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ARCHAEOLOGICAL EXCAVATIONS AT FORDHAM ROAD, ISLEHAM, CAMBRIDGESHIRE

GREY REPORT

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Andrew A. S. Newton

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INTRODUCTION

Between January and March 2005, Archaeological Solutions Ltd (AS) undertook a programme of archaeological excavation at Fordham Road, Isleham, Cambridgeshire (NGR TL 6438 7390) (Fig 1). The project was commissioned by Hereward Housing Limited in response to a planning condition placed on the residential redevelopment of the site.

Prior to this phase of work, in August 2004, an archaeological evaluation was carried out at the site by the Cambridgeshire County Council Archaeological Field Unit (Kenney 2004). The evaluation revealed a number of postholes, several pits, a ditch and a quarry pit, all of medieval date. Post-medieval levelling was noted at the western edge of the site. The evaluation suggested that the site represented an early medieval croft, similar to later examples known from elsewhere in Isleham (Kenney 2004).

THE SITE

The site is located at the southern end of the historic core of the village of Isleham, which lies in the East Cambridgeshire district of the county of Cambridgeshire.

The excavation site occupied the eastern part of the area that was to be developed. It consisted of a sub rectangular area of approximately 1800m^2 aligned north-west to south-east. The site was bounded by Fordham and Station Roads but separated from both by a narrow strip of land approximately 1.5m wide. The central part of the site was slightly reduced in size to comply with a 10m exclusion zone surrounding a live Transco Gas substation, which lies to the north-west of the site along Station Road. The site was formerly used as allotment gardens.

The village of Isleham is located at the south-eastern edge of the Cambridgeshire fens, close to the foot of the Lower Cretaceous Chalk ridge, which runs along the south of the county before sweeping northwards into Norfolk (Hall 1996). The chalk ridge rises from the fens to *c.* 11m AOD at the site; the surrounding fenland lies partly on Lower Cretaceous Chalk, and partly on Gault Clay. This solid geology is overlain by the chalky drift and chalk-derived soils of the Wantage 2 association (SSEW 1983).

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND (Fig 2)

The Romano-British period

Evidence for Roman activity in the Isleham area is quite extensive. Evidence of agricultural activity and field systems with associated pottery sherds, have been identified to the south-west of the village. Evidence exists for the presence of two significant Roman buildings in the area, both to the south-west Isleham itself (Scott 1993, 39). One of these (the 'Temple site') lies *c*. 1.2km west of the Fordham Road site and comprises a quarry pit backfilled with the remains of a Roman building including brick, tile, mosaic tesserae (including some made from pottery sherds and chalk) and wall plaster. The other lies close-by and is recorded as a corridor villa with at least four rooms. Numerous Roman small finds have been recovered in the Isleham area, including a significant hoard of pewter objects.

Anglo-Saxon Isleham

Evidence for Anglo-Saxon activity in the Isleham area is restricted to two chance finds from either end of the village, although a number of early Anglo-Saxon cemeteries are known from slightly further afield in the Soham and Freckenham areas.

The existence of Isleham is documented in the later Anglo-Saxon period. It is recorded as *Yselham* in a charter of 895 that is one of the documents making up Walter de Gray Birch's *Cartularium Saxonicum* (Reaney 1943, 192). The 'ham' element of the settlement's name is common amongst later Saxon place names and denotes a village community (Taylor 1978, 11). Reaney (1943, 192) states that the 'Isle' element appears to be derived from the personal name *Gisla* indicating that Isleham was *Gisla's* ham. However, *gisl* translates as 'hostage' into modern English suggesting that it was in fact the "village of hostages". The 14th century parish church of St. Andrews is believed to stand on the site of a wooden Saxon predecessor understood to have been presented to the Bishop of Rochester by King Alfred (Kenney 2004, 4).

The medieval period

Prior to the Norman Conquest, Isleham appears to have formed part of the Royal estates centred on Soham. The manor was certainly held in demesne by Edward the Confessor (Williams & Martin (eds.) 2003, 520). By the time of the Domesday Survey, *Gisleham* was recorded as a Royal vill in the hundred of Staploe. The Royal manor was granted in 1100 by Henry I to Alan, son of Flaald, and remained in his family (the FitzAlan family, later the Earls of Arundel) until the 17th century (Wareham & Wright 2002, 427), and was known towards the end of this time as Great Isleham. During the 1110s Alan, son of Flaald, granted an estate in Isleham to the Breton abbey of St. Jacut-de-la-Mer or de l'Isle. Early in the 13th century the seat of the alien priory moved to an appropriated church in Linton but the monks retained their Isleham manor until the 1340s when they were progressively dispossessed by the Crown (Wareham & Wright 2002, 432).

The only remaining priory building is the chapel of St. Margaret, which is a Scheduled Ancient Monument (SAM 28). St. Margaret's chapel is built of clunch set

in a herringbone pattern on a plinth of Barnack stone. It is a simple construction with a nave, chancel and apse. Further remains of the priory (SAM 61), consisting of the buried foundations of conventual buildings and earthworks representing fishponds and linear divisions lie to the north of the chapel of St. Margaret. Archaeological work carried out in the late 1990s has recorded ditches and earthworks associated with the priory (Kenney 2004, 5).

By the medieval period, Isleham had developed into a moderately large, but nucleated settlement on the fen-edge. No certain medieval habitation remains have been recorded outside of the nucleus of the village. However, the 'temple' site (situated on Temple Road; so named because of the village's associations with the Knights Templar) to the west of the village produced glazed 14th century wares and other medieval pottery (along with the Roman remains mentioned above) when it was excavated in 1936. The 'temple' is marked as a moated site on early Ordnance Survey maps and the plan that these maps show is very similar to such features from the medieval period (Hall 1996, 88). As in other parishes on the clay slopes of Cambridgeshire the medieval field systems are visible in and around Isleham surviving as large linear earthworks (Hall 1996, 88).

Post-medieval

By the start of the 16th century the extraction and processing of clunch, a hard variety of chalk, was already established in Isleham. In the 1460s five crofts east of the south end of Up, later Mill, Street already contained stonepits at their street ends and there was a limekiln croft south of Blatherweyk, later known as West, Street (Wareham & Wright 2002, 443).

Little is recorded regarding Isleham's industrial practices for most of the post-medieval to modern period although it is known that clunch quarrying and burning for lime continued in the village until the 1930s. Evidence of early modern clunch processing is relatively abundant. To the eastern side of the High Street, a series of 19th century lime kilns (SAM 63), lie directly south of a quarry shown on the Isleham Enclosure Map (Kenney 2004). Four limekilns located on Limestone Close are Grade II listed structures, which were built in *c.* 1860 for the manufacture of limestone mortar. These four kilns remain mostly intact with their associated ramp and coarse clunch walling. From 1828 to the 1920s the products of Isleham's clunch quarries and limekilns were distributed to Wisbech, Peterborough and Ipswich by barges operating on the River Lark and the Isleham Navigation, an artificial channel which ran from the river to East End (Wareham & Wright 2002, 444). Similar navigable channels had been constructed in the later medieval period and were presumably in operation during the post-medieval period; a water-filled channel, which gave the present-day Waterside Road its name, linked a former quarry to the north of Isleham with the River Mark further north. An additional canal flowed westwards at the rear of the properties in the north of the village, and thus provided the opportunity for waterborne trade (Kenney 2004).

EXCAVATION AND RECORDING

The excavation was undertaken by AS between January and March 2005 (Williamson *et al* 2005). It was conducted according to the brief and specification, and conformed to IFA guidelines (IFA 1999).

The area of excavation measured 1800m² and was located in a position on the site approved by CCC CAO and the client. Topsoil and overburden were removed by a 13 ton 360° mechanical excavator to archaeological horizons or the natural chalk substrate; thereafter all excavation was undertaken by hand. Following machine excavation of the site, all archaeological features were surveyed using a Total Station to produce a pre-excavation plan. Archaeological horizons and features were cleaned and excavated by hand, and deposits were recorded on *pro-forma* recording sheets, drawn to scale and photographed as appropriate. The excavated site and excavated spoil were scanned with a metal detector to enhance the recovery of metallic finds.

DESCRIPTION OF ARCHAEOLOGICAL FEATURES BY PHASE

Phase 1: Undated Features and Features of 11th-12th century date

The features assigned to Phase 1 are those that can be dated as 11th to 12th century in origin. Also regarded as being of Phase 1 are two undated features whose characteristics suggest that they may significantly predate other features assigned to this phase. These features have been assigned to Phase 1 on the basis of their stratigraphic relationships to Phase 2 features; neither contained datable finds.

Undated Phase 1 structures

The first of the undated Phase 1 structures (F1330), although severely truncated, was rectangular in plan (see Fig 4) with a steep sided, flat-based profile (Fig 5), suggesting that it was a sunken-featured building (SFB) or *grubenhaus*. The lower fills of the structure were markedly layered and are interpreted as successive floor and occupation deposits. These are overlain by a final backfill. A sherd of 13th-15th century pottery was recovered from the structure's primary fill but this is thought to be intrusive; the feature was cut by a number of features, including Phase 2 Tank F1365 and Phase 3 Well F1552, indicating that it was constructed prior to the 12th century.

The second Phase 1 feature lay at the north-western end of the site (Fig 4; Plates 1 and 2). This feature, F1670, was semi-circular in plan though its full form was not identifiable as it extended beyond the limits of the excavated area. F1670 consisted of a gully or foundation trench surrounding three successive layers (Fig 6). The lowest of these layers (L1474) was of rammed chalk. This was overlain by a floor composed of reused Roman ceramic building materials (L1439) (see Peachey, this report), which was in turn sealed by a second rammed chalk layer (L1438). These deposits may represent three successive floor surfaces for the building that the feature represents, though the first chalk layer (L1474) may have been a deliberate foundation layer for

the tile floor. While the character and form of the north-western part of F1670 is not known, the shape of this feature has led to its interpretation as the apsidal end of a building, the main body of which lay outside of the excavated area. A building displaying an apse is likely to be a building of some importance, the use of Roman tile, presumably salvaged from elsewhere in Isleham, to floor the building may reinforce the suggestion that this was a high status building.

11th to 12th century Phase 1 structures

In addition to the undated structures two further possible buildings are represented by datable Phase 1 features. These were S1029, a post built structure located towards the south-eastern end of the site and F1614, a second sunken-featured building located at the north-western end.

S1029 (Fig 7; Plate 3) comprised 16 postholes (F1114, F1138, F1155, F1153, F1176, F1251, F1144, F1161, F1118, F1116, F1159, F1112, F1076, F1074, F1072 and F1070) which formed the plan of a rectangular structure, measuring approximately 7.4 x 4.3m, with possible internal subdivisions. It is thought that the western wall of this structure was rebuilt slightly later (Phase 2 Postholes F1189, F1207, F1157, F1135 and F1127), suggesting repairs or alteration, and indicating that it was still standing, and in use, during the second phase of activity at the site. The position of the building, within the later Phase 2 enclosure reinforces this notion.

Given the chronological overlap between Phases 1 and 2, the assignment of S1029 and its rebuilt west wall to different phases need not imply a particularly long lifespan for the building. It must be remembered that it is not known whether the small amount of datable pottery on which this phasing is based was deposited during construction or during the use of the building.

On the basis of the size, depth and location of the postholes, it is likely that building S1029 was similar in construction to the archaic timber framing of the 13th century, with straight timbers strengthened by cross bracing (Wood 1981, 222). The upright posts would probably have been in-filled with panels of wattle and daub; such construction was common in the medieval period. To the south-west of building S1029 were two further lines of postholes. These ran parallel to one another and parallel/perpendicular to the walls of the building and are considered to represent fence lines. A further fence line may have existed subdividing the space between the building and one of the features comprising part of the Phase 2 enclosure. Configurations of postholes to the north-west of the building may represent arrangements of further short fence lines or railings. Postholes comprising these fence lines make up a large proportion of Phase 1 features.

The sub-rectangular plan, steeply sloping sides and almost-flat base mark F1614 as a possible sunken-featured building. The primary fill of this feature (L1617) has been interpreted as the initial accumulation of a silty deposit in the space beneath the building's suspended floor; the ten sherds of pottery recovered from this deposit may have fallen through gaps in the floor. The overlying deposits may post-date the use of F1614 as a sunken-featured building: L1475 was a floor surface of crushed chalk and flint, covering only half of the area of F1614. Although it appears inconsistent with

the presence of a suspended floor within the building, it is possible that part of the area below the floor was lined to facilitate its use for storage. Alternatively, this deposit may represent a new floor. The burnt appearance of the chalk in L1475 may have occurred prior to its being laid as a floor, or may have been a result of the same process as the overlying deposit, which contained charcoal. This charcoal filled deposit represents the final backfilling of the SFB feature, probably with domestic waste. The charcoal contained within it, and the burning of the underlying layer suggest that some of this waste material was burnt *in situ*. This feature cut the apsidal feature F1670, possibly providing weight to the argument that the latter, undated, feature was significantly earlier than most of the other Phase 1 features. The presence of a sunken-featured building with a secure date, however, makes the likelihood that the SFB F1330 was its contemporary, and therefore of 11th-12th century date, more realistic, despite the widely accepted view that such buildings were typical of the early to middle Anglo-Saxon period and no longer used after the 7th century.

Phase 1 clunch extraction and processing

The extraction and processing of clunch began during Phase 1. F1615 is interpreted as a quarry pit for the extraction of the raw material. Although this feature is located close to the limit of excavation and was, as a result, not entirely visible it can be seen to be considerably smaller than most of the later quarry pits. Several smaller pits, F1524, F1567, F1099 and F1235 may also represent small scale clunch extraction activity. F1511 was interpreted as a tank for the soaking of clunch; this interpretation was based on the sub-rectangular (with rounded-ends) plan of the feature and its steep-sided broad-based profile (Fig. 8). The interpretation of similar features assigned to Phase 2 is discussed below.

Water to fill the tank was probably supplied by one of the three Phase 1 wells, F1140, F1294 and F1445, all located at the southern end of the site. The wells had (near) parallel vertical or slightly undercut sides, and there was no evidence for lining in any of them; however, none was excavated beyond a depth of 1.2m for reasons of health and safety. They were filled by layered deposits of clayey silt, with deposits of clunch/chalk rubble also present in some of them. Finds from the wells were generally relatively sparse. Part of a bone flute (see Crummy, this report) was recovered from Well F1140.

Boundary features

Two linear gullies (F1502 and F1555) appeared to form an interrupted boundary running approximately east to west across the site (see Fig 4); a further gully (F1457) on the same alignment lay *c*. 5.6m to their north-west, terminating approximately in line with the terminus of F1502. The line of this third gully was continued eastwards by a line of postholes, two of which cut, and therefore post-dated, the gully's eastern terminus. It is possible that these features represent a boundary deliberately separating these two areas, possibly indicating differential ownership of the two ends of the site. However, these features lay between Tank F1511 and the only (known) sources of water, and so it seems unlikely that they represent a property division. Another possibility is that the flat-bottomed gullies and postholes held the sill beams and posts of a timber built building in this area of the site. It has also been suggested that these features mark the edges of, or act as drainage channels for, a trackway leading to and

from the projected continuation of Phase 3 quarry pit F1599 (Williamson *et al* 2006, 34).

Phase 2: Clunch extraction and processing in the 12th to 14th centuries

The features assigned to the second phase of activity at the site represent the quarrying and processing of clunch. Datable material recovered from the fills of these features indicates a date range of 12th to 14th century for Phase 2 activity.

Clunch extraction

F1010, located in the very eastern corner of the site has been interpreted as a quarry pit from which clunch was extracted during Phase 2. Its extents in plan and profile are not known, though a machine excavated slot reached a depth of 1.7m without encountering the base of the feature. As was the case with the later quarry pits, relatively few finds (twenty-two sherds of pottery and small quantities of animal bone and mussel shell) were recovered from F1010; this scarcity of finds probably reflects the manner in which the quarry pits were rapidly backfilled with clunch processing waste.

Some of the smaller pits recorded at the site may have initially been dug for the extraction of clunch/chalk and then later used as refuse pits or for other purposes. Features for which this interpretation may be particularly apt are F1385, F1340, and F1332, all of which were relatively large and deep (the smallest measuring 1.2 x 1.2 x 0.7m) with distinctive vertical sided, flat based profiles. However, the cutting of any feature at the site would have produced chalky material, although this was not necessarily good quality clunch in pieces of architecturally-useful size; poorer quality material could have been used for burning into lime.

Clunch processing tanks and their water supply

Eleven Phase 2 features (F1243, F1180, F1245, F1097, F1319, F1327, F1365, F1367, F1581, F1583, F1586 and F1313) were interpreted as tanks for the soaking of clunch, which has to be soaked before it can be successfully sawn into usable blocks. These, like Phase 1 Tank F1511, were identified primarily on the basis of their shapes in plan (sub rectangular with rounded ends) and profile (steep sided and broad (flat or slightly concave) based). Sections of a relatively undisturbed (F1097) and two truncated (F1245 and F1319) tanks are shown in Fig 8. Several tanks had been truncated, making their full extents hard to assess but F1097, which was cut only slightly by two pits, may have been typical in its dimensions of 6.00 x 1.16 x 0.58m.

The tanks are not all contemporary with one another. There was intercutting between them, and in some instances one tank was apparently dug as a re-cut of another, in approximately the same location. In addition to pottery, animal bone, CBM and mussel shell, the latter in large amounts from F1097, were recovered from the tanks. It is probable that disused tanks were used opportunistically to dump domestic waste. Chalk/clunch found in the fills of the tanks may represent the dumping of waste from clunch processing or may be the remaining debris from the tanks' last use. These features were mostly clustered at the southern end of the site; F1313 was located away

from the other tank features assigned to this phase, towards the northern end of the site, just to the south of the Phase 1 possible boundary.

A constant supply of water would have been required for the tanks. Several features recorded at the site have been interpreted as wells, but only one of these, F1124, has been dated to Phase 2 of activity. A large assemblage of pottery was recovered from this feature as well as a large quantity of mussel shell. Like the other wells recorded at the site, it was revealed to have near parallel, vertical or slightly undercut sides, no evidence for any lining and to be filled by layered deposits of clayey silt. The feature was machine-excavated to a depth of 5.1m and the bottom was still not reached. The feature was located next to large pits in the north-west of the enclosed area (discussed below) formed by the clunch processing tanks. This location makes it likely that the well was ideally positioned to supply the majority of the Phase 2 tanks.

The enclosed area

The configuration of the Phase 2 clunch soaking tanks (except for F1313) suggests that they formed the north-east and north-west sides of an enclosure at the south eastern end of the site. The south-east side of this enclosure was formed by ditch F1110. It is possible that undated ditch F1003 formed the southern edge of the enclosure, but this cannot be confirmed and the feature remains unphased. The two ditches bore no resemblance in section either to the tanks or to one another, although both were very shallow and probably truncated. It appears that neither the ditches nor the tanks would have formed an impassable boundary, and that they would have acted as markers for, rather than enforcers of, the division of space at the site.

It is possible that Phase 1 Structure S1029 was still standing when the enclosure was constructed around it. Certain pits (e.g. F1042, F1044) of the cluster within the enclosure, to the east of Structure S1029, contained finds assemblages consistent with the deposition of domestic refuse. This led initially to the suggestion as the enclosure functioning to separate domestic from industrial space, but closer spatial analysis indicates that both industrial and (limited) domestic activity are represented within the enclosure, whose boundary is, in any case, comprised of industrial features. The lack of finds directly associated with Building S1029 casts further doubt on the idea that the enclosed area was solely domestic. It seems more likely that the building was used by the people working at the site, perhaps for administration, possibly for temporary occupation, and almost certainly for the preparation and/or consumption of meals, but that no one lived in it on a permanent basis (Williamson *et al* 2006, 61).

Phase 2 features towards the north-western end of the site

Tank F1313 lay a significant distance to the west-north-west of the enclosure formed by the other Phase 2 clunch soaking tanks (Fig 4). Although securely dated to Phase 2, its lowest fill contained 11th to 12th century pottery, possibly indicating that its first use predated other Phase 2 features. This tank was part of a cluster of Phase 2 features, the others being large and small pits, to the immediate east-south-east of the Phase 1 possible boundary (see above).

Several other Phase 2 pits were located to the north-west of the Phase 1 possible boundary (see Fig 4). A cluster of postholes located between the gullies of the

putative boundary was largely undated, but a few examples contained small amounts of Phase 2 pottery. No structural configuration is apparent.

