

Kiln Material Report (Archive)

Kiln material, in this report, is considered to be burnt clay from a kiln, and fragments from other contexts that are visibly similar. Samples of the fabric of the kilns were kept for study and are discussed here. 6766 fragments of this material, weighing 272.234kg, were recovered from the kilns and other related features excavated on the site.

The quantities of material recovered from each kiln are set out in Table. 1, below.

Feature Type	Feature Nos.	Fill Nos.	Weight (kg)	Count
Kiln 1	1618		42.967	1009
Kiln 2	1223		133.496	2498
Stoke pit of Kilns 1 and 2		1029, 1030, 1166, 1168	13.609	404
Material over 1 and 2		1002, 1589	0.476	20
Kiln 3	11423		27.338	1516
Kiln 4	14858		25.246	516
Kiln 5	10906		10.038	275
Kiln-like oven?	11477		6.900	138
Related material			12.164	300

Table 1. The quantities of material recovered from each kiln.

Kilns 1 and 2 were located at the south end of Area W, Kilns 3 and 5 in Area N and Kiln 4 in Area L. While Kilns 1 and 2 were closely associated, there did not appear to be any connections between Kilns 3, 4 and 5 or the kiln-like oven 11477. Apart from the stokepits, no associated features were noted.

On examination there were found to be six fabrics present. These were identified macroscopically as follows:

- Fabric A: A low fired, evenly mixed fabric, with very little vegetable tempering and sparse sand. The fabric is light in weight and typically creamy orange to red in colour, with both surfaces covered with impressions of what looks like long, fine grass. These fragments varied between 11 and 27mm thick and were generally fairly flat, but sometimes curved up almost into rim like shapes (Fig 1). There were 541 pieces, weighing 37.680kg, mostly from the stokepit of Kilns 1 and 2.
- Fabric B: A highly fired fabric with moderate sand, sparse vegetable tempering and inclusions of some fairly large sherds of pottery (Fig 4). The colour range is grey to red. This fabric occurs as irregular chunks and it is therefore difficult give any meaningful measurements. The possible ?vent holes (Figs. 6 and 7) in this fabric are vitrified, in some cases to an almost green glaze-like state. There were 404 pieces, weighing 26.774 kg. 82% of Fabric B was found in Kiln 2.
- Fabric C: Similar to Fabric B but with a less highly fired appearance. There is slightly more sand, some small fragments of flint, and sparse vegetable temper. The colour ranges

from buff to pale orange. These may be the outer layers of the kilns, which would have been less heavily fired. This was the commonest of the fabrics, with 4890 pieces, weighing 149.147kg.

Fabric D: A very low fired clay with almost no visible tempering. The fragments are an even dark orange in colour and fragmented to small crumbs (3-4mm). There were 138 pieces, weighing 6.900kg. This material only came from the possible kiln 11477 and was thought by the excavator to be the heat-damaged tile lining of the feature, but it is more likely to be a thin, flat layer of hard-baked clay kiln base. Two fragments of straight-sided slabs, 35mm thick, possible kiln furniture, were also made in this fabric.

Fabric E: An even lower fired clay with almost no visible tempering. It was found only in Kiln 3, where it lined the chamber and the flue. There were 609 pieces, weighing 22.473kg.

Fabric F: This material is similar in make-up to Fabric B but less highly fired and with no original surface surviving. There were 135 pieces, weighing 26.892kg, from Kilns 4 and 5.

Tile fragments and pieces of septaria were also present in the assemblage from kiln constructions, but are not discussed here.

The ditches in area W that produced fragments of Fabrics A and B are not far from Kilns 1 and 2, and clearly derive from them. The similar pieces of Fabric A from Post-hole 11322, many metres away are more difficult to explain. It must be assumed that they were incidentally deposited. Fabric A or B did not occur in Kilns 3, 4 and 5. Fabrics C and F occur in the latter three kilns but C and E only in Kiln 3.

All the Elms Farm kilns are of the single chamber, single-flued variety, with a central circular pedestal. The kilns had been cleared of their final firing; there were however, fragments of kiln structure found in and around the kiln. The majority of material (see Table 00) comes from Kilns 1 and 2, which were better preserved than Kilns 3, 4 and 5. These two kilns were positioned side by side with their flues pointing NE. and NNE. to a shared shallow stokepit, from which much of the structural debris was recovered. Kiln 2 had been badly damaged by the cutting of a later ditch. What remains of it suggests that it was similar to 1 in shape and construction although damage to the pedestal means that its shape is less well defined. Hearth 11477 has been included here also because of the kiln-like shape of the feature.

