



Baking and brewing in a medieval settlement at Star Lane, Westwood, Thanet

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BAKING AND BREWING IN A MEDIEVAL SETTLEMENT

AT STAR LANE, WESTWOOD, THANET

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and illustrations by Rob Goller and S.E. James

Summary

A strip-map-and-sample excavation on land south-east of Star Lane, Westwood, Thanet, revealed evidence of settlement within a sequence of medieval enclosures, and a probable medieval bake-house of a general type recently recognised more widely in Kent (Andrews *et al.* 2009; Schuster and Stevens 2009). The site, excavated in December 2011 and January 2012 (Wessex Archaeology 2012), lay to the immediate south-east of the Weatherlees-Margate-Broadstairs Wastewater Pipeline, the adjacent 10 m wide section of which (referred to below as ‘the pipeline easement’) was excavated in 2005 revealing another bake-house and some of the same enclosures (Egging Dinwiddy and Schuster 2009) (Fig. 1).

The excavation reported here was part of a programme of archaeological works commissioned by CgMs Consulting in advance of mixed-use housing and commercial development. These works had earlier included a desk-based assessment (CgMs Consulting 2006) and two phases of trial trench evaluation (Archaeology South-East 2007; 2011). The excavation site was in two parts – Area 1 at the south-west covering 7070 m² centred on NGR 635970 167780, and Area 2 covering 1010 m² centred on NGR 636040 167870 (Fig. 1). The site was located on relatively flat ground within a cultivated field, at c. 44–47 m above Ordnance Datum. Below the ploughsoil was an orange-brown silty clay subsoil overlying degraded and Chalk natural with involutions filled with patches of clay-with-flints. The geology is mapped as Head brickearth overlying Upper Chalk (British Geological Survey sheet 274, Ramsgate).

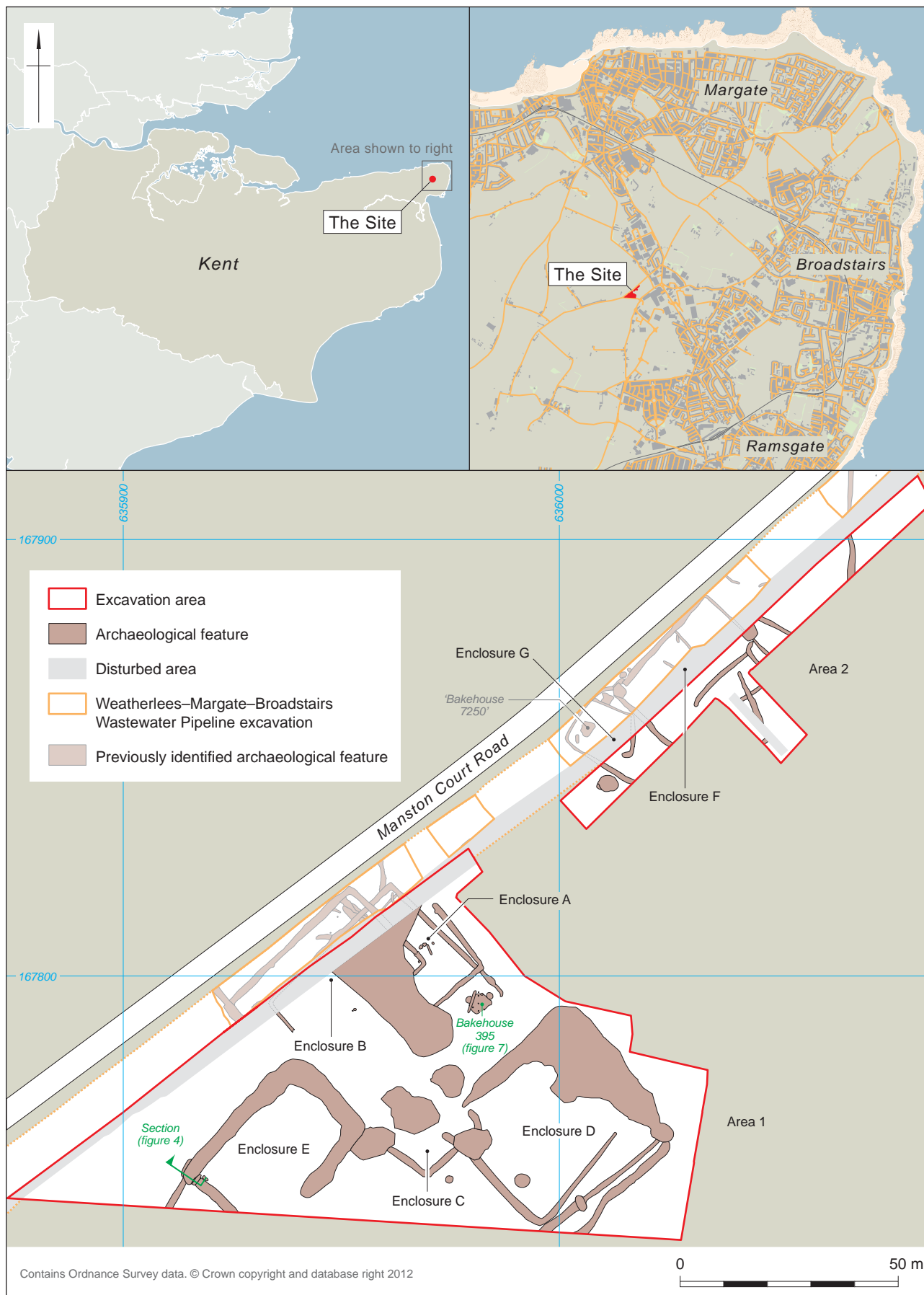


Figure 1 Site location, and plan of all features

Results

The enclosures

Ditches defining parts of a number of rectangular enclosures, some of them previously excavated within the pipeline easement, were further exposed within both areas of the site (Figs 2 and 3). The enclosures, some overlapping, all had the same general orientation, with their longer axes aligned north-east to south-west.

Enclosure A and B

Enclosure A, which had part of its north-eastern side defined ditch 380, appears to have been the earliest of a sequence of overlapping enclosures at the north of Area 1. The ditch was *c.* 1.1 m wide and 0.3 m deep, but it narrowed at the south-east, and turned slightly to the south, probably at the enclosure's eastern corner, before either terminating or petering out. Part of its north-western side was exposed in the pipeline easement, while a short length of slightly narrower, unexcavated ditch, *c.* 38 m to the south-west, could represent its south-western side, giving it dimensions of *c.* 38 m by 35 m. The general absence of any ditch defining the southern part of the enclosure may indicate heavier truncation in this area, although it is possible that the enclosure was open to the south-east. The position of the enclosure's eastern corner may be related to bake-house 395 (see below). The ditch produced a single sherd of pottery dated 1225–1350.

The eastern corner of a later enclosure (Enclosure B) is represented by ditch 392 (its stratigraphical position visible within the pipeline easement where the enclosure's north-western side had been exposed), suggesting a remodelling of Enclosure A, with a westward shifting by *c.* 10 m. Only *c.* 11 m of ditch 392 was visible (with evidence of recutting in the northern section), as it was cut at both ends by an area of extensive quarrying (240, below), but it revealed that this enclosure measured *c.* 23 m by 37 m. Again, truncation appears to have removed any trace of ditch towards the south: the ditch forming its south-west side within the pipeline easement, for example, was not recorded in Area 1, and ditch 392 was not recorded south of quarry feature 240.

A third ditch (379) also post-dated Enclosure A, cutting across ditch 380, but having a slightly different orientation to both Enclosures A and B. This suggests that it may have been the latest of these three ditches, although as only one angled corner was visible it may not have defined an enclosure. It measured up to 1.5 m wide and 0.35 m deep (and also had evidence of localised recutting). At the south it was cut by (and again not traced beyond)