Phase 3: Continuation of clunch-working in the 14th to 16th centuries

Quarry Pits

Three large Phase 3 quarry pits (F1599, F1665 and F1667) were identified around the perimeter of the site. Two further, undated, quarry pits (F1579 and an un-numbered example) may have been contemporary with these or with similar features dating to Phases 1 (F1615) and 2 (F1010). The un-numbered quarry pit may be a continuation of F1599. Because the Phase 3 quarry pits (like the others at the site) extended beyond the excavated area, their full extents were not apparent, but all were conspicuously large in plan (up to 8.5 x 7.5m). The large size of these features was matched by their depth, meaning that they were not bottomed for reasons of health and safety; F1599 was found by machine excavation to be more than 4.5m deep (see Fig. 8).

Most of the quarry pits contained multiple layered fills, many of which comprised large amounts of chalk/clunch rubble. This probably represents waste material from the clunch processing carried out at the site deliberately used to back fill the quarry pits, possibly when they were abandoned having become to large for safe quarrying. Some quarry pit fills, such as L1648 in Pit F1599, may represent episodes of natural silting. The observed upper fills of the two unexcavated quarry pits F1665 and F1667 closely resembled the subsoil of the site and are thought to represent the final episode of slumping into these features. Few finds were recovered from the quarry pits, although surprisingly large pottery assemblages were recovered, without excavation, from the upper slump fills of F1665 and F1667. Animal bone, CBM, mussel shell, slag and pumice were recovered from quarry pit features.

Wells

Four of the features assigned to Phase 3 (F1536, F1500, F1487 and F1552) were considered to be wells. These features were circular or sub-circular in plan but, like the quarry pits, were too deep for full excavation; all were found to be at least 1.2m deep (the limit for safe excavation), although F1500 appeared to be no deeper than this. Like the earlier wells, the Phase 3 wells had near parallel, vertical or slightly undercut sides and there was no evidence that they were lined. Despite the presence of more wells and more quarry pits in Phase 3 than in any of the preceding phases, possibly suggesting that more clunch was being extracted and processed at the site, there are no Phase 3 features representing clunch processing tanks. This may represent a shift away from soaking clunch in features cut into the ground, possibly to the use of wooden vats or similar objects for this stage of the process. An alternative explanation may be that Phase 3 clunch soaking tanks were present at the site but exist outside of the limits of the excavated area.

Significant undated features

The majority of the undated postholes outside of the Phase 2 enclosure were postholes located between the gullies of the Phase 1 possible boundary; a small number of

Phase 1 and 2 postholes were also present in this area. It has been suggested that these features (and possibly also the Phase 1 gullies) represent a building, but no structural configuration has been identified.

A series of gullies (F1241, F1095, F1093, F1106) ran parallel to one another in the eastern corner of the site. They were all similar in profile, although width, depth and regularity varied between them. It is possible that these features are plough scars but they have been tentatively interpreted as the wheel ruts of carts. The smaller features with more regular profiles would thus represent individual wheel marks (e.g. F1062, F1066 and F1068 representing three distinct wheel marks each superimposed on the last), with the broader, less regular features representing the passage of several wheels. The 0.8m spacing between F1241 and F1106 may be consistent with the wheel span of a narrow cart. Although these features are undated, their position in relation to Quarry Pit F1010 suggests that they were left by vehicles being driven right up to the quarry pit, possibly either to take the quarried clunch away or to deposit refuse material when the feature was backfilled.

Finds distribution analysis

Finds distribution analysis was carried out in order to identify patterns in finds distribution, to locate areas which may have been used for particular activities and to aid interpretation of structures.

The distribution of animal bone (Fig. 9), distribution of all pottery (by sherd count; Fig. 10) and distribution of pottery by fabric type (Figs. 11 to 20) were analysed. This analysis identified little or no patterning in the distribution of these classes of artefact which may help to identify areas of particular activity types or to assist interpretation. It can be seen that features forming and within the enclosed area (formed partially by Phase 2 tanks) within which the structure S1029 lay produced large quantities of finds. This, as has been suggested elsewhere in this report, may be the result of preparing or consuming meals within this area.

SPECIALIST REPORTS

The flint
Martin Tingle

Introduction

The assemblage is composed of 12 pieces weighing 50g, although if burnt but unworked flint is excluded the worked flint assemblage totals 9 pieces weighing 30 g. It all appears to be residual material from a group of medieval features

Terminology

Throughout this analysis the term ‘cortex’ refers to the natural weathered exterior surface of a piece of flint while ‘patination denotes the colouration of the flaked surfaces exposed by human or natural agency. Following Andrefsky (1998, 104)

dorsal cortex is divided into four categories; the term primary flake refers to those with cortex covering 100% of the dorsal face while secondary flakes have cortex on between 50% to 99% of the dorsal face. Tertiary flakes have cortex on 1% to 49% of the dorsal face while flakes with no dorsal cortex are referred to as non cortical

A blade is defined as an elongated flake whose length is at least twice as great as its breadth. These often have parallel dorsal flake scars, a feature that can assist in the identification of broken blades that, by definition, have an indeterminate length/breadth ratio.

Raw Materials

Although much of the flint is without surviving dorsal cortex, the remaining pieces suggest that at least some of the flint derives from secondary deposits.

Composition and Technology

Feature	Context	Find	Weight (g)
F1025	L1026	Uncorticated Flint	3
F1025	1026	Burnt Flint	11
F1025	1026	Broken Flake	5
F1030	L1031	Tertiary Flake	1
F1187	L1188	Tertiary Flake	5
F1294	L1295	Uncorticated Flint	1
F1313	L1315	Burnt Flint	1
F1313	L1333	Tertiary Flake	4
F1313	L1333	Burnt Flint	8
F1367	L1368	Uncorticated Flint	3
F1502	L1503	Uncorticated Flint	3
F1589	L1590	Uncorticated Flint	5
		Total	*50*

Table 1 The composition of the assemblage

The assemblage is composed largely of small unretouched Tertiary and uncorticated flakes. The worked flint derived from 9 contexts with the greatest concentrations being 3 pieces each from Pit F1025, L1026, and Tank F1313, L1315 and L1333.

Discussion

There are no datable pieces within the assemblage and while it is assumed that these are residual prehistoric finds, some could have resulted from the dressing of flint nodules for construction work. This assemblage is too small and too widely dispersed for any firm conclusions to be established.

The Pottery

Peter Thompson

The excavation recovered 2,207 sherds weighing 24.225 kg of which 2179 sherds weighing 24.021 kg were stratified, the rest coming from the areas of top and subsoil. Most of the pottery shows varying signs of abrasion and there are contexts containing only fragmentary sherds, but generally the assemblage is in good condition. There are a comparatively large number of diagnostic rims and upper profiles and several features contained large quantities of pottery providing good dating evidence. The assemblage is almost exclusively medieval, with less than a dozen sherds that are residual prehistoric or post-medieval.

Ware	**Sherd count**	**Sherd weight (g)**	**% of sherd count**	**Date range (apprrox)**
Flint (Iron Age)	4	8	0.18	800 BC – AD 50
Late Saxon?	9	125	0.41	800-1050?
St Neots	49	303	2.24	850-1150
Thetford	71	626	3.25	850-1150
Stamford	13	69	0.6	850-1150
Early Med	37	324	1.69	900-1200
Quartz and limestone	5	35	0.22	1050-1250
Ely-type	1,733	20,445	79.53	1100-1540
Shelly	16	66	0.73	1100-1400
Miscellaneous greywares	62	620	2.84	1100-1400
Miscellaneous sandy wares	100	793	4.58	1100-1400
Developed Stamford	1	177	0.04	1150-1250
Blackborough-type	10	62	0.45	1150-1300
Grimston	5	50	0.22	1170-1540
Scarborough	1	12	0.04	1200-1350
Essex-type	51	261	2.3	1300-1550
Late Medieval Oxidised	5	10	0.23	1400-1540
Post-medieval	7	35	0.32	1540-1800+
Total	2,179	24,021		

Table 2. Quantification of stratified wares by sherd count and weight

The Wares

Late Saxon/early medieval wares

Other than 4 residual (probably Iron Age) flint tempered sherds weighing just 8g, the earliest pottery is of Saxon appearance in grass and sand tempers, although some of these could also be residual. Four abraded sherds from F1614 (L1476) contain coarse sand and burnt plant temper, one also having a thumb decorated applied clay strip.

Grass temper was commonly used into 9th century and at one site in Berkshire appears to have been still in use in the early 11th century. A simple Saxon rim (2g) in a fine sandy fabric with pale orange surfaces from F1614 (L1475) could span a broad date range.

The trio of Saxo-Norman wares of Thetford, St Neots and Stamford type are present at a ratio of 71:49:13 respectively accounting for just over 6% of the stratified sherds. Thetford profiles comprised 6 jar rims mostly from cooking pots 12 to 14cm in diameter (Fig 9.1 and 9.2) but including a storage jar rim 20cm across with thumb decoration to the top (Fig 9.3). A sherd from a pitcher and a strap handle both from F1044 are probably residual. Four St Neots jar rims are between 12 and 16 cm diameter and three bowl rims include an inturned rim and a redeposited hammerhead rim, the latter from F1188. The Stamford sherds were all small glazed body sherds from pitchers or jugs.

Posthole F1114 (L1115) contained a sherd of Stamford ware along with a small micaceous sandy sherd that is probably Saxon (mid 9th to late 12th century). F1615 (L1617) contained ten early medieval sherds with brown surfaces all from the same jar with a rim diameter of 21 cm; the upright rim suggests an 11th century date. Tank F1511 (L1512) included a jar rim each in St Neots and Thetford ware, both being approximately 12 cm in diameter. The small size, profuse platy shell and dark fabric of the former suggests the assemblage is pre-12th century. F1614 (L1476) contained a small St Neots jar rim approximately 14 cm in diameter and two upper profiles from Thetford-type vessels, one a cooking pot and the other a storage jar (Figs 9.2 and 9.3) all of 11th- mid 12th century date. A single sherd of Ely ware from this context suggests that the pottery was deposited in the 12th century.

Three wells also contain Saxo-Norman pottery. Well F1140 contained just nine sherds within three fills (L1142, L1143 & L1664); one was an early medieval brown gritty fabric and the remainder represented all three of the Saxo-Norman wares including yellow glazed Stamford ware and a 14 cm rim from a small globular cooking pot in Thetford-type ware (Fig 9.1). The comparatively small size may suggest a pre-12th century date possibly earlier than the 12th century (Hurst 1956, 46) although the form would fit equally well with the 12th century. Well F1294 (fills L1297 and L1299) is of similar date containing just 7 sherds of St Neots, Thetford and two small quartz sand tempered sherds possibly of late Saxon date. A third well, F1445, with fills L1448, L1449 and L1451, contained 22 sherds also comprising all three Saxo-Norman wares and early medieval sherds. A St Neots deep bowl rim, approximately 30 cm in diameter and another with inturned rim were present. Such inturned rims are again suggested by Hurst as being indicative of a pre-12th century date (Hurst 1956, 46).

Pit F1049 contained two fills, in the lower deposit (L1050) were five small sherds of Ely ware including a thumb decorated jug rim; these were associated with two large base sherds comprising a sagging base from a St Neots cooking pot and a flat cooking pot base in a hard red-brown fabric with grey slightly micaceous surfaces with rilling. This fabric has similarities to Thetford 'Fine Ware' from Thetford (although the rilling is uncommon). At Thetford, 'Fine Ware' is dated late in the site series as is the increase in flat bases, which ended some time in the 12th century (at Grimston, Thetford ware production ceased around the middle of the century) (Rogerson and Dallas 1984, 118 and McCarthy and Brooks 1988, 162). At Forehill, Ely, Ely sherds

began to supersede Saxo-Norman ones in the later 12th century, the latter being residual by the 13th (Hall 1988, 137-143). A date of mid 12th century is probable for the context.

Ely Wares

The assemblage is dominated by Ely and Ely-type wares comprising almost 80% of the assemblage. These wares, which are thought to have been manufactured between the 12th and 16th centuries (Healey 1997, 52), can be quite mixed and include both hand and wheel-made forms, the latter increasing in the late medieval period. Fabrics are usually dark to mid grey and can contain white inclusions, ooliths, chalk and occasionally flint together with sand; surfaces are often buff or pale orange but can also be brown or grey. Only 1.82% of the Ely sherds show evidence of glazing although this figure is likely to be slightly offset by the fact some sherds retain only vestiges of glaze suggesting in some cases it might have completely worn off. Vessels were usually only partially glazed so the proportion of complete vessels that actually contained glaze is probably higher than indicated by the number of glazed sherds; nevertheless, the figure is low. Of the rim sherds, jars accounted for nearly 55% with bowls and jugs being approximately equal. Rims are generally everted and rounded, jars have mainly 14 to 26 cm rim diameters and bowls 18 to 34 cm, although one example is over 50cm diameter. Jug rims are between 10 and 14 cm diameter; only strap handles are present some having quite elaborate thumb and stab decoration and in one case incised wavy lines (Figs 9.17 and 9.19). Decoration is generally absent but other than mentioned several vessels have thumb impressions to applied strips (Fig 9.5) and in one case to the rim of a jug. Incised wavy lines or rilling is also occasionally found (Figs 9.12 and 9.19). The large wheel-made bowl profile also has a cordon beneath the rim (Fig 9.15).

Five features held large quantities of pottery in excess of 100 sherds comprising mainly Ely wares. Three of the features which are adjacent to each other, F1182 (266), F1124 (284) and F1187 (117) contained a total of 667 sherds weighing 14kg. Other than a small amount of residual Saxo-Norman and early medieval wares these were exclusively unglazed Ely wares of 13th to 14th century date; included from here are two jug rims and a decorated handle of probable 14th century date (David Hall, personal comment; Figure 9.16, 9.17 & 9.18). Feature F1340 contained 252 sherds weighing over 3.3 kg of similar character and date to the above but including three glazed Ely sherds. Similarly, Feature F1060 (L1061 and L1137) contained 160 sherds weighing over 2.2kg with a single glazed Ely sherd.

Well F1500 (L1501) contained a partially re-constructible profile containing a bunghole from a jar or cistern (Fig 9.20). The vessel has sooting inside suggesting it might have had a secondary function; it is unlikely to pre-date the 14th century with a later 14th or 15th century date probable. Another sherd from a bunghole vessel came from Pit F1496 (L1497). Pit F1595 (L1596) contained the largest and best preserved sherds from the site which could be re-joined into part pro-files of three vessels. One is a jar with a flanged rim and rounded shoulder (Fig 9.11) the second comprises part of a jug with a well-defined shoulder in partial green glaze, and the third is an upper profile of an unglazed rounded jug (Fig 9.19). All three vessels are wheel-made with comparatively thin walls and both jugs have rilling around the body as an attempt to copy the decoration on Grimston ware vessels (David Hall personal comment). These

are late medieval vessels dating *c.* 15th century. Another feature containing a large amount of pottery is Pit F1487 (L1488); 179 sherds weighing over 1kg include the neck of a glazed jug, a triangular jar rim with incised wavy line decoration andtwo sherds containing faded glaze and roulette decoration.

Miscellaneous sandy wares

A mixed group of sandy wares numbering 174 sherds (8%) can be broadly dated between the 12th and 15th centuries. These include grey wares several sherds of which are Blackborough End-type cooking pots including a rim sherd from F1097 (L1098). The lower fill of Well F1500 (L1508) contained a rim in a sandy fabric the form having some parallels with a stumpy curved rim from the White Hart, Ely dated between the 12th and late 14th centuries (Ratkai 1993, 128 Fig. 10.11. No1).

Glazed wares

Essex wares are described in their own category below. Other than them, imported glazed wares came from south Lincolnshire, Yorkshire and Norfolk. Pit F1385 (Ll386) included a complete flat base with mottled green glaze in good condition in Developed Stamford ware dated *c.* 1150-1250 whilst another import is a sherd of Scarborough ware in pink fabric and dark glossy green glaze from Quarry Pit F1426 (L1427) *c.* 1250-1350.

A sherd from F1018 (L1020) in a buff well sorted quartz tempered fabric is reminiscent of Surrey White Ware, but the rare very coarse flint, iron trailed slip decoration and the beard decoration indicating an anthropomorphic face jug, suggest it is an oxidised Grimston ware (Fig 9.13: McCarthy and Brooks 1988, 268).

Well F1536 (L1539) contained a partial foot and base from a pipkin in green glazed Grimston ware of the 15th-16th century.

Essex Wares

Hedingham ware is present amongst this group; in Essex, it is stratigraphically dated to the mid 12th-13th centuries but at Cambridgeshire sites it continues possibly throughout the medieval period. For example, at Denny Abbey, north of Cambridge it is found in contexts dated to the first half of the 14th century where it is described as smooth red ware (Cottar 2000, 83). It is also thought to be of 14th century date at the Bene't Court sites, Cambridge (Edwards and Hall 1996, 258). It is not known when Hedingham ware first appears in Cambridgeshire but it seems to be at Denny, at least in small amounts, in layers dated to the second half of the 12th century (Coppack 1980, 226). At Forehill, Ely, Hedingham ware appears in the 13th century whilst a sherd of Mill Green ware was 14th century. Colchester and Hedingham-type wares containing white slip appear at the Bene't Court sites in Cambridge in the 15th and 16th centuries (Edwards and Hall 1996, 156-7).

At Isleham one sherd of Hedingham ware from Tank F1367 (L1368) in high relief plastic decoration is reminiscent of the 'Scarborough-style' outline by Cottar which is dated *c.* 1175/1200-1250 (Fig 9.14: Cottar 2000, 91)

Pit F1496 (L1497) also contained a later Hedingham ware jug rim and strap handle in a clear glaze with wavy incised decoration *c.* 15th century.

Orange Sandy Ware is a term including pottery of an East Anglian redware tradition that has not been sourced but probably includes later Colchester and Hedingham wares. At Denny abbey it appears by *c.* 1340 and continued at least until *c.* 1550 some point after which it was replaced by a post-medieval Developed Orange Sandy Ware (Coppack 1980, 224, 228 and 236). At the White Hart, Ely, as at Denny, it has a clear lead glaze and is dated to the 14th -16th centuries (Ratkai 1993, 126). At Forehill, Ely, Essex redwares although first appearing in the 13th century become common in the late 15th and early 16th centuries (Hall 2003, 145).

Well F1536 (L1539) included an 'Essex' sherd with mottled green glaze over white slip and another with a brown glaze along with 18 small sherds in hard red fabrics with partial white/yellow slip and clear glaze. This is probably Sgraffito ware although incised decoration was absent on the sherds recovered. There is some debate as to whether these wares were actually made in Cambridgeshire or Essex, but the overall dating indicates a 15th or possibly early 16th century date for the assemblage. Pit F1496 (L1497) had a sherd of Sgraffito ware with lines of white slip under clear/brown glaze again suggesting a 15th century date.

Some of the latest pottery from the site comes from Tree Hollow F1280 (L1281) and Posthole F1565 (L1566) both of which contained two sherds of post-medieval red earthenware *c.* 17th century. A small sherd of Transfer Printed Ware (*c.* 1780-1900) is from a tree bowl F1288 (L1289) and a sherd of early modern stoneware came from the topsoil

Summary

The pottery spans the medieval period. The few late Saxon sherds could be residual but the Saxo-Norman and early medieval sherds accounting for 8% of the stratified total suggests activity was taking place by the 12th century at the latest but probably began in the 11th, although none can unequivocally be shown to be pre-Conquest.

The entire assemblage is of a typical domestic nature with no discernible evidence, for example, of status or industrial activity. It is characterised by local Ely and Ely-type coarsewares, predominantly jars (comprising 55% of the Ely total), which accounts for nearly 80% of the assemblage. Imported wares following the Saxo-Norman period that might constitute a table or 'best' ware component account for approximately 9% of the medieval assemblage with most coming from Essex particularly in the later period but relatively little coming from Grimston.

With the exception of the two late pits containing post-medieval red earthenware (Pit F1280 and Post-hole F1565) the lack of early post-medieval sherds such as Cistercian ware, Border ware, black glazed earthenware ware, or any local equivalents, suggests pottery stopped being deposited some time in the late 15th or possibly 16th centuries.

