The Results of Fieldwalking at Kingston Pastures Farm, Cambridgeshire, 2001 (KPF01/KIN01): The Roman Ceramic Building Materials.

Cambridgeshire HER Event Nº: CB15744, CB15745

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Photo: M. Coles

Summary

Following the discovery of a stone column by the farmer, Cambridge Archaeology Field Group (CAFG) carried out a fieldwalking exercise at Kingston Pastures farm, Cambridgeshire. More than six hundred sherds of Roman pottery were collected, along with a small quantity of Roman ceramic building materials (CBM). This assessment will concentrate on the CBM, although a summary of the potsherds collected appears in the original fieldwalking report, which has been included in this report as an appendix. Please note that figures 3, 4, 5 and 6 are missing from the original report. Figures 3 and 4 were additional photographs of the column, while figure 5 was a plot of the finds. Plots of the finds may be found in the CBM report.

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Introduction

Cambridge Archaeology Field Group (CAFG) carried out a fieldwalking exercise at Kingston Pastures farm during the winter season of 2001/2. This arose following the discovery by the farmer of a stone column (see Cambridgeshire Historic Environment Record N^{o}: CB15744 and the front-page photograph). The fieldwalking exercise recovered a large number of Roman era artefacts (CAFG 2001), mainly pot sherds but also some ceramic building materials (CBM). Although the fieldwalking was originally carried out using the KPF01 site code, the CBM and full recording spreadsheets use the KIN01 identifier, following a reorganisation of CAFG records. This report will concentrate on the detailed assessment of the CBM.

Archaeological Background

The only prehistoric find recorded from Kingston parish is a Mesolithic pebble mace head (CHER N^{o}: 3272). Linear and curving earthworks and ditches, interpreted as Iron Age and/or Roman era field boundaries and enclosures, were identified on aerial photographs (CHER N^{o}: MCB25570, MCB25573, MCB25574) to the east of Porter's Way, on the eastern side of Kingston wood and north of Kingston Pastures farm. Late Iron Age/Roman 'Belgic' pottery was found in Kingston churchyard (CHER N^{o}: CB16222) and a find spot including a bone hair pin, a bronze pin, pottery and a piece of hypocaust tile is also recorded (CHER N^{o}: 03461a).

The name of the parish implies a royal interest and at Domesday a royal demesne was recorded there (BHO). A little over 1km to the north of Kingston Pastures farm is Kingston Wood farm. Its C16th century farmhouse has an adjacent moated site and may be the location of the medieval Kingston Wood manor. Ridge and furrow have been noted around the parish (CHER N^{o}: 03326) and in particular at Kingston Pastures farm (CHER N^{o}: 03327). The village itself contains a number of late medieval and early post medieval houses, while the church of All Saints and St Andrew may date from the 13th century. Kingston Pastures farmhouse is a Grade II listed building of early 18th century date (Entry N^{o}: 1331195).

Topography and Geology

Kingston parish lies approximately 11km to the southwest of Cambridge, with the village situated in the north of the parish. Here the land slopes down gently north-eastwards to the Bourne Brook at c.30m OD, which forms much of the northern boundary with Bourn, Caldecote and Toft. Kingston Pastures farm lies c.2.8km to the southwest of the village, where the land rises to a ridge at a little over 70m OD. A lane running along the ridge past Kingston Pastures farm from the A1198 forms much of the southern boundary with Wimpole parish. The A1198 was a former Roman road from Godmanchester to Royston which became known as Ermine Street. At approximately 1km to the east of Kingston Pastures farm, the lane turns sharply downhill to the south, passing through Wimpole parish. Continuing eastwards from the sharp turn of the lane, is an ancient routeway comprising footpaths and a bridle way known as the Mare Way, which after following the high ridge, itself turns to the south, crossing the A603 Cambridge to Arrington road, another former Roman road.

The western boundary of Kingston parish, not quite reaching Ermine Street, largely follows the ancient routeway known as Porter's Way. To the east, the parish boundary with Great Eversden takes

a more sinuous route from the junction of the Mare Way and Wimpole Road, to reach the Bourn Brook to the north. The soil is mainly boulder clay overlying gault clays, with occasional spreads of gravel (BHO).

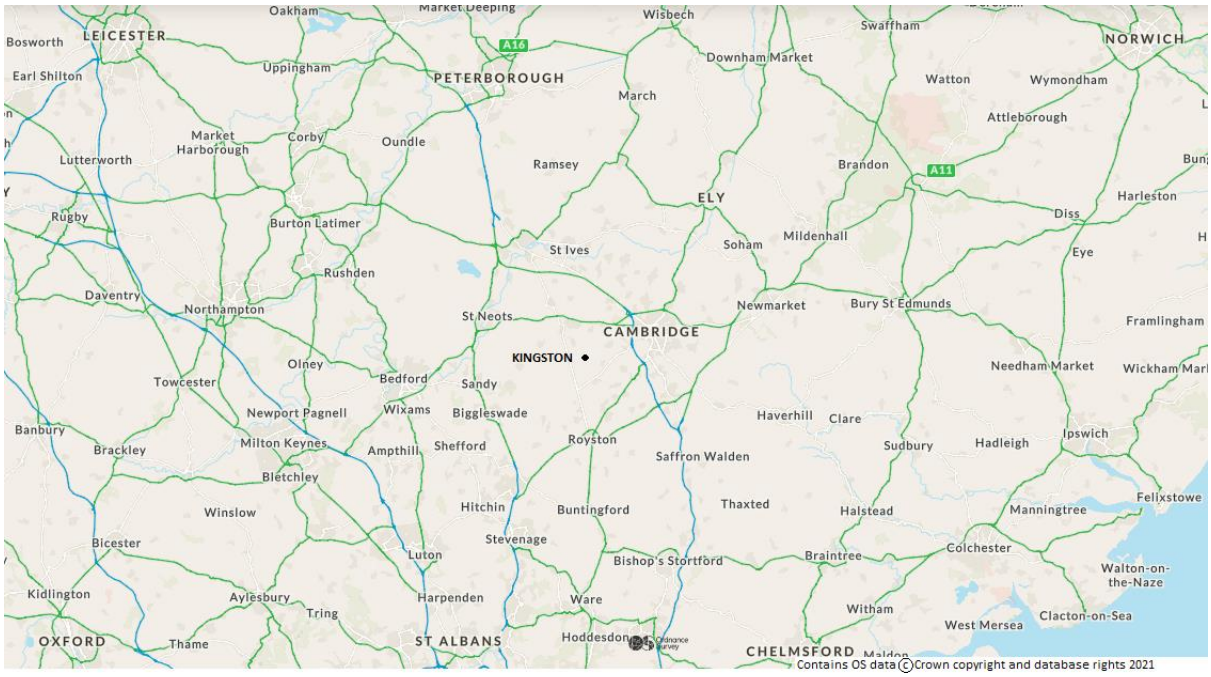

Figure 1. Kingston location map.

