Chapter 14. The Ceramic Building Material and Other Fired Clay

A.M. Slowikowski

I. Introduction and Methodology

All ceramic building material (CBM) and fired clay excavated was kept for analysis. However, the CBM was sampled prior to accessioning but after recording; all undiagnostic fragments were discarded. The CBM and fired clay assemblage is comprised of the following:

Object type	**Fragments**
Fired clay	
Daub	74
Slab	146
Loom weight	2
Kiln bar	3
Ceramic Building Material	
Roof tile – *tegulae*	661
Roof tile – *imbrices*	331
Roof tile - gutter	1
Brick/floor	832
Flue	1146
Modern and miscellaneous	
Flat roof tile	4
Peg tiles	1
Unidentified	9
TOTAL	**3210**

Table 14.1 Ceramic building material and fired clay totals

Quantification was by fragment count. A fabric type series was defined for the site and correlated with the Bedfordshire Ceramic Type Series at the analysis stage. All CBM was recorded by form and fabric type, within its contexts. Tiles and bricks that had an edge surviving had their thicknesses measured. All positions of mortar, signatures, finger marks, paw prints and evidence for technology and use were recorded. Combing on flue tiles was recorded, including widths of combs to try and establish groups of tilers or even individual tilers using the same comb. This was unsuccessful, although it could be established that specific fabric types, presumably from a single production centre, used individual combing patterns. Numbers of prongs were recorded where the full width of the pattern survived. Information is tabulated wherever possible and examples of each pattern and form were chosen for illustration, as well as those tiles with unusual features, such as post-firing holes.

Form	**Fired Clay**				**CBM**				
	GRG/ORG	**ORG**	**ORG/SHL**	**SHL**	**1A Sandy**	**2 Grey cored**	**3 Sand/grog**	**4 Gault**	**5 Shelly**
Daub	10	42	22						
Slab	54	73	15	2	1				1
Loom weight			2						
Kiln bar			3						
Tegula					473	17	12		159
Imbrex					209	4	18		100
Gutter					1				
Brick/floor					180	2	13	451	186
Flue					135				1011

Table 14.2 Fired clay and ceramic building material by fabric and form, (quantified by fragment count; excluding post-Roman roof tiles and unidentified fragments)

II. Fabric descriptions

Fired clay

The fired clay, whether portable objects or structural, is made up of a wide range of fabrics and has been grouped into six broad fabric types, coded by letter.

GRG/ORG Grog with organic inclusions
Fairly soft, smooth, very soapy to the touch although three examples are sandier in texture. Small rounded lumps of buff-grey grog characterise this type. Surfaces are buff in colour with a dark grey, almost black, core. Some organic matter is mixed in with the fabric, leaving voids where it has fired out. Primarily slabs occurred in this fabric type (Table 14.2).

ORG Organic tempered
Hard fired material, dark grey with buff and/or pink patches. Soapy in texture. Organic material has been burnt out leaving the impressions of straw or grass, and there are large seed impressions on four examples. This fabric is wide ranging and includes examples which have the occasional addition of large pebbles (10-15mm) and have a powdery rather than a soapy texture. This fabric was used for slabs and was a constituent of daub (Table 14.2).

ORG/SHL Organic and shell tempered
Hard fired with orange-buff-pink surfaces and a dark grey or occasionally buff core. Organic inclusions have frequently burnt out leaving voids in the fabric. Small white calcareous inclusions (approx. 1mm) and/or shell (up to 4mm). There are fragments with particularly large seed impressions in their surfaces as well as the impressions of straw or grass. Used both for slabs and daub, it was also the fabric used for the possible loom weights and kiln bars (Table 14.2).

SHL Shelly
Medium hard fired with buff-pink or grey surfaces and a buff or orange-buff core. Inclusions are shell (up to 5mm), occasionally quite dense, sparse black (iron ore) and occasional white rounded possibly limestone inclusions (approx 0.5mm). Only slabs occurred in this fabric and then rarely.

Manufactured ceramic building material

Five fabric categories were defined for the manufactured ceramic building material, coded by number.

Type 1A Sandy
Hard, fairly smooth but can be quite powdery to the touch and easily abraded when underfired. Oxidised, orange or brown in colour throughout, with occasional dark red core; can be overfired when colour is brick-red throughout. Finely tempered, although *tegulae* have less care taken over them and some large pebbles are left in the clay. Quartz is sub-angular, 0.1-3.0mm. Some dark red inclusions, possibly iron ore, 0.4-0.7mm. All forms are present except brick, including one possible gutter/valley tile, although this may be a *tegula* twisted in firing.

Type 2 Grey cored
Hard, fairly smooth well made with few large pebbles. Usually bright orange or light brown in colour; characterised by distinctive medium grey core throughout. Finely temered; quartz grains are 0.1-0.3mm; some rounded, possibly iron ore inclusions, 0.5-1.5mm. *Tegulae*, *imbrices* and bricks are present.

Type 3 Sand and grog
Smooth, soft and powdery to fairly hard; buff-orange when low fired, darker orange-brown when highly fired. Very finely sand-tempered; quartz is sub-rounded and less than 0.1mm, although some infrequent grains can be up to 0.2mm. Characterised by large red iron ore inclusions, 0.5-5.0mm. Some small black particles, less than 0.1mm. Imbrices and bricks occur in this fabric.

Type 4 Gault
Coarse, fairly hard, almost untempered although infrequent limestone and flint inclusions are found. Also some buff and red grog, 0.3-0.5mm. Light pink-orange surfaces although occasionally can be white-buff. Bricks only in this fabric.

