



University of
Leicester

Archaeological Services



**An Archaeological Excavation
in advance of Swinford Windfarm,
near Lutterworth, Leicestershire
NGR: SP 575 815 centre**

Mathew Morris

ULAS Report No 2011-128

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With contributions from:

Heidi Addison, Jennifer Browning, Simon Chapman, Lynden Cooper, Nicholas J. Cooper, Jon Coward, Anita Radini and John Thomas

For: CgMs Consulting Ltd

Approved by:

Signed: ...  Date: 21.12.2011

Name: Patrick Clay

University of Leicester

Archaeological Services

University Rd., Leicester, LE1 7RH

Tel: (0116) 2522848 Fax: (0116) 2522614

ULAS Report No 2011-128

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An Archaeological Excavation in advance of Swinford Windfarm, near Lutterworth, Leicestershire (SP 575 815 centre)

Mathew Morris

Summary

During the summer of 2011 an archaeological excavation was undertaken in a 350ha area of farmland between Swinford and Lutterworth in Leicestershire (SP 575 815 centre) in advance of the proposed construction of an 11 turbine wind farm by Nuon Renewables. Fieldwork was carried out over a five week period between July 12 and August 12 by staff of University of Leicester Archaeological Services (ULAS) on behalf of CgMs Consulting. In all, four c.60m by c.30m areas were stripped over the proposed footprints for Turbines 4, 5, 9 and 11 to investigate possible early Roman features found during a programme of archaeological trial trenching undertaken by ULAS in 2010.

In Turbine 4 a complex sequence of possible late Iron Age and early Roman settlement was uncovered. The earliest features were a series of parallel, east to west orientated ditches dating to the mid to late 1st century AD which were found crossing the northern half of the area. These were replaced during the first half of the 2nd century by a series of rectangular enclosures in the southern half of the area which were enclosed by a substantial ditch which could be traced running north-north-west to south-south-east across the western side of the site before turning east at its southern end. Four structures were found within the excavated area. Structures One and Two both appeared to be associated with the earlier phase of activity. Structure One may have been the remains of a rectangular timber building but Structure Two was almost certainly the remains of a roundhouse. Late Iron Age pottery found beneath a cobble surface in Structure Two and from one of its drip-gullies may indicate that the roundhouse dated to the Conquest period (early-mid 1st century). A second roundhouse, Structure Three, was sited immediately south of Structure Two and appeared to be associated with the later enclosures. Its demise was marked by a thick, overlying layer of soil containing large quantities of charcoal and burnt daub. This appeared to date to the early 2nd century. The fourth structure, which was stratigraphically the latest feature in the area, was a substantial stone platform surrounded on its north side by a ditch which appeared to be intended to keep the platform dry from water descending on it from up-slope. Along the ditch the platform was kerbed with stone, including a large fragment of re-used rotary-quern. It is thought the platform was intended to be a dry, external working surface, possibly a threshing floor. A dispersed collection of redeposited iron slag and vitrified heath lining suggests iron-working, most likely smithing, was also occurring in the vicinity but no primary evidence of industrial activity was found in the area. Geophysical results suggest that the occupation in Turbine 4 was on the western edge of a small settlement sited immediately east of the excavated area. Ceramic dating suggests that all occupation had ceased by the mid 2nd century AD.

Less archaeology was found in Turbines 5 and 9. In Turbine 5 a series of severely plough-damaged ditches and gullies formed two parallel alignments, possibly marking a trackway heading north-north-west towards the settlement in Turbine 4. A small number of pits or tree-throws edged the southern side of the 'trackway' whilst to the north two cremation pits were excavated. The small amount of pottery recovered from the area suggests occupation could have spanned the 1st century AD, or may well have been confined to the decades around the Conquest period. In Turbine 9, a few further ditches, gullies and pits were uncovered. Very little pottery was recovered, most of which was heavily abraded early Roman material, and it remains unclear to which period most of these features date to. The ditches all pre-dated the medieval ridge-and-furrow but little more could be determined; whilst one ash-filled pit, possibly a hearth, produced a small quantity of late Iron Age pottery. A second small pit contained the semi-articulated remains of a sheep which, judging by the good quality of the bone (on a site where bone did not survive well), had almost certainly been buried during the post-medieval or modern period. No archaeological features were found in Turbine 11, but an almost complete flint chisel of possible late Neolithic date was recovered from the subsoil during machining.

The site archive will be held by Leicestershire County Council Museum Service under the accession number X.A99.2011.

Introduction

During the summer of 2011 an archaeological excavation was undertaken near Swinford in Leicestershire in advance of the proposed construction of an 11 turbine wind farm by Nuon Renewables. Fieldwork was carried out over a five week period between July 12 and August 12 by staff of University of Leicester Archaeological Services (ULAS) on behalf of CgMs Consulting.

The proposed site of Swinford Wind Farm is located approximately 4km to the south-west of Lutterworth, and 1km to the north-east of Swinford at a central grid reference of SP 575 815 (Figure 1). The planning application

boundary encompasses an area of approximately 350ha but the actual development footprint will only account for approximately 5ha of that area.

Planning permission for the wind farm (08/00506/FUL) was granted on appeal by Harborough District Council in 2009 with a condition requiring that a staged programme of archaeological work be undertaken in accordance with an approved written scheme of investigation (Bourn 2010) before development commenced. This was in accordance with Planning Policy Statement 5 (PPS5: Planning and the Historic Environment, 2010). Leicestershire County Council's Historic and Natural Environment Team (LCCHNET), in their capacity as archaeological advisors to Harborough District Council, initially requested a programme of geophysical survey and archaeological trial trenching across the development area. This specifically targeted the base of each turbine and the site of the temporary construction compound. The geophysical survey was conducted by Wessex Archaeology in 2009 (Thomas 2009) and the trial trenching was undertaken by ULAS in 2010 (Hyam 2010). Some significant archaeological remains were recorded at Turbines 4 and 9, and remains of lesser significance were recorded at Turbines 5 and 11. Evidence of ridge and furrow was also recorded in many parts of the site. Subsequently a final stage of excavation and recording was agreed with LCCHNET, targeting Turbines 4, 5, 9 and 11 (Figure 2), which would investigate four c.60m by c.30m areas over the footprints of the respective turbines (Bourn 2011). This document constitutes the report for this final archaeological stage.

Geology and Topography

The British Geological Survey of Great Britain, sheet 170 (Market Harborough), shows that the underlying geology likely consists of superficial deposits of Diamicton Till, commonly known as Boulder Clay, overlying bedrock deposits of mudstone belonging to the Blue Lias and Charmouth Mudstone formations (BGS 1968).

The site is on the south side of a gently rising plateau that lies on a south-west to north-east orientation, lying between 154m and 117m OD. The four turbine locations are situated on spurs of high ground projecting south from the plateau, with Turbines 4 and 5 located to the west, and Turbines 9 and 11 located to the east, of a small north to south orientated tributary valley of the River Avon.

Historical and Archaeological Background (adapted from Bourn 2011)

A detailed historical and archaeological background is outlined in the Environmental Statement (Nuon 2008). In summary, the Lutterworth Fieldwalking Group has recorded a number of prehistoric sites to the north of the site in the area of Misterton. These include several Mesolithic, Neolithic and Bronze Age flint assemblages. In addition there are cropmarks of possible enclosures and ring ditches (possible former burial mounds). These remains are all located toward the River Swift and may be indicative of prehistoric settlement being focussed on the river (Clay 2002, 85-104). There are no recorded prehistoric remains within the wind farm site boundary and no fieldwalking was undertaken. Geophysical survey by Wessex Archaeology did not reveal any remains that can be clearly interpreted as being of prehistoric date.

Few Roman sites are recorded in the area. Some Roman pottery sherds have been recovered from fieldwalking in the same area as the prehistoric assemblages mentioned above. The geophysical survey did not reveal any remains that could be clearly interpreted as being of possible Roman date.

The scheduled remains of Stormsworth DMV are located within the site on the southern boundary (SM 17085) but are not impacted on by the proposed wind farm. These earthworks continue south of Rugby Road although they are not scheduled in that area. Stormsworth was recorded at Doomsday and was occupied until 1500 when it was depopulated by Selby Abbey. The remains of ridge and furrow have been recorded across much of the site. The majority of this ridge and furrow has been ploughed flat and is no longer visible as earthworks. The geophysical survey recorded the remains of ridge and furrow in most of the areas surveyed.

The site was progressively enclosed during the post-medieval period. No post-medieval archaeological remains have been recorded within the site.

ULAS undertook an evaluation in October 2010. The evaluation proved negative of archaeological features at the proposed locations of the temporary construction compound and at Turbines 1-3, 6-8 and 10. The features recorded at the other turbine locations were as follows:

- | | |
|------------|--|
| Turbine 4 | The trenches excavated at Turbine 4 revealed a series of ditches, gullies and post-holes which produced mid-1st to 2nd century pottery, including Samian ware, and an early Roman quern. No clearly identifiable domestic features were revealed but the density of features and quantity of artefacts is indicative that the turbine is located within or in close proximity to, an early Roman settlement. |
| Turbine 5 | An undated gully and post-hole. |
| Turbine 9 | An undated ditch, thought to be possibly associated with a track to Stormsworth DMV. |
| Turbine 11 | Two shallow pits containing early Romano-British pottery. |



Figure 1: Location maps with project area highlighted

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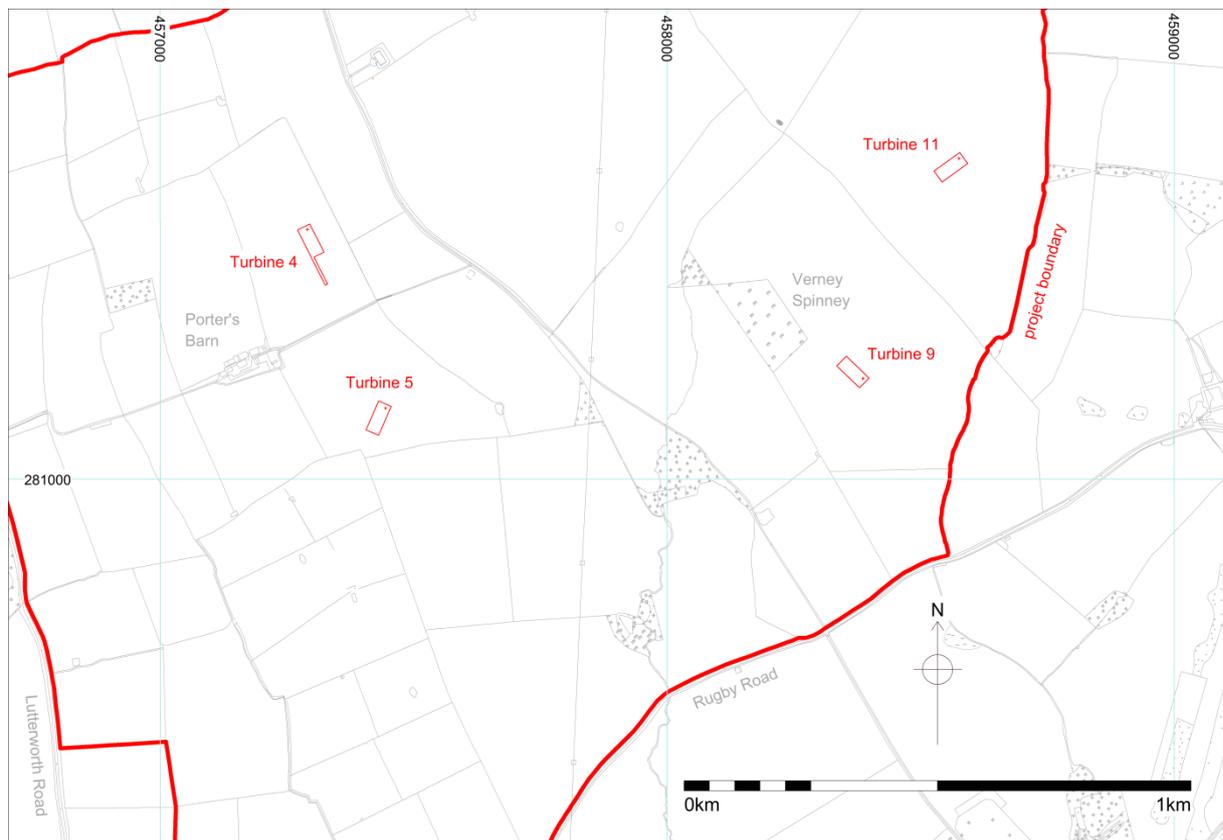


Figure 2: Location map showing position of Turbines 4, 5, 9 and 11 within project area.

Adapted from survey data provided by CgMs.

Aims

The aims of the archaeological excavation and watching brief were as detailed in the Written Scheme of Investigation (Bourn 2011, 5) as follows:

- To determine the internal morphology of the excavated areas and land-use,
- To identify the nature, date and range of zones of activity: residential, industrial, religious, etc. and to determine the dynamics of the spatial distribution of activities and changes over time.

Within these parameters, the excavation presents an opportunity to address the following research objectives:

- What is the natural topographic configuration of the site?
- What is the nature of the Roman remains revealed in the evaluation (i.e. are they domestic occupation or evidence of exploitation of the area from a nearby settlement)?
- Can the existing detailed understanding of the character and chronology of the human occupation and exploitation of the area be enhanced by evidence from the turbine locations?
- What evidence is there for industrial, domestic and agricultural activity at Turbine 4?
- What evidence is there for ritual/religious activity at Turbine 4?
- Is the ditch recorded at Turbine 9 part of a trackway leading to Stormsworth DMV to the south-west?

The objectives of archaeological excavation and recording in support of the research aims were to establish the extent, date, quality, character, form and potential of the archaeological deposits including environmental data and record as appropriate.

Methods

Topsoil was stripped using a 360° tracked excavator with a ditching bucket, together with a dumper truck when available. The areas of Turbines 4, 9 and 11 had varying thicknesses of silty-clay subsoil which was stripped and stored separately in order to prevent mixing between the topsoil and subsoil. Turbine 5 displayed no real subsoil, but rather a thin interface between the topsoil and natural substratum beneath. Potential archaeological deposits were investigated by hand, although in two areas in Turbine 4 small machine-cut sondages were utilised in order to clarify uncertainty over the nature of deposits encountered. Ground conditions were poor; unusually low rainfall over the preceding months had baked the subsoil, and the natural substrata (mostly clays) were very hard, particularly in Turbine 4, necessitating using the excavator bucket to cut the subsoil away from the natural substrata rather than scraping it off. The natural substrata had a propensity to come up in clumps.

Most feature excavation, even of the relatively slight features, had to be carried out by mattock, and several of the deeper ditch features needed a pickaxe to remove the top of the fill until damper fill suitable for a mattock was encountered further down. Initially, due to the adverse conditions, features were sampled only to the extent that profile and dating could be established; on the advice of the Leicestershire County Council, Senior Planning Archaeologist, however, more feature sampling was undertaken later. Most of the original evaluation trenches, where they coincided with the area excavation, could be located although their exact extents were not always visible as the area strip was, of necessity due to the conditions, fractionally lower than the original strip in places.

Stripped areas were examined by hand cleaning and all archaeological deposits/features located were planned at an appropriate scale and sample-excavated by hand as appropriate to establishing the stratigraphic and chronological sequence of the site. All plans were tied into the Ordnance Survey National Grid and spot heights were taken as appropriate.

Sections across excavated archaeological features were drawn at an appropriate scale and tied to the National Grid. Each context was recorded on a standard ULAS pro-forma context recording sheet. A photographic record of the excavation was prepared, illustrating in both detail and general context the principal features and finds discovered. Colour digital and 35mm black and white photographs were taken throughout the excavation. The photographic record also included 'working shots' to illustrate more generally the nature of the archaeological operation mounted.

All work followed the Institute for Archaeologists (IfA) *Code of Conduct* and adhered to their *Standard and Guidance for Archaeological Excavation* (2008) and the *Guidelines for Archaeological Work in Leicestershire and Rutland* (LMARS).

Results

Turbine 4

Beneath silty clay subsoil, the natural sub-strata in Turbine 4 was orangey clay with small rounded pebbles to the centre and east, brighter orange clay with fewer pebbles along a strip to the west, and between the two a more mixed grey silt-clay with abundant pebbles and occasional silt patches. As well as the turbine area itself, a narrow strip was carried out southwards along the line of the proposed access track. Within the main area of Turbine 4, ploughed out ridge and furrow was observed running on a north-north-west to south-south-east orientation. The furrows were typically about 2m wide and spaced approximately 5m apart. In the narrow access track area the orientation changed and the furrows ran east-north-east to west-south-west.



Figure 3: Turbine 4 during excavation, looking north-west

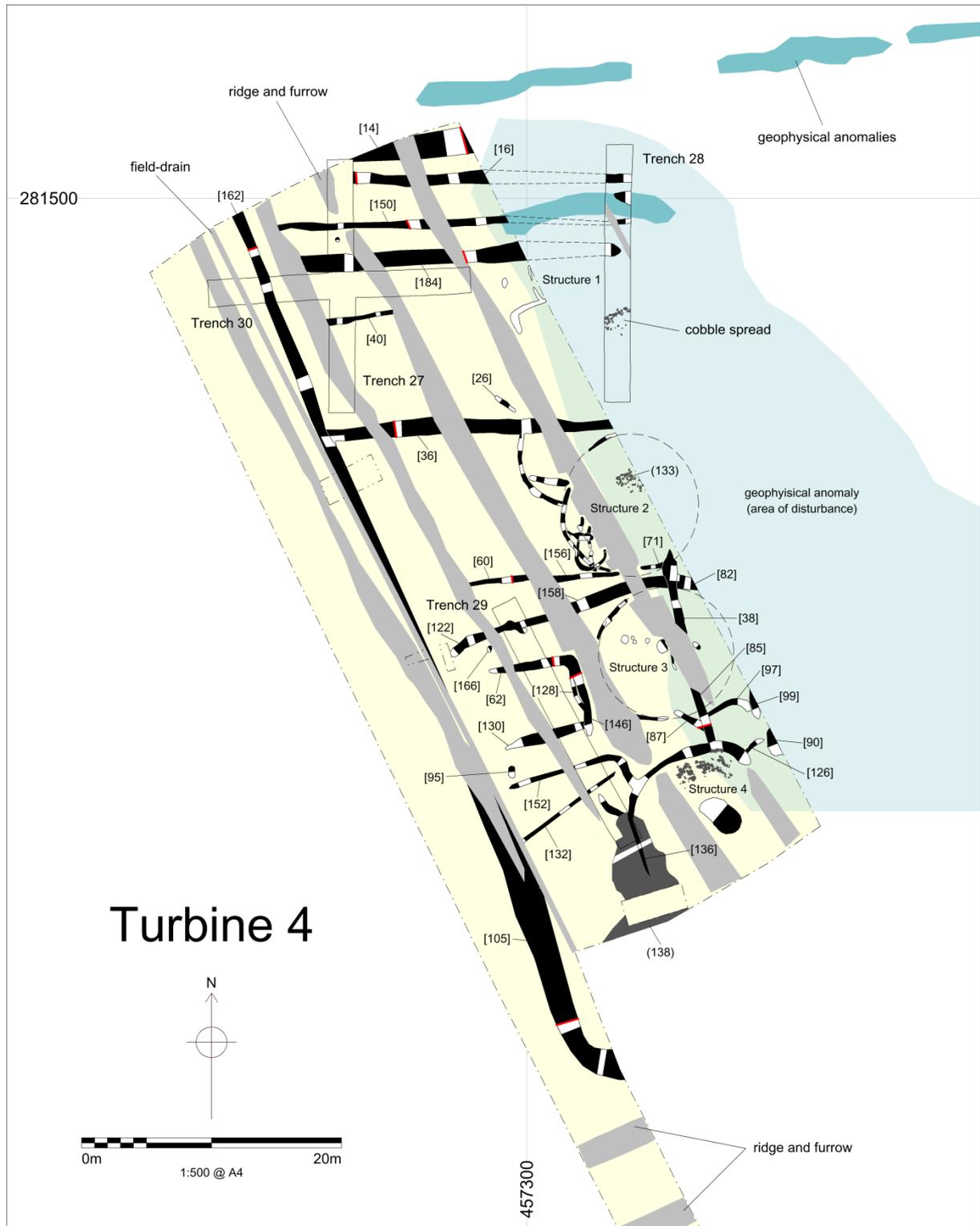


Figure 4: Plan of Turbine 4.