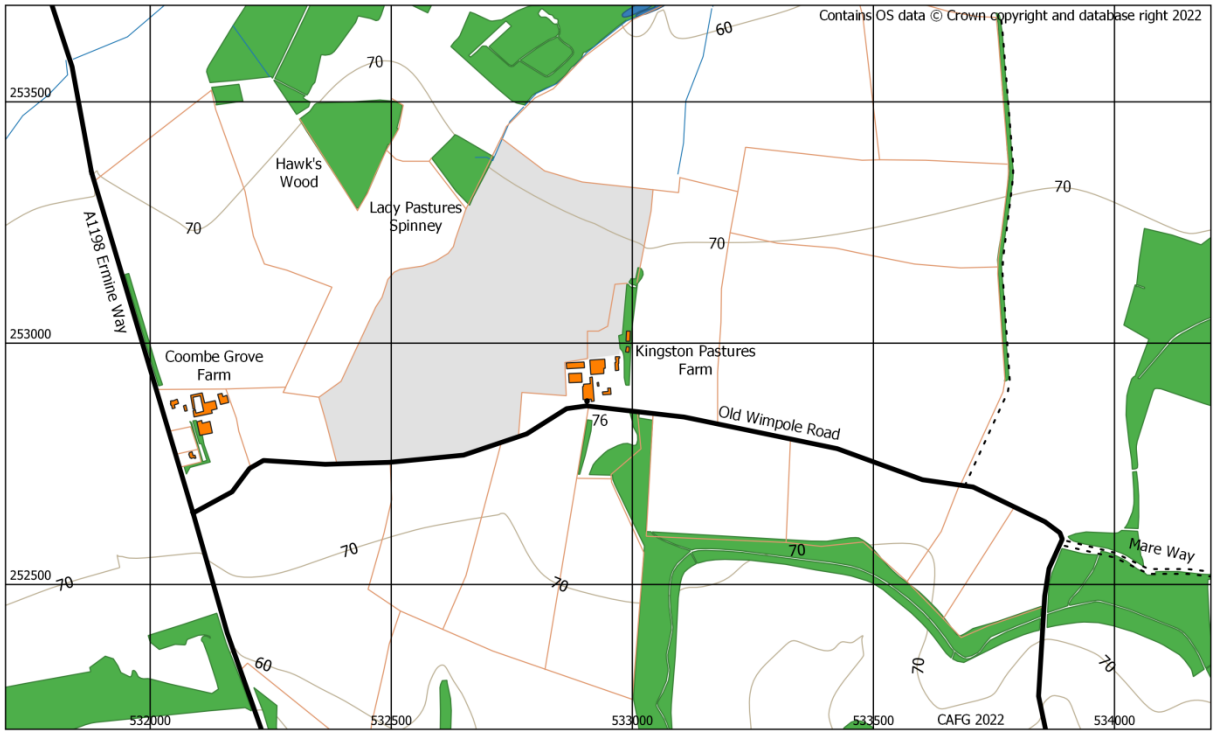

Figure 2. Fieldwalked area (shaded)

Fieldwalking methods

Surface collection was carried out by field walkers following lines 10 paces apart. Finds were bagged at intervals along the lines and unique numbered labels were placed in each bag. National Grid

coordinate references were allocated for each finds bag location, as recorded by a Garmin eTrex handheld GPS device. Following washing, the Roman ceramic building materials (CBM) were re-bagged separately to any other finds for assessment.

CBM assessment - Introduction

Fragments of Roman CBM were recorded by weight and firing grade, inclusions were noted along with any human or animal made markings, and colour of fabrics was determined in accordance with the Munsell Soil Color system. The data were recorded in a Microsoft Excel spreadsheet and analysed with the aid of a Pivot Table (Table 1). The assemblage is quite small, comprising only ninety-six identifiable fragments of Roman era CBM, weighing just over 6.4kg.

	FABRICS																			
	F1		F1a		F2		F2a		F3		F4		F5		F5a		F6		TOTALS	
CBM TYPE	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)	Nº	WT(g)
BOX	2	186	1	59	1	39													4	284
BRICK					1	181	1	107	2	520	1	289							5	1097
COMB	3	92	3	302	1	28			1	42	1	63					1	123	10	650
IMB	1	114	1	19	3	157			3	151	1	59							9	500
INDET	4	73	5	43	3	59	7	76	4	35	1	44							24	330
TEG	2	483	3	199			1	214			1	61							7	957
TILE	7	512	7	795	6	152	8	683	6	316			2	33	1	134			37	2625
TOTALS	19	1460	20	1417	15	616	17	1080	16	1064	5	516	2	33	1	134	1	123	96	6443

Table 1. Summary of Roman CBM forms by fabric type.

The assemblage was examined by 10x magnification hand lens in order to aid the compilation of a catalogue of fabric types (Table 2). The forms of bricks and tiles were determined where possible and by reference to Brodribb (1987). Measurements were made to the nearest millimetre unless indicated otherwise, although due to the very abraded nature of many of the CBM fragments, these values could be a little lower than the original dimensions. Representative samples of forms and fabrics were retained with the remainder and unidentifiable fragments being disposed of after recording. The percentage weights in Table 2 have been calculated relative to the total weight of all fragments.

Unusual features where observed, such as marks made by humans, fabric colours and inclusions, were recorded. The cross-sections of tegula flanges were drawn, and any evidence for how the flanges may have been formed was also recorded.

Although most of the identifiable post Roman brick and tile was thought to have been removed from the assemblage during the original sorting process, a small quantity was subsequently identified. These were deemed to be too few to be of interest to separately assess but are basically recorded in the assessment spreadsheet accompanying this report.

The site codes referred to in this report, including that for the Kingston Pastures farm investigation, are internal CAFG codes. Fabric colour ranges follow the Munsell Soil Color system: 2.5YR (pinkish/orange), 5YR (light red/orange), 7.5YR (dark red/orange), 10YR (red).

