A Romano-British settlement with ovens and field system at Theobalds Road, Wivelsfield, East Sussex

By Andrew B. Powell

with contributions by Catherine Barnett, Nicholas Cooke, Lorraine Mepham, Chris J. Stevens and Sarah F. Wyles Excavation west of Wivelsfield, East Sussex, revealed part of an early Romano-British settlement. One of the round-houses may have had a non-domestic, possibly ritual, function. The settlement appears to have been subsequently incorporated within a rectilinear arrangement of field/enclosure ditches. Along the edge of one of these ditches were built a series of features interpreted as ovens, of varying form and likely use, from which charred waste from cereal processing and charcoal from coppiced woodland were recovered.

INTRODUCTION

A n excavation in 2010, south of Theobalds Road, Wivelsfield, East Sussex, revealed part of a Romano-British settlement with evidence of large-scale, organised oven use, and associated field/enclosure ditches (Fig. 1). The excavation (Wessex Archaeology 2011), which was undertaken as a planning condition in advance of the site's development for housing, followed a geophysical survey of the site (Stratascan 2008) and a trial trench evaluation (Dawkes 2008).

The excavation site, which covered 1.08ha centred on NGR 523670 120560, lay on a gentle west-facing slope between 50m and 44m aOD. The site was divided by an extant hedgerow into eastern and western parts, connected at the south. Nearby Burgess Hill is located within the Low Weald, and the site's underlying geology is Wealden Clay with a localised narrow band of Horsham Stone Member in the northern part of the site (British Geological Survey Sheets 318 and 333). There was 0.3m of topsoil across the site, overlying a silty clay subsoil of similar depth, and the natural clay. There was much evidence of tree-root disturbance - the Weald was historically heavily wooded, and more recently, from 1875–1937, OS maps show the western part of the site to have been an orchard, the eastern part a field.

A postulated prehistoric ridgeway runs east-west along Theobalds Road (CgMs 2008). The site also lies 1.2km east of the projected line of the Roman road between London and Portslade, which passed through both the iron-working area of the Weald and the corn-growing landscape of the South Downs (Margary 1936). This road intersects with the Greensand Way, the west-east Roman road between Hardham and Barcombe, at Hassocks, 5km to the south (Margary 1935), where a large Romano-British cemetery suggests the presence of a substantial settlement (Couchman 1925; Lyne, 1994). A major Roman settlement spanning the 1st-5th centuries AD, including a villa and bath-house, lay further east along the Greensand Way, at Barcombe, near where the road crossed the River Ouse (Rudling et al. 2010). Romano-British features of 1st-4th century date, including a late Romano-British possible corn-drying oven, have been excavated at Innovation Drive on the west side of Burgess Hill (Sawyer 1999), while a villa and associated tile-kiln is known at Hurstpierpoint further to the south-west (Scott 1993).

RESULTS

The main excavated features comprised a large subrectangular field or paddock (referred to here as the 'enclosure'), with a number of ditches extending from it forming other probable boundary ditches (Fig. 1). Within this wider arrangement of ditches at the west of the site there were at least two (possibly four) round-houses, probably indicating an area of settlement extending to the south-west. Close to, but separate from, the round-houses there were numerous burnt features, described below as 'ovens', although probably having a range of uses; many of them were arranged along the side of one of the boundary ditches.

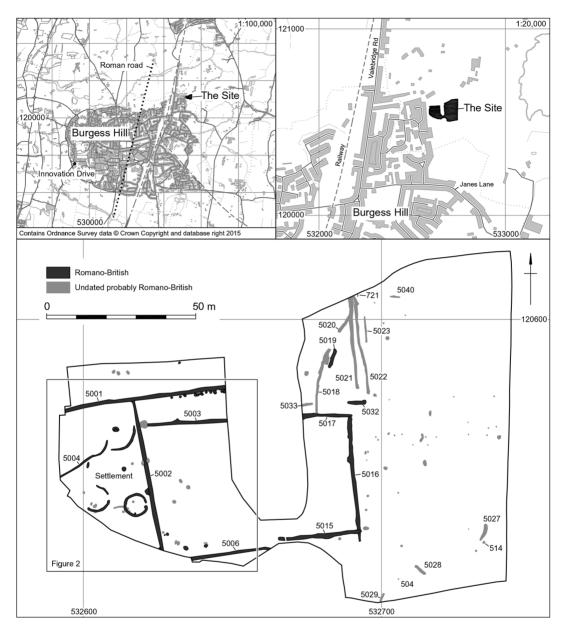


Fig. 1. Site location and plan.

ENCLOSURE AND DITCHES

The enclosure measured 65–69m east–west by 38–44m north–south, being wider towards the west (Fig. 1). There was an entrance approximately midway along the southern side, the ditches on either side being misaligned by approximately 2m; that to the east (5015) turned slightly inwards,

and that to the west (5006) slightly outwards. As the latter continued outside the excavation, the precise arrangement of the entrance is unclear; it is possible, for example, that ditch 5006 was connected to a wider arrangement of ditches. The south-west corner of the enclosure lay outside the excavation, as did a 25m length of the northern side, and there may have been other entrances at these locations. The ditch of the enclosure's west side (5002) continued 8m past its north-west corner to join east-west ditch 5001.

While there was some variation in the dimensions of the enclosure ditches, they were in general between 0.7m and 1.8m wide, with moderately steep, straight sides and flat or slightly concave bases; ditch 5006 had a wide, shallow lip on its northern side. Up to four fills were recorded, and in places there was some evidence for re-cutting. However, the enclosure in its final form appears not to have been constructed as a single event. The eastern end of ditch 5015, for example, cut across the southern end of ditch 5016, which formed the enclosure's eastern side. In turn, ditch 5016 extended 3m further to the south, but at its other end terminated just short of ditch 5017, on the enclosure's north side. The relationship between the ditches on the western side of the enclosure, lying outside the excavation at the south-west corner, and obscured by a pit or tree-throw hole at the northwest corner, is also unclear.

Ditch 5001, which had a V-shaped profile towards the base, but a wide shallow lip on either side, continued westward out of the excavation area, but at the east end either terminated or turned to the north or south within the unexcavated area along the hedge line.