Northern Ditches

Ditches [14] [16] [36] [40] [60/71/156] [150] [184]

Gully [26]

The northern half of the area was dominated by a series of parallel ditches running on an east to west orientation (Figure 4). The larger ditches [14], [16], [36] and [184], of which [14] was the most substantial, had steep, tapered profiles and were between c.0.7m and c.1.4m wide with a maximum depth of c.0.6m. The smaller ditches [40], [60] and [150] had gentler concave profiles and were between c.0.3m and c.0.4m wide with a maximum depth of c.0.18m (Figure 5). All were filled with grey silty-clay with occasional charcoal flecks and fieldstones but very few finds, notably just abraded pottery predominately dating to the mid-late 1st century AD. Ditches [40], [60] and [184] were all seen in Trench 27 during the evaluation and ditches [16], [150] and [184]

all appear to correspond with features seen to the east in Trench 28. Ridge and furrow transected the ditches, which generally survived beneath the furrows. However, ditch [40] was only c.5m long and did not continue east or west beyond two furrows, and ditches [150] and [184] did not continue further west beyond the same furrow. Two of the northern ditches, [36] and [60], were truncated by southern enclosure ditches [38] and [162], providing the only stratigraphic relationships in the northern half of the area.

Very few features were found between the ditches, the exceptions being two possible buildings (see Structure One and Structure Two) immediately south of ditch [184] and between ditches [36] and [60], a possible post-hole between ditches [150] and [184] (seen in Trench 27), and a short gully [26] next to ditch [36]. The gully was an isolated feature which projected north-west away from the ditch for approximately 1.9m. It was c.0.3m wide with a maximum depth of 0.2m; had a steep profile with a flat base; and appear to butt-end at either end. Its fill, mottled orange-grey silty-clay, contained few inclusions and no finds.

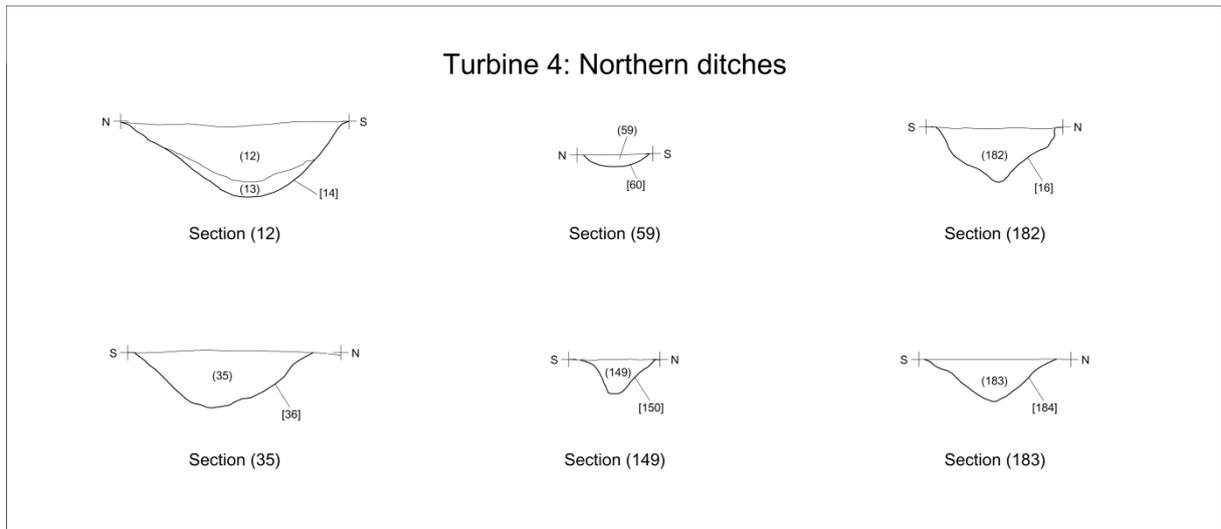


Figure 5: Sections across some of the northern ditches



Figure 6: Structure One, looking north

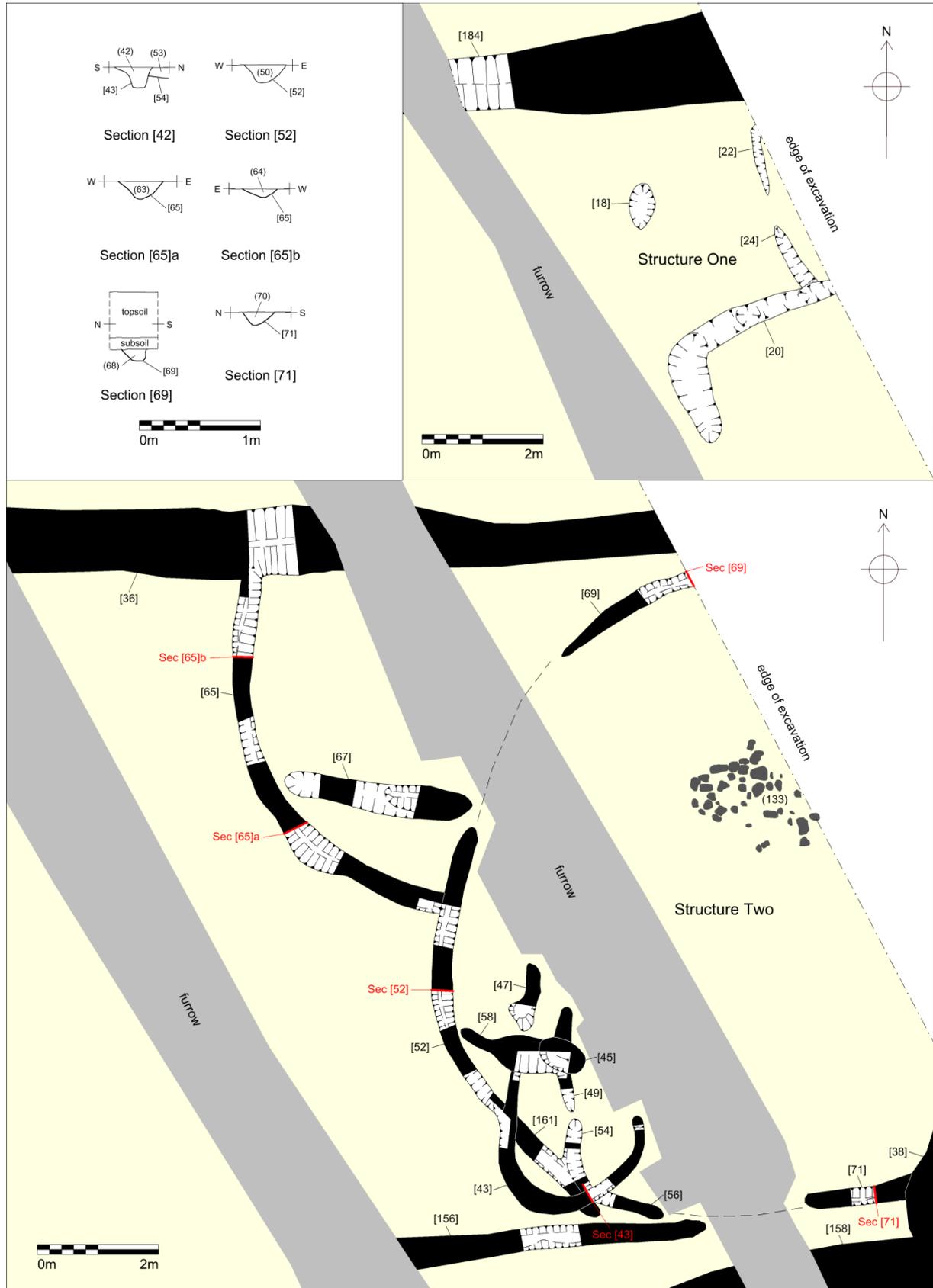


Figure 7: Plans of Structures One and Two, and sections across Structure Two

Structure One

Beam-slots [20] [22] [24]

Post-hole [18]

Structure One was situated on the eastern edge of Turbine 4, immediately south of ditch [184] (Figure 7). Its main feature was an L-shaped beam-slot [20] which projected east-south-east from the excavation edge for *c.*3m,

before turning south-south-west for *c.* 1.4m. The central half of the beam-slot was a shallow concave impression, less than 30mm deep, with a *c.* 0.38m diameter post-hole halfway along its length. At either end, the beam-slot was deeper, with a maximum depth of 0.24m, having a much steeper tapered profile to the east and a broader flat-bottomed profile to the west.

In line with the structure's western side, *c.* 2m north of beam-slot [20], was a post-hole [18]. This was ovoid with steep sides, measuring *c.* 0.65m by *c.* 0.4m with a maximum depth of *c.* 0.15m. Also to the north, on the edge of excavation, were two further beam-slots, [22] and [24]. The southernmost of the two, [24] projected off beam-slot [20], and like [20]'s eastern end was steeply tapered, measuring *c.* 0.75m by *c.* 0.2m with a maximum depth of *c.* 70mm. Beam-slot [22] was very similar, continuing the alignment *c.* 0.5m to the north for a further *c.* 1.2m before leaving the excavation. All four features were filled with very bland orange-grey silty-clay.

Little can be said about the structure's appearance but it is presumed to be the remains of a rectangular building. Evidence suggests it was of timber construction, utilising a combination of earth-fast posts and framing resting on timber base-plates. Its orientation subtly differs from that of the northern ditches and it may be of a different phase of activity. This could not be proved stratigraphically. Pottery recovered from beam-slot [20] suggests it had gone out of use by the late 1st century AD.



Figure 8: Structure Two, looking north

Structure Two

Gullies [43] [47] [49] [52/161] [54/56] [58] [65] [67] [69]

Post-hole [45]

Structure Two was also situated on the eastern side of Turbine 4, between ditches [36] and [60] (Figure 7). It comprised a series of intercutting curvilinear gullies. Unfortunately, large areas of the structure had been removed by a furrow running through it from north to south. Stratigraphically, the earliest feature was *c.* 7.5m long gully [52/161] which turned eastwards in a gentle curve before being truncated by the furrow. In profile, it had steep sides and a flat or concave base, *c.* 0.35m wide with a maximum depth of *c.* 0.12m. Its northern course may have continued to the east of the furrow as gully [69], a shallow linear feature which could be traced for *c.* 2.4m before leaving the excavation. Whilst its southern course may have continued as gully [71], although this could have also have been part of ditch [60]. Together, these features are presumed to be the remains of drip-gully surrounding the site of a roundhouse measuring approximately 11m in diameter.

Butting up against the north side of gully [52] was a second *c.* 6.8m long curvilinear gully [65], *c.* 0.3m wide with a maximum depth of 0.15m, which continued north until it was truncated by, or joined ditch [36] (the relationship remained unclear because of the dry ground conditions). Considering its relationship with ditch [36]

to the north and gully [52] to the south, this gully may be some attempt to drain water from the roundhouse into the ditch, although this goes against the natural slope of the ground. It may also be the remains of a drip-gully around a second roundhouse although this interpretation did not satisfactorily fit the evidence. Both gullies were filled with orange-grey silty-clay which contained charcoal flecks and small fragments of burnt clay, possibly daub. Pottery from both gullies dated between the mid 1st century and the early 2nd century making them broadly contemporary with the northern ditches.

The southern end of gully [52/161] was truncated by a short curving gully [54/56] which appeared to continue north into the structure's interior as gully [49]. These were narrow, shallow concave features, less than c.0.3m wide with maximum depths of less than c.50mm. Their fills were similar to those of the other gullies and again contained small quantities of burnt clay.

Subsequently, both gully [52/161] and gully [54/56] were truncated by a third U-shaped gully [43]. This extended south truncating gully [54] then curved east and north again, after truncating gullies [161] and [54/56], before disappearing into the furrow. In all, the gully circled a c.1.9m wide area. It had near vertical sides and a flat base, being c.0.28m wide with a maximum depth of c.0.18m and its fill, although similar to the other gullies, was notable in that it contained no burnt clay. On its western side, a short gully [47] possibly represented its continuation to the north until it too disappeared into the furrow.

Inside Structure Two, gullies [43] and [49] were both truncated by a short east to west orientated gully [58]. This was in turn truncated by post-hole [45]. A similar east to west orientated gully [67] was also present immediately north of Structure Two within the curved enclosure of gully [65]. Both gullies had shallow, concave profiles with a maximum depth of less than c.0.1m. Their fills were similar to the other features in Structure Two, with some charcoal and burnt clay. Gully [67] also contained a small quantity of burnt stone. The post-hole [45] was ovoid, with near vertical sides and a flattish base, c.0.86m by c.0.5m with a maximum depth of c.0.22m. In contrast to the other fills in Structure Two it contained very dark grey clay with a much higher percentage of charcoal.

On the eastern edge of the excavation, 'inside' Structure Two, was a spread of large cobbles (133) covering a c.2m by c.2m area. These were set in yellowish-grey clayey silt which rested on the natural substratum and although extensively damaged by modern ploughing, they are thought to be the remains of a stone surface inside Structure Two. Although a small quantity of mid 1st to 2nd century pottery was recovered from their surface, when excavated, a large quantity of late Iron Age pottery was found sealed beneath the stones. From its condition it did not appear to be residual and may indicate that Structure Two could date to the Conquest period or soon after.

Structure Three

Gullies [75] [80] [89]

Pits or post-holes [28] [30] [32] [34] [73] [76]

Demolition layer (11)

A second roundhouse, Structure 3 (Figure 9), is tentatively identified immediately south of Structure Two. This had been extensively damaged by multiple furrows but the fragments of two curving gullies [80] and [89] appeared to encircle an area approximately 10m in diameter. The northern gully [80] could be traced for c.3.75m from north-east to south-west before being truncated by furrows at either end. The southern gully [89] could be traced for c.2.34m from east to west, curving north before being truncated by a furrow. Its eastern end was not truncated and appeared to have a blunt terminus. Both gullies were c.0.3m with a maximum depth of c.0.15m. They had steep, tapered profiles and were filled with orange-grey silty-clay containing small quantities of charcoal and burnt clay.

Inside the structure was an east to west alignment of small pits or post-holes which approximately divided the interior in half. The largest of these [73], being c.0.9m in diameter and c.80mm deep, was situated almost centrally within the structure. It was filled with several large, unsorted fieldstones which may have been the ploughed out remains of post-packing or a post-pad. To the west were four severely truncated features filled with very dark grey charcoal-rich clay. These were arranged so that the two larger post-holes [32] and [34] flanked the two smaller ones [28] and [30] which were at right-angles to the alignment. The larger features were c.0.5m and c.0.34m in diameter respectively whilst the smaller features were both c.0.26m in diameter. None of the post-holes was deeper than c.40mm. Maintaining the alignment to the east of [73], but separated from the other features by a furrow, was a sixth post-hole [76]. This was oval with steep tapered sides, measuring c.0.8m by c.0.4m with a maximum depth of c.0.17m. Inside, a large fieldstone had been forced down into the base of the post-hole, possibly to provide a pad for a post to rest on. South of the post-alignment and orientated approximately at right-angles to it was a short gully [75]. This could be traced for c.1.1m, terminating at its southern end, but its northern extent was truncated by a furrow. It was shallow with tapered sides, just c.0.15m wide and c.40mm deep, and was filled with similar material to post-holes [28-34].