FABRIC	N°	WT(g)	%Wt	DESCRIPTION
F1	19	1460	22.7	HARD, UNEVENLY FIRED WITH REDUCED CORE. SANDY CLAY WITH; FERRITIC (13 EXAMPLES), CALCITIC (5) AND/OR QUARTZITE (16) INCLUSIONS. SURFACE COLOUR RANGES: 10YR (4), 5YR (8), 7.5YR (7)
F1a	20	1417	22	SLIGHTLY SOFTER THAN F1, UNEVENLY FIRED WITH REDUCED CORE. SANDY CLAY WITH; FERRITIC (14 EXAMPLES), CALCITIC (5) AND/OR QUARTZITE (20) INCLUSIONS. SURFACE COLOUR RANGES: 10YR (2), 5YR (8), 7.5YR (10)
F 2	15	616	9.6	HARD, UNIFORMLY WELL FIRED. SANDY CLAY WITH; FERRITIC (13 EXAMPLES), CALCITIC (7) AND/OR QUARTZITE (25) INCLUSIONS. SURFACE COLOUR RANGES:10YR (3), 5YR (5), 7.5YR (7)
F2a	17	1080	16.7	SLIGHTLY SOFTER THAN F2, UNIFORMLY WELL FIRED. SANDY CLAY WITH; FERRITIC (10 EXAMPLES), CALCITIC (0) AND/OR QUARTZITE (14) INCLUSIONS. SURFACE COLOUR RANGES:10YR (1), 5YR (5), 7.5YR (11)
F3	16	1064	16.5	GENERALLY, WELL FIRED HARD FABRIC. SANDY CLAY WITH; FERRITIC (16 EXAMPLES), CALCITIC (8) AND/OR QUARTZITE (12) INCLUSIONS AND SILTY CLAY PELLETS, PATCHES AND/OR STREAKS (16). SURFACE COLOUR RANGES:10YR (3), 5YR (7), 7.5YR (6)
F4	5	516	8	GENERALLY, UNIFORMLY WELL FIRED, WITH RED/ORANGE BANDS IN THE CORE. SANDY CLAY WITH; FERRITIC (4 EXAMPLES) AND/OR QUARTZITE (4) INCLUSIONS. SURFACE COLOUR RANGES: 10YR (1), 2.5YR (1), 5YR (1), 7.5YR (2)
F5	2	33	0.5	GENERALLY WELL FIRED HARD FABRIC, WITH LIGHT ORANGE/BROWN CORE 2.5Y/6/4). HEAVILY SHELL TEMPERED CLAY WITH; NO MACROSCOPICALLY VISIBLE FERRITIC OR QUARTZITE INCLUSIONS. SURFACE COLOUR: 7.5YR/8/6
F5a	1	134	2	GENERALLY WELL FIRED HARD FABRIC, WITH REDUCED CORE (GL1/6/5GY). HEAVILY SHELL TEMPERED CLAY WITH; FERRITIC (RARE <0.5MM) AND QUARTZITE (RARE <5MM) INCLUSIONS. SURFACE COLOUR: 10YR/8/4
F6	1	123	1.9	UNIFORMLY FIRED SOFT FABRIC, SANDY CLAY WITH; FERRITIC (RARE <2MM) AND QUARTZITE (ABUNDANT <0.5MM) INCLUSIONS. SURFACE COLOUR: 10YR/6/6

Table 2. Summary of Roman CBM fabrics

Fabrics

The most outstanding feature of the Roman CBM fabrics from Kingston Pastures is that they are mainly hard and well fired, in quartzite sand tempered, occasionally micaceous clays. Several of the fabrics share common characteristics with similar ones. In these cases, their fabric identifier is that of the primary fabric with the addition of a subscript 'a' (e.g. F1/F1a).

The most common fabric types are F1/F1a, together comprising around 45% by weight of the entire CBM assemblage. All the examples of these fabric types have reduced cores in colours ranging from dark grey (GLEY1/8/10Y), to light pink/brown (2.5Y/8/4). F1a fabric is slightly softer than F1, but they likely form slightly different parts of a common spectrum of firing and/or manufacturing variability. Quartzite sand is the predominant macroscopically visible inclusion, noted in 16 (84%) of the F1 examples, sometimes abundantly, and all twenty of the F1a examples. Red (haematite) ferrous inclusions were noted in 13 (68%) of the F1 examples and 14 (70%) in F1a. Calcitic inclusions were much less evident, visible in 5 (26%) of F1 examples in rare quantities and 5 (20%) of F1a, also in rare quantities. All forms appear in the F1/F1a fabrics apart from bricks.

The next most populous fabrics are F2/F2a, comprising 26% by weight of the total assemblage. All the examples of this fabric group are uniformly well fired. Once again, quartzite sand is the major inclusion, observed in 13 (86%) of the F2 fabric examples and 14 (82%) of the F2a type. Calcite is much less evident, identified in only 7 (46%) examples of the F2 fabric but none of F2a. Red ferrous

inclusions were visible in 8 (53%) of F2 examples and 10 (58%) of F2a. Once again, all forms were identified in this fabric group.

Fabric F3 examples are generally hard and well fired. They are notable for the inclusion of silty clay pellets, patches, and streaks. Additionally, ferrous inclusions were observed in all examples of this fabric. Similar fabric types to F3 have been noted at Reach villa (Coates 2020) and Harlton (Coates 2015), where it was the dominant fabric.

The next fabric (F4) is generally uniformly well fired and is similar to F1, although examples have darker red/orange bands in their cores. Ferritic inclusions are visible in four examples and quartz in 4 also, but no calcite is observable.

Fabrics F5/F5a are the most instantly recognisable in the assemblage. They are heavily calcite tempered and almost certainly originate in the kilns at Harrold, Bedfordshire (Brown 1994). The two examples of F5 fabric are fired to a pink/orange surface colour (7.5YR/8/6), whilst the cores are light orange/brown (2.5Y/6/4). The tempering appears to be a generally fine (<2mm) mixture of fossil and calcite shell. Although abraded, one of the examples appears to retain the remains of multiple linear combing marks. This suggests that they may be fragments of flue tiles, which Brown (1994 83-4) noted at Harrold. The single example of fabric F5a is much thicker than those of F5 and is probably a fragment of a tegula. Its surface colour is a pale pink/orange (10YR/8/4), with its core mainly mid-grey (GLEY1/6/5GY). As with the F5 fabric, the F5a tempering is a mixture of fossil and calcite shell, although of a less fine nature (<3.5mm). Also visible are opaque dark grains, which occur in other examples of Harrold type CBM in Cambridgeshire; Childerley (CAFG a) and Haslingfield (CAFG b) for instance, and long darks streaks. This could be due to poorly mixed ferrous (magnetite) sandy clay.

The remaining fabric type (F6), of which there was only one example, was a uniformly fired, slightly softer fabric. It's most notable characteristic, was the abundant quantity of quartzite sand tempering. This made the fabric surface very coarse to the touch, being akin to sandpaper.

The lack of variability in the Kingston fabric types is not unusual for Roman sites in Cambridgeshire, having been noted at Harlton (Coates 2015) and Melbourne (AOC 2017) for instance.

Tegulae

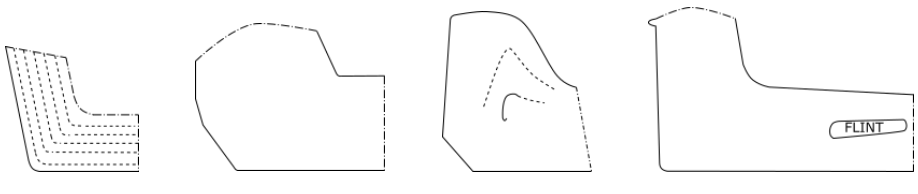

Figure 3. Kingston Pastures farm tegula flange profiles. (Scale 1:2) — · — · — **Broken/damaged**

All the flange profiles illustrated in Fig.3 above have been drawn at their widest points and as if left-handed to aid comparison. Single dotted lines indicate observed flowlines in the clay fabrics.

As with several of the other categories of CBM in the Kingston assemblage, there are very few examples of tegula roof tiles where reliable measurements may be obtained. They were largely produced in the F1/F1a fabric types, with surface colour ranges; 5YR (2), 7.5YR (4), 10YR (1).

There is some variety in the tegula flange types amongst the Kingston Pastures farm assemblage, notwithstanding that flange profiles can change along their lengths. Some of them share common characteristics. Two have been trimmed at the outer base of the flange (Fig.3:02, 03), a trait seen on tiles from other Cambridgeshire sites, for example Great Eversden (CAFG c). None of them exhibit double finger smoothing channels.

