Southampton French Quarter 1382 Specialist Report Download F4: Structural and Fired Clay

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Introduction

Structural and fired clay comprising 6541 fragments weighing 107.84 kg with a mean fragment weight (MFW) of 16.5g was recovered from 457 contexts. The fired clay was found in contexts dating from all phases (Table 1), with half found in the Anglo-Norman contexts, a third (32%) in High Medieval deposits and 10% in Anglo-Saxon contexts with an unsurprisingly rapid decline from the late Medieval period onwards. Fired clay was found in all the tenement blocks, but occurred in the highest quantity in tenement 237, which accounted for c 30%, with more moderate quantities of c 10% in tenements 170, 172, 178 and 241.

Discard of selected material was undertaken in accordance with the OA discard policy established for building material. Amorphous and non-diagnostic fragments were discarded from all large groups of material and in smaller groups only a sample was retained if no diagnostic pieces were present. Sieved material from samples was quantified and discarded apart from diagnostic fragments; when it was the only material from a context a small representative sample was retained.

Fabrics

Fabrics were characterised using a binocular microscope at a magnification of x15 - x25 supplemented with a x10 hand lens for identification during recording. During assessment six fabrics were identified, but subsequently during analysis these have been reconsidered and organised as two broad groups with sub-types distinguished by certain additional characteristics. A small number of examples of green clay (Fabric C) were noted and this may be the clay that formed the basis for the other fabrics. The fabrics are quantified by phase in table 2.

Fabric Group A: Colour: red, reddish / yellowish brown, brown, grey. Matrix: sandy earthy micaceous clay. Fine inclusions: fine-medium sand and silt mostly quartz and rare mica (probably occurring naturally in the clay). Coarse inclusions: common gravel (flint, chert, hard fine-grained rock) (angular - subangular - subrounded) mostly 10-20 mm, but from 5 up to 47 mm. Rare chalk (subangular) 1-5 mm. Occasional broken shell, including mussel, 4- 20 mm. Fine organic voids from grass, hay, or cereal straw.

Sub-type Ao: High density of organic temper: fine and coarse stems, leaves. The impression of seed/flower head visible on one piece was identified as cereal rather than hay, though the exact species could not be determined (Wendy Smith pers. comm.). It is likely that most of the impressions derive from cereal straw, rather than hay. The very high density of vegetal inclusions in this sub-type resulted in a very porous and fragile texture.

Fabric Group B: Colour: red, orange, reddish brown, brown, grey. Matrix: fine sandy silty micaceous clay. Fine inclusions: moderate - high density of fine, medium and coarse poorly sorted quartz sand, low density of mica silt/fine sand, rare shell sand. Coarse inclusions: generally low density of grit (angular) 2-5 mm and flint/chert gravel (angular - sub-rounded) 5-15 mm; pebbles (rounded) 15 mm; shell 8-10 mm

(often as leached voids); plus rare grog (pot/CBM/FC) up to 23 mm. Generally hard and well fired. A few examples have a very high density of gravel.

Subtype B2: was differentiated by its soft and powdery texture.
Subtype Bo: was characterised by the addition of some organic material in the form of cereal straw/hay added in moderate density and resulting in a more porous texture, though never in a density comparable to Ao.

Fabric C: yellowish green clay with brown streaks of iron rich clay. Coarse inclusions: rare rounded chalk grit.

Fabric B accounted for 83% (wt), whilst fabric A accounted for (13%). The clay source is likely to have been in the immediate area.. Clay or brickearth deposits were found in the excavation area and it is possible the purpose of some pit digging was to obtain clay for structural use. Fabric A appears to have a higher soil content, perhaps indicating a clayey subsoil or mix of earth and clay was used. Fabric B appears to be a purer sandy clay, probably from cleaner clays below the main soil horizons. A study of fabrics used in wattle and daub walling (Graham 2004) indicates wall daub was normally made of a clayey sand soil with a mean clay content of only 7% and coarse aggregate should not normally form more than 20% of the daub mix. No detailed analysis of particle size of the fired clay was made, but the general impression is that the clay content is higher than that found in wall daub, though fabric A is closer in character than fabric B.

Forms of structural material

There is little variety in the form of the fired clay with 80% being structural material with wattle impressions. A small quantity (7%) was identified as oven structure or furniture and a further 9% was unclassified (either unused, amorphous or with a single surface). The remainder included a few heavily fired vitrified fragments including a prop or bar, which may have derived from a furnace or industrial process, and pieces of hearth surface. The forms are quantified by phase in table 3.

Wall daub and render

A small quantity of fragments were identified as wall daub and render. The render measured between 10 and 30 mm thick and had a very smooth flat surface akin to plaster. Some examples had a white or pink wash over the surface. A group from pit 853 had been dumped with a load of stone rubble, suggesting this was the render for a stone wall that had been demolished. A few pieces with wattle impressions from this same pit may indicate the wall had timber framed elements associated. The items identified as wall daub had evidence of cut or squared timbers and in one case edges at an acute angle suggesting it may have infilled the angle between an upright or horizontal beam and a cross-braced beam. One example of lath or split rod impressions also occurred. The function of the large quantities of fired clay with wattle impressions is discussed separately below.

Hearth and Oven

The pieces identified as hearth and oven structure was based primarily on the occurrence of some examples within features identified as hearth or oven bases. The hearth had a plain flat surface on one side only and therefore its context was essential for its identification. Similarly the material identified as oven structure was based on the occurrence of one group within an oven base. This was made in a very porous fabric (Ao or Bo) with a high density of organic temper represented by the voids of coarse cereal straw (Figure 1). This had initially been identified as wall daub on account of the density of organic matter incorporated and its association with ovens was unexpected. The material has characteristics in common with a building technique known as ‘light earth’ which involves tamping a clay mix containing a large quantity of straw into a framework and then cladding both faces. The construction acts as a form of

insulation rather than as a load bearing structure and the material needs a waterproof surface if used externally or may be finished off with an earth plaster indoors. The association of this type of fired clay with an oven base may represent insulation that would be necessary around a bread oven. Though other insulating materials such as sand or soil infilling the gap between wall and oven can be used, this highly porous fired clay may have been preferred as a lighter or more effective alternative. Little evidence of structural form of this highly porous fired clay survived: some pieces had a flat surface and one piece formed a flat slab.

Oven structure from context 5092 included pieces with dense organic impressions, possibly from turves, on the exterior convex surface. From this same context came fragments with a curving rounded edge one possibly from a circular vent c 100 mm wide and others from an arched opening c 140-160 mm diameter. Large quantities of wattle reinforced structure was also associated with this material and adds weight to its interpretation as oven wall. Two further closely related groups of wattle reinforced structure were found in association with oven 4446 and in this case certainly represented oven wall.

Other material tentatively identified as oven furniture was sparse and included a firebar, oven plate and a small disc, possibly used as a prop or support. The dearth of complex oven structure or furniture suggests any ovens were of simple design, which would accord with the simple domed chamber with a single opening typical of bread ovens. However the presence of ceramic hearth and kiln tiles (described and discussed with the ceramic building material p00) is a reminder that the more complex elements may have been made separately.

Wattle reinforced structure

The vast majority of the fired clay derived from structures reinforced with a wattle framework. This was characterised by the presence of interwoven wattle impressions on one side. Exterior surfaces, when they survived, exhibited distinct variations in the quality of the finish ranging from fairly smooth and even to roughly finished. Most pieces appeared to be flat, though some curving convex or concave surfaces were occasionally observed. The curvature of a large domed structure would be difficult to detect on the small fragments surviving, especially those with an irregular surface finish. A rougher finish was most common and finger depressions and grooves from moulding the clay were often present. A number of samples had organic impressions in the surface, which included chaff, cereal straw or grass and fine organic impressions, which may have been created by the imprint of turves. The turf or fine organic impressions on the exterior surface could indicate this was being used as insulation in some cases.

The fragments measured between 16 and 80 mm thick with 20-55 mm the most common, though thickness can vary considerably on a single piece depending on the arrangement of wattles. The higher values usually indicate the thickness to the wall core, whilst the lower values are over the outermost wattles.