A less regular arrangement of ditches lay just north of the enclosure's north-east corner. While most of these ditches contained no datable finds (e.g. 5018, 5020, 5021, 5022, 5023), the majority shared the main axes of the enclosure and are considered likely to be broadly contemporary, although possibly representing more than one phase of activity. One boundary, comprising ditches 5018 and 5020, followed a curving line north then north-east away from the enclosure's northern side. There were also a number of short lengths of ditch (e.g. 5019, 5032, 5033 and 5040) in the same area.

The finds from the ditches were dominated by Romano-British pottery, with only small quantities of other materials – animal bone, fired clay, burnt flint and worked flint (probably residual) – being recovered. A single large fragment (1327g) of a Greensand rotary quern came from ditch 5006.

However, the finds were not evenly distributed within the ditches. The largest quantities came from features towards the west of the site, probably reflecting the proximity of the settlement, and only small quantities from the east; the only finds from ditch 5016, for example, were nine sherds (27g) of pottery. Where larger quantities of finds were recovered, they appeared to be concentrated at particular locations. For example, over 2.5kg of pottery (19% of all the Romano-British pottery from the site) was recovered from a single section (143) of ditch 5001. There was also a large deposit of pottery (910g) at the western extent of ditch 5006 on the southern side of the enclosure (section 415).

The interior of the enclosure was largely empty, except at its western end, where there was a spread of features - pits, post-holes and burnt features which appear to represent a continuation of the settlement features to the west of ditch 5002 (Fig. 2). This may indicate that the settlement pre-dated the construction of the enclosure; this is also suggested by the atypical alignment of ditch 5004 within the settlement, and the close proximity of the entrance of Structure 1 (below) to ditch 5002. Two features (possible pits or tree-throw holes 128 and 130) cut the ditch, while another two (pit 231, and pit or tree-throw hole 299) were cut by it. It is noticeable, however, that a similar spread of undated features east of the enclosure extends up to its eastern side (ditch 5016), but not into the enclosure, perhaps indicating that these post-dated the enclosure's construction (Fig. 1).

SETTLEMENT

The settlement area is marked by a number of lengths of curved gully representing drip gullies of round-houses, within and among which were a number of pits and hearths. The curved gullies all lay within the area bounded to the north by ditch 5001 and to the east by ditch 5002 (Fig. 2).

Structure 1

The most complete, albeit the smallest, structure was represented by gully 5010, which averaged 0.7m wide and was up to 0.3m deep, with moderately steep sides and a wide, slightly concave base. The gully was not in fact circular, but had a slightly hexagonal shape 6.3m wide internally, with a narrow entrance (only 0.8m wide) in the middle of its eastern side. The gully produced 265 sherds of Romano-British pottery (weighing 1717g – 13% by weight of all the pottery from the site); of the sherds whose location was recorded (about one quarter was only recorded as coming from the gully's surface),

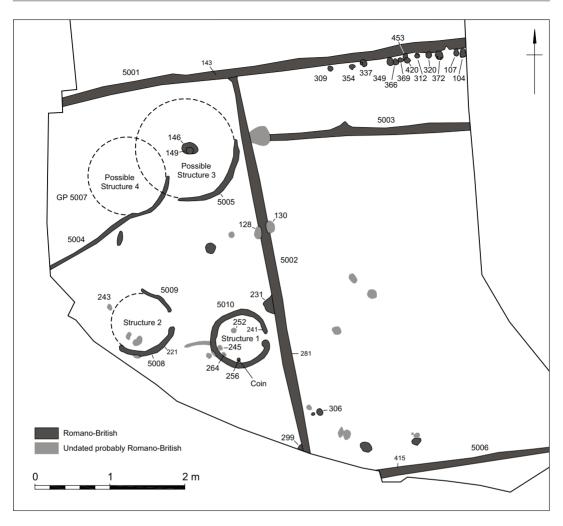


Fig. 2. Plan of settlement area.

over 98% by weight came from the two gully terminals; two hobnails also came from one of the terminals. The only other finds were fragments of fired clay (30g).

There were four shallow features (small pits or post-holes) inside the structure, three of them (245, 256 and 264) on the edge of the gully to the southwest, and one (252) just north of centre. Feature 252 contained no finds, while feature 264, which contained only fired clay (317g), may pre-date the gully, since the fired clay had slumped into the gully which cut its edge. The finds from the other two features were atypical – not only was there no pottery (despite the quantity in the gully), but also they included the only coin found on the site, an early Roman *as/dupondius* from feature 256, and the only unburnt animal bone, a tooth (not identified to species) from feature 245.

The form of Structure 1 and the distinctive character of some of the deposits within its terminals and internal features suggest that it may have had a non-domestic function, perhaps as a shrine, with some of the deposited materials possibly votive in character.

Structure 2

A less complete, but slightly larger, structure is represented by gullies 5008 and 5009, which appear

to form the eastern part of a round-house 7.8m in internal diameter, with a 2m wide entrance at the east. It appears that the western half of the structure had been destroyed by ploughing or other disturbance, although gully 5009 had an irregular, outward-curving line at the west which could indicate that this structure had some other shape. The gullies were of similar dimensions to gully 5010, but contained less pottery (35 sherds, 351g); they also produced another hobnail, and a fragment of burnt animal bone. Two small pits lay within the structure's likely interior, but neither contained finds.

Possible Structure 3

A third possible structure is represented by a 13m length of gully (5005) forming the south-eastern arc of a circle 13.3m in internal diameter. This, too, appears to have been truncated around the rest of the circuit, as it petered out at either end (although it is possible that it was never more than a length of curved gully). As there was no break in the gully, any entrance must have been located somewhere other than in the south-eastern quadrant. The only internal feature was a possible hearth at the centre of the postulated circle: an oval, flat-based pit (146), 1.6m by 2.2m and 0.3m deep, containing two unburnt fills, into which was cut a smaller feature (149), 1m in diameter and of similar depth. Feature 149 contained 5.4kg of burnt flint (58% of all the burnt flint from the site), as well as small quantities of Romano-British pottery and fired clay, suggesting some specific function, either domestic (heating, cooking) or possibly craft-related.

