UNIVERSITY OF LEICESTER
Archaeological Services

An Archaeological Excavation on Land south of Soar Valley Way, Enderby, Leicestershire NGR: SP 554 998

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An Archaeological Excavation on Land south of Soar Valley Way, Enderby, Leicestershire
NGR: SP 554 998

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An Archaeological Excavation on Land south of Soar Valley Way, Enderby, Leicestershire [NGR: SP 554 998]

Roger Kipling and Matthew Beamish

Summary

An archaeological excavation was undertaken between May and August 2015 by University of Leicester Archaeological Services on behalf of Everards Limited. The fieldwork was a post-determination requirement on a proposed planning application for commercial development on land south of Soar Valley Way, Enderby, Leicestershire, in order to mitigate the potential impact of the development on such remains.

The archaeological excavation revealed evidence for archaeological activity, probably of stock agricultural character from the 4th century BC (Middle Iron Age) to the 3rd century AD (Romano-British) date. This agricultural activity was represented by ditch boundaries of Iron Age and Roman date, an Iron Age pit alignment, and Roman enclosures. A focus of Roman activity in the 1st to 2nd century AD shifted to the south in 2nd to 3rd centuries. Watering holes surrounded by areas of metalling were in use in both Middle Iron Age and Roman periods. Some evidence was recorded of ditch features that may have served to control livestock. Environmental evidence provided clear indications of an open pastoral landscape.

The site is remarkable for the preservation and discovery of a bark shield that is unparalleled in British if not European prehistory.

The site archive has been compiled under Leicestershire Museum accession number X.A33.2012 and will be deposited with the British Museum.

Introduction

An open-area archaeological excavation was undertaken on land to the south of Soar Way, Enderby, Leicestershire as a follow-up to a preliminary evaluation in 2012 which produced evidence for late prehistoric and/or early Roman archaeological activity.

In view of the results from 2012, and in accordance with National Planning Policy Framework (NPPF): Section 12 Conserving and Enhancing the Historic Environment, and following recommendations by the Leicestershire County Council (LCC) Senior Planning Archaeologist, additional archaeological field evaluation and open area excavation was recommended at the site. This was intended to provide further indications of character and extent of any heritage assets in order that the potential impact of the development on such remains may be assessed by the Planning Authority and a mitigation strategy agreed.

Fieldwork was carried out between May and August 2015 and involved the machine excavation of nine trial trenches as a preliminary to open area stripping targeting those areas with archaeological potential, in consultation with the Senior Planning Archaeologist at LCC, in order to fully define those areas with significant archaeological potential.

The archaeological evaluation was undertaken in accordance with Following National Planning Policy Framework (NPPF): Section 12 Conserving and Enhancing the Historic Environment. All work was undertaken in accordance with the Chartered Institute for Archaeologists (CIfA) Code of Conduct (2014) and adhere to their *Standard and Guidance for Archaeological Field Evaluation* and *Archaeological excavations* (2014). The LCC *Guidelines and Procedures for Archaeological work Leicestershire and Rutland* (1997) was also adhered to.

Site Description, Topography and Geology

The site lies in Enderby, approximately 1.5km east-north-east of the village core and around 5km south-west of Leicester city centre and occupies a rectangular area of *c.*7.7ha that is bounded by Narborough Road South to the west and the A563 Soar Valley Way to the north. To the south is the Police Headquarters and to the east are more enclosed fields. The site is centred on National Grid Reference SP 554 998. The British Geological Survey of England and Wales, sheet 156 (Leicester) shows the geology of the area is likely to be Glaciofluvial Deposits (sand and gravel) over most of the site, with Oadby Member Till at the western edge. The largely level site lies at a height of *c.*68m. The development area is currently a field containing an arable crop and a number of trees.

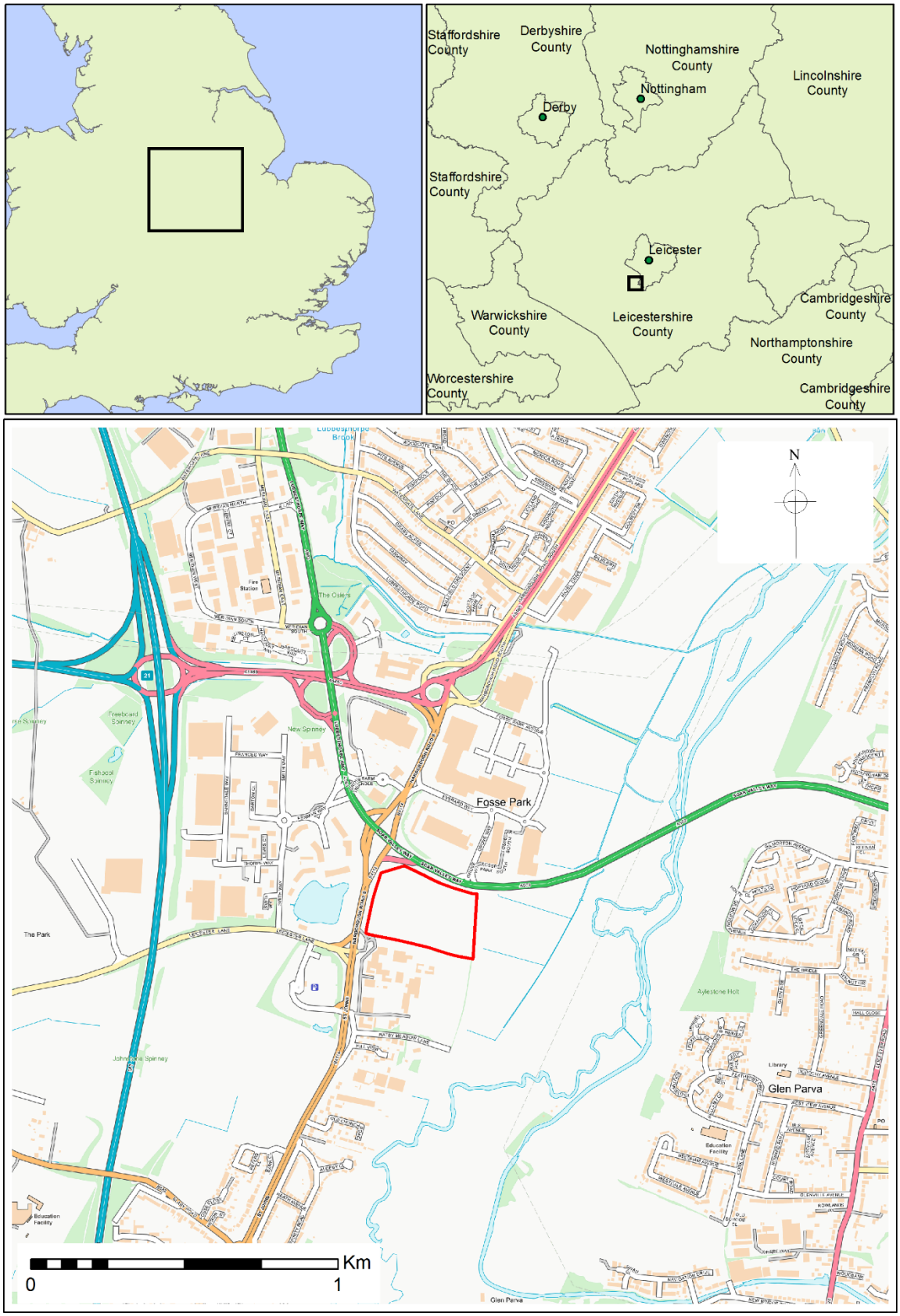

Figure 1: Site Location (outlined in red) *Contains OS data © Crown copyright [and database right] 2019*

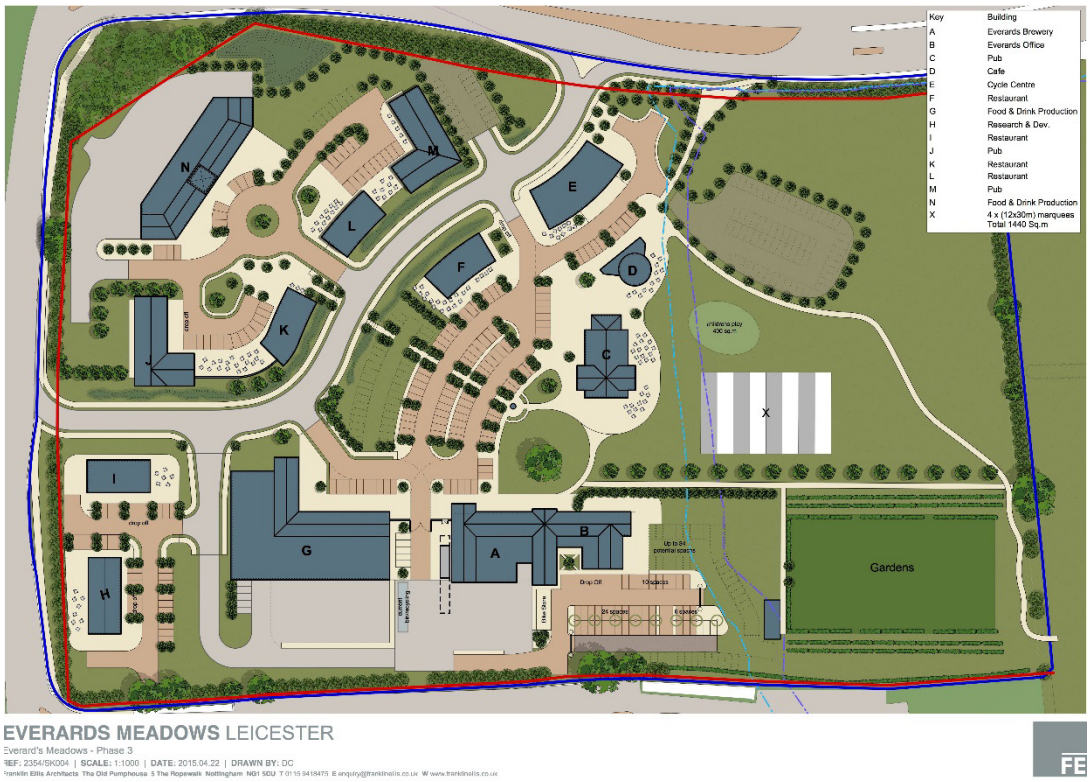

Figure 2: Plan of proposed development (supplied by client)

Archaeological and Historical Background

An earlier archaeological desk-based assessment and geophysical survey of the area (Hunt 2011) indicated that the application area lies within an area of some archaeological significance, as listed on the Leicestershire Historic Environment Record (HER). This showed that there are visible cropmarks within the field itself (HER refs: **MLE16568** & **MLE16569**) which are most likely prehistoric or possibly Roman in date. One appears to be a double ditch, a boundary form characteristic of Iron Age date land division. A trench evaluation was undertaken in 2012 (Kipling 2012). Archaeological features were successfully identified in the east of the west of the site, but not in the east, and a potential double ditch boundary (**MLE 16569**) was not located.

Results of a search of the HER for Bronze Age, Iron Age and Roman sites in February 2019 are shown below (Fig.4), and text from the 2011 Desk Based Assessment updated with new sites that have been identified in the interim.

Prehistoric

Several known archaeological sites lie in the immediate vicinity of the excavation area. A Palaeolithic hand axe was found around 350m south of the site in the early 20th century (**MLE6041**), whilst an additional late Palaeolithic flint implement was located in 2011 600m west of the site, north of Leicester Lane, Enderby (W. Jarvis pers. comm.). A group of around 100 flint tools, dating from the Neolithic period to the Bronze Age were found during the excavation of an Iron Age site around 800m to the north-west of the site (**MLE7123**), and a scatter of flint material and sherds of pottery dating from the Neolithic to Early Bronze Age were found 300m south-east of the site (**MLE7377**). A substantial Iron Age site was discovered south-west of Grove Farm Triangle, which lies around 800m from the edge of the site, in the 1980s and 1990s, which showed evidence of metal working as well as enclosure ditches and roundhouses (**MLE79**). Further evidence for occupation during the Iron Age was discovered just south of Ratby Meadow Lane, around 300m south-east of the site (**MLE96**) and in an area 600m to the west of the site, where further houses and human remains were discovered (**MLE112**). An archaeological evaluation in October 2011 and excavation in 2016 located substantial areas of Bronze Age and Iron Age occupation 700m to the west, north of Leicester Lane, Enderby (**MLE6259**). Further evidence of Iron Age settlement in known 650m south-west on the east side of, and partly truncated by the M1 (**MLE99**).

Excavations by ULAS on the Park and Ride site 300m to the south-east of the site revealed evidence for further two Iron Age houses and a double ditch system (**MLE16060** & **MLE16061;** Harvey 2011). The area was occupied into the Roman period (see **MLE17757** below).

Roman

The site lies almost adjacent to the line of the Roman road known as the Fosse Way (**MLE1380**). Metal detecting along the route close to the Grove Farm Triangle, yielded Roman brooches, a coin and a copper alloy seal box lid (**MLE7684**). Seven Roman coins were found by metal detector around 320m north-west of the site (**MLE7686**), whilst a buckle and a brooch were found on a site around 700m south-west of the site (**MLE7688**). Excavations at the Park and Ride site excavation in 2008 revealed six Roman burials in very poor condition, including of two male and one female skeletons (Harvey 2011, 56-62) (**MLE17757**).

The site itself includes areas of activity in the Romano-British period, and these are now included on the HER as **MLE20819.** Further evidence of features of Early Roman date in the form of ditch and post-holes have been located 400m to the south-west **MLE23469**. A large Roman period settlement including evidence of pottery manufacture and substantial buildings is known 600m to the south-west adjacent to the line of the Fosse Way (**MLE101**).

Preliminary evaluation conducted in 2012 produced evidence for general activity of late prehistoric and/or early Roman date, likely agricultural in character and apparently concentrated in the western part of the site, with a possible concentration of Roman activity centred on the south-west corner. Archaeological features included a small rectangular stock enclosure associated with a possible pond or watering hole feature. A number of ditches identified in the vicinity may have been functionally linked to this arrangement, possibly as drove roads. The overall absence of cultural material and archaeo-botanical potential suggested that this activity was located some distance from any associated settlement.

The absence of archaeological evidence in the eastern area appeared to stem from a variation in the geology between the upslope, more permeable geology of sands and gravels (hence more suited to settlement observed to the west, and as such atypical of the locality) and the heavier, alluvial geology characterising the eastern part of the site.

Figure 3: Google Earth satellite image (2006)

Aims and Methods

All exploratory and mitigation work was considered in light of the East Midlands Research Framework (Cooper ed. 2006) and strategy (Knight *et al.* 2012), along with targeting national research aims, highlighted as English Heritage's critical research priorities for the Roman period (EH 2012). Potential research objectives that this scheme might contribute towards included the following:

The Roman Period (Taylor 2006; Knight *et al.* 2012, 70-81). The evaluation results suggested the presence of Roman evidence which would be affected by the scheme. There are several Roman sites within the vicinity including the major Roman road, the Fosse Way, and excavations may contribute to knowledge on rural settlement, landscape and society. Artefacts could identify trade links and economy.

The main objectives of the archaeological work as set out in the Written Scheme of Investigation (Clay 2015) were:

- To identify the presence/absence of any archaeological deposits.
- To establish the significance, character, extent and date range for any archaeological deposits to be affected by the proposed ground works.
- To undertake an open area excavation to record an appropriate sample of the archaeological depssoits identified
- To produce an archive and report of any results.

Within the stated project objectives, the initial aim of the evaluation was to establish the nature, extent, date, depth, significance and stx`ate of preservation of archaeological deposits on the site in order to determine the potential impact upon them from the development. All work was undertaken in accordance with the Chartered Institute for Archaeologists (CIfA) Code of Conduct (2014), and adhered to their *Standard and Guidance for Archaeological Field Evaluation* and *Archaeological excavations* (2014). The LCC *Guidelines and Procedures for Archaeological work Leicestershire and Rutland* (1997) will be adhered to.

The programme of archaeological evaluation consisted of a sample targeting the cropmarks, geophysical survey and some blank areas not previously investigated in the 2012 evaluation, comprising nine 30m x 1.6m trenches totalling *c*.434m² of trenching. This followed the Written Scheme of Investigation (Clay 2015) approved by the LCC Senior Planning Archaeologist on behalf of the planning authority who also monitored the fieldwork. Excavation was undertaken using mechanical excavators fitted with a 1.6m wide toothless ditching bucket, with topsoil and overburden removed carefully in level spits, under continuous archaeological supervision.

Proceeding from this in consultation with the LCC Senior Planning Archaeologist as advisor to the Planning Authority, two open areas were machine stripped, the larger of the two targeting possible enclosures to the east, and a second, smaller area in the south-west corner aiming to investigate a potential settlement focus. Subsequently, the discovery of the Iron Age pit alignment necessitated the extension of the larger area west and south in order to link up with the second, resulting in a single stripped area totalling *c.*1.235ha.

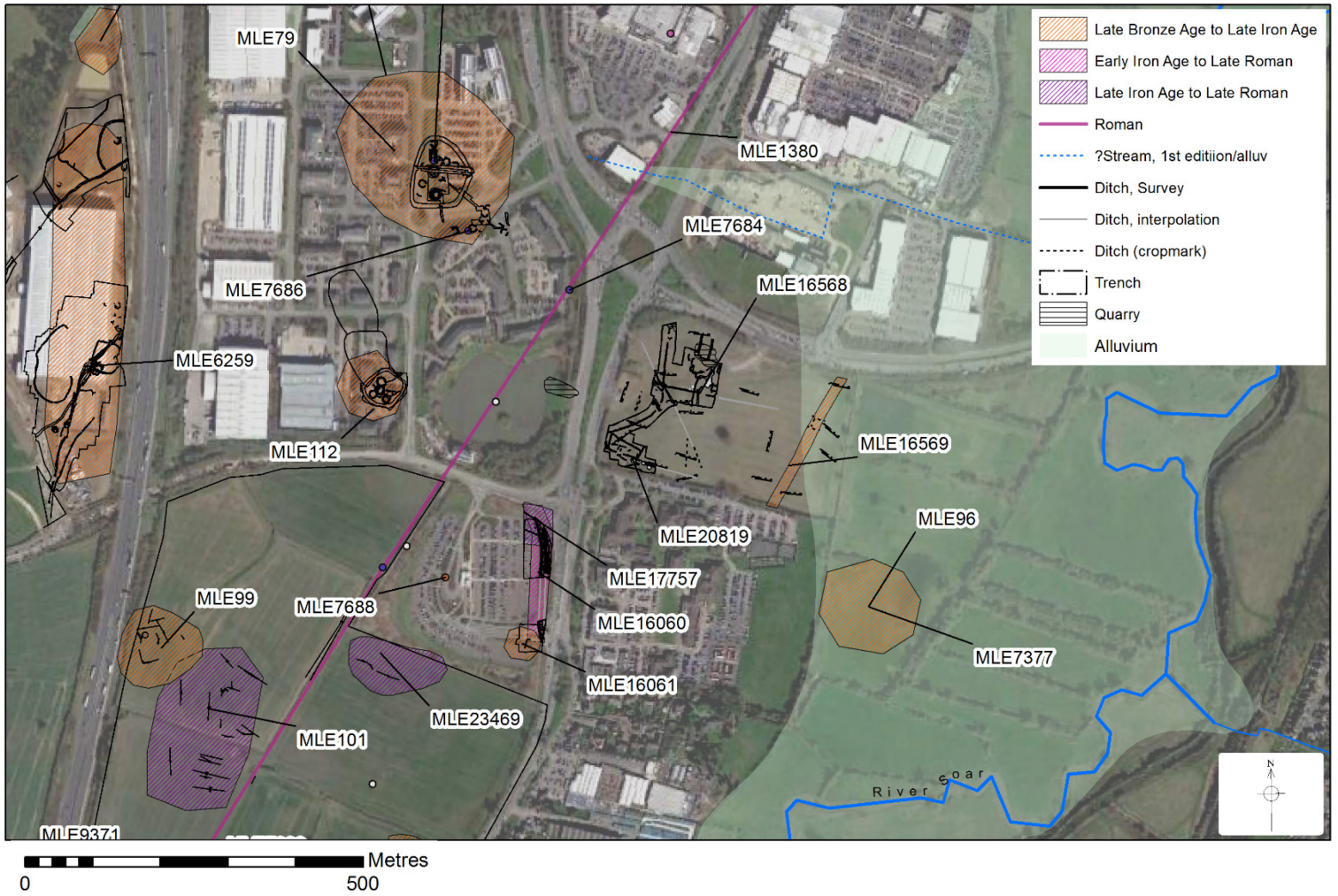

Figure 4: Location of site to other Late Bronze Age, Iron Age and Roman sites in the vicinity with satellite image backdrop with contours (m aOD) drainage and mapped extent of alluvium

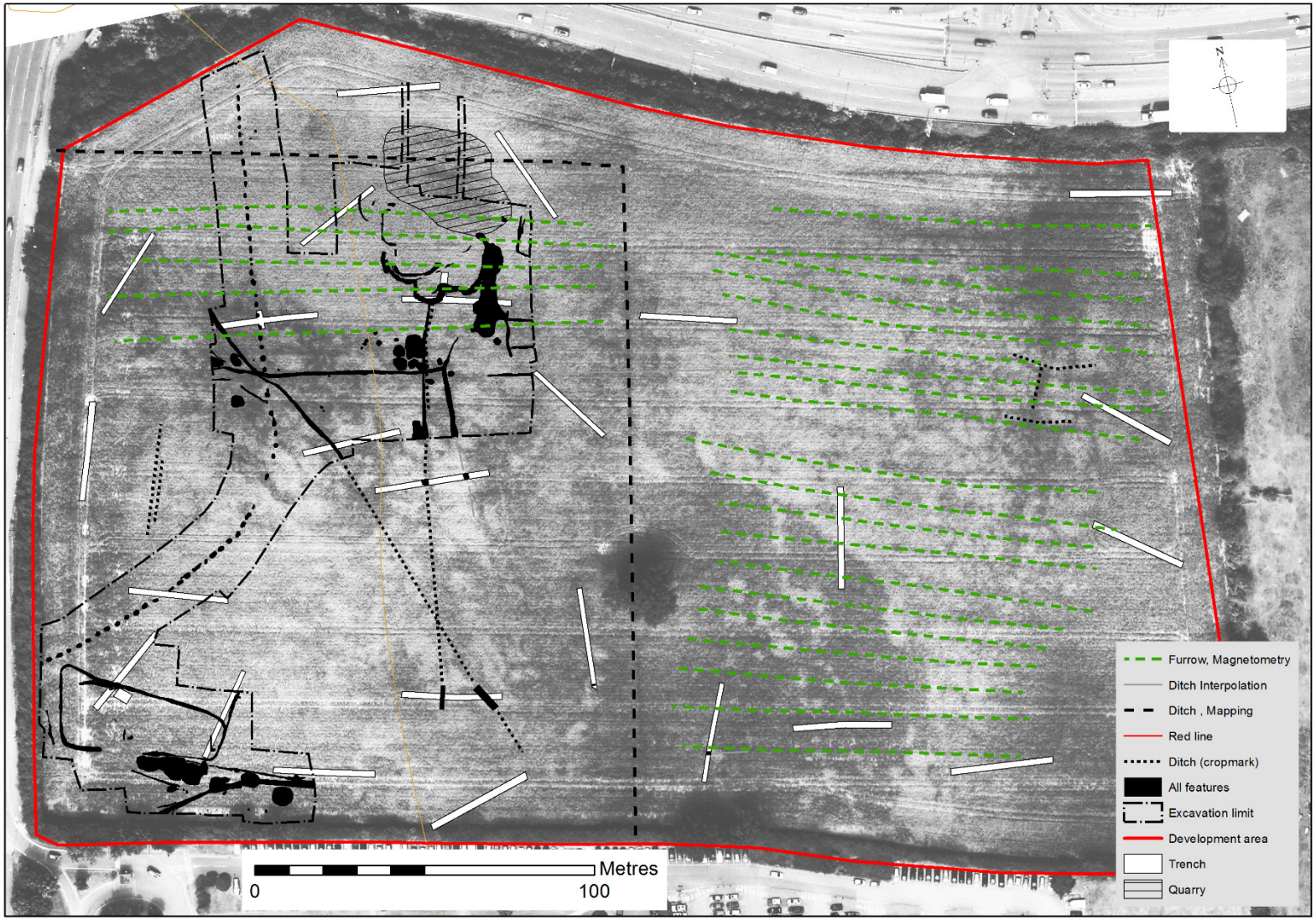

Figure 5: Location of development area with aerial photograph, interpretation, trench and area excavation locations, and all recorded features

Figure 6: Machine strip in progress; view north-east

Figure 7: General working views east across excavation

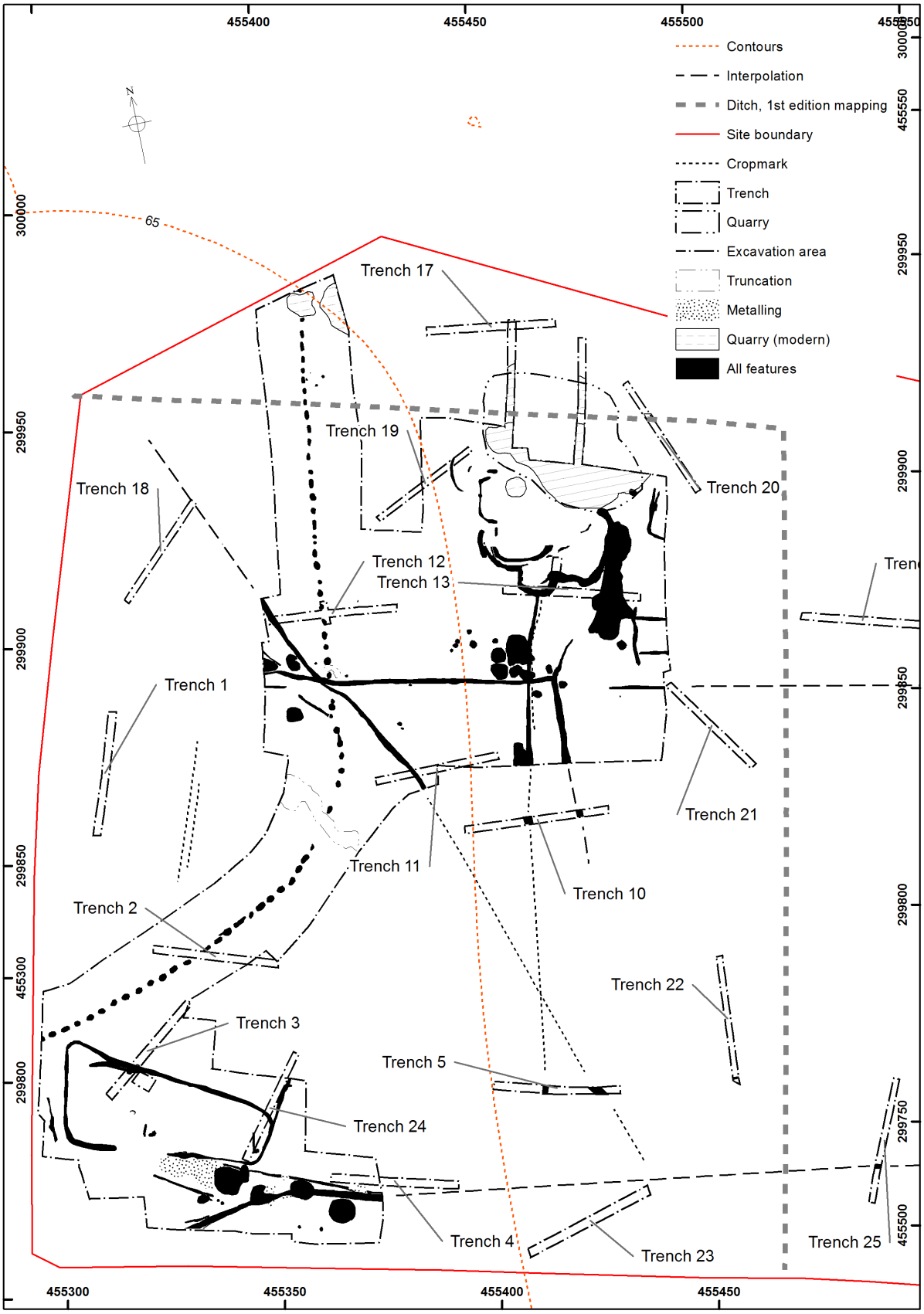

Figure 8: General plan of excavation showing all archaeology, including modern quarry pits in the north of the site.

Cut numbers are enclosed by square brackets, and deposits in round brackets. Contexts recorded in the evaluation trenches are reported separately and are italicised. Context descriptions are listed in Table 37, p156).

Prehistoric deposits

Pit Alignment Figs 9- 12, 17-18.

Pit Alignment [238]-[503] [238] (237), [243] (242), [245] (244), [256] (255),[263] (261), [269] (268), [281] (280), [288] (287), [295] (294), [303] (302), [311] (310), [366] (367) (368) (369) (370), [372] (371), [390] (389) (410), [392] (391) (414), [413] (412), [415] (416), [419] (420) (439) (440), [428] (433) (434) (435), [441] (442), [447] (446) (449), [452] (453), [456] (457), [462] (463), [472] (473), [496] (497), [500] (498) (499), [501] (502), [503] (504).

A substantial prehistoric boundary feature was represented by a linear arrangement of some 62 pits running broadly north-south along the western edge of excavation forming a single, 212m line heading directly south across the site from its northern boundary before angling sharply to the south-west and exiting the site at its south-west corner.

In total, 29 of the 62 pits in the pit alignment were excavated, representing a 47% sample of the total. The features were generally oval or sub-circular in plan and measured *c.*2m-2.5m x 1m-1.5m in plan and around 0.5m in depth and with common leached orange/grey sandy silt fills.

Whilst post-medieval sand/gravel quarrying and a west to east field boundary in the northern area of the site had removed several pits, and disturbance was apparent in other areas leading to some discontinuities in the arrangement, the surviving pits appeared regularly spaced, set *c.*1.5m-2m apart.

Some pits were clearly elongated and sub-rectangular, whereas others were more circular. No particular pattern to these differences has been recognised.

Five of the pits produced pottery, with material of general Iron Age date from pits [245], [256], [295], [366], with a small number of mid to late Iron Age sherds from [503]. Pits which produced pottery were all located to the north of the intersection with ditch [304]. Several pits in the area of the intersection had multiple fills, indicating backfilling.

The lack of stratigraphic relationships preclude any certainty to phasing of the archaeology. Pit alignments are associated with landscape subdivision during the later prehistoric period and as such are likely to form part of a wider network of settlements and interlinking ditches and trackways as have been revealed by archaeological excavation in the immediate area.

Four post structure [474], [476], [489], [491] Figure 10

Toward the northern extent of the exposed alignment an arrangement of four post-holes in a sub-rectangular shape approximately 2.7m x 2.1m was offset to the east. The post-holes were shallow and varied between 0.08m and 0.26m deep. No finds were recovered.