Type 5 Shelly
Coarse fabric, heavily shell-tempered although the shell inclusions can be quite fine. Fairly hard to soft depending on degree of firing, occasionally with a soapy feel. Colour varies from pink, through orange to buff or grey, sometimes all colours on the same tile, depending on extent of reduction. There is a wide range within this fabric type, with occasional large limestone lumps up to 7.0mm, red grog up to1.0mm and/or voids resulting from burnt out organic inclusions. All forms occur in this fabric.

III. Fired clay

Daub

Phase	G no	Group description	Fragments
1	22	Post-built building	32
1	46	Group of pits	21
2	2	Enclosure ditches	1
2	62	Occupation deposits above early cobbles in Areas 4	1
3	19	Enclosure ditch	7
3	38	Ditch	2
3	64	Occupation deposits in Area 2 predating main building G65 (contains Burial 3)	10

Table 14.3 Distribution on site of fired clay - daub

The fragments of fired clay recorded as possible daub are of the same basic organic fabric type as the slabs described below. Many of the fragments had flat surfaces but unless they had both an upper and a lower surface they have been grouped together as daub. All the fragments from the site showed voids of organic matter with straw or grass clearly visible, as well as the occasional large seed impression. This suggests either the inclusion of fresh chaff in the clay mix or animal dung, the latter being more usual.

Clay, both fired and unfired, had many uses and, as only two fragments had clear wattle impressions, identification must be regarded as tentative. The relatively large number of fragments — all from a single post hole of building G22, two of them with wattle impressions — suggests that these at least were structural (Table 14.3). This post-hole was truncated by a Phase 2 ditch (G20), however, and there is a strong likelihood that the fragments were intrusive.

Twenty-one small fragments of daub were found in the same post hole (1-106) as the large slab fragment (no.3) (see below).

Slabs and 'trays'

Phase	G no	Group description	Frags
1	4	Enclosure ditches	12
1	22	Post-built building	60
1	35	Enclosure ditch	1
1	46	Group of pits	16
1	47	Enclosure ditch	3
1	88	Pair of pits	2
2	1	Enclosure ditches	3
2	2	Enclosure ditches	2
2	10	Line of post pits / post-holes	1
2	20	Enclosure / trackway ditches	4
2	21	Roundhouse gully	1
2	40	Ditch	1
2	54	Pit	3
3	3	Enclosure ditch	1
3	38	Ditch	3
3	64	Occupation deposits in Area 2 predating main building G65 (contains Burial 3)	9
4	34	Group of pits	12
4	69	Occupation deposits surrounding main building G65	2
5	73	Destruction fill within hypocaust	2
5	74	Destruction layers outside main building G65	1
5	86	Post-hole	2

Table 14.4 Distribution on site of fired clay - slabs

A number of flat slabs of fired clay were found, all heavily organic tempered with the addition of some shell or grog filler, making smaller fragments difficult to distinguish from daub fragments, especially as all the fragments are hard fired and have flat surfaces. Where two surfaces exist, an upper and a lower, these have been recorded as slabs; amorphous fired clay sometimes with the remnant of a surface has been recorded as daub.

The diameter of only one could be measured, approx.180mm. Others are possibly roughly rectangular with rounded corners. They are very obviously hand-formed with uneven edges, some turned up to form a 'tray' rather than a flat slab. Clear finger smoothing is seen on the surfaces; Fig. 2.5 no. 2 is particularly well-made and has been scraped smooth possibly with a knife. Where thickness could be measured it was in the region of 32mm although there is one example which is unusually thick at 60mm.

These flat slabs are relatively common, although not in large quantities, on Late Iron Age/early Roman sites. At Newnham they are most common in Phases 1 and 2, although they appear to have continued to be used, possibly not for the same purpose, in later phases.

Similar types occurred at Camulodunum (Hawkes and Hull 1947, 347) but none were structural; they were used in ovens or kilns. Baldock (Stead and Rigby 1986, 187-8) also produced some organic tempered 'clay slabs' whose suggested use was also as parts of ovens, kilns or hearths. A variety of fired clay objects including slabs and 'trays' (slabs with upturned edges) were recovered from the Conquest-period pottery manufacturing site at Stagsden (Gentil and Slowikowski 2000, 90-1). On that site at least some are clearly associated with pottery manufacture and, despite the presence of kiln bars (see below) there is no other evidence of pottery manufacture at Newnham.

There is no evidence for how the slabs were used at Newnham, although it has been suggested that at Baldock they might have been used as salt licks for cattle (Stead and Rigby 1986). Elsewhere in the region their use as bake stones for baking flat breads has been conjectured (Slowikowski 2008, 278). This is unlikely at Newnham as there was no evidence of sooting or burning on any of the surfaces. These objects were simple to make and were clearly multi-functional.

A single pit (1-106) in pit group G46 produced a large slab fragment with a clear edge which had been turned up to form the lip of a 'tray' (Fig. 2.5 no.3).

Other fired clay objects

Phase	G no	Group description	Fragments
Loom weights			
1	22	Post-built building	1
2	6	Enclosure ditch	1
Kiln bars			
2	21	Roundhouse gully	1
2	60	First cobbled surface/floor in Areas 4&5	1
3	45	Enclosure ditch (contains Burial 4)	1

Table 14.5 Distribution on site of fired clay – other objects

Loom weights

Two fragments of possible loom weights were found (Table 14.5). The fabric of both is heavily organic tempered with some shell and is similar in appearance to the fabric of the slabs and the daub. One is a small corner fragment from an Iron Age triangular block with one pre-firing hole surviving (unillust.), which came from the south-westernmost post hole in building G22. The placing of objects or fragments of objects within the foundations of buildings is a recognised phenomenon in the Iron Age (Hill 1995, 21; Slowikowski 2005, 115), suggesting that the placement of this loomweight in the post-hole had ritual significance.