Illustrations

Fig 9.1 L1142 Simple everted jar rim *c.* 11th-12th century

Fig 9.2 L1476 Thetford-type cooking pot *c.* 11th-12th century
Fig 9.3 L1476 Thetford-type thumb decorated jar rim *c.* 11th-12th century
Fig 9.4 L1344 Jar rim and shoulder *c.* 13th century
Fig 9.5 L1344 Cooking pot with thumb decorated strip *c.* 13th century
Fig 9.6 L1344 Cooking pot *c.* 13th century
Fig 9.7 L1508 Medieval sandy ware jar rim *c.* 13th-?14th century
Fig 9.8 L1137 Squared jar rim *c.* 13th-14th century
Fig 9.9 L1605 Cooking pot c. 14th-15th century
Fig 9.10 L1488 Flanged jar rim with incised decoration *c.* 15th century
Fig 9.11 L1596 Flanged jar rim *c.* 15th century
Fig 9.12 L1020 Incised decorated rim *c.* 14th century
Fig 9.13 L1020 Decoration from Grimston face jug *c.* 14th century
Fig 9.14 L1368 Hedingham decorated sherd *c.* 13th century
Fig 9.15 L1570 Bowl rim *c.* 14th -15th century
Fig 9.16 L1126 Jug rim with lip *c.* 13th-14th century
Fig 9.17 L1126 Decorated jug handle *c.* 13th-14th century
Fig 9.18 L1183 Jug rim and neck *c.* 14th century
Fig 9.19 L1596 Part re-constructed profile of jug *c.* 15th century
Fig 9.20 L1501 Bunghole from jar or cistern with internal sooting *c*. mid 14th-15th century

Ceramic Building Materials
Andrew Peachey

Excavations produced two groups of re-used Romano-British CBM associated with medieval contexts. The first group, accounting for the bulk of the CBM, comprises Floor Surface L1439. The second smaller group is made up of sparse Romano-British CBM in medieval and later features.

L1439 Tile Floor Surface

The floor surface was constructed with reused or salvaged fragments of Romano-British CBM (91 fragments, 69132g, Table 3). The fragments are in a poor and abraded condition, although partial forms can be reconstructed in three instances from cross joining fragments. Unfortunately, no complete forms are present. The Romano-British forms that are present have been classified according to Brodribb (1977).

Romano-British CBM type	**Frequency**	**Weight (g)**
Tegula/20mm thick flat tile	11	1376
Imbrex tile	2	852
Bessalis/Pedalis/40mm thick brick	78	66904
Total	*91*	*69132*

Table 3: Quantification of Romano-British CBM in Floor layer L1439

Two brick types account for nearly all the CBM in L1439 and it is largely impossible to distinguish between them in their fragmentary state. These are *bessalis* and *pedalis* type bricks, with examples of the former measuring 240mm^2 and the latter with one side of 370mm, and both measuring 40mm thick. The most common function of *bessalis* bricks was to form the columns or *pila* that supported a hypocaust floor, with *pedalis* bricks to provide capping or bases for these columns. Thus, it seems most likely that the CBM used to construct this floor was ‘robbed’ from the remains of a

local Romano-British villa or bathhouse and reused in the post-Roman/early medieval period; there is a notable absence of any Roman pottery. Also present among the Romano-British CBM used in the floor are highly abraded fragments of *tegula* (11 fragments, 1376g) and *imbrex* (2 fragments, 852g) roof tile.

Other Romano-British CBM in medieval features

A total of 42 fragments (1841g, Table 3) were recovered from 18 discrete features, predominantly Phase 2 but also Phases 1 and 3, but are only present in small and abraded quantities. The types present are identical to the more intact and well preserved examples in Floor Layer L1439. No examples of any medieval CBM were present.

Romano-British CBM type	**Frequency**	**Weight (g)**
Tegula/20mm thick flat tile	9	956
Bessalis/Pedalis/40mm thick brick	5	684
Miscellaneous fragments	9	127
Mortar	19	74
Total	*42*	*1841*

Table 4: Quantification of Romano-British CBM not in Floor layer L1439

Small Finds and bulk metalwork
Nina Crummy

The assemblage consists largely of items that cannot be closely dated, but does include a cut short cross halfpenny of Henry II dated to 1180-9, and a fragment of a bone flute made from a goose ulna (Phillips, this report). Similar flutes occur on many medieval sites, including Exeter, London and York (Megaw 1984; Egan 1998, 287-8; MacGregor *et al* 1999, 1977). The ironwork comes mainly from post-medieval or modern contexts, as do many of the stone objects. The exception is a fragment of a Mayen lava rotary hand-quern from the Phase 2 pit F1656. The post-Roman trade in German lava querns was established in the Middle Saxon period and continued into the early post-medieval period; this fragment may therefore be reasonably contemporary with its context.

SF 2. (L1052) F1121. Pit fill. Silver cut short-cross halfpenny of Henry II, probably Class Ib, 1180-1189. Diameter 19 mm.

Fig. 10. (L1664) F1140. Fill of well. Fragment of a bone flute made from a goose ulna, with D-shaped blow-hole and four finger-holes, the lowest broken. The bone is highly polished. Length 75 mm.

SF 4. (L1488) F1487. Fill of well. Iron triangular-section blade fragment. Length 29 mm, width 16 mm.

(L1001). Subsoil. Iron ring-headed strap-fitting, narrowing to the ring and broken across a rivet hole at the lower end. Length 72 mm, maximum width 33 mm.

SF 5. (L1488) F1487. Fill of well. Iron nail with rectangular head. Length 70 mm.

SF 7. (L1508) F1500. Feature fill. Iron nail shank. Length 68 mm.

SF 3. (L1431) F1430. Pit fill. ?Iron lenticular object, one side damaged or irregular, with little magnetic attraction; perhaps a natural haematite formation. Diameter 18 mm.

(L1427) F1426. Quarry pit fill. Heat-affected flat ceramic sherd, with two irregular edges set at right angles. 35 by 19 mm, 7 mm thick on average.

(L1488) F1487. Fill of well. Fragment of the lower-stone from a Mayen lava rotary hand-quern, both surfaces worn smooth. Total weight 82 g.

(L1657) F1656. Pit fill. Weathered fragment of Mayen lava from a rotary hand-quern, with no original surface remaining. Weight 244 g.

(L1026) F1025. Pit fill. Naturally formed flint spheroid, possibly curated as an unusual object. Diameter 29 mm.

SF 9. (L1590) F1589. Tree bole fill. Cylindrical stone or iron object with clay encrustation; possibly a natural accretion. There is a slight constriction near each domed end, set asymmetrically. Length 55 mm, maximum diameter 15 mm.

SF 8. (L1476) F1614. Fill of ?sunken-featured building. Slightly curved stone cylinder, probably a fossil. Length 42 mm, maximum diameter 12 mm.

SF 6. (L1488) F1487. Fill of well. Amorphous lump of iron slag, with heavy external waterlaid deposit. Weight 90 g.

Slag
Jane Cowgill

A single piece of slag (SF6, L1488) was submitted for recording. It was washed before being identified solely on morphological grounds by visual examination.

The piece was a hearth bottom weighing 83g and measuring 40 x 80 x 30mm. Charcoal was identified as the fuel used in the smithy hearth which produced this piece.

Table 5: Metal-working debris catalogue.

Context	Type	Count	Weight	Comments
1098 Seg B	HB	1	26g	Dense fragment.
1183	HB	1	81g	Charcoal fuel; dense fragment.
1318 Quad B	HB	1	204g	Hearth lining on straight back; dense fragment.
1519	HB	1	127g	Shattered; mid-grey colour; dense fragment.
1666	SLAG	1	20g	HB fragment?

HB: Plano-convex slag accumulation (commonly known as hearth bottoms).

All the slag recovered are by-products of iron smithing - the forging, repair or recycling of iron objects, probably using charcoal as the fuel in the hearth. They are

all fairly similar dense fragments, but being such a small assemblage further comments are not warranted.

Table 6: Catalogue of the coal

Context	Type	Count	Weight	Comments
1000	COAL	1	17g	Slagged.
1315	COAL	1	1g	

Table 7: Catalogue of the quernstone fragments

Context	Type	Count	Weight	Comments
1026 Seg A	QUERN	1	14	Niedermendig lavastone; no surfaces.
1344	QUERN	1	14	Niedermendig lavastone; in fragments; no surfaces.
1590	QUERN	1	27	Niedermendig lavastone; in fragments; no surfaces.

Very small fragments from Niedermendig lava quernstones.

Table 8: Catalogue of the stones

Context	Type	Count	Weight	Comments
1026	IRONSTONE	1	14g	
1098	IRONSTONE	1	48g	Covered in mortar.
1246 Slot F	IRONSTONE	1	37g	Covered in mortar.
1315	IRONSTONE	1	203g	
1356	IRONSTONE	3	129g	
1535	IRONSTONE	1	11g	
1549	IRONSTONE	1	33g	
1556	PEBBLE	1	14g	Quartz.
1653	IRON PAN	1	10g	

These are all natural stones and can be discarded.

Animal bone
Carina Phillips

Introduction

The animal bone assemblage consisted of 553 fragments. The bone was of moderate preservation. Surface erosion had occurred on some of the bone, which may have obliterated evidence of butchery, particularly cut marks. Modern fragmentation had also occurred on a proportion of the assemblage possibly hindering identification of bone to species and element. The hand recovery technique used may be biased towards the recovery of larger bones, possibly resulting in an under-representation of small species particularly bird, fish and small mammals.

21% of the animal bone assemblage came from Phase 1 (11^{th}-12^{th} Century) features. 52% dated to Phase 2 (12^{th}-14^{th} Century) and 17% dated to Phase 3 (14^{th}-16^{th} Century). The remainder was from undated or natural features and has been excluded from the following analysis. There was no animal bone from Phase 4.

Method

Bones were identified and recorded to species and element when possible. The category sheep/goat has been used due to the difficulties in clearly identifying the species sheep (*Ovis sp.)* or goat (C*apra sp.*). Tooth wear for cattle *(Bos sp.)*, sheep and pig *(Sus sp.)* were recorded using the method of Grant (1982) and ages assigned following the method of Bourdillion & Coy (1980 cited by Crabtree 1989). Measurements were taken when viable following the methods of Jones *et al* (1976) and von den Driesch (1976), and are contained in the site archive. It was not possible to calculate heights for any bone. When available the fusion state of identifiable bones was also recorded and ages were assessed following Silver (1969). Fragments that could not be identified to a particular species were recorded under the categories of 'large sized', consisting of cattle, large deer, and horse *(Equus sp.*), and 'small sized' consisting of sheep/goat, pig and dog *(Canis familiaris)* bone fragments. The unidentifiable bone fragments were recorded. Evidence of burning, sawing, chopping, knife-cutting and gnawing was recorded, as was deliberately smashed bone.

Results -Phase 1 (11^{th}-12^{th} century)

Phase 1 Features	Count	%
Apse	1	1
Gully	55*	48
Building F1026	1	1
Posthole	4	3.5
SFB	12	10.5
Tank	6	5
Well	35	31
Total	114	-

**=includes articulated remains*

Table 9: Count and percentage of bones by feature type for Phase 1

Species	NISP	MNI	Chopped	Cut	Smashed	Gnawed
Sheep/goat	8 (1 sheep)	1	2	1	0	1
Cattle	5	1	0	0	1	0
Pig	3	1	0	1	0	0
Cat	3 (*3)	1	0	0	0	0
Dog	1	1	0	0	0	0
Domestic Fowl	52 (*52)	2	0	0	0	0
Goose	3	1	0	0	0	0
Unidentifiable Fish	1	1	0	0	0	0
Large sized	7	-	1	0	1	0
Small sized	16	-	0	1	5	0
Unidentifiable	15	-	0	0	0	0

Total	114	-	3	3	7	1

**n= number of bones from one individual*

Table 10: Number of Identified Specimens/fragments (NISP), Minimum Number of Individuals (MNI) and butchered, gnawed and burnt counts of Phase 1 bone.

47% of the Phase 1 bone was recovered from Gully F1555, L1556; 52 of the 53 bones in this feature came from a minimum of two domestic fowl (see below). Wells (F1140, F1294 and F1445) accounted for the next highest proportion of bone (31%, table 5).

67% of the Phase 1 assemblage was identifiable to species. Domestic fowl bones were most frequent due to the presence of 52 bones from a minimum of two articulated skeletons in Gully F1555, L1556. A femur in this assemblage displayed increased trabecular bone, which is caused by an increased need for calcium in producing eggs (R. Jones pers. comm.). One individual exhibited indents in the coracoid facet of the sternum, the sternum ends of the coracoids, and the proximal ends of the humeri. It is possible that all these pathologies are associated with egg laying (R. Jones pers. comm.); however, comparative examples of such pathologies could not be found.

All identified species were domestic species; sheep/goat, cattle, pig, cat, dog and goose. Excluding domestic fowl all the other species were recorded in small numbers. The small number of identifiable bones and absence of teeth wear evidence hinders consideration of species age profiles for this phase. 11% of the assemblage exhibited butchery marks, consisting of chop marks, cut marks and smashed bone fragments. The types and positions of these suggest they occurred during butchery, filleting and marrow extraction.

Results -Phase 2 (12th-14th century)

Phase 2 Features	**Count**	**%**
Pit	186	64
Post Built Building F1028	1	0.3
Post Built Building S1029	4	2
Posthole	1	0.3
Quarry Pit	2	1
Tank	71	24
Well	25	9
Total	290	-

Table 11: Count and percentage of bones by feature type for Phase 2

Species	NISP	MNI	Chopped	Cut	Smashed	Gnawed	Burnt
Cattle	70	9	3	2	1	3	0
Sheep/goat	35 (I sheep)	5	2	1	1	5	0
Pig	9	2	0	0	0	0	0
Cat	9 (*3, 3)	2	0	0	0	0	0
Horse	6	1	0	1	0	1	0
Dog	2	1	0	0	0	0	0
Domestic Fowl	2	1	0	0	0	0	0
Goose	3	1	0	0	0	0	0
Large sized	32	-	0	1	3	0	1

Small sized	44	-	1	1	8	1	0
Unidentifiable	78	-	0	1	0	0	0
Total	290	-	6	7	13	10	1

**n= number of bones from one individual*

Table 12: Number of Identified Specimens/fragments (NISP), Minimum Number of Individuals (MNI) and butchered, gnawed and burnt counts of Phase 2 bone.

64% of the Phase 2 assemblage came from pits (table 7). 52% of the phase 2 assemblage was identifiable to species. Eight species were identified all consisted of domestic species (Table 8). Cattle bones were most frequent in both NISP and MNI counts (forming 61% of the identifiable assemblage). Sheep/goat bones were the second most frequent identifiable species forming 31% of the identifiable assemblage (one bone was positively identified to sheep). Pig bones were present in much smaller numbers than cattle and sheep/goat accounting of only 9% of the Phase 2 identifiable assemblage (Chart 1).

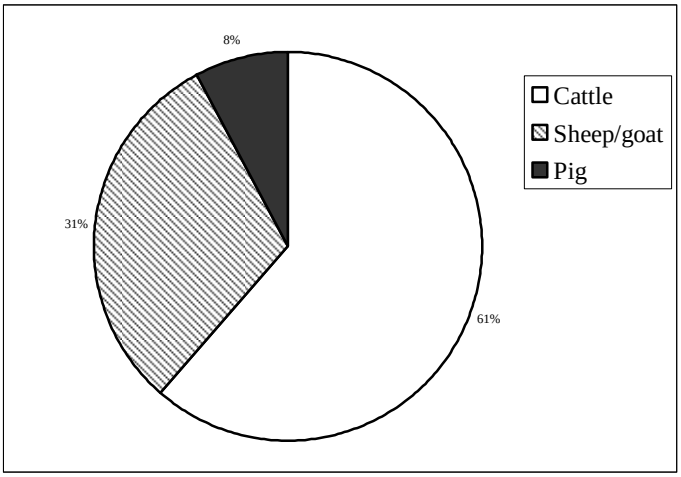

Chart 1: Percentages of the main food producing species (cattle, sheep/goat and pig bones; the most frequent (NISP) species

Cat bones were present in the same number as pigs, the bones came from a minimum of two individuals, one (3 bones, including the skull) was present in F1124, L1126 and the other in (also consisting of three bones) came from F1571, L1572. Three other disarticulated bones were present. Three goose bones were present, one femur was very small in size for domestic goose. It exhibited cut marks indicative of meat removal. Horse and dog bones were present in small numbers. One horse phalanx exhibited a cut mark suggestive of skinning. Wild species may be presented by the small goose bone (possibly wild) and a fish bone that was unidentifiable to species, but cannot be confirmed.

The assemblage produced ageing evidence based on dental wear for the three main species, conclusions from the ageing evidence however should be considered with caution due to the small size of the assemblage. Three cattle mandibles had sufficient teeth present to enable estimation of age. Two came from cattle aged 2 ½-4 years at death and one was from an adult animal. This tentatively indicates that some cattle were slaughtered at the prime meat producing age (1 ½ -3 ½ years) and some survived into adulthood; suggesting utilisation of cattle for meat and other produces such as for dairying, breeding and traction. Teeth wear age estimates were possible for four

sheep/goat mandibles, one came from an individual aged 3-4 years at death; the other three came from individuals aged 4-6 years at death. All therefore, survived beyond the suggested prime meat producing age of 1 ½-3 years (Payne 1973, Hambleton 1999). This suggests sheep were kept for a primary purpose of produce other than meat, perhaps wool. Meat would, of course, still have been utilised but as a secondary produce. Two pig mandibles provided age estimates; these were 6-12 months and 1-2 years. An economical husbandry pattern would have seen the slaughter of most pigs on almost reaching adult size so that the most meat was yielded without having to waste resources keeping the animal at the same size of a longer period of time (Hambleton 1999, 69). Herd sizes would have remained sustainable as pigs can produce large litters from their first year onwards.

Of the sized bones (unidentifiable to species), small sized bones were recorded in slightly higher numbers. This contradicts the cattle and sheep/goat counts; however it is likely to be related to the presence of more smaller sized species such as pigs than other large (cattle) sized species.

9% of the Phase 2 assemblage (42 bones) exhibited butchery marks. Deliberately smashed bone was most common, probably related to breakage of the bone for marrow extraction. Cut and chop marks were present in similar numbers. The position of the chop marks suggests disarticulation of the carcass into pieces at the joints, and removal of the mandible possibly to enable access to the tongue. The cut marks present are associated with meat filleting. 3% of the phase 2 assemblage exhibited carnivore gnawing.

Results-Phase 3 (15th-17th Century)

Phase 3 Features	Count	%
Pit	19	18
Quarry Pit	8	8
Tank	8	8
Well	68	66
Total	103	-

Table 13: Count and percentage of bones by feature type for Phase 3

Phase 3	NISP	MNI	Chopped	Cut	Smashed	Sawn	Gnawed	Burnt
Sheep/goat	20	4	0	0	2	0	0	0
Cattle	9	1	0	0	2	0	1	0
Pig	4	1	0	0	0	0	0	0
Domestic Fowl	3	1	0	0	0	0	0	0
Horse	1	1	0	0	0	0	0	0
Dog	1	1	0	0	0	0	0	0
Large sized	18	-	1	1	2	0	1	0
Small sized	30	-	0	0	3	0	2	0
Unidentifiable	17	-	0	1	0	0	0	0
Total	103	-	1	2	9	0	4	0

Table 14: Number of Identified Specimens/fragments (NISP), Minimum Number of Individuals (MNI) and butchered, gnawed and burnt counts of Phase 2 bone.

Phase 3 features produced 103 fragments, 66% of these came from wells (table 9). 37% of the assemblage was identifiable to species. Only domestic species were

present. Sheep/goat bones were most frequent in NISP and MNI counts. All other species; cattle, pig, horse, domestic fowl and dog, were present in small numbers and had an MNI of 1. One of the domestic fowl bones, a tarsometatarsus, was very small in size and may have been a special breed (R. Jones pers. comm.). Small sized long bone fragments were most frequent overall probably related to the frequency of sheep/goat and the addition of other sheep sized species such as pig. One cattle mandible from and adult mandible and a sheep/goat mandible from an animal aged 4-6 years at death were present. Butchery marks were present in 12% of the bone. Smashed bone was most frequent. Four fragments exhibited carnivore gnawing.

Discussion

In all phases a majority of the animal bone came from pits, wells or gullies rather than quarry pits. The assemblage composition suggests that the bone is likely to represent domestic waste, possibly disposed of by workers at the quarry, who may have brought food from Isleham village. It is also possible that waste was disposed of here by local occupants. Phase 2 provided the most evidence for the utilisation of animals due to its larger assemblage size than Phases 1 and 3 (Phase 4 did not contain any animal bone). In each phase domestic species accounted for most if not all the animal bone present.

