



ROMAN DERE STREET AND AN
ASSOCIATED ROADSIDE
SETTLEMENT

EAST OF GREEN HAMMERTON,
NORTH YORKSHIRE

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SUMMARY

A previously unknown Roman roadside settlement with pottery kilns was identified to the east of Green Hammerton during archaeological work connected with the installation of a water pipeline between Marton and Acomb Landing, North Yorkshire, in 2008–9. The investigations also confirmed the location and course of Dere Street Roman road towards York and the likely site of the Roman bridging point on the River Nidd. The roadside settlement site lay on the west bank of the Nidd, immediately to the north of the modern A59 primary road, and comprised a series of enclosures and buildings on either side of Dere Street over an area of c.5ha. A side road dated to an early phase of the settlement, as did three of four investigated roundhouses. Two later rectangular buildings, a roundhouse and three pottery kilns were located alongside the road and dated from the 3rd to 4th centuries AD. Two of the kilns were considered to be part of the small-scale, dispersed rural potting industry that produced Dales-type jars in gritty grey ware, an industry of which little is known in this part of Yorkshire.

The course of Roman Dere Street was exposed at four locations along the water pipeline route. It was evident that the current A59 road between Green Hammerton and Upper Poppleton followed the Roman alignment closely, only deviating from it at two river crossings. The alignment of the Roman road at Pool Lane suggested that the Roman bridging point on the Nidd was in a similar position to that occupied by an 18th-century bridge to the south of the modern road bridge. This section of the Roman road was also the best preserved, as the area had been under pasture rather than being cultivated farmland. The road at Pool Lane was defined by flanking ditches, which delineated a series of cobble and pebble layers, with evidence that the stone foundations were constructed on organic material, possibly brushwood.

Sections of the Roman road were exposed at three other locations (Skip Bridge Farm, Moor Monkton Moor and Shirbutt Closes), where it survived as a plough-damaged cobbled surface. A large midden deposit, which sealed three substantial ditches and a small number of other features, was recorded to the east of the Nidd at Gowlands. The accompanying artefacts suggested the presence of a high-status Roman period building in the near vicinity.

The project archive is held by York Museum Trust under the accession number YORYM2024.29. The report has been upload to the Archaeological Data Service via OASIS (OASIS ID: northern1-530994).

INTRODUCTION

In 2008–9, construction of a new pumping station and a water pipeline between Marton service reservoir, North Yorkshire, and Acomb Landing water treatment works, City of York, was accompanied by a programme of geophysical survey, archaeological excavation and monitoring (Fig. 1). The archaeological evaluation and mitigation work was managed by Northern Archaeological Associates for Laing O'Rourke on behalf of Yorkshire Water Services.

Geophysical survey identified a number of areas where archaeological excavation was required in advance of construction. In particular, interpretation of the geophysical survey data indicated a high concentration of archaeological features in Field 23, located at the junction of the A59 road with Pool Lane, near Green Hammerton (GSB Prospection 2007; 2008a; see Fig. 2). The former course of Dere Street was identified running north-west–south-east across the survey area (Fig. 3). A number of enclosures were also indicated, most of which appeared to be strip enclosures perpendicular to the Roman road, suggesting that they may have been contemporary with it. The northern boundaries of the enclosures on the north side of the road were constrained by the course of the River Nidd. Two further enclosures were broadly triangular and appeared to respect both the road and the route of a possible track running from the road towards the north-east. The track was identified on the ground as a hollow way. Other features were apparent inside the enclosed areas, but it was not possible to ascertain from the geophysical survey data alone whether they were associated with the enclosures or had resulted from activities associated with later, medieval agriculture, evidence of which was also interpreted from the geophysical data.

The excavation of the section of pipeline between an existing water main to the north of Whixley and another alongside the River Ouse near Acomb was monitored, which identified archaeological features in a further six fields (Fig. 1). The sequence of features interpreted from the geophysical survey data in Field 23 was found to continue to the west of Pool Lane (in Fields 21 and 22), and together the features were considered to constitute one 'site' (Pool Lane; Fig. 3). Investigation at Gowlands revealed a group of features dating to the Romano-British period, while at Skip Bridge Farm, Moor Monkton Moor and Shirbutt Closes plough-damaged remains of a cobbled surface were recorded, which were interpreted as elements of Dere Street.

BACKGROUND

DERE STREET

The road, which was identified at four locations in the pipeline route, is on an appropriate alignment to be understood as a section of the Roman road identified by Margary as Route 8a, or Dere Street (Margary 1967, 427–8). This road joined with the Roman route between Tadcaster and York (Margary Route 28c), just outside the area of the Roman city near Micklegate Bar, and a section of it was excavated on the north side of Blossom Street, on the west edge of the city in the 1950s (Wenham 1964, 524–53). Margary (1967) observed that the first three miles of the road from York were difficult to trace, and probably differed from the course of the modern road, which winds considerably. However, Margary also noted that the Roman alignment could be traced from Foss Bridge on a relatively straight course, reaching the River Nidd at a convenient crossing point near Kirk Hammerton. From this point, it was suggested that the road swung to the north through Green Hammerton, where it turned north-north-west and followed a single alignment to Aldborough (and beyond that to Hadrian's Wall, and thence into Scotland). The location and orientation of the road recorded at the Pool Lane site seems to concur with the route as described by Margary, as do the sections identified along the pipeline route to the east. Margary's Route 280, which he identified as Rudgate (*ibid.*), now an unclassified road running

through the village of Whixley, provided a southwards extension to Dere Street to the major road junction at Tadcaster.

ROMANO-BRITISH FIELD SYSTEMS

The North Yorkshire Historic Environment Record (HER) records a number of cropmarks suggesting Romano-British field systems at various points close to the Green Hammerton section of Dere Street. The cropmarks include a series of ditched enclosures north-east of Whixley and others to the south and west of Upper Poppleton. Geophysical survey identified further detail of some of the enclosures near Whixley (GSB 2007), but these were avoided by the pipeline construction and were not investigated further.

ROMANO-BRITISH SITES

The nearest previously recorded Romano-British site to Pool Lane is a villa at Wilstrop Hall, c.1.2km to the south (Fig. 1; Lawton 2003a, 6–8). The villa was located on high ground overlooking a bow in the River Nidd (SE 479 550). It was first discovered in 1975, and a small excavation revealed the remains of a bath-house, which had probably been robbed of its masonry during the medieval period, potentially by inhabitants of the nearby village. Further investigation was carried out in 1996, including fieldwalking, from which a quantity of pottery, tiles and *tesserae* was recovered. A geophysical survey took place over an area of 100m square, encompassing the focus of the remains found in 1975. Whilst a resistivity survey revealed no features, a magnetometer survey showed a rectilinear enclosure measuring 80m by 60m with a track along one side. The assemblage of pottery and six coins recovered from the ploughsoil indicated that the site was inhabited from the late 1st or early 2nd century AD until the first quarter of the 4th century. Archaeological remains dating to the Roman period have also been recorded in Green Hammerton, comprising an inhumation burial, a coffin, ditches, and occupation debris.

EXCAVATION RESULTS

The results of the archaeological excavations are discussed below by site, comprising settlement remains at Pool Lane and Gowlands, and sections of Roman road at Skip Bridge Farm, Moor Monkton Moor and Shirbutt Closes.

POOL LANE (FIELDS 21, 22 AND 23)

The site at Pool Lane lay 15km to the north-west of York and c.1km to the east of Green Hammerton (SE 481 562), which placed it approximately equidistant between York and Aldborough. The settlement was located to the immediate north of the A59 road, west of the River Nidd and either side of Pool Lane. The features recorded extended for 550m within the pipeline easement and included four roundhouses, evidence for two further timber-built structures, a road surface with associated side ditches, a series of enclosures, two or possibly three pottery kilns, a possible cist, and a cremation burial.

The site was located on low-lying ground at an elevation of between 13m and 16m above Ordnance Datum (aOD), with the highest ground to the north-west. The solid geology of the area of the site is recorded as Triassic and Permian sandstones of the Sherwood Sandstone Group and the drift as lacustrine clays, silts and sands with alluvium in the floodplain of the Nidd (British Geological Survey 2016). The area of excavation in Fields 21, 22 and 23 was governed by the pipeline route and formed a narrow strip across the Romano-British settlement (Fig. 3). Pottery from the three roundhouse gullies, and ditches in Fields 21 and 22 ranged in date from the Late Iron Age to the 3rd century AD and probably represented activity in the early Romano-British period. The finds recovered from features in Field 23 dated from the 3rd to the late 4th century, and possibly the early 5th century. Analysis of the limited stratigraphy in Field 23 suggested that the roundhouse, nearby cultivation trenches and a north-south fence-line and gullies to the east of the roundhouse pre-dated a series of large enclosure ditches. The pottery recovered from these features, however, suggested a broadly contemporary date in the 3rd to 4th century. The large ditches formed strip enclosures running perpendicular to and respecting a road, which was orientated north-west to south-east. In Field 23, the full extent of the boundaries was interpreted from the geophysical survey data, but this was not possible in Fields 21 and 22, where survey results were obscured by modern land drains.

ROUNDHOUSES AND ASSOCIATED FEATURES

In Field 22, there was evidence for two, or possibly three roundhouses, while the remains identified in Field 23 represented one roundhouse with two further possible ring gullies nearby.

The sections of curving gully identified in Field 22 potentially represented two (perhaps structural) gullies and a construction trench. Curved gully **2201** (Fig. 4) had an approximate internal diameter of 8m and measured 0.52m wide and between 0.10m and 0.25m deep. It terminated to the north-east, suggesting an entrance to the east. Five sherds of pottery were recovered from the fill of the gully. These comprised three sherds of pre-Roman Iron Age stone-tempered ware and two sherds of heavily abraded oxidised ware, attributed to the Romano-British period. Three internal postholes were identified, with an average diameter of 0.3m and an average depth of 0.12m, but no further internal features were noted.

Curved gully **2203** (Fig. 5) had similar dimensions to gully **2201**, with an opening to the east marked by two terminals. Its fill yielded eight abraded sherds from an Ebor pulley-rim flagon, dated to between AD120 and AD200. Two postholes were identified, one adjacent to the inside

of each terminal, the southern example of which (31) yielded half of an upper beehive quernstone (Fig. 41, no. 72).

Curved gully 2202 (Fig. 5) was located 3m to the north-west of gully 2203. It was difficult to ascertain its precise overall dimensions, as only a limited section was revealed, but it was apparently smaller than the other two gullies. The gully profile appeared to be consistent with that of a construction trench, being steep-sided with a relatively flat base, and measuring 0.35m wide by 0.12m deep. The gully terminated to the west, suggesting a possible entrance: the terminal was deeper (0.32m) than the rest of the gully, indicating that it may have accommodated a post. Twelve sherds of stone-tempered pre-Roman Iron Age pottery were recovered from the gully fill.

The largest and most complete roundhouse (420) at the Pool Lane site was located at the east end of Field 23 (Figs 6–8). The remains of the roundhouse comprised two concentric penannular gullies encircling 75 postholes, two larger pits and evidence for an internal division. No diagnostic finds were retrieved from the gullies. Feature 70/383 comprised a penannular gully, a little over half of which was exposed within the easement, with an internal diameter of c.16m and an entrance to the east. The average dimensions of the gully, which had a U-shaped profile, were 0.4m wide by 0.1m deep. A number of fire-cracked pebbles were found in one section and a fragment of a stone disc, which may have been used as a pot-lid, was recovered from the north-east terminal. Environmental samples from the feature contained charred heather stem fragments, which may result from use as fuel or in craftwork but might possibly have derived from a thatch or turf roof.

The second penannular gully (420) was located inside gully 70/383. It had an internal diameter of 12.5m and was located c.0.8m from gully 70/383. The average dimensions were 0.55m wide by 0.37m deep. There was evidence for a wattle wall (483) along the inner edge of the cut, which appeared as a distinct grey, silty clay deposit, averaging 0.15m wide by 0.20m deep, with a high frequency of charcoal flecks. The deposit was identified in seven of the nine sections excavated through gully 420 and was notably absent only in the two cuts adjacent to the entrance. The presence of possible wattles suggested that gully 420 represented the wall construction trench for the roundhouse. It had been back-filled with excavated natural clay, from which a single piece of fired clay was recovered.

Substantial pits (54 and 258) were located either side of the entrance. Each pit had a diameter of 2.5m, with a maximum depth of c. 0.75m, and appeared to have supported posts framing the doorway into the roundhouse. These posts appeared to have been replaced at least twice. One of the later postholes (254) in pit 258 contained a saddle quern, which had been reused as a post-pad (Fig 9). This can be compared to the deposition of a beehive quern in one of the postholes associated with curving gully 2203, perhaps suggesting structured deposition. A tuyère was recovered from the fill of secondary posthole 511, which may attest to iron-working in the area.

The 75 postholes inside the two concentric gullies were clustered around the inside of the construction trench and were considered to represent roof supports, which had been successively replaced over time. That none of the postholes appeared to be inter-cut might indicate that replacement was undertaken while the original posts were still in situ. Sixty of the postholes were excavated, but no datable finds were recovered from their fills.

Two large pits were located in the interior of the roundhouse. Pit 86 was irregular in plan and measured 0.85m by 0.87m with a maximum depth of 0.8m. It contained four distinct fills, the earliest and latest of which contained a high charcoal content. There was no evidence for in-situ

burning, as would be expected in a fire-pit, and it is possible that the pit was used for storage. The second pit (166) was oval in plan and measured 1.7m by 0.66m, with a maximum depth of 0.44m. It was filled by a mixed deposit of heat-reddened clay, grey sandy silt and black organic soil, from which a number of fire-cracked pebbles were recovered. It is possible that the feature represented a cooking pit, although it may have been a second storage pit that had been filled with cooking or fire debris.

A narrow, slightly curving slot (570) ran westwards for 8.5m from entrance posthole 258. It comprised a series of conjoined stakeholes, measuring up to 0.1m wide and 0.1m deep, and was presumed to have held an internal wattle wall that served to sub-divide the roundhouse into different zones. A substantial posthole (544) was located close to the west end of the slot and may have provided additional support. The posthole measured 0.62m by 0.3m by 0.24m deep and had evidence for a post-pipe (566). The wall slot was transected by S-shaped gully 562, which measured at least 6m long by 0.4m wide but no more than 0.05m deep. Its intersection with the construction gully of the roundhouse was located beyond the limits of excavation, and their contemporaneity could not be demonstrated.

A series of short, inter-cut sections of gully extending for c.8m, and perhaps representing another roundhouse, was situated adjacent to the southern limit of excavation. Gully 206 cut curving gully 383 and was truncated by a substantial enclosure ditch (313). It was 0.45m wide with a maximum depth of 0.2m. No diagnostic artefacts were recovered from it, although a number of fire-cracked pebbles were observed within the grey/brown silty clay fills. A further small section of curving gully (180) was located to the immediate north of gully 206; however, the relationship between the two could not be recorded, as their intersection was truncated by a more recent field drain. Gully 180 measured 0.5m wide by 0.2m deep and extended for 3.1m until it was truncated by gully 205, which followed the same course and was probably a recut of the former. Gully 205 extended for at least 1.5m, presumably continuing outside the area of excavation. It was filled by grey/brown silty clay, from which a quantity of fire-cracked pebbles was recovered. A sherd of East Yorkshire calcite-gritted ware pottery, dating to the 3rd to 4th century AD, was retrieved from the gully fill.

A number of features were identified to both the east and west of the roundhouse, including a series of narrow furrows, two gullies with a parallel fence-line, and a number of discrete pits. These features may have been contemporary with the roundhouse, being similarly truncated by later enclosure ditches. A series of 18 parallel furrows (141), which were considered to represent small-scale cultivation of crops, was located approximately 10m to the west of the roundhouse (Fig. 10). On average, the furrows extended for 16m and were 0.2m wide by 0.15m deep. They were filled by homogeneous grey silty clay. To the east of the roundhouse, a north-south fence-line (19) was identified, which comprised a shallow gully containing at least three postholes (21, 50 and 52) (Fig. 11). Four linear gullies (10, 14, 16 and 33) were identified to the west of fence-line 19, all of which ran parallel with it and were presumably intended to aid drainage of the area. Gullies 10 and 33 ran across the full width of the easement, while gullies 14 and 16 extended for only a few metres from the north limit of excavation. A single potsherd from a reduced coarseware vessel dating to the 3rd to 4th century AD was recovered from the fill of gully 10. However, this may have been intrusive.

A curved gully (12) truncated linear gullies 14, 16 and 33 (Fig. 11). It extended 3.5m from the northern limit of the excavation to its terminal. It was possible that the feature represented part of a circular gully of a further roundhouse, but this could not be established within the excavation area and the feature did not appear in the geophysics interpretation.

Seven pits were distributed amongst the gullies to the east of roundhouse **420** (Fig. 11). Pit **44** was situated directly outside the entrance to the roundhouse, some 2m away, and measured 1.1m by 0.9m with a maximum depth of 0.6m. No finds were recovered from the pit. Circular pit **31** was located approximately 5m to the south of pit **44**, with a diameter of 0.6m and a maximum depth of 0.6m. The fill of pit **31** was charcoal-rich but contained no finds that might indicate its function. Pit **8** was circular and measured 0.76m in diameter and 0.29m deep. It was steep-sided with a flat base and contained a number of heat-affected pebbles and two fragments of what may have been a polishing stone, which had also been scorched. The form of the pit and the materials within it might suggest that it was a cooking pit, similar to pit **166** inside the roundhouse. It was located to the immediate west of fence-line **19**, adjacent to a charcoal-rich spread (**36**), which also contained fragments of heat-affected pebbles and may indicate the general location for a hearth associated with the pit. Four pits (**29**, **40**, **42** and **48**) were identified to the east of fence-line **19**, all of which were shallow and elongated in plan. The pit fills were charcoal-rich but again contained no finds to indicate potential use.

ROMAN ROAD

Road **194** (Fig. 12) was identified by the geophysical survey as a strong anomaly running north-west to south-east across Field 23 (Fig. 2). It is possible that it post-dated a track, which was identified by the geophysical survey and was visible on the ground as a hollow way. The track may have provided access to the River Nidd. A degree of local land re-organisation had either accompanied or been prompted by the construction of road **194**, with strip fields demarcated by enclosure ditches, which in some cases truncated the earlier features described above. A number of enclosures were identified by the geophysical survey results in Field 23, most of which lay perpendicular to the road on both its north-east and south-west sides (Fig. 2). This pattern of land enclosure appeared to continue westwards into Fields 21 and 22.

Road **194** was visible for 38m running obliquely across the excavation area, with an average width of 7m (Fig. 13). To either side of the road were a number of broadly parallel ditches identified as roadside drainage ditches, some of which evidently truncated the metalled surface. There was also evidence for a possible footway along the south-west edge of the road, delimited by a further parallel ditch.

The road was underlain by dark grey organic layer **209/237**, which was up to 0.15m deep (Figs 12 and 14). It is possible that **209/237** represented the remains of a deposit of brushwood, constituting the initial construction of the road to provide a stable surface, as was common practice in waterlogged areas (Davies 2002, 60). The organic deposit was overlain in the southern half of the road only by a layer of light grey clay (**234**). The foundation of the road comprised a layer of pebbles mixed with iron-rich red sand **207**, which extended across the entire width at an average thickness of 0.05m. Above **207**, there was a deposit of small pebbles mixed with iron-rich orange sand and gravel (**136**), the thickest component of the road, which measured up to 0.15m deep. Layer **136** was covered by cobbles **126**, which were discontinuous, presumably due to erosion during use. A deposit of subsoil (**95**), which had accumulated over the cobbles, produced three iron objects and 18 sherds of pottery, including Huntcliff ware, Crambeck grey ware and the late handmade fabric Monaghan B18 ware. The pottery suggests a date range for disuse of the road in the late 3rd to 4th century AD.

A prominent zone of similarly sized cobbles in the ploughsoil on the east side of Field 22 suggested that the alignment of the Roman road indicated by the geophysical survey data in Field 23 continued for at least 50m.

Running parallel but to the south-west of the principal road surface was a 3m-wide compacted surface of sand and small pebbles (399–401) laid on organic layer 237 (Figs 12 and 15). This was thought to represent a footway constructed at or around the same time as the road. The surface coincided with the northern edge of one of the roadside enclosures (D); it is unknown whether it continued beyond. It is also possible that layers 399–401 represented the vestige of an earlier road on a slightly different alignment, which had been heavily truncated by the redefinition of the enclosures and roadside ditches in this area. A further cobbled surface (617) was located to the south of the main road surface, which may represent reinforcement of an entrance to the enclosure immediately to the south.

The earliest ditch on the north side of the road was 438, while the equivalent to the south was 278 (Fig. 12). These cut through natural subsoil 437 and 372 respectively. However, ditch 278, which was somewhat wider, also truncated the non-metalled footway and brushwood deposit, suggesting that it was a recut of an earlier feature. The ditches had similar profiles, both having a deeper channel down the centre. They were spaced approximately 10m apart and may indicate the extent of a foundation trench excavated prior to the construction of the road. Ditch 278 measured 1m wide by 0.43m deep and was filled with dark grey sandy silt. Ditch 438 had been truncated but could be projected to measure 0.7m wide by 0.45m deep. It was filled by a similar deposit to that in ditch 278. No diagnostic finds were recovered from either ditch.

A third ditch (249) was identified on the same alignment as ditches 278 and 438. It was located between the metalled surface of the main road and the possible footway (Fig. 12), which it truncated. Ditch 249 was heavily truncated by a later ditch, but its projected width was 1.15m and it was 0.26m deep. Its shallow, concave profile differed from those of ditches 278 and 438, which suggested that it may have been intended as a boundary between the road and possible footway rather than as a functional drainage ditch.

Close to the south edge of the excavation area, ditch 249 either turned to the south-west or was truncated by a separate ditch 582 on that alignment. Later ditch 582 also truncated ditch 278 and cut through the layers constituting the possible footway. Analysis of the geophysical survey data revealed that ditch 582 formed part of one of the enclosures of the roadside settlement (described below). It yielded four sherds from a mid-4th-century or later Huntcliff jar, and was recut by ditch 580, which appeared to follow the same course and terminated alongside the road.

After the ditches described above silted up, a phase of repair was seemingly carried out and the course of the road was changed slightly. Two later parallel ditches (156 and 232) were dug, which truncated the earlier ditches flanking the road (Fig. 12). Ditch 156 measured 0.9m wide and was filled by light grey, silty clay. Ditch 232 measured 1.13m wide by 0.32m deep and was filled by a similar material.

ENCLOSURES, BUILDINGS AND ASSOCIATED FEATURES

A number of conjoined enclosures were identified in Fields 21, 22 and 23 that were delimited by substantial ditches (Figs 2 and 3). The geophysical survey data from Field 23 indicated that the enclosures at this point respected the course of the Roman road and framed a roadside settlement. The enclosures were typically rectilinear, c.10m wide and between 40m and 70m long, except those at the junction of two roads, which had a less regular shape. Two buildings were identified flanking the road, in addition to two or possibly three kilns within two of the enclosures further to the west of the road.

NORTH-EAST OF THE ROAD

Ditch **5** was oriented almost east to west and apparently formed the northern limit of the roadside enclosures: no features were identified to the north-east of ditch **5** and the ground dropped away quite steeply to the River Nidd from this point (Fig. 11). Alluvial subsoil **4** had accumulated on the slope, which suggested that this area had historically been prone to river flooding and was consequently unsuitable for settlement. The maximum depth of the subsoil was 1m adjacent to the river, diminishing towards the top of the slope. Ditch **5** measured 1.33m wide by 0.33m deep and was recut by ditch **25**, which measured 0.45m wide by 0.11m deep. Both ditches were filled with grey/brown silty clay and their diminutive size and location along the top edge of the slope would suggest that they served as boundary markers rather than functional drainage ditches.

To the west of ditch **5**, a roughly rectangular enclosure (Enclosure A; Fig. 2) was possibly delimited to the east by gullies **10** and **33** (Fig. 11), and to the west by substantial ditch **313** (Fig. 10), although none of the ditches were distinct in the geophysical survey data. Ditch **313** cut curving gully **206**, which in turn truncated roundhouse gully **383**, demonstrating that they were not contemporary. Ditch **313** ran north-west to south-east and measured 2.17m wide by 0.89m deep. It was filled by three distinct silty clay deposits, which were also observed in perpendicular ditch **327**, implying that the two features were contemporaneous. The clay deposits may account for the relative lack of definition of the ditches in the geophysical survey data. Ditches **313** and **327** contained sherds of late 3rd- to 4th-century AD Crambeck and Holme-on-Spalding-Moor grey wares, and East Yorkshire calcite-gritted ware.

Ditches **313** and **327** formed a small sub-rectangular enclosure, part of larger Enclosure B defined by ditch **96**, which was revealed by the geophysical survey data to be approximately perpendicular to the hollow way. Ditch **96** measured 3.4m wide by 1m deep and contained three brown silty clay fills, from which a Huntcliff jar rim dating to the mid-4th-century AD was recovered. Ditch **96** truncated cultivation trenches **141**. No further features were identified between it and ditch **313**.

Ditches **96** and **240** represented two sides of kite-shaped Enclosure C at the junction of the road and track. The enclosure had an internal sub-division and evidence for a building (Fig. 10). Ditch **240** was V-shaped in profile, orientated north-east–south-west and measured 1.04m wide by 0.51m deep. Its silty clay fill contained a fragment of *tegula* (Fig. 40, no. 67), sherds of a developed flanged grey ware bowl, Crambeck grey ware, and Monaghan B18 ware, which suggested a date in the late 3rd to early 4th century AD.

A north-west to south-east aligned ditch **104** was identified within the enclosed area, which had a similar profile and dimensions to ditch **240** and may have been contemporary (Fig. 10). It measured 1.05m wide and had a maximum depth of 0.3m. Finds recovered from ditch **104** included an iron knife blade and sherds of late 3rd- to 4th-century AD Huntcliff ware and Crambeck parchment ware. Ditch **104** was truncated by curving ditch **120**, which appeared to form a smaller enclosure with ditch **100/138**. The terminals of the two ditches were located 0.9m apart forming a potential entrance and the area between the two terminals was characterised by a spread of trampled clay **160**. Ditches **120** and **100/138** both measured 1m wide by 0.4m deep. Both ditches were filled by dark grey silty clay and contained a number of artefacts: an iron nail, pottery sherds of pre-Huntcliff type, a developed flanged grey ware bowl, sherds of gritty grey ware, Dales ware, Crambeck grey ware, and Holme-On-Spalding-Moor ware, indicating a late 3rd- to 4th-century date range. Three hearth bottoms were recovered from the fill of ditch **100**, together with a tuyère fragment.

A series of beam slots, which were considered to have held timber sleepers that formed part of the foundation of building **619**, was recorded at the west side of Enclosure C (Figs 16–18). The beam slots were vertical-sided and flat-bottomed, with their main axis aligned north-west to south-east, i.e. parallel to road **194** and perpendicular to ditch **240**. The principal slot (**267**) measured 4.6m long by 0.23m wide by 0.13m deep. Beam slot **290** continued the alignment to the south-east, measured 3m long, and had the same dimensions as slot **267**. A narrow slot (**509**) may have continued the alignment to the north-west but was truncated by ditch **240** and may not have been related to beam slot **267**. Several short slots (**261**, **272**, **299** and **303**)—each of which measured between 0.33m and 0.4m wide and between 0.13m and 0.18m deep—ran perpendicular to the main alignment. A posthole (**268**) was identified at the intersection of beam slots **267**, **272** and **290**. Another potential posthole (**301**) was located adjacent to north-east to south-west aligned slot **303**. It seemed possible that one further posthole was cut at the north-west terminal of slot **267**, but it was not recorded as such due to its limited depth. The beam slots were filled by homogeneous grey silty clay, which suggested that the beams had been removed rather than having decayed in situ. Artefacts recovered from the fills included non-diagnostic grey ware sherds from beam slot **290**, a fragment of vessel glass from beam slot **261**, and a sherd of gritty grey ware pottery from posthole **301**, which was likely to belong to the Dales-type group of the 3rd to mid-4th century AD.

Neither the geophysical survey nor the excavation recorded any features in the area to the west of ditch **240** and north of the road, and it may represent a paddock. Its north side was apparently defined by a linear geophysical anomaly, presumably a ditch, perpendicular to ditch **240**. The south side was defined by a series of ditches (**228**, **365** and **440**) that ran parallel to one another on approximately the same alignment as the road (Fig. 12). Ditch **440** measured 0.7m wide by 0.38m deep, was filled by brown silty clay and was recut by ditch **228**, which measured 1.3m wide and 0.35m deep. Ditch **365** ran parallel to **440** and measured 1.55m wide by 0.35m deep. The latter two ditches were filled by dark brown silty clay, which most likely represented a single episode of silting and may suggest that they were open and filled contemporaneously. A single sherd of coarse grey ware pottery dating to the late 3rd to 4th century AD was recovered from ditch **228**.

SOUTH-WEST OF THE ROAD

To the south-west of the road, a series of sub-rectangular enclosures was identified from the geophysical survey data. Enclosure D was bounded to the north-east by ditch **582**, which was recut by ditch **580** (Fig. 12). Its north-west side was formed by ditch **378**, which had been recut four times (**384**, **369**, **502** and **499**; Figs 19 and 20). Materials recovered from the series of ditches included sherds from a late 4th-century AD Huntcliff jar and an iron nail from the fill of ditch **384**, as well as part of a Crambeck reduced ware lugged jar, dating from the late 3rd to 4th century AD, and a fragment of copper-alloy sheet from the fill of ditch recut **499**.

Ditch **378** turned to the north-west where it formed the edge of small Enclosure E adjacent to road 194. The west edge of the enclosure appeared to be delimited by substantial north–south ditch **430** (Figs 19 and 20), which measured up to 3.5m wide by 1m deep. The ditch fills yielded a possible stone *tessera*, potsherds from a handmade, everted-rim jar in a stone-tempered fabric of pre-Roman Iron Age or early Roman date, and a non-diagnostic grey ware base, which may have been residual. Ditch **430** was recut by ditch **412**, which measured 1.4m wide by 0.59m deep, and contained a number of fills, including a dump of charcoal. Artefacts from **412** included a 4th-century AD copper-alloy coin, a fragment of *tegula*, a sherd of a Crambeck grey ware developed flanged bowl, and a sherd of late 3rd- to 4th-century AD East Yorkshire calcite-gritted ware. Three sections of gully (**521**, **523** and **528**) were truncated by ditch **412**; it is possible that they originally fed into ditch **430**. No finds were recovered from these gullies.

Three pits (**406**, **455** and **488**) were cut into infilled ditch **430** (Figs 19 and 20). Two of the pits (**406** and **488**) were keyhole-shaped in plan, while pit **455**, which was partly truncated by **488**, was sub-circular. The pit fills contained high densities of charred plant remains, which suggested that they had been used for the deposition of by-products from cereal processing. A sherd of East Yorkshire calcite-gritted ware was retrieved from the fill of pit **406** and a sherd of Crambeck grey ware was recovered from the fill of pit **488**, both of which indicated a date in the late 3rd to 4th century AD. A further pit (**445**) was situated c.4.5m to the east of **488** and was filled by burnt material (**446**), which included fragments of fired clay.

An extensive deposit of black clay silt (**82**) with frequent charcoal fragments overlay ditches **430** and **412**, as well as the gullies and the pits (Fig. 21). The deposit extended for 12m east to west, continuing beyond the limit of excavation to the north and south, and had a maximum depth of 0.3m. Deposit **82** contained a large quantity of pottery and other artefacts associated with domestic activity and probably represented midden material that incorporated demolition debris from nearby structures. The sherds of pottery included amphora and various types of Crambeck and Huntcliff wares, which firmly dated the deposit to the late 4th century, after c.AD370. Ten fragments of ceramic building material and a fragment of mortar were also recovered from deposit **82**. The pieces included four fragments of *tubuli* (Fig. 40, no. 69), three *tegulae* (Fig. 40, no. 68), one possible ridge tile, and two unidentifiable fragments. All of the tiles recovered from deposit **82** showed evidence of heat discolouration/burning, including some that had occurred post-breakage. The presence of these types of ceramic building material in this context suggested that a building of relatively high status had once stood in the vicinity. This notion is corroborated by the nature of other materials indicative of the presence of a domestic building. Such finds included a 4th-century copper-alloy coin, a stone thatch weight (Fig. 41, no. 75), a shale spindle whorl (Fig. 40, no. 70), two fragments of antler, one fragment of glass bead and two of 1st- to 2nd-century bottle glass, two pieces of lead, four iron nails, and a knife blade. A further spindle whorl (Fig. 40, no. 71), made of either jet or shale, was recovered from the subsoil (**02**) overlying this area of the excavation.

A series of features suggesting a second phase of building overlay midden deposit **82** (Figs 21 and 22). The features included two post-pads (**413** and **416**) and a potential floor surface (**83**) composed of silty clay in the area between them, which together appeared to represent part of a structure **620**. Post-pad **413** measured 0.7m in diameter and comprised three courses of cobbles, while post-pad **416** measured 0.8m in diameter and comprised only a single course of cobbles. The floor surface extended for c.7m east–west by 3m north–south and continued beyond the northern limit of the excavation. Two iron objects were recovered from the floor surface, along with a pottery sherd from a Monaghan B18 lugged jar dating to the late 4th century AD and sherds from Huntcliff jars. A path (**80**) and a possible burial cist (**88**) were identified in the vicinity and may have been associated with the putative building. Path **80** ran east–west for 11m and was a maximum of 1.1m wide (Fig. 22). It comprised a shallow hollow that was filled with mid-brown clay and contained sherds from a Huntcliff jar dating to the mid-4th century AD or later. A fragment of disc quern (Fig. 41, no. 73) was recovered from the terminal of the feature, which may have been intentionally deposited prior to the abandonment of the site (see Cruse, this volume). The path led from the south-west corner of the building past possible cist **88** and continued beyond the limit of the excavation. Cist **88** cut ditch recut **499**. It comprised a sub-rectangular cut that was 0.2m deep and measured 1.3m from north-west to south-east by 0.7m (Figs 21 and 23). It was lined on the base and along either side with sub-angular sandstone pieces up to 300mm long and an average of 100mm thick, with an almost-triangular stone at the south-east end. All of the side and end slabs had slumped outwards in antiquity. The fill (**90**) of the cist contained tiny fragments of fired clay, charcoal and cinder, but no human remains were present.

To the west of the cist, and adjacent to path **80**, a spread of large stones (**364**) was pressed into the surface of deposit **82** (Fig. 21). The spread measured 5m east–west by 3m north–south, and continued beyond the southern limit of the excavation. It seems likely that the stone spread was set down to establish a firm surface in a residually wet area caused by infilled ditches **412** and **430**.

A more extensive strip Enclosure F adjoined Enclosure E to the south-west, with ditch **412** separating the two. Enclosure F was bounded to the north-west by ditch **115**, which was U-shaped in profile, measured 2.04m wide, and had a maximum depth of 0.85m (Fig. 24). It was filled by orange-grey silty clay **116**, the finds from which included sherds of late 4th-century Crambeck parchment ware. Although beyond the limits of excavation, interpretation of the geophysical survey results suggested that the south-west boundary of Enclosure F, and at least two more to the north-west, was formed by ditch **181** (Fig. 2).

Enclosure F contained two internal divisions. A shallow north–south aligned gully (**553**), which measured 2.2m long to the northern edge of excavation, by 0.4m wide by 0.11m deep (Fig. 24), was truncated by a large, irregular oval-shaped depression (**538**). This measured 5.5m north-east to south-west by 3m and was a maximum of 0.2m deep. Pottery from an East Yorkshire calcite-gritted wide-mouthed jar, dating to the 4th century AD, was collected from the grey, charcoal-rich silty clay fill of the depression. A shallow ditch (**536**) ran parallel to gully **553** and cut depression **538**. It measured 0.98m wide, 0.38m deep and 5.9m to its northern terminal. This ditch contained fragments of a 3rd-century AD biconical grey ware bowl, which were presumably residual.

Ditch **293**, which ran parallel to ditch **115**, delimited the north-west edge of Enclosure G (Fig. 24). At 2.36m wide, ditch **293** was one of the widest enclosure boundary features investigated, although its subsequent recuts (**226** and **292**) were less substantial. Sherds of East Yorkshire calcite-gritted ware dating to the late 3rd to 4th century AD were recovered from recut **226**. Ditch **293** terminated to the south-west, only 0.75m from a perpendicular ditch (**181**), which formed the south-west boundary to several of the enclosures. The shallow profile of ditch **181** was noticeably different from the enclosure ditches that ran perpendicular to it. It was c.4m wide by 0.65m deep with a relatively flat base. The ditch was recut on the same alignment along its south-western edge by ditch **590**, which had been backfilled with grey/yellow silty clay. The recut was much less substantial, measuring only 0.92m wide, but contained a number of sherds of East Yorkshire calcite-gritted pottery dating to the late 3rd to 4th century AD. Two hearth bottoms were recovered from the boundary feature, one from ditch **181** and one from its recut (**590**). Of these, one had become leached and the other was abraded, suggesting that they were residual in these contexts.

A possible kiln (**549**) was located towards the centre of Enclosure G (Figs 24 and 25). It was pyriform in plan, measuring 2m by 1.1m, with the 0.64m-deep kiln chamber to the south-east and the shallower flue to the north-west. Four distinct deposits of grey silty clay infill were recorded, of which **550** and **567** contained fired clay potentially deriving from the collapse or destruction of a domed superstructure. Cereal remains were recovered from the primary fill of the kiln. These may reflect the use of threshing residues as kindling and would also account for remains of burnt heather in the deposit. Alternatively, the cereal remains may suggest that the kiln was used as a rudimentary corn dryer.

Ditch **181** truncated ditch **92**, which ran parallel to ditch **293** to form Enclosure H (Fig. 24). Finds recovered from the earlier ditch included sherds of Crambeck grey ware and oxidised ware dating to the 3rd to 4th centuries AD. The only archaeological feature within Enclosure H was a narrow

gully (247) running parallel to and 1.5m away from ditch 226, before curving round to link with its terminal.

Enclosure I was identified at the west end of the excavation, possibly delimited by a pair of narrow gullies (612 and 614) that ran on a north-east–south-west orientation (Fig. 24). A single sherd of 3rd- to 4th-century AD grey ware was recovered from gully 612. Enclosure I was significant in that it contained two pottery kilns (574 and 603), located to the south-east of gullies 612 and 614. Both kilns were oriented with the chamber to the north-west and the flue and stoke-hole to the south-east (Figs 26 and 27). Kiln 603 was better preserved and measured 3.2m north-west to south-east by 1.32m, with the kiln chamber being a maximum of 0.22m deep (Figs 27 and 28). It was probably a semi-sunken kiln, with the firing chamber constructed of at least three courses of large cobbles 615 and a base of flat stones 610. The stone structure would have been lined with clay, some of which survived in situ (608). The kiln would probably have had a clay superstructure, which may account for some of the burnt clay found within it. Four near-complete, sand-tempered clay kiln bars were recovered from kiln 603 (Fig. 29, Fig. 42 nos 83–4 and nos 87–8).

Kiln 603 cut pit 601, which measured 0.82m from the south-east of the feature to the north-western edge of excavation by 1.52m from north-east to south-west and was a maximum of 0.18m deep (Figs 26 and 27). The flue of kiln 603 was subsequently cut by pit 599, which measured 2m north-east to south-west by 1.30m and was a maximum 0.3m deep. Both pits were filled by black-grey silty clay. A sherd of grey ware dating from AD120 onwards (which may have been residual) was recovered from pit 599. An assemblage of charred plant remains, which comprised small amounts of cereal residues from the final stages of crop processing, was collected from pit 599.

Kiln 574 was similar in form and dimensions to kiln 603, but the firing chamber was not lined with cobbles. Three distinct episodes of firing were evident within the kiln, characterised by successive layers of burnt clay and charcoal extending the full length of the flue and firing chamber (Figs 27 and 30). Two fragments of kiln bar were recovered (Fig. 42, nos 89–90).

A total of 40 sherds of pottery were recovered from the debris within kilns 574 and 603, all of which were grey wares, indicating a date from the early 3rd to the mid-4th century AD. The pieces included a Dales ware jar and a Dales-type jar from 603. None of the sherds were wasters, but the site had been truncated and the discard zone may have been beyond the extent of the excavation.

The series of enclosures evident in Field 23 appeared to continue into Field 22 (Fig. 4). Two north-east–south-west ditches (24 and 36) were U-shaped in profile and measured c.1.15m wide by 0.36m deep. A sherd of pre-Roman Iron Age pottery was recovered from ditch 36. Two other ditches (8 and 44) on this alignment were V-shaped in profile and measured c.2m wide by 0.55m deep. It is possible that the two distinct types of ditches represented two separate phases of enclosure. Ditches 39 and 55, which ran south-east to north-west, were U-shaped in profile and measured c.0.93m wide by 0.4m deep. Ditch 52, which had a similar profile and dimensions, was orientated broadly east–west and terminated within the excavation area.

A single ditch (12) in Field 21 followed the principal north-eastward orientation of the enclosures recorded to the east and may indicate a field system established parallel to the Roman road (Fig. 31). Ditch 12 was c.1.2m wide by 0.35m deep with a rounded profile and contained a sherd of Dressel 20 amphora dating from the mid-1st to 3rd century AD. To the east of ditch 12, two shallow east–west oval features (1 and 14) had comparable dimensions of 1.73m by 1m (Fig. 31). Surviving to a depth of no more than 0.14m, it is possible that the pits represented heavily

truncated graves, although no human remains or evidence for the presence of such remains were identified. A rim from a ring-necked flagon in a pale oxidised ware was found in feature 1.

Human remains were, however, located 75m further to the west, where a single cremation burial (16) was found in isolation (Figs 31 and 32). The cremation had been placed in a sub-circular pit that measured 0.42m north to south by 0.33m by 0.13m deep. The primary deposit and secondary deposit (17 and 18 respectively) were probably placed in the pit at the same time. Both deposits contained a large quantity of charcoal, the remains of an abraded Nene Valley colour-coated long-necked beaker dated to the 3rd or 4th century AD (Fig. 39, no. 21), and 800 nails, including hobnails. The sex of the cremated individual could not be ascertained, but it was determined to be at least 18 years of age.

GOWLANDS, FIELD 26

At Gowlands, an extensive midden-type deposit (2701), measuring up to 0.4m deep, was defined and examined via a series of sondages to test any underlying archaeology (Fig. 33). It was judged that the midden soils provided sufficient depth of overburden to protect underlying deposits, which were only excavated to characterise them sufficiently. A number of features were identified, comprising three substantial ditches, a gully, three postholes, and a large block of worked stone.

A large ditch (2711) ran north-west to south-east, approximately parallel to the presumed alignment of Dere Street, for at least 10m. In Sondages 1 and 4, it cut through a layer of clay silt (2717) and into the natural geology. Ditch 2711 was 2m wide at its terminal in Sondage 4, increasing to approximately 3m wide to the west, with a U-shaped profile and a maximum recorded depth of 1.1m.

A second ditch (2706) with a similar profile ran approximately parallel to ditch 2711, although 2706 turned to the north-east after 15m in Sondage 6. Ditch 2706 was recut by 2708 with a narrower, V-shaped profile. The similarity of the profiles and fills of ditches 2711 and 2706, including the artefact assemblages recovered from them, suggested that they may be contemporary. A substantial quantity of pottery was collected from 2706, 2708, and 2711, including East Yorkshire calcite-gritted ware, Nene Valley colour-coated ware, Crambeck grey ware, Central Gaulish black-slip ware, oxidised ware, and unidentified gritty grey wares, all of which can be dated to between the 3rd and 4th centuries AD. Two sherds of Dressel 20 amphora dated to the late 1st to mid-2nd century and a single sherd of potentially pre-Roman Iron Age/early Roman period pottery indicated earlier activity at the site. A circular piece of lead caulking from inside a domed stud was recovered from the upper fill of ditch 2711 and was possibly associated with furniture adornment.

Approximately 12m to the north-west of the large ditches, the terminal of gully 2705—which extended for only 1m from the edge of the excavation—measured 0.6m wide by 0.2m deep. Posthole 2715, one of three postholes (2715, 2721 and 2722) in Sondage 2, was situated adjacent to the gully; each of the postholes had a diameter of c.0.4m and appeared to be heavily truncated, surviving to a maximum depth of 0.13m. Pottery sherds collected from the fills of the gully and the postholes were of similar styles to those from the ditches described above, within a date range from the late 3rd to 4th century AD. It is possible that the postholes represented elements of a structure, but this cannot be stated with confidence. To the south-west of the postholes, the surface of the natural geology had a gradual incline, which may have constituted part of the lower reaches of the agger for the Roman road.

A small portion of a further small ditch **2718** was revealed to the north-west in Sondage 3. The feature appeared to be aligned east to west, and was 1m wide, but did not yield many artefacts.

Potential evidence for a high-status Roman period construction came from a block of roughly tooled masonry (Fig.34), which had been deposited directly onto the natural clay towards the centre of the area. It measured 0.5m long by 0.5–0.58m wide by 0.30–0.34m deep, making it wedge-shaped in two planes. This suggested that it may have been used as a keystone for an arch in a structure that was not identified within the excavated area. Its rough finish was probably not meant to be seen as part of a façade but may have been intended to receive render or plaster. It seemed probable that the stone had a secondary purpose in this context, maybe as a foundation stone for a survey marker in setting out the adjacent Roman road, a theory that has been expounded by Wenham (1964, 535) for a similar find from Blossom Street, York. However, the stone from York has also been interpreted as the possible base for a roadside altar (RCHME 1962, 3 & 51).

The midden deposit (**2701**) overlying and infilling the features described above consisted of dark brown silty sand. It covered the full width of the excavation area over a distance of c.70m, thinning out and becoming paler at either edge. A concentration of artefacts was recovered from **2701**, the nature of which suggested that there had been a building of relatively high status in the vicinity. The finds comprised 19 pieces of ceramic building material, including five fragments of *tegula*, two fragments of box-flue tile (*tubuli*), and 12 further fragments that were not identifiable, as well as four pieces of lead, one of which was part of a rolled sheet, a fragment of an iron bar, iron nails and 264 sherds of Romano-British pottery.

SKIP BRIDGE FARM, MOOR MONKTON MOOR AND SHIRBUTT CLOSES

Further evidence for the route of Roman Dere Street was recorded at Skip Bridge Farm, Moor Monkton Moor and Shirbutt Closes, each located successively eastwards along the pipeline (Fig. 1).

At Skip Bridge Farm, the pipeline traversed a narrow strip field that ran parallel with the modern road, and which displayed a distinct change in level to the south. This was presumed to be the remains of the agger of the Roman road, upon which a deposit of medieval plough-soil had accumulated. Sondages through the soil deposit identified a 7m-wide spread of cobbling 0.5m below the modern field surface. The Roman road was badly truncated by later ploughing, which followed a trend perpendicular to the modern road. Due to the disturbed nature of the road remains, a series of 1m-wide segments was excavated across the feature to expose the surface and underlying structure, and to identify any associated features. The road survived as a single layer of rounded river cobbles, up to 0.1m across, pressed into the natural clay.

At Moor Monkton Moor (Figs 35 and 36), the modern road veered to the north of the Roman alignment to accommodate the crossing of a stream called The Foss. This meant that the full width of the Roman road surface could be recorded, crossing the pip route at an angle over a distance of 160m.

At Shirbutt Closes, the road survived for 60m as a series of patches of cobbles against the northern field boundary. No roadside ditches or other features associated with the two sections of the road surface were identified. It was observed that the two fields to the east of Shirbutt Closes, which had recently contained potato crops, were completely devoid of any cobbles. These had apparently been de-stoned as part of the preparation for planting.

FINDS AND ENVIRONMENTAL REMAINS

POTTERY

R. Leary, with contributions on the mortaria by K. Hartley

INTRODUCTION AND METHODOLOGY

The pottery was examined in context groups and catalogued according to Darling (2004). The fabrics were recorded in fabric groups and source suggested where appropriate. Reference was made to the *National Roman Fabric Reference Collection* where appropriate (Tomber and Dore 1998). The pottery was quantified by sherd count, weight and rim equivalent.

There were 1,330 sherds (22,511g) of Romano-British pottery and 25 handmade sherds (289g) of Iron Age or early Roman type. The quantities of sherds recovered from the excavated areas are shown in Table 1. Table 2 shows the total quantities by ware, and Table 3 by site.

Table 1. Quantities of Romano-British pottery by site code

Site Code	Number	Weight (g)	RIM equiv.
MAL08	374	5,469.1	486
PLG08	825	16,358.27	1,240
WAL08	1	3.3	0
YRG08	130	680.1	202

WARES AND VESSEL TYPES

The fabric of the pottery was first examined by eye and sorted into ware groups on the basis of colour, hardness, feel, fracture, inclusions, and manufacturing technique. If the sherds could not be adequately grouped by eye, then they were examined under a x30 binocular microscope and compared with sherds from known sources. National fabric collection codes are given wherever possible (after Tomber and Dore 1998).

Table 2. Description and quantity of wares

Fabric group	Abbrev	Ware	Description	Nat fabric collection equivalent	No	Weight (g)	RimP
RB	Amp	A	Amphora indeterminate		4	358.2	
RB	B18	B18	Monaghan 1997 B18 group		25	298.7	12
RB	BB1	BB1	Black burnished ware 1	BB1 DOR	3	6.1	3
RB	BBT	BBT	Black burnished type. Dark grey/black. Hard with hackly fracture. Abundant fine to medium, subrounded quartz		9	100.8	16
RB	Central Gaulish BS	CGBS	Central Gaulish black-slip ware	CGBS	1	1.6	
RB	CRA PA	CRA PA	Crambeck parchment ware	CRA PA	44	815.6	79
RB	CRA RE	CRA RE	Crambeck grey ware	CRA RE	269	5698.7	404
RB	Derbys	DBY	Derbyshire ware	DER CO	1	2.8	
RB	DR20	DR20	Dressel 20 amphora	BAT AM	14	763.3	19

*Roman Dere Street and an associated roadside settlement
East of Green Hammerton, North Yorkshire*

Fabric group	Abbrev	Ware	Description	Nat fabric collection equivalent	No	Weight (g)	RimP
RB	DW	CTA2	Dales ware	DAL SH	24	84.7	20
RB	E Yorks CT	EYCT	East Yorkshire calcite-gritted ware	HUN CG	460	8111.1	836
RB	Ebor	E1	Ebor 1	EBO OX	11	267.2	29
RB	Ebor	E3	Ebor 3	EBO OX	1	21.6	
RB	Fine GW	GRA	Pale grey with smooth feel and fracture, ?med subvisible quartz and sparse medium rounded black and white incl		1	9	10
RB	gritty GW	GRB G1	Brownish grey with buff margins and grey core. Hard with slightly gritty feel and irregular fracture. Moderate ill-sorted fine to medium/coarse, subangular quartz, rare coarse rounded red/brown inclusions and fin white inclusions, moderate fine mica		11	116.6	20
RB	gritty GW	GRB G2	Medium grey, rough, gritty feel and hackly fracture. Moderate, well-sorted coarse subangular quartz, sparse medium rounded brown inclusions and moderate fine mica		69	724.9	60
RB	GW	GRB	Medium quartz-t grey ware, indeterminate		20	101.8	3
RB	GW	GRB1	Medium grey ware. Hard with irregular fracture and sandy feel. Moderate, well-sorted, medium, subangular quartz and rare, medium, rounded white inclusions. Similar to grey Ebor or Norton wares		1	9.9	5
RB	GW	GRB2	Grey ware. Hard with irregular fracture. Moderate, well-sorted, medium, subangular quartz		25	727.4	13
RB	GW	GRB3	Grey, hard, sandy with irregular fracture. Abundant, medium, subrounded quartz		23	695.27	29
RB	GW	GRB4	Medium grey ware, powdery when abraded with finely irregular fracture. Abundant fine, subangular quartz and rare, medium, rounded black inclusions. Probably a Holme-on-Spalding Moor fabric	HSM RE	25	556.7	39
RB	GW	GRB5	medium grey, sandy, hard with finely hackly fracture. Abundant, fine to medium (c0.2-0.3mm), subangular quartz with rare, coarse angular quartz		31	250	35
RB	GW	GRB6	medium grey, sandy, hard with finely hackly fracture. Abundant, fine to medium (c0.2-0.3mm), subangular quartz with rare, coarse angular quartz		1	23.3	7

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Fabric group	Abbrev	Ware	Description	Nat fabric collection equivalent	No	Weight (g)	RimP
RB	M CRA WH	MCRA WH	Crambeck white ware	CRA WH	28	1055.2	47
RB	M Manc	MH	mortarium Mancetter-Hartshill	MAN WH	2	32.7	
RB	M NV	MLNV	mortarium Nene Valley	LNV WH	2	100.1	12
RB	M N East	M N East	mortarium oxidised white-slipped, approximates to MB28 in Bell and Evans 2002, attributed there to NE England		1	20	
RB	M WH	MW	mortarium white ware		6	74.5	9
RB	Mor	M OX	mortarium oxidised		4	60.1	3
RB	NV CC	NV	Nene Valley CC	LNV CC	161	909.5	77
RB	Ox W	OAB	oxidised ware, indeterminate fabric		9	33.8	5
RB	Ox W	OAB/FC	oxidised ware. Buff ware, soft and sandy with moderate, fine, subangular quartz		3	17	
RB	Ox W	OAB1	oxidised ware. Hard with slightly powdery feel and irregular fracture. Sparse to moderate medium, subangular quartz, rounded red/brown inclusions and fine silver mica. These sherds are abraded and have suffered from burial conditions and were difficult to identify		31	336.4	36
RB	Ox W	OAB2	orange with grey core. Hard sandy with irregular fracture. Abundant fine, subvisible quartz and sparse medium quartz. Late oxidised ware		2	34.7	
RB	Ox W	OAB3	pink, soft and powdery with rather smooth fracture. Mod, ill-sorted fine-med rounded red incl, subvisible quartz and moderate silver mica		1	48.4	100
RB	Ox W	OAC1	oxidised ware coarse. Hard and rough with hackly fracture. Moderate, coarse, subangular quartz and rare white inclusions, ? As Ebor 3		1	27.5	
RB	Shell-t ware	CT	brown ware with irregular vesicles.		1	2	
RB	TS	TS	samian	SAM	1	1.1	
RB	White ware	WH	White ware, indeterminate fabric		2	8.5	

The handmade Iron Age to early Roman pottery comprised calcite-gritted ware and stone-tempered wares, probably erratic-tempered ware, with some vesicular sherds that were originally calcite gritted. The sherds were all non-diagnostic body sherds except two stone-tempered ware everted-rim jars.