The other fragment is from a possible corner but not enough survives to define it further.

Kiln bars

Three fragments of kiln bars were recovered from the site, from contexts in Phase 2 and 3 (Table 14.5). The kiln bars at Newnham are all in an organic/shell fabric and appear to have been tapered at both ends. Number 7 might be hexagonal in section.

Kiln bars were used as a base on which to stack the pots to be fired. They were placed so as to radiate out from a central support such as a pillar, pedestal or up-turned pot (Slowikowski 2000, 73). The bars facilitated the even circulation of heat around the kiln (Corder 1957, 17). One end would have rested on the central support and the other in a recess or on a ledge in the kiln wall. Alternatively, the outer end of the kiln bar may have rested on the top of the oven wall itself.

Although no wasters have been identified in the pottery assemblage the presence of kiln bars does suggest pottery manufacture. The kiln bars are fragmentary and found scattered rather than in a discrete context. Nevertheless, they would not have travelled far from where they were used and they are clear evidence of pottery manufacture in the vicinity if not in the excavated area of the site.

Although only three kiln bar fragments were found, two derived from Phase 2 contexts: the gully of roundhouse G21 and the external cobbled surface G60. The third kiln bar came from the fill of enclosure ditch G45 in Phase 3. The fabric of all three suggests an early Roman date for their use. At this time, pottery manufacture was carried out by small workshops which had a very localised if not domestic distribution. This resulted in a large number of small

workshops producing for the local market. These were eventually replaced by a smaller number of highly organised mass manufactories with a wider distribution. By the 3rd and 4th centuries industries such as those at Oxford, the Nene Valley and Harrold dominated the market in this region.

IV. Ceramic building material

Bricks

Bricks and floor tiles are indistinguishable, so they have been recorded together. Throughout the report they are referred to as 'bricks'. The same size and shape of brick would have been used both for floors and walls (Brodribb 1987, 35). They occur most commonly in gault fabric, although shelly and sandy types also occur frequently (Table 14.2).

Some bricks whose complete dimensions could be measured survived; 20 of these are shelly bricks from G73 (2-14), the destruction of the hypocaust. They fall in the range 185-211mm x 180-207mm and only four are square. Their sizes fit into the range of sizes for bricks called *bessales*, which are usually 2/3 of a Roman *pes* (1 *pes* = *c*. 296mm), although the inability of the Romans to measure accurately means a fairly wide range of sizes (Brodribb 1987, 2). Their use was primarily for the building of *pilae* for hypocausts although they were also put to other uses. One large square sandy brick 270mm x 270mm x 40mm was found in the same context. All the complete bricks have patchy mortar on one side and a heavy covering of mortar on the other. Of these, 14 have been stabbed with either a nail or a pointed stick several times on one side, possibly to speed drying (Fig.5.7 no.13). Most bricks thicker than about 37mm were stabbed; below that size only random thicknesses were stabbed.

Shelly bricks probably originated at the Harrold kilns (Brown 1994) but their varied thicknesses means they were made by a variety of tilers using different moulds. They need not all have been made at the same time or bought in with the same batch. The gault bricks, however, being more consistent in their thickness, are most likely to have come from the same kiln.

One sand/grog brick has a strip of clay 5mm thick applied along its lower surface; its purpose, if deliberate, could not be ascertained. Two bricks have human finger impressions, both sandy types. The finger impressions are smudged. A sandy brick from Tr.4F (19) has the print of a dog's paw (identification: Lawrence and Brown 1974, 48). Only one brick has a deliberate signature, a scored sign on the upper surface (Fig.5.7 no.14).

An examination was made of bricks with mortar, particularly its position. It appears that mortar did not cover the whole surface of the brick but was sometimes spread around the edges only, and at other times in a mass at the centre of the brick. Some mortar was found on broken edges on shelly and sandy types, indicating either use of broken bricks or repairs to bricks broken *in situ*.

There is no sign of sooting on any brick.

Tegulae

Tegulae occur in five different fabrics: shelly, sandy, grey-cored, sand and grog, and shelly with black inclusions, with sandy types predominating. Sandy types have the most varied thicknesses, from 13-26mm; Brodribb (1987, 13) cites only two examples less than 20mm, from Ickham (14mm) and Slonk Hill (18mm). Verulamium produced what was described as an 'exceptionally thin' *tegula* of 15mm (Wheeler and Wheeler 1936, 141) in the 3rd century construction of building 4. The thinnest example from Newnham is 13mm. Shelly types are the thickest, varying from 26-28mm, although few of their edges survived intact.

Flanges and cut-outs were recorded according to Brodribb (1979, 6-7). The most common flange is no. 11, a type not previously recorded. The most common cut-out is no. 5, and this usually occurs in combination with flange no. 11. Patches of mortar also occur on some of the flanges, indicating that weight alone was not enough to keep the *tegulae* on the roof. Two sandy and one shelly *tegulae* have post-firing holes bored through them, possibly for pegs or nails. At Beauport Park a quarter of the *tegulae* had nail holes (Brodribb 1979, 215). They were placed on the lowest part of the roof, while the others depended on weight to prevent them from slipping. Holes were usually pierced prior to firing although post-firing examples are known from Piddington (Brodribb 1987, 11). Others probably exist unrecognised; as the hole would create a weak spot, the *tegula* would break across it and it can then be easily confused with trowel holes. At Verulamium nail holes were rare, but mortar was present on both *imbrices* and *tegulae* (Wheeler and Wheeler 1936, 142). Mortar was also found on some broken edges of sandy and grey-cored types, indicating either the use of broken *tegulae* or the repair of *tegulae* that have broken *in situ*.