The inner surfaces of the fragments were covered with interwoven wattle impressions. These took the form of horizontal roundwood rods interwoven around vertical roundwood sails. The arrangement of wattles on material from context 5092 suggest the vertical sails were set 160 mm apart. The rods measured between 5 and 29 mm with the densest concentration between 10 and 18 mm, whilst sails overlapped in distribution with a range of 11 – 40 mm. The distributions are shown diagrammatically in figures 2-12 with individual charts for larger individual groups (pits 799, 48, 4494, 4705, 6667, 7572, pit fills 5092, 5233, 8557, layer 3079 and oven bases 8446 and 8465), together with a chart (Fig. 13) showing wattle sizes by phase (excluding the large groups). The range and distribution of wattle sizes is tabulated in Table 4 and this shows there is no significant differences in the distribution and sizes of any of the individual groups, nor when compared to groupings by phase, which cannot be attributed to sample size and no evidence to suggest structural differences that could indicate a division between wall daub and oven wall. The only change observed was a decrease in wattle size from the earlier to the later phases (Table 4), which is likely to reflect woodland management, coppice cycles and availability of coppice,

perhaps indicating a greater demand resulting in shorter coppice cycles in the high medieval and subsequent phases.

This pattern of wattle sizes has been associated with oven structures in prehistoric and Roman assemblages of fired clay whereas burnt building daub was characterised by slightly larger wattle sizes (Poole 2008). Fired clay of Saxon date from Springhead (Poole forthcoming) and Winchester (Poole in prep) with similar wattle sizes has been ascribed to ovens or corn-drying ovens. However in situ evidence of clay ovens and the method of construction is rare and though the existence of wattle frameworks forming a basis for oven construction is generally accepted, conclusive evidence is poor.

The Roman building daub had larger shaped timber impressions commonly present, but it could be argued that the inset wattle panels in medieval buildings would only retain evidence of the smaller wattles. A study of wattle and daub (Graham 2004) from Wiltshire buildings has shown that the upright sails or staves if made of riven oak were 15-25 mm deep by 60-90 mm wide or hazel poles were routinely 20-30 mm diameter. It was also common to shape the staves to a diamond shaped section. Graham (*ibid*) suggests that round wood wattles were an earlier phenomenon and that laths did not become common until the 14th or 15th century. Coppice on a seven-year cycle would produce wattles of 12-25 mm diameter, of which the thinner sections could be used complete and the thicker halved or quartered. Graham's measurements of wattles showed a range in size from 5 to 30 mm, which compares well with those from the fired clay. Although the wattle sizes present on the fired clay are comparable to those found in wattle and daub wall panels, there is very little or no evidence for some of the other features such as split wattles, laths or for riven or shaped staves of appropriate size. In addition the only evidence for the spacing of the sails is less than that found in wall daub, which Graham (*ibid*.) records as c 250 mm as compared to an estimate of 160 mm in samples from 5092. However a small fragment of charcoal from the end of a split wattle embedded in a piece of fired clay from 4442 was identified as oak (*Quercus sp*.) (Dana Challinor *pers. com*.) and would lend support to an interpretation as daub.

The research in wattle and daub of standing buildings has inevitably focussed on later medieval buildings or later repairs and it could be argued that the absence of common features may merely reflect the earlier date of the material under consideration here, which was found in greatest concentration in the late Saxon, Anglo-Norman and high medieval periods, declining thereafter.

Thus there are arguments for and against the wattle reinforced fired clay representing oven structure or building daub. It is possible and likely that both may be represented within the assemblage, but it has not been possible to demonstrate on intrinsic structural features of the fired clay that both these functions or only one are represented in the archaeological record. Interpretation and function is discussed further below.

Objects of Clay

Spindle whorl: Complete discoidal spindle whorl flattened top and base with rounded concave edges, except on one side, where it appears to have been set down on edge, whilst the clay was still wet. Some irregular pits in the surface appear to be voids where stone grits have fallen out. Central perforation circular and cylindrical 13x14 mm. Diameter: 37.5x32 mm; height: 18 mm .Wt: 22 g. Fabric: CBM Med1c

Loomweight: Even curving convex surface: this fragment resembles part of a bun-shaped object with concave base. It is very incomplete so it is extremely speculative to suggest it may be a fragment of late Saxon loom weight. Diameter: c 60 mm; height >26 mm. Wt: 26 g. Fabric B.

Discussion

The assemblage is of a moderate size with several large groups of fired clay. The majority of the assemblage derived from secondary deposits in pits, with small quantities found in other features including postholes, wells and linear features, and a wide variety of spread layers, including surfaces, make-up and occupation deposits. Six ovens also produced variable quantities of fired clay ranging from a few small fragments up to 2.5 kg and totalling c 7.5 kg or 7% of the fired clay. Though small in quantity, this is significant as it represents material found in a primary position and has allowed some material discarded in secondary situations to be more accurately identified to function. Wall daub and render was found only discarded in pit fills. Oven and hearth debris occurred in a wider range of features and layers.

A limited number of tenements produced the bulk of the assemblage (fig 14 - chart). The largest amount, over 32 kg, was found on tenement 237 with five other tenements (167, 170, 172, 178 and 241) producing substantial amounts between 9 and 14 kg. Tenements 173 176 and 177 produced moderate amounts (c 2-6 kg) of fired clay, but the remaining tenements only c 1 kg or less. This distribution pattern is similar in some respects to that of the ceramic building material with the emphasis on tenements 170, 172, 173, 237 and 241. However the other properties to produce above average quantities of fired clay (167, and 176-8) produced only minor amounts of brick and tile. This suggests there may be more than one factor affecting the distribution of fired clay that was not relevant to the brick and tile. The latter may have been used to display the prestige and wealth of the owners, whilst the fired clay related to functional aspects though there does appear to be some relationship to the status of a property. One category of tile which may be relevant in terms of function and occurs in the same areas or tenements as the larger assemblages of fired clay are hearth / kiln floor tiles (Figure 14).

In relation to status it may be argued that the wealthier properties possessed certain types of structures of a utilitarian character that was not normally or commonly present in the humbler dwellings. In this respect the interpretation of the function of the fired clay is all important. It had been hoped that wattle sizes might show some clear differentiation, which could be used to distinguish oven structure from building daub in conjunction with other characteristics. However the patterns found when comparing individual groups or by phase show very little difference. The only group which could be positively associated with an oven base (contexts 8444 and 8445) exhibited the same distribution pattern in the size of the wattles as other groups. The only variation is one relating to phase suggesting a slight diminution in wattle sizes from the late Saxon – Anglo-Norman values to the high and late medieval values (Table 4). This change in wattle sizes may reflect the availability of coppiced poles and changes in woodland management in the hinterland possibly indicating that the coppice cycle was shortened. This may reflect a greater demand for building materials but environmental factors affecting growth could be an alternative cause. A less likely interpretation is that there may have been deliberate selection for thinner wattles relating to structural preferences, but no other evidence is available to confirm such a hypothesis.

Taking all the evidence relating to the fired clay it is concluded that the fired clay with wattle impressions largely relates to oven structures and for brevity it is referred to as oven wall in the catalogue of individual tenements. It is probably little different to daub used for walling in general but the preservation through firing is more likely to have occurred as the result of constant and fairly intense firing of a bread oven or malting kiln, rather than as the result of burning in house fires. Though the latter is a possibility no evidence in the archaeological record of burnt buildings was found and it would be odd that only burnt daub survived and not burnt ceramic, stone or other building materials. Tenements 240-3 were destroyed in the French raid of 1338, but the fired clay does not exhibit any difference in character to other groups.

The evidence of the fired clay suggests that certain properties had their own ovens constructed of clay over a wattle framework. It is probable the wattles supported or reinforced the clay dome of the oven and also possibly formed the exterior walling. Bread ovens require some form of insulation to maintain temperatures once the hot coals were raked out and the bread placed inside for baking. This may have been achieved by constructing the ovens with suitably thick clay walls. However the evidence of clay

with a very high cereal straw content, which would appear to be the medieval equivalent to the modern construction technique known as 'light-earth', can be interpreted as insulation material. The presence of turf impressions on some of the exterior surfaces suggests this may also have been used as insulation. The presence of insulation materials would imply that the oven was set in a larger construction with the insulation placed between the oven walls and an exterior cladding.

