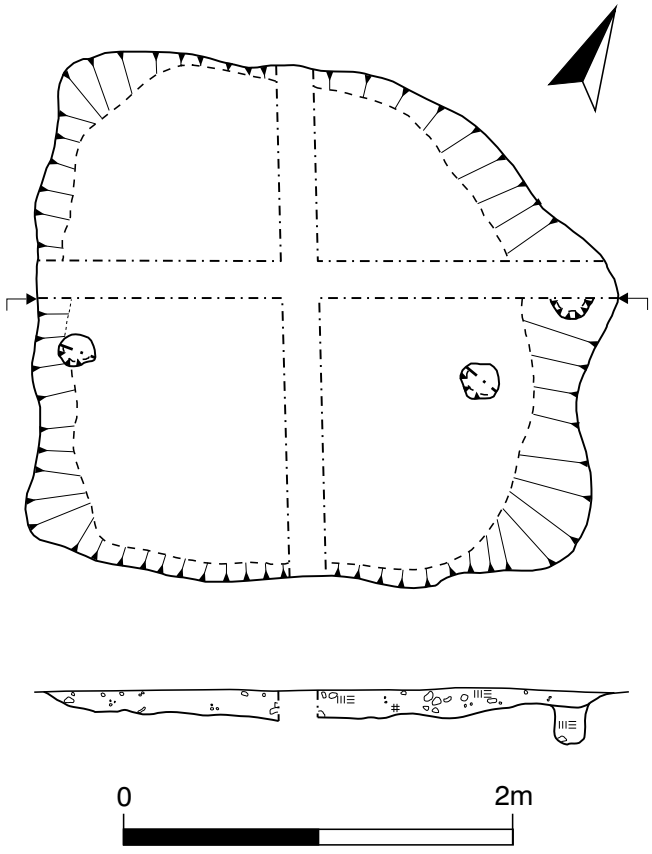

FIGURE 5 Anglo-Saxon sunken-featured building

resumption of settlement in the 7th century, when decorated pottery was no longer being produced, only shortly prior to the appearance of the middle Saxon enclosure, and they are therefore described separately.

The early/middle Anglo-Saxon pottery
by Paul Blinkhorn

These comprised 276 sherds of hand-built wares, weighing 3,262g. The estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference was 1.63.

The seven fabrics containing granite, fine or coarse quartz, sandstone, chalk and chaff in various combinations, are typical of sites in the region, such as Pennyland, Milton Keynes (Blinkhorn 1993). The granitic wares, which occur in small quantities on many early Anglo-Saxon sites in the county, are likely to have originated in Leicestershire, where outcrops of Mount Sorrel granite are known in the Charnwood forest area (Vince 1995). Clays in that area, with distinctive acid igneous rock inclusions, have been exploited since the Iron Age.

The sunken-featured building, SFB 144, produced 76 sherds of hand-built pottery (1,666g, EVE = 0.43), over 51% (by weight) of the hand-built pottery from the site. As is often the case with such features, all the pottery appears to be of secondary deposition, comprising individual sherds from different vessels deposited in material used to backfill the hollow rather than being pots used

FIGURE 6 Anglo-Saxon sunken-featured building, looking south-west

during the lifetime of the structure. The assemblage appears unexceptional, comprising some decorated vessels dated to the 5th century AD, see below (Fig 7, 1–3), fragments of jars (Fig 7, 4–5) and a small bowl (Fig 7, 6), all with simple rim forms, and a base sherd from a large jar (Fig 7, 7). All vessels were black with burnished surfaces.

The decorated sherds from the sunken-featured building are very early in date, and are from vessel types uncommon in the region. The *Buckelurnen* (Fig 7, 1–2) have very few parallels, and are mainly known from cremation cemeteries. In Bedfordshire, four examples are known from Sandy (Kennett 1970, fig 6, 1–4) and another at a cemetery in Luton (Kennett 1973, fig 1, 5). Northamptonshire has produced a small number (Myres 1977), but by far the majority of known examples are from East Anglia and Lincolnshire, with outliers in other counties.

The incised carinated bowl, the S*chalenurne*, is perhaps even rarer (Fig 7, 3). These vessels have a similar distribution to *Buckelurnen*, although very few are known from the south-east midlands. An example from Bedfordshire, probably the Sandy cemetery (Kennett 1970, fig 8, 12), and a vessel from the Luton cemetery could be placed in the same category (Kennett 1973, fig 1, 3). Fifth-century pottery is otherwise very rare in the county.

Such pottery is perhaps even rarer from settlement sites in Milton Keynes and the south-east Midlands generally. The site at Bancroft villa produced 192 sherds of hand-built pottery, of which nine were decorated in 5th-century styles, including fragments from four different *schalenurnen* (Blinkhorn 1994a, fig 294, 1–4). A similar date was given to the assemblage of 11 decorated sherds (out of 391) from Berrystead Close, Caldecotte, which included a *Schalenurne* with a slashed carination (Blinkhorn 1994b, fig 13, 13). Other assemblages of early Anglo-Saxon pottery have been noted at other sites in the city, such as that from Pennyland (Blinkhorn 1993), but they all date to the later 5th or 6th centuries.

Further afield in the county, a large assemblage of over 2,000 sherds was excavated at Walton, near Aylesbury (Farley 1976). The decorated pottery is said to have indicated that the site was occupied in the 5th and 6th centuries, but there were no obvious *Buckelurne* or *Schalenurne* fragments present.

The hand-built pottery assemblage from this site, when combined with the material from the

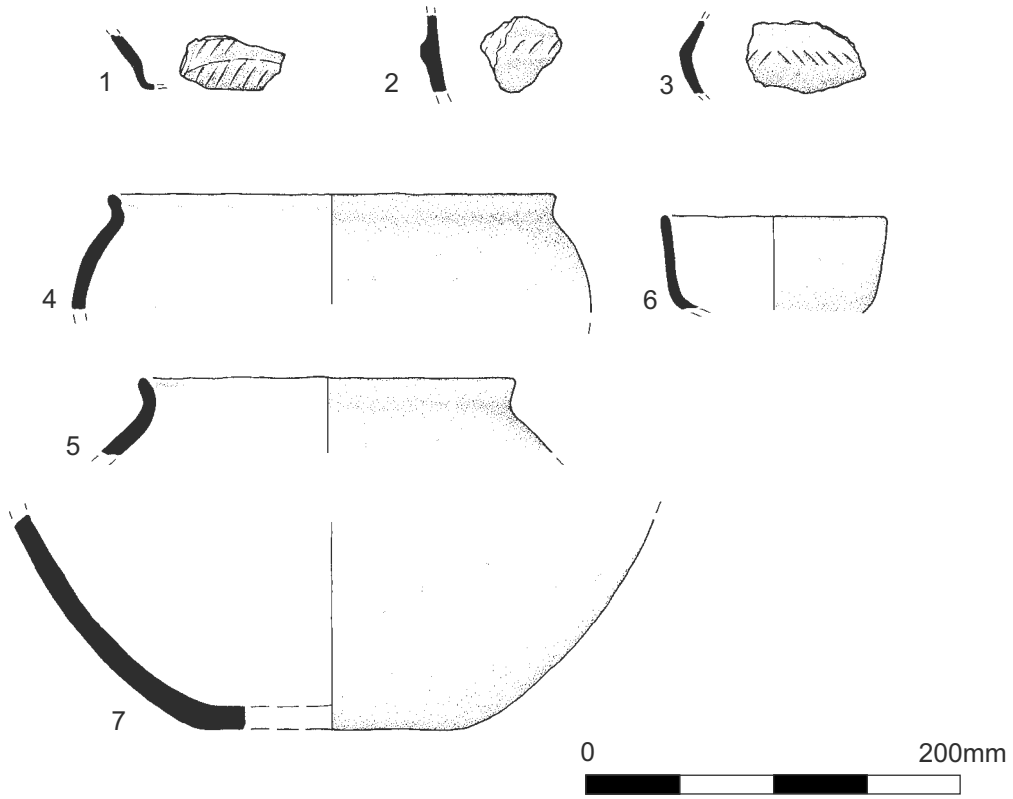

FIGURE 7 Early/middle Saxon pottery, 3-9

evaluations by Northamptonshire Archaeology and Oxford Archaeology and excavations by Thames Valley Archaeological Services, comprises 532 sherds (4,961g, EVE = 2.67). As noted, the Walton excavations (Farley 1976) produced around 2,000 sherds, and Pennyland (Blinkhorn 1993) 1,966 sherds, but otherwise this is the largest assemblage from the county. It would seem by the chronology of the pottery that yet more Anglo-Saxon discoveries are still to be made, as the 6th-century core of this settlement has not been found.

THE MIDDLE ANGLO-SAXON SETTLEMENT AND ENCLOSURE (7TH/8TH-9TH CENTURIES)

The settlement

This comprised a sunken-featured building, SFB 468, and 70m to the east, another sunken-featured building or a pit, 1255, and three clusters of postholes (Fig 4).

SFB 468, to the south-west, and truncated by later ditches, was 3.50m long by at least 2.20m wide and 0.20m deep, a central posthole survived at the eastern end. The fill was compact reddish-brown silty clay containing animal bone, pottery, charcoal flecks and limestone pieces.

A cluster of postholes, 1257, just north of SFB 468, may have been the remnant of a post-built

structure at least 5m long by 4m wide. The postholes were typically 0.10-0.30m in diameter; one contained early/middle Saxon pottery. A circle of heavily burnt clay on a base of limestone pieces was probably a hearth. A nearby cesspit, 465, with a fill of greenish mineralised faecal matter, may have been contemporary.

To the east, SFB or pit 1255 was rectangular, aligned north-south, 2.40m long by 1.65m wide and 0.15m deep. The fill was similar to that in the other SFBs, but lacked limestone, and contained a single sherd of early/middle Saxon pottery.

A scatter of postholes, 1159, lay midway between the SFBs. A more extensive scatter of postholes, 1258, lay to the west. This group was bounded to the north by a possible fence line, and the sparse scatter of postholes, aligned south-west to north-east, may have been a remnant of a timber hall perhaps 12m long with posts 2m apart. To the north was a further collection of postholes, 839. Gully 393, aligned a little east of north-south, was probably contemporary with the early settlement features.

Pit 506

A small pit to the west contained an exceptional assemblage of finds dated to the early/middle Saxon period, the 5th/6th–7th centuries, perhaps indicating that settlement in the area, if not actually on the excavated site, had been continuous. It seems likely that this assemblage had been buried no later than the 7th or early 8th centuries, but the span of time suggests some of the objects had been curated for a considerable time, perhaps held as family heirlooms. The spearheads, seax, combs, heckle and box fitting are all objects that are typical grave goods in the 6th/7th centuries AD, so it is possible that this small group was re-deposited after burials had been disturbed, but the quern is unlikely to have been a grave good.

The pit was 1.19m long by 0.79m wide and 0.25m deep, with steep sides and a flat bottom (Fig 8). Part of the upper and much of the lower stone from a lava quern, part of a third stone and two broken bone combs were set against the north and west side of the pit. Two complete iron spearheads and a broken seax, probably laid on or wrapped in straw, a woolcomb heckle, a corner bracket possibly from a box, two nails of a type used on timber and four metal fragments, were in the south-eastern half of the pit (Figs 9–13). The fill also contained 0.9kg of ironworking slag, probably from a smithing hearth, and fuel-ash slag. The spears and seax would be appropriate grave goods for a man and the combs would be appropriate for a woman, but the incorporation of parts of a quern and even some smithing debris are a curious combination.

The finds from pit 506

by Tora Hylton and Andy Chapman

The two bone combs, although incomplete, are fairly well preserved. The double-sided composite comb is long and narrow, 255mm long by 45mm high and 16mm thick, comprising two end-plates, about eight tooth-plates and two connecting-plates secured by nine iron rivets (Fig 9, 1 and 10). The comb and the connecting-plates are simply decorated with panels of four incised transverse grooves. One side is decorated with eight panels and the other with just two, one on each terminal. The teeth are gradated and are in line with the end of the connecting plate. Only one of the connecting-plates has the ubiquitous equidistant notches created during the cutting of the teeth, suggesting that the comb had been repaired. Stylistically this comb displays similar characteristics to middle-Saxon combs of the 7th and 8th centuries, rather like examples from Pennylands, Milton Keynes (Riddler 1993, fig 58, 40).

In contrast, the small fragment of a single-sided comb is an extremely fine piece of work, beautifully decorated and the teeth are very finely cut (8-9 per 10mm) (Fig 9, 2 and 11). It comprises one end-plate, 40mm long by 30mm high, and fragments of two connecting-plates, 6.5mm thick, secured by an iron rivet and there are vestiges of a further two close-set rivet holes *c*5mm apart (Figs 9, 2; and 11). The end-plate flairs out and its upper edge is in line with the top edge of the connecting plates. The curvature of the connecting-plate indicates that the comb would have had a plano-convex profile rather like examples from York (MacGregor *et al* 1999, fig 884, 7544).