Table 1: Post-holes of four post structure

Cut	Fill(s)	Dimensions (L/W/D) (m)	Finds	Notes
474	475	0.22 x 0.22 x 0.08	None	
476	477	0.92 x 0.92 x 0.15	None	
489		0.78 x 0.78 x 0.1	None	
491	492	0.62 x 0.56 x 0.26	None	

Table 2: Pit alignment pits

Cut	Fill(s)	Dimensions (L/W/D) (m)	Finds	Notes
238	237	3.58 x 1.2 x 0.32	1 x flint scraper	
243	242	0.90 x 1.2 x 0.25		
245	244	1.1 x 1.10 x 0.45	Pottery	
256	255	1.4 x 1.3 x 0.40	Pottery	
263	261	2.7 x 1.5 x 0.40	N	
269	268	1.3 x 1.3 x 0.30	N	
281	280	2.4 x 1.3 x 0.40	Pottery	
288	287	2.4 x 1.2 x 0.35	N	

295	294	2.4 x 1.6 x 0.35	Pottery	
303	302	2.2 x 1.4 x 0.45	2 x flints	
311	310	1.65 x 1.65 x 0.28	1 flint flake	Probably cut by post-hole 323.
366	367, 368, 369, 370	1.98 x 1.72 x 0.51	Pottery, flint	
372	371	1.6 x 1.6 x 0.60	None	Possible post packing
390	389, 410	2.3 x 1.5 x 0.60	None	
392	391, 414	1.7 x1.4 x 0.60	None	
413	412	2.10 x 0.50 x 0.15	None	
415	416	0.84 x 0.90 x 0.26	None	
419	420, 439, 440	2.04 x 1.52 x 0.46	None	
428	433, 434, 435	1.72 x 1.20 x 0.40	None	
441	442	1.90 x 1.50 x 0.50	Single flake	
447	446, 449	2.7 x1.80 x 0.35	None	
452	453	1.53 x 1.08 x 0.18	None	
456	457	1.6 x 1.60 x 0.50	None	
462	463	1.8 x 0.74 x 0.36	None	
472	473	2.0 x 1.56 x 0.51	None	
496	497	2.2 x 0.88 x 0.14	None	
500	498, 499	2.50 x 1.90 x 0.70	None	
501	502	1.78 x 0.90 x 0.18	Flint	Located by default/elimination
503	504	1.88 x 1.40 x 0.38	Pottery & flint	Located by default/elimination

Central Ditches and Pits Figure 11

The central excavation area was dominated by two intercutting ditch features crossing the pit alignment. A number of pit features were recorded in the area of the intersection.

Ditch [304] [18](17)(21),[19](20),[26](27)(28),[304](305),(306),(307)/[324] (325), (326)/[320] (321)/[327] (328)/[373] (381), (382), (383), (384)/[429] (436), (437), (438)

The earlier of two ditches, ditch [304] (1m-1.5m wide x 0.50m deep x 60m+ long) traversed the excavation on a north-western to south-eastern alignment. Crop mark evidence shows that the ditch continued for a further

Linear feature [332] (331)/[363] (362)

Linear feature [332] measuring 0.80m wide, 0.25m deep 8m length north-west to south-east running 5m from and parallel to ditch [304]. The ditch was filled

Ditch [209] [209](210)/[264] (265)/[266] (267)/[282] (283), (284)/[298] (299)/[296] (297) [298] (299)/[365] (364)/[417] (418)/[429] (436), (437), (438)

Once ditch [304] was at least partly infilled, it was cut by ditch [209], which emerged from the west and ran eastwards for c.70m before it was cut by two north-south aligned linear features, [150] and [252].

On the basis of the cropmark evidence (see Figure 5) ditch [304] continued for a further 100m beyond the eastern edge of the excavation area. The ditch was not continuous with a break of some 12m on the east side of the excavation area.

Ditch [176] [176] (177), [178] (179), [180] (181)

On the east side of the excavation area, ditch continued the line of the ditch 209 after a gap of some 12m. The ditch is undated but suggested to be contemporary.

Pits [308]-[454] [308](309), [329](330)(387)(388), [344](345)(346)(347)(348), [454](455)

A small grouping of six oval pits [308, 329, 374, 375, 344, 454] and a linear feature [332]/[363] were clustered around the intersection of the two ditches and the pit alignment on the central western limit of excavation. Pit 308 contained some fire cracked stone.

Pits [374]-[375] [374] (385), [375] (386)

Two substantial oval pits, [374] & [375] were positioned in the intersection of ditches [304] and [209], measuring 2.7m x 1.8m x 0.35m and 2.9m x 2.26m x 0.56m respectively, and both produced Iron Age jar or bowl sherds. Another pit which produced Iron Age pottery also included later pottery and is considered below [344], (346) (347).

Limited ceramic dating from the pits suggests a broad Iron Age date for the grouping.

Although stratigraphically there were no clear indications as to the relationship between the pit alignment and the other features, ditch [304] aligned north-west to south-east had a clear deviation in its course where it crosses over the pit alignment, and on this evidence, it is suspected that the pit alignment existed before ditch [304] was cut. Ditch [304] is itself cut by ditch [209] which also deviates from a straight line where it passes across the pit alignment suggesting the pit alignment continues to exist as a landscape feature when ditch [209] was laid out.

Pits [152]-[159] [152] [153] (152), [155] (154), [159] (160) (161)

A small cluster of pits [152], [154], [159] were located 28m to the east of the ditch intersection. Pit [152] and [159] contained Iron Age pottery with fill (153) of [152] producing 38 sherds (Table 8 p55). These features may be contemporary.

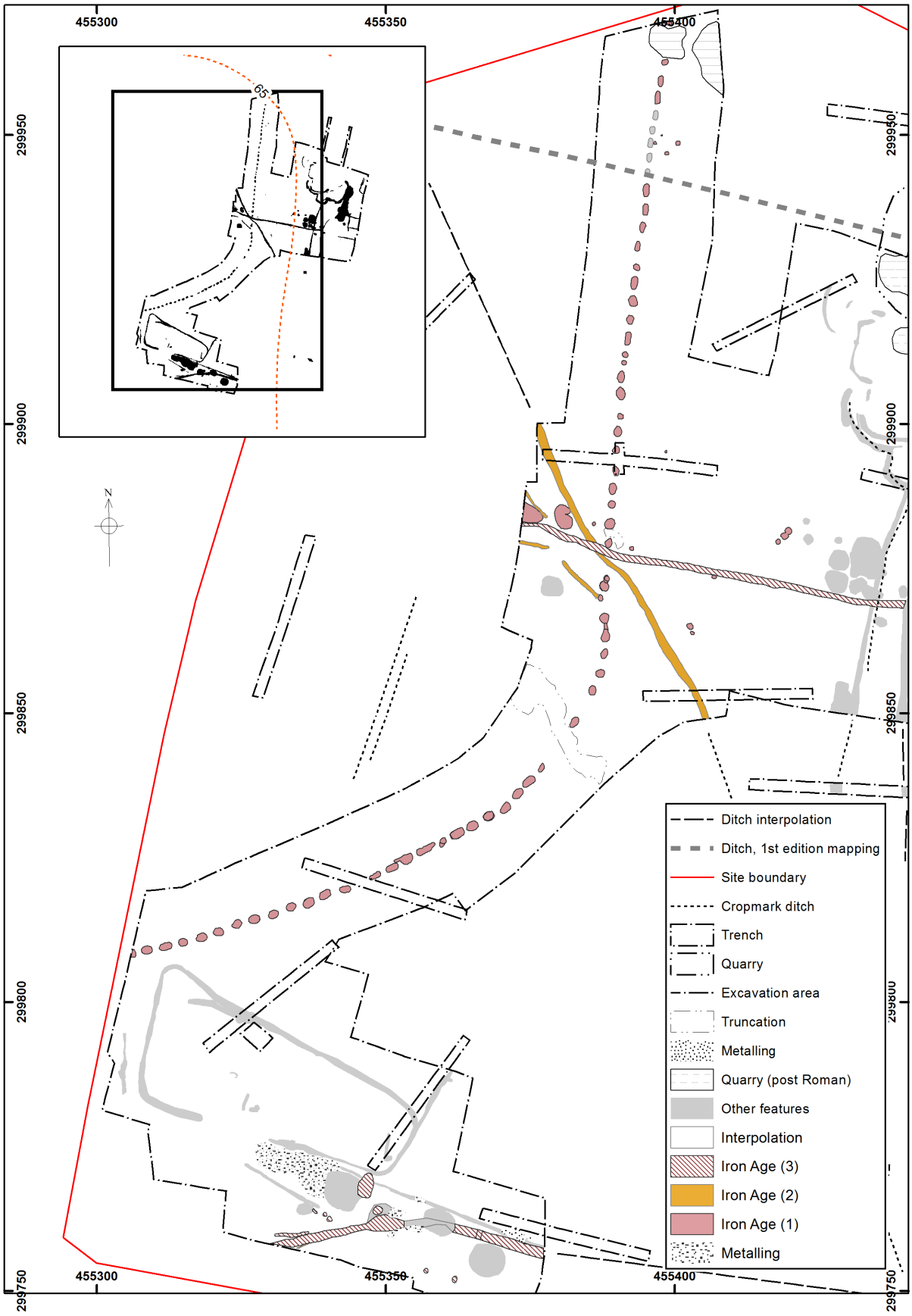

Figure 9: Iron Age features.

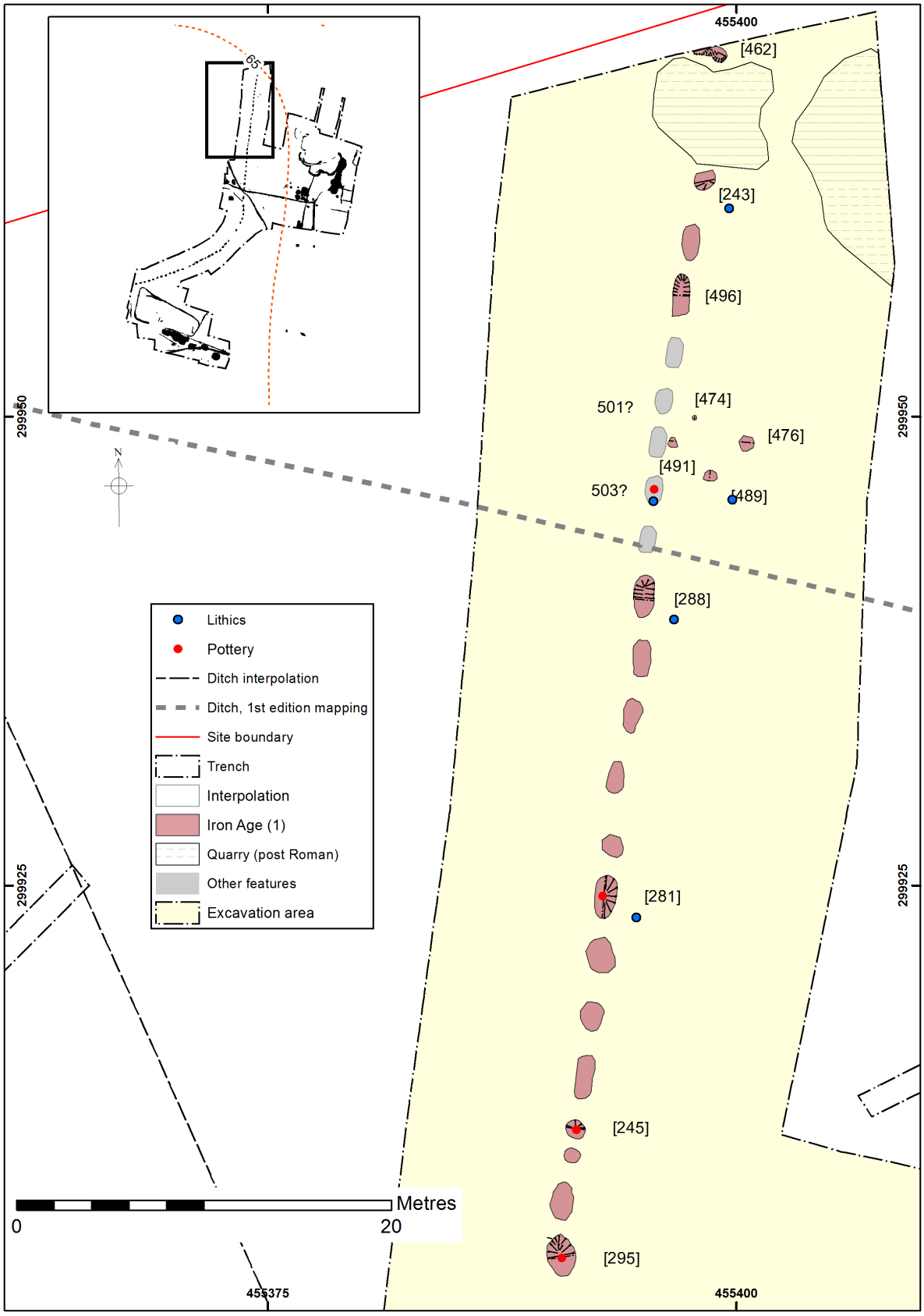

Figure 10: Pit alignment, northern section

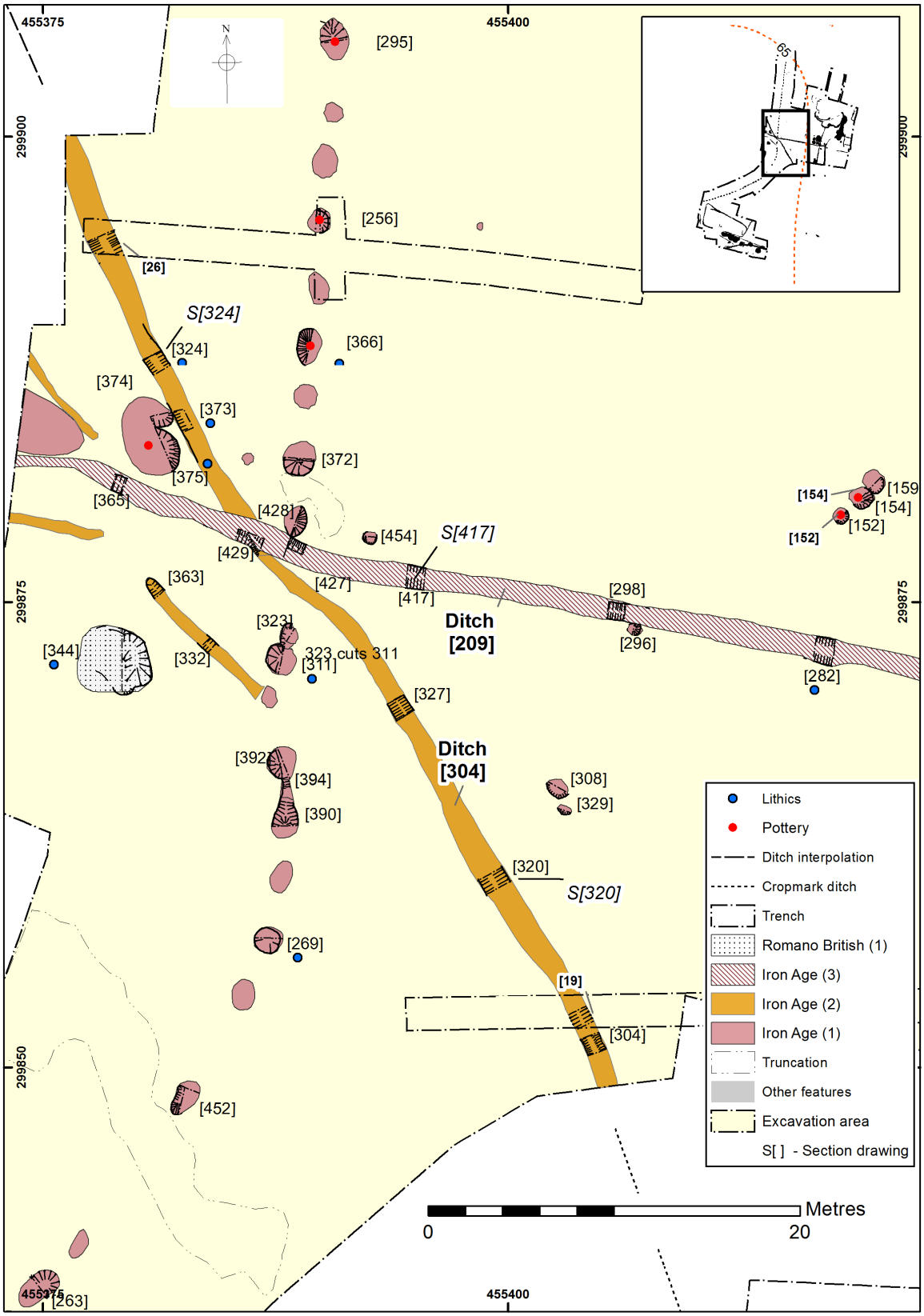

Figure 11: Western central area of excavation showing pit alignment and intersecting ditches.

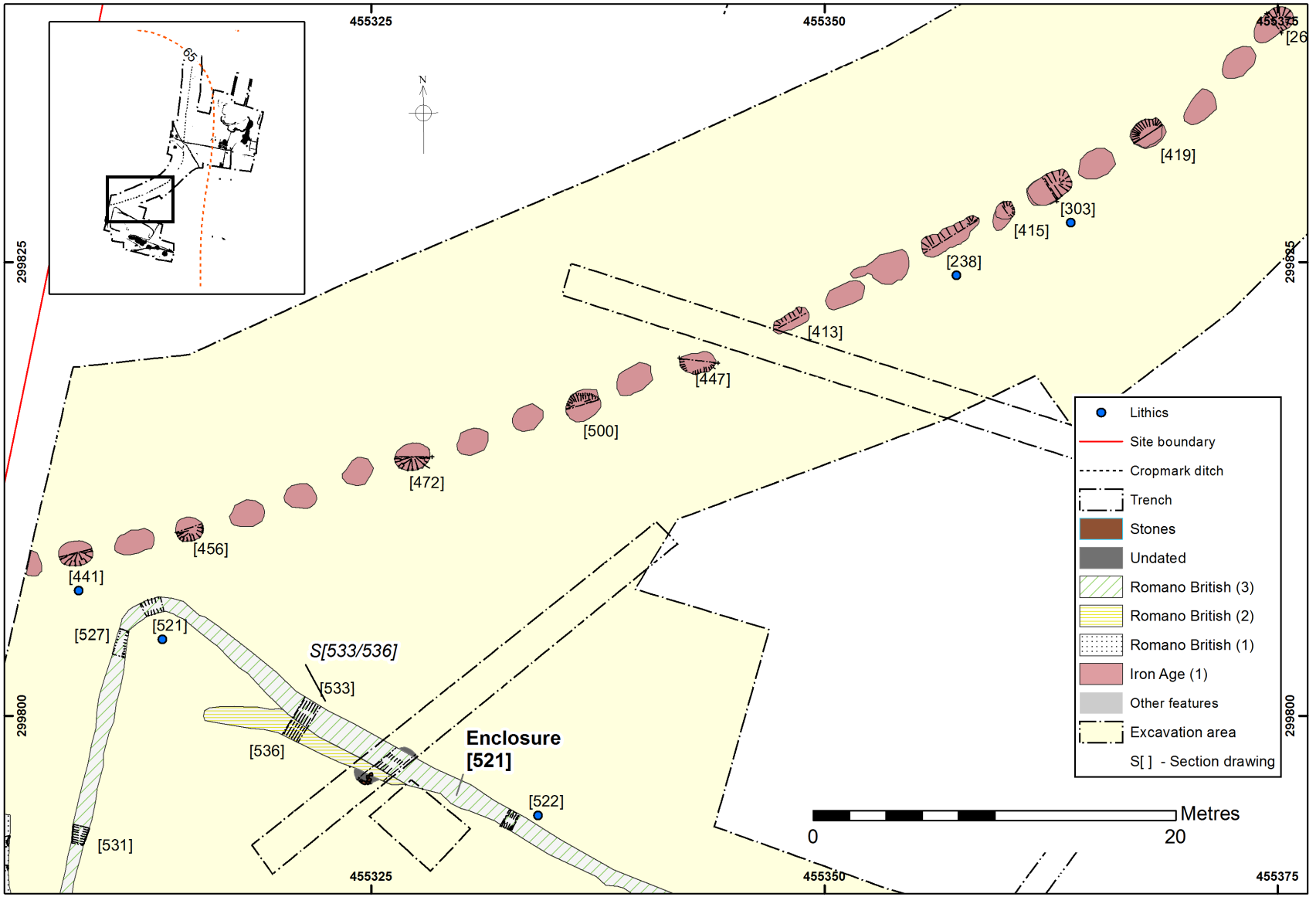

Figure 12: Pit alignment: south-western section

Figure 13: View east across excavation area with pit alignment running left to right

Figure 14: Pit [245]: view south (1m scale)

Figure 15: Pit alignment pit [303]; view south-west (1m scale)

Figure 16: Pit alignment pit [419]; view south-east (1m scale)

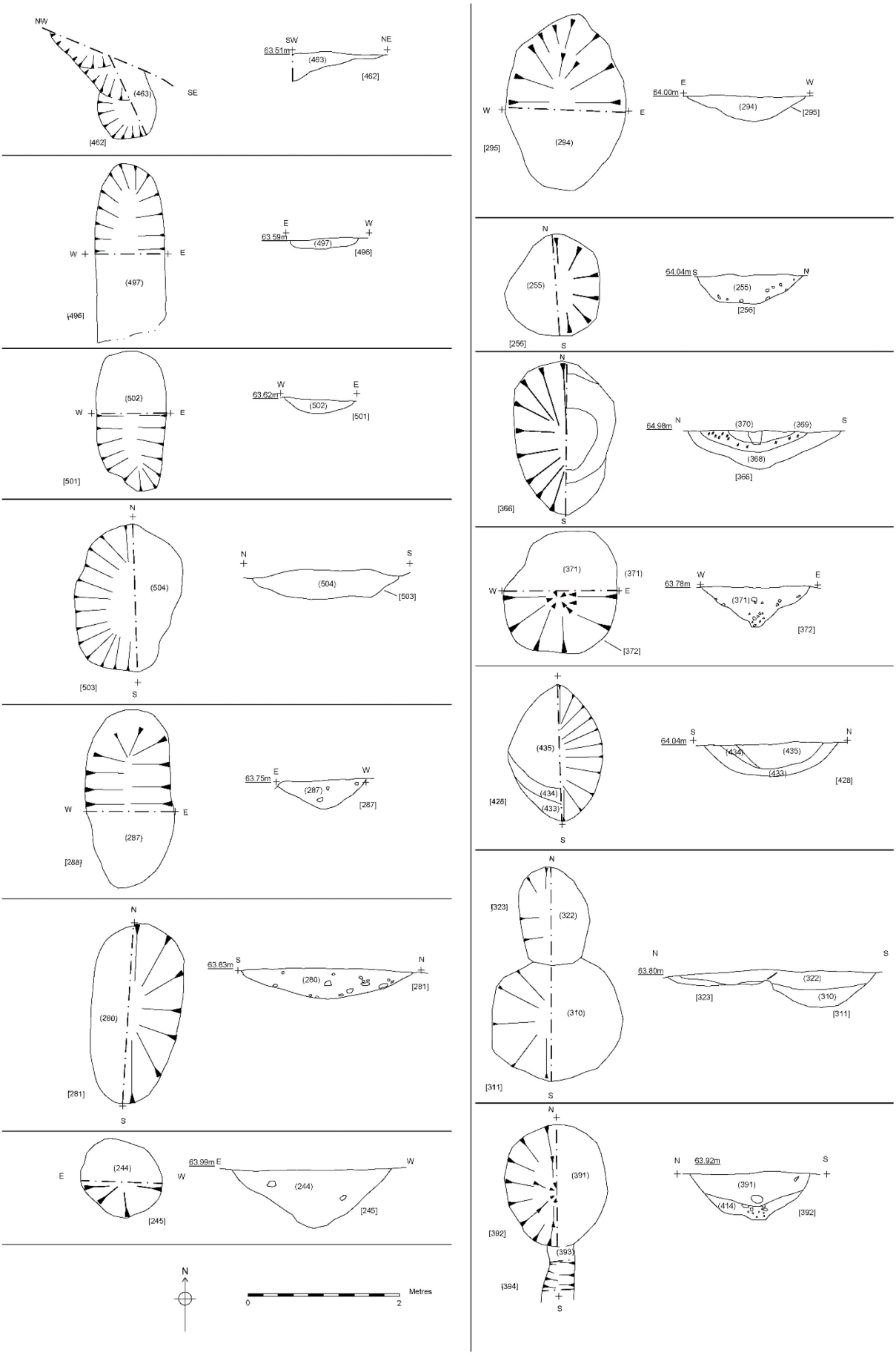

Figure 17: North to centre pit alignment excavated features, column left followed by column right, north to top.

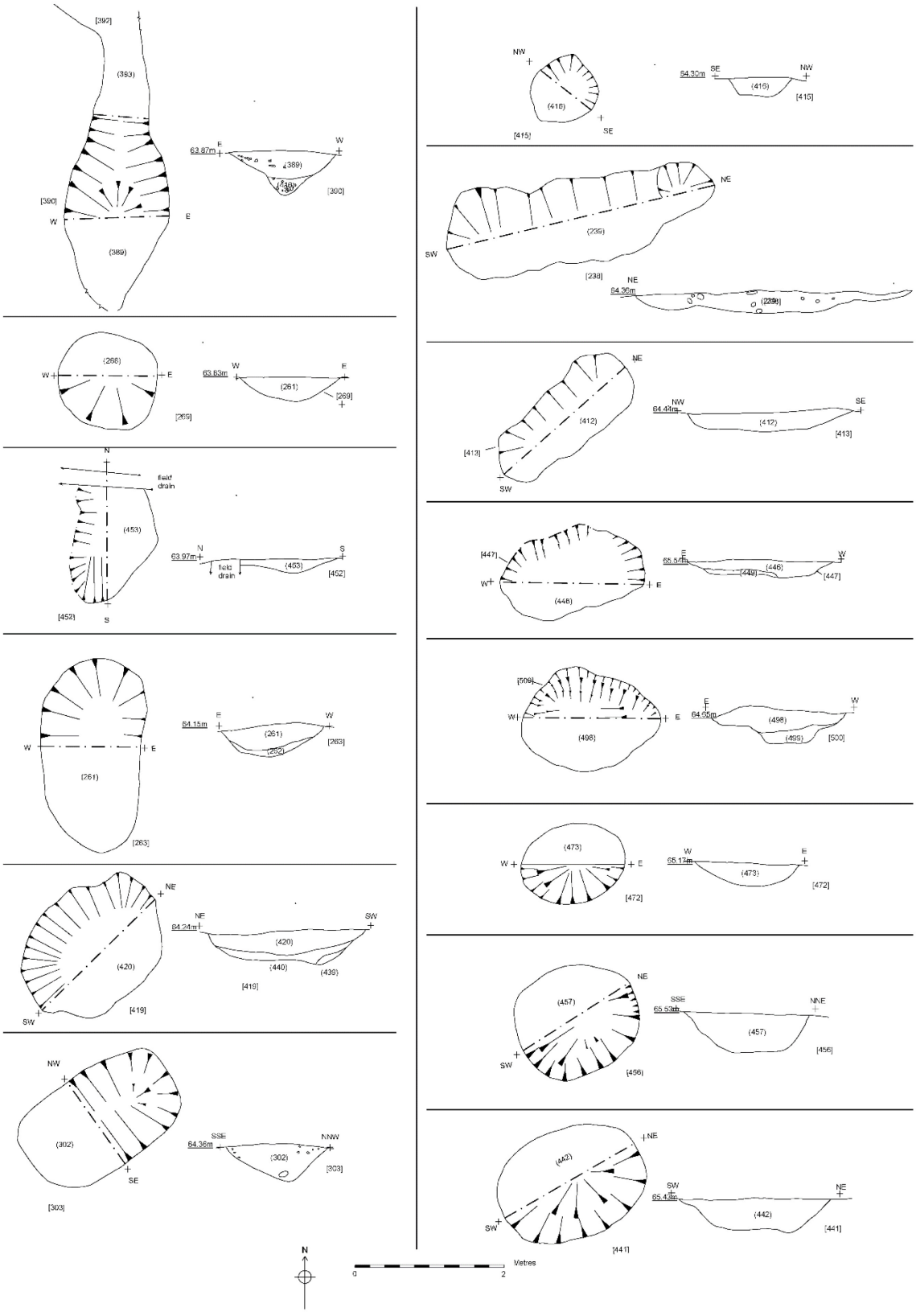

Figure 18: Centre to south-west pit alignment excavated features, column left followed by column right, north to top.

Figure 19: General view east across central area of excavation. Pits [374] and [375] in foreground.

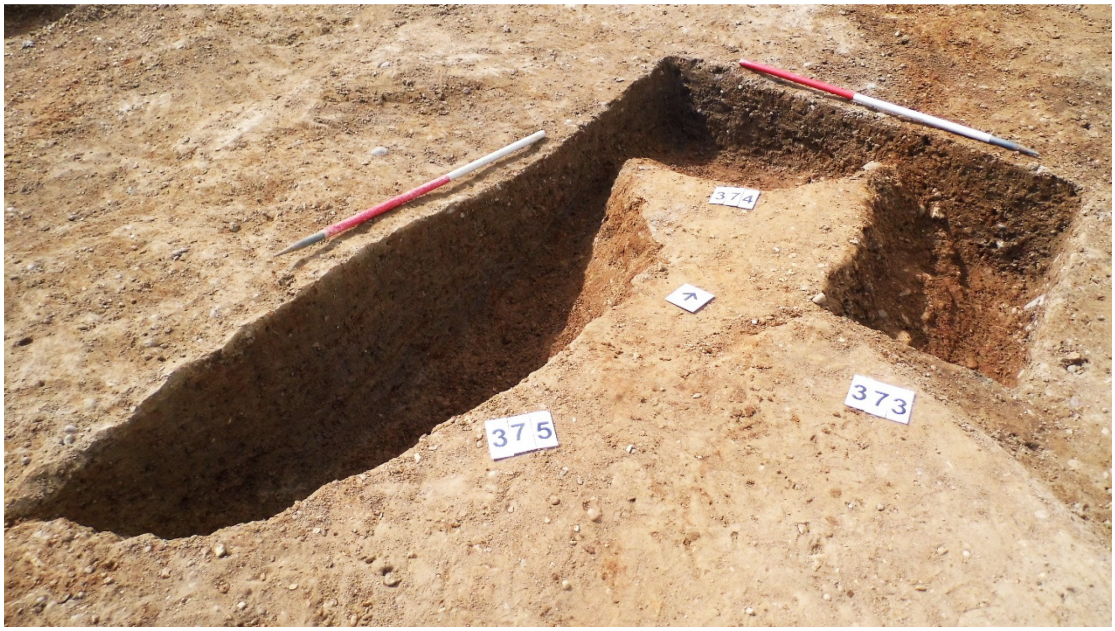

Figure 20: Ditch **[304]**([373]) & pits [374] & [375]; view north-west; 1m scale

Figure 21: Ditch **[304]**/[327]; view north-north-west; 1m scale

Figure 22: Ditch **[209**]/[417]; view east; 1m scale

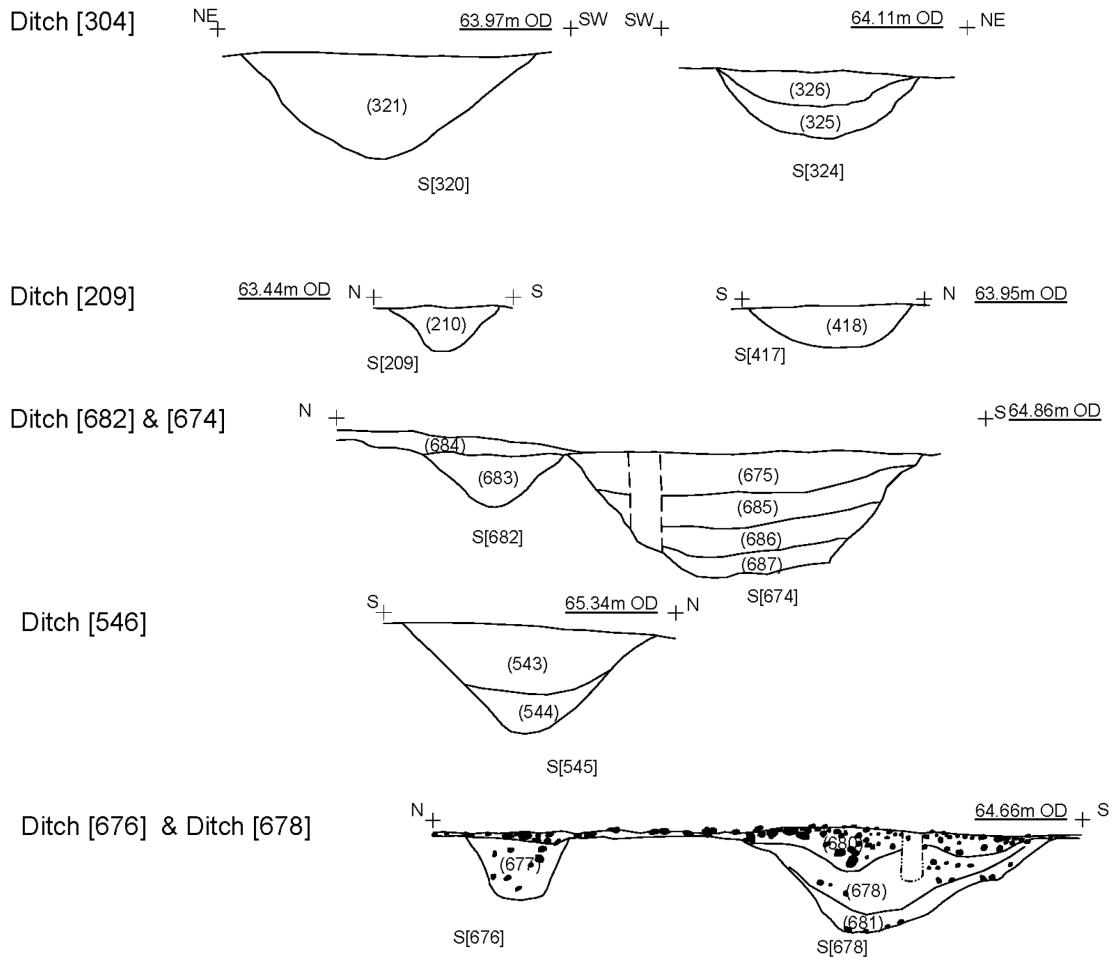

Figure 23: Ditch and gully sections

Pits, Ditches and Trackway Figure 24

The south-east corner of the excavated area was characterised by a complex of features demonstrating clear evidence of use during the Middle Iron Age and subsequently the early Roman periods. Ceramic and radiocarbon dating suggests discrete phases of activity although similarity in terms of feature types is evident. The contemporaneity of the metalled surfaces with certain of the features appeared likely, although a lack of dating material mitigated against determining this conclusively. Difficulties in terms of phasing were compounded by probable plough disturbance and/or water erosion of gravel metalling leading to misleading relationships with likely contemporary features. Despite these difficulties, a broad phasing sequence was identified, suggestive of a gradual eastward shift of activity throughout the Iron Age and Roman periods. The following narrative will accordingly address these features on a period by period basis.