Medieval manuscripts illustrate a variety of bread ovens. Some are simple clay domes with a single chamber and vent forming a free-standing structure, sometimes shown set on carts as portable ovens. Others appear to be more elaborate set into a building with the oven at waist height and sometimes an additional chamber underneath. The more elaborate and later types of oven of 15th century or later date illustrate the use of bricks in their construction. This coincides with the archaeological evidence on the site for the rapid decline in the quantity of fired clay after the high medieval period and the increase in brick during this period. It is possible both materials were combined when brick was first introduced and expensive, the brick possibly being used only for the opening in the wall of the oven, which would be subject to greatest, wear. A number of heavily burnt and vitrified bricks were noted in the ceramic building material assemblage and these are likely to have been used in ovens of malting kilns. A post-medieval brick bread oven (3787) had clearly been lined with a clay or daub render.

It is known from historical records that only limited numbers of households had their own bread oven – in rural areas this was often the manor house and the lord would charge for others to bake their bread in his oven. The same may have held true in towns and the distribution of fired clay together with hearth and kiln bricks can be interpreted as indicating those properties, which had a bread oven on the premises. This coincides with those properties, which have evidence for their wealth or status in other materials – tenement 237, 241, 170, 172 and 173. However these facilities were not exclusive to the more prestigious properties and some of the smaller cottages (tenements 167, 174-6, 178) on the High street frontage also produced sufficient fired clay to indicate the presence of such structures. This raises the possibility that these may have served as a baker's shop at some point during the Anglo-Norman or high medieval phases.

Stratigraphic Analysis

The fired clay is summarised below in relation to each individual tenement and the overall quantities of fired clay are tabulated by phase in Table 5.

Tenement 166

A very small quantity (10 fragments; 204 g) of mostly unclassified fragments were recovered, scattered through all phases from Saxon to Late Medieval. Some pieces with wattle impressions may be oven or wall structure, whilst others may be oven or hearth floor. One fragment from an Anglo-Norman deposit could be a piece of metal-working mould.

Tenement 167

A moderately large quantity (387, 9014 g) of fired clay was found on this tenement mainly concentrated in the Anglo-Norman deposits, with just one or two pieces from other phases. All was found in pit fills, the majority in pit 7572 and was similar in character, derived from a wattle-reinforced structure. This is likely to represent the presence of a bread oven or similar structure at this period. Kiln tile found on the adjacent tenement 166 was probably of Anglo-Norman date and may be from the same structure suggesting the properties my not have been subdivided at this phase.

Tenement 168

Small quantities of unidentified fired clay was found in late Saxon pits and of wattle reinforced structure in Anglo-Norman pits. A slightly larger quantity of oven wall was found in a high medieval levelling layer (6451).

Tenement 169

A small quantity of oven structure, including wall and insulation was found in three high medieval pits. The majority was closely associated in two pits and is likely to derive from a single oven.

Tenement 170

Fired clay was found in substantial quantity on this property and through all phases, though only in small quantities after the late medieval phase.

In the late Saxon period oven wall structure was found in several pits (6219, 6334, 7191, 7322) and included one piece with evidence of the curved edge of an opening in the wall. A scatter of small undiagnostic fragments was found in a few other pits. The quantity of fired clay doubled in the Anglo-Norman period and was found scattered through several pits, mostly in small amounts, apart from one larger group from pit 6667, which included both oven wall structure and a triangular or wedge shaped block that may have formed some other part of the oven or an associated enclosing structure.

There was a notable decrease in the quantity of fired clay recovered from high medieval phase pits, which produced oven wall and 'light earth' insulation. A similar quantity (by weight) of the same fired clay forms was found in the succeeding late medieval phase, but much more fragmented, suggesting this may have been residual, derived from the same sources as the high medieval phase material. This pattern continued in the post-medieval phase.

Tenement 171

A single small fragment of oven wall occurred in a high medieval pit and amorphous unfired fragments of clay in the fill of a postmedieval posthole.

Tenement 172

This property produced one of the larger assemblages of fired clay, of which the bulk occurred in the late Saxon and Anglo-Norman phase notably decreasing in the high medieval phase and just a few fragments found in the late medieval to early modern phases.

The Anglo-Saxon material was found dispersed through several pits with two larger groups in pits 48 and 105, which both produced oven wall together small unfired and unused lumps of green clay, which may have been collected for repairs to ovens. Pit 105 additionally contained fragments of render with a whitewashed surface. This may represent part of the exterior surface of the oven or an enclosing structure.

The Anglo-Norman material consisted entirely of oven wall apart from a scatter of unidentified fragments, though one piece with a curving surface may have been part of a cylindrical object such as a firebar or pedestal. It included one large group from pit 799, which typified the assemblage.

The high medieval material consisted predominantly of oven wall and was found mainly in pit fills, though a few small fragments also occurred in linear features and construction trenches. One larger group from pit 172 consisted of oven wall, oven floor or lining and oven structure with turf impressions, which

may represent insulation around the exterior of the oven, as well as a piece with a cylindrical or conical peroration, which may have form a small vent for smoke or as access for a tuyère.

The piece of oven wall from a late medieval pit and few unidentified fragments from post-medieval deposits may be residual or represent the final disuse of this type of clay structure.

Tenement 173

This tenement produced a moderate quantity of fired clay, which increased from Saxon to high medieval, with the latter accounting for over a half of the fired clay, but thereafter only a few small fragments occurring in the late medieval and postmedieval phases.

The Saxon material was mostly concentrated in one pit and consisted predominantly of oven wall, together with a piece of wall render with a cream plaster wash and an overfired fragment that may be furnace lining. This may relate to the quantities of industrial waste noted with the slag and metalworking debris from this tenement, which included additional ceramic items.

The Anglo-Norman assemblage was found exclusively in pit fills and comprised predominantly oven wall. Some of the pieces from pit 266 had a very smooth convex surface and others had turf impressions. P1082 produced some small fragments of wall daub with lath impressions.

Half of the high medieval assemblage was made up of oven wall, including two larger groups from pits 257 and 598. The latter pit also produced insulation type oven structure and also what appeared to be wall daub with evidence of squared timbers. Three other pits, 623, 853 and 932, produced significant quantities of wall daub and render. The render from pit 853 had a very smooth surface and was associated with large quantities of stone rubble suggesting this was the render from a demolished stone wall. There were also a few pieces with wattle impressions associated though not actually attached to any of the render, suggesting the demolished structure may also have had wattle and daub partitions or forming part of an upper timber framed storey.

Only a few small fragments of amorphous fired clay and one piece with a wattle impression were recovered from the late and post-medieval periods.

Tenement 174

A small quantity of fired clay was recovered from Anglo-Norman and late medieval pit fills. Only a single small fragment came from the intervening phase. All the diagnostic pieces were oven wall, apart from a small roughly moulded oblong objects 20x28 mm wide, possibly part of a firebar found in late medieval deposits.

Tenement 175

Fired clay was found in small quantity in pits of late Saxon and high medieval date. All was oven structure, mostly wall with wattle impressions, but a thick flat slab with curving edge was also present

Tenement 176

This produced a moderate quantity of fired clay with relatively low densities in the late Saxon and Anglo-Norman phases with a considerable increase in high medieval which accounted for c 80%. All was oven wall.

Tenement 177

A moderate quantity of fired clay was found in pit fills with greatest amount in the Anglo-Norman phase decreasing in the high medieval phase. Diagnostic material consisted of oven wall in both phases. Some possible turf impressions were present on Anglo-Norman pieces.

Tenement 178

This produced one of the largest groups with the bulk of the assemblage concentrated in the Anglo-Norman phase and only small quantities of non-diagnostic fragments occurring during the remainder of the medieval period. All was found discarded in pit fills. The main assemblage from pit 5090 consisted of oven structure mainly oven wall with wattle impressions, but also edges of vents or stokeholes and organic impressions on the exterior surface indicative of some form of insulation material. This tenement was possibly associated with a baker's in the 14th century, but the fired clay evidence suggests such a function may have begun in the Anglo-Norman period.

Tenement 179

A small quantity of mainly unidentified fired clay together with a single fragment of oven wall occurred in high and late medieval deposits.