The majority of the pottery is of local origin, coming from the Crambeck industry and the sources of East Yorkshire calcite-gritted ware of Huntcliff type, with smaller amounts from the local kilns, the Holme-on-Spalding-Moor industries (Corder 1930; Halkon and Millett 1999), and other, unknown grey ware industries in the Vale of York. The Crambeck wares comprise the grey, red, parchment and white wares and include types 1, 1b, 2, 3, 4, 5, 5A, 5B, 6, 7, 9, 12, and 13

(Corder 1937). The EYCT group include Huntcliff ware jars and wide-mouthed jars, proto-Huntcliff jar forms and a plain-rim dish form (types JH and DD5; Monaghan 1997). A group of sherds in a handmade fabric comparable with Monaghan's (1997) B18 group (type JS) was identified in a proto-Huntcliff jar form and a large jar of lugged type. This group is from a similar area to Huntcliff-related wares and appears in mid- to late 4th-century contexts at York. Monaghan (1997, 1032–33) notes that, although this group may derive from the same clay source, it includes several sub-fabrics. The Holme-on-Spalding-Moor group comprises sherds from large jars, a type usually lugged (type JL; Monaghan 1997), and flanged bowls. The medium-grey wares include plain-rim and grooved-rim dishes, developed flanged bowls, one carinated or biconical bowl (Norton type 10b; Hayes and Whitley 1950), fragments from wide-mouthed jars and large jars, a type usually lugged (Norton types 6 and 4; *ibid.*), and a bifid rim lid. The forms present, and the dominance of late fabrics, indicate a chronological emphasis in the late 3rd to 4th century. The number of Huntcliff jars, the presence of late Crambeck types, such as Type 1a, and the parchment forms demonstrate activity after c.AD360/70 (Bidwell 2005).

Dales ware, which was in decline by the mid-4th century, is uncommon in the ceramic assemblages, but a gritty grey ware fabric was used to produce Dales ware-type jars, as well as a developed flanged bowl and an everted-rim jar form. A partially oxidised Dales-type jar in this fabric came from one of the kilns at Green Hammerton. This fabric has not previously been noted by workers in the region and was thought to originate in the Vale of York on the basis of its inclusions (A. Vince pers. comm.). A comparable ware in similar forms has been found on sites around Wetherby. It is similar to a medieval fabric from Pontefract (J. Young pers. comm.) and a source around this area is suggested. Dales-type jars of the 3rd century in gritty grey ware have also been identified at Piercebridge by Croom *et al.* (2008, 230), where they developed into a series of single and double lid-seated jars in the same fabric by the end of the 3rd century. The later lid-seated group continued in use through the 4th century and is "second in importance only to the East Yorkshire wares" (*ibid.*, 230). The ware group is still present in significant numbers in groups dated to the late 4th or early 5th century at Piercebridge. Croom *et al.* (2008) compare the gritty grey ware fabric and forms with a group at Catterick (Bell and Evans 2002, 354, R5 and R8) that was used to make Dales-type jars and point out that the ware is rare at York and Malton but is present on the eastern and central sectors of Hadrian's Wall. While Croom *et al.* (2008) favour a source for this ware around Catterick or Piercebridge, its presence at Green Hammerton in a kiln points to other sources. Like Dales ware itself, it may be that this simple form, at least some of which is handmade, may have been made by a dispersed industry in the late Roman period, and the kilns at Green Hammerton may be early in the development of this industry. A similar ware has been identified at kilns at Stamford Bridge, which were also used to make Dales-type jars (Lawton 2003c).

A group of medium oxidised wares used to make copies of samian bowl 38 may be from Crambeck or other late kilns (Monaghan 1997, 907). Fine wares comprise late Nene Valley colour-coated beakers, globular long-necked and pentice-moulded forms, and a Central Gaulish black-slipped beaker. A small number of Dressel 20 Spanish amphora, originally containing olive oil, were identified, along with one indeterminate amphora sherd. Mortaria included Crambeck white ware and parchment ware (types 6 and 7; Corder 1937), and an oxidised mortarium with white slip in a wall-sided form. The fabric of this last vessel approximates to MB28 in Bell and Evans (2002), which they attribute to North-East England. The source is unknown but will be within the area between York and Catterick. The use of solely iron slag trituration grit and the very thin wall of the mortarium both point to a date in the late 3rd or 4th century. A very abraded and discoloured sherd of mortarium from context **82** is fine-textured and may have had a matt red-brown slip. This fragment is probably extra clay flaked from a spout and seems to have a distal bead. It is of unknown origin and dates to no earlier than the late 1st century and no later than the 2nd century.

Very little early Roman pottery was recovered. An Ebor flat-rim bowl was identified, dating to the 2nd century (type BD; Monaghan 1997). Two flagons, one ring-necked, the other pulley-rimmed, are in oxidised wares from the Ebor industries or other kilns around York and date to the late 1st to mid-2nd century and to the 2nd century respectively (types FR2 and FP; Monaghan 1997).

CHRONOLOGY, FUNCTION, STATUS AND TRADE

GOWLANDS (MAL08 FIELD 26)

This group (365 sherds; 5,385g) dates predominantly to the late Roman period and the presence of Huntcliff jars in most features indicates infilling after c.AD360/370. Some earlier vessel types are present, including 2nd-century Ebor ware, a Dressel 20 amphora rim, and samian ware. These early wares are in very abraded condition.

Layer **2701** contained 264 sherds of Romano-British pottery, as well as one handmade sherd and two medieval sherds. More than 60% of the group is made up of Huntcliff and Crambeck wares, including the classic Huntcliff lid-seated jars and the CRA RE developed flanged bowl with internal wavy line burnish, which indicate a date range after the mid-4th century and c.AD370 respectively. Only two sherds of Crambeck parchment ware were identified. Fragments from late Nene Valley pentice-moulded and painted long-necked beakers of the early to mid-4th century, and sherds from a late red ware bowl copying samian form Dr 38 of the mid- to late 4th century are present. GRB G sherds, including an everted-rim jar, are present, but there is no Dales ware. Two Crambeck white ware mortaria (Corder type 6) are present. Two early oxidised ware vessels (bowls with flat rims) recovered are comparable to Monaghan (1997) type BD, which date to the 2nd century, and their fabric can be compared with Ebor ware; these must be residual, as they are abraded or very abraded. A date range around the mid-4th century would be consistent with the lack of Dales ware beaker forms, which declined numerically after the mid-4th century, and the presence of mid-4th to early 5th-century types.

The pottery from **2701** had slightly lower than average sherd weight (17g) than the settlement at Pool Lane, Green Hammerton (20g) and was noticeably more abraded with smaller sherds, a characteristic that is consistent with its interpretation as a midden group.

The ditches (**2711** and **2706**) contained late 3rd- to 4th-century material in their early fills. Primary fill **2712** included GRB G2 sherds from an everted-rim jar with grooved rim-tip. The date range of this fabric is not well established, but the forms—everted-rim jars and Dales ware types—suggest a late 3rd- to mid-4th-century range. East Yorkshire calcite-gritted ware sherds from **2707**, the primary fill of **2706**, indicate a date in the late 3rd century at the earliest. The secondary fill (**2713**) of ditch **2711** contained a very small scrap of Central Gaulish black slip ware from a beaker. This ware was current in the early 3rd century at York (Monaghan 1997, 897). Further GRB G2 sherds also came from this context, perhaps from the same jar as that from primary fill **2712**. The upper fill (**2714**) of ditch **2711** contained more Crambeck grey ware sherds, which date to after c.AD280, and a scrap of Nene Valley colour-coated beaker. Such small numbers of sherds make dating difficult, but the presence of somewhat earlier pottery, such as black slip ware, suggests that the ditches may have been open in the 3rd century but began to fill up in the late 3rd to 4th century.

Pottery sherds from fill **2703** in gully **2705**, upper fill **2704** of ditch **2708**, and posthole **2715** include Huntcliff jars dating from the mid-4th century (c.AD360) to the early 5th century. The four sherds from the rim and shoulder from a Huntcliff jar from posthole **2715** are noticeably

larger and less abraded than other sherds from Gowlands. Primary fill **2709** of ditch **2708** includes Crambeck grey ware, East Yorkshire calcite-gritted ware, grey ware sherds, and a Dressel 20 amphora rim of late 1st- to mid-2nd-century type. The CRA RE and EYCT sherds provide a date in the late 3rd to 4th century, but earlier activity is suggested by the amphora sherd. The pottery sherds from secondary fill **2720** of ditch **2718** include one very abraded grey ware sherd from a bifid rim lid and five very abraded handmade sherds of Iron Age or Roman date. The lid is not closely datable.

The presence of significant amounts of fine wares and some imported wares, along with 38% tableware to 55% jars, suggests a high social status for the Gowlands site (Evans 1993, fig.13). Over 80% of the pottery originated in kilns in Yorkshire, from Crambeck, York, and the Vale of York. A small amount of pottery was imported, such as the Central Gaulish black-slip beaker and the Spanish Dressel 20 oil amphora. The presence of a sherd of Derbyshire ware was unexpected, as this ware is absent from York (Monaghan 1997, 913). Nene Valley colour-coated ware beakers are well represented and a Nene Valley mortarium of late 3rd- to 4th-century type (type M36-7; Perrin 1999) was also present within the subsoil. Very small numbers of Ebor ware sherds are present, which is consistent with the date range of the site falling after the end of the Ebor industries. The mortaria are predominantly Crambeck white wares.

MOOR MONKTON MOOR (MAL08 FIELD 36)

One non-diagnostic grey ware sherd from the cobbled surface is of Roman date. A fragment of ceramic building material is also present.

SHIRBUTT CLOSES (MAL08 FIELD 50)

Three very abraded sherds from a white ware mortarium of 2nd-century type were collected. The pieces were so abraded and discoloured due to the burial conditions that firm identification of the fabric is not possible.

POOL LANE

YRG08 FIELD 21

The group of 119 sherds from pit **16** came from a Nene Valley colour-coated beaker of mid-/late 3rd- to 4th-century date. Although many of the fragments are small and abraded, they all appear to derive from a single beaker. The vessel was long-necked and globular, with indentations and rows of dash rouletting around the shoulder, middle and lower body. It is not clear if there were slit- as well as oval-indentations, but this is likely. Most of the rim is present. The date at which this form began to be made lies in the second half of the 3rd century, with examples most common in the late 3rd to mid-4th century. At York, Monaghan (1997) noted Nene Valley colour-coated examples of this form appear in contexts lacking Crambeck ware, a fabric introduced around AD280, and suggests this form was present before AD280 and possibly as early as AD250 (type KE; *ibid.*). The vessel is not burnt, and so is unlikely to have been a pyre good. The smashed and abraded condition may have been due to post-depositional conditions, but smashed grave goods are not unknown during the Roman period and this action may have been part of the rites during a pre-burial feast (Millett 1986; Matthews 1981, 46-8).

A body sherd from a Spanish Dressel 20 olive oil amphora, a type imported into Britain from the mid-1st to 3rd century, came from ditch **12**, and the complete rim from a ring-necked flagon came from tree-throw **01**. The latter vessel is very abraded and in a fine pale oxidised ware. The neck is splayed, with rings of even dimensions, which suggests a date range in the late 1st to

early 2nd century. This is not an Ebor ware, but may be related to Monaghan's (1997) type O4, a non-local oxidised ware from York. Unfortunately, a sample of this is not present in the York fabric collection for comparison.

YRG08 FIELD 22

Eight very abraded sherds from an Ebor 1 pulley-rim flagon were recovered from context 20. Monaghan (1997) noted this form in his ceramic phases 2 and 2b, which date to the 2nd century, c. AD120–200 (type FP; *ibid.*). However, at Trentholme Drive cemetery, York, Gillam (1968, figs 19–20, nos 14–17) suggests a late 2nd to 3rd-century date range, and at Catterick, Bell and Evans (2002) suggest a date range of the late 2nd to mid-3rd century (type F6; *ibid.*). Sherds from a handmade everted-rim jar in a coarse stone-tempered fabric came from gully 2202 and are of pre-Roman/Iron Age type.

A rim sherd from a GRA jar with a short, everted rim came from the topsoil and dates to the late 1st to early 2nd century AD.

PLG08 FIELD 23

Chronology

An assemblage of 825 sherds (16,358g) of pottery, including one handmade sherd of pre-Roman Iron Age or early Roman type, was identified from the excavations. More than half of these came from layer 82. The remaining context groups were derived predominantly from ditch fills, and more than 60% of the groups amounted to less than ten sherds. This thin scatter of material makes firm dating problematic but, considering the date range represented in the assemblages, the *terminus post quem* given for individual features, and the proportions of key wares on the site, a chronology can be suggested.

Pre-Roman/Early Roman

The earliest material came from ditch 430, primary fill 442, and comprises a handmade jar of pre-Roman Iron Age form. This type of vessel may have continued in use into the early Roman period, but it would not have survived long in circulation once Roman pottery was available. Other finds from 442 suggest that the ditch is a Roman feature and that the handmade vessel—which represents much earlier activity on the site—was redeposited.

Late 3rd to late 4th/early 5th century

The building between ditches 100 and 240 contained small amounts of pottery, which include GRB G1 and GRB G2 body sherds from sections 292 and 301. GRB G2 was found in the kilns and was used to make Dales-type jars and bead and flanged bowls of the late 3rd to 4th century; the presence of body sherds in these wares points to this date range.

The assemblage is dominated by late wares, such as Huntcliff jars and Crambeck wares, including the parchment wares now dated to after AD370 (Bidwell 2005). The proportion of Huntcliff, Crambeck and gritty grey wares using estimated vessel equivalents compares closest to the very late 4th- to early 5th-century group at Piercebridge (Croom *et al.* 2008, table 9.26). The Piercebridge group was characterised by Crambeck parchment (2.5%) and a high proportion of Huntcliff wares (41%), compared with Crambeck grey ware (23%), figures, which compares well

with what was seen at Green Hammerton (6%, 48% and 24% respectively). Most of the parchment ware and Huntcliff jars came from late features, such as spread **82, 83, 364, 384**, gully **80**, and ditches **98, 104, 115, 367, 384, 580, 582** and **181**. Other features may date to the same period, but the pottery in them could only be dated with certainty to the late 3rd to 4th/early 5th century, after c.AD270/280, on the basis of the presence of non-diagnostic sherds of East Yorkshire calcite-gritted ware or proto-Huntcliff jar forms, bead and flange bowls, and Crambeck wares that date from the late 3rd to 4th centuries. These features included gully **112**, ditches **80, 92, 100, 112, 120, 226, 228, 240, 313, 327, 412, 421, 499** and **538**, ring gullies **354, 362** and **612**, pits **488** and **455**, and posthole **406**. In some cases, the features with earlier sherds can be moved into the mid- to late 4th-century group on stratigraphic considerations. For example, ditches **120** and **536** cut features containing Crambeck parchment wares or Huntcliff jars, so must date later than c.AD360/370.

Amongst the calcite-gritted wares, both proto-Huntcliff and Huntcliff types were identified and date to the late 3rd to 4th century and c.AD360 to early 5th century respectively. Similarly, the presence of both the earlier and later Crambeck products suggests occupation from the late 3rd/early 4th century to the late 4th/early 5th century. The larger amount of pottery of late 4th/early 5th-century type is probably due to its abandonment in situ when the site was vacated.

The pottery suggests some activity in the late 3rd to early 4th century, with most of the pottery from the settlement features dating to the mid- to late 4th century. The occupation certainly continued late in the 4th century and possibly into the early 5th century.

KILN PRODUCTS

The kilns produced very little pottery, but the forms identified in the wares present in the kilns and found elsewhere on the site, together with the dating evidence from other sites, suggest a date range in the late 3rd to early 4th century. How many more kilns might lie outside the area of excavation cannot be determined, but the siting of small numbers of pottery kilns on the edge of a rural settlement can be paralleled at Stamford Bridge (Lawton 2003c), where a similar gritty ware was produced (and was also used to make Dales-type jars as well as other forms), and the production date range was from the mid-2nd to the late 3rd or early 4th century.

The kilns at Green Hammerton contained sherds from GRB5 and GRB G2 vessels. Kiln **549** contained very little pottery, but one tiny scrap of ware GRB G2 was recovered from fill **567**, suggesting this kiln may have fired similar wares to the other kilns. The pottery from kiln **603** comprises a GRB G2 Dales-type jar and a CTA2 Dales ware jar. Both are burnt or irregularly fired and could be waster material. Dales ware proper was most common after the mid-3rd century, while the Dales-type jar in GRB G2 ware is dated by parallels from Catterick to the late 3rd to early 4th century. In kiln **574**, fill **576** produced two GRB G2 sherds together with part of a burnt GRB5 plain-rim dish and an unusual oxidised rebated rim in a similar ware, probably also GRB5, which is of uncertain date.

Although only a small amount of pottery was found in the kilns, the recurrence of fabrics GRB5 and G2, and their misfired conditions, suggests they were being made in the kilns. The presence of Dales ware, which is not a local fabric, is somewhat puzzling, but this vessel is a traded piece.

The forms made in GRB G2, Dales-type jars with both a flat-topped rim and a rounded-tip rim, and the everted-rim jars and bead and flange bowl suggest a date range in the 3rd to 4th century. At York, Monaghan (1997, 899) noted Dales-type wares were most common in periods 3a–3b, dating to c.AD200–280, but continued into the 4th century at Lincoln. At Lincoln, Dales-type jars in gritty grey ware were dated to the 3rd to 4th century, but no definitive evidence was

provided for a late 4th-century date (Darling 1999, 30). GRB G2 is not the same as the fabric found at York and contrasts with the Lincoln jars and Trent Valley products mentioned by Darling (1977, 30) in details of form. Dales-type jars in a gritty ware were also made in the Holme-on-Spalding-Moor industry, where they were attributed a date range from the mid-3rd to mid-4th century (type J02; Halkon and Millett 1999). However, they were re-dated on account of Swan's (1992) dating of the Ebor grey ware Dales-type jars to the early 3rd century. Evans (1999) noted that the fabric, a gritty grey ware (fabric G101), was present in late 2nd-century contexts, but the forms made at this time were not Dales-type jars. At Shiptonthorpe, fabric G101 is only present in small numbers in the 2nd century and is recorded as "rising markedly in the late 3rd...and residual by the late 4th" (Evans 2006, 132). If the stratified sequence at Shiptonthorpe is examined (Evans 2006, appendix III), it can be shown that the G101 Dales-type jars (type G101.1) were not present in the recorded groups until the late 3rd century.

At Catterick, Evans gives the flat-topped rim Dales-type form a date range in the late 3rd to early 4th century and the rounded-tip form a date in the later 3rd to earlier 4th century (forms J12.2 and J12.4 respectively; Bell and Evans 2002). These forms and a comparable fabric have also been identified at Piercebridge. Here, the published groups suggest the Dales-type jars in gritty grey ware were still present in the late 4th century, although these may be redeposited (Croom *et al.* 2008, fig. 9.32 no. 96), while the single and double lid-seated jars were the more common form in gritty grey ware in the late 4th century and later groups (*ibid.*, 230). Croom noted the gritty grey ware at Piercebridge that increased numerically in the late 4th- to early 5th-century group (4.3%) compared with 5.2% at Green Hammerton, where it was being made. However, at Piercebridge, the single and double lid-seated jar forms were the dominant types during this period. There is little in the way of stratified, well-dated evidence for this Dales-type jar in gritty ware in the locality, but preliminary work on a late 4th-century group at Wattle Syke includes relatively few gritty grey ware Dales-type jars, suggesting the examples here are of late 3rd- to mid-4th-century date rather than later, and that the increase of gritty grey wares at Piercebridge was due to the expansion of the market for single and double lid-seated jars. Therefore, based on the current evidence, the forms from the kilns and the other forms present in the fabrics being made at the site point to a working life in the late 3rd to mid-4th century.

Many rural kilns in Lincolnshire and Yorkshire made Dales and Dales-type jars in both shell-tempered and gritty grey wares in the 3rd and early 4th centuries, these being replaced in the mid- to late 4th century by single and double lid-seated jars in gritty wares, shell and calcite-gritted wares, including the well-dated Huntcliff wares. The grey gritty and shell-gritted Dales-type jars were made in dispersed kilns, which included the well-documented Holme-on-Spalding-Moor industries, as well as kilns in Lincolnshire, such as those at Little London (Oswald 1937), Knaith (Samuels 1983, 643), Barnetby Top (Samuels 1979, 15), Swanpool (Darling 1977, 30), and Market Rasen (Samuels 1983, fig. 180). In addition, the kilns at Stamford Bridge, dated to the mid-2nd to late 3rd or early 4th century, produced Dales-type jars in a gritty grey ware. Evans (2002, 248) suggested his fabrics R5 and R8 at Catterick were local products, and Croom *et al.* (2008, 230) favour a source either at Catterick or near Piercebridge for the grey gritty jars identified at Piercebridge and on Hadrian's Wall. Until now, very little was known of the pottery industry in this part of Yorkshire and the discovery of the kilns at Green Hammerton is a valuable contribution to our understanding of the pottery tradition in this area in the late 3rd to 4th centuries.

TRADE AND EXCHANGE OF POTTERY AND SITE STATUS

The larger amount of Crambeck parchment ware at the Pool Lane site compared to Gowlands is consistent with a later date range. As at Gowlands, pottery from Yorkshire sources dominates the group at c.70%, with the addition of the local GRB G2 ware at c.6% by count. Small amounts of imported amphorae are also present, including Spanish oil amphorae of Dressel 20 type. Around 2–3% of the group is identified as Holme-on-Spalding-Moor ware, although more products of this industry may be incorporated in the medium-quartz tempered group (GRB1 and 2). Fragments of several flanged hemispherical bowls compare with Crambeck red ware, but an oxidised ware base is more comparable with the Ebor ware range, and one sherd from the body and rim of a flanged segmental bowl compares well with an Ebor ware dish from the York General Accident site in a mid- to late 2nd-century phase (Perrin 1990, no. 1232). It also resembles copies of samian form 36 made in other industries, such as at Swanpool and the Nene Valley in the late 3rd to 4th centuries, but these are not present in the Crambeck industries. The source of this piece is therefore uncertain. Less than 3% by count (less than 1% by weight) was made up of shell-tempered Dales ware, which is in keeping with the generally late character of the group. The amount of fine ware from the Nene Valley is much lower than the Gowlands group and this also reflects the later date range. The mortaria are mostly Crambeck types, but single examples of mortaria of the Mancetter-Hartshill and Lower Nene Valley industry are also present, with one oxidised white-slipped mortarium with slag triturations grits comparing well with a fabric found at Catterick (MB28; Bell and Evans 2002), which has been attributed to North-East England. The source is unknown but will be within the area between York and Catterick. The use of solely iron slag trituration grit and the very thin wall of the mortarium both point to a late date, perhaps in the late 3rd or 4th century.

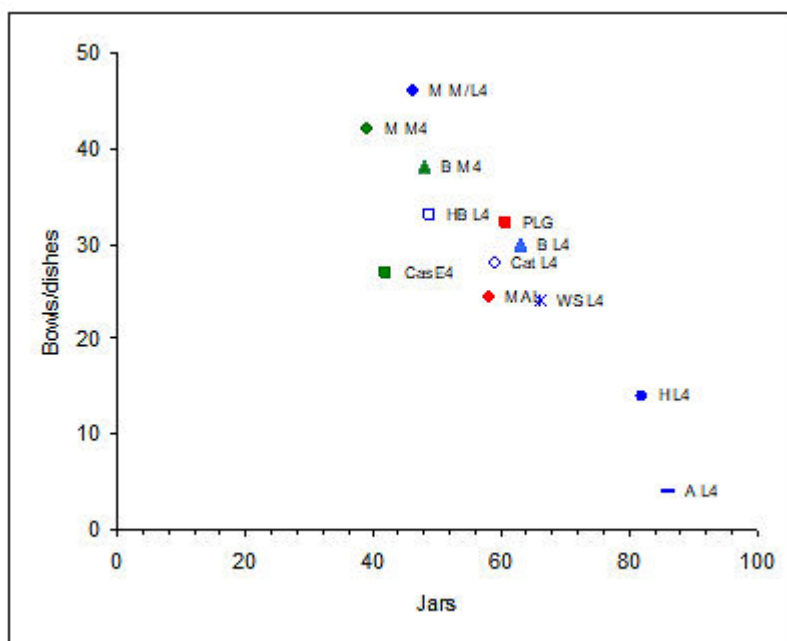


Figure 37: Relative proportion of table ware such as bowls and dishes and cooking ware such as jars from excavations MAL08 and PLG08 and contemporary groups from a range of other sites including forts, urban, villa and lower status rural settlements. M=Malton town, Cat= Catterick town, B=Beadlam villa, Cas= Castleford fort, WS= Wattle Sykes rural, preliminary quantification; H=Heslerton rural, HB=Healam Bridge vicus, A= Aberford South Dykes rural, M4=mid fourth

century, L4=late fourth century, M/L4= mid to late fourth century. Figures from Evans 1993 except Wattle Syles (Leary in prep) and Aberford Dykes (Leary 2008).

The proportion of bowls and dishes, and jars is 32% and 62% respectively, with no beakers represented by rim sherds and fewer beaker sherds than at Gowlands overall. Since the Nene Valley beaker production seems to have declined by the mid-4th century, this may only result from the later occupation at Pool Lane Field 23 rather than at Gowlands. Comparison with quantified groups from early, mid- and late 4th-century sites in the region suggests that the assemblage belongs at the upper end of the rural settlement range (Fig. 37).

SHERD CONDITIONS

Sixteen of the Huntcliff and proto-Huntcliff jars are sooted on the body, rim, neck, and shoulder. One CRA RE jar base has a possible post-firing perforation, although it may have resulted from damage whilst in the ground or during excavation. Thirty-four vessels have been burnt and scorched. These comprise one B18 jar base, nine CRA PA mortaria/bowls (types 5 and 7), 13 CRA RE sherds from flanged bowls and large jars, a Dales ware jar, GRB G2 Dales-type jars, a GRB5 plain rim dish and cupped rim, seven CRA WH mortaria, a sherd from a Mancetter-Hartshill mortarium, and sherds from flanged red ware bowls. Wear could be seen inside one of the red ware bowls, suggesting it may have been used as a mortarium. No graffiti or certain evidence of repair was noted.

ILLUSTRATED SHERDS (FIGS 38–39)

1. GRB G2 Dales-type jar, Bell and Evans 2002, form J12.2, late 3rd to earlier 4th century. 2704.
2. Dressel 20 amphora rim. 2709.
3. CRA RE plain rim dish, end of 3rd to 4th century. 2709.
4. GRC G2 jar with bifid everted rim. 2712.
5. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 2716.
6. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 2701.
7. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 2701.
8. EYCT proto-Huntcliff jar, Bell and Evans 2002, type J9.1/2, late 3rd to earlier 4th century. 2701.
9. EYCT plain rim dish, Bell and Evans 2002, type D1.1, 4th century. 2701.
10. CRA RE grooved-rim dish, end of 3rd to 4th century. 2701.
11. CRA RE plain-rim dish, Corder 1937, type 2, end of 3rd to 4th century. 2701.
12. CRA RE bead and flange bowl with internal burnished wavy line, Corder 197, type 1b, c. AD360+. 2701.

13. CRA RE short everted rim, end of 3rd to 4th century. 2701.
14. BBT plain-rim dish. 2701.
15. NV small bodysherd from pentice moulded beaker, Perrin 1999, 97, late 3rd to mid-4th century. 2701.
16. NV bodysherd of long necked beaker with faint traces painted decoration, Perrin 1999, 96, late 3rd to mid-4th century. 2701.
17. Ebor ware type flat rim bowl, Monaghan 1997, type BD, Hadrianic–early Antonine. 2701.
18. OAB2 bodysherd of flanged bowl, Dr38, Monaghan 1997BF5, mid-4th century+. 2701.
19. CRA WH flange of mortarium, 4th century. 2701.
20. Corder (1937), type 6 mortarium, 4th century. 2701.
21. NV folded beaker with long neck and beaded rim. 17.
22. OAB3 ring-necked flagon. 01.
23. Ebor 1 pulley-rim flagon. 20.
24. GRB5 bead and flange bowl, late 3rd to 4th century form. 229.
25. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 364.
26. CRA RE small wide-mouthed jar/bowl, Corder 1937, type 13, end of 3rd to 4th century. 364.
27. CRA PA wall-sided bowl or mortarium, scorched outside and inside rim. Corder 1937, type 5B, c. AD370+ (Bidwell 2005). 364.
28. CRA PA wall-sided mortarium, York Minster, Hartley 1995, fig. 125, no. 56, type 9 mortarium, scorched all over rim, c. AD370+ (Bidwell 2005). 381.
29. CRA RE Corder type 4 wide-mouthed everted-rim jar. This vessel has a rather brown core but is otherwise of Crambeck fabric type, end of 3rd to 4th century. 500.
30. OAB1 bowl. Perhaps an Ebor ware. Perrin 1990, no. 1232 from a mid- to late 2nd-century phase. 422.
31. EYCT proto-Huntcliff wide-mouthed jar, Bell and Evans 2002, type J9.1/2, late 3rd to earlier 4th century. 539.
32. GRB2 abraded sherd from everted vessel, probably a carinated bowl of the type made at Norton, Hayes and Whitley 1950, type 10b. 537.
33. GRB G1 everted-rim jar. 593.
34. GRB G2 rim of Dales-type jar with rounded rim-tip, slightly flattened on top. Bell and Evans 2002, form J12.4, later 3rd to mid-4th century. 596.

35. GRB5 partially oxidised plain-rim dish. 576.
36. GRB5? Completely oxidised rebated rim grooved on rim tip, possibly a bowl or jar, perhaps belonging to the later single lid-seated rim jar series. 576.
37. GRB G2 mostly oxidised, but partially reduced Dales-type jar with tall everted rim, flat rim-tip, rebated internally. Bell and Evans 2002, form J12.2, late 3rd to earlier 4th century. 604.
38. CTA2 partially oxidised, very abraded fragments from a Dales ware jar. Bell and Evans 2002, form J12.2. In Dales are 3rd to early 4th century, predominantly after the mid-3rd century. 616.
39. B18 plain-rim dish, Bell and Evans 2002, type D1.1, 4th century. 82.
40. CRA PA wall-sided mortarium or bowl with grooved rim, scorched. Corder 1937, type 7, c. AD370+ (Bidwell 2005). 82.
41. CRA PA grooved wall-sided platter. Corder 1937, type 9, c. AD370+ (Bidwell 2005). 82.
42. CRA PA wall-sided mortarium, Corder 1937, type 7, scorched all over rim, c. AD 370+ (Bidwell 2005). 82.
43. CRA RE everted rim bowl/wide-mouthed jar, Corder 1937, type 4, end of 3rd to 4th century. 82.
44. CRA RE plain rim dish, Corder 1937, type 2, end of 3rd to 4th century. 82.
45. CRA RE bead and flange bowl with internal burnished wavy line, Corder 197 type 1b, c. AD360/70+. 82.
46. CRA RE hemispherical flanged bowl, Corder 1937 type 5a, probably burnt, end of 3rd to 4th century. 82.
47. CRA RE hemispherical flanged bowl, Corder 1937, type 5a, worn inside bowl, end of 3rd to 4th century. 82.
48. CRA RE rim of large jar with grooved rim, Corder 1937, type 3a, end of 3rd to 4th century. 82.
49. CRA RE beaker base, end of 3rd to 4th century. 82.
50. CTA2 rim of Dales ware jar, Bell and Evans 2002, form J12.2 in Dales-type are 3rd to early 4th century, predominantly after the mid-3rd century. 82.
51. EYCT rim of necked jar with rolled out rim, proto-Huntcliff type, Bell and Evans 2002, type J6.1, probably 4th century. 82.
52. EYCT rim of wide-mouthed jar with rolled out rim, proto-Huntcliff type, Bell and Evans 2002, type J9.1/2, late 3rd to earlier 4th century. 82.
53. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 82.

54. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 82.
55. EYCT Huntcliff jar, Bell and Evans 2002, form J6.6, c. AD350/60+. 82.
56. EYCT wide-mouthed Huntcliff jar with grooved rim, Bell and Evans 2002, form J6.6, c. AD350/60+. 82.
57. GRB2 wide-mouthed jar with rolled over rim. As at Norton (Hayes and Whitley 1950, type 6). 82.
58. GRB4 bead and flange bowl, late 3rd to 4th century. 82.
59. GRB5 grooved flat-rim bowl, late 2nd to 3rd century. 82.
60. CRA WH reeded rim mortarium, Corder 1937, type 6 scorched, Hartley 2002, 388 type 53, 4th century. 82.
61. CRA WH reeded rim mortarium, Corder 1937, type 6, Hartley 2002, 388 type 53, 4th century. 82.
62. OAB1 flanged hemispherical bowl, Corder 1937, type 5, scorched all over rim and flange, mid-4th century+. 82.
63. B18 body of lugged jar with horizontal groove on rim and burnished loops. Facetting suggests this is handmade. Perhaps related to a late handmade group found at York (Monaghan 1997, 911–3). 83.
64. GRB G2 bead and flange bowl, late 3rd to 4th century. 83.
65. GRB3 wide-mouthed jar with heavy everted, slightly hooked rim, Throlam type jar, late 3rd to 4th century. 83.
66. CRA WH flanged mortarium with spout, Corder 1937, type 6, 4th century, Hartley 2002, 388 type 48. 83.

Table 3: Quantification and relative quantities of Romano-British wares by site.

Abbrev	Ware	Nos	G.	RIMP	Rel % Nos	Rel %G.	Rel % RimP
Amp		1	29.4	0	0.3	0.5	0
DR20		7	311	19	1.9	5.7	3.9
BB1		1	4.5	3	0.3	0.1	0.6
BBT		7	80.8	16	1.9	1.5	3.3
GW	GRB	13	62.5	3	3.5	1.1	0.6
GW	GRB1	1	9.9	5	0.3	0.2	1
GW	GRB2	9	112.7		2.4	2.1	0
GW	GRB3	17	209.1	16	4.5	3.8	3.3
GW	GRB4	3	128.7		0.8	2.4	0
GW		43	522.9	24	11.5	9.6	4.9
gritty GW		14	140.5	16	3.7	2.6	3.3
CRA RE		70	1525.4	111	18.7	27.9	22.8
CRA PA		3	53.2	0	0.8	1	0
Derbys		1	2.8	0	0.3	0.1	0
Shell-t ware		1	2	0	0.3	0	0
EYCT		151	1928.6	242	40.4	35.3	49.8
Ebor	E1	2	55.5	14	0.5	1	2.9
Ebor	E3	1	21.6		0.3	0.4	0

*Roman Dere Street and an associated roadside settlement
East of Green Hammerton, North Yorkshire*

Abbrev	Ware	Nos	G.	RIMP	Rel % Nos	Rel %G.	Rel % Rimp
Ebor		3	77.1	14	0.8	1.4	2.9
Ox W	OAB	7	24.5		1.9	0.4	0
Ox W	OAB1	15	79.2		4	1.4	0
Ox W	OAB2	2	34.7		0.5	0.6	0
Ox W	OAC1	1	27.5		0.3	0.5	0
Ox W		25	165.9	0	6.7	3	0
NV CC		33	250.3	0	8.8	4.6	0
Central Gaulish BS		1	1.6	0	0.3	0	0
M CRA WH		6	211.3	20	1.6	3.9	4.1
M NV		1	92.6	12	0.3	1.7	2.5
M WH		4	60.7	9	1.1	1.1	1.9
White ware		2	8.5	0	0.5	0.2	0
MAL08 total		374	5469.1	486	100	100	100
Amp		3	328.8	0	0.4	2	0
DR20		6	392.3	0	0.7	2.4	0
B18		25	298.7	12	3	1.8	1
BB1		2	1.6	0	0.2	0	0
BBT		2	20	0	0.2	0.1	0
GW	GRB	7	39.3		0.8	0.2	0
GW	GRB2	16	614.7	13	1.9	3.8	1
GW	GRB3	6	486.17	13	0.7	3	1
GW	GRB4	24	428	39	2.9	2.6	3.1
GW	GRB5	31	250	35	3.8	1.5	2.8
GW	GRB6	1	23.3	7	0.1	0.1	0.6
GW		85	1841.47	107	10.3	11.3	8.6
gritty GW	GRB G1	11	116.6	20	1.3	0.7	1.6
gritty GW	GRB G2	55	584.4	44	6.7	3.6	3.5
gritty GW		66	701	64	8	4.3	5.2
CRA RE		198	4169.3	293	24	25.5	23.6
CRA PA		42	766.4	79	5.1	4.7	6.4
DW		24	84.7	20	2.9	0.5	1.6
EYCT		309	6182.5	594	37.5	37.8	47.9
Ebor	E1	1	36.2		0.1	0.2	0
Ebor		1	36.2	0	0.1	0.2	0
Ox W	OAB1	20	284.2	41	2.4	1.7	3.3
Ox W		20	284.2	41	2.4	1.7	3.3
NV CC		9	272	0	1.1	1.7	0
M CRA WH		22	843.9	27	2.7	5.2	2.2
M Manc		2	32.7	0	0.2	0.2	0
M NV		1	7.5	0	0.1	0	0
M N East		1	20	0	0.1	0.1	0
M WH		2	13.8	0	0.2	0.1	0
Mor		4	60.1	3	0.5	0.4	0.2
TS		1	1.1	0	0.1	0	0
PLG08 total		825	16358.27	1240	100	100	100
Ox W		1	3.3	0	1	3.3	0
WAL08 total		1	3.3	0	1	3.3	0
DR20		1	60	0	0.8	8.8	0
Ebor	E1	8	175.5	15	6.2	25.8	7.4
Ebor		8	175.5	15	6.2	25.8	7.4
Fine GW		1	9	10	0.8	1.3	5
Ox W	OAB3	1	48.4	100	0.8	7.1	49.5
Ox W		1	48.4	100	0.8	7.1	49.5
NV CC		119	387.2	77	91.5	56.9	38.1
YRG08 total		130	680.1	202	100	100	100
Grand Total		1330	22510.77	1928			

PETROGRAPHY

R. A. Ixer

INTRODUCTION AND METHODOLOGY

Nine sherds and two clay samples from excavated material from Marton-cum-Grafton (MAL) and Green Hammerton (PLG) were provided for petrographical examination. An additional five 'Northern Frontier' sherds, one from Piercebridge and two each from *Segedunum* and *Arbeia* were supplied.

Initially, the exposed surfaces, cut surface and thin section of the 16 samples were investigated using a x20 hand lens, the Geological Society of America rock-colour chart and the sedimentary descriptive card supplied by Geo Supplies Sheffield (for grain size, grain shape and percentage area).

A standard thin section was prepared by cutting a slice from each sherd/sample and grinding it to the correct thickness. Each section was investigated using transmitted light petrography in plane polarised and crossed polarised light using x6.3, x12.5 and x25 objectives with x12.5 eye pieces, giving overall magnifications of x80, x155 and x310.

The emphasis of the report is on providing detailed petrographical characterisation of the sherds/clay (this is given in detail in the archive) with some discussion on their manufacture and the geographical provenance of the raw materials used in the pottery manufacture.

LOCAL GEOLOGY AS THE ORIGIN OF THE POTTING RAW MATERIALS

The Triassic Sherwood Sandstone Formation forms the bedrock geology for both Green Hammerton and Marton-cum-Grafton but is overlain by poorly sorted glacial till (diamicton). The bedrock geology was probably not employed directly as a raw material, but superficial deposits may have been. Determining the detailed local geology for the 'Northern Frontier' pots is not appropriate as the number of samples is so few, but both *Arbeia* and *Segedunum* have Carboniferous Coal Measures as their bedrock geology.

RESULTS

SYNOPSIS

Ten of the fourteen sherds are divided into two fabric groups. In neither group are there carbonate- (fossil or calcite), slag-, erratic- (cf. Ixer and Vince 2009), or Whin Sill dolerite-tempered wares, but all are medium-coarse to coarse sand-tempered (500–1000 µm diameter). Hence the main tempering material comprises monocrystalline or polycrystalline quartz with minor feldspar.

The majority of the sherds carry minor to trace amounts of more distinctive, and therefore diagnostic, clasts, including granite, fine-grained volcanic and metamorphic rocks. None of these rock types crop-out in the local/regional area and instead represent a glacial component.

One sherd from Piercebridge (PB73 152 385), although a Group 1 gritty grey ware, carries Whin Sill clasts, and so is designated a separate sub-group, namely Group 1a gritty grey ware.

One sherd from Hammerton (PLG08 616) is shell-tempered and is an exotic with regard to its find spot. It is designated as Group 3.

One sherd from *Arbeia* (12079 5584) has no temper, or is very sparsely tempered, and is designated as Group 4.

CLAY SAMPLES FROM GREEN HAMMERTON KILN

The fine clay sample is very clean (having very few non-plastics), with a rare, fine sand component that is comprised of quartz, sandstone and trace amounts of phyllite. The lack of any defining features means that it is not possible to determine (petrographically) if the clay is the same as that used in the manufacture of any of the Green Hammerton pots.

The sandy clay sample has abundant fine sand comprised quartz, fine-grained sandstone, probably from the Coal Measures, and trace amounts of chert. This fine sandy clay is unlike the main clay used in the manufacture of Group 1 pots. It is similar to some of the Group 2 pot fabrics (PLG08 576A is the nearest), but the density of the sand is higher than any found in that group.

Both samples could be baked, local raw materials.

GROUP 1: GREY GRITTY TEMPERED WARES

This group comprises PLG08 604, *Arbeia* 5585, PLG08 83, and MAL08 2704 and 2712. They make a tight petrographical group manufactured to a common 'recipe'. The pots are characterised by a coarse-grained (500–1000 µm diameter) quartz-dominated temper, which makes up approximately 10% by area, that is distributed within a clean clay.

The coarse-grained quartz and feldspar in the temper have authigenic overgrowths and are probably derived from Millstone Grit or Triassic sandstones, as overgrowths on both mineral groups are typically found in cemented sandstones from these formations.

PLG08 604 is taken as the type fabric for Group 1 gritty grey ware. In addition to quartz, feldspar and sandstone clasts, it has significant amounts of fossiliferous chert, but it is free of any glacial component.

Arbeia 14186 5585 has coarse-grained (750 µm diameter) quartz-dominated temper, which makes up c.10% by area. In addition to quartz, feldspar and sandstone clasts, the sherd has significant numbers of large, dolomitised, fossiliferous chert clasts, probably from the Carboniferous Limestone. The pot is free of any glacial component.

MAL08 2704, 2712 and PLG08 83 also carry Palaeozoic fossiliferous chert (from the Carboniferous Limestone) but have minor to trace amounts of granite and fine-grained, graphic granite and metamorphic phyllite. Despite the presence of this minor, glacially derived component to their non-plastics, all three could have been made locally, perhaps from the same raw materials as PLG08 604.

GROUP 1A

A single sherd from Piercebridge has a coarse-grained (500–750 µm diameter) quartz-dominated temper, which makes up about 10% by area. It shares many of the characteristics of the Group 1 gritty grey wares.

The coarse-grained quartz and feldspar in the temper are probably derived from Millstone Grit or Triassic sandstones as some quartz grains show authigenic overgrowths; as noted above, these are typically found in cemented sandstones from these formations.

However, it significantly differs from all other investigated Group 1 pots in the nature of its minor clasts, as it carries little chert, but has large silicified fossils, small granite clasts, and kaolinite-bearing sandstone and Whin Sill dolerite.

Hence the origin of the raw materials for the Piercebridge pot is different from any of the other investigated gritty grey wares. Although an origin at Green Hammerton is possible, the composition of the minor clasts makes it unlikely and suggests an origin closer to the North Pennines (as silicified Palaeozoic fossils and Whin Sill are associated with the Carboniferous Limestone), and to Piercebridge itself, is more plausible.

GROUP 2: SILTY WARES

This group encompasses PLG08 576B, 593, 82, 576A, and *Segedunum* 421 and 456. No type pot was selected, as this is a less-coherent group and may represent a single ware type ('recipe'), which shows wide grain size and density variations, or a number of discrete ware types. It should be noted that PLG08 576A has the greatest differences to the 'typical' member of this group.

The pots are characterised by having a fine to medium (250–375 µm diameter) natural sand added to a variety of clays from very clean to slightly silty. The sand temper varies from c.10% to >33% (576A), but the majority are c.20–30% by area.

Finer grained quartz and internally fine-grained sandstone clasts suggest that some of the sand could derive from Coal Measure, in addition to Millstone Grit or Triassic sandstones. All pots carry minor amounts of fine-grained igneous and volcanic rocks (perhaps from the Cheviot Hills), and PLG08 82 and *Segedunum* 456 also have south-west Scottish granite clasts, suggesting that these clasts were transported by ice moving down the north-east English coast, rather than through the Stainmore Gap (see Ixer and Vince 2009 for a fuller discussion). Chert is present in most of the pots but is of minor importance.

It is difficult to match the pot with any locality, in terms of provenancing its raw materials, as the group may represent pots made with a constant manufacturing recipe, but using local raw materials.

Segedunum 421 and 456 are very similar to each other and have a fine- to medium-grained (375 µm diameter) quartz-dominated temper, which makes up c.10% by area.

Although the two 'Northern Frontier' pots share characteristics with Group 2 pots from Green Hammerton (especially PLG08 593), they could have been made locally in the north-east of England.

GROUP 3

One sherd (PLG 08 616) is shell-tempered within a Mesozoic ?deep-water clay, and so is very different from all the other examined material. It is exotic with regard to its find spot and may be an example of a Lincolnshire shell-tempered fabric. Similar shell-tempered pots are known from Wattle Syke, Adwick and Sykehouse (Cumberpatch 2010), but are rare.

GROUP 4

Arbeia 12079 5584 is not tempered, or very sparsely tempered. It carries rare (<1–2% by area) 375 µm diameter sand grains. It carries no recognisable glacial component, but has coarse-grained, kaolinite-cemented sandstone clasts. It is unlike any pot from Green Hammerton or any other investigated pot.

COMPARISON WITH OTHER GROUP 1 GRITTY GREY WARES AND GROUP 2 SILTY WARES

GROUP 1

Petrographically, PLG08 604, which is a waster from a kiln at Green Hammerton, is highly comparable to Aberford Dyke ASP07 7080/7002 (Ixer 2011a) and 14186/5585 from *Arbeia* in both fabric and choice of the raw materials; none show a glacial component. It is possible that all three were manufactured using the same raw materials, and perhaps made at Green Hammerton.

Gritty grey ware sherds MAL08 2704, 2712 from Marton, PLG08 83 from Green Hammerton, and BTW07 73, 139 and 140 from Wattle Syke all have a very similar fabric, but the raw materials have trace amounts of igneous and metamorphic rock clasts, suggesting a minor glacial component to them. If the presence/absence of the minor to trace glacial component is due to natural inhomogeneity of the sand temper, then they too may be from Green Hammerton.

Lapeunte (1992) described a number of wares from close to Hadrian's Wall. The present Group 1 gritty grey wares would belong to her Group 3 'Roman late gritty grey wares', assuming that 'pseudopolygonal, fine-grained texture of silica' is her description of chert.

GROUP 1A

Piercebridge is a Group 1 gritty grey ware that is unlikely to have been made at Green Hammerton, but by using raw materials obtained from further north/north-east of there.

Lapeunte (1992) recognised a Whin Sill-bearing fabric from the 'Northern Frontier' and called it Group 1 of her Local Traditional Wares, characterised by the presence of various sandstones and quartz dolerite. She suggested an origin on the Northumbrian Coastal Plain, most probably somewhere between the AIn and the Wear.

GROUP 2

The silty ware pots from Green Hammerton are similar to each other, as well as to the other Group 2 pots investigated from Wattle Syke (Ixer 2011b) and the two pots from *Segedunum* (421; 456), but since this is a 'loose' petrographical group any single geographical origin would be difficult to ascribe. A Green Hammerton origin for all or some of these pots cannot be eliminated, but equally the pots from each locality could be of local manufacture.

GROUP 3

One sherd (PLG08 616) is shell-tempered within a Mesozoic ?deep-water clay and is unlike any other pot examined. It is exotic with regard to its find spot and may be an example of Lincolnshire shell-tempered fabric. Similar shell-tempered pots are known from Wattle Syke, Adwick and Sykehouse (Cumberpatch 2010), but are rare.

GROUP 4

Arbeia 5584 is unlike any other pot examined and it is unwise to suggest an origin for the raw materials or a place of manufacture. It is a poorly made pot and so may be local, from North-East England.

THE CERAMIC BUILDING MATERIAL

S. Tibbles

The majority of the assemblage of ceramic building material (CBM) was identified as Romano-British in date. Its presence could reflect a structure in the vicinity, a notion substantiated by the variety of forms present. The assemblage may have been reused within smaller aspects of a structure/s associated with occupation activity, such as a hearth, oven, kiln, post-packing, or possibly associated with a road or a floor or surface.

The remainder of the CBM comprised post-medieval brick fragments and early modern land drain. One fragment of mortar was also recorded. In addition, three fragments of fired clay from topsoil **01** and ditch fill **116** from Field 23 were identified, which are discussed further by Cowgill (this volume).

INTRODUCTION AND METHODOLOGY

Twenty-eight fragments of CBM and one fragment of mortar were submitted for assessment (Table 4). The assemblage was recovered from six contexts and weighed a total of 1,894g (Table 5).

The assemblage was quantified by count and weight and examined using a low-powered binocular microscope (x15). A Munsell colour code was recorded where appropriate and the presence of original surfaces was considered to aid identification. Information regarding dimension, shape and fabric was recorded and, where possible, the material was compared with existing typologies.

Diversity in size and colour in CBM, caused during manufacturing, must be taken into consideration when comparing examples in collected assemblages and typologies. The varying sizes and colours can be attributed to differences in the clays used, shrinkage during drying, firing within the kiln or clamp, and the location of the brick/tile inside the kiln.