Signatures in the form of signs smeared on with the fingers were not as common as at Beauport Park, the most complete collection of Roman tile and brick, where only 29% were without signatures. At Newnham only five examples of finger signatures were found: two on shelly *tegulae*, two on sandy *tegulae* (Fig.5.5 nos 1, 6) and one on a sand and grog *tegula*. All are very fragmentary and impossible to fully reconstruct although elsewhere the commonest signature is a symmetrical semi-circle. It has been suggested (Lowther 1948, 10) that the purpose of roller-stamping flue tiles was to identify individual tilers for the purpose of checking quality. This may have been the same reason for the signatures on other types of tile (Betts 1987, 26-7). Batch marks on the edges of tiles were absent here, although they are present on tile from other sites (Brodribb 1987, 132-3).

Animal or human prints are common on most sites (Cram and Fulford 1979, 207), and at Newnham blurred finger prints were frequently found on a wide variety of tile. One sandy *tegula* had part of an animal's paw print, possibly a dog (Fig.5.5 no. 2) (Lawrence and Brown 1974, 48). The tiles were left outside or in an open shed to dry prior to firing and a domestic dog must have run over the surface of them while they were drying. There are signs of knife trimming on some of the flanges of sandy *tegulae* as well as the underside towards the edges. A knife does not appear to have been used to trim other *tegulae*. Some *tegulae* have finger grooves at the base of the flange, but these are not consistent. They are not restricted to any one *tegula* type. Although it has been suggested (Brodribb 1987, 16) that these grooves aided the down flow of rainwater, since not all tegulae had them it was probably just a natural way of 'finishing off' after formation of the flange.

Imbrices

Of a total of 342 fragments of *imbrex*, 65% are of sandy type and 29% are of shelly type, presumably corresponding to the sandy and shelly *tegulae*. Small amounts of sand and grog and grey-cored *imbrices* were found (6% and 1% respectively).

They were made by bending sheets of clay over a rounded block. All *imbrices* have a uniform smooth section unlike the varied angles of medieval ridge tiles. Roman *imbrices* were used on the roof ridge as well as overlapping *tegulae* flanges vertically down the roof, ensuring a watertight seal. The use of purpose-made ridge tiles is known but none were recognised at Newnham. Occasionally mortar was used to hold the *imbrices* in place. Both shelly and sandy *imbrices* have patchy mortar on upper or lower surfaces (and occasionally on both), usually towards one end, where it survives, indicating that *imbrices* not only covered *tegula* flanges but overlapped each other. There are examples of sandy and shelly *imbrices* with mortar on their broken edge. One sandy *imbrex* from G73 (2b-6) had particularly thick mortar on a break, indicating a repair after the tile had broken, probably *in situ*, or possibly use of a broken tile.

One *imbrex* of sandy type is sooted on the underneath. It was found in G69 (2-168), levels outside the building, but associated with its occupation. As braziers rather than open hearths would have been in use as supplementary heating to the hypocaust, the sooted *imbrex* may have been on a roof covering the stoke pit to the hypocaust system. No other sooted roof tiles were found, either *tegulae* or *imbrices*, however, so the *imbrex* may have been sooted accidentally. Examples are known from Verulamium of *imbrices* being use as flue tiles instead of purpose made box flue tiles (Wheeler and Wheeler 1936, 26). This could also explain internal sooting.

Signatures did not occur on *imbrices.* While one shelly *imbrex* from Tr.2 (89) has what appears to be faint combing along its length, it cannot be certain whether this was a signature or an attempt at decoration.

All *imbrices* with a surviving edge had their thickness measured. The thicknesses vary between 13-16mm for all types, although two sandy *imbrices* are particularly thick, 20mm and 32mm. The commonest thickness was 13-14mm and *imbrices* appeared to be rather more consistent in their sizes than either *tegulae* or bricks. Their fabric is of a finer consistency and they are better made than the *tegulae* in corresponding fabric types. One complete end survived, at least 420mm long and 166mm wide (Fig.5.5 no. 5).

Flue tiles

Flue tiles are of two fabric types: shelly and sandy, with shelly types predominating. Their source, as for the other shelly tiles, was probably the Harrold kiln. Only two flue tiles with complete dimensions were found; both have tapering sides which suggests they were used as hollow voussoirs. The first (unstratified) measures 215mm x 135mm and has a post-firing hole bored through one side. This could however, be a trowel hole. The other, from G73 (2b-6)) (Fig.5.6 no. 7) measures 251mm x 163mm (tapering to 154mm) x 170mm (tapering to 137mm). One other incomplete fragment of a possible hollow voussoir was found in destruction levels, G72 (5b-11).

Fragments of both blank and combed walls were found, the majority of sherds being combed. Twelve fragments have combing on adjacent walls; all other fragments have the more usual alternating blank and combed walls. One flue tile from G8 (1-77) has one side only covered with mortar although adjacent sides also have combing. The purpose of the

combing is not decorative as it would not have been visible beneath the coat of plaster, but rather as a key for plaster or mortar to adhere.