Phase 1 provided little evidence of animal bone use (much of the animal bone consisted of the bones from domestic fowl skeletons). All the species represented were also present in Phase 2. The domestic fowl bones in Gully F1555, L1556 suggested exploitation of this species for eggs.

In Phase 2 all except an unidentifiable fish and possible wild goose bone came from domestic species. Cattle and sheep/goat bones were most common suggesting they were utilised more frequently than any other species and are therefore likely have been the main meat producers. Of the two species cattle probably provided the most meat due to their larger size and more frequent numbers. Sheep/goat and cattle farming is likely to have occurred in the rural areas outside the main town of Isleham, market trade probably making the meat of these species available to the local occupants and quarry workers. The husbandry patterns for both these species is tentatively indicted by age estimates suggesting cattle are likely to have been kept for both prime meat and use in later life i.e. traction or dairying and sheep were kept primarily for produces other than meat, probably for wool production. Pigs, domestic fowl and geese would also have been utilised for meat; domestic fowl and geese were commonly consumed in this period (Wilson 1991). However as emphasised by the Phase 1 domestic fowl pathologies; eggs would also have been important. Both fowl and geese could have been kept in the town. The possible wild goose bone could indicate that wild species were exploited when available or may have been traded. The fish bone could also indicate trade; however it was not possible to identify it to species. Detailed analysis of the butchery of the bones was not possible due to too few examples; it was therefore not possible to consider where and how the animals were butchered and processed.

Horses, dogs and cats were also utilised. Horses would have been exploited for their speed and ability to be trained; uses would have included ploughing and transport. Dogs were useful in hunting, herding and guarding and both dogs and cats would have been useful in keeping away the vermin. It is possible that cats in particular were kept

at the quarry to help keep away vermin in the buildings present, particularly considering the bones from the two skeletons. Horses, dogs and cats may also have been utilised in death for skins and furs, meat and bones. The cut horse bone suggests that horse skins at least were being utilised in this phase.

Phase 3 contained the bones from five species, all of which were also present in Phase 2. In contrast to Phase 2, the Phase 3 assemblage exhibited high numbers of sheep/goat bones over other species. Assessment due to the small size of the assemblage of the primary utilisation of sheep/goat could not be made. These higher numbers of sheep/goat could indicate a shift towards sheep/goat becoming a more important animal in the later phase. A sheep husbandry pattern, for a primary production of wool is a pattern seen at a number of sites in medieval southern Britain (Grant 1984, 182). In the 14th-15th century's medieval economy wool was a particularly important commodity; a general agricultural depression was taking place but high wool prices occurred (ibid). Considering the small size of the phase 3 assemblage it could tentatively be suggested that this increased importance in wool production in the medieval period could account of the higher number of sheep/goat bones in the later phase at Isleham.

A bone flute was the only example of worked bone at Isleham, present in Phase 2 (L1664; see Crummy, this report). Flutes are found numerously on medieval sites (Leaf 2005). The Isleham flute was undecorated and made from a goose ulna, this is the most common bone and species for bird bone flutes to be made from. Undecorated flutes have mainly been found at town and castle sites (Leaf 2005).

Conclusions

In phases 1-3 domestic species dominated the assemblages. In Phase 2 (12th- 14th century) cattle are indicated to have been exploited in higher numbers than any other species. Cattle appear to have had two primary uses, some for prime meat and others for uses in traction or dairying. Sheep/goat were present in slightly lower numbers and wool production is likely to have been their primary produce. A change was observed in Phase 3, where sheep/goat bones were most frequent, perhaps indicating a shift in the husbandry practices in the area. This could be associated with the increase in the importance of wool production in the medieval period. However the small size of the assemblage makes this a tentative suggestion.

Shell
Carina Phillips

Introduction

883 shells were recovered from Fordham Road, Isleham. Undated and Natural features contained the largest amounts of shell. Phase 2, 12th-14th century, contained the most dated shell, accounting for 166 fragments. Only 13 came from phase 3, 14th-16th century. Phase 4 features did not contain any shells. The shells were of moderate preservation; however fragmentation was common due to the fragile structure of the shells.

Method

The shell was identified to species. Single shells, such as whelks were counted. For the bivalve mussel separate counting of the valves was not possible due to fragmentation. For the bivalve oyster, the upper and lower valves identified and paired when possible. For those unpaired they were identified as either upper or lower valves and recorded. If only fragments were present these were recorded. Evidence of opening was also recorded if present, as was concretion to the shell. A record was also made if there was evidence of a parasite having been present on the shell. A height measurement was taken of complete shells. Minimum numbers of oysters were calculated from the total number of pairs, in addition to the greatest amount of either the upper or lower valve.

Results

	Phase 1	Phase 2	Phase 3	Natural	Undated
Mussel	8	165	13	305	387
Cockle	1	0	0	1	0
Periwinkle	1	0	0	0	0
Whelk	0	1	0	1	0
Total	10	166	13	307	387

Table 15: Counts of shell for each phase

Mussel *(Mytilus edulis)* shell was most common in all phases, accounting for 99% of the entire assemblage. Undated posthole F1090, L1092 and natural tree hollow F1355, L1356 contained the largest amounts of mussel shell, 387 (from a minimum of 196 individuals) and 304 (from a minimum of 152 individuals) shells respectively.

Small numbers of common cockles *(Cardium edule)*, dog whelks *(Nucella lapillus)* and edible periwinkle *(Littorina littorea)* were also present. A cockle and whelk were also present in natural tree hollow F1355, L1356.

Discussion

The absence of oyster shell is unusual as oyster is most frequently recovered in archaeological excavations. However, various shellfish species including mussels, whelks and periwinkles were commonly consumed in the medieval period, and were popular with both the rich and poor (Wilson 1999, 42). It is possible that mussels were more easily and frequently available to purchase, or that they were preferable to taste. The large deposits in F1090 and F1355 may each represent the disposal of a single meal; literature evidence shows that for a large household several hundred shellfish were bought at once (Wilson 1999, 43). These shellfish would have been transported from the coast in brine water, where they would have kept fresh for several days; they then would have been pickled for further prolonged use, or cooked.

Environmental samples
Val Fryer

Method statement

The samples were bulk floated by Archaeological Solutions, and the flots were collected in a 500 micron mesh sieve; 34 were submitted for analysis. The dried flots were scanned under a binocular microscope at magnifications up to x 16, and the plant macrofossils and other remains noted are listed on Tables 11-14. Nomenclature within the tables follows Stace (1997). All plant remains were charred. Modern contaminants including fibrous and woody roots, seeds, leaf fragments and arthropods were present throughout, and formed the major component of most samples.

Results

Plant macrofossils

Cereal grains and/or seeds of common weeds and wetland plants were present at a very low density (rarely more than one specimen per assemblage) in all but eight samples (see Table 11). Preservation was poor to moderate, with many of the grains being puffed and distorted, possibly as a result of combustion at high temperatures.

Oat (*Avena* sp.), barley (*Hordeum* sp.), rye (*Secale cereale*) and wheat (*Triticum* sp.) grains were recorded, with wheat occurring most frequently. Cereal chaff was entirely absent. Weed seeds were exceedingly rare, and were only recorded as single specimens within six assemblages. All were of common cereal crop contaminants including goosegrass (*Galium aparine*), an indeterminate grass (Poaceae), knotgrass (*Polygonum aviculare*), vetch/vetchling (*Vicia/Lathyrus* sp.) and other small legumes (Fabaceae). Two saw-sedge (*Cladium mariscus*) nutlets were recorded from samples 35 and 68. Charcoal fragments were present within most assemblages, although rarely at a high density. Other plant macrofossils, including pieces of charred root/stem and an indeterminate culm node, were present but exceedingly rare.

Other materials

Fragments of black porous and tarry material were present throughout. Although some may be residues of the combustion of organic materials at very high temperatures, others had the appearance of modern fuel waste, for example, coke. Mollusc shells were also recorded from most samples. However, most retained good coloration and some delicate surface detailing, and are almost certainly intrusive within the contexts.

Conclusions

In summary, the assemblages are all very small (most <0.1 litres in volume) and most appear to be severely contaminated with modern materials. The few charred remains recorded are not indicative of any specific on-site activities, and most are probably derived from very low densities of scattered or wind-blown refuse. Cereals, and particularly wheat, would appear to have been of some local importance, although there is no evidence for either the processing or usage of the grain.

Key to Tables
x = 1 – 10 specimens xx = 10 – 50 specimens pmc = possible modern contaminant
ph = post hole Med. = medieval

Sample No.	**103**	**56**
Context No.	**L1331**	**L1425**
Feature No.	**F1330**	**F1330**
Feature type	**SFB**	**SFB**
Cereals		
Hordeum sp. (grains)	xcf	
Triticum sp. (grains)		x
Cereal indet. (grains)	x	
Other plant macrofossils		
Charcoal <2mm		x
Charcoal >2mm		x
Other materials		
Black porous 'cokey' material	x	
Small mammal/amphibian bones		
Sample volume (litres)	**20**	**10**
Volume of flot (litres)	**0.2**	**<0.1**
% flot sorted	**50%**	**100%**

Table 16: Charred plant macrofossils and other remains from Phase 1 contexts

Sample No.	**28**	**35**	**38**	**42**	**43**	**45**	**49**	**69**	**92**	**93**	**100**	**104**	**106**	**107**	**109**
Context No.	**L1205**	**L1277**	**L1293**	**L1333**	**L1315**	**L1318**	**L1380**	**L1503**	**L1449**	**L1448**	**L1295**	**L1587**	**L1366**	**L1634**	**L1652**
Feature No.	**F1204**	**F1276**	**F1292**	**F1313**	**F1313**	**F1316**	**F1379**	**F1502**	**F1445**	**F1445**	**F1294**	**F1586**	**F1365**	**F1552**	**F1124**
Feature type	**Pit**	**Pit**	**Pit**	**Tank**	**Tank**	**Pit**	**Ph**	**Gully**	**Well**	**Well**	**Well**	**Tank**	**Tank**	**Well**	**Well**
Cereals															
Avena sp. (grains)												x			
Hordeum sp. (grains)															x
Secale cereale L. (grains)												xcf			
Triticum sp. (grains)			x	x	x			x	x		xcf	x			x
Cereal indet. (grains)	x	x	x	x		x	x	x	x	x	x	x	x	x	x
Herbs															
Fabaceae indet.												x			
Galium aparine L.															x
Large Poaceae indet.															x
Polygonum aviculare L.					x										
Wetland plant macrofossils															
Cladium mariscus (L.)Phol		x													
Polygonaceae indet.															x
Other plant macrofossils															
Charcoal <2mm	x	x		x	x	x	x		x	x	x	x	x	x	x
Charcoal >2mm		x										x	x	x	
Other materials															
Black porous 'cokey' material	x		x	x	x	x	x	x	x			x		x	x
Black tarry material	x		x	x		x	x	x		x					
Small coal											x				
Small mammal/amphibian bones															xpmc
Sample volume (litres)	**5**	**10**	**15**	**15**	**30**	**30**	**15**	**15**	**15**	**15**	**15**	**15**	**20**	**15**	**20**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.2**	**<0.1**	**<0.1**	**<0.1**	**0.2**	**<0.1**	**0.2**	**0.2**
% flot sorted	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**50%**	**100%**	**100%**	**100%**	**50%**	**100%**	**50%**	**50%**

Table 17: Charred plant macrofossils and other remains from Phase 2 contexts (1)

Sample No.	**8**	**15**	**37**	**51**	**66**	**68**	**86**	**113**	**102**
Context No.	**L1115**	**L1142**	**L1291**	**L1391**	**L1497**	**L1476**	**L1625**	**L1391**	**L1301**
Feature No.	**F1114**	**F1149**	**F1290**	**F1290**	**F1496**	**F1496**	**F1624**	**F1390**	**F1300**
Feature type	**Ph**	**Well**	**Pit**	**Pit**	**Pit**	**Pit**	**ph**	**Pit**	**Pit**
Phase	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**
Cereals									
Secale cereale L. (grains)		x							xcf
Triticum sp. (grains)	X		x	x	x	x	x	x	x
Cereal indet. (grains)		x	x	x	x	x	x	x	x
Herbs									
Fabaceae indet.					x		x		
Polygonum aviculare L.									
Wetland plant macrofossils									
Cladium mariscus (L.)Pohl						x			
Other plant macrofossils									
Charcoal <2mm		x	x	xx	xx	x	x	xx	x
Charcoal >2mm		x		x				x	
Charred root/ stem	x		x						
Indet. culm node			x						
Other materials									
Black porous 'cokey' material	x	x		x	x	xx	x	xx	x
Black tarry material	xx	x			x	x	x		x
Small coal frags				x				x	
Brick. tile	x								
Sample volume (litres)	**5**	**15**	**15**	**15**	**15**	**40**	**20**	**30**	**15**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.2**	**0.2**	**0.2**	**<0/1**	**0.1**
% flot sorted	**100%**	**100%**	**100%**	**100%**	**50%**	**50%**	**50%**	**100%**	

Table 18: Charred plant macrofossils and other remains from the Phase 2(2) and 3 contexts

Sample No.	Context No.	Feature No.	Contents
26	1203	1201	Ch;BPC;Coal
31	1240	1239	Ch
44	1317	1316	Ch;BPC;Coal
48	1368	1367	Ch;BTM
96	1636	1552	BPC
101	1299	1294	Ch
105	1584	1583	Ch;BTM
110	1653	1124	Ch;BPC

Key:
Ch = Charcoal
BPC = Black porous material
BTM = Black tarry material

Table 19: Samples containing only charcoal and/or other remains

DISCUSSION & CONCLUSIONS

The Phase 1 undated features- activity prior to the industrial use of the site

The two undated Phase 1 features represent activity prior to the use of the site for industrial clunch extraction and processing. No evidence exists to determine whether these features were contemporary with one another; they were in different parts of the site and shared no stratigraphic relationship. Their morphology, construction and possible uses suggest that they are not the kind of structures that would be found on an industrial site and may therefore be considered to be significantly earlier than other Phase 1 features. These features appear to represent buildings that suggest that, before clunch processing was carried out at the site, it may have been used for occupation, storage or possibly religious purposes.

The Sunken-featured building

Sunken-featured buildings or *Grubenhäuser* are the most distinctive structure from, and are found widely in, early Anglo-Saxon settlement sites (Powlesland 1997). It is generally considered that such buildings were no longer used after the 7th century. Measuring 4.8 x 2.25m in plan the Phase 1 sunken-featured building, F1330, recorded at Fordham Road is close to the average size for sunken-featured buildings of *c.* 3 x 2m as suggested by Rahtz (1982) and to the average of *c.* 4 x 3m as suggested in Dodwell *et al* (2004). Evidence of support for the main structure of sunken-featured buildings usually takes the form of postholes or sill-beam slots in the sunken-floor, in the sides or in the ground around the hollow (Rahtz 1982). Such structural evidence appears to be lacking from F1330 and this is relatively uncommon on sites in East Anglia. This may be due to truncation by later features but the areas in which postholes are likely to have been located are visible. A building with a similar lack of postholes was excavated at an Anglo-Saxon settlement site on the Cambridge Backs where it was considered that the absence of postholes did not mean that the structure was devoid of supporting posts; they may have stood directly on the base of the pit. This does however, suggest that gable posts were not essential to the construction of sunken-featured buildings (Dodwell *et al* 2004). It would appear that the building at Fordham Road might have been of similar construction to that recorded at the Cambridge Backs.

Despite the lack of dating evidence, the common perception of sunken-featured buildings as being indicative of an Anglo-Saxon presence, and the possible similarities in construction of F1330 to a feature of known Anglo-Saxon date on the Cambridge Backs, makes it easy to regard the feature as being of this date. Of course, with so little firm evidence this is a dangerous assumption. The presence of Phase 2 sunken-featured building F1614 also warns of the danger of assuming an Anglo-Saxon date for F1330. Although sunken-featured buildings first appear in the 5th century and become less common towards the end of the Saxon period there are occasional instances of them in 12th to 14th century contexts (Rahtz 1982). One such example is the feature S13/14, a sunken-floored building, recorded during excavations at Kent International Business Park in Manston. Evidence from this site suggests that it was being backfilled in *c.* 1225; suggesting that it was in use in the late 12th or early 13th centuries (Perkins *et al* 1998). It therefore seems sensible to suggest that if F1614 is a sunken-featured building then it belongs to the somewhat unusual group of such

buildings found in later contexts as described by Rahtz (1982). Although F1330 is cut by Phase 2 features, it need not necessarily pre-date them by a large margin; it is quite possible that F1614 and F1330 were (near) contemporary, and that both date to the 11th to 12th century.

Assessing the function of F1330 is open to widely varying interpretation. In continental Europe, sunken-featured buildings are often interpreted as workshops, whereas in Britain they were, for a long period interpreted as dwellings (Reynolds 1999, 41). This latter interpretation is based on preconceptions in England regarding the *adventus Saxonum* as a mass migration of low status communities (Higham 1991), who required quick convenient homes. Assessing the building's function is possibly made even more difficult when the possibility that the feature is later than Saxon is considered.

Apsidal-ended building

That building F1670 is represented by what appears to be an apse marks it as a building of some significance. Although the size and form of the main part of the building are not known the dimensions of the possible apse and its apparent construction of wattle and daub suggest that the remainder of the building was small and of simple construction. Although undated, this building appears to pre-date the Phase 2 features recorded at the site, suggesting that it was constructed prior to the 12th century.

It is not unreasonable to tentatively suggest that a pre-12th century building of sufficient significance to bear an apse is a church. This suggestion is, of course, based on inference and the possibility that the building represented by F1670 had another, possibly secular, purpose remains. It is, however, known that one of the precursors of the 14th century church of St. Andrew was a wooden construction. The Historic Environment Record listing for St. Andrew's church (HER 07591) states that this wooden construction was one of several that existed before the current church and that it was built during the Anglo-Saxon period when King Alfred granted the parish to Burricus, Bishop of Rochester. Although the HER information states that the Anglo-Saxon church may have lain on the same site that the current church occupies there appears to be no definite evidence to confirm this. The possibility, therefore exists that the apsidal feature at the Fordham Road site may represent this early church.

If the feature does represent an Anglo-Saxon church then the apse suggests that it may have been a church of the Roman mission of St. Augustine. Morris (1983, 34) divides Anglo-Saxon churches into two main architectural groups, those of the south-east of England, notably Kent, which are associated with St. Augustine's mission from Rome, and those of Northumbria. The apsidal east end appears mainly in the south-east of the country (others have been noted elsewhere), in the area of influence of the Roman mission (Morris 1983, 38). It seems, therefore, possible that the Fordham Road structure may have belonged to this architectural tradition.

The interpretation of the structure as a church suffers slightly from the fact that the position of the apse suggests that the building was aligned with the apsidal end facing south-east, rather than east as would be expected of most churches. However, Benson

(1956) states that not all churches face due east, many are aligned with the position of the rising sun on their saint's day. The apparent wattle and daub construction of the building suggests that it may have been similar to the first of several churches built at the Furnells site in Raunds, which is described by Boddington (1996, 6) as being small, even by Anglo-Saxon standards and of the 'field church' category. A description that suggests a degree of impermanence, possibly until a larger or more elaborate structure, could be built. It seems possible then, that this structure may represent a small, possibly semi-temporary, church, built to meet the religious needs of the local community in the short term. In this scenario, once sufficient finance or materials became available, a more permanent church was constructed in a more favourable location, possibly that still occupied by the current church.

Perhaps the most interesting aspect of the feature is the use of Romano-British ceramic building material to tile the floor of the apse. Rodwell (1999) suggests that when there was a readily available supply of it, Romano-British brick or stone, or in this case brick and tile, was taken advantage of by Anglo-Saxon church builders. There would certainly have been a supply of such material in Isleham as the presence of two Roman buildings in the area demonstrates (see Fig 2). The use of Roman tile in Saxon churches, especially as quoins to strengthen the corners of stone built churches is recorded at Bradwell-on-Sea in Essex and Roman tile courses in the fabric of walls are seen in many Anglo-Saxon churches. One such example is the church of St. Olave excavated on the site of St. Margaret's Rectory, Ironmonger Lane, London (Shepherd 1987). Re-used Roman period material is evident in the construction of the crypt of the priory church at Hexham in Northumberland, which incorporates numerous stones from Roman buildings all re-used without regard to their original architectural function (Parsons 1990). The presence of a Roman building may have dictated the choice of site for the Anglo-Saxon monastic church at Jarrow, Tyne and Wear, as a useful supply of ready cut stonework (Cramp 1969).