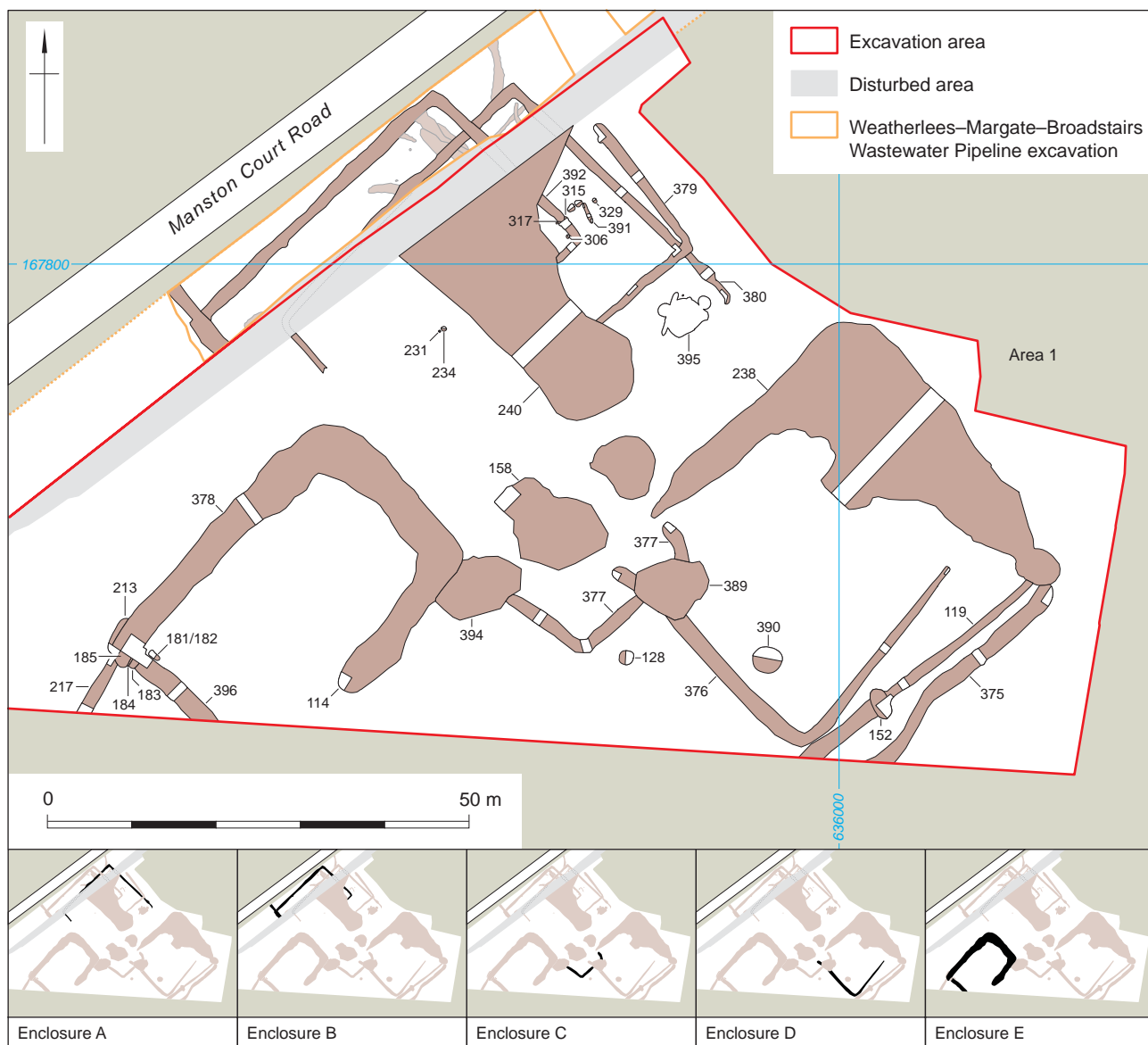


Figure 2 Area 1 and associated features in the pipeline easement (enclosure colours to facilitate identification only)

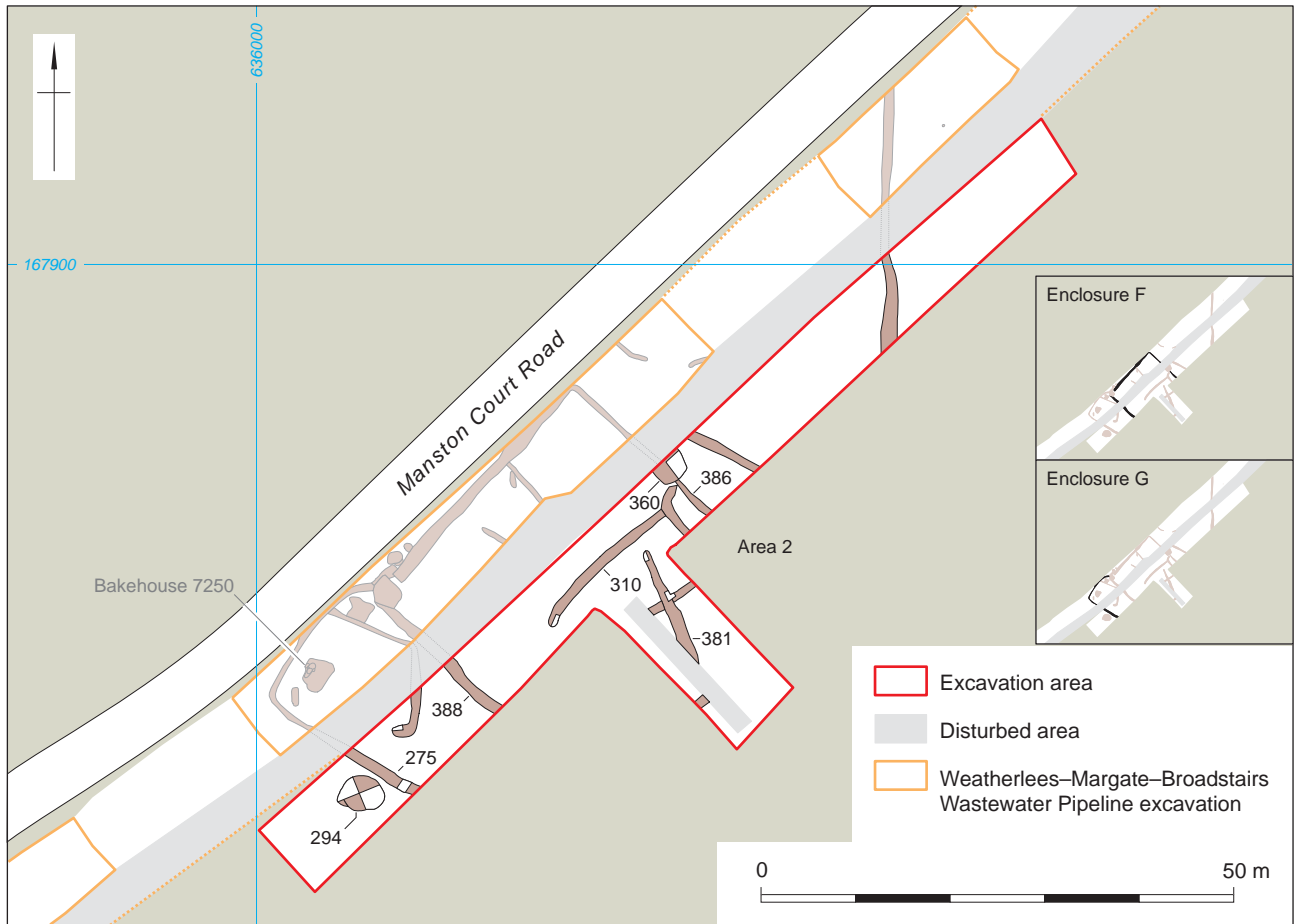


Figure 3 Area 2 and associated features in the pipeline easement (enclosure colours to facilitate identification only)

quarry feature 240, while at the north it ended in a rounded terminal; no corresponding ditch was recorded in the pipeline easement.

Enclosures C and D

Further ditches, all but one of broadly similar scale to ditches 379, 380 and 392, were recorded in the southern part of Area 1, suggesting further possible enclosures and phases of modification. These included ditch 377, which appears to define parts of three sides of a possible enclosure (Enclosure C). The ditch was cut at the west a quarry pit (394) but its line beyond that was followed (and possibly truncated) by, first, the much more substantial ditch (378) of Enclosure E (below), and then possibly (within the pipeline easement) by the ditch forming the south-western side of Enclosure B (but also continuing beyond that). To the east, ditch 377 turned to the north-east, then curved north-west to a rounded terminal. It contained pottery dated 1225–1350 (as well as a residual flint scraper).

Apparently intersecting with ditch 377 was ditch 376, although the intersection (and therefore their stratigraphical relationship) was obscured by quarry pit 389. Ditch 376 ran south-east for 30 m from a rounded terminal, then turned to the north-east for 26 m narrowing to a *c.* 0.6 m wide terminal. It contained no finds. South-east of ditch 376, and diverging slightly from its line towards the north-east, were two roughly parallel ditches (119 and 375), both also containing no finds. They were mostly just over 1 m apart, but ditch 375 (which showed evidence of recutting) followed an irregular line to the south. They continued south-west beyond the edge of the excavation, and at the north-east they were cut by the eastern end of an extensive area of quarrying (feature 238, below) – in the case of ditch 375, just before it terminated. That ditch 376 (and possibly ditches 119 and 375) may have defined the south-eastern and south-western sides of an enclosure (Enclosure D) is suggested by the fact the outer edges of quarry feature 238 have a broadly rectangular form mirroring the lines of the ditches.

Enclosure E

The most westerly enclosure (Enclosure E) was defined on its north-west, north-east and south-east sides by a much more substantial ditch (378) between 3 m and 5 m wide, with moderately steep, slightly convex sides, and a slightly concave base. It varied considerably in depth – between 0.9 m at its western terminal (185) and 1.5 m towards its northern corner. A narrower ditch (396), *c.* 2.5 m wide and 1 m deep, appeared to mark the enclosure's south-west side, while another small ditch (217) continued the line of the enclosure's north-west side towards the south-west. The enclosure measured *c.* 31 m by 19 m internally, with an entrance in the southern part of the south-east side.