The dating of brick and tile can be contentious due to its potential for reuse, and thus date ranges are provided here where material of known dates has been recorded.

THE ASSEMBLAGE

Eighty-two percent of the ceramic assemblage was of Romano-British date. The remainder of the material dated from the post-medieval to early modern periods (Table 4). A Munsell colour range between 2.5YR/6/8 light red to 5YR/6/6 reddish yellow was recorded.

One fragment of mortar was recovered from context (surface) **82** in Field 23.

Table 4: The assemblage by period

Period	Type	Quantity	Weight (g.)
<i>Romano-British</i>			
	Roof Tile	10	1004
	Box-Flue Tile	5	376
	Bessales?	3	279
	Tile?	1	31
	Type Unknown	4	61
	Mortar	1	17
<i>Post Medieval</i>			
	Brick	2	47
<i>Early Modern</i>			
	Land Drain	3	79
Total		29	1894

Table 5: The CBM assemblage by context

Context No	Field	Context Interpretation	No of Fragments
1	23	Topsoil	10
2	23	Subsoil	5
82	23	Occupation spread	10
116	23	Fill of enclosure ditch [115]	1
160	23	Spread/Trample of clay	1
239	23	Fill of enclosure ditch [240]	1

ROMANO-BRITISH

Of the twenty-three fragments of ceramic building material, four forms were identified: *tegulae*, *bessales?*, ridge?, and box-flue tile. Five fragments could not be conclusively identified by form and were categorised as tile? and type unknown (Table 6).

Table 6: The Romano-British CBM assemblage by type

Type	Quantity	Weight (g)
Tegulae	9	890
Bessales?	3	279
Box-Flue Tile	5	376
Ridge?	1	114
Tile?	1	31
Type Unknown	4	61
Total	23	1751

ROOF TILES

Tegulae were the fundamental building material in the construction of a roof. They have particular features in the form of flanges on one face, as well as upper and lower cutaways, which were required to allow tiles to slot into one another. *Tegulae* were set with the flanged surface uppermost and *imbrices* were used to overlap two adjoining flanges to produce a solid roof. Ridge tiles were used on the apex of the roof, where the *tegulae* met the apex.

Nine fragments of *tegulae* were noted from four contexts: **1** (one fragment), **2** (four joining fragments, discussed as one tile), **82** (three fragments) (Fig. 21, no. 68) and **239** (one fragment) (Fig. 21, no. 67). The tiles had a thickness range between 18mm and 28mm. The majority were abraded, although crisp breaks were also recorded.

Finger-smoothed flanges were noted on four tiles. Two flange types were identified: Type 2 (two tiles, **2** and **239**) and Type 4 (one tile, **82**). The flange type of the remaining tile (**82**) could not be determined as it was broken in antiquity. Types 2 and 4 are a common form and are widespread

throughout Yorkshire and the York area (Tibbles 2002; Tibbles and Tibbles 2004, 20; 2009, 4; forthcoming).

The dimensions of the flanges were as follows: height including flange: >31mm to 46mm; and flange width: 24mm to 46mm. Two knife-blade scars noted on the *tegula* from **2** may be the remnants of an upper cut-away.

One *tegula* (from context **01**) bore the remnants of a possible V-shaped signature formed by two finger strokes. However, this interpretation is only tentative, as it was noted on the underside of the tile, and signatures are more often made on the upper surface (Betts 1998, 228). It may have occurred during manufacture and be an accidental impression.

Heat discolouration/burning, including post-breakage, was noted on all *tegulae* except for the fragments from **1** and **239**. The latter tile was recorded as a 'second'. It was over-fired, and the underside was slightly blown.

One fragment of ridge? tile from **82** had a thickness of 25mm and a finger-smoothed finish to the outer surface.

BRICKS

Bessales were the smallest of the Roman bricks, with an average dimension of 198mm square, equivalent to eight Roman inches or *unicae* (Brodrigg 1987, 34). They were mainly used to construct hypocaust pillars (*pilae*), but they were used in other aspects of building construction, such as archways and flooring.

The three fragments of brick, with a thickness between 31mm and 34mm, were categorised as *bessales*? Although two joining fragments were evident, the remaining fragment was not considered to be the same brick. All were abraded. One fragment may have been used in a floor, as the upper surface displayed smooth patches, possibly indicating that it was foot-worn.

BOX-FLUE TILE

Tubuli were square pipes set within walls as part of the hypocaust heating system of Roman buildings. They have characteristic combing or scoring of two surfaces as a keying element for plaster or mortar. They also often have lateral vents at opposing sides to allow the warm air to circulate.

Of the five box-flue tiles identified, the characteristic feature of combing was noted on two fragments (**1** and **82**). The tile from **82** displayed two strokes, one vertical/horizontal and one diagonal, of c.19 fine tines. The fragment from **1** displayed one incomplete stroke of two broad tine impressions (orientation could not be ascertained due to the small size of the fragment). The distinctly different combing suggests two combs were used. The remainder were plain faces and comprised two corner fragments—with the remnants of the returning face—and one fragment with a finger-smoothed top/bottom edge or a lateral vent.

The tiles had a thickness range of 16mm to 26mm, and heat discolouration/burning, including post-breakage, was evident on all the fragments.

UNIDENTIFIABLE BY FORM

Five unidentifiable fragments of CBM were recovered from **1** (one fragment), **2** (one fragment), **82** (two fragments) and **116** (one fragment). All were abraded and post-breakage heat discolouration/burning was evident on the fragments from **1** and **82**. The majority bore no diagnostic measurements, nor features to enable identification of form. However, the fragment from **2** may represent a *tegula*, as a knife-blade scar and possible clay removal was noted. This was suggestive of a lower cut-away. One fragment from context **1** had a thickness of 17mm and was categorised as tile. The dating of this fragment is cautionary as the fabric was unlike the remainder of the Romano-British assemblage, and it may be of medieval date.

MORTAR

The fragment of mortar from **82** was a lime-based chalk mix. One surface was 'flattish' in appearance and the opposing surface, also 'flattish', had a slight chamfer. This may have been from original use. The fragment weighed 17g.

ILLUSTRATED CBM FRAGMENTS (FIG. 40)

- 67. Romano-British tegula. **239**.
- 68. Romano-British tegula. **82**.
- 69. Romano-British box-flue tile. **82**.

DISCUSSION

The CBM may have been associated with or used (or reused) in various archaeological features recorded by the excavations; for example, post-packing, floor surface **83**, road metalling **126** and **136**, and kilns **549**, **574** and **603**.

Two-thirds (65%) of the CBM assemblage displayed the effects of burning/heat discolouration. This was suggestive of demolition burning, but may have occurred during manufacture, and it could even be the result of reuse within smaller free-standing structures, such as kilns. Excluding the material from topsoil **1**, the majority of the CBM assemblage (ten fragments) was recovered from deposit **82** in the occupation area to the south-west of the kilns. It is therefore possible that the pieces from **82** may represent material used inside the kilns, but it should be noted that they may equally have been used in a hearth or oven located outwith the excavations. On balance, it is considered that the assemblage is probably reused from a building(s) elsewhere. The material in the subsoil and topsoil is probably redeposited, a result of later cultivation of the soils.

The range of forms identified would have been used in various aspects of construction, including roofing, floors and/or walls, and a hypocaust. The presence of this range of CBM, notably the box-flue tile, could reflect a building(s) of some status in the vicinity. It is possible that the building(s) was associated with the roadside or agricultural settlement identified by the excavations.

Farms and settlements in the local area would likely have supplied agricultural produce to York and its satellite settlements (Fraser 2009, 7). Evidence to suggest similar use of the land, possibly associated with a settlement, was identified on the Marton to Acomb Landing pipeline to the immediate east (NAA 2008, 16–17), and also noted at Osbaldwick Lane, to the east of York (Fraser 2009, 41).

RECORDED FINDS

M. Bishop, with additional notes on glass by D. Allen

INTRODUCTION AND METHODOLOGY

The total number of recorded finds from the excavations was 16. The assemblage comprised three copper-alloy items, four ferrous objects, one lead, six glass, and two jet or shale. All of the pieces had been assessed previously for conservation and were examined using X-radiography by the conservation laboratory at the University of Durham.

Objects were studied with reference to the X-rays to facilitate identification. All of the finds were appropriately packaged for short- to medium-term storage in accordance with local museum and conservation guidelines.

CATALOGUE

FERROUS

1. Fragment of bar, now sub-rectangular in section with a rounded end. Not datable. L: 38mm; W: 18mm; Th: 10mm. MAL08 2701 RF 4.
2. Knife blade, in two pieces. Roman? L: 65mm; W: 20mm; Th: 4mm. PLG08 82 RF 56.

NAILS

3. Uncertain type; bent and headless. Roman? L: 53mm. MAL08 2701 RF 6.
4. Uncertain type; bent into an L-shape and headless. Roman? L: 69mm. MAL08 2701

COPPER ALLOY

5. Coin, probably Constantinian. Obverse illegible, reverse with nude Jupiter facing left. Roman (4th century AD). D: 17mm. PLG08 394 RF 15.
6. Coin, illegible. Roman (4th century AD). D: 13mm. PLG08 82 RF 7.
7. Irregularly shaped piece of sheet with no original edges surviving. Roman? L: 19mm; W: 17mm. PLG08 500 RF 21.

LEAD

8. Probably circular, domed caulking from inside the head of a domed stud, rather than a spindle whorl. Possibly adornment from furniture. Cf. examples from South Shields (Allason-Jones and Miket 1984, 8.96–9). Roman. D: 29mm; H: 11mm; hole D: 6mm. MAL08 2713 RF 2.

GLASS

9. Indeterminate blue-green fragment, possibly a bottle, 1st to 2nd century. PLG08 82 RF
10. Small fragment of dark blue glass, possibly from a bead. Roman? L: 3mm. PLG08 82. RF 14.

11. Rim fragment of a large bottle, blue-green glass, 1st to 2nd century (Price and Cottam 1998, 191–8, figs 88–9). PLG08 82 RF 27.
12. Fragment of pale green glass with spiral self-coloured trail. Possibly a convex jug with long neck, globular or discoid body, late 1st to early 2nd century (Price and Cottam 1998, 150–2, fig. 66). PLG08 116 RF 3.
13. Indeterminate blue-green fragment distorted by heat. PLG08 262 RF 8.
14. Tiny indeterminate colourless fragment. PLG08 368 Sample AA.

SHALE

15. Half of a globular spindle whorl of shale fractured across its diameter. The hole tapers to the centre. Cf. examples from York (Allason-Jones 1996, 47, 296–8). Roman. Dia: 37mm; H: 16mm; hole Dia: 6–8mm. PLG08 82 RF 11.
16. Disc spindle whorl of jet or shale with one raised face. The underside is uneven, so may be damaged or may have been intentionally left rough, although this seems unlikely. Cf. An example from South Shields (Allason-Jones and Milet 1984, 7.172). Roman. Dia: 36mm; H: 10mm; hole Dia: 7mm. PLG08 2 RF 1.

ILLUSTRATED ARTEFACTS (FIG. 40)

70. Globular spindle whorl. 82 RF 11.
71. Disc spindle whorl. 2 RF 1.

DISCUSSION

This small collection of items is generally indicative of Roman domestic occupation activity but is not very informative. The spindle whorls are striking, since Allason-Jones (1996, 47) notes that while globular forms are more common in York, discoid examples are prevalent in South Shields, and this excavation has produced examples of each, although they are intrinsically not datable. The coins are late, and the fragments of copper alloy and glass may be indicative of industrial activity, but there is no reason why they need to be considered as such.

THE NAILS

E. M. Foulds

INTRODUCTION

A large quantity of iron nails was recovered from a late Roman (3rd–4th centuries AD) cremation deposit 18 from site YRG08. The function of the nails is uncertain, but it is considered possible that they may have been used in the construction of wooden item(s) within a funeral pyre grave good assemblage.

THE ASSEMBLAGE

Approximately 658 iron fragments were recovered from 18, the primary fill of a small pit, which also contained cremated human remains and a broken, near complete, but not burnt Nene Valley ceramic vessel. Seven of the iron fragments were hand-collected (RF 2), and the remainder were

recovered via processing soil samples. The locations of the nails in the deposit were not recorded individually and their precise relationship with the cremated bone and broken vessel sherds is therefore ambiguous.

Based on the number of nail heads identified, the fragments represent c.366 nails. Of the remaining fragments, 134 are fragments of nail shank and 174 are amorphous fragments that are likely to be from iron nails.

Approximately 251 of the iron fragments were x-rayed at Durham University Department of Archaeology. The x-rayed material totalled 38.1% of the total iron assemblage, and was assumed to be a representative sample. One hundred and eighty-six nails with heads are clearly discernible, representing 74.1% of the x-rayed assemblage by count. The remainder are fragments of nail shank, or other amorphous fragments, constituting 25.9% of the x-rayed material.

In examples in which the majority of the nail head and shank remain intact, most nails have a flat circular head (c. 10mm in diameter) with a square or rectangular shank cross-section, and measure c.25mm long. Based on comparable physical appearance, the remaining iron fragments are probably from nails of similar size and shape. Eight of the x-rayed nails appear to be only 10mm long and have either domed or pyramidal heads (7–10mm in diameter).

All of the nails are heavily corroded, and where some have broken, the cross-section shows that they have corroded to such an extent that they are now hollow. Although many of the nail shanks are straight, there is also a significant proportion that are bent and distorted, perhaps due to being subject to high temperatures (although see Booth et al. 2010, 333 for a different interpretation of bent nails in cremations). This interpretation, together with the fragments of burnt bone, charcoal, and mineralised wood adhering to the iron corrosion on all surfaces of the nails, suggests that they were burnt on a funeral pyre.

DISCUSSION

Based on form, the majority of the nails from YRG08 can be assigned to Manning Type 1B, which is classified as less than 150mm long with flat, sub-rectangular or rounded heads (Manning 1985, 134). Other 'short' nails in the Manning typology all have very distinctive heads, such as wide discoidal, hollow dome, and globular (Types 7–9), which it is suggested were used for upholstery. None of the nails retrieved from 18 possess such characteristic heads, confirming that the nails most closely parallel Type 1B. Similarly sized and shaped nails from cremations at the Roman cemetery at Brougham, Cumbria, were described as Manning Type 1B (Cool 2004, 271), but Mould (2004) was able to sub-divide them into more specific size groups (see below). Eight x-rayed nails, which have pyramidal heads, are likely to have been either decorative dome-headed nails (Manning Type 8), or possibly hobnails (Manning Type 10).

Therefore, it seems probable that the majority of the nails would have been used in a construction of wood, rather than in hobnail shoes. Nails (hobnails and constructional) in cremation contexts are not uncommon finds (e.g. Booth et al. 2010; Cool 2004). At Brougham and Lankhills (Winchester) Roman cemeteries, all examples from cremations were either Manning Type 1B nails or hobnails (Type 10). At both cemeteries, many of the nails were much larger than the YRG08 examples, although Mould (2004, 271) sub-divided the Brougham nails by size into two groups: small (head length less than 13mm and shank less than 36mm), and medium (head length 13–22mm and shanks less than 70mm, although some have larger heads). The YRG08 nails are comparable with Mould's small nail sub-group.

Compared to the cremations at Brougham and Lankhills, the YRG08 nail assemblage is unusually large, with at least 366 nails represented. At Brougham, most cremations only included 10 nails, although there were some instances of 'more than 60' from four cremations (Cool 2004, 271). At Lankhills, the maximum number of nails from both urned and un-urned cremations was 22 (Booth et al. 2010, 332). The comparatively large number of nails at YRG08 could be due to the formation of the cremation deposit, but could also be the result of enhanced recovery of finds from soil sample processing. It is notable, however, that more iron nails were recovered from cremation contexts at Brougham, where there was no routine/consistent sampling methodology (Cool 2004, 13), than at Lankhills, where a sampling strategy was employed (Booth et al. 2010, 404). This potentially suggests differences in burial practices, which may have affected the inclusion of grave goods in cremation deposits, rather than the difference being a recovery bias.

The item(s) that the YG08 nails were used to construct is not apparent. The nails from the Lankhills cremation deposits were thought to derive from objects that were placed on the funeral pyre and burnt with the body. As these were larger nails, one interpretation is that the nails were used in the construction of a funeral bier to carry the corpse to the pyre, although they may also suggest that the nails may have been used for boxes or caskets (Booth et al. 2010, 332). At Lankhills, the nails were gathered along with the burnt bone remains and placed in a vessel, or were buried without a vessel.

In contrast, the small nails from several of the cremations at Brougham were suggested to be from boxes or caskets, which contained the cremated bones and other grave goods. This is supported by fragments of box fittings found in cremation 273 (Cool 2004, 394). At Brougham, the nails were recognised at the time of excavation and their spatial arrangement supports the interpretation that they were part of a container of some kind. However, even for such boxes, the number of nails that were used does not equate to the number of nails found in the YRG08 cremations, and there is no mention of evidence of burnt nails other than a single nail from cremation deposit 223.

Given that there are small fragments of burnt bone adhering to the nail corrosion, the large number of nails present in deposit 18, and their similar size to the buried boxes at Brougham, it is considered likely that the YRG08 nails made up multiple small, possibly delicate objects that were burnt on the funeral pyre as grave goods, and that the method of retrieving the cremated bone meant that more nails and other pyre material than might be normal were included in the burial deposit.

THE STONE OBJECTS

M. Foreman and G. Gaunt (lithology)

METHODOLOGY

All objects were examined by eye in natural daylight. Given the nature of the material, they were measured to an accuracy of 1mm; the recorded range of dimensions is presented where deemed appropriate.

CATALOGUE

NO. 1: PLG08, CONTEXT 82, RF 12 (FIG. 41, NO 75)

Material: river-rolled cobble of fine-grained sandstone (non-specialist identification by M. Foreman).

Identification: improvised thatch-weight.

Form: large irregular cobblestone with an apical transverse perforation of 6–20mm diameter for suspension. The perforation, which probably originated as a naturally occurring hole or hollow, has been casually improved or completed by drilling from both sides. The roughly flat-bottomed form appears to be fortuitous and naturally formed.

Dimensions: L: 166mm; max W: 172mm; max Th: 113mm; perforation max diam.: c.15mm on one side and c.20mm on the other; min diam.: c.6.5mm.

Context associations: occupation material of Romano-British date, including pottery, roof and box-flue tiles, a glass-vessel sherd, two lead objects, a spindle whorl, glass bead, iron nails, and other objects.

NO. 2: PLG08, CONTEXT 60, RF 46

Material: fine-grained compacted sandstone (non-specialist identification by M. Foreman).

Identification: fragment of a stone disc.

Form: flat fragment of sandstone split along its bedded planes. Smoothed on one face and probably broken from edge of a larger object; the curving edge of one flat face may suggest this had an original diameter of c.110mm. The outer edges along the circumference have subsequently been chipped and abraded. The smoother of the two flat opposed surfaces is pale grey in colour, discolouration which may be the result of gentle heating.

Dimensions: L: 90mm; max W: 36mm; Th: 28mm; inferred original diam.: 110mm.

Context association: fill of roundhouse gully, associated with heat-cracked pebbles.

NO. 3: YRG09, CONTEXT 30, RF 1 (FIG. 41, NO.72)

Material: sandstone, pale to medium, slightly reddish-brown, medium to (more commonly) coarse-grained, poorly sorted, poorly compacted; Millstone Grit (Geoff Gaunt).

Identification: beehive quern upper stone.

Description: c.40% fragment. Split across its diameter, with subsidiary fracture lines across opposing grinding surface edges. Four impacts to the top of the hopper have removed c.60% of its upper profile. No trace of the dressed external surface (normal for such a quern) survives. Five glancing impacts to the edge of the grinding surface have removed 10–20mm thick flakes from its entire perimeter and the central surface is roughened by further impacts.

The grinding surface is flat and smoothed from use, worn to 5° from the horizontal. Whilst the feed-pipe has been bored cylindrically over c.50mm from each end (apparently to different diameters), the central, linking, 50mm section is markedly less regular. The handle hole is drilled at an incline of 15°.

Dimensions: Diam.: >255mm (est. 280mm); H: >185mm (est. 200–220mm). Hopper W: >80mm (est. 100mm); D: >30mm (est. 60mm). Feed-pipe Diam.: top 25mm, base 35mm. Handle hole L: >45mm (est. 60mm); Diam.: 25mm. Wt: 6kg (est. intact 13–15kg). YQS 3585. Context: fill of posthole 31, inside roundhouse gully 2203.

NB: an alternative interpretation, which assumed that the object's exterior surface was deliberately roughly finished to give a slightly oval grinding surface with a smaller diameter of 250–260mm, was rejected, as such a rough external finish is very atypical and only 5% of the 359 measured upper stones in Heslop (2008) had such a small diameter.

NO. 4: YRG09, CONTEXT 43, RF 2

Identification: corner of a rectangular slab.

Material: sandstone, pale grey, fine- to (less commonly) medium-grained, fairly well-sorted, fairly well-compacted, with medium thick bedding. Carboniferous, cf. Coal Measures. YQS 3585 (G. Gaunt).

Description: flat-sided block, 40mm thick, upper and lower surfaces are smooth, perhaps water-worn. Two vertical side-faces at right-angles; this could be the corner of a rectangular slab >120mm long by >65mm wide.

NO. 5: PLG08, CONTEXT 253, RF 19 (FIG. 41, NO.74)

Identification: saddle quern.

Material: sandstone, pale slightly greyish brown, fine-grained, well-sorted, well-compacted, massive. Provenance uncertain. Overall appearance suggests 'dolomite sand' variety of the upper part of Permian Lower Magnesian Limestone, but a scratch test shows that most, and probably all, of the grains are quartz, not dolomite, so a Carboniferous or Middle Jurassic origin is likely. Presumed to be part of an erratic (G. Gaunt).

Description: 80–85% intact, a roughly triangular boulder has been split in half, to create a G/S, which has been worn smooth. One side has had its natural curve enhanced with peck-dressing, whilst the other two, converging sides are not dressed. The naturally rounded base is also randomly peck-dressed (c. 1–2mm deep), but has a smooth, roughly 100mm dia area at its flatter centre (the central smoothed area could be the result of wear from supporting a timber post.) The G/S is slightly concave across its length (c. 2mm max), but flat across its width (suggesting wear from the back-and-forth motion of a two-handed rubber, moving lengthways from the apex to the rounded side). The bulk of the G/S edge at its narrower end has been deliberately removed.

Dimensions: G/S L: 300mm; W: max 250mm, narrowing to 100–120mm (est.) at apex; H: max 140mm; Wt: 15kg (est. intact c. 17–19kg). YQS 3588. Fill of posthole 254, reused as a post-pad.

NO. 6: PLG08, CONTEXT 09, RF 47

Identification: unidentified object.

Material: sandstone, pale grey, medium to (less commonly) coarse-grained, with sparse 2–5mm-wide quartz pebbles. Millstone Grit (G. Gaunt).

Description: two non-joining edge fragments (A and B), apparently from the same artefact. They both have a flat face, which is very smooth and non-abrasive (A is >90mm wide; B is >50mm wide), with a gently curving edge of c.400mm radius and angled fracture faces, making each fragment triangular. In section, they both have a domed profile, rising to an estimated height of c.60mm, with B having a steeper initial face than A. The lower portion of the external face retains

some evidence of peck-dressing, but the more horizontal section is smoothly finished (or water-worn).

Dimensions: if the two fragments are opposing portions of the same artefact, it would be >140mm wide by >120mm long by c.60mm high. Wt: A = 0.5kg, B = 0.15kg. YQS 3589. Context: fill of pit 8, west of fence line 19; the fill contained a high quantity of fire-cracked stones.

Comment: It is difficult to ascribe a function to these small fragments. Options considered include:

- A 'rubber' stone (for a saddle quern). However, this is unlikely, as the non-abrasive flat face makes an improbable grinding surface.
- A 'smoothing/polishing' stone: if the flat face was used as the upper surface, then the rounded 'base' would presumably need to be earth-fast to provide the necessary stability.
- A furniture component: the polished (?) flat face could be part of the edge of a very large, c.0.80m diameter, circular table top, but its c.60mm thickness and variable edge profile both make this unlikely. Croom (2007, 69) notes that the wooden table tops at Herculaneum were typically smaller, i.e. 0.42–0.61m in diameter.
- An architectural element: it could possibly be from the rim of a curved shelf.

NO. 7: PLG08, CONTEXT 81, RF 5 (FIG. 41, NO.73)

Identification: large upper disc hand quern.

Material: sandstone, pale brownish grey, fine- to medium- and (sparsely) coarse-grained, with sparse 2–5mm quartz pebbles, poorly sorted, moderately compacted. Almost certainly Millstone Grit, although on lithological grounds a Middle Jurassic Crinoid Grit origin cannot be precluded. However, no finds of Crinoid Grit west of York are known by the author, and only one such find in York (G. Gaunt).

Description: 25% fragment, broken radially on one side through the weakness created by the radial 'slot' in its upper surface. The flat upper surface was peck-dressed (2–5mm dia, 2mm deep). Modest convex hopper, the feed-pipe is widened irregularly at its base. The skirt is peck-dressed and vertical. The G/S had originally been peck-dressed, but then worn smooth. Its outer 100mm was flat, but the inner area was slightly concave, so that, at the base of the feed-pipe (if the lower stone was flat), then the initial clearance for the incoming grain would be c. 3mm.

Dimensions: Dia 475mm; H: rim 45–50mm, centre 55mm. Hopper W: 100mm, D: 25mm. Feed-pipe Dia min 50mm, base 60–85mm. U-shaped handle 'slot' L: 90mm; D: 25mm, W: >10mm (perhaps 25–30mm); Wt: 5kg (est. intact 20kg). YQS 3587. Context: fill of gully 80 (c. 2m from terminal), cut into occupation layer 82, dated to AD370 to early 5th century.

DISCUSSION

STONE OBJECTS

M. Foreman

The irregular triangular form of No. 1 recalls that of roughly shaped Iron Age loom-weights, of which around 20 examples made from chalk are known from the Iron Age and Romano-British occupation at Garton Slack, East Yorkshire (e.g. Acc. Nos KINCM.2006.11303.2919–2934; Brewster 1980). A perforated limestone cobble from the villa at Beadlam, North Yorkshire, is

identified as a thatch-weight or loom-weight (Neal 1996, 61, fig. 42 no. 123). However, the weight from Pool Lane is larger and heavier than all these other weights, with a smaller perforation relative to its size. This would exert too strong a pull on the thin skein of wool that would need to be threaded through the hole, for it to have functioned as a loom-weight. The excavator's identification of the object as a thatch-weight appears apt, though there is a range of other tasks for which such objects might be used, including the stretching of hides, or the weighting of fishing nets or traps (Steane and Foreman 1988).

Stone object No. 2 is suggested to be a fragment from the edge of a roughly fashioned stone disc. Such objects are frequently identified as pot-lids (e.g. Clark and Gaunt 2004, 215–16). The dimensions of those from the South Manor at Wharram Percy, an assemblage dominated by Middle Saxon material, most closely resemble this example (nos 13–15 in Clark and Gaunt 2000, 104, fig. 51 no. 13). A domestic function as a pot-lid might be indicated by the association of the object with fire-cracked pebbles in a roundhouse gully. Other interpretations are possible, including recreational use as 'quoits' to be thrown or rolled (e.g. nos 5–8 in Foreman 2008).

Objects Nos 3 and 4 were recovered as surface finds. No. 3 is considered to be a naturally formed belemnite fossil; no clear trace of wear or polish was observed on the object. The material of No. 4 was tantalisingly unfamiliar. It was described by the excavator as 'red polished stone', or 'marble'. Further possibilities of it being Purbeck marble, or talc-stone or steatite, were considered by the author. The latter point was dismissed by its visual comparison with Viking Age finds from Coppergate, York. A formal identification as Serpentinite, a mineral from Cornwall used in recent times, tends to confirm the recent date suggested by its stratigraphic position in a deposit overlying modern rubble make-up. Ogilvey comments that this material was used to make vessels, as in this case, and also served as a decorative facing stone, appearing on buildings of late 19th- or early 20th-century date in Kingston upon Hull.

QUERNS

J. Cruse

Although only three pieces of quern were found on the pipeline scheme, they provide an interesting snapshot of rural quern usage in an area deep in the Vale of York, along the road between the provincial capital at York and the *civitas* capital at Aldborough.

With no suitable stone quarries in the immediate vicinity, the saddle quern (No. 7) appears to utilise an erratic rock, which could have weathered out of the local glacial deposits. In comparison, the probably early Roman beehive upper (No. 5) and the late Roman disc quern (No. 9) both seem to use Millstone Grit, for which the nearest surface exposures are 10–15km to the west. This could indicate that the Roman inhabitants, like their Late Iron Age predecessors, continued to look west, sourcing their stone from lower Wharfedale (or beyond), whereas the saddle quern may be earlier, before long-distance trade arrangements were established.

The beehive upper stone has an exterior angle of c.70° and can thus be classified as an 'upright'. The distribution of such Millstone Grit querns is concentrated at least 15km to the south-west, in the lower valleys of the Wharfe and the Aire (Heslop 2008, 37). This again indicates the inhabitants had links to the west. It can also be noted that Heslop (2008, 50) suggests that such 'upright' beehives were post-Conquest in date.

The disc quern has a U-shaped radial slot in its upper surface to take a wooden handle, and is this clearly a hand quern. Where radial slots are present on similar large upper querns, they are often accompanied by a moulded collar around the hopper, such as at Dalton Parlours (no. 57;

Buckley and Major 1990, fig. 87), or by moulded collars around both the slot and the hopper, as at Catterick (no. 17; Wright 2002, fig. 355). As both of these comparable examples are from unstratified contexts, it is useful that No. 9 can confirm that such slots continued in use into the late 4th to early 5th century.

The deliberate removal of the hopper and the exterior surface from the beehive quern are both evidence of ‘detachment’, presumably prior to it being halved and deposited in pit 30. ‘Detachment’ and ‘division’ are regularly observed on beehive querns, prior to their deposition, and Heslop (2002, 71) has speculated on why this was done. It is interesting to note that the saddle quern also had c.40% of its grinding surface edge deliberately detached from its narrower end, suggesting that it suffered a similar fate before it was deposited. However, the absence of any ‘detachment’ from the disc quern could indicate that these did not need this type of treatment.

The final aspect of the querns that needs examining is whether they were deliberately deposited or the subjects of casual disposal. The remodelled saddle quern was purposefully used, flat face uppermost, as a post-pad in posthole 254, which was the right-hand door post (looking out) of the roundhouse marked by gully 420. Harding (2009, 62) has speculated on whether pits inside the right-hand side of an entrance indicate that this area was the preferred site for the household shrine. Parker-Pearson (1999, 51) also considered that “the doorway was the liminal space, not only between inside and out, but also between life and death”. This led Webley (2007, 142) to re-examine the southern English evidence for finds being concentrated in the right-hand side of buildings, who found that this practice was most marked during the Middle Bronze Age to Early Iron Age. The beehive fragment was also found in a pit dug inside the right-hand entrance terminal of gully 2203 (another east-facing roundhouse), and may have had a similar association.

However, the disc quern found in the terminal of shallow linear feature 80, cut into the surface of occupation layer 82 (which is dated by ceramics to the end of the late Roman period), may well have been intentionally deposited prior to the site being abandoned.

FIRED CLAY, SLAGS AND EVIDENCE FOR FUEL

J. Cowgill

INTRODUCTION AND METHODOLOGY

A total of 2.7kg (1,578 pieces) of fired clay, slags and evidence for fuel were submitted for recording. The finds were identified solely on morphological grounds by visual examination, sometimes with the aid of a x10 binocular microscope. More detailed information, including any fuel imprints or inclusions noted in the clay fabrics or slags, is given below and the material is summarised in Tables 7 and 8.

Table 7: The fired clay

Cont.	Samp.	Count	Weight	Comments
2		1	10g	Oxidized; no surfaces; clay.
49	AA	13	77g	Reduced; occasional natural organic inclusions.
49	AA	40	109g	Oxidised/ reduced; variable ironstone/ organic inclusions – some natural?
49	AA	85	103g	Most natural – some possibly fired clay. Not discarded.
55	AA	1	<1g	Oxidised crumb.
81		5	34g	Oxidized buff; no surfaces; clay with some sand.
82		2	24g	Oxidized/reduced fired; no surfaces; lightly fired natural.
82		30	385g	Oxidized purple/buff/orange; poorly wedged with large clay inclusions otherwise sandy fabric with mixed quartz size; 3 smoothish surfaces.

*Roman Dere Street and an associated roadside settlement
East of Green Hammerton, North Yorkshire*

Cont.	Samp.	Count	Weight	Comments
82		30	343g	Oxidized cream colour; poorly worked clay fabric; flat surface.
82		15	129g	Oxidized natural clay; probably not worked.
82		1	23g	Reduced fired to a mid-grey; one side vitrified.
82		1	30g	Oxidized/reduced fired natural.
82	AA	160	62g	Most oxidized crumbs; variable sand content.
82	AB	1	<1g	Light pink low fired oxidized clay.
82	AB	10	2g	Discarded natural. Hard iron stained clay.
82	AB	9	2g	Reduced fired.
83		1	1g	Pink/purple lump of silty clay; natural?
83		5	43g	Oxidized worked clay.
90	AA	2	1g	Oxidised crumbs.
101		2	3g	Oxidized/reduced clay; probably not worked.
106	AA	4	1g	Oxidised crumbs.
248	AA	80	62g	Lightly ?fired natural; variable ironstone/ organic inclusions; most crumbs.
266	AA	6	2g	Oxidised crumbs.
269	AA	4	2g	Oxidised crumbs; high organic content.
269	AA	145	104g	Oxidised; rare ironstone; 3 possible flattish surfaces.
277	AA	1	<1g	Oxidised crumb.
315	AA	1	<1g	Oxidised crumb.
320	AA	1	<1g	Oxidised crumb.
407		4	16g	All different small fragments; oxidized/reduced; probably not worked.
407		1	2g	Sandy buff fabric.
422	AA	30	18g	Oxidised crumbs; slight variation in fabric – due to natural?
446		1	47g	Sandy clay; reduced fired area vitrified; probably not worked.
446	AA	75	47g	Oxidised crumbs and hard fired flakes; some pink/mauve; some variability in fabric.
446	AB	300	294g	Most oxidised crumbs and hard fired flakes – few reduced; some pink/mauve; some variability in fabric. More than one source for the fired clay.
446	AB	4	40g	Uneven oxidized surfaces; low fired natural with ironstone inclusions.
454	AA	5	1g	Oxidised crumbs.
454	AA	1	2g	Reduced fired; daub or highly fired natural – no surfaces.
454	AB	4	1g	Oxidised crumbs.
456	AA	5	2g	Oxidised/ reduced mixed crumbs.
477		1	5g	Clay blob.
550	AA	10	4g	?Fired natural crumbs.
554		6	13g	Reduced clay fragments; no surfaces.
567	AA	7	6g	Oxidized clay; most crumbs; 1 tiny surface.
593		1	3g	Oxidized clay; probably not worked.
598	AA	1	49g	Fired natural clay; very rough oxidized surface.
598	AA	15	6g	Oxidised/ reduced crumbs; mixed fabrics.

Table 8: The slags and fuel debris

Catalogue of the codes used in the Table - IA GREY SLAG: Iron-Age Grey slag; VITCLAY: vitrified clay.

Cont.	Samp.	Type	Count	Weight	Comments
49	AA	CHARCOAL	28	4g	
82		COAL	6	13g	Disintegrating; some shaley.
82	AA	COAL	1	<1g	
82		CHARCOAL	-	1g	Fragments of larger pieces.
82	AB	CHARCOAL	33	2g	
82		IA GREY SLAG	12	27g	Powdery; chalky white.
82	AA	SLAG	1	<1g	White Fuel-ash slag or IA grey.
82	AA	SLAG	1	4g	Iron smithing slag?
90	AA	CHARCOAL	4	<1g	
90	AA	CLINKER	1	<1g	
95		CLINKER	1	4g	
101		COAL	8	6g	
101	AA	COAL	65	15g	Few clinker.
101		HEARTH BOTTOM	3	169g	Coal fuel; mid-grey colour; leached; 55x65x20mm; 40x65x30mm; 50x50x20mm.
101	AA	SLAG	3	7g	Smithing slag or large Fuel-ash slag.

Cont.	Samp.	Type	Count	Weight	Comments
101		VITCLAY	1	26g	Totally vitrified; very sandy fabric; partially formed Iron-Age Grey slag?
101		TUYERE	1	20g	Remains of air hole.
161		COAL	25	134g	Large pieces (small fragments not counted).
248		CINDER	1	20g	Coal fuel; very bubbly; iron-smithing cinder?
368	AA	COAL	2	7g	
422	AA	COAL	1	<1g	
456	AA	CLINKER	1	2g	
511		TUYERE	1	42g	Rim and air hole; recent breaks and some missing; purple back; no slag attached - not necessarily associated with iron working.
576	AA	CHARCOAL	2	<1g	
591		HEARTH BOTTOM	1	88g	Magnetic; abraded; 45x80x20mm.
595		HEARTH BOTTOM	1	23g	Leached fragment.
604	AA	COAL	6	1g	
604	AA	SLAG	1	<1g	Fuel-ash slag.

DISCUSSION

Much of the fired clay is only ‘crumb’-sized, weighs less than 1g and lacks surfaces or any other identifiable characteristic. The majority has only been heated to a relatively low temperature or for a short time span and is probably geological soil that became ‘fired’ during events such as bonfires. Any variation in fabric is likely to be due to differences in the underlying deposits.

The largest assemblage was recovered from a spread of material (**82**) to the south of the road at Pool Lane, infilling ditch **412** and the surrounding area. It is a mixed group, but includes some possible structural remains with smooth, well-formed surfaces (for example the pieces weighing 385g, Table 7). The site description of the deposit indicated that it contained a range of domestic debris and was perhaps the waste disposal area or midden for material from a number of sources. Moreover, there may well have been multiple origins for the fired clay, from a variety of different structures.

Some of the pieces from **446**, the fill of a pit to the north-east of the spread of material, are pink/mauve in colour. This is thought to be the result of iron in the clays being affected by a process that involved salt and is commonly associated with coastal briquetage assemblages. Salt was widely used historically and was essential for a range of processes, both ‘domestic’ and ‘industrial’, including dyeing and food preservation.

Five hearth bottoms (more correctly termed plano-convex slag accumulations) were collected by the excavation and were all by-products of iron smithing—the fabrication, repair or reuse of iron. The five examples are all leached or abraded, and therefore may be residual in their contexts, although the three from **101**, the fill of a ditch within Enclosure C at Pool Lane, were found with a tuyere fragment and could perhaps be by-products of an itinerant smith. Coal was the sole fuel used by this smith.

Small pieces of Iron Age grey slag were recovered from material spread **82** and, consistent with most slags of this type, they have a chalky white to cream-coloured surface with a very vesicular frothy core, although the surface is unusually powdery. The material has evidently been molten, has flowed, and has a glassy structure. This type of slag was generated by an unknown high temperature process and is found exclusively in Iron Age contexts, most commonly those associated with the Late Iron Age.

The bemusing aspect concerning the slags is the consistency of the morphological characteristics, in particular their colour, regardless of where in the country they are found, the underlying geology at the find-site, or the size or status of the site. Samples of Iron Age grey slags from two sites have been analysed (Swiss and McDonnell 2001; Cowgill *et al.* 2001) in an attempt to try to determine the process that generated them. The experiments showed that the slags were produced by a high temperature pyrotechnical process that involved temperatures in excess of 1,200°C, which would have required a forced draught, suggesting a pair of bellows would have been needed. The analyses ruled out the possibility that they could derive from a ferrous or non-ferrous metallurgical process, or the most obvious inorganic processes, namely lime burning and glass production or working. With organic pyrotechnologies, the temperatures required are too low; even cremation, the highest temperature process, will barely reach temperatures of 1,000°C (J. McKinley pers. comm.). Relatively high temperatures may arise during the accidental or deliberate burning of house structures, when temperatures of 1,200°C may be reached, with the necessary minerals present in walling and flooring to produce this type of slag. They are, however, not usually found in particularly charcoal-rich contexts and the artefacts found associated with them are not burnt, but usually ordinary domestic rubbish. It is difficult to tally this line of inquiry with the consistency of the Iron Age dates, when similar types of building materials (wattle, mud and stud, various types of thatching materials, etc.) were used in earlier and later periods. Therefore, the results of these analyses unfortunately do not allow a suggestion of the processes involved or give an indication of method or purpose. The reason for the restricted date range for the Iron Age Grey slag has still to be resolved.

THE POTTERY KILN FURNITURE AND DEBRIS

J. Cowgill

INTRODUCTION AND METHODOLOGY

A total of nearly 19.5kg (c.3,000 pieces) of kiln debris was recorded with use of a x10 binocular microscope. The larger assemblages of kiln debris were sieved through a 20mm mesh and the smaller fragments and crumbs were not sorted or recorded in detail. The terminology employed follows Swan (1984).

THE POTTERY KILNS AND KILN TERMINOLOGY

Evidence for two pottery kilns (574 and 603) was found on the east side of Pool Lane, in the western edge of Field 23. A third possible kiln (549) was identified further to the east, but was structurally different to the other two, and may not have been a pottery kiln. The majority of the archaeological features excavated at the site appear to be contemporary with the kilns, and may have a direct relationship with them, whether as pottery producers, benefactors of any profits generated by the pot manufacture, or the producers of the contents that were held in these ceramic containers.

Most Romano-British pottery kilns consisted of three basic elements: a combustion chamber or bowl (with domed oven above, where the pots were fired); the elongated, uncovered stoke-hole; and an arched flue that connected the two. The bases of the three elements were usually level to aid fire/heat management: the fire was started in the stoke-hole and heat was transferred gradually via the flue into the combustion chamber to ensure that the temperature was raised slowly, thus preventing the pots in the oven from cracking (B. Hines pers. comm.). At the end of firing, the ash and any partially burnt wood was raked out of the combustion chamber through the flue. The combustion chamber, along with the firing oven above, would need to be well-insulated to ensure the required temperatures were reached (approximately 800°C, depending

on fabric and results required) and most had a clay lining. The nature of the superstructure (domed capping above the stacked pots), however, was determined by the intended firing atmosphere. Oxidising conditions only needed a light, temporary capping, such as pottery sherds or tiles, as permeability was not a consideration. On the other hand, reduced wares were more complicated, as the entire structure needed to be sealed tight and impermeable during the later stages of firing and cooling (Swan 1984, 34). Permanent and/or portable kiln furniture were used, including some form of pedestal (often permanent, but could be as simple as an upturned pot), bars, or plates on which the pots were stacked (set), and a huge variety of objects (such as tiles, flat stones, broken fire bars) that were used as stacking aids (setters). There is a great diversity in the design of kilns that have been excavated, and although much of the variability is dictated by the demands of the finished products, Swan (2002, 72) has noted that 'potters in antiquity in general were always more conservative in their kiln-technology than in the choice of their ceramic repertoire. Kiln structures may, therefore, be more indicative of the intrinsic traditions of a workshop and its connections with other potters, than are its actual products'.

The base of the Green Hammerton kilns' combustion chambers, flues and stoke-holes were probably built below the ground surface and therefore semi-sunken in form, but the depth of the base of the kilns from the contemporary ground is not known as both have been truncated by later ploughing. However, the natural boulder clay into which they were built would have had good insulation properties. The kilns were built on a similar alignment, quite possibly to optimise the prevailing wind conditions, with the sealed unit of the combustion chamber to the north-west and the open stoke-hole to the south-east. The kilns were only 1.2m apart and could have operated in tandem.

The kilns would have been covered in some form of weather-proof structure, to protect them during their period of use. Once this had been removed or allowed to decay, they would have deteriorated rapidly. Although the internal surface of the clay lining would have been relatively well-fired, the rest of the clay lining may have been soft and easily penetrated by rain, frost and snow.

KILN 574

Kiln 574 produced two bars, no setters and mainly fired clay crumbs from samples.

579: alluvial fill of out-of-use kiln.

577: two bars, and cracked stones.

576: phase of burning, consisting mainly of fired clay crumbs.

575: red crust from in situ burning that appears to have been raked into adjacent pit.

578: grey silty clay in base of bowl. The base of the clay lining in the kiln unaffected by heat?

The whole structure must have had a thick clay lining and it is likely that the kiln was left to collapse in situ post-use (and following removal of any protective shelter), and the debris then became very weathered. The two kiln bars may not originate from this kiln at all.

KILN 603

Context 603 describes the combustion chamber and 607 the flue and stoke-hole. There was no evidence for a pedestal.

Kiln bowl **603** produced the majority of the kiln furniture and debris and was better preserved. It included **604–606** (setters), **609** (fire bars and one tile), **616** (tiles and ?setters), and collapsed structure in the bowl. Presumably, this latter material is derived mainly from the kiln lining, although the distribution of the setters suggests that part of the assemblage may have derived from some other kiln. River pebbles formed the outer structure to the feature, but the pebbles must have been covered by a thick clay lining. The bars forming the oven floor needed to span the distance between the outer shelf and the pedestal in the centre. The bars were found lying against the pebbles, suggesting that the lining had already disintegrated and fallen off when the bars were discarded in the kiln. Much of the lining would revert to clay once weathered (this is what happens to iron-smelting furnaces, and they are fired to a much higher temperature), as only the exposed surfaces actually become ‘fired’, and probably not to any great depth/thickness.

CLAY FABRICS

Two broad fabrics of kiln material were identified; one appeared to be relatively pure clay, while the second was much sandier and quite rough to the touch. A sample of each was subject to petrographical analysis (see Ixer, this volume) for characterisation of the clays and to establish whether the clay used was comparable to any of the pottery fabrics associated with the kilns, which were also submitted for analysis. The report concluded that the purer clay fabric was poorly mixed and could be natural or manmade, while the silty, sandy fabric was poorly mixed clay tempered with sand—again, this could have occurred naturally nearby within a different clay bed.

Although the structural kiln clays were not identified as being the same as any of the pottery fabrics, the same local clays were usually used for both kilns and potting, though they were often treated in very different ways. The clay for pot production would have been carefully prepared to improve its plasticity, and tempered and wedged to make it suitable for the intended end product, whereas that used for the kiln was generally more coarsely tempered. The addition of sand to the kiln construction clay helped to bind it and prevent excessive shrinkage and cracking in the structure, which had to undergo repeated thermal stress during each kiln firing (Swan 1984, 32; B. Hine pers. comm.).

KILN FURNITURE

All six of the kiln bars are made from the sandy clay, which would have restricted shrinkage when they dried and the risk of distortion during firing. The bars all have a square section and most taper towards the ends, which are fashioned in slightly different ways. How significant the variations are is unknown, but presumably the shapes enabled the bars to rest securely on a ledge running around the inside of the kiln and on the central pedestal. Most have one flat side (on which it is presumed they dried), and this may have been used as the upper surface in the kiln, as it would have provided a more level surface (oven floor) upon which to set the pots, lifting them above the fire in the base of the combustion chamber. The majority of the bars are well-made and finished, but one bar (cat no **62**) is noticeably cruder and larger than the others and the fabric has cracked across several planes, perhaps during firing. This bar may have been reused as a setter, as it appears more rounded and abraded than the others. All the bars were last fired in an oxidizing environment. The presence of kiln bars indicates that prefabricated portable furniture may have been used in the kilns, and therefore likely that kiln furniture was not necessarily discarded in the kiln in which it was originally used (Swan 1984, 40).

The two bars in kiln **574** were recovered from upper fill **577**, a possible post-abandonment deposit formed after the kiln had started to disintegrate. The bars from kiln **603** were found at the base of the kiln beneath other deposits, very close to the cobbled kiln surround, upon which

would have been a clay lining. The lining must have already disintegrated when the bars were deposited, which provides further evidence for the suggestion that the bars may not necessarily have been used in this kiln and hints that other, as yet undiscovered, kilns may have existed nearby.

A variety of setters were used, some purpose-made such as those described as ‘tiles’, while kiln wasters, stones, broken fire bars—to name a few of the variations found—were also employed.

The kiln bars and the pieces positively identified as tiles only occur in the sandy fabric, but the tiles, unlike the bars or structural debris, are all darker in colour, being reddish brown. This must be due to a difference in firing conditions and was perhaps determined by, and the result of, where they were located in the kilns.

The tiles range in thickness from 7mm to 17mm, have roughly parallel surfaces, but are not as well made as Romano-British building materials and do not appear to have been made in a wooden former. Some have thin, curving rounded edges and it is uncertain what shape they originally were, but it is possible that they are fragments of the flat or slightly concave circular plates of clay that are commonly found on kiln sites (Swan 1984, 41). In some of Swans’ (*ibid*, fig. II) reconstructions she suggests that tiles such as these, or large pot sherds, may have been used to help cap the dome of the kiln, to reinforce the arch of the flue, or functioned as setters. If the tiles recovered from the excavations were intended and used for any of these purposes, then their irregularities would not have been a problem.

There are six other potential pieces of tile, all made from the clay fabric with frequent organic imprints (grass/straw?) on their surfaces (604, 18g; 616, 130g). They are 7–13mm thick and similar to the sandy fabric tiles, although no edges were recorded, and their shape is uncertain. The lack of edges and the presence of the organic imprints suggests that, rather than being setters, the pieces may have had a different function. It is possible that they formed part of the kiln oven-capping over the stacked pots. If a reduced ware was intended to be produced, this capping would have had to have been air-tight. Straw or hay is often used in experiments to cover the set pots to help stabilize them and to separate them from the temporary clay capping above (B. Hine pers. comm.), but in this scenario the imprints would only be on one side, and not on both as is the case with most of the pieces recorded here. Thin layers of straw alternating with clay may have been used to improve the seal and the capability of the capping to retain heat. Similar tiles or ‘plates’ with organic imprints on both sides were recovered from the kiln site at Stamford Bridge (Lawton 2003, 10), although in this instance they were reduced fired and it is suggested that they were being used as a “roof sealant inside the dome or within the body of the dome” of the temporary capping.

No evidence for a permanent or portable pedestal was found in the kilns. There are a few pieces that have tentatively been described as possible fragments of pedestal bases (604, 95g; 616, 105g), but equally these could have functioned as setters; one is made from the sandy fabric while the other is just clay.

Table 9: The kiln structural debris and tiles

Context	Find No.	Type	Fabric	Count	Weight	Comments
575	AA?	KILN	Sandy	23	18g	Few oxidized surfaces.
575	AA?	KILN	Clay	60	36g	Most crumbs; few surfaces; 1 obtuse 130° angle of surface from wall.
576		KILN	Sandy	17	87g	Sand on surface - little in core; 11 with good smooth surfaces.
576	AA	KILN?		20	3g	Reduced fired crumbs.