Kiln 1 (1618) Area W

This kiln was built in a circular clay lined cut 1.70 m in diameter and 0.32m deep, and is of the standard, East Anglian style, Wattisfield type (Swan 1984, 115-6). Between the construction cut of the kiln and the lining were 12 stake holes ranging from 0.32m to 0.25m deep and from 0.09m to 0.05m in width. These were evenly spaced around the circumference of the kiln and perhaps are evidence for the construction of the dome. The early 4th century kiln excavated at Ivy Chimneys, Witham (Turner 1999, 47-50) had a similar arrangement of stake holes. Wattle-like impressions were recorded in some of the kiln material, measuring 17, 45, 48 and 63mm in diameter. Presumably these came from the superstructure of the kiln.

The upper surface of the pedestal and the make up of the flue were reinforced with two layers of pot, mostly mortaria sherds, but with some amphora and greyware. The Ivy Chimneys kiln (Turner 1999, 50) had pieces of tile set in the pedestal. It is difficult to be certain whether this was the original method of construction or a repair. A number of the mortaria sherds were stamped and have been dated to AD 160-190, and there is an archaeomagnetic date of AD 140-170 for the last firing of this kiln. However the pottery dating suggests that Kiln 1 was constructed in the late 2nd or early 3rd century AD and abandoned during the early 3rd century AD. The pottery dating implies that this kiln may have been taken out of production before the adjacent one and perhaps this is the reason why there was less structural debris surviving. The fragments of fabrics A, B and C have impressions and vitrification as discussed below.

Kiln 2 (1223) Area W

A later ditch, 445 cut across Kiln 2, removing much of the pedestal. Nevertheless a number of interesting features were preserved. This kiln is similar in size to Kiln 1, being built in a circular clay lined cut 1.65 m in diameter and 0.20 m deep. The greater amount of heat damage to this kiln in the form of cracking, discolouring and vitrification suggests either a longer life or greater heat.

There is an archaeomagnetic date of AD 90-210 for the last firing of the kiln. A number of sherds of greyware dating to the 3rd century AD were found imbedded in the surviving wall of the firing chamber (Fig. 7). There is more material in this kiln than the adjacent one for the reason already suggested. Fabrics A, B and C are represented in the assemblage.

Kilns 1 and 2 Stoke pit (1589) Area W

The shared stoke pit contained, in addition to charcoal, a large quantity of featureless fragments of kiln structure which presumably were parts of both kilns. Some of the larger chunks of the highly fired material had been perforated by holes with a diameter of 40-50mm (Figs. 4, 6, 7 and 9). While the rough inner surfaces of these tubes are vitrified and cracked, the surface at right angles to one of them is wiped smooth and has no vitrification. Various suggestions have been made as to the function of these holes in the kiln. The author's first assumption was that they were the slots that held the fire-bars, as at Spong Hill, Norfolk (Swan 1984, pl. 16). This is not likely for Kiln 1, as the wall survives above the level of the pedestal and such holes would have survived *in situ* if they ever existed, which was not the case. In addition if they were fire bar slots they would not have been subjected to such a great amount of heat on the inner surfaces as they show. It is possible that they could have been vents in the dome or, as R. Darrah (pers comm.) has suggested, associated with tuyeres, which would explain the vitrification. Indeed the degree of heat damage suggests that they must have been internally placed whatever their function. Alternatively these fragments with holes could be from kiln furniture, in the form of perforated plates as seen in Lower Nene Valley kilns (Swan 1984, fig VIII), or a perforated lintel plate as at Biddlesden, Bucks (Woods, Turland and Hastings 1981), or part of a perforated firing floor. The latter interpretation seems unlikely for Kiln 1, as it survives above the level at which such a floor would have been, and there would have been traces of where it was luted to the kiln wall. Since Kiln 2 has been damaged it is not certain how the firing floor was built.

The second class of fragments present in the stokepit consists of grass-impressed flattish masses of baked clay (Figs. 1-3). The function of these remains uncertain, but since they are not highly

fired it is possible that they were part of the outer dome, as patches to counteract heat loss (pers comm. Tim Robey). Alternatively, R. Darrah (pers comm.) has suggested that they may be from a clay settling pit, which used layers of grass or hay as a filter, or that grass was used as a bed to dry the clay slurry. How the material became baked is more difficult to explain.