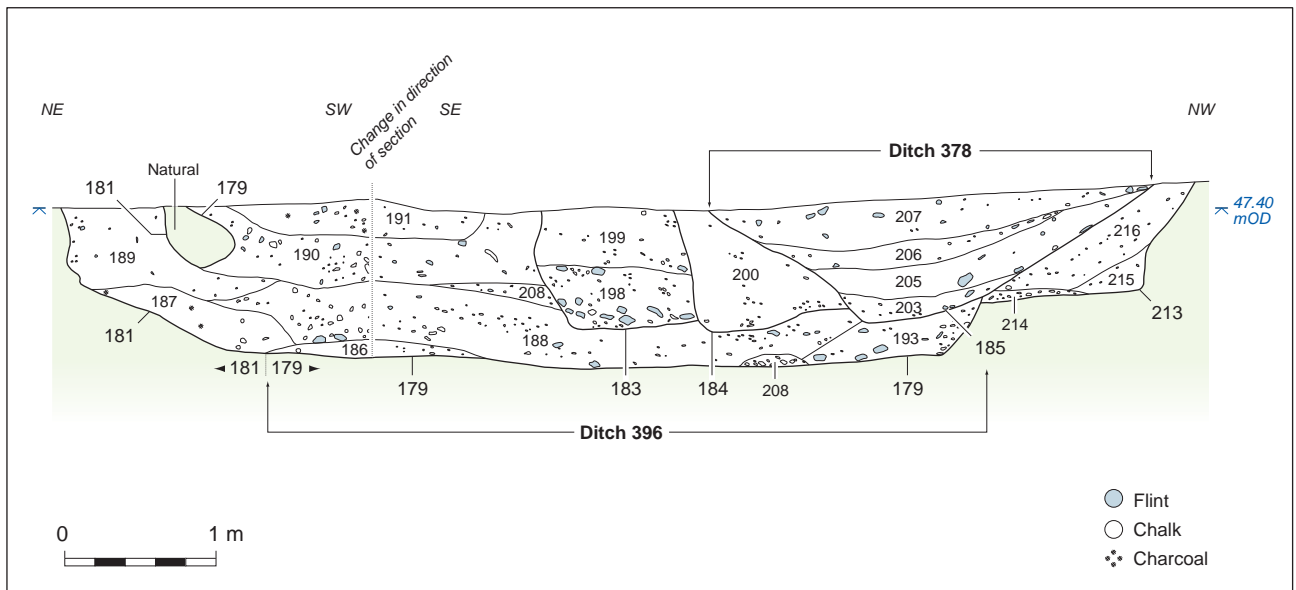


Figure 4 Section of Enclosure E ditch and associated features

A single fill was recorded in the eastern terminal (114) of ditch 378, from which was recovered five fragments of lava quernstone and 182 marine shells (mainly limpets, periwinkles but also oyster). A further six quern fragments were recovered from the western terminal (185), and in total the ditch produced 24 sherds of pottery, most dated 1225–1350; some earlier sherds (1075–1250) were recovered from the same contexts and were therefore probably residual.

The western terminal (185) was stratigraphically the latest cut in a complex of intercutting features at the enclosure's south-west corner (Fig. 4). Among the earliest of these was feature 213, *c.* 4.6 m long, at least 1.4 m wide, and 0.8 m deep, with a steep north-western side and a flat base. It contained no finds. This was cut by the north-western end (179) of ditch 396, and by the north-east end of ditch 217 (not visible in section).

Ditch 396 was cut, in turn, by a sequence of two pits (183 and 184), both *c.* 0.8 m deep with vertical sides and flat bases (Fig. 4). The earlier of these (183) had been backfilled with a lower deposit of brown soil containing frequent flint nodules, and an upper fill of redeposited chalk rubble; the later pit (184) had a single backfilled layer of light brown very chalky soil. The only find from either pit was an iron nail from the flint layer in 183. Pit 184 was cut by the ditch terminal (185).



Figure 5 Chute-like features 181 (left, half sectioned) and 182 (right) on the edge of ditch 396, Enclosure E, viewed from the north-east

Immediately east of pits 183 and 184 there was curious feature (181/182 – possibly two adjacent features) in the western corner of the enclosure, along the inner edge of, and apparently connected to ditch 396 (Figs 5 and 6). At the surface it had the appearance of a single subrectangular feature, *c.* 1.5 m long and *c.* 0.7 m wide, filled at the top with a slightly chalk-flecked brown silty clay (189) distinct from the natural geology of involuted clay and degraded chalk. At a depth of *c.* 0.3 m, however, it split into two diverging parts – 181 at the south-east, cut by 182 at the north-west, which undercut the northern side of the ditch. Their bases sloped down towards the ditch base and emerged as adjacent large cavities in the ditch side, their fills interleaving with the lower ditch fills (Fig. 4).



Figure 6 Bases of Chute-like features 181 and 182 on the edge of ditch 396, Enclosure E, viewed from the west (the unexcavated top of these features is visible as rectangular area of lighter brown soil)

These features have the appearance almost of ‘waste disposal chutes’ and it is notable that feature 182 contained a rich assemblage of finds and environmental material. Its three fills produced 59 sherds of pottery (2033 g), from at least three vessels, comprising a Tyler Hill jar dated *c.* 1225–1350 (Fig.11.2) from the lowest fill (192), large parts of a flared bowl or curfew (an inverted bowl used to cover fire embers) (Fig. 11.1) from the layer above (210), and a single sherd from a glazed jug from the uppermost fill (211), the latter two vessels both dated *c.* 1150–1250. Five fragments of animal bone, a fish vertebra, and an iron possible nail were also recovered, along with a large quantity of well-preserved charred plant remains, including cereal grain and chaff (free-threshing wheat and barley) and weed seeds, and charcoal (mainly of mature wood). There were no indications of cess, however. The only

finds recovered from the adjacent section of ditch 396 (179) were seven fragments of lava quernstone. No finds were recovered from feature 181.

This feature seems an overly elaborate means of disposing rubbish into the ditch, unless its upper part lay within some structure inside the enclosure that was built up to the edge of the ditch. However, no other features were recorded inside Enclosure E, and it is possible that all traces of any internal structures have been truncated. Some material appears to have been dumped directly into ditch 396 (as it was into ditch 378) – the excavated slot (109) 4 m to the south-east of feature 181/182 contained 125 marine shells (mostly mussel and limpet, but also oyster and periwinkle), and fish scales were also recovered; there were also smaller quantities of charred plant remains, including further barley and wheat.

Enclosures F and G

A less coherent arrangement of ditches appear to define a number of phases of enclosure in Area 2 (and the adjacent section of the pipeline easement) (Fig. 3). However, two short lengths of ditch (388 and 386) appear to form (with corresponding ditches in the pipeline easement) a rectangular enclosure (Enclosure E) measuring *c.* 30 m by at least 20 m, its north-western side on same line as that of Enclosure A.

In addition, the westward extension of the most southerly of the Area 2 ditches (275) was seen in the pipeline easement to curve northwards around the previously recorded bake-house, possibly enclosing it (Enclosure G), suggesting that these two features were associated. However, the relationship between ditch 275 and that of Enclosure F was obscured by a deep pit.

The other ditches in this area appear more random in their orientation and position, although it is noteworthy that ditches 310 and 381, which could be spatially associated, both contained pottery sherds of only early medieval date (within the range of *c.* 1050–1250), suggesting that some of these ditches, if not the majority, could pre-date the more rectangular enclosures.

The bake-house

The bake-house (395) lay just inside what appears to have been the eastern corner of Enclosure A (Figs 2, 7). Although there is no direct association between the enclosure and the structure, it is noted that the bake-house at Fulston Manor was also located in the corner of an enclosure (Powell *et al.* 2009, fig. 3.2), while that in the pipeline easement also lay inside the bend in a ditch, albeit of a less easily identifiable enclosure (above). Structure 395 consisted of a large subrectangular hollow with a number of associated post-holes close to its edge, two