A linear gravel-metalled surface, probably representing either a road or trackway, ran diagonally through the south-east corner of the excavation. The c.5m -6m wide surface was traced for a minimum of 50m running parallel to the southern side of a ditched Roman enclosure (discussed above), running east beyond the limit of excavation.

The waterlogged, organic-rich deposits at the base of the larger, western pit, served to preserve a shield constructed from bark with willow basketry boss, an artefact which is unparalleled. The shield had been buried no later than 195 cal BC and this dating along with pottery recovered from the infilled features, indicates that many of them were out of use by the earlier Roman period when the area was more actively exploited.

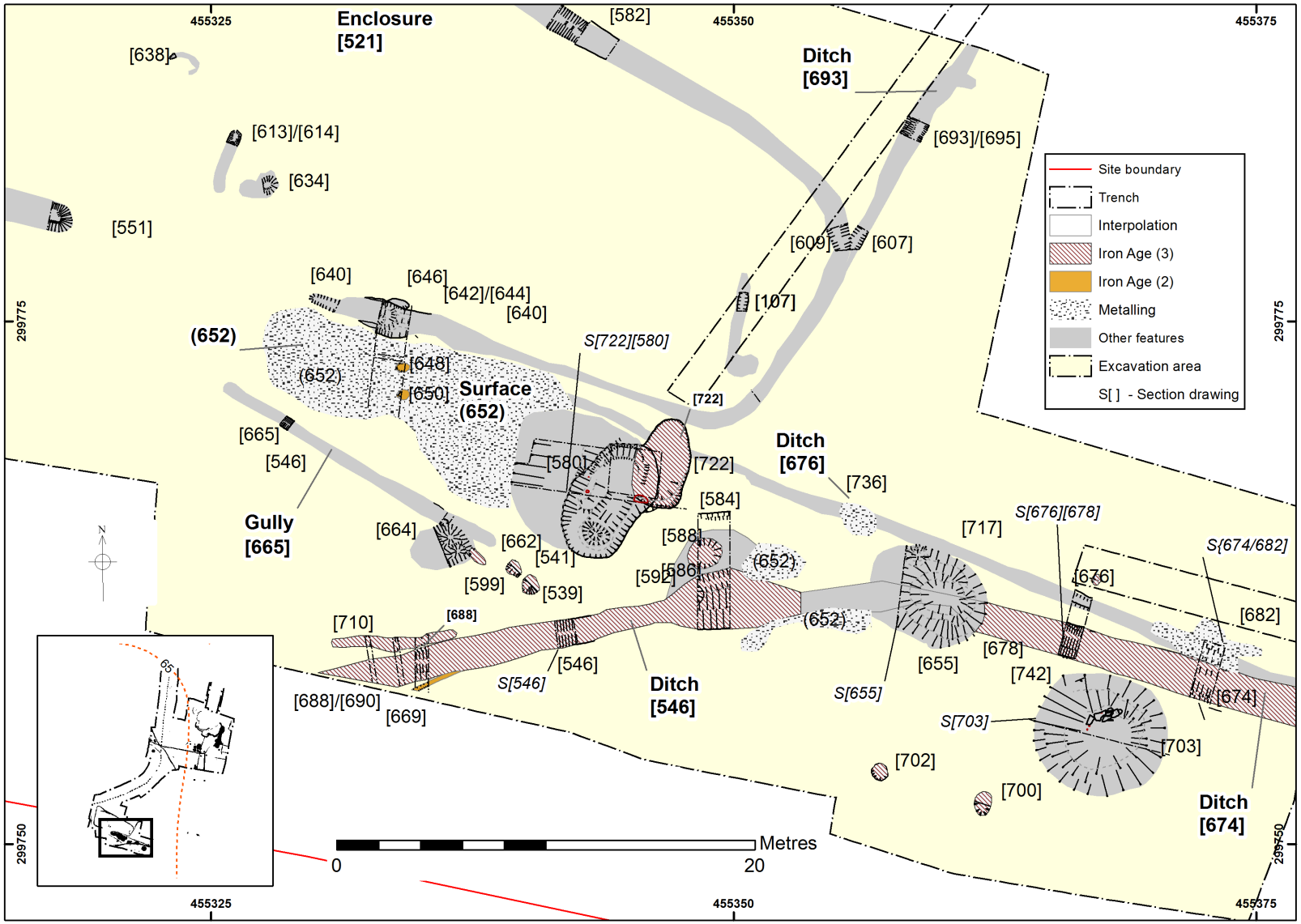

Figure 24: Iron Age features in south of site

Metalling (652)

A *c.*5m-6m wide gravel-metalled road or trackway occupied the south-west corner of the excavation (Fig.25). The feature ran parallel to the southern side of the enclosure on a north-west-west to south-south-south-east alignment.

The principal context (652) comprised a 0.2m-thick hard compacted gravel metalled material in a pale grey-brown silty clay matrix. Pottery suggests that this surface was in use in the early-middle Iron Age (E. Johnson p51).

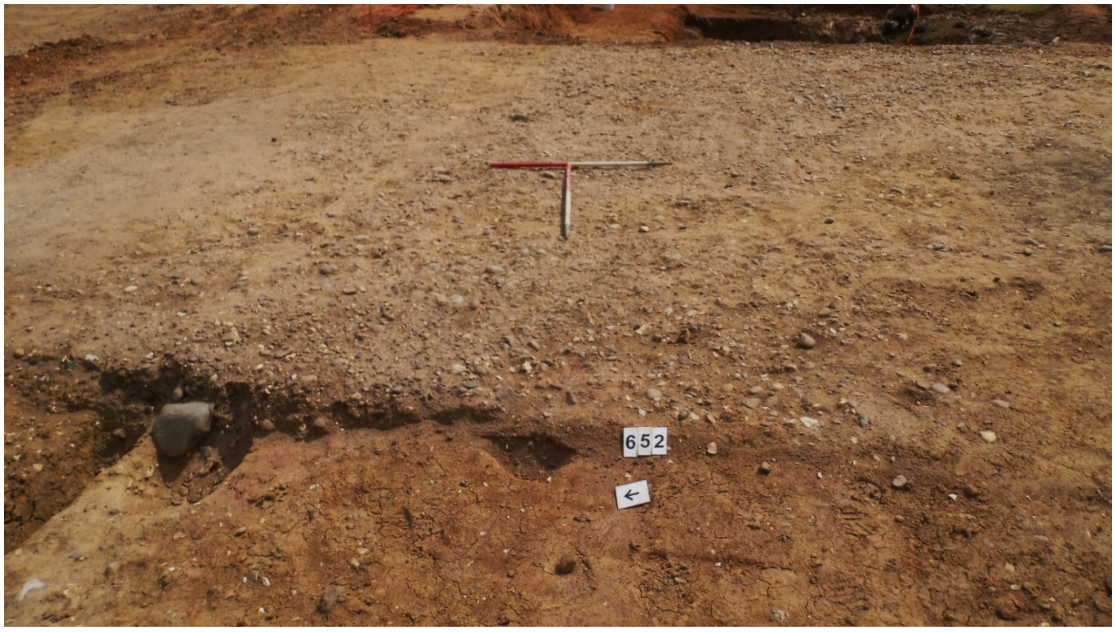

Figure 25: Trackway (652) with watering hole [580/722] beyond; view east (1m scales).

Iron Age pottery was recovered from excavation of the metalling, but the surface appears to have been reused for access to the Roman period watering holes (see

Post-holes [648] & [650]

The metalling (652) sealed two small, undated post-holes [648] and [650] of oval plan measuring 0.42m and 0.4m in diameter and 0.15m and 0.12m deep respectively. Their silty sand fills produced no dating material.

Pit [722]/[745] [722] (626), (627), (628), (629), (654), (659), (712) [745] (630), (631), (632), (660), (661) Figs 26 - 30

A substantial pit [722] interpreted as a livestock watering hole that was probably recut [745] and at least partly infilled no later than 195 cal BC before being substantially recut and enlarged in the 1st or early 2nd century AD ([580] described below) represents the earliest directly dated feature. The pit was located at the eastern limit of the major metalling spread (652) and adjacent to the south-east corner of the ditched Roman enclosure 521 (p49). The feature comprised an oval cut [722], 3.4m long, 1.9m wide and 1.85m deep with 45° sloping sides to a flat base and oriented broadly north-south. Upper fills were sandy slumps or /tip layers, whilst lower fills were waterlogged and rich in organic material. A substantially intact shield of bark with woven boss (T1, SF5) (see p60) was discovered in a mid-greenish brown silty sand (661) with infrequent charcoal flecking. This layer was 0.85m above the base of the original pit, or 0.26m above the base of a possible recut [745]. The object had the appearance of having been deliberately placed, positioned outer face down on a flat plane at the base of (661) close to the interface with the underlying fill (660). Samples from the bark fabric of the shield and from the boss produced radiocarbon dates suggesting that the object had been constructed in either 395–345 cal BC (66% probability) or 315–255 cal BC (29% probability) and deposited either between 360–350 cal BC (1% probability) or 300–195 cal BC (94% probability) (Hamilton and Beamish p107).

Total excavation of this sizeable feature presented a considerable logistical challenge which necessitated stepped machine excavation and use of a pump in order to provide safe access to the lower fills, which were waterlogged. The lower fills of both Iron Age and Roman pits were very similar.

Dung beetles were identified, with other broad indicators of a pastoral/open environment from (661) (D. Smith p131), and a rat flea was identified in samples taken from (659) a friable mid grey silty sand (Hill & D. Smith p120) sealed below (661). Plant remains also indicated a pastoral environment with indicators of open grassland and little indications of woodland (W Smith p112). Cereal chaff was found in the deposit in which the shield had been buried (W Smith p114).

The feature did not produce any ceramic dating evidence. Other pieces of waterlogged wood recovered from the feature included a length of radially split wood (T3, Bamforth p134) that was found in an earlier context (654), a firm/friable mid green brown silty sand with small rounded to angular pebbles, occasional charcoal flecks and twig fragments.

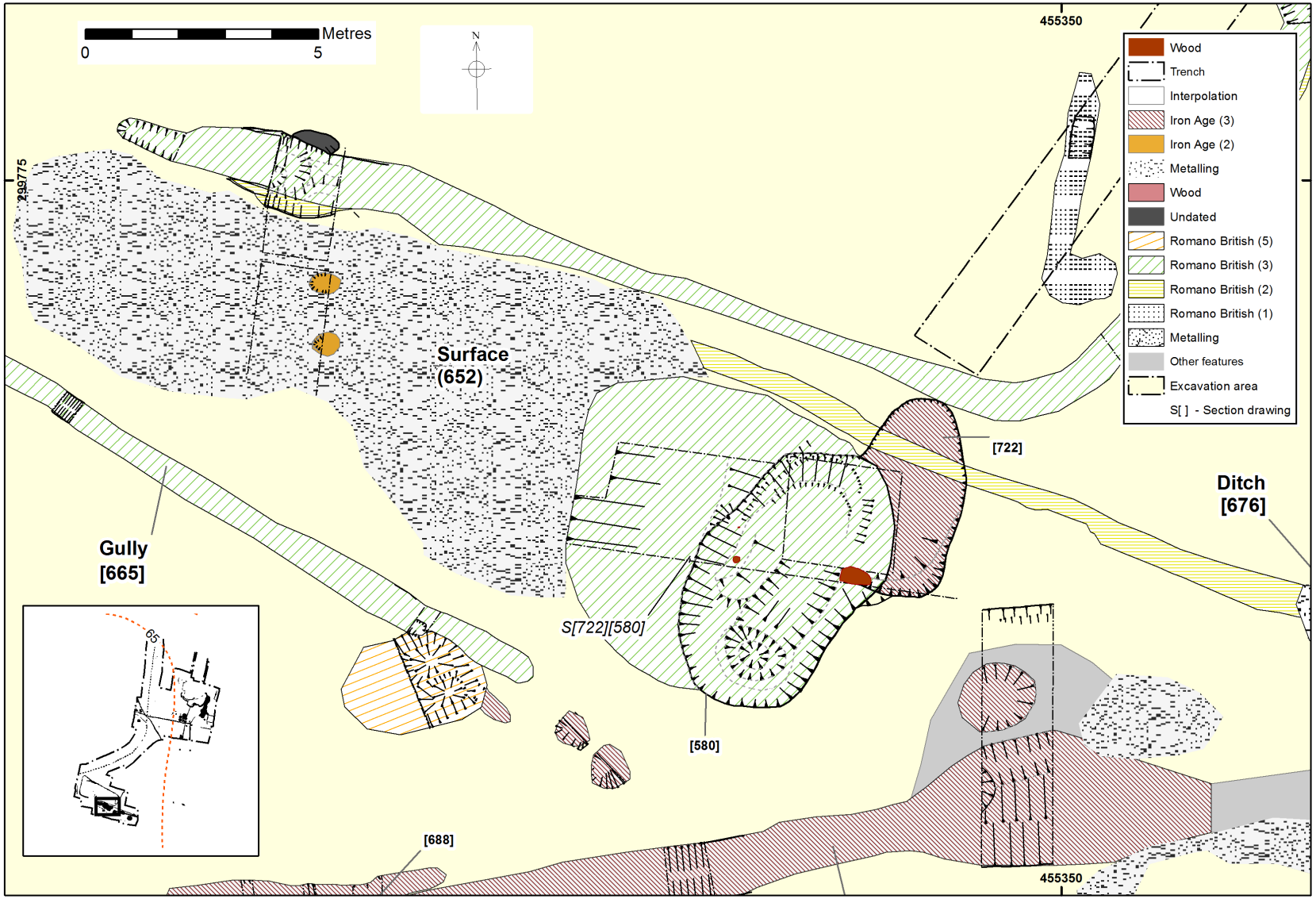

Figure 26: Feature [722] (Middle Iron Age) cut by [580] (Early Roman).

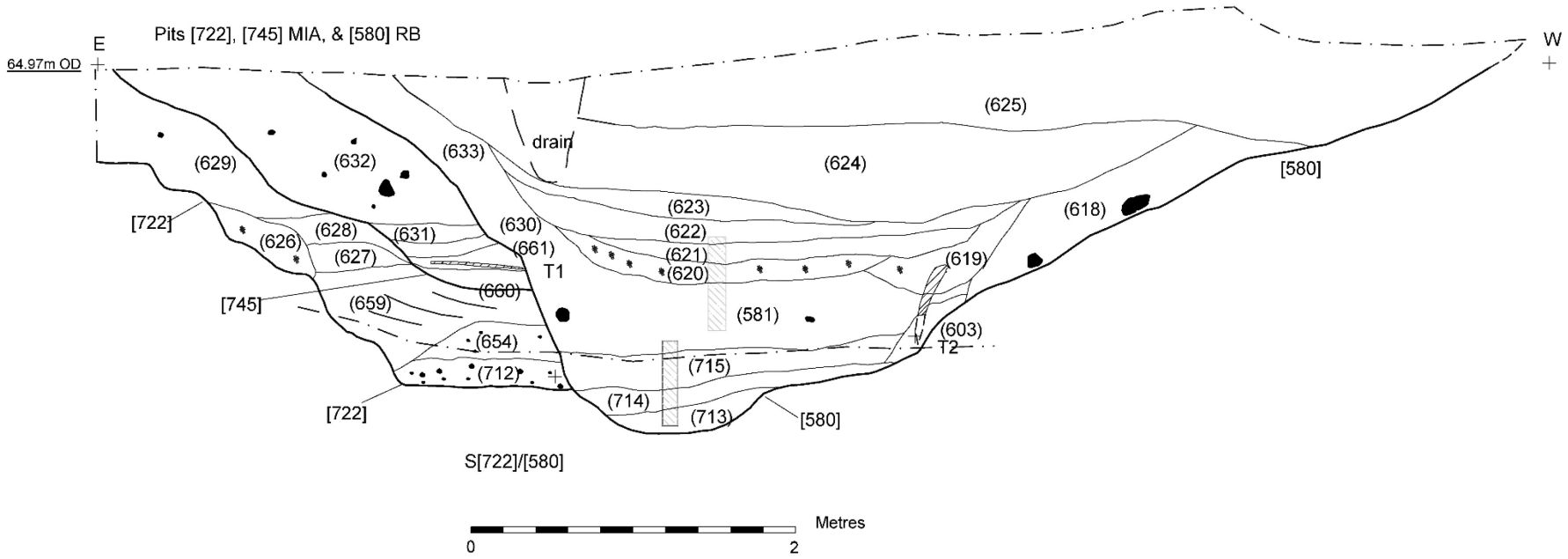

Figure 27: S[722]/[580] Principal composite north-facing section of [722] (Middle Iron Age) pit cut by [580] (Early Roman) pit. The bark shield lay in the south-west corner of the pit, in front of the section in layer 661. The section was excavated and recorded in two phases.

Figure 28: Recording of bark shield from Feature [722] deposit (661)

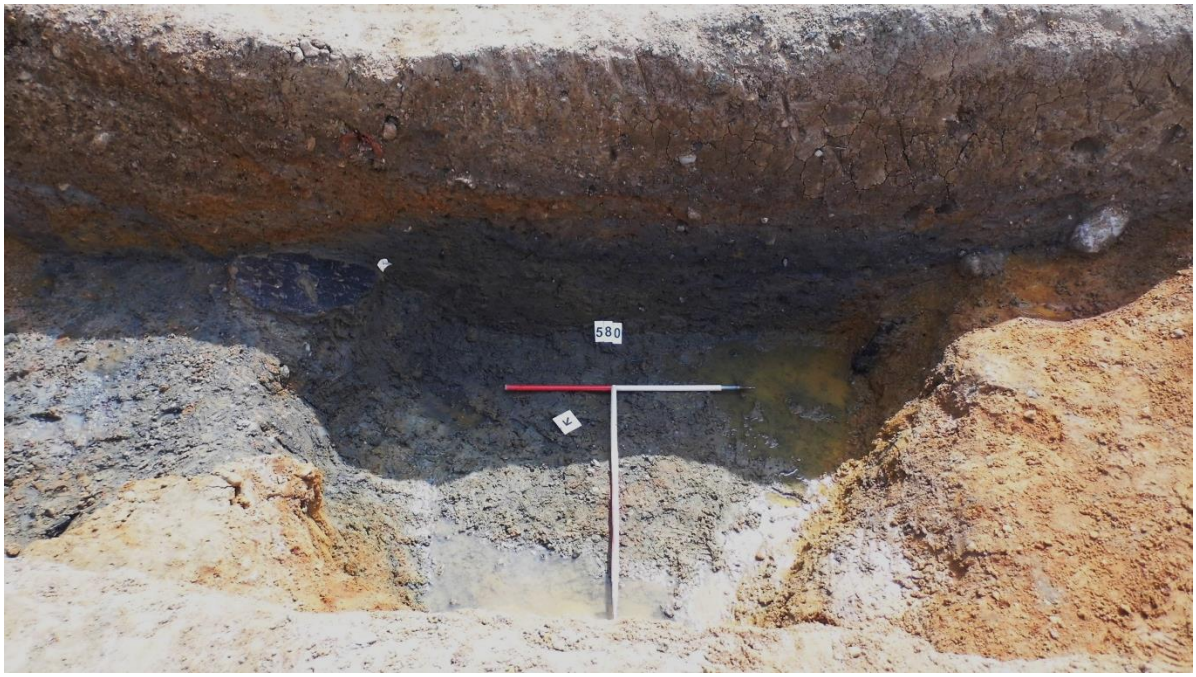

Figure 29: Middle Iron Age feature [722] on left with in situ shield (deposit 661) truncated by Early Roman feature [580] (1m scales)

Figure 30: Middle Iron Age feature [722] on left with recut by Early Roman feature [580] view south-west; 1m scales

Linear features [546] – [710] , [586] (587), [592] (593), [669] (670), [678] (679), (681), [688] (699), [690] (673), (716), [710] (711)

Post-holes [700]-[702] [700] (699), [702] (701)

Two undated post-holes [700] and [702] were recorded near the southern edge of excavation.

Ditch [674] [674] (675), (685), (686), (687)

A ditch [674] (1.9m wide, 0.67m deep and c.16m in length) was recorded running broadly east-west parallel with the trackway on its southern side and extending east beyond the limit of excavation. Fill (685) produced middle-late Iron Age pottery (p51). Ditch [674] was obliterated by a later Roman pit [655].

Ditch [546] [546] (547) (548), [584] (585) [688](673)(689)

A length of ditch [546] on north-east south-west alignment likely formed a continuation of [674] on the west side of pit [655] and continued for a further 20m to the excavation limit.

Together the ditches [674] and [546] may form the northern edge of an enclosure of uncertain size.

A similar ditch feature [546] was recorded extending to the south-west from beyond pit [655], and this may be the same feature.

A west-east aligned ditch, 1m wide, was sample excavated in trench 25, some 114m to the east. This may have been a continuation of ditch [674], although this may instead have been a continuation of the later Romano-British gully [676] (see p43), or unrelated to either.

Figure 31: Ditch **[674]**/[678] (r) & Roman ditch **[676]**; view south-east; 1m scales

Romano-British deposits

Multiple phases of activity were represented by intercutting deposits recorded in the central area of the site on the east side. Immediately adjacent features are grouped under a single cut number.

Linear features & pits

Initial activity of 1st to 2nd Century AD activity was recorded in the north-east of the excavation area and was characterised by a series of discrete ditches and gullies that are recut on a number of occasions. The features broadly to define the western, eastern and southern boundaries of an area within which features were otherwise absent. On the south side, an apsidal form defines an area 6m x 5m. The features are distinctive in having slight returns at their ends, perhaps indicating that they had originally been excavated around some other features or structures of which nothing else has survived.

To the east, intercutting ditches and pits were cut over an area 30m by 5m aligned north to south. Some of the later pits in this area were cut down into the natural water table. The resultant waterlogged nature of which enabled a small pair or likely children's leather shoes to survive. The features are interpreted as initial Roman sand and gravel quarries although the repeated recutting of the features following initial extraction is more difficult to explain. Substantial further post medieval quarrying activity was also apparent in the northern excavation sector, the infill of which was cut by the field boundary as recorded on the Ordnance Survey 1st edition.

Northern area REF _Ref5909998 \h Figure 33*Group [113]* [22](23),[24](25),[33](32),[113] (118) (119), [114] (117), [132] (133), [158] (157), [175] (174), [214] (213), [216] (218), [218] (219), [289] (290) (291) (292) (293)

Ditch [150] [16](15),[40](41)(42)(43),[150] (151)/[236] (235)/[225] (226)/[312] (313), [248] (249), (254), [266] (267), [271] (275), [282] (283), (284), [312] (313)

A small rectangular enclosure initially encountered in the evaluation and located in the north of the area. The ditch had an apsidal attachment [24/33] on its southern side, the latter consisting of or defined by a 1.20m wide, 0.30m-0.55m deep ditch with an open, asymmetric ditch profile filled with a pale brown crumbly silt. The ditch curved north and joined a second, east-west ditch [22], in a D-shaped arrangement measuring *c.*10m wide externally and 6m wide internally, identified in 2015 as [158].

Ditch [22]/[158] was represented by a gradual sloping-sided, 0.55m deep cut to a flat base. The lack of differentiation between respective fills suggested that the two ditches formed a single feature. The excavation provided further details, revealing an interconnected series of C-shaped ditches encompassing an area broadly measuring 30m east-west and 20m north-south. It was unclear as to whether these represented a succession of ditch cuts or were concurrent.

Ditch [150] extended south from apsidal ditch [113]. Excavated profiles revealed a consistent V shaped ditch with a single fill. The base of the ditch deepened to the south. The ditch cut through infilled pit features [248] and [229] of probably Romano-British date, and also an earlier ditch [209]. At its southern extent the ditch was cut by pit [314].

Ditches 150] (151), [175] (174) [132] (133) produced late 1st or 2nd century pottery.

Group [115] [115] (126) (127), [116] (120) (121) (122) (123) (124) (128), [134] (138)(139)(140), [135] (133) (134) (145) (146) (147), [148] (141) (142), [162] (165) (166), [164] (170) (171) 172) (173), [163] (167) (168) (169), [164] (170) (171) (172) (173), [333] (336)(337), [334] (338), (339), (340)(341), (342), [335] (361), [351] (352),[358](360),[378] (408)

On the eastern side of the central area was complex set of intercutting pits and/or ditches broadly aligned north-south over an area 30m x 5m. The grouping appeared to have originated as a series of around ten sand and/or gravel quarry pits prior to amalgamation in order to form a more homogeneous deposit. The substantial but shallow pits were largely oval or sub-circular in plan between 1m and 2m in diameter and 0.3m-0.5m deep with flat or concave bases. The sands and gravel rich silty fills were largely sterile of finds.

The south-western corner of the grouping, formed by a ditch butt end [148], looks to represent one side of a 4m wide gap or entrance way, the opposite side of which was formed by a butt ending ditch [264].

Several ditches [113], [116], [135], [164] & [404] produced a small quantity of pottery indicating an early Roman late 1st/early 2nd century date for the group.

Ditch [478] [478] (479) (485) (486) (487), [480] (481) (488)

Pit [482] [482] (483) (484)

Ditch [480] [480] (481)

In the north-east corner of the excavation, a right angled length of gully was recorded, defining an area at least 10 x 3m. Four sections were excavated across the feature: these revealed that the gully was cut by a pit feature [482] the infill of which was cut by separate short length of gully [480].

Pits [379]-[461] [379](395), (396), (397), (398), [421] (422), [423] (424), [425] (426), [450] (451), (466), (467), (470), (471), [458] (464), (465), (470), (471), [459] (468), (469), (470), (471), [460] (469), (470), (471), [461] (469)

Figure 34

Numerous ill-defined pit cuts and recuts were exposed in sections excavated through the ditch and pit complex on the east side of the area. The fragmentary remains of small nailed leather sandals of two different sizes were recovered from pit [450] at the southern end of the complex (Figure 23). Paralleled by other examples from Yorkshire (Cooper, p98), these also date from the early 2nd century AD.

Figure 32: Leather footwear fragments recovered from a Roman quarry pit (451) [450] (see Cooper p98). The pieces are paralleled with examples from the early 2nd century AD

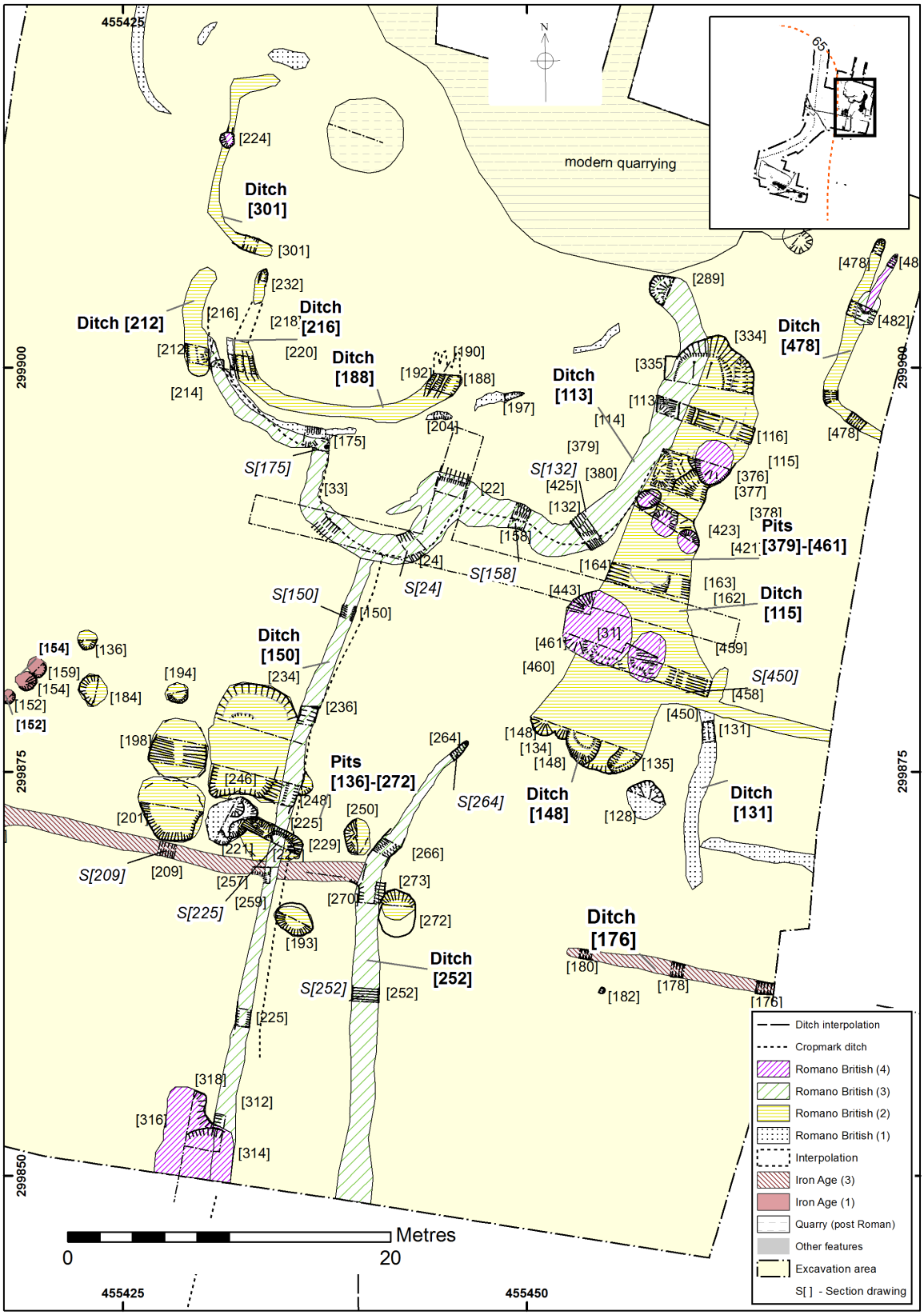

Figure 33: Romano-British features in north-east of site

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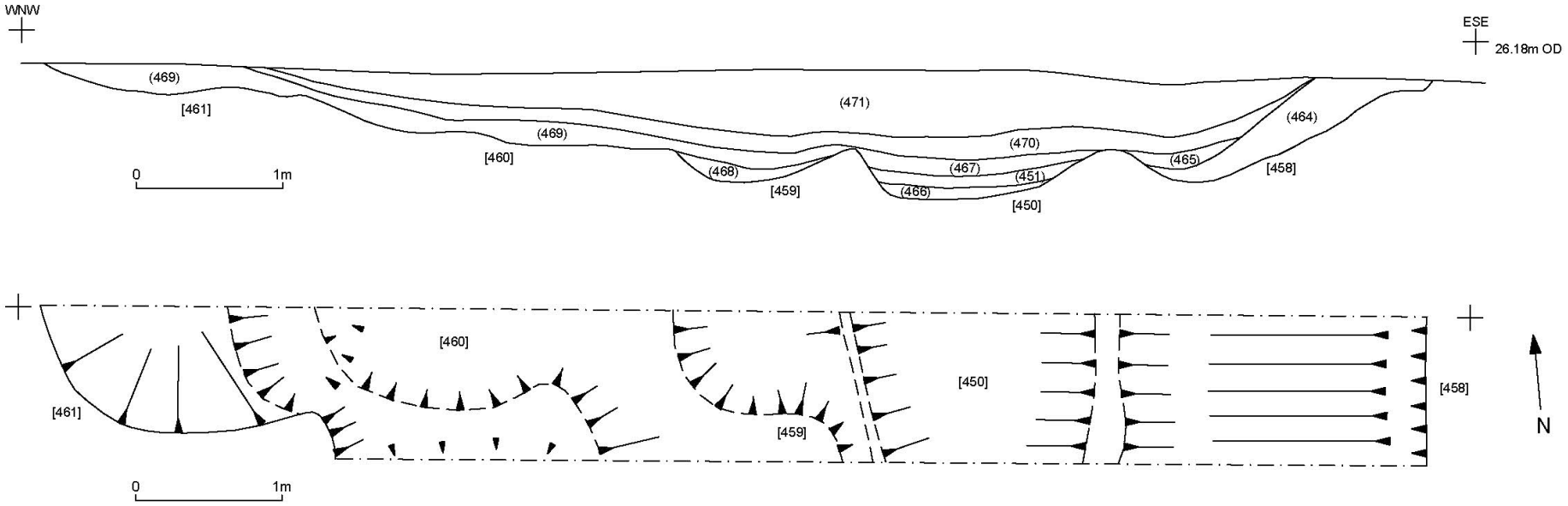


Figure 34: S[450] pits complex; representative plan & section. Shoe fragments were recovered from cut [450].