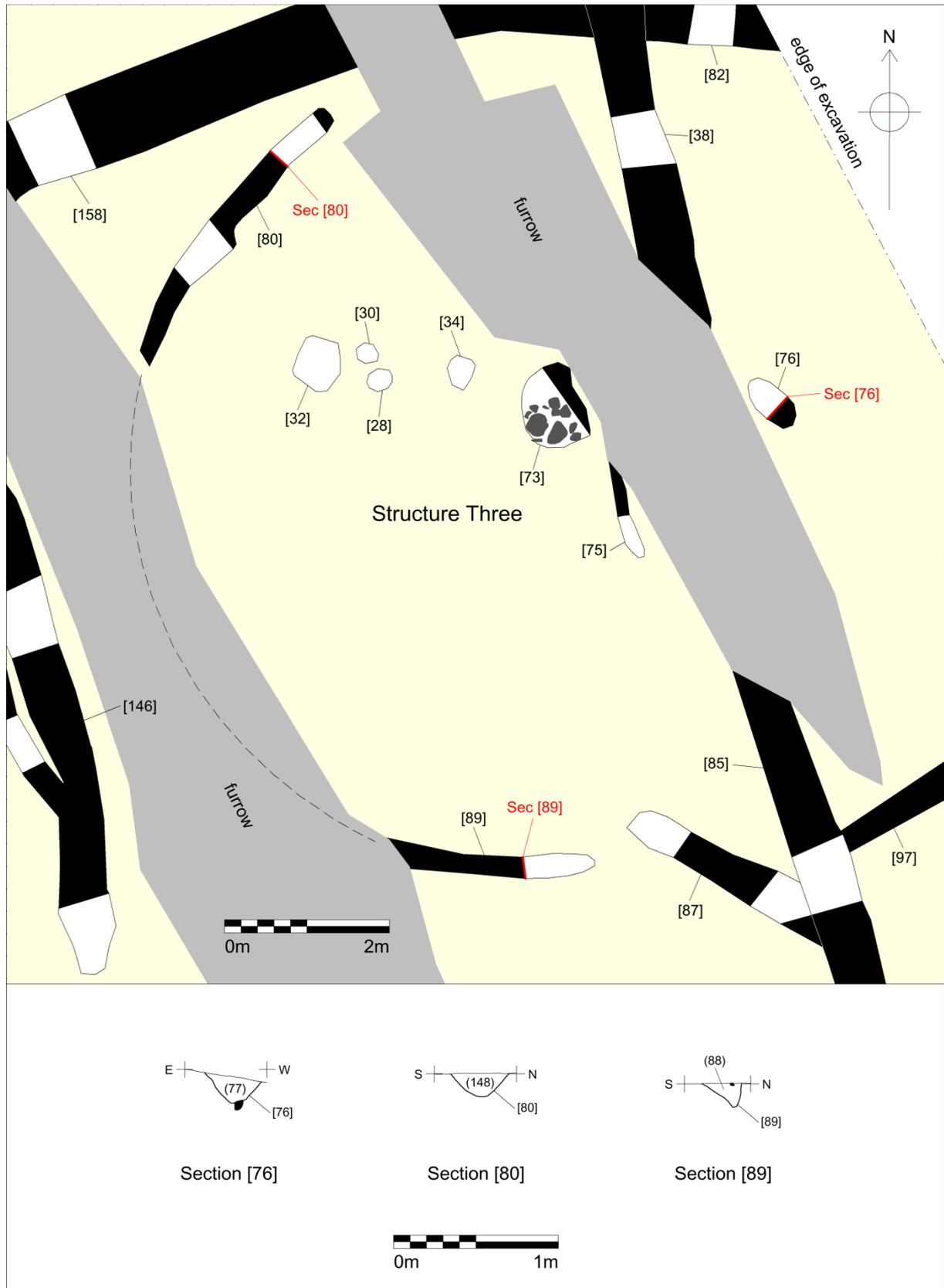


Figure 9: Plan of, and sections across, Structure 3

The features forming Structure Three were all sealed beneath an expansive layer of dark orange-grey clayey silt (11) which lay immediately beneath the subsoil. This was primarily removed during the machining but was noted to have covered all of Structure Three. It may have also been present to the west of the structure as (143) (see Southern Enclosures). Layer (11) contained significant quantities of charcoal and large fragments of burnt clay or daub which may signify a destruction horizon for the roundhouse. Pottery recovered from the material show this to have occurred during the early 2nd century AD.

Southern Enclosures

Ditches [38/85] [62] [82/122/158] [85] [105/162] [130] [146] [152]

Gullies [87] [97] [99] [126] [128] [132]

Pits or post-holes [90] [95] [166]

Soil layer (143)

The southern half of Turbine 4 was dominated by further ditches which appeared to outline a series of small rectangular spaces along the western side of a much larger enclosure (Figure 4). These ditches were on a different alignment to the northern ditches, being orientated more east-north-east to west-south-west rather than east to west. This suggests that they may have been part of a different phase of activity to the northern ditches. As enclosure ditch [162] appeared to truncate northern ditch [36] the southern enclosures are presumed to be later, an interpretation borne out by the ceramic dating (see ‘The Roman Pottery’ below).

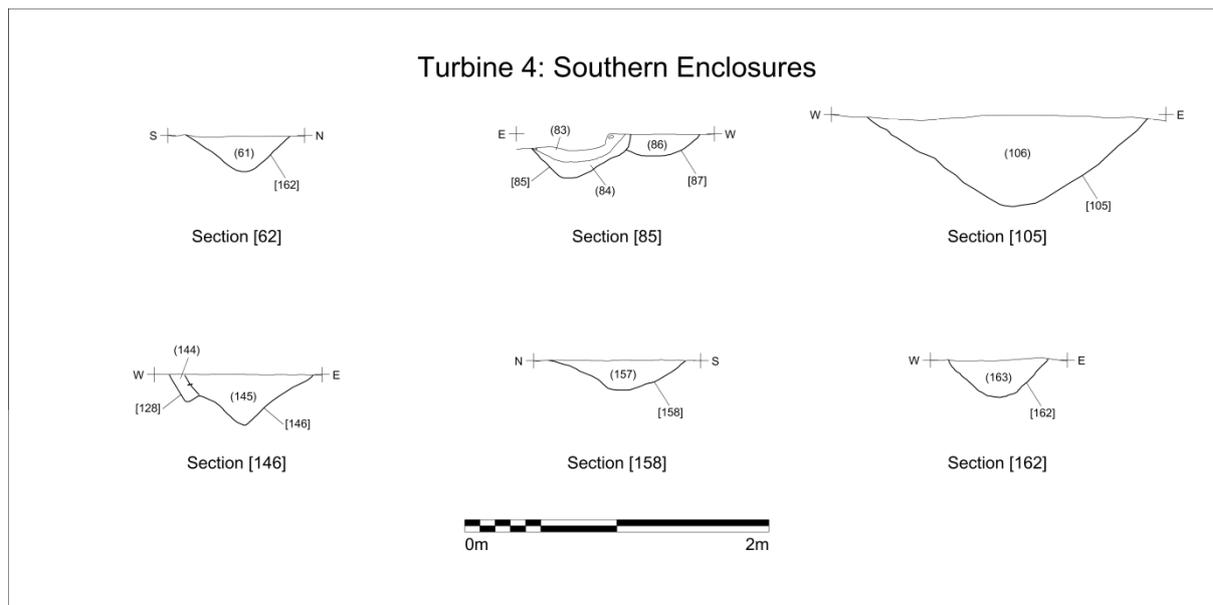


Figure 10: Sections across some of the southern enclosure ditches

The excavated area is clearly located over the south-western corner of a large enclosure demarcated by a ditch [105/162]. This ran north-north-west to south-south-east down the western side of the excavation before turning eastwards at its southern end. The ditch was relatively slight to the north (width *c.*0.7m with a maximum depth of *c.*0.25m) but became more substantial further south (Figure 10). As it turned east it was *c.*2 wide with a maximum depth of *c.*0.7m. The difference in depth and width between the northernmost excavated sections and the southernmost may reflect both the original construction and subsequent soil erosion. North is upslope, whereas the south-west corner is at the lowest part of the area. Therefore, one might assume that the ditch would need to be more substantial down slope where it would need to hold or drain more water. The topsoil and subsoil were also noticeably thinner up slope to the north so it could be postulated that some reduction of the original land surface had occurred. No features or archaeological deposits were seen ‘outside’ the enclosure to the west or to the south of this ditch.

Inside the enclosure, the space appears to have been divided by a series of ditches into smaller areas. To the north, ditch [82/122/158] extended east-north-east from the main enclosure ditch before curving around the north side of Structure Three and continuing east beyond the excavation. Its west end stopped *c.*1.5m short of the main enclosure ditch, but this may have been product of later erosion or truncation, ditch [122]’s western terminus being shallow and poorly defined. Further east, the ditch was flat-bottomed, *c.*0.9m wide with a maximum depth of *c.*0.25m. To the south, and to the west of Structure Three, a group of ditches, [62], [130] and [146], formed three sides of a small rectangular enclosure. The earliest of the three ditches was [130], a shallow *c.*6.3m long ditch filled with orange-grey silty-clay. Again, to the west it ended in a tapered butt-end *c.*2.5m short of the main enclosure ditch, whilst to the east it was truncated by the southern terminus of ditch [146]. Ditches [62] and [146] appeared to be contemporary, forming a right-angled feature with clearly defined termini to the south and west. The two ditches typically had steep, tapered profiles *c.*0.7m in width with a maximum depth of *c.*0.35m and were also filled with orange-grey silty-clay. Inside the small rectangular enclosure, ditch [146] truncated a narrow, tapered curvilinear gully [128], just *c.*0.3m wide with a maximum depth of *c.*0.1m.

Both ditch [146] and gully [128] were sealed beneath a *c.*0.1m thick layer of orange-grey clayey-silt (143) which was present beneath the subsoil. This contained charcoal, pebbles and larger cobbles and may have been the same material as (11) found over Structure Three to the east.

Approximately 2.5m to the south, a second right-angled ditch [152], exited into, or was truncated by, ditch [92/136] (see Structure Four – the relationship remained unclear because the extremely dry ground condition). This ran parallel with ditches [62] and [130], and like them, it stopped short of the enclosure ditch to the west. The ditch was c.0.65m wide with a maximum depth of c.0.19m, had concave sides and a flattish base, and was filled with dark greyish-brown silty-clay which was very similar to the fill of ditch [92/136].

To the south of ditch [152], on a north-east to south-west orientation which failed to match any other alignment on the site, was a narrow linear gully [132]. With a tapered profile only c.0.3m wide and with a maximum depth of c.0.12m, this was truncated to the west by a modern field drain but faded out to the east before reaching ditch [152]. Due to its very regular sides, it was originally assumed to be another field drain but no drain was found in its base. No dateable material was recovered from its fill and it may have a modern origin.

Between ditches [122] and [62], and ditches [130] and [152], were two small pits or isolated post-holes [166] and [95]. Post-hole [166] was a shallow circular feature c.0.46m in diameter with a maximum depth of c.0.12m; whilst [95] was ovoid with a steep, concave profile c.0.7m by c.0.5m with a maximum depth of c.0.2m. Both were filled with bland orange-grey silty-clay.

On the eastern side of Turbine 4, between Structures Three and Four, were a series of short, stone-filled gullies: [87], [97] and [99] (Figure 11). These were all between c.2.2m and c.3.7m long, and were typically c.0.4m wide with a maximum depth of c.0.25m. All three exhibited steep or near vertical sides with flat bottoms and distinct termini (where untruncated). Both [87] and [97] were truncated by ditch [85] but gully [97] did curve around to the south at its eastern end, apparently respecting gully [99]. It is possible all three were associated with Structure Three. At the very least they did appear to be structural, being filled with large cobble packed with orange-grey silty-clay which also contained charcoal and burnt daub.



Figure 11: Gullies [97] and [99], looking north

Further south, only partially visible on the edge of the excavation, was a shallow scoop [90], measuring c.2.1m by c.0.7m with a maximum depth of c.0.1m. It was filled with greyish-brown sandy-clay containing large cobbles, some fire-cracked stones, charcoal, vitrified hearth or furnace lining and iron hearth slag. However, this all appeared to be redeposited rather than in-situ evidence of industrial working. Between the scoop and Structure Four was a fourth small gully [126]. This terminated to the east just short of scoop [90] but was truncated to the west by ditch [92]. The gully was c.1.6m in length, c.0.4m wide with a maximum depth of c.0.1m and was filled with orange-grey clay which was very similar to the natural substratum into which it was cut. This made it very difficult to define considering the dry ground condition.

The only ditch with any substantive stratigraphic and ceramic dating was ditch [38/85], a single feature divided by a medieval furrow with [38] to the north and [85] to the south. This ditch was orientated north-north-west to south-south-east, parallel with the enclosure ditch to the west. To the north was a ragged, stone-filled terminus immediately north of ditch [82] while to the south it was truncated by ditch [92] (see Structure Four). Along its

length it also crossed Structure Three and truncated gullies [87] and [97]. The ditch, which had steep sloping sides and a concave base, was *c.*0.62m wide with a maximum depth of *c.*0.3m. It contained an initial sedimentation of bluish-grey clay before becoming filled with orange-grey silty-clay. The upper fill contained a substantial quantity of broken pottery, including an intact but crushed grey-war jar, all of which suggest it fell out of use during the mid 2nd century.



Figure 12: Structure Four, looking south-west

Structure Four

Ditch [92/136]

Cobble layers and silt spreads (102) (104) (138)

Pit [107]

Stratigraphically, the latest features in Turbine 4 (discounting the ridge and furrow) formed Structure 4 (Figure 12), situated at the southern end of the excavated area immediately south of Structure 3. It comprised a ditch [92/136] curving around the north and west side of a platform of substantial cobbles (102) (Figure 13). The ditch [92] began to the east of the structure, curving north-westerly then south-westerly, before continuing south as ditch [136]. Typically *c.*0.7m wide with a maximum depth of *c.*0.25m, ditch [92] had steep tapered sides and a flat or concave base. To the north and east it truncated ditch [85] and gully [126], and possibly ditch [152] (see Southern Enclosures). As it continued south as ditch [136] it became narrower and shallower (*c.*0.5m wide and just *c.*0.15m deep) before joining an expansive spread of orange-grey clayey-silt (138) which covered a larger area in the south-west corner of the enclosure. It is suggested that the ditch was intended to act as a drain around the cobble platform (102) taking water away to the south-west, explaining its position up slope of the cobbles but not down slope. Layer (138) is thought to be silt deposition overflowing from the ditch and settling in the lowest part of the site.

To the south of the ditch large, worn cobbles had been laid flat in brownish-grey silty-clay to make a stone surface or platform (102) which measured *c.*4.5m east to west by *c.*2.4m and was up to *c.*0.18m thick. The cobbles ranged in size from as little as *c.*0.1m in diameter up to *c.*0.4m. Along the ditch edge stones had been set close together to form a kerb, which included a piece of reused quern stone (see 'The Rotary Quern' below). The platform was truncated to the east and west by plough furrows and its true extent is unknown. However, it may have extended at least *c.*6m to the south because a second, similar area of cobbles (104) filled a shallow ovoid pit [107] south of the platform. The pit measured *c.*3.5m by *c.*1.9m with a maximum depth of *c.*0.14m, but its dubious sides and irregular base may indicate that it was simply the result of compression of softer ground beneath the weight of the cobbles rather than a deliberately dug feature.

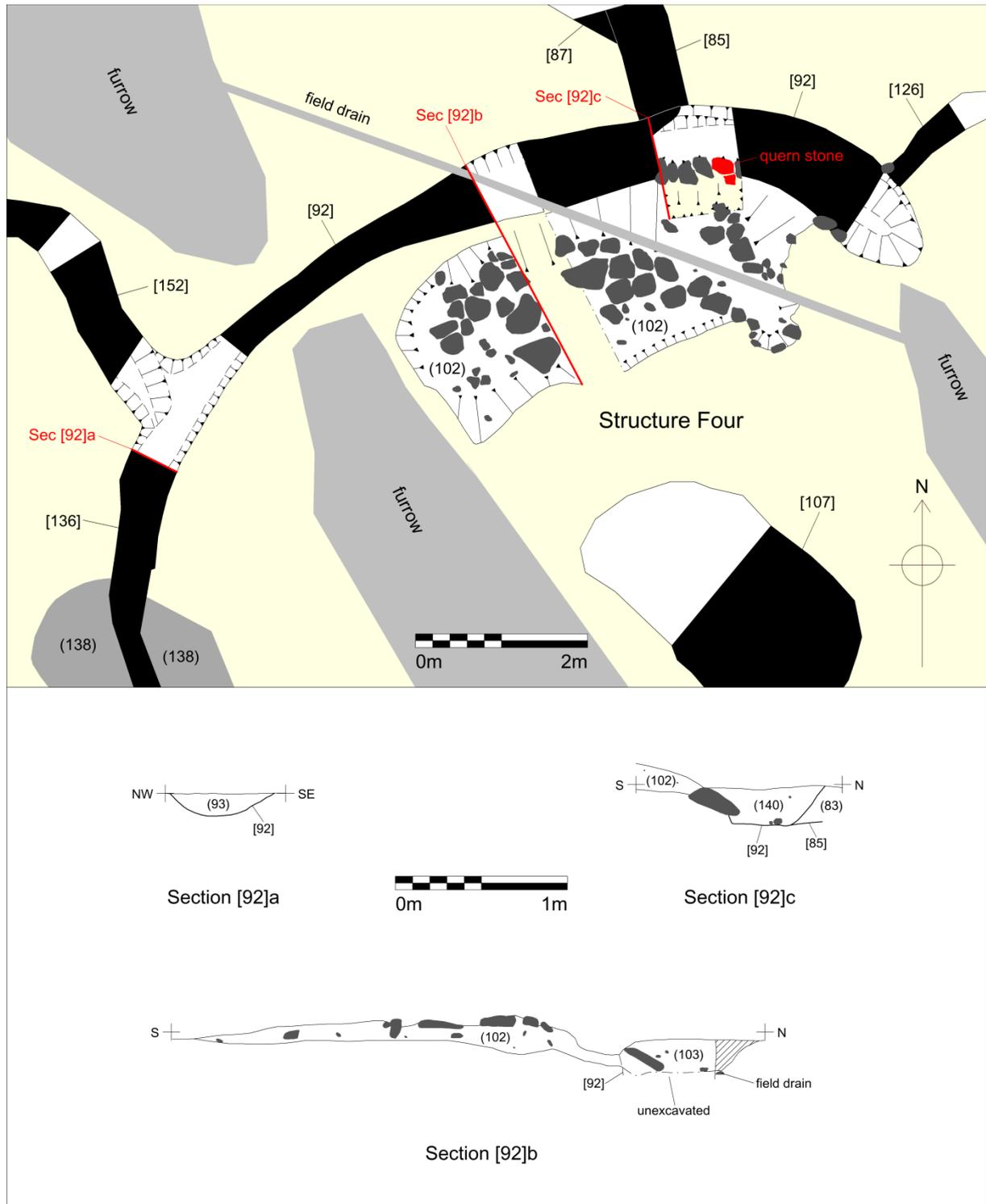


Figure 13: Plan of, and sections across, Structure Four

The stones did not appear to be derived from the site and appeared smooth as if worn by water, suggesting that they had been transported some distance up the hill to create the platform. These were not the only cobbled areas found during the excavation. A second, smaller area (133) was found in Structure Two and during the 2010 evaluation another spread of stones was found in Trench 28, c.30m north of (102). Two fragments from the upper half of a rotary quern had again been found within this spread (Hyam 2010, 12).