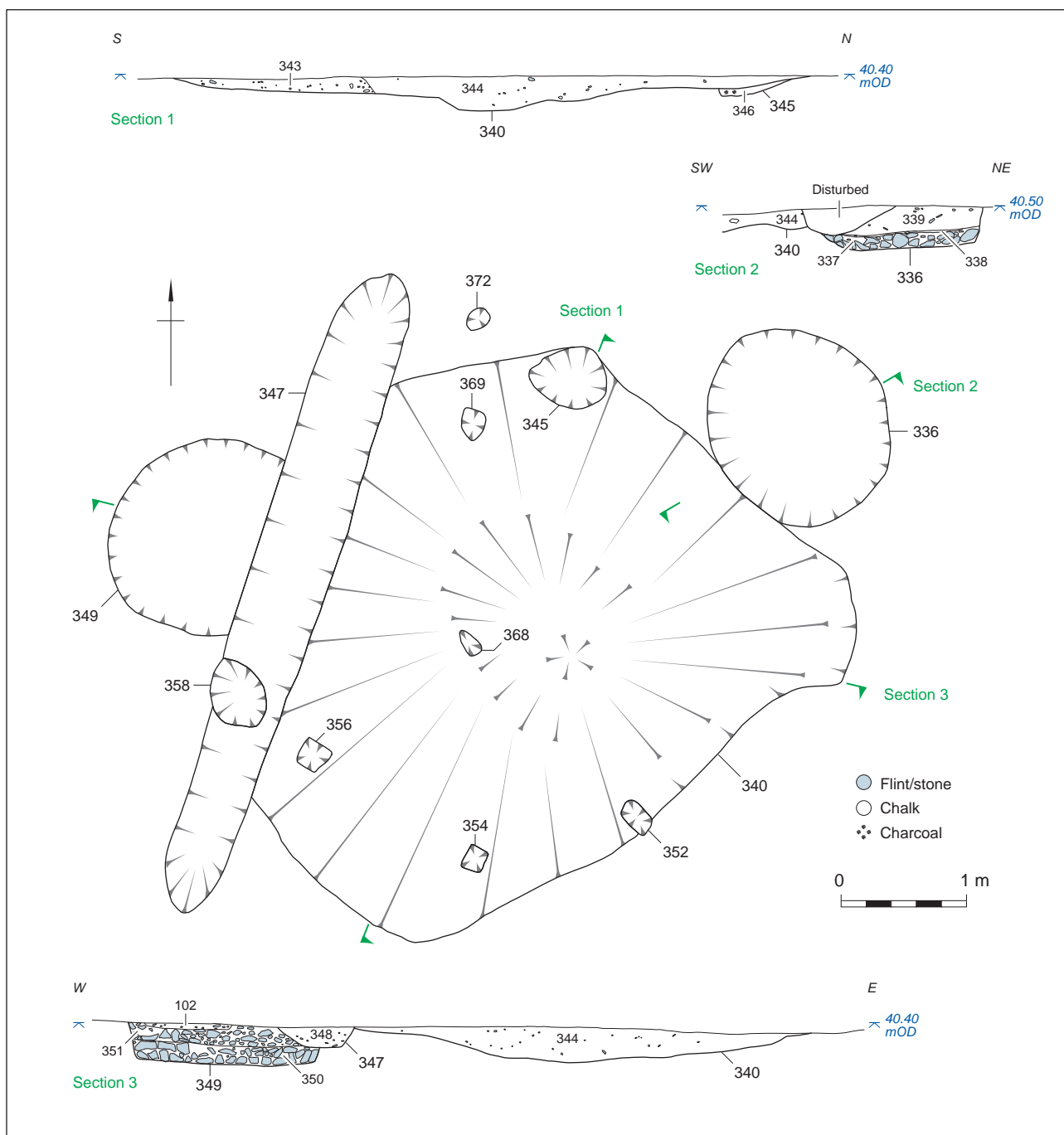


Figure 7 Bake-house 395: plan and sections

circular, flint-filled shallow pits, interpreted as oven bases, on its north-eastern and north-western sides, and small possible hearth near its northern corner (Fig. 7). The structure had been heavily truncated.

The hollow (340) measured up to 3.9 m by 4.8 m wide, with shallow to moderately steep sides to the south-east and south-west, and an irregular base, with a maximum depth towards the centre of *c.* 0.3 m. Most of the hollow was filled with a single fill (344), although at the southern corner this overlay a patch of slightly stonier soil (343) which sealed a thin ashy deposit (342) containing charred grain fragments of barley and free-threshing wheat (Table 2); further ashy patches were noted elsewhere on the base of the hollow, and further cereal remains were recovered from layer 344 (Wessex Archaeology 2012, Appendix 2). The only finds were seven pieces of probably residual worked flint.

Around the southern side of the hollow was an arc of four post-holes, the outer two (352 and 358) on the edge of the hollow, and the inner two (354 and 356) located in from the edge. Another post-hole (368) lay at the centre of the hollow, while at the north, post-hole 369 also lay in from the edge, while post-hole 372 lay just outside (although it too may have lain on the edge before the hollow was truncated). It is unclear whether these were structural post-holes, although their generally small size (*c.* 0.2 m wide, apart from post-hole 358 which measured 0.4 m by 0.6 m), suggests that some at least may have been related instead to activities within the structure. The building's superstructure may have rested on sleeper beams of which no traces survive.

Many of the comparable bake-houses previously identified in Kent, including that *c.* 65 m to the north-north-east within the pipeline easement (Egging Dinwiddy and Schuster 2009, 135–7; fig. 2.30), contained two adjacent features – a circular feature interpreted as a bread oven, and a smaller, often 'pear-shaped' hearth with a range of possible uses, including possibly in relation to brewing (Schuster and Stevens 2009, fig. 5.2; Powell *et al.* 2009, 183). This structure, however, appears to have differed in two respects.

Firstly, there were two circular 'oven' features associated with it – feature 336 at the north-east, and feature 349 at the north-west. Secondly, both features appear to have lain immediately outside the hollow rather than inside it. However, the truncation of the bake-house may mean that only the deepest part of the hollow has survived, and its original full extent may have encompassed both ovens. Moreover, the western stratigraphical relationship between the hollow and oven 349 is obscured by a later gully (347, below). The relationship between feature 336 and the hollow was also obscured during the excavation by an earlier evaluation trench (Trench 8), although during the evaluation, feature 336 (evaluation context 8/004) was recorded as cutting the infilled hollow (8/006) (Archaeology South-East 2007, fig. 4).

Feature 349 was *c.* 1.6 m in diameter and 0.3 m deep, with very steep straight sides and a flat base. Filling its lower half was a layer of flint nodules (350), among which were 24 pieces of lava quernstone, one piece of a Greensand rotary quernstone, one fragment of a Millstone Grit, one piece of coarse igneous rock probably also from a quern, and seven pieces of slab-like, fine-grained sandstone with no obvious signs of working; together these 34 stone pieces weighed 9364 g. The layer had a flat upper surface. It was overlain by a second layer of flint nodules (351) from which only four fragments (8 g) of other stone (lava quernstone) were recovered. Environmental samples from this layer produced charred grain fragments of free-threshing wheat and barley, including a few that were germinated (Wessex Archaeology 2012, Appendix 2). Neither of the flint layers, however, displayed evidence of *in situ* burning or heating.

Layer 351, however, did contain 62 marine shells (limpets and periwinkles); this is of note since a layer of marine shells was recorded in the oven in the pipeline easement, lying around the edge of the flint layer below the oven floor; shell was also a component of the cob-like material of compacted, crushed chalky silt which made up that oven's walls (Egging Dinwiddy and Schuster 2009, 136).

Feature 336 was of similar if slightly oval form, measuring 1.4 m by 1.6 m, although it had a shallower south-western side. Its lower fill (337), as in 349, comprised a layer of flint nodules containing fragments of compacted chalk – possibly remnants of the cob-like material used to construct the oven walls. However, the layer contained no other stone types, or other finds, and no environmental remains were recovered from it. Its flat upper surface was overlain by a thin layer of soil (338) from which a few charred indeterminate cereal grain fragments were recovered (Wessex Archaeology 2012, Appendix 2), then by an upper soil fill (339) similar to that filling the hollow. In this feature, also, there was no evidence of *in situ* burning.

There were no indications within either feature of the ovens' walls or floors, but the absence of any sign of *in situ* burning in these features is surprising. The purpose of the stone layers would have been to absorb heat when the oven was fired, and then radiate it back into the oven at an even rate, during its operation. If such ovens were used primarily for baking bread, they would have operated at relatively low temperatures compared, for example, to pottery kilns or industrial furnaces. The two distinct stone layers in oven 349 may indicate the rebuilding of the oven; multiple flint layers were noted in the oven at Fulston Manor, but there they were interleaved with layers of burnt clay representing a sequence of oven floors (Powell *et al.* 2009, fig. 3.5).

To the west of oven 336 was shallow oval feature (345), *c.* 0.5 m by 0.6 m, with a steep southern side, but its base sloping up to the north, and containing a single fill of dark clay burnt clay and cob. The position of this feature, and less than 1 m from oven 336, is

comparable to that of the secondary hearth features (or ‘keyhole’ oven) found in many similar bake-houses. As in the majority of such structures, the hearth lies to the left of the oven (when viewed from inside the structure) (Schuster and Stevens 2009, fig. 5.2); less typically, their positions were reversed within the bake-house in the pipeline easement.

Other features

A range of features lie among the enclosures, although they need not be contemporary with them.