It is possible, however, that the use of Roman material in Anglo-Saxon period churches indicates more than just use of convenient, ready prepared material for construction. With over 160 churches in Britain known to be built on or within Roman structures there appears to be some sort of link between Roman buildings and Anglo-Saxon churches. This is possibly based on a vague historical understanding, probably fostered and promoted by the mission to England of St. Augustine, that made *Christian* synonymous with *Roman* to the people of Anglo-Saxon England (Bell 1998). Re-use of Roman material in Anglo-Saxon churches may be an extension of this link although reasons behind the re-use of material as opposed to siting a church on or within a Roman building are difficult to identify.

It could, therefore, be suggested that the use of Romano-British CBM in this feature reinforces the argument that the feature represents a church. However, this is still not conclusive proof that religion (of any kind) was the building's function.

The clunch working site

The development of the Fordham Road clunch working site

The dated features assigned to Phases 1, 2 and 3 attest a site where the quarrying and processing of clunch was carried out. The picture of events represented by the features

of these three phases appears to demonstrate the development of the site from apparent small scale industrial activity to a seemingly more complex operation. The dating and stratigraphic evidence indicates that activity was carried out continuously during a period from the 11th to 16th century. The site represents a significant medieval precursor to the later clunch extraction and lime-burning industries for which Isleham became known (Williamson *et al* 2006, 62).

The size of the 6 large quarry pits demonstrates that during the lifespan of the site a considerable amount of clunch was extracted. F1615, the Phase 1 quarry pit is the smallest recorded at the site, indicating small scale extraction during this early period. Equally, only one quarry pit is assigned to Phase 2. However, this is comparable in size to the later quarry pits and the large number of tanks for the processing of the extracted material suggests that extraction had reached a far greater scale in the 12th to 14th century period represented by Phase 2. Phase 3 appears to have seen clunch extraction at its peak as 3 of the 7 quarry pits are dated to this phase. However, it reasonable to suggest that other quarry pits may exist outside of the excavated area and that the window onto the clunch-working site at Fordham Road afforded by the excavated area only offers a skewed view of quantities of clunch being extracted during each period. In addition to the quarry pits it is possible that some of the smaller pits recorded at the site may have been dug for the sole purpose of extracting clunch/chalk, indeed the cutting of any feature at the site will have produced clunch. It appears that clunch extraction started at the site with the excavation of a smaller quarry pit before techniques, or market forces, allowed, or demanded, extraction on a larger scale and therefore the opening of the larger quarry pits.

After extraction, the clunch was moved to the tanks for soaking. Clunch is easily workable with a large-toothed, two-handled saw when it is wet but it hardens as it dries. The processing tanks would have, therefore, required constant supplies of water, presumably supplied by the six wells identified at the site. Only one Phase 1 tank has been identified, supporting the notion that clunch processing was a small scale industry at the site during the period represented by Phase 1 features. The water supply for this tank may have come from one of the three Phase 1 wells located at the opposite end of the site. This would seem to be a problematic arrangement as water would have had to have been carried a long distance from the wells to the tank. It is, however, possible that further wells of a Phase 1 date exist beyond the limits of the excavated area. The logistics of water supply appear to have been arranged more effectively during Phase 2 of clunch-processing activity. All but one of the clunch soaking tanks dated to this period are clustered at the southern end of the site, with the single Phase 2 well located close-by. Water may have drained easily from the processing tanks as they were dug into the porous chalk geology of the site. It is possible that they were lined with leather or tight wickerwork to counter this, although no signs of any lining were encountered during excavation. There are no clunch soaking tanks dated to Phase 3, despite an apparent increase in the number of quarry pits, and therefore presumably an increase in the quantity of clunch being extracted. This may suggest that the problem of water draining from the tanks was solved by using some either container for soaking the clunch in, possibly wooden vats. The fills of the tanks are thought to represent deliberate backfilling with quarry waste (e.g. the chalk and flint in F1313) or domestic rubbish (as in F1511) rather than to be representative of their last use for clunch processing (Williamson *et al* 2006, 62).

Several of the Phase 2 clunch processing tanks form two sides of an enclosure that contained the Phase 1 post-built building, S1029. The apparent extension or alteration of this building suggests that it was still in use when the tanks forming the enclosure were dug. This enclosed part of the site has, thus far, been interpreted as a semi-domestic area. Muir (2004, 216) states that at old quarry sites a search should be made for an administrative area, where stone was stacked prior to removal. Although no evidence of the stacking of stone has come to light within this part of the site, it seems possible that this was one of the functions of this area. Undated features interpreted as wheel ruts made by carts lie to the south-east of the enclosure. These features appear to avoid the features that represent the enclosure boundary and may represent the route taken by carts transporting the prepared stone away from this part of the site. A lack of Phase 3 features within this enclosed area may indicate that it had gone out of use by the beginning of this phase. This may indicate that the administrative area of the site was removed to a different location, beyond the limits of the excavated area, possibly in turn suggesting that new parts of the surrounding area had been turned over to clunch quarrying.

The features recorded at the site, and the associated dating and stratigraphic evidence reveal that clunch extraction processing started at the site some time in the 11th or 12th centuries. It was, initially, probably practised on only a relatively small scale but increased, perhaps quite dramatically between the 12th and 14th centuries before reaching what represent a peak in both output and technique some time between the 14th and 16th centuries. Phase 4 (16th century/later) is represented by only a single feature, suggesting that by the 16th century clunch working at this site had ceased, or had, at least, shifted away from the area examined during excavation. The relative quantities of different feature types in each phase (e.g. the presence of 12 clunch soaking tanks compared to only one quarry pit in Phase 2) act as a strong indicator that much of the clunch extraction and processing activity at the site occurred outside of the excavated area; this is only a small window onto what may have been a much wider area. As such, the picture of the development of the Fordham Road clunch processing site may be somewhat distorted.

Medieval stone extraction industries

The only industries that developed to any magnitude during the medieval period in England were the primary crafts of cloth-making and building (Holmes 1974, 37). By extension, developments in building would have created pressure on the quarrying industries of medieval England to improve techniques and output. The development of a quarrying industry seems to have begun in the late Anglo-Saxon period as demand for freshly quarried stone began to grow and replace the large-scale re-use of building stone (Parsons 1990, 8). Any small medieval community that had access to a supply of passable building stone would have a local quarry. The stone could be of low quality but would be exploited nonetheless, especially for projects such as church building, as the cost of transporting stone was often restrictive (Muir 2004, 216).

A pre-Conquest 11th century agreement between the abbots of Peterborough and Ramsey provides documentary evidence that, by this time, the quarrying industry was experiencing increasing sophistication as the document in question differentiates between dressed freestone and rough rubble (Parsons 1990, 8-9). From the Norman Conquest onwards, demand for building stone began to increase as first cathedrals and

major monastic churches were rebuilt or replaced and some castles incorporated stone-built structures. In the following century, many more castles were provided with stone keeps and large houses began to be constructed from stone (Parsons 1990, 9). The large and prestigious building projects of the medieval period were supplied by quarries of comparable magnitude such as those at Barnack and Ketton near Peterborough and Portland or Corfe in Dorset (Muir 2004, 216). However, French stone, perhaps most notably from Caen, originally imported for Norman building projects, continued to be imported until the late 1440s despite the development of the English quarrying industry (Parsons 1990, 9).

Isleham, along with Cherry Hinton, Reach and Burwell, formed one of two main groups of clunch quarries in Cambridgeshire, the other group, located to the south-east of Cambridge, included Eversden, Haslingfield and Barrington (Purcell 1967, 26). The best clunch for use as a building material is considered to be that from the Burwell clunch beds (Purcell 1967, 25). However, stone from the Eversden, Haslingfield and Barrington quarries was popular in the 15th and 16th centuries for building projects, especially college buildings, in Cambridge (Purcell 1967, 26). Nearly all of Cambridge's pre-1500 stone buildings were of clunch (Clifton Taylor 1972, 63). Clunch was also used in the building of Ely Cathedral (Darby 1977, 43) and Dunstable Priory in Bedfordshire, built in 1132 (Harris 1990). The effectiveness of clunch as a building material is compromised as it erodes comparatively quickly. Many of the medieval clunch-built buildings in Cambridge eventually had to be faced with ashlared limestone or brick, or rendered. Christ's College, built of alternating courses of brick and clunch in the early 16th century eroded so badly that its repellent appearance reportedly deterred people from entering their sons at the college (Clifton Taylor 1972, 63).

Effectively as an extension of the development of the stone building industry, monumental sculpture became an important industry from the 13th century onwards (Platt 1978, 74). Due to its softness clunch can be easily carved, although its effectiveness as an external building stone is not great, it lends itself well to sculpture and there are several examples of its use for internal decorative work. A number of the older Cambridge colleges have 16th and 17th century fireplaces carved from clunch but some of the finest examples can be seen in the 14th century Lady Chapel, although now defaced, and the Chantry chapels of Bishops Alcock and West in Ely Cathedral as well as in the churches of Burwell and Isleham (Purcell 1967, 28).

The Victoria County History indicates that clunch quarrying was carried out in Isleham from the medieval period onwards stating that "in the 1460s five crofts east of the south end of Up, later Mill, Street…already contained stonepits at their street ends" (Wareham & Wright 2002, 443). This strongly suggests that the Fordham Road site, with an earliest date of *c*. 11th century, may represent one of the earlier clunch extraction sites in Isleham. Clunch was already in common use, mainly in the areas close to its sources, at around the same time quarrying appears to have been started at the Fordham Road site (Harris 1990). The method of extracting the clunch from large quarry pits at Isleham appears to be different to the extraction methods employed at Totternhoe in Bedfordshire where stone very similar to that from Burwell was excavated. Although the description is of the quarries in 1748, long after the Fordham Road quarry had gone out of use, Roberts (1974) states that the Totternhoe quarries consisted of a main gallery or adit cut into the rock and supported by pillars of clunch

left in place and posts of wood. Branching off from these main galleries were further small ones (Roberts 1974). The difference in techniques may be due to the depth of the overlying strata, the subtle differences in the rock type or even the width or depth of the beds. However, it may be that the extraction methods described at Totternhoe represent greatly advanced quarrying techniques in comparison to those employed at the much earlier Fordham Road site. Such an evolution in quarrying techniques is evident in the chalk mines of Norwich. An extensive system of tunnels created through mining activity for chalk (to be burnt into lime) and flint (for building) exists under the outskirts of medieval Norwich. Such mining activity has been carried out in Norwich since the 11th or 12th century and in the early period, the emphasis in this area was on open cast working (Atkin 1981).

It seems then that the earliest quarrying activity recorded at the Fordham Road site may represent one of the earlier clunch working sites in Isleham, and possibly in Cambridgeshire as a whole. The method of extracting the stone at the Fordham Road site appears to be somewhat less sophisticated than the methods employed at Totternhoe and at the chalk mines in Norwich, this may indicate that the Fordham Road quarry was a comparatively small-scale operation.

Isleham's clunch industries: their role in the settlement's economy

Although clunch was quarried for building stone and for burning to produce lime in Isleham from at least the 11th century it appears that for most of the medieval period it was mainly only used in the surrounding area. Clunch quarried in Cherry Hinton was used for building churches and several colleges, including Trinity, Corpus Christi (which had its own quarry there in the late 14th century) and Peterhouse, in Cambridge (Wareham & Wright 2002, 111). In 1300, Ramsey Abbey had a supply of clunch from Reach and clunch shipped from Reach was used at Cambridge Castle in the 1280s. In 1367, Ely priory rented five limekilns in Reach and in the 15th century lime from Reach was used in the construction of Kirtling Castle (Wareham & Wright 2002, 226). Clunch from Burwell was used at Cambridge castle in 1295 and later at several Cambridge colleges (Wareham & Wright 2002, 354). Isleham clunch, however, does not appear to be mentioned in conjunction with the major medieval religious or educational establishments in Cambridge or the surrounding area although in the post-medieval and early modern periods Isleham clunch was transported by barge to Wisbech, Peterborough and Ipswich. It is possible that Isleham clunch was not used in Cambridge, probably the biggest market for the product in the area during the medieval period, because the other clunch producing areas of Cambridgeshire lay closer and could therefore supply clunch at less cost. Isleham was however connected to an extensive system of inland waterways in and around the fens leading to large regional ports at Cambridge and the major international ports at Wisbech and King's Lynn in the medieval period (Oosthuizen 1993). This suggests that clunch from Isleham could have been transported around the region, including to Cambridge, and even, potentially, abroad. This did not though give Isleham an advantage over the other clunch producing settlements of Cambridgeshire. Reach, for example was also connected to the waterways of the area and from its wharves and basins it shipped iron, timber, flints and agricultural produce as well as clunch, establishing itself, by the 14th century, as an important local commercial centre (Darby 1977, 43).

Mineral extraction in the form of mining was often valuable as a manorial right during the medieval period either exercised by lords or leased out by them (Holmes 1974, 36). It is possible that quarrying was operated on a similar basis during this period and it is therefore conceivable that the Fordham Road quarry was operated as a manorial enterprise.

The development of the clunch industry in Isleham may have been related to the ecclesiastical presence in the area, initially in the form of Isleham priory itself, Ely priory which held land in Isleham from *c.*1145 or from 1539 onwards when the newly formed Ely Abbey held the Uphall Manor in Isleham (Wareham & Wright 2002, 436). The active involvement of medieval religious establishments in heavy industrial practices is not unknown, as evidence from Rievaulx Abbey in North Yorkshire, which owned and operated several ironworking sites and aided the development of the industry in this area, demonstrates (McDonnell 1999). It is however, perhaps more likely that if the Fordham Road clunch processing site was run by, or for, Isleham priory it was worked either by the lay brethren, rather than the monks themselves, or by individuals outside of the priory's community. It is equally likely that clunch extraction was a right granted to certain tenants by the lords of the manor, either secular or ecclesiastical. In Reach, where Ely priory also owned land, priory tenants were, from the 1420s, given leave to dig clunch in crofts located close to limekilns rented out by the priory (Wareham & Wright 2002, 226). Documentary evidence demonstrates that the church was often closely involved in trade and commerce in towns in medieval Britain. Glasgow, for example was a flourishing trade centre that was strongly regulated by successive bishops (Schofield & Vince 1994, 51; 134). Controlling, or at least having a share in Isleham's clunch industry would have been of great economic value to an institution like a priory and ensuring a healthy economy in the local area can only have been to the benefit of the local religious establishment. Even if either of the religious institutions holding land in Isleham during the medieval did not own the Fordham Road site it is possible that one, or both, were involved with the clunch industry in some other way, either through ownership of one of the other clunch quarrying sites or through some involvement in the trade and transportation of the commodity.

The main factor in Isleham's economy appears to have been its location on the fen edge. The fen provided resources such as fish, waterfowl, hay, peat, reeds and sedge to augment more conventional sources of income. The waterways of the fen, and the man-made cuts and canals provided the settlement with links to the major trading centres at Cambridge, Wisbech and King's Lynn (Oosthuizen 1993). Reach's position on the fen edge waterways allowed it to establish itself as an important medieval commercial centre (Darby 1977, 43). Isleham, however, appears not to have reached such heights. There was no market at Isleham and despite considerable investment in Isleham's water transport infrastructure the return from this investment appears, from the 1327 Lay Subsidy, not to have been particularly significant. This relatively poor return may have led to the decision not to make the further investments needed to obtain a market grant (Oosthuizen 1993). This does not indicate that Isleham was a poor settlement; it was cumulatively wealthier than most upland villages, although so were most other fen edge settlements all of which had similar resources and access to waterborne transport as Isleham. Isleham was just one of many similar fen edge villages serving a rich hinterland (Oosthuizen 1993).

Clunch and clunch-derived products (lime) could be transported and traded away from the village thanks to the fen edge water ways but it is likely that many other products were also shipped out (and in) in this way. Isleham was competing with many other settlements with vastly similar resources and few of these appear to have been able to rise above the others economically. Isleham's relative lack of economic and financial power may have been a contributory factor in the overlooking of its clunch for use in the major prestigious building works of the medieval period in Cambridge and Ely, although its distance, in comparison to other clunch producing areas, from these places was probably an equally important factor. Without the impetus that supplying clunch to big building projects in the region would have given Isleham's medieval clunch industry it appears unlikely that it could have developed into a major economic activity in the settlement during this period. It was not until the later medieval period, when clunch digging crofts are recorded at the south end of Up (later Mill) Street (Wareham & Wright 2002, 443), and into the post-medieval period, that clunch appears to have been an industry of notable importance in Isleham; a time when activity at the Fordham Road site may have been reaching its peak. Clunch extraction and processing activity at Fordham Road, however, was probably catering for a fairly localised market for most of the site's lifespan prior to this.

However, easily falling within that localised market, at least during the earlier part of the quarry's lifespan, was Isleham Priory. The Priory was granted land in Isleham in the early 12th century, roughly coinciding with the beginning of Phase 2 clunch extraction activity at the Fordham Road site. The only surviving part of the priory, Isleham Chapel, is constructed of clunch set in a herringbone pattern (Wareham & Wright 2002, 447) and it seems reasonable to suggest that other priory buildings would have been of similar construction. It is therefore extremely possible that the already-existing clunch working site at Fordham Road was identified a source materials for the new priory and this provided the financial impetus that allowed it to develop from the 12th century onwards. How the quarry remained operating, and indeed continued to develop, after the priory moved to Linton in the early 13th century is difficult to identify. It may have continued to supply stone for the repair of existing priory buildings or for other local building projects, but its distance from centres such as Ely and Cambridge, and the proximity of other clunch producing settlements to these places, probably restricted the use of Isleham clunch in these towns. There was, however, evidently enough demand to keep the Fordham Road site producing clunch until the end of the medieval period and the beginning of the post-medieval period when other clunch producing sites in Isleham came to the fore.

Site morphology and social implications

It has been considered that the Phase 1 parallel gullies (F1502, F1555 and F1457) and the associated postholes represent a boundary feature separating one end of the site from the other. To the north of this possible boundary lay F1511, a clunch soaking tank, and F1615, the earliest quarry pit. No wells to supply water to the tank are recorded in this part of the site during this phase, it is possible that such features existed to the north of this possible boundary but lay beyond the excavated area. To the south of the boundary, at the very southern end of the site several wells were recorded and dated to Phase 1, however no tanks or quarry pits were recorded from this phase at this end of the site. Just as Phase 1 wells at the northern end of the site may have lain beyond the limits of excavation then the same may be true for tanks

and quarry pits at the southern end. If this is the case, and gully features do represent a boundary, then this pattern may be suggestive of separate crofts, possibly organised and administered on a similar basis to those in Reach, worked by the tenants of Ely priory. The possibility that the Phase 1 features represent two different clunch-working crofts would suggest that the people working them were individuals attempting to make a living from a right granted (or leased) to them by their manorial overlords. Any person granted leave to work a croft was probably a serf and therefore subject to many limitations on their personal freedoms. Amongst these limitations may have been rules governing to whom or where the extracted clunch could be sold or at which kilns it could be burnt into lime, just as many serfs involved in arable agriculture were obliged to have their corn ground at a mill belonging to their lord or run by one of his servants (Hibbert 1989, 24-25).

In Phases 2 and 3 clunch working features appear to be evenly distributed around the site. Phase 2 features do appear to cluster at the southern end of the site but there appears to be no boundary on site. This may indicate that the site was opened up and the crofts, should they have existed, were amalgamated into a larger scale production unit. Increased demand from the newly established Isleham priory during the period represented by Phase 2 may have been the economic push-factor that caused this to happen. Many medieval peasants found it more profitable to work regularly as part of a standing labour force for one master, usually the lord of the manor, rather than work their own land and do regular but intermittent manorial service (Hibbert 1989, 30-31). The development of the Fordham Road clunch extraction and processing site during Phase 2 may have made employment of this kind available in Isleham; the workers at the site could, quite feasibly, have been comprised of individuals working in this manner, especially if clunch working was carried out on a year-round basis. A waged workforce would, almost by definition, be made up of freemen peasants, as opposed to serfs, as these individuals were free to make the decision to become part of a standing workforce. Therefore, the standing in society of the Fordham Road clunch workers may have changed as the site developed. The artefactual and ecofactual assemblages recovered from the site offer very little in terms of elucidating social stratification. This is, of course, unsurprising as an industrial site is unlikely to yield evidence of high status diet.