Figure 35: Pits complex [461] etc: view east; 1m scales

Figure 36: Ditches [162] & [164]; view south-west (1m scales)

Pits [136]-[272] [136] (137), [184] (185) (186), [193] (200), [194] (195), [198] (199), [201] (202), [221] (222), [229] (230) (285) (286), [234] (233) (239), [246] (247), [272] (276)

A small grouping of 13 shallow oval pits located south-west of Group A. and a single late 1st century sherd from (286) of pit [229]. Pit [229] was central to the group, and was cut by north-south ditch [150]/[225] which also produced late 1st century pottery (p37).

The first pit in the sequence was pit [221]. Little pattern can be discerned to the arrangement. In the south-east of the group, four of the pits are relatively equally spaced and if Iron Age in date would be

suspected to represent a four post structure. However, none of the pits' profiles indicated that they had once held posts, and a structural explanation seems less likely than an extractive one: the features are interpreted as probable quarry pits.

Ditch [131][131](130)*]*

A U shaped ditch with a single fill

Group [188] [188] (189), [190] (189), [192] (191), [197] (196), [204] (203), [212] (211), [220] (219), [232] (231), [301] (300)

The ditch can be traced in cropmarks, and section were excavated through it in evaluation trenches 10 and 5. No finds were recovered. The ditch was truncated by a modern granite built drain in trench 10.

(151) [150] produced a single late 1st century pottery sherd,

Ditch [252] [36](37(38),[252](253),[264](265),[270](274)

Ditch [252] was at least 30m long and aligned north-south broadly parallel with Ditch [150]. At its northern end, the ditch turned to the north east before terminating. Where sample excavated the feature had a broadly V shaped profile with two fills. The base of the ditch deepened to the south.

A sherd of mid to late Iron Age pottery was recovered from the section excavated adjacent to where Ditch [252] truncated ditch [209], and this pottery is probably residual.

A section was excavated through a ditch on a similar alignment in trench 10, ten metres to the south, and this probably represents a continuation of the same feature.

Pits [224]-[482] [224] (223), [314] (315), [31 6] (317), [318] (319), [376] (399), [400] (401), [404] (405) (406), [443] (444) (445), [482] (483) (484).

A series of pits cut across a number of infilled ditch features across the area represent the last phase of events represented archaeologically.

*Post Roman Quarry Pit*s [493](494)(495)[515](516) (517) (518) (519) (520)

A number of pits were investigated in the north of the site that were established as recent quarrying and not recorded further. Some residual finds were recovered. A large area of quarrying extending beyond the northern extent of excavation and visible in the cropmarks, appears to underlie the field ditch recorded on 1st edition mapping, and the quarrying must have concluded and been backfilled prior to enclosure.

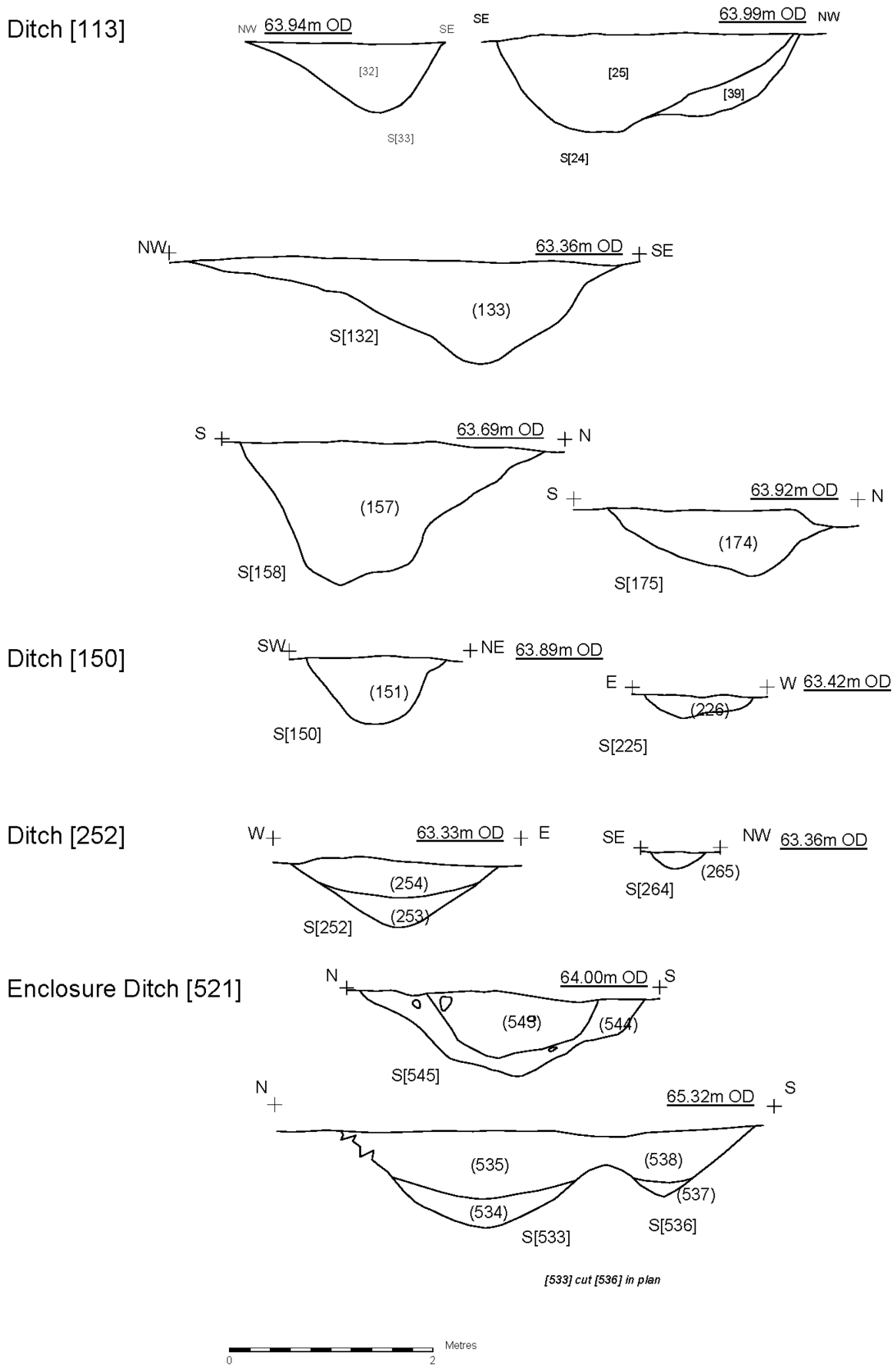


Figure 30: Ditch sections

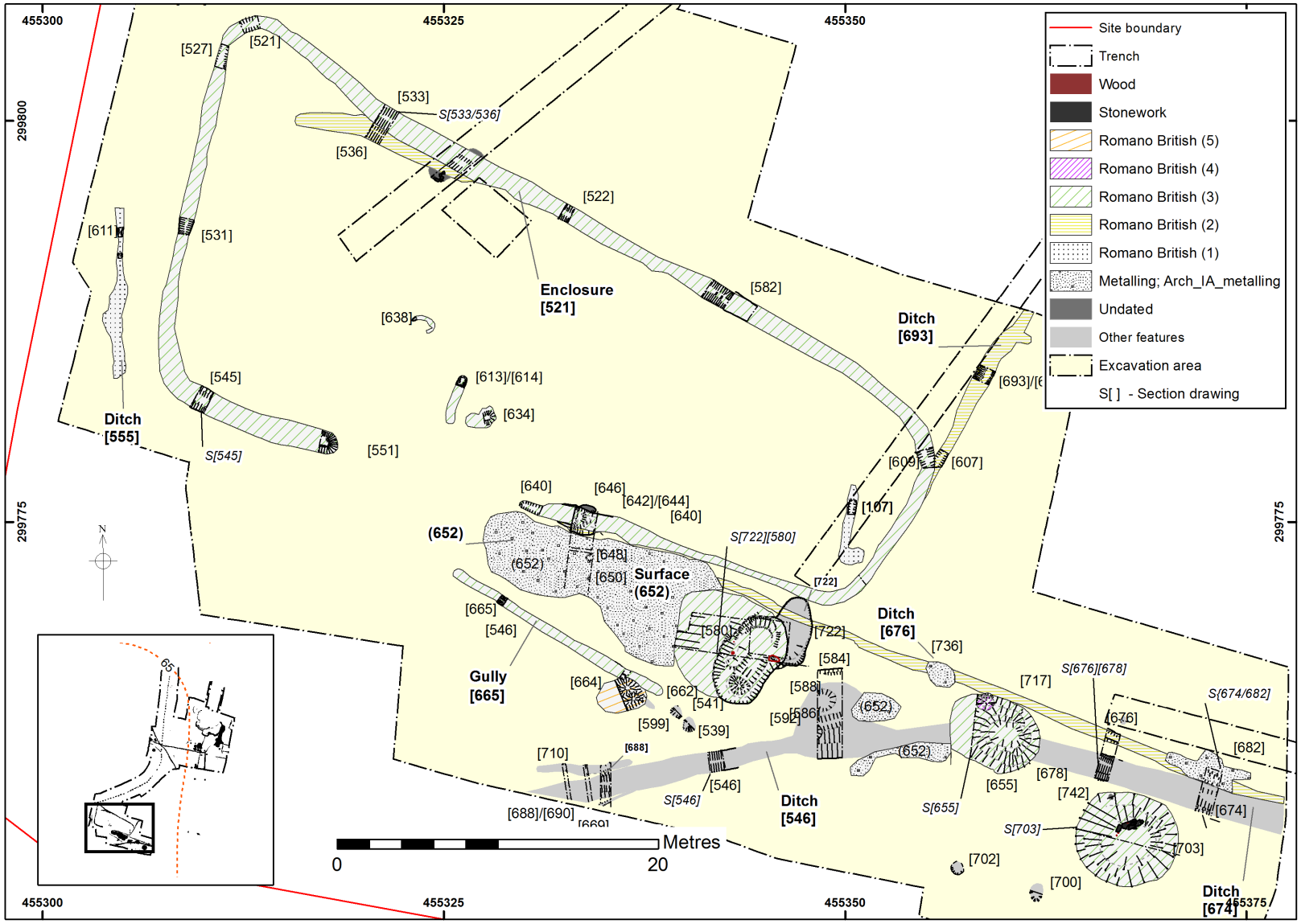


Figure 37: Plan of Enclosure and contemporary features in south of site

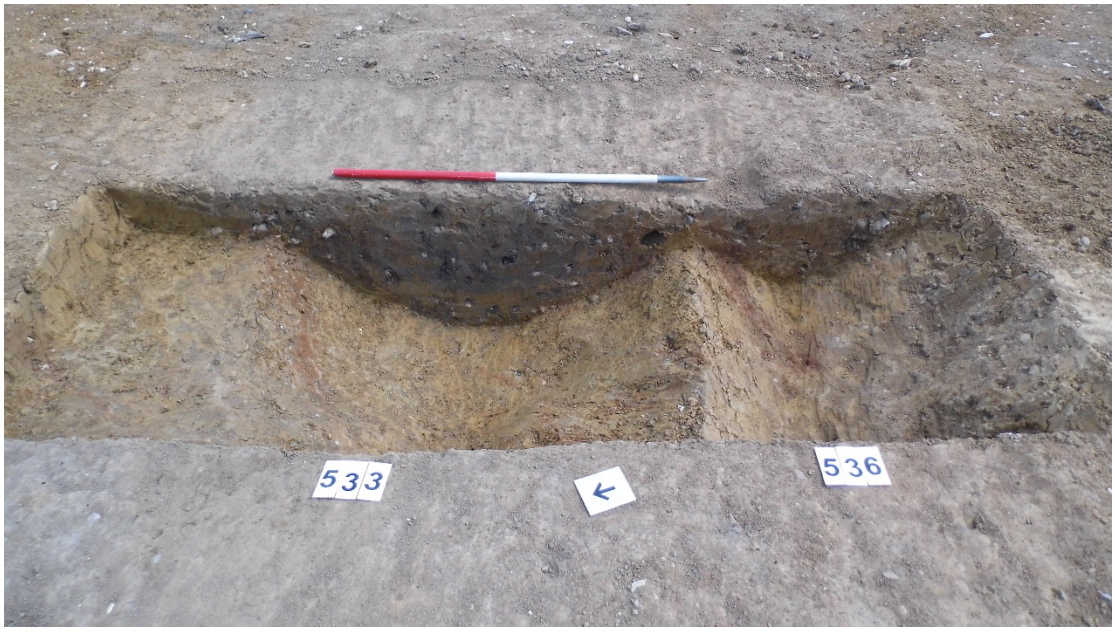


Figure 38: Enclosure ditches [533] & [536]; view south-east (1m scale)

Figure 39: Pit [634]; view west (0.25m scale)

Table 3: Feature [580]/[722] fill descriptions

Context	Cut	Above	Below	Description	Dating
581	580	715	620	Plastic dark grey waterlogged silty clay with common twig fragments; some charcoal flecks & occasional small-large angular/rounded stones. Good number of larger angular-rounded stones at base of fill. Animal bone.	late 1st-early 2nd century pottery (and mid-late IA):
603	580	580	581	Soft mid orange brown silty sand; some gravel inclusions & rare charcoal flecks. Silty sandy slump on western side of cut. Animal bone.	
618	580	580	619	Friable light-mid grey brown silty sand; common small gravel inclusions. Silty slumping on west side of waterhole.	
619	580	581	620	Plastic mid grey silty clay with rare charcoal flecks. Clay patch on west side of waterhole.	
620	580	581	621	Friable dark grey black silty sand; common charcoal flecks, some wood fragments. Dark charcoal/organic rich fill.	
621	580	620	622	Friable light/mid grey silty sand. Rare charcoal flecks, small pebbles. Silty layer immediately below redeposited gravels (620).	
622	580	621	623	Firm mid orange brown silty gravels; abundant gravel inclusions, rare charcoal flecks. Layer of redeposited gravel slump or wash spanning most of waterhole width - seems to separate Iron Age/Roman finds (?)	
623	580	622	624	Friable mid grey silty sands; occasional small-large angular/rounded stones; rare charcoal flecks. Only seen central left of section.	late 1st-mid 2nd C pottery
624	580	623	625	Firm plastic mid orange-grey silty clay; occasional small-large angular/rounded stones & occasional charcoal flecks. Distinctive from fills above or below.	
625	580	624	-	Firm mid grey brown silty clay with some sands; occasional angular/rounded small pebbles. Top fill of waterhole seen on west side, remainder of silts from above.	late 1st-2nd C pottery
626	722	629	659	Friable mid grey silty sands; charcoal flecking. Small slump/tip layer on eastern side of cut.	
627	722	659	628	Friable mid grey orange silty sands. Small sandy slump/tip on east side of cut.	
628	722	629	629	Friable light-mid grey silty sand. Small tip/silt line on east side of cut.	
629	722	628	632	Firm/friable mid grey brown silty sands; occasional small angular/rounded pebbles; rare charcoal flecks. Silty slump/tip on eastern side of cut.	
630	722	661	631	Friable mid orange brown silty sand. Shallow tip, silty layer, sterile. Possible evidence of burrowing.	
631	722	630	632	Friable mid orange silty sand. Small, shallow, silty slump; sterile.	
632	722	580	631	Friable mid orange brown silty sand; occasional small angular/rounded stones, rare charcoal flecks. Slump on east side of cut; similar to (629).	
633	580	581	620	Friable mid orange grey silty sand; small gravel inclusions. Silty fill/tip/slump similar to (622).	

Context	Cut	Above	Below	Description	Dating
654	722	659	712	Firm/friable mid green brown silty sand with small rounded to angular pebbles, occasional charcoal flecks and twig fragments.	
659	722	654	660	Soft/friable mid green grey silty sand with occasional grey clay patches. Occasional charcoal flecks, small wood fragments, small angular/rounded stones. Silty clay waterlogged organic fill with some laminating,	Rat flea
660	722	659	661	Plastic/friable mid/dark grey silty clay; occasional charcoal flecks. Thin patch of clay silting on east side of cut [722]. Possibly truncated by recut [580].	
661	722	660	630	Soft mid green brown silty sand. Very silty layer. No evidence of backfilling, sterile. Contains shield	Deposition modelled at either 360–350 cal BC (1% probability; Fig. 1; Enderby shield) or 300–195 cal BC (94% probability) (see p133)
712	722	722	654	Firm mid orange/brown/yellow silty gravels with abundant gravel inclusions. Natural gravel slump in base of cut.	
713	580	580	714	Friable mid grey green silty sands; occasional small angular to rounded gravel fragments with twig fragments. Initial organic silting after initial cut; several large sub rounded stones at base. Animal bone.	Iron Age & late 1st-2ndc+ pottery
714	580	713	715	Friable mid yellow green brown silty sand; rare small gravels & charcoal flecks. This silty band; distinctive green/yellow colour.	mid-late IA pottery
715	580	714	581	Friable mid/dark grey brown silty sand with some clay; occasional small/large angular/rounded stones & some charcoal flecks.	md-late IA pottery

Southern Area

The metalled surface (652) surviving from the Middle Iron Age appears to have been reused in the Early Roman period. The track appears contemporary with three substantial pits which are interpreted as flanking quarries and/or watering hole features (see below), and also on the basis of general spatial arrangement with a sub rectangular enclosure (internal size 46 x 16m).

A least two of the substantial pits features were characterised by open bowl-like profiles cut down into the natural water table with gently-sloping sides particularly on their west sides, and some evidence for the stabilisation of their lower sand and gravel sides with stone work and reveting timber posts. This evidence is the basis for their interpretation as watering holes for livestock.

Early Roman *Late 1st or early 2nd century AD REF _Ref5910091 \h Figure 37Gully [676]* [676](677)/[682](683)[736](737)

Metalling (652)(684)

During the Roman period a single gully [676]/[682]/[736] was cut tracing the northern edge of the Iron Age trackway (652). The shallow U-shaped linear cut (0.56m-0.75m wide x 0.20m-0.36m deep) was partially overlain by a patch of gravel metalling (684) suggesting that the trackway surfaces had some longevity although later depositional change brought about by the plough cannot be discounted.

The gully may have been functionally linked to the nearby watering hole features [580], [655] and [703] as it closely bounds the northern edges of [580] and [655], and it therefore may have controlled livestock access to the pits and for the features to have been contemporary at least in part.

A ditch feature on a similar alignment was sample excavated in trench 25, 114m to the east, and this may have been an extension of this feature or the earlier Iron Age ditch [674].

Ditch [665] [665](666),[662](663)

On the south side of the trackway was a 15m length of gully [665]. The feature measured 1.4m wide and 0.6m deep with 45° sides to a concave base. Two sections were excavated through the feature which was filled with a light brownish grey sandy silt. Several sherds of Iron Age pottery were recovered from the western segment: these are considered to be residual.

Gully [693] [693](694)[695](696).

A 12m length of gully cut at 90º to gully [676] was recorded to the north. This feature was truncated by the western end of enclosure [521] with which it was co-aligned. A single sherd of BB1 pottery from (694)/[693] (along with residual Iron Age material) provides a terminus post quem of the 2nd century or later for the infill of [693] and the cutting of enclosure [521]. The gully showed evidence of a recut ([695]).

Watering hole [580] [580](581)(603)(618)(619)(620)(621)(622)(623)(624)(625)(633)(713)(714)(715)Figure 26-

Following substantial infilling of the Middle Iron Age pit ([722] see p3), the pit was enlarged by a substantial recut during the late 1st or early 2nd century AD [580] (*c.*8.5m x c.3m x c.2m deep). The elongated oval cut, oriented north-east to south-west, had a gently sloping western edge dropping to a flattish base and a steeper eastern edge.

Ceramic evidence from several contexts (581), 623), (714) & (625) and the primary fill (713) suggests a transitional late Iron Age/early Romano-British late 1st or early 2nd century date for the cut [580], which cut through the shield on its north-east edge.

Cattle, horse and sheep/goat bone, some with butchery marks, was recovered from fills (581), (603) and (713): much of the bone from these contexts showed sign of canine gnawing (W. Johnson, p102). Bone from (713) had evidence of ossified haematoma which might indicate healed trauma/injury.

Structural evidence comprised a single vertical timber post set against the base of the western face of recut 580 (Timber 2, Bamforth p134).

The feature was flanked on its western edge by the coarse gravel metalled surface [652] that was laid down in the Middle Iron Age. The western edge of the pit was markedly more gentle than the eastern, leading gradually down into the natural water table where the slight evidence for timber reveting was recorded at the base of the western slope (Figure 27).

Fill (622) may represent the first deposited fill post-abandonment of the feature; covers organic fills and over recut [722]. Finds from the fills above, (623) & (625) both produced late 1st-2nd century Roman pottery. Some animal bone was recovered from (623).

A rich assemblage of insect remains from the Roman recut pit provided clear indications of the feature having been located in an open landscape setting in close proximity to grazing and grassland as well as arable and cultivated land, with an absence of human settlement in the immediate area (Hill & Smith, p117). A pollen monolith was taken but the results were inconclusive (Richer p).

The highest density of plant remains from the site came from deposit (715). The waterlogged remains were dominated by wild seeds indicative of an environment of agricultural land, grassland and shrubbery (Santer & Small p110). Charred remains from [580] included wheat glume bases, a straw culm node, blackthorn stones, and a fragment of hazel nut shell (Santer & Small p109).

The collective evidence suggests that this feature functioned as a livestock watering hole, presumably for cattle, with perhaps origins as a sand and gravel quarry.

*Watering hole [655]*Figure 40

[655](656)(657)(658)(723)(724)(725)(726)(727)(728)(729)(730)(731)(732)(733)(734)

Feature [655] was located *c.*8m east of watering hole [580]/[722] and formed a substantial oval cut measuring *c.*5.8m north-west to south-east and *c.*4.2m south-west to north-east and 1.28m deep (Figs 40, 41). The edges of the pit were at broadly 45° sloping to a small flattish base, with a plan form suggesting that the western edge was slightly more gradual than the eastern.

The predominately sandy silt fills likely represent successive natural silting episodes, with heavily organic dark blue grey fills, notably (656), featuring below the water table towards the base. Pottery from several fills (656), (657), (658), (718), (726) & (729) produced material of late 1st-2nd century date, with a small amount of residual Iron Age pottery from (725) and (731). A single glume base was identified in environmental samples from (656) (Santer & Small p108).

The substantial open plan cut down to the level of natural clay and character of its fills suggests the feature having functioned as a quarry targeting the overlying sands and which appears to have subsequently been infilled by natural silting episodes. The close spatial relationship between the pit and gully [676] on its north side suggests contemporaneity.

Pit [717] [717](718)(735)

Pit [655] was truncated by the cutting of a circular pit [717] on its northern edge. The small but deep feature (1.10m diameter x 1.23m deep) contained a dark grey organic fill (735) with some animal bone (W. Johnson p103), whilst the orange-brown sandy clay secondary fill (718) produced a partial 2nd century Black Burnished ware vessel.

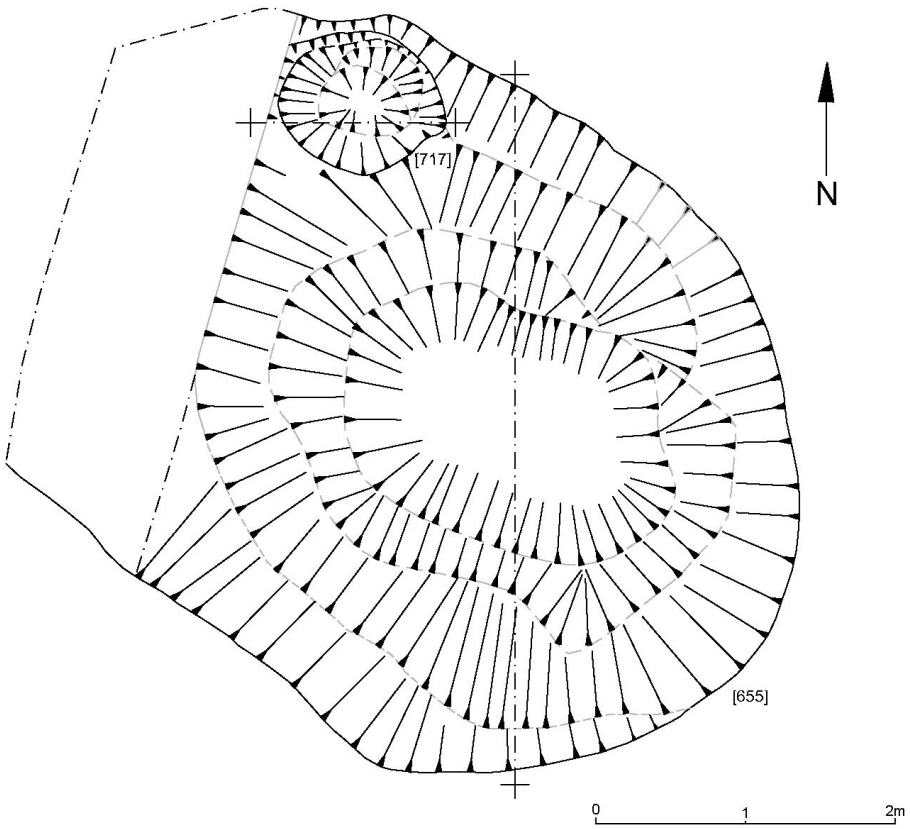


Figure 40: Pit feature [655] which was cut by pit [717]

Figure 41: Pit feature [615] which was cut by pit [717]; view east; 1m scales

Watering hole [703][703](704)(705)(706)(707)(744) Figs 42-46

Feature [703] was located in the south-east corner of the excavation, *c*.4.5m east of pit [655]. The circular cut measured *c*.6m in diameter and had 30°-45° sloping sides to a wide, flat base; the western edge was distinctly flatter in gradient (30°). The base of the latter was characterised by a short length of unbonded granodiorite stonework (744), the flattish, unshaped blocks measuring 0.2m-0.4 square forming four

courses of crude reveting, held in place by two small roundwood stakes (T5/T6 & T7) driven into the sand and gravel base of the pit, with a smaller piece of roundwood (T4) pushed into the pit side (Bamforth p134).

Lower fills (704) & (705) had organic content, whilst upper (likely post-abandonment) fills (706) & (707) were markedly sandier and produced 2nd - 3rd century pottery. A horse skull in good condition was recovered from (705) (W. Johnson p103). Animal bone recovered from (706) was also in good condition whist that from the overlying (707) was badly degraded (W. Johnson p101).

Post-hole [742][742](743)

A single undated post-hole [742] measuring 0.4m x 0.1m deep cut the feature close to the top of its upper edge.

The sloping western edge and presence of probable reveting suggest that feature [703] functioned as a watering hole for cattle until its abandonment in the mid-2nd or early 3rd century. Environmental evidence in the form of insect remains produced results of setting comparable to watering hole [580]/[722]; namely an open landscape setting in close proximity to grazing and grassland as well as arable and cultivated land, with an absence of human settlement in the immediate area (Hill & D. Smith, p117).