Gully/ditch 5004, possible Structure 4

Extending into the interior of possible Structure 3 was gully/ditch 5004, the north-eastern end of which followed a regular curve along the possible south-eastern arc of a circle with a projected diameter of 10m. At the southern limit of this circle, the gully/ditch, which had a moderately steep V-shaped profile, turned and continued in a straight line towards the south-west. It is possible that two separate features are represented – the gully of a fourth structure, and a ditch possibly forming an internal division within the settlement (though it is noticeable that its orientation does not conform to those of the enclosure and associated ditches). Alternatively it may simply be a single ditch deliberately curved, for some unknown reason, at

one end. It produced only two sherds of Romano-British pottery.

Other features within the settlement area

If gully/ditch 5004 did represent, either in part or in whole, an internal boundary within the settlement, it is notable that all the features around the structures (apart from pit/hearth 146/149), lie to its south-east. Many of them were pits, of variable size and probable function, although generally containing few, if any, finds. Some of the pits contained significant quantities of burnt material (burnt flint, fired clay), possibly dumped in them, while other features were identifiable from in situ burning as hearths. They included a small, highly burnt, oval depression (243) that lay just west of the projected line of Structure 2; if this structure was a round-house, this hearth is unlikely to be contemporary with it. Several other burnt features lay within the western end of the enclosure.

Features east of the enclosure

There was a thin scatter of small discrete features, as well as a number of short lengths of ditch/gully (e.g. 5027, 5028, 5029), to the east of the enclosure (Fig. 1). The fact that no such features were recorded west of ditch 5016 might indicate that these features postdate the ditch's (and the enclosure's) construction - although this is a slightly tenuous conclusion to draw. These features included a number of post-holes too thinly distributed to suggest any recognisable structures, one of which (504) had a burnt fill containing charcoal which probably derived from a post of mature oak. There were also a number of pits, some of whose fills contained burnt material, and others, such as feature 514, whose in situ burning indicates their use as some kind of oven/hearth.

ROW OF OVENS (AND ASSOCIATED FEATURES)

While some of the burnt material recovered from the settlement features may derive from domestic activities, such as heating and cooking, it is very likely that a proportion of it also derived from some form of agricultural/industrial process, which is represented by a row of ovens (and associated features) that were arranged in a line along the south side of ditch 5001, to the north of the enclosure (Fig. 2). They may have extended some distance further to the east, outside the excavated area along the extant hedge line, but, like the ditch, not as far as

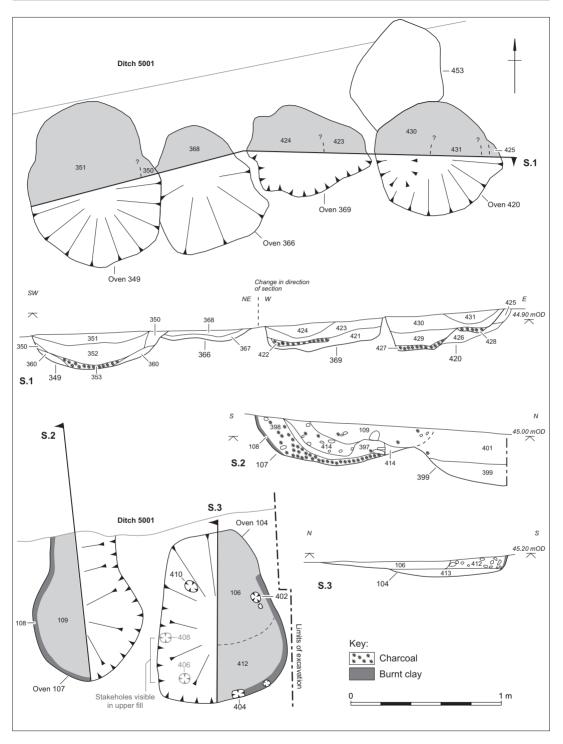


Fig. 3. Plans and section of selected ovens.

the eastern part of the site. Some were constructed immediately adjacent to each other (Fig. 3), others were spaced up to 2.6m apart. Moreover, some overlapped slightly with the edge of the ditch, while others were separated from it by a narrow gap (although this gap may be due to the truncation of both the ditch and the ovens). Oven 420 was cut on its northern edge by a shallow, unburnt pit (453) (Fig. 3).

While they are of broadly similar size, between 0.7m and 1.2m wide, and most of them were readily recognisable by the red heat discolouration of their sides and the often red and ashy grey hues of their fills, the ovens display significant variation in their shapes and profiles, suggesting that they had a variety of functions. In many, a fired clay 'lining' was recorded, but this was probably just the natural clay on the sides and base that had been baked hard during repeated firings, rather than an applied lining (Fig. 3). Many contained charcoal-rich layers lying immediately above the burnt natural, overlain by fills containing high levels of red, burnt soil and clay.

Oven 354

The feature with the most complex and distinctive form was feature 354, the second oven from the west. As far as could be established, it comprised at the base a small, slightly hourglass-shaped cut (354) 0.5m long, aligned approximately north-south, which was 0.25–0.3m wide at the ends, narrowing to 0.2m at the centre. This had near-vertical sides rising 0.3m from a flat base, above which they levelled on to a flat ledge 0.1m wide, before rising a further 0.1m, again near-vertically, to the top of the cut. It is clear that the upper part of the cut, at least, was heavily burnt, the baking and reddening of the clay extending 0.1m into the natural.

The cut was filled to the approximate level of the ledge with predominantly yellow sandy clay (359), apparently unburnt but containing occasional flecks of charcoal. This was overlain, first, by a layer of red, redeposited burnt soil (358), up to 0.13m thick, which extended over the ledge, then by a layer of soil (357) up to 0.11m thick, which again, although unburnt, was rich in charcoal (mixed species) and charred plant remains (including grains and chaff of hulled wheat and barley, and hazelnut shells). Covering the entire feature, and extending beyond its edges, was a compact layer, 1m in diameter and up to 0.07m thick, of pinkish burnt clay (356). This layer appears to be slightly domed, although it dipped down in the centre where it overlay the northern part of the cut. Despite its compact nature, this layer seems most likely to represent redeposited material (rather than burnt *in situ*), possibly from the oven's above-ground structure that has been compacted following its collapse or demolition.