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Context	Find No.	Type	Fabric	Count	Weight	Comments
576	AA?	KILN	Sandy	9	20g	Flattish wall surfaces.
576	AA?	KILN	Clay	8	50g	Flattish wall surfaces.
576	AA?	KILN	Clay	15	156g	Mainly clay but some surfaces incorporate sand; most pink/red but not tile coloured.
576	AA?	KILN	Mixed	400	257g	Not sorted; most crumbs; most probably clay fabric.
596		KILN	Sandy	16	314g	Wall surfaces; many uneven and irregular.
596		KILN	Sandy	1	34g	Smooth flat reduced black surface; 23mm thick.
596		KILN	Clay	1	61g	Acute surface; (cf 604 206g).
596		KILN	Clay	2	112g	Wall surfaces with right-angled surface; ledge? (cf 616 209g).
596		KILN	Clay	24	297g	Wall surfaces; some very smooth - burnished?
602	AA	KILN	Sandy	100	152g	Oxidised/ reduced fired; a few possible surfaces – one could be stepped.
604		POT		1	4g	Grey ware.
604		TILE	Sandy	16	459g	Fired red/brown; most with reduced fired core; 2 curved rims; 10-17mm thick.
604		KILN	Sandy	44	2337g	Some fingered; some curved surfaces; 2 with an angled surface at 120° from wall; 1 pedestal/setter fragment (cf 616 105g); pieces up to 40mm thick.
604		KILN	Clay	1	95g	Sand content in fabric - poorly mixed? Stand/ kiln ledge? DRAW.
604		KILN	Clay	3	140g	Very fingered with right-angled surface to wall; ledge? (cf 616 209g).
604		KILN	Clay	2	206g	1 flat and 1 curved outer surface; inner face joins at acute angle; DRAW.
604		KILN	Clay	8	362g	As above.
604		KILN	Clay	212	3483g	Wall pieces - most just one oxidized external face; some smooth - burnished; some fingered; some slivers/flakes.
604		POT?		3	2g	2 oxidized fabric; 1 grey fabric.
604		POT		1	4g	Grey ware.
604		KILN	Clay	1	18g	Tile? Organic impressions on flattish surfaces; 7 - 10mm thick.
604		KILN	Mixed	1000+	663g	Not sorted or counted; most crumbs.
606	AA	KILN	Sandy	60	102g	All oxidized - backs not reduced fired; some parallel sided - tiles? C. 10mm thick; sides uneven; 43 small crumbs.
609	AA	TILE?	Sandy	1	5g	Parallel sided faces? C 7mm thick.
609	AA	KILN	Clay	3	30g	Pink/buff surfaces with sand coat on surface up to 4mm thick; 1 fingered.
609	AA	KILN	Sandy	2	27g	All wall fragments with acute angles (cf 604 206g).
609	AA	KILN	Sandy	18	141g	Some fingered surfaces; most pinky/red colour ; some tiles?
609	AA	KILN	Clay	14	118g	Pinky/buff wall fragments.
609	AA	KILN	Mixed	90	53g	Not sorted; most crumbs.
616		KILN	Clay	5	130g	Flattish ?tile; oxidized; 8 - 13mm thick; frequent organic imprints on both sides.
616		KILN	Sandy	6	543g	Buff/pink smooth surfaces; some fingering; lots of surfaces - uncertain how many true. DRAW.
616		KILN	Sandy	72	1426g	Oxidized fabric - reduced reverse; many surfaces - some fingered; 1 rounded surface.
616		TILE	Sandy	2	39g	Oxidized red/brown fabric with reduced core; 12mm thick; DRAW.
616		TILE	Sandy	2	84g	Oxidized red/brown fabric with reduced core; 12mm thick; curved thin rim; DRAW.
616		TILE	Sandy	25	347g	Oxidized red/brown fabric with reduced core; 10-14mm thick; few rims; 3 crudely made with pitted surfaces.
616		KILN	Clay	1	105g	Stand/setter piece with flattish curved surface at 50° to wall; DRAW.
616		KILN	Clay	1	58g	Sliver/ flake with uneven flattish oxidized surface on both sides; 3 - 9mm thick; DRAW.

Context	Find No.	Type	Fabric	Count	Weight	Comments
616		KILN	Clay	1	231g	Odd piece with oxidized curved surfaces and flat reduced fired face; location in kiln? DRAW.
616		KILN	Clay	2	209g	Fingered wall pieces with flat surface at right angle; ?ledge minimum 20-28mm wide; reduced fired back; DRAW.
616		KILN	Clay	1	115g	Wall piece with some pock marks; curved edge at right angles (ledge?); minimum 26mm deep; DRAW.
616		KILN	Clay	308	4472g	Wall pieces; most just 1 oxidized face; some fingered; some flakes/ slivers.
616		KILN	Sandy	2	51g	Wall pieces with curved face at an angle - stand/ledge (cf 616 105g).
616		KILN	Clay	3	128g	As above but only 'inner' face is curved.
616		KILN	Clay	3	167g	Fingered x 2; ?ledge pieces minimum 35 - 50mm wide; (cf 616 209g).
616		KILN	Mixed	550	1342g	>20mm; not sorted; some clay fabric pieces very smooth - almost burnished.
616		POT?		1	1g	Oxidized; large sand inclusions.

STRUCTURAL EVIDENCE

Apart from the river cobbles forming the outer wall of the kiln, all of the surviving structural evidence takes the form of fired clays.

It is assumed that all the material recorded in Table 9 is from the kiln structures, and perhaps the majority is from the inner clay lining. All the main elements of the kilns—the flues, firing chambers, and however much of the domed ovens above was permanent—would have been clay lined, with repairs made regularly after most firings. The temporary part of the dome capping would have had to be re-built before each firing and dismantled after the kiln had cooled to allow the pots to be unloaded. Depending on how much of it was integral to the permanent structure and how frequently the kiln had been fired, the temporary capping material could form a significant element within the assemblage.

With the sole exception of a piece from **596** (34g), all the pieces are very fragmentary with oxidized outer surfaces and reduced fired cores. Pieces in the clay fabric dominate the assemblage (680 pieces from a total of 981, or 10,484g out of a total weight of 16,431g), but they are slightly smaller, being more prone to break or flake without the temper to help bind the fabric. The 'slivers/flakes' are perhaps an example of this, as they are only found in the clay fabric; however, they may be just small clay repairs, which failed to bind properly and shrunk and fell off during firing. A few pieces appear to have a sand 'slip' applied to what otherwise seems to be pure clay. On one fragment (30g) from **609**, the 'slip' is up to 4mm thick, and it may have been applied during the firing to repair any developing cracks or weak spots. The oxidized face is usually pinkish-buff in colour.

Most of the forms recorded occur in both fabrics, such as pieces with two angled surfaces (whether acute or obtuse), heavily fingered pieces that indicate the clays had been only roughly plastered-on by hand and not smoothed over (possibly representing internal surfaces), and possible inner-ledge fragments where a flat surface often joins fingered-clay at a near right-angle. The pieces with clear angles may imply that the oven walls (whether part of the permanent structure or temporary capping) were coil-built, as the joins between the coils would have been potential weak points. Some of the surfaces on the clay fabric pieces appear very smooth, almost giving the impression that they had been burnished, possibly as a result of care being taken in the kiln finish.

The oxidized nature of the kiln material is problematic, given that most of the 40 sherds found amongst the debris (none of which may necessarily be wasters; see Leary, this volume) are reduced wares. The sherds probably date the kilns to the mid-3rd to early or mid-4th century, and the majority of pottery produced in the region at this date was in reduced wares. One possible waster from **603/607** is a Dales-type jar in GRB G2 fabric, which was partially reduced but mainly oxidized; it is considered likely that the intention was a grey ware, but the firing went wrong. Another sherd in a finer ware may also have been fired at Green Hammerton, as it appears burnt and is not properly reduced (R. Leary pers. comm.). The lack of wasters may be viewed as problematic, but the site was truncated and the discard zone for wasters may well have been beyond the extent of the excavations (M. Darling pers. comm.). It is also not uncommon for the waste from small concerns to be quite insubstantial—the manufacturers may have had low standards and used whatever they managed to make or, alternatively, could have been skilled potters and had a low failure rate (R. Leary pers. comm.). If grey wares were indeed being produced at the site, the only explanations for the oxidized nature of the kiln fabric and furniture is that the seal failed during the final firing and cooling period, thereby allowing oxygen in, or that the kilns were being reused for drying pots prior to firing.

DISCUSSION

Evidence for three kilns was found during the excavations in Field 23, Pool Lane: two on the western site limits (**574**, **603**) with a third to the east (**549**), all of which were possibly located on the periphery of a contemporary settlement but inside an enclosure ditch. The absence of any structural evidence in kiln **549** may preclude it from being a pottery kiln. According to Swan (1984, 33), “the design of kiln structures was influenced primarily by the traditions and ancestry of the potting background to which [the potters] belong.” The technological needs would have varied dependent upon a number of critical factors, such as the firing properties of the clays, whether the pottery produced was oxidized or reduced fired, and the length of firing required. The most well-preserved kiln **603** was probably semi-sunken. Its firing chamber was constructed from at least three courses of large cobbles (**615**) lined with c.150mm of clay, some of which (**608**) survived in situ, and the majority of the kiln-structure debris catalogued here was probably elements of the lining. Some form of surrounding ledge to support the kiln bars would have been necessary (possibly some of the ?ledge fragments recorded). Additional ledges have been noted in other kilns to aid setting of the pottery (Swan 1984, 41). No evidence for a central pedestal survived in any of the kilns. The form of the pedestal defines many kiln types, such as the poorly understood Linwood kilns, of which it is just possible that kiln **603** is an example. Otherwise, the evidence suggests a relatively simply constructed kiln, perhaps originally derived from the late La Tène-type kilns (*ibid.*)

A range of activities would have been undertaken at a pottery, including the excavation and preparation of the clays (and tempers if necessary), which would have required access to water. Buildings were needed for drying the pottery prior to firing, for storage of the fired pots, to protect the kilns from the vagaries of the weather, and not least, for the potters to work in when throwing the vessels. At Green Hammerton, because of the limited area of excavation, and the truncation suffered by the archaeology, no clear evidence for such arrangements has survived. It is not unlikely that some of the building remains recorded 50m to the east related to pottery production. Transport links to local markets and those at further distance were presumably available along the River Nidd and via the road network.

The scale of the Green Hammerton industry is far from certain. The output of pottery production sites tends to be judged on the quantity of kilns or wasters found, but here the kilns were on the edge of the excavations and any number could exist beyond it, whilst wasters were noticeably lacking. Each kiln could represent a short season of production—perhaps dictated by demand

for the products, or their intended contents—or there may have been a more significant industry based here. Grey ware production sites seem to have burgeoned throughout the Yorkshire countryside from AD220s–230s until the late 4th century, and although many were stifled by competition from the Crambeck kilns, the gritty grey ware production continued in a small way. The producers of handmade indigenous grey wares sold not only to local markets, but also in increasing quantities during the zenith of their output to the Northern Frontier. Kilns (or wasters) have been recorded at, for example, Hasholme and Bursea (Halkon and Millet 1999) and Stamford Bridge (Lawton 2003), and doubtless more sites remain to be found.

CATALOGUE OF THE ILLUSTRATED KILN FURNITURE AND FRAGMENTS (FIG. 42)

76. Thin tile fragment with organic imprints on one side, labelled on figure as **576 AA**.
- 77–78. ‘Tile’ fragments, sandy fabric, setters? Found in the base of kiln **603** firing chamber. **616**, combined weight 39g.
- 79–80. ‘Tile’ fragments, sandy fabric, both with shaped rims, setters? Found in the base of kiln **603** firing chamber. **616**, combined weight 84g.
81. Odd piece with oxidized curved surface with a reduced-fired flat face, clay fabric. Found in the base of kiln **603** firing chamber. **616**, 231g.
82. Stand/setter piece, clay fabric, flattish curved surface at 50° to wall. Found in the base of kiln **603** firing chamber. **616**, 105g.
83. Half? a crudely made kiln bar, surviving length 198mm, thick centre tapers to end, cracked, reused as a setter or abraded? Found in the base of kiln **603** firing chamber. **609**, RF 62, 811g.
84. Complete square-sectioned kiln bar, 286mm long, tapering to shaped ends, slight fingering, one flat side. Found in the base of kiln **603** firing chamber. **609**, RF 18, 1,345g.
85. Repair/ledge fragment?? Sand content in fabric poorly mixed. Found in kiln **603** firing chamber. **604**, 95g.
86. Flake/repair spall, clay fabric, flat and curved faces join at an acute angle. Found in kiln **603** firing chamber. **604**, 206g.
87. Complete roughly square-sectioned kiln bar, 290mm long, tapers to one rounded end, other end fingered, one flat side. Found in the base of kiln **603** firing chamber. **609**, RF 60, RF 61, 1,332g.
88. Complete square-sectioned kiln bar, 290mm long, ends curve down to meet flat side, slight fingering, one flat side. Found in the base of kiln **603** firing chamber. **609**, RF 59, 917g.
89. Half? a kiln bar, surviving length 166mm, two good sides and two damaged, tapers to a shaped end. Found in upper (post-abandonment?) fill of kiln **574**. **577**, RF 48, 662g.

90. Fragment of a square-sectioned? kiln bar, surviving length 80mm, tapers towards the ends, neither complete. Found in the upper (post-abandonment?) fill of kiln 574. 577, RF 48, 291g.

THE HUMAN REMAINS

J.I. McKinley

INTRODUCTION AND METHODOLOGY

Cremated bone was recovered from a small late Roman (3rd- to 4th-century) pit in Field 21 during excavations at Pool Lane (YRG08). The cremated remains were associated with a broken, albeit near-complete, Nene Valley beaker (Leary, this volume; Fig. 38 no.21) and c.630 iron nails.

Osteological analysis followed the author's standard procedure for cremated remains (McKinley 1994, 5–21; 2004a). Age was assessed from the stage of tooth and skeletal development (Beek 1983; Scheuer and Black 2000b), and the patterns and degree of age-related changes to the bone (Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (Gejvall 1981; Wahl 1982; Buikstra and Ubelaker 1994).

RESULTS AND DISCUSSION

The 0.42m by 0.33m cut (16) survived to 0.13m deep and to some extent had clearly been truncated by ploughing (Figs 31 and 32). The archaeological components of the deposits, including cremated bone, were evident at surface level and it is probable that some bone will have been lost as a result of the disturbance. It should be noted, however, that non-contained burial deposits can survive intact in graves as little as 60mm deep and burials inside urns in graves only slightly deeper (e.g. McKinley 2009). The pit also displayed slight disturbance from animal burrowing.

Much of the bone is slightly worn in appearance, some of it also having a slightly chalky aspect. This, together with the paucity of trabecular bone (subject to preferential loss in acidic soil conditions; McKinley 1997, 245; Nielsen-Marsh *et al.* 2000), reflects the acidic burial environment (glacial silty clay), the effects of which may have been exacerbated by the disturbance to the deposit.

The 581.2g of bone recovered represents the remains of a probable female adult, c.25–35 years of age. It is noted that the <2mm residue contained a substantial amount of bone, for which it was not possible to obtain a weight, but which would probably take the overall weight to over 600g. The only possibly pathological change observed to the bone was a thickened and uneven profile to the anterior portion of the right zygomatic arch (part of the cheek bone). This may be indicative of a healed fracture to the bone (the adjacent facial bones were not recovered) occasioned by a blow (accidental or the result of inter-personal violence) to the right side of the face.

Most of the bone is white in colour, indicative of full oxidation (Holden *et al.* 1995a; 1995b). A few fragments of skull vault, parts of the facial bone, the atlas vertebra and a few fragments of femur shaft are blue/grey in colour, reflective of incomplete oxidation. The variations are very minor, with only the inner part of most fragments being affected (bone oxidises from the outside in). Factors affecting the efficiency of oxidation have been discussed in detail elsewhere by the writer (McKinley 1994, 76–78; 2004b, 293–5; 2008), but the skeletal elements involved in this instance are amongst those most commonly affected due to such causes as dense soft tissue coverage (thigh area; femur) and a potentially peripheral position on the pyre (skull).

The weight of bone recovered represents c.37.5% of the expected from an average adult cremation (McKinley 1993) and falls within the median range of weights recovered from contemporaneous cemeteries (McKinley 2004b, 295–8, table 6.6).

The majority of the bone was recovered from the 5mm sieve fraction (c.54%), with only c.37% in the 10mm fraction, and a relatively low maximum fragment size was recorded (34mm). These figures appear in contrast to those more commonly recorded for British cremation burials of most periods, in which the majority of the bone from adult burials is generally recovered from the 10mm fraction (e.g. McKinley 2004b, table 6.7; 1997, 69). Cremated bone is very brittle and repeated manipulation and disturbance of deposits inevitably increases fragmentation, breakage occurring along the dehydration fissures formed during cremation. In this instance, the various forms of disturbance to the deposit and the aggressive burial environment will undoubtedly have adversely affected the stability of the bone, but its condition may also reflect other factors such as pre- and post-depositional manipulation of the remains (see below).

Most cremation burials of any period (unless substantially truncated) will include fragments of elements from all four skeletal areas (skull, axial skeleton, upper and lower limb). The identifiable proportions from each are often skewed from what may be referred to as a 'normal' distribution due to the ease with which skull fragments may be recognised, even as very small fragments, and the difficulties in distinguishing individual long bones (McKinley 1994, 6). The taphonomic loss of trabecular bone may also reduce the proportion of the axial skeleton (mostly trabecular) identified (see above). The proportion (by weight) of the bone identifiable to individual skeletal elements from the cremation is within the average range at c.43%. There is the commonly observed over-representation of skull elements (50% of identifiable bone) and paucity of axial skeleton (c.6%), but all areas of the skeleton are represented, and there is no evidence to suggest deliberate selection of specific skeletal elements for deposition.

Tooth roots and the small bones of the hands and feet are commonly recovered from the remains of cremation burials of all periods, and the author believes their frequency of occurrence may provide some indication of the mode of recovery of bone from the pyre site for burial (McKinley 2000a; 2004b, 299–301). A large number of these elements (16 tooth roots and 28 small bones) were identified in this deposit, which suggests that the bone may have been recovered from the pyre site by raking-off and winnowing (rather than hand recovery of individual bones), thereby easing the recovery of these smaller skeletal elements, as well as the larger ones (but see below). Few such elements were recovered from the burials within the large late Romano-British cremation cemetery at Brougham, Cumbria (McKinley 2004b, 298–301).

The deposit was charcoal-rich (mostly small particle size) and, in addition to the cremated bone, included a large quantity of iron nails (c.630 hobnails; presumably remains of pyre goods) and a substantial proportion of a smashed and abraded Nene Valley beaker (Leary, this volume; Fig 37, no. 21). The formation process of the deposit, and therefore its nature, is unclear. The beaker vessel, most of which lay at the base of the cut, had been broken, and possibly also abraded, prior to deposition in the small pit.

The recovery of redeposited pyre debris (comprising mostly fuel ash with some cremated bone and, in this case, some burnt stone) from grave fills (generally deposited over/around the materials representing the formal 'burial') is a common feature of the rite in the Romano-British period, but it also occurs in a number of other guises, including as surface spreads, within pre-existent features, and as formal deposits within what appear to comprise deliberately excavated features (McKinley 2004b 304–6; 2000b; 2017). In the case of context **18**, the apparently homogeneous distribution of bone, pyre goods and fuel ash suggest that it represents a deposit of pyre debris; this may account for the large numbers of small skeletal elements and hobnails in the fill,

presumably scooped-up *en masse* with the fuel ash for deposition. Alternatively, given the evidence of the condition and distribution of the pottery, it could represent the redeposited remains of an urned or accompanied urned burial in which pyre debris deposited in the grave fill has become mixed with the formal burial remains due to post-depositional manipulation. On the weight of the current evidence, the latter interpretation appears most likely.

Late Roman cremation burials have occasionally been found in large urban cemeteries (Molleson 1993, 30) and the numbers have increased slightly in recent years (e.g. McKinley 2003a; Birbeck and Moore 2004c; Burleigh and Fitzpatrick-Matthews 2010). The example from Pool Lane has added to the growing numbers that are now also coming to light in rural settings (e.g. McKinley 2003b; Lovell 2005; Dinwiddy and Bradley 2011). The one region in which cremation burials of this date are common in Britain is the Northern Frontier, in the cemeteries of forts (Cool 2004). It is believed that this may be linked to the place of origin of those using these cemeteries; cremation remained the predominant rite amongst the northern Germanic peoples, particularly in the Saxon coastlands around the Elbe and Weser basins (Todd 1980, 147–51; Topal 1981, 75). The military in Britain are known to have included non-native personnel (Jarrett 1994) and the link between the persistence of the cremation rite in such a confined area of Britain and the northern, particularly Saxon, Germanic regions probably represents a significant link (Cool 2004; McKinley 2004b). It is, therefore, possible that the occasional presence of late Romano-British cremation burials is indicative of a few foreign migrants retaining the rite with which they were familiar. Alternatively (though there is no reason the possible explanations should be mutually exclusive), Molleson (1993, 30) has suggested, with particular reference to Dorchester, Dorset, that the occasional persistence of this apparently non-normative rite was indicative of conservatism within a small proportion of the population. Either suggestion may be pertinent to the Pool Lane case.

THE BIOLOGICAL REMAINS

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SUMMARY

Most of the fields investigated revealed little archaeology, with only two at Pool Lane (YRG08/YRG09, Field 22; PLG08, Field 23) and one at Gowlands (MAL08, Field 26) producing sediment samples and hand-collected organic remains that required recording.

Very little ancient biological material was recovered, restricted to comminuted charcoal assemblages (Fields 21 and 22) and traces of cereals and fuel ash slag (Field 26). There was also some vertebrate material from Field 26, but this was scarce and provided little information.

Fifty-one samples from a range of features were examined from Fields 22 and 23, but in the majority of cases ancient plant remains were few, limited to small quantities of charcoal and occasional charred weed seeds. There was some evidence from samples from ring gully **70/383** in Field 23 for the use of heather, perhaps in the construction of roundhouse **420**, or as fuel. Several samples from the occupation area contained remains representing semi-cleaned wheat crops, probably processed for consumption, whilst a sample from the primary fill of kiln **549** in Enclosure G contained cereal residues from the final stages of spelt wheat processing.

The small amount of vertebrate material from Field 23 was poorly preserved with a high incidence of fragmentation. The assemblage was dominated by cattle and large mammal bone, with very few remains of other domestic mammals and no evidence for the exploitation of birds or other wild animal species. Most of the bones are likely to represent primary and secondary butchery refuse, particularly the material recovered from the enclosure ditch fills. The absence of butchery or skinning marks on an articulated horse limb from ditch fill 116 suggested that this animal was not exploited for meat or hide, but this does not necessarily distinguish it as a 'special' deposit; there was no associated evidence for ritual activity and it may simply be refuse. Overall, the small size of the assemblage and its poor state of preservation rendered it of little interpretative value.

INTRODUCTION AND METHODOLOGY

Flots from sediment samples, additional biological remains recovered from sample residues and hand-collected organic remains were analysed.

SEDIMENT SAMPLES

The colour, lithology, weight and volume of each sample was recorded. The samples were processed to 500 microns using the Siraf method of flotation (Williams 1973) and the flots and residues were dried. The residues were sieved to 4mm, and artefacts and biological remains sorted from the >4mm fraction were forwarded to relevant specialists; the <4mm fraction was retained unsorted pending the results of assessment.

One sample (**592AA**), thought to contain organic remains preserved by anoxic waterlogging, was processed broadly following the methods of Kenward *et al.* (1980) for the recovery of plant and invertebrate macrofossils. The resultant flot fraction was examined wet.

The flots and material sorted from sample residues were examined for macrofossil remains using a low-power binocular microscope (x7 to x45); the flot material was sieved into fractions (using 2mm and 4mm sieves) to facilitate assessment where necessary. All of the components of the flots were recorded using a five-point semi-quantitative scale.

Table 10: Abundance scale utilised for processed flots

Abundance Scale	Abundance	Count
1	Few/rare	Up to 3 items/individuals, trace level component of the whole
2	Some/present	4-20 items/individuals, minor component of the whole
3	Many/common	21-50 items/individuals, significant component of the whole
4	Very many/abundant	51-200 items/individuals, major component of the whole
5	Super-abundant	200+ items/individuals, dominant component of the whole

Processed sample fractions were scanned until no new remains were observed and a sense of the abundance of each taxon or component (relative to the processed fraction as a whole) was achieved. The abundance of recovered organic and other remains within the sediment as a whole may be judged by comparing the flot volumes and the quantities of remains recovered from the residues with the size of the processed sediment sub-samples.

Plant macrofossil remains were identified as closely as possible following comparison with modern reference material, where possible, and published works (e.g. Cappers *et al.* 2006; Jacomet 2006). Six relatively rich charred plant assemblages were recorded in detail, with counts made of identifiable botanical remains where applicable (highly fragmented and non-diagnostic remains were recorded semi-quantitatively, as outlined above).

Wood and charcoal identifications were attempted for a selection of fragments of over 2mm in radial cross-section. Pieces were broken to give a clean radial cross-sectional surface and the anatomical structures were examined using a low-power binocular microscope (x7 to x45). Basic identifications were made by comparison with modern reference material, where possible, and with reference to published works (Hather 2000; Schoch *et al.* 2004). Nomenclature for plant taxa follows Stace (1997), with cereal identifications following Jacomet (2006) where nomenclature follows van Zeist (1984).

Identifications for vertebrate remains recovered from samples were attempted via comparison with modern reference material held by Palaeoecology Research Services, where possible.

Consideration was given to the suitability of the macrofossil remains for submission for radiocarbon dating by standard radiometric technique or accelerator mass spectrometry.

HAND-COLLECTED VERTEBRATE REMAINS

For the vertebrate remains, subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Semi-quantitative information was recorded for each context concerning fragment size, dog gnawing, burning, butchery, and fresh breaks.

Identifications to species or species group were carried out using a modern comparative reference collection. Other fragments (classified as 'unidentified') were grouped into categories, where possible: large mammal (assumed to be horse, cow or large cervid), medium-sized mammal (assumed to be sheep, pig or small cervid), and totally unidentified.

Measurements were taken where possible; all measurements followed those outlined by von den Driesch (1976) unless otherwise specified. Withers heights for horses were estimated using calculations devised by Kiesewalter (in von den Driesch and Boessneck 1974).

Tooth wear stages for cattle, caprovid and pig were recorded using those outlined by Grant (1982). Loose mandibular teeth were assigned to the general age categories outlined by O'Connor (1991). Mammal bones were described as 'juvenile' if the epiphyses were unfused and the associated shaft fragment appeared spongy and porous. They were recorded as 'neonatal' if they were also of small size.

RESULTS

SEDIMENT SAMPLES

A list of the sediment samples is presented in Table 11 and Table 12, and summarised below by field and by feature group where appropriate.

YRG08 AND YRG09 (FIELD 22)

The three samples taken from features at YRG08 yielded very little biological evidence. The samples contained nominal quantities of charcoal, which were not suitable for further identification, and no cereal residues, remains of wild/weed plant species, or other classes of biological remains (Table I2). Non-charred root material was abundant in the samples from **7** and **9**, together with small numbers of non-charred seeds, earthworm egg capsules and a few insect remains, all of which were recent and represent a moderate degree of bioturbation.

A small amount of heavily mineralised charcoal was retrieved from **18** from pit **16**, which included a single tuber of possible lesser celandine (cf. *Ranunculus ficaria* L.) but was mostly indeterminate.

The seven samples from YRG09 produced extremely limited biological assemblages restricted to small, comminuted charcoal assemblages, which primarily consisted of fragments of less than 2mm. A few larger fragments of charcoal recovered from the residues from two of the samples were examined, but most were deformed and rather vesicular; three fragments from **34** were tentatively identified as heather (cf. *Calluna* sp.) and one from **23** was of a diffuse porous species but could not be identified more closely (Table I2). The only other charred botanical remains were a single wheat (*Triticum* sp.) glume base and one seed of heath-grass (*Danthonia decumbens* (L.) DC.). All of the flots were dominated by relatively abundant non-charred root material and small numbers of non-charred weed seeds, indicating that the deposits have been disturbed by recent biological activity.

MAL08 (FIELD 26)

The six samples from MAL08 (Field 26) produced slightly elevated quantities of biological remains when compared to those from YRG08/YRG09 (Field 22), notably in the form of charred plant macrofossils. The flots, however, were extremely small, ranging in volume between <1ml and c.5ml, and were dominated by small charcoal assemblages, which had limited scope for further identification due to the paucity of well-preserved fragments of greater than 2mm and the mineralised state of the charcoal recovered from the residues (Table I2). The charcoal assemblages did contain some charred herbaceous stem and root fragments, and one or two ericaceous (heather-type) stem fragments were present in possible midden deposit **2701** (Table 12).

The traces of cereal residues from midden deposit 2701, gully 2705 and ditches 2708, 2711 included remains of barley (*Hordeum distichon* L./*Hordeum vulgare* L.), emmer/spelt wheat (*Triticum dicoccum* Schübl./*T. spelta* L.), and oat (*Avena*). The few wild plant/weed 'seeds' were limited to wild radish (*Raphanus raphanistrum* L.), dock (*Rumex*), stinking chamomile (*Anthemis cotula* L.), and sedges (*Carex*) (Table 12). The flots also contained varying amounts of non-charred roots, seeds and a recent (desiccated) earthworm, indicating that the deposits had been subject to varying degrees of bioturbation.

In addition, midden 2701 and the fills of features 2705, 2708, 2711 contained traces of fuel ash slag. Vertebrate remains from the samples were few and none could be identified (Table 14).

PLG08 (FIELD 23)

The 51 bulk samples selected for analysis from PLG08 produced extremely small flots, ranging in volume between <1ml and 50ml, with the majority (45 samples) not exceeding 5ml (Table 2). A sample from 592 was thought to contain ancient organic material preserved by waterlogging and the flot was retained wet. However, the small flot (c.10ml) consisted primarily of filamentous vegetative (root-like) material and indurated sediment 'crumb', with the only recovered material being a single uncharred seed of elder (*Sambucus nigra* L.), a charred dock (*Rumex*) fruit, some net-veined leaf fragments, a small amount of comminuted charcoal (<4mm) and some coal. If the non-charred biological remains were contemporary with deposition, then they were too degraded to provide any interpretative information. The charred botanical component was also too small to analyse.

Almost all the of the samples contained varying, but typically large, amounts of recent intrusive material, primarily in the form of roots, as well as seeds, earthworm egg capsules and insect (mostly beetle) remains (Table 12). In addition, items identified as soil fungus (*Cenococcum*) sclerotia were present in varying numbers in most of the flots. Determining whether the items are recent or charred (archaeological) remains is very difficult due to the morphology of the spores; therefore, the presence and abundance of the remains has been recorded, but they are not discussed further.

When excluding the recent biological remains, the flots tended to be dominated by comminuted charcoal, with some charred herbaceous remains present in many of the samples, including occasional ericaceous (heather-type) stem fragments in several (Table 12).

Other charred plant macrofossil remains consisted of cereal residues and wild plant/weed 'seeds', which were, in general, only present in small numbers (rarely exceeding 10 items), with cereal grains present in 13 samples, cereal chaff in 13 samples, and wild plant/weed 'seeds' in 30 samples (Table 12). Only six samples (from 454 (two samples), 456, 489, 567, 598) yielded 30 or more identifiable charred botanical items (Table 13). The overall state of preservation of the charred plant remains was variable. In some instances, the cereal residues and 'seeds' were particularly abraded and/or fragmented, which often prevented identification to species and sometimes to genus, while in other cases the presence of very fragile chaff elements, such as twisted awn fragments, indicated good preservation.

The identifiable cereals consisted of wheat (*Triticum* sp.), with positive identifications of spelt (*Triticum spelta* L.) and tentative identifications of emmer/spelt (*Triticum dicoccum* Schübl./*T. spelta*) and free-threshing wheat (*T. aestivum* L./*T. durum* Desf./*T. turgidum* L.), as well as barley (*Hordeum distichon* L./*H. vulgare* L.), with occasional hulled, straight and twisted grains recorded, the last confirming the presence of six-row barley (*H. vulgare*). The corresponding chaff assemblages were principally glume bases of a glume wheat species (emmer/spelt-type), with

some remains positively identified as those of spelt, and with only traces of barley chaff which, aside from a couple of items, were too poorly preserved to determine if they were from two-row (*Hordeum distichon*) or six-row (*H. vulgare*) barley. The one sample (from **489**) which contained several grains sharing similar morphological characteristics to a free-threshing wheat species also yielded several free-threshing rachis of a tetraploid wheat species (i.e. *Triticum durum/T. turgidum*), which confirmed the presence of durum/rivet-type wheat. Oat (*Avena*) was a rare occurrence and no corresponding chaff was present to determine whether this was a wild or cultivated variety. Other remains of potential economic value consisted of a single mineralised nutshell fragment, which appeared to be of hazel (*Corylus avellana* L.).

The wild plant/weed seed assemblages tended to be small and fairly homogeneous. Wetland taxa such as sedges (*Carex*), rushes (*Juncus*), and pale persicaria (*Persicaria lapathifolia* (L.) Gray) occurred frequently, along with ruderal species (those of waste/disturbed ground), notably persicaria (*Persicaria* sp.), knotgrass (*Polygonum aviculare* agg.), and possible cleavers (cf. *Galium aparine* L.). Weed species typically associated with arable ground were also quite common, including fat hen (*Chenopodium album* L.), stinking chamomile (*Anthemis cotula* L.), brome (*Bromus*), and black bindweed (*Fallopia convolvulus* (L.) Á. Löve). Other frequent wild species were goosefoot/orache (*Chenopodiaceae*), possible scentless mayweed (*Tripleurospermum* cf. *inodorum* (L.) Sch. Bip.), heath-grass (*Danthonia decumbens* (L.) DC), and large indeterminate grasses (Poaceae >2 mm).

For the most part, the charred botanical assemblages were too small to support detailed analysis, only the six samples presented in Table 13 offered any scope for analysis and interpretation. The state of preservation of the cereal grains and fragmented state of the chaff (notably from **454**, **489**) made calculating simple ratios to aid the characterisation of the assemblages problematic: there were not enough identifiable straight or twisted barley grains present to be able to ascertain whether two-row and/or six-row barley was being cultivated, whilst the majority of the wheat grains could not be identified beyond genus, and the samples from **454** (AB) and **489** were abundant in fragmented (unquantifiable) glume bases, which potentially skews the ratios of glume wheat grain to glume bases (emmer/spelt-type in this instance). In addition, the unsorted residue fractions of the samples from the two deposits were noted to be rich in charcoal (100+ items). The proportions of cereal grain, cereal chaff and wild plant/weed 'seeds', the composition of the 'seed' assemblage, and the minimum density of charred items per litre have helped to characterise the assemblages as a whole and provide an indication of the activities that generated them (see 'Discussion', below).

Vertebrate remains recovered from the sediment samples were typically few, mostly unidentified and of no interpretative value (Table 15). Although three deposits gave larger numbers, these were predominantly of tiny fragments.

HAND-COLLECTED VERTEBRATE REMAINS

The excavations produced a small assemblage of hand-collected vertebrate remains from MAL08 (Field 26) and PLG08 (Field 23). Remains from MAL08 were limited to poorly preserved, mostly non-diagnostic fragments of bone and tooth enamel with very few identifiable elements, and this small assemblage was not investigated further (Table 16). The assemblage from PLG08 was slightly larger and warrants brief discussion.

PLG08 (FIELD 23)

Numbers of identified specimen (NISP) figures by sub-areas/feature groups (see NAA 2010) are given in Table 17, whilst details of the remains are in Table 18. The majority of the bone fragments

(485 in total) derived from two groups of enclosure ditches, surface **82** and structure **620**. Group 1 relates to enclosure ditches to the east of the Roman road and Group 2 to enclosure ditches to the west of it. Group 1 contexts containing bone were **101, 105, 161, 163, 239, 315, 448**. Group 2 contexts containing bone were **93, 116, 182, 223, 227, 593**. Bone was recovered from the occupation area from contexts **81, 82, 83, 375, 394, 422, 492, 501, 537, 539, 554**. Much smaller amounts of bone were recovered from miscellaneous other features, including some associated with the road. Most of the deposits were of Romano-British date, although evidence for dating was somewhat limited, and some features of Iron Age date were also located nearby. Table 17 shows the concentrations of bone from the different areas; the figures are likely to show a degree of bias caused by severe fragmentation of poorly preserved bone and teeth from some contexts, increasing the count of unidentified fragments. This was particularly the case for the large mammal bone from Group 1.

Most of the material was of moderate to poor preservation, with several deposits containing very little other than fragments of tooth enamel. Poorer preservation seemed to be more prevalent in the Group 1 enclosure ditches, with proportionally more material maintaining angularity in the occupation area and Group 2 ditches. There was no preservation advantage for fragments from the lower fills of features. Fresh breaks were extensive throughout the assemblage and were recorded on 40% of the fragments; this included bones that seemed superficially to be better preserved, for example those from **116**. Pronounced variation in colour or angularity within contexts was not apparent, suggesting a low incidence of reworked or residual material.

No mandibles with tooth rows were present and there were very few post-cranial fragments that could provide age-at-death and biometrical data. This was partly the result of the extensive fresh breakage during excavation, which was a consequence of the poor preservation (and hence fragility) of some of the bones. From their dental attrition, several of the cattle isolated third mandibular molars (e.g. **82, 315, 581**) represented animals that were adult or elderly (after O'Connor 1991). A few elements showed evidence for epiphyseal fusion and, with the exception of an unfused distal metapodial condyle from **161**, all the epiphyses were fused. Tooth wear stages (following Grant 1982) are recorded in Table 18.

No evidence for butchery or pathology could be seen on any of the fragments and there was only one incidence of dog gnawing (on a cattle calcaneum from **422**). Absence of evidence for such modifications is, however, at least partly due to fragmentation and erosion of the bones. A few small pieces (mostly from the occupation area) were calcined, indicating burning at a very high temperature (525–640°C; Shipman *et al.* 1984), although it is possible that they had been subjected to repeated burning at lower temperatures.

By far the largest proportion of the bone (c.50%) was assigned as 'unidentified', which is a reflection of the poor preservation and the extent of the fresh breakage over most of the assemblage. Those fragments identified to species or categorised by size were dominated by cattle and large mammal bones, which together made up c.40% of the total number of fragments. The majority of the cattle bones were from the head or lower limbs, but this is probably due to the relative robustness of these elements and it is reasonable to assume that a proportion of the long bone fragments assigned to the large mammal category may have been cattle. A number of horse bones were also present but, with the exception of a few loose teeth, all seemed to be from the same forelimb deposited in fill **116** of ditch **115**, which also produced pottery dated to the 3rd–4th century AD. The metacarpal, minor metacarpals, phalanges, and carpals were all present, together with fragments of humerus, which may be from the same adult individual. Measurements taken from the metacarpal provided an estimated withers height of 1330mm (c.13hh). Remains of the other main domesticated mammals, ovicaprids (sheep/goat) and pig, were scarce. Furthermore, there was very little material categorised as medium-sized mammal,

suggesting a genuine paucity of these species rather than non-identification of fragmented material. A single broken canine tooth, possibly from a dog, was recovered from **182**. There were no remains of bird or wild animal species.

DISCUSSION

POOL LANE (YRG08/YRG09; FIELD 22)

The three samples from ditch **8**, gully **10** and pit **16** yielded very little biological material. On the basis of the composition of the mineral component, it would appear that the sampled fills of ditch **8** and gully **10** resulted from gradual infill of the features; the residues and flots from the amount to a little over 1% of the original sample volumes, meaning that the majority of the deposits consisted of very fine sediment.

The residue from fill **18** of pit **16** (sample number 18AA) was recorded in the field as consisting of 50% iron nails, 45% burnt bone and 5% stone (>10mm) and has been identified as a cremation deposit. The only item of note in the small assemblage of biological remains from the sediment sample was the single record of a possible lesser celandine tuber. Finds of charred lesser celandine tubers are not uncommon (see Mason and Hather 2000; Hall 2003) and it has been a subject of speculation whether these tubers, when found in quantity, were deliberately gathered for consumption or represent the surviving remnants of burnt turf (Hall 2003, 26). The potential presence of lesser celandine in this context is interesting, but the tentative identification and single occurrence provides little scope for further interpretation on this occasion.

There was very little reliable evidence for domestic activity associated with the features from Field 22, due to the lack of biological remains that could feasibly constitute domestic waste. The composition of the mineral fractions of the samples suggested that the gullies and enclosure ditches from which the samples were collected filled in gradually, although the presence of cobbles from posthole **30** may be elements of post-packing. Overall, the biological remains recovered from the Field 22 sample group contribute little to the greater understanding of the site.

POOL LANE (PLG08; FIELD 23)

SEDIMENT SAMPLES

THE ROUNDHOUSE

The only notable remains recovered from three samples from fills **61**, **103** and **461** of gully **70/383** were the traces of charred ericaceous stem fragments, which may derive from material used in the construction of the roundhouse. Heather may have been exploited for construction purposes, for thatch or roofing using turves, or for other domestic purposes, such as for fuel or craftwork; it was not possible to ascertain the intended use of such a versatile resource on the strength of the available evidence. The samples taken from penannular gully **420** (which was located concentrically within gully **70/383**), from the hurdle wall (Group **483**, which was located on the edge of gully **420**), and from curved gullies **180**, **205** and **206**, yielded very little aside from small quantities of comminuted charcoal (primarily <2mm) and occasional charred weed seeds. There was no indication of intentional disposal of domestic waste into any of the sampled features. The sampled postholes and pits within the roundhouse delineated by gully **70/383** were particularly sparse in biological remains and provided no reliable datable or interpretable evidence.

**GROUP 1 ENCLOSURE DITCHES, BUILDING FOUNDATION, ROAD AND ASSOCIATED DITCHES, AND BANKS,
GULLIES AND PITS**

The three samples from enclosure ditch **96**, posthole **268** (associated with the possible foundations of a building) and organic layer **237** beneath road **194** (from **99**, **269**, **237** respectively) produced very small assemblages of biological remains, which provided no scope for interpretation nor any material suitable for radiocarbon dating. The mineral component of the sample taken from fill **13** of curved gully **12** suggested that the gully filled in gradually and the biological evidence indicated the incorporation of low levels of domestic debris, perhaps as incidental inclusions given the paucity of the charred botanical remains. The presence of a 'heather-type' stem fragment and 'seeds' of blinks, sedge, rush, and heath-grass indicated the exploitation of damp, moor/heath land habitats, but this was the limit of their interpretative potential. The single sample taken from fill **49** of pit **48** contained only a small quantity of heavily mineralised indeterminate charcoal and a single hazelnut shell fragment.

OCCUPATION AREA

Two intercut pits (**455** and **488**) in the occupation area provided direct evidence for crop-processing activities. Two samples were analysed from pit **455**—one from fill **489** (described as a black ashy deposit), and one from fill **456** (brown clayey silt)—whilst two samples from fill **454** in pit **488** were also recorded; all four produced fairly homogeneous botanical assemblages.

Contexts **454** (fill of **455**) and **489** (fill of **488**) contained high densities of charred plant remains (at least 48 and 216 quantified items per litre of sediment respectively, but very likely more) and, on the basis of the composition of the major botanical components, the assemblages appeared to be composed of a mix of fine sieve residues, i.e. both fine sieve products and by-products. The abundance of glume wheat chaff (which was highly fragmented in **454**), and the presence of arable weed species, such as goosefoot/orache (including fat-hen), pale persicaria, knotgrasses, sedges, and rushes, indicates fine sieve by-products; the cereal grain and wild plant/weed seeds, such as bedstraw (>2mm, including possible cleavers), and the predominance of large grasses (including brome), which are similar in size to the prime grain, indicates the presence of fine sieve products. It appears then, that semi-cleaned crop(s) of a glume wheat species, most likely spelt, were being processed; the fine sieve by-products (chaff and smaller persistent weed seeds) and contaminants of the product, such as spoiled grain and weeds that were similar in size to the prime grain (i.e. the large grasses), were being removed by hand and discarded with the fine sieve by-products into the pits. This interpretation raises further points for discussion: the consistent presence of barley and traces of oat and durum/rivet wheat in the discarded processing residues suggests that these may have been treated as contaminants of the glume (?spelt) wheat crop. However, whether barley, and to a lesser degree oat and durum/rivet wheat were contaminants of the main wheat crop, or whether mixed (maslin) crops were being grown is difficult to ascertain, as free-threshing cereals, such as barley and durum/rivet wheat, are processed differently to glume wheats; the semi-cleaned wheat crops were processed for direct consumption, although the prime grain may have been stored in a fully processed state, or it may have been prepared for export in a clean state. However, the consistent presence of glume wheat residues, barley and the similar suites of weed species from samples across the site strongly suggests that the cereals were cultivated locally and processed by the inhabitants for consumption. The presence of pale persicaria, stinking chamomile, sedges, rushes and, to a lesser degree, heath-grass in many of the samples (not just those from the two pits) indicates the cultivation of heavier soils that would appear to have been prone to waterlogging or may have extended into damp/wet areas.

The hints of durum/rivet wheat were interesting, as this was considered to be a less stress-tolerant species compared to emmer, spelt or barley, and during the Roman period it would have constituted a more desirable/marketable crop (Mills 2007). The presence of small quantities of chaff suggests that this cereal was growing and being processed locally (rather than being imported to the site as a cleaned crop for consumption). However, overall, very few durum/rivet wheat remains were recovered and it is perhaps most likely that they represent relic inclusions within crops that were primarily of other cereal(s).

GROUP 2 ENCLOSURE DITCHES

KILNS

The primary fill **567** of possible kiln **549** contained a moderate charred botanical assemblage (at least nine quantified items per litre of sediment), which was comparable in composition to the four samples from pits **455** and **488** from the occupation area to the west of Dere Street. The deposit from the kiln appeared to contain cereal residues from the final stages of processing spelt, but it is difficult to decide whether the small numbers of barley grains constitute contaminants of the wheat crop or part of the crop itself. The suite of wild plant/weed species was very similar to those from the botanically rich samples from pits **455** and **488**, strengthening the evidence for the cultivation of heavier, damp soils. The consistency in the cereals and suites of wild plant/weed species recorded in samples from this group of features and those from the occupation area indicates a degree of continuity in respect of the crops and soils under cultivation from the pre-Roman Iron Age into the Roman period. The cereal remains from the primary fill of kiln **549** may be derived from processing cereals or, alternatively, may reflect the use of cleaning residues as kindling for the kiln; the latter proposition is supported to some degree by the fact that remains of heather were also recovered from this deposit. A sample collected from the fill of the flue of kiln **549** was not selected for analysis, as it did not appear to be particularly rich in organic remains.

The single sample from kiln **574** contained very little charred botanical remains, aside from trace levels of charcoal and cereal residues, which may be remnants of fuel. The two samples from the combustion chamber (**603**) and flue (**607**) of kiln **603** were also practically devoid of charred botanical remains, providing no indication of the material(s) selected to fuel the kiln; traces of cereal residues may be reworked from the fill of pit **599**, into which the kiln bowl was cut (see below).

The sample from pit **599** produced a moderate charred botanical assemblage, which was very similar in composition to those from pits **455**, **488** and kiln **549**. It appears that small amounts of cereal residues from the final stages of crop processing (of spelt wheat and ?barley) were discarded into the feature.

VERTEBRATE REMAINS

The vertebrate material from Field 23 was poorly preserved with a high incidence of fragmentation. The condition of the remains was generally consistent, suggesting a low incidence of reworked or residual material and relatively consistent burial environments within individual contexts. The poor preservation and fragmentation of the material may be a contributory factor to the absence of evidence for butchery and carnivore scavenging. Vertebrate remains from contexts associated with the Group 1 enclosure ditches to the east of Dere Street appeared to be most severely affected by adverse burial conditions, but preservation in features from other areas was only marginally better.

The assemblage was dominated by cattle and large mammal bone, with very few remains from other domestic mammals and no evidence for the exploitation of birds or other wild animal species. Most of the bones are likely to represent primary and secondary butchery refuse, particularly the material recovered from the enclosure ditch fills. The absence of butchery or skinning marks on the articulated horse limb from ditch fill **116** suggested that the animal was not exploited for meat or hide, but this does not necessarily distinguish it as a 'special' deposit. There was no associated evidence for ritual activity, and it may simply be refuse.

The small size of the vertebrate assemblage and its poor state of preservation renders it of no real interpretative value. The nature and condition of the material, however, provided a useful indicator of the poor preservation conditions prevailing at the site and the decreased probability of finding larger and more interpretatively valuable assemblages in the vicinity.

GOWLANDS (MAL08; FIELD 26)

On the basis of a number of finds recovered from Gowlands, in particular the block of roughly tooled masonry, high status Roman period construction at the site has been suggested (NAA 2008). However, the overall paucity of biological remains from the six samples provided little to enhance the current interpretation of the site.

The traces of barley and glume wheat (emmer/spelt-type) recorded did indicate that these species were consumed; these are cereals typical of cultivation during the Romano-British period (Greig 1991). The presence of fuel ash slag in midden **2701**, the fill of gully **2705**, and the fills of ditches **2708** and **2711** indicated the incorporation of heat-affected siliceous material into the deposits/features and may be derived from domestic hearth debris or perhaps metal-working activities, as slag was recovered by the excavations. Furthermore, the presence of ericaceous stem fragments (from midden **2701**) suggests the exploitation of heathland habitats, but the scarcity of the material precluded any attempts to determine if the 'heather-type' plant remains derived from peat or directly from the plant, or its probable use.

Vertebrate remains from Gowlands were few and largely restricted to poorly preserved, mostly non-diagnostic fragments of bone and tooth enamel of no interpretative value (Table 16).

Table 11: Details of the sediment samples (CN = Context number)

Field	Site code	Context	Sample	Processed sample vol (l)	Processed sample weight (kg)	Retained Unprocessed sample vol (l)	Description
22	YRG08	07	AA	40	44.5	None	Fill of ditch 8
22	YRG08	09	AA	9	11	None	Fill of gully 10
22	YRG08	18	AA	16	19	None	Fill of pit 16
22	YRG09	23	AA	16	20	None	Fill of enclosure ditch 24
22	YRG09	26	AA	8	10	None	Fill of curvilinear drip gully 2203
22	YRG09	30	AA	6	7	None	Fill of posthole 31
22	YRG09	34	AA	15	20.5	None	Fill of curvilinear gully 2202 (from the terminus)
22	YRG09	37	AA	15	25	None	Fill of enclosure ditch 36
22	YRG09	43	AA	18	22	None	Fill of enclosure ditch 44
22	YRG09	56	AA	16	22	None	Fill of enclosure ditch 55
26	MAL08	2701	AA	27	36.5	None	Dark silty sand spread (midden?)
26	MAL08	2703	AA	32	44.5	None	Dark silty fill of gully 2705
26	MAL08	2704	AA	32	39.5	None	Upper fill of ditch 2708
26	MAL08	2713	AA	35	37	None	Secondary fill of ditch 2711
26	MAL08	2716	AA	8	10.5	None	Fill of posthole 2715
26	MAL08	2902	AA	13	17	None	Layer of dark silty clay, beneath layer of rounded cobbles 2901
23	PLG08	13	AA	20	21.5	2 sample tubs	Fill of ditch 12
23	PLG08	49	AA	8	9	None	Fill of pit 48
23	PLG08	61	AA	7	8	1 sample tub	Fill of curvilinear gully 59
23	PLG08	72	AA	6	6	None	Fill of posthole 71
23	PLG08	82	AB	18	19	2 sample tubs	Spread
23	PLG08	90	AA	16	21	4 sample tubs	Fill of cut 88 (possible inhumation cut)
23	PLG08	99	AA	29	33	None	Fill of ditch 96
23	PLG08	103	AA	8	9	None	Fill of curvilinear gully 102
23	PLG08	111	AA	8	9	3 sample tubs	Fill of pit 86
23	PLG08	123	AA	13	16.5	2 sample tubs	Fill of gully 122
23	PLG08	132	AA	7	9.5	None	Fill of posthole 131
23	PLG08	152	AA	9	10	1 sample tub	Fill of curvilinear gully 151
23	PLG08	167	AA	17	20	2 sample tubs	Fill of pit 166
23	PLG08	184	AA	7	8.5	2 sample tubs	Fill of gully 183
23	PLG08	185	AA	10	9.5	1 sample tub	Fill of ditch 181
23	PLG08	237	AA	10	11	2 sample tubs	Layer of road make-up
23	PLG08	242	AA	8	11	2 sample tubs	Fill of posthole 241
23	PLG08	254	AA	10	12	None	Fill of posthole 254 (Should be 253? Fill 253 of posthole 254 recorded as sampled)

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Field	Site code	Context	Sample	Processed sample vol (l)	Processed sample weight (kg)	Retained Unprocessed sample vol (l)	Description
23	PLG08	266	AA	8	8	None	Fill of posthole 265
23	PLG08	269	AA	6	10	1 sample tub	Fill of posthole 268
23	PLG08	306	AA	9	11	None	Fill of pit 305
23	PLG08	334	AA	9	9	None	Fill of curvilinear construction cut 382
23	PLG08	336	AA	23.5	26	None	Fill of curvilinear gully 335
23	PLG08	357	AA	13	12.5	None	Fill of curvilinear gully 354
23	PLG08	389	AA	7	5	None	Fill of curvilinear construction cut 388
23	PLG08	403	AA	27	28	None	Fill of curvilinear gully 402
23	PLG08	407	AA	7	9	3 sample tubs	Fill of pit 406
23	PLG08	419	AA	8	9	None	Fill of curvilinear gully 418
23	PLG08	426	AA	8	9.5	None	Fill of posthole 425
23	PLG08	429	AA	6	6	None	Fill of curvilinear construction cut 491
23	PLG08	446	AA	?	?	?	Fill of pit 445
23	PLG08	446	AB	40	26	None	Fill of pit 445
23	PLG08	454	AA	?	?	?	Fill of pit 488
23	PLG08	454	AB	6	8	None	Fill of pit 488
23	PLG08	456	AA	20	21	None	Fill of pit 455
23	PLG08	458	AA	35	31.5	None	Fill of curvilinear gully 457
23	PLG08	461	AA	29	25	None	Fill of curvilinear gully 460
23	PLG08	478	AA	?	?	?	Fill of curvilinear gully 474
23	PLG08	489	AA	6	8	None	Fill of pit 455
23	PLG08	495	AA	9	10	3 sample tubs	Fill of curvilinear gully 494
23	PLG08	498	AA	7	8	None	Fill of curvilinear construction cut 497
23	PLG08	512	AA	?	?	?	Fill of posthole 511
23	PLG08	512	AB	6	10	None	Fill of posthole 511
23	PLG08	517	AA	6	9	None	Fill of posthole 516
23	PLG08	545	AA	9	11	None	Fill of posthole 544
23	PLG08	567	AA	25	31	None	Fill of kiln 549
23	PLG08	576	AA	28	31	None	Fill of kiln 574
23	PLG08	592	AA	9	12	0.05	Fill of pipe trench 590, within ditch 181
23	PLG08	598	AA	7	8	3 sample tubs	Fill of pit 599
23	PLG08	602	AA	15	19	None	Fill of pit 607
23	PLG08	604	AA	29	33	None	Fill of kiln 603
23	PLG08	606	AA	2	3	None	Fill of kiln 603

Table 12: Organic remains recovered from the flots

Key: 'CN' = context number; 'S' = sample designation; 'V/Wt (l/kg)' = volume/weight of processed sediment sample in litres/kilograms; 'CPR' = charred plant remains; 'C'coal' = charcoal; 'Unch' = uncharred. Abundance scale: 1 – few/rare, up to 3 individuals/items or a trace level component of the whole; 2 – some/present, 4 to 20 items or a minor component; 3 – many/common, 21 to 50 or a significant component; 4 – very many/abundant, 51 to 200 or a major component; and 5 – super-abundant, over 200 items/individuals or a dominant component of the whole.