Four of the seven possible fire-bar fragments (Fig 8) come from the stokepit, and appear to be of the untapered clay bar type which is commonest in the area of the Thames Estuary (Swan 1984, 64). It is difficult to be sure of the dimensions of these objects because of their fragmentary nature. The rest were in Kiln 2, so it is tempting to suggest this was the source of the fire-bars from the stokepit. One of the bar fragments retained the impression of a stick at its core, similar to an example from Wood Burcote, Northants. (Swan 1984).

Kiln 3 (11423) Area N

This kiln was built in a slightly oval clay-lined cut 1.3m to 1.5m in diameter and 0.50m deep. Although the clay lining of the kiln survived well above the level of the top of the pedestal, there were no signs of a ledge or slots for fire-bars. The south-facing flue had been repaired or reinforced with fragments of tile, and it is possible that the fragments of tile in the stokepit of Kilns 1 and 2 had also been used in this way. The fragments of Fabrics C and E from this kiln were not fired to the same degree as those from Kilns 1 and 2, and have no diagnostic features preserved on or in them. An archaeomagnetic date of AD 225-250 has been given for the last firing of this kiln. The pottery dates the abandonment to around the mid 3rd century AD having been in use, in parallel with Kiln 5, since the second half of the 2nd century AD. The structural material of both kilns is similar.

Kiln 4 (14858) Area L

This kiln was also built in a circular clay-lined cut, 1.3m in diameter and 0.40m deep. The flue faced east but the kiln was otherwise very similar to Kiln 3. The baked clay kiln material was made from fabrics C and F, with no distinguishing marks. A number of small fragments of *tegulae* and *septaria* had been used in construction or repair. An archaeomagnetic date of AD 150-210 or 270-400 has been given for the last firing of this kiln. The pottery dates suggest that the kiln stopped production before the mid 4th century AD.

Kiln 5 (10906) Area N

This kiln is similar in shape to the other kilns, but it is only 1.2m in diameter and 0.40m deep. The lining material does not exhibit much evidence of great heat. The fabrics present are similar to Kiln 4. The pottery found in the kiln, which is not thought to have been produced in it, [ref] dates the abandonment to the first half of 3rd century AD.

Possible Kiln ? (11477) Area N

This possible kiln seems to have been inserted into the slumped area of an earlier pit and has been included here because of the kiln-like shape and the traces of a pedestal which were present. The crucible fragments and copper alloy casting waste from its upper fills may indicate that it was used for metallurgy rather than pottery production. The nearly 7kg of material from the feature includes two heat-damaged fragments of straight-edged slabs 35mm thick. The pieces are 102x92mm and 117x94mm, but could be from much larger objects, possibly fire-bars or kiln

floor. The pottery from this feature suggests that it dates from the late 1st century BC to early 1st century AD (**Period II A**), rather early for a kiln of this form.

Catalogue of Illustrated Kiln Material:

1. A Fragment of vegetable impressed baked clay curved up to form the edges of holes. Fabric A. Context 1180, Kiln 2 (1223). **31**
2. A Fragment of vegetable impressed baked clay with the deeper mark of a plant root in the surface. Fabric A. Context 1180, Kiln 2 (1223). **32**
3. A Fragment of vegetable impressed baked clay curved up to form the edges of holes. Fabric A. Context 1180, Kiln 2 (1223). **33**
4. A surface fragment with part of a 'vent' hole at right angles to it and with a possible textile impression preserved in it. Fabric B. Context 1174, Kiln 2 (1223). **35**
5. A segment of kiln material with a rim sherd of pottery pressed into it. Fabric C. Context 1098, Kiln 2 (1223). **36**
6. A fragment of kiln material with a vitrified 'vent' hole at right angles to an unevenly finished surface, possibly an outer one. Fabric B. Context 1092, Kiln 2 (1223). **38**
7. A kiln material fragment with a partially vitrified 'vent' hole at right angles to a surface with a wiped finish. There is also the impression of a pot rim on the reverse (not shown). Fabric B. Context 1174, Kiln 2 (1223). **37**
8. Part of a possible parallel-sided fire-bar. Fabric C. Context 1045, Kiln 2 (1223). **34**
9. A curved vitrified kiln material fragment with a wiped finish, possibly the inner surface of the dome. Fabric C. Context 1508, Kiln 1(1618). **39**

Bibliography

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