This sequence of layers, if correct, is hard to explain, since the fills in the cut (at least the lower two – 359 and 358) appear to represent its deliberate infilling, following the oven's decommissioning. It is unclear why the oven should have been infilled in this generally rather ordered way, rather than just demolishing the above-ground elements into the cut.

Features 312, 372 and 104

Three of the features contained arrangements of stake-holes that were clearly associated with either their above-ground construction or their operation. Two of them (104 and 372) had similarly shallow profiles, quite different from the other features in the row. Feature 104 measured 0.9m by 1.1m, and was 0.1m deep, with steep sides at the south and a largely flat base rising up gradually to its northern edge; the base displayed evidence of *in situ* heating (Figs 3 and 4). In the central and southern part there was a roughly circular arrangement of at least five stake-holes (and two other smaller possible stake-holes). Feature 372 measured 1m by 1.3m and 0.1m deep, and had eight stake-holes in the southern half of its base, as well as one at either end just



Fig. 4. Ovens 104 and 107, and a section through ditch 5001, viewed from the north (scale: 1m).

outside the cut; here too there was evidence of *in situ* heating.

Feature 312 was quite different, measuring 0.6m in diameter and 0.3m deep, with a curved profile, and having two stake-holes in its base, 0.4m apart on its northern edge. Although its fill contained flecks of charcoal and fragments of burnt clay, as well as a very large quantity of charred plant remains (mainly wheat chaff), the feature displayed no signs of *in situ* burning. It was one of only two features in this row (the other being oven 349) that contained pottery (six sherds, weighing 34g).

DISCUSSION

These features were clearly positioned in relation to an existing ditch, and while this may simply indicate the spatial organisation of different activities on the site, possibly reflecting concerns for safety, comfort or convenience, their location on the southern side of ditch 5001 may have facilitated their use, for example by providing a convenient level from which to operate them, or as a receptacle for oven waste. There were no indications of a bank on the south side of the ditch, but it is possible that these features could have been built into such a bank. In a number of the excavated sections of the ditch adjacent to these features (but not all) there was a layer of charcoal and other burnt material lying at around mid-level within the ditch, sloping down from southern side, i.e. deposited when the ditch was approximately half silted up. This layer was relatively thin, suggesting that the ditch was not used consistently for this purpose, although possible recuts of the ditch might indicate that this material was periodically cleaned out of it.

As they survived, only two of these features intersected – feature 349 cutting the western edge of feature 366 – and it is unclear to what extent the row represents multiple features in contemporary use, or a sequence of features replaced over time. In comparison with more substantial, masonry corndrying ovens, these features probably had a limited lifespan before needing repair or replacement.

It is clear that not all the features in the row

had the same function. While most showed clear signs of *in situ* burning, three (312, 366 and 420) appeared to be largely unburnt. Two of those that were burnt (104 and 372) had wide, shallow profiles and arrangements of stake-holes in their bases, and it is possible that both of them were paired with adjacent deeper ovens to their immediate west (e.g. Fig. 4). The hourglass-shaped structure of feature 354 has no parallels on the site.

It is also notable that there was a significant mismatch between those features with the richest charred plant assemblages and those with the richest charcoal assemblages, only oven 320 and feature 312 containing large quantities of both (*see* Tables 3 and 4 below).

In none of these truncated features was their purpose or their method of operation clear from their form. Certain potential functions can be ruled out. The absence of slag in the samples from these features indicates that they were not used in metalworking, while the absence of pottery kiln waste rules out pottery manufacture. The presence of charred cereal remains suggests processing of crops, although there is more than one way in which such remains could end up in these features. Grain, in large quantities, may have been dried in ovens after being harvested and before being stored as semi-clean spikelets (see below), and some of it may have been accidentally burnt. Grain taken out of storage, in relatively small quantities, may have been parched in ovens to facilitate de-husking, again resulting in some accidental charring. Finally, the waste from such de-husking, which would have been dominated by chaff but including some grain (like the assemblages from some of these ovens, see below), may have been used as tinder and/or fuel in the ovens, either for these grain-processing activities, or for uses unrelated to them. The latter could have included, for example, cooking and baking, smoking or curing meats, malting grain (although no sprouted grain was identified at the site), or other activities using fire such as production of charcoal.

THE FINDS

By Lorraine Mepham and Nicholas Cooke

METALWORK

A heavily worn and corroded copper alloy coin, recovered from pit 256 inside Structure 1, is probably an *as/dupondius* of the early Romano-British period, its identification resting solely in the size and form of its flan. *Asses* and *dupondii* were small denomination copper alloy coins that formed part of

The excavation produced a relatively small finds assemblage, dominated by Romano-British pottery and burnt/fired clay from the ovens (Table 1).

| Material type | No. | Wt. (g) |
|---------------------------|------|---------|
| Metalwork | 4 | - |
| Coin | 1 | - |
| Iron | 5 | - |
| Pottery | 1506 | 13,624 |
| Prehistoric | 1 | 19 |
| Romano-British | 1503 | 13,566 |
| Post-medieval | 2 | 49 |
| Fired clay | 2478 | 15,306 |
| Stone | 1 | 1327 |
| Flint | 15 | 125 |
| Burnt flint | 420 | 9251 |
| Animal bone | 20 | 12 |
| Ceramic building material | 19 | 582 |
| Glass | 5 | 19 |

Table 1. Finds totals by material type.

the revised Roman coinage system introduced by Augustus. This coin could have been in circulation from the 1st to late 3rd centuries AD.

Six heavily corroded iron objects were recovered, three of them identifiable as hobnails (two from the gully of Structure 1, and one from the gully of Structure 2). The other three are unidentifiable, even after X-radiography; two may be nails, while the third is a larger, curved object.

POTTERY

The condition of the pottery is poor, probably due largely to acidic post-depositional soil conditions. Sherds have suffered a high degree of surface and edge abrasion, leading to partial or total loss of surface slips or slurries. Most of the pottery was Romano-British. A single undiagnostic body sherd in a coarse, flint-tempered fabric of probable Late Bronze Age date, and probably residual, was recovered from a short length of undated ditch (721) at the north-east of the site; two post-medieval sherds were also recovered. Only the Romano-British pottery is considered here.