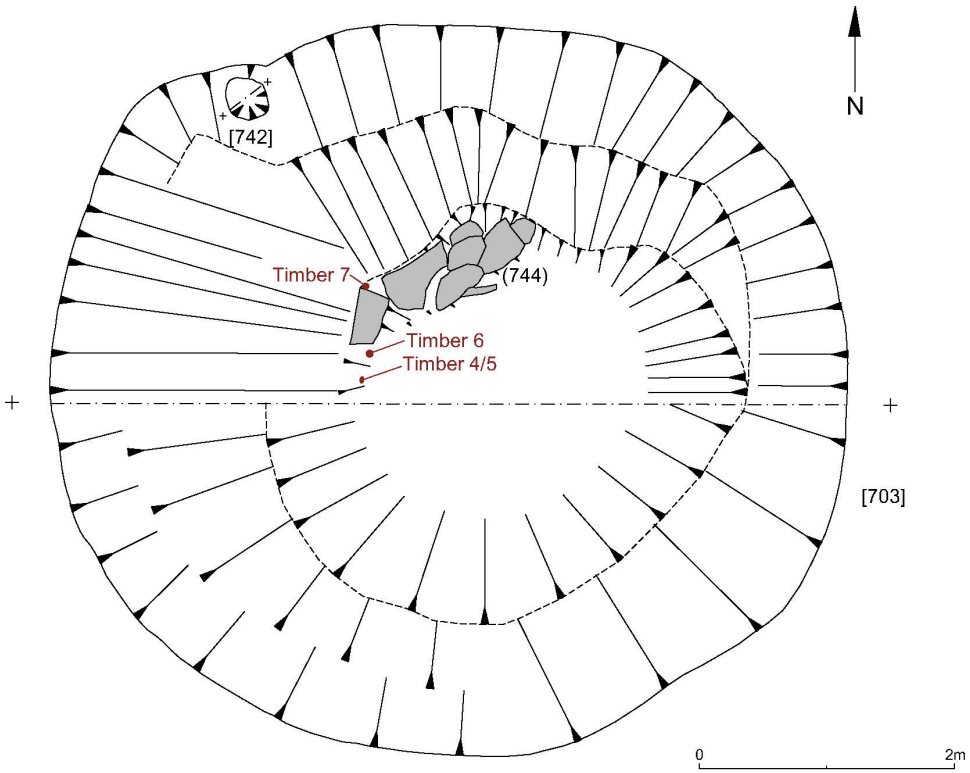


Figure 42: Feature [703]: plan

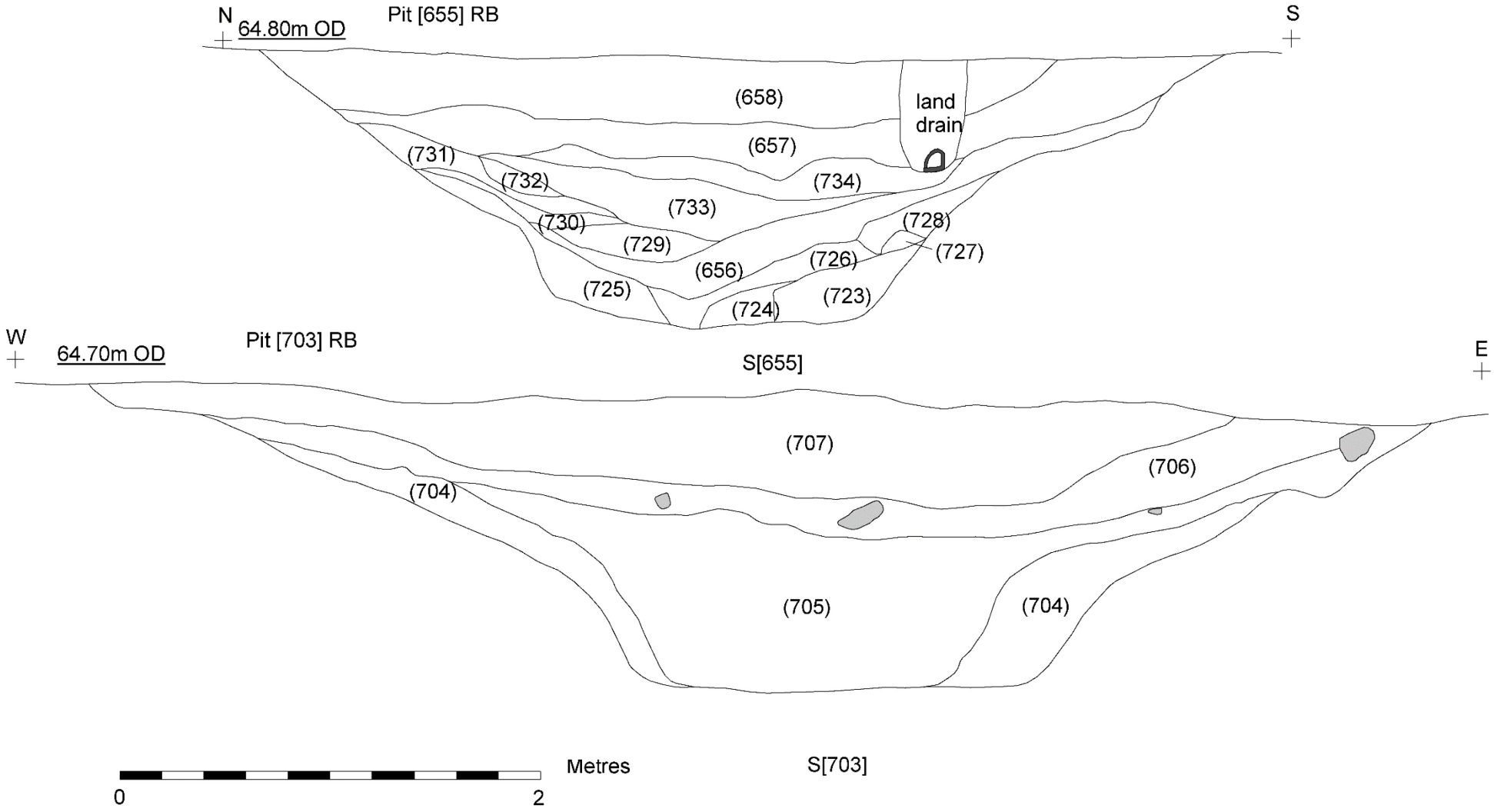


Figure 43: Sections through features [655] and [703]

Figure 44: Feature [703] with metalled surface and parallel ditches beyond; view north-east; 1m scales

Figure 45: Pit [703]; revetment (744) & Timbers 6 & 7; view west (0.15m scale)

Figure 46: Feature [703] fully excavated; view north; 1m scales

Enclosure [521] [01](02)[03](04),[521](523),[522](524),[527](528),[531](532),[533] (534, 535),[536](537,538),[545](543,545), [551] (522,553,554) [582] (583) [609] (610) [614] (616, 617) [667](668)

Pit [646][646](647)

To the north of the track and the watering holes the ditches of an elongated sub-rectangular enclosure aligned north-west to south-east were recorded. Measuring approximately 52m x 18m internally, the enclosure was defined by a heavily truncated 45° sided, flat-based ditch measuring 0.44m-1.6m wide and 0.16m-0.50m deep.

A single entrance 12m wide defined by opposing ditch butt ends [551] & [667] was located on the southern side of the enclosure to the west of centre.

Grey silty clay fills produced a small quantity of pottery of late 1st to early 3rd centuries AD date with the latest material comprising mortaria fragments of mid 2nd to early 3rd century date from the north-west corner ([527] (528)). A single abraded sherd from an unusual hemispherical cup in Central Gaulish colour-coated ware was recovered from a section through the enclosure ditch in evaluation trench 3 indicating a mid-2nd to the mid-3rd century AD date (Cooper 2012, p24).

A section excavated through enclosure ditch and metalling revealed an earlier pit [646] (647) filled with a light brown grey silty sand and at least three phases of cutting that widened and deepened the area of the terminus ([640](641)(653),[642](643)and [644](645)). An earlier ditch cut was also found on the northern length of enclosure ditch in the form of a small spur [536](537)(538).

In the north-west corner a co-aligned ditch [607](608), [693](694),[695](696) extended for 12m to the edge of excavation. No relationship could be established between the ditch and the enclosure. A single sherd of BB1 pottery from (694)/[693] provides a terminus post quem of the 2nd century or later.

Pit [07] [07](12)

A small pit with a possible stone lining showing some signs of in situ burning was recorded in evaluation trench 3. The pit was 1.5m long and unknown width as it was cut by a linear feature [03], probably an early cut of the enclosure ditch.

Pit [613] [613] (615)[614](617)

A 3m length of gully, 0.80m wide by 0.35m deep contained three grey and dark brown sandy fills which contained some burnt material, but no artefactual evidence. This feature may have extended to the south-east toward the eastern enclosure ditch terminal but was not further excavated.

Pit [634] [634](635, 636, 637)

Three metres to the north of the entrance a well-defined steep sided elongated pit 2m long by 0.90m wide by 0.45m deep contained some burnt stone in its uppermost fill. This feature is probably structural.

Pit [638] [638](639)

A curvilinear sandy deposit contained some charcoal and may have been burnt. This feature is undated and may be the remains of a tree throw pit.

Gully [107] (108)

A 5m long linear feature in the east of the enclosure was 0.50m wide and 0.30m deep and filled by a dark brownish grey silty sand which did not contain any dating evidence.

The Iron Age and Roman Pottery

Elizabeth Johnson

Assemblage Size and Condition

A stratified assemblage of Iron Age and Roman pottery was retrieved from the excavations. The Iron Age component comprises 232 sherds weighing 2.393kg with an EVEs value of 1.01. Much of the pottery is abraded and there are many very small sherds alongside the better preserved material. The average sherd weight of 10.3g reflects the mixed quality. The Roman component comprises 192 sherds weighing 4.246kg with an EVEs value of 3.155. The average sherd weight of 22.1g suggests good levels of preservation, although some surfaces are abraded.

Methodology

The pottery was examined in hand specimen using a binocular microscope at x15 magnification and classified using the Leicestershire fabric series for Prehistoric and Roman pottery (Pollard 1994, Marsden 2011), with reference to the Prehistoric Ceramics Research Group Guidelines (PCRG 1997). When identifying the Roman pottery, specific fabrics were assigned to all sherds wherever possible within the archive dataset, however, in this report the generic ware groups summarised in Table 4 below are used for clarity of quantified data presentation.

Table 4: Summary of Leicestershire Prehistoric pottery fabric series (Marsden 2011).

Fabric	Fabric
Sandy Q1 Quartz sand	Mudstone M2 Mudstone and sand
Quartz Q4 Sandy fabric with quartz Q5 Quartz Q6 Sandy fabric with sandstone	Granitic Rock R1 Granitic Rock R2 Sandy fabric with granitic rock R3 Sand and granitic rock in approximately equal quantities
Shell-tempered S1 Shell S2 Sandy fabric with shell	Grog G2 Grog in sandy fabric

Table 5: Summary of Roman pottery fabric series (Pollard 1994).

Fabric Code:	Fabric Type:
Samian	Samian wares

Fabric Code:	Fabric Type:
CG	Calcite gritted (shelly)

C	Colour-coated wares
MO	Mortaria
BB1	Black Burnished wares
GW	Grey wares

GT	Grog Tempered wares
OW	Oxidised wares
WW	White wares
WS	White slipped wares

Quantification was by sherd count, weight (grams) and estimated vessel equivalents (EVEs based on rim values). Average sherd weights (ASW) have also been calculated to provide an indication of the condition of the material and levels of preservation within the assemblage. Vessel forms were assigned where diagnostic sherds allowed, using the Leicestershire Museums form series and other published typologies. The dataset was recorded and analysed within an Excel workbook, which comprises the archive record.

The Iron Age Pottery

The table below details a summary of the major pottery fabrics present within the assemblage. Figure 47 shows the percentage of fabrics present by EVEs as a measure of individual vessels identified, whilst weight is shown to enable comparison with other published sites. All references to percentage values relate to weight unless otherwise stated.

Table 6: Quantification of the Iron Age pottery.

Fabric	Sherds	% Sherds	Weight (g)	% Weight	EVEs	% EVEs	ASW (g)
G2	3	1.3%	18	0.8%	0	0.0%	6.0
M2	33	14.2%	626	26.2%	0	0.0%	19.0
Q1	52	22.4%	379	15.8%	0.405	40.1%	7.3
Q4	48	20.7%	414	17.3%	0	0.0%	8.6
Q5	30	12.9%	297	12.4%	0.425	42.1%	9.9
Q6	1	0.4%	7	0.3%	0	0.0%	7.0
R1	1	0.4%	12	0.5%	0	0.0%	12.0
R2	16	6.9%	307	12.8%	0	0.0%	19.2
R3	30	12.9%	278	11.6%	0.18	17.8%	9.3
S1	17	7.3%	50	2.1%	0	0.0%	2.9
S2	1	0.4%	5	0.2%	0	0.0%	5.0
Total	232	100.0%	2393	100.0%	1.01	100.0%	10.3

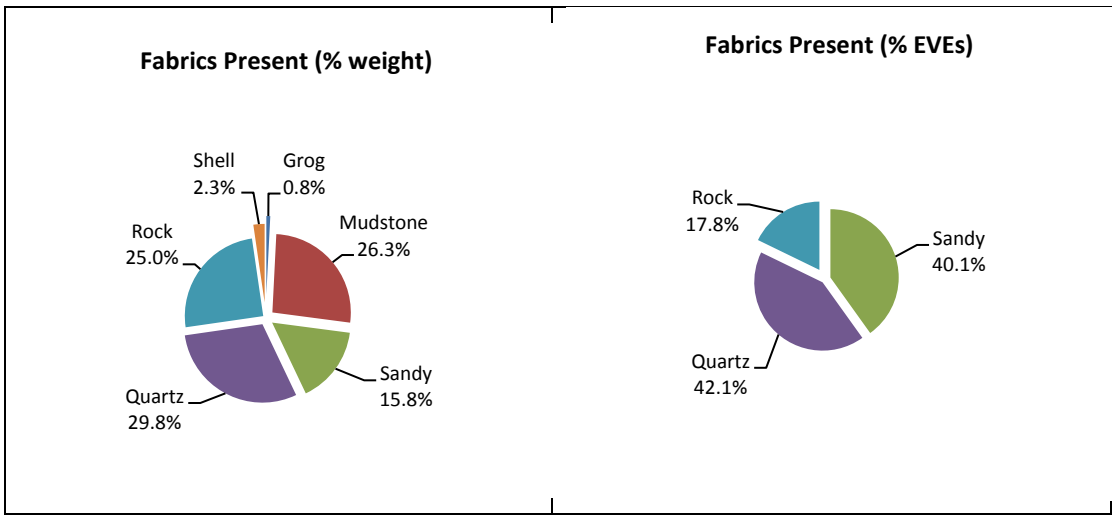


Figure 47: Iron Age fabrics present by % weight and EVEs.

Quartz based fabrics (Q4/Q5/Q6) form the single largest fabric group, with 74 sherds accounting for almost 30% by weight and 34% by sherd count. Two rims were recovered, both in (369). One is an upright rim with no decoration on the rim or body, the other is a slightly flared rim on another plain vessel. Upright rims are common during the whole of the Iron Age, whilst the flared rim could indicate

an early-middle Iron Age date rather than later (Knight 2002, 128-129). A substantial portion of the flared rim (35%) was recovered, which explains why the quartz fabrics account for such a significant proportion of the total EVEs. Three vessels showed decoration or surface treatment. A jar from (652) has incised fingernail impressions along the girth, suggesting an early-middle Iron Age date, rather than later (Ibid, 127). Two vessels (643) and [674] (685), are scored indicating a middle-late Iron Age date (Elsdon 1992). The rest of the material is plain and is therefore difficult to date beyond a broad Iron Age date.

Some of the quartz based fabrics are not typical examples. A single sherd with quartz sand and sandstone inclusions from [344] (347) has been labelled Q6 as it did not fit any existing fabric descriptions in the most recent fabric series. Four sherds of essentially Q5 are unusual insofar as there is evidence of other types of rock inclusions in addition to the quartz. Three sherds from (369) and one sherd from [674] (685) are packed with quartz and quartzite, but have other rock (probably granitic) inclusions as well. The sherds from (369) contain mostly rounded quartz and quartzite suggesting a riverine source, whilst the sherd from (685) has angular or sub-angular inclusions. These examples compare with a fabric identified by Marsden at Enderby in 2004, which he described as "mixed rock" with quartz sand. The mixed rock included granitic, quartzite and sandstone inclusions. It was unclear whether or not this fabric was local or produced closer to the Charnwood Forest (Marsden 2004).

Sandy wares (Q1) form the next significant fabric group, with 52 sherds accounting for 22.4% and 40.1% of the EVEs. Much of the material comprises small sherds which explains why Q1 represents only 15.8% by weight. Eight out of the 13 rims found within the assemblage are in the Q1 sandy fabric. The forms present include two plain rims, four upright rims, one upright beaded rim and one flared rim. The flared rim is from (504) and could date to the early-middle Iron Age. The upright beaded rim dates to the middle-late Iron Age and is heavily sooted on the exterior surface. This vessel was recovered from [580] (715). One scored sherd was recovered from [580] (581). A jar from [580] (713) is probably ovoid in shape which would suggest a middle-late Iron Age date. This jar is heavily sooted inside and out.

Granitic rock based fabrics (R1/R2/R3) form the third substantial fabric group, the 47 sherds accounting for 20.2%, (25% of the weight). The R3 fabric, with approximately equal amounts of quartz sand and rock, is the most common with 30 sherds present. Three rims were found, all in the R3 fabric. An upright almost bead rim jar with a possible trace of scoring was found in [271] (275) and dates to the middle-late Iron Age. The other two rims comprise an upright flattened rim and upright rim, both of which were recovered from (369). The other vessel of note is a fairly substantial jar base with some body sherds, including three scored sherds, from (504). The interior is heavily sooted and some quite thick residues are attached in some places, suggesting it was used as a cooking pot. The outcrops of granodiorite in the Charnwood Forest are the most likely source of the granitic inclusions, suggesting some importation of pottery from the Mountsorrel area (Knight et al 2003).

The remainder of the assemblage is comprised of M2 mudstone and sandy ware along with small quantities of the G2 grog tempered ware, and the S1 and S2 shelly fabrics. The 33 sherds of M2 represent only three vessels in three contexts, even though by weight eM2 accounts for 26.3%. This is due to the presence of a substantial jar base and some body sherds recovered from [588] (590), the 18 sherds weighing 501g. All the sherds are plain, with no evidence of decoration or surface treatment such as scoring present. There are also no rims to assist with dating, therefore the pottery can only be broadly dated to the Iron Age. Three sherds of G2 grog tempered ware were found in one context, [580] (714). The sherds represent one vessel and are scored, providing a middle-late Iron Age date and this material is most probably residual in the Roman pit. The shelly wares are in very poor condition, the 18 sherds weighing only 55g. As with the mudstone fabric, there are no rims or evidence of surface treatment such as scoring to assist with dating, so the material can only be broadly dated to the Iron Age.

The Roman Pottery

The table below details a summary of the major pottery fabrics present within the assemblage. Figure 48 shows the percentage of fabrics present by EVEs as a measure of individual vessels identified, whilst sherd count is shown to enable comparison with other published sites. All references to percentage values relate to sherd count unless otherwise stated.

Table 7: Quantification of the Roman pottery.

Fabric	Sherds	% Sherds	Weight (g)	% Weight	EVEs	% EVEs	ASW (g)
BB1	28	14.6%	700	16.5%	0.21	6.7%	25.0

C	3	1.6%	47	1.1%		0.0%	15.7
CG	6	3.1%	141	3.3%		0.0%	23.5
GT	6	3.1%	26	0.6%		0.0%	4.3
GW	103	53.6%	1819	42.8%	1.765	55.9%	17.7
MO	16	8.3%	1257	29.6%	0.525	16.6%	78.6
OW	21	10.9%	183	4.3%	0.58	18.4%	8.7
Sam	7	3.6%	18	0.4%	0.075	2.4%	2.6
WS	1	0.5%	24	0.6%		0.0%	24.0
WW	1	0.5%	31	0.7%		0.0%	31.0
Total	192	100.0%	4246	100.0%	3.155	100.0%	22.1

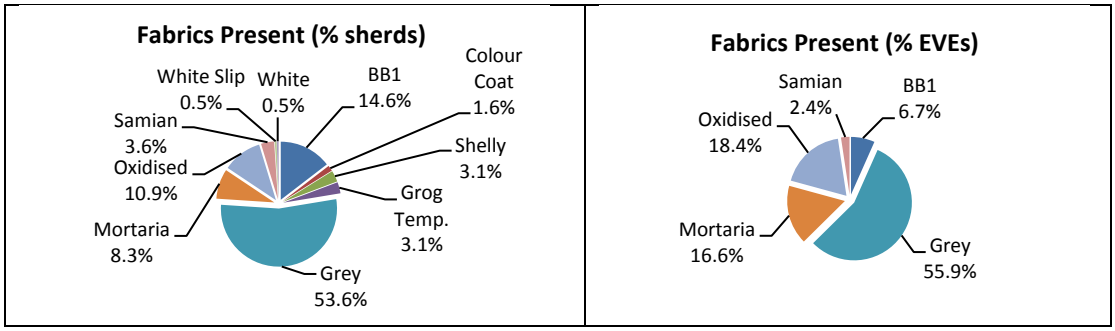


Figure 48: Roman pottery fabrics present by % sherds and EVEs.

Grey, shelly and grog-tempered coarse wares account for 59.8% of the assemblage, the majority of which are most likely locally made providing utilitarian jars and bowls for general household use. Grey ware forms the largest component at 53.6%, most of which are most likely jars. Only 6 jar rims were recovered and the forms present include rounded outcurved, neckless ledge, bead rim and everted fine lid seated. The bead rim (133) and neckless ledge rim [344] (346), are early forms and could date within the later 1st century. The everted fine lid seated jar is comparable to a set of jars found at the Vaughan Way site in Leicester and dates from the later 1st century to the middle of the 2nd century (Johnson 2009, 27). The remaining rounded outcurved rims are common forms which appear during the later 1st century and continue throughout the Roman period. The decorative styles present include burnishing, girth grooves, burnished lines and lattice, wavy lines and incised chevrons, suggesting a later 1st to 2nd century date overall, however there are many plain body sherds that are not closely datable and could be later. One other vessel worth noting is a jar from (581). Only body sherds were present, decorated with girth grooves and a zone of burnished vertical lines. The jar is interesting as it is slightly warped with a small air bubble on the interior surface. The fabric looks early and although the vessel is not poor enough to be considered a "second" or waster, it could indicate an early attempt at producing grey ware during the later 1st century. The only other clearly identifiable vessels are two bowls; a necked s-shaped bowl from (523) and a bowl with a high flange and curved wall from (602). The latter is comparable to mid-3rd and 4th century East Midlands Burnished wares and Swanpool types from Lincoln (Todd 1968; Darling 1977, 10-11).

The shelly and grog-tempered wares are a small component, accounting for 3.1% each. All the shelly wares are jars and most of the sherds are abraded. Two jar bases were recovered from [580] (623) and (729). The remaining body sherds came from [703] (706) (707). The bases and most of the body sherds do look fairly early, probably dating within the second half of the 1st century, though some could date into the 2nd century. Two grog-tempered ware jars are present; one from [580] (523) and one from [655] (657). Early grog-tempered wares are commonly known as "transitional" fabrics and date to the mid-late 1st century (Pollard 1994, 74-75).

The remaining coarse wares comprise white, white-slipped, oxidised and Black Burnished wares, illustrating regional pottery supply. Black Burnished wares form the largest component at 14.6%; though with only one rim present represents 6.7% of the EVEs. All the vessels are jars with acute lattice indicating a date range from c.AD120 to the end of the 2nd century (Holbrook and Bidwell 1991, 95-96). Oxidised wares form 10.9% (18.4% EVEs), although ten of the 21 sherds are from a single vessel. This is a jar from [655] (657) with a recurved rim most likely dating to the later 1st or early 2nd centuries.

The fabric is a very fine oxidised ware and could date within the 1st century. As with most of the oxidised wares, the sherds are fairly abraded. The only other rim present is from a necked cordoned jar found in [580] (621), again probably dating to the later 1st or 2nd centuries. A similarly dated carinated jar or bowl was recovered from [580] (623). The oxidised wares are not in particularly good condition compared to other fabrics, with an average sherd weight of just 8.7g and many abraded surfaces. White and white slipped wares comprise only 1% of the assemblage combined. A white slipped ware strap handle from a flagon was recovered from [580] (625), whilst a white ware flagon was found in [599] (602). Both vessels date to the later 1st or 2nd centuries. The most likely sources for the oxidised, white and white-slipped wares are Mancetter-Hartshill and Northamptonshire (Swan 1984, 98-101; Pollard 1994, 113-114).

The fine wares comprise samian wares and Romano-British colour-coated wares. Imported samian wares from South and Central Gaul account for 3.6% of the assemblage. All the South Gaulish sherds are abraded, small fragments, and no vessel types are identifiable. Samian ware from Southern Gaul was imported to Britain from around the middle of the 1st century until the very early 2nd century. Two Central Gaulish vessels are also present. An abraded dish or bowl was recovered from [594] (595), whilst a Drag.18/31 dish was found in [580] (623). This type of dish was produced during the first half of the 2nd century and the micaceous fabric suggests Lezoux as the most likely source (Webster 1996). Only three sherds of colour-coated ware were found in the assemblage, all from the Nene Valley and all from a single context [599] (602). Two vessels are represented; a flagon and a flanged bowl imitating the samian Drag.38 form. Both date to the 3rd or 4th centuries, with the bowl dating from the middle of the 3rd century onwards (Howe et al 1980 22-25; Perrin 1999, 102-103).

Specialist wares account for 8.3% of the assemblage and comprise 16 sherds of Nene Valley mortaria representing four vessels. Two forms are identifiable, both a type with a bead above the flange suggesting a date no earlier than the middle of the 2nd century. One is particularly well preserved with a full profile and just over half the vessel rim present. The form is similar to Gillam types 253 and 254 dating to the second half of the 2nd century (Gillam 1957, 27, Fig.26, 66). This vessel was found in [703] (706) and is the reason mortaria accounts for 16.6% of the EVEs which is an unusually high proportion.

Discussion

Overall, there is evidence of activity from the Iron Age to at least the middle of the 3rd century. The Iron Age pottery is not in particularly good condition and much can only be dated broadly as Iron Age. The Roman pottery is in much better condition, with most dating to the 1st and 2nd centuries with only one deposit containing later material.

Two of the main features on the site are a pit alignment and a series of water holes, one of which is of particular interest as a bark shield, was preserved in the waterlogged conditions. The shield is thought to have been deposited no later than 195 cal BC (Hamilton & Beamish p107). Two pits from the alignment, (369) and (504), each contained a reasonable quantity of pottery. Forty seven sherds (508g) were recovered from (369), including five jar rims. Three are upright, one is upright flattened and another is slightly flared. The flared one may possibly be early-middle Iron Age rather than later. All the sherds are plain. Fifty sherds (383g) of pottery were recovered from (504). Three jar rims were present comprising an upright rim, a flared rim comparable to that from (369) and a plain rimmed barrel shaped jar. A heavily sooted scored ware jar with a residue on the interior was also present, suggesting a middle-late Iron Age date.

The watering hole feature [722]/[580] produced 39 sherds (973g) of pottery, comprising 12 sherds (170g) of Iron Age pottery and 27 sherds (803g) of Roman pottery. The cut [580] represents an early Roman (late 1st or early 2nd century) recut of the Middle Iron Age feature [722]. The lowest fill level (713) of the former contained a Q1 Iron Age body sherd which was heavily sooted. The jar is possibly ovoid or ellipsoid. Alongside this was a Roman grey ware jar with burnished lattice zones, most likely dating to the later 1st or 2nd centuries. The next fill (714) contained three sherds from a grog tempered scored ware jar dating to the middle-late Iron Age. Above this, (715) contained a Q1 sandy ware jar with upright beaded rim dating to the middle-late Iron Age. This vessel was also heavily sooted. Above (715) lay (581). The pottery from this level comprises a Q1 sandy ware upright rimmed scored ware jar dating to the middle-late Iron Age alongside a Roman grey ware jar. The seven substantial grey ware sherds are from a single vessel, a jar with horizontal grooves and burnished vertical lines in between. A later 1st-early 2nd century date is most likely, though it could date as early as c.AD60/65. All the remaining contexts above (581) contained Roman pottery only. A fine, micaceous oxidised ware necked and

cordoned jar dating to the later 1st or 2nd century was recovered from (621). Eight sherds (134g) were recovered from (623). The pottery comprises an oxidised ware carinated and cordoned bowl or jar, a grey ware jar with incised chevrons, a grey ware jar with a trace of horizontal grooves, a grog-tempered jar and an abraded shelly ware jar. The grog-tempered jar is transitional in nature and dates to the mid-late 1st century (Pollard 1994, 75). The rest of the pottery most likely dates to the later 1st or 2nd century. A grey ware jar dating to the later 1st or 2nd century was recovered from (624). Finally, five sherds (45g) were retrieved from (625) comprising two grey ware jars and a white slipped ware strap handle from a flagon. The pottery from (625) is all abraded and probably dates to the later 1st or 2nd century.

The latest pottery on the site was from a pit [599] (602), from which 14 sherds (393g) were recovered. The grey wares include a bowl with a high flange and curved wall comparable to Swanpool and East Midlands Burnished ware types dating from the mid-3rd century onwards, along with a narrow mouthed jar in the same fabric. The only colour-coated ware within the assemblage is also from this deposit, comprising a Nene Valley colour-coated ware jar and a bowl copying the samian ware Drag.38 form, again dating from the middle of the 3rd century onwards (Todd 1968; Darling 1977, 10-11; Howe et al 1980, 22-25; Perrin 1999, 102-103). There is also a Nene Valley mortarium which would not date before the middle of the 2nd century along with other grey, oxidised and white wares that are not closely datable and could date any time from the 2nd century onwards. There is also an Iron Age plain rimmed jar in a sandy fabric.

The Roman element of the assemblage is fairly straightforward, insofar as it appears to be mainly later 1st or 2nd century with one feature dating from the middle of the 3rd century possibly into the 4th century. The presence of Roman pottery within the watering hole feature is most likely the result of surface finds sinking through time through the waterlogged burial environment.

Dating Iron Age pottery can be very difficult where no surface treatment or decoration is present, as the common forms such as upright rims appear throughout the Iron Age. The two flared rims from (369) and (504), along with the impressed decoration from (652) hint at some earlier Iron Age activity. There is also some evidence for middle-late Iron Age activity in the form of a few scored ware vessels and the upright bead rim jar from (715). However, most of the Iron Age pottery is plain, with only ten scored sherds representing six vessels recovered. This is a low proportion for a typical middle-late Iron Age assemblage and it may be that some of the pottery dates closer to the Middle Iron Age before scored ware becomes prevalent. Excavations elsewhere in Enderby and at Huncote in 2004 produced an assemblage with almost 57% scored ware (Marsden 2004), clearly placing it in the middle-late Iron Age, whilst at Lubbesthorpe only 4% of pottery was scored and a Middle Iron Age date was suggested (Cooper 2011, 20). This pattern is echoed throughout Leicester and Leicestershire. The difficulty is that plain vessels do also occur during the middle-late Iron Age, an issue that has been highlighted before and is something to be aware of (Marsden 2011, 61-64; Johnson 2015, 85-86).