A variety of moulds may have been used to produce the tegulae, including those with vertical sides (Fig.3:02, 04), inclined inwards (Fig.3:03) and inclined outwards (Fig.3:01). A mould with inclined sides may have been more easily lifted away from a still wet tile although, presumably, a mould with sides which are inclined outwards would have been used to produce an inverted tile, with an insert on the baseboard (possibly Fig.3:01). Alternatively, a mould with detachable sides could have been employed (Warry 2006). One of the tegula flanges (Fig.3:04) exhibited a vertical lip on its upper outer edge, which might be indicative of clay squeezing over the top of the side of the mould, whilst it was being formed. The flange to bed transition of one example (Fig.3:02) was relatively sharp and may have been finished with a tool.

None of the Kingston Pastures farm tegula flanges examined appeared to have convincing lower cutaways. One, (Fig.3:02), had a doubly trimmed lower edge which could have been part of a cutaway; however, it may be no more than excessive trimming of the lower tile edge.

Where they reliably survived, up to three measurements were taken for each tegula flange; the bed thickness where it meets the flange, the overall external flange height and the flange width, measured along a horizontal line from the outer flange face at the height of the bed, to a point where it would intersect a line projected down the inside face of the flange. Statistical analysis of such a small sample may not give very meaningful results, unless there are some very strong underlying factors. The width of the flange of one of the Kingston assemblage at 35mm, although not quite the end of the tile, is at the upper end of the width range of tegulae flanges seen in Cambridgeshire (Coates 2014). All of the bed thicknesses lie within 1.5mm of the the median value of 21.5mm. This amounts to a variation of only around 7%, which falls within the accepted range of differential clay shrinkage upon drying of around 10%. Only two flange heights could be measured with confidence, both of which were 42mm: this is towards the lower end of the range of flange heights recorded on tegulae in Cambridgeshire.

It is possible to say something about the manner in which some of the tegulae flanges were produced, by noting voids and flow lines within the clay masses. The flange of one example (Fig.3:01), was created by simply folding up the edge of the slab of clay forming the bed, before the top was trimmed or smoothed off. As the flange slopes outwards, it would have been dificult to remove the mould that it was formed in. If this tile had been produced in an inverted mould with an insert on the baseboard, then the clay would have been pushed down into the corner of the mould.

Due to the upper surface of the bed being abraded however, there was no evidence of moulding sand to corroborate this theory. A second example shows an alternative method of flange formation (Fig.3:03). Here, the edge of the clay slab has been folded up, then back down, before being smoothed where it rejoined the bed. This is evident in the flow lines and the arched void under the fold.

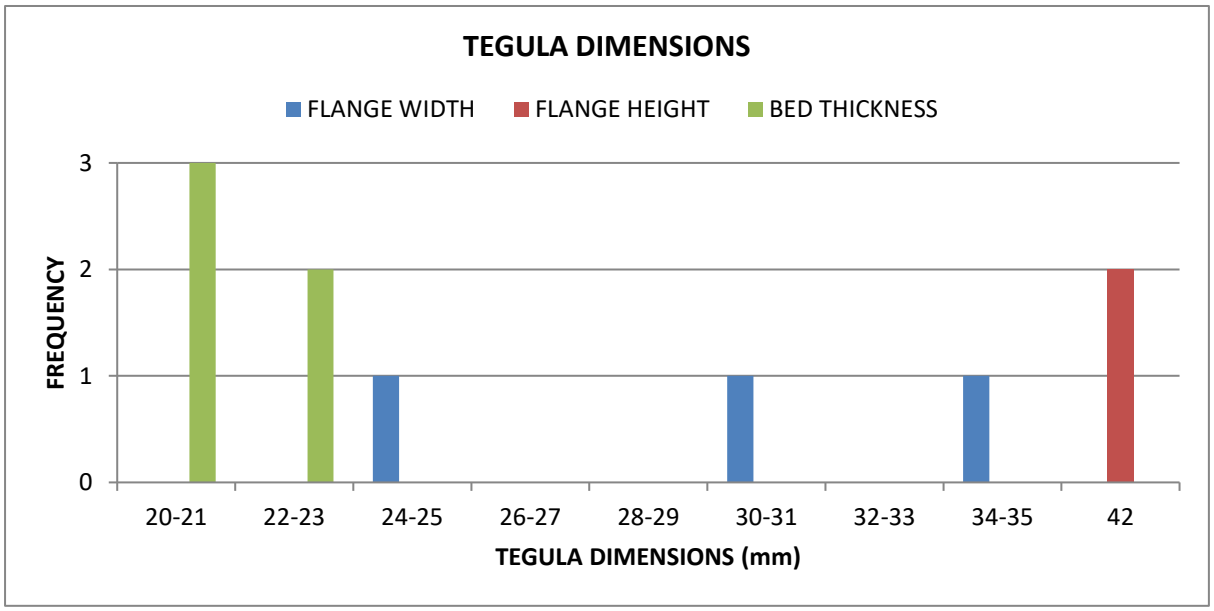

Figure 4. CBM category Tegula dimensions.

Imbrices

A total of seven imbrex fragments were identified amongst the CBM assemblage. Most were relatively small and abraded. They were mainly hard fired, and all had been produced on a sanded former. One showed signs of transverse smoothing. Thicknesses ranged between 13-17mm, with a variation of +/-2mm (13%) about the median of 15mm. The surface colour ranges of the imbrex fragments were 2.5Y (1), 5YR (4), 7.5YR (3), 10YR (1). They were produced in a range of fabric types, with three being in the F3 variety, having silty clay pellets.

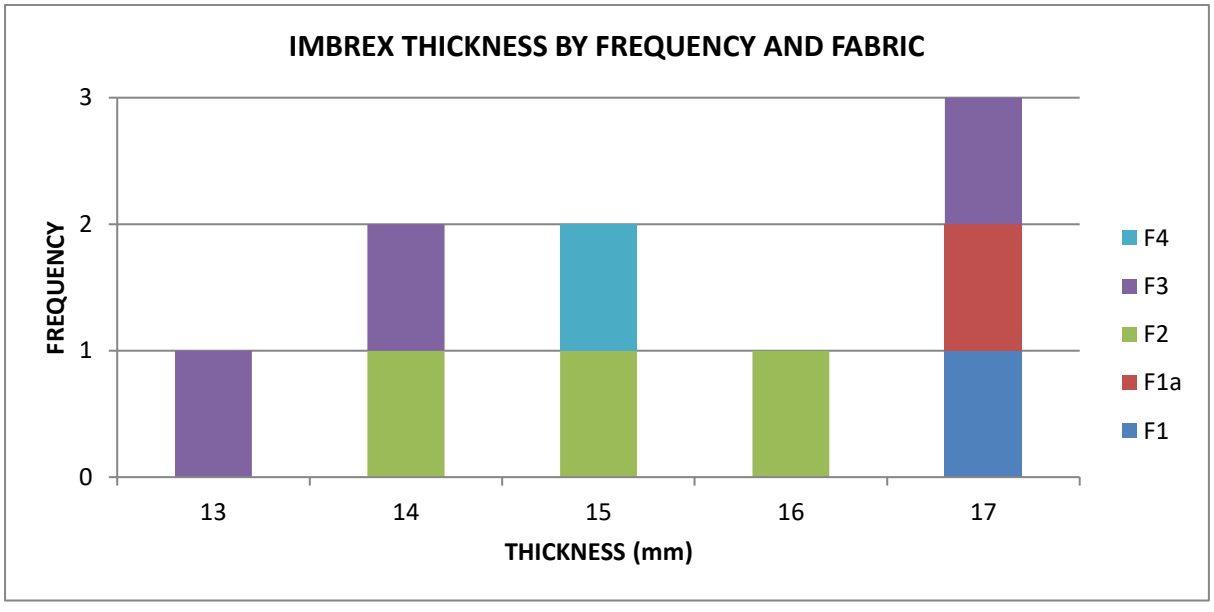

Figure 5. CBM category Imbrex, thickness by frequency.