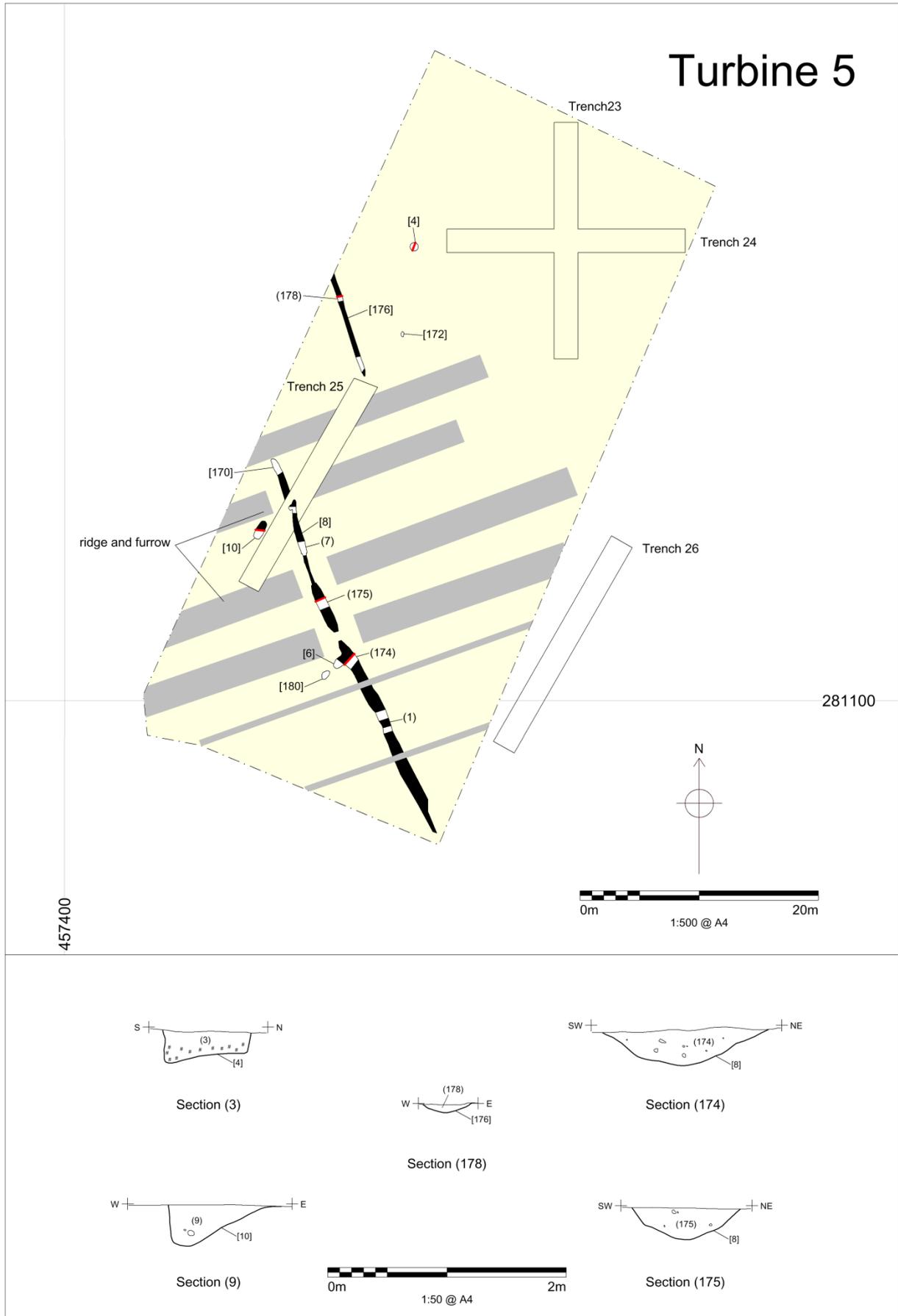


Figure 14: Plan of Turbine 5 and sections across selected features

Turbine 5

Jon Coward

Ditches and gullies [8] [170] [176]*Pits* [6] [10] [180]*Cremations* [4] [172]

The natural sub-strata in Turbine 5 was orange clay with small pebbles, together with an area of silty grey clay in the south-east corner and several discrete areas of decayed limestone fragments. Wide plough furrows ran south-west to north-east, and modern plough scars cutting into the natural substrata were widespread running along the same axis as the furrows. This turbine area appears to have been extensively plough-damaged; it was noticeable that no distinct subsoil was present, indicating that it had been incorporated into the topsoil by ploughing.

A linear feature encountered in Trench 25 of the evaluation was relocated (Figure 14); this linear ditch [08] ran south-east approximately three metres from the edge of the original trench baulk before being cut by a furrow. It was c. 0.60m in width by 0.25m in depth and the fill (07) was grey silty-clay with charcoal flecks and some fieldstone, but without finds. Further to the south-east, three further vague linear features - (1), (174) and (175) - were located on the same orientation, suspected to be further components of the same feature; at the request of the Planning Archaeologist the intervening furrows were machined out to reveal that ditch [08] ran across the entire area, albeit with some gaps where the furrow bases had truncated it. Although supposedly butt-ending in the evaluation trench at the junction with a probable post-hole, closer inspection after weathering and rain showed that the feature also continued north-west out of the evaluation trench as [170] and headed into the western baulk. Several slots were excavated through the ditch, showing a homogenous fill and profile, the best-preserved sections reaching a 0.30m depth. Two slots, (1) and (174) produced early Roman pottery.

Adjoining the edge of the original evaluation trench, south-west of ditch [8/170], was an ovoid pit [10], 1.60m by 0.80m by 0.35m maximum depth, the profile of which showing that the deepest part of the pit was to the west end with a distinct ramp upwards. This may represent a post which has been dug out, perhaps associated with the post-hole located in the evaluation trench. The clay-silt fill did not contain any finds. Two other small pits were also located south-west of ditch [8]. Pit [6] was a shallow concave feature, 0.8m by 0.71m by 0.17m maximum depth, which had eroded into the ditch along its north-east edge. It was filled with mottled silty-clay (5) with charcoal flecks, fire-cracked stones and a small quantity of late Iron Age pottery, but its poorly defined sides may indicate that it was little more than a tree bowl on the edge of the ditch. Immediately south-west of it a second indistinct oval pit [180], 0.9m by 0.58m by 0.24m maximum depth, was similarly filled but with no finds, and may also represent a tree bowl.

North, and parallel to ditch [08] was a very truncated gully [176]; this was very shallow at c. 0.40m width by 0.08m maximum depth, with a silty-clay fill and no finds. It survived only near the west baulk, and further machining failed to show it continuing south-east, but it is postulated that it originally would have been a pair with the southern linear feature, defining a field system or drove way. The line of this putative drove way heads north-north-west towards the settlement area in Turbine 4.



Figure 15: Cremation pit [4], looking north-west

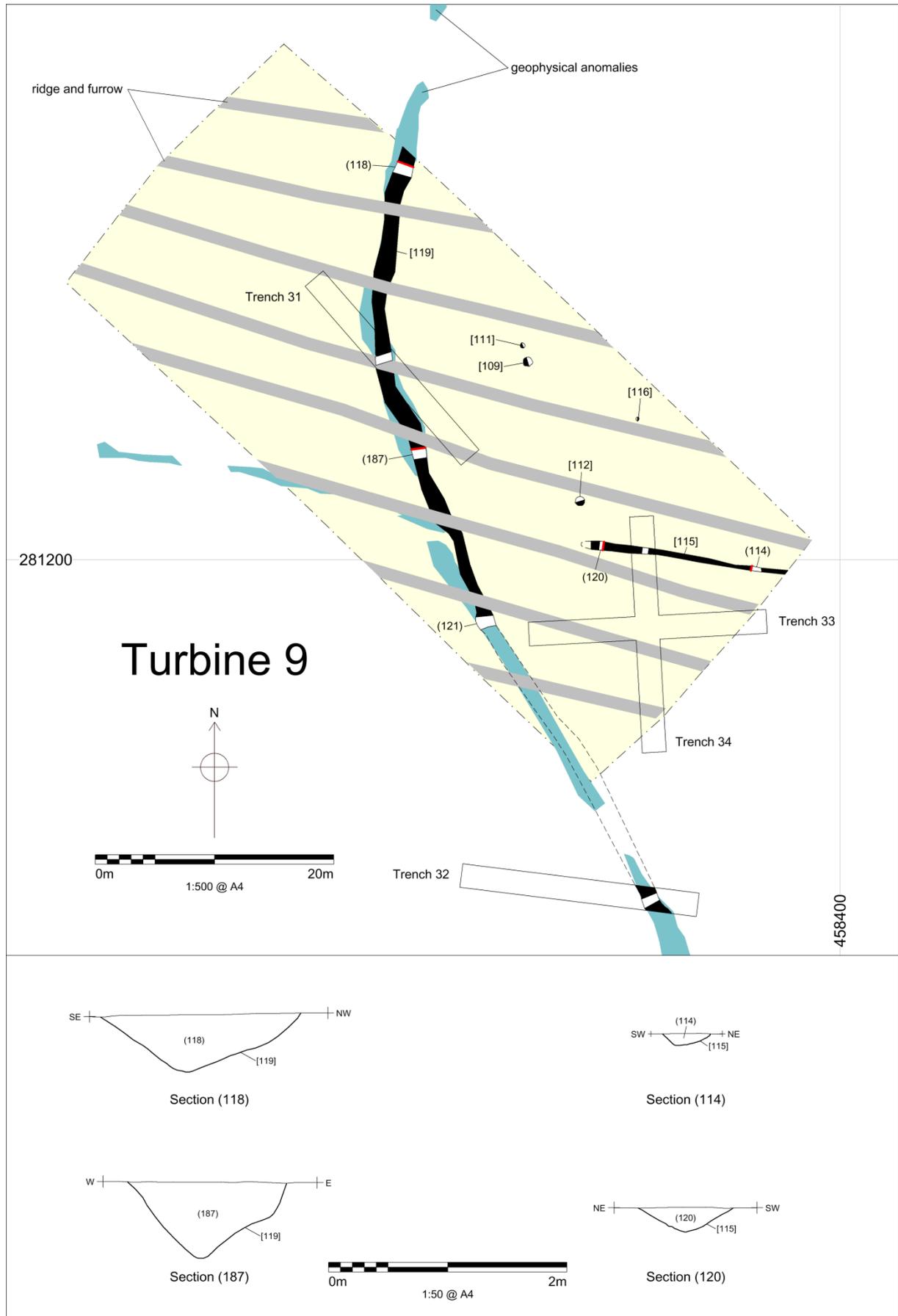


Figure 16: Plan of Turbine 9 and sections across selected features

Located near the truncated northern linear was a shallow pit [172] of 0.26m width by 0.10m depth containing a silty-clay fill (171) with a very little charcoal, but several pieces of cremated bone were recovered. This pit is presumed to be a heavily truncated cremation. Immediately to the north a much better-preserved pit [4] of 0.50m diameter by 0.35m depth, straight-sided and flat-bottomed, was filled with very dark charcoal-rich sandy clay, with abundant calcined bone fragments and fire-damaged stone fragments (3, 141) (Figure 15). The bone, although present throughout, was concentrated in the lower half of the fill (142). The differing context numbers of this essentially homogenous fill were assigned to differentiate samples. The base of the pit showed signs of scorching, although it is just as likely that leaching of the fill had stained the natural sub-strata.



Figure 17: Turbine 9 during excavation, looking north

Turbine 9

Jon Coward

Ditches and gullies [115] [119]

Pits [109] [111] [112] [116]

The natural sub-stratum in Turbine 9 was orangey clay with small pebbles, together with some smaller areas of silt at the eastern edge (Figure 17). The evaluation trenching had located a substantial ditch running north-north-west to south-south-east in Trench 31, and a small shallow gully running east to west in Trench 34, neither of which was dated (Hyam 2010). The area excavation re-located both features (Figure 16).

The ditch [119] was observed to run across the stripped excavation area from the north, heading south to south-south-east in a gentle bend; it became very indistinct near the south baulk but almost certainly continued. Apart from the slot excavated in the evaluation trench, three further slots were excavated through this ditch, one (118) near the north-east baulk, another (187) about 9m to the south of the evaluation slot, and (121) at the most southerly part of the feature where its line could be determined with any confidence on the surface. The three slots displayed a similar profile and fill, being about 1.3 - 1.6m in width and 0.50 - 0.60m in depth, the profile being a shallow V-shape and the fills greyish silty-clay. Slots (187) and (121) yielded some early Roman pottery, albeit only a few abraded sherds.

The small gully [115] was identified running from just west of the original evaluation trench, eastwards into the area excavation baulk. The eastern slot (114) slot showed it to be 0.40m in width and 0.10m in depth with a shallow concave profile; the western slot (120) was slightly more substantial at 0.80m in width and 0.20m in depth; neither produced any finds. The gully appeared to peter out at its west end rather than being butt-ended, although this may have been removed by the furrow running along its south edge.

In addition, four further pit features were located in the area excavation. Pit [112], c.4m north of the west end of gully [115], was sub-circular and shallow at c.1.00m by 0.10m; this had an unusual fill (113) consisting of a pale

silty clay with considerable quantities of ash and charcoal fragments and two sherds of possible late Iron Age pottery; it may be the remnants of a hearth base. Pit [116] was also sub-circular and shallow, being c.0.40m by 0.15m; it too had an unusual fill (117), containing a large number of sheep bones. Three of the vertebrae appeared articulated, indicating that the animal had not undergone the usual butchery processes. This may be a relatively modern burial in view of its different condition from other bone recovered (see Browning below).

Further north-west, on the eastern side of the excavated area, pit [109] was sub-circular, c. 0.70m width by 0.22m in depth, filled with orangey-grey clay. No finds were recovered. Adjacent was a slightly smaller pit [111] of c. 0.55m width by 0.17m depth. This had a very sterile pale sandy clay fill, anomalous to other features, and may be a natural glacially derived feature.



Figure 18: Turbine 11 during excavation, looking north-east

Turbine 11

Jon Coward

Turbine 11 displayed an unusually complex range of natural substrata. Most of the turbine area overlay orangey clay with small rounded pebbles (Figure 18), although much of it was darker and dirtier-looking grey clay with stone fragments. In addition areas of decayed limestone fragments were encountered and small areas of silt, often around the junction between the grey clay and limestone substrata. It would appear that the geology in the wider area as a whole may consist of laminar bands of these materials, as the limestone was present in patches in Turbine 5, and the grey clay was encountered in Turbine 4 beneath the cleaner orangey clay where deeper features had cut down into it.

Very faint plough furrows running east to west could be seen at the south-west end of the area but nowhere else. The evaluation trenching had located two small potential pit features, one of which contained two sherds of early Roman sandy ware; these however were less than 10cm deep, presumably indicating heavy plough truncation. They were re-located in the area excavation, but no other potential features were encountered, nor were any finds recovered from the stripping with the notable exception of a fine Neolithic flint chisel from the subsoil (see 'The Lithics' below).

Finds

The Lithics

Lynden Cooper

In total, six flints were recovered during the excavation (Table 1). The débitage is later prehistoric, all from local derived flint from superficial deposits.

Table 1: The Lithics

Context	Classification
118	2ry flake
169	2ry flake
U/S TB4	2ry flake
U/S TB4	3ry flake
U/S TB5	3ry flake
U/S TB11	Chisel

The flint chisel from Turbine 11 (Figure 19: The flint chisel from Turbine 11) is a near-complete, partially ground example. It is bifacially worked and lenticular in section. Its section thickens away from the blade, presumably to strengthen the hafted butt. There was an original tang to the chisel but this has been partly re-worked. The blade is bevelled on both sides and was carefully crafted with pressure retouch, evident from long sub-parallel shallow, invasive flaking. The retouch is perpendicular to both lateral sides and the blade edge. One corner shows extreme wear but the other corner and blade edge appear to have been sharpened through pressure retouch. Ground chisels are often found in Neolithic contexts with Late Neolithic examples being more common (Butler 2005, 145).



Figure 19: The flint chisel from Turbine 11

The Roman Pottery

Nicholas J. Cooper

Introduction

A total of 1313 sherds of Roman and Late Iron Age pottery weighing 8685g was recovered from stratified contexts across the site as a whole, primarily from Turbine 4, but with small amounts from Turbines 5 and 9 (Turbine 11 also produced a few sherds at evaluation). The stratified material was classified using the Leicestershire Roman pottery form and fabric series (Pollard 1994, 110-114) and quantified by sherd count and weight. The Late Iron Age pottery was recorded with reference to the County's prehistoric fabric series (Marsden 2011, 62). The full record is held in archive on an MS Excel spreadsheet and summary tables are presented below (Tables 2-5). Additionally, a further 1800g of pottery was recovered from unstratified deposits; these were not recorded in detail but were scanned to confirm that they reflected the same character and date range as the stratified material.

The pottery has been divided into sub-assemblages according to the main structural elements of the site and are described and discussed in the same order. A full record of pottery in Turbine 4 is provided in Appendix Two.

Overview

This overview is intended to draw out the important elements of the detailed analysis which follows in order to reconstruct a likely chronology for the site. The assemblage as a whole spans the Late Iron Age to the middle or possibly later decades of the 2nd century. Division of the material into sub-assemblages has allowed some refinement of absolute chronology that confirms the relative chronology, based on the stratigraphy, which detected a progression in date from the Northern Ditches moving southwards across the circular structures to the Southern Enclosure. The assemblages from the Northern Ditches, Structure 1 and Structure 2 are very conservative, comprised entirely of jars in local wares and including Iron Age vessels (from Structure 2 or beneath it). The complete lack of samian or any other fine or specialist wares, coupled with the preponderance of grey wares, would tend to indicate that occupation was confined to the later decades of the 1st century AD. The only caveat to this might be the small assemblage size that would suggest that samian should only appear (in terms of probability) in groups of over 100 sherds, in which case the dating perhaps extends into the early or middle 2nd but certainly not later, as the presence of the commoner later Central Gaulish samian from Lezoux, as well as other, British, fine and specialist wares, might be expected after this date, even in small groups. The fact that when samian ware does appear, in the groups from the Southern Enclosure and Structure 3 and 4, it is relatively early in date (for a rural site) i.e. later 1st and early second century from Southern Gaul and Les Martres, is both a surprise and a likely confirmation that the Northern Ditches and Structure 2 do not extend into the 2nd century. Indeed, the lack of Lezoux samian from the assemblage as a whole is the strongest argument for the ending of occupation of the Southern Enclosure and Structures 3 and 4 by the middle of the 2nd century. Only two diagnostic sherds suggest the possibility that it extends into the second half of the 2nd century and neither of these is securely stratified.

Turbine 4

The Northern ditches

A total of 69 sherds (548g) was recovered from the series of parallel E-W ditch cuts [14], [16], [36], and [184] and from two of the smaller ditches [60] and [150], as well as gully features [26], [71] and [156]. The analysis by fabric is summarised below (Table 2)

Table 2: Quantified record of Roman pottery from the Northern Ditches by fabric

Fabric	Sherds	Weight	% sherds
White ware	1	2	1
Fine Grey	2	17	3
Coarse Grey	44	305	64
Sandy ware	11	102	16
Shelly ware	3	22	4
Grog temp	8	100	11
Total	69	548	100

The assemblage as a whole comprises locally-produced necked and shouldered jar forms in a variety of sandy (SW3), shelly (CG1A) and grog-tempered (GT4) fabrics, prevalent from the mid-1st century, alongside wheel-made fine and coarse grey wares (GW3, 5, 6 and 9), becoming commoner as the second half of the first century progresses. A single sherd of white ware (WW2) from [184], which could derive from a flagon, is the only other vessel type in evidence. The lack of any residual Iron Age pottery, suggests no preceding occupation of that date

in this part of the site. Whilst being indicative of a basic rural site assemblage of early Roman date, the lack of diagnostic fine wares such as samian, does not allow dating more closely than the middle of the 1st century to the early-middle 2nd century. The preponderance of grey wares would suggest a date towards the later decades of the 1st century at the earliest with some jar forms, for example from [36], indicating that it perhaps goes as late as the mid-2nd. Although a small assemblage, the complete lack of samian tableware or any regionally-produced fine or specialist wares would, however, still indicate an early to middle second century date at the latest and that a date within the late 1st century is most likely.