Area 1

Northwest of bake-house 395, within the area of Enclosure A, there was a cluster, under 6 m across, of eight features. They included a short length of undated gully (391), 2.5 m long, aligned NNW–SSE (and therefore at an angle to the enclosure ditches) interpreted on site as a possible beamslot, but having a U-shaped profile 0.4 m wide and 0.13 m deep. To its east was an undated post-hole (329), and to its immediate west a pair of 0.8 m wide pits (285 and 288), both containing pottery dated 1075–1250. Further south-west, were pits 315 and 317 (which cut ditch 392) were both 0.14 m deep and appeared to have been burnt *in situ*, and a small cut (306) in which had been placed a rounded jar (dated 1150–1250) (Fig. 8). A few charred



Figure 8 Jar in pit 306

cereal fragments were recovered from the vessel (Wessex Archaeology 2012, Appendix 2), which had soot around the base, but not the wide range of plant and animal remains found in a similarly placed pot just outside the medieval enclosure at Fulston Manor (Powell *et al.* 2009,

187 and fig. 3.2). The vessel could have been placed there during use, on analogy with other buried vessels within buildings (e.g. Moorhouse 1986, figs. 13 and 14). Also in this group was an undated post-hole, just inside the corner of ditch 392.

While the proximity of these features suggests that at least some of them were associated, they form no obvious structure and have no obvious combined function. However, it is notable that the pottery from two of these features (285 and 288), as well as the single vessel, were all of relatively early date (pre-1250), while features 315 and 317 appear to have been relatively late (at least stratigraphically), cutting the ditch of Enclosure B. Approximately 20 m south-west of this group there was a small burnt feature (234), containing 99 sherds (454 g) of pottery (dated 1225–1350) and burnt flint, and an adjacent post-hole (236). Both were heavily truncated (c. 0.5 m deep), reflecting the truncation of the enclosure ditches in this area.

There were three features in the vicinity of Enclosure D. Outside it, to the west, was a well 128, c. 1.5 m in diameter at the top, with concave upper sides narrowing to c. 0.8 m at a depth of 1 m, then dropping near-vertically to 1.2 m depth where excavation stopped. Augering indicated it was at least 4.2 m deep, with a silty clay fill (129) in the top 3.7 m, below which the fill contained more chalk inclusions (130). It produced no finds.



Figure 9 Section of feature 390 viewed from the north

Approximately 14 m to the east, in the angled formed by ditch 376, was a large undated circular feature (390), c. 3.5 m diameter and up to 1 m deep with moderately steep concave sides but an irregular base, the natural in the base comprising disturbed chalk and patches of clay (Fig. 9). This feature was interpreted in the field as two adjacent pits, one of them cut by

a substantial post-hole with a dark organic fill; the tops of all three features were subsequently truncated by a large circular feature, *c.* 0.5 m deep, later recut and backfilled with a layer of large flint nodules. A possible alternative interpretation is that this is a tree-throw hole into which the flint nodules were either deposited or accumulated naturally. The feature contained no finds.

Ditch 119 was cut by an oval pit (152), 2 m by 3.8 m, and *c.* 2 m deep (its depth below 1.2 m established by augering), with steep, in places undercut sides. Nine fills, resulting from erosion of the sides and natural silting, were recorded. The only finds, all in copper alloy, were all from the uppermost fill (159) – a small rectangular buckle that is not closely datable; a short length of binding strip possibly from a book or casket binding; and three small sheet fragments.

Area 2

Only two features apart from ditches were recorded in Area 2. In the south, possible well 294 measured *c.* 3.7 m by 4.7 m, and at least 3 m deep (its depth below 1.3 m established by augering). At the top the sides were moderately steep, but curved to near-vertical at a depth of 1.2 m, where it was *c.* 1 m in diameter. A sequence of 11 fills were recorded, from which only two sherds of pottery, dated 1225–1350, was recovered from the uppermost fill, along with two probably residual flints.



Figure 10 Feature 360 viewed from the south-east

Feature 360, which cut the north-eastern side of Enclosure F (on the edge of the excavation), appeared at the top to be subrectangular in shape, measuring *c.* 3.6 m by at least 2.6 m. However, below ground it was of irregular form and profile, slightly stepped to the south-east where four small possible stake-holes lay in a shallow arc cutting the side, but steep at the north, descending to a flat base at a depth of 1.1 m (Fig. 10). This feature is of uncertain function. There was a compact layer of burnt clay and chalk cob (361), up to 0.07 m thick, on the base, black on its surface but turning to red below, and therefore possibly burnt *in situ*, although there was no evidence of burning on the sides of the cut; it contained charred grain fragments of barley and free-threshing wheat. This was overlain by two layers of slightly chalky soil, then a main fill of largely chalk-free soil filling the rest of the feature to within 0.15–0.25 m of the base, from which two sherds of pottery, dated 1225–1350, were recovered.

Quarry features

Evidence of a phase of possible quarrying in Area 1 is represented by a number of large discrete features (e.g. 158, 389 and 394), and by two more extensive areas (238 and 240). The only excavation of the smaller features, which were of irregular shape and *c.* 10–13 m wide, was a slot excavated through the northern end of features 158, which revealed a 0.24 m deep cut with steep-sides and a flat base; its single fill produced a sherd of pottery dated 1225–1350, fragments of fired clay, and two pieces of flint. In addition, the use of a metal detector led to the recovery from pit 394 of two small copper alloy buckles (Objects 1 and 9). Features 389 and 394 both cut ditch 377 (Enclosure C), the former also cutting ditch 376 (Enclosure D); the relationship between feature 394 and ditch 378 (Enclosure E) was not established. Of the more extensive quarry area, feature 240 was at least 30 m long, cutting across Enclosures A and B, but appearing not to have extended into the pipeline easement. The excavation of a slot near its narrow midpoint showed it was up to 1.5 m deep, with two apparently backfilled deposits (241 and 242); no finds were recovered.

As mentioned above, the outline of the other extensive area of quarrying (238), which was *c.* 40 m long, suggests that its extent was related to the northern side of possible Enclosure D. The single excavated slot revealed it to be of similar depth to feature 240. Its one recorded fill produced ten sherds of pottery dated 1225–1350, and two fragments of lava quernstone. Metal detection also led to the recovery of a copper alloy buckle and a copper alloy key (Fig. 12), an iron object and two iron nails. Each of these large features appeared to be the product of single phases of quarrying, the section revealing no intercutting of smaller pits.

Finds

by Lorraine Mephram

A small finds assemblage recovered during the excavation was primarily of medieval date but also included some earlier (prehistoric) and later (post-medieval) items (Table 1).

Table 1 Finds totals by material type

Material type	No.	Wt. (g)
Metalwork	31	-
<i>Lead</i>	3	-
<i>Copper alloy</i>	12	-
<i>Iron</i>	16	-
Pottery	327	3822
<i>Early medieval</i>	59	1027
<i>Medieval</i>	268	2795
Stone	64	10,076
Worked flint	30	294
Fired clay	74	-
Shell	369	-
Animal bone	7	-

Pottery

All the pottery is of medieval date. In general it is in good condition; one vessel was apparently deposited complete, and two other contexts produced large sherds of single vessels making up complete profiles. Sherds are mostly unabraded, although a few dated as earlier medieval have suffered higher levels of abrasion. The pottery has been quantified within each context by fabric type, using the Canterbury (CAT) type series.

Six sherds, from the terminal of ditch 310, are early medieval Canterbury sandy ware (EM1) (Cotter 2006, 134). This closely resembles M1, but is here distinguished on the grounds of vessel form, the sherds including a jar rims of undeveloped, early medieval form, one with the externally beaded profile typical of the period *c.* 1075–1125/50 (e.g. Cotter 1992, fig. 3, 1). Other early medieval wares, including shelly (EM2) and shelly/sandy (EM3), are also present as body sherds, in all cases small and abraded (from associated ditch 381, and from paired pits 285 and 288).

Excluding the complete vessel from pit 306, the majority of the sherds (169) are in a single fabric type: medieval Tyler Hill ware (M1). This is unsurprising given that the Tyler Hill, *c.* 23 km to the west near Canterbury area, is the nearest known medieval kiln source in