Box and Combed Tile

Only four pieces of CBM were identified as definitely being parts of box tiles. This was largely due to the partial survival of their corners. They were all uniformly well fired, with traces of fine moulding sand on their inner faces. There were a further ten fragments of combed tile in the assemblage, of which the thickness of eight was measurable. They were predominantly of the unevenly fired F1/F1a fabrics, with reduced cores and surface colour ranges; 5YR (3), 7.5YR (4), 10YR (3). They are all likely to be parts of box tiles, as also are five fragments categorised as tile.

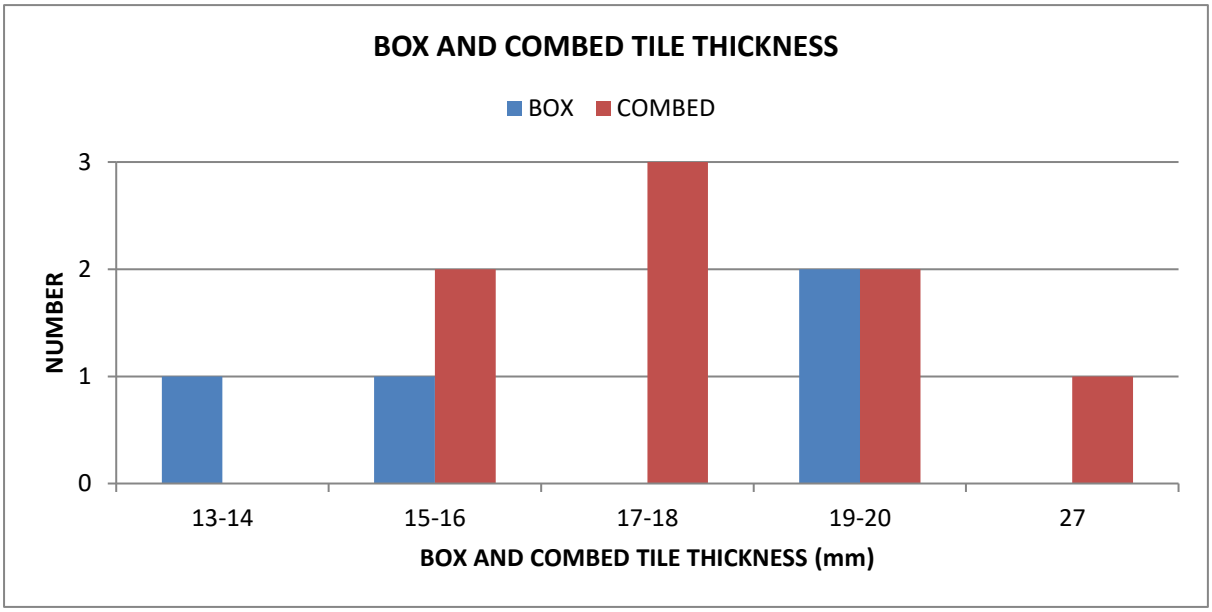

Figure 6. CBM category Box and Combed tile thickness.

Many of the combings were apparently executed using a comb with three tines, spaced regularly at 4-6mm apart. The difference in spacing of comb tines between tiles, could be due to differential

BAG	T(mm)	CTYPE	FTYPE	NOTES
273	19	BOX	F1a	1 EDGE, POSSIBLE BOX
276	13	BOX	F2	ERODED SALTIRE CROSS COMBING, 3 * 3mm WIDE * 5mm APART
286	19	BOX	F1	SALTIRE CROSS COMBING 3 * 3mm * 4mm APART
343	15	BOX	F1	POSSIBLE LINEAR MARK ONE EDGE
273	27	COMBED	F1a	LINEAR COMBING 3 * 4mm * 11mm APART. (FAILED BOX?)
275	-	COMBED	F2	2 LINEAR (COMB?) MARKS
281	16	COMBED	F1	COMBING 3 * 3mm * 5mm APART. (POSSIBLE JOINT?)
288	17	COMBED	F3	COMBING 3 * 2mm * 4mm VAGUE
292	15	COMBED	F1a	POSSIBLE FAINT COMBING 3 * 2mm * 5mm APART
298	-	COMBED	F1	POSSIBLE COMBING 3 * 3mm * 5mm APART
315	18	COMBED	F1a	MULTIPLE DIAGONAL COMBING FROM CORNER, OVERLAPPING, 2mm * 4mm APART
329	20	COMBED	F1	3 or 4 LINEAR COMBINGS, 2.5mm WIDE * 6mm APART
333	18	COMBED	F4	4 DIAGONAL LINEAR COMBINGS 2mm * 6mm APART
364	19	COMBED	F6	COMBING IN PROBABLE SALTIRE CROSS PATTERN, 3 or 4 * 2mm* 4mm APART.

Table 3. Summary of Box and Combed tiles.

shrinkage, or the comb not always being held square to the direction of stroke. Where the combings survive in good condition, the tines appear to have widths of 2-3mm, although the grooves do widen towards the top, perhaps because the tines were tapered. One tile had three, 4mm wide linear combings 11mm apart which were presumably made using a different comb to those on others.

Several of the CBM category Box and Combed tiles appeared to show the remains of the half-lap, or scarf joint, where the slab of clay which was used to produce them had been wrapped around a former and the ends pressed together. The examples observed appeared to have failed, or at least partially failed at the joints, which may not have been carefully formed. This is evidenced by the reduced cores of the tiles being surrounded by oxidised fabric at the break (Fig.10).

Plain Tile

Fragments of CBM were assigned as tile, based on their having at least two intact surfaces, reliably measurable thickness, but no other characteristics which could allow them to be placed in any other CBM category. In total thirty-seven examples weighing 2625g (40.7% of the Roman CBM by weight), were recorded.

There was a fairly uniform distribution numerically of tile thicknesses between fabrics F1 to F3 inclusive, although the average weights of fabrics varied somewhat. The average for all fabrics overall amounted to 70.95g, with the lowest being F2 at 25.3g and the highest, F1a at 113g.

The histogram of tile thickness by frequency (Fig. 7), shows a strong grouping of tile fragments with thickness between 11mm–22mm, with a possible second peak at 23mm–30mm. Although the thinner examples could be parts of box or flue tiles, five examples fall within the range of tegula bed thickness (20-23mm). The corners of two plain tiles had survived. Fabric F5 was represented by thinner tiles in the range 8-16mm, with fabric F2 examples in the range 11-19mm. The remaining fabrics showed wide distributions of thickness ranges, with only a single example of the F5a fabric being identified in the Tile category of CBM.