One connecting plate is decorated with a repeated zig-zag motif at the terminal, followed by fretwork, and the other is decorated with alternating panels of four transverse grooves and crosses (the rivet has been placed in the centre of the cross). Tiny cut marks on the lower edge of the connecting plate indicate that the teeth were sawn *in situ*. The style of the comb and the decorative styles employed are of mid-late Saxon date and

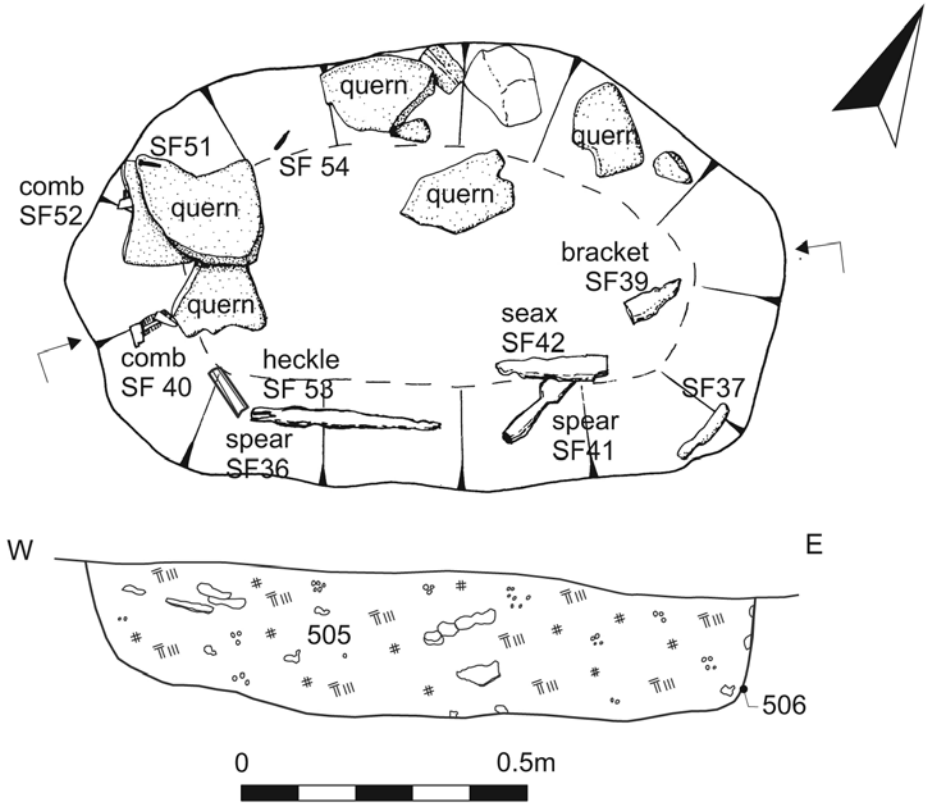

FIGURE 8 Early/middle Saxon pit 506

may be paralleled by examples from Anglo-Scandinavian deposits in York (*ibid* 1999, fig 888, 7592).

The heckle or woolcomb is manufactured from sheet iron, originally folded around a rectangular wooden block (now missing), and secured with tacks, two of which survived (Fig 9, 3). It is almost complete, 100mm long, 25mm wide and 20m deep, but one terminal is missing. Heckles were used for preparing, carding, wool and bast fibres prior to spinning into thread. All the teeth are missing, but the two rows of 11 circular/sub-circular holes indicate the number and position of the tapered iron rods. Rectangular-headed two-row combs are well known from the 7th and 8th centuries, with similar combs from the continent and Scandinavia (Walton Rogers 1997, 1720). Traces of mineralised wood are present on the surface (David Parish pers comm). Such objects are not common, but a similar form of wool comb has been recovered from Coppergate, York (Ottaway 1992, fig 212, 2273).

The box fitting is a corner bracket in iron with one perforated terminal, forged at an angle of 90 degrees, with the other terminal missing (Fig 9, 4).

The blade appears to be part of a single-edged knife/short-sword with a triangular section, a rectangular tang central to back of blade, and a cutting edge with stepped shoulder. The back of the blade is horizontal with the cutting edge widening towards the tip (Fig 9, 5). The width and the thickness of the blade, 39mm and 10mm, suggest that it would have been quite a substantial weapon, but as only about half the blade survives, at 158mm long, it is difficult to gauge how long it was originally. Although incomplete, it is probably part of a 'narrow' seax as distinguished by Evison (1961,

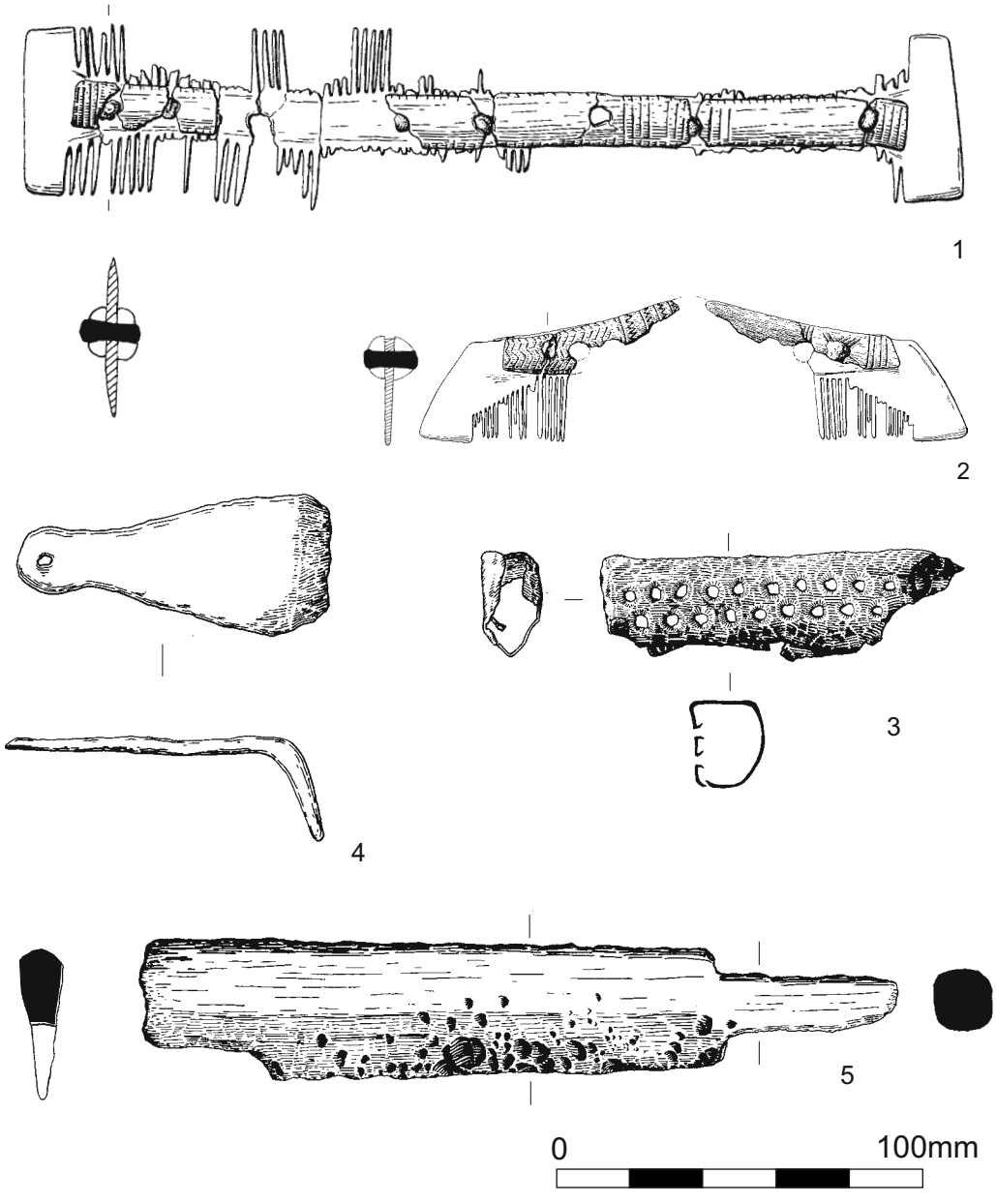

FIGURE 9 Bone combs, seax, heckle and box bracket from pit 506

FIGURE 10 Large double-sized bone comb (scale 50mm)

FIGURE 11 Small single-sided comb (scale 50mm)

227–30), the main form found in England during the 7th century (Lucy 2000, 51). Such objects would have been used for hunting and/or fighting and their presence is a sign of status. There are traces of highly mineralised wood fragments and mineralised straw.

The iron spearheads are complete and are differing forms of the same generic type, 'Angular blades' as devised by Swanton (1974) in his corpus of pagan Anglo-Saxon spear types. Both have blades with lozenge-shaped cross-sections, angles that are positioned at the lowest part of the blade near the junction of the socket, short solid necks and a cleft socket. The main difference between the two is the length of the spearhead and the relative proportions of the blade to the socket. The longer spearhead has a blade which is longer than the socket (Fig 12, 6), while the other has a socket which is longer than the blade (Fig 12, 7).

The longer blade is the earliest type, Swanton Type H2; an angular blade with a slight concave curve just above the angle. Blades with this feature are, according to Swanton, characteristic of pagan Anglo-Saxon spear types, and are commonly recovered from burials. They are found in their greatest numbers in 6th-century deposits, particularly in the Upper Thames Region (Lucy 2000, 48), and were superseded in the second half of the 6th century (Swanton 1974, 20). The spearhead is 335mm long by 32mm wide, the middle/upper end of the range for type H2 (220-350mm long), and the socket is 130mm long by 25mm wide. In the

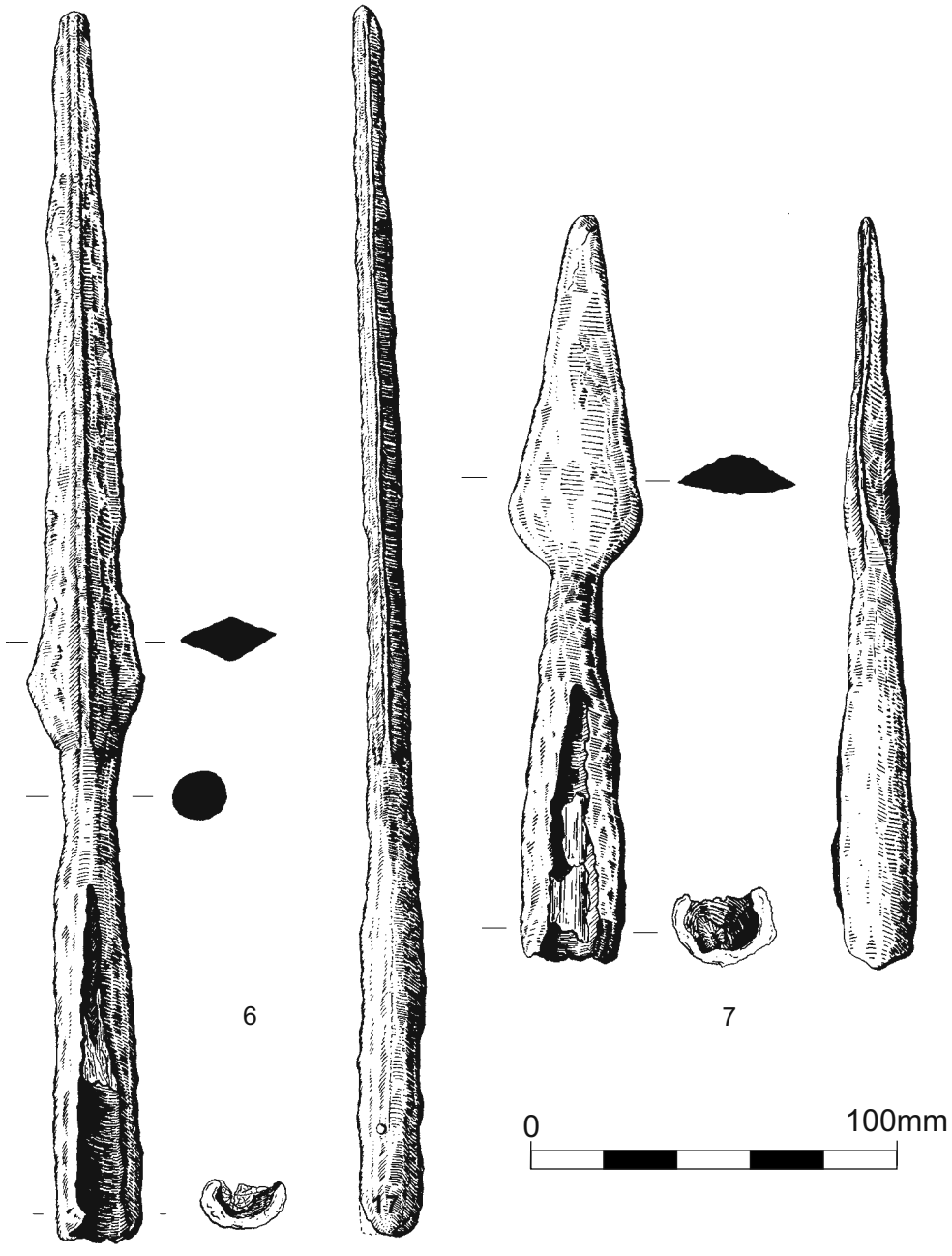

FIGURE 12 Spearheads from pit 506

socket vestiges of the original wooden shaft are visible: most probably ash (*Fraxinus excelsior*).

The smaller spearhead may be compared to a Swanton Type E2, but displaying slight affinities to a Swanton Type F2, because of the length of the socket. This spearhead is 205mm long, at the lower end of the range for the type (200-350mm), with the blade 100mm long by 37mm wide and a socket 105mm long by 27mm wide. The distribution of this blade type is generally the midlands and northern England (*ibid*, 11). Swanton suggests they are a long-lasting type that was in use into the late Anglo-Saxon period.

Querns

by Andy Chapman

There are two joining pieces from an upper stone and four joining pieces from the lower stone of a well-used lava quern (Fig 13). The lower stone is 425mm in diameter and 27mm thick, and the central spindle hole, 43mm in diameter, is surrounded by a slightly raised area. The upper stone varies from 440-470mm in diameter, creating an irregular overhang over the lower stone. It varies from 32mm thick at the centre to 19mm thick at the circumference. The central eye is up to 70mm in diameter, but tapers to match the diameter of the spindle hole in the lower stone. There is no raised collar, as on many Saxon lava querns (Watts 2002, fig 14), and the handle socket has not survived. Both grinding surfaces are well worn, but with dimpled tool marks still prominent. On the non-grinding surfaces there are tool marks made with a chisel-ended implement.