Four different types of combing pattern were distinguished: a figure-of-eight; crossed lines (there were variations in this group); wavy lines and a combination of crossed and wavy line (Fig. 5.6 nos 7-10; Fig. 5.7 nos 11-12). Brodribb (1987, 108) identified at least 80 different combing patterns. Both shelly and sandy types are predominantly cross-lined with a few examples of wavy lines and the combination pattern. The figure-of-eight occurs only on shelly types.

The width of the combing and the number of prongs were recorded to try and establish groups of tiles possibly made by the same tilers or workshop. It was, however, impossible to establish this as some patterns were made by a narrow comb used twice, and these were not easy to distinguish. Elsewhere the most usual size of comb is seven prongs giving a combing width of 37mm (Brodribb 1987, 78). Plaster/mortar adhered to 6% of combed flue tile fragments. Assuming that the combing was intended to help plaster/mortar to adhere, 94% of tiles without plaster/mortar is a high proportion. The plaster/mortar occurred on 4% of shelly flue tiles and 22% of sandy flue tiles. The combing on the sandy types is deeper and therefore the plaster/mortar adhered closer. Besides the shallowness of the combing on the shelly flue tiles, the surfaces are often abraded, being softer than sandy tiles. One shelly flue tile with crossed-line combing, from G74 (2b-5), has remnants of red and white plaster/mortar adhering, indicating plastering on two different occasions possibly patching or repair.

Thirty-one (3%) shelly and five (4%) sandy flue tiles have signs of soot blackening on the interior; one shelly and one sandy tile also have sooted exteriors, and one shelly tile has only the exterior sooted. The majority of flue tiles from G52 (2-217) are sooted. Sooting confirms their use as flue tiles, probably close to the furnace.

The flue tiles were moulded around a solid block and the 'seam', usually down the centre of one wall, rather than at the corner, was strengthened by adding a fillet of clay along its interior. The cut-outs in the blank walls are rectangular in shape with rounded corners, both for shelly and sandy types. One shelly tile has blurred finger marks on the inside edges of the cut-out where the tile had been lifted from the block. This method appears to be universal (Lowther 1948, 4).

V. Site overview

The material deriving from each feature group is discussed below in the phase to which the feature (*i.e.* its cut and use) has been allocated. It should be noted, however, that, although the fills of features have been allocated to the same phase as the cut and use of the feature, the material found within them is most likely to have been introduced at the end of the life of that feature. Strictly speaking, therefore, these fills should properly be allocated to the succeeding phase, unless the feature was very short lived, and cut and filled almost immediately.

Phase	Fired Clay				CBM				
	ORG	ORG/SHL	GRG/ORG	SHL	1A Sandy	2 Grey cored	3 Sand/grog	4 Gault	5 Shelly
1	100	25	21	2	22			3	7
2	4	4	11		54		2	10	20
3	11	2	20		166	3	5	44	73
4		11	2		256		5	269	440
5			5		276	8	17	93	706
6					30				20

Table 14.6 Ceramic building material and fired clay fabrics by phase (quantified by fragment count; excluding post-Roman roof tiles and unidentified fragments)

Phase	Fired Clay				CBM				
	Daub	Slab	Loom weight	Kiln bar	Tegula	Imbrex	Gutter	Brick/ floor	Flue
1	53	95	1		15	3		8	5
2	2	15	1	2	26	9		32	18
3	19	13		1	105	35		85	65
4		13			150	93	1	342	377
5		5			198	97		262	541
6					41	1		1	7

Table 14.7 Ceramic building material and fired clay forms by phase (quantified by fragment count; excluding post-Roman roof tiles and unidentified fragments)

Phase 1 Late Iron Age to early Roman

G no	Group description	Fired Clay			CBM			
		Daub	Slab	Loom weight	Tegula	Imbrex	Brick/floor	Flue
4	Enclosure ditches		12		1	3	1	
12	Structural features / truncated gully				2			1
22	Post-built building	32	60	1	10			
35	Enclosure ditch		1					3
46	Group of pits	21	16		1		1	
47	Enclosure ditch		3					
85	Ditch						1	1
87	Pit group		1				2	
88	Pair of pits		2				2	
89	Structural gully?				1		1	

Table 14.8 Phase 1 Fired clay and ceramic building material

Enclosures

Most of the fired clay (slabs and daub) was found in Phase 1, the majority of fragments coming from the central area of the site (Area 5), especially G22 and G46 (Table 14.8)

The fill of enclosure **G35** contained largely Late Iron Age pottery in 'Belgic' fabrics and a single slab which is likely to be contemporary with this pottery. Early Roman pottery was found and the flue fragments are likely to be of the same date.

Ditch **G4** contained twelve fragments making up at least five slabs. Two are particularly well made: no. 2 is round, with a diameter of 180mm and is neatly shaped with a knife-trimmed or scraped surface, possibly the upper surface; the other, no.1, is rounded although not perfectly circular with a neatly trimmed edge. The slab in sandy fabric 1A is the only one on the site in this fabric, although some of the sandy fragments recorded as coming from *tegulae* in G22 (below) may also derive from slabs. Other ceramic building material is intrusive.

Roundhouses and structural gullies

The ring ditch **G29** contained no fired clay or ceramic building material although one of the two pits in **G88** within the roundhouse did contain two very abraded fragments of slab in grog/organic fabric. The other pit contained intrusive fragments of Roman shelly fabric 5 brick/floor tile, one of which has scoring on the upper surface (Fig.5.7 no. 14).

The only structural group to contain fired clay or ceramic building material is **G12**; the *tegula* and flue fragments are likely to be intrusive.