Structure 1

Only three coarse grey ware body sherds (GW5) were recovered from beam-slot (19) [20] indicating a later 1st-century date for the infilling of the structural elements.

Structure 2

A total of 63 sherds (279g) was recovered from gullies [43], [52], [58], [65] [67] and [166]. An additional 52 sherds (340g) of Late Iron Age pottery from a single vessel was recovered from (186) which was sealed by cobbled surface (133) found inside the structure. This material has been catalogued alongside the other material relating to the southern enclosure (below). The analysis of the assemblage by fabric is presented below (Table 3).

Table 3: Quantified record of Roman pottery from Structure 2

Fabric	Sherds	Weight	% sherds
Iron Age	15	40	24
Coarse Grey	9	116	14
Sandy ware	11	28	17
Shelly ware	20	41	32
Grog temp	8	54	13
Total	63	279	100

This small assemblage comprises the same conservative elements as that from the Northern Ditches of which it forms the most southerly building element, namely transitional sandy, shelly and grog-tempered ware jars with some coarse grey ware jars. The group also contains an Iron Age jar in the scored ware tradition (in shell-tempered fabric S2) (Elsdon 1992a), from gully [67] with an upright rim, the top of which was decorated with oblique slashes. Joining sherds of the vessel came from both fills (66) and (154) and were accompanied by thin-bodied transitional sandy ware sherds. Evidence from other sites in south Leicestershire such as Enderby (Elsdon 1992b) suggest that scored ware is in use up until the Roman Conquest but not beyond, whilst in the Nene Valley in Northamptonshire it probably does not continue into the first century AD (Elsdon 1992a). A second Late Iron Age jar in the scored ware tradition, with an upright rim and slashed decoration below the flattened upper surface, was found in (186) and sealed by the cobbled surface (133) inside Structure 2. The likelihood here, if the pottery is not residual (and its condition suggests it is not), is that gully [67] and (186) *could* date to the Conquest period or soon after or that at least there was pre-structure activity of that date, which was not evident from the Northern Ditches. Otherwise, the jar forms in shell-tempered ware (CG1A), from [58] and [65] are channel-rimmed which would be typical of a mid-late 1st century date. Again, as with the Northern Ditches, the complete lack of any fine or specialist wares, local or imported, would tend to indicate that the dating does not extend far, if at all, into the 2nd century and that the structure is broadly contemporary with the northern ditch system.

Structure 3

A total of 116 sherds (815g) was recovered, primarily from demolition layer (11), but also from the fills of pit [73], post-hole [76] and gullies [80] and [89]. The analysis by fabric is summarised below (Table 4).

Table 4: Quantified record of Roman pottery from Structure 3

Fabric	Sherds	Weight	% sherds
Samian ware	1	7	<1
White ware	29	160	25
Oxidised	1	2	<1
Fine Grey	3	25	3
Coarse Grey	72	546	62
Sandy ware	4	23	3
Shelly ware	3	10	3

Fabric	Sherds	Weight	% sherds
Grog temp	3	42	3
Total	116	815	100

Whilst the assemblage shares many of the conservative attributes found in the groups to the north with shouldered and necked jar with channelled and beaded rims respectively, in the expected range of expected fabrics, there are new elements comprising the abraded rim of a South Gaulish samian dish Form 18/31 dating *c.* 90-110, the body of a white ware flagon probably dating to the later 1st or early 2nd century from (11), and a sherd of oxidised ware from (73). The group can therefore be more firmly placed within the early decades of the 2nd century, or at least the proposed 'demolition layer' within the structure, but is not otherwise that different in character from the Northern Ditches group, in terms of the proportions of the major wares.

The Southern Enclosure

A total of 916 sherds (5474g) was recovered from ditches [38], [62], [85], [105], [146] and [152], gullies [87], [97], [99] and [126], and soil layer (143). The assemblage is summarised by fabric below (Table 5) and also includes the Iron Age material sealed beneath cobbled surface (133) found within Structure 2 and discussed there.

Table 5: Quantified record of Roman pottery from the Southern Enclosure

Fabric	Sherds	Weight	% sherds
Samian ware	5	29	<1
M-H Mortaria	3	370	<1
BB1	6	55	<1
White ware	18	110	2
Oxidised	100	310	11
Fine Grey	33	173	4
Coarse Grey	638	3541	70
Sandy ware	19	118	2
Shelly ware	30	324	3
Grog temp	10	93	1
Iron Age	54	351	6
Total	916	5474	100

This is by far largest group from the site as a whole and contains a wider range of wares which allow it to be dated more precisely. Whilst three quarters of the assemblage are grey wares, and there are small amounts of Iron Age and mid-late 1st century wares which make up another 10%, the remainder comprises fine, specialist and traded wares which suggest that the group dates towards the middle of the 2nd century with a small possibility of extending into the second half of the century. The majority of the pottery derives from the fills of ditch cuts [38] and [85] which form a single length of ditch cutting across Structure 3, and appears, itself, to be cut by Structure 4, to the south. The pottery from this ditch comprises a coherent group of grey ware jars, one of which, from fill (84) was complete (Figure 20: A crushed, but complete grey ware jar found in ditch (84) [85]) with another of the same form from fill (83). The form is short-necked with a slightly down curving bead rim and is identical to jars produced in shell-tempered ware from Bourne-Greetham on the Rutland-Lincolnshire border which have been found in deposits at Empingham, Rutland dating to the AD150s (Cooper 2000, 75-81 fig.38.49), although the form was probably current earlier. The other necked bead and shouldered jars in the group would also support an early to middle 2nd century date. Only a single, very abraded samian vessel, an early South Gaulish Form 37 dating *c.* 70-100, came from fill (101) [38], but the occurrence of an oxidised ware (OW2) bag-shaped beaker with a developed cornice rim also from [38] would tend to confirm a mid-2nd century date for the infilling of the ditch. The main north-south ditch [105], which defines the western edge of the settlement, only produced grey ware necked jar sherds, not closely datable within the late 1st to mid-2nd century. Pottery from the ditch forming an open-sided rectangle [62] was of similar date. The other securely stratified diagnostic vessel was a chamfered flat rim bowl in BB1 from gully [99] (Holbrook and Bidwell 1991, 108, fig.30.38.1/2) which will not have reached the site before the 120s and is more likely to date from the middle-2nd century. The last diagnostic vessel is less securely stratified, coming from (139), the insecure surface of silt spread (138) at the southern end of the enclosure. The vessel is a mortarium from Mancetter-Hartshill over the Warwickshire border, with down-curving flange and red and black grits and dates *c.*150-200. This is the only

sherd which might point to a date in the second half of the 2nd century. The gully of Structure 4 appears to cut through this silt spread.



Figure 20: A crushed, but complete grey ware jar found in ditch (84) [85]

Structure 4

A total of 103 sherds (1419g) was recovered primarily from the fills (93), (103), (134) and (140) of curvilinear ditch [92], but also from cobbled surface (102) and cobble-filled pit [107]. The assemblage analysis is summarised below (Table 5).

Table 6: Quantified record of Roman pottery from Structure 4

Fabric	Sherds	Weight	% sherds
Samian ware	5	39	5
Nene Valley CC	1	2	1
White ware	2	7	2
Oxidised	4	19	4
Fine Grey	1	5	1
Coarse Grey	59	535	58
Sandy ware	10	92	9
Shelly ware	1	2	1
Grog temp	20	718	19
Total	103	1419	100

In common with the other groups this is dominated by jars in grey ware alongside those in sandy, shelly and grog-tempered fabrics totalling 88% by sherd count and broadly dating between the middle-later 1st and the middle 2nd century. However, the occurrence of diagnostic fine wares from [92] demonstrates that the structure was going out of use towards the middle of the 2nd century. Two Central Gaulish samian vessels, of Form 18/31 and probably Form 37, from Les Martres-de-Veyre, came from fills (134) and (92) dating to c.100-120. Fill (134) also produced a very abraded sherd, probably of Lower Nene Valley colour-coated ware, which should date after c.AD 150, whilst cobble spread (102) produced an abraded, but delicate, Central Gaulish samian cup Form 33, probably from Les Martres, and therefore dating c.100-120. The extremely abraded nature of the colour-coated sherd presents the possibility that it arrived later at the top of the deposit and does not provide a

genuine *tpq* for the fill. Pit or depression fill (104) [107] produced an abraded South Gaulish samian dish Form 18/31, dating *c.*90-110 and quite possibly from the same vessel as the demolition deposit (11) in Structure 3.

Turbine 5

Just 11 sherds (49g) were recovered from three contexts and the full record is presented below (Table 7).

Table 7: Iron Age and Roman pottery from Turbine 5

Area	Con.	Cut	Fabric	Form	Type	Rim	Sherds	Weight	Diam	EVEs	Date
Gully	174	8	SW3	misc	body		1	3			M-L1st+
Pit	1	2	SW3	misc	body		1	1			M-L1st
Tree throw	5	6	Q1	jar	barrel	plain	9	45	200	0.05	Late Iron Age

The group comprised and quartz sand-tempered (Fabric Q1) Late Iron Age jar in the scored ware tradition and two sherds of transitional sandy ware (SW3), dating from the middle to late 1st century, from the other two contexts. The pottery is not closely datable but would suggest that occupation could have spanned the 1st century AD, or may well have been confined to the decades around the Conquest.

Turbine 9

A total of 32 sherds (96g) was recovered from three contexts and the full record is presented below (Table 8).

Table 8: Iron Age and Roman pottery from Turbine 9

Area	Con.	Cut	Fabric	Form	Type	Sherds	Weight	Date	Notes
Ditch	121	119	CG1A	jar	body	27	70	M1st-2nd	abraded
Ditch	187	119	SW3	misc	body	1	5	M-L1st	abraded
Ash pit	113	112	Q1?	jar	body	4	21	Late Iron Age?	

This is a similar group to that from Turbine 5 and the northern part of Turbine 4, comprising Late Iron Age and Roman transitional sandy and shell-tempered sherds, probably dating within the 1st century AD.

The Metalwork

Nicholas J. Cooper

X.A99.2011 (106) [105]: A bent and incomplete square-sectioned shaft of a Roman nail. Length 45mm.

A relatively unusual find on a site of early Roman date where the roundhouse structures would not have used nails in their construction. Recovered from the enclosure ditch surrounding the southern enclosures.

The Rotary Quern

John Thomas

X.A99.2011 (102): This is a large fragment from an upper section of Roman flat-topped rotary quern, now broken into two pieces, made of quartzitic sandstone (Figure 21).

The fragment is evidently from a fairly substantial quern with an estimated diameter of *c.*460mm. Just under a quarter of the central hopper survives, which also appears relatively large with a diameter of *c.*180mm.

The quern must originally have been circular, but one side has suffered damage at some point, resulting in a rather more irregular shape. Evidence on the sides, hopper hole and grinding surface indicate that the quern was originally shaped by pecking – this is particularly obvious around the outer edge.

The working surface is smooth from use and is slightly concave.

This quern was found as part of a group of stones set along the edge of Ditch [136], which formed a kerb in association with the cobble platform (102) of Structure 4. The location suggests practical re-use of a broken quern fragment and echoes other broken quern fragments (Sf 1 and 2) found in a similar context during the evaluation of this site (Thomas 2010, 39).

The general dating for the deposit from which the quern was recovered is between mid-1st – mid 2nd century AD and this is supported by the shape and form of the fragment which correspond to Curwen's classification type for early Romano-British rotary querns (1937, 144).



Figure 21: The fragment of rotary quern found re-used in Structure Four

The Fired Clay (Burnt Daub)

Nicholas J. Cooper

A total of 59 amorphous fragments (556g) of fired clay was recovered from 14 contexts across Area 4 with a small amount unstratified. The full quantified analysis of the material is presented below (Table 9)

Table 9: *Quantified analysis of the fired clay*

Area 4	Context	Cut	Frag.	Weight
Structure 3	11		5	220
Structure 1	19	20	3	5
Structure 1	21	22	4	10
N Ditches	25	26	2	20
South Encl.	37	38	8	15
Structure 2	51	52	3	15
South Encl.	61	62	2	15
Structure 2	66	67	8	20
South Encl.	101	38	2	105
South Encl.	124		4	80
Structure 4	134	92	2	9
Structure 4	140	92	1	5
Structure 3	148	80	6	6
Structure 2	154	67	1	5
	US		8	26
Total			59	556

The assemblage is extremely fragmentary and only the larger fragment from the demolition deposit (11) in Structure 3 bears a probable wattle impression, whilst that from (101) has a finger flattened surface. The poorly-mixed nature of the sandy clay and the amorphous form of the pieces indicates that this material represents burnt daub deriving from the superstructures of buildings 1-4.

The Industrial Residues*Heidi Addison*

A total of 1,582g of material relating to industrial activity was recovered from seven contexts, all in the area of Turbine 4, with a small amount of unstratified hearth slag from Turbine 5. The material has been quantified by weight and described below (Table 10).

Table 10: The Industrial residues

Context	Cut	Weight (g)	Description
11		2	Fuel ash.
91	90	63	Ceramic. Vitrified hearth/furnace lining. Little or no slag attached; ceramic colouring partially intact.
		64	Fe hearth/furnace bottom (partial)? Weight and density.
		6	Fe hearth slag.
98	99	128	Fe hearth slag. Heavy and dense. Fayalite?
134	92	198	Fe hearth bottom. Dense/heavy. Plano-convex. Smithing
		21	As above
140	92	2	Fuel ash.
144	128	276	Fuel ash.
191	36	342	Iron ore.
U/S TB4		227	Iron ore.
		213	Natural. Ironstone with red striations.
U/S TB5		40	Fe hearth slag. Weight and density. Fayalite?

The residues comprise 457g of iron hearth slag including part of a hearth bottom from [92] and another fragment of a hearth or furnace bottom from [90], which was found alongside vitrified clay hearth lining (63g). Fuel ash totalling 280g was recovered from (11), [92] and [128]. The evidence points to iron smithing activity rather than smelting, as there is a lack of tap slag, and it seems to concentrate in the area of the southern enclosure, re-deposited in the fills of features relating to Structure 3 (demolition layer 11 and [99]), Structure 4 ([92] and [90]), and the open rectangular structure (gully [128]). The possibility of smelting is suggested by the presence of natural iron stone (782g), which may have been selected out for its weight and noticeably high iron content, and which was found stratified in [36], one of the northern ditches, and unstratified in the area of Turbine 4.

Osteological Analysis of Cremated Human Remains*Simon Chapman****Introduction and Methods***

The cremated human remains from Turbine 5 were examined by the author, at Leicester University, in January 2012. The suspected human remains were excavated from a single discrete feature [4] from the footprint of Turbine 5. This was a circular pit measuring 0.5m diameter and 0.35m depth, with straight sides, a flat base, and charcoal rich fill and on this basis it was suspected to be a cremation pit.

A second suspected cremation pit [172] was also found in this area but appeared to be so truncated that no bone fragments were of sufficient size for analysis although cremated bone fragments were noted during the excavation of this feature.

No pottery fragments were found within either of these cremation pits, so the assumption is that these represented un-urned cremation burials. Both of the suspected cremation pits had suffered from some degree of post-depositional disturbance/truncation and it seemed unlikely that any of the deposits were preserved in their entirety for subsequent specialist analysis.

A total of **821g** of cremated bone was available to the author for analysis from cremation pit [4]. Combining the remains recovered from contexts (3), (141) and (142) (see Table 11).

Table 11: Suspected cremation burial features from Swinford Wind farm

Cut	Context	Context Type	Notes
[4]	(3)	Initial half section.	Produced 91g of calcined bone.
-	(141)	Upper layer of remaining section.	Produced 59g of calcined bone.
-	(142)	Lower layer of remaining section.	Produced 671g of calcined bone
[172]	(171)	Fill of truncated pit.	No bone fragments recovered, minimal charcoal.

Recovery

Cremation pit [4] was first excavated as a cross section, the removed half being sampled as a single context (3). The other half of the pit was then removed and sampled in two spits, the upper layer (141) and the lower layer (142). The sampled fill was retained for later sorting and flotation. These were later processed by bulk water flotation and the flots were collected on to a 500µm mesh sieve. Residues were collected on a 1mm mesh. Residues above 5mm were sorted by eye for the retrieval of bone etc. while residues of 1mm and 2mm fraction were also retained for examination by the specialist.

Charcoal

Charcoal was noted in each context during excavation and in abundance during the flotation process and survived in quantity in all of the unsorted fractions (see Radini below).

Osteological Analysis

The Osteological analysis of the cremated bone followed the standard guidelines for analysis and reporting as published by the Institute of Field Archaeologists (Brickley and McKinley 2004) and (McKinley and Roberts 1993).

Once sieved, cleaned and dry the cremated bone from each context was sieved through progressive wire meshes (10mm and 5mm) as a means by which to separate the bone fragments according to constituent sizes. The fragments were then viewed, piece by piece, through a desk magnifier. The fragmented bones from each context were then classified according to anatomical type. In most cases the classificatory terms used were general ones: cranial, upper limb, lower limb, and axial, since the small size of the fragments made more specific identification virtually impossible. In some instances, however, specific bones could be identified according to unique morphology (Spence 1967), such bones were further examined in an effort to determine age and sex characteristics using the methods described by Bass (1987), Wells (1960) and McKinley (1989). Each cremation was then recorded in terms of weight (in grams), of its percentage composition and according to visual characteristics. Some aspects of standard analysis were, however, made redundant either by incompleteness of the skeleton, or due to bone fragmentation. Further methodologies and sources will be detailed, where relevant, in the following text.

Unsorted 1mm and 2mm sieving residues were also available along with the sorted bone from the cremation pit. Although such minute bone fragments are of little osteological value an estimation was, however, made of their weight. Estimations were made by sorting a 10g sample of each residue in to bone and non-bone components. A percentage (by weight) of bone constituent in each residue could then roughly calculated. The estimated weights of bone in each of the fine fractions were then added to the sorted bone remains to give an overall maximum weight of bone for the cremation burial.

Results and Interpretation

Identification

Initial observation of the >10mm and >5mm fractions confirmed that the cremated bones recovered from pit [4] were indeed human remains. Several specifically identifiable bone fragments were found, especially in the >10mm fraction, which included the distal end of a hand phalanx, a proximal rib end and several shaft fragments identifiable as human ulna, radius and femur. No fragments of animal bone were identified, although that is not proof that none was present (as these could easily be missed due to the very small fragment sizes).