The surviving part of the lower stone weighs 5.1kg, and the complete stone would have weighed around 7.5kg. The remaining part of the upper stone weighs 2.1kg, and the full stone would have weighed around 6.5kg. The full set would therefore have weighed around 14kg, although as the stones were perhaps half their original thickness, so when new the quern may have weighed around 28kg. The dimensions are typical for Saxon lava querns, which range from 400-530mm in diameter and from 40-60m thick.

Pit 506 also contained a large fragment for the bottom stone of a quern or millstone in excess of 500mm in diameter, with a central eye *c*100mm in diameter. It is fashioned in a fine-grained stone, possibly Millstone Grit, but all surviving surfaces have been blackened by burning.

Slag

by Andy Chapman

Numerous pieces, weighing 900g, comprise a mixture of fuel ash slag and miscellaneous ironworking slag, sometimes with fired clay hearth/furnace lining adhering to them.

The Middle Anglo-Saxon Enclosure

A large rectangular enclosure was created in the middle Saxon period, the northernmost ditches cutting SFB 468. Only the northern corner of the enclosure lay within the excavated area, but previous excavation has shown that it was aligned north-west to south-east, up to 211m long and 155m wide, enclosing nearly 3ha (Figs 2 & 4). Middle Saxon pottery, Ipswich and Maxey ware, from the fills of the enclosure ditches indicate that it had been excavated by the mid-8th century. Bone from the base of the ditch at the southern end of the enclosure has given radiocarbon dates of 680–890 Cal AD (95% confidence, 1245+/–35 BP, GrA-27203) and 690–890 Cal AD (95% confidence, 1223+/–28 BP, OxA-14200) (Preston 2007, 112, table 7), which indicate that the enclosure was in use throughout the 8th century.

The northernmost end of the enclosure was defined by a narrow gully, 337, up to 0.45m deep with varying profiles and fills. A later recut of the eastern arm which ran northwards to a terminal, was 1.10m wide and 0.80m deep (Fig 4). A curving ditch, 280/349, to the immediate south of the northern arm, was closely contemporary.

The ditches generally contained pottery and animal bone, mainly sheep/goat. An iron barrel padlock key from ditch 280, an iron nail and a spindle whorl indicate some domestic activity, although contamination from the later periods of domestic occupation is possible.

External boundaries/enclosures

Sometime after the formation of the middle Saxon enclosure, a series of short curvilinear ditches and longer linear ditches were set out to the east and north of the enclosure, but respecting both its location and alignment (Fig 4). Ditches near the sunken-featured buildings contained early/middle Saxon pottery residual from the earlier settlement. There was also some middle Saxon pottery from the ditches nearest to the enclosure, and indicative of contemporary activity taking place outside the enclosure.

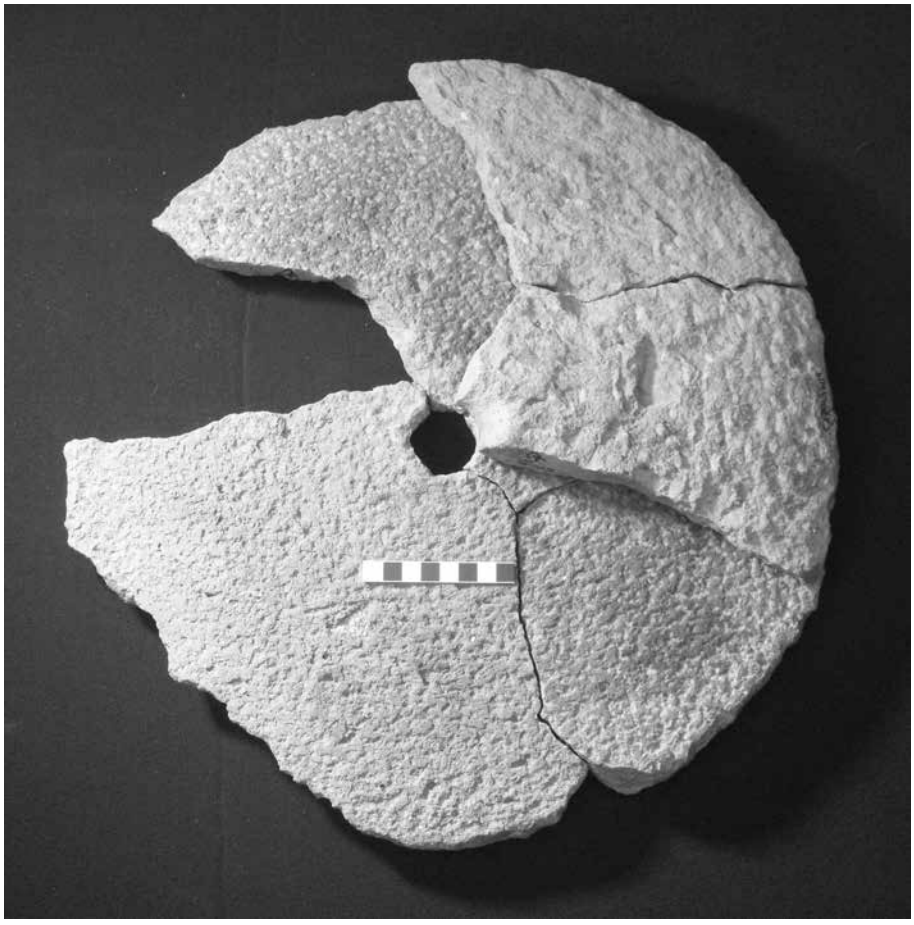

FIGURE 13 Lava quern from pit 506, showing dimpled grinding surface of lower stone and toolmarks on upper surface of upper stone (scale 80mm)

To the east of the enclosure there were two closely parallel curving ditches, 385 and 436, and associated linear ditches, 550 and 906. A similar arrangement of ditches, though Bronze Age in date, has been interpreted as a 'race' and drafting gate, used for sorting and separating livestock (Pryor 2006). Similar arrangements are still in use today. The presence of such a feature may suggest that large numbers of animals were being handled in an area immediately adjacent to the large enclosure.

A later arc of ditch, 1221, was very different in character and the fills contained domestic debris; frequent charcoal, burnt clay flecks and animal bone, and the domestic artefacts included a bone comb.

The rectilinear pattern of ditches to the north of the middle Saxon enclosure may have formed a small rectangular enclosure, 30m wide. The western arm, 110, had a small central entrance, while the eastern, 1113, and southern, 954, arms were continuous. There was a broad opening, 4m wide, at the south-western corner with an internal ditch, 504, creating an elongated funnelled entrance that may have been associated with stock management.

To the west, a single oval pit, 678, contained early/middle Saxon pottery.

Middle Anglo-Saxon pottery

by Paul Blinkhorn

There are 14 sherds of Ipswich Ware and 18 sherds of Maxey Ware.

Ipswich Ware, AD 725–850 (Blinkhorn 2012) Middle Saxon, slow-wheel made ware, manufac-

tured exclusively in the eponymous Suffolk *wic*. The material probably had a currency of 725/740 – mid 9th century at sites outside East Anglia. There are two main fabric types:

F95: Group 1: Hard and slightly sandy to the touch, with visible small quartz grains and some shreds of mica. Frequent fairly well-sorted angular to sub-angular grains of quartz, generally measuring below 0.3 mm in size. 11 sherds, 220g, EVE = 0.11
F96: Group 2: Hard, sandy and mostly dark grey in colour. Their most prominent feature is a scatter of large quartz grains (up to *c*2.5mm) which either bulge or protrude through the surfaces of the vessel, giving rise to the term "pimply" Ipswich ware (Hurst 1961). This makes them quite rough to the touch. 3 sherds, 141g, EVE = 0

Maxey-type Ware: F97. Exact chronology uncertain, but generally dated *c*650–850 (eg Hurst 1976). Wet-hand finished, reddish-orange to black surfaces. Soft to fairly hard, with abundant fossil shell platelets up to 10mm. Vessels usually straight-sided bowls with upright, triangular, rim-mounted pierced lugs. 18 sherds, 276g, EVE = 10

It is uncertain if hand-built pottery continued in use in the period 650–850, although it is often found at sites with Ipswich and Maxey wares, which are undoubtedly of middle Saxon date. The mean sherd weight of hand-built pottery from middle Saxon features is considerably lower than that from early Saxon features, but it is higher than that from features of early/middle Saxon date (those which have hand-built pottery but no decorated wares). The mean weights of hand-built pottery from features of early/middle Saxon date does not differ significantly from the mean weights in late Saxon and later phases, when they were undoubtedly residual, so it is possible that all the hand-built pottery from the 7th century onwards is residual (Table 2).

The situation is similar to the other Wolverton Mill sites; the mean sherd weight of the hand-built pottery from middle Saxon features (6.9g) is similar to that from the early/middle Saxon features (5.1g), but nowhere near as large as that from the early Saxon features. Some areas of the south Midlands have produced compelling evidence that there was a hiatus in the use of hand-built pottery in the middle Saxon period, but the picture is far from clear in this area. Certainly, at the Wolverton Mill sites, taphonomy may be a factor. The early Saxon pottery assemblage is mainly from an SFB, whereas the later/undated hand-built material is from post-built structures or ditches, with the former particularly rarely yielding large assemblages or large sherds due to the nature of the features involved.

The Anglo-Saxon pottery in its local and regional context

Pottery from other associated sites at Wolverton Mill showed a similar range of wares (Blinkhorn 2007b), although early Anglo-Saxon decorated pottery was represented by just one stamped and incised sherd from an assemblage of 239 sherds. There was activity in the vicinity of those sites during the 6th century, but its focus lay outside the excavated area. Evaluation by Northamptonshire Archaeology (Blinkhorn 2006) produced 16 sherds of early/middle Saxon hand-built pottery, including a decorated sherd with curvilinear decoration of probable 5th century date, and also a sherd of Ipswich ware.

The other nearby sites also produced an assemblage of middle Saxon pottery, including nine sherds of Ipswich ware and 60 of Maxey Ware. This means that Wolverton Mill has produced 24 sherds of Ipswich ware, the largest assemblage in

TABLE 2 Pottery occurrence, all fabrics (early-middle Saxon)

Phase	*Sherds*	*Weight (g)*	*EVE*	*Mean weight (g)*
ES	103	2135	0.69	20.7
E/MS	68	431	0.16	6.3
MS	35	488	0.24	13.9
Totals	**206**	**3054**		

Buckinghamshire, a useful addition to the growing corpus of such pottery in the region. In Milton Keynes, six sherds of Ipswich ware occurred at Pennyland and two at Westbury-by-Shenley (Hurman & Ivens 1995). Elsewhere in the county, the Prebendal Manor at Aylesbury produced 12 sherds (M Farley pers comm), and five occurred at Wing Church (Blinkhorn 2008).

The rest of the Ipswich ware sites in the county, Wing Church and the Aylesbury Prebendal Manor aside, seem typical of many rural sites which have produced such pottery in the south and east Midlands. They appear to have been farming communities of unexceptional status, but were wealthy enough to have been able to indulge in limited trade. For example, it is suggested that the middle Saxon site at Pennyland was specialising in stock production. This has been dealt with at length elsewhere (Blinkhorn 1999b), with the suggestion that there was a change in the middle Saxon period in the Midlands from broad-based subsistence economy to a more specialised production of a limited range of commodities, a surplus of which was traded. It seems likely that the settlement at Wolverton Mill was of that type.

Maxey ware pottery is more common than Ipswich ware in the south-east midlands, but large assemblages are still rare. In Milton Keynes, a single sherd was noted at Pennyland, six at Great Linford (Pearson 1992) and one at All Saints' Church in Milton Keynes village (Mynard & Zeepvat 1992, 184–5). A site at Chicheley near Newport Pagnell, (Farley 1980) produced 77 sherds.

Vessel use

The Anglo-Saxon hand-built assemblage comprises entirely simple jars and bowls, as does the middle Anglo-Saxon assemblage. Spouted pitchers, one of the features of the Ipswich ware industry, are completely absent, although sherds did occur in some of the earlier excavations at this site (Blinkhorn 2002b).

Early/middle Anglo-Saxon finds (AD450–750)

by Tora Hylton

A group of finds from around the sunken-featured buildings includes a barrel padlock key: from the middle Saxon enclosure ditch there is a structural nail, adjacent to SFB 144, and a bone spindlewhorl. There are fragments from three antler combs, all early/middle Saxon (450–750), and a small fragment of a connecting-plate.

An iron pin with a flat sub-rectangular perforated head surmounted on a circular-sectioned, hipped shank tapering to a point, appears to be a crude example of a style of dress-pin that dates to the 8th/9th centuries. One of the perforations retains a probable fragment of a link from a chain, suggesting that it may have been one of a pair of pins, connected by a small linked chain, used to fix cloaks or other outer garments. A complete iron barrel padlock key came from a middle Saxon enclosure ditch 280. Keys of this type were in use from the pre-Conquest to the post-medieval period.

Early/middle Anglo-Saxon animal bone (AD450–850)

by Karen Deighton

Sheep are the dominant species, above cattle, with both pig and horse also well represented (Table 3). Chicken and goose are also present in some numbers (Table 4), Rabbit is intrusive, as it was not introduced until the 11th century. This is the only appearance of deer.