* - the abundance score for uncharred root reflects the relative abundance of this material compared to the volume of the bioarchaeological/mineral component of the washovers.

Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
YRG08	07	AA	40/44.5	<1	None	-	1	2	-	-	-	1	5	Sediment 'crumb' score 5. Insect (modern) score 1. Uncharred seed; Polygonaceae.
YRG08	09	AA	9/11	<1	~2	-	-	2	-	-	-	1	4	Uncharred seed; Polygonaceae. Earthworm egg capsules score 1. 1x fragment of coal present in charcoal from residue. Flot mostly sand/sediment 'crumb' and uncharred roots.
YRG08	18	AA	16/19	~2	20	1	2	2	-	-	-	-	-	Charcoal from flot and residue is heavily mineralised. Charred roots/tubers (including cf. Ranunculus ficaria L.) >2 mm. Semi-intact modern beetle present.
YRG09	23	AA	16/20	<1	~2	-	-	2	-	-	-	2	5	Charcoal from residue mostly mineralised, distorted and vesicular, but one fragment could be partially identified as being of a diffuse porous species. Uncharred seed; Urtica, Stellaria, Carex. Earthworm egg capsules score 1.
YRG09	26	AA	8/10	<1	None	-	-	1	-	-	-	1	5	Uncharred seed; Chenopodiaceae, Sambucus nigra L.
YRG09	30	AA	6/7	<1	None	-	-	2	-	-	-	-	5	-
YRG09	34	AA	15/20.5	<1	~15	-	2	4	-	1	1	3	5	Charcoal from residue mostly mineralised, with some fragments distorted and vesicular, three others could be tentatively identified as heather (cf. Calluna). Charred Triticum sp. glume base x1, Danthonia

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														decumbens (L.) DC. x1. Uncharred seed; Chenopodiaceae, Persicaria lapathifolia (L.) Gray, Polygonum, Rumex.
YRG09	37	AA	15/25	<1	None	-	-	1	-	-	-	2	5	Uncharred seed; Chenopodiaceae, Stellaria, Polygonum.
YRG09	43	AA	18/22	<1	None	-	-	1	-	-	-	1	5	Uncharred seed; Chenopodiaceae, Stellaria.
YRG09	56	AA	16/22	<1	None	-	-	2	-	-	-	1	5	Uncharred seed; Urtica dioica L.
MAL08	2701	AA	27/36.5	4	~15	1	1	5	2	1	2	-	5	Charcoal from residue is mineralised with some root/rhizomes and ericaceous stem fragments. Charred, mineralised Hordeum distichon L./H. vulgare L. x2 and 1x hulled grain, Avena sp. x1 and indeterminate cereal grain x3, Triticum sp. glume base fragment x1, Raphanus raphanistrum L. x1, Rumex sp(p). x2, Anthemis cotula L. x9, Carex sp. x3 and indeterminate seed x1. Fuel ash slag x2 (>4 mm).
MAL08	2703	AA	32/44.5	~5	~10	-	2	5	-	1	1	2	3	Charcoal includes frequent small herbaceous stem fragments and charcoal from the residue is mineralised with occasional root fragments. Charred Hordeum distichon/H. vulgare rachis x1, Triticum dicoccum (Schübl.)/T. spelta L. glume base x1, Carex sp(p). x2 and indeterminate seed x1. Uncharred seed; Ranunculus Subgenus Ranunculus, Sambucus nigra, small indeterminate Poaceae (<2 mm). Modern worm. Fuel ash slag score 1 (2-4 mm).
MAL08	2704	AA	32/39.5	~2	<5	1	1	5	1	-	1	-	5	Charcoal from residue is mineralised. Charred Hordeum distichon/H.

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														vulgare (straight) x1, Cerealia indeterminate/Poaceae x1, Carex sp. x1. Fuel ash slag present (score 1).
MAL08	2713	AA	35/37	1	None	1	2	3	1	-	2	-	-	Charcoal includes occasional herbaceous stem fragments <2 mm. Charred indeterminate grain fragments x 2, Carex spp. x2 and indeterminate seed x 1. Fuel ash slag score 1 (>4 mm).
MAL08	2716	AA	8/10.5	<1	~5	-	-	2	-	-	-	-	5	-
MAL08	2902	AA	13/17	1	None	-	2	2	-	-	1	2	5	Charcoal includes some root/stem fragments. Charred Carex sp. x1 and indeterminate seed x1. Uncharred seed; Ranunculus sp.
Gullies														
PLG08	13	AA	20/21.5	2	~5	1	3	5	-	-	2	2	4	Charcoal includes roots/rhizome fragments, small grass-sized culm internodes and 1x ericaceous stem fragment. Charcoal from residue silted and mineralised. Charred Montia fontana L. x1, Tripleurospermum cf. inodorum (L.) Schl. Bip. x2, cf. Juncus sp. x1, Carex sp. x1, Cyperaceae x1, cf. Danthonia decumbens (L.) DC. x1. Cenococcum sclerotia score 3. Uncharred seed; Stellaria sp. Pre-Quaternary spore score 1. Coal score 2 (<2 mm).
Pits														
PLG08	49	AA	8/9	<1	~15	-	1	2	-	-	1	-	5	Charcoal from residue silted and mineralised. Charred and mineralised cf. Corylus avellana L. nutshell fragment x1 from residue. Uncharred seed; Stellaria sp. Cenococcum sclerotia score 3.
Ring Gullies: Roundhouse														

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
drip gully 70/383														
PLG08	61	AA	7/8	1	~17.5	-	1	3	-	-	1	1	5	Charcoal includes 1x ericaceous stem fragment. Charcoal from residue is mineralised with some root/rhizome and ericaceous stem fragments. Charred Carex sp. x1. Uncharred seed; Chenopodiaceae. Cenococcum sclerotia score 3. Snail score 1; Cecilioides acicula (Müller).
PLG08	103	AA	8/9	~5	14	-	1	4	-	-	-	1	-	Charcoal includes small ericaceous stem fragment. Charcoal from residue is mineralised with small roundwood fragment (with bark). Uncharred seed; Stellaria sp. ?Weevil (cf. Curculionidae sp.) head fragment x1 – modern.
PLG08	461	AA	29/25	<1	None	-	2	5	-	-	-	1	5	Uncharred seed; small leguminous seed, Sambucus nigra. Cenococcum sclerotia score 2.
Ring Gullies: Penannular gully 420														
PLG08	357	AA	13/12.5	<1	None	-	-	2	-	-	-	1	5	Uncharred seed; Stellaria sp.
PLG08	419	AA	8/9	<1	None	-	1	3	-	-	1	2	4	Charred indeterminate seed x1. Uncharred seed; Stellaria sp. Earthworm egg capsules score 1. Cenococcum sclerotia score 2.
PLG08	458	AA	35/31.5	1	None	1	1	2	-	-	2	2	5	Charcoal includes occasional herbaceous root/stem fragment. Charred Chenopodiaceae x4, Polygonaceae x1, indeterminate seed x1. Uncharred seed; Chenopodiaceae. Earthworm egg capsules score 1. Modern beetle remains score 1. Cenococcum sclerotia score 1.

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
PLG08	478	AA	16/19.5	<1	4	1	2	4	-	-	1	1	5	Charcoal from residue is mineralised. Charred indeterminate seed x1. Uncharred seed; Stellaria sp.
PLG08	495	AA	9/10	<1	None	-	-	2	-	-	-	2	5	Charcoal includes occasional root/rhizome fragments (score 1). Uncharred seed; Chenopodiaceae. Sand grains score 3. Coal score 1 (<2 mm).
Ring Gullies: Hurdle wall (Group 483)														
PLG08	334	AA	9/9	~5	None	1	2	2	-	-	1	1	2	Charred Danthonia decumbens x1. Uncharred seed; Stellaria sp. Earthworm egg capsules score 1. Modern insect score 1. Cenococcum sclerotia score 2.
PLG08	389	AA	7/5	<1	None	-	-	3	-	-	-	-	5	Earthworm egg capsules score 1.
PLG08	429	AA	6/6	<1	None	-	-	1	-	-	-	-	4	
PLG08	498	AA	7/8	<1	None	-	-	2	-	-	1	-	3	Charcoal includes occasional root/rhizome fragments (score 1). Charred Chenopodiaceae x1. Sand grains score 3.
Ring Gullies: Curvilinear gully (part of Group 206)														
PLG08	184	AA	7/8.5	1	6	-	-	1	-	-	2	1	5	Charcoal from residue is mineralised, with ?roundwood fragments present. Charred Persicaria sp. x2, Tripleurospermum sp. x1 and Danthonia decumbens x1. Uncharred roots score 5. Uncharred seed; small leguminous seed. Earthworm egg capsules score 2. Cenococcum sclerotia score 3. Small coal fragments score 1.

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
PLG08	336	AA	23.5/26	<1	None	-	-	3	-	-	-	1	5	Uncharred seed; Stellaria sp. Modern beetle fragment score 1. Cenococcum sclerotia score 2.
Ring Gullies: Curvilinear gully (part of Group 205)														
PLG08	123	AA	13/16.5	1	3	-	-	1	-	1	1	1	5	Charcoal from residue is heavily mineralised. Charred Triticum sp. glume base x1, Cyperaceae x1 and indeterminate seed x1. Uncharred seed; Ranunculus sp., Stellaria sp. Worm capsules score 1. Cenococcum sclerotia score 2.
Ring Gullies: Curvilinear gully (part of Group 180)														
PLG08	152	AA	9/10	~5	3	-	-	3	-	-	1	-	1	Charcoal from residue is mineralised. Charred indeterminate seed x1. Earthworm egg capsules score 1. Pre-Quaternary spores score 1. Cenococcum sclerotia score 1.
Postholes: Within area enclosed by curvilinear gully 70/383														
PLG08	72	AA	6/6	<1	~5	-	-	3	-	-	1	1	5	Charcoal from residue mineralised with some root/stem fragments. Charred small indeterminate Asteraceae x1. Uncharred seed; Stellaria sp. Cenococcum sclerotia score 3.
PLG08	132	AA	7/9.5	<1	3	-	-	2	-	-	-	-	5	Cenococcum sclerotia score 3.
PLG08	242	AA	8/11	1	11	-	-	4	1	2	1	1	5	Charcoal from residue is mineralised, with a small round wood/stem

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														fragment present. Charred Triticum sp. x2, Triticum sp(p). glume bases x5 and Triticum chaff fragments (score 2), Bromus sp. x1 and indeterminate Poaceae fragment x1. Uncharred seed; Chenopodiaceae. Earthworm egg capsules score 2. Very fragmented modern beetle cuticle score 1.
PLG08	254	AA	10/12	<1	6	-	1	3	-	-	-	2	5	Charcoal from residue is heavily mineralised with some burnt bone fragments (1.4 g) also picked out. Uncharred seed; Stellaria sp. Earthworm egg capsules score 2. Cenococcum sclerotia score 1.
PLG08	266	AA	8/8	<1	3	-	-	-	-	-	1	-	5	Charcoal from residue is mineralised and includes 1x herbaceous stem fragment. Charred indeterminate seed x1. Earthworm egg capsules score 1. Cenococcum sclerotia score 1.
PLG08	306	AA	9/11	<1	5	-	-	3	-	-	-	-	5	Charcoal from residue is heavily mineralised. Cenococcum sclerotia score 2.
PLG08	426	AA	8/9.5	<1	None	-	-	2	-	-	-	1	4	Uncharred seed; Stellaria sp. Earthworm egg capsule score 1. Pre-Quaternary spore score 1.
PLG08	512	AA	8/11	~1	None	1	1	2	-	-	-	-	5	Charcoal includes occasional root/rhizome fragment (score 1). Modern beetle sclerites score 1. Sand grains score 4. Black plastic and ?paper score 1 each.
PLG08	512	AB	6/10	~2	None	-	2	4	-	-	-	-	5	Sand grains score 3. Small (to 5 mm, but most <2 mm) baked/indurated sediment lumps. Earthworm egg capsules score 1. Flakes of ?paint score 1. ?Cenococcum sclerotia (possibly charred?) score 1.

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
PLG08	517	AA	6/9	~1	None	-	-	2	-	-	-	-	5	Sand grain score 2. Modern beetle sclerite fragments score 2. <i>Cenococcum sclerotia</i> (?charred) score 1.
PLG08	545	AA	9/11	<1	None	-	-	1	-	-	-	-	5	Sand grains score 2. ? <i>Cenococcum sclerotia</i> (?charred) score 1.
Pits: Within interior of roundhouse														
PLG08	111	AA	8/9	1.5	>3	-	-	4	-	-	1	1	2	Charcoal includes ericaceous stem fragments (score 1). Charcoal from residue includes 1x roundwood fragment (25 mm length and 28 mm width), with some small comminuted fragments. Charred indeterminate seeds x3. Uncharred seed; <i>Polygonum</i> sp. <i>Cenococcum sclerotia</i> score 3. Modern ground beetle head x1.
PLG08	167	AA	17/20	1	None	1	1	3	-	-	-	-	5	Worm capsules score 1. Soils spores score 3.
Enclosure Ditches														
PLG08	99	AA	29/33	<1	None	-	-	2	-	-	1	2	5	Charred <i>Carex</i> sp. x1 and indeterminate seed x2. Uncharred seed; <i>Chenopodiaceae</i> , <i>Stellaria</i> sp. Pre-Quaternary spores score 1. Snails; 1x <i>Valvata cristata</i> Müller apex fragment.
Building Foundation														
PLG08	269	AA	6/10	<1	18	-	-	4	-	-	-	-	5	Charcoal from residue is mineralised, with 2x ?bark fragments. Earthworm egg capsules score 1.
Road and Associated Ditches and Banks														

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
PLG08	237	AA	10/11	<1	~2	-	-	2	-	-	-	1	4	Charcoal includes a few root/rhizome fragments. Uncharred seed; Stellaria sp. Earthworm egg capsules score 1. Cenococcum sclerotia score 1.
Occupation Area														
PLG08	82	AB	18/19	1	~3	-	1	3	1	-	1	2	5	Charcoal from residue is mineralised with root/rhizome and ericaceous stem fragments present. Charred Triticum sp. x1, Hordeum distichon/H. vulgare (straight) x1, cf. Eleocharis sp. x1 and indeterminate seed fragment x1. Uncharred seed; Stellaria sp., Sambucus nigra. Earthworm egg capsules score 1. Small coal fragments score 2.
PLG08	90	AA	16/21	<1	~1	-	-	3	-	1	1	2	5	Charred Triticum dicoccum/T. spelta glume base x1 and indeterminate seed x2. Uncharred seed; Stellaria sp., Aethusa cynapium L., small indeterminate Poaceae. Earthworm egg capsules score 2. Cenococcum sclerotia score 2. Small coal fragments score 2. ?Modern ground beetle head x1.
PLG08	407	AA	7/9	~5	None	-	1	4	1	1	2	2	2	Charcoal includes ericaceous stem fragments (score 1). Charred indeterminate grain x1, Triticum dicoccum/T. spelta glume base x1, small leguminous seed x1, cf. Anthemis cotula L. x1, Carex spp. x3, Danthonia decumbens x 1 and indeterminate seed x4. Uncharred seed; Chenopodiaceae, Stellaria sp., Sambucus nigra. Earthworm egg capsules score 2. Coal score 1 (<2 mm).

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
PLG08	446	AA	9/10	13	None	1	2	5	1	-	2	2	2	Charred Hordeum/Triticum x1, cf. Eleocharis sp. x2, Carex spp. x3, indeterminate seed x4. Mineralised Eleocharis sp. x1. Uncharred seed; Chenopodiaceae, Stellaria sp. Earthworm egg capsules score 2. Cenococcum sclerotia score 1. Modern beetle fragments score 1.
PLG08	446	AB	40/26	50	None	2	3	5	2	-	2	2	2	Charcoal includes cf. Arrhenatherum elatius var bulbosum (Willd) St-Amans. 'tuber'. Charred cf. Triticum sp. x1, cf. Hordeum distichon/H. vulgare x1, indeterminate grain x2, Carex sp. x2, Danthonia decumbens x1 and indeterminate seeds x9. Uncharred seed; Stellaria sp. small leguminous seed, Aethusa cynapium. Earthworm egg capsules score 3. Modern beetle remains score 1. Cenococcum sclerotia score 3. Coal score 1 (<2 mm).
PLG08	454	AA	5/5	5	None	-	1	5	4	2	3	-	3	Charcoal includes some herbaceous root/stem fragments. Charred Triticum cf. spelta, Triticum sp(p)., Hordeum distichon/H. vulgare, indeterminate cereal grain and fragments, Triticum dicoccum/T. spelta glume base, Triticum rachis, Chenopodium sp., Atriplex sp., Polygonum aviculare agg., Persicaria sp., Galium sp(p)., Chrysanthemum segetum L., small indeterminate Asteraceae, Juncus sp(p)., Carex sp., Bromus sp., Poaceae (>2 mm).
PLG08	454	AB	6/8	15	None	-	1	5	4	5	4	2	-	Charcoal includes 1x cereal/grass-sized culm node. Charred Triticum spelta, Triticum spp., Hordeum

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														vulgare, Hordeum distichon/H. vulgare, detached coleoptiles, indeterminate grain and grain fragments, Hordeum distichon/H. vulgare and Triticum (glume wheat species) chaff, twisted awn fragments, chaff mostly indeterminate glume wheat chaff fragments. Charred small leguminous seed, Galium cf. aparine, Chenopodium album L., Atriplex sp(p), Persicaria lapathifolia L., Persicaria sp(p)., Bromus sp(p)., Poaceae (>2 mm), Carex sp(p)., Juncus sp(p)., Tripleurospermum cf. inodorum, Anthemis cotula L., Raphanus cf. raphinistrum, 'Type A' species. Uncharred seed; Chenopodiaceae, Stellaria sp. Earthworm egg capsules score 2. Cenococcum sclerotia score 1.
PLG08	456	AA	20/21	2	None	1	1	4	3	2	4	2	5	Charred Hordeum distichon/H. vulgare, Hordeum/Triticum, Triticum cf. dicoccum, Triticum sp(p)., Avena sp., indeterminate grain and grain fragments, Triticum spelta and Triticum sp(p). glume bases, Galium cf. aparine, Juncus sp., Carex sp., Rumex sp., Persicaria lapathifolia, small indeterminate Poaceae (<2 mm), Chenopodium sp., 'Type A' species, Bromus sp(p), indeterminate Poaceae (>2 mm) and Poaceae fragments (score 3). Uncharred seed; Stellaria sp. Sambucus nigra. Cenococcum sclerotia score 2.
PLG08	489	AA	6/8	35	None	-	2	5	5	5	5	-	-	Charcoal mostly indeterminate (large) Poaceae fragments (<2 mm). Charred

Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														Hordeum vulgare, Hordeum distichon/H. vulgare, Triticum spelta, T. cf. dicoccum/spelta, T. cf. aestivum sl., Avena sp., twisted awn fragments, free-threshing tetraploid Triticum rachis, T. spelta chaff, Hordeum vulgare and H. distichon/H. vulgare rachis, Ranunculus sp., Potentilla sp., Carex sp., small indeterminate Poaceae (<2 mm), 'Type A' 'seed', Juncus sp(p), Anthemis cotula, Tripleurospermum cf. inodorum, small indeterminate Asteraceae, Chenopodium sp(p), Atriplex sp(p), Rumex sp(p), Persicaria lapathifolia, Polygonum sp., Vicia/Lathyrus, Galium aparine, Bromus sp(p), Poaceae (>2 mm).
Enclosure Ditches														
PLG08	185	AA	10/9.5	<1	None	-	-	2	-	-	-	1	3	Uncharred seed; Stellaria sp.
PLG08	567	AA	25/31	10	None	1	5	5	4	4	4	1	3	Charcoal includes ?heather (cf. Calluna vulgaris L.) diffuse porous roundwood of ~13 years growth. Charred Hordeum distichon/H. vulgare, Triticum spelta grain and glume bases, Triticum spp. grain and glume bases, poaceae (>2 mm), Danthonia decumbens, Tripleurospermum sp(p), Anthemis cotula, Juncus sp(p), Chenopodium album L., Chenopodiaceae, Carex sp., Fallopia convolvulus (L.) Á. Löve, Galium cf. aparine L., Bromus sp. Uncharred seed; Chenopodiaceae. Stones (to 6 mm) score 1. Earthworm egg capsules score 1. Sand grain score

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														3. Paper and flakes of ?paint score 1 each. ?Cenococcum sclerotia (?charred) score 1.
PLG08	592	AA	9/12	~10	None	-	1	4	-	-	1	1	5	Charred Rumex x1. Uncharred Sambucus nigra x1. Uncharred filamentous vegetative/root material score 5, net-veined lead fragments score 2. Coal score 3. Flot recorded wet – mostly vegetative material and indurated sediment 'crumb'.
Kilns														
PLG08	576	AA	28/31	~2	None	1	-	2	1	2	2	-	5	Charcoal includes occasional root/rhizome fragments <2 mm (score 1). Charred Hordeum distichon/H. vulgare x2 and indeterminate grain x1, Triticum sp(p). glume bases x3 and glume base fragments (score 2), Carex sp. x1, Bromus sp. x1, indeterminate seed x4. Sand grains score 3. Modern beetle sclerites score 1. Paper score 1. ?Cenococcum sclerotia (?charred) score 2.
PLG08	598	AA	7/8	~5	None	1	2	5	3	3	2	-	3	Charcoal includes some root/rhizome fragments (<2 mm). Charred Hordeum distichon/H. vulgare, Triticum sp(p)., indeterminate grain and fragments, Triticum sp(p). glume bases and fragments. Hordeum distichon/H. vulgare rachis, twisted awn fragments, Chenopodium sp., Chenopodiaceae, Fallopia convolvulus, Persicaria lapathifolia, Persicaria sp., Eleocharis sp., Poaceae (> 2 mm). Baked/indurated sediment lumps (to 4 mm) score 4. Sand grains score 3. Stones (to 5 mm) score 2.

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Site code	CN	S	V/Wt (l/kg)	Flot vol (ml)	CPR from residue vol (ml)	C'coal (>4mm)	C'coal (2-4mm)	C'coal (<2 mm)	Charred grain	Charred chaff	Charred seed	Unch seed	Unch root*	Notes
														?Cenococcum sclerotia (?charred) score 1.
PLG08	602	AA	15/19	~2	None	1	-	1	-	1	2	1	5	Charcoal includes 1x tuber/rhizome (>4 mm). Charred Triticum sp. glume base fragment x1, small indeterminate Asteraceae x1, cf. Persicaria sp. x1, small indeterminate leguminous seed, x1 Poaceae (>2 mm) fragment x1, indeterminate seed x2. Uncharred seed; Atriplex sp. ?Earthworm egg capsule fragment score 1.
PLG08	604	AA	29/33	~2	None	-	-	1	2	-	2	1	5	Charred Triticum sp. x1, indeterminate grain x1 and fragments (score 2), Persicaria lapathifolia x4, Fallopia convolvulus x1, Rumex sp. x2, Chenopodiaceae x1. Uncharred seed; Sambucus nigra. Coal score 1 (<2 mm). Plastic 'sponge' score 2. Modern invertebrate (?insect) cuticle fragments score 1. Earthworm egg capsules score 2.
PLG08	606	AA	2/3	~3	None	-	-	1	-	-	-	1	4	Uncharred seed; 1x large 'winged' seed. Sand grain score 5. Fine baked/indurated sediment lumps (to 2 mm) score 2. Coal score 1 (to 3 mm). Paper score 3.

Table 13: Details of the charred botanical remains from the six botanically rich samples from PLG08 (Field 23).

Key: 'ch' = charred. Figures are counts, semi-quantitative abundance score are given as '*' – few/rare, up to 3 individuals/items or a trace level component of the whole; '**' – some/present, 4 to 20 items or a minor component; '***' – many/common, 21 to 50 or a significant component; '****' – very many/abundant, 51 to 200 or a major component; and '*****' – super-abundant, over 200 items/individuals or a dominant component of the whole.

Context				454	454	456	489	567	598
Sample				AA	AB	AA	AA	AA	AA
Context type				Pit fill	Pit fill	Pit fill	Pit fill	Kiln fill	Pit fill
processed subsample size (litres)				5	6	20	6	25	7
residue size (l)	dry			5	0.3	2.3	2.77	1.6	0.4
washover volume (ml)	dry			5	15	2	35	10	~5
material suitable for radiocarbon dating				yes	yes	yes	yes	yes	yes
Plant remains									
Cultivated and associated plants									
Cereals (Grain)									
<i>Avena</i>	oat	caryopsis (large: >2mm)	ch			5	23		
<i>Hordeum distichon</i> L./ <i>H. vulgare</i> L.	barley	caryopsis	ch	18	24		34	13	6
<i>Hordeum distichon</i> L./ <i>H. vulgare</i> L.	barley	caryopsis (symmetrical)	ch		10	3	23		
<i>Hordeum vulgare</i> L.	six-row barley	caryopsis (asymmetrical)	ch		1		4		
<i>Hordeum distichon</i> L./ <i>H. vulgare</i> L.	hulled barley	caryopsis (hulled)	ch			1	23		
<i>Hordeum/Triticum</i>	barley/wheat	caryopsis	ch			2			
<i>Triticum nudum</i> (<i>T. aestivum</i> L./ <i>T. durum</i> Desf./ <i>T. turgidum</i> L.)	free-threshing tetra/hexaploid wheat	caryopsis	ch				35		
<i>Triticum</i> cf. <i>spelta</i> L.	?spelt wheat	caryopsis	ch	3					
<i>Triticum spelta</i> L.	spelt wheat	caryopsis	ch		6		17	14	
<i>Triticum spelta</i> L.	spelt wheat (sprouted)	caryopsis	ch		1				
<i>Triticum</i> cf. <i>dicoccum</i> Schübl.	emmer	caryopsis	ch			2			
<i>Triticum dicoccum</i> Schübl./ <i>T. spelta</i> L.	emmer/spelt wheat	caryopsis	ch				10		
<i>Triticum</i>	wheat	caryopsis	ch	12	56	7	171	46	9
<i>Triticum</i>	wheat (sprouted)	caryopsis	ch		5				
Cerealia indeterminate	cereal	caryopsis	ch	15	46	15	102	29	4
Cerealia indeterminate	cereal (sprouted)	caryopsis	ch		2				
Cerealia indeterminate	cereal	coleoptile (detached)	ch		**		**	**	
Cereals (Chaff)									
<i>Hordeum distichon</i> L./ <i>H. vulgare</i> L.	barley	rachis segment	ch		1		14		1

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Context				454	454	456	489	567	598
Sample				AA	AB	AA	AA	AA	AA
Context type				Pit fill	Pit fill	Pit fill	Pit fill	Kiln fill	Pit fill
<i>Hordeum vulgare</i> L.	six-row barley	rachis segment	ch				2		
<i>Triticum turgidum</i> sl. (<i>T. turgidum</i> / <i>T. durum</i>)	free-threshing tetraploid wheat	rachis node	ch				3		
<i>Triticum spelta</i> L.	spelt wheat	glume base	ch		13	1	77	6	
<i>Triticum dicoccum</i> Schübl./ <i>T. spelta</i> L.	emmer/spelt wheat	glume base	ch	2	21	3	122	22	23
<i>Triticum</i>	glume wheat-type	chaff fragments	ch		*****			***	**
Cerealia indeterminate	cereal	rachis	ch				3		
Cerealia indeterminate	cereal	awn fragments	ch		*				
Cerealia indeterminate	cereal	twisted awns	ch		*		**		*
Arable weeds									
<i>Anthemis cotula</i> L.	stinking chamomile	achene	ch		2		15	15	
<i>Bromus</i>	brome	caryopsis	ch	3	22	5	271	5	
cf. <i>Bromus</i>	brome	caryopsis	ch				40		
<i>Chenopodium album</i> L.	fat-hen	seed	ch		1			3	
<i>Chrysanthemum segetum</i> L.	corn marigold	achene	ch	2					
<i>Fallopia convolvulus</i> (L.) Á. Löve	black bindweed	nutlet	ch					1	2
<i>Raphanus raphanistrum</i> L.	wild radish	pod	ch		1				
<i>Tripleurospermum</i> cf. <i>inodorum</i> (L.) Sch. Bip.	scentless mayweed	achene	ch		4		11	12	
Wild plants									
Wetland taxa									
<i>Carex</i>	sedge	trigonus nutlet	ch	1	2	2	1	1	
<i>Eleocharis</i>	spike-rush	nutlet	ch						1
<i>Juncus</i>	rush	seed	ch	3	5	2	3	9	
<i>Persicaria lapathifolia</i> (L.) Gray	pale persicaria	nutlet	ch		15	1	1		5
Heath (including moorland and mountain) taxa									
<i>Danthonia decumbens</i> (L.) DC.	heath-grass	caryopsis	ch					1	
Ruderal (wasteland and disturbed ground) taxa									
<i>Galium</i> cf. <i>aparine</i> L.	cleavers	seed	ch		7	1	22	2	
<i>Galium</i>	bedstraw (>2 mm)	seed	ch	5					
<i>Persicaria</i>	persicaria	nutlet	ch	2	7				5
Polygonaceae	knotweed family	nutlet	ch				3		
<i>Polygonum aviculare</i> L.	knotgrass	nutlet	ch	1					
Eurytopic taxa									
Asteraceae	daisy family	achene	ch	3			2		
<i>Atriplex</i> / <i>Chenopodium</i>	orache/goosefoot	seed	ch	2	4	1	5	11	7

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Context				454	454	456	489	567	598
Sample				AA	AB	AA	AA	AA	AA
Context type				Pit fill	Pit fill	Pit fill	Pit fill	Kiln fill	Pit fill
<i>Vicia/Lathyrus</i> 2-4mm	vetch/vetchling	seed	ch				2		
Poaceae (large)	large grasses (>2mm)	caryopsis	ch	6	18	34	237	19	2
Poaceae (small)	small grasses (<2mm)	caryopsis	ch			1	1		
<i>Potentilla</i>	cinquefoils	achene	ch				1		
<i>Ranunculus</i> subg. <i>Ranunculus</i>	buttercup	achene	ch				2		
<i>Rumex</i>	dock	nutlet	ch			1	2		
Fabaceae (small)	small leguminous seeds	seed	ch		2				
Type 'A' (not formally identified)		'seed'	ch		1	1	1		
Indeterminate		'seed'	ch	8	15	4	13	19	2
Other botanical remains									
ericaceous stems	heather/ling stems		ch					*	
rhizomes/tubers	undifferentiated		ch		*				**
Other									
<i>Cenococcum geophilum</i> Fr.	soil fungus	sclerotia	?		*				
Totals									
Total quantified charred plant remains				86	292	92	1296	228	67
Charred cereal grain				48	151	35	442	102	19
Charred cereal chaff				2	35	4	221	28	24
'Weed seeds'				36	106	53	633	98	24
<i>Triticum</i> glume wheat grain (spelt and emmer/spelt-type)				3	7	2	27	14	0
<i>Triticum</i> glume bases				2	34	4	199	28	23
Quantified charred items per litre of sediment processed (given as a whole number rounded down)				17	48	4	216	9	9

Table 14: Vertebrate remains from sample residues from MAL08 (Field 26), by context

Context	Sample	Total fragments/wt (g)	Max linear dimension (mm)	Notes
2701	AA	7/1	16	unidentified: undiagnostic fragments (calcined)
2703	AA	37/7.5	22	unidentified: undiagnostic fragments (occasionally charred/calcined)
2704	AA	2/0.7	20	unidentified: undiagnostic fragments (calcined)
2713	AA	2/0.8	13	unidentified: undiagnostic fragments (calcined)
2716	AA	50/9	21	unidentified: eroded undiagnostic fragments (occasionally charred/calcined)

Table 15: Vertebrate remains from sample residues from PLG08 (Field 23), by context

Context	Sample	Total fragments/wt (g)	Max linear dimension (mm)	Notes
61	AA	8/0.5	10	unidentified: tooth enamel fragments
72	AA	4/0.6	11	unidentified: undiagnostic fragments (calcined)
82	AA	32/11	36	unidentified: worn and eroded undiagnostic fragments
99	AA	~500/340	90	large mammal: worn and eroded pieces of humerus and scapula with long bone fragments and a carpal, approximately 400 of the bones were tiny, undiagnostic fragments and many displayed signs of fresh breakage Pig: loose lower third molar
111	AA	3/0.4	7	unidentified: undiagnostic fragments (calcined)
242	AA	7/1.3	12	unidentified: undiagnostic fragments (calcined)
254	AA	3/0.7	12	unidentified: undiagnostic fragments (charred/calcined)
266	AA	6/0.6	12	unidentified: undiagnostic fragments (calcined)
269	AA	5/0.5	13	unidentified: undiagnostic fragments (calcined)
357	AA	102/18	25	unidentified: undiagnostic fragments
407	AA	1/<0.1	6	unidentified: undiagnostic fragment (calcined)
426	AA	2/<0.1	6	unidentified: undiagnostic fragments (calcined)
446	AA	2/0.2	8	unidentified: undiagnostic fragments (calcined)
446	AB	9/3.2	30	unidentified: ?long bone fragments (calcined) and 1x unburnt piece of tooth enamel
456	AA	14/1.8	17	unidentified: undiagnostic fragments (including 2x calcined)
489	AA	5/2.2	19	Sheep/goat: 2nd phalanx and other phalange fragments (charred)
512	AB	85/16.5	26	unidentified: several worn and eroded pieces of skull and horncore with other undiagnostic fragments
567	AA	16/3.9	27	Sheep/goat: fragmented tooth enamel
576	AA	9/2.1	24	unidentified: worn and eroded undiagnostic fragments (plus 1x calcined)
604	AA	1/0.6	15	unidentified: worn and eroded fragment

Table 16: Hand-collected vertebrate remains from MAL08 (Field 26), by context

Key: UM – upper molar; PM – premolar; LM – lower molar.

Context	Fragments	Wt (g)	Max (mm)	Bone preservation	Notes
2701	2	4	30	Burnt	unidentified: 2 fragments (calcined)
2703	2	16	30	Very poor	Cattle: 2 teeth (UM, PM)
2704	23	14	28	Poor	Pig: 1 2nd phalanx (broken) medium-sized mammal: 1 tiny fragment unidentified: 2 fragments (bovid) tooth enamel; 19 undiagnostic bone fragments
2707	1	1	14	Burnt	unidentified: 1 small fragment (charred/calcined)
2712	19	50	50	Moderate to good	Horse: 1 tooth (LM) Cattle: 1 2nd phalanx (broken longitudinally) large mammal: 1 vertebra fragment; 1 long bone fragment medium-sized mammal: 1 long bone fragment unidentified: 4 fragments
2713	10	7	36	Moderate	unidentified: 10 fragments, very worn
2714	4	2.5	21	Moderate	unidentified: 4 small fragments
2720	3	4.5	30	Poor	unidentified: 3 fragments (very worn)

Table 17: Hand-collected vertebrate remains from PLG08 (Field 23)

NISP (number of identified specimens) by areas defined in the excavator's interim report (NAA 08/114)

Species		Enclosure Ditches – Group 1	Enclosure ditches – Group 2	Occupation area	Road and associated ditches and banks	Other	Total
?Canis f. domestic	cf. dog	-	1	-	-	-	1
Equus f. domestic	horse	5	14	5	-	1	25
Sus f. domestic	pig	2	2	2	-	-	6
Bos f. domestic	cow	35	6	13	3	3	60
Caprine	sheep/goat	-	4	2	1	-	7
large mammal		43	36	56	-	2	137
medium-sized mammal		-	3	3	-	-	6
unidentified		98	26	86	14	19	243
Total		183	92	167	18	26	485

Table 18: Hand-collected vertebrate remains from PLG08 (Field 23); by context

Key: 'Wt (g) = weight of bone in grammes; 'Max' = maximum linear dimension of fragments present; 'UM' = upper molar; 'UPM' = upper premolar; 'LM' = lower molar; 'LPM' = lower premolar. Tooth wear stages (following Grant 1982) were recorded where possible and are shown in parentheses following the relevant record.

Context	Fragments	Wt (g)	Max (mm)	Bone preservation	Notes
2	1	5	40	Moderate	<i>Horse</i> : 1 tooth (incisor, in 2 pieces)
81	1	21	63	Good	<i>Horse</i> : 1 tooth (LM)
82	50	395	90	Moderate to very poor, mostly poor. Approximately 10% calcined	<i>Horse</i> : 2 teeth (molars, very poor condition) <i>Pig</i> : 1 fragment of mandible with LM1/2 (occlusal surface broken) <i>Cattle</i> : 2 mandible fragments; 4 teeth (UPM, UM1/2, LM3 x2 (k, b)) <i>Sheep/goat</i> : 1 tooth (UM1/2) <i>large mammal</i> : 2 mandible fragments; 14 fragments of tooth enamel; 2 unidentified fragments <i>unidentified</i> : 22 fragments (10 of which are calcined)
83	20	82	72	Good to very poor	<i>Horse</i> : 1 tooth (LM) <i>Cattle</i> : 1 tooth (UM, broken) <i>large mammal</i> : 8 fragments of tooth enamel <i>unidentified</i> : small fragments (calcined)
93	4	87	85	Good to poor	<i>Cattle</i> : 1 radius (proximal articulation) <i>Sheep/goat</i> : 1 tooth (UM1/2) <i>large mammal</i> : 2 unidentified fragments
101	5	9	38	Very poor	<i>Cattle</i> : 2 teeth (fragmented molars) <i>unidentified</i> : 3 tiny pieces of tooth enamel
105	39	34	44	Very poor	<i>Cattle</i> : 4 teeth (molar fragments) <i>unidentified</i> : 35 fragments of tooth enamel, some probably bovid
116	44	660	160	Mostly good, some moderate	<i>Horse</i> : lower forelimb (metacarpal, 1 st phalanx, 2 nd phalanx, 3 rd phalanx, 2 minor metacarpals, 6 carpals); 1 distal humerus <i>large mammal</i> : 3 carpals (broken, probably horse); 1 fragment of proximal humerus (?horse); 11 long bone fragments (?horse); 2 vertebra fragments; 18 unidentified <i>medium mammal</i> : 1 rib fragment <i>unidentified</i> : 1 fragment (calcined)
161	34	150	77	Mostly very poor, some moderate	<i>Cattle</i> : 1 metapodial (unfused distal condyle); 1 incisor (broken) <i>large mammal</i> : 1 humerus (fragment of distal articulation); 1 pelvis (ilial shaft); 1 vertebra (neural arch); 5 long bone shaft fragments <i>unidentified</i> : 24 fragments (1 calcined)
163	6	32	47	Differential preservation - moderate to good	<i>Pig</i> : 2 teeth (LPM (a), molar fragment) <i>Cattle</i> : 2 teeth (UPM, UM) <i>unidentified</i> : 2 tiny fragments
182	13	77	51	Moderate	? <i>Dog</i> : 1 canine (broken) <i>Cattle</i> : 2 distal metapodial fragments <i>Sheep/goat</i> : 2 teeth (LM1/2 (f), LM3) <i>large mammal</i> : 1 long bone fragment; 3 unidentified fragments

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Context	Fragments	Wt (g)	Max (mm)	Bone preservation	Notes
					<i>unidentified</i> : 3 small fragments
223	1	0.2	10	Moderate	<i>Pig</i> : 1 tooth (broken molar)
227	3	8	43	Moderate	<i>unidentified</i> : 3 small fragments
239	7	114	55	Moderate to good	<i>Cattle</i> : 1 tibia (distal articulation); 1 astragalus (in 3 pieces); 1 calcaneum fragment <i>large mammal</i> : 1 vertebra fragment; 1 long bone fragment <i>unidentified</i> : 2 fragments
315	58	493	80	Poor to very poor	<i>Horse</i> : 5 teeth (molars) <i>Cattle</i> : 12 teeth (3 LM1/2 (f, g, j), 3 LM3 (b, f/g, g), 3 UM, 1 UPM); 5 fragments of tooth enamel <i>large mammal</i> : 14 mandible fragments (probably all the same bone); 1 long bone shaft fragment <i>unidentified</i> : 20 fragments
362	1	15	53	Good	<i>large mammal</i> : 1 metapodial fragment (distal articulation)
364	3	11	47	Very poor	<i>large mammal</i> : 1 astragalus fragment <i>unidentified</i> : 2 fragments, very pitted and eroded
366	10	13	28	Poor to very poor	<i>Sheep/goat</i> : 1 astragalus, worn and broken <i>unidentified</i> : 9 fragments, pitted and eroded
368	9	5	49	Poor to very poor	<i>Cattle</i> : 1 tibia (distal articulation, very poor preservation) <i>unidentified</i> : 8 fragments, possibly part of above cattle tibia
375	18	89	77	Moderate to good	<i>Sheep/goat</i> : 1 metatarsal (shaft) <i>large mammal</i> : 4 mandible fragments, possibly all part of the same bone; 6 (?cattle) humerus fragments <i>medium-sized mammal</i> : 1 pelvis (fragment of ilial shaft) <i>unidentified</i> : 5 long bone fragments; 1 pelvis fragment
394	29	205	88	Moderate	<i>Cattle</i> : 1 femur (part of distal shaft); 3 molar enamel fragments <i>large mammal</i> : 1 femur (distal condyle); 11 long bone fragments <i>unidentified</i> : 13 tiny fragments
422	20	90	88	Moderate to good	<i>Horse</i> : 1 tooth (lower molar) <i>Cattle</i> : 1 calcaneum (chewed) <i>medium-sized mammal</i> : 1 rib (shaft fragment, in 2 pieces) <i>unidentified</i> : 17 tiny fragments
448	34	237	81	Moderate	<i>Cattle</i> : 1 scapula (glenoid); 1 tibia (distal articulation); 1 1 st phalanx, 1 2 nd phalanx <i>large mammal</i> : 1 carpal (eroded); 17 scapula (blade fragments, probably all part of the same bone) <i>unidentified</i> : 12 fragments
492	10	100	100	Moderate	<i>large mammal</i> : 1 radius (proximal articulation, in 3 pieces, poor preservation); 1 long bone shaft fragment (in 2 pieces) <i>unidentified</i> : 8 small fragments
501	10	75	72	Moderate to good	<i>Cattle</i> : 1 radius (lateral side of proximal articulation) <i>large mammal</i> : 2 ulna (semi-lunaris and part of ?cattle olecranon process); 1 pelvis (fragment of ilium with sacral scar) <i>unidentified</i> : 1 mandible fragment (in 2 pieces); 5 small fragments
537	6	75	70	Moderate to good	<i>large mammal</i> : 1 long bone fragment (in 3 pieces); 1 pelvis (part of ilium and sacral scar); 1 fragment <i>unidentified</i> : 3 tiny fragments

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Context	Fragments	Wt (g)	Max (mm)	Bone preservation	Notes
539	1	5	28	Good	<i>Pig</i> : 1 tooth (LM3 (a))
554	2	2.5	27	Good	<i>medium-sized mammal</i> : 1 long bone fragment (charred) <i>unidentified</i> : 1 fragment (charred)
576	6	4.5	30	Good	<i>unidentified</i> : 6 tiny fragments
581	7	46	65	Moderate to good	<i>Cattle</i> : 2 teeth (LM1/2(f), LM3 (a)) <i>unidentified</i> : 5 fragments
583	1	26	72	Moderate	<i>Cattle</i> : 1 calcaneum
591	5	8	27	Moderate	<i>Cattle</i> : 3 teeth (unerupted premolars) <i>unidentified</i> : 2 pieces of abraded cancellous bone
593	27	135	60	Moderate to good	<i>Horse</i> : 1 tooth (LM) <i>Pig</i> : 1 mandible (fragment with LM3) <i>Cattle</i> : 1 metapodial (condyles, in 2 pieces); 1 mandible (diastema) <i>large mammal</i> : 1 long bone fragment; 1 lump of cancellous bone <i>medium-sized mammal</i> : 1 rib (fragment); 1 mandible (fragment with tooth sockets, sheep/goat or small cervid) <i>unidentified</i> : 5 long bone fragments; 1 pelvis fragment (part of acetabulum); 13 fragments
596	1	2	23	Good	<i>unidentified</i> : 1 small fragment (calcined)

DISCUSSION

The archaeological remains at Pool Lane, to the east of Green Hammerton, were located on relatively flat ground at between 13m and 16m AOD, with the land to the east of the site dropping away steeply to the River Nidd. Topographically, the site occupied an attractive location for settlement and agriculture, in preference to the area to the east, which patently would have been at risk of flooding. The settlement was situated at the point where the Roman road between York and Aldborough crossed the Nidd, roughly equidistant between the two centres.

The results of the excavations indicated that the earliest features were three roundhouses in Field 22, which were apparently located within contemporary enclosures and may have represented the first phase of settlement in this area. Although the extent and form of the enclosures in Field 22 could not be established, primarily because the results of the geophysical survey were obscured by modern services, the enclosures were on the same alignment as those in Field 23 to the east, albeit more widely spaced. A further roundhouse was identified in Field 23, possibly associated with a group of cultivation trenches, two gullies, a fence-line and a number of discrete pits. These features were truncated by a series of substantial ditches, which respected the line of the north-west to south-east Roman road and a possible side road branching to the north-east. The geophysical survey interpretations indicated that the large ditches formed a series of conjoined enclosures set out alongside the road. In Field 23, two enclosures contained rectangular buildings flanking the road, while in other enclosures were three kilns at further distance from the road. Two enclosure ditches with V-shaped profiles were recorded in Field 22, similar in form and orientation to those in Field 23, and it could be that they formed boundaries of later enclosures respecting the road, rather than being associated with the roundhouses in Field 23.

Additional stretches of the Roman road were identified at Skip Bridge Farm, Moor Monkton Moor and Shirbutt Closes, which supported the presumption that the course of the Roman road, between the River Nidd east of Pool Lane and Upper Poppleton on the outskirts of York, was broadly adopted by the line of the modern A59.

The quantity and quality of artefacts recovered from the excavations at Gowlands in a loop of the Nidd indicate that the archaeological deposits represent midden material derived from a relatively high-status Roman period site. It is possible that the small knoll occupied by Gowlands Farm, adjacent to the A59, was the location of a Roman signal station or fortlet (NAA 2009). This would have represented a strategic situation overlooking the bridgehead settlement at Pool Lane, affording observation or regulation of the passage of goods and people. Alternatively, a high-status farmstead or villa may have made advantage of the elevated position. Ditches found to be sealed by the midden deposits were relatively substantial and may represent minor defensive works.

DATING AND PHASING

The pottery assemblage recovered from the roundhouse gullies and associated enclosure ditches in Field 22 indicates activity in this area in the early Romano-British period. No finds were recovered from the two ditches with V-shaped profiles in Field 22, which may relate to a separate phase of enclosure, although all the enclosures were aligned to the Roman road.

In general, finds from the features in Field 23 were dated to between the 3rd and early 5th centuries; a single sherd of pre-Roman Iron Age pottery may have been residual in one of the

ditches. The relative phasing of features in Field 23 was established from limited stratigraphic relationships. The available stratigraphy indicated that the roundhouse and nearby cultivation trenches, north–south gullies and fence-line were earlier than the large enclosure ditches, which cut them, although no diagnostic finds were recovered from the roundhouse other than a saddle quern, which appeared to have been reused as a post-pad. The finds from one of the north to south aligned gullies and a spread of material cut by the fence-line were dated to the 3rd to 4th century, as were the majority of finds from the large enclosure ditches. No datable finds were recovered from the foundation of the road in Field 23, but pottery sherds dating to between the late 3rd and early 4th century were collected from the layer immediately overlying the road; a single sherd of non-diagnostic Roman grey ware was recovered from the make-up of the road in Field 36. A late Roman date is noted for the finds recovered from contexts associated with the roadside buildings and also for the finds from the fills of the two kilns at the west end of Field 23. So, whilst some of the features recorded in Field 23 were stratigraphically earlier than others, the ceramic evidence indicates that they all dated broadly to the 3rd to early 5th centuries AD, apparently indicating persistent occupation of the settlement throughout this period.

The pottery recovered from the midden deposit and underlying features at Gowlands dated predominantly to the late Roman period; the presence of Huntcliff jars in most features indicates infilling after AD360–370.

LOCATION

The evidence from Field 22 suggests that the settlement had an early Romano-British foundation, potentially pre-dating the construction of the road and later enclosures and settlement, which developed along the course of the road. It is possible that there was activity in the vicinity during the Iron Age, as finds dating to this period were recovered from features in Field 22. A number of Iron Age sites have been identified in the immediate hinterland of York indicating the extent of native occupation in the region prior to the creation of the Roman fortress there. Excavations carried out to the north of York in 1996, in advance of pipeline construction between Moor Monkton and Elvington, revealed several circular enclosures delineated by ditches containing roundhouses (Pearson 1996). A similar settlement was identified in Naburn just 5km to the south-east of the fortress (Jones 1988) and Iron Age land divisions were recorded at Germany Beck, Fulford (Oxley pers. comm. in Roskams 1999, 49–50).

The location of the site at Pool Lane is notably equidistant from the Roman fortress at York and from the Roman town of Aldborough, situated 14km from each on the principal road between the two centres. It has been proposed that such roadside settlements served the Roman government or relevant civitas authority in providing overnight accommodation, food, change of vehicles/animals, and the protection of goods for officials travelling between centres (Black 1987).

Recent excavations of the Romano-British roadside settlement at Healam Bridge, North Yorkshire, have revealed a similar pattern of occupation to that recorded at Pool Lane (Ambrey *et al.* 2017). The site was located on Dere Street, Margary's route 8b (1967, 428–9), 19km distant from the Roman towns of Aldborough and Catterick. No evidence was found for pre-Roman occupation at Healam and, considering its location equidistant between two important Roman centres, it may have represented the site of a *mansio* and associated roadside settlement. As at Pool Lane, the site appeared to have grown from a bridgehead settlement at the point where Dere Street crossed a watercourse, in this case Healam Beck. Nine enclosures were identified running from the beck-side occupation to the north, delimited by substantial boundary ditches set out perpendicular to the road. Enclosure ditches of similar character were noted on the west side of the road. It is possible that the site at Pool Lane developed in a similar way to Healam Bridge,

with the initial focus of settlement adjacent to the river crossing. The extent of the excavated area at Pool Lane was limited by the width of the pipeline easement and dictated by its route, so the potential for settlement immediately adjacent to the river was not investigated.