The assemblage was quantified by broad ware group (e.g. greyware, grog-tempered ware), or known ware type (e.g. samian) (Table 2). It consists largely of sherds in two broad coarseware groups – handmade grog-tempered and wheelthrown sandy greywares – both of which are likely to be mostly of local manufacture, although almost certainly from several sources. Possible greyware sources include the Alice Holt production centre on the Surrey/Hampshire border, and Coldwaltham, Hardham, Pulborough and Storrington in west Sussex (Swan 1984).

Grog-tempered wares originated in the Late Iron Age, probably in the 1st century BC; they are the most common types encountered on Late Iron Age sites in mid and east Sussex. Post-conquest grog-tempered wares in the region are often termed 'East Sussex ware', and they continued to be made in East Sussex until at least the 4th century (Green 1980).

The range of vessel forms in both coarseware types is extremely limited – most are everted rim jars, some with a slight neck cordon, and a few with corrugated shoulders. There are a very few convex-sided dishes and probable lids. There is one Table 2. Romano-British pottery totals by ware type.

| Ware type | No. sherds | Wt. (g) |
|--------------------|------------|---------|
| Samian | 43 | 286 |
| Amphora | 10 | 971 |
| Grog-tempered ware | 967 | 9053 |
| Greyware | 451 | 2993 |
| Whiteware | 12 | 62 |
| Oxidised ware | 19 | 120 |
| Misc mortaria | 1 | 71 |
| sub-total RB | 1503 | 13,556 |
| Total | 1503 | 13,566 |

example of a sharply carinated jar, but otherwise profiles are uncertain. Apart from the neck cordons, and lattice burnish on one greyware jar, no decoration was noted.

Other ware types are present in much smaller quantities, of which samian is the most common. Only one vessel form could be identified, a form 38 flanged bowl from ditch 5001. There are ten sherds of Dressel 20 amphorae, 12 sherds of whiteware, including the cupped rim and neck of a flagon, all from ditch 5001, 19 of oxidised ware (no identifiable vessel forms), and one mortarium, the latter with a beaded and flanged rim, in a fine, dense, orange-red fabric with flint and ironstone grits (from gully 5009 of Structure 2).

Overall, the vessel forms are not particularly chronologically distinctive, although the carinated jar is paralleled at Wiggonholt and dated there to AD 70–150 (Evans 1974, fig. 13, 76–80). This, together with the presence of samian and the whiteware flagon (a late 1st or 2nd century form) and the complete absence of clearly late wares and forms (e.g. British finewares, dropped flange bowls), suggests that the focus of the assemblage lies in the early Romano-British period (later 1st or 2nd century). The homogeneity of the assemblage also suggests that it reflects activity over a relatively restricted time span within this potential date range. Certainly no ceramic sequence is discernible.

OTHER FINDS

The fired clay consists entirely of small, abraded and featureless fragments in soft, friable fabrics with few macroscopically visible inclusions. Most of the material came from the ovens along ditch 5001, probably consisting of the burnt natural forming the sides and base of these features, and their above-ground structural elements; the distribution across the rest of the site was fairly low.

The only piece of worked stone was the upper stone of a Greensand rotary quern, probably from the Lodsworth production centre, recovered from enclosure ditch 5003.

The worked flint assemblage includes three pieces of Mesolithic date: a blade core and core fragment from the topsoil, and a backed bladelet from ditch 5040. The rest of the assemblage consists of undiagnostic waste flakes.

Burnt, unworked flint was recovered as a low-level scatter across the site, although more frequent in the ovens and other burnt features. It occurred in significant quantities (5.4kg) only in the central hearth (149) in Structure 3. This material is intrinsically undatable, and while often taken as an indicator of prehistoric activity, here it is directly associated with the Romano-British activity on the site. Animal bone comprised 20 very small fragments, unidentifiable to species, almost all of which were burnt.

All the ceramic building material is of medieval or postmedieval date, and consists of fragments of roof tile and brick. The glass recovered is also of post-medieval date, and includes both vessel and window.

ENVIRONMENTAL EVIDENCE

By Catherine Barnett, Sarah F. Wyles and Chris J. Stevens Following the assessment of 62 bulk samples from the site, 12 wood charcoal assemblages and 8 charred plant assemblages

Table 3. Charred plant remains.

were chosen for full analysis. Standard methods were used for sample preparation and identification, and plant nomenclature is according to Stace (1997) (see the project archive for standard methods, assessment and analysis archive reports).

CHARRED PLANT REMAINS

The charred plant assemblages, from one ditch (5002) and seven oven-related samples, were dominated by cereal remains, with only small quantities of weed seeds and other plant remains recorded. Grains of hulled wheat – emmer or spelt (*Triticum dicoccum/spelta*) – were present in all, those from oven 354 being most numerous. Barley (*Hordeum vulgare*) grains