TABLE 3 Animal taxa (early-middle Saxon)

Species	*No*
Horse *(Equus)*	10
Cattle *(Bos)*	48
Sheep/goat *(Ovicaprid)*	101
Pig *(Sus)*	18
Deer *(Cervid)*	3
Dog *(Canid)*	2
Amphibian	5
Small mammal	3
Rabbit (*Orictolargus)*	2
Total	**192**

TABLE 4 Bird taxa (early-middle Saxon)

Species	*No*
Chicken *(Gallus)*	9
Goose *(Anser)*	2
Chicken *(Galliform* family)	1
Bird *(Avis)* indet.	4
Total	**16**

Early/middle Anglo-Saxon charred plant remains (450–850AD)
by Wendy Carruthers

Legumes were particularly important during the Saxon period (Table 5), as demonstrated by the excavation of a large number of cess pits from Saxon Southampton (Carruthers 2005). Not only do they help to restore nitrogen to poor soils when grown in rotation with cereal crops, but they are also a good source of protein that can be dried and stored for long periods.

TABLE 5 Legume remains (early-middle Saxon)

Species	*No*
Pea (*Pisum sativum*)	1 + cf 1
Celtic bean (*Vicia faba* var. minor)	1
Cultivated vetch (*Vicia sativa* cf var. *sativa*)	5

Bread-type wheat was the dominant identifiable cereal, apart from a single gully where barley was a little more frequent. The presence of stinking chamomile seeds (*Anthemis cotula*) in 44% of the 5th to mid-9th-century samples provides further evidence that the cereals were being grown nearby, since it is typically a weed of heavy, damp clay soils.

Barley was fairly frequent in the middle Saxon enclosure ditches, rather than features associated with the SFBs. These may represent dumps of waste fodder. Samples from SFB 144 produced mainly bread-type wheat with very few weed seeds, suggesting the deposition of food waste. Of particular note were 77 mineralised brassica seeds (*Brassica/Sinapis* sp) in the middle Saxon enclosure ditch. It is not possible to distinguish whether these remains came from a weed brassica such as charlock, or a food plant such as mustard, as the seed coats were not preserved. The fact that the seeds were concentrated in one deposit in a mineralised state suggests that they may have been in faecal remains. These seeds are often present in cess pits amongst human faecal material, and there is evidence to suggest that brassica seeds have been used as a spice since at least the Iron Age.

LATE SAXON/SAXO-NORMAN VILLAGE (10TH-11TH CENTURIES AD)

In the 10th century new linear boundary ditches were established and then refurbished and modified through the 11th century forming a series of rectangular plots, some of which contained small post-built houses (Fig 14). They probably formed minor elements of settlement at the periphery of the larger village of Wolverton, which lay to the north. The new boundary systems avoided the middle Saxon enclosure while respecting its alignment, indicating that even though its function may have ceased, its former importance was still recognised.

To the north-east, the complex sequence of ditches flanking the modern footpath show that the hollow-way was in existence by the 10th century, and also respected the north-west to south-east alignment that had originated in the middle Saxon period. The modern footpath therefore displays some 1200 years of landscape continuity.

The hollow-way boundaries

The earliest surviving ditch, 1207, was 1.00m wide and 0.60m deep, and pottery dating to the Saxo-Norman period came from the upper fill. It was lost to a recut to the north-west and was replaced by a new ditch, 395, up to 1.73m wide and 0.45m deep, whose fill contained a whittle tang knife and a barrel padlock key. At some stage there was also a fence-line to the north-west, parallel to the ditch.

Parallel intermittent ditches a little to the south, 884 and 1181, appear to be broadly contemporary. Five small postholes, 1262, may have formed a small timber structure.

To the south of the hollow-way boundaries an anomalous ditch, 897, aligned obliquely across the typical ditch alignments, is difficult to explain and was, perhaps, short-lived, as both earlier and later ditch systems respected the prevailing north-west to south-east alignments.

The northern buildings

Within the northern area there were two small areas of domestic activity; a post-built house, S955, and a dispersed scatter of postholes and pits, 986, set within a complex of curvilinear ditches forming a small rectangular enclosure, 23 × 17m.

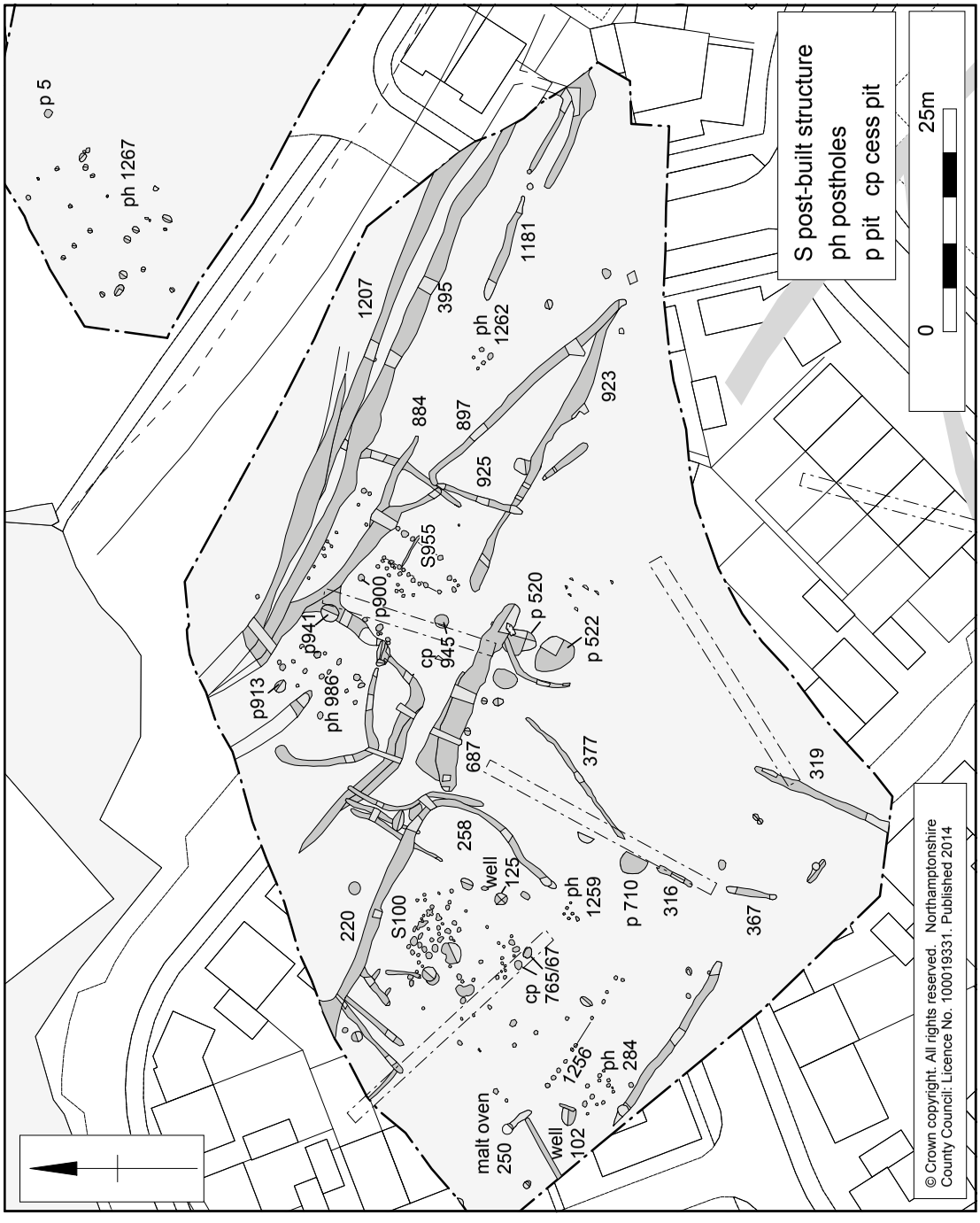

FIGURE 14 Late Saxon/Saxo-Norman settlement, structure groups

Structure 955

A group of postholes, some intercut, defined a rectangular building aligned north-east to south-west, *c*6.5m long by 3.6m wide (Figs 14 & 15). The postholes cut a silty layer, 985, containing frequent small gravel and limestone pieces, filling a shallow hollow beneath the building. The western wall comprised a rough line of closely-spaced postholes, no more than 1m apart, but the probable east wall only partially survived. Four postholes contained fuel-ash slag and two produced quantities of oats. A narrow slot crossed the building but terminated beyond the eastern wall. To its south a shallow pit, 1007, flanked by two postholes contained flecks of burnt clay.

A shallow cess pit, 945, lay to the south-west (Fig 14). The mottled olive-green fill was indicative of cess, and it also contained the largest quantity of oat grains from the site. To the north of structure 955 there was a pit, 900, that contained burnt clay and a large amount of flax seed.

Posthole group 986

This was a scatter of postholes and pits (Fig 14). To the north there was a shallow sub-circular pit, 913, lined with pale cream-coloured and occasionally heat-reddened clay and limestone. The remains of an upper clay superstructure may have been

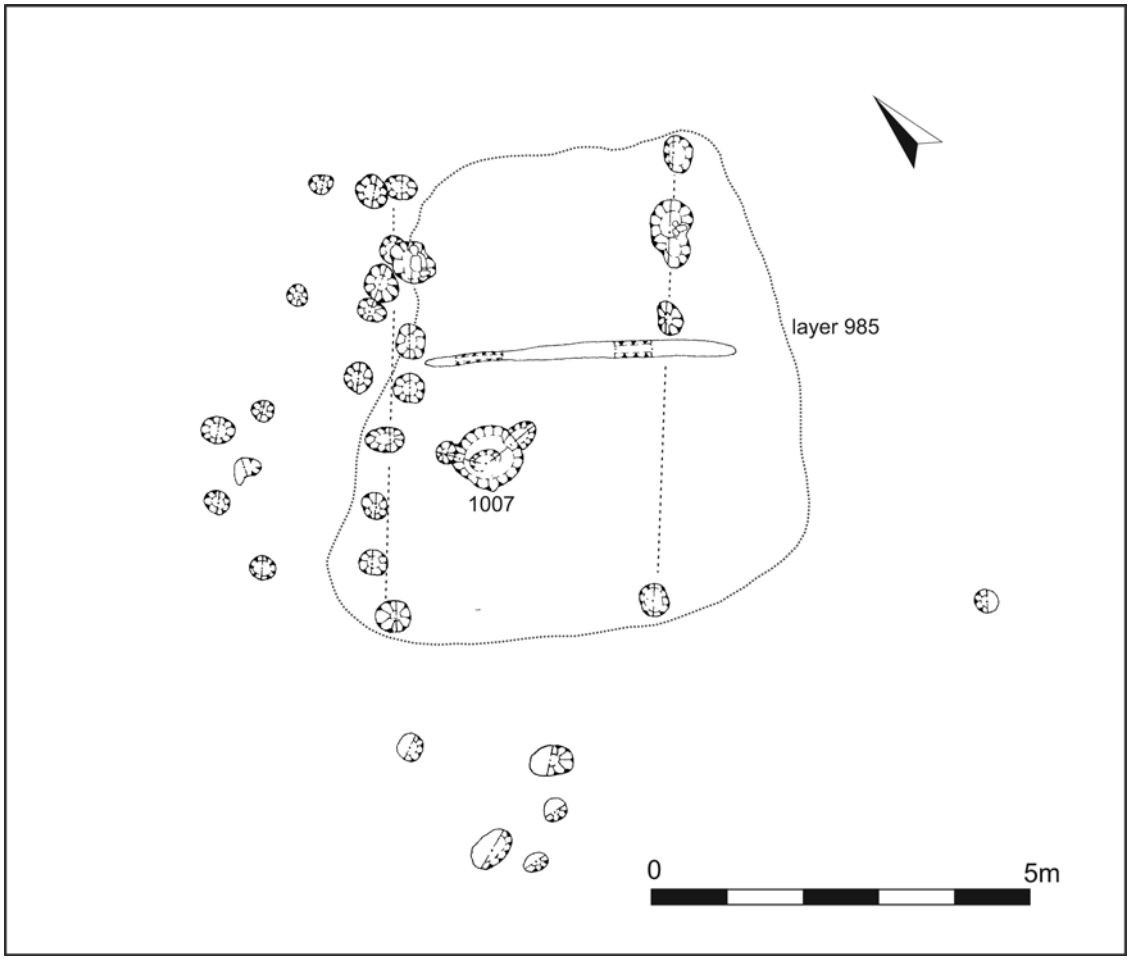

FIGURE 15 LATE SAXON/SAXO-NORMAN STRUCTURE 955

backfilled into the feature, which also contained ashy material. To the east, pit 941, was substantially larger than other features in this area, being 1.0m in diameter and 0.48m depth.

The southern boundaries

A boundary line lay 20-25m to the south of the ditches adjacent to the hollow-way (Fig 14). To the east there was a single length of ditch, 923, Further west, and offset 5m to the south, there was a broad ditch, 687, which had been recut. The alignment was continued westward by ditch 220, which was L-shaped, with an arm turning southward, forming a northern and eastern boundary to a focus of domestic activity. Close to the southern terminal there was a small rectangular setting of postholes, 1259, 2.0m by 2.5m, which may have been a small outbuilding or perhaps even a gateway, although no continuation of the eastern arm had survived.

To the south the earliest boundaries were a series of intermittent gullies 367, 316 and 377, lying beyond the middle Saxon enclosure. At the northern end of these gullies there was a cluster of pits including large shallow hollow, 520, and pits with charcoal-rich fills, including 522, which contained a stone deposit and burnt clay, possibly the remains of an oven.

The area south of these boundaries was largely devoid of activity through the 10th and 11th centuries, and a later boundary ditch, 319, at right angles to the boundaries to the north, indicates that in the 12th century the rectilinear plot system was eventually carried across the site of the Middle Saxon enclosure.

The western building and domestic activity

The focus of domestic activity in the west was a post-built house, S100, with a nearby well, 125, and cess pits, 765 and 767. To the south a fenceline, 1256, divided the domestic centre from a malting oven, 250, and another well 102 (Fig 14).