Table 8: Summarised Pottery Catalogue

Con	Cut	Prin Con	Feat. type Grp	Fabric	Form	Ves part	Sherds	Weight (g)	Dating
122	**116**	115	L	GW	Jar	Base	1	21	later1stC
133	**135**	115	L	GW	Jar	Rim	1	7	late1st-early2ndC
151	**150**	150	L	GW	Jar/beaker	Body	1	1	late1stC+
153	**152**		P	Q4	Jar/bowl	Body	38	324	Iron Age
155	**154**		P	M2	Jar/bowl	Body	1	74	Iron Age
172	**164**	115	L	GW	Jar	Body	1	12	late1st-early2ndC
174	**175**	150		GW	Jar	Body	1	4	late1st-2ndC+
244	**245**		PA	Q1	Jar/bowl	Body	8	62	Iron Age
255	**256**		PA	Q1	Jar/bowl	Body	7	37	Iron Age
275	**271**	209	L	R3	Jar	Rim	1	41	mid-late IA
286	**229**		P	GW	Jar	Body	1	2	late1stC+
294	**288**		PA	R1	Jar/bowl	Body	1	12	Iron Age
339	**334**	115	L	S1	Jar/bowl	Body	1	4	Iron Age
346	**344**		P	GW	Jar	Rim	1	10	later1stC
347	**344**		P	Q6	Jar/bowl	Body	1	7	Iron Age

Con	Cut	Prin Con	Feat. type Grp	Fabric	Form	Ves part	Sherds	Weight (g)	Dating
369	**366**		PA	R3	Jar	Rim	5	53	Iron Age
369	**366**		PA	R3	Jar	Rim	2	27	Iron Age
369	**366**		PA	Q5	Jar	Rim	10	108	Iron Age
369	**366**		PA	Q1	Jar	Rim	1	5	Iron Age
369	**366**		PA	Q5	Jar	Rim	1	4	Iron Age
369	**366**		PA	Q1	Jar/bowl	Body	2	18	Iron Age
369	**366**		PA	Q5	Jar/bowl	Base	3	44	Iron Age
369	**366**		PA	Q5	Jar/bowl	Body	9	68	Iron Age
369	**366**		PA	Q5	Jar/bowl	Body	5	38	Iron Age
369	**366**		PA	R2	Jar/bowl	Body	9	143	Iron Age
385	**374**		P (PA)	Q1	Jar/bowl	Body	2	5	Iron Age
386	**375**		P (PA)	Q4	Jar/bowl	Body	1	5	Iron Age
405	**404**	115	L	GW	Jar	Base	1	19	late1st-early2ndC
432	**427**	209		Q4	Jar/bowl	Body	2	18	Iron Age
504	**503**		PA	S1	Jar/bowl	Body	11	37	Iron Age
504	**503**		PA	Q1	Jar	Rim	2	22	Iron Age
504	**503**		PA	Q1	Jar	Rim	3	6	Iron Age
504	**503**		PA	Q1	Jar	Rim	4	13	Iron Age
504	**503**		PA	R3	Jar/bowl	Body	6	22	Iron Age
504	**503**		PA	R2	Jar	Base	7	164	mid-late IA
504	**503**		PA	Q1	Jar/bowl	Body	3	5	Iron Age
504	**503**		PA	R3	Jar/bowl	Body	2	33	Iron Age
504	**503**		PA	R3	Jar/bowl	Body	1	14	Iron Age
504	**503**		PA	R3	Jar	Base	11	67	Iron Age
523	**521**	521	ED	GW	Bowl	Rim	1	105	late1st-2ndC+
523	**521**	521	ED	GW	Jar/bowl	Body	1	3	late1st-2ndC+
523	**521**	521	ED	GW	Jar	Base	1	35	late1st-2ndC+
524	**522**	521	ED	GW	Jar	Body	3	29	late1st-2ndC+
526	**525**	521		GW	Jar	Body	1	4	late1st-early2ndC
528	**527**	521	ED	MO	Mortarium	Rim	4	133	mid2nd-early3rdC
553	**551**	521	ED	GW	Jar	Rim	1	14	late1st-mid2ndC
553	**551**	521	ED	Sam	Misc	Body	1	1	mid1st-early2ndC
553	**551**	521	ED	OW	Jar/beaker	Body	1	1	late1st-2ndC
554	**551**	521	ED	GW	Jar	Rim	1	16	late1st-2ndC+
556	**555**	555		Sam	Misc	Body	1	1	mid1st-early2ndC
560	**559**	555		GW	Jar	Body	1	2	late1st-2ndC+
564	**563**	555		Q5	Jar/bowl	Body	1	8	Iron Age
566	**565**	555		OW	Misc	Body	1	1	late1st-2ndC
572	**571**	555		OW	Jar	Base	1	18	late1st-2ndC+
576	**577**	555		MO	Mortarium	Body	1	15	mid2ndC+
581	**580**		P	GW	Jar	Body	7	457	late1st-early2ndC
581	**580**		P	Q1	Jar	Rim	2	47	mid-late IA
585	**584**	585	D	GW	Jar/Bowl	Rim	17	135	late1st-2ndC

Con	Cut	Prin Con	Feat. type Grp	Fabric	Form	Ves part	Sherds	Weight (g)	Dating
590	588		P	M2	Jar	Base	18	501	Iron Age
595	594	555		Sam	Misc	Body	1	3	2ndC
595	594	555		OW	Jar/beaker	Body	3	3	late1st-2ndC
602	599		P	GW	Bowl	Rim	2	110	mid3rd-4thC
602	599		P	GW	Jar	Rim	1	57	3rdC+
602	599		P	GW	Jar	Body	5	79	2ndC+
602	599		P	C	Flagon	Body	2	19	3rd-4thC
602	599		P	C	Bowl	Body	1	28	3rd-4thC
602	599		P	MO	Mortarium	Body	1	67	mid2ndC+
602	599		P	WW	Flagon	Body	1	31	late1st-2ndC
602	599		P	OW	Misc	Body	1	2	2ndC+
602	599		P	Q1	Jar	Rim	1	7	Iron Age
605	604	555		GW	Jar	Base	1	7	late1st-2ndC+
605	604	555		GW	Jar	Base	1	17	late1st-2ndC+
610	609	521	ED	GW	Jar	Base	4	100	late1st-2ndC+
621	580		P	OW	Jar	Rim	1	64	late1st-2ndC
623	580		P	Sam	Dish	Rim	2	12	early-mid2ndC
623	580		P	OW	Jar/bowl	Body	1	27	late1st-2ndC
623	580		P	GW	Jar	Body	1	47	later1stC
623	580		P	CG	Jar	Base	1	21	mid-late1stC+
623	580		P	GT	Jar	Body	1	5	mid-late1stC
623	580		P	GW	Jar	Body	2	22	late1st-2ndC
624	580		P	GW	Jar	Body	3	19	late1st-2ndC+
625	580		P	WS	Flagon	Handle	1	24	late1st-2ndC
625	580		P	GW	Jar	Body	4	21	late1st-2ndC
643	642	521	ED	Sam	Misc	Body	2	1	mid1st-early2ndC
643	642	521	ED	GW	Jar	Body	2	5	late1st-2ndC+
643	642	521	ED	Q4	Jar	Base	1	9	Iron Age
643	642	521	ED	S1	Jar	Body	2	7	Iron Age
643	642	521	ED	Q4	Jar	Body	1	9	Mid-late IA
643	642	521	ED	Q1	Jar/bowl	Body	1	6	Iron Age
652		652	M	S1	Jar/bowl	Body	3	2	Iron Age
652		652	M	Q4	Jar/bowl	Body	5	49	early-mid IA
652		652	M	R3	Jar/bowl	Body	1	5	Iron Age
652		652	M	M2	Jar/bowl	Body	14	51	Iron Age
656	655		P	GW	Jar	Body	1	48	late1st-2ndC
657	655		P	OW	Jar	Rim	10	48	later1st-early2ndC
657	655		P	GW	Jar	Body	1	9	late1st-2ndC
657	655		P	GT	Jar	Body	5	21	mid-late1stC
658	655		P	BB1	Jar	Rim	18	288	2ndC
658	655		P	GW	Jar/bowl	Rim	2	37	late1st-2ndC+
658	655		P	GW	Jar	Rim	14	124	late1st-2ndC+
658	655		P	GW	Misc	Body	9	28	late1st-2ndC
658	655		P	OW	Misc	Body	1	2	late1st-2ndC
658	655		P	Q1	Jar/bowl	Body	1	3	Iron Age
663	662	665		Q1	Jar/bowl	Body	2	3	Iron Age

Con	Cut	Prin Con	Feat. type Grp	Fabric	Form	Ves part	Sherds	Weight (g)	Dating
668	**667**	521		R3	Jar/bowl	Body	1	16	Iron Age
671		546		Q1	Jar/bowl	Body	1	1	Iron Age
685	**674**	674	D	Q5	Jar	Body	1	27	mid-late IA
692	**691**			S2	Jar	Base	1	5	Iron Age
694	**693**	693	D	BB 1	Jar	Body	1	17	2ndC+
696	**693**	693	D	Q1	Jar	Rim	1	4	Iron Age
696	**693**	693	D	Q1	Jar/bowl	Body	1	1	Iron Age
706	**703**		P	MO	Mortarium	Rim	10	1042	mid2nd-early3rdC
706	**703**		P	GW	Jar	Body	3	38	late1st-early2ndC
706	**703**		P	CG	Jar	Body	2	86	late1st-2ndC+
707	**703**		P	CG	Jar	Body	2	13	late1st-2ndC+
707	**703**		P	GW	Jar	Base	1	41	2ndC+
707	**703**		P	OW	Jar	Body	1	17	2ndC+
713	**580**		P	GW	Jar	Body	3	84	late1st-2ndC+
713	**580**		P	Q1	Jar	Body	4	84	Iron Age
714	**580**		P	G2	Jar	Body	3	18	mid-late IA
715	**580**		P	Q1	Jar	Rim	3	21	mid-late IA
718	**717**		P	BB 1	Jar	Base	9	395	2ndC
725	**655**		P	Q1	Jar/bowl	Body	1	2	Iron Age
726	**655**		P	GW	Jar	Body	1	50	late1st-2ndC+
729	**655**		P	CG	Jar	Base	1	21	mid-late1stC+
731	**655**		P	Q1	Jar/bowl	Body	2	27	Iron Age

The Post-Roman Pottery

Deborah Sawday

Methodology

The pottery, eight sherds, weighing 151 grams, was examined under a x20 binocular microscope and catalogued with reference to the ULAS fabric series (Davies and Sawday 1999; Sawday 2009).

The results are shown below (Tables 9 and 10). The finds evidently relate to the nearby village of Enderby, and were possibly deposited on the site during the manuring of the fields in the medieval period and later.

Table 9: The post Roman pottery fabrics.

Fabric	Common Name/Kiln & Fabric Equivalent where known	General Date Range
PM	Potters Marston ware - Potters Marston, Leicestershire (1)	c.1100-c.1300/50+
CC1	Chilvers Coton A/Ai (14), Warwick CTS WW01,?WW012, ?SQ51, (2)	c.1250-1400
CC2	- Chilvers Coton fabric C (14), Warwick CTS SQ30 (2)	c.1250/1300-1500
MS3	Medieval Sandy ware 3 – misc. coarse hared fired quartz tempered fabrics -? Burley Hill/Allestree/Ticknall, Derbyshire or Staffs (3)	Early/mid 13th C.-. 1400/1450
MS8	Medieval Sandy ware – misc. sandy fabrics ? including under fired Midland Purple ware, fabric MP2 (3)	c.1300-1550
EA2	Earthenware 2 – 'Pancheon ware', Chilvers Coton/Ticknall, Derbyshire (4)	17th C-18th C. +

(1) Haynes 1952, Sawday 1991, Davies and Sawday 1999
(2) Soden & Ratkai 1998.
(3) Coppack 1980, Soden & Ratkai 1998.
(4) Gooder 1984, Sawday 1989

Table 10: The medieval and later pottery by fabric, sherd numbers and weight (grams) and context.

Context	Cut	Group Cut	Ware/Fabric	no	gr	comments
106	[105]	Drain	EA2 – Earthenware 2	2	90	Post med/modern
118	[113]	113	PM – Potters Marston	1	4	Abraded, thin walled possibly 12th C.
157	[158]	150	CC2 – Chilvers Coton C ware	1	6	Brown glaze, c.1300+,
157	[158]	150	MS8 – Medieval Sandy ware	1	12	c.1350/1400+
290	[289]	150	MS3 - Medieval Sandy ware	1	14	Simple everted jar rim, c.1300+
670	[669]	546	PM – Potters Marston	1	4	Abraded, thin walled possibly 12th C.
670	[669]	546	CC1 – Chilvers Coton A ware	1	21	Abraded. 1250/1300+

Waterlogged Wood Artefact *by Michael Bamforth, and Matthew Beamish with contributions from Steven Allen, Gareth Beale, Michael Biggs, Konstantinos Chatzipanagis, Derek Hamilton, Claire Robinson, Luke Spindler and Chloe Watson*

Summary
A bark and wicker shield was excavated from a silty deposit within an Iron Age pit. The artefact has been recorded and conserved, and is the only known example of its type from Britain, and as far as can be established, northern Europe. The artefact has been dated to the Middle Iron Age and although completely organic, was composed of the elements also represented in metal shields with body, rim, boss and handle. Additionally the bark body was structured with laths of a different wood that had been inserted into the bark: this represents a technology not hitherto represented in British prehistory.

Introduction

The artefact, directly dated to the Middle Iron Age (see Radiocarbon p133), was recovered from a basal deposit of an otherwise unremarkable pit that was partially truncated by a later Romano-British re-cut of the feature. The artefact was situated in waterlogged deposits which created the anaerobic conditions necessary for organic preservation.

Although remarkably in its construction, the artefact bears a striking resemblance to a shield and is referred to as such throughout this report (Figure 1, Figure 2 and Figure 3).

Photogrammetry was carried out on site and acetate tracings (following initial lifting) by Matthew Beamish and Heidi Addison (ULAS) in August 2015, soon after which the object was CT scanned by Claire Robinson at Leicester Royal Infirmary. The shield was cleaned and prepared for conservation by Mags Felter (York Archaeological Trust) and recorded off-site by Michael Bamforth (University of York) during late 2015. The illustrations were carried out by Chloe Watson (University of York), RTI and NIR photography by Gareth Beale (University of York). The taxonomic identifications were carried out by Steven Allen (York Archaeological Trust). Penelope Walton Rogers (The Anglo-Saxon Laboratory) carried out analysis of the boss. The raman spectroscopy was carried out by Konstantinos Chatzipanagis (University of York). The ZooMS analysis was carried out by Luke Spindler (University of York). Dr Rachel Crellin reported on wear and cut marks. Dr Michael Biggs produced 3D prints of selected areas of the shield, and also positive casts of holes for further study by Rachel Crellin. The conserved shield was scanned for a second time by Claire Robinson in February 2019.

Methodology

Wood

This document has been produced in accordance with Historic England guidelines for the treatment of waterlogged wood (Brunning and Watson 2010) and recommendations made by the Society of Museum Archaeologists (1993) for the retention of waterlogged wood.

The metric data were measured with hand tools including rulers and tapes.

The system of categorisation and interrogation developed by Taylor (1998; 2001) has been adopted within this report.

Throughout the investigation of the artefact a policy of minimising damage and invasive investigation was followed at all times. This has made certain aspects, such as identifying the conversion of the wooden laths / stiffeners, somewhat difficult.

CT Scan

The CT body scanner at the Leicester Royal Infirmary was used to scan the fragments of artefact. These data enabled internal structures within the artefact to be examined non-destructively. The scans were undertaken on a Toshiba Aquilion 64 slice scanner (120kV, 80mA and 64 x 0.5 mm slice thickness, matrix 512 x 512 reconstructed to 0.5mm). The shield was waterlogged at the time of initial scanning and supported with plaster of Paris when the scans were completed. When scanned a second time, the shield lay on fibre glass trays supported on foam sheets.

3D Printing

STL (3D) files were extracted from the DICOM (scan) data using OsiriX software (version 8.0.1). The areas of interest were then cropped using the open source software Blender (version 2.78), and that this was also used to create the inverse "casts" (specifically by using a Boolean modifier).

Reflectance Transformation Imaging Photography (RTI)

Reflectance Transformation Imaging is a multi-light imaging technique which enables the creation of interactive image files. RTI enables the user to re-light an object or surface by moving and manipulating simulated light sources and applying filters which alter surface appearance. Highlight based RTI was used to record the object. A series of photographs was taken of each fragment from a fixed camera position. In each image the fragment was lit from a different direction using an LED studio light. These image sets were then combined using 'RTI Builder' in order to generate a surface model of the fragment which was of sufficiently high detail to highlight small surface details including traces of deterioration and tool marking. Both specular enhancement and diffuse grain tools were used within RTI Builder to enable enhanced identification of faint tooling and surface marks.

Near-Infrared Photography (NIR)

Photographs of the object were also captured using an adapted near-infrared camera. The visibility of iron based pigments can be enhanced with NIR photography.

Raman Spectroscopy

Samples were investigated using a 532 nm laser. The integration time used was two seconds and each spectrum was the average of either 10 or 60 repeated scans according to the signal. 10% of the total power was used which corresponds to approximately 1-1.5 mW. A 50x objective lens was used to focus the laser beam on a sample area of 1-1.5 μm in diameter.

In an attempt to identify the red pigment seen on the outer / lower surface fragment 4 was examined targeting areas with visible pigment for identification and areas with none for control.

In a speculative attempt to identify the presence of any glue between the bark sheets sub-samples were recovered from between the layers of fragment 3 in two locations and subjected to analysis.

Taxonomic Identification, wood

Each piece was sampled by removing thin slices from accessible surfaces which were placed on a slide for visual examination under a transmitted light binocular microscope at x40, x100 and x200 magnification. All species identifications follow Schweingruber (1982).

Zooms

A minute sample of the possible hide fragment was removed from the shield using tweezers, and analysed using Zooarchaeology by Mass Spectrometry (ZooMS). The fragment was prepared by incubating with 1μL trypsin in 50μL ammonium bicarbonate for protein digestion, then peptide isolation and analysis followed Buckley et al. (2009).

Conservation

The pieces were handled separately. The soil was removed from each piece as far as possible using soft brushes and tap water. At this stage the pieces were photographed and drawn, with the photographers and illustrator undertaking the work in the YAT laboratory. After recording, the pieces were each given a fibre-glass support, fashioned by placing a cling-film barrier layer over the object and laying fibre matting over the top. The resin was then painted on to create a close-fitting support. At this point the objects could be turned over to clean and record the other side.

The pieces were then prepared for pre-treatment by covering with stretch bandages to avoid movement in the treatment tank.

The objects were then put into pre-treatment which consisted of three different grades of Polyethylene Glycol (PEG) dissolved in tap water. The regime which was chosen was as follows: 10% PEG 400, 15% PEG1500, 30% PEG4000. Each of the different grades of PEG were started at 5% and gradually increased by 5% every two to three weeks to allow the gradual absorption of the PEG.

Once the final concentrations were reached the pieces were freeze-dried in the North Star freeze drying unit, over a period of 45 days (FD run number 4).

After freeze-drying and a few days acclimatisation to the ambient environment, the bandages were removed from each of the pieces and excess PEG cleaned from the surfaces using a brush and hot air blower. The surfaces were further treated by painting on 10% PEG6000 in 50:50 Industrial Methylated Spirits and water followed by consolidation with 1% Klucel G (hydroxyl methyl cellulose) in IMS.

Once the back had been treated in this way, a further fibre-glass support was fashioned for each piece, which allowed them to be turned over once again, to be right-side up, and for the upper surface to receive the same treatment. Any loose pieces were adhered using HMG cellulose nitrate adhesive.

The pieces were packed in a Correx box fashioned to the correct size and with plastazote supports.

Results

Excavation

The shield was recovered from a large, ovoid feature measuring approximately 5m long, 3.5m wide and 2m deep, interpreted as a gravel quarrying pit or possible watering hole

This flat, oval shaped wooden artefact measured 670 x 370mm when initially revealed in the ground. The object was lying outer face down with the circular hole behind the woven boss visible and a piece of roundwood lying across it. The object was recorded and photographed using standard site methods and was then block lifted as a single piece.

Once recovered to ULAS and following the identification of the object as an artefact - most probably a shield - acetate tracings were carried out on the inner / upper faces of the artefact. The single piece fractured into five major fragments (Figure 66) each of which were wrapped in cling film, supported by mudroc, and turned over to facilitate cleaning the lower / outer face. Further acetate tracings were carried out by Matthew Beamish. As the outer / lower face was revealed, the central woven boss and surface decoration became apparent.

Following a pilot scan to test the viability of scanning waterlogged wood in the Body Scanner at the Leicester Royal Infirmary on 22/08/2015, the remaining pieces were scanned on 04/09/2015 and dicom data recorded by Dr Claire Robinson, forensic pathologist.

The artefact was then transported to York Archaeological Trust for further cleaning, stabilisation, recording and subsequent conservation.

Following completion of the conservation, the artefact was transported back to Leicester on 20/11/2017. The bark body of the conserved artefact was scanned again on 14/02/2019.

Dating

(see Hamilton and Beamish p133)

Bayesian modelling of determinations from the artefact and from the deposition context estimates the shield was constructed in either *395–345 cal BC (66% probability) or 315–255 cal BC (29% probability)* and deposited between *360–350 cal BC (1% probability; Fig. 1; Enderby shield deposition) or 300–195 cal BC (94% probability)*.

Use-life for the artefact is estimated at 10–170 years (95% probability), and 75–165 years (68% probability).

Figure 49: Photo taken post-conservation showing the outer face of the shield (inner face of the bark), which was lying face down in the ground

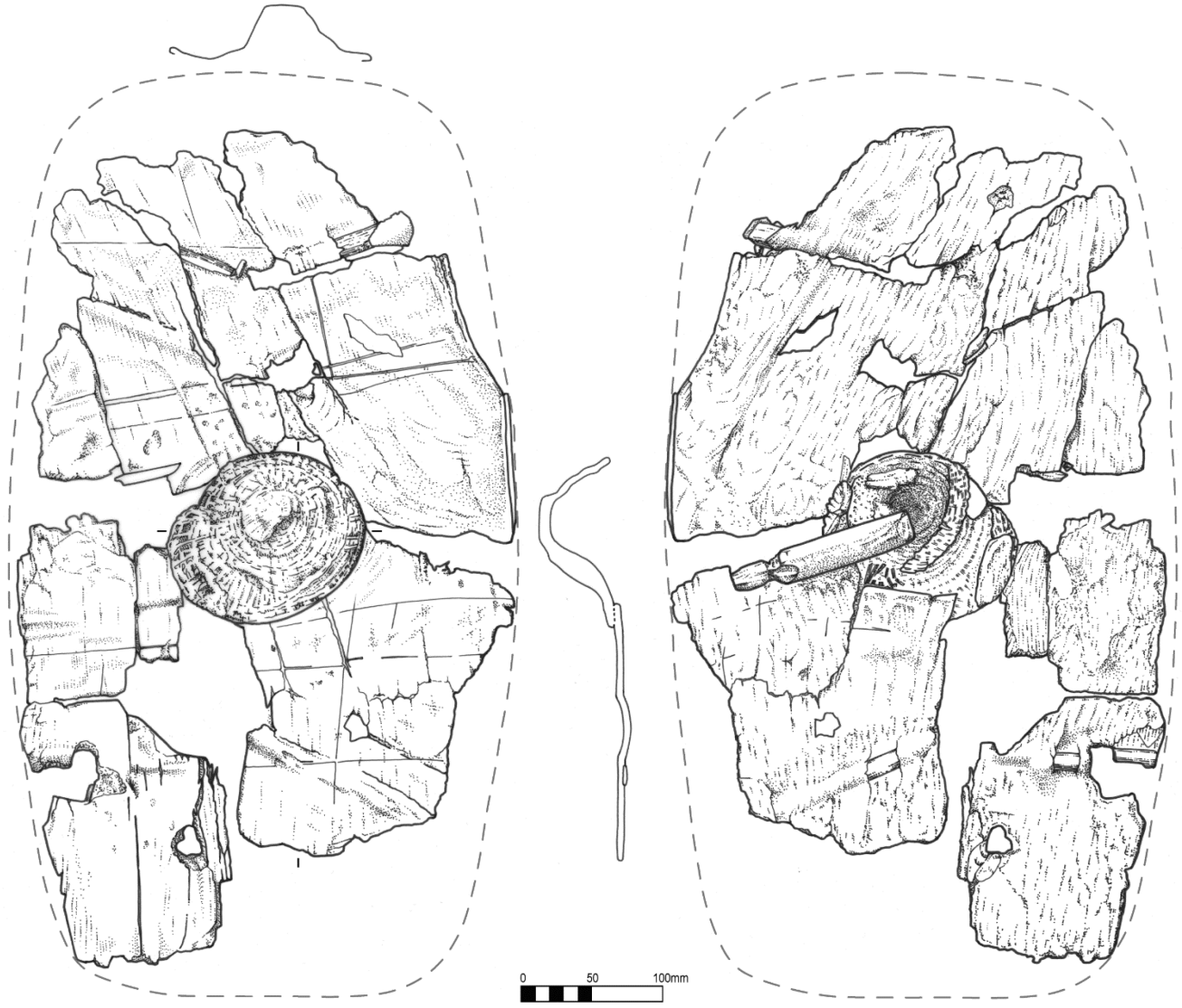
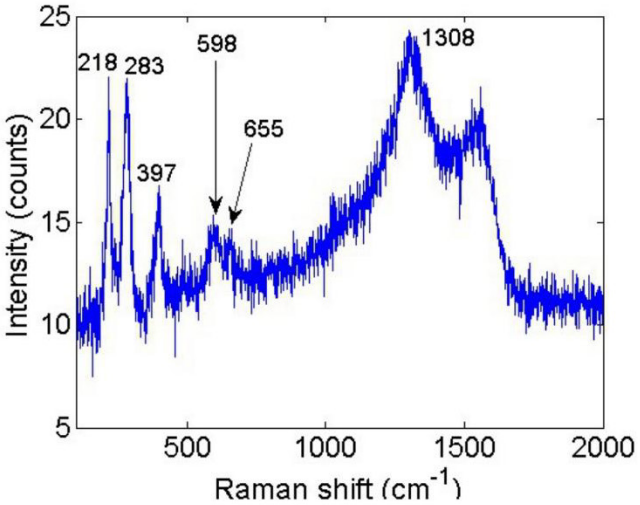


Figure 50: Illustration of the shield (Chloe Watson)



Raman bands assigned are related to hematite

Scale bar: 4 µm

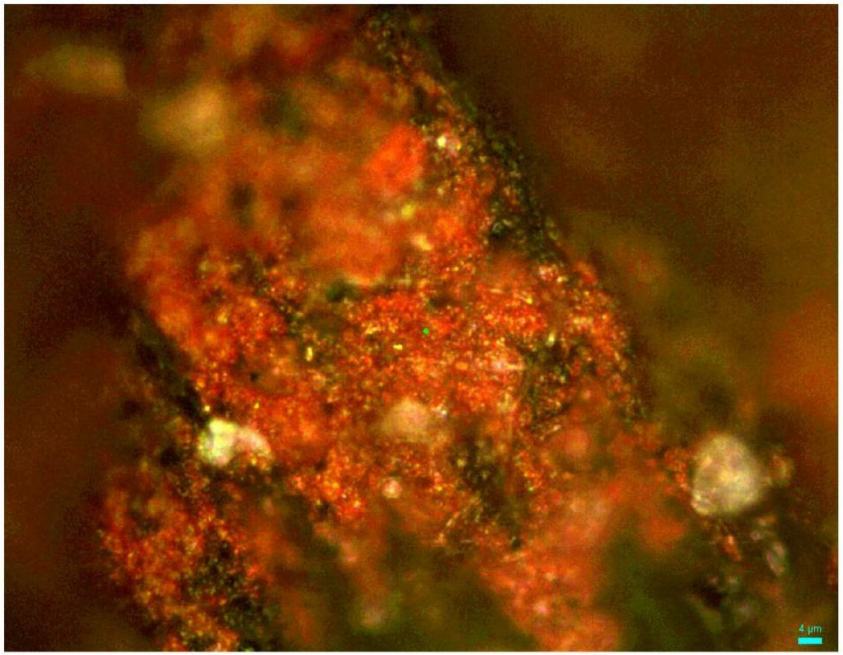
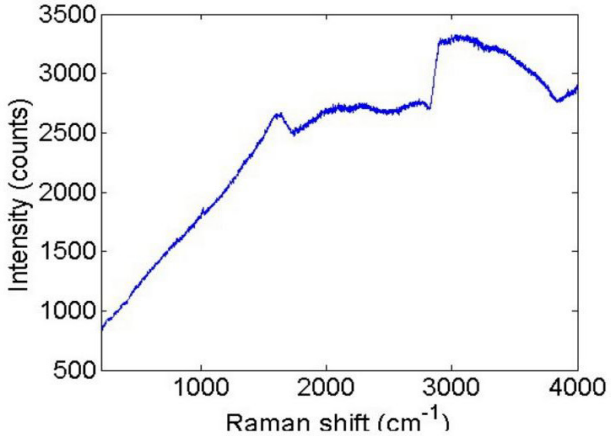
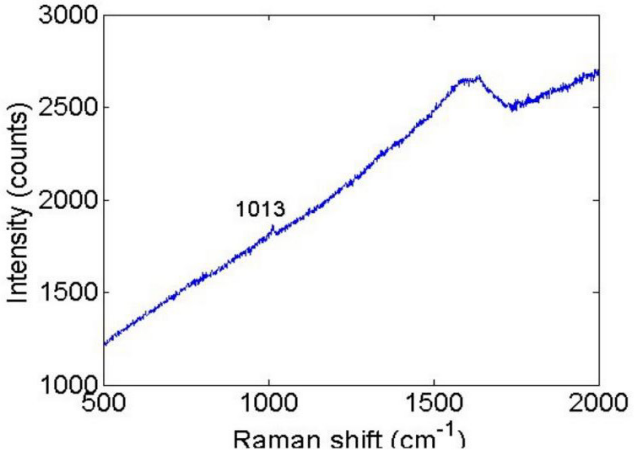
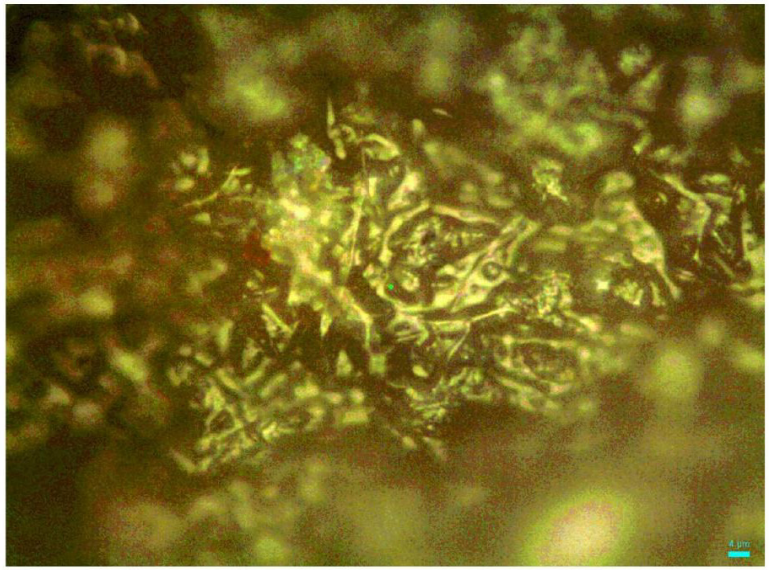


Figure 51: Raman results showing hematite, Fragment 4



Tiny peak observed at around 1009-1013 cm^{-1}
Not definitely assigned – Maybe related to mineral?
Due to the huge background, the peak is hard to see, but it is evident.





Scale bar: 4 µm

Figure 52: Raman results, control, Fragment 4

General

The artefact consists of a broadly flat, very thin sub-ovoid bark construction that appears to have originally been formed of a single sheet of bark with the smoother / inner face of the bark orientated towards the front of the shield and the rougher, outer face of the bark orientated towards the back of the shield. There is a central, domed boss constructed of small diameter roundwood coiled and stitched with a flat fibre utilising a simple stitch and wrap binding. The boss covers a sub-circular hole in the bark and appears to have been sewn to a now degraded material between the boss and the bark – perhaps a skin product.

Four thin split wood laths / stiffeners have been identified that appear to pass between laminations in the bark. Split roundwood edging / beading is present in places around the edges, again appearing to pass through laminations in the bark.

The outer / lower face of the artefact has a rough 'checkerboard' design demarcated by cut lines with red ochre pigment visible within some of the squares of the design.

Condition

The artefact is largely complete. However, the majority of the original edges are missing and there are several holes (see Crellin p79). The artefact is broken into five major fragments. The distorted diameters of the two associated pieces of roundwood describe a vertical compression in the range of 9 - 12%.

The condition scale developed by the Humber Wetlands Project (Van de Noort et. al. 1995: Table 15.1) will be used throughout this report (table 11). The condition scale is based primarily on the clarity of surface data. Material is allocated a score dependent on the types of analyses that can be carried out, given the state of preservation. The condition score reflects the possibility of a given type of analysis but does not take into account the suitability of the item for a given process. If preservation varies within a discrete item, the section that is best preserved is considered when assigning the item a condition score.

Table 11: Condition scale used in this report

condition score		museum conservation	technology analysis	woodland management	dendro-chronology insufficient	identification to taxa
5	excellent	+	+	+	+	+
4	good	-	+	+	+	+
3	moderate	-	+/-	+	+	+
2	poor	-	+/-	+/-	+/-	+
1	very poor	-	-	-	-	+/-
0	non-viable	-	-	-	-	-

Using the above condition scale (table 11) the artefact scores a 5, describing an item in excellent condition. In the best preserved areas the original pigment and incisions are visible on the outer surface of the object and the weave of the fibres of the boss are clearly visible.

Taxonomic Identification

Main body: Two small samples were examined, both being fragments broken off the main sheet of the artefact. Radial Longitudinal and Transverse Sections confirm that the material is bark but diagnostic characteristics are present to allow species identification. Examination of the Tangential Longitudinal Section shows short uniseriate medullary rays which are most similar to those of Alnus spp. (alder) wood but this is not sufficient to be conclusive. The bark could also feasibly be hazel, poplar, spindle tree or willow with willow the most likely alternative (pers. comm. Steven Allen).

Edging, fragment 2: *Corylus avellana* L. (hazel)

Laths: *Pomoideae* sp. (apple/pear/hawthorn/quince)

Handle and other roundwood fragment: Both are identifiable as *Salix* spp. (willow)

Woven boss core: *Salix / Populus* (willow / poplar), probably willow.

Main Body

Bark

With the exception of a small part of the edge of fragment 1, where split roundwood beading / edging is visible, all the outer edges are broken.

The main body displays frequent longitudinal cracks, following the grain of the bark. These are presumed to represent post depositional damage.

With the exception of fragment 4, either laths or beading can be seen to pass through laminations within the bark (table 12).

Table 12: Details of bark fragments, main body

fragment	length (mm)	breadth (mm)	thickness (mm)	laminations	surface crazing
Fragment 1	355	300	7	visible	Inner surface
Fragment 2	225	285	7	visible	Inner surface
Fragment 3	190	128	7	visible	Inner surface (most)
Fragment 4	86	35	3.5	not visible	
Fragment 5	76	127	6	visible	Inner Surface

Surface crazing was seen over most of inner surface of Fragment 3 and in patches on the inner surface of fragments 1, 2 and 5. The crazing is very light, follows the grain and features rectangular plaques c.1-2mm. This is not charring and most probably represents brown rot / dry rot (Coggins 1980)(table 12).