Post-built structures

The post-built building **G22** produced large quantities of fired clay from three of its post-holes. The assemblage comprises daub, fragments of slabs, a loom weight and ten tiny crumbs of a possible *tegula*, which were only tentatively ascribed to this form based primarily on their sandy fabric. They are, however, very fragmentary and abraded and could be fragments of fired clay slabs or daub. They also came from a post-hole that had been truncated by a Phase 2 ditch (G20); no other post-holes in G22 produced structural daub, and there is consequently a strong possibility that this material was intrusive, although the presence of loom weight in the south-westernmost post-hole does suggest that some degree of structured deposition was taking place.

Other features

Possibly associated with G22 was pit group **G46**. One pit (1-106) within G46 produced a large slab fragment with a turned up edge (no.3) and a further 21 fragments of daub. In addition there are eleven fragments, possibly from a single slab and a further three fragments, from another pit (5a-48) in the same group. The sandy brick/floor and *tegula* fragments are so small and abraded that they could be amorphous fired clay or, if identified correctly, they are intrusive.

The close proximity of G22 to G46, as well as the similar material found within them, suggests that these may have been in use, or at least abandoned, at the same time.

Pit group **G87** contained a fragment of a slab/'tray' in one pit as well as a tiny abraded sliver of a sandy brick/floor tile, probably intrusive.

Ditches G47 and G85 and structural gully G89 contained only intrusive ceramic building material fragments.

VI. Phase 2 Early to mid-Roman

G no	Group description	Fired Clay				CBM			
		Daub	Slab	Loom weight	Kiln bar	Tegula	Imbrex	Brick/floor	Flue
1	Enclosure ditches		3			2	1		2
2	Enclosure ditches	1	2			2	1	2	2
6	Enclosure ditch			1		4	2	2	2
10	Line of post pits / post-holes		1			1			
14	Ditch					1	1	1	
20	Enclosure / trackway ditches		4			5		4	4
21	Roundhouse gully		1		1	5		1	2
31	Group of post-holes					2			
40	Pit		1						
42	Enclosure ditches					1		13	2
54	Pit		3						
60	First cobbled surface/floor in Areas 4&5				1		1		2
62	Occupation deposits above early cobbles in Area 4	1				3	3	9	2

Table 14.9 Phase 2 Fired clay and ceramic building material

Enclosures and drove ways

The material within the fill of ditch **G2** is fragmentary and mixed, with most building material likely to be intrusive. The daub and the slab fragments could have derived from Phase 1 activity, possibly G4.

As with G2, much of the building material found within ditch **G1** is intrusive. The three fragments of slabs, however, are all of the same grog/organic fabric and come from the same area of the ditch suggesting they possibly derived from G46 in Phase 1.

The four fragments of slab from drove-way **G20** were small and abraded and clearly residual. The rest of the ceramic building material comprised a small mixture of brick and tiles.

Ditch **G6** subdivided the area between G1 and G2 and contained, in addition to a small quantity of mixed building material, the corner fragment of a possible loom weight. The fragmentary nature of what would have been a relatively substantial object suggests it is residual in this ditch.

Further subdivisions of this area included ditch **G14** but the fill, as with the previously discussed ditches, comprised a mixture of Roman brick and roof tile.

The ditches of **G42** contained fragments largely of brick/floor tiles but also some smaller fragments of roof tile and flue.

Building G39 and cobbled surfaces

The features allocated to the main building in this phase, **G39**, contained no ceramic building material. Neither did the internal cobble floor **G61** nor the loam layer above it **G63**. This suggests that either thatch or wooden shingles were used on the roof. Had manufactured ceramic building material been used in the construction it is likely that many more fragments would have been found if not in the structural features of G39 then at least in the surrounding area.

The large area of cobbling **G60** outside building G39 contained only few and fragmentary ceramic building material, as did the layer **G62** which built up on top it. Included in the material of G60 was a kiln bar (no. 6).

Other structures

Very little ceramic building material or fired clay derived from post holes **G10** and none from stake holes **G11**.

The roundhouse ring-gully **G21** contained a kiln bar, possibly originating from an industrial area in the vicinity of the site. Its presence in this phase, as well as its organic/shell fabric, suggests pottery manufacture in the early Roman period. The rest of the ceramic building material is mixed and fragmentary.

Rectangular post-hole structure **G31** produced two small *tegula* fragments from one of its post holes, not enough to suggest it had a tiled roof.

Pits

Two of the four pits **G54** contained fragments of slabs but these could have derived from Phase 1 features in the same area.

Pit **G40** contained a fragment of a slab, possibly also residual.

VII. Phase 3 Mid-Roman

G no	Group description	Fired Clay			CBM			
		Daub	Slab	Kiln bar	Tegula	Imbrex	Brick/floor	Flue
3	Enclosure ditch		1		18	3	3	4
7	Enclosure ditches				4	7	3	
19	Enclosure ditch	7				3	1	10
32	Line of post holes with stone packing							1
38	Ditch	2	3		2		1	1
43	Enclosure ditch				8	2	17	14
45	Enclosure ditch (contains Burial 4)			1	25	3	11	10
51	Well				25	8	3	17
64	Occupation deposits in Area 2 predating main building G65 (contains Burial 3)	10	9		10	1	14	4
65	Main building (bath house?)				1			
66	Cobbled/paved surface mostly to south and west of main building G65				4	1	7	
67	Later limestone paving in Area 5				4	2	20	2
68	Make-up for main building G65				1		2	
78	Ditch?				2	3	1	
81	Gully				1	2	2	2

Table 14.10 Phase 3 (unidentified fragments omitted)

Enclosures and drove ways

Enclosure ditch **G3** contained a relatively large assemblage of building material, predominantly roof tile, but also small quantities of brick/floor and flue tile fragments. The single fragment of a slab is likely to be residual in this context.