Identifying the presence of housing is an important research objective in the study of industrial sites. Despite the possibility that the earliest features associated with clunch working at the Fordham Road site may represent at least two separate crofts, and the presence of two buildings confirmed as being of this date and a further building that may or may not be contemporary with these (F1330), permanent housing is not apparent at the site. Of these buildings, F1614 and F1330, appear to be *grubenhauser*; although buildings of this type are common and display wide variance in form and function and may have been employed as dwellings in the earlier Anglo-Saxon period they appear only occasionally in medieval contexts (Rahtz 1982). As *grubenhauser*, these buildings are not typical of medieval peasant housing. The post-built structure at the southern end of the site, S1029, was initially interpreted as having a semi-domestic function. This interpretation was made on the basis of rubbish assemblages from nearby pits (Williamson *et al* 2006, 19). Although the building stood within a clearly defined area separating it from the industrial areas of the site it was considered to have been used for shelter and temporary accommodation by the people working at the site rather than a wholly domestic dwelling house (Williamson *et al* 2006, 61).

Muir's (2004, 216) assertion that medieval quarry sites had administrative areas suggests that this may have been the primary function of the post-built building with the semi-domestic appearance a result of workers using it to shelter in.

Conclusions

Although it is probable that the undated Phase 1 features (F1330 and F1670) both represent the use of land within the site prior to its medieval industrial function it is not possible to define an exact date or period for their construction or use. Both display some circumstantial and comparative evidence that makes it tempting to suggest that they are of Saxon date, especially given the known Anglo-Saxon history of the area, the several small finds of this date and the, thus far, elusiveness of Anglo-Saxon structures in Isleham. However, conclusive evidence does not exist and combined with the lack of dating evidence it is impossible to apply with any certainty any date more specific than middle Saxon to 11th century to these features. The presence of a second sunken-featured building at the site, F1614, with a secure 11th to 12th century date raises the possibility that F1330 may have been its contemporary and therefore not representative of Anglo-Saxon activity at all.

The sunken-featured building, F1330, is open to the usual debate regarding such structures. This particular example appears to have been devoid of gable posts, making it similar to an Anglo-Saxon SFB recorded at the Cambridge Backs. It does not, however, offer any new evidence regarding the function of buildings of its type and the presence a second SFB (F1614), securely dated to the 11th-12th century, may imply that F1330 is also more recent than its construction may suggest. The apsidal-ended building is more enigmatic. Although only the apse portion of the structure was revealed during excavation, its appearance and the materials with which it was tiled, combined with its probable date, are highly suggestive of a church or chapel building. It appears, however, to be aligned with the apsidal end facing south-east, rather than east, as would generally be expected of a church. Although early churches are mentioned in Isleham all are considered to have been sited where the current 14th century Parish Church stands. Given the small size of the apse, its width is just under 2.5m, and the apparent wattle and daub construction of its walls it is probably best to regard the apsidal-ended building as a temporary church building, possibly a predecessor to the church given to Bishop Burricus of Rochester by Alfred the Great.

It would appear that the apsidal-ended building and possibly the undated sunken-featured building (F1330) had been removed, or were replaced, sometime during the 11th century when clunch extraction began to be carried out at the site. Although Harris (1990) states that clunch was used commonly in the 12th century in areas close to its sources, an 11th century date for the start of clunch extraction activity at Fordham Road may indicate that it was one of the earlier sites of industrial extraction of the material. Purcell (1967) indicates that the recording of the use of clunch in Cambridge in 1415 is an early date. This may be why the extraction techniques displayed at the Fordham Road site, digging the raw material from large pits, appear to be somewhat primitive in comparison to those used later at the clunch quarries at Totternhoe where a system of adits was cut in to the rock face and the rock was removed in blocks through the use of iron wedges and observance of the position of the natural vertical fissures (Roberts 1974). The chalk and flint mines of Norwich started initially in the 11th or 12th century based on an open-cast system of stone

extraction but eventually methods changed and tunnelling into the strata became the preferred approach. That clunch extraction at Fordham Road did not follow this pattern of development may have more to do with the positioning of the clunch deposits in relation to the surface but it may also indicate that clunch extraction at Fordham Road remained a relatively small-scale activity throughout the duration of the site's use for this purpose.

Clunch extraction at Fordham Road may have remained a comparatively small scale endeavour due to economic factors; Isleham was competing with other fen-edge settlements all with similar resources and access to the fenland waterways that made rising above the others on an economic and financial basis difficult. Additionally, the main markets for clunch, the big towns and regional centres, where major building works were carried out, all had other sources of the material much closer than Isleham suggesting that the output from Fordham Road, and any other clunch quarries in Isleham, was only sold on a particularly localised market. Clunch quarried at Isleham, Reach and Burwell was used for building in the southern fens as, aside from important buildings, churches, bridges and some important private dwellings, all building work relied on locally available materials right up until the 19th century (Parker & Pye 1976, 150-152).

The Medieval manorial land holding system suggests that any industrial activity was probably controlled by the lords of the manor, which in the case of Isleham may have, at varying times, been a lay individual or one of the religious establishments that held land in the village. Although a tenuous link, it is possible that, if the apsidal-ended building was indeed a church, the land at the Fordham Road site had remained in church hands and was, therefore, owned by either Isleham Priory or was part of Ely Priory's, later Ely Abbey, holdings in Isleham. It is possible that manorial control took the form of issuing clunch working crofts to tenants. Such a state of affairs is suggested by the presence of the possible Phase 1 boundary features.

Although the social significance of the clunch-working site at Fordham Road appears difficult to identify and its role in the local economy does not appear to have been one of monumental importance the site adds much to the understanding of the character of medieval Isleham. Its presence suggests that clunch-working was established in the settlement possibly significantly earlier than previously considered. The lower end of the date range established for Phase 2 features coincides with some of the earliest dates mentioned for the use of clunch in the East Anglia region. This suggests that there was a local market, at least, for clunch quarried in Isleham at this time.

The site may have had a significant role to play in the forming of the settlement of Isleham in the medieval period. The founding of Isleham priory in the early 12th century coincides with the start of Phase 2 activity at the site and a shift from what appears to be quite small scale activity to what appears to be a more efficiently organised and probably larger scale operation. This raises the possibility that clunch was extracted from Fordham Road for the construction of the priory buildings. The only extant building from Isleham priory is Isleham Chapel, which was built from clunch, unfortunately there is no physical evidence to prove that this material was extracted from the Fordham Road site. Use of clunch from Fordham Road would have provided the impetus that allowed clunch working to development into viable industrial activity in Isleham. Thereafter it is possible that the Fordham Road site

supplied clunch to other building initiatives; possible candidates for this include the internal carved masonry at the 14th century church of St. Andrew. Although it appears to have remained small-scale this may be seen as the initial driving force behind the post-medieval development of clunch extraction and lime burning in Isleham.

It is possible that the early undated features, the apsidal-ended structure and sunken-featured building F1330 represent Anglo-Saxon activity. Stratigraphic evidence suggests that this is a possibility and the form of the features is also indicative of such a date. Although there is strong documentary evidence for the existence of an Anglo-Saxon settlement at Isleham and Anglo-Saxon artefacts have been recovered from the area no evidence of buildings of this date has been identified. The undated Phase 1 features at Fordham Road may represent these, thus far, elusive, Anglo-Saxon structures. However, as no reliable dating evidence exists and the features cannot be confirmed as being of this date the main research value of the site lies in the dateable Phase 1, Phase 2 and Phase 3 features and the information that these provide regarding the development of medieval Isleham and of the medieval clunch industry in this part of Cambridgeshire.

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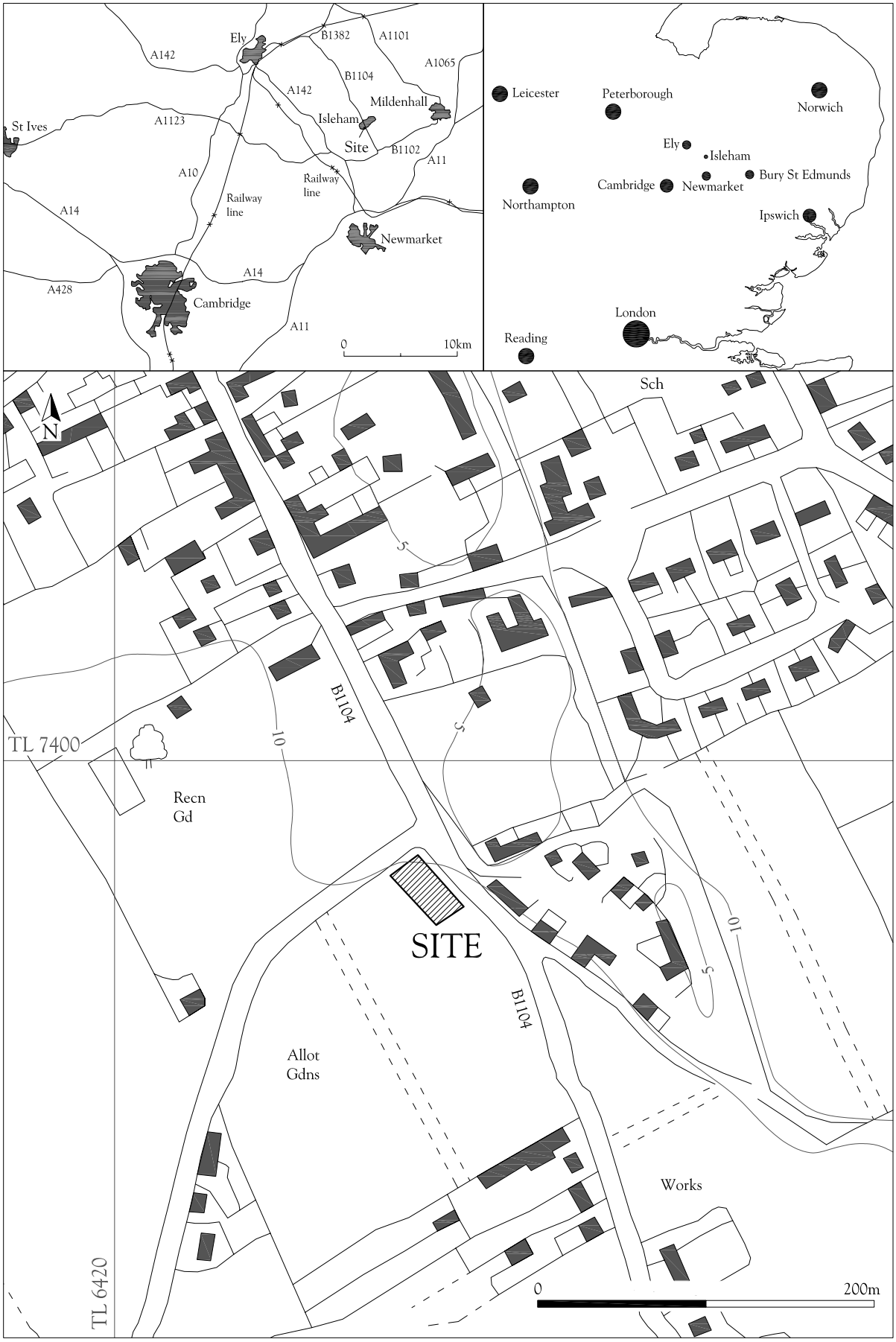

Figure 1 Site location plan

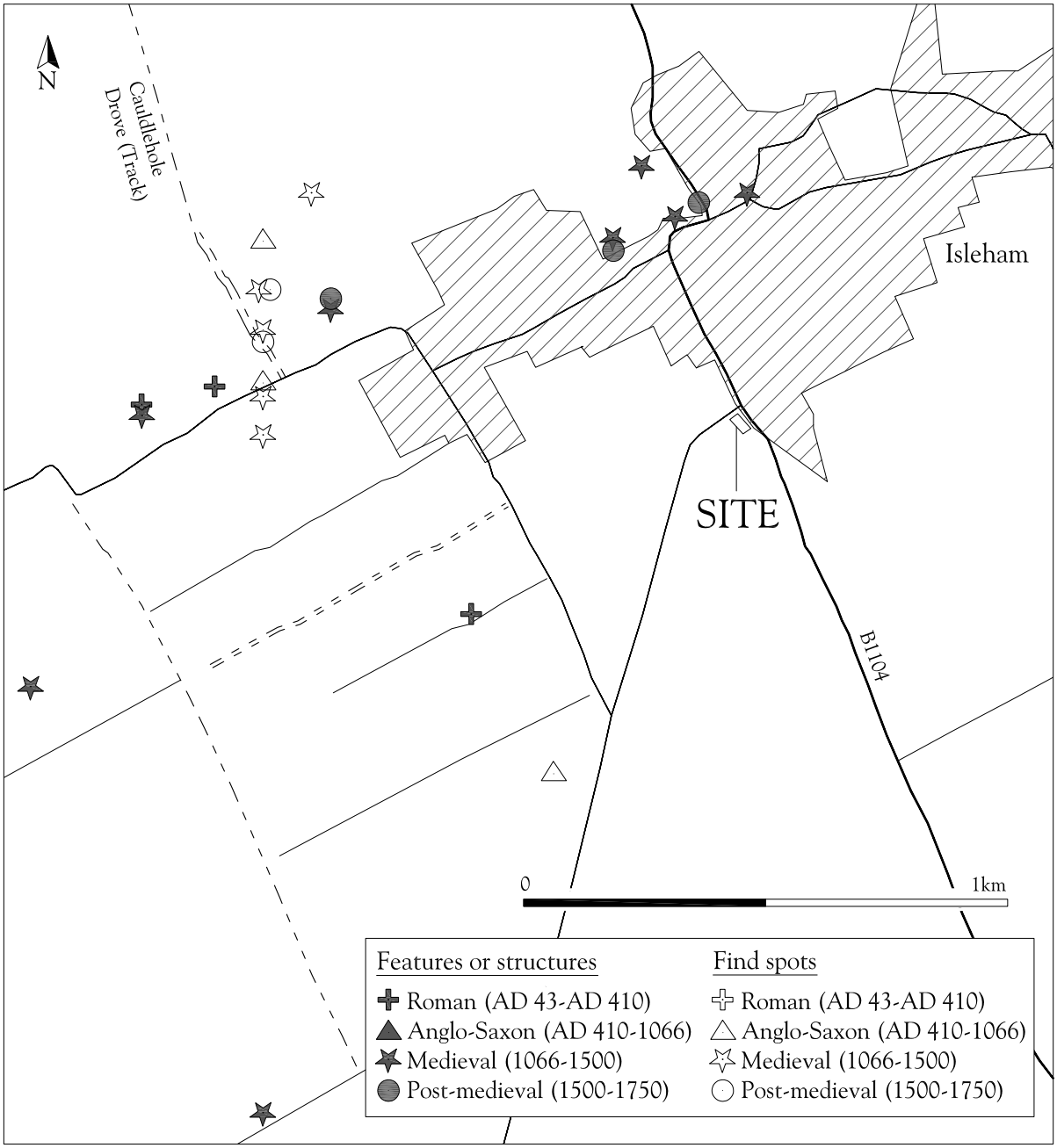

Figure 2 Locations of significant Roman, Anglo-Saxon, medieval and post-medieval sites in Isleham