A combination of aerial and geophysical surveys and excavation at the roadside Roman settlement at Shiptonthorpe revealed a similar type of site to that identified at Pool Lane. The Shiptonthorpe site was located where the Roman road from Brough (on the River Humber) to York, the northward continuation of Ermine Street, crossed a stream 17km south-east of York (Millett 2006). The excavated evidence at Shiptonthorpe revealed a typical 'ladder' form of settlement and indicated that occupation began in the early to mid-2nd century. Millett (2006) proposed that the impetus for the establishment of the settlement lay not in a military or local government directive but was more likely to be the result of population drift to a location that was perceived to be advantageous. They based this notion on the piecemeal layout of enclosures identified beside the road, which were not suggestive of a regular system of land allotment. However, the enclosures at Pool Lane, identified via a combination of geophysical survey and excavation (Fig. 2), appear to be fairly regular strips, between 20m and 30m wide and up to 80m long, running perpendicular to the road. The pattern only changes at the junction of Dere Street with the side road, where the enclosures become triangular or kite-shaped to accommodate the diverging road alignments.

The presence of a broadly contemporary villa at Wilstrop Hall only 0.9km away from Pool Lane must also be considered in the context of land tenure. It has been suggested that the proximity of villas to roadside settlements may infer that the village inhabitants were tenants of the villa owners (Todd 1970, in Smith 1987, 33). This may conceivably have been the case at Pool Lane. It is further possible that the site at Gowlands was associated with the Wilstrop villa, but insufficient evidence for the pattern of enclosures was observed at Gowlands to usefully consider this further.

A comparable example of this type of settlement is Alfoldean in Sussex, located on Stane Street, the Roman road between London and Chichester. A number of high-status buildings adjacent to the River Arun have been interpreted as a *mansio* by Black (1987, in Luke and Wells 2000, 94). Alfoldean was one of a number of roadside settlements, including Harding, Dorking and Ewell, which were evidently established at 12km intervals along Stane Street (Luke and Wells 2000, 99). This pattern was paralleled along the Roman road between Chichester and Silchester, where the roadside settlements of Neatham and Iping were identified at 20km intervals. The settlement at Alfoldean was extended over at least 550m from the site of the *mansio*, which would suggest that it was a successful community in its own right. The evidence for settlement at Pool Lane indicates a community of similar proportions and this, coupled with its location equidistant from York and Aldborough and adjacent to a river crossing, means that, through comparison with Alfoldean, it could be proposed that the Pool Lane site functioned as a *mansio*. This is supported by the recovery of *tubuli* and *tegula* from Field 23, which indicates the former presence of a building of relatively high status nearby.

The riverside location of the Pool Lane site must also be considered. A large number of Romano-British roadside settlements developed around major road crossings of rivers or streams (Smith 1987). The question here is, whether the river usefully provided a means for transport of goods, which might have leant further impetus to the growth of the community. Anderson (1992, 88) suggested that, as the Roman road network was well designed to accommodate transport of heavy bulk supplies by wheeled carts or pack-animals, it would be unnecessary to develop a river transport system unless it was dramatically more efficient than the roads. This pragmatism would appear relevant to the Pool Lane site, as the River Nidd is narrow and sinuous between Pool Lane and its confluence with the River Ouse leading into York, whereas the route by road

is comparatively direct. This, coupled with the dramatic increase in river siltation due to deforestation during the Roman period, would probably preclude river transport to Pool Lane being preferred over road transport. However, the side road from Dere Street leads towards the river, and interpretation must therefore allow for aspects of riverine activity.

DERE STREET

The location and orientation of the various sections of Roman road identified by the excavations seem to broadly concur with the route of Dere Street, as described by Margary (1967, 427–8). The main discrepancy is the point at which the road passed through the village of Green Hammerton: whereas Margary thought it probable that the existing road into the village from the east maintained the Roman alignment, in a series of gradual changes, the Pool Lane excavation demonstrated that the change in alignment occurred where the road crossed the river.

To the west of Pool Lane, the presence of the road was represented by a prominent zone of cobbles within the ploughsoil, extending at least 50m from the field boundary. Recent satellite imagery recorded soilmarks over the road line continuing across several fields to Green Hammerton.

The remains of Dere Street at Pool Lane were better preserved than those identified elsewhere on the water pipeline scheme. The road was exposed for 38m running obliquely across the excavation, and its surface averaged 7m wide. The road make-up layers survived up to 0.4m deep and comprised a primary deposit of organic material, which may have been brushwood, and two layers of cobbles separated by a layer of sand. Evidence for a non-metalled path was identified along the south-west edge of the road and roadside ditches were recorded delimiting both this and the metalled surface.

The remains of the road at Skip Bridge Farm, Moor Monkton Moor and Shirbutt Closes were less substantial and badly truncated by ploughing, surviving in each case as a single layer of cobbles pressed into the geological clay. At Skip Bridge Farm, there was a suggestion of an agger surviving as a medieval strip field or lynchet with a distinct drop to the south. A comparable section of road beneath a medieval lynchet was examined on the outskirts of York in 1960, on a site known as Severus Hills (RCHME 1962, 3), in direct alignment with the sections of road described here.

At Moor Monkton Moor, the line of Dere Street could be traced north-west to south-east over 160m. Roadside ditches, which might have been anticipated in this low-lying, poorly drained section of the route, were notably absent. No obvious ditch-like anomalies were identified by geophysical survey (GSB 2008b), although there was a series of parallel geophysical trends, which may have been caused by the road remains.

At Shirbutt Closes, much of the road had been ploughed away, and the little that survived comprised patches of cobbles. It was seen in a pipe trench in the adjacent field to the east that the soil had been de-stoned to a depth of 0.5m for potato cultivation, thereby removing any trace of the Roman road. Similar agricultural operations probably explain the complete absence of road remains further to the east, most notably at the point where the route of the A59 departs the Roman alignment.

Parallels can be drawn between the method of construction of the road at Pool Lane and a 100m length of Roman road between Castleford and Tadcaster at Aberford (O'Neill 2001, 105–17). The road at Aberford overlay a deposit of organic material, similar to that seen at Pool Lane. In this case, it was interpreted as a buried soil, which had survived in situ beneath the road agger. The road make-up was composed of alternating layers of hardcore and softer material. At Aberford,

the layers comprised crushed limestone and subsoil, whereas river cobbles and sand had been used at Pool Lane, demonstrating that construction materials were obtained locally. There were no roadside ditches at Aberford, and O'Neill (2001) concluded that this was due to the pronounced agger (0.85m high) and the limestone geology of the area, which may have provided adequate surface drainage.

The presence of a side lane for pedestrians alongside Roman roads, as possibly identified at Pool Lane, is paralleled elsewhere in Britain. In some locations, Margary (1939) observed lightly metalled or non-metalled roads on each side of a central metalled roadway, bounded at their outer edges by small shallow ditches. One such example is Old Ford, on the London to Colchester road, where there were three lanes, all of which were metalled (Mills 1984). In this case, only the central lane was heavily worn, suggesting that it had been used by wagon traffic, with the side roads provided for pedestrians and animals.

Although the bridging point of the River Nidd was not identified by the water pipeline excavations, the orientation of the excavated section of road in Field 23 indicates that it crossed the river at approximately the same location as the late 18th-century Skip Bridge. Approximately 2.5km to the east of Pool Lane, and less than 200m from the section of road excavated at Moor Monkton Moor, a Roman bridge was identified by excavation at Carp Vale Fisheries (Arnott 2006). A cobbled road surface led to a group of 19 posts, which appeared to form part of a bridge spanning a minor watercourse now known as the Foss, a tributary of the River Ouse. The road recorded at Carp Vale was constructed in similar fashion to that at Pool Lane, with large cobbles used throughout, compacted with finer stones and gravel, a method of construction thought to have been used to resist damage from flooding (Ottaway 1990, 3–18).

The presence of a weight from a *groma* (a Roman surveying tool), in context with one of the posts at Carp Vale, indicated a probable construction date in the late 1st to early 2nd century, a short time after the arrival of the 9th Legion in York in AD71 (Arnott 2006, 13). In the Blossom Street excavation in York, a coin dated the construction of the road to the late 2nd century, with 3rd-century pottery lying on the road surface. This was echoed by finds of pot sherds dating to the 3rd to 4th centuries from the layer sealing the road surface at Pool Lane.

ENCLOSURES

Up to 20 enclosures were identified at Pool Lane, defined by substantial ditches respecting the course of Dere Street. Nine of the enclosures were investigated by excavation and the remainder were recorded by geophysical survey. In general, the enclosures comprised elongated rectangular strips perpendicular to the road, a pattern readily paralleled at other Romano-British roadside settlement sites. At the roadside settlement of Healam Bridge, for example, at least nine enclosures perpendicular to Dere Street were identified. The enclosure complex had apparently been implemented piecemeal, as at Pool Lane, with at least four phases of development recognised. Six of the Healam Bridge enclosures contained evidence for large rectangular post-built structures within them, which were consistently aligned perpendicular to the road. The structures differed from those adjacent to the road at Pool Lane in that there was very little associated evidence for domestic activity, whilst their substantial size suggested that they were probably connected with agriculture and storage (Ambrey *et al.* 2017).

Linear plots respecting a Roman road were identified from cropmarks, magnetometry and targeted excavation at the roadside settlement of Shiptonthorpe (Millett 2006). Enclosures on opposite sides of the road were of different sizes but were generally perpendicular to it. Four of the plots were partially divided widthways by a ditch, similar to sub-divisions revealed by geophysical survey at Pool Lane. Where the enclosures were separated in this way, it was found

that the area closest to the road was used for habitation and the area beyond was agricultural. The differing forms of the enclosures at Shiptonthorpe suggested that the settlement grew to its full extent in an organic manner, rather than resulting from a single phase of land allotment.

At the roadside settlement at Bainesse, near Catterick, evidence for a field system was identified to the east of Dere Street. It comprised linear ditches running both parallel and perpendicular to the known course of the Roman road. However, the field system at Bainesse was not laid out contemporaneously with the formation of the settlement along the road, although the two had been integrated by the mid-2nd century, if not before (Wilson 2002, 146–8).

The Alfoldean *mansio* site, at the crossing of the River Arun in West Sussex, straddled Stane Street, beyond which a series of broadly parallel ditches delimited strip enclosures perpendicular to the road (Luke and Wells 2000). It was noted that the plots were generally larger in the earlier phases of occupation and became increasingly smaller over time. Sub-division of original plots is also seen at the Romano-British roadside settlement at Hibaldstow (Smith 1987).

It is often the case that main road ribbon development settlements are only one plot deep. The enclosures within Field 22 at Pool Lane lie at a distance of 150m from the projected route of the road. This might infer that the land divisions perpendicular to the road may be more than one plot deep. At the Romano-British roadside settlement at Fenny Stratford, Buckinghamshire, plots two and three deep were observed, though not all of these contained evidence of domestic activity and some were viewed as ancillary to the roadside house-plots to which they were attached (Neal 1984).

SETTLEMENT ECONOMY

Evidence for the cultivation of cereals and for animal husbandry at Pool Lane indicates that the inhabitants of the settlement practiced a mixed farming regime. The cereals used included emmer/spelt and free-threshing wheat, barley, and occasional evidence for durum/rivet-type wheat and oat. The consistent presence of glume wheat residues and barley, and the similar suites of weed species from across the site suggest that the cereals were cultivated and processed locally for consumption. A number of quern fragments, presumably associated with this process, were recovered from secondary locations. Despite extensive soil sampling, botanical assemblages were generally small. A few exceptions to this were noted, including a quantity of ericaceous stem fragments from the fill of a roundhouse gully in Field 23. This was indicative of heather being used in the construction of the roundhouse for thatch or for other domestic purposes, such as fuel or craftwork. High densities of charred plant remains were also recovered from pits in the occupation area in Field 23. The nature of the pit assemblages suggests that semi-cleaned crops of a glume wheat species were being processed for direct consumption. A similar composition of charred botanical remains was recovered from the primary fill of a kiln, but in this case, it is more likely that the crop residues were used as fuel, as heather was also present. The assemblage of animal bone from Pool Lane was generally poorly preserved, with a high incidence of fragmentation, which may account for the absence of evidence for butchery or carnivore scavenging. The majority of the animal bone was identified as cattle and large mammal, with very few remains from other domestic animals and no evidence for the exploitation of birds or other wild animals.

Industrial activity at Pool Lane was represented by small-scale pottery production and metal-working. It is possible that the pottery kilns operated as a household industry serving the needs of the adjacent settlement. However, the number of kilns identified at a site need not be a reliable indication of its importance, as only three kilns were found at Wilderspool, Cheshire, but their products have been found over a relatively wide area of Britain (Hartley 1981). There also

remains the possibility that there were more kilns at Pool Lane, which have either not survived modern farming activities or perhaps lay outside the limited excavation area. The pottery forms from the kilns, which comprised Dales-type jars in a gritty grey ware, together with the other forms present on the site in similar fabrics, point to a working life in the late 3rd to mid-4th century.

The siting of small numbers of pottery kilns on the edge of a rural settlement is paralleled at Stamford Bridge, 10km to the north-east of York (Lawton 2003b). There, a similar gritty ware was produced and was also used to make Dales-type jars, among other forms. The production date range at Stamford Bridge was determined to be the mid-2nd to the late 3rd or early 4th century.

Dales-type jars in a gritty ware were also made by the Holme-on-Spalding-Moor industry, 35km south-east of York (Halkon and Millett 1999). Initially ascribed a date range in the mid-3rd to mid-4th centuries, the pottery was re-dated on account of Swan's dating of the Ebor grey ware Dales-type jars to the early 3rd century. The scale of pottery production seems to have been relatively modest and on a wholly domestic scale at sites like Bursea House and Hasholme. The quantity of wasters recovered from these sites suggested that production may have been more substantial at Throlam, where the main period of manufacture appears to have been in the 4th century. The Holme-on-Spalding-Moor kilns were dispersed across the landscape, located within or beside many of the settlement sites, suggesting that pottery was produced by individual groups rather than as part of an industrial-scale enterprise.

One argument for the growth in the pottery industry in the 3rd century is that when the AD212 Edict of Caracalla made for universal citizenship of the Empire for all freemen, the number of recruits to the Victorious Sixth Legion at York from the surrounding countryside must have grown substantially (Swan 2002). Such men would have been accustomed to grey vessels in coarser fabrics, which would have decreased demand for finer tablewares whilst promoting the jars, deep bowls and storage containers traditionally made by indigenous potters. A similar pattern is documented north of the Humber Estuary during the same period, where a number of 'Romanised' potteries of some significance began to emerge where previously they had been rare, or very small. The industries in these areas may have made advantage of being the nearest significant potteries to the Northern Frontier zone, with economic benefits in cost and transport; recurrent civil wars in the south and the threat of seaborne barbarians may also have discouraged longer-distance trade (Monaghan 1997). Although the Pool Lane site could not be considered a significant pottery on the strength of the excavated evidence, it was certainly situated advantageously with potential to transport wares north and south on Dere Street.

There was only limited evidence for metal-working at or near the Pool Lane site, in the form of five hearth bottoms and a tuyere fragment from ditch fills in Field 23. The residual nature of the finds and the lack of any related evidence suggests that metal-working was not integral to the economy of the site.

The site economy at Gowlands was difficult to interpret, not least because of the paucity of biological remains recovered. Traces of emmer/spelt wheat were recorded, indicating that these species were grown and/or consumed nearby, but no evidence of features associated with the processing of crops was seen. Animal bone from the features was poorly preserved and mostly non-diagnostic, giving no information on animal husbandry at the site. The presence of fuel ash slag in a midden spread, as well as several ditches and gullies, may have derived from domestic hearths or could indicate metal-working activities.

BURIAL EVIDENCE

Only one burial was positively identified at Pool Lane, in Field 21. A cremation was located 75m beyond the west-most enclosure ditch in the excavation. The date of the burial, as inferred from pottery sherds, was between the 3rd and 4th century, which suggested that it was associated with the roadside settlement identified further to the east. The fragmented vessel was a Nene Valley colour-coated long-necked beaker (Fig. 19, no.21), several examples of which were recorded accompanying burials in the Roman cemetery excavated at York Station (RCHME 1962, 88–92). The Pool Lane cremation was situated c.200m from the projected route of the Roman road, a considerable distance beyond the settlement. The isolated location is paralleled by examples from other roadside settlements, where formal cremations and inhumations were situated beyond the inhabited area, such as at Piercebridge (Cool and Mason 2008).

Two grave-shaped features recorded 75m to the east of the Pool Lane cremation did not produce any evidence for human remains, but their shallow depth indicated severe truncation. Additionally, part of a ring-neck flagon recovered from one pit (Fig. 19, no.22) was very similar to five examples found accompanying burials at York Station (RCHME 1962), so a funerary interpretation is not entirely implausible. A possible small burial cist was identified in Field 23, but no datable finds or human remains were recovered from it. Small amounts of ceramic building material, charcoal and cinder were present, but there was no evidence for a burial, possibly due to acidic soil conditions.

ARCHITECTURAL TRADITION

Four roundhouse structures were identified at Pool Lane, of which the example in Field 23 was the most substantial and best preserved. The remains of the roundhouse comprised two concentric gullies, 75 postholes, evidence for an internal sub-dividing wall and two internal pits. The inner gully was interpreted as a construction trench, with vertical sides and a flat base into which a wattle wall had been positioned. This was evinced by a 0.1m-wide dark grey deposit, which ran along the inside edge of the construction gully.

Structurally, the roundhouse post-ring should ideally be located at the point at which the roof area is halved in order to distribute the weight of the roof evenly, identified by Hill (1984) as a radius ratio of 1:0.707. Work carried out by Pope (2003) on a dataset of 270 double-ring structures from across northern and central Britain revealed that the general trend was for the supportive post-ring to be positioned further away from the wall than the structural optimum. This was also the case with the Pool Lane roundhouse, but the load-bearing potential of the hurdle wall must also be considered and may account for the location of the post-ring. This calculation is based on the assumption that the roof extended as far as the outer gully, but it is possible that it extended beyond.

The presence of an internal division to the roundhouse suggested that the area to the left of the entrance (when looking inside) would have been darker than that to the right, as natural light falling through the entrance would have been restricted to the left. This may have been connected with the presence of the two large pits located behind the partition, in an area potentially segregated from the main activity area for storage. The presence of the pits and the absence (in any quantity) of industrial waste suggests mainly domestic use of the roundhouse.

The principal Pool Lane roundhouse appeared to have been repaired or possibly even rebuilt in the same location, as suggested by the quantity of postholes in discrete clusters. There was evidence for two further sections of ring gully truncating the southern edge of the main roundhouse, suggesting that a similar structure had been constructed immediately to the south.

Such reuse of location can be paralleled at the Romano-British site at Millfield Farm, Wheldrake, 10km south-east of York (Robinson 2009). The earliest phase of activity there comprised two inter-cut ring gullies, each enclosing an area c.11m in diameter. The two ring gullies occupied almost exactly the same position, indicting the desire or need to continue occupation of the location. No datable finds were recovered from the gullies, but they were truncated by linear features, finds from which indicated that the roundhouses had been abandoned before the late 2nd or 3rd century.

At Pool Lane, a north–south aligned fence-line located c.12m to the east of the roundhouse may have been contemporary with it. The use of such boundaries in association with prehistoric houses has been suggested as evidence for mixed farming (Coggins and Fairless 1984), with fences used to separate livestock from areas of domestic cultivation.

Three of the four Pool Lane roundhouses were entered from the east. This observation supports Pope's (2003) description of a trend to east-facing entrances from the end of the Early Iron Age, a tradition which continued until the end of the Roman period. Pope proposed that this was due to the climate worsening in the early 1st millennium BC, giving rise to an increased need for provision of shelter alongside that for light. The diminutive size of the remaining curved gully and its entrance to the west suggested that it may have been an ancillary building, perhaps for storage or for housing livestock, with less importance given to optimising natural light and, to some extent, shelter within the structure.

The two quernstones found in roundhouse postholes may have been deposited in these locations simply for the practical purpose of providing a stable footing for a post. Similar depositions of saddle querns in postholes were noted in 1st-century contexts at Stanwick Tofts and at Thorpe Thewles near Stockton, where two of three saddle querns were found in the backfill of the main roundhouse ring gully (Heslop 2008, 74). At Thorpe Thewles, this positioning was interpreted as an emblematic marking event of regeneration in the long-lived history of the principal dwelling at the site. The same may conceivably be true of the saddle quern in the posthole of the roundhouse in Field 23, as this was a secondary feature indicating a phase of rebuilding or repair.

The excavation in Field 23 revealed two rectangular buildings less than 10m away from, and flanking, the Roman road. One of the structures was set on sill beams with supportive posts and appeared to have been parallel to the original alignment of the road, although the full extent of the building could not be determined. A single sherd of pottery from one of the postholes indicated a possible 3rd- to 4th-century date for the structure. At Castleford, rectangular structures represented by beam slots were identified c.5m from the Roman road (Abramson *et al.* 1999, 126–36). Some were aligned parallel to the road and others were perpendicular to it. The overall dimensions of the second Pool Lane structure could not be determined, and whilst its orientation to the road remains unknown, the two post-pads and clay floor appeared to be parallel to the slight realignment of the road defined by later ditches. The components of the structure immediately overlay a midden deposit, which yielded a substantial quantity of Huntcliffe and Crambeck ware pottery, firmly dating the construction of the building to after AD370.

At Bainesse, the remains of four rectangular buildings were identified to the immediate east of Dere Street, constructed on beam slots with posts at either end (Wilson 2002, 139–85). All of the buildings were aligned to the road, but the limited excavation area meant that the full extent and orientation of only one of the buildings could be ascertained. This building measured 8.5m by 5m externally and was positioned perpendicular to and c.20m away from Dere Street. The building had been replaced in the same location by another structure, the remains of which included gullies parallel to the long sides of the building. A row of six postholes attested to the

location of the southern wall of the building and any postholes that had existed on the line of the north wall had been removed by a later foundation trench. All of these buildings were dated to the late 1st to early 2nd century AD, so were earlier but still comparable to the roadside buildings at Pool Lane.

At the roadside settlement of Hibaldstow, the excavated areas indicate a common orientation of buildings perpendicular to the road (Smith 1987, 189–98), while at Alfoldean, there was a distinct trend inasmuch as buildings less than 5m wide were perpendicular to the road, whereas those over 7m were parallel to it (Luke and Wells 2000, 97). This indicates that the situation varies from one roadside settlement site to another, and that the full extent and orientation of the roadside buildings at Pool Lane cannot simply be elucidated through comparison with other sites.

The Pool Lane site potentially had two phases of structures. The roundhouse in Field 23 was considered on stratigraphic evidence to have been abandoned by the late 2nd or 3rd century and the finds from the three roundhouses in Field 22 were generally dated to the later Iron Age or early Roman period, with eight sherds of a 2nd-century Ebor pulley ring flagon from one of the ring gullies. Whilst it is possible that the finds were residual in these contexts, the absence of any later material points towards an early date for the structures. By contrast, finds from the two rectangular structures were dated to the 3rd to 4th century, indicating that they superseded the roundhouses as the predominant building style on the site. This is a pattern paralleled by many sites of the same period in York's hinterland and might indicate the 'Romanisation' of rural settlements drawn into supplying the growing town and *colonia* of *Eboracum*.

A similar situation was observed at Stockton Moor West, c.5km north-east of York, where the quantity of clay tile and limestone tile fragments indicated the presence of a well-constructed building in the vicinity (Pearson 1996). At Dalton Parlours, c.15km south-west of the Pool Lane site, an extensive Iron Age settlement, incorporating roundhouses and boundary ditches, was overlain by a series of rectangular stone buildings dating to the 3rd to 4th century AD (Wrathmell and Nicholson 1990). This sequence is repeated at Crayke, c.22km north of York, where a possible Late Iron Age roundhouse, represented by a ring gully, was replaced by a rectangular stone building in the 2nd to 3rd century (Wood forthcoming), and at Millfield Farm, Wheldrake, to the south-east of York, where rectangular structures on sill beams clearly truncated earlier ring gullies (Robinson 2009).

Other than a saddle quern in a secondary context, the well-preserved roundhouse in Field 23 contained no diagnostic finds. It was therefore difficult to assign a secure date to the feature and it may have been of the same period as the rectangular buildings flanking the roadside, although the very absence of diagnostic finds would seem to contradict this. At Welton in East Yorkshire, a timber roundhouse stood contemporaneously with a 2nd-century stone-built house that contained five rooms and a rear corridor (Mackey 1999).

CONCLUSIONS

The excavations at Pool Lane investigated a Romano-British roadside settlement and located a river crossing equidistant from the important Roman centres of York and Aldborough. The wider investigations also provided the opportunity to define the course of Dere Street, the Roman road between these two centres.

The investigations identified early Romano-British activity represented by three roundhouse gullies and associated enclosure ditches. Other features were dated to the late 3rd to 4th century and may represent a shift in the focus of the settlement in response to the construction of the Roman road. The features comprised a series of irregularly shaped enclosures respecting the course of the road, two rectangular timber-built structures flanking the road, a roundhouse, two pottery kilns, a cremation, and a possible cist.

The establishment of the roadside settlement adjacent to the river crossing has been compared with other similar sites in the area and elsewhere and it can be proposed that its initial function may have been as part of a *mansio* system. The advantageous location at the crossing of a major Roman road over a watercourse could have promoted the subsequent development and expansion of the settlement.

The emergence of a small-scale pottery industry at Pool Lane in the 3rd century AD was consistent with other development identified in the rural hinterland of York in this period. This growth may have been attributable to York gaining in prosperity as it became the capital of the newly created province of Britannia Inferior in AD197, which had a positive effect on the prosperity of the surrounding area.

The quantity and quality of the artefacts recovered from Gowlands indicate that there was a relatively high-status Roman period site in the immediate vicinity. This may have been a second villa, or alternatively a Roman signal station or fortlet, located on the small knoll occupied by a modern farm. This would have presented a strategic position overlooking the bridgehead settlement at Pool Lane. Relatively substantial ditches that were sealed by midden deposits may represent minor defensive works.

PROJECT ARCHIVING

The project archive is held by York Museum Trust under the accession number YORYM2024.29. The report has been upload to the Archaeological Data Service via OASIS (OASIS ID: northern1-530994).

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APPENDIX A: CONTEXT CATALOGUES

Site Code YRG09

Context	Group number	Site Code	Field	Interpretative description	Notes
1		YRG08	Field 21	Cut of tree throw (?)	'grave' shape
2		YRG08	Field 21	primary fill of 1	
3		YRG08	Field 21	secondary fill of 1	
4		YRG08	Field 21/22	Natural drift geology	
5		YRG08	Field 21/22	Subsoil	
6		YRG08	Field 21/22	Topsoil	
7		YRG08	Field 22	Fill of Ditch [8]	
8		YRG08	Field 22	Cut of NE-SW Ditch	
9		YRG08	Field 22	Fill of Gully [10]	
10		YRG08	Field 22	Cut of NW-SE Gully	
11		YRG08	Field 21	Fill of Ditch [12]	
12		YRG08	Field 21	Cut of NE-SW Ditch	
13		YRG08	Field 21	Fill of Ditch [12]	
14		YRG08	Field 21	Cut of tree throw (?)	'grave' shape
15		YRG08	Field 21	Fill of [14]	
16		YRG08	Field 21	Cut of Cremation Pit	
17		YRG08	Field 21	Primary Fill of [16]	
18		YRG08	Field 21	Primary Fill of [16]	
19		YRG08	Field 21	Secondary Fill of [16]	
20		YRG08	Field 22	Fill of [2203]	
21		YRG08	Field 22	Fill of [2201]	
22		YRG08	Field 22	Fill of [2202]	
23		YRG09	Field 22	Primary fill of [24]	
24		YRG09	Field 22	Cut of ditch	
25		YRG09	Field 22	Secondary fill of [24]	
26		YRG09	Field 22	Fill of [27]	
27		YRG09	Field 22	Cut of ring gully (= 2203)	
28		YRG09	Field 22	Fill of [29]	
29		YRG09	Field 22	Cut of posthole	
30		YRG09	Field 22	Fill of [31]	
31		YRG09	Field 22	Cut of posthole	
32		YRG09	Field 22	Cut of linear gully	
33		YRG09	Field 22	Fill of [32]	
34		YRG09	Field 22	Fill of [2202] (= 35)	
35		YRG09	Field 22	Fill of [2202] (= 34)	
36		YRG09	Field 22	Cut of ditch	
37		YRG09	Field 22	Primary fill of [36]	
38		YRG09	Field 22	Secondary fill of [36]	
39		YRG09	Field 22	Cut of ditch	
40		YRG09	Field 22	Fill of [39]	
41		YRG09	Field 22	Fill of [42]	
42		YRG09	Field 22	Cut of shallow feature	
43		YRG09	Field 22	Fill of [44]	
44		YRG09	Field 22	Cut of ditch	
45		YRG09	Field 22	Fill of [46]	
46		YRG09	Field 22	Cut of posthole	
47		YRG09	Field 22	Fill of [48]	
48		YRG09	Field 22	Cut of posthole	
49		YRG09	Field 22	Fill of [50]	
50		YRG09	Field 22	Cut of posthole	
51		YRG09	Field 22	Fill of [52]	
52		YRG09	Field 22	Cut of ditch	
53		YRG09	Field 22	Cut of ditch (modern)	
54		YRG09	Field 22	Fill of [53]	
55		YRG09	Field 22	Cut of ditch	
56		YRG09	Field 22	Fill of [55]	

Site Code PLG08

Context	Group number	Site Code	Field	Interpretative description	Notes
1		PLG08	23	topsoil	clay loam
2		PLG08	23	subsoil	sandy clay
3		PLG08	23	natural	boulder clay
4		PLG08	23	alluvial subsoil (near to river)	sandy clay
5		PLG08	23	cut of ditch	
6		PLG08	23	fill of ditch 5	clayey silt
7		PLG08	23	fill of gully 25	silty clay
8		PLG08	23	cut of pit	
9		PLG08	23	fill of pit 8	silty clay
10		PLG08	23	cut of gully	
11		PLG08	23	fill of gully 10	silty clay
12		PLG08	23	cut of ditch	
13		PLG08	23	fill of ditch 12	sandy clay
14		PLG08	23	cut of gully	
15		PLG08	23	fill of gully 14	sandy clay
16		PLG08	23	cut of gully	
17		PLG08	23	fill of gully 16	sandy clay
18		PLG08	23	spread	clayey silt
19		PLG08	23	cut of ditch	
20		PLG08	23	fill of ditch 19	sandy clay
21		PLG08	23	cut of post hole	
22		PLG08	23	fill of post hole 21	clayey silt
23		PLG08	23	fill of ditch 5	silty clay
24		PLG08	23	fill of ditch 5	silty clay
25		PLG08	23	cut of ditch	
26		PLG08	23	fill of ditch 25	silty clay
27		PLG08	23	fill of ditch 26	silty clay
28		PLG08	23	void	
29		PLG08	23	cut of pit	
30		PLG08	23	fill of pit 29	clay
31		PLG08	23	cut of pit	
32		PLG08	23	fill of pit 31	sandy clay
33		PLG08	23	cut of gully	
34		PLG08	23	fill of gully 33	silty clay
35		PLG08	23	fill of gully 33	silty clay
36		PLG08	23	spread	silty clay
37		PLG08	23	void	
38		PLG08	23	void	
39		PLG08	23	fill of gully 19	sandy clay
40		PLG08	23	cut of pit	
41		PLG08	23	fill of pit 40	silty clay
42		PLG08	23	cut of pit	
43		PLG08	23	fill of pit 42	silty clay
44		PLG08	23	cut of pit	
45		PLG08	23	fill of pit 44	sandy clay
46		PLG08	23	void	
47		PLG08	23	void	
48		PLG08	23	cut of pit	
49		PLG08	23	fill of pit 48	silty clay
50		PLG08	23	cut of post hole	
51		PLG08	23	fill of post hole 50	clayey silt
52		PLG08	23	cut of post hole	
53		PLG08	23	fill of post hole 52	clayey silt
54		PLG08	23	cut of pit / posthole	
55		PLG08	23	fill of pit / posthole 54	clayey silt
56		PLG08	23	fill of ditch 25	silty clay
57		PLG08	23	fill of ditch 5	clayey silt
58		PLG08	23	fill of ditch 19	sandy clay
59	70	PLG08	23	cut of curvilinear gully	

*Roman Dere Street and an associated roadside settlement
East of Green Hammerton, North Yorkshire*

Context	Group number	Site Code	Field	Interpretative description	Notes
60	70	PLG08	23	fill of curvilinear gully 74	silty clay
61	70	PLG08	23	fill of curvilinear gully 59	clayey silt
62		PLG08	23	cut of pit	
63		PLG08	23	fill of pit 62	clayey silt
64		PLG08	23	cut of post hole	
65		PLG08	23	fill of post hole 64	silty clay
66		PLG08	23	cut of pit	
67		PLG08	23	fill of pit 66	silty clay
68	70	PLG08	23	cut of curvilinear gully	
69	70	PLG08	23	fill of curvilinear gully 68	silty clay
70	70	PLG08	23	group number for curvilinear gully	
71		PLG08	23	cut of post hole	
72		PLG08	23	fill of post hole 71	silty clay
73		PLG08	23	fill of post hole 71	silty clay
74	70	PLG08	23	cut of curvilinear gully	
75	70	PLG08	23	cut of curvilinear gully	
76	70	PLG08	23	fill of curvilinear gully 75	silty clay
77		PLG08	23	cut of post hole	
78		PLG08	23	fill of post hole 77	silty clay
79		PLG08	23	fill of post hole 77	silty clay
80		PLG08	23	cut of linear feature	
81		PLG08	23	fill of linear feature 80	silty clay
82		PLG08	23	spread	silty clay
83		PLG08	23	floor surface	silty clay
84	70	PLG08	23	cut of curvilinear gully	
85	70	PLG08	23	fill of curvilinear gully 84	silty clay
86		PLG08	23	cut of pit	
87		PLG08	23	fill of pit 86	silty clay
88		PLG08	23	cut of possible inhumation	
89		PLG08	23	stone lining of cut 88	
90		PLG08	23	fill of cut 88	silty clay
91		PLG08	23	buried soil layer	clayey silt
92		PLG08	23	cut of ditch	
93		PLG08	23	fill of ditch 92	clayey silt
94		PLG08	23	fill of ditch 92	silty clay
95		PLG08	23	subsoil (2) adhering to surface of road 194	sandy clay
96		PLG08	23	cut of ditch	
97		PLG08	23	fill of ditch 96	clayey silt
98		PLG08	23	fill of ditch 98	clayey silt
99		PLG08	23	fill of ditch 98	silty clay
100		PLG08	23	cut of ditch	
101		PLG08	23	fill of ditch 100	silty clay
102	70	PLG08	23	cut of curvilinear gully	
103	70	PLG08	23	fill of curvilinear gully 102	silty clay
104		PLG08	23	cut of ditch	
105		PLG08	23	fill of ditch 104	silty clay
106		PLG08	23	fill of pit 86	silty clay
107		PLG08	23	cut of gully	
108		PLG08	23	fill of gully 107	clayey silt
109		PLG08	23	cut of gully	
110		PLG08	23	fill of gully 109	clayey silt
111		PLG08	23	fill of pit 86	clayey silt
112		PLG08	23	cut of gully	
113		PLG08	23	fill of gully 112	silty clay
114		PLG08	23	fill of pit 86	silty clay
115		PLG08	23	cut of ditch	
116		PLG08	23	fill of ditch 115	silty clay
117		PLG08	23	void	
118		PLG08	23	cut of pit	
119		PLG08	23	fill of pit 118	clayey silt

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Context	Group number	Site Code	Field	Interpretative description	Notes
120		PLG08	23	cut of gully	
121		PLG08	23	fill of gully 120	clayey silt
122		PLG08	23	cut of gully	
123		PLG08	23	fill of gully 122	silty clay
124	180	PLG08	23	cut of gully	
125	180	PLG08	23	fill of gully 124	silty clay
126	194	PLG08	23	loose layer of road metalling	
127		PLG08	23	cut of post hole	
128		PLG08	23	fill of post hole 127	silty clay
129		PLG08	23	cut of post hole	
130		PLG08	23	fill of post hole 129	silty clay
131		PLG08	23	cut of post hole	
132		PLG08	23	fill of post hole 131	silty clay
133		PLG08	23	cut of pit	
134		PLG08	23	fill of pit 133	sandy clay
135		PLG08	23	fill of pit 133	clay
136	194	PLG08	23	layer of road metalling	
137		PLG08	23	fill of post hole 127	silty clay
138		PLG08	23	cut of ditch	
139		PLG08	23	fill of ditch 138	silty clay
140		PLG08	23	fill of ditch 100	silty clay
141	141	PLG08	23	group number for the cuts of 9 parallel furrows	
142	142	PLG08	23	group number for the fills of 9 parallel furrows 141	clayey silt
143		PLG08	23	cut of gully	
144		PLG08	23	fill of gully 143	silty clay
145		PLG08	23	cut of gully	
146		PLG08	23	fill of gully 145	silty clay
147		PLG08	23	void	
148		PLG08	23	void	
149	180	PLG08	23	cut of curvilinear gully	
150	180	PLG08	23	fill of curvilinear gully 149	silty clay
151	180	PLG08	23	cut of curvilinear gully	
152	180	PLG08	23	fill of curvilinear gully 151	silty clay
153		PLG08	23	cut of pit	
154		PLG08	23	fill of pit 118	clay
155		PLG08	23	void	
156		PLG08	23	cut of ditch	
157		PLG08	23	fill of ditch 156	silty clay
158		PLG08	23	fill of pit 153	sandy clay
159		PLG08	23	fill of ditch 138	silty clay
160		PLG08	23	spread	clay
161		PLG08	23	fill of ditch 120	clayey silt
162		PLG08	23	fill of ditch 104	clayey silt
163		PLG08	23	fill of ditch 120	silty clay
164		PLG08	23	upper fill of ditches 100 and 138	silty clay
165		PLG08	23	fill of ditch 104	clayey silt
166		PLG08	23	cut of pit	
167		PLG08	23	fill of pit 166	silty clay
168		PLG08	23	cut of post hole	
169		PLG08	23	fill of post hole 168	silty clay
170		PLG08	23	cut of post hole	
171		PLG08	23	fill of post hole 170	silty clay
172		PLG08	23	cut of post hole	
173		PLG08	23	fill of post hole 172	silty clay
174		PLG08	23	cut of post hole	
175		PLG08	23	fill of post hole 174	clayey silt
176		PLG08	23	cut of post hole	
177		PLG08	23	fill of post hole 176	clayey silt
178		PLG08	23	cut of post hole	
179		PLG08	23	fill of post hole 178	silty clay

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Context	Group number	Site Code	Field	Interpretative description	Notes
180	180	PLG08	23	group number for curvilinear gully	
181		PLG08	23	cut of ditch	
182		PLG08	23	fill of ditch 181	silty clay
183		PLG08	23	cut of gully	
184		PLG08	23	fill of gully 183	silty clay
185		PLG08	23	fill of ditch 181	silty clay
186		PLG08	23	cut of post hole	
187		PLG08	23	fill of post hole 186	silty clay
188		PLG08	23	cut of post hole	
189		PLG08	23	fill of post hole 189	sandy clay
190	206	PLG08	23	fill of curvilinear gully 191	silty clay
191	206	PLG08	23	cut of curvilinear gully	
192		PLG08	23	cut of ditch	
193		PLG08	23	fill of ditch 192	silty clay
194		PLG08	23	group number for road	
195		PLG08	23	cut of post hole	
196		PLG08	23	fill of post hole 195	sandy clay
197	206	PLG08	23	cut of curvilinear gully	
198	206	PLG08	23	fill of curvilinear gully 198	silty clay
199		PLG08	23	cut of post hole	
200		PLG08	23	fill of post hole 199	sandy clay
201		PLG08	23	fill of post hole 199	silty clay
202		PLG08	23	fill of ditch 181	silty clay
203	180	PLG08	23	cut of curvilinear gully	
204		PLG08	23	fill of curvilinear gully 203	silty clay
205	205	PLG08	23	group number for curvilinear gully	
206	206	PLG08	23	group number for curvilinear gully	
207		PLG08	23	layer of road make-up	sandy gravel clay
208	404	PLG08	23	fill of ditch 232	clay
209	404	PLG08	23	layer of road make-up	clay
210		PLG08	23	cut of post hole	
211		PLG08	23	fill of post hole 210	sandy clay
212		PLG08	23	fill of post hole 210	silty clay
213		PLG08	23	cut of post hole	
214		PLG08	23	fill of post hole 213	sandy clay
215		PLG08	23	cut of post hole	
216		PLG08	23	fill of post hole 215	silty clay
217		PLG08	23	cut of post hole	
218		PLG08	23	fill of post hole 217	sandy clay
219		PLG08	23	fill of linear feature 80	silty clay
220		PLG08	23	cut of pit	
221		PLG08	23	fill of pit 220	silty clay
222		PLG08	23	fill of pit 220	silt
223		PLG08	23	fill of post hole 224	clayey silt
224		PLG08	23	cut of post hole	
225		PLG08	23	fill of pit 220	silt
226		PLG08	23	cut of ditch	
227		PLG08	23	fill of ditch 226	silty clay
228		PLG08	23	cut of ditch	
229		PLG08	23	fill of ditch 228	silty clay
230		PLG08	23	cut of field drain	
231		PLG08	23	fill of field drain 230	clay
232		PLG08	23	cut of ditch	
233		PLG08	23	construction cut for road 194	
234	194	PLG08	23	layer of road make-up	clay
235		PLG08	23	cut of pit	
236		PLG08	23	fill of pit 235	clayey silt
237		PLG08	23	layer of road make-up	clay
238		PLG08	23	void	
239		PLG08	23	fill of ditch 240	silty clay

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Context	Group number	Site Code	Field	Interpretative description	Notes
240		PLG08	23	cut of ditch	
241		PLG08	23	cut of post hole	
242		PLG08	23	fill of post hole 241	clay
243		PLG08	23	cut of post hole	
244		PLG08	23	fill of post hole 243	clay
245		PLG08	23	fill of post hole 246	silty clay
246		PLG08	23	cut of post hole	
247		PLG08	23	cut of gully	
248		PLG08	23	fill of gully 247	silty clay
249	194	PLG08	23	cut of ditch	
250	194	PLG08	23	fill of ditch 249	sandy silt
251		PLG08	23	cut of pit	
252		PLG08	23	fill of pit 251	clayey silt
253		PLG08	23	fill of post hole 254	silty clay
254		PLG08	23	cut of post hole	
255		PLG08	23	group number for 9 stakeholes	
256		PLG08	23	fill of pit 258	silty clay
257		PLG08	23	fill of post hole 568	silty clay
258		PLG08	23	cut of pit / posthole	
259		PLG08	23	void	
260		PLG08	23	void	
261		PLG08	23	cut of beam slot	
262		PLG08	23	fill of beam slot 261	clayey silt
263		PLG08	23	cut of post hole	
264		PLG08	23	fill of post hole 263	silty clay
265		PLG08	23	cut of post hole	
266		PLG08	23	fill of post hole 265	clay
267		PLG08	23	cut of beam slot	
268		PLG08	23	cut of post hole	
269		PLG08	23	fill of post hole 268	silty clay
270		PLG08	23	void	
271		PLG08	23	void	
272		PLG08	23	cut of beam slot	
273		PLG08	23	fill of beam slot 272	clay
274		PLG08	23	cut of post hole	
275		PLG08	23	fill of post hole 274	clay
276		PLG08	23	cut of post hole	
277		PLG08	23	fill of post hole 276	silty clay
278	194	PLG08	23	cut of ditch	
279		PLG08	23	fill of ditch 278	sandy silt
280		PLG08	23	cut of pit	
281		PLG08	23	fill of pit 280	clayey silt
282		PLG08	23	cut of post hole	
283		PLG08	23	fill of post hole 282	sandy clay
284		PLG08	23	cut of post hole	
285		PLG08	23	fill of post hole 284	clay
286		PLG08	23	cut of post hole	
287		PLG08	23	fill of post hole 286	clay
288		PLG08	23	cut of pit	
289		PLG08	23	fill of pit 288	silty clay
290		PLG08	23	cut of construction trench	
291		PLG08	23	fill of construction trench 290	silty clay
292		PLG08	23	cut of ditch	
293		PLG08	23	cut of ditch	
294		PLG08	23	fill of ditch 293	clay
295		PLG08	23	fill of ditch 288	clay
296		PLG08	23	fill of ditch 288	silt
297		PLG08	23	cut of post hole	
298		PLG08	23	fill of post hole 297	sandy clay
299		PLG08	23	cut of beam slot	

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Context	Group number	Site Code	Field	Interpretative description	Notes
300		PLG08	23	fill of beam slot 299	silty clay
301		PLG08	23	cut of beam slot	
302		PLG08	23	fill of beam slot 301	silty clay
303		PLG08	23	cut of beam slot	
304		PLG08	23	fill of beam slot 303	silty clay
305		PLG08	23	cut of pit	
306		PLG08	23	fill of pit 305	silty clay
307		PLG08	23	fill of beam slot 303	clay
308		PLG08	23	fill of post hole 268	silty clay
309		PLG08	23	cut of post hole	
310		PLG08	23	fill of post hole 309	sandy clay
311		PLG08	23	cut of post hole	
312		PLG08	23	fill of post hole 311	silty clay
313		PLG08	23	cut of ditch	
314		PLG08	23	fill of ditch 313	sandy clay
315		PLG08	23	fill of ditch 313	sandy clay
316		PLG08	23	fill of ditch 313	clayey sand
317		PLG08	23	cut of post hole	
318		PLG08	23	fill of post hole 317	clay
319		PLG08	23	cut of post hole	
320		PLG08	23	fill of post hole 319	clayey sand
321		PLG08	23	fill of beam slot 267	silty clay
322		PLG08	23	cut of post hole	
323		PLG08	23	fill of post hole 322	clay
324		PLG08	23	cut of post hole	
325		PLG08	23	fill of post hole 324	silty clay
326		PLG08	23	fill of ditch 292	clay
327		PLG08	23	cut of ditch	
328		PLG08	23	fill of ditch 327	sandy clay
329		PLG08	23	fill of ditch 327	sandy clay
330		PLG08	23	fill of ditch 327	clayey sand
331	420	PLG08	23	cut of curvilinear gully	
332	420	PLG08	23	fill of curvilinear gully 331	silty clay
333	420	PLG08	23	cut of curvilinear gully	
334	483	PLG08	23	fill of curvilinear construction cut 382	sandy clay
335	206	PLG08	23	cut of curvilinear gully	
336	206	PLG08	23	fill of curvilinear gully 335	silty clay
337		PLG08	23	cut of ditch	
338		PLG08	23	fill of ditch 337	clay
339		PLG08	23	cut of post hole	
340		PLG08	23	fill of post hole 339	clay
341		PLG08	23	cut of post hole	
342		PLG08	23	fill of post hole 341	clay
343	420	PLG08	23	fill of curvilinear gully 333	sandy clay
344	383	PLG08	23	cut of curvilinear gully	
345	383	PLG08	23	fill of curvilinear gully 344	silty clay
346		PLG08	23	cut of post hole	
347		PLG08	23	fill of post hole 346	clay
348		PLG08	23	fill of post hole 346	silty clay
349		PLG08	23	cut of post hole	
350		PLG08	23	fill of post hole 349	clay
351		PLG08	23	fill of post hole 349	silty clay
352		PLG08	23	cut of pit	
353		PLG08	23	fill of pit 352	silty clay
354	420	PLG08	23	cut of curvilinear gully	
355	420	PLG08	23	fill of curvilinear gully 354	silty clay
356	420	PLG08	23	fill of curvilinear gully 354	clayey silt
357	420	PLG08	23	fill of curvilinear gully 354	silty clay
358		PLG08	23	cut of post hole	
359		PLG08	23	fill of post hole 358	clay

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Context	Group number	Site Code	Field	Interpretative description	Notes
360		PLG08	23	cut of post hole	
361		PLG08	23	fill of post hole 360	clay
362	420	PLG08	23	cut of curvilinear gully	
363	420	PLG08	23	fill of curvilinear gully 362	silty clay
364		PLG08	23	spread of large stones	
365	404	PLG08	23	cut of ditch	
366	404	PLG08	23	fill of ditch 365	sandy silt
367		PLG08	23	cut of ditch	
368		PLG08	23	fill of ditch 367	clayey silt
369		PLG08	23	cut of ditch	
370		PLG08	23	fill of ditch 369	clay
371		PLG08	23	fill of ditch 369	silty, sandy clay
372		PLG08	23	alluvial deposit	clay
373		PLG08	23	cut of ditch	
374		PLG08	23	fill of ditch 369	clayey silt
375		PLG08	23	fill of ditch 412	clayey silt
376		PLG08	23	fill of curvilinear gully 331	clayey silt
377		PLG08	23	fill of curvilinear gully 331	silty clay
378		PLG08	23	cut of ditch	
379		PLG08	23	fill of ditch 378	silty clay
380		PLG08	23	void	
381		PLG08	23	fill of ditch 384	clayey silt
382	483	PLG08	23	curvilinear construction cut	
383	383	PLG08	23	group number for curvilinear gully	
384		PLG08	23	cut of ditch	
385		PLG08	23	fill of ditch 384	clay
386	483	PLG08	23	curvilinear construction cut	
387	483	PLG08	23	fill of curvilinear construction cut 386	silty clay
388	483	PLG08	23	curvilinear construction cut	
389	483	PLG08	23	fill of curvilinear construction cut 388	silty clay
390		PLG08	23	cut of post hole	
391		PLG08	23	fill of post hole 390	silty clay
392	483	PLG08	23	curvilinear construction cut	
393	483	PLG08	23	fill of curvilinear construction cut 392	silty clay
394		PLG08	23	fill of ditch 412	clayey silt
395		PLG08	23	fill of ditch 384	silty clay
396	206	PLG08	23	cut of curvilinear gully	
397	206	PLG08	23	fill of curvilinear gully 396	silty clay
398		PLG08	23	fill of ditch 367	silty clay
399		PLG08	23	deposit	sand
400		PLG08	23	deposit	sand
401		PLG08	23	deposit	sand
402	383	PLG08	23	cut of curvilinear gully	
403	383	PLG08	23	fill of curvilinear gully 402	sandy clay
404	404	PLG08	23	group number for road	
405		PLG08	23	void	
406		PLG08	23	cut of post hole	
407		PLG08	23	fill of post hole 406	clayey silt
408		PLG08	23	cut of post hole	
409		PLG08	23	fill of post hole 408	clay
410		PLG08	23	fill of post hole 408	clay
411		PLG08	23	fill of post hole 408	silty clay
412		PLG08	23	cut of ditch	
413		PLG08	23	post pad	
414		PLG08	23	cut of stake hole	
415		PLG08	23	fill of stake hole 414	silty clay
416		PLG08	23	post pad	
417		PLG08	23	fill of ditch 430	silty clay
418	420	PLG08	23	cut of curvilinear gully	
419	420	PLG08	23	fill of curvilinear gully 418	silty clay