Tenement 237

This property produced the largest amount of fired clay amounting to nearly a third of the whole assemblage and over two and half times as much as any other tenement. The fired clay occurred through all phases but was most prolific in the Anglo-Norman phase followed by the high medieval. Quantities from all other phases were small by comparison. Oven wall dominated the assemblage in all phases with pit 4705 producing a very large group in the Anglo-Norman phase and two large groups from layer 3079 and pit 3115 in the high medieval period. Other oven structure was also identified including insulation material in the high medieval and post-medieval periods. A single small fragment of possible wall daub was identified in the high medieval period and a piece of wall render in Anglo-Norman pit. The fired clay suggest bread ovens were present during the Late Saxon, Anglo-Norman and high medieval periods, but in the later medieval period other materials such as brick had probably replaced clay as the main construction material for such structures, though some clay ovens may have continued in use. Fragments of fired clay from a post-medieval bread oven 3787 constructed in brick, suggest that it was lined with clay.

In addition this was the only tenement to produce a clay spindle whorl and a possible fragment of late Saxon loomweight, though this latter identification is very tentative. Both were found in Anglo-Norman pits.

Tenement 238

This tenement produced a very small quantity of oven wall from Anglo-Norman and high medieval deposits, together with a few amorphous fragments from early modern contexts.

Tenement 239

A small quantity of oven wall was found in late Saxon, Anglo-Norman and high medieval deposits, together with some possible furnace lining from the latest phase.

Tenement 240

This tenement produced only a background scatter of fired clay comprising oven structure and wall found in Anglo-Norman and high medieval pit fills.

Tenement 241

This property produced one of the larger assemblages concentrated predominantly in the high medieval phase with small quantities of oven wall occurring earlier in Late Saxon and Anglo-Norman deposits. A single unidentified fragment was found in a late medieval pit. The high medieval material consisted of oven structure, oven insulation and oven wall, much of which was found in or closely associated with ovens 8245 and 8446. Wall daub with evidence of a squared timber and possible diagonal cross-brace timber was found in a late medieval pit (8391).

Tenement 242

This tenement produced only a moderate amount of fired clay. A single unidentified piece was found in Saxon levels and a small amount of oven wall and non-diagnostic pieces in the Anglo-Norman phase. The bulk was found in a late medieval demolition layer and comprised entirely oven insulation structure.

Tenement 243

A small quantity of oven wall and unidentified fragments occurred from the late Saxon through to the late medieval period, with the majority concentrated in Anglo-Norman contexts.

References

Graham, Tony, 2004 *Wattle and Daub: Craft, Conservation and Wiltshire Case Study* Masters Dissertation, Dept of Architecture and Civil Engineering, University of Bath
http://www.tonygraham.co.uk/house_repair/Wattle_Daub_Conservation.pdf

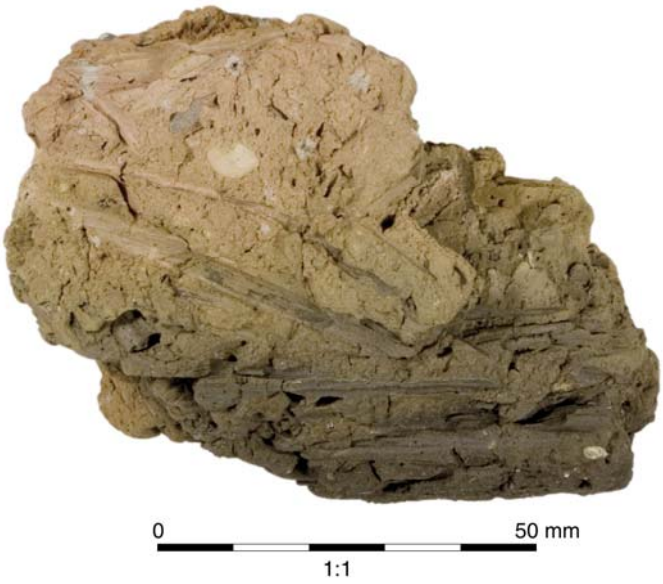
Poole, C, 2008, The Wall daub, Painted Plaster and Mortar in Cunliffe, B W and Poole, C, *The Danebury Environs Roman Programme A Wessex Landscape during the Roman Era Volume 2 – Part 7 Dunkirt Barn, Abbotts Ann, Hants, 2005 and 2006* EH and OUSA – Monograph No.**71**

Poole, C, forthcoming The fired clay in Andrews, P, Biddulph, E, Hardy, A, and Smith, A, *Settling the Ebbsfleet Valley: CTRL excavations at Springhead and Northfleet, Kent. The late Iron Age, Roman, Saxon and medieval landscape,* Oxford Wessex Archaeology

Poole, C, in prep The Structural and Fired Clay in Brown, L, Ford, B, Hardy, A, and Teague, S, E*xcavations at XXXX, Winchester, Hampshire (title to be finalised).*

Figures

Figure 1: photo of cereal straw impressions in fired clay



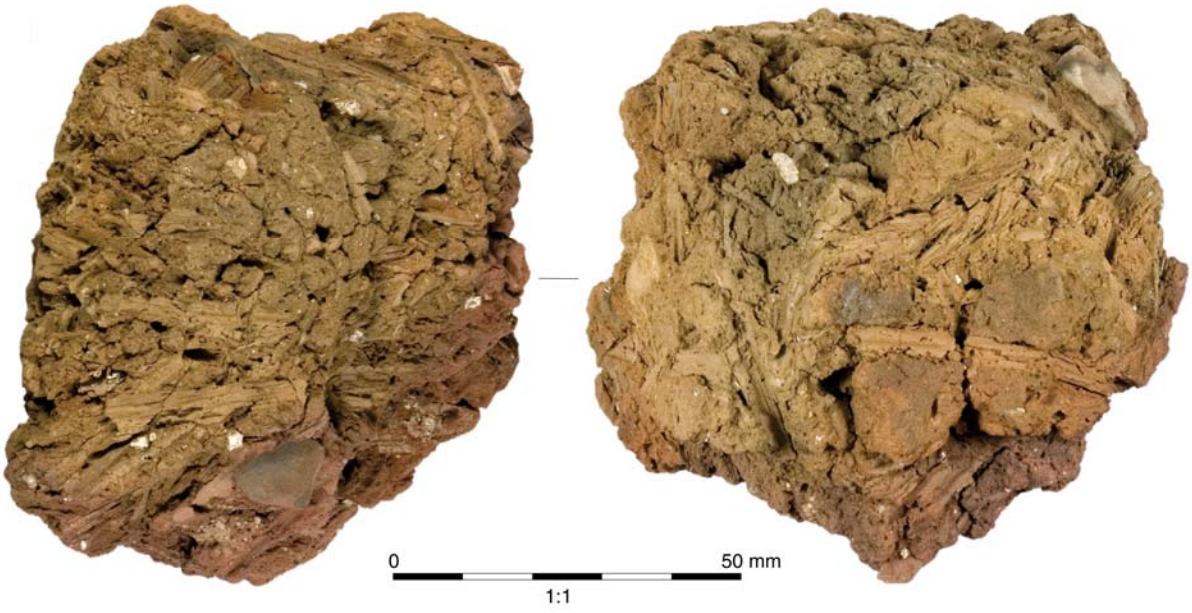


Figure 2: distribution of wattle impression sizes from pit 48 (489, 497, 501-4, 524-5, 563-4) (phase LSAX) (rods: n=51,mean 13.6 mm, mode 11/13 mm, median 13 mm)