| Table 5. Charled plant remains. | Feature type | Ditch 5002 | | | | | | | | | |
|---|----------------------|------------|-----|-----|-----|-----|-----|-----|------|--|--|
| | Cut | 281 | 349 | 420 | 320 | 337 | 354 | 312 | | | |
| | Context | 282 | 352 | 427 | 321 | 339 | 357 | 313 | 313 | | |
| | Sample | 12 | 24 | 62 | 19 | 28 | 22 | 16 | 50 | | |
| | Vol (l) | 40 | 23 | 2 | 40 | 10 | 5 | 18 | 16 | | |
| | Flot size (ml) | 1580 | 130 | 35 | 225 | 50 | 100 | 150 | 175 | | |
| Cereals | | | | | | | | | | | |
| Hordeum vulgare L. sl (grain) | barley | 3 | - | - | - | - | 3 | - | - | | |
| Hordeum vulgare L. sl (rachis frag) | barley | - | - | - | - | - | - | 2 | 3 | | |
| Hordeum vulgare L. sl (basal rachis frag) | barley | - | - | - | - | - | - | 1 | 1 | | |
| Triticum spelta L. (glume bases) | spelt wheat | 2 | 45 | 52 | 103 | 17 | 69 | 112 | 787 | | |
| Triticum spelta L. (spikelet fork) | spelt wheat | - | - | 3 | - | 2 | 1 | - | 5 | | |
| Triticum spelta L. (basal rachis) | spelt wheat | - | 1 | 1 | 1 | - | - | - | - | | |
| Triticum dicoccum/spelta (grain) | emmer/spelt wheat | 3 | 10 | 15 | 11 | 1 | 21 | 3 | 16 | | |
| Triticum dicoccum/spelta (spikelet fork) | emmer/spelt wheat | 1 | 2 | 6 | 52 | 3 | 12 | 18 | 67 | | |
| Triticum dicoccum/spelta (glume bases) | emmer/spelt wheat | 8 | 86 | 459 | 642 | 33 | 502 | 378 | 3127 | | |
| Cereal indet. (grains) | cereal | 3 | 5 | 18 | 7 | - | 13 | 6 | 12 | | |
| Cereal frag. (est. whole grains) | cereal | 3 | 4 | 9 | 12 | 2 | 17 | 12 | 44 | | |
| Other species | | | | | | | | | | | |
| Ranunculus sp. | buttercup | - | 1 | - | 1 | 1 | - | - | - | | |
| Papaver dubium L. | long-headed poppy | - | - | - | - | - | - | - | 2 | | |
| Corylus avellana L. (fragments) | hazel | 2 | - | 1 | - | - | 14 | - | - | | |
| Chenopodium sp. | goosefoot | - | 1 | 1 | - | - | - | - | - | | |
| Atriplex sp. L. | oraches | - | - | 1 | - | - | - | - | - | | |
| Rumex sp. L. | docks | - | 4 | 3 | 1 | - | 1 | - | - | | |
| Brassica sp. L. | brassica | - | - | - | - | - | - | 1 | - | | |
| Crataegus monogyna Jacq. | hawthorn | - | - | - | - | - | - | 1 | - | | |
| Vicia L./Lathyrus sp. L. | vetch/pea | - | - | - | 1 | - | - | - | - | | |
| Centaurea L. | knapweed | - | 1 | - | - | - | - | - | - | | |
| Tripleurospermum inodorum (L.) Sch. Bip. | scentless mayweed | - | - | 6 | - | - | - | - | - | | |
| Carex sp. L. trigonous | sedge trigonous seed | 1 | - | - | - | - | - | 3 | - | | |
| Carex sp. L. flat | sedge flat seed | - | - | - | - | - | - | 1 | - | | |
| Avena sp. L. (grain) | oat grain | - | 2 | 7 | 6 | - | 8 | - | - | | |
| Avena sp. L. (awn) | oat awn | - | - | 1 | - | - | 4 | - | - | | |
| Sparganium erectum L. | branched bur-reed | - | - | - | - | - | 1 | 1 | 3 | | |
| Parenchyma | | - | - | 5 | - | - | - | - | - | | |
| Bud | | 1 | - | - | - | - | - | - | - | | |

were recorded only in the ditch and in oven 354, and rachis fragments recorded from feature 312. Glume fragments of spelt (*Triticum spelta*) and emmer/spelt were present in all samples, but there was no clear evidence of emmer (*Triticum dicoccum*). Hulled wheat glume fragments were more numerous than hulled wheat grain fragments, the ratios ranging from under 4:1 in the ditch to 249:1 in feature 312.

Fragments of hazelnut (*Corylus avellana*) shell were recorded in three features (feature 312, oven 420 and ditch 5002), and a fruit of hawthorn (*Crataegus monogyna*) in feature 312. Weed seeds were present only in small numbers; they included oat (*Avena* sp.), dock (*Rumex* sp.), scentless mayweed (*Tripleurospermum inodorum*), long-headed poppy (*Papaver dubium*) and buttercup (*Ranunculus* sp.), all of which are typical of waste, rough or cultivated ground. A few seeds were from species indicative of wetter environments, such as branched bur-reed (*Sparganium erectum*) and sedge (*Carex* spp.).

WOOD CHARCOAL

As shown in Table 4, the charcoal from Structures 1 and 2 and ditch 5002 proved to be similar, with oak (Quercus sp.) dominant at 41-79%, and substantial quantities of birch (Betula sp.) at 9-14%. Pomoideae fruit roundwood and mature hazel (Corylus avellana) were both common, while lesser types included ash (Fraxinus excelsior), alder (Alnus glutinosa), possible elm (cf. Ulmus sp.), holly twigwood (Ilex aquifoilum), bird cherry (Prunus cf. avium), blackthorn (Prunus cf. spinosa) and willow/aspen roundwood (Salix/Populus sp.). Oak roundwood cut at 5-13 years was well represented in the ditch and in Structure 1, but the oak in Structure 2 was mostly (if not all) mature. Together, a minimum of ten taxa are represented in these three features, and clearly roundwood was heavily used in addition to mature wood. Pit 306, in the area of settlement at the west of the site, proved species-poor despite the exceptional size of the charcoal assemblage; oak was heavily dominant, comprising mainly large pieces of mature wood, and there were lesser amounts of hazel, birch, and Pomoideae roundwood.

In the eastern spread of settlement features, feature 514 contained 96% mature oak, mainly sap wood, plus lesser amounts of hazel roundwood and the only representation of a non-native type, a piece of barberry twigwood (*Berberis vulgaris*). The large charcoal assemblage from nearby post-hole 504 proved to be solely of large pieces of mature oak, probably from a structural oak timber burnt *in situ*; many pieces were glassy and vitrified, indicating a very high temperature of burn (>8000°C) according to the experimental work of Prior and Alvin (1983).