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Context	Group number	Site Code	Field	Interpretative description	Notes
420	420	PLG08	23	group number for curvilinear gully	
421		PLG08	23	cut of ditch	
422		PLG08	23	fill of ditch 421	clayey silt
423		PLG08	23	cut of post hole	
424		PLG08	23	fill of post hole 423	clayey silt
425		PLG08	23	cut of post hole	
426		PLG08	23	fill of post hole 425	clay
427	420	PLG08	23	cut of curvilinear gully	
428	420	PLG08	23	fill of curvilinear gully 427	clay
429	483	PLG08	23	fill of curvilinear construction cut 491	silty clay
430		PLG08	23	cut of ditch	
431		PLG08	23	cut of ditch	
432		PLG08	23	fill of ditch 431	silty clay
433		PLG08	23	cut of post hole	
434		PLG08	23	fill of post hole 433	clay
435		PLG08	23	cut of post hole	
436		PLG08	23	fill of post hole 435	clay
437		PLG08	23	deposit	silty clay
438		PLG08	23	cut of ditch	
439		PLG08	23	fill of ditch 438	silty clay
440		PLG08	23	cut of ditch	
441		PLG08	23	fill of ditch 440	silty clay
442		PLG08	23	fill of ditch 430	silty clay
443		PLG08	23	fill of ditch 430	clayey silt
444		PLG08	23	fill of ditch 430	clayey silt
445		PLG08	23	cut of pit	
446		PLG08	23	fill of pit 445	silt
447		PLG08	23	fill of ditch 327	sandy clay
448		PLG08	23	fill of ditch 327	sandy clay
449		PLG08	23	fill of ditch 327	clayey sand
450		PLG08	23	fill of ditch 327	sandy clay
451		PLG08	23	fill of ditch 327	sandy clay
452		PLG08	23	fill of ditch 327	clayey sand
453		PLG08	23	cut of pit	
454		PLG08	23	fill of pit 488	ash
455		PLG08	23	cut of pit	
456		PLG08	23	fill of pit 455	clayey silt
457	420	PLG08	23	cut of curvilinear gully	
458	420	PLG08	23	fill of curvilinear gully 457	silty clay
459		PLG08	23	void	
460	383	PLG08	23	cut of curvilinear gully	
461	383	PLG08	23	fill of curvilinear gully 460	sandy clay
462		PLG08	23	fill of pit 453	clayey silt
463		PLG08	23	fill of pit 488	clay
464		PLG08	23	cut of post hole	
465		PLG08	23	fill of post holes 464 and 466	clay
466		PLG08	23	cut of post hole	
467		PLG08	23	cut of post hole	
468		PLG08	23	fill of post hole 467	clay
469		PLG08	23	void	
470		PLG08	23	void	
471		PLG08	23	cut of post hole	
472		PLG08	23	fill of post hole 471	clay
473		PLG08	23	cut of post hole	
474		PLG08	23	fill of post hole 473	clay
475	420	PLG08	23	cut of curvilinear gully	
476	483	PLG08	23	fill of curvilinear construction cut 496	silty clay
477	420	PLG08	23	fill of curvilinear gully 475	clay
478	420	PLG08	23	fill of curvilinear gully 474	clay
479		PLG08	23	cut of post hole	

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Context	Group number	Site Code	Field	Interpretative description	Notes
480		PLG08	23	fill of post hole 479	clay
481	206	PLG08	23	cut of curvilinear gully	
482	206	PLG08	23	fill of curvilinear gully 481	clay
483	483	PLG08	23	group number for curvilinear construction cut	
484		PLG08	23	cut of ditch	
485		PLG08	23	fill of ditch 484	silty clay
486		PLG08	23	fill of ditch 412	clayey silt
487		PLG08	23	fill of ditch 412	clayey silt
488		PLG08	23	cut of pit	
489		PLG08	23	fill of pit 455	ash
490		PLG08	23	fill of pit 455	silty clay
491	483	PLG08	23	curvilinear construction cut	
492		PLG08	23	fill of pit 455	silty clay
493		PLG08	23	fill of pit 488	silty clay
494	420	PLG08	23	cut of curvilinear gully	
495	420	PLG08	23	fill of curvilinear gully 494	silty clay
496	483	PLG08	23	curvilinear construction cut	
497	483	PLG08	23	curvilinear construction cut	
498	483	PLG08	23	fill of curvilinear construction cut 497	silty clay
499		PLG08	23	cut of ditch	
500		PLG08	23	fill of ditch 499	clayey silt
501		PLG08	23	fill of ditch 499	clay
502		PLG08	23	cut of ditch	
503		PLG08	23	fill of ditch 502	silty clay
504		PLG08	23	fill of ditch 430	clayey silt
505		PLG08	23	cut of post hole	
506		PLG08	23	fill of post hole 505	silty clay
507		PLG08	23	cut of post hole	
508		PLG08	23	fill of post hole 507	silty clay
509		PLG08	23	cut of gully	
510		PLG08	23	fill of gully 509	silty clay
511		PLG08	23	cut of post hole	
512		PLG08	23	fill of post hole 511	silty clay
513	562	PLG08	23	cut of curvilinear gully	
514	562	PLG08	23	fill of curvilinear gully 513	clay
515	562	PLG08	23	fill of curvilinear gully 513	silty clay
516		PLG08	23	cut of post hole	
517		PLG08	23	fill of post hole 516	clayey silt
518	483	PLG08	23	curvilinear construction cut	
519	483	PLG08	23	fill of curvilinear construction cut 519	silty clay
520		PLG08	23	fill of ditch 430	clayey sandy silt
521		PLG08	23	cut of gully	
522		PLG08	23	fill of gully 521	silty clay
523		PLG08	23	cut of gully	
524		PLG08	23	fill of gully 523	silt
525	420	PLG08	23	fill of curvilinear gully 427	clay
526		PLG08	23	cut of pit	
527		PLG08	23	fill of pit 526	silty clay
528		PLG08	23	cut of gully	
529		PLG08	23	fill of gully 528	clayey silt
530		PLG08	23	cut of post hole	
531		PLG08	23	fill of post hole 530	clayey silt
532		PLG08	23	cut of gully	
533		PLG08	23	fill of gully 532	silty, sandy clay
534		PLG08	23	cut of oval feature	
535		PLG08	23	fill of oval feature 534	clayey silt
536		PLG08	23	cut of ditch	
537		PLG08	23	fill of ditch 536	clay
538		PLG08	23	cut of shallow feature	

*Roman Dere Street and an associated roadside settlement
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Context	Group number	Site Code	Field	Interpretative description	Notes
539		PLG08	23	fill of shallow feature 538	silty clay
540	562	PLG08	23	cut of curvilinear gully	
541	562	PLG08	23	fill of curvilinear gully 540	clay
542	562	PLG08	23	fill of curvilinear gully 540	silty clay
543		PLG08	23	fill of oval feature 534	clayey silt
544		PLG08	23	cut of post hole	
545		PLG08	23	fill of post hole 544	silty clay
546		PLG08	23	fill of post hole 544	clayey silt
547		PLG08	23	cut of post hole	
548		PLG08	23	fill of post hole 547	silty clay
549		PLG08	23	cut of kiln	
550		PLG08	23	fill of kiln 549	silt
551		PLG08	23	fill of kiln 549	silty clay
552		PLG08	23	fill of kiln 549	clayey silt
553		PLG08	23	cut of gully	
554		PLG08	23	fill of gully 553	clayey silt
555		PLG08	23	fill of shallow feature 538	silty clay
556		PLG08	23	cut of post hole	
557		PLG08	23	fill of post hole 556	silty clay
558		PLG08	23	cut of post hole	
559		PLG08	23	fill of post hole 558	silty clay
560		PLG08	23	cut of post hole	
561		PLG08	23	fill of post hole 560	silty clay
562	562	PLG08	23	group number for curvilinear gully	
563		PLG08	23	cut of gully	
564		PLG08	23	fill of gully 563	clayey silt
565		PLG08	23	fill of post pipe 566	silty clay
566		PLG08	23	cut of post pipe	
567		PLG08	23	fill of kiln 549	clayey silt
568		PLG08	23	cut of post hole	
569		PLG08	23	void	
570		PLG08	23	cut of wall slot	
571		PLG08	23	fill of wall slot 570	clay
572		PLG08	23	cut of post hole	
573		PLG08	23	fill of post hole 572	silt
574		PLG08	23	cut of kiln	
575		PLG08	23	fill of kiln 574	clayey silt
576		PLG08	23	fill of kiln 574	clayey silt
577		PLG08	23	fill of kiln 574	clayey silt
578		PLG08	23	fill of kiln 574	silty clay
579		PLG08	23	fill of kiln 574	clayey silt
580		PLG08	23	cut of ditch	
581		PLG08	23	fill of ditch 580	sandy silt
582		PLG08	23	cut of ditch	
583		PLG08	23	fill of ditch 582	sandy silt
584	562	PLG08	23	fill of gully 585	silty clay
585	562	PLG08	23	cut of curvilinear gully	
586	562	PLG08	23	fill of gully 587	silty clay
587	562	PLG08	23	cut of curvilinear gully	
588		PLG08	23	fill of pit 589	silty clay
589		PLG08	23	cut of pit	
590		PLG08	23	cut of pipe trench	
591		PLG08	23	fill of pipe trench 590	silty clay
592		PLG08	23	fill of pipe trench 590	clayey silt
593		PLG08	23	fill of ditch 181	silty clay
594		PLG08	23	fill of ditch 181	clayey silt
595		PLG08	23	void	
596		PLG08	23	spread	silty clay
597		PLG08	23	deposit	silty clay
598		PLG08	23	fill of pit 599	silty clay

*Roman Dere Street and an associated roadside settlement
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Context	Group number	Site Code	Field	Interpretative description	Notes
599		PLG08	23	cut of pit	
600		PLG08	23	fill of pit 601	clayey silt
601		PLG08	23	cut of pit	
602		PLG08	23	fill of pit 607	silty clay
603		PLG08	23	cut of kiln	
604		PLG08	23	fill of kiln 603	silty clay
605		PLG08	23	fill of kiln 603	silty clay
606		PLG08	23	fill of kiln 603	silty clay
607		PLG08	23	cut of pit	
608		PLG08	23	fill of kiln 603	fired clay
609		PLG08	23	fill of kiln 603	silty clay
610		PLG08	23	fill of kiln 603	cobbles
611		PLG08	23	fill of gully 612	silty clay
612		PLG08	23	cut of gully	
613		PLG08	23	fill of gully 614	silty clay
614		PLG08	23	cut of gully	
615		PLG08	23	fill of kiln 603	cobbles
616		PLG08	23	bulk finds from kiln 603	fired clay
617		PLG08	23	metalled surface	cobbles
618		PLG08	23	metalled surface	cobbles
619		PLG08	23	group number for building	beam-slots
620		PLG08	23	group number for building	post-pads

Site Code MAL08

Context	Group No.	Site Code	Field	Interpretative description	Notes
301		MAL08	Field 3	Topsoil	
701		MAL08	Field 7	Topsoil	
1701		MAL08	Field 17	Topsoil	
1901		MAL08	Field 19	Topsoil	
2001		MAL08	Field 20	Topsoil	
2201		MAL08	Field 22	Cut of Roundhouse Gully (W)	
2202		MAL08	Field 22	Cut of Roundhouse Gully (C)	
2203		MAL08	Field 22	Cut of Roundhouse Gully (E)	
2700		MAL08	Field 26	Topsoil in Field 26	
2701		MAL08	Field 26	Dark silty sand spread	
2702		MAL08	Field 26	Subsoil in Field 26	
2703		MAL08	Field 26	Dark silty fill of Gully [2705]	Sondage 2
2704		MAL08	Field 26	Upper fill of Ditch [2708]	Sondage 1
2705		MAL08	Field 26	Cut of Gully	Sondage 2
2706		MAL08	Field 26	Cut of S Ditch	Sondage 1, Sondage 7
2707		MAL08	Field 26	Primary fill of Ditch [2706]	Sondage 1
2708		MAL08	Field 26	Re-cut of S Ditch	Sondage 1, Sondage 7
2709		MAL08	Field 26	Primary fill of Ditch [2708]	Sondage 1
2710		MAL08	Field 26	Secondary fill of Ditch [2706]	Sondage 1
2711		MAL08	Field 26	Cut of N Ditch	Sondage 1, Sondage 4
2712		MAL08	Field 26	Primary fill of Ditch [2711]	Sondage 1
2713		MAL08	Field 26	Secondary fill of Ditch [2711]	Sondage 1
2714		MAL08	Field 26	Upper fill of Ditch [2711]	Sondage 1, Sondage 4
2715		MAL08	Field 26	Cut of Posthole at terminus of Gully [2705]	Sondage 2
2716		MAL08	Field 26	Fill of Posthole [2715]	Sondage 2
2717		MAL08	Field 26	Dark clayey-silt spread	Sondage 1
2718		MAL08	Field 26	Cut of N-S Ditch	Sondage 3
2719		MAL08	Field 26	Primary clayey fill of Ditch [2718]	Sondage 3
2720		MAL08	Field 26	Secondary silty fill of Ditch [2718]	Sondage 3

*Roman Dere Street and an associated roadside settlement
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Context	Group No.	Site Code	Field	Interpretative description	Notes
2721		MAL08	Field 26	Cut of posthole to south-east in Sondage 2	Sondage 2
2722		MAL08	Field 26	Cut of posthole to south-west in Sondage 2	Sondage 2
2800		MAL08	Field 27	Topsoil	
2900		MAL08	Field 29	Topsoil in Field 29	
2901		MAL08	Field 29	Layer of rounded cobbles	
2902		MAL08	Field 29	Layer of dark silty-clay	
2903		MAL08	Field 29	Subsoil in Field 29	
3600		MAL08	Field 36	Topsoil in Field 36	
3601		MAL08	Field 36	Remains of cobbled surface/track	Sondage 2
3602		MAL08	Field 36	Subsoil in Field 36	
3603		MAL08	Field 36	Silty layer above (3604), below (3601)	Sondage 2
3604		MAL08	Field 36	Natural drift geology	
3605		MAL08	Field 36	Remains of cobbled surface/track	Sondage 3
3606		MAL08	Field 36	Remains of cobbled surface/track	Sondage 1
3607		MAL08	Field 36	Remains of cobbled surface/track	Sondage 4
3608		MAL08	Field 36	Silty layer adjacent to cobbled surface/track	Sondage 4
3901		MAL08	Field 39	Topsoil	
5000		MAL08	Field 50	Topsoil in Field 50	
5001		MAL08	Field 50	Cut of Pit	
5002		MAL08	Field 50	Remains of cobbled surface/track	
5003		MAL08	Field 50	Natural drift geology in Field 50	
5004		MAL08	Field 50	Subsoil in Field 50	
5005		MAL08	Field 50	Upper cobble-rich fill of Pit [5001]	
5006		MAL08	Field 50	Primary sandy-silt fill of Pit [5001]	
5201		MAL08	Field 52	Topsoil	
5500		MAL08	Field 55	Topsoil	
5501		MAL08	Field 55	Natural	
5600		MAL08	Field 56	Topsoil	
5601		MAL08	Field 56	Natural	
5700		MAL08	Field 57	Topsoil	
5701		MAL08	Field 57	Natural	
5801		MAL08	Field 58	Topsoil	
6001		MAL08	Field 60	Topsoil	
6101		MAL08	Field 61	Topsoil	

Site Code WAL08

Context	Group No.	Site Code	Field	Interpretative description	Notes
1		WAL08	Field 4	Topsoil	

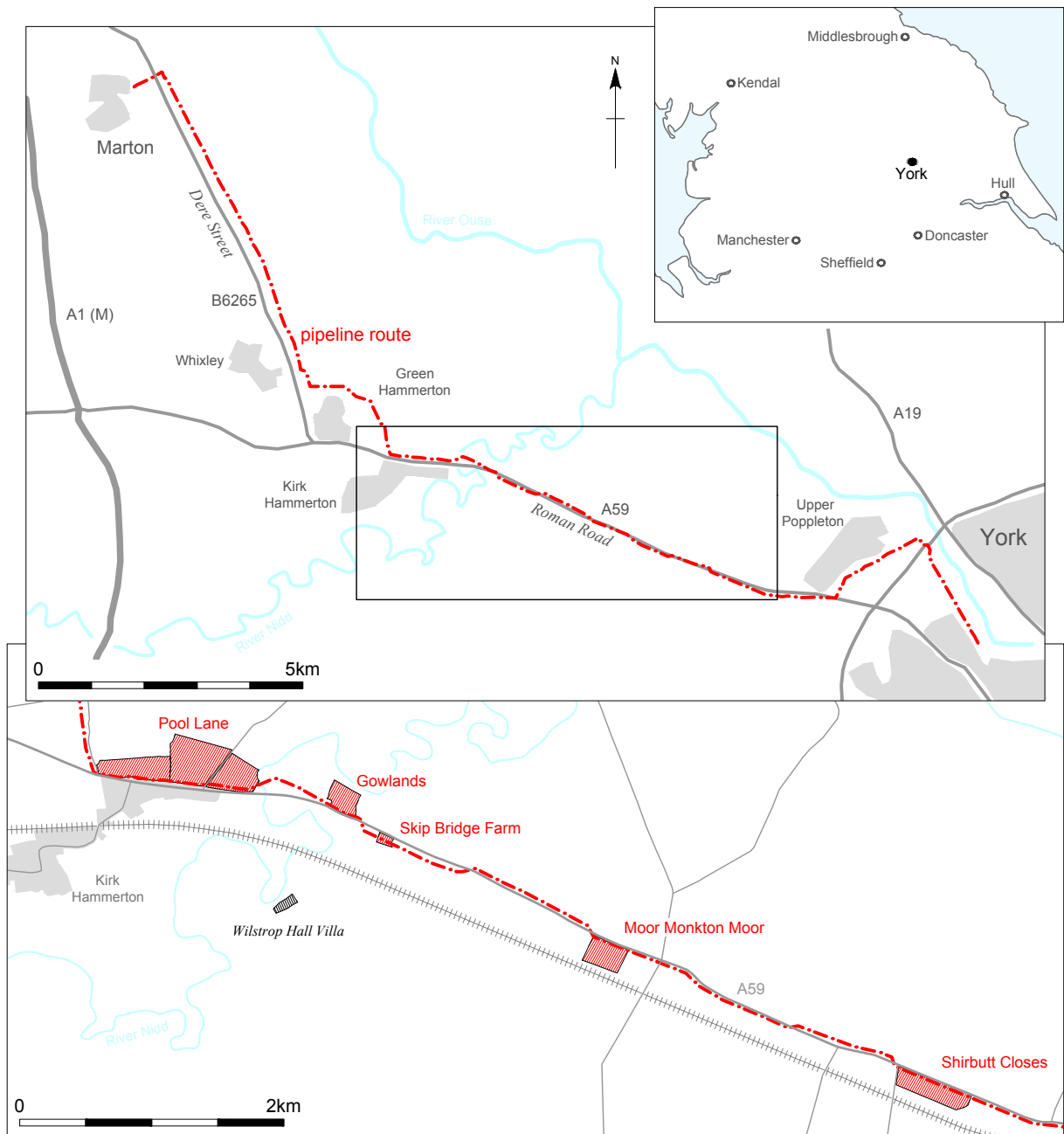


Figure 1: Pipeline route and location of sites

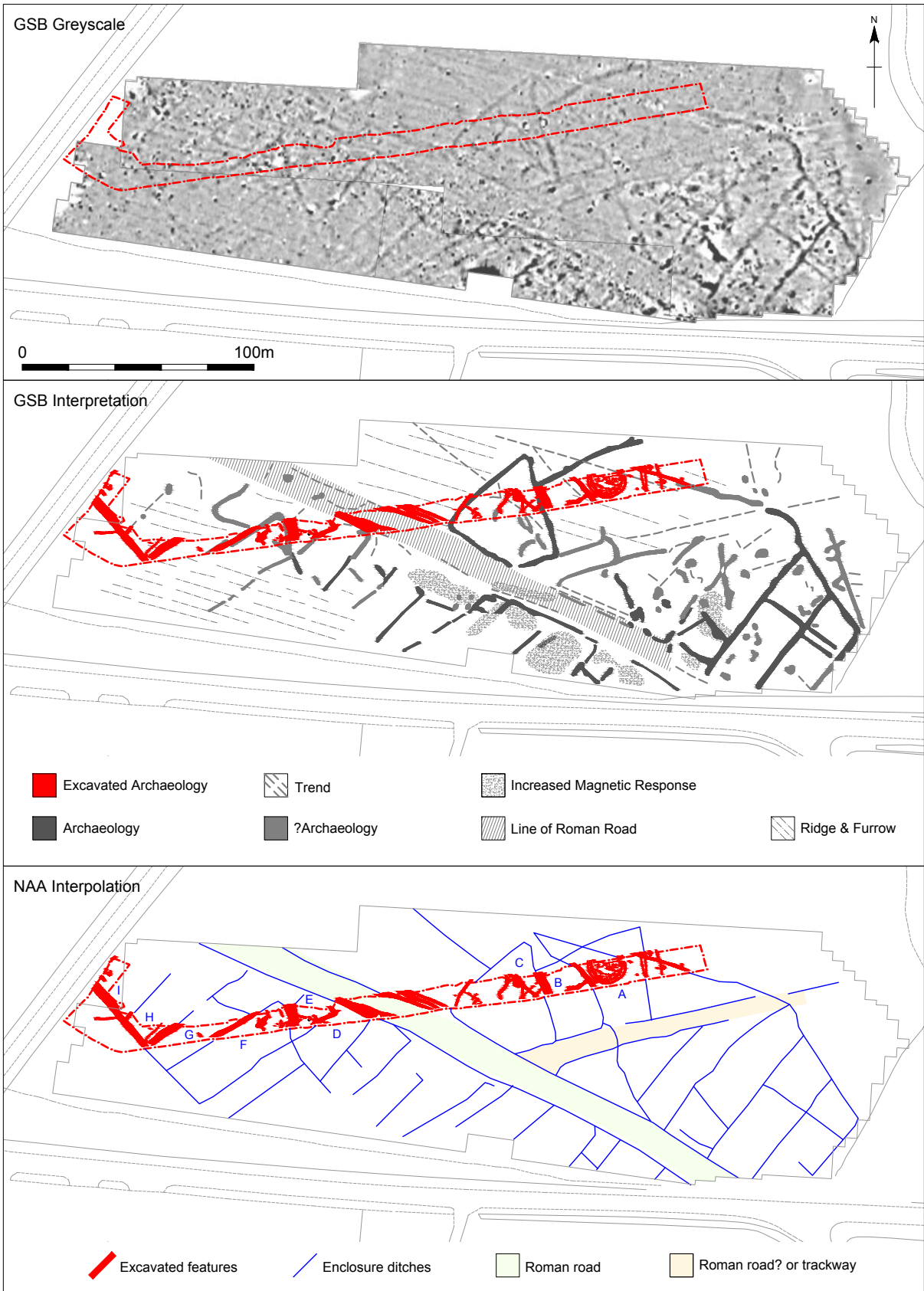


Figure 2: Pool Lane, Field 23, excavated features in relation to geophysical survey

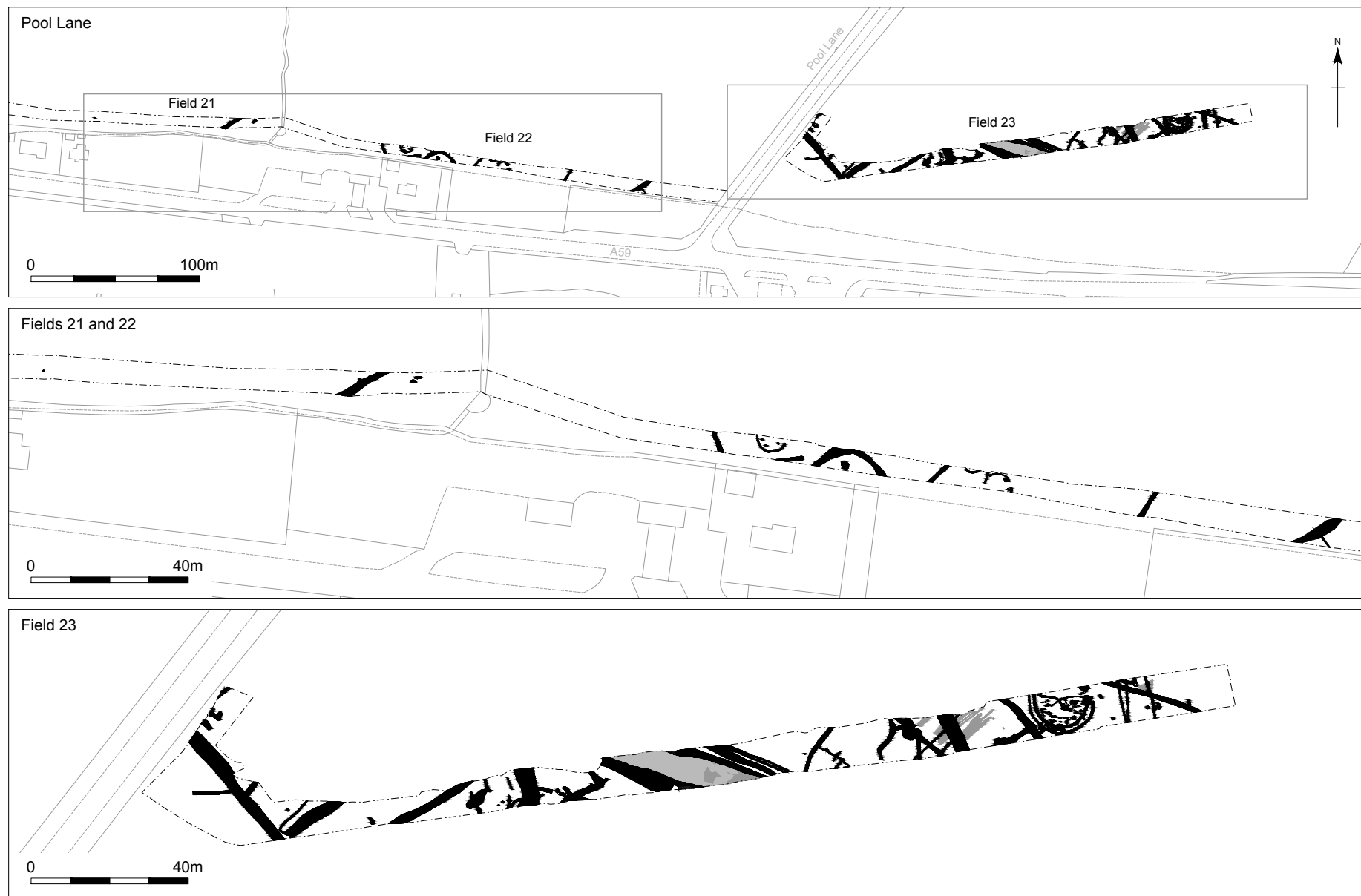


Figure 3: Pool Lane, excavated features and the route of Dere Street

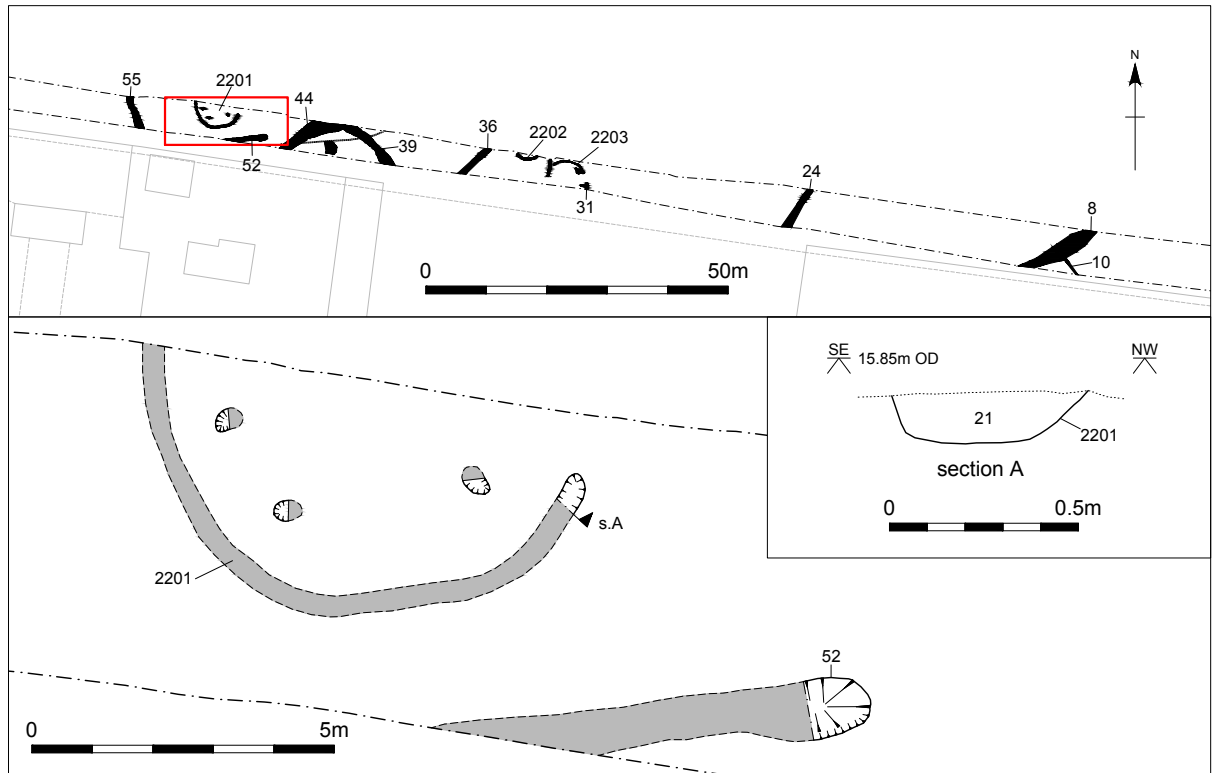


Figure 4: Pool Lane, Field 22, Ring gully 2201

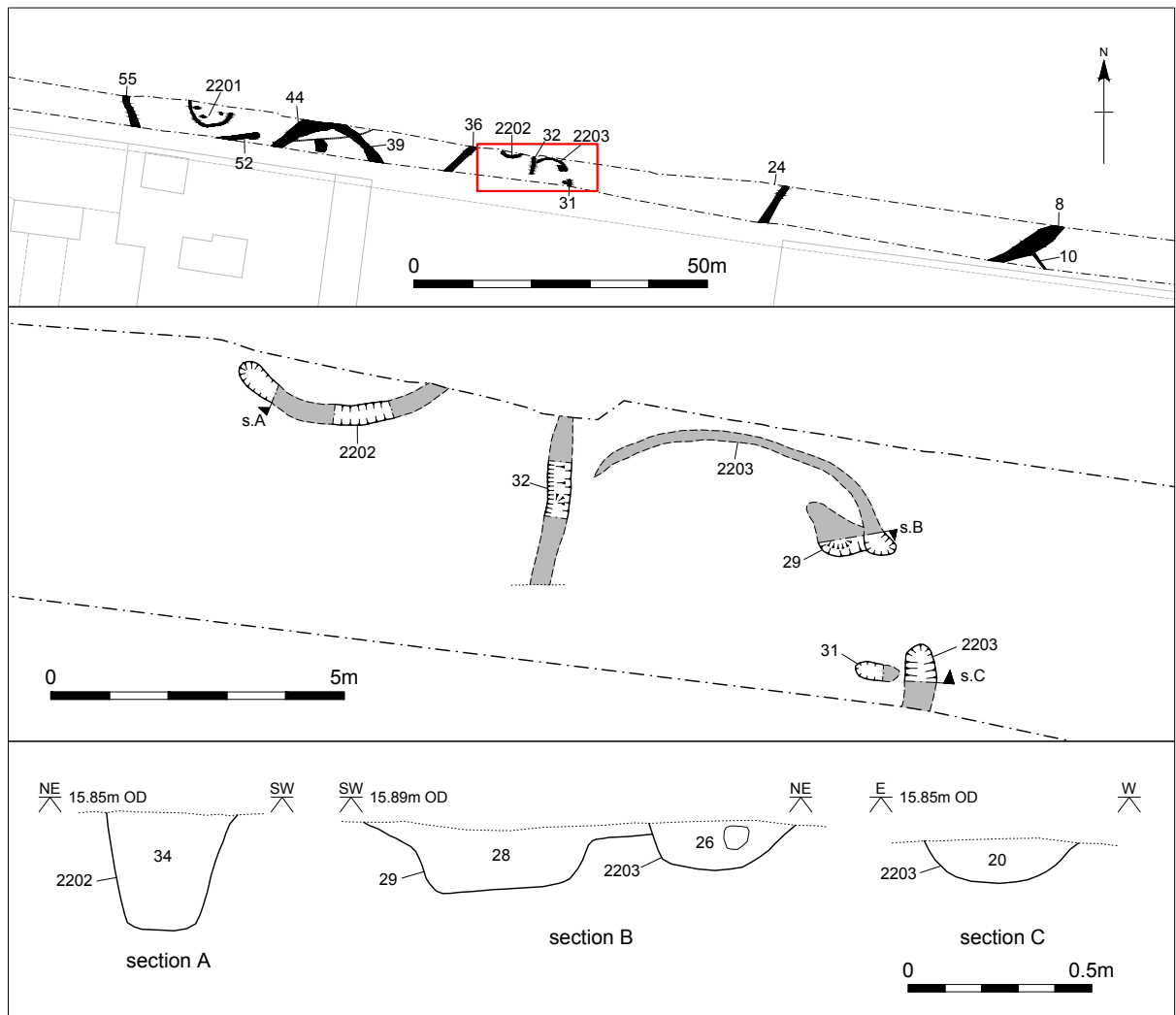


Figure 5: Pool Lane, Field 22, Ring gullies 2202 and 2203



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Figure 6: Pool Lane, Field 23, roundhouse 420, Field 23

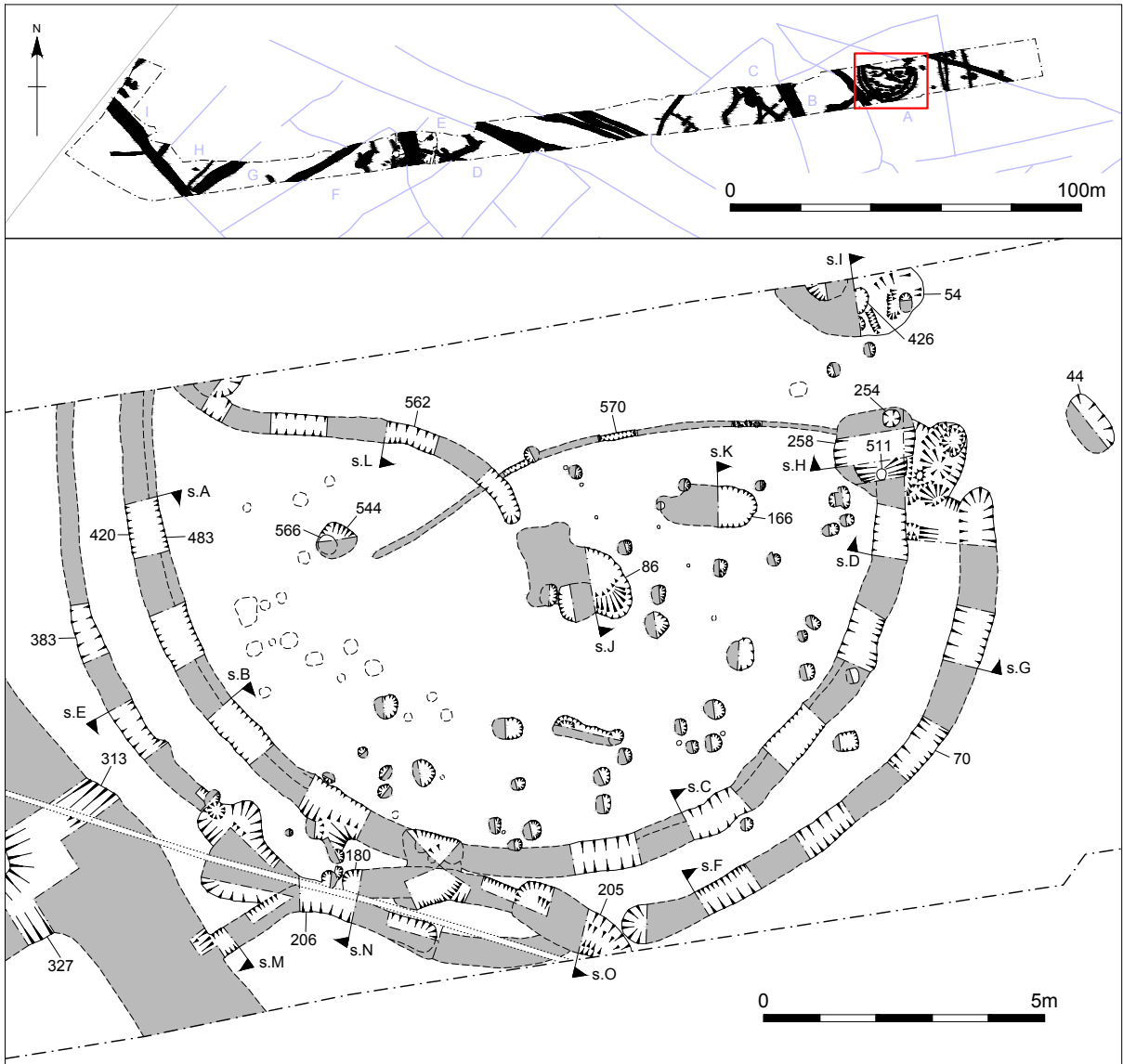


Figure 7: Pool Lane, Field 23, roundhouse 420

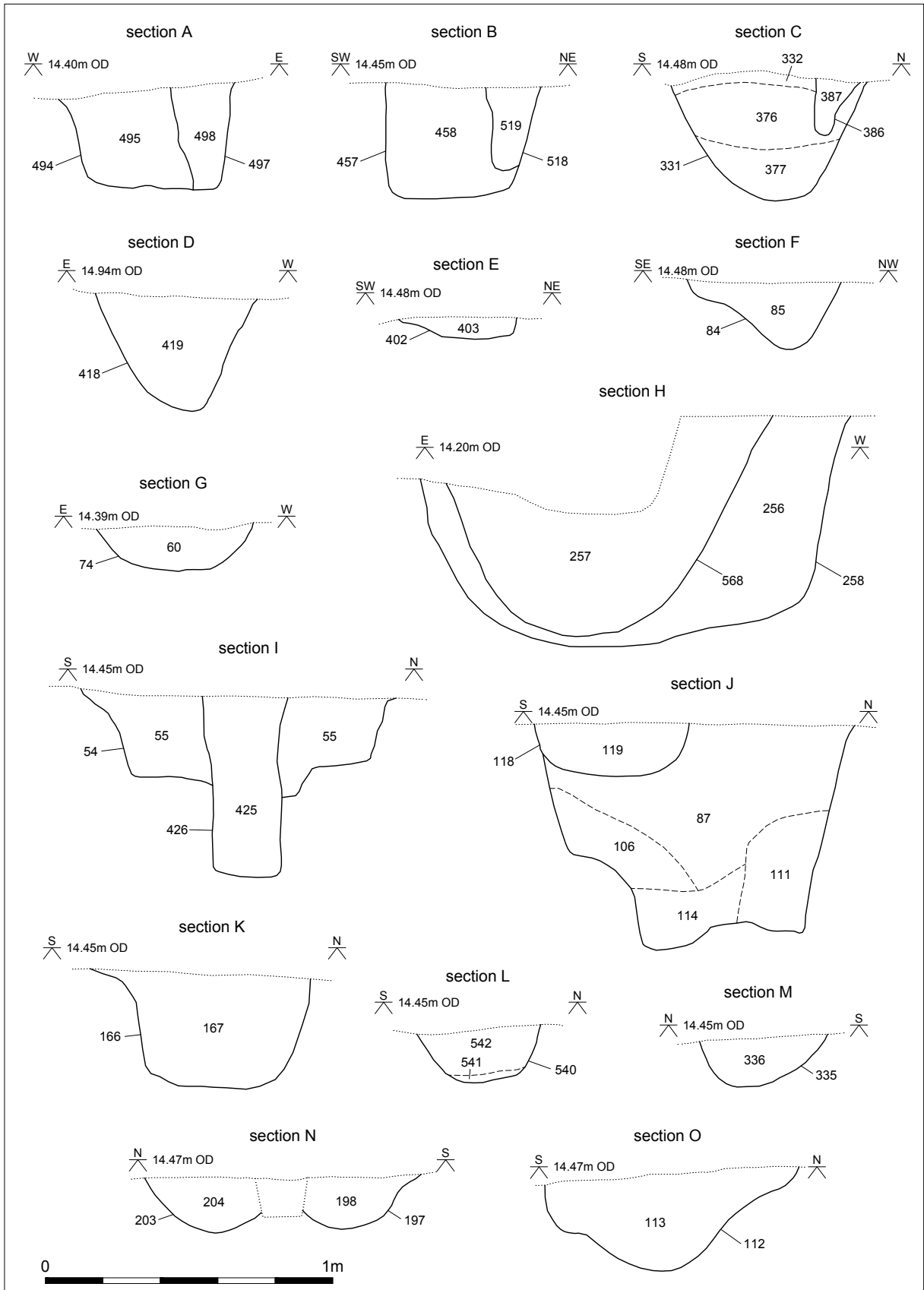


Figure 8: Pool Lane, Sections through roundhouse 420 and associated features



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Figure 9: Pool Lane, Field 23, quern stone
at the base of posthole 254, scale 25cm

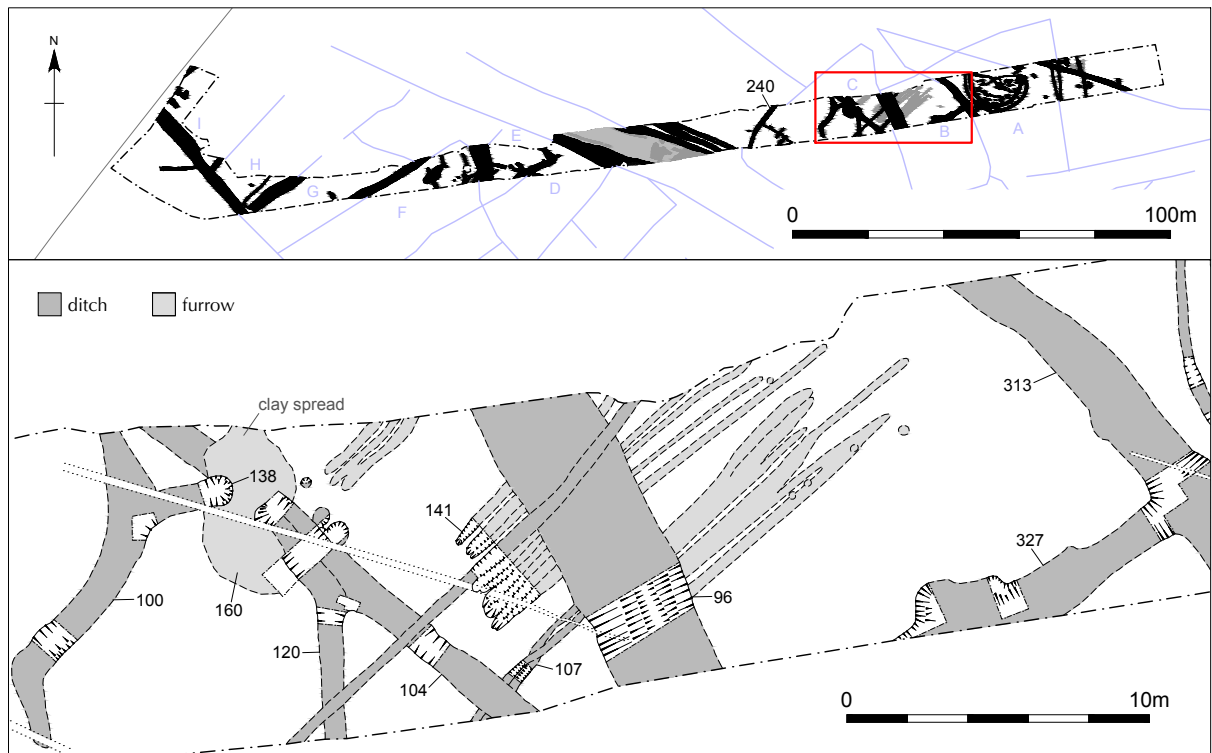


Figure 10: Pool Lane, Field 23, ditches and furrows

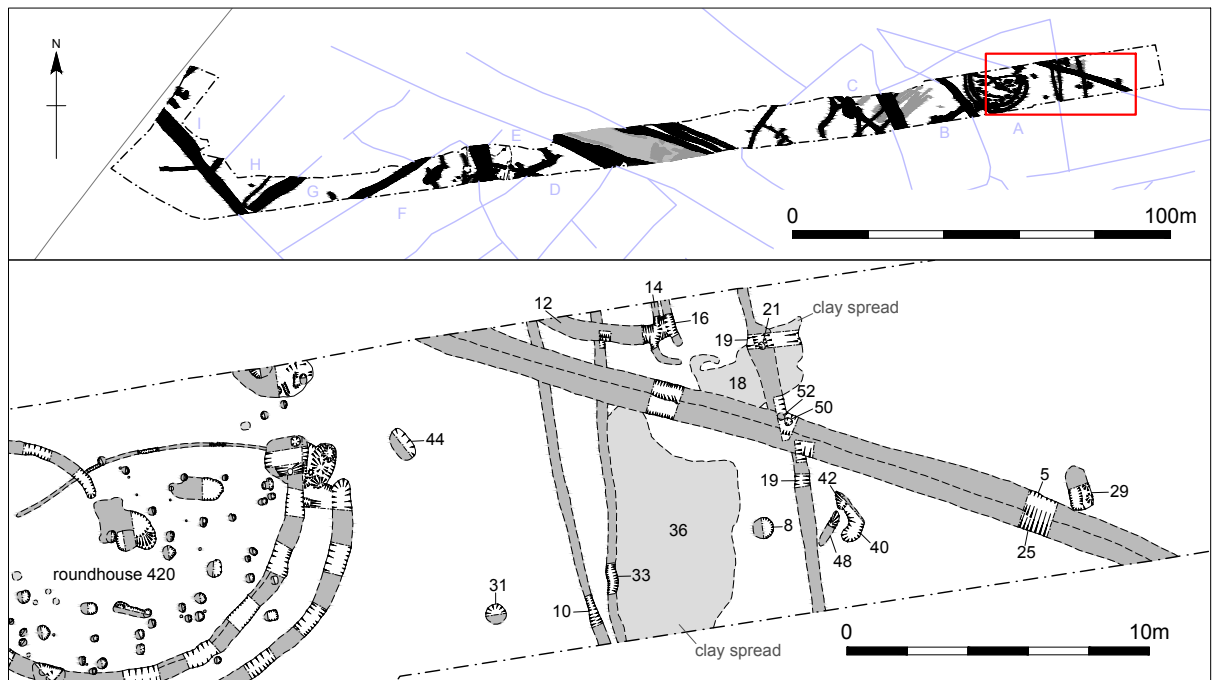


Figure 11: Pool Lane, Field 23, fencelines and gullies

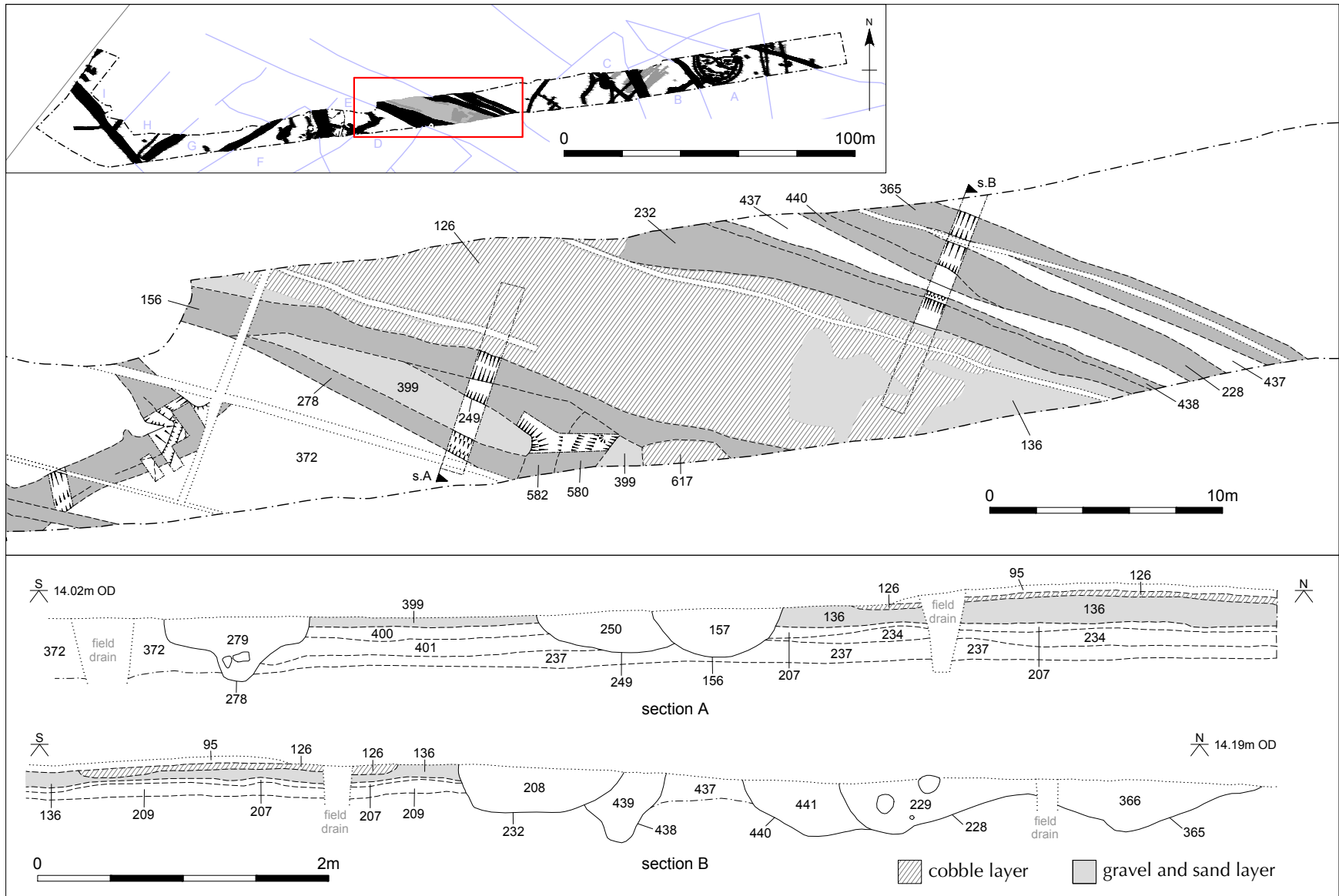


Figure 12: Pool Lane, Field 23, road 194/404 and associated ditches



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Figure 13: Pool Lane, Field 23, overview of road 194



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Figure 14: Pool Lane, Field 23, section through road 194, showing underlying brushwood layer



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Figure 15: Pool Lane, Field 23, section through road 194, showing un-metalled side road in foreground