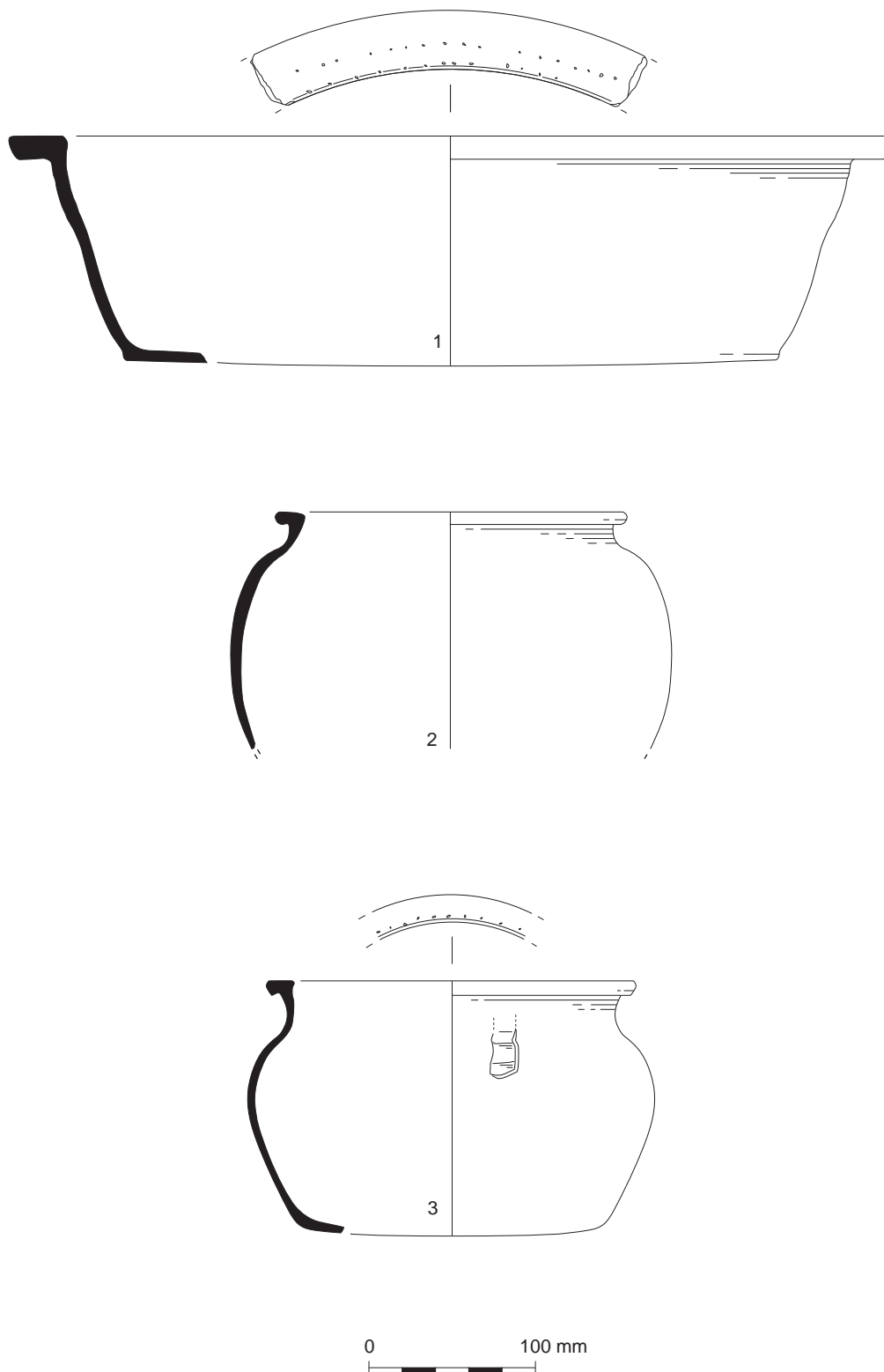


Figure 11 Medieval pottery: 1) shell-dusted flared bowl from feature 182 (context 210); 2) Tyler Hill jar from feature 182 (context 192); 3) complete shell-dusted jar from pit 306 (context 308)

operation, spanning the medieval period from at least the 12th century (Cotter 1992). Fabric M1 has a date range of *c.* 1225–1350.

Diagnostic sherds come from jars, a bowl, and one strap-handled jug. Feature 182 contained a large part of a single jar, of typical convex profile, necked and with a squared rim (Fig. 11.2). The jar is externally sooted, revealing use, but is also spalled, suggesting a firing fault (in which lens-like portions of clay flake or ‘spall’ off the surface, due to over-rapid heating during firing); this vessel may have been a ‘second’. Two other jar rims, of similar squared form, one with pin-prick stabbing, came from the terminal of ditch 377 and waterhole 294, respectively. Five other, smaller rim sherds, some with pin-prick stabbing (burnt feature 234 and enclosure ditch 380), could derive from either jars or bowls. One definite bowl was identified, of flared form, with a squared rim similar to the jars, and also carrying pin-prick stabbing. Although some of these vessels in Tyler Hill ware carry glaze splashes, this in most cases is accidental, and only one sherd, from feature 182, from a horizontally rilled, rounded vessel, probably a jug, appears to have been deliberately glazed, with a patchy pale olive green glaze.

One complete vessel, and a small group of other sherds, are in a variant of fabric M1, with surface shell-dusting (EM.M1). The complete vessel (fragmented when excavated due to ancient breaks), deliberately placed within a shallow cut (306), is a rounded jar with a squared rim with pin-prick stabbing, and decorated with vertical applied thumbled strips on the body (Fig. 11.3). There is sooting on the underside of the base and up the lower part of the vessel sides. Most of the other sherds (from feature 182) belong to a single vessel, which survives as a complete profile of a flared bowl with a squared rim; the rim is markedly heavy, and has a double row of pin-pricks (Fig. 11.1). It is possible that it is in fact a curfew (an inverted bowl used to cover fire embers), although such forms are rare in this fabric, and a similar example from Canterbury is illustrated as a bowl (Macpherson-Grant 1981, no. 97). One other smaller rim, from either a jar or bowl, also with a double row of pin-pricks, came from enclosure ditch 378.

One body sherd is in a sandy greyware fabric, probably from north or west Kent (M38A); this ware type has a wide potential date range of *c.* 1150–1400.

Stone

Most of the stone recovered (57 pieces) comprises fragments of lava quernstones. These were imported into Kent from the Late Iron Age and through the Romano-British period, and then reintroduced in the mid-late Saxon period (perhaps as early as the 7th century), continuing in use well beyond the Norman Conquest. In the medieval period lava was the dominant stone

type for hand querns, although by the 12th–13th centuries, the increasing number of water mills had led to a reduction in their use (Watts 2006; Riddler and Vince 2005). Almost half of the fragments (28 pieces) came from oven 349 (in bake-house 395), while a further 11 and nine pieces came from enclosure ditches 378 and 379, respectively. Others were residual in later medieval/early post-medieval contexts (e.g. quarry pit 238).

The remaining stone includes three other quern or millstone fragments, all from oven 349: one in a coarse igneous rock, one in Millstone Grit (a ubiquitous stone type for querns from the late medieval period), and one in Greensand. Also from the oven were seven pieces in a fine-grained sandstone, all showing some signs of having been burnt. Three are slab-like pieces, and could have been worked to this form, while the others are irregular and show no obvious signs of working.

Metalwork

Copper alloy

Four copper alloy buckles were recovered; two are small, rectangular buckles which are not closely datable (from pit 152 and quarry pit 394). Quarry pit 394 also contained a simple annular buckle (similar in form to an annular brooch, but lacking the constriction to hold the pin in place on the frame), broadly of mid-13th to mid-15th century date. Its size (diameter 26 mm) puts it within a group thought to function as belt buckles (Whitehead 1996, 16–7). The fourth buckle, from quarry pit 238, is a double loop oval form with moulded knobs either end of the strap bar, a type dated c. 1500–1650 (*ibid.*, 54).

A large key, from quarry pit 238, is of a type dated to the 14th and 15th centuries (Ward Perkins 1940, type VI, pl. 29) (Fig. 12). The type is characterised by a solid shank bored at the end, a massive bit, and the elaborate form of the bow – in this instance lozenge-shaped and pierced with a quatrefoil, and with elaborated corners.

Also present is a short length of binding strip, C-shaped in cross-section, with two rivet holes (one rivet *in situ*), and retaining traces of white metal plating on the upper surface (from pit 152). This may be a book or casket binding.

A piece of sheet roughly folded into a conical form, with a single incised line around the top, was recovered from the subsoil. It may be a simply made scabbard chape; a similar item, although more highly decorated, is known from Clarendon Palace, Wiltshire, with a likely date of 13th century (Goodall *et al.* 1988, fig. 70, 15), and another plain example, although larger, is known from Battle Abbey, Sussex (Geddes 1985, fig. 50, 42). Also from the subsoil was a small disc, perforated for use as a pendant, and covered in Arabic characters on both sides; this is presumed to be a modern item.



Figure 12 Late medieval key from quarry pit 238 (context 239)

Lead

The lead comprises a small conical weight (28 g/1 oz), a narrow strip wound round into a 'collar', and a torn sheet fragment; all these items came from the subsoil.

Iron

The ironwork includes two buckles. One, from ditch 379, is a single-loop kidney-shaped buckle with buckle plate attached and pin *in situ*; the type is dated *c.* 1450–1550 (Whitehead 1996, 25). The second is a large double-loop oval buckle, broader across the strap bar than across the frame. Buckles of this type were used to secure a baldrick (a belt slung from shoulder to waist, from which the sword belt was suspended), an item worn by both military personnel and civilians through much of the 17th century (*ibid.*, 52). This example came from the subsoil.

Other objects include a wide rectangular staple (pit 360), and an unidentifiable object of plate metal (quarry pit 238). The remaining ironwork consists of nails and miscellaneous fragments.

Other finds

A small group of residual prehistoric worked flints was recovered. It consists mostly of waste flake and core material, but there is one end scraper and one blade, the latter rolled and heavily edge-damaged. Raw material is in most cases a variegated dark grey/light grey flint; the end scraper is in Bullhead flint, and there is one waste flake in a pale grey, cherty material.

Sixty-nine fragments of fired clay were retrieved from a soil sample taken from feature 360. These are in a soft silty clay, containing rounded chalk fragments, characteristic of 'cob' building material. Five pieces of undiagnostic fired clay from feature 158 are of unknown date and function.