The area was subdivided by gullies **G7** which contained similar fragmentary building material to G3.

The enclosure ditch **G78** contained a fragmentary assemblage of building material.

Ditch **G19** appears to have been open while building G21 was still in use and, in addition to manufactured building material, contained seven relatively large fragments of daub, weighing on average 15.57g. Several of the fragments have one smoothed surface and could have had a structural use, possibly in building G21.

The enclosure ditch **G38** contained a mixed and fragmentary assemblage of building material primarily roof and flue tile although pieces of daub and fragments of a slab were also found.

Ditch **G43** contained only manufactured building material but it is a mixed assemblage of roof, floor and flue tiles and in a variety of fabric types.

Like Ditch 43, ditch **G45** also contained the full range of manufactured ceramic building material in a variety of fabric types.

Building G65 and other structures

A layer of mixed material **G68** was deposited on top of the levelled ground surface in preparation for the construction of building G65. Within this material were small and abraded fragments of ceramic building material possibly intrusive from the G65.

The structural features of building **G65** produced a single *tegula* fragment.

One of the post holes of the putative annexe **G32** contained a single shelly flue fragment, which might have got in during episodes of rebuilding or repair.

Cobbled surfaces and occupation deposits

Deposits **G64** contained an almost complete neonate burial (Burial 3) as well as a large but very mixed assemblage of pottery, fired clay and ceramic building material. This was interpreted as possible occupation debris. The relatively large number of slabs from G64 suggests that, although the deposit contained much possible residual material, they may have continued to have a function well into this phase, even if it was not the same function as in preceding phases.

Resurfaced cobbled yard **G66** to the south and west of building G65 contained small quantities of ceramic building material.

New paved or cobbled surface **G67** covered the northern half of Area 5 and contained mainly fragments of brick/floor tile but also some roof and flue tile fragments.

Other features

The well **G51** contained mainly roof and flue tile fragments. The flue tiles all had crss combing and oval cut-outs and were in shelly fabric 5. The ceramic building material, with the exception of a single example each of *tegula*, brick/floor tile and flue tile, was in sandy fabric 1A. This could have been demolition debris from an unknown structure with a single episode of construction using one batch of material.

No fired clay or ceramic building material was recovered from the oven **G41**.

VIII. Phase 4 Mid- to late Roman

G no	Group description	Fired Clay	CBM					Mod
		Slab	Tegula	Imbrex	Gutter	Brick/floor	Flue	Flat roof tile
8	Enclosure ditch		3	4			5	
15	Pit			1			1	
34	Group of pits	12	1	1		2		
34	Odds and ends in Area 2			3			1	
44	Enclosure/track way ditches		11	2		24	13	
52	Pit		82	39	1	21	220	
57	Ditch?		4	10		34	5	
69	Occupation deposits surrounding main building G65	2	9	4		19	16	
70	Occupation deposits within main building G65		32	11		4	95	
71	Ash in hypocaust						1	
72	Late occupation deposits in Area 5		8	18		240	20	2

Table 14.11 Phase 4 (unidentified fragments omitted)

Enclosures and drove ways

Ditch **G8** contained a small mixed assemblage of ceramic building material.

Drove–way ditches **G44** contained a mixed assemblage of ceramic building material in a variety of fabric types.

The ceramic building material assemblage from ditch **G57** is predominantly brick/floor tile and roof tile. As the ditch cut through the foundations of Phase 2 building G39, it is possible that the ceramic building material derived originally from there.

Occupation deposits

Outside building **G65**, occupation deposits G69 and G72 were derived from a mixture of deliberate dumping and natural silting.

Deposit **G69** contained mainly brick/floor and flue fragments, but also a smaller quantity of roof tile and two abraded fragments from fired clay slabs, residual by this phase. Two fragments of roof tile, a *tegula* and an *imbrex*, showed signs of having been burnt.

Deposit **G72** comprised predominantly brick/floor tiles. Included in this assemblage are two fragments from modern flat roof tiles.

Inside building G65, deposit **G70** was probably the raking pit for the stoke hole of the hypocaust. It contained a large quantity of ceramic building material predominantly flue tiles in shelly fabric 5, all of which had either wavy-line or cross-combing. The consistency of fabric and combing types suggests they were used in the same structure, or at least were part of the same batch.

Also inside the building, deposit **G71,** described as a thin layer of ash, contained a single fragment of a cross-combed flue tile.

Pits

Pit **G15** contained tiny amounts of ceramic building material, an *imbrex* and a flue tile only.

Pit **G52** contained a large quantity of ceramic building material of varying fabric types, but predominantly flue tiles in shelly fabric 5 and sandy fabric 1A. A single gutter or valley tile was identified from the well smoothed surface on the inside of the curve.

Of the pits in **G34**, (2-66) contained three fragments among which was the complete end of a sandy (fabric 1A) *imbrex* (Fig.5.5 no.5) and another (2-89) contained two fragments of roof tile and eleven fragments from a fired clay slab. The latter pit also contained a small quantity of Late Iron Age/early Roman pottery. Pit 2-66, on the other hand, contained late Roman pottery in addition to the *imbrex*.