Fragment 2 shows clear evidence of trimming with a slight chamfer around the sub-circular boss hole. The bark was 5mm thick at this location.

Laths

Four thin, split wood laths or stiffeners have been identified, all of which are *Pomoideae* sp. These are visible where they pass between laminations in the bark as ridges or bumps and each is visible in at least one place where they protrude through breaks in the bark. Varying in width from 5-16mm and in thickness from 1-3mm these items are tentatively identified as radial splits (table 13). The laths are formed of straight grained, knot free, slow grown wood.

Table 13: Details of split Pomoideae sp. laths / stiffeners

fragment	orientation	breadth (mm)	thickness (mm)	conversion
Fragment 1	horizontal	16	3	rad?
Fragment 1	oblique	5	1	rad?
Fragment 2	oblique	14	1	rad?
Fragment 3	horizontal	13	1.5	rad?

Edging / Beading

A length of edging / beading is visible on the edge of fragment 1. This consists of half split roundwood measuring 94mm x 7mm x 3mm (original diameter 7mm).

A small rectangular area (5mm x 2mm) of material that is perpendicular to the main axis of growth on the edge of fragment 5, may represent the remains of a flat stitch.

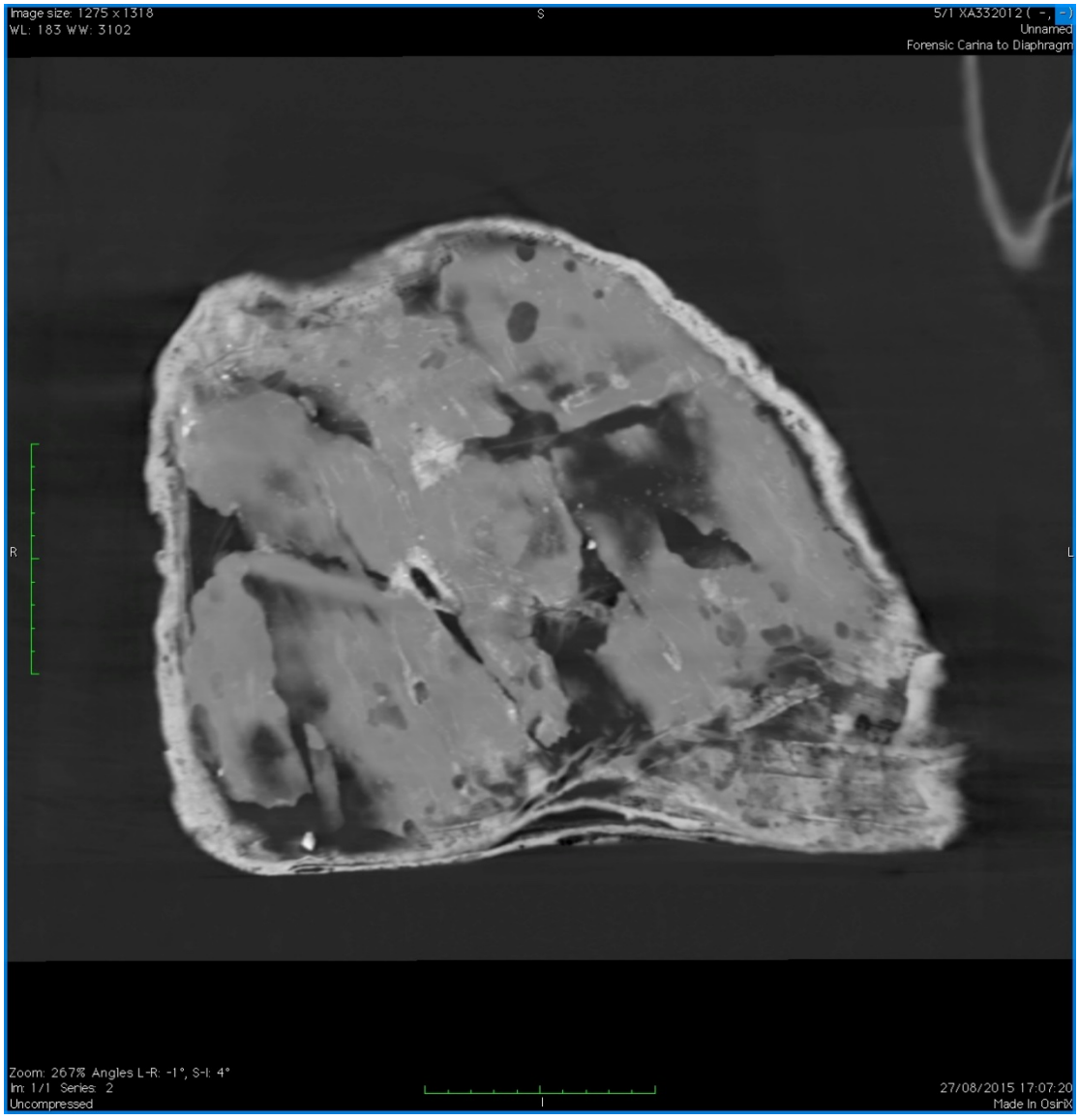


Figure 53: CT scan of fragment 1 showing laths (see Figure 81 for lath locations)

Decoration

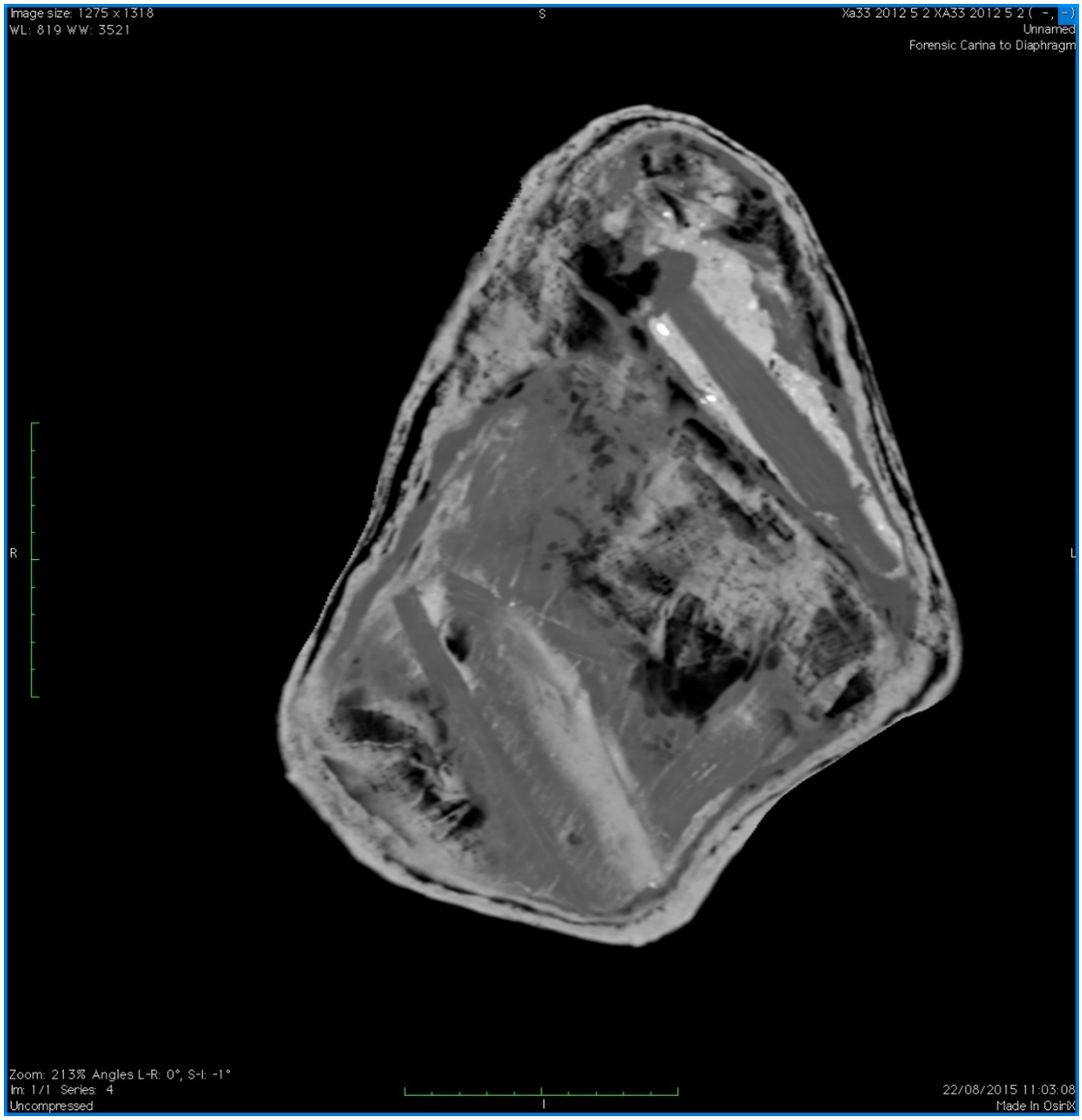


Figure 54: CT Scan of fragment 2 showing laths, handle and unrelated roundwood fragment. (See Figure 81 for lath locations).

Scored lines / incisions

A series of longitudinal and transverse scored lines / incisions are visible on the lower / outer face of the artefact, producing a rough 'checkerboard' effect. These lines are straight and uniform in appearance. Although first recognised with the naked eye, RTI was used to further investigate the presence of these lines.

The incisions are straight and vertical sided with a sharp, 90 degree break of slope into a flat base. The lines are approximately 1mm wide with a maximum depth of 0.5mm. The vertical sides and flat base are uniform where visible, suggesting the use of a gouge.

On fragment 1, multiple scored lines can be identified in some areas (Fig 81).

Pigment

There are four distinct patches where red pigment is visible. In each case the pigment appears to be bounded by the incised lines. These patches were initially noted during the acetate tracing process

immediately after cleaning. The visibility of the pigment rapidly reduced and despite the application of NIR photography, no further areas of pigment were identified.

Fragment 4 of the main body, with an area of red pigment visible to the naked eye, was selected for raman spectroscopy. Areas with visible pigment were targeted, providing a signal for hematite (Fe2O3)(Figure 51). Control readings of areas with no visible pigment observed a further small peak that is unassigned, although may represent a mineral (Figure 52). Hematite is the coloured component of red ochre, commonly used as a red pigment in the UK from the Mesolithic onwards.

Handle

A piece of roundwood was recorded, adhering to the inner / upper face of fragment 2, heading into boss. This piece was identified as willow and measured 131mm x 23mm x 21mm. The piece retained bark. One end had been chamfered at around 10' on opposite sides to form a taper 60mm long, and reduce the thickness of the piece to 5mm on the end (Figure 55 and Figure 56). Two 8mm wide x 6mm deep notches had been crudely cut into the roundwood each side of the taper around 30mm from the end (to centre). Remains of *a twisted fibre* binding were observed in the base of the notches, and evidence of a corresponding stitch can be seen in photographs of the shield prior to lifting, and RTI imaging. The end of the handle that lay immediately below the boss has been cross-cut. Where the opposite end of the handle would have been stitched through the shield, an area of bark is missing and appears to have been lost in antiquity.

On the basis that the shield was designed to be held with its longer side in a vertical plane, and the scored lines delineating the decorative rectangles also vertical and horizontal, the handle appears to have been designed at an angle of around 14º to the horizontal (Figure 81). This can be paralleled in the handle position of three of the Salisbury miniature shields (1998,0401.131998,0401.131998,0401.13, 1998,0401.171998,0401.171998,0401.17 and 1998,0401.181998,0401.181998,0401.18 (http://www.britishmuseum.org/research/collection_online/search.aspx?searchText=shield&place=28934&from=bc&fromDate=1000&to=ad&toDate=0&object=20451), and also with the miniature shield from Alcester (Warwickshire Museums accession A11454). Angled handles may have present on the hide shaped shields recorded at Mill Hill, Deal (Parfitt 1995 Fig 3) and also Hillside Farm, Bryher (Johns 2002 Fig 13) although the folding of these shields prior to deposition renders the arrangement more difficult to be certain of.

Figure 55: Fragment of handle. The lower face was seated against the bark. Remnant of binding is visible in the notch.

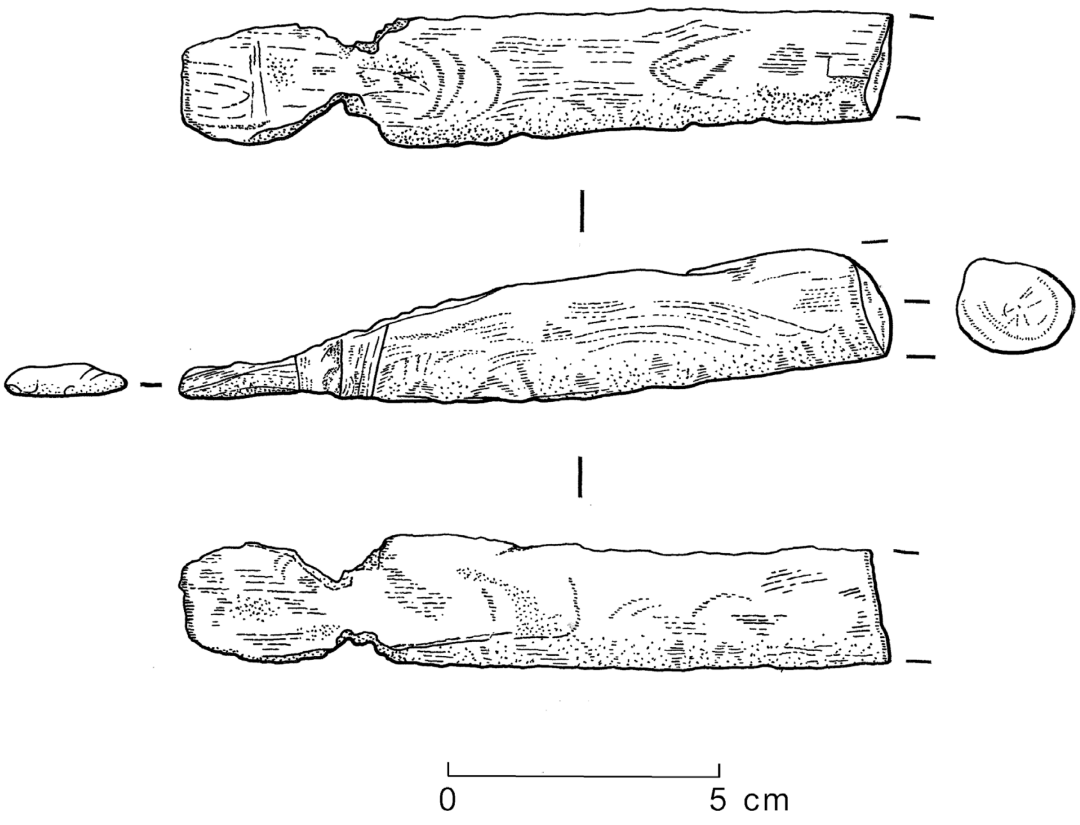


Figure 56: Handle (drawing Michael Hawkes)

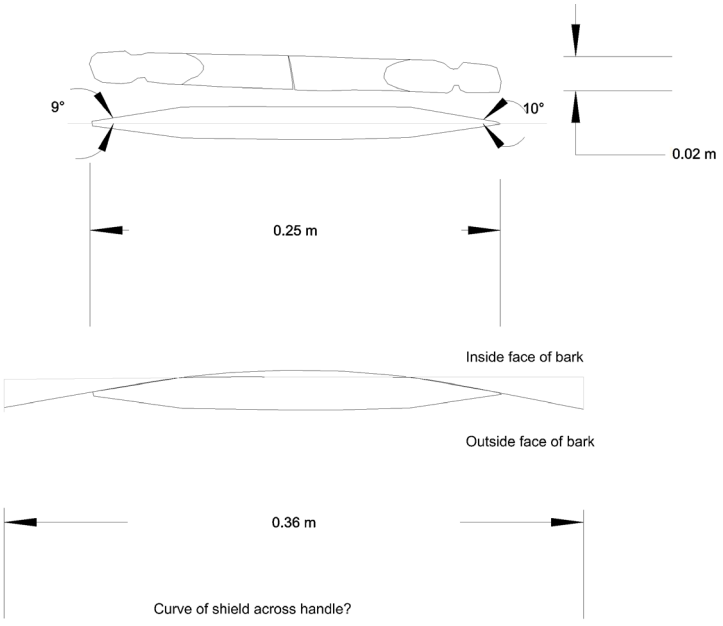


Figure 57: Suggested curvature of shield across handle, on the basis the handle is symmetrical and horizontal. The curve would have been slightly more pronounced if the handle was rotated.

Basketry Boss *Penelope Walton Rogers*

The boss in coiled basketry technique

The basketry at the centre of the shield has been fashioned into a dome with an encircling flange, a shape commonly found in metal shield bosses. It is almost complete, although parts of the flange have broken away (Fig.58). On the back of the boss there are two further 15-mm wide strips, which may represent detached fragments of the flange or the remains of a handle. The overall dimensions of the boss after conservation are 142 mm in diameter and 45 mm in height, while the flange is 25-30 mm wide.

The technique of the boss is termed 'close coiling' (Adovasio 1977, 55-72). It has been worked on a sturdy coil of woody material, up to 5 mm thick, and the coil has been bound together by a flat fibre, 3-4 mm wide. In basketry terminology, the coil is called the 'foundation' and the binding is the 'stitching'. It was impossible to follow the path of the stitching through the coiling, due to the poor preservation of the material, but in several areas the stitches form Vs, which almost certainly indicates the use of split stitch (also known as bifurcated stitch) (Fig.60). This in turn implies that the stitching material was 6-8 mm wide before splitting. The centre of the coil is damaged, but appears to be a simple single coil (sometimes called a 'snail'). This will have formed the starting point of the basketry. In practice, coiling and stitching are worked simultaneously, from the centre outwards, the work being rotated in the hand as the stitching progresses. There are approximately 14 circuits of the coil in the boss, of which three form the flange. At the edge of the flange, the stitching material forms a figure-of-eight around the two outer circuits of the foundation.

A sample of the foundation was examined by Steven Allen, wood technologist at York Archaeological Trust, who described it as coming from a very thin diameter roundwood, less than one year old. It had little surviving structure, but what there was indicated a diffuse porous hardwood with uniseriate rays and simple perforation plates. This suggested Salix spp (Willows, species not determinable) although Populus spp. (Poplars, species not determinable) could not be excluded. The raw material of the stitching (examined by the author) was flat with a fine linear grain, making it visually similar to grass, rush or tree bast. The flattened outer rind of nettle can have a similar appearance, although nettle usually has visible nodes that interrupt the grain (observations made on fresh nettles processed by traditional methods in the author's laboratory).

Basketry in the archaeological record

This shield boss represents a rare survival from a craft that was probably commonplace in prehistoric times. If basketry is poorly represented in the archaeological record, it is because many of the plant materials from which it is made become brittle with time and once buried their cellulosic component has little resistance to hydrolytic degradation or microbiological attack (Jakes and Sibley 1983). Such basketry remains as have survived in sites across Europe (including Britain), reveal that a number of highly sophisticated techniques were already in use in the Neolithic period (Alfaro Giner 1984, 153-184; Walton Rogers 2014 and unpublished [Must Farm]). By the Bronze Age, basketry was being employed for containers such as baskets, boxes and flagons, while the same techniques were used in flexible materials for mats and outer garments such as capes (ibid.).

Different fibres were used, depending on the intended function of the object and local availability of the raw material: bulrush (Scirpus lacustris L.), sedge (family Cyperaceae), grass (family Poaceae) and tree bast (genus unknown), for example, have been identified in the British material (Henshall 1950, 151-5; Walton Rogers 2014, 73); and hair-moss work (Polytrichum commune Hedw.) from northern Britain in the Roman period is also likely to represent native British technology (Wild 1994; Harris and Gleba 2015) . Willow has been identified before in a small lidded container made of wicker ('wicker' is the term used for basketry worked on a framework of stakes in robust materials such as willow) from Roman London (Pritchard and Chapman 1987) and wicker is known to have been worked into chariots and furniture elsewhere in the Roman world (Bobart 1936, 45-9, 89-90). Wickerwork shields, known to the Greeks as gerra, were used by the Persian army in the 5th century BC (Herodotus The Histories, VII, 61; IX, 62; Xenophon The Persian Expedition [Anabasis] II, i, 6), although these were large shields intended to screen soldiers from arrows: they will have been different in character from the finer coiled basketry of the Enderby shield boss.

Most of the basketry that has survived from prehistoric Britain has proved to have been worked in variations on a twined technique akin to weaving. Coiling, however, can be traced back to the Neolithic

period in Switzerland, Germany and Spain (Forbes 1964, 180) and has been recently recorded in a container worked in lime bast from an Early Bronze Age cremation burial at Whitehorse Hill, Dartmoor (Jones 2017, 72-4, 230-1). Coiling is also well represented in the Irish material (Fitzgerald 2000, 36-7). The best preserved of the Irish group includes a series of bags made from two flat discs of coiled basketry, bound together at the edges, with an attached carrying handle (Raftery 1970). These have been found in three sites, at Timoney, Co. Tipperary, Twyford, Co. Westmeath, and Mill Bog, Aghintemple, Co. Longford (Raftery 1970). The Irish bags are poorly dated, although certainly prehistoric, and where illustrated they appear to have been worked in simple close coiling. The Aghintemple example had a foundation of alder, Alnus, and stitching worked in flat strips 'of a ligneous plant, the exact nature of which could not be determined', while the Timoney bag was reported as made of 'thin alder rods' (Raftery 1970, 167). Coiling was also used for some of the miners' baskets found in dry prehistoric sites in the Iberian peninsula and variations on split stitch appear there in eneolithic (i.e. chalcolithic) examples from the caves at Los Murciélagos, Albuño, Granada (Alfaro Giner 1984, 167-77, 246, plates 48-51).

To sum up, the use of basketry for a shield boss may not have been previously recorded, but its materials and structure are in accord with our knowledge of European prehistoric basketry.

What was the boss attached to?

Remains of corded sewing thread are visible on the upper face of the best preserved part of the flange (Fig.60). The sewing thread is 2.5-3.0 mm thick and plied S2Z (S-spun, two-ply, plied Z). There are two stitches, parallel to the flange edge, 20 mm apart, one a single stitch 15mm long and the other a double stitch 20 mm long. There may be faint traces of a third stitch on the same alignment. It was not possible to sample the thread without removing a substantial part of the evidence and the fibre of the sewing thread is therefore unknown. The outer 20 mm of the flange has left an impression around the central cavity of the shield, on its outer face (Fig.62). The stitching on the flange aligns with a row of perforations in the bark, although the sewing thread itself has not been preserved there.

A thin layer of very poorly preserved organic material on the back of the flange appears in a flat layer in patches on the back of the flange. It does not reach as far as the outer edge but extends inwards, a few millimetres beyond the internal edge of the flange (Fig.63). This thin deposit could have been mistaken for a compacted layer of silt, were it not for the reddish brown material distributed between the silt particles (Fig.63). This colour is typical of decayed animal products when preserved in acidic conditions. There is also a line running across the flange where the edge of the material lifts up in a manner often seen in torn or wrinkled leather (Fig.64). On this evidence, it can be suggested that the boss was attached to some form of animal skin product. There are certain biomolecular techniques such as ZooMS (Zooarchaeology by Mass Spectrometry) which can detect and characterise collagen peptides in skin products. Previous ZooMS analyses on a range of samples from different preservation conditions, carried out on behalf of The Anglo-Saxon Laboratory by the BioArCh department at the University of York, had indicated that the heavily degraded material on the boss would be unlikely to yield positive results. It was still considered worthwhile to test a small sample, although no results were achieved (see p75).

The use of animal skin products in shields

'Skin products' include tanned and alum-tawed leathers, oil-dressed skins and animal hides prepared in different ways (Cameron 2000, 32). A thick skin product was used for the Late Bronze Age shield from Clonbrin, Co.Longford, Ireland (Cameron 2000, 30, reviewing and updating Coles 1962) and layered animal hides are also recorded in Classical sources. Shields made of compacted layers of hide were carried by both Greeks and Trojans in the *Iliad*, for example: '[Tychius] made the glittering shield for Ajax from the hides of seven well-fed bulls' (*Iliad* VII, 263-4); '[Hector] hit Ajax's fearful seven-layered shield' (VII, 292); '[the Greek camp] where many oxhide shields had fallen in the dust' (XII, 23-4); 'the round shield he carried, made of bull's hide and shining bronze in rings, with two cross braces fitted on'(XIII, 134-6); 'Hector…held his shield in front of him, an even circle made of hide, densely packed'(XIII, 940-1); 'Hector's battle skills kept his broad shoulders hidden behind his bull's hide shield' (XVI, 420-1). Some of the best shields had a final layer of bronze on the front, while others had a metal boss and applied metal ornament. These symbols on the front of shields are well known from Greek sculptures and vase paintings, where a capital lambda, for example, indicates a Spartan.

One interpretation of the evidence from the Enderby shield might be that this had a multi-layer construction, with a rigid backing of hide, and a front element of bark and lath on which were painted identifying symbols.

ZooMS analysis of possible animal skin product

There was no evidence of any collagen being present in the material, but there was significant consolidant contamination from the conservation process.

Other items

A piece of roundwood (T14) was originally adhering to the outer / lower face of fragment 2, near the boss and was included in the initial CT scans (54). As the shield lay directly over the piece in the ground, it had caused some local deformation of the bark. Identified as willow, the roundwood measured 183 x 34 x 30mm, had bark present and was possibly trimmed at one end from one direction. This item was conserved along with the shield but is not believed to have formed a part of the artefact.

Figure 58: The basketry boss, removed from the shield. Diameter of boss 142 mm. © ASLab.

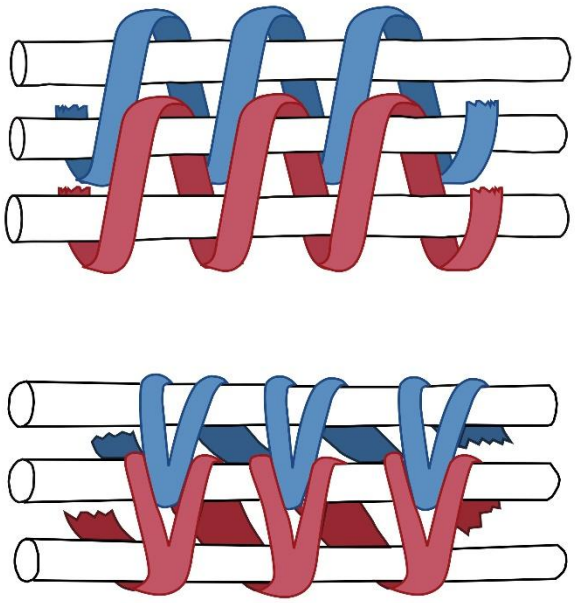


Figure 59: Two coiled basketry techniques, with the foundation rods straightened out.
Above: simple non-interlocking coiling, where the stitching material binds together two adjacent foundation rods.
Below: split stitch (bifurcated stitch), where the stitching digs into the stitching material of the previous row and splits the fibre.
© ASLab

Figure 60: A section of the basketry boss where the stitching appears to form Vs, as in split stitch. Note also the sewing on the flange (see the close-up in). © ASLab

Figure 61: The sewing on the flange. This is a single stitch, 15 mm long (see also Fig.60). © ASLab

Figure 62: Area of overlap of boss flange on bark of main body. Stitching holes visible

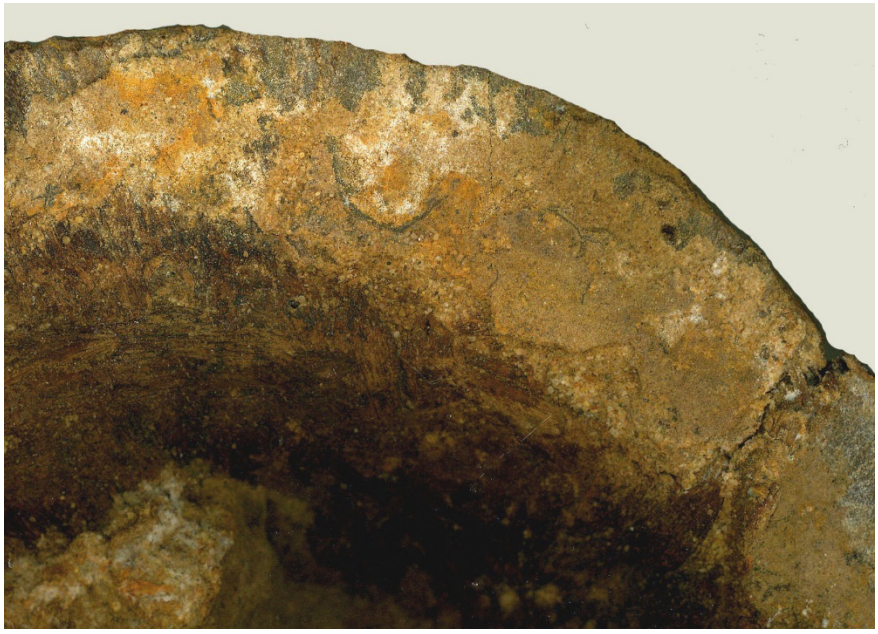


Figure 63: . Close-up of the thin layer of poorly preserved organic material on the back of the basketry boss flange. The flange is 25-30 mm wide. © ASLab.

Figure 64: Close-up of the organic material on the back of the basketry boss flange. (a) ginger-coloured material between silt particles © ASLab.

Figure 65: Close-up of the organic material on the back of the basketry boss flange. the edge of the organic material where is lifts away from the flange. © ASLab.

Wear marks on the Waterlogged Artefact *Dr Rachel Crellin*

Introduction

The author is a metalwork wear analyst (Dolfini and Crellin, 2016) with extensive experience carrying out experimental work with replica Bronze Age shields made from bronze, leather, and wood (see, Crellin et al., 2018; https://sites.google.com/site/bronzeagecombat/) and using these experiments to inform the analysis of prehistoric metal objects for evidence of both manufacturing techniques and wear-marks. This experience and knowledge, of considering experimentally the formation of wear-marks on shields and examining Bronze Age shields for signs of use, was applied to the study of the Enderby shield.

Methodology

The shield was examined for potential traces indicative of wear and use. Given the fragile nature of the shield, the usual techniques of microscopic analysis were not possible, and instead the shield was initially examined macroscopically. This was followed by an examination of the RTI files (p61) produced for the various shield fragments. The ability to manipulate the RTI viewer makes marks visible that are invisible to the naked eye and can be used to highlight ambiguous traces.

Study of the RTI was paired with the examination of 1:1 3D prints of specifically selected parts of the shield provided by Dr Michael Biggs at the Leicester Royal Infirmary (LRI). The 3D prints were based upon the CT scans undertaken in August 2015 by Dr Claire Robinson at LRI completed before the production of the RTI files.

In the interpretation of wear marks one of the primary issues is the separation of production marks, surface texture, and corrosion, from wear marks (Dolfini and Crellin, 2016). In the case of the Enderby shield the central challenges of interpretation were distinguishing wear marks from the surface texture of the bark and from marks caused by natural deterioration. A particular challenge was whether a number of potential holes in the shield, particularly those at the edge of the fragments, formed as the shield fragmented, were produced through use (i.e. the shield was punctured by another object), or were the product of the two (i.e. that the shield received blows that damaged and weakened the structure which, when exposed and lifted, contributed to the fragmentation of the shield).

The Enderby shield is effectively un-paralleled (see p93). The lack of comparator objects, and especially comparator bark shields means that there is no published literature to draw on, and as a result the observations and interpretations below should be viewed as provisional and naturally tempered by the limitations of our knowledge in this area.

The range of objects which could have been used in conjunction with the shield, and thereby left marks on the surface of the shield, is quite large. If we interpret the shield as a [illegible]ssible piece of defensive weaponry then we might expect to consider spears and swords as potential sources of the marks left on the surface of the shield. There is no reason that a wide range of tools as well as weapons could have left marks on the surface of the object

Each fragment of the shield is considered in turn below, and potential wear marks along with potential mechanisms of formation are discussed. The different fragments and locations of holes and marks are shown in Fig. 81.