One very eroded piece of cattle radius was recovered from oven 349; and six small fragments retrieved from soil samples from ditch 396 and feature 182. A few fish scales were recovered from samples taken from ditch 396, and a fish vertebra from feature 182.

A small amount of marine shell (four species) was recovered: oyster (*Ostrea edulis*; 3 shells), mussel (*Mytilus edulis*; 75 shells), periwinkle (*Littorina littorea*; 102 shells) and limpet (*Patella* spp.; 186 shells). The oysters includes both left and right valves (i.e. both preparation and consumption waste), but none of the valves are measurable. The assemblage is quite distinctive in its composition, both in terms of the range of species recovered and the predominance of periwinkles and limpets. This is very similar to the assemblages recovered from Saxon features at the nearby site at Cliffs End, Ramsgate, which were likely to have derived from Pegwell Bay (Wyles forthcoming.). The shell came from just four contexts, in oven 349, ditches 378 and 396, and the subsoil.

Environmental evidence

Charred plant remains

by Sarah F. Wyles and Chris J. Stevens

Seventeen bulk samples were taken during the excavation for the recovery of charred plant remains and wood charcoal. These samples came from medieval ditches, pits, the bake-house, a chute-like feature, and a buried vessel. Their assessment showed a wide degree of variation, with a number of samples producing significant quantities of charred plant remains, in particular from chute-like feature 182 (Wessex Archaeology 2012).

On the basis of the assessment, four samples were chosen for full analysis. Two came from ditch 396 (cut 109) marking the south-west side of Enclosure E, and single samples from

feature 182 and the hollow (340) of bake-house 395. Given that sunken-featured bakery/kitchen features of medieval date have been found elsewhere in Kent, including previously at Star Lane (Schuster and Stevens 2009), it was hoped that the samples might throw further light on the nature and function of such features.

Methods

The bulk samples were processed by standard flotation methods; the flot retained on a 0.5 mm mesh, residues fractionated into 5.6 mm, 2 mm and 1 mm fractions and dried. The coarse fractions (>5.6 mm) were sorted for artefacts and ecofacts, weighed and discarded.

The flots were sorted and all identifiable charred plant macrofossils were extracted from the flots, together with the 2 mm and 1 mm residues. Identification was undertaken using stereo incident light microscope at magnifications of up to x40, following the nomenclature of Stace (1997) for wild plants, and traditional nomenclature, as provided by Zohary and Hopf (2000, tables 3 and 5), for cereals, and with reference to modern reference collections where appropriate. The charred plant remains were quantified and the results tabulated.

Results

The four analysed samples produced varying quantities of charred plant remains (Table 2). The largest assemblage was recovered from feature 182, with a rich sample also being retrieved from the nearby ditch context 111 (cut 109). The plant assemblages were all dominated by cereal remains, with only low numbers of weed seeds and other plant remains, apart from garden pea (*Pisum sativum*), vetch/pea (*Vicia/Pisum* sp.), oats (*Avena* sp.) and oat/brome grass (*Avena/Bromus* sp.), being recorded.

Grains of free-threshing wheat (*Triticum turgidum/aestivum* type) and barley (*Hordeum vulgare*) were present in all the assemblages, with free-threshing wheat being most numerous in the ditch. Among the large quantity of barley grains in feature 182 several had signs of germination, and a few looked twisted, indicative of six-row rather than two-row barley. However, it might be noted that no coleoptiles were observed within this assemblage despite the excellent preservation of charred material. Among the very high number of barley rachis fragments recovered from this feature a significant number could be identified as of two-row barley (*Hordeum vulgare* spp. *distichon*). A relatively small quantity of rye grains (*Secale cereale*) were also recorded from this feature. A few grain and glume fragments of hulled wheat, emmer or spelt (*Triticum dicoccum/spelta*), and a probable glume base of emmer (*Triticum dicoccum*) were seen in the assemblage from ditch context 110. Grain fragments were also more numerous than the chaff elements in all of the assemblages.

Weed seeds, other than vetch/garden pea and oat/brome grass, were present in relatively low numbers. These included seeds of dock (*Rumex* sp.), brome grass (*Bromus* sp.), stinking mayweed (*Anthemis cotula*), red bartsia (*Odontites vernus*), oraches (*Atriplex* sp.), corncockle (*Agrostemma githago*), cornflower (*Centaurea cyanus*), rye-grass (*Lolium* sp.) and rye-grass/fescue (*Lolium/Festuca* spp.), and common spike-rush (*Eleocharis* cf. *palustris*).

Table 2 Charred plant remains

Feature		Enclosure E ditch 396		Feature 181/182	Bake-house 395
Cut		109		182	340
Context		110	111	211	342
Sample		1	2	4	12
Volume (l)		40	30	4	5
Flot size (ml)		30	40	70	10
% roots		30	3	2	35
Cereals					
<i>Hordeum vulgare</i> L. <i>sl</i> (grain)	barley	9	31	350	14
<i>Hordeum vulgare</i> L. <i>sl</i> (rachis frag)	barley	cf. 1	5	438	3
<i>Hordeum vulgare</i> Spp. <i>distichon</i> L. <i>sl</i> (rachis frag 2 row)	barley	-	-	29	-
<i>T. dicoccum</i> (Schübl) (glume base)	emmer wheat	cf. 1	-	-	-
<i>Triticum dicoccum/spelta</i> (grain)	emmer/spelt wheat	1	-	-	-
<i>T. dicoccum/spelta</i> (glume bases)	emmer/spelt wheat	2	-	-	-
<i>Triticum turgidum/aestivum</i> (grain)	free-threshing wheat	15	93	83	6
<i>Triticum turgidum/aestivum</i> (rachis frags)	free-threshing wheat	2	7	16	-
<i>Triticum</i> sp. (grain)	wheat	1	-	-	-
<i>Secale cereale</i> (grain)	rye	-	-	8	-
Cereal indet. (grains)	cereal	32	130	191	38
Cereal frag. (est. whole grains)	cereal	51	128	140	82
Cereal frags (culm node)	cereal	1	2	65	-
Cereal frags (basal culm node)	cereal	-	-	4	-
Other species					
<i>Atriplex</i> sp. L.	oraches	-	-	1	-
<i>Agrostemma githago</i> L.	corncockle	1	-	2	-
<i>Rumex</i> sp. L.	docks	2	-	-	-
<i>Vicia</i> L./ <i>Pisum</i> sp. L.	vetch/pea	11	66	16	7
<i>Pisum sativum</i> L.	pea	3	21	14	3
<i>Odontites vernus</i>	red bartsia	-	1	-	-
<i>Centaurea cyanus</i> L..	cornflower	-	-	4	-
<i>Centaurea cyanus</i> L..	cornflower flower head	-	-	cf. 2	-
<i>Anthemis cotula</i> L. (seeds)	stinking mayweed	1	1	24	1
<i>Eleocharis cf. palustris</i> (L.) Roem. & Schult.	common spike-rush	-	-	3	-
Poaceae (small indet.)	small grass seed	-	-	2	-
Poaceae stem frag	grass	-	-	16	-
<i>Lolium</i> sp.	rye grass	-	-	10	-
<i>Lolium/Festuca</i> sp.	rye grass/fescue	-	7	-	-
<i>Avena</i> sp. L. (grain)	oat grain	2	10	8	3
<i>Avena</i> sp. L. (floret base) cf. cultivated	oat floret	-	-	8	-
<i>Avena</i> sp. L. (floret base) cf. wild	oat floret	-	-	1	-
<i>Avena</i> sp. L. (palea/ lemma)	oat palea/lemma	-	-	cf. 354	-
<i>Avena</i> sp. L. (awn)	oat awn	-	-	1	-
<i>Avena</i> L./ <i>Bromus</i> L. sp.	oat/brome	2	13	34	2
<i>Bromus</i> sp. L.	brome grass	1	-	-	-
Animal dung		-	2	-	-
Charred conglomerate of stems and seeds		-	-	11	-
Egg shell		-	-	4	-

The other economic plants included garden pea, particularly within ditch context 111. Oat grains were recorded in all of the assemblages, and of the nine oat floret bases recovered from feature 182, eight were likely to be from cultivated oats and one from wild oats. There was also a large number of oat palea/lemma fragments within this sample.

These weed seeds are generally typical of those recovered from arable habitats and field margins and are comparable with other assemblages of medieval date in the area. Stinking mayweed generally becomes more common in charred assemblages in the Anglo-Saxon and medieval periods (Greig 1991) and is characteristic of the cultivation of heavy clay soils (Green 1984), associated with the change from ards to mouldboard ploughs (Jones 1981; Stevens with Robinson 2004; Stevens 2009a). Corncockle has been seen elsewhere as accompanying the introduction of free-threshing wheat and rye (Jones 1988). There were also a few seeds of species more indicative of wetter environments, such as common spike-rush.