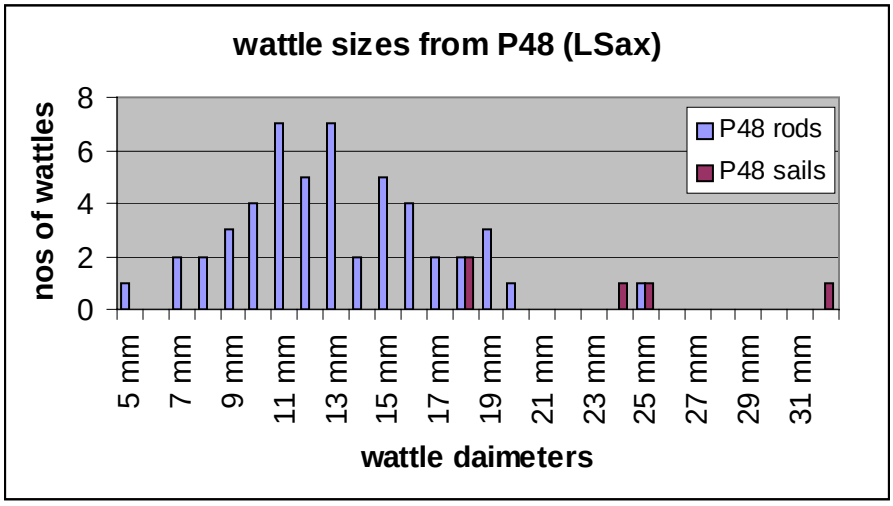


Figure 03: distribution of wattle impression sizes from pit 799 (805) (phase AN) (rods n=49, mean 13.5 mm, mode 15 mm, median 14 mm; sails n=6)

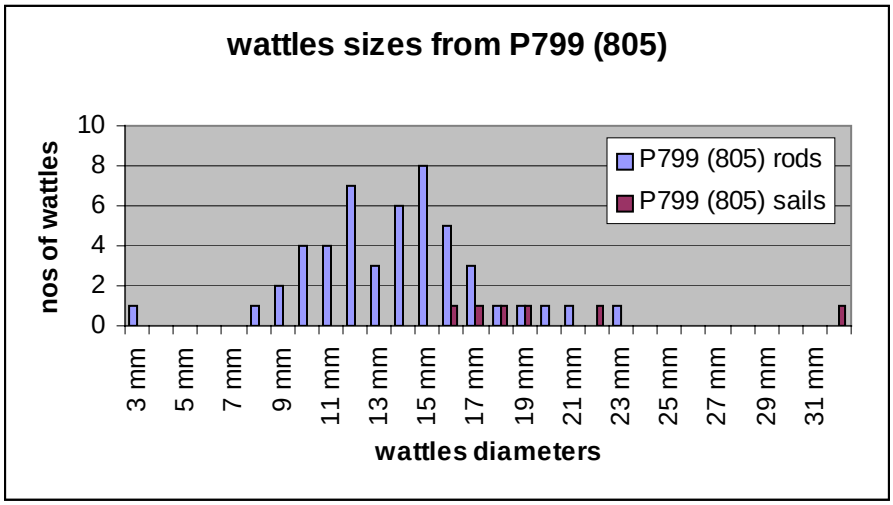


Figure 04: distribution of wattle impression sizes from pit 4705 (phase AN) (rods n=134, mean 13 mm, mode 13 mm, median 13 mm; sails n=15, mean 24 mm, mode 22 mm, median 22 mm)

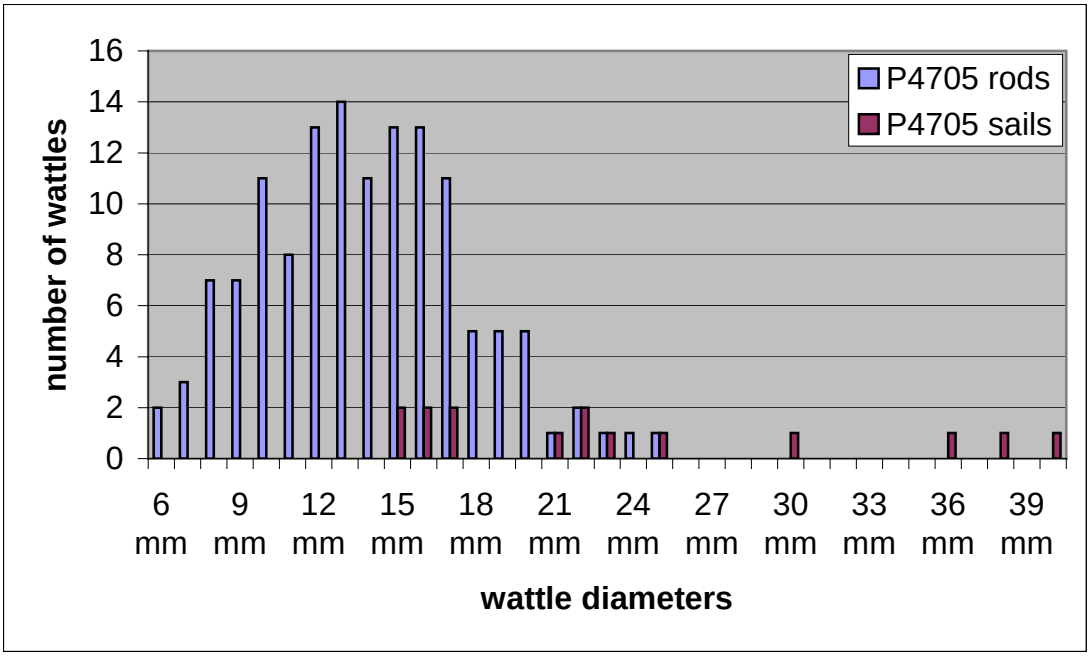


Figure 05: distribution of wattle impression sizes from fired clay in pit 5090 (5092) (phase AN) (rods n=290, mean 13 mm, mode 13 mm, median 14 mm; sails n=24, mean 17 mm, mode 17 mm, median 17 mm)

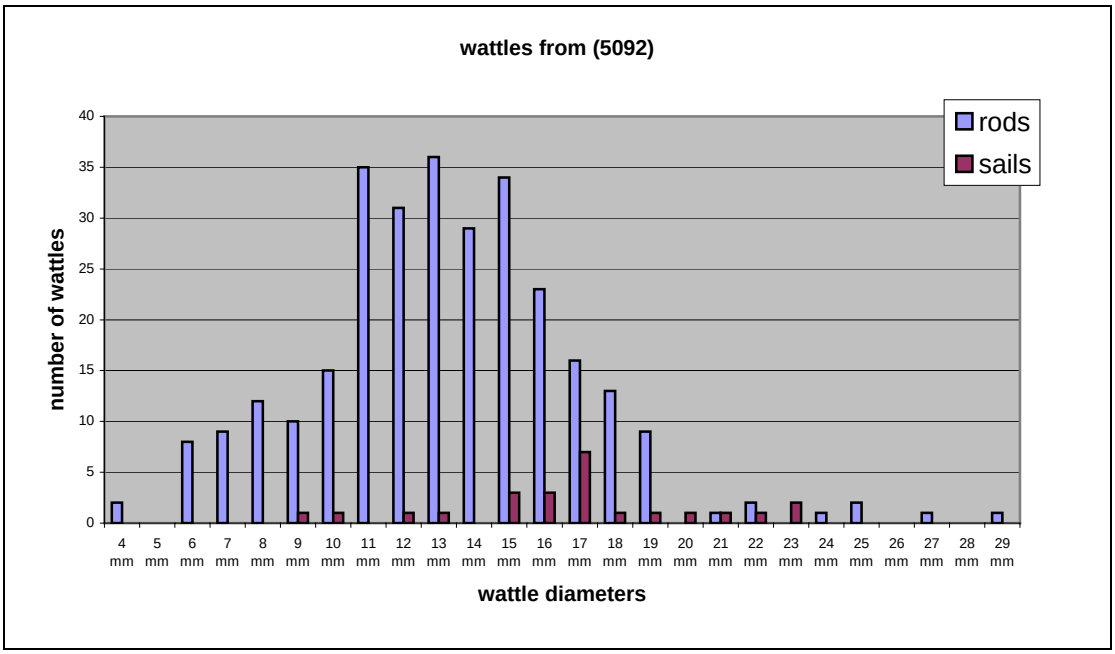


Figure 06: distribution of wattle impression sizes from pit 6667 (6726) and (6727) (phase AN) (n=38,mean 16 mm, mode 15-16 mm, median 16 mm)