Due to the fact that the majority of the bone was of very small fragment size and due to the lack of distinguishable fragments the cremation burial can only be said to contain the remains of a minimum of one individual. There is of course a possibility that a single pyre or pyre site may have been used for a number of cremations, but this cannot be proven without evidence of cross contamination of remains. In no instance were there obvious remains of more than one individual identified in the Swinford Cremation burial. There is no evidence to suggest that multiple cremations were being practiced in this case.

Bone Weights

A total of 821g of cremated bone was recovered from pit [4], with the majority being concentrated in the lower half of the burial pit (142). It appears less bone was recovered during the excavation of the initial half section of the pit (3) than in the bulk sampling of the remainder of the pit, a factor that may have as much to do with method of excavation as distribution of bone within the pit (Table 12).

When compared to cremation weights obtained elsewhere, a total of 821g of bone for the Swinford cremation burial should be regarded as fairly average. McKinley (1989, 69) observed a wide range of weights for adult cremations, ranging between 200g and 2,000g, but with an overall mean weight of c.800g. The recorded weight of bone from modern cremations gives us an indication that we should expect between 1000-3,600g of cremated bone for each adult represented (McKinley 1993).

Table 12: Weights of bone from the different contexts of from cremation burial [4], Swinford

Context.	Weight of calcined bone recovered.	% of total
(3) -Half section-	91g	11%
(141) -Upper spit-	59g	7%
(142) -Lower Spit-	671g	82%
Total	821g	

It is likely here, as at other ancient sites, that only a token quantity of bone was recovered from the pyre site for subsequent burial. Certainly other factors too would have affected the survival of the cremated bone. The intense heat of firing followed by subsequent pyre collapse would have reduced many of the thin and brittle bones (pelvis, ribs long bone heads etc.) to irrecoverable powder.

The large quantity of charcoal associated with each of the pit contexts may be an indication that the burnt out pyre was simply raked in to the prepared pit, with little regard for individual selection of bone fragments for burial. The fact that some of the smallest bones found in the human body, e.g. the finger phalanges (Figure 22), were also present in the pit seems to support the theory of *en mass* raking.



Figure 22: Distal end of a finger phalanx from the Swinford cremation burial.

The small size of the bone seems to support the notion that the cremated remains may have been simply raked from the pyre in to the pit, rather than by individual selection

Pyre Efficiency

Detailed analysis of ancient cremated bones gives an insight into the process of their cremation. Since the rates and temperatures at which bone becomes calcined (heat degraded), deformed and discoloured have been studied by various researchers (Piontek 1976; Shipman *et al* 1984; Buikstra and Swegle 1989; Spencer 1989), it is possible to evaluate cremation efficiency and possible pyre temperatures of prehistoric cremations.

Most of the cremated bone in the Swinford cremation burial had been fully calcined i.e. most of the organic (collagen) element of the bone had been combusted leaving a predominantly inorganic (hydroxyapatate) structure of pale whitish grey colouration. Rarely were any parts of the body found to be poorly cremated. This overall uniformity of firing, of all body parts, seems to imply that some degree of pyre tending may have been observed. It is also likely, to have obtained such results, that the pyre temperature must have reached in excess of 800°C (Spencer 1989). At these temperatures most of the organic component of bone is burnt off and the remaining bone salts start to fuse (Mayne Correia 1997, 276) resulting in higher bone durability.

That outdoor wood pyres could achieve such high temperatures has been proven by experimental research (Piontek 1976, Steiner *et al* 1995 and McKinley 1997). However, one should not completely overlook the duration of cremation as a controlling factor also, since a short but intense burning may lead to *incomplete* cremation in much the same way that a long less intense one will lead to *complete* cremation. Certainly, if Buikstra and Swegle's observations (cited in Shipman 1984, 322) are correct, firing must be maintained for a minimum of two hours before the bones even reach the temperature of the fire.

Fragmentation

The loss of the organic components of bone, as described above, result in it being very brittle. Consequently cremated bone remains are invariably heavily shattered prior to any specialist analysis. Bone fragment size, measured in terms of maximum bone sizes (<1mm - 42mm) and as a percentage of the total bone recovered in the 10mm and 5mm sieves, were recorded for the remains from the from Swinford cremation burial (Table 13).

The overall small fragment size of bone from this site is, however, clearly illustrated by the fact that 69% of all the bone recovered was below 10mm in size (Table 13; Figure 23). It is always possible that any bones recovered from the funeral pyre may have been further broken (intentionally) as part of the burial ritual e.g. by rapid quenching, beating, grinding etc. (as in modern cremations where the resulting bone is ground to powder). It is not, however, possible to add any substance to such claims in this case, despite such small fragment size, due to the fact that the cremation burial had been ploughed/truncated, infiltrated with soil and wet sieved prior to analysis. Not to mention that the bone had undergone the trauma of pyre collapse, retrieval, burial and eventual excavation. In other words the fragment size observed at Swinford could just as well be explained as a result of the cremation process and of post-depositional taphonomy as it could by intentional ritual breakage (McKinley 1994).

Table 13: Bone fragmentation levels of cremation burial [4], Swinford

Fraction	Weight of calcined bone recovered.	% of total weight
>10mm	257g	31%
10-4mm	410g	50%
<4mm	154g	19%
Total	821g	

Figure 23: Bone fragmentation levels of the Swinford cremation burial

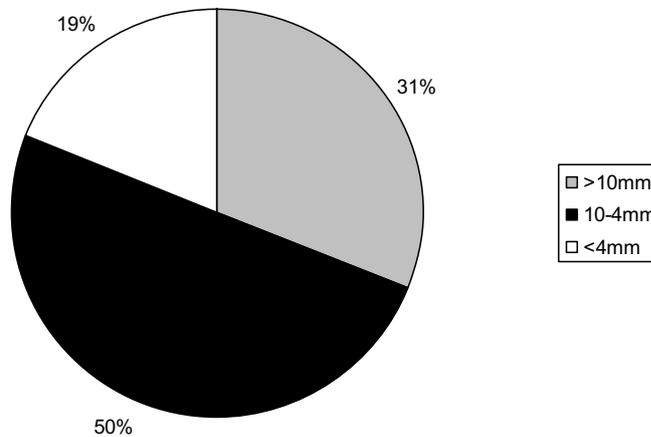


Table 14: Results of Osteological analysis of the cremated bone from Swinford

	Context (3)	Context (141)	Context (142)	Cremation Burial [4] (combined contexts)
Total weight	91g	59g	671g	821g
Identifiable bone:	50g (55%)	7g (12%)	140g (21%)	197g (24%)
Cranial	16g (18%)	6g (10%)	52g (8%)	74g (9%)
Axial	4g (4%)	1g (2%)	18g (3%)	37g (5%)
Upper Limb	14g (15%)	0g	35g (5%)	49g (6%)
Lower Limb	16g (18%)	0g	35g (5%)	51g (6%)
Unidentified bone	41g (45%)	52g (88%)	531g (79%)	624g (76%)
Of which undefined limb	7g	6g	40g	53g

Fragment sizes:				
>10mm	48g (53%)	6g (10%)	203g (30%)	257g (31%)
10-5mm	35g (38%)	15g (25%)	360g (54%)	410g (50%)
< 5mm	41g (45%)	38g (65%)	108g (16%)	154g (19%)
Maximum fragment size	42mm	34mm	37mm	42mm

Minimum no. of individuals (MNI)		1
Age		Sub-adult ??
Sex		Indeterminate
Pathology		None seen
Colour		Pale white/grey
Serrated cracking		No
Curving Cracks		Yes
Crazing		No
Warpage		Yes

The state of the body

For many years archaeologists, physical anthropologists and forensic scientists (Baby 1954; Spencer 1989; Thurman and Willmore 1981; Buikstra and Swegle 1989; Piontek 1976) etc. have endeavored to determine the pre-cremation state of burned bodies i.e. were they complete ‘fleshed’ bodies at the time of burning or had they been excarnated/defleshed prior to their cremation. The result of their research was the classification of certain fracture and warpage patterns which seemed to relate to the pre-cremation state of the body. The surface of burned dry bone displays significant cracking or ‘checking’ (often described as having the appearance of an old oil painting). The burning of flesh covered bones, on the other hand, results in the development of curved and serrated heat fractures in addition to checking and significant bone warpage. These attributes may be a result of differential speeds of desiccation, and, in the case of fleshed bodies, the rapid contraction of the large muscle groups.

All of the bone from cremation burial [4] at Swinford displays numerous curved heat fractures (Figure 24) and noticeable bone warpage (Figure 25) consistent with the burning of whole fleshed bodies.



Figure 24: Curved heat fractures observed on long-bone shafts from the Swinford cremation burial, suggestive of the body having been burned ‘in the flesh’



Figure 25: Bone warpage of a radial mid-shaft fragment from the Swinford cremation burial, suggestive of the body having been burned ‘in the flesh’

Composition

Body part representation, in terms of relative included proportions of cranial, axial, upper-limb and lower-limb elements, was quantified during the analysis of the bone. However, no evidence was found to suggest that any body part was preferentially selected for burial over another, which again supports the notion that the pyre remains were simply raked in to the burial pit en mass.

In experiments to determine the average dry ash weights of the various parts of the skeleton Trotter and Hixon (1974, 17) calculated that the weight of the average adult skeleton would be distributed roughly as 20% Skull, 18% Axial, 18% upper-limb and 44% lower limb (Table 15).

It was apparent that although the burial contained some bones from all regions of the skeleton these did not occur in the ratios demonstrated by Trotter and Hixon's experiment. However, this does not account for the large quantities of unidentified bone from the burial (Table 14). What is evident, nonetheless, is that some effort was indeed made to collect bone from all areas of the collapsed funeral pyre, likely the result of en mass debris raking, rather than as individual selection of bone remains for burial.

Table 15: Body part ratios as observed in the cremation burials from Swinford

	% Identified	% Unidentified	Unclassified limb (g)	% Cranial	% Axial	% Upper-limb	% Lower-limb
Expected ratio according to Trotter and Hixon (1974)	-	-		20	18	18	44
Swinford Cremation				9	5	6	6

Age and Sex

Determination of age and sex in cremated bone samples, wherever possible, follows the same methods as would be employed in un-burnt skeletons (Bass 1987; Brothwell 1981; Workshop of European Anthropologists 1980), principally through examination of sexually dimorphic features of the pelvis and skull for sex, and bone and dental development/degradation for age determination. However, such methods do rely heavily on the good preservation of large pieces of the relevant bones. Due to the very small fragment sizes observed in this cremation burial the sex of the individual could not be determined in this case.

Determination of the age at death of the individual was similarly difficult due to the small fragment size. A tentative age at death has, however, been determined as a possible juvenile/sub-adult. This age determination is simply based on the survival of several pieces of cranial suture, whose fine filaments are unbroken and show no evidence of ossification (fusion) with the neighbouring bone (Figure 26).



Figure 26: Segments of cranial sutures from the Swinford cremation burial

The sharp edges and unbroken filaments seem to suggest that this may have been a sub-adult who's sutures had not yet fused

Discussion

The analysis has attempted to provide information pertaining to the specific cremated individual that was recovered from cremation burial pit [4] at Swinford Wind Farm. Unfortunately the small fragment size of the cremation deposit significantly restricted the scope of the investigation. Determination of the sex of the individual was not possible in this case due to the high level of fragmentation and to the fact that the relevant pieces required for sexing were not preserved. A tentative age of the individual has been determined as a possible juvenile/sub-adult. This is simply based on the survival of several pieces of cranial suture, whose fine filaments are unbroken and show no evidence of ossification (fusion) with the neighbouring bone.

Analysis of the cremated bone has also shed some light on the nature of the funerary ritual associated with the human remains at this site. The intentional burial of human remains as a part of a ritual process is a recognised phenomenon in all periods of human history. However, the burial itself is often merely the culmination of a far more complex burial rite. The term ‘cremation’ itself does not describe the product of the burial ritual, thus cannot be used to describe the burials and the bones themselves, rather the term conveys the process by which these products have come about. The ‘cremation burials’ and their constituent ‘cremated remains’, however, often retain some residual evidence of the process which created them.

To efficiently burn a human body on a cremation pyre requires the application of well honed methods and principles. If the duration and/or temperature of the firing is too low then cremation will be incomplete. Similarly climactic conditions, size and weight of the body, efficiency of the fuel etc. must all be carefully considered and acted upon if an efficient cremation is to ensue. Such considerations mean, in modern day India at least, that pyre construction and cremation is carried out by experienced professionals. Holck (1986) has estimated that it would take a minimum of 146Kg of wood fuel to cremate an adult in an open air pyre, however, great fluctuations may have arisen as a result of fuel shortage or abundance or as a reflection of the status of the person(s) being cremated. That all of the recovered cremated bone from this site was fully calcined certainly indicates that considerable effort was being made at Swinford to collect together sufficient fuel, and to fully tend the cremation of this individual.

Once the pyres’ flames had done their work, usually lasting between 3-10 hrs according to ethnographic parallels (modern India) and experimental cremations (Pointek 1976, 278), it appears that the debris from the pyre site was raked in to a simple pit. Due to the lack of pottery found in association with the burial one can assume that this was not an urned burial, however, it is not possible to rule out the possibility that a fabric or leather bag was used originally hold these remains, as these could well have rotted beyond trace over time.

There appears to have been no attempt made to separate the bone remains from the ash and charcoal from the pyre as charcoal was an abundant constituent of the pit fill. It was also not important that all the bodily remains were recovered from the pyre site (since clearly they were not) rather the token collection of remains, a pit full, seems to have been the final intention of this ancient burial act.

The Animal Bone

Jennifer Browning

Introduction

An animal bone assemblage numbering 82 fragments was recovered. Re-assembly of joining fragments reduced the total number of specimens to 45. The bones were recovered from eight features, predominantly of Roman date.

Methods

Bones were identified using the skeletal reference collection housed at the School of Archaeology and Ancient History, University of Leicester. Information was compiled directly into a spreadsheet with facility for recording data on species, bone element, state of epiphysial fusion and completeness to elicit information on species proportions, skeletal representation, age and condition. Where possible, the anatomical parts present for each skeletal element were recorded using the ‘zones’ defined by Serjeantson (1996), with additional zones ascribed to mandibles based on Dobney and Reilly (1988). Preservation was assessed on a four-point scale with reference to Harland *et al* (2003). Measurements were taken when bone completeness permitted, following von den Driesch (1976) and Payne and Bull (1988). Recording of tooth eruption and wear for cattle, sheep and pig followed Grant (1982). Information was recorded into a *pro forma* spreadsheet. Where fragments were not sufficiently diagnostic to identify to species, they were assigned to one of the following categories based on characteristics such as size and thickness of the cortical surface: ‘large mammal’, represents undiagnostic fragments probably from cattle, horse or red deer, while ‘medium mammal’ bones were likely to derive from sheep, goat, pig, roe deer or possibly dog.

Results

The excavations produced a small assemblage of animal bones. The assemblage was considerably fragmented and a refitting of bone fragments reduced the number of bones from 82 to 45 fragments. Preservation on the bones from context 117 was good, although fragmented. However the condition of these bones was in contrast to many of the other specimens, which were not only fragmented but also had ‘powdery’ and abraded surfaces (Table 16).

Table 16: State of preservation (definitions after Harland et al 2003)

Preservation	1	5	93	117	139	133	154	187	Total
Good: lacks fresh appearance but solid; very localised flaky or powdery patches.				33					33
Fair: surface solid in places, but flaky or powdery on up to					1				1

Preservation	1	5	93	117	139	133	154	187	Total
49% of specimen.									
Poor: surface flaky or powdery over 50% of specimen	4	2	1			2	1	1	11
Total	4	2	1	33	1	2	1	1	45

Table 17 shows the numbers of bones attributed to each species. The prevalence of sheep/goat is due to the recovery of a partial skeleton in 117, the fill of a small pit on the edge of the ridge and furrow (Turbine 9) and thought to post-date it. Cattle are represented by tooth fragments in features (93), (133), and (139). Horse teeth were recovered from ditch fill (1) and ditch (187). No butchered bones were identified and only one burnt fragment, of indeterminate species, was present.

Table 17: Number of bone fragments from each context

Context	Feature	Period	cattle	horse	sheep/goat	lge mml	med mml	Indet.	Total
1	Ditch – Tb 5	Roman		4					4
5	Pit – Tb 5	Roman				2			2
93	Gully (Structure 4) – Tb 4	Roman	1						1
117	Pit – Tb 9	Post-med			9		24		33
133	Cobble spread (Structure 2) – Tb 4	Iron Age	2						2
139	Insecure surface of 138 – Tb 4	undated	1						1
154	Gully (Structure 2) – Tb 4	Roman						1	1
187	Ditch – Tb 4	Roman		1					1
Total			4	5	9	2	24	1	45

Post-medieval or modern pit

The semi-articulated sheep bones in the probable post-medieval or modern pit (117) in Turbine 9 were in better condition than bones from the Roman features elsewhere (Table 16). Fragments from the left and right scapula, left humerus, ulna and radius, left and right femur, left tibia and the sacrum were present. The humerus exhibited exostoses on the lateral part of the distal articulation. This is likely to represent a pathology observed in many archaeological assemblages known as ‘penning elbow’, which is traditionally thought to be caused by trauma during penning (Baker and Brothwell 1980), however more recent work suggests that minor repeated trauma such as moving over uneven ground could be a factor (Clark 2009, 158). The state of fusion of the elements present suggests that the animal was at least 3 ½ years old when it died (based on Silver 1969).

Comments

Bones were recovered from a late Iron Age cobbled spread in Structure 2 (Turbine 4), several Roman pits, ditches and gullies and a post-medieval pit. Cattle, sheep/goat and horse were identified in the assemblage. In the Roman assemblage the only identified specimens were tooth fragments, indicating the presence of both cattle and horse. The assemblage was not of sufficient size to provide reliable information on diet or husbandry practices at the site and appears to have been poorly preserved.

Environmental Evidence

The Charred Plant Remains

Anita Radini

Introduction

Features including cremations, post-holes, ditches and demolition layers, dating the Roman period (1st to 2nd century AD), were sampled for the recovery of archaeobiological evidence. Volume of the soil samples and the results of the analysis are presented in Table 18.

Materials and Methods

All of the environmental samples targeted for analysis were sieved in a sieving tank with 0.5mm mesh and flotation into a 0.3mm mesh sieve. Residues were all air dried and separated on a 4mm mesh riddle and the coarse fraction (CF) over 4mm sorted for all remains and finds, the fine fractions (FF) below 4mm were reserved for sorting during the analysis stage if required. The flotation fractions (Flots) were transferred from the sieve into plastic boxes and air dried. The flots were scanned in their entirety noting the species present and estimating their abundance (x = 1 to 5 items, xx = 5 to 20 items, xxx = more than 20 items).