Structure 100

The post-built house, S100, was at least 4.5m long by 3.5m wide, although further postholes at both ends may suggest that the building was perhaps 8-10m long (Fig 16). To the south, a small pit, 656, contained hearth debris.

Two lengths of the nearby gully contained ironworking slag, and fuel-ash slag came from one posthole. To the south-west there was an extensive scatter of postholes and pits, perhaps an open yard, one of which contained hearth debris. Many of the postholes retained limestone slabs from former post-packing, and there were occasional examples of post-pads or limestone slabs in the bases of features. There were frequent occurrences of burnt grain within the fills.

Two cess pits, 765 and 767, 10m to the south of the building, had fills showing the characteristic greenish-yellow deposit, and both contained frequent pottery and bone.

A well, 125, 5m to the south-east of the building was up to 3.00m in diameter and 1.65m deep. The lower 0.40m of the pit retained near vertical sides, 1.0m in diameter, while the upper sides had collapsed, perhaps following the removal of a timber lining. The uppermost layers filling the abandoned well pit were of post-medieval date.

South-east of the building there were two large pits. Pit 710 was 1.40m deep containing successive dumped layers, including the articulated remains of small amphibians/rodents. The uppermost fill was a capping of compact, rammed clean limestone. Pit 807 was only 0.55m deep.

At the western end of the area, beyond fence-line 1256, there was a well and a malting oven. The well, 102, was 1.65m deep, cutting into the natural clay below the limestone. The upper sides were eroded but the bottom 0.80m was vertical-sided, 0.80m in diameter with a flat base. The lower fill was waterlogged and full of organic matter, including twigs.

The malting oven, 250, was 3.75m long by up to 0.90m wide and 0.30m deep (Figs 17 & 18). The stokehole lay at the northern end, 0.87m in diameter, with the fire set within the opening of the flue, which was 1.20m long and 0.30m wide. This opened into a deeper chamber, 1.70m long by 0.75m wide and up to 0.30m deep. The earliest fill contained much charcoal and was probably the remains of the last firing. Burnt clay, limestone and unburnt clay from the oven superstructure filled the northern end of the flue. The malting oven has produced an archaeomagnetic date of *c*970–1020. A very similar earth-cut malting oven with a long flue linking the stokehole and the chamber at West Cotton, Raunds, Northampton, was dated to early 12th century, with the first stone-built ovens in use from the later 12th century (Chapman 2010, 111–112, fig 4.36).

To the south-east of the malt oven and well

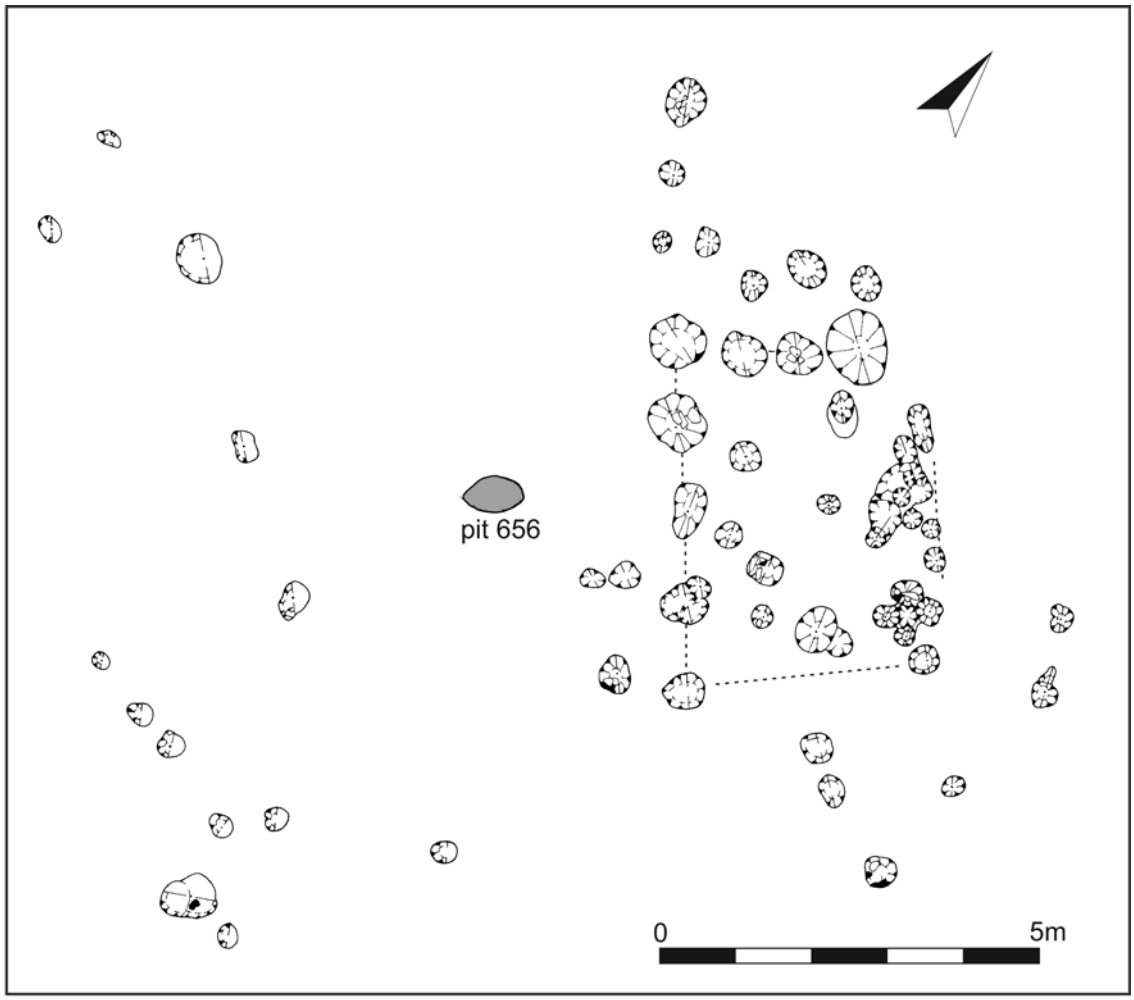

FIGURE 16 Late Saxon/Saxo-Norman structure 100

was a cluster of 14 postholes, 284 (Fig 14). These varied from oval to circular, and most were filled with yellowish-brown silty clay. To the south was a small circular pit with reddened-blackened cut sides, indicative of burning *in situ*, and a fill containing much charcoal and burnt clay flecks.

Posthole group 1267

To the east of the hollow-way was a scatter of 22 postholes, 1267, and a pit, 5, containing a deposit of burnt daub and charcoal (Fig 14).

Late Saxon and medieval pottery

by Paul Blinkhorn

The pottery was recorded using the Milton Keynes Archaeological Unit type-series (Mynard & Zeepvat 1992; Zeepvat *et al* 1994).

St. Neots Ware (F100) (*c*900–1100), 98 sherds, 1,077g, EVE = 1.76
St. Neots Ware (F200) (*c*1000–1200), 356 sherds, 2072g, EVE = 1.37
Stamford Ware (*c*900–12000), 2 sherd, 3g, EVE = 0
Sandy and Shelly ware (late 11th–mid 13th centuries), 13 sherds, 95g, EVE = 0
Medieval Shelly ware (1100–1400), 314 sherds, 3172g, EVE = 2.09

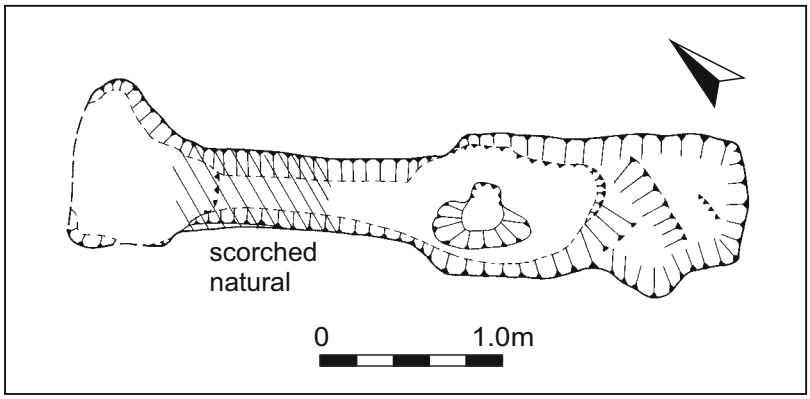

FIGURE 17 Late Saxon malting oven 250

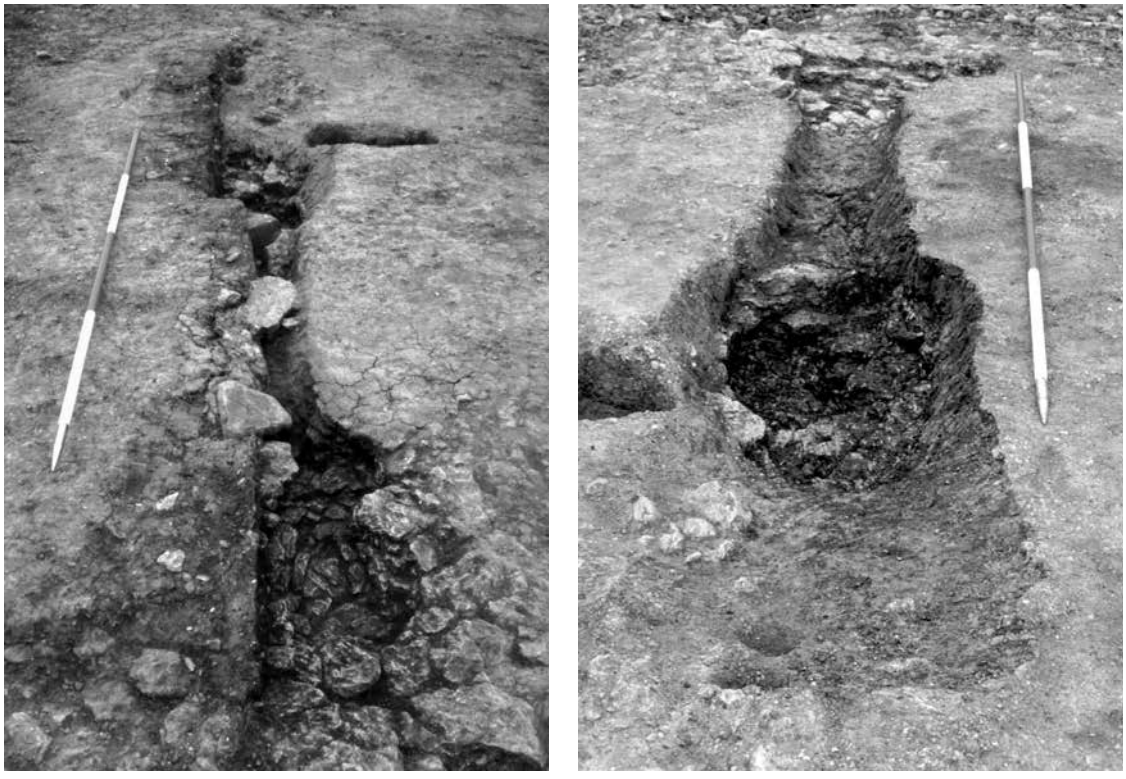

FIGURE 18 Malting oven 250, looking south-east into partially excavated flue, left, and north-west into chamber, right

TABLE 6 Medieval ceramics: Phase dating scheme

Ceramic Phase	*Defining Wares*	*Chronology*
Middle Saxon (MS)	Middle Saxon	AD 650-850
Late Saxon (LS)	St Neots (F100)	10th century
Saxo-Norman (SN)	SN (F200), Stamford, Sandy & Shelly	11th century
Medieval (M1)	Medieval Shelly	12th century
Medieval (M2)	Brill/Boarstall	Early – mid 13th century
Medieval (M3)	Potterspury	Mid13th – 14th century

TABLE 7 Pottery occurrence per ceramic phase, all fabrics

Ceramic Phase	*Sherds*	*Weight (g)*	*EVE*	*Mean weight (g)*
ES	103	2135	0.69	20.7
E/MS	68	431	0.16	6.3
MS	35	488	0.24	13.9
LS	47	354	0.34	7.5
SN	344	2265	2.52	6.6
M1	750	8016	4.29	10.7
M2	1	2	0	2.0
M3	38	370	0.63	9.7
Total	**1386**	**14061**	**8.87**	

Medieval Grey Sandy Ware (Mid 11th–late 14th centuries. 350 sherds, 3210g, EVE = 1.24
Potterspury Ware (1250–1600), 7 sherds, 97g, EVE = 0.21
Brill/Boarstall Ware (1200–?1600), 2 sherds, 4g, EVE = 0
Cotswolds-type ware (*c* late 10th-early 13th centuries) 30 sherds, 371g, EVE = 0.36
Oxford ware (*c* late 11th-14th centuries), 5 sherds, 73g, EVE = 0

Chronology

Each pottery assemblage was given a seriated Ceramic Phase (CP) date, based on the range of wares present, and adjusted according to the stratigraphic evidence (Table 6).

Pottery occurrence

The pottery occurrence per ceramic phase (Table 7) shows that pottery deposition all but ceasing before the beginning of the 13th century (Ceramic Phase M2).

In most cases, the occurrence of the main fabric types per phase appears to reflect their generally accepted chronology, and residuality is fairly low. The exception is the material from phase M3 (mid-13th to 14th centuries). Only 370g of pottery were recovered and nearly 52% (by weight) is Anglo-Saxon, and thus residual, showing that there was little activity at the site at this time.