There was no evidence of any mineralization or cess material within these assemblages, although some fragments of charred animal dung were recovered from ditch 109. This is significant given the nature of feature 182 which appear to have had some function involving the disposal of waste from inside the enclosure into the ditch.

Arable farming, brewing and baking

The charred plant assemblages from these three features are similar to those analysed from the medieval features in the adjacent pipeline easement (Stevens 2009b) and at Fulston Manor, Sittingbourne (Powell *et al.* 2009). However, some distinct differences are noted and are discussed below.

Free-threshing wheat, mainly bread wheat, became the dominant wheat in southern England during the Saxon and medieval periods (Greig 1981), replacing hulled wheats, spelt and emmer. The small numbers of charred hulled wheat glumes on the site may be residual from earlier activity in the general area, although larger deposits of glumes of emmer have been dated to the mid-Saxon period from sites in the Thames Valley (Pelling and Robinson 2000; Pelling 2003) and to the early medieval period at the Olympic Park site in the lower Lea Valley (Wyles *et al.* 2012). The Saxon and medieval period also saw an increase of barley, oats and rye, although the last is poorly represented in these samples.

There are some differences between the assemblages from this excavation and those from the previous excavation in the pipeline easement (Stevens 2009b). Unlike three of the present assemblages, all the analysed samples from medieval contexts in the pipeline easement were dominated by barley, and had a greater presence of rye. While the sample from feature 182 contained many more barley grains than those of free-threshing wheat, it differed from those recorded in the easement in having a very large number of barley rachis fragments including, most significantly, those of two-row barley; previously, only six-row barley had been identified. However, there are similarities in general composition between the sample from feature 182 and that from a medieval fire-pit (854) at Fulston Manor (Powell *et al.* 2009).

A mixture of free-threshing wheat and barley grains could represent the charring of crops grown and stored as a maslin, a medieval insurance against potential poor yields. However, the presence of weed seeds both of heavier clay soils and wetter environments and of those typical of arable fields and possibly of lighter soils may indicate that the crops were grown on a range of soil types. Usual medieval practice was a three-field and three-year rotation system, in which spring crops, usually oats and barley but also pea, were followed by a winter crop, usually rye or wheat, then by a period of fallow in the third year. The chalk loam soils of Thanet were noted in Rolls dating to the 13th century as being particularly good for supplies of wheat and barley, while oats were more commonly grown in the Weald (Pelham 1933).

The cereal remains from the enclosure ditch and the bake-house appear to represent either waste or cleanings from barley and free-threshing wheat crops. That large seeds dominate the weed assemblage suggests that the crops were brought onto the site following harvest in summer and stored most probably as semi-clean grain, i.e. after having been threshed, winnowed, coarse and fine-sieved. This also appears to have been the case in the assemblages from the pipeline easement and Fulston Manor (Schuster and Stevens 2009).

The remains from the ditch and bake-house seem unlikely to be representative of part of the malting or brewing process. Both barley and wheat were commonly used in baking bread, although the former was regarded as the inferior loaf. Similarly both oats and barley could be used for bread, fodder or malting/brewing, and again sometimes mixed to make a coarse bread deemed fit only for the lower classes (Stone 2006).

The assemblage from feature 182, however, may well be indicative of a specific process taking place. Large numbers of barley rachis fragments and grains were observed, and the positive identification of two-row barley, especially from rachis fragments, is rare within charred archaeobotanical assemblages; it is also unusual to have so many palea/lemma fragments of oats preserved. As such this assemblage appears quite unique – although it is possible that this more reflective of preservation conditions than of any specific function. Two-row barley is favoured in brewing as it has a lower protein content than six-row barley and thus germinates more evenly, as well as needing a shorter steeping time (Carruthers 1995; Johnston *et al.* 2009). Its possible occurrence has been suggested at the medieval site at Howard's Lane, Wareham (Carruthers 1995), and from the medieval deposits at 43 South Street, Bridport (Stevens 2001). Two-row barley was positively identified from the medieval site at Alms Lane, Norwich where there was also evidence of malting and brewing (Murphy 1985). Given the presence of two-row barley and the association of 'bake-house' structures with both baking and brewing (Schuster and Stevens 2009), the assemblage from feature 182 might well be related to malting. However, interpreting the assemblage is somewhat problematic and it may represent a mixture of waste from different activities.

Prior to malting, and probably even storage, barley would have been threshed and winnowed, during which the rachis fragments would have been removed. Their presence, therefore, might represent the waste from such processing of ears, especially given the relatively high numbers of culm nodes. Several grains showed signs of germination, but given the absence of coleoptiles, a further possible interpretation is that the remains represent the mashed grain left after the straining off of the wort, during the brewing process. Barley is not usually dehusked prior to malting, although the coleoptiles are often 'knocked-off' and removed prior to the grain being mashed.

Oats were also a common ingredient in beer during the medieval period in Europe (Cornell 2003), and the presence of oat husks may also point to brewing. Given the low number of oat grains, and the poor preservation of such delicate remains, the oat husks appear to represent the collection and burning of oat dehusking waste, probably in considerable quantities. While they may represent grain destined for use as bread or porridge, oat hulls are today often added to the mash to prevent it from settling or sticking.

As has been suggested on other Kentish sites (Schuster and Stevens 2009), the composition of the charred assemblages suggest that the sunken-featured building may have been used for both baking and brewing.

Discussion

The second excavation at Star Lane has helped in the interpretation of the medieval features previously recorded in the relatively narrow easement of the Weatherlees-Margate-Broadstairs Wastewater Pipeline, revealing the full dimensions of some of the enclosures, and the more extensive nature of the associated settlement complex. It has confirmed that the site saw some reconfiguration over time, although it has not been possible to identify clear phases of activity, the pottery fabrics and forms suggesting a relatively tight date range, from early 13th to mid-14th century, for most of the activity on the site.

The full extent of the site remains unknown, although it clearly extended beyond the excavated areas. Apart, however, from the enclosure and other ditches, and the bake-house, there were few features by which to characterise the nature of activity on the site, including the use(s) of the enclosures. No traces of domestic dwellings were recorded, although this is probably due to truncation by ploughing, and there were relatively few small features such as pits and post-holes. Finds were unevenly distributed across the site, with most of what can be characterised as a domestic waste coming from the ditch (and associated features) of Enclosure E. For example, *c.* 56% (by weight) of the pottery from the site came from this enclosure, most of it from the curious 'waste chute' feature (181/182) connected to the ditch; a further

27% came from two small pits (234 and 306) within the interior area of Enclosure B. The Enclosure E ditches also accounted for *c.* 85% (by weight) of all the marine shell from the site (the only other contexts from which it was recovered was one of the bake-house ovens). It is possible that this enclosure, which was surrounded by the most substantial ditch on the site, contained a significant domestic dwelling.

The status of the site, and its position and function within the manorial organisation of medieval settlement and agriculture, is also hard to determine. The dearth of animal bone suggests that animal husbandry may have been of lesser importance than arable farming, although it is possible that some of the enclosures could have been animal pens or paddocks. The presence of marine shell indicates that local coastal resources also provided some contribution to the diet. The pottery appears to be predominantly utilitarian, although tablewares are also present. Most of the other datable objects, such as the metalwork (e.g. key, buckles), are not directly associated with the site's occupation, as they belong to the late medieval or early post-medieval periods.

The presence of the two bake-houses, however, clearly identify the site as a focus of specialised economic activity. The large number of quernstone fragments (of a variety of stone types) found within one of the bake-house ovens indicates that milling was an important component of that activity. It is not possible to determine whether one of the bake-houses was a replacement for the other, or whether the possibly extensive settlement had more than one in operation at the same time. While only single bake-houses have been recorded at some sites, up to ten are known at Monkton, *c.* 6 km to the west (Canterbury Archaeological Trust 2007). Milling was an activity under manorial control, for which a fee was paid, and it is possible that such bake-houses were similarly controlled, although they were probably more widely dispersed with local communities. To the north of the site there are the remains of a manor house, of uncertain date, at Nash Court, while the site of another medieval manor house is recorded to the east at Sacketts Hill. In the earlier discussion of the site (Egging Dinwiddy and Schuster 2009, 138–9) it was suggested that such bake-houses reflected the increasing diversion of agricultural produce into the wider markets as finished goods (such as bread) in order to increase manorial profits, taking advantage of the developing road network. According to Edward III's lay subsidy rolls, by 1334–5 Thanet had one of the highest population densities in Kent (Lawson and Chalkin 2004, 58).

Likewise, elements of the charred plant assemblages add to the growing evidence for a close association between baking and brewing at such sites, possibly undertaken within the same bake-house structures. Although both of the ovens in bake-house 395 are of a form interpreted as 'bread ovens', the third, heavily truncated hearth (345) is probably equivalent to the secondary hearths consistently found in such structures, including that within the pipeline easement. The botanical evidence for brewing, however, was found not within the bake-

house, but within the curious chute feature (182) on the edge of the site's most substantial enclosure ditch. Many questions remain about this feature, although the variety and richness of the finds from both it and the ditch would support a generally domestic interpretation for the enclosure.

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