Morphological criteria were used for the identification of plant species, based on modern reference material and seed identification manuals (e.g. Berggren 1981; Anderberg 1994; Cappers *et al.* 2006). Plant names follow Stace (1997).

Results

Overall the archaeobotanical evidence was very poor. All samples, other than those associated with the cremation contexts, had large amounts of small root and rootlet fragments, suggesting a degree of soil disturbance.

The samples from the cremation contexts (see Table 18) were found to be rich in charcoal fragments, the most common of them being very small charcoal flecks. Where the fragments were identifiable, they belonged to oak (*Quercus* sp.) and hazel (*Corylus avellana* L.). Moreover two tubers and grass stems belonging to onion couch grass (*Arrhenatherum elatius* ssp. *Bulbosus* ((Wylld.) Hyl.) were recovered from sample 17 (142).

Only one sample, 15 (140), was found to have charred cereal remains consisting of four small and poorly preserved charred grains of wheat (*Triticum* sp.) and six fragments of chaff which was identified as spelt wheat (*Triticum spelta* L.), perhaps suggesting threshing of spelt wheat occurred near the ditch from which the sample came from (see Table 18).

Un-charred seeds belonged mainly to cleavers (*Galium aparine* L.) and common fumitory (*Fumaria officinalis* L.) were recovered from sample 5 (7), 18 (63) and 19 (102) and they are likely to be the results of modern seed rain on the site.

Table 18: Charred plant remains

Sample	Context	Cut	Notes	V L	Comments
2	T.5 3	4	Cremation	40	Oak and hazel wood
5	T. 5 7	8	Gully fill	4	Very poor, modern roots and seeds
6	T.4 27	28	Post-hole fill	2	Very poor, modern roots
9	T.4 11	-	Demolition deposit	8	Very poor, modern roots
10	T.4 31	32	Post-hole fill	5	Very poor, modern roots
11	T.4 29	30	Post-hole fill	1	Very poor, modern roots
12	T.4 33	34	Post-hole fill	1	Very poor, modern roots
15	T.4 140	92	Ditch fill around cobbles	18	Spelt wheat chaff and grains
16	T.5 141	4	Cremation	30	Oak and hazel wood
17	T.5 142	4	Cremation	60	Oak and hazel wood, onion couch grass tubers x2
18	T.4 63	65	Ditch fill	12	Poor, modern seeds
19	T.4 102	-	Soil matrix around cobbles	12	Poor, modern seeds
21	T.5 171	172	Cremation	8	Oak and hazel wood
22	T.5 173	4	Cremation	60	Oak and hazel wood
23	T.4 182	16	Ditch fill	8	Very poor, modern roots
25	T.4 104	107	Soil matrix around cobbles	12	Very poor, modern roots
26	T.9 187	119	Ditch fill	10	Very poor, modern roots

V (L) =volume in litres

Discussion and Conclusions

The samples associated with cremation contexts suggest that mainly hazel and oak wood were used as fire wood for the cremation pyre. The charred fragments of grass stems and the two tubers of onion couch grass, found in

sample 17, suggest they were possibly used as tinder for starting fires, as suggested by Murphy (2002) or were growing on the site of the pyre. The use of oak and hazel wood, and onion couch grass and grass stems in the cremation pyre was also found in samples from other sites (Radini and Monckton 2010).

It is not possible to assess the nature and scale of spelt wheat cultivation and consumption on site due to the low amount chaff and grains recovered from sample 15, but the presence of charred spelt chaff suggests the processing of spelt wheat happened nearby the site.

Despite the paucity of the archaeobotanical evidence, the samples have provided some information about the processing and consumption of spelt wheat on the site, adding to our knowledge for the Roman period in the region.

Discussion

Turbine 4

In Turbine 4 a complex sequence of possible late Iron Age and early Roman settlement was uncovered. Although the excavation identified few stratigraphic relationships between features, this evidence, combined with the ceramic dating has allowed some simple phasing for the sequence of occupation in the area (Figure 27). This chronology shows a progression in date for the features which moves southwards, down-slope off the crest of the hill.

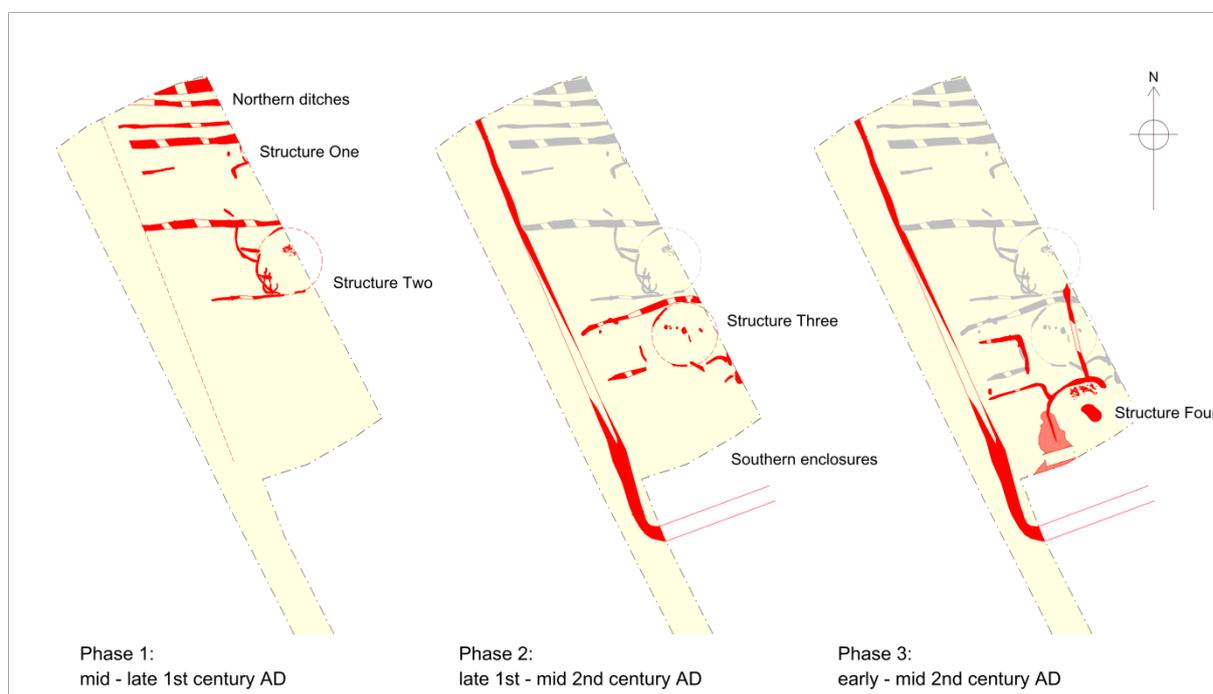


Figure 27: The phase sequence for occupation in Turbine 4

Phase 1 (mid to late 1st century AD): The earliest features on the site were a series of parallel, east to west orientated ditches which were falling out of use during the later decades of the 1st century AD. These appear to define a series of small fields across the northern half of the area, located to the south of a possible trackway. Although the southern enclosure ditch [105/162] does not appear to have been present during this period it may replace an earlier, no longer extant, alignment because the northern ditches do not appear to continue west beyond its line. They did, however, continue to the east of the excavation and ditches on the same alignment as several in Turbine Four were found during the evaluation to the east of the site.

Two structures appear to be associated with this early phase of activity. Structure One may have been the remains of a rectangular timber building but its position on the very edge of excavation means little more can be said about it. Structure Two, however, is almost certainly the remains of a roundhouse measuring approximately 11m in diameter. Late Iron Age pottery found beneath a cobble surface (133) in Structure Two and from one of its drip-gullies may indicate that it was built during the Conquest period (early-mid 1st century), falling out of use by the end of the 1st century. This was the only Iron Age pottery recovered from Turbine 4 and generally, occupation of the site does not appear to have begun until the early Roman period.

Phase 2 (late 1st to mid 2nd century AD): By the early 2nd century AD, much of the site appears to have been contained within a substantial enclosure ditch, with the space being divided into a series of smaller fields or paddocks. A second similarly sized roundhouse, Structure Three, was sited immediately south of Structure Two. This may have post-dated Structure Two but appears to have pre-dated ditch [82/122/158] which respects it,

curving around its northern side. The roundhouse's demise was marked by a thick, overlying layer of soil containing large quantities of charcoal, fire-cracked stones and burnt daub. This appeared to date to the early 2nd century and suggests that the roundhouse may have burnt down, accidentally or to deliberately clear the site.

Phase 3 (early to mid 2nd century AD): Occupation of the southern enclosure continued past the early 2nd century AD, with new spaces being enclosed within the south-west corner of the larger enclosure. No further buildings were found in the excavated area and the geophysical results (Thomas 2009) suggest that the occupation in Turbine 4 was on the western edge of the main area of settlement, probably a small farmstead sited immediately east of the excavated area.

The fourth structure, which was stratigraphically the latest feature in the area, was a substantial stone platform surrounded on its north side by a ditch which appeared to be intended to keep the platform dry from water descending on it from up-slope. This carried water away to the west of the platform into the enclosure's south-west corner where it may have initially drained into the main enclosure ditch. However, a thick spread of alluvial silt (138) covering much of the corner shows that water eventually flooded the area, possibly creating a pond or boggy area. Along the ditch the platform was kerbed with stone, including a large fragment of recycled rotary-quern, and it is thought that the platform was intended to be a dry, external working surface used for agricultural work, such as a threshing floor. An industrial function is thought unlikely because no significant quantities of industrial waste were recovered from the surface or out of the ditch. However the presence of charred spelt from ditch [92] adjacent to the stone platform would perhaps support the interpretation of a threshing floor.

Enough redeposited fragments of iron slag, iron ore, fuel ash and vitrified hearth lining were recovered from a dispersed scatter of features within the southern enclosures to suggest some iron-working, most likely smithing, was occurring in the vicinity. However, it was not found in great enough concentrations to suggest it was actually taking place within the excavated area.

Only two diagnostic sherds of pottery suggest the possibility that occupation across Turbine 4 extended into the second half of the 2nd century AD. Neither of these came from securely stratified contexts and overall, occupation appears to have ceased in the area by the mid 2nd century AD.

Turbines 5, 9 and 11

Less archaeology was found in Turbines 5 and 9. In Turbine 5 a series of severely plough-damaged ditches and gullies appeared to form two parallel alignments, possibly marking a trackway heading north-north-west towards the settlement in Turbine 4. A small number of pits or tree-throws, possibly the remains of a hedge-line, edged the southern side of the 'trackway' whilst to the north two cremation pits were also found in close proximity to it. Fine flecks of cremated bone were also occasionally observed in modern plough scars in the vicinity. This may be evidence of further, ploughed-out cremations and it may be that the cremations were part of a burial site stretching along the trackway outside the settlement area, as seen on other Romano-British sites. The small amount of pottery recovered from the area suggests occupation could have spanned the 1st century AD, or may well have been confined to the decades around the Conquest period (mid 1st century).

Little can be said of the cremation, the small fragment size of the burnt bone significantly restricting the scope of the investigation, and although it is tentatively suggested that cremation [4] was of an juvenile/sub-adult, no sex or accurate age could be determined. The second suspected cremation [172] contained no bone fragments of a sufficiently analysable size. The pyre ash and burnt bone had been deposited directly into the pit rather than being buried within an urn, although use of an organic container cannot be ruled out. Considering the large amount of charcoal in the cremation it would appear that the pyre site was simply raked into the pit, with no attempt to separate the bone remains from the ash and charcoal. No dateable material was recovered from the feature, but the charcoal flecks suggest a mixture of oak and hazel was primarily used as fire wood whilst onion couch grass may have been used as tinder, although this could simply have been growing in the vicinity of the cremation.

In Turbine 9, a few further ditches, gullies and pits were uncovered. Very little pottery was recovered, most of which was heavily abraded early Roman material, and it remains unclear to which period most of these features date to. During the evaluation it was suggested that the same ditches were most likely medieval field boundaries, the lack of finds precluding any nearby settlement (Hyam 2010, 16). If this is the case they must pre-date the medieval ridge-and-furrow which was observed to truncate the ditches and gullies across Turbine 9.

Although the ditches did pre-date the medieval ridge-and-furrow little more could be determined for the other features; one ash-filled pit, possibly a hearth, produced a small quantity of late Iron Age pottery whilst a second pit contained the semi-articulated remains of a sheep which, judging by the good quality of the bone (on a site where bone did not survive well), had almost certainly been buried during the post-medieval or modern period.

Despite two possible Roman post-holes being found during the evaluation, no other archaeological features were found in Turbine 11. The only find of note was an almost complete flint chisel of possible late Neolithic date which was recovered from the subsoil during machining.

Archive

The site archive consists of:

- a site indices containing:
 - 5 A4 context index sheets
 - 4 A4 photo index sheets
 - 1 A4 sample index sheet
 - 1 A4 drawing index sheet
 - 2 A4 survey note sheets
- 104 A4 context record sheets
- 226 colour digital photographs (contact sheets and CD)
- 156 35mm black and white photographs (contact sheets and film)
- 4 A3 and 1 A2 permatrace sheets containing plans and section drawings
- Finds, including:
 - 6 pieces of flint
 - 1313 sherds of pottery
 - 1 piece of metalwork
 - 2 fragments of a quern stone
 - 59 pieces of fired clay (daub)
 - 13 pieces of iron industrial waster
 - 82 fragments of animal bone

The archive will be held by Leicestershire County Council Museum Service under the accession number X.A99.2011.

Publication

ULAS reports the results of all archaeological work through the *Online Access to the Index of Archaeological Investigations* (OASIS) database held by the Archaeological Data Service at the University of York (Table 19).

Table 19: Summary of OASIS information

OASIS No.	universi1-117075
Project Name	Swinford Windfarm, Leicestershire
Project Type	Area Excavation
Project Manager	P Clay
Project Supervisor	Jon Coward
Previous/Future work	Geophysics, evaluation trenching
Current Land Use	Arable
Development Type	Windfarm
Reason for Investigation	PPS 5
Position in the Planning Process	As a condition
Site Co ordinates	SP 575 815 centre
Start/end dates of field work	12 July- 12 Aug 2011
Archive Recipient	LMARS
Height min/max	117m - 154m OD
Study Area	5 ha
Finds	Iron Age, Romano-British

A summary of the work will also be submitted for publication in the local archaeological journal, the *Transactions of the Leicestershire Archaeological and Historical Society*, in due course

Acknowledgements

Thanks are extended to Rob Bourn of CgMs; the representatives of Nuon Renewables; landowners M. Mourant, J.W. Deacon and G. Deacon; and the Morris Brothers for their help and co-operation on site.

Fieldwork was carried out by Jon Coward and Mathew Morris with the aid of Steve Baker, Leon Hunt, Andy Hyam and Gerwyn Richards. Special thanks also go to James Harvey who managed to lay out the trench areas despite having to wade through shoulder-high oil-seed rape. Finds were processed by Heidi Addison with the aid of Pauline Houghton. The report was written by Mathew Morris with contributions from Heidi Addison, Jennifer Browning, Simon Chapman, Lynden Cooper, Nicholas J. Cooper, Jon Coward, Anita Radini and John Thomas. The project was managed for ULAS by Dr Patrick Clay.

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Mathew Morris
ULAS
University of Leicester
University Road
Leicester LE1 7RH
Tel: 0116 252 2848
Fax: 0116 252 2614
Email: mlm9@le.ac.uk

18.12.2011

Revised 11.01.2012

Appendix One: Context List

Table 20: Summary of excavated contexts

Cut/layer no.	Fill nos.	Feature	Turbine no.	Area	Finds	Ceramic Date	Notes
2	1	Pit	5	-	Pot, bone, slag	Roman – mid-late 1st c.	
4	3, 141, 142, 173	Cremation pit	5	-	Burnt bone	-	
6	5	Tree throw	5	-	Pot, bone	Late Iron Age	
8	7, 174, 175	Gully	5	-	Pot	Roman – mid-late 1st c.	may be continuation of 170
10	9	Pit	5	-	-	-	
11	-	Demolition layer?	4	Structure 3	Pot, slag	Roman - early 2nd c.	same as 143
14	12, 13	Ditch	4	N Ditches	Pot	Roman - late 1st c.	
16	15, 182	Ditch	4	N Ditches	Pot	Roman - late 1st c.	
18	17	Post hole	4	Structure 1	-	-	same structure
20	19, 159	Beam-slot	4	Structure 1	Pot	Roman - late 1st c.	
22	21	Beam-slot	4	Structure 1	-	-	
24	23	Beam-slot	4	Structure 1	-	-	
26	25	Gully	4	N Ditches	Pot	Roman - late 1st c.	
28	27	Post hole	4	Structure 3	-	-	
30	29	Post hole	4	Structure 3	-	-	
32	31	Post hole	4	Structure 3	-	-	
34	33	Post hole	4	Structure 3	-	-	
36	35, 185, 191	Ditch	4	N Ditches	Pot	Roman - late 1st c.	
38	37, 101	Ditch	4	S Enclosure	Pot	Roman - mid 2nd c.	same as 85
40	39	Gully	4	N Ditches	-	-	
43	41, 42	Gully	4	Structure 2	Pot	Roman - late 1st – early 2nd c.	
45	44	Post hole	4	Structure 2	-	-	
47	46	Gully	4	Structure 2	-	-	
49	48	Gully	4	Structure 2	-	-	

Cut/layer no.	Fill nos.	Feature	Turbine no.	Area	Finds	Ceramic Date	Notes
52	50, 51	Roundhouse drip gully	4	Structure 2	Pot	Roman - late 1st – early 2nd c.	
54	53	Gully	4	Structure 2	-	-	
56	55	Gully	4	Structure 2	-	-	
58	57	Gully	4	Structure 2	Pot	Roman - late 1st – early 2nd c.	
60	59	Gully	4	N Ditches	Pot	Roman - late 1st c.	
62	61, 188	Ditch	4	S Enclosure	Pot	Roman - mid 2nd c.	
65	63, 64	Gully	4	Structure 2	Pot	Roman - late 1st – early 2nd c.	
67	66, 154	Gully	4	Structure 2	Pot	Roman - late 1st – early 2nd c.	
69	68	Gully	4	Structure 2	-	-	
71	70	Gully	4	N Ditches	Pot	Roman - late 1st c.	
73	72	Pit	4	Structure 3	Pot	Roman - late 1st – early 2nd c.	
75	74	Gully	4	Structure 3	-	-	
76	77	Post hole	4	Structure 3	Pot	Roman - late 1st – early 2nd c.	
80	78, 79, 148	Gully	4	Structure 3	Pot	Roman - late 1st – early 2nd c.	
82	81, 100	Ditch	4	S Enclosure	-	-	same as 122 and 158
85	83, 84	Ditch	4	S Enclosure	Pot	Roman - mid 2nd c.	same as 38
87	86	Gully	4	S Enclosure	Pot	Roman - mid 2nd c.	
89	88	Gully	4	Structure 3	Pot	Roman - late 1st – early 2nd c.	
90	91	Cobble filled scoop	4	S Enclosure	-	-	
92	92, 103, 134, 135, 140	Curvilinear ditch	4	Structure 4	Pot, slag	Roman - mid 2nd c.	same as 136
95	94	Pit	4	S Enclosure	-	-	
97	96	Gully	4	S Enclosure	Pot	Roman - mid 2nd c.	
99	98	Gully	4	S Enclosure	Pot	Roman - mid 2nd c.	
102	-	Cobble surface	4	Structure 4	Pot, quern stone	Roman - mid 2nd c.	
107	104	Cobble filled pit	4	Structure 4	Pot	Roman - mid 2nd c.	
105	106, 147, 153	Enclosure ditch	4	S Enclosure	Pot, nail	Roman - mid 2nd c.	same as 162
109	108	Post hole	9	-	-	-	