IX. Phase 5 Late Roman to Saxon

G no	Group description	Fired Clay	CBM				Modern
		Slab	Tegula	Imbrex	Brick/floor	Flue	
73	Destruction fill within hypocaust	2	56	21	113	390	
74	Destruction layers outside main building G65	1	15	7		36	
75	Destruction fill within main building G65		70	28	15	49	
76	Destruction layers in Area 4		25	20	46	27	1
77	Destruction layers in Area 5		23	6	76	23	1
79	Robber trenches in Area 2		9	12	4	16	
80	Robber trenches in Area 4			3	8		
86	Post-hole	2					

Table 14.12 Phase 5

Structural features

Post hole **G86** contained two fragments from a fired clay slab and no other ceramic finds.

Robber trenches and destruction layers

Robber trenches **G80** and **G79** contained a small mixed assemblage of CBM, with most coming from G79. G80 contained only brick/floor and imbrex fragments in sandy fabric 1A and gault fabric 4. Layer G79, on the other hand contained the full range of forms but only in shelly fabric 5 and sandy fabric 1A.

Destruction layers inside the building G74 and G75

Destruction layers outside the building **G76** and **G77** contained a large assemblage of ceramics, including the full range of ceramic building material forms and fabrics.

Destruction layer **G73** within the hypocaust contained the largest assemblage of ceramic building material, giving an idea of the material used in the construction of the hypocaust building. Examples of roof tile, flue and brick/floor tiles were found in both shelly fabric 5 and sandy fabric 1A. Among the brick/floor tiles were complete examples from the hypocaust *pilae* measuring approximately 198 sq mm, the right size for *bessales*. All are stabbed on the underside to

facilitate drying prior to firing and to allow mortar to adhere well. The flue tiles show some soot blackening on their interiors and varied combing patterns, including cross combing, wavy-line combing and figure-of-eight combing.

X. Unphased - probably Roman

No fired clay or ceramic building material was recovered from burials 2c-28, 5a-61 or the corn drying oven G50.

There was a quantity of ceramic building material which derived from unphased contexts, topsoil or was recorded as unstratified. The assemblage comprised mainly roofing tile, brick/floor and flue tiles, including a shelly flue tile (fabric 5) recorded as being almost complete (L215mm; H135mm) with cross combing on all sides (similar to Fig. 5.6 no. 7). Four fragments of individual slabs in grog and organic fabric (GRG/ORG) were found.

XI. Phase 6 Modern

A small assemblage of mixed ceramic building material dating to the Roman period was recovered from modern features.

Catalogue of illustrated fired clay objects (Fig. 2.5)

1. Slab in ORG/SHL fabric; flat, rounded with trimmed edge; Ph1 G4 (5c-20.03)

2. Slab in GRG/ORG fabric; neatly shaped, round diameter approx. 180mm; one trimmed/scraped surface; Ph1 G4 (5c-20.01)

3. Slab in ORG/SHL fabric; rounded with turned up edges; Ph1 G46 (1-106)

4. Slab in ORG/SHL fabric; knife trimmed edges (polygonal?); Ph3 G64 (2-176)

5. Slab in ORG/SHL fabric; turned up edge; Ph4 G34 (2-31)

6. Kiln bar fragment in ORG/SHL fabric; one tapering end; Ph2 G60 (5b-14)

7. Kiln bar fragment in ORG/SHL fabric; roughly hexagonal in profile; Ph3 G45 (5a-18)

Fragment (17g) in ORG/SHL fabric from the possible corner of a loom weight. (unillustrated); Ph 2 G60 (5b-14)

Fragment (419g) from a possible loom weight in ORG/SHL fabric; rectangular, brick-like fragment with three remaining surfaces. Only thickness could be measured: 65mm. A hole with a diameter of 12mm tapering to 9mm was made prior to firing by pushing a pointed implement at an angle through the object from one end. (unillustrated); Ph 1 G22 (5b-51)

Catalogue of illustrated ceramic building material (Figs 5.5–5.7)

All published at scale 1:4 except no.3 which is scale 1:8

1. One fragment of a sandy *tegula* with finger smeared 'signature' in the form of a loop on upper surface; flange type 11. Ph 4 G52 (2-190)

2. One fragment of a sandy *tegula* with animal paw print on upper surface; flange type 11; cut out type 5. Ph 4 G70 (2-52)

3. One fragment of a sandy *tegula* with post-firing hole possibly for a nail or peg; flange type 11. Ph 4 G52 (2-190)

4. One fragment of a shelly *tegula* with faint finger groove at base of flange; flange type 1. Ph 5 G73 (1-18)

5. Complete end of a sandy *imbrex*. Ph 4 G34 (2-66)

6. One fragment of a sandy *tegula* with post-firing hole possibly for a nail or peg and finger smeared 'signature'. Ph 5 G73 (2b-5)

7. Complete shelly wedge-shaped flue tile with wavy line and cross combing on opposing sides and remains of mortar on edges. Ph 5 G73 (2b-6)

8. One fragment of a shelly flue tile with cross combing. Ph 4 G52 (2-217)

9. One fragment of a shelly flue tile with figure-of-eight combing. Unphased (4-1)

10. One fragment of a shelly flue tile with wavy line and cross combing. Ph 4 G52 (2-217)

11. One fragment of a shelly flue tile with cross combing and oval cut-out in blank wall. Ph 5 G73 (2-14)

12. One fragment of a sandy flue tile with cross combing and oval cut-out in blank wall. Ph 3 G51 (1-19)

13. Complete sandy brick/floor tile with random stabbing on one surface. Ph 5 G73 (2-14)

14. One fragment of a shelly brick/floor tile with pre-firing scoring on one surface. Ph 1 G88 (2b-16)