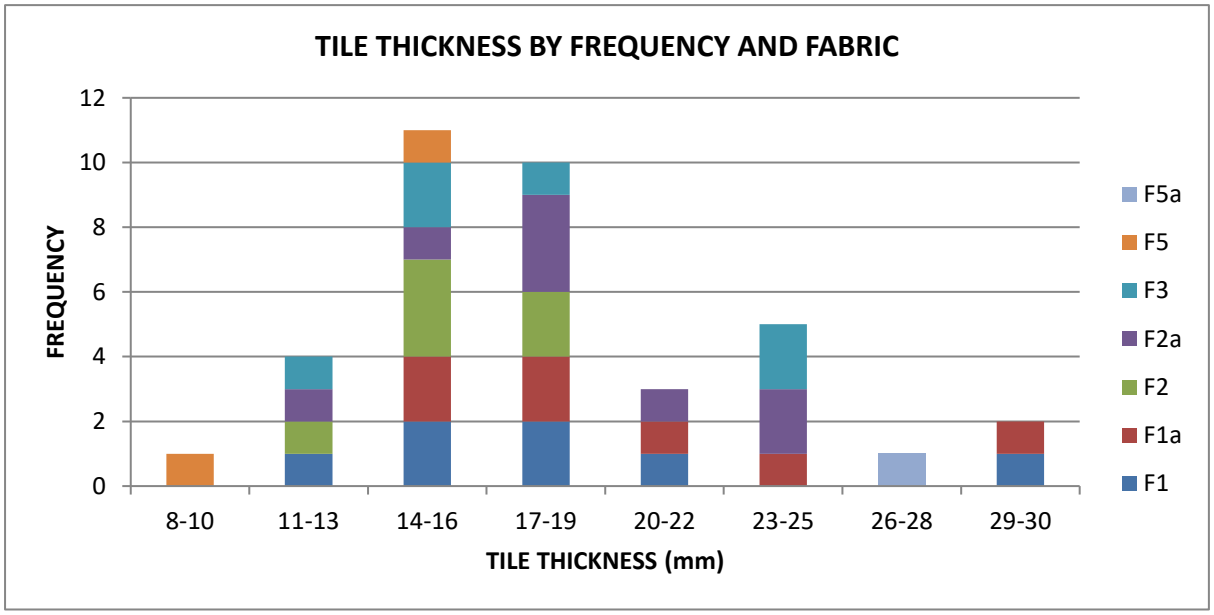

Figure 7. CBM category Tile, thickness.

Brick

Fragments of CBM with thickness greater than 30mm were designated as brick. There was a total of five such fragments, weighing 1097g (17% of the Roman CBM by weight), with the average weight being 219g. The thickness of the brick fragments lay in the range 32mm–45mm, which is similar to the range of thickness from Reach villa (Coates 2020) for instance. The two fragments with thickness of 32mm could be examples of tegulae with extreme bed thickness. Fabric types represented were F2 (1), F2a (1), F3 (2) and F4 (1). Surface colour ranges recorded were 2.5YR (2), 7.5YR (3).

Markings

Besides the box and combed tiles mentioned above, humanly made marks were noted on another six of the other brick and tile fragments (Table 4). One piece of tile (bag 318), had what appeared to be part of a finger 'signature' mark, indicating that it may have originally been part of a tegula.

BAG	T(mm)	CTYPE	FTYPE	NOTES
309	45	BRICK	F3	POSSIBLE COMBED OR LINEAR MARKS
297	14	TILE	F5	POSSIBLE FINE COMBING
311	11	TILE	F2	POSSIBLE COMBING/SHAPING
318	24	TILE	F1a	SURFACE WIPED (FINGERS), POSSIBLE PARTIAL FINGER LOOP MARK
339	16	TILE	F1a	1 LINEAR MARK
341	13	TILE	F3	3 FAINT LINEAR MARKS (COMB?) PARALLEL WITH SHAPED EDGE

Table 4. Summary of marked CBM fragments.

Indeterminate

A number of CBM fragments were too abraded or damaged to adequately determine their form and were recorded as indeterminate **(**INDET) before being discarded. This needs to be born in mind when considering the analysis. There were twenty-four such fragments (25% numerically), weighing 330g (5.1% of the total Roman CBM by weight). The weights of fragments ranged from 1-47g, with an average weight per sherd of 13.8g. Of the twenty-four fragments, 16 (75%) fell in the range of 1-15g, with the fabrics represented being F1 (4), F1a (3), F2 (3), F2a (6), F3 (1), F4 (1).

Stone.

Although not technically ceramic building materials, two fragments of stone which were collected during the fieldwalking, merit comment due to their possible architectural attributes.

The first, from Bag 201 (Fig. 12), was almost certainly an architectural fragment in view of the discovery of the stone column which led to the fieldwalking exercise (appendix 1). It was a thin, although a little irregular, slab of fine sandstone with occasional larger harder clasts. With an average thickness of 22mm it had a curved, apparently chamfered edge. Originally it may have been semi-circular, although the surviving areas of the curved edge perhaps suggest it was slightly oval. The edge forming the diameter of the fragment appears to have been roughly straightened.

The second fragment of stone is a less certain candidate for a worked piece, although in the light of a definitely worked example of similar type being found at Comberton (CAFG d), it is prudent to discuss it here.

The BAG 333 example (Fig. 13) is a slab of coarse sandstone conglomerate, with particle size <2mm. It was a thin, irregular slab. From an analysis of photographs, Nigel Woodcock (*pers. comm*), of the Sedgwick Museum, Cambridge, has suggested that it may originate from the Woburn Sands series (WbS). A bed of WbS underlies the Kingston area. However, a section line on the Solid and Drift geological map sheet 204, shows that at Comberton nearby it is covered by 30-40m of Gault clay.

Referring to Surface and Drift geological map sheets (BGS 187 and BGS 204), the major surface outcrop of WbS in the region occurs around Sandy, Potton and Gamlingay. This is at least 8km to the southwest of Kingston, although a thin finger extends as far north as the Gransdens, c.6km to the west. However, there is a small outcrop at Bourn, c.4.5km to the north, where the Bourn Brook has cut down through it. This outcrop is within 1km of Roman Ermine Street, which would have been convenient for the transport of quarried stone to Kingston Pastures. However, it has not been possible to confirm if the Bourn outcrop is the point of origin for the Kingston stone fragment.

An Historic England atlas of building stone (2019) notes that Woburn Sandstone was used in the nearby churches at Great Gransden, Longstowe and Gamlingay. However, the stone from these examples is much finer grained than the Kingston fragment and very friable when handled. A second member of the Woburn Sands Formation, also mentioned in the Historic England atlas, is Cottenham Sandstone. Examples of its use are given as the churches at Cottenham and Rampton. The stone used at Rampton is once again not at all like the fieldwalking find, containing an appreciable quantity of large gravel. It is likely that the coarse sandstone from Kingston does come from the Woburn Sands Formation, however, more research is needed to establish its exact origin.

Discussion.

A total of ninety-six Roman CBM fragments, weighing 6.44kg were collected during the fieldwalking exercise, many being very abraded. The weight distribution of fragments was heavily skewed towards the small size, with an average of 67.1g, and 85 (88.5%), falling within one standard deviation.