Cut/layer no.	Fill nos.	Feature	Turbine no.	Area	Finds	Ceramic Date	Notes
111	110	Post hole	9	-	-	-	
112	113	Ash filled pit	9	-	Pot	Late Iron Age?	
115	114, 120	Gully	9	-	-	-	
116	117	Sheep inhumation	9	-	Bone	-	
119	118, 121, 187	Ditch	9	-	Pot, bone	Roman – mid-late 1st c.	
122	123	Ditch	4	S Enclosure	-	-	same as 82 and 158
124	-	Furrow over ditch 105	4	S Enclosure	-	-	
126	125	Gully	4	S Enclosure	Pot	Roman - mid 2nd c.	
128	127, 144	Gully	4	S Enclosure	Slag	-	
130	129	Gully	4	S Enclosure	-	-	
132	131, 189	Gully	4	S Enclosure	-	-	
133	-	Cobble spread	4	S Enclosure	Pot, flint	Roman – late 1st c.	
136	137	Curvilinear ditch	4	Structure 4	-	-	same as 92
138	-	Silt spread	4	Structure 4	-	-	
139	-	insecure surface of 138	4	S Enclosure	Pot	Roman – late 2nd c.	
143	-	soil layer	4	S Enclosure	Pot	Roman - mid 2nd c.	same as 11
146	145, 168	Ditch	4	S Enclosure	Pot, flint	Roman - mid 2nd c.	southern turn of 62
150	149, 181	Ditch	4	N Ditches	Pot	Roman - late 1st c.	
152	151, 167	Ditch	4	S Enclosure	Pot	Roman - mid 2nd c.	
156	155	Gully	4	N Ditches	Pot	Roman - late 1st c.	
158	157	Ditch	4	S Enclosure	-	-	same as 82 and 122
161	160	Gully	4	Structure 2	Pot	Roman - late 1st – early 2nd c.	
162	163, 164, 190	Enclosure ditch	4	S Enclosure	-	-	same as 105
166	165	Post hole	4	S Enclosure	Pot	Roman - late 1st – early 2nd c.	
170	169	Gully	5	-	Flint	-	may be continuation of 8
172	171	Cremation pit	5	-	Burnt bone	-	
176	177, 178	Gully	5	-	-	-	

Cut/layer no.	Fill nos.	Feature	Turbine no.	Area	Finds	Ceramic Date	Notes
180	179	Pit	5	-	-	-	
184	183	Ditch	4	N Ditches	Pot	Roman - late 1st c.	
186	-	Pottery beneath cobbles 133	4	S Enclosure	Pot	Late Iron Age	

Appendix Two: Record of Iron Age and Roman pottery from Turbine 4*Table 21: Iron Age and Roman pottery from Turbine 4*

Area	Con.	Cut	Fabric	Form	Type	Rim	Dec	Sherds	Weight	Diam.	EVEs	Date	Notes
Furrow ov105	124		samian	misc	body			1	2			Late 1st-2nd	v. abraded
Furrow ov105	124		GW5	jar	necked	bead		20	211			L1st-2nd	
Furrow ov105	124		OW2	jar	necked	bead		10	20			L1st-2nd	
Furrow ov105	124		WW2	flagon	handle			1	2			L1st-2nd	abraded
Furrow ov105	124		GT3	jar	body			3	15			M1st-2nd	Fired clayx 4 (80g)
N Ditches	15	16	SW3					1	7				
N Ditches	35	36	GT4	jar	base			4	50			Mid-L1st+	
N Ditches	185	36	GW5	jar	shortneck	downbead		3	28	160	0.2	Mid2nd	
N Ditches	185	36	GW3	jar	body			1	9			L1st-2nd	
N Ditches	185	36	GT4	jar	body			2	20			Mid-L1st+	
N Ditches	191	36	GW5	jar	body			1	5			L1st-2nd	
N Ditches	191	36	SW3	jar	body			2	14			Mid1st+	
N Ditches	183	184	WW2	misc	body			1	2			L1st-2nd	
N Ditches	183	184	GW5	jar	body			4	18			L1st-2nd	
N Ditches	183	184	GT4	jar	body			2	30			M1st-2nd	
N Ditches	12	14	CG1A	jar	shouldered	chan rim	corrug	2	20			M1st-M2nd	joins 11
N Ditches	12	14	GW5	jar	body			2	24			L1st-2nd	
N Ditches	12	14	SW3	jar	base			5	49			M-L1st	
N Ditches	59	60	GW6	jar	necked	bead		28	165			L1st-2nd	
N Ditches	149	150	GW9	jar	shortneck	bead		6	65			L1st-2nd	
N Ditches gully	25	26	CG1A	jar	body			1	2			M1st+ handmade	? Fired clay x2 (20g)
N Ditches gully	70	71	GW3	jar	carinated	everted	neckcord	1	8			L1st-E2nd	
N Ditches gully	70	71	SW3	jar	body			2	25			M-L1st	
N Ditches gully	155	156	SW3	jar	body			1	7			M1st-M2nd	

Area	Con.	Cut	Fabric	Form	Type	Rim	Dec	Sherds	Weight	Diam.	EVEs	Date	Notes
S Encl	84	85	GW5	Jar	shortneck	downbead		82	740	160	1	Mid2nd	Complete Vessel form as CG3B Jars RW48
S Encl	83	85	GW5	Jar	shortneck	downbead		5	35	160	0.24	Mid2nd	form as above
S Encl	83	85	GW5	Jar	shortneck	bead		6	310	220	0.85	Mid2nd	
S Encl	83	85	GW5	Jar	shouldered	downcurve		6	116	240	0.7	Mid2nd	
S Encl	83	85	GW5	Jar	necked	bead		2	17	160	0.16	Mid2nd	
S Encl	83	85	GW5	jar	necked	outcurve		1	5	120	0.1	Mid2nd	
S Encl	83	85	GW5	jar	necked	triangbead	black surf	26	155	120	0.15	Mid2nd	
S Encl	83	85	GW5	jar	body			189	740			Mid2nd	
S Encl	83	85	GW5	jar	body		black surf	82	240			Mid2nd	
S Encl	83	85	OW2	jar		bead		40	55	150	0.2	Mid2nd	
S Encl	83	85	CG1A	jar	shouldered	bead?	grooved	26	305			Mid1st-2nd	
S Encl ditch	106	105	GW3	jar	necked	hookbead		1	7	120	0.12	2nd	abraded
S Encl ditch	106	105	SW3	jar	body			2	2			M-L1st	abraded
S Encl ditch	147	105	GW5	jar	body necked			10	30			L1st-2nd	abraded
S Encl ditch	153	105	GW5	jar	body			7	15			L1st-2nd	abraded
S Encl ditch	145	146	SW3	jar	body			2	18			M-L1st	abraded
S Encl ditch	168	146	GW5	misc	base			2	25			L1st-2nd	abraded
S Encl cobble	133		GW3	misc	body			1	2			L1st-2nd	
S Encl cobble	133		GT4	jar	body			3	40			M1st-2nd	
S Encl ditch	151	152	GW5	jar	body			1	16			L1st-2nd	
S Encl gully	96	97	GW5	jar	body			8	61			L1st-2nd	abraded
S Encl gully	96	97	OW2	beaker	globular	bead		3	6			L1st-E2nd	abraded
S Encl gully	96	97	OW2	jar	necked	downcurve		1	2			L1st-E2nd	abraded
S Encl gully	96	97	CG1A	jar	body			2	12			M1st-2nd	abraded
S Encl gully	96	97	GW9	jar	base			6	51			M1st-2nd	abraded

Area	Con.	Cut	Fabric	Form	Type	Rim	Dec	Sherds	Weight	Diam.	EVEs	Date	Notes
S Encl gully	96	97	SW3	jar	base			3	41			M-L1st	abraded
S Encl gully	98	99	CGSam	misc	body			1	1			2nd	vabraded
S Encl gully	98	99	BB1	bowl	flanged	HB38.1		6	55			120-160	abraded
S Encl gully	98	99	GW3	jar	body			16	68			L1st-2nd	abraded
S Encl gully	98	99	GW9	jar	necked	bead		2	144	240		L1st-2nd	
S Encl gully	98	99	GW4m	bowl	base			3	30			E-M2nd	
S Encl gully	98	99	GW6	jar	shouldered	chan rim		6	42			L1st-m2nd	sim to WW1
S Encl gully	125	126	GW5	jar	base			8	42			L1st-2nd	
S Encl soil lay	143		WW3	jar	globular			10	56			L1st-2nd	
S Encl soil lay	143		OW2	misc	body			1	5			L1st-2nd	
S Encl soil lay	143		GW5	jar	necked	hookbead		9	45			L1st-2nd	
S Encl soil lay	143		SW3	jar	shouldered		combed	11	50			M1st-M2nd	
S Encl. ov138	139		MO4	Mort	flanged	downcurve		3	370			150-200	Red/black grits
S Encl. ov138	139		GW5	jar	necked	bead		8	38			L1st-2nd	
S Encl. ov138	139		GT4	jar	body			3	34			M1st-2nd	
S Encl. ov138	139		CG1A	jar	body			2	7			M1st-2nd	
S Encl gully	86	87	Q1	misc	body			1	6			Late Iron Age	
S Encl	186		S1	jar	upright rim	flattended	slashes	52	340			Late Iron Age	abraded
S Encl	186		GW5	bowl	carinated	upright		1	14			L1st+?	parallel?
S Encl	37	38	OW2	beaker	globular	everted		20	89	140		L1st-E2nd	
S Encl	37	38	WW2	misc	body			1	1			L1st-2nd	
S Encl	37	38	WW1	jar	body			3	48			M1st-M2nd	
S Encl	37	38	GW3	jar	body			2	16			L1st-2nd	
S Encl	37	38	GW6	jar	necked	bead		3	20			L1st-2nd	fired clay x 8 (15g)
S Encl	37	38	S1	jar	body			1	5			LIron Age	abraded
S Encl	101	38	SGSam	bowl	Form 37			3	26			70-100	vabraded
S Encl	101	38	WW3	flagon	lid-seat rim			3	3			L1st-2nd	

Area	Con.	Cut	Fabric	Form	Type	Rim	Dec	Sherds	Weight	Diam.	EVEs	Date	Notes
S Encl	101	38	OW2	beaker	bag-shaped	devcornice		1	9			120-180	
S Encl	101	38	OW2	beaker	outcurve			2	3			L1st-E2nd	
S Encl	101	38	GW1	jar				1	7			L1st-2nd	too coarse for BB1
S Encl	101	38	GW9	jar	necked	bead	black surf	131	385	130	0.35	L1st-2nd	
S Encl	101	38	GW5	jar	body			10	32			L1st-2nd	
S Encl	101	38	OW2	misc	body			14	66			L1st-2nd	
S Encl	101	38	OW	misc	body			1	40			L1st-2nd	Tile x 2 (105g)
S Encl	61	62	GW3	jar	necked	bead	girthgroo	10	50			L1st-2nd	
S Encl	61	62	GW5	misc	body			6	5			L1st-2nd	
S Encl	61	62	SW3	misc	body			1	7			M-L1st	
S Encl	61	62	OW2	misc	body			7	15			L1st-2nd	
S Encl	61	62	GT4	misc	body			1	4			M1st-2nd	
Struc 1	19	20	GW5	jar	body			3	5			L1st-2nd	
Struc 2	41	43	GW5	jar	base			2	94			2nd+	
Struc 2 ED gully	51	52	GW5	jar	body			6	15			L1st-2nd	fired clay x 3 (15g)
Struc 2 gully	64	65	CG1A	jar	shouldered	chan rim		1	10			M1st-M2nd	
Struc 2 gully	64	65	GT2	jar	necked	everted		7	48			M-L1st	
Struc 2 gully	63	65	GT4	jar	body			1	6			M-L1st	
Struc 2 gully	63	65	SW3	jar	body			7	22			M-L1st	handmade
Struc 2 gully	57	58	CG1A	jar	shouldered	chan rim		19	31			M1st-M2nd	abraded
Struc 2 gully	66	67	S2	jar	upright rim	plain rim	oblslash	14	26			Late Iron Age	same as 154
Struc 2 gully	66	67	SW3?	misc	body			1	1			M-L1st?	thin body
Struc 2 gully	154	67	S2	jar	upright rim	plain rim	oblslash	1	14			Late Iron Age	same as 66
Struc 2 gully	154	67	SW3?	jar	body			3	5			M-L1st	thin body
Struc 2 gully	160	166	GW5	jar	body			1	7			L1st-2nd	
Struc 3 demol	11		SGSam	dish	Form			1	7			90-110	abraded

Area	Con.	Cut	Fabric	Form	Type	Rim	Dec	Sherds	Weight	Diam.	EVEs	Date	Notes
					18/31								
Struc 3 demol	11		WW2	flagon	body			29	160			L1st-m2nd	
Struc 3 demol	11		GW5	jar	necked	bead	corrug	2	20			L1st-E2nd	
Struc 3 demol	11		GW5	jar	necked	bead		5	26			L1st-E2nd	
Struc 3 demol	11		GW6	jar	shortneck	bead		3	40			L1st-2nd	
Struc 3 demol	11		GW5	jar	body			46	320			L1st-2nd	
Struc 3 demol	11		GW5	bowl	flanged	triangbead	black surf	7	20			E-M2nd	
Struc 3 demol	11		GW9	jar	necked	bead		6	85			L1st-2nd	
Struc 3 demol	11		CG1A	Jar	shouldered	chan rim		3	10			M1st-M2nd	joins 12
Struc 3 demol	11		GT4	jar	body			3	42			M1st-2nd	
Struc 3 gully	78	80	GW3	jar	shouldered	lid seat		2	20	100	0.25	L1st-m2nd	
Struc 3 gully	78	80	GW5	jar	body			2	30			L1st-2nd	
Struc 3 gully	148	80	MG?	misc	body			1	2			M-L1st NCD	fired clay x 6 (6g)
Struc 3 gully	88	89	GW6	misc	body			1	5			M1st-E2nd	very hard thin body
Struc 3 p-hole	77	76	SW3	jar	necked	bead		3	21			M-L1st	
Struc 3 p-hole	77	76	GW3	jar	necked	downcurve		1	5			L1st-E2nd	
Struc 3 pit	72	73	OW2	misc				1	2			L1st-2nd	
Struc 4 C ditch	93	92	CGSam	bowl	?Form 37			1	10			100-120?	Les Martres?
Struc 4 C ditch	93	92	WW3	jar	body		red ring	1	5			Early 2nd	check
Struc 4 C ditch	93	92	GW5	Jar	shouldered	outcurve		4	15			Early 2nd	
Struc 4 C ditch	93	92	GT4	misc	body			2	7			M1st-2nd	
Struc 4 C ditch	93	92	SW3	misc	body			3	2			M1st-2nd	
Struc 4 C ditch	103	92	GW5	jar	body			2	20			L1st-2nd	
Struc 4 C ditch	103	92	GT4	jar	body			1	6			M1st-2nd	
Struc 4 C ditch	134	92	GW5	jar	necked	bead		1	50	320	0.1	E-M2nd	
Struc 4 C ditch	134	92	GW5	jar	body			17	92			L1st-2nd	
Struc 4 C ditch	134	92	GW5	jar	necked	everted		1	2	60	0.1	L1st-2nd	

Area	Con.	Cut	Fabric	Form	Type	Rim	Dec	Sherds	Weight	Diam.	EVEs	Date	Notes
Struc 4 C ditch	134	92	CGSam	dish	Form 18/31			1	12	170	0.08	100-120	Les Martres?
Struc 4 C ditch	134	92	C2NV?	beaker	body			1	2			M2nd+	v abraded
Struc 4 C ditch	134	92	SW3	jar	necked	bead		7	90			M1st-L1st	abraded
Struc 4 C ditch	134	92	GT4	jar	body			1	27			M1st-2nd	
Struc 4 C ditch	134	92	OW2	misc	body			1	5			L1st-2nd	abraded
Struc 4 C ditch	140	92	OW2	beaker	bag-shaped	simpcornice		1	2	80	0.12	2nd	abraded
Struc 4 C ditch	140	92	GW3	beaker	globular	simpcornice		1	5			L1st-E2nd	
Struc 4 C ditch	140	92	WW2	misc	body			1	2			L1st-2nd	
Struc 4 C ditch	140	92	GT4	jar	body			1	25			M1st-2nd	
Struc 4 C ditch	140	92	CG1A	jar	body			1	2			M1st-2nd	
Struc 4 C ditch	140	92	GW5	jar	necked	bead		11	90	180		L1st-2nd	
Struc 4 C ditch	140	92	GW7	dish				1	15			L1st-2nd	
Struc 4 C ditch	140	92	OW2	misc	body			1	10			L1st-2nd	
Struc 4 cobble	102		CGSam	cup	Form 33			2	15			M-L2nd	abraded
Struc 4 cobble	102		GW5	jar	necked	bead		1	10			L1st-2nd	abraded
Struc 4 cobble	102		GW5	misc	body			7	100			L1st-2nd	abraded
Struc 4 cobble	102		GW9	misc	body			7	86			M-L1st	abraded
Struc 4 cobble	104	107	GT3	jar			combed	14	630			M1st-M2nd	sim to WW1
Struc 4 cobble	104	107	SGSam	dish	Form 18/31			1	2			90-110	abraded
Struc 4 cobble	104	107	OW2	misc	body			1	2			L1st-2nd	
Struc 4 cobble	104	107	GT4	jar	body			1	23			M1st-2nd	
Struc 4 cobble	104	107	GW5	jar	body			7	55			L1st-2nd	

Contact Details

Richard Buckley or Patrick Clay
University of Leicester Archaeological
Services (ULAS)
University of Leicester,
University Road,
Leicester LE1 7RH

T: +44 (0)116 252 2848

F: +44 (0)116 252 2614

E: ulas@le.ac.uk

w: www.le.ac.uk/ulas



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