Six of the ovens (and associated features) on the south side of ditch 5001 were analysed. The assemblages varied in size and condition, but all displayed the same basic composition, with large numbers of oak and hazel fragments, small rodlike roundwood being dominant. Between them they also contained a minimum of a further ten taxa, oven 320 having the most varied assemblage. Birch appeared in four of these features, birch roundwood cut at 5–10 years forming 21% of the assemblage in oven 320, while birch cut at approximately 20 years accounted for 30% of the assemblage in oven 107. Small numbers of dogwood (*Cornus* sp.), willow/poplar and holly fragments occurred in two samples, while alder, ash, ivy (*Hedera helix*), Pomoideae, elder (*Sambucus nigra*) and hornbeam (*Carpinus betulus*) occurred in one each. The volume of roundwood charcoal found allows some consideration of the age of cutting for several tree types. Harvesting at 5–10 years was most common for hazel and oak, and also for willow/aspen and Pomoideae. However, younger or older roundwood was occasionally taken, 11–15 year old oak being common; large numbers of juvenile oak fragments (<5 years) were noted in feature 312 and hearth 309.

ENVIRONMENTAL DISCUSSION

Evidence relating to arable cultivation and crop processing is provided by the charred plant assemblages, although on their own the remains cannot directly indicate whether the inhabitants were engaged in growing the crops. The dominance of larger weed seeds suggests storage of semi-clean spikelets after removal of the smaller weed seeds and straw fragments (Stevens 2003). Since the assemblages are rich in glumes, they appear to represent the by-products of dehusking, e.g. removal of the glumes (Hillman 1981; 1984).

Large quantities of chaff have generally been associated with Romano-British corn-dryers (Van der Veen 1989), with the probability that the dehusked glumes were used in part as fuel. The assemblages from Theobalds Road have some similarity to the plant remains recovered from a possible late Romano-British corn-drying oven at Innovation Drive, Burgess Hill (Hinton 1999), where chaff fragments again outnumbered those of grain, albeit not in such large numbers as in some of the Theobalds Road samples. Although the main cereal from the possible corn-drying oven at Innovation Drive was spelt wheat, the assemblage also included a small quantity of emmer, which was not identified at Theobalds Road.

The charred remains give some indication of the wider environment, in the main an exploited landscape of mixed secondary open woodland, with some areas of arable cultivation. Most of the charcoal (from a minimum of 16 taxa) was from deciduous shrubs and trees of open woodland and hedgerows that will grow together on a variety of soil types. Wetland taxa were present but in small numbers, and alder and willow/aspen wood, and bur-reed and sedge seeds, were occasionally encountered. Hawthorn fruit and wood were identified, which, together with the birch, indicates exploitation of localised scrubland. The possible presence of a non-native type (barberry) is of interest botanically, since it is believed to have become naturalised after being introduced in antiquity (Stace 1997, 97); it may have been deliberately planted at or near the site for hedging.

Despite the use of a variety of woody types, from a range of habitats, there was clearly also woodland management, including coppicing at least of hazel and oak, if not also of birch, willow and alder. Given their relatively consistent ages when cut, oak and hazel were apparently coppiced in a regular rotation, although other taxa may have been cut on a more casual basis. Such rotation encourages production of dense rod-like stems, increasing the productivity (and often lifespan) of the managed tree, and the predictability of supply where fuel requirements are high (Edlin 1949; Buckley 1992). For example, intensive use of coppiced hazel and oak has been noted in the pottery kilns of the Alice Holt pottery industry, at Alice Holt and Frith End (Birbeck *et al.* 2008; Barnett 2012).

The use of lesser types, including ash, ivy, holly, Pomoideae, cherry type and willow/aspen, was probably both as kindling and perhaps to achieve different types/heat of burn. Just five taxa – oak, field maple, hazel, Pomoideae and cherry type –

| Salix/Populus sp. Sambucus nigra cf. Ulmus sp. Unidentified Total no frags used Onne tsg of cond wood | 11 100 Some oak vitrified. * 4–8 years, ** | | 100 Some large fragments. * <i>Crataegus</i> type | - 1 2 100 Some large fragments, all heavily Fe stained | 200 Some large fragments. * 3–20 years | 200 Large clean sample. Oak dominated by mature sapwood | 100 Large pieces, several vitrified | | - 1 - 1 1 - 100 Large pieces. * 20 years, ** 5 years, *** incl 18 cut at: 5-10 years, 5 cut at 11-15 years | 7 70 Small fragmentary assemblage, some vitrified, others mineralised | 3 – – – 100 Some very large fragments.* 5-10 years | 3 – – 8 28 Small assemblage, most mineral- encrusted and friable. | 11 - - 100 Moderate, well preserved assemblage. * 6-8 years, ** young, up to 7 years | * 5 years+ inc slow grown, **inc 38 cut |
|--|--|------------|---|--|--|---|-------------------------------------|---|--|---|--|--|--|---|
| Prunus sp. cf. spinosa Prunus sp. cf. avium | 3 | | 3 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 |
| Pomoideae | S | | 5* | I | 10 R | I | I | | 1 | 3 | I | I | I | 1 |
| Quercus sp. | 26 15 D*** | VI CT | 65 14 R | 71 | 175 9 R* | 192 | 100 | | 55 R*** | 41 5 T | 51 | 5 7 R | 2 83 R** | 4 |
| xəll xəll | I | | 2 T | I | I | I | I | | 1 | 1 | 3 | I | I | 1 |
| xilən nrəhəH | I | | I | I | 1 | I | I | | 1 | I | 4 | I | I | I |
| excelsior Excelsior | 2 0 | 4 4 | 4 | 4 | I | I | I | | I | 1 | I | I | I | I |
| ανε]]α η α Corylus | 25 R* | 1 1 | I | 9 | 1 | 7 R | I | | 11 R** | 9 1T | 8 | 5 | 3 R* | 13 R* |
| .ds snuxo) | 1 | | I | I | I | I | 1 | 5001 | 1 | 1 | 1 | I | 1 | I |
| Carpinus betulus | I | | 1 | I | I | I | I | ditch 5001 | 1 | I | 9 | I | I | I |
| cf. Berberis vulgaris | I | | 1 | I | 1 | 2 | I | along | 1 | I | I | I | I | I |
| Betula sp. | 6 | - | 6 | 14 | S | 1 | I | tures | 30 R* | ŝ | 21* | I | - | 1 |
| n20111182111A | 1 | | 1 | - | 1 | 1 | 1 | 1 feat | R* 3 | T | 1 | I | I | 1 |
| Eil | 282 | - | 242 | 222 | 305 | 516 | 505 | elatea | 398 | 352 | 321 | 357 | 313 | 311 |
| Feature 1 | Enclosure | Settlement | | Structure 2, 2 cut 221 | Pit 306 | Feature 514 | Post-hole 5 504 | Ovens and related features along | Oven 107 | Oven 349 3 | Oven 320 | Oven 354 3 | Oven 312 | Oven 309 |

were represented in six Romano-British features at Innovation Drive, Burgess Hill (Seel 1999); this could in part be due poor preservation and the number of pieces examined, but may also indicate a greater focus on a limited set of habitats and type.