The ratio of tegula fragments to imbrex by weight, amongst those which were definitely identifiable in the assemblage is 1.91. If the weight of plain tile fragments in the range of tegula bed thickness (20mm-23mm) is added to that of the identified tegula fragments, a ratio of 4.15 is produced, which is unfeasibly high for a standard Roman roof (Brodribb 1987, 11-12; Ramos Sáinz 2003). However, following Warry (2010, 1), if both imbrices and tegulae were subject to the same history of destruction, then the ratio of the average weight of the resulting fragments might be close to the ratio of their original weights. For the Kingston CBM, the ratio is 2.46. This figure is reasonable for the suggested range for a standard Roman roof, although the sample size from Kingston Pastures is small.

Conclusions

There was little dating evidence to be found amongst the Kingston CBM. However, a later phase of production is hinted at by the measurable tegula fragments, which have relatively smaller

dimensions. Warry (2006) for instance, has proposed that early Roman roofing tiles began much larger and more robust, before shrinking in all dimensions. There were also a few fragments of Harrold type shell tempered CBM: the main period of production of the Harrold kilns occurring in the late third century (Brown 1994, 105-6).

The quantity of CBM recovered from Kingston Pastures is quite small, tending to suggest there was not a substantial building on the site. The distribution of CBM fragments, combined with that of the pottery (Fig. 8), is more strongly concentrated near the present buildings of Kingston Pastures Farm. This might suggest that the focus of activity/occupation lay here, or in association with the apparent nearby enclosures identified in the aerial interpretation plot (Fig. 9) (AAME). A second, more diverse, locus of finds lay a little to the west of the farm. This appears to be an episode of dumping. There is a curvilinear feature running west from the farm. Perhaps this might mark the remains of an old track. As noted at some sites in Cambridgeshire, dumps of Roman pot and CBM were used to repair potholes (Gibson and Knight 2002, 40; Coates 2015, 13). If the tiles with the suspected failed scarf joints really were discarded box flue tiles, rather than half boxes, then it may be that tile and/or pottery production was being carried out at what is now Kingston Pastures Farm.

Archiving

A copy of this report will be lodged with the Cambridgeshire Historic Environment Team for inclusion in the Historic Environment Record. It will also be made available to download from the CAFG website. The full recording spreadsheets for the CBM and pottery may also be available from the CAFG website, or by application to the group.

A representative selection of CBM forms and fabrics and of the pottery will be retained. In the short term, it will be held by CAFG members and may ultimately be deposited in Cambridgeshire County Council's 'Deepstore' facility in Cheshire.

Acknowledgements

We would like to thank Mr Richard Parrish for permitting access to the fields at Kingston Manor farm and for his interest in the project, and Oxford Archaeology for support and access to their Bar Hill premises for finds processing and storage. Thanks, must also go to those CAFG colleagues who read and commented on early drafts of this report and all the other past and present members of CAFG, without whose efforts and enthusiasm the Kingston Pastures project may never have been completed.

Colin Coates

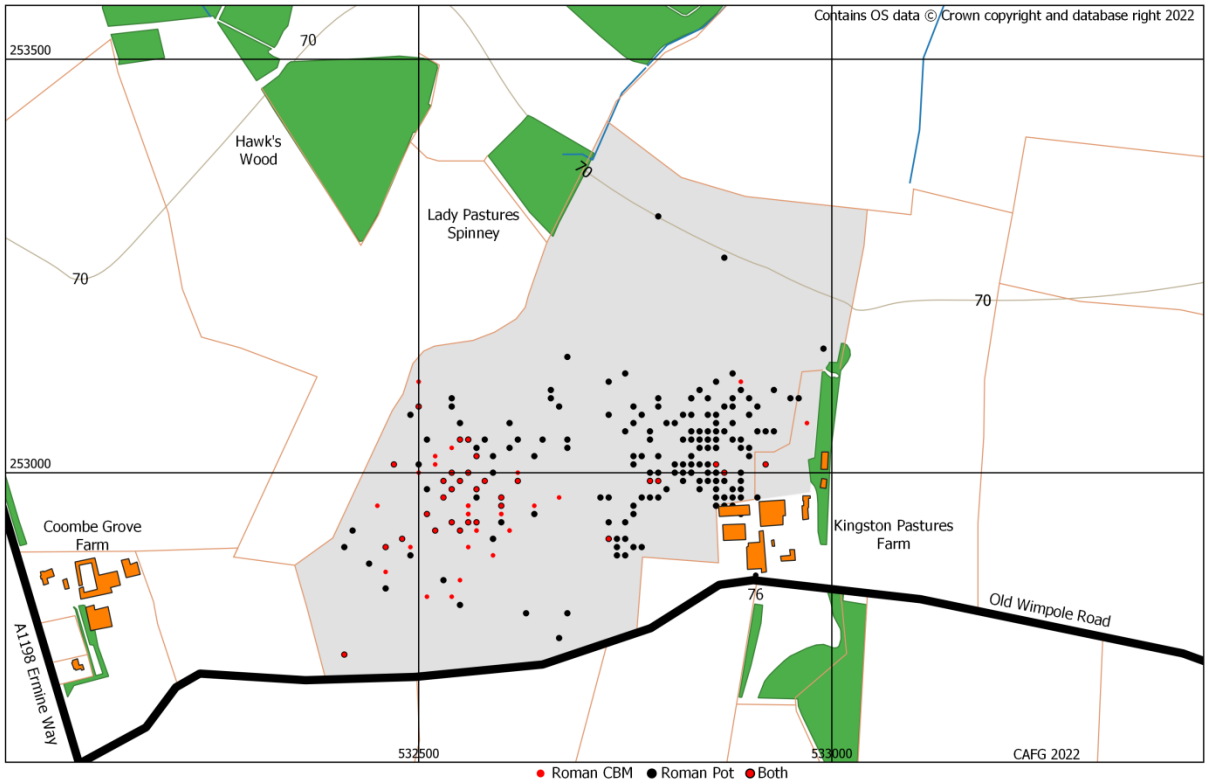

Fig. 8. Distribution map of Roman finds.