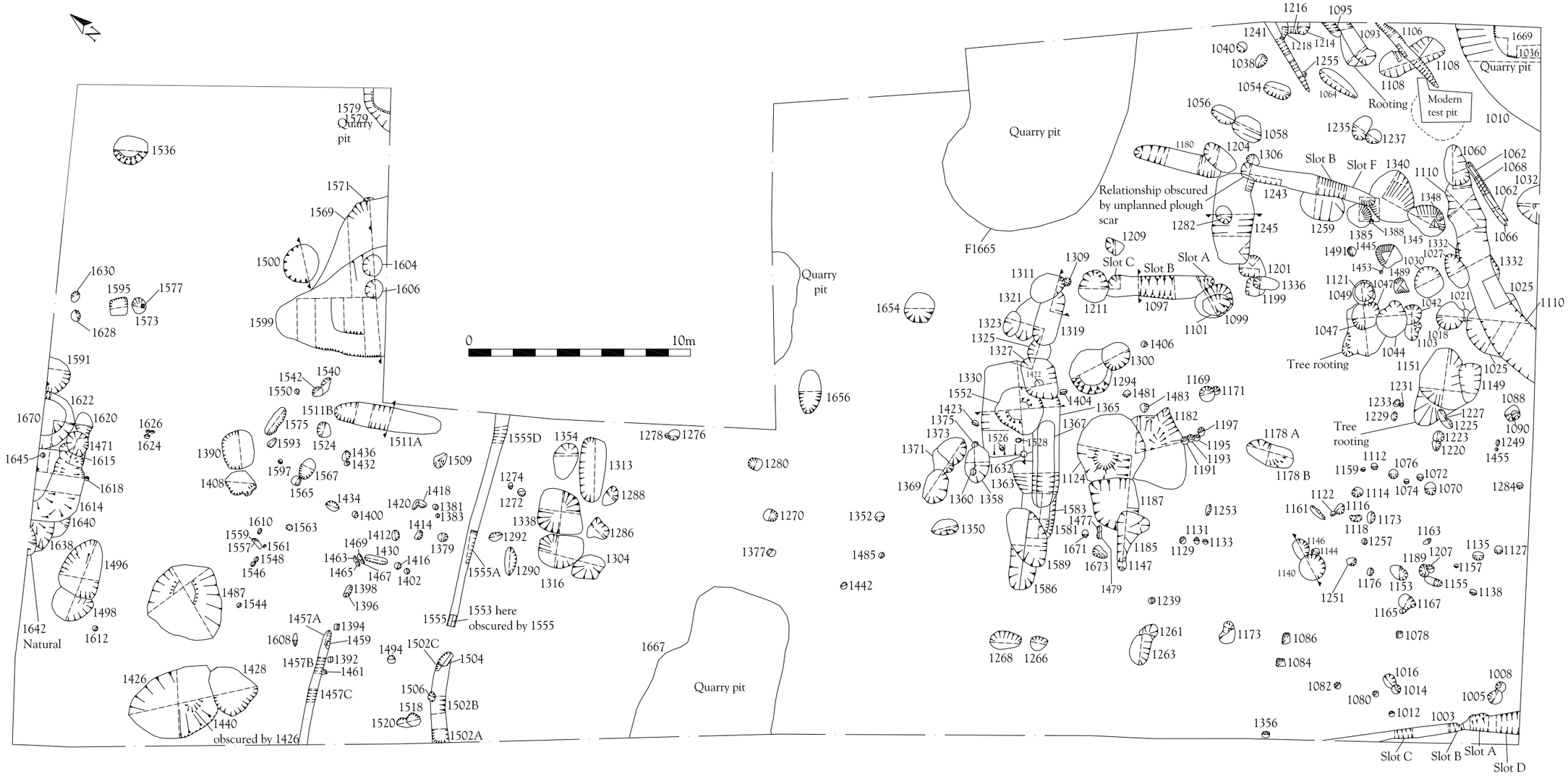

Figure 3 Site plan

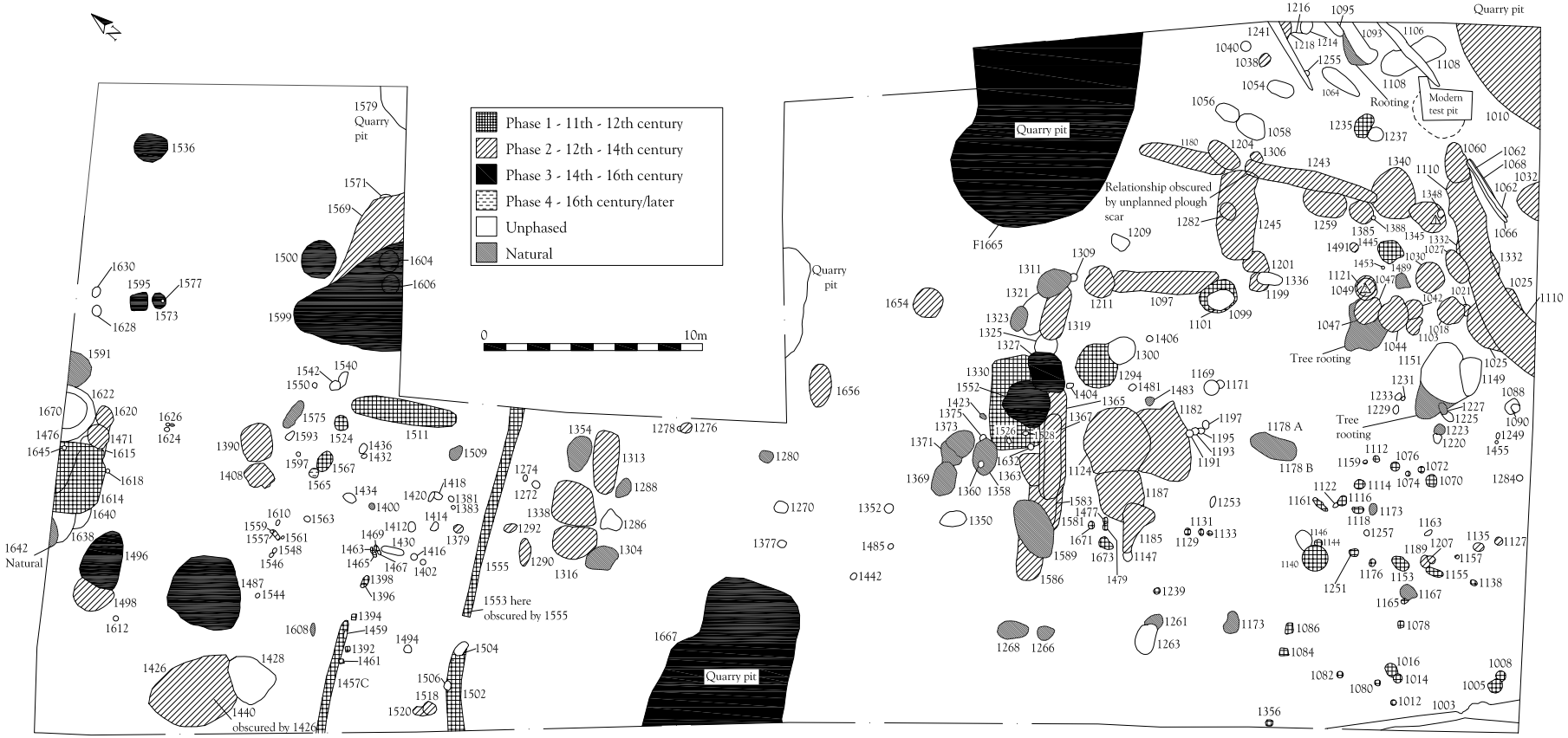

Figure 4 Phase plan

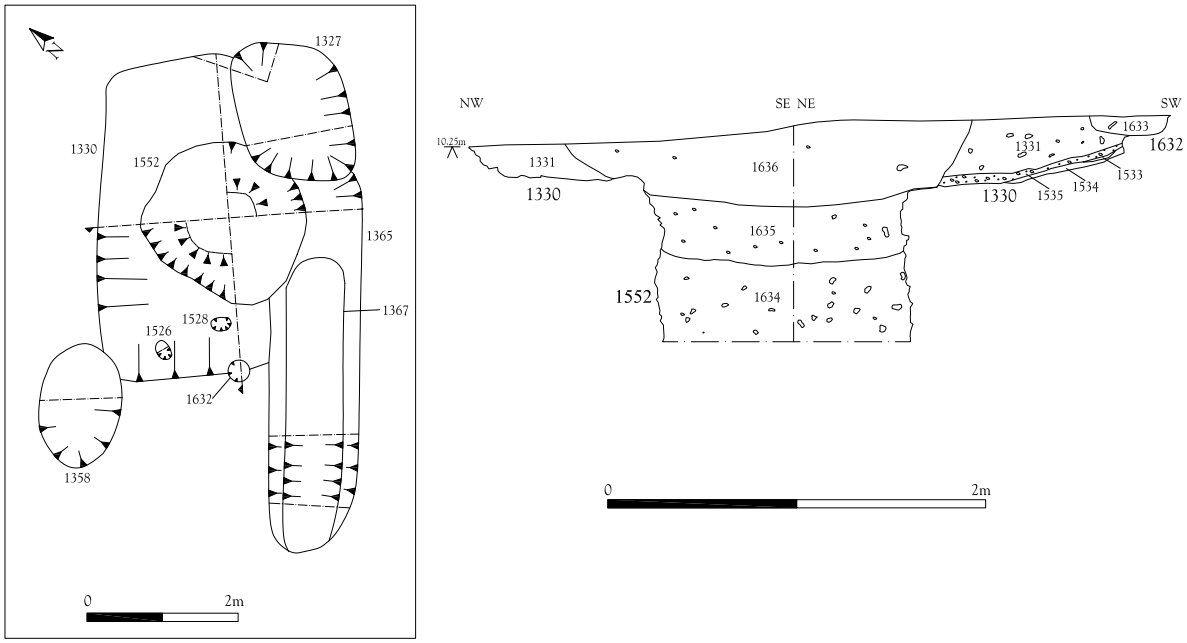

Figure 5　Sunken-featured building F1330

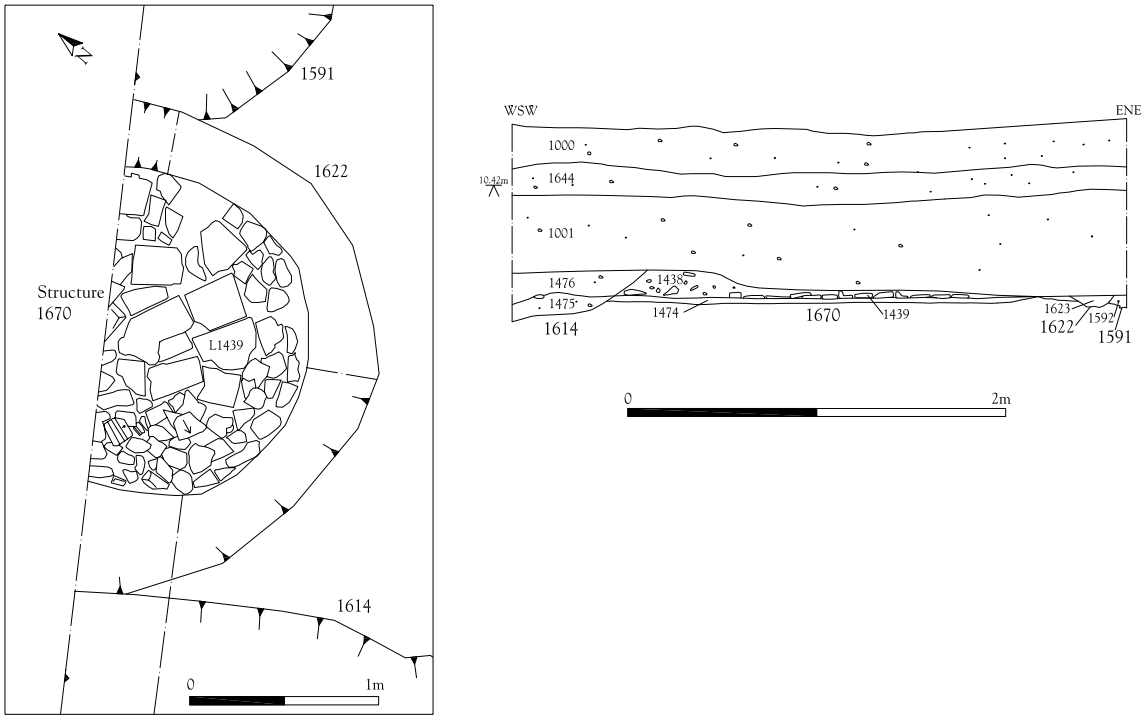

Figure 6　Apsidal-ended building F1670

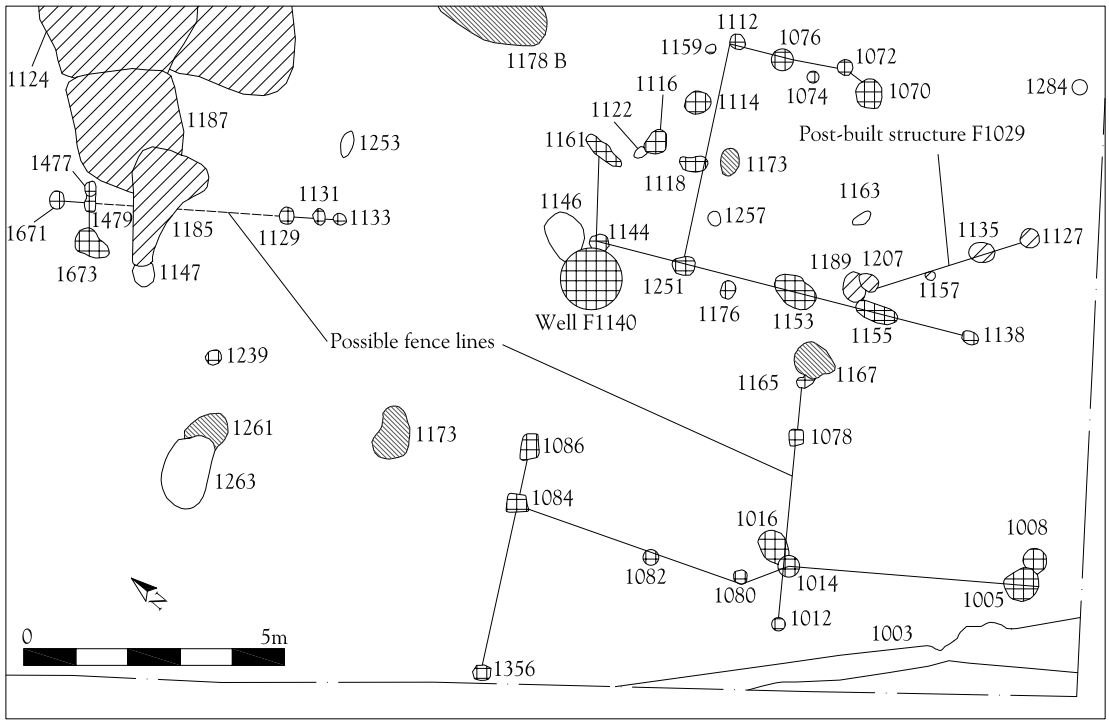

Figure 7 Plan of post-built structures and fence lines

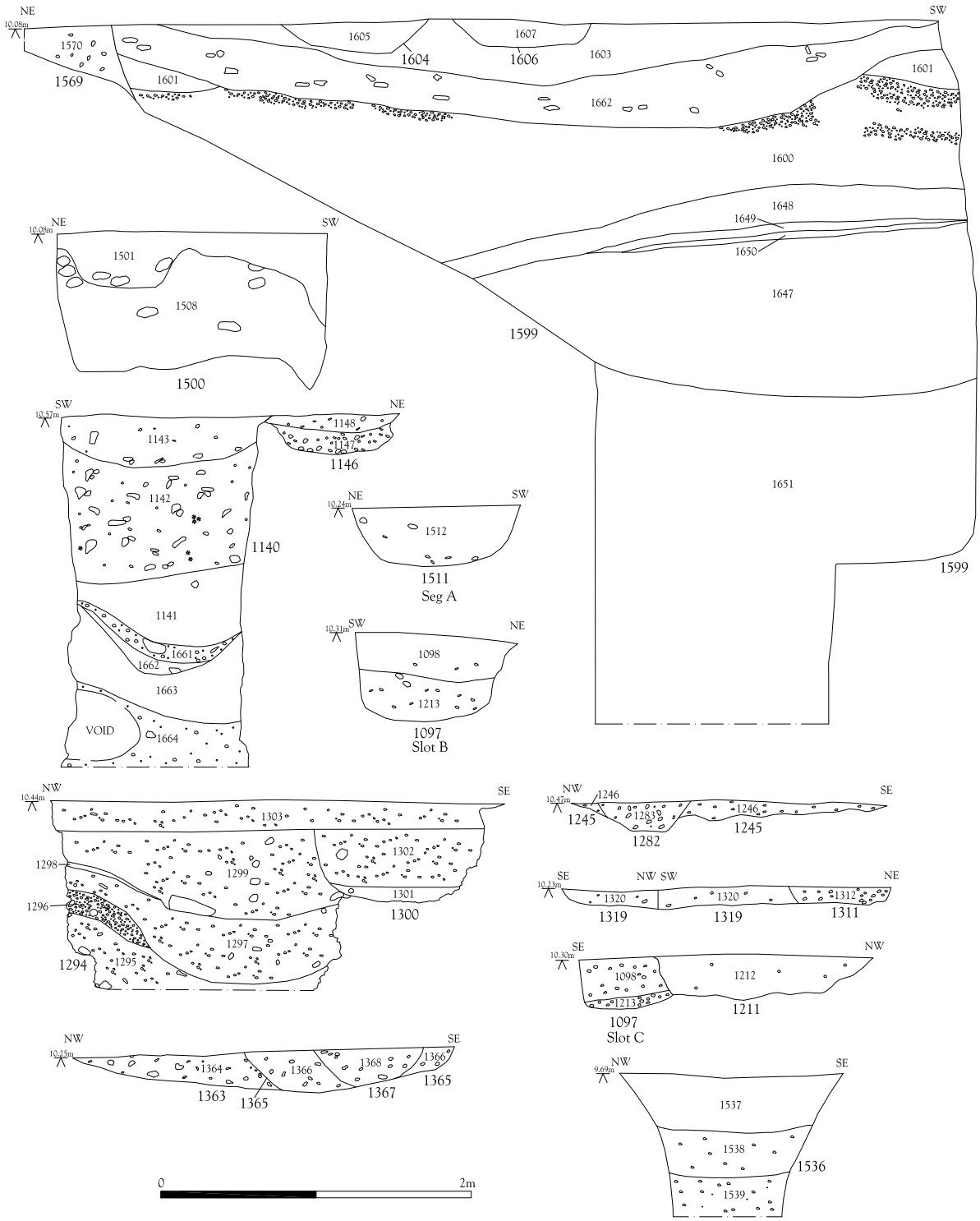

Figure 8 Selected sections

Figure 9 Animal bone distribution by fragment count

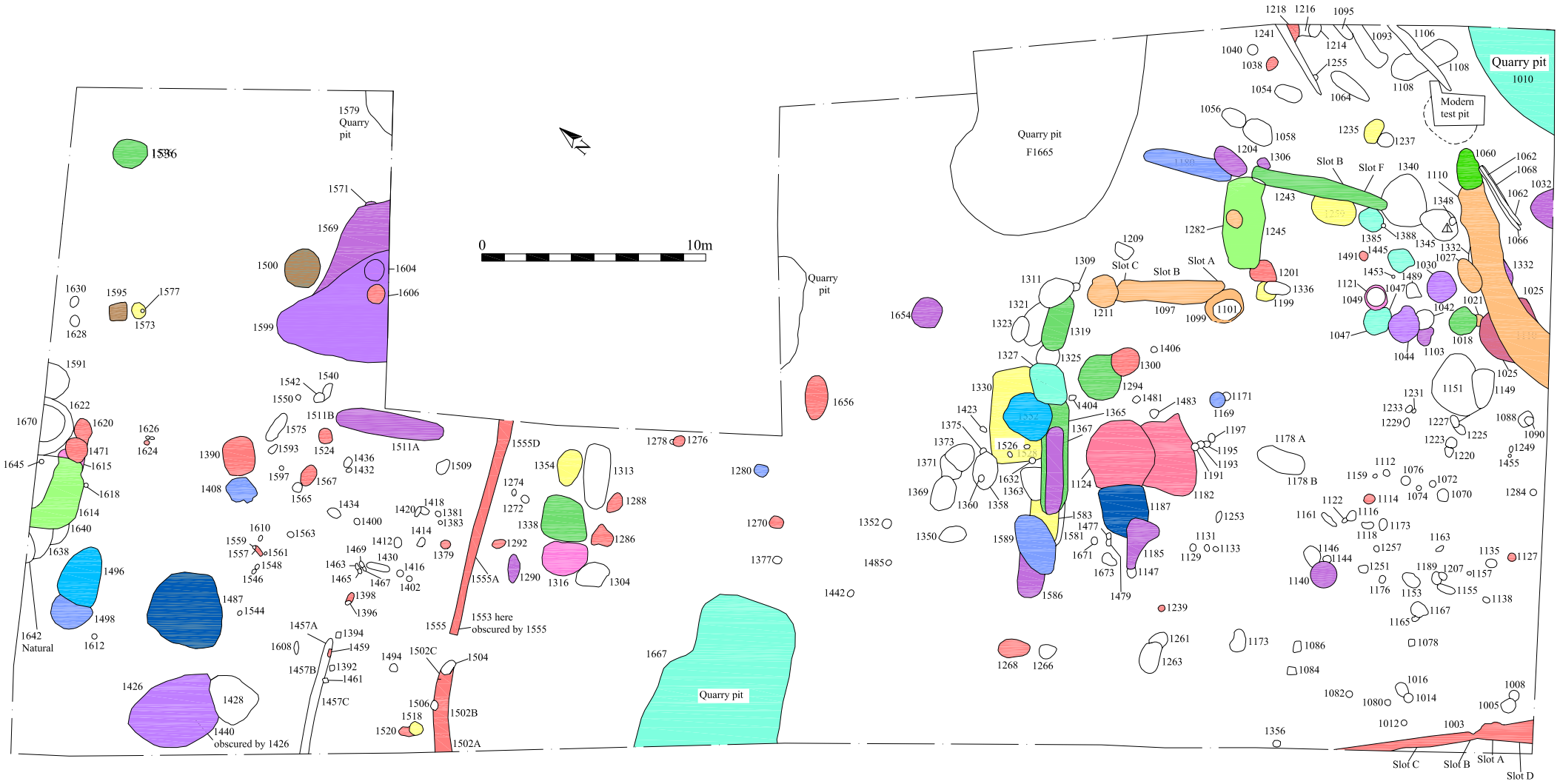

Figure 10 Pottery distribution by sherd count

Figure 11 Pottery distribution - fabric type 1

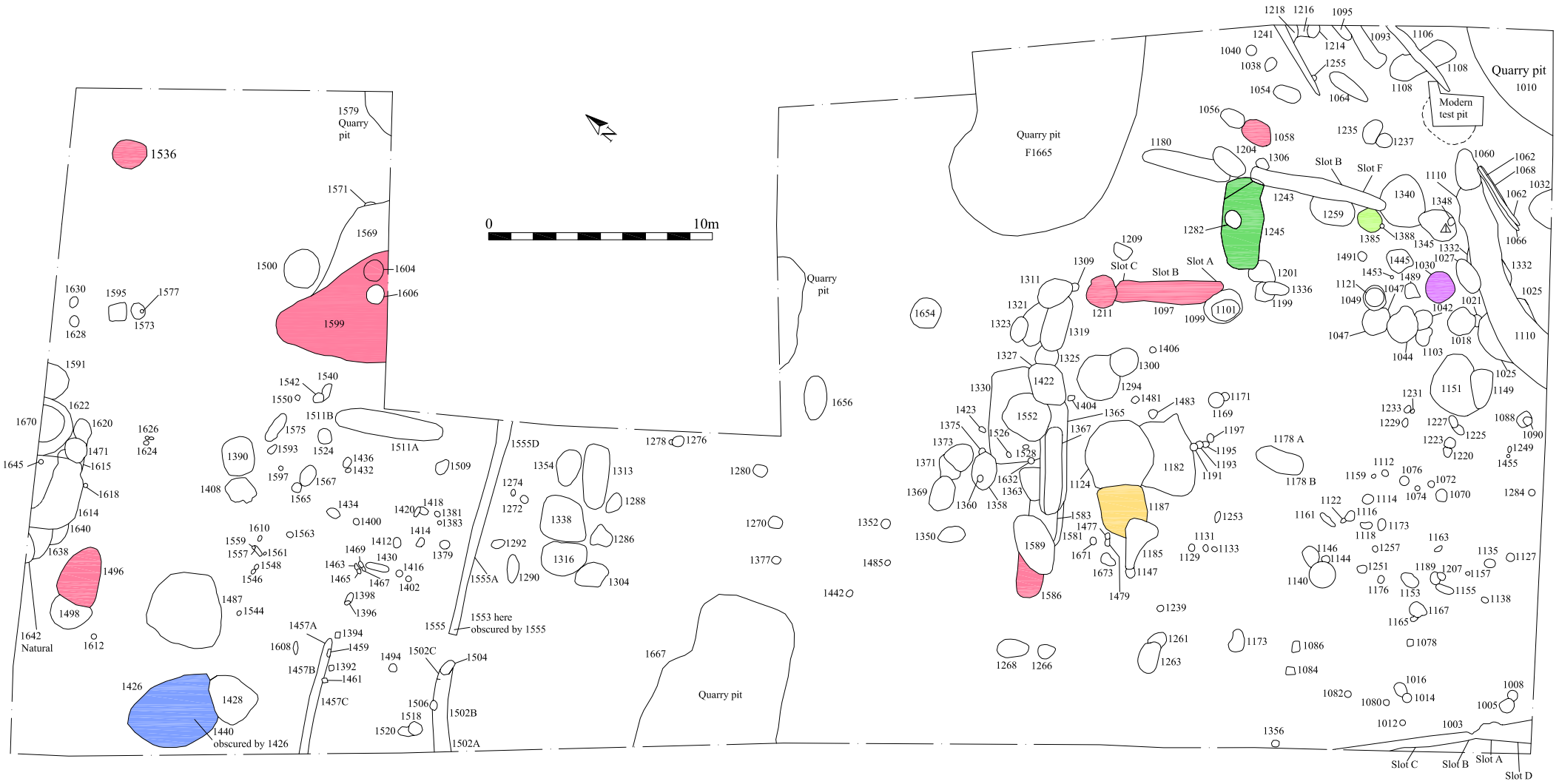