The whole assemblage was generally scattered, with only two vessels reconstructed to a full profile; a grey sandy ware jar with extensive lime scaling on inner lower body and base pad, and a shelly ware bowl, with the outer surface extensively and evenly sooted (Fig 19, 1 and 2). No cross-fits were

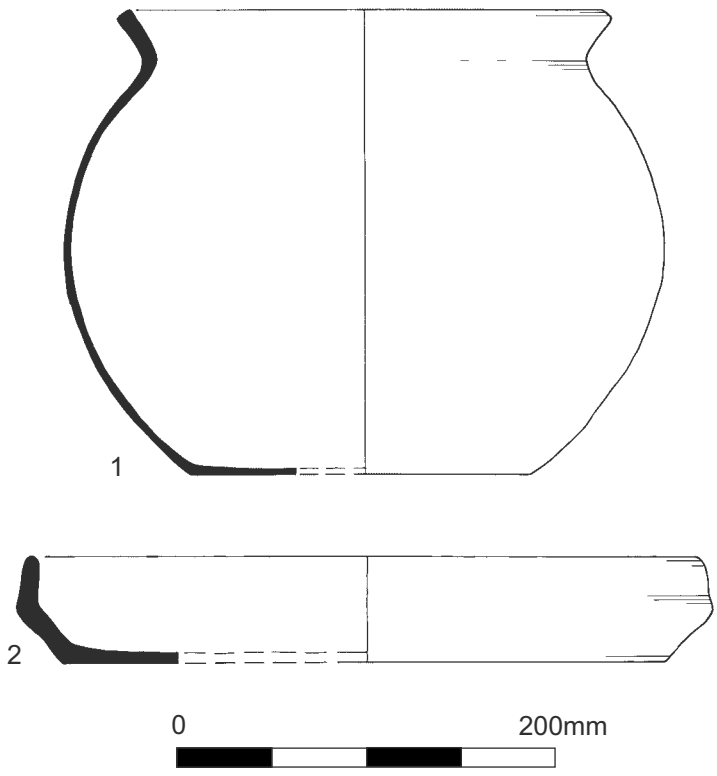

FIGURE 19 Medieval pottery, 1 and 2

noted between features or even between contexts within the same feature.

Vessel use

The late Saxon and Saxo-Norman assemblages are dominated by jars, with St Neots ware inturned-rim bowls not uncommon, but the period also sees the introduction of cylindrical jars, a specialist cooking vessel of the late Saxon/Saxon Norman period. The 12th century (Phase M1) sees the introduction of large shelly ware bowls with upright rims, a typical trait of the period, while at the same time inturned rim bowls fall from use. Jugs first appear in this phase, but are never common, although the figure of 19% for the mid-13th to 14th centuries (Phase M3) is fairly typical of assemblages of that date in the region, despite the small assemblage size.

The medieval pottery in its local and regional context

The area covered by the Wolverton Mill sites appears to have been somewhat peripheral from the late Saxon period onwards. Just 16 sherds of late Saxon and Saxo-Norman pottery were noted and only 38 sherds of medieval material from the 12th century. Potterspury ware is more numerous, but the assemblage still only comprises 56 sherds. The evaluation by Northamptonshire Archaeology produced mainly late Saxon pottery, but also small quantities of medieval wares from the 12th century, giving a generally similar ceramic profile to the main excavations under consideration here.

In the evaluation of the area, including the present site (Blinkhorn 2002b), almost all of the pottery was of late Saxon to 12th century date, with just a single late medieval sherd. This

generally reflects the pattern seen here for that period.

Late Saxon/Saxo-Norman finds (10th to 11th centuries)

by Tora Hylton

Two shield-shaped plates with bar mounts attached came from a late Saxon ditch and residual in a post-medieval ditch. Recent evidence suggests that they were strap ends for pin-less buckles. In London, 'strap-clasps' as they have been termed, are generally dated from the late 13th through to the 14th-15th centuries, but at Wolverton one was recovered from a 10th to 11th-century context, suggesting that they may have been in use from an earlier date.

Most finds came from pits in the vicinity of Structure 100. A side-link joining the rein to the snaffle came from a pit close to Structure 100. This style dates to the 9th and 10th centuries, with similar examples recorded in Scandinavia, but they may also be found in 11th to 12th-century deposits. A horseshoe with a sinuous/wavy outline, created during punching the countersunk depressions, is often referred to as a 'Norman' shoe, and this type date to the 11th-12th centuries. A worn fiddle-key nail, from a pit dated to the 10th-11th centuries, is a type used with the 'Norman' shoe.

Textile tools include a shale spindlewhorl from a cess pit near Structure 100, and a combined spatulate and point-ended pin-beater used with the vertical two-beam loom, introduced during the 9th century, from well 125. There is also a complete pig metatarsal buzz-bone, a complete iron barrel padlock key and three whittle tang knives.

Querns

by Andy Chapman

There is a total of 4.17kg of fragments, measuring no more than 150mm, from lava querns. Two pieces are from features dated to the early/middle Saxon period (5th to mid-8th centuries), but most are attributed to the late Saxon period. A further two pieces in features of medieval date and one from a post-medieval context are probably residual. These pieces are all from lava querns closely comparable to the example from pit 506. A few fragments from upper stones exhibit central eyes of the same simple form, and none possesses any additional features. The majority are from querns that have been heavily used, typically 25-35mm thick although one piece is only 17mm thick. The original thickness is indicated by a single piece from an upper stone that is 60-65mm thick, and retains part of the central eye. This indicates that the stones were typically reduced to a half or even less of their original thickness before they became unusable.

The lava used for these querns would have been imported from the sources in the Eifel region of Germany (Watts 2002, 33). This stone was used for querns in the Roman period, and in the middle and late Saxon period lava is the most common stone type. Trade in lava querns is also documented through the medieval period, but by this time querns were also being manufactured in a wide range of local stone types.

The ironworking slag

by Andy Chapman

A total of 1.75kg of ironworking debris was recovered as either single fragments or up to four pieces per context, typically weighing less than 100g and only occasionally as much as 150g. The material comprises a mixture of fuel ash slag and miscellaneous ironworking slag, sometimes with fired clay hearth/furnace lining adhering to it. The character and the small quantities recovered would be appropriate to a minor episode or episodes of iron smithing in the 10th-11th centuries. A small cluster of material from the vicinity of Structure 955 comprises only small pieces of fuel ash slag.

The fired clay

Of the 141 pieces of fired clay, weighing 4.9kg, 53 fragments (4.2kg) came from pit 5, in the smaller excavation area to the north, dated to 10th-11th centuries. About one third of these fragments have wattle impressions.

Late Saxon/Saxo-Norman animal bone

by Karen Deighton

There is a continued dominance of sheep/goat (Table 8), and the assemblage shows a prevalence of lower limbs.

TABLE 8 Animal taxa (late Saxon/Saxo-Norman)

Species	No
Horse *(Equus)*	11
Cattle *(Bos)*	75
Sheep/goat *(Ovicaprid)*	115
Pig *(Sus)*	30
Dog *(Canid)*	9
Amphibian	14
Small mammal	4
Rabbit (*Orictolargus)*	20
Fish (*Piscis)*	1
Total	**279**

FROM VILLAGE TO FIELD (12TH TO 14TH CENTURIES)

The domestic area

A scatter of large pits containing domestic debris, including pottery dating to the 12th century, and further pottery from some of the postholes of building 100, indicates that domestic occupation continued into the 12th century, as the last element of settlement within this area (Fig 20). The eroded upper half of well pit 125 was backfilled at this time as well. Abandonment of the building, perhaps by the middle of the century, marked a contraction on the southern margin of the medieval village, with the area then taken into the open field system.

There were 15 pits, some substantial, the weathered sides of many indicating that they were open for some time. There was often side collapse between layers of fill that contained lenses of charcoal and limestone. Pottery and bone were found throughout.

To the south-west the extent of the domestic area was redefined by a new gully, 121. A series of other gullies on parallel alignments, terminating in the western corner of the site, suggested that more intensive domestic occupation was continuing nearby. A human cranium was found in the upper fill of a ditch/pit 115, at the western end of the site.

The hollow-way boundaries

The ditches bounding the southern side of the hollow-way moved slightly to the north, and between the 12th and 14th centuries there were at least five recuts. At the north-western end these ditches turned westward before terminating (Fig 20). The ditches were 1.4-3.7m wide and 0.56-0.90m deep with U-shaped profiles. The fills were soft or compact dark grey clayey silts, some with large limestone pieces and gravel nodules. There was little dating evidence. An area of trampled or churned natural on the north-eastern side of the northernmost ditch may have been the edge of the hollow-way deposits.

North-east of the hollow-way, two gullies, 25 and 79, 0.80m wide and 0.50m deep with V- or U-shaped profiles, may be boundaries dating to this period. A small pit, 94, 1.30m diameter by 0.40m deep, contained 13th-century pottery. At the east end of the area three large and intercut limestone quarry pits, 69 and 81, up 12.70m wide and at least 1.90m deep, were backfilled with re-deposited clay and limestone, interleaved with silts. The few finds included 13th-century pottery.

Late Saxon and medieval pottery

Tenth-century and later pottery is typical of sites in the south-east Midlands. It is dominated by St Neots type shelly wares and subsequently the medieval shelly wares. The presence of a small assemblage of Oolitic ware is worthy of note. The most likely source of this is the Cotswold region (Mellor 1994), and this, along with a small number of sherds of Oxford ware, shows that there was trade to the west around the time of the Norman Conquest. Such pottery is fairly rare in the Milton Keynes region, and suggests that the site may have been relatively wealthy at that time.

Medieval finds (12th to 14th centuries)

A fine-grained lathe-turned limestone spindle-whorl came from 12th-century pit 947, and a heckle tooth came from pit 809. A late medieval horseshoe was found in the upper fill of ditch 1235. A whetstone, from a medieval quarry pit 69, manufactured from a fine-grained siltstone tapers slightly towards the top which has a remnant perforation for suspension. A whittle-tang knife came from pit 895.

The medieval animal bone

by Karen Deighton

Sheep/goat was the most common animal (Table 9). The size of a dog humerus and radius from (551), gully 838, suggests a large animal. Chicken is the

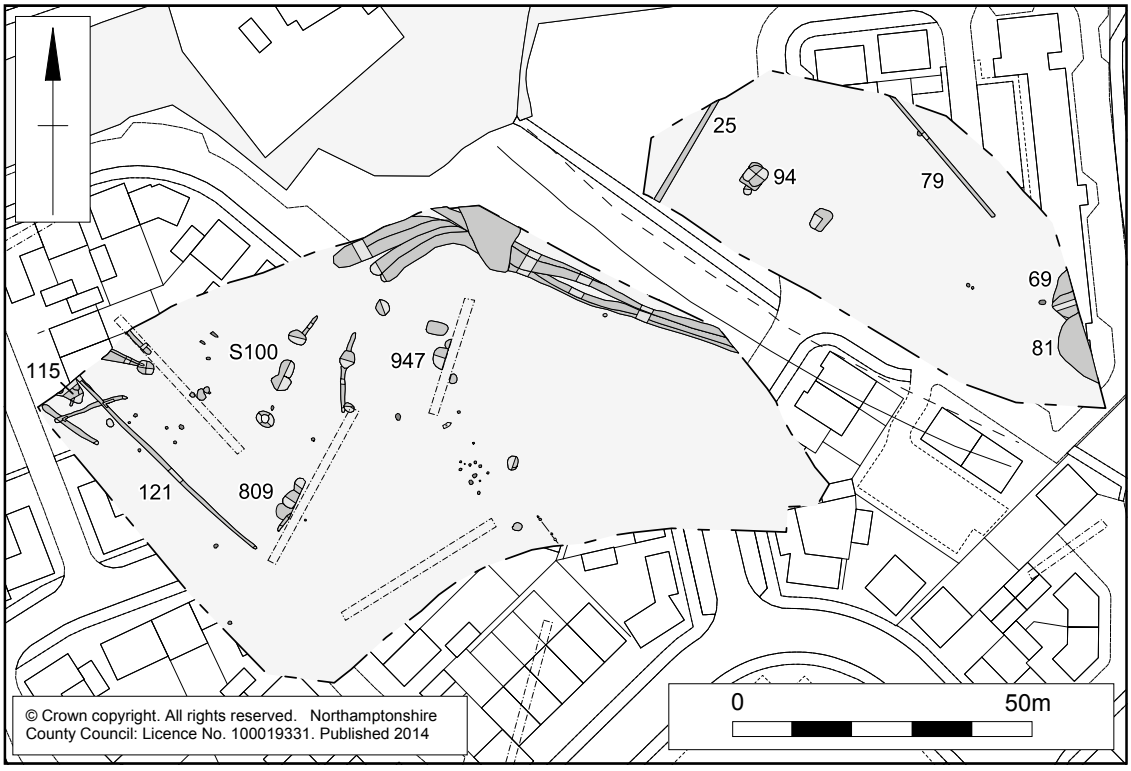

FIGURE 20 Medieval and post-medieval fields

TABLE 9 Animal taxa (medieval)

Species	*No*
Horse (Equus)	6
Cattle (Bos)	55
Sheep/goat *(Ovicaprid)*	104
Pig (Sus)	20
Dog (Canid)	5
Amphibian	5
Small mammal	2*
Rabbit (*Orictolargus)*	15
Total	**212**

*1 house mouse

TABLE 10 Bird taxa (medieval)

Species	*No*
Chicken *(Gallus)*	14
Goose (*Anser)*	10
Crow *(Corvid)*	6
Bird *(Avis) indet.*	9
Total	**39**

most common bird species. Crow is only seen in the 12th-14th centuries. Amphibian in this instance is frog or toad. House mouse is also a commensal species.

The Saxon and medieval animal bone: general discussion

by Karen Deighton

Sheep/goat dominates all periods, followed by cattle then pig with smaller numbers of horse and dog. It is not possible to draw any firm conclusions relating to kill off patterns for the major domesticates, due to the paucity of data available. The sheep/goat assemblage was the only one large enough for body part analysis. Some temporal change is apparent; with the 12th to 14th centuries showing a prevalence of hind legs. Horse and dog remain consistently low through the medieval period.