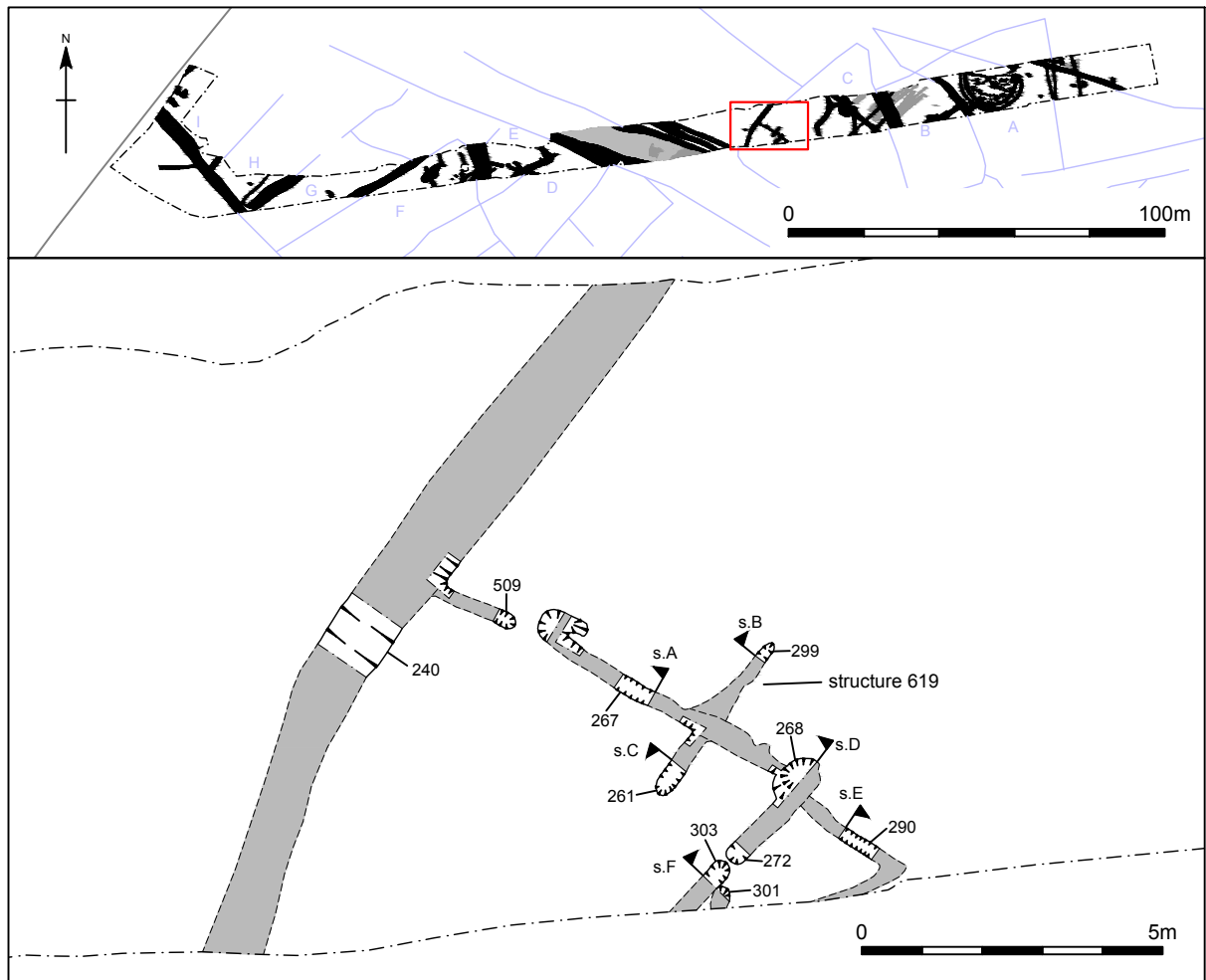


Figure 16: Pool Lane Field 23, plan of structure 619

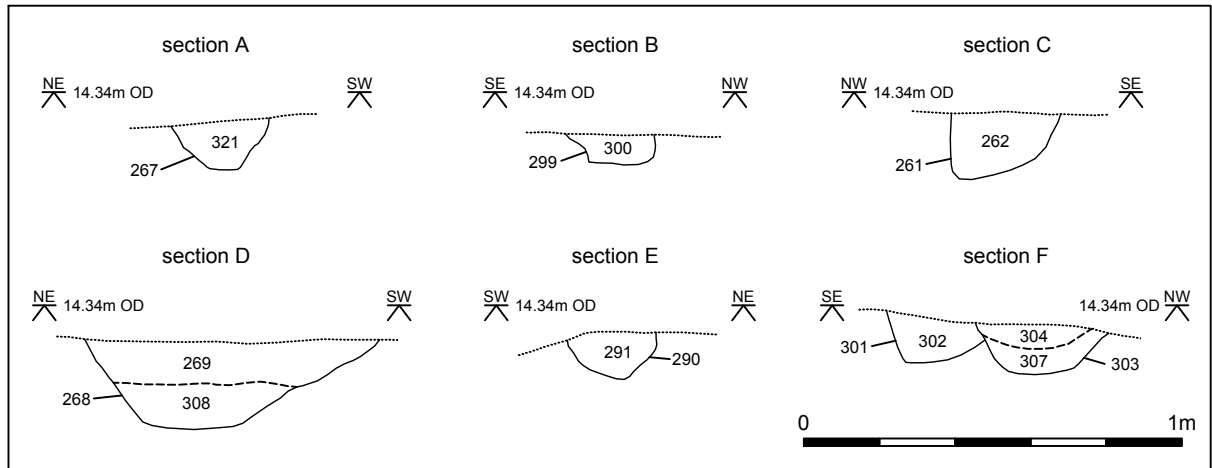


Figure 17: Pool Lane Field 23, sections through structure 619



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Figure 18: Pool Lane, Field 23, structure 619

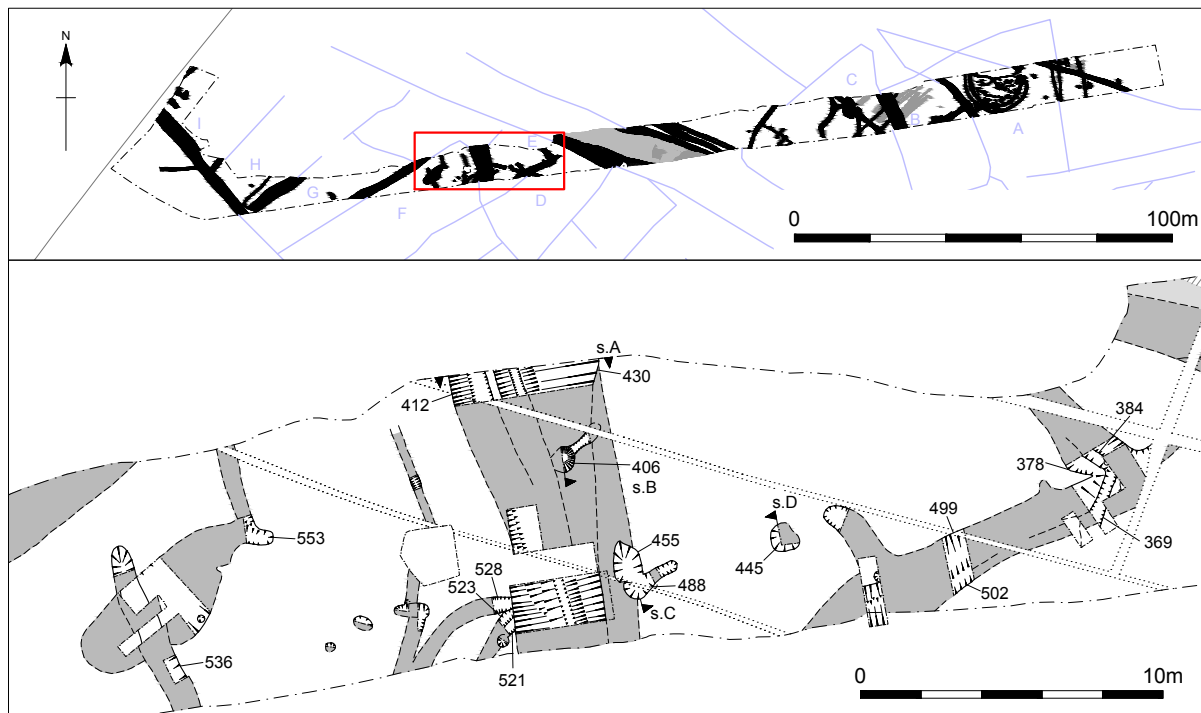


Figure 19: Pool Lane, Field 23, plan of ditches 412 and 430

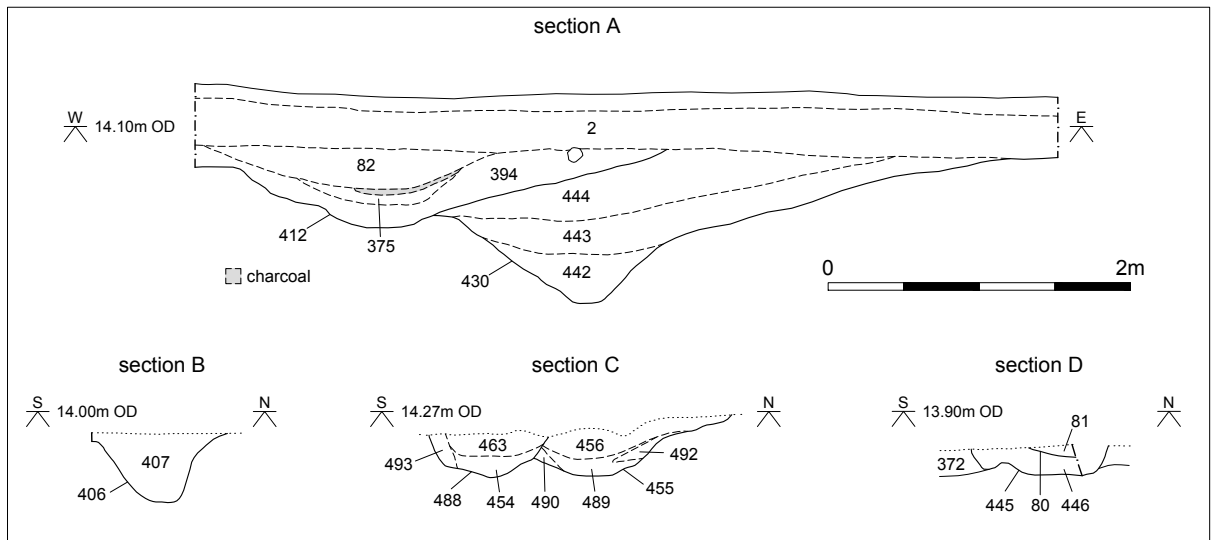


Figure 20: Pool Lane, Field 23, sections through ditches 412 and 430

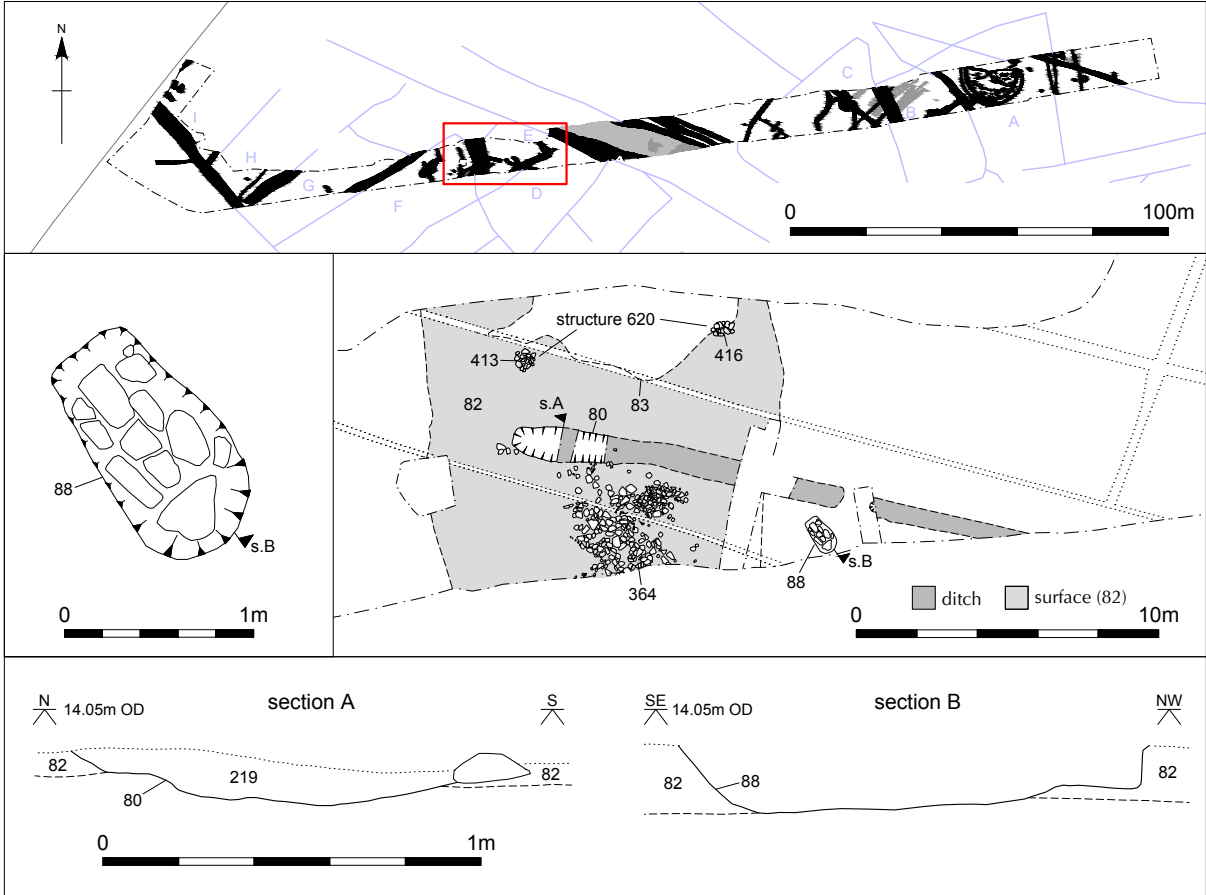


Figure 21: Pool Lane Field 23, surface 82 and possible cist 88



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Figure 22: Pool Lane, Field 23, structure 620 and path 80



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Figure 23: Pool Lane, Field 23,
possible cist 88

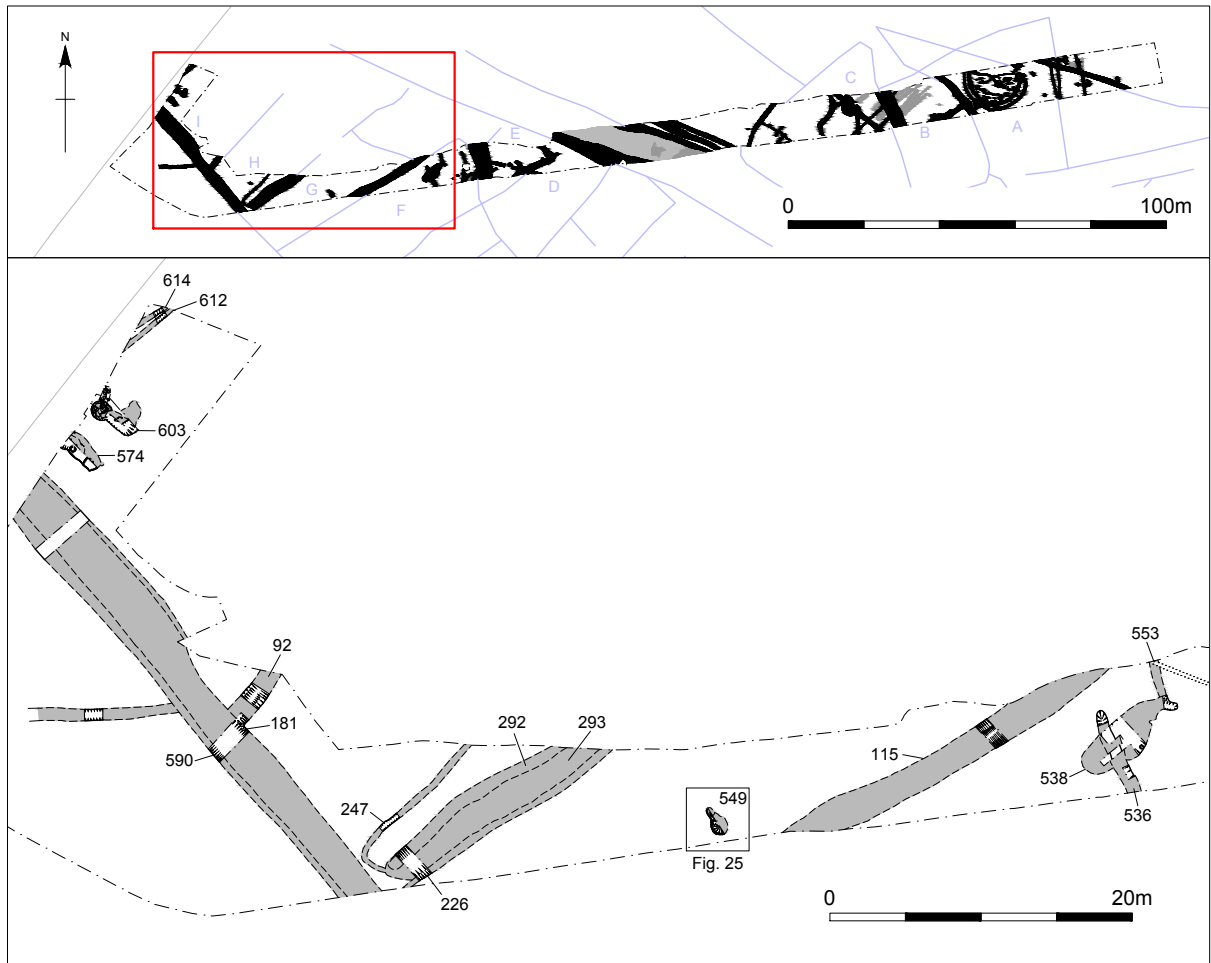


Figure 24: Pool Lane, Field 23, features at western end of field

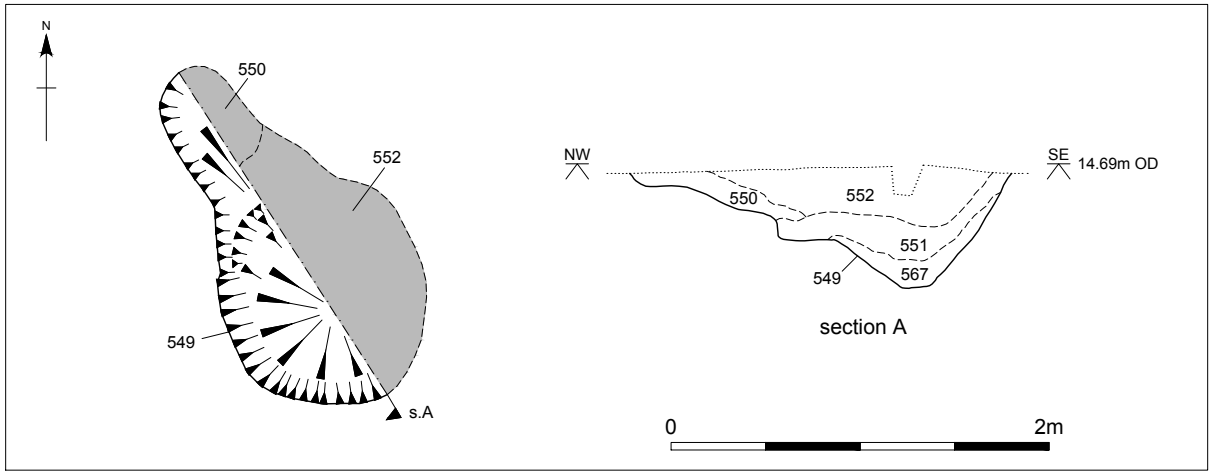


Figure 25: Pool Lane Field 23, Kiln 549

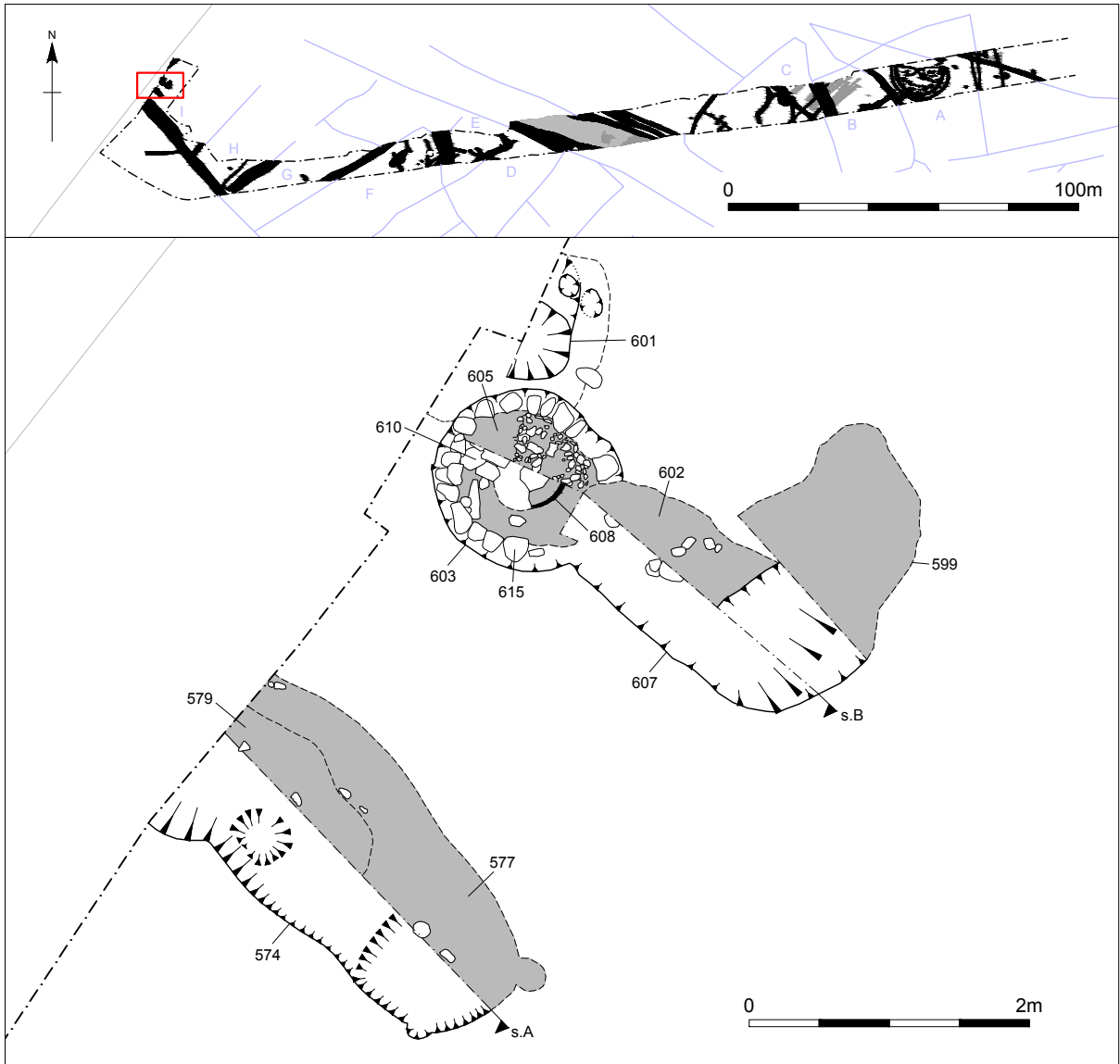


Figure 26: Pool Lane, Field 23, plan of Kilns 574 and 603

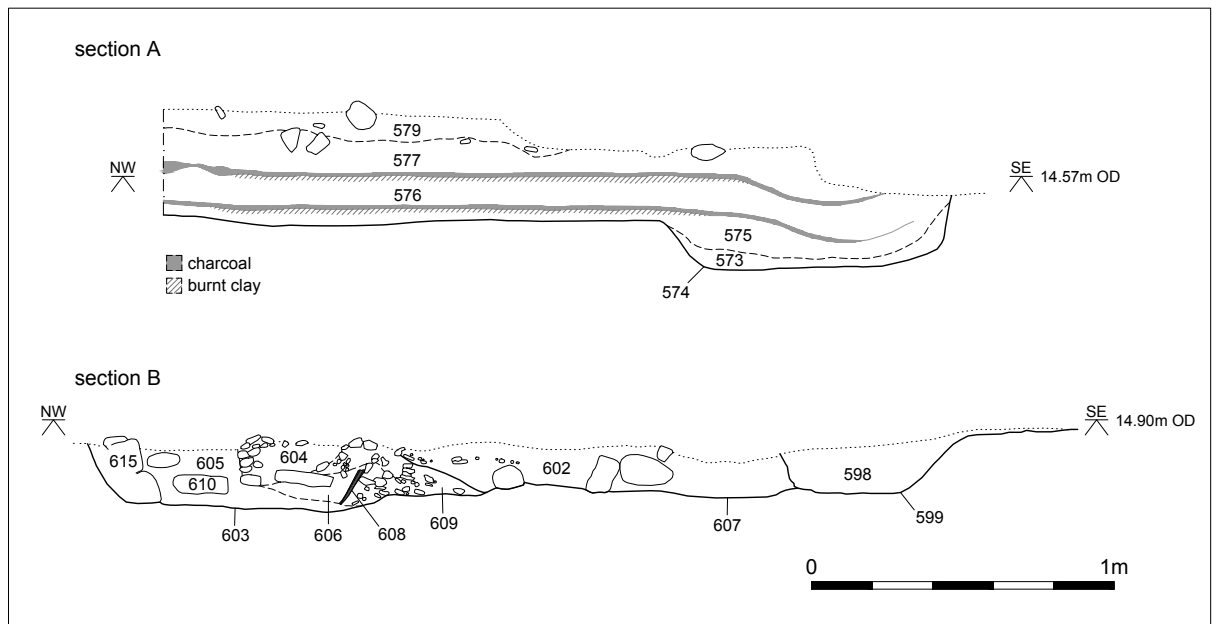


Figure 27: Pool Lane, Field 23, sections through Kilns 574 and 603



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Figure 28: Pool Lane, Field 23, kiln 603, base showing cobble lined bowl and collapsed fired clay dome



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Figure 29: Pool Lane, Field 23, kiln 603, showing kiln base in situ



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Figure 30: Pool Lane, Field 23, section through kiln 574

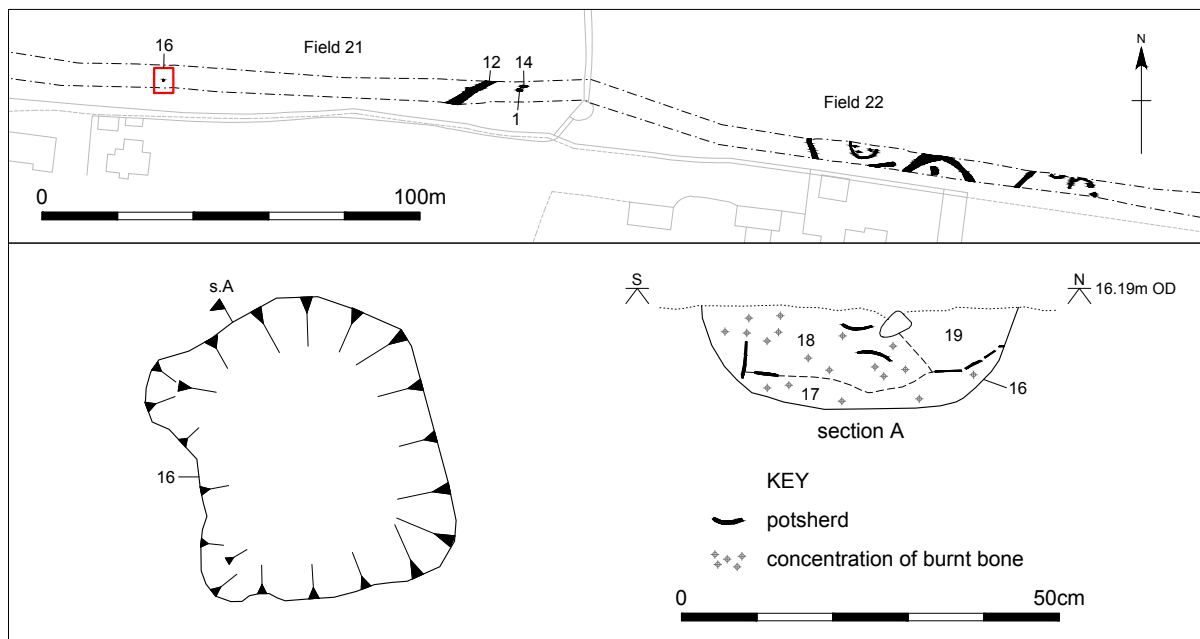


Figure 31: Pool Lane, Field 21, cremation pit 16



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Figure 32: Pool Lane, Field 21, section through cremation 16, scale 25cm

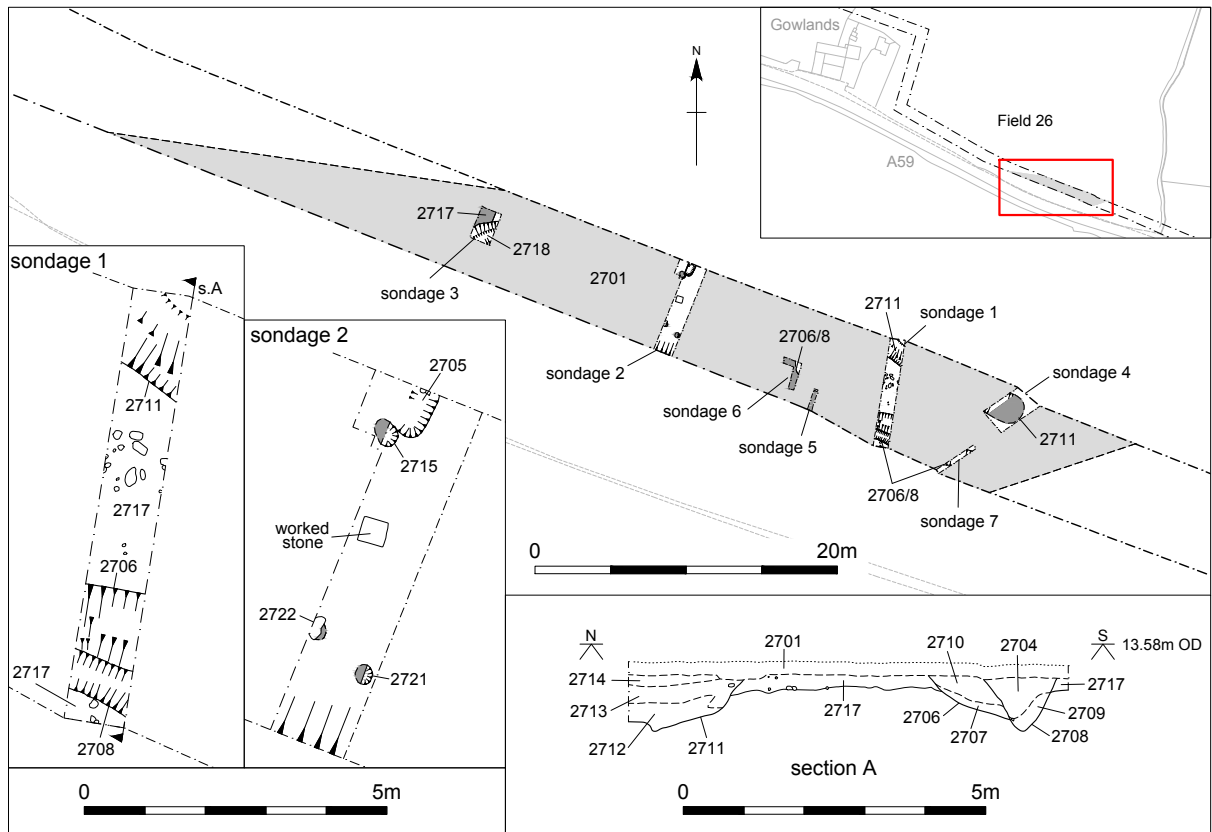


Figure 33: Gowlands, Field 26, excavated sondages through deposit 2701



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Figure 34: Gowlands, Field 26, section through midden deposit 2701 showing carved stone block

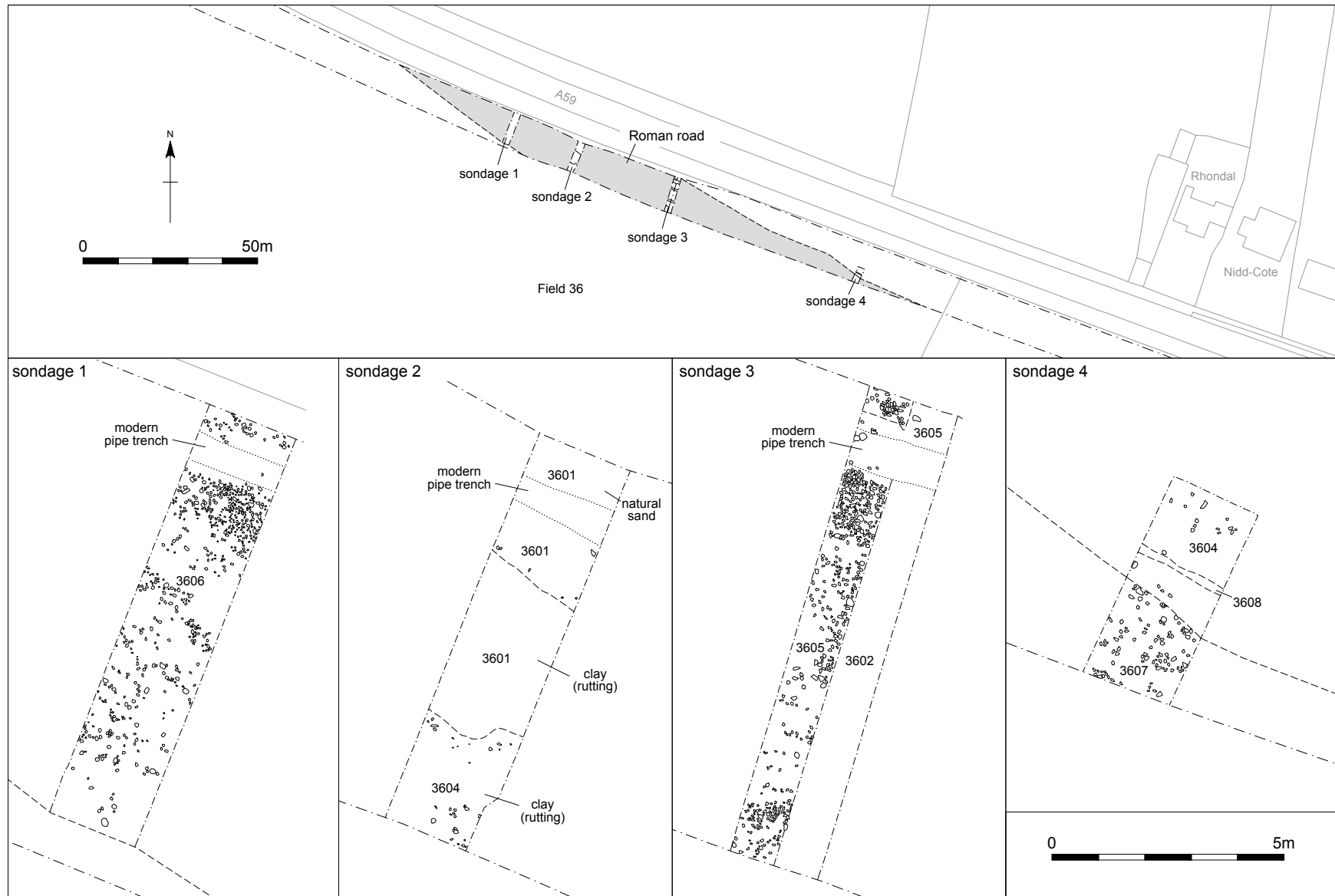


Figure 35: Moor Monkton Moor, Field 36, sondages through Roman road surface



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Figure 36: Moor Monkton Moor, Field 36,
Roman road crossing the easement

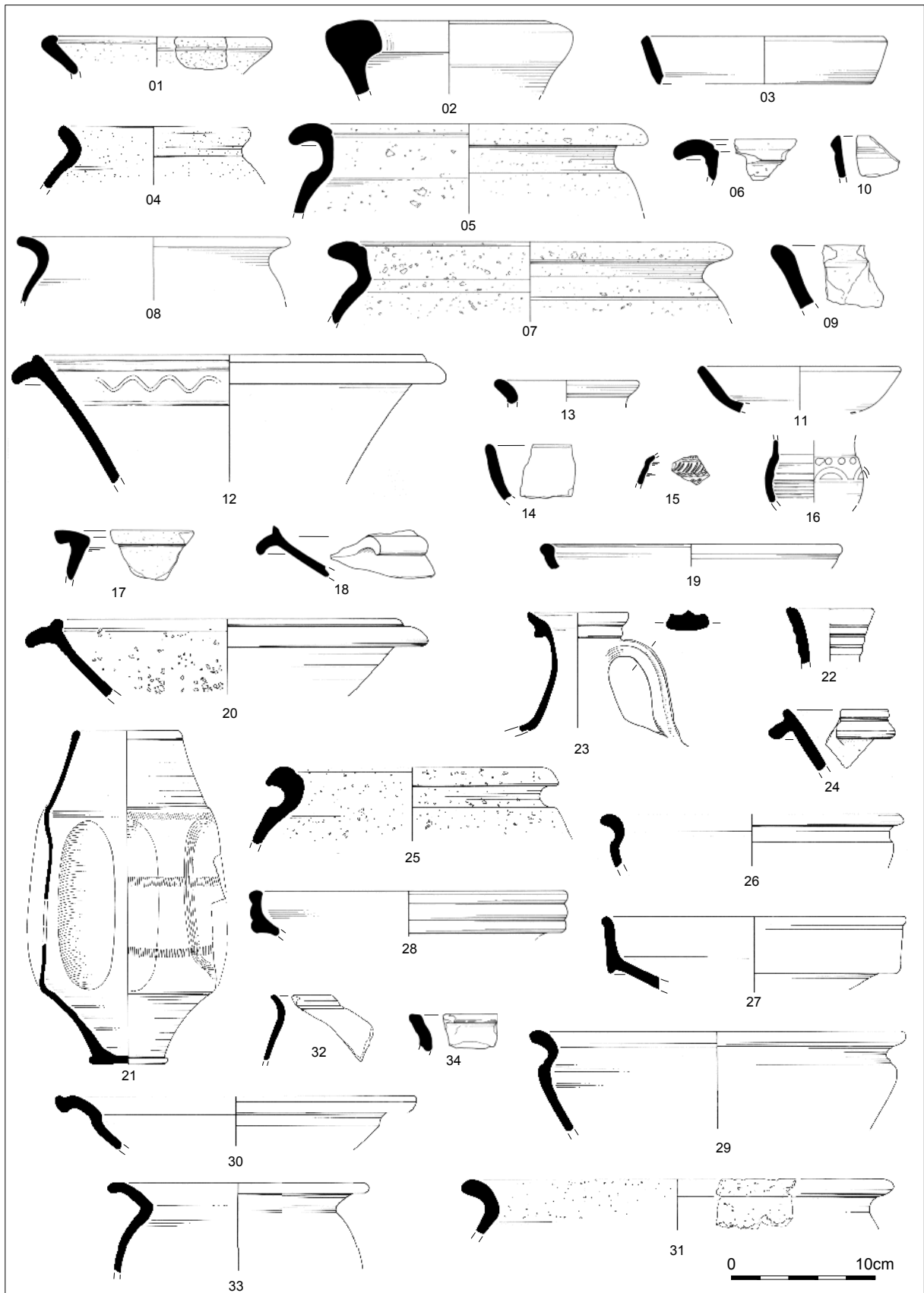


Figure 38 Roman pottery: vessels 1-34

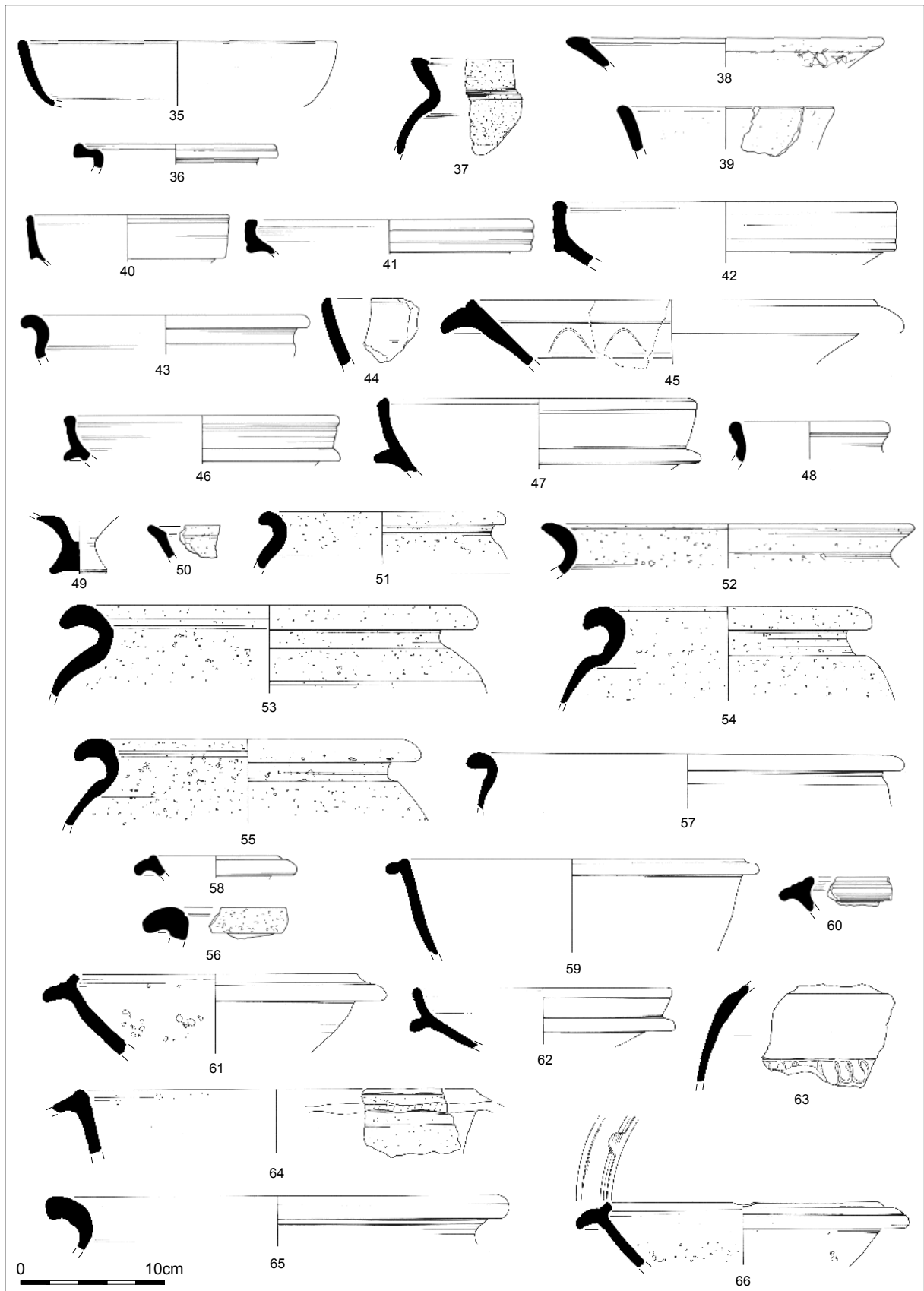


Figure 39 Roman pottery: vessels 35-66

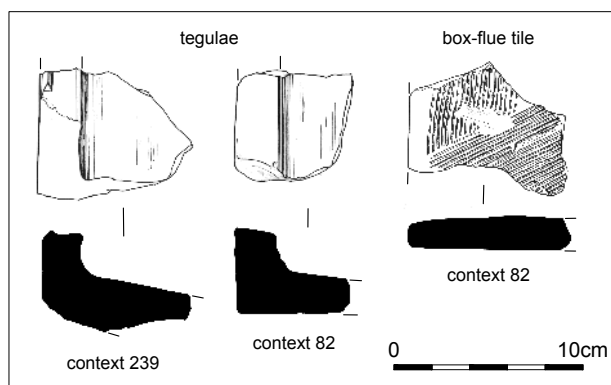


Figure 40 Tile fragments

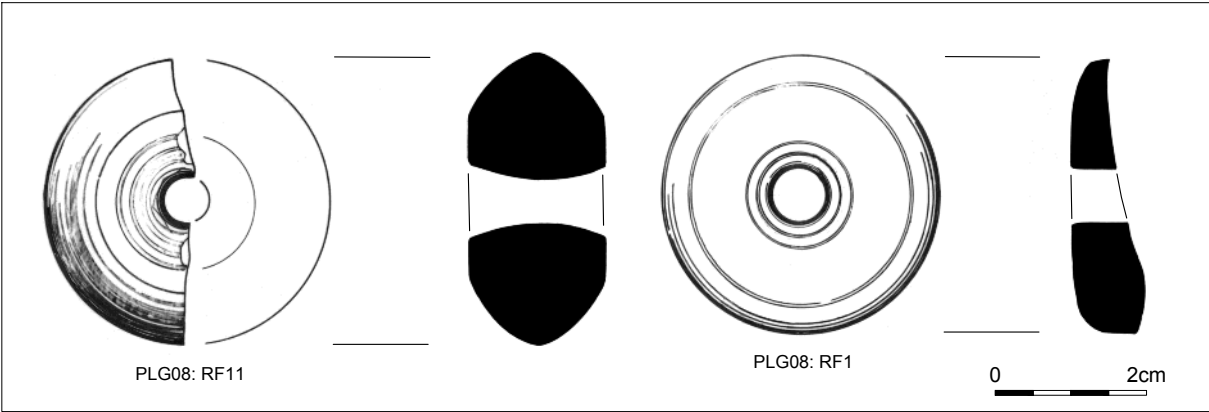


Figure 41 Spindle whorls from PLG08

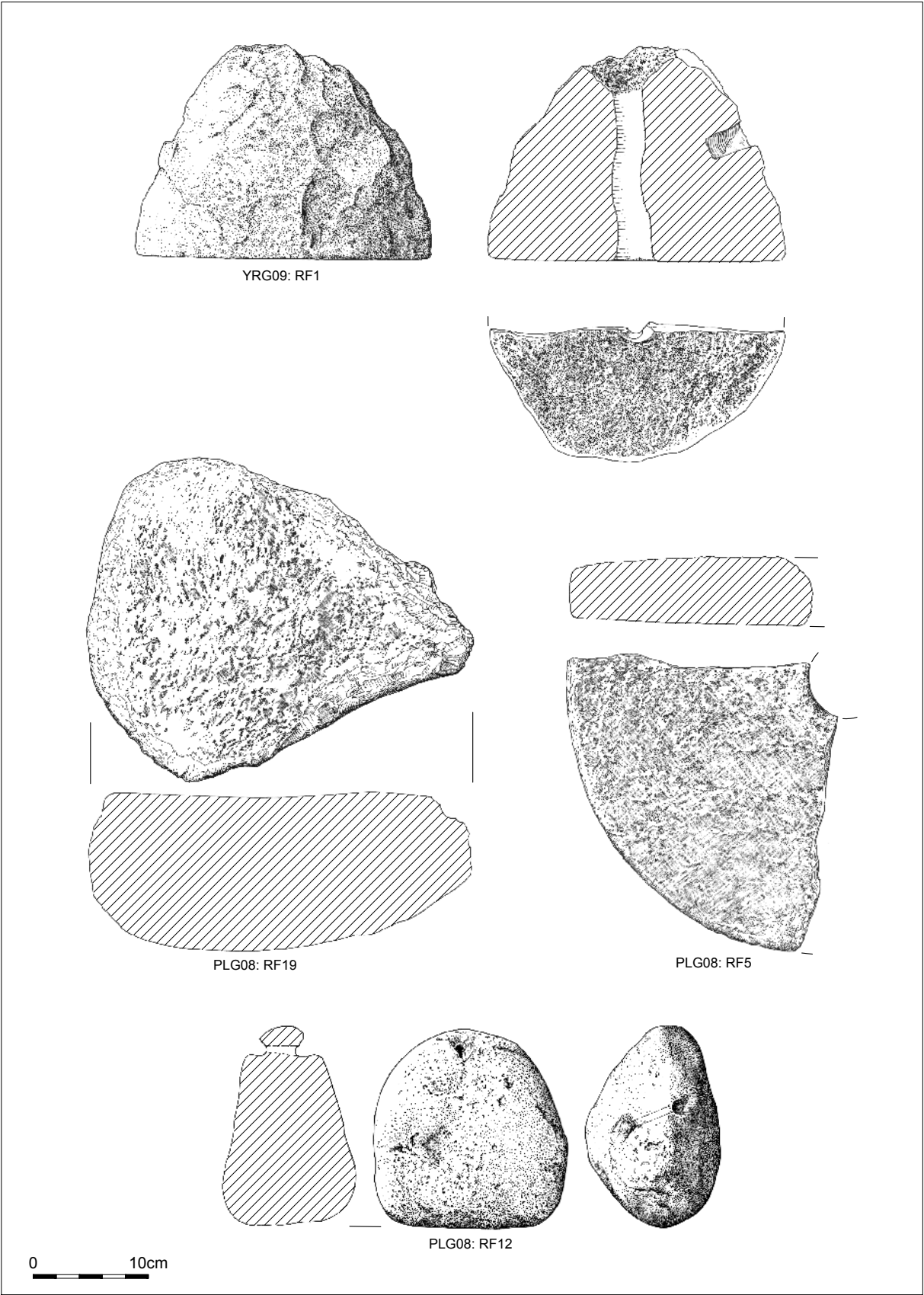


Figure 42 Quern stones and a stone weight

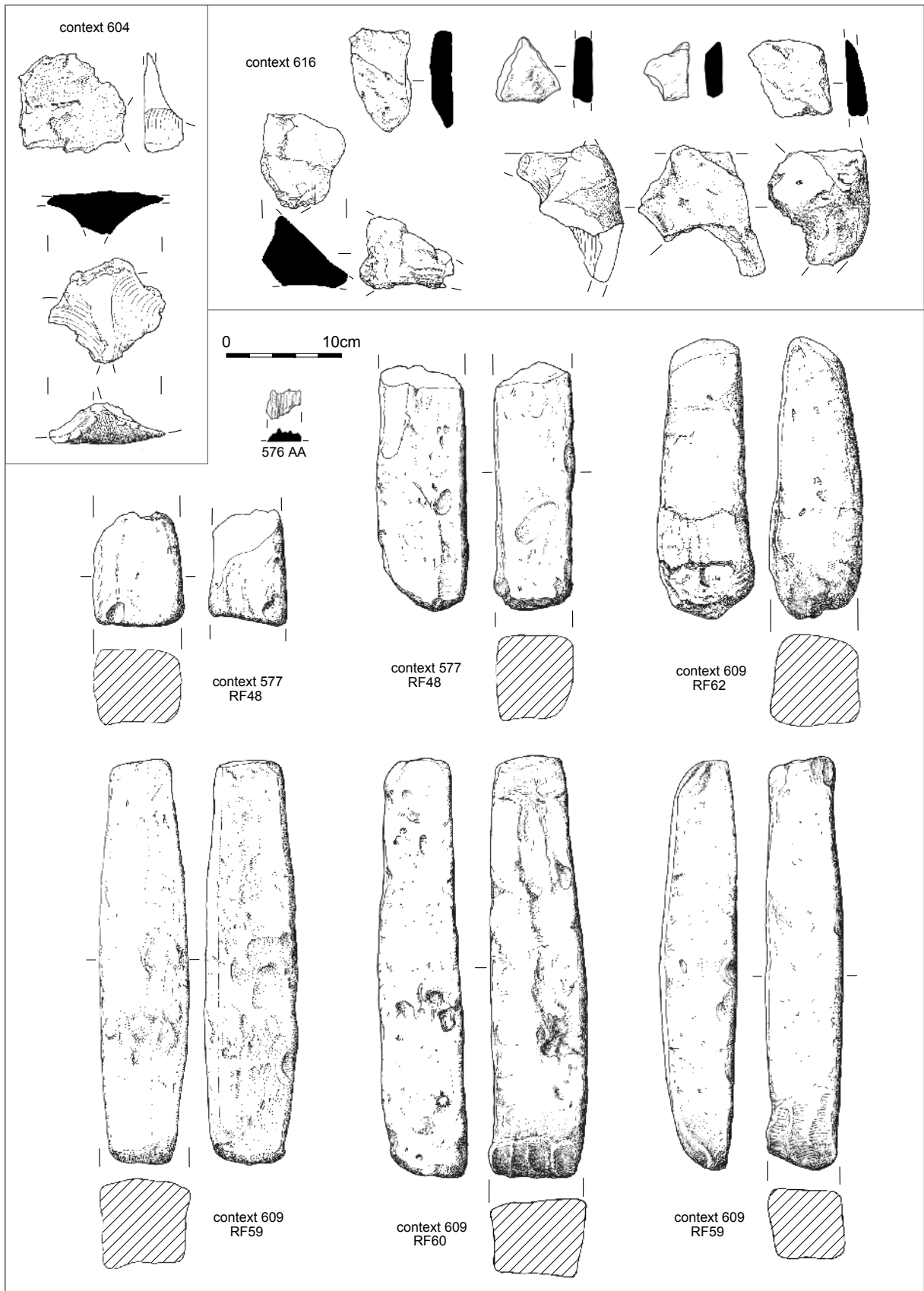


Figure 43 Kiln furniture and debris from PGL08