Figure 12 Pottery distribution - fabric type 2

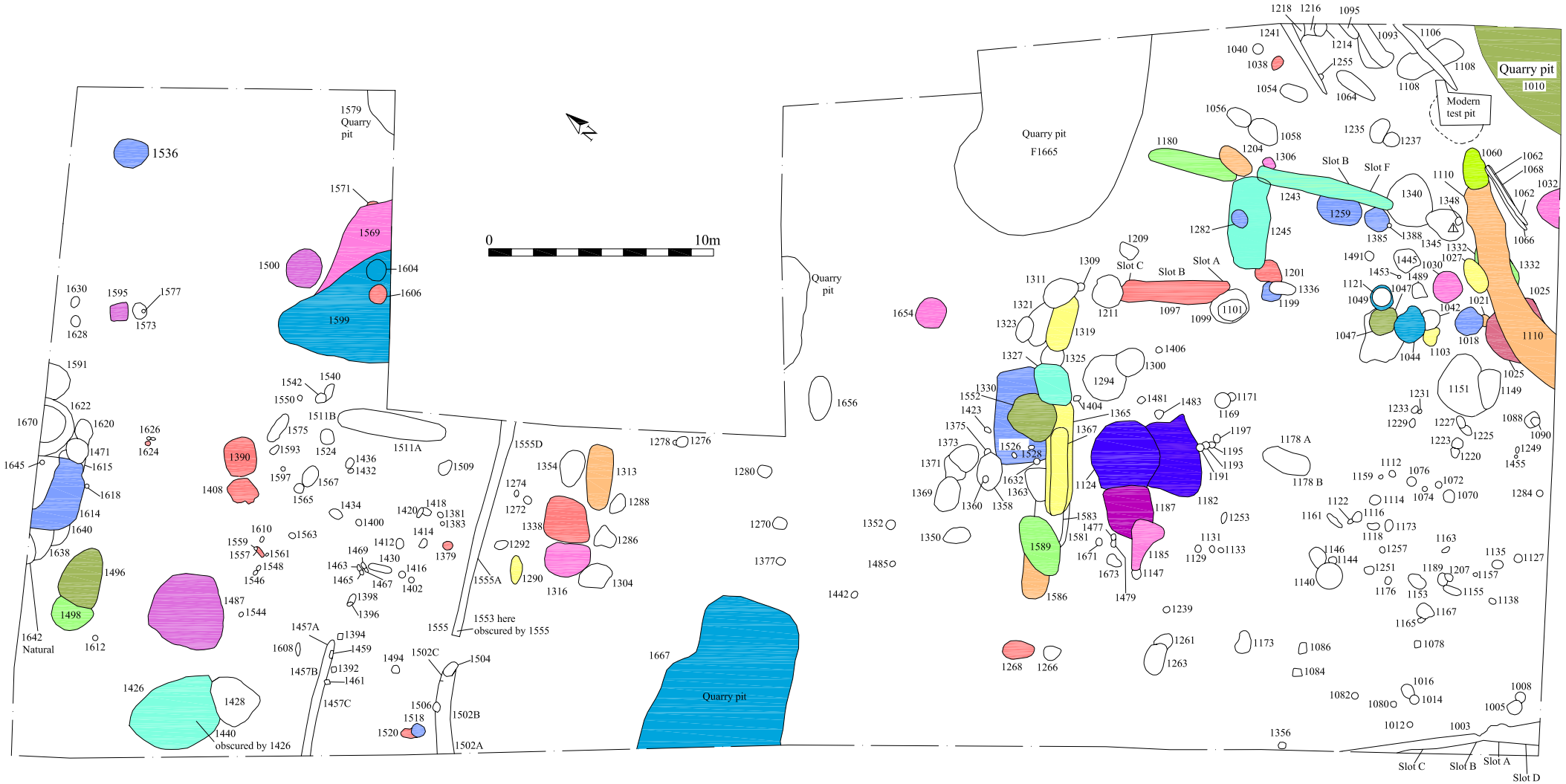

Figure 13 Pottery distribution - fabric type 3

Figure 14 Pottery distribution - fabric type 4

Figure 15 Pottery distribution - fabric type 5

Figure 16 Pottery distribution - fabric type 6

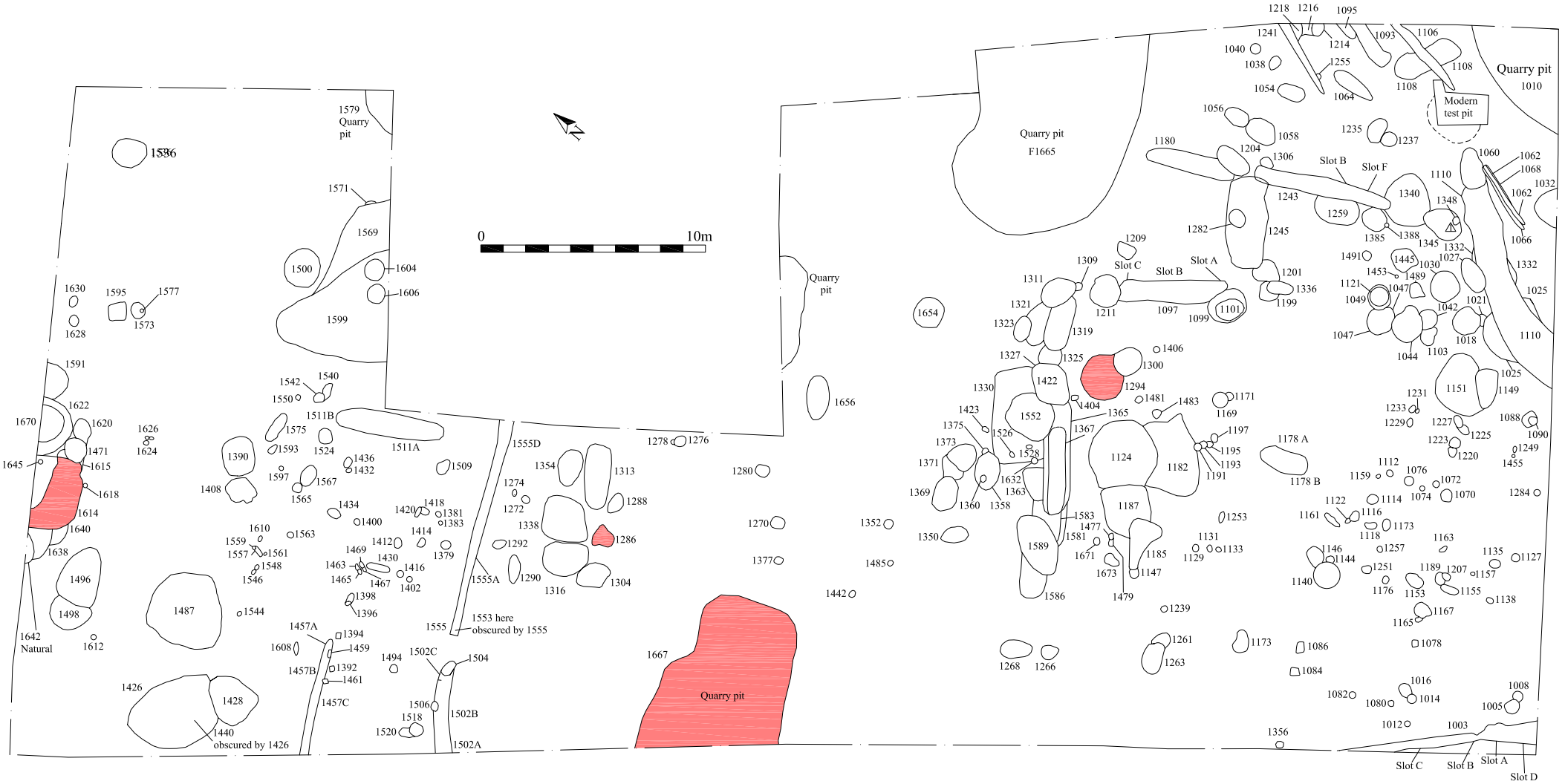

Figure 17 Pottery distribution - fabric type 7

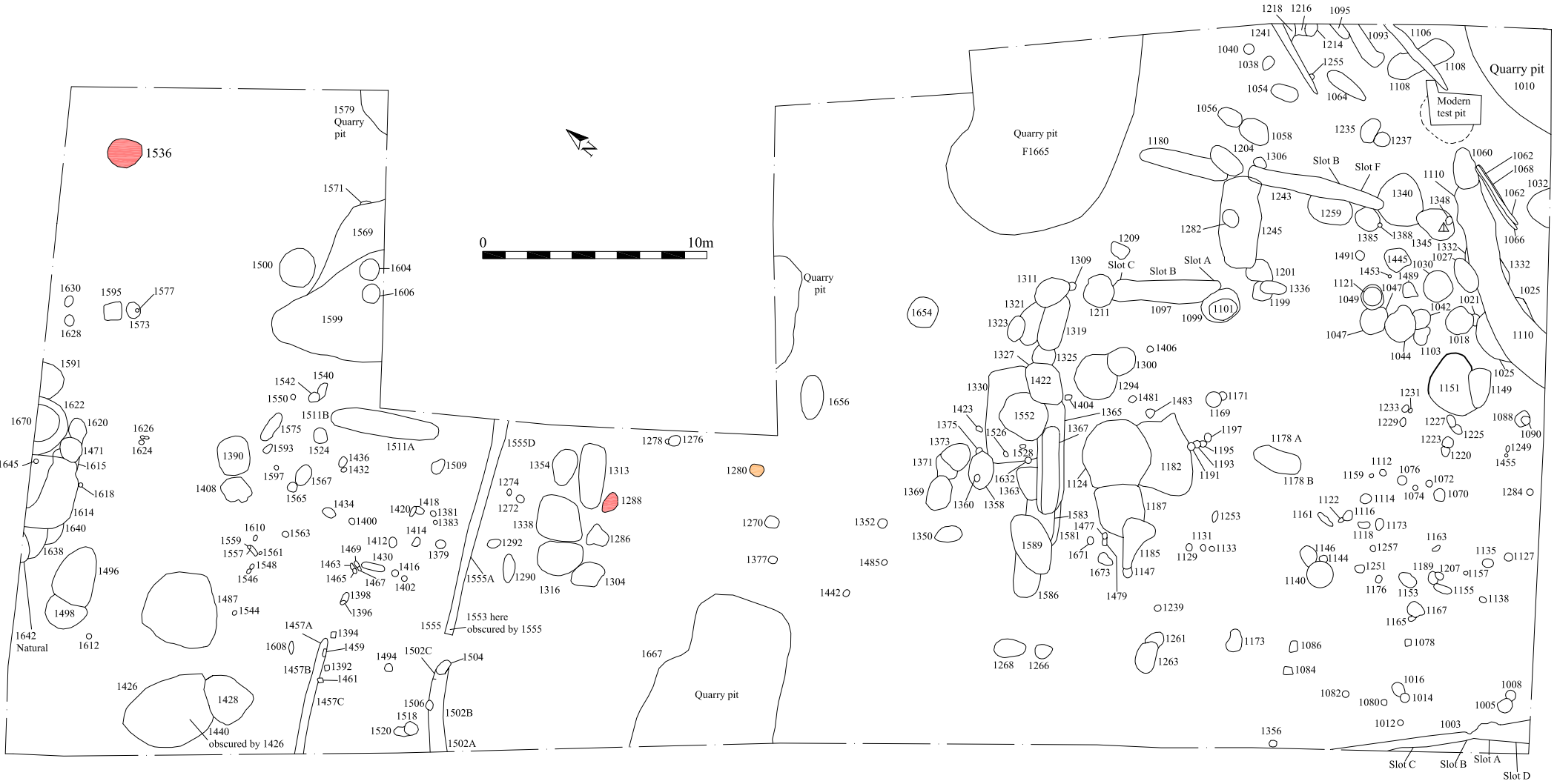

Figure 18 Pottery distribution - fabric type 8

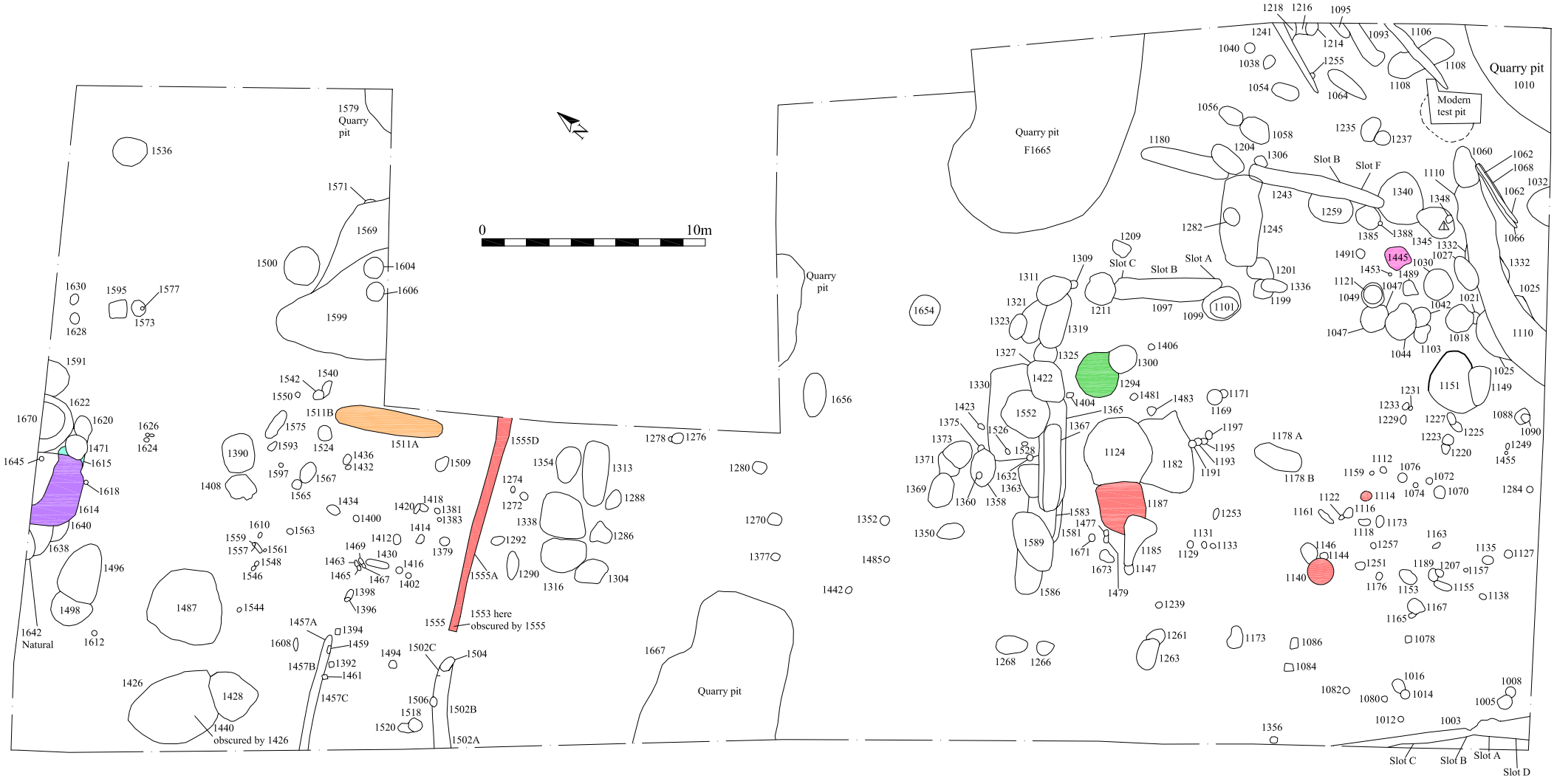

Figure 19 Pottery distribution - fabric type 9

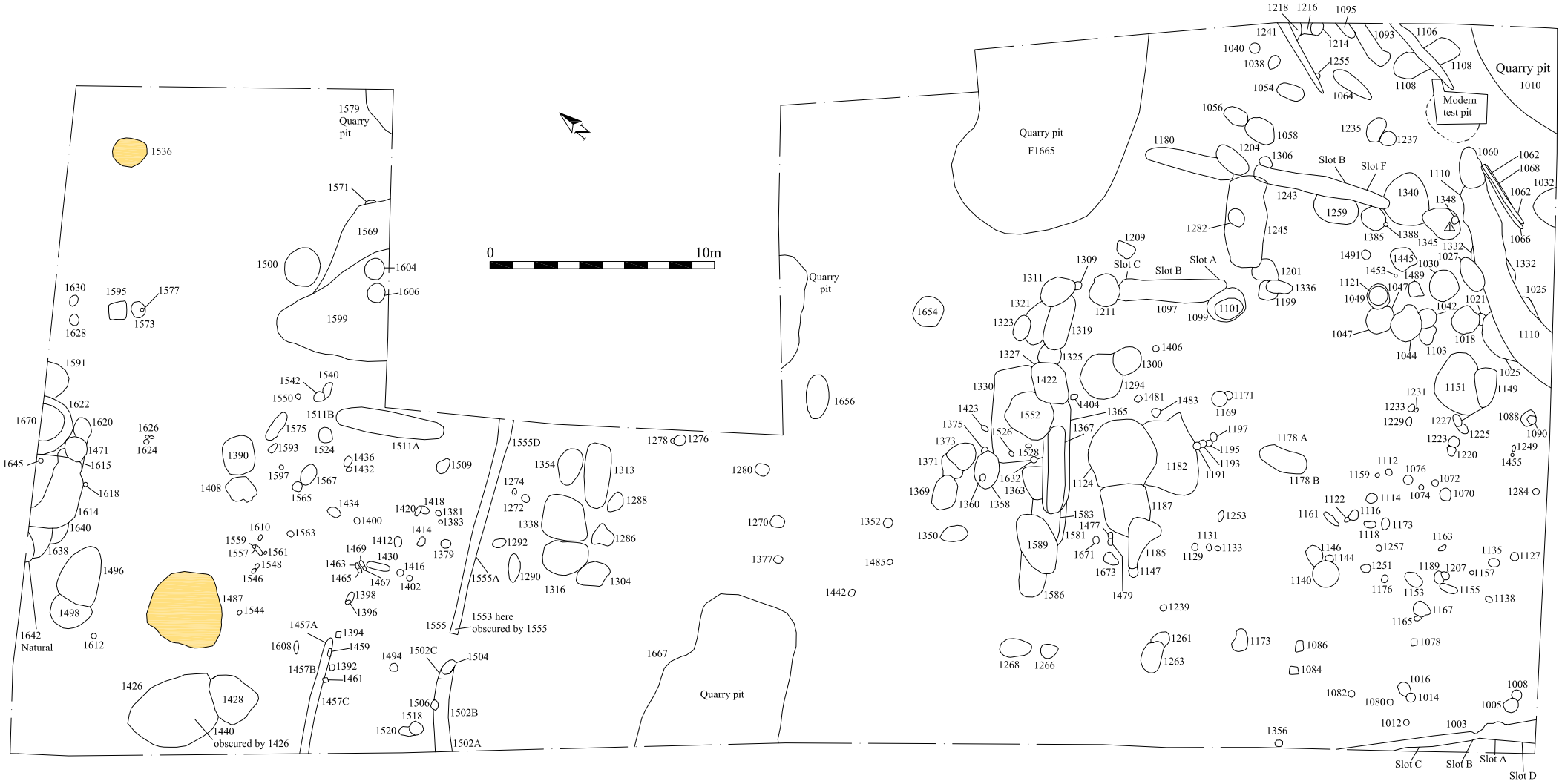

Figure 20 Pottery distribution - fabric type 10

6 - 10