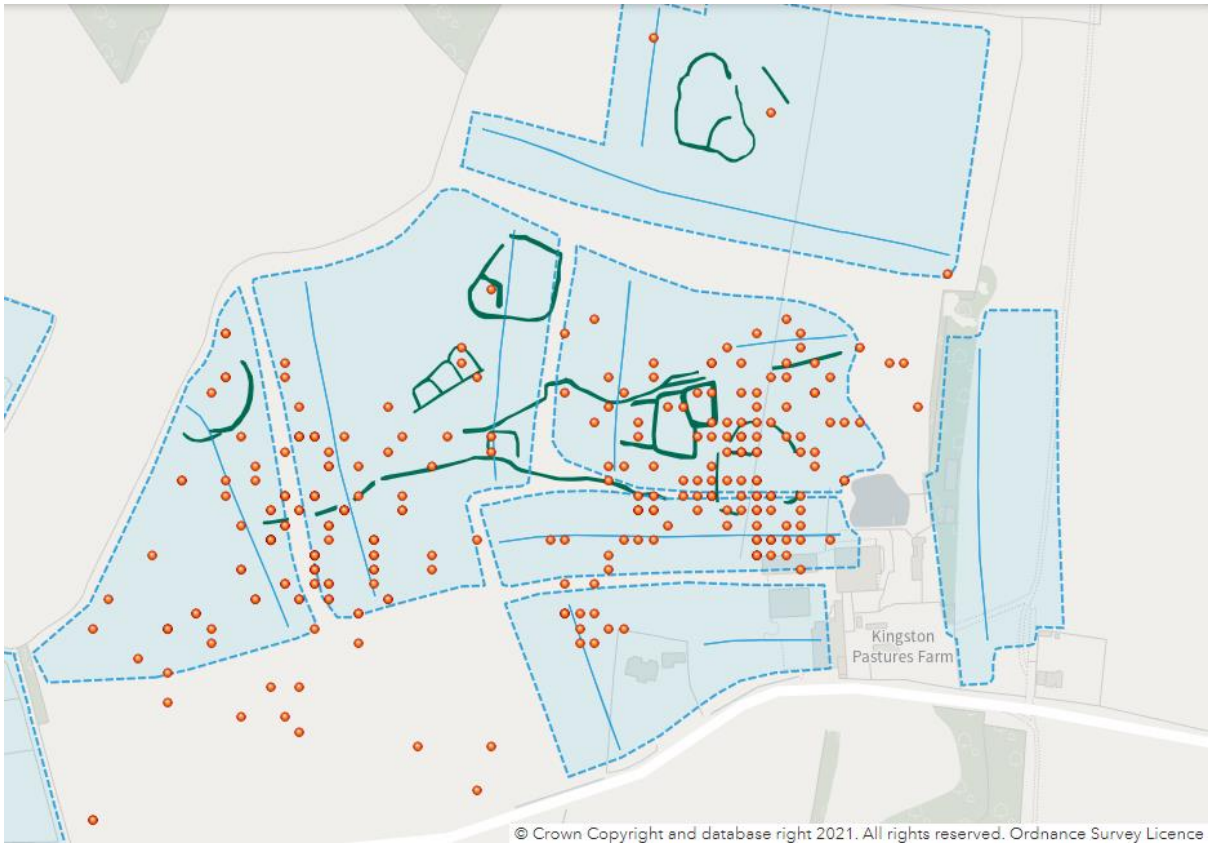

Fig. 9. Distribution plot of Roman finds over aerial mapping archaeological interpretation. (Data from Historic England)

Figure 10. Bag 273, Box tile with possible failed joint. (Photo: C.B. Coates)

Figure 11. Bag 364, Box tile with 'Saltire cross' combing. (Photo: C.B. Coates)

Figure 12. Bag 201, rounded limestone fragment. (Photo: C.B. Coates)

Figure 13. Bag 333, fragment of sandstone agglomerate. (Photo: C.B. Coates)

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Appendix 1. Preliminary fieldwalking report.

Kingston Pastures Farm.

A Stone column
and
Fieldwalking

Cambridge Archaeology Field Group

2001-2002

Summary

The recovery of part of a stone column by the farmer led to fieldwalking by members of Cambridge Archaeology Field Group of an area centred on TL 327530. A significant spread of Roman pottery sherds was identified. The figure numbers in the following refer to illustrations in this report.

Introduction

Mr Richard Parrish, the farmer of Kingston Pastures Farm, found part of a stone column while ploughing. He remembered the point of recovery (TL 32885296) in relation to the nearest farm building. The site lies in the parish of Kingston on the border with the parish of Wimpole.

Following inspection of the stone column, members of Cambridge Archaeology Field Group (CAFG) undertook fieldwalking in the area indicated. A significant spread of Roman pottery sherds was identified. This area on the top of the east-west chalk ridge, which runs from Haslingfield to Tadlow, carries the early trackway known as the Mare Way and is within the study area on which CAFG has concentrated its activities.

The Stone Column

The column is 48 cm high with a maximum girth of 28 cm at the base and is made of coarse limestone. The shaft of the column (figure 1) has been broken and part of the base has been damaged. Two sides of the base are square cut rising 7 cm from the end and on these two sides there is no sign of the lowest beading found on the other five sides, suggesting that these were not expected to be seen when the column was in place. The centre of the base had been carved out to form a roughly square mortise (figure 2). Figures 3 and 4 are photographs of the column.

Fieldwalking

Geology and Topography

The soil is derived from the clay with flint capping of the underlying chalk. It lies on the top of the ridge, which runs east-west. To the north the ground drops slowly (47m in 3.6Km) to the Bourn Brook at Kingston and to the south it drops more steeply (32m in 1Km) towards Valley Farm, Arrington. The early trackway known as the Mare Way follows the ridge and the area examined lies to the north of the modern road, centred on TL 372530. The present field is shown as divided into a number of smaller ones in the Ordnance Survey map of 1890. A footpath crosses the field from north to south, coming from Kingston past the farm and on to Arrington.

Methodology

The area to be walked was marked out with the National Grid one hundred metre squares and this was used to plot the position of each find point on to a plan. The standard method for fieldwalking by CAFG was employed. This is to walk at ten pace intervals between persons

in straight lines across the field. Each person carries canes to mark the point at which a bag is deposited containing any artefacts found on the surface of the ground. Walkers are instructed to pick up artefacts of all periods and place them in a plastic bag but not to exceed twenty paces before starting a new bag. The position of each cane is marked on the plan with a number and the same number is written on a label placed in the bag. All artefacts are washed and sorted and recorded by period. Distribution maps are drawn of the finds.

Results

The field walking recovered 1446 items of pottery, brick and tile, metal, glass and other objects: of these 624 were Roman pottery. Figure 5 shows the distribution of the Roman pottery and figure 6 its break down by general description. The remaining finds were more recent objects mainly post-medieval pottery and brick. The Roman pottery was divided into categories of finish, function and colour as shown in the table below.

Colour Coat	Mortaria	Samian	Shell Tempered	Grey	Buff	Red	Total
34	7	1	75	275	66	166	624

Most of the sherds were very worn with few pieces showing the form of the vessel. Examination of the hectares TL 328529 and TL 328530 with a metal detector did not recover a single item of metal.

Discussion

The finding of a carved and turned stone architectural column is rare in south Cambridgeshire. The recovery of a significant surface spread of 2nd to 4th century pottery at the same place suggests that the column is of the same date. Very little Roman roof tile was recovered: that which was present came mainly from the western end of the field.

The pottery spread was sufficient to suggest occupation in the Roman period and the column might possibly represent a structure of some importance, perhaps with a colonnaded veranda. There is no previous record from this site of Roman finds. We were informed by a local person that there was Roman pottery in an adjacent field (TL 324534), but this is now under grass. The Roman road, Ermine Street, runs north-south 800m to the west of Kingston Pastures Farm and ribbon development has been suggested along its line 3Km to the south around Arrington Bridge.[1]

Further field walking in the area of this site will be undertaken to establish, within the limits of this technique, the extent of occupation in this period and further study of the column is needed to establish its origins and confirm its date of manufacture.

Acknowledgements

CAFG thank Mr Richard Parrish for permission to undertake this work.

[1] Horton, W et al., *Excavation of a Roman Site near Wimpole, Cambs., 1989*, PCAS 83, 31-74

Figure 1 Stone column from Kingston Pastures Farm.

Figure 2 Column base.