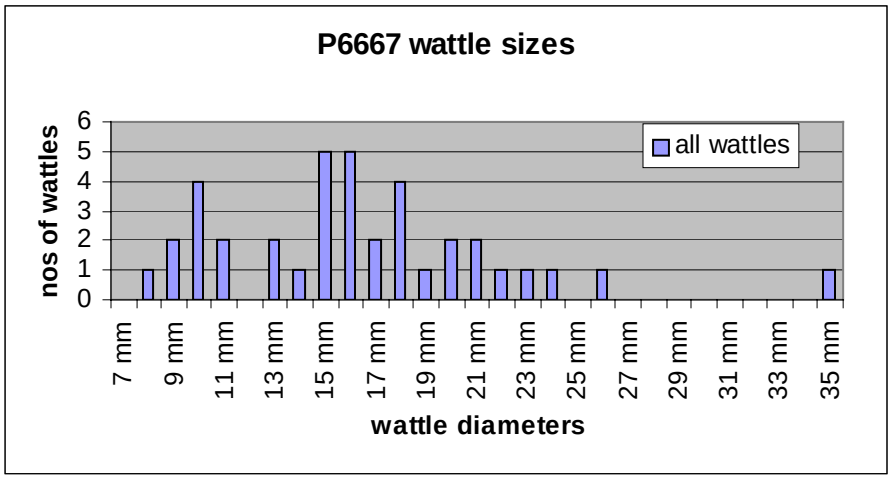


Figure 07: distribution of wattle impression sizes in fired clay from pit 7572 (phase AN) (rods n=179, mean 12 mm, mode 9 mm, median 12 mm; sails n=10)

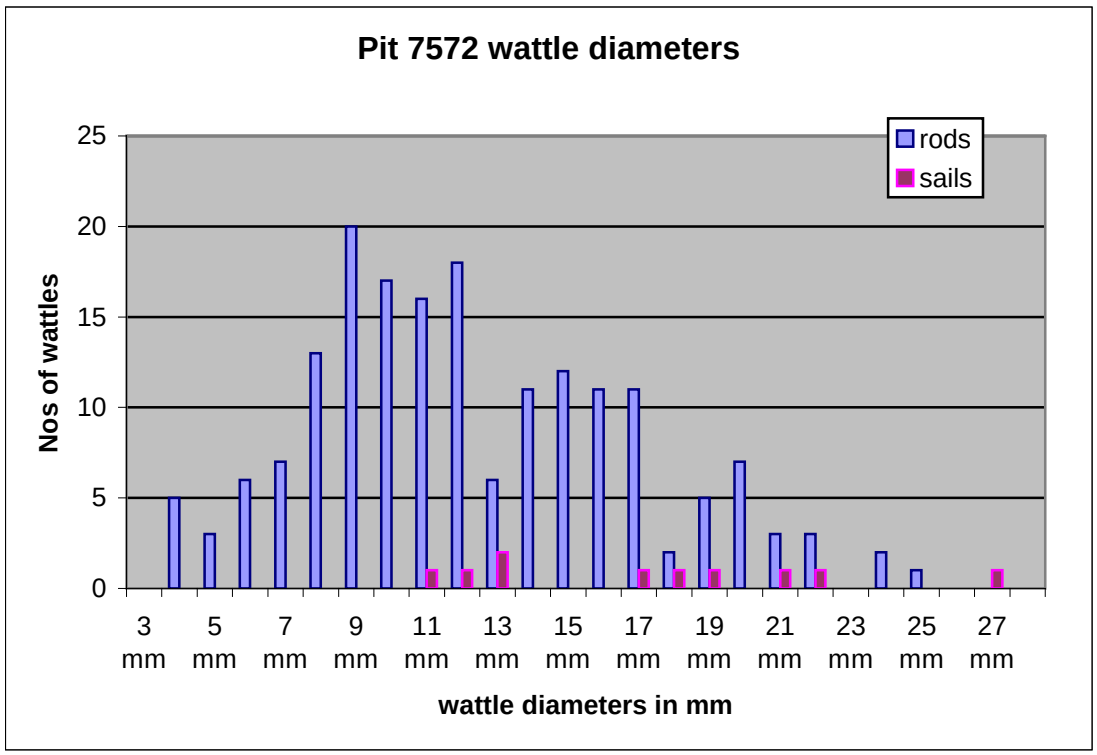


Figure 08: distribution of wattle impression sizes from layer 3079 (Phase Hmed) (rods n=64, mean 11 mm, mode 10 mm, median 11 mm; sails n=6.)

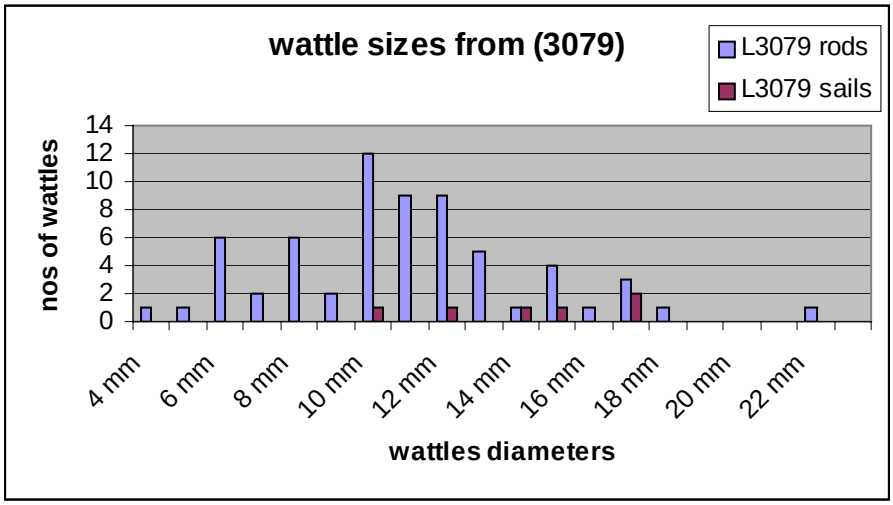


Figure 09: distribution of wattle impression sizes from pit 4494 (4442) (phase Hmed) (rods n=33, mean 13 mm, mode 14 mm, median 15 mm)

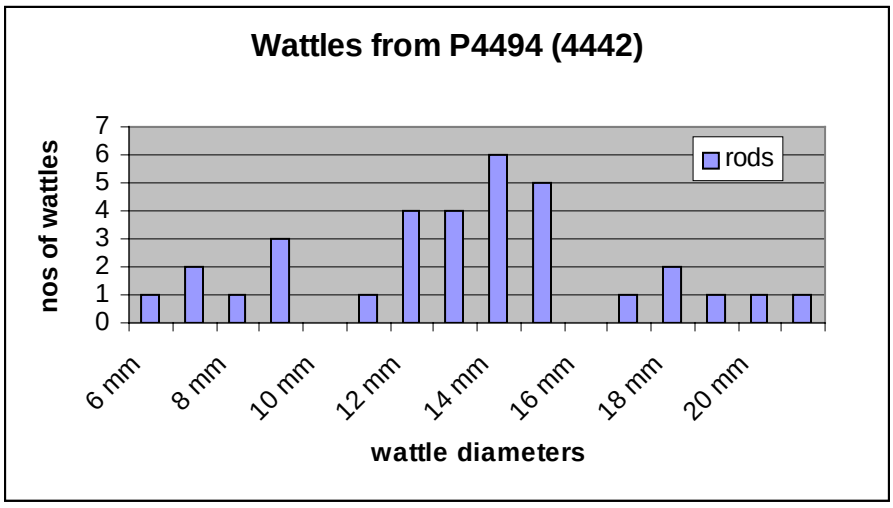


Figure 10: distribution of wattle impression diameters from pit 5196 (5233) (phase Hmed) (rods n=52, mean 11 mm, mode 10 mm, median 11 mm; sails n=1)