Comparing the 11th-century material of Wolverton with that from Cowper Tannery, Olney (Deighton 2004), cattle were dominant at Olney, then pig and sheep/goat in almost equal numbers, unlike the heavy dominance of sheep/goat at Wolverton. There was less species diversity at Olney, which only had major domesticates and indeterminate birds.

Cattle were again dominant in 12th-century Olney, followed by sheep then pigs. Chicken and goose were present in Olney, as at Wolverton. Dog and deer were also present at Olney, but only dog at Wolverton. This apparent difference in dominant domesticates could either reflect a difference in status, as cattle are often more prevalent at higher-status sites, or a difference in local environmental conditions, with one area more suited to sheep. A similar range of species was seen for the medieval period at West Cotton, Raunds, Northamptonshire (Albarella & Davis 2010). Pigs at West Cotton are seen to decrease through time and sheep to increase, whereas numbers for both species at Wolverton remain fairly constant. This again could reflect the differing local environments and the variable balance between woodland and pasture.

The Charred and Mineralised Plant Remains

by Wendy Carruthers

The residues available to be checked for mineralised plant remains produced no evidence of concentrated faecal material. The sparse mineralised remains scattered around the site probably represent redeposited material from cess pits and middens. There was very little charred material. Nomenclature and most of the habitat information follow Stace (1997).

Legumes

Leguminous crops are usually under-represented in the charred crop record, as they are less likely to come into contact with fire and, when charred, often lose important identifying characters (primarily the seed coat and *hilum* (detachment scar)). The size and shape of charred legumes can be useful, but these are imprecise characters so identifications are uncertain. At Wolverton Mill sufficient large leguminous seed fragments and large vetch (3-4mm diameter) seeds (*Pisum/Vicia/Lathyrus* sp.) were recovered to indicate that legumes were important to the economy from the early-middle Anglo-Saxon (Table 5) and throughout the medieval period (Table 11). The presence of large legume fragments suggests that they were still being grown in the 13th/14th centuries.

Possible origins of the charred remains

As is common in most Saxon and medieval assemblages, the principal component of all of the samples was cereal grains, with very few chaff fragments to assist in identifications. The cultivation of primarily free-threshing wheat for human consumption meant that cereals were less likely to become charred during processing, than with the hulled wheats of prehistoric times (which required parching). Valuable processing waste was more easily removed and stored for use as fodder etc. closer to the point of cultivation, away from settlements. For this reason most of the cereal remains recovered from Saxon and later sites has probably become charred at a later stage in its use, perhaps accidentally, whilst being prepared for cooking, or deliberately, in the disposal of grain spoilt during storage. Therefore, the assemblages tend to be grain-rich, with just a trace of contaminants such as chaff and weed seeds. Fodder crops, such as barley and oats, rarely come into contact with fire, being fed to livestock in the husk.

All the assemblages from Wolverton Mill are likely either domestic waste from floor sweepings and hearths, or domestic waste mixed with burnt

TABLE 11 Legume remains (late Saxon and medieval)

Date	*Mid 9th-11th centuries*	*13th-14th centuries*
Species	No	No
Pea (*Pisum sativum*)	cf 5	-
Celtic bean (*Vicia faba* var. minor)	3 + cf.3	-
Large legume fragment (pea/ bean/vetch)	7	15
Cultivated vetch (*Vicia sativa* cf var. *sativa*)	4	2
Possible cultivated vetch (3-4mm *Vicia/Lathyrus* sp)	65	30
No of samples	**39**	**10**

Note: cf indicates that no hilums were present to confirm the identifications, but seed dimensions and shape indicate the probable taxa

fodder, bedding and stable waste. Pure cereal processing waste was not recovered.

The range of cereals cultivated and changes through time

Bread-type wheat was clearly the principal crop grown for human consumption, as is found on most Saxon and later sites across the British Isles. It was the dominant identifiable cereal in all except one early/middle Saxon (5th-mid 9th centuries) sample where barley was a little more frequent, and three samples from a late Saxon/Saxo-Norman cess pit 945 and postholes from structure 955 (samples 110, 132 and 134) where oats were much more frequent. Oats were generally fairly frequent in Structure 955.

The local calcareous clay soils would have been very suitable for the cultivation of bread wheat. The constant presence of stinking chamomile seeds (*Anthemis cotula*) in 44% of the 5th-mid 9th centuries samples, 87% of the 9th to 11th-century samples and 91% of the 13th/14th-century samples provides further evidence that the cereals were being grown nearby, since it is typically a weed of heavy, damp clay soils. The increased occurrence of stinking chamomile through time probably reflects the spread of this weed across cultivated fields. Alternatively, a greater percentage of the land under cultivation could have been clayey during the later periods, or the soil structure deteriorated through constant cultivation, favouring the spread of stinking chamomile.

It is interesting to examine the occurrence of other indicator weeds in addition to stinking chamomile (bearing in mind the relatively small numbers of samples examined from some phases) in Table 12.

Most of the increase in concentration is due to greater numbers of cereals grains being present rather than weeds (grain to weed ratios increase from 6:1 in the 5th to mid 9th-century samples, to 10:1 in the mid 9th to 11th-century samples). The possible significance of the weed changes seen in the table is discussed below.

In addition to the weeds listed in Table 12, other weed taxa recovered included typical medieval arable weeds such as shepherd's needle (*Scandix pecten-veneris*) and corn cockle (*Agrostemma githago*). In the Pennylands samples, Jones (1993) noted the presence of weeds such as cornflower and stinking chamomile in the Anglo-Saxon but not the Iron Age samples, and suggested that this may relate to deeper ploughing and the change from cultivating primarily spelt wheat to bread/ club wheat. Greig (1991) traced the introduction of cornflower into Britain back to the Roman period, but could find no obvious reason for the fact that it did not become a common arable weed until the

TABLE 12 Percentage of samples containing weed taxons

Arable weed	*Soil preferences*	*5th-mid 9th centuries*	*mid 9th-11th centuries*	*13th-14th centuries*
Stinking chamomile (*Anthemis cotula*)	Heavy, damp, clayey	44%	87%	91%
Cornflower (*Centaurea cyanus*)	light, sandy soils	0%	5%	9%
[*Centaurea* sp.]			[13%]	[9%]
Corn spurrey (*Spergula arvensis*)	acidic, sandy soils	0%	3%	18%
Thorow-wax (*Bupleurum rotundifolium*)	calcareous soils	0%	10%	27%
Ave. frags./litre of soil (fpl)		**5.7**	**11**	**13.9**
No. of samples analysed		**16**	**39**	**11**

TABLE 13 Percentage of samples containing cereal taxons

Species	*5th-mid 9th centuries*	*mid 9th-11th centuries*	*13th-14th centuries*
free-threshing wheat	100%	100%	100%
barley	94%	97%	100%
oats	81%	85%	91%
rye	38%	74%	73%
Vetch *(Vicia sativa)*	25%	8%	9%
(3-4mm seeds)	(56%)	(41%)	(73%)
No. of samples	**16**	**39**	**11**

later medieval period, around 1200. It is particularly common on sites with light, sandy soils, so its spread is sometimes linked to the spread of rye.

Hulled barley (*Hordeum vulgare*) and oats (*Avena* sp.) were present in almost all of the samples across the phases (Table 13). Rye (*Secale cereale*) was more frequent in the early-mid Saxon to Saxo-Norman periods, but to some extent this was also true of barley and oats. As with the weed seeds, this may, in part, be a consequence of increased preservation of charred material in the later phases. However, there does appear to have been a genuine increase in the quantities of non-wheat cereal crops being grown over time. The leguminous evidence, although slight, suggests that the cultivation of peas (*Pisum sativum*) and beans (*Vicia faba* var. *minor*) may have decreased by the 13th/14th centuries (see Table 12 above), but because these remains are only rarely recovered in an identifiable state, the smaller number of samples examined from the 13th/14th centuries could have produced this impression. Cultivated vetch (*Vicia sativa* var. *sativa*) continued to be a useful fodder crop through the three phases, although barley, oats and rye may have replaced vetch to a certain extent in the later phases.

Taking the cereal and weed ecology evidence together, there appears to have been a gradual expansion with the passage of time onto a wider range of soils, making use of the different abilities of all four cereal crops to cope with different soils. Initially the local loamy brown earth soils along the river valley would have provided fertile, moist, fairly easily ploughed land for wheat cultivation. If expansion onto land further afield became necessary, the calcareous clays to the west would

have been suitable for the cultivation of wheat and barley, and oats and rye would have tolerated the sandier, acidic soils to the east. Two of the three corn spurrey seeds (acid indicator) were recovered from samples that contained relatively high oat and/or rye levels (samples 93 and 112). Four of the seven samples containing thorow-wax (calcareous soil indicator) produced abundant bread-type wheat with frequent barley, oats and rye. The other three were fairly poor samples with only sparse cereals.

Because the assemblages contained redeposited burnt material that may have come from several sources, it is impossible to say whether or not the cereals were being grown as maslins (mixed crops). Wolverton Mill is located in a fairly good climatic and edaphic region, so the growing of maslins may have been less important. Cereal/legume maslins such as oats and cultivated vetch (hara) can help to maintain soil fertility, as well as producing a nutritious fodder crop. Unfortunately, vetch seeds from Wolverton Mill were not frequent enough to demonstrate an association with any of the cereals. Peas and beans can be grown either as field crops or as garden plants.

One further crop of economic importance that was recorded from all three phases of occupation was cultivated flax, *Linum usitatissimum*. It is unusual to find charred flax seeds in such a wide range of deposits (11 samples in total, including gullies, pits, ovens, ditches and cess pits), as its oily seeds do not preserve well by charring. This suggests that flax was particularly important at Wolverton Mill. The local damp river valley soils would have suited the cultivation of flax well. The records mostly consisted of occasional seeds, but sample 104 (pit 900, associated with Structure 955) produced 202 seeds. This structure could be linked with flax production, e.g. burnt waste from removing the seed heads and leaves. However, perhaps a more likely explanation for the presence of a large number of charred seeds is that oil extraction was taking place. The presence of three charred seeds in two different cess pits 465 and 767 (samples 13 and 71) suggests that seeds may also have been consumed. Flax or linseed has a laxative property. Alternately, burnt waste had been used in the cess pit to dampen odours, as is often found in faecal deposits.

Distribution around site

The late Saxon/Saxo-Norman samples, being more abundant, were widely spread around the site. No obvious pattern of distribution was observed with regards to the occurrence of flax seeds, mineralised remains or larger concentrations of cereal grains, *i.e.* these remains were scattered from one side of the site to the other. The large wheat concentrations, however, were all recovered either from ovens, pits or postholes, rather than ditches or gullies. Most of the charred peas and beans from all three phases were recovered from rubbish pits, postholes or SFBs, rather than enclosure ditches, suggesting an association with human food waste rather than fodder. The highest concentrations of oats were found in samples from Structure 955, indicating a special use for this building that probably involved livestock.

No significant patterns of distribution were observed for the 13th/14th-century samples either, but perhaps this is not surprising considering that the remains were not preserved due to cereal processing activities, but were the waste from day-to-day domestic activities around the settlement.

Comparisons with other sites in the Milton Keynes area

As noted above, excavations at Pennyland (Jones 1993) produced Anglo-Saxon charred assemblages that were comparable to those from Wolverton Mill. Jones's samples were richer in bread/club wheat by a ratio of 1.68 to 1. The Wolverton ratios were as follows:

Early/middle Saxon (5th-9th centuries): 2.27 to 1, wheat to barley
Late Saxon/Saxo-Norman (mid 9th-11th centuries): 3.86 to 1, wheat to barley
13th to 14th centuries: 4.52 to 1, wheat to barley

The increased and increasing proportion of wheat to barley could relate to the use of a wider range of soils to cultivate a range of fodder crops, rather than relying heavily on barley (as noted above).

Oats were fairly scarce in the Pennylands samples and rye was not recorded, but the Pennylands soil samples were much smaller and less abundant than those from Wolverton Mill, so the two sets of results are not directly comparable.

Apart from these small differences, some

similarities between Pennylands and Wolverton are notable. These include the occurrence of cultivated flax and possible cultivated vetch at Pennylands, and similarities between the ranges of arable weed seeds recovered, as discussed above.

The Wolverton Mill assemblages were generally typical of Saxon and medieval sites across most parts of southern Britain, producing evidence for the cultivation of all four cereal types in addition to peas, beans, cultivated vetch and flax. It is only where soils are the limiting factor that settlements had to select a different range of crops to suit the local conditions. The settlers at Wolverton Mill were fortunate enough to have access to a range of fertile soils to grow the preferred grain for human consumption, bread wheat. However, like most rural sites of the period, there was no evidence that luxury imported fruits and spices were consumed. Even native hedgerow remains like hazelnut shell fragments (*Corylus avellana*) were notably scarce at Wolverton Mill. It is possible that the mallow seeds (*Malva* sp) in pit 899 represented a native plant used as a vegetable, as the large leaves of mallow can be consumed like spinach and the seeds make a tasty snack.

Post-Medieval Features

The boundary ditch system adjacent to the hollow-way was redefined. To the north-east, two quarry pits, 60 and 87/90, were dug in the 17th and 19th centuries (Fig 20). There were 112 sherds of miscellaneous 19th and 20th-century wares.

Discussion

The early/middle Anglo-Saxon settlement

It has been suggested that, unlike many Milton Keynes parish boundaries which follow the furlongs of the medieval open field systems, Wolverton parish is likely to be an early foundation with boundaries formed by Watling Street (the modern A5), the river Great Ouse and Bradwell Brook (Croft & Mynard 1993, 15–16).