It is suggested that the broad uniformity of the charcoal assemblages across all of the features at Theobalds Road indicates that the charcoal and charred plant remains derive

CONCLUSIONS

At first glance this site has all the characteristics of a small early Romano-British mixed agricultural farmstead, with a number of round-houses and hearths, cereal cultivation indicated by the charred remains from possible corn-drying ovens, an enclosure possibly used for livestock control (although very little animal bone was recovered, probably due to the soil conditions), and a more extensive array of ditches reflecting the wider organisation of the agricultural landscape. The relatively large-scale use of ovens might be explained by the site's position close to the London–Portslade Roman road, and the opportunity it might have provided for supplying urban grain markets.

Although the site appears to have had a relatively brief period of occupation at the start of the Romano-British period (later 1st or 2nd century AD), it is clear that it saw some development over time. While the absence of any discernible pottery sequence prevents detailed phasing of the site, it is possible that the area of settlement at the west predated the laying out of the extensive ditch system. The atypical orientation of ditch 5004 may be related to an earlier layout and the distribution of these settlement features.

Closer examination, however, suggests that the site's interpretation may be more complex. For example, most features were significantly truncated, yet of all the suggested round-houses, Structure 1 not only had the best-preserved gully, but was also the smallest. At just over 6m wide internally it was probably too small to have been a domestic dwelling, yet it appears to have had a more substantial gully than possible Structure 3, which was at least double its size. It may be that its slightly rounded hexagonal shape simply reflects its method of construction – possibly built around a frame of six posts tied at their tops by a ring beam. However, it might also indicate some specific function. Although a number of Romanomainly from an associated set of activities. These appear to have been on a relatively large scale, requiring a predictable, managed woodland resource to exploit for fuel. Most of the charcoal was very well preserved, and very few pieces were vitrified or fissured, indicating careful management of temperature, and use of appropriately dried/cured wood, rather than any freshly cut, damp pieces.

British shrines are polygonal in form, such as the masonry Temple 2 at Chanctonbury Ring, West Sussex, which consisted of a cella with between 9 and 11 sides and a rectangular entrance chamber (Rudling 2001, 113), truly hexagonal structures are rare for this period. However, one of the buildings at the temple complex at Collyweston in Northamptonshire was hexagonal and 7m wide internally (Knocker 1965). The shape of Structure 1, its narrow entrance, the possible special deposits of pottery and the presence of hobnails in its entrance terminals, and the atypical finds from two of its internal features, including a coin, possibly a votive offering to ensure the prosperity of the settlement, all appear to set this building apart, perhaps as a shrine.

At some point the settlement area appears to have become constrained by the laying out of a rectilinear arrangement of ditches, some of which (in their final form) defined a subrectangular field or enclosure, perhaps a paddock, with others extending beyond the site. Although the ditches respected the positions of the round-house structures (if not all the probably associated features), the proximity of ditch 5002 to the entrance of Structure 1 may mean that this building was no longer in use after the ditch was dug, and the whole area of settlement may have undergone reorganisation. Certainly, the increasing spatial organisation of activity on the site, as represented by the laying out of the ditches, is reflected also in the positioning of the ovens on the southern edge of ditch 5001.

The ovens themselves also raise interesting questions. Even if most (if not all) were in contemporary use, the operation of such relatively small features may have amounted to no more than the output of a single typical masonry-built corndrying oven. Yet, even with the presence of charred cereal remains, it is far from certain that drying corn (either before storage or before de-husking) was the primary function of any of these ovens; the clear differences in form are a strong indication that they were used for more than one purpose.

While the wooded clays of the Weald may have been more suited to animal husbandry than arable farming (in contrast to the Chalk of the South Downs just 8km to the south of the site), this does not rule out the cultivation of fields around the site. However, it does raise the question of why a settlement at this location should have been so concerned with drying corn, if that is what these features were used for. Yet even if this settlement was not involved in arable cultivation (or only to a relatively small degree), it would certainly have consumed cereals, and therefore presumably have stored them (and ground them - using the rotary quern). When ready for consumption, the semi-clean spikelets may have been parched to facilitate de-husking, and, depending on the size of the settlement (whose extent was almost certainly larger than that exposed), this could have generated significant quantities of glume-rich waste containing some grain. This material may then have been used as tinder/fuel in the ovens, resulting in its charring.

Such an argument could be countered by pointing to the masonry corn-drying oven found in a similar landscape at Innovation Drive, Burgess Hill. However, local land-use may have changed significantly between the 1st century AD and the 4th (from when the latter feature appears to date); moreover, there remains some doubt as to whether it was indeed a corn-drying oven – no stoke-hole was identified, and there was no burnt deposit of the type usually associated with such features (Sawyer 1999, 56). Many of the other corn-drying ovens in Sussex have been located either on the Downs, such as Ranscombe Hill (Bedwin 1976) and Bullock Down (Rudling 1982), or on the coastal plain, as at Fishbourne (Rudkin 1986) and Angmering (Griffin forthcoming).

In summary, it has not been possible fully to characterise this relatively short-lived site, or all the activities undertaken on it. The evidence of animal husbandry relies on a specific interpretation of the organisation of the landscape by an array of ditches. Evidence for cereal cultivation is provided by the charred remains from some form of processing, but whether cultivation was undertaken by the site's occupants, or only its produce was consumed there, remains unclear. There are hints that one of the buildings within the settlement may have had some non-domestic, possibly religious function; if not, these hints, which include possible 'special deposits' in two pits and in the two gully terminals, may represent domestic ritual practices (Rudling 2008, 126). Finally, a range of activities requiring the use of ovens were undertaken in a designated area of the site, possibly including crop-processing and other food-related activities.

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