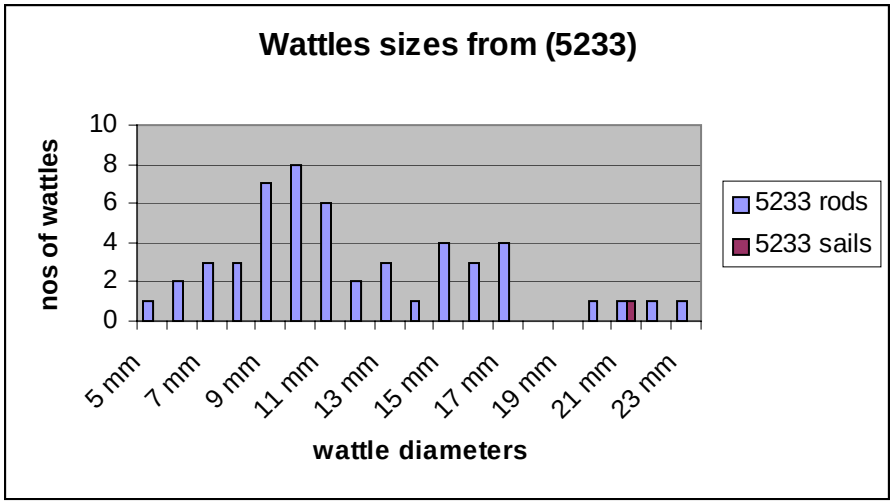


Figure 11: distribution of wattle impression sizes from pit 8464 (8557) (phase Hmed) (rods n=53, mean 11 mm, mode 8 mm, median 10 mm; sails n=4)

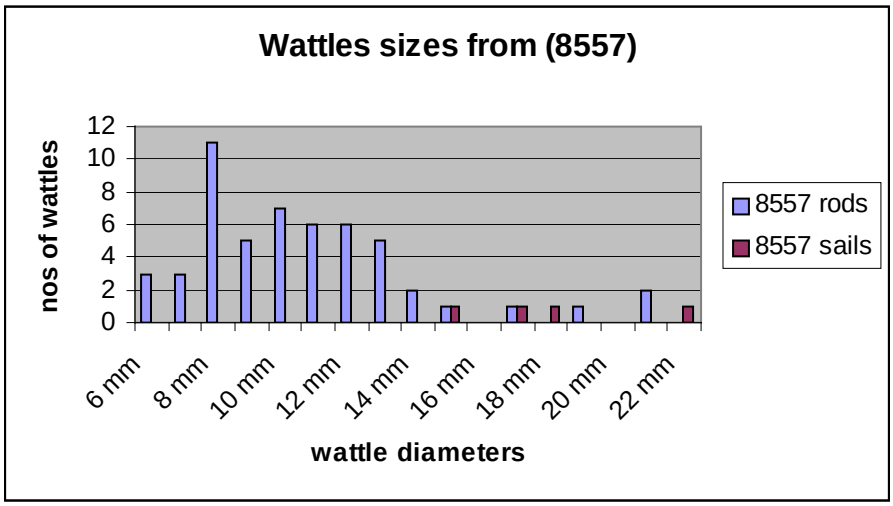


Figure 12: distribution of wattle impression sizes from fill of oven bases 8446 and 8465 (phase Hmed) (8445: rods n=35, mean 11 mm, mode 10 mm, median 10 mm; sails n=3; 8444: rods n=65, mean 11 mm, mode 12 mm, median 11 mm; sails n=2)

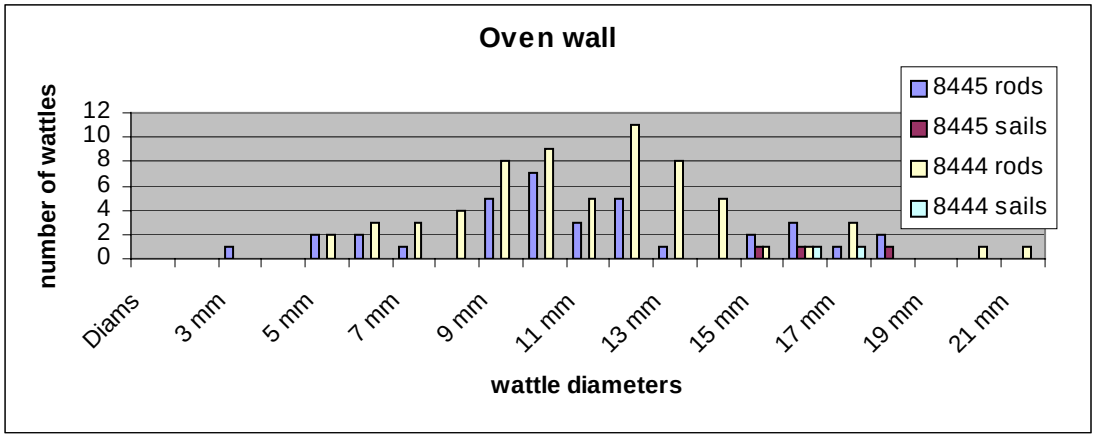


Figure 13: distribution of wattle impression sizes quantified by phase
(LSAX rods: n=188, mean 13 mm, mode 17 mm, median 13 mm; sails n=6, mean 23.5 mm, mode 18 mm, median 24 mm;
AN rods n=309, mean 13 mm, mode 12 mm, median 13 mm; sails n=12, mean 22 mm, mode 20 mm, median 20 mm;
HMed rods n=320, mean 13 mm, mode 12 mm, median 13 mm; sails n= 19, mean 21 mm, mode 20 mm, median 20 mm;
LMed rods n=45, mean 13 mm, mode 12/14 mm, median 13 mm; sails n=2; Pmed rods n=9, mean 10 mm, mode 8 mm, median 10 mm; EMod rods n=2)

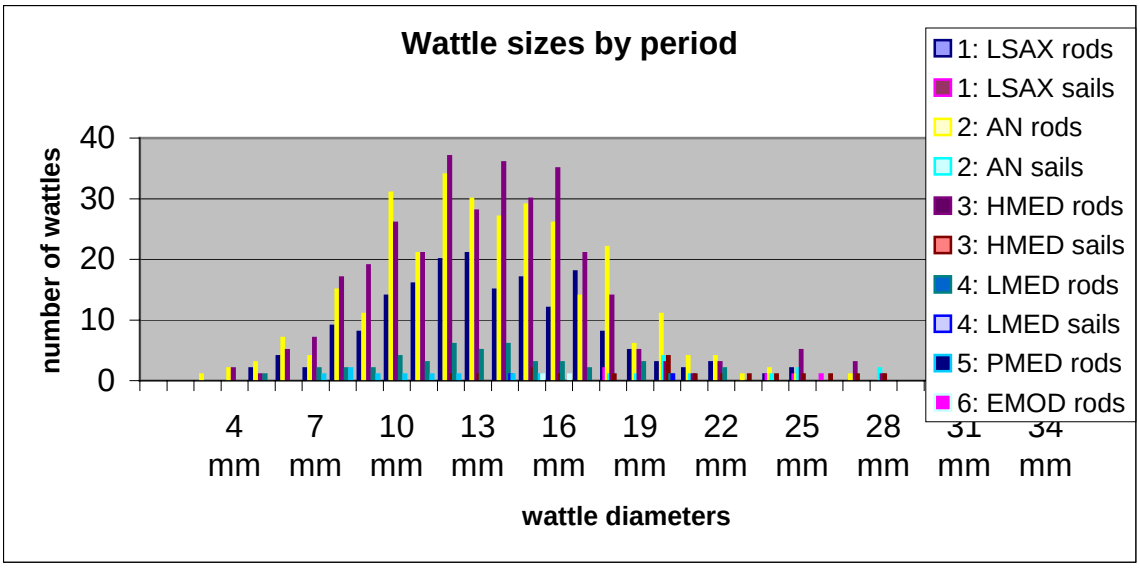
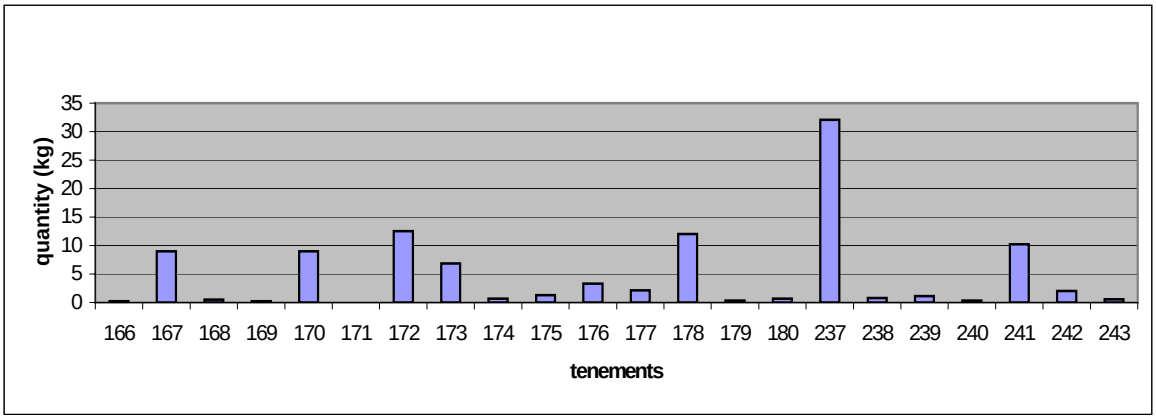