There is a small assemblage of 5th-century pottery in association with a sunken-featured building (SFB), and in trial trenching to the east of the site another SFB has been radiocarbon dated to the 5th-6th centuries (Preston 2007). However, the pottery from the other SFBs and the post-built structures can only be broadly dated to the early/middle Saxon (AD 450–750), so the main Saxon settlement on the site may date to the late 7th to the 8th centuries, only shortly pre-dating the middle Saxon enclosure.

The SFBs and associated post-built structures are presumed to be part of a dispersed settlement, which is likely to have occupied the remainder of the hilltop to the immediate south and west of the site, with a 7th-century cemetery known to lie to the east of the middle Saxon enclosure (Fig 1).

A shallow pit containing a range of finds including two spears, a seax, a heckle, two bone combs and most of a lava quern, mostly items deposited as grave goods in the middle Saxon period. Special deposits in Saxon settlements seem to have performed different functions, perhaps relating to 'termination' deposits at the end of a building's life or situated at settlement entrances or boundaries (Hamerow 2006). However, the assemblage from Wolverton Mill does not appear to conform to such a model, and there was no bone, animal or human, within this deposit. While it is possible that they derive from disturbed graves, the quern is not a typical grave deposit, and another possibility is that the assemblage comprises the prized possessions of a man and a woman perhaps as a cenotaph to both, buried near their home and marking their deaths, which perhaps occurred elsewhere, or as the deposition of a curated collection of family heirlooms.

The middle Anglo-Saxon enclosure

The large ditched enclosure, apparently devoid of associated internal features, may be equated with a large oval at Higham Ferrers, Northamptonshire, which was 160m long by 100m wide (Hardy & Lorimer 2004, 13–15). At Higham Ferrers, the nearby presence of an elaborate stone-built malting oven of middle Saxon date seems to confirm the high status of the site at this time, although material directly related to the enclosure was sparse. The enclosure has been interpreted as 'a purpose-built tribute centre for a royal estate', with the large enclosure functioning at least in part as a stock corral, with this accounting for the sparse material evidence related to it. There may have been another similar large enclosure at Tempsford, Bedfordshire. In this case middle Saxon occupation lay adjacent to what may have been an oval enclosure up to 130m diameter, but

the full plan was not recovered (Maull & Chapman 2005, 16–21 & fig 3.3).

The defining ditches of the enclosure at Wolverton are quite insubstantial and even the deepest, with an external bank, would still have needed additional fencing or hedging to prevent animals from straying. There is little evidence that the enclosure ditches were slighted in the later Saxon period, indeed later settlement appears to have avoided the enclosed area until after the Norman Conquest. This may indicate that the boundaries remained intact for many generations subsequent to their creation, and also that the memory of the former importance of the enclosure was retained and respected.

It has been suggested that there was a change from an earlier broad-based subsistence economy to a more specialised one in the middle Saxon period, where the surplus goods were traded, allowing the inhabitants to engage in limited trade (Blinkhorn 1999b). The presence of the stock enclosure and the possible race and drafting gate to the east indicate that the inhabitants were engaged in such an economy, probably dominated by sheep. A slight predominance of young animal bones from the enclosure ditches may suggest that they were farming animals for meat, as well as for secondary products. Finds from the enclosure ditches, such as a key for a barrel padlock and a fragment of rotary quern suggest domestic settlement in the vicinity, as also occurred at both Higham Ferrers and Tempsford.

To the north of the middle Saxon enclosure at Wolverton there was a smaller rectangular enclosure, as well as ditch systems to the east that may have been related to stock management. However, dating the complex sequence of ditches, when individual sections often produced only small quantities of pottery, has left the structure and the chronology of the sequence uncertain.

Re-ordering of settlement in the late Saxon/Saxo-Norman period

By the 10th century there had been a major reorganisation of the landscape, although the middle Saxon enclosure was still respected. It was probably at this time that a trackway on an alignment parallel to the middle Saxon enclosure was created, forming one of three main routes between the mill, the castle and church and the northern manor in Wolverton village.

The nature of settlement

Running south-westward from the hollow-way, there were further parallel boundary ditches that defined separate domestic plots, one adjacent to the trackway and another to the south-west. To the south, the earliest of the new boundary ditches all stopped short of the middle Saxon enclosure, and there was little encroachment onto this area even in the 11th and 12th centuries.

The area adjacent to the trackway showed a complex of shifting ditch systems. There was a single well-defined building, structure S955. The nearby presence of a cess pit would suggest that this was a domestic building, although a slot or drain and some of the environmental evidence suggest use for livestock, although this might have been a reuse of the building.

The area to the south-west may have been a single property, a croft within its toft. To the north there was a house, with a nearby well and cess pits. To the south-west a more functional area contained a malting/drying oven and a nearby well.

While the small size of the post-built houses does not suggest a high status for the occupants, they were involved in a level of trade, acquiring quality metal items such as horse fittings and Oxford ware pottery. There is also debris from flax/linen working and tools associated with spinning and weaving, but only minimal evidence for iron smithing.

Thorir's manor?

In the 10th-11th centuries the settlement may have been at the southern end of the village of Wolverton, which was centred on the church. It is possibly that this end was a separate manor, divided from the remainder by the road. The settlement may have been part of one of the tripartite manors of Wolverton known at Domesday.

It is assumed that the main Wolverton manor would have been based with the church and imposed upon by the later castle. Godwine, the man of King Harold, may have held it. Of the remaining two pre-Norman Saxon landowners, Thorir the *housecarl* was a man of Edward rather than Harold, so it is uncertain whether he would have fought at Hastings.

The impact of the Norman Conquest

The Domesday Book records the value of Wolverton at £20 prior to the conquest, £15 when

received (in 1066), but only 20s by 1086. The archaeological record shows that in this part of the settlement occupation continued through the 12th century with the final pit digging occurring into the 13th century.

Occupation may have contracted to the north and east, to what survives as Old Wolverton deserted medieval village (DMV). The site of the Butts (the medieval village archery practice area) close to the southern/centre part of the DMV is another indicator of the continued village centre. Another major change in the locality was the new town of Stony Stratford, which was founded in the 12th-13th centuries.

The later medieval site

The major site boundary/hollow-way was maintained and recut. This evidence seems to reiterate local preoccupations where the lord was taken to the local courts for failing to scour out his ditches bounding with common land and allowing his cattle to roam freely at night!

During the 13th century settlement was abandoned within the excavated area and perhaps taken into the open fields, suggested by ridge and furrow earthworks and the presence of very deep subsoil over the centre of the site. Ridge and furrow earthworks have also been noted, superimposed over earlier settlement remains within the DMV area north of the site, so the process of contraction seems to have been widespread. This may in part be due to the spread of the Black Death which is known to have severely affected north Buckinghamshire, certainly including Bradwell, in the mid-14th century.

Hollow-way

There is a discrepancy between the published map of the medieval field systems and the detailed earthwork survey of the remains north of the Stratford Road (Croft & Mynard 1993, figs 75 & 77). The former shows the road to Stratford (Fig 21a, dashed line) but not the prominent forked hollow-way leading south-east towards the excavated site, north-west towards the mill and east towards the village centre (Fig 22a, solid line). It seems likely that the main route heading towards the mill is the known, but unlocated, medieval *Le Mylneway* (Millway). The north-western half of that route was removed by ridge-and-furrow cultivation in the medieval/post-medieval period. It seems unlikely that the Stratford Road followed the course reproduced here in the medieval period, but it must have been remodelled to this form sometime prior to 1740. The hollow-way crossing the site is certainly part of the medieval road pattern that has been retained until the present day.

All known settlement earthworks and the accompanying open fields in the parish were mapped (Croft & Mynard 1993, figs 75 and 77). The nearest surviving settlement comprised three crofts adjacent to the castle, at the western end of a linear village settlement, *c*1.5km long, with the castle and church at its centre. Most of the main excavation area was under cultivation in the open field system. There is no evidence to suggest whether the smaller site area east of the hollow-way was part of a wider medieval field or not.

Although there is no Enclosure Map, field names are recorded on the 1742 map (now lost) and a Tithe map of 1840 (Fig 21b: after Hyde 1945, 13; Croft & Mynard), which shows the landscape after enclosure. The main excavation area lay south of the Stratford Road within *Black Hill* field, divided from the smaller excavation area in *Bar Race* by a main route between the fields. *Black Hill* may be a medieval field name, suggestive of former settlement. There was only the Church and Vicarage (established in 1534). The forked route to the mill had fallen out of use, the back route north of Kiln Close survived.

The Provisional Edition 1814 Ordnance Survey Buckinghamshire Sheet (Fig 21c, The British Library digital scan Reference 229 CO203-0,) shows new structures in the north-east corner of the excavated area and along the eastern Stratford Road frontage, even though the village focus had moved away. The fields remained unchanged.

In 1967 the site was in a form close to today, with a new plot in the angle between the two excavation areas (Fig 21d; Croft & Mynard 1993, fig 74). The hollow-way had become wooded. A tramway ran along on the south side of the Stratford Road between 1887 and 1926. With the introduction of the railway, the Stratford Road was extended to the east, bypassing the area of the church.

The post-medieval period

The main boundary ditch between the two site areas was maintained into the post-medieval period, but was eventually superseded by hedgelines set slightly further north.

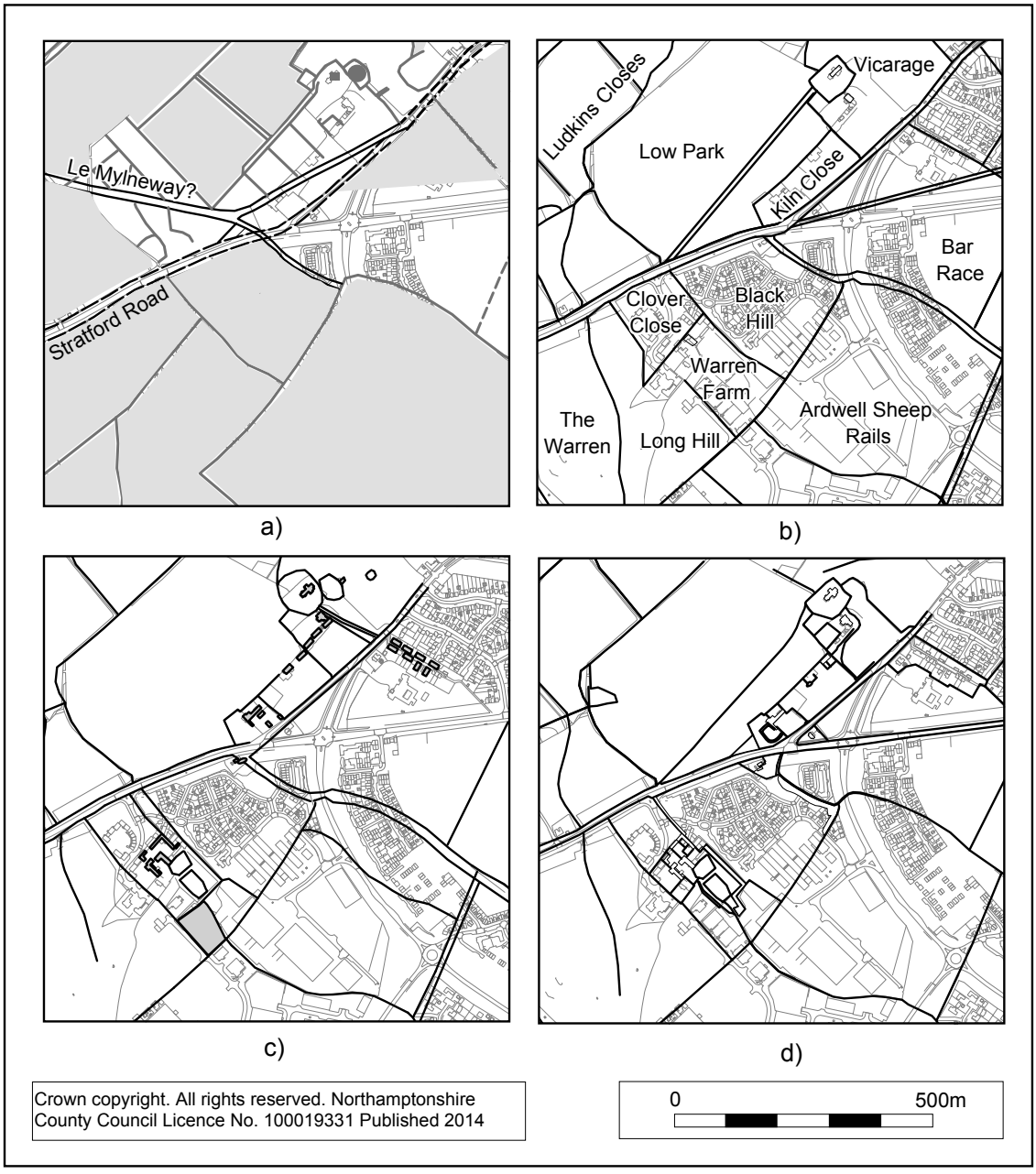

FIGURE 21 Historic maps: a) Medieval landscape of Wolverton (Croft & Mynard 1993); b) Post-medieval landscape (Croft & Mynard 1993); c) Provisional Ordnance Survey map 1814; d) 1967 Ordnance Survey map (Croft & Mynard 1993)

The two site areas were part of two separate large enclosed fields, Black Hill and Bar Race, belonging to Warren Farm since at least 1654 and up until 1967. The re-introduction of dispersed settlement into Old Wolverton, including Spinney Cottage at the north site boundary between 1742 and 1814 may be associated with the post-medieval limestone quarry pits located within the smaller site area.

The hollow-way was retained as a major back route and boundary throughout the post-medieval period until bisected by the current Milton Keynes road system. The boundary south of Wolverton Road is still operational as a footpath.

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