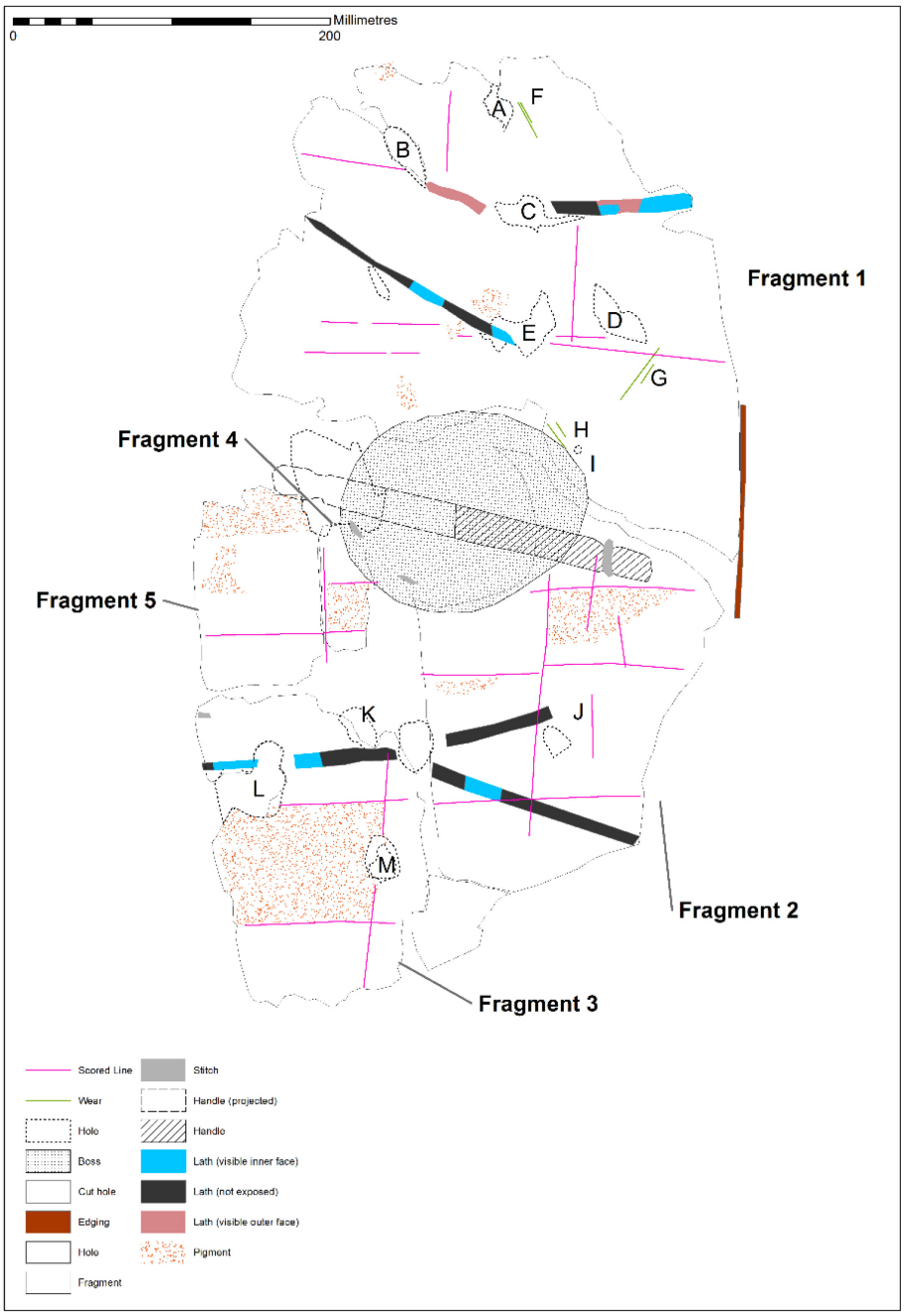


Figure 66: Schematic of shield with fragments and location of wear marks A-M.

Fragment 1

This is the largest fragment and consists of a large portion of the body of the shield above the boss. The fragment contains discontinuous laths in separate directions. One of 90mm in length running horizontally on the right side. A second of 40mm in length is 44mm to the left and may be a continuation. A third 150mm in length is on a diagonal on the left. There are also scored decorative lines on this fragment and traces of pigment were identified (p70). The basic RTI file is shown in Fig.67.

Figure 67: Fragment 1 RTI – Areas A-I, discussed below, marked to indicate location.

A number of holes and scratches can be observed on the fragment, and these have been labelled A-I.

A

This is a large elliptical hole in the fragment, approximately 30mm in length by 20 mm wide. The hole has smooth edges to it with a narrower 'tail' running unto the body of the fragment (see Fig.68). The hole has the shape of the profile of a spear with a primarily round body and narrower blades, but the location of the mark at the edge of the fragment, and its orientation with the grain of the bark, limits the certainty of interpretation as the hole could have resulted from the way in which the fragment has fractured.

Figure 68: Fragment 1 showing the detail of the shapes and edges of A, B, and C.

B

This is a large elliptical hole running across the grain in the top left corner of fragment 1 approximately 40mm in length by 20mm wide (see Fig.68). The hole is wider in the middle, and tapers to a narrower point to the lower right where the hole meets one of the laths. To the upper left the hole meets the edge of the fragment. On the upper right side the hole has a slightly chamfered edging as the edge slopes downward, whereas on the lower side the edge is smoother and straighter.

If interpretation is led by the lower right part of the hole then it can be interpreted as a puncture to the body of the shield, particularly as this is where the hole meets the lath. The lath effectively strengthens the shield making it harder for it to be punctured. This interpretation is strengthened by a brief experiment with a replica shield and metal tipped arrows fired from a bow in June 2018: those arrows which struck the bark body of the shield bounced off and those that struck areas stiffened by the laths penetrated, indicating that there was different resistance across the shield. In contrast if interpretation is led by the upper left corner of the fragment where the hole meets the edge of the shield and there is less clarity, then any interpretation is less secure.

On balance, the presence of the lath in this area, which presumably followed the path of the hole curving up and round to the top left of the shield supports the interpretation of this hole as the result of an impact where the impact has penetrated the lath and the deterioration to that lath by both the impact and decomposition has resulted in the shape captured in the RTI.

Area C

This is an irregular hole on the top right of fragment 1, below Area A, approximately 50mm in length by 20mm wide (see Fig.67 and Fig.68). This hole appears to be the result of a direct impact on the lath. As discussed above it appears that the areas where the shield has laths are potentially stiffer than areas without laths making the interpretation of this hole more securely associated with an impact. Fig.69 shows the shape of the hole more clearly. This is provisionally interpreted as the result of a single impact on the shield, probably by a spear, which hits in the more rounded central area of the hole. The impact could potentially have fractured the lath in a linear manner, producing the more rectangular area we see to the left. The lower part of the hole includes a triangular extension with smooth rounded edges. It is

tempting to interpret this triangular area as the product of a spear blade, however there is a fissure running from the top left above the hole, through the middle of the hole, and beyond the bottom right of the hole. This fissure appears to be part of the undulating surface of the bark itself making it uncertain whether the shape of the hole in this area is the product of the object that produced the hole itself or a product of the way the texture of the bark itself effected the shape of the mark left by the impact.

Figure 69: Area C on Fragment 1

Area D

This is an irregular elliptical hole, in the mid-right of fragment 1, approximately 50.5mm in length by 21.1 mm wide (see Fig.70). Directly below the hole is a decorative scratch running parallel to the lower edge of the hole. This hole is clearly defined with smooth straight edges (this was highlighted by the 3D print in particular). The location of the hole, firmly in the middle of a fragment, allows us to have more confidence that the hole can be interpreted as the result of an impact on the shield; a spear impact is one possible source of the mark.

Area E

This is a highly irregular hole in the middle of the shield, approximately 50mm in length by 40 mm wide (see Fig.70). We can interpret the hole as the result of some kind of impact to the surface of the shield. Focusing on the detail of the shape of the hole in Fig.70, there are a number of features that become obvious. Firstly, there is a decorative scratch that runs through the hole (highlighted in red) – the two lines do not join up indicating the difficulty of incising a design on the undulating surface of the bark and the unforgiving nature of the material where mistakes cannot be erased. Both of these incisions seem to have played a role in the formation of the unusual shape of the hole; if we presume the two scratches pre-date the formation of the hole then it seems the scoring to the surface has encouraged cracking giving the particular shape. Similarly, there are also a series of fissures that run across the surface of the bark at approximately 60 degrees, these are part of the surface texture of the bark (as discussed above). The fissure on the right of Fig.70 has perhaps been crucial in the formation of the linear hole in that area. The complexity in this area, where decorative scratches and the natural texture of the bark appear to have contributed to the particular shape of the hole, make further interpretation of the precise mechanism of the formation of the hole difficult.

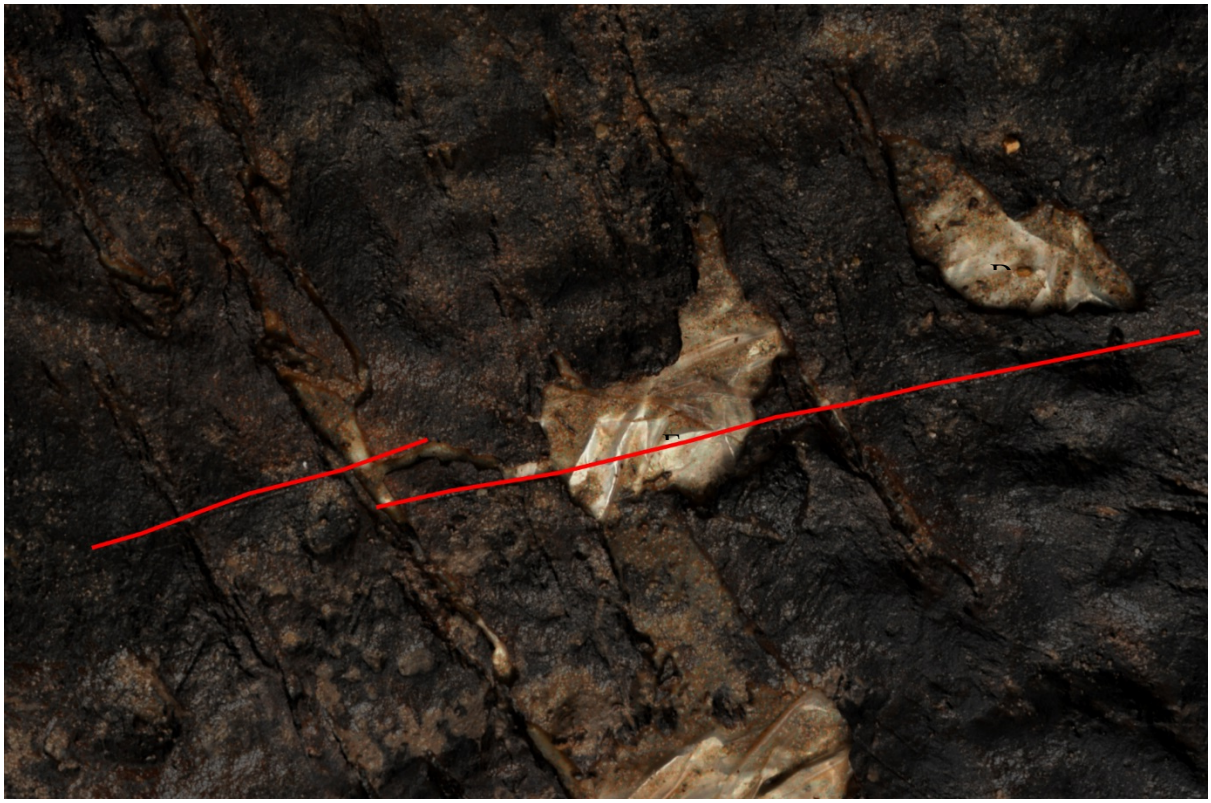


Figure 70: Fragment 1 – areas E (centre) and D (right) – red lines trace the path of the scratched on decoration

Area F

This area is to the right of Area A in the top of Fragment 1. There are two parallel incisions to the surface of the bark, which are approximately 40mm and 20mm in length (see Fig.71 and Fig.72). The shape and nature of these incisions strongly resembles the marks made to the surfaces of shields through contact with the blade of a sword or the blade of a spear used in a more sword-like (rather than thrusting manner). Often in experimental combat the first impact of a bladed weapon leaves one bigger mark and then as the attacking weapon 'bounces' off a second smaller re-bound mark is left by the side of the first (see for example, O'Flaherty et al., 2011): the two marks here are interpreted as an impact incision and a re-bound.

Figure 71: Fragment 1 – Area F (left, highlighted by the red box) and Area A (right)

Figure 72: Fragment 1 – Area F with the two lines highlighted in red

Area G

This is an area on the lower right-hand corner of fragment 1, below area D, where there are two parallel incisions approximately 50mm and 20mm in length (see Fig.73 and Fig.74). Again, these two parallel incisions have a shape and form, similar to that of Area F, indicative of impact from a bladed weapon to the body of the shield.

Figure 73: Fragment 1 – Area G (left, highlighted by the red box) and Area D (above)

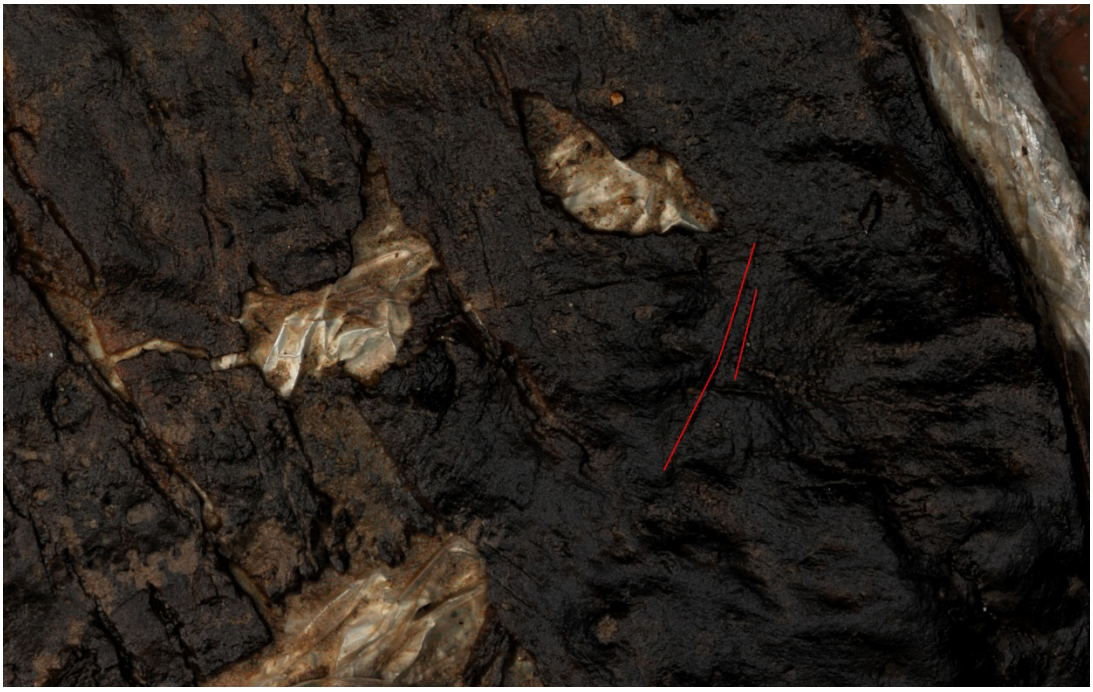


Figure 74 Fragment 1 – Area G two lines highlighted in red

Area H

This is a very round hole in the mid lower part of fragment 1 below Areas D and E, which is approximately 8mm in diameter (see Fig.75). A wider depression surrounds the hole with sides that slope gently down to it. This mark is interpreted **not** as a product of wear but as a natural hole in the bark, in the experimental reconstructions such holes were common, particularly in the alder bark.

Figure 75: Area H highlighted in red box, Area I highlighted in green box.

Area I

This area contains two parallel incisions to the surface of the shield, in the mid lower part of fragment 1, these are approximately 20mm in length (see Fig.75). These two incisions run parallel to each other about 10mm apart. Similar to areas F and G these two marks are interpreted as the result of an impact from another blade, such as a spear or a sword.

Fragment 2

This is a large fragment from the middle and lower part of the body of the shield (see Fig. 76). The fragment includes the woven boss of the shield, a lath, and decorated areas of the main body. Figure 76 shows the basic RTI of the fragment with the area discussed below highlighted.

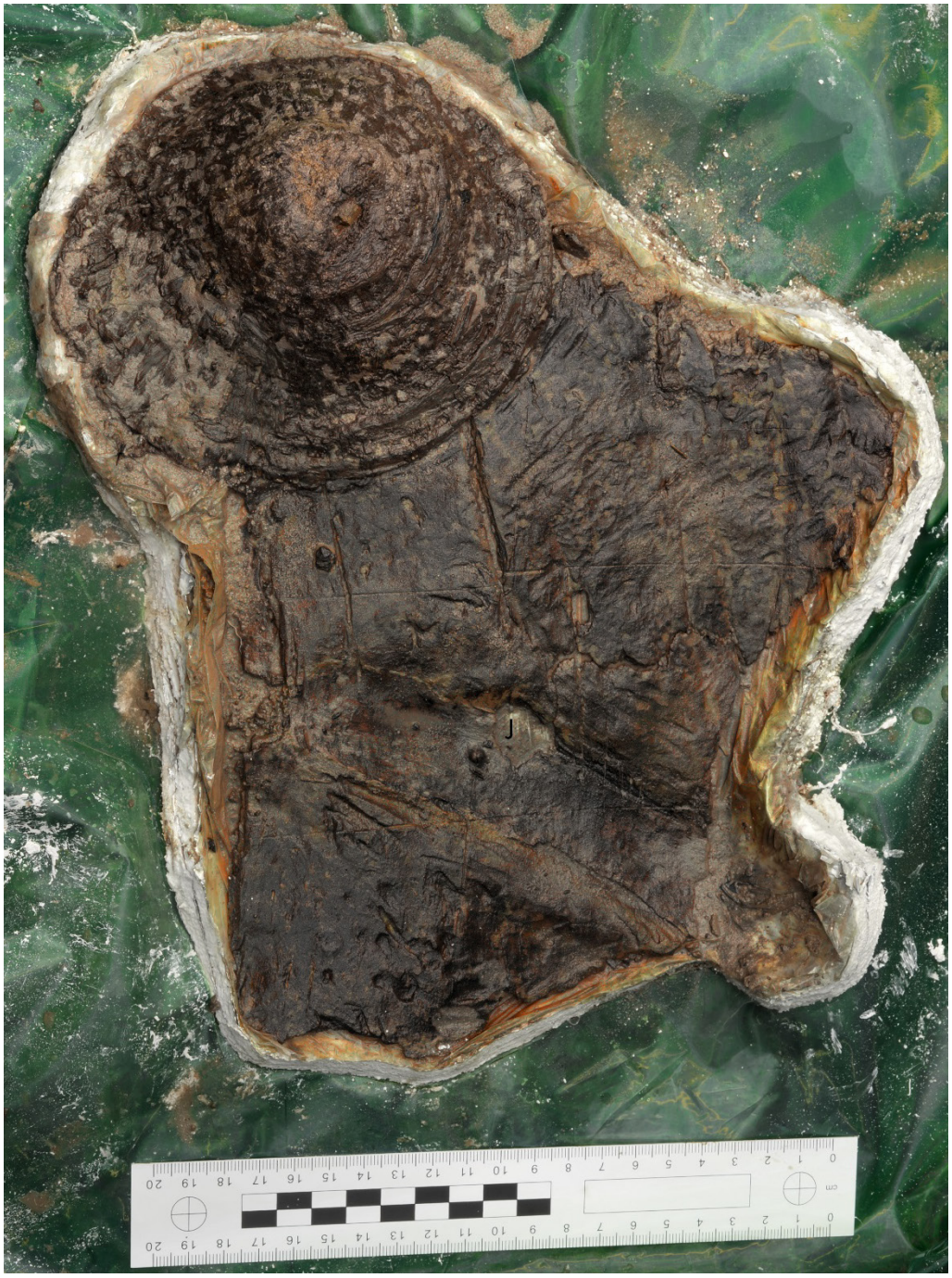


Figure 76: RTI of fragment 2 with area J labelled in the middle

Area J

This is a relatively large circular hole in the middle of the body of fragment 2, which is approximately 20mm in length and 25mm in width (see Fig.77 below). The hole is off-circular and sits just off the centre of an incised decorated rectangle on the shield. The 3D print of the CT scan shows the sides of the edges of the hole to be very vertical and smooth in shape. The shape of the hole is irregular in nature. The hole appears to be the result of a penetrating impact though the irregular shape makes it hard to interpret in more detail.

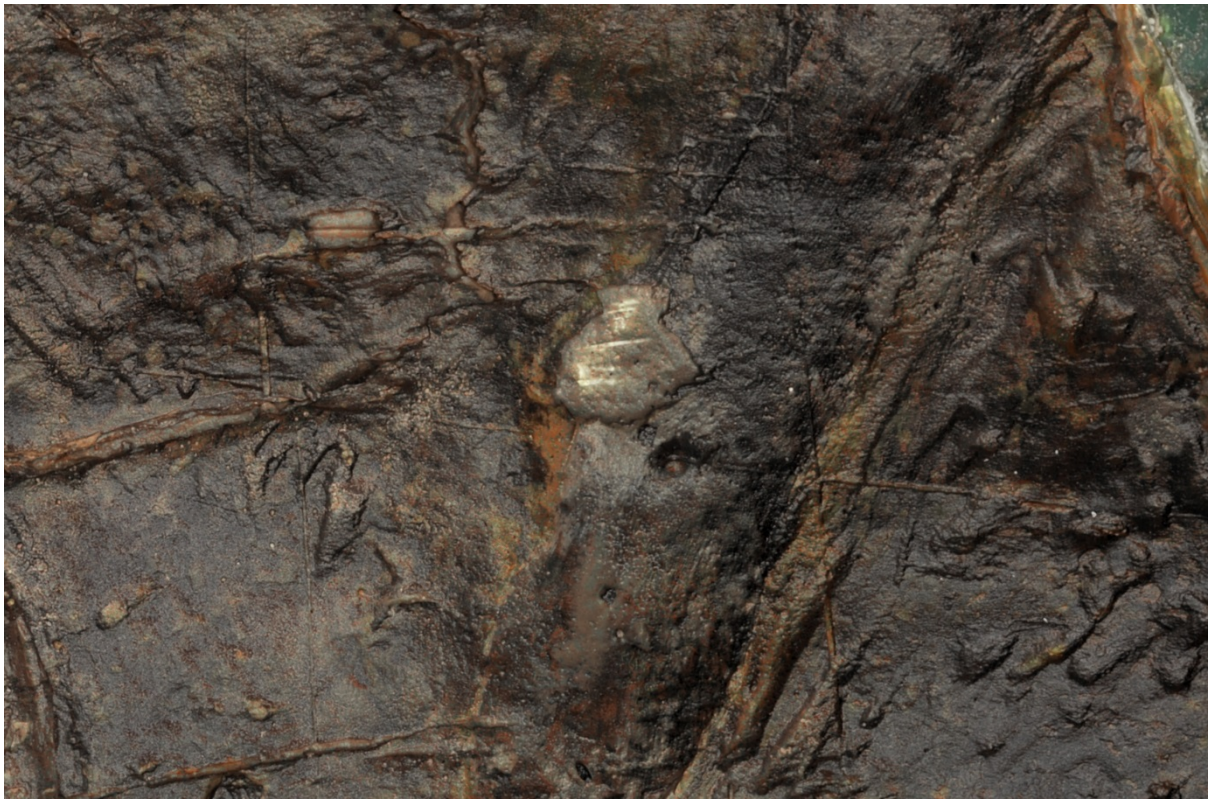


Figure 77: Area J in the centre of the image.

Fragment 3

This is a smaller fragment from the lower left part of the shield (see Fig. 66) with a lath running through it in the upper part from left to right. Figure 78 shows the RTI of the fragment with 3 Areas highlighted.

Figure 78: Fragment 3 with Areas K-M highlighted

Area K

This is a curved area in the top right corner of fragment 3, approximately 20-30mm in width (see Fig.78) above. This area is very hard to interpret with any confidence: it could be the edge of a relatively rounded hole in the shield, or alternatively the shape as found may simply be a product of the way the shield has fragmented. There can be no certainty that this hole formed through wear.

Area L

This is a very large hole in the top left of fragment 3, approximately 50mm in length and 50mm in width (see Fig.78). This hole is also very hard to interpret with any confidence. It is a large hole which runs to the edge of the shield (there is a stitch interpreted as adjoining the bark to the rim on the left-hand edge of this fragment about half way down its length). The edges of the more rounded upper part of the hole and the more rounded lower right corner of the hole are very gently sloping with a clear chamfer to them. There is insufficient evidence to differentiate how this hole formed.

Area M

This is a relatively large hole in the body of fragment 3 on the mid-right, approximately 30mm in length and 22mm in width (see Fig.79 below). The hole has an irregular shape with curved edges. On the left hand side the edges are chamfered and gently sloping whereas the edge on the right hand side is a lot steeper (this is even clearer in the 3D print of the CT scan). This hole is interpreted as the result of an impact to the shield.

Figure 79: Area M on Fragment 3.

No marks which were thought to be the result of use were identified on either Fragments 4 or 5.

Table 14: Shield fragments and areas showing wear

Fragment	Area	Interpretation	Certainty	Dimension (mm)
1	A	Elliptical hole – spear?	No	30x20
1	B	Elliptical hole – spear? Chamfered edge. Damage to lath. Location on edge precludes certainty	No	40x20
1	C	Irregular hole – spear? Fissure in bark precludes certainty	No	50x20
1	D	Irregular elliptical hole. Possibly from a spear	Yes	50x21
1	E	Very irregular hole. Discontinuity in decorative marks indicates that hole predates deposition		45x40
1	F	Two parallel incisions: impact incision and re-bound incision – edged blade e.g. sword, spear, knife	Yes	26; 15
1	G	Two parallel incisions: impact incisions – edged blade e.g. sword, spear, knife	Yes	42; 14
1	H	Round hole – Natural.		8
1	I	Two parallel incisions: impact incisions – edged blade e.g. sword, spear, knife	Yes	20; 11
2	J	Large off-square resulting from penetrating impact	No	17x20
3	K	Curved hole (part)	No	20 to 30
3	L	Large hole	No	50 x50
3	M	Irregular hole with curved edges. Impact hole.	Yes	30x22

Discussion

The examination of the conserved object, combined with scrutiny of RTI imagery and 3d prints produced from CT scan data recorded prior to the conservation of the shield, has led to the positive identification of wear marks.

Given the lack of comparator shields and experimental work it is hard to be unequivocal about the marks on the shield but, there are marks which can be confidently identified as produced through wear and use. The exact mechanism of their formation is less secure. The wear marks include holes from penetrating blows that could have been caused by metal spears and/or swords as well as blunt force weapons such as clubs, sticks, and wooden spear shafts. The marks also include cuts to the surface of the shield which were produced by contact with some type of edged-blade such as a sword blade, spear blade, or knife.

Conclusion

The use of CT scanning, 3D printing and RTI imagery have all contributed to the positive identification of wear marks and damage (as opposed to marks from production) on the surface of an extremely fragile and exceptional object. The separation of production, wear, and post-depositional damage on this object was particularly challenging. Despite this both holes and cut marks were identified on the surface of the object that suggests it was actively used in prehistory. The precise nature of that use is less secure. Both holes on the surface of the shield, created by impacts and cuts to the surface of the shield, created by edged-blades were positively identified. Exactly what type of objects made the holes and cuts is less secure – metal spears and swords are both possible sources. In the case of the cuts to the surface a metal blade (be that of a sword, spear, or knife), given the date of the object and shape of the marks, seems like the most probable source. The holes are harder to interpret, spearheads are one potential cause, however a wooden spear shaft, the butt of a sword, or any number of other tools are all possible.

The Enderby shield is unparalleled in multiple ways. The discovery of a bark shield in itself is exceptional enough, the suggestion, drawn from the above analysis, that it has been actively used and damaged in prehistory is arguably all the more exceptional. Our common present day understanding of bark as a material suggests that it is weak and impractical, particularly in the face of weapons, and most especially weapons which could have been made of metal. Despite this the surface of the object shows evidence that the shield was used and damaged. The experimental reconstruction of the shield demonstrated that bark can be effectively shaped and hardened in surprising ways. A bark shield could well have provided a light-weight, easily usable, and effective means of active defence. Whether the marks on the surface of

the shield formed through combat, ritual, or perhaps even child's play is something we cannot be certain of on the basis of this analysis.

General Discussion

Iron Age shields from the British Iron Age are represented three groups of evidence. The first group are stray finds of metalwork many of which were dredged from major rivers in the 19th century. The corpus mainly comprises only the metal facings of organic shields. A second group consists of shields excavated from burials where the evidence comprises shield fittings, including bosses, handles and bindings. A third group is miniature shields both recovered individually and in groups, recovered as stray finds, by metal detectorists and from controlled excavation.

The first group is dominated by exquisitely decorated examples (Battersea, Witham, Ratcliffe on Soar, Watkin et al 1996). It is arguable which if any of these examples were used for combat being either too heavy, or too ornate, it being more plausible that they were for display or parade (Fitzpatrick 2007, 342). The second group from burials contain important information on general shape and the arrangement of fittings, but the material construction of the shield body remains beyond our understanding with current techniques (e.g. Grimthorpe, Stead 1968, Chittock 2017, & Mill Hill, Deal, Parfitt 1995). The third group are miniatures which despite the limits of size placed upon the makers include important strands of evidence relating shield shapes, the arrangement of boss and other fittings including the handle, and to decoration.

The known shields can be grouped into oval (eg Chertsey Shield http://collection.britishmuseum.org/id/object/BCB88369), sub-rectangular (eg Battersea, http://collection.britishmuseum.org/id/object/BCB8496) and hide-shaped shapes (eg http://collection.britishmuseum.org/id/object/BCB54134). The shape of the Enderby shield is not known although the remnant of original edge shows that is was not circular.

There are no direct parallels for a bark shield dating to this period or any other part of British or European prehistory. Although organic / wooden shields are known from the British Isles in later Prehistory (e.g. Clonoura, Littleton Bog, Co Tipperary O'Kelly 1989 p271), these generally involve an organic backing for a hide covering. None are made of bark. There are ethnographic examples of bark shields from further afield (Schlunke 2013) but none constructed from the bark of northern European deciduous trees.

The presence of decoration on the outer surface of this item strongly suggests that there was, in this case, no hide covering. However, it is a possibility that the main body of the shield was made of layered hide, with the willow-based basketry boss attached directly to the hide, and the bark layer acting as a facing to carry the decoration.

Of the comparable surviving metal shields, red is a commonly used colour whether coral or glass (Giles 2008, 72) although more usually surviving as part of the boss.

Reconstruction

Experimental work to construct bark shields using the components identified, in June 2018, resulted in the production of two shields, one of Alder bark and one of Willow. The experiment served to demonstrate that a split hazel rim, fixed with bark ties, and fixed to the edge of the bark with blackthorn pins and bark stitches could be made to comfortably form a curve of around 75mm radius without kinking. A wooden rim develops its strength in being a continuous piece of wood, so although it is possible that the rim was made from sections, as identified for the metal binding of hide shaped shields (e.g. the Deal Shield, established following the analysis of the Salisbury hoard (Stead 1998, p114), and therefore does not necessarily constrain the shape of a shield, the rim on an organic shield may have contributed tension and consequently strength, by virtue of being continuous, and therefore an oval, circular, or subrectangular shape is more plausible than a complex hide shape. A discontinuous rim would have needed strengthening at any acute joins.

Size of other shields

On the basis that the boss is central to the shield and that it was symmetrical, the minimum size of the Enderby shield is 670mm x 360mm. This compares with the Battersea shield which measures a maximum 777mm x 357 mm.

The finished replica shields measured 0.67m x 0.35m (alder) and 0.67 x 0.37m (willow) and weighed 1.2kg and 0.62kg respectively when fully dry and