Figure 14: Quantity of fired clay per tenement



Tables

***Table 1**: Quantities of fired clay by period*

Period	No. frags	% No	Wt (g)	% wt	Tenements
1: Late Saxon	399	6	10703	10	166-8, 170, 172-3, 175-6, 180, 237, 239-43
2: Anglo-Norman	2858	44	54577	50.6	166-8, 170, 172-4, 176-8, 180, 237-43
3: High Medieval	2165	33	31962	32	166, 168-80, 237-241, 243
4. Late Medieval	562	8.5	4110	4	166-7, 170, 172-4, 178-9, 237, 241-3
5. Post- Medieval	448	7	1497	1.5	167, 170-3, 237
6. Modern	9	0.1	223	0.2	
Unphased/void	110	1.7	1853	1.7	
Total	6551		104925		

***Table 2**: Quantity of fired clay fabrics by phase*

		Phase						
Fabric	Data	1: LSAX	2: AN	3: HMED	4: LMED	5: PMED	6: EMOD	U	Grand Total
A	Count	5	227	125	3				360
	Wt (g)	239	8664	985	116				10004
Ao	Count	2	205	194	96	12			509
	Wt (g)	9	338	1988	1793	145			4273
B	Count	361	766	1258	121	51	8	109	2674
	Wt (g)	9806	24581	25382	1924	786	186	1848	64513
Bo	Count		1017	205		1			1223
	Wt (g)		20285	1254		62			21601
B2	Count	10	104	47	8	25			194
	Wt (g)	114	120	679	30	47			990
Clay	Count	12	1						13
	Wt (g)	479	6						485
CBM: Med 1	Count	1							1
	Wt (g)	32							32
CBM: A2?	Count				2				2
	Wt (g)				119				119
CBM: Med1c	Count		1						1
	Wt (g)		22						22
CBM: D	Count					1			1
	Wt (g)					54			54
~	Count	8	537	336	332	358	1	1	1573
	Wt (g)	24	561	1674	128	403	37	5	2832
Total: Count		399	2858	2165	562	448	9	110	6551
Total Wt (g)		10703	54577	31962	4110	1497	223	1853	104925

***Table 3**: Fire clay forms quantified by phase*

Type	Phase	1: LSAX	2: AN	3: HMED	4: LMED	5: PMED	6: EMOD	Unph	Grand Total
Furnace	Count	1	1	8					10
	Wt (g)	22	2	26					50
Hearth	Count		38	6					44
	Wt (g)		57	359					416
Oven furniture	Count		2		2				4
	Wt (g)		96		51				147
Oven structure	Count	2	13	498	156	13			682
	Wt (g)	75	648	4696	1810	207			7436
Oven wall	Count		987						987
	Wt (g)		11167						11167
Wattle structure	Count	294	1164	732	78	7	4	108	2387
	Wt (g)	8681	39792	21722	1766	692	152	1842	74647
Structural	Count		2			1			3
	Wt (g)		28			54			82
Wall Daub	Count		2	175					177
	Wt (g)		176	1754					1930
Wall render	Count	6	4	25					35
	Wt (g)	75	67	215					357
Small object	Count		2						2
	Wt (g)		47						47

Type	Phase	1: LSAX	2: AN	3: HMED	4: LMED	5: PMED	6: EMOD	Unph	Grand Total
Unclassified	Count	96	643	721	326	427	5	2	2220
	Wt (g)	1850	2497	3190	483	544	71	11	8646
Total Count		399	2858	2165	562	448	9	110	6551
Total Wt (g)		10703	54577	31962	4110	1497	223	1853	104925

***Table 4**: Comparison of wattle impression sizes for individual feature or context groups and phase groupings arranged by phase showing range of wattle sizes and mean, mode and median values for rods and sails. (Phase 1 = late Saxon; 2 = Anglo-Norman; 3 = high medieval; 4 = late medieval; 5 = postmedieval and 6 = early modern)*

Phase & ctx	rods range	mean	mode	median	sails range	mean	mode	median
1: P48	5-25 mm	13.6	11/13	13	18-32 mm	23	18	24
1: all	5-25 mm	13	13	13	18-32 mm	23.5	18	24
2: P799	3-23 mm	13.5	15	14	16-32 mm	~	~	~
2: P4705	6-25 mm	13	13	13	15-40 mm	24	22	22
2: 5092	4-29 mm	13	13	14	9-23 mm	17	17	17
2: P6667	8-26 mm	16	15/16	16	35 mm	~	~	~
2: P7572	4-25 mm	12	9	12	11-27 mm	15	13	18
2: small gps	3-27 mm	13	12	13	18-36 mm	22	20	20
3: 3079	4-22 mm	11	10	11	10-17 mm	14		
3: P4494	6-21 mm	13	14	15	~	~	~	~
3: 5233	5-23 mm	11	10	11	21 mm	~	~	~
3: 8557	6-21 mm	11	8	10	16-22 mm	18	~	18/19
3: 8444	5-21 mm	11	10	10	15-18 mm	16.4	16	16
3: 8445	3-18	11	12	11				
3: small gps	4-29 mm	13	12	13	12-30 mm	21	20	20
4: all	5-22 mm	13	12/14	13	14-20 mm	17	~	~
5 & 6: all	7-16 mm	10	11	10	~	~	~	~

***Table 5**: Quantities of fired clay by phase on each tenement*

Tenement	Phase	1: LSAX	2: AN	3: HMED	4: LMED	5: PMED	6: EMODU	Grand Total
166	Count	4	4	1	1			10
	Wt (g)	58	33	35	78			204
167	Count	3	381		2	1		387
	Wt (g)	80	8555		363	16		9014
168	Count	25	3	28				56
	Wt (g)	39	69	388				496
169	Count			6				6
	Wt (g)			248				248
170	Count	56	84	14	66	6	1	227
	Wt (g)	1950	4304	1064	1053	626	16	9013
171	Count			1		4		5
	Wt (g)			10		5		15
172	Count	185	115	86	1	3	1	391
	Wt (g)	4479	5758	2123	117	19	37	12533
173	Count	42	79	317	8	24		470
	Wt (g)	986	1636	4159	51	46		6878
174	Count		84	1	46			131
	Wt (g)		524	11	130			665
175	Count	41		23				64
	Wt (g)	831		479				1310
176	Count	10	45	490				545
	Wt (g)	274	396	2625				3295
177	Count		306	26				332
	Wt (g)		1232	884				2116
178	Count		1128	23	129			1280
	Wt (g)		11518	304	173			11995
179	Count			11	146			157
	Wt (g)			278	59			337
180	Count	2	21	9				32
	Wt (g)	38	460	197				695
237	Count	11	511	737	64	410	3	1736

Tenement	Phase	1: LSAX	2: AN	3: HMED	4: LMED	5: PMED	6: EMODU	Grand Total
	Wt (g)	1184	18258	8575	243	785	115	29160
238	Count		8	10			4	22
	Wt (g)		519	234			55	808
239	Count	7	1	27				35
	Wt (g)	422	57	648				1127
240	Count	1	6	12				19
	Wt (g)	8	82	246				336
241	Count	10	41	340	1			392
	Wt (g)	214	538	9409	83			10244
242	Count	1	22		94			117
	Wt (g)	31	252		1735			2018
243	Count	1	19	3	4			27
	Wt (g)	109	386	45	25			565
	Count						110	110
	Wt (g)						1853	1853
Total Count		399	2858	2165	562	448	9 110	6551
Total Wt (g)		10703	54577	31962	4110	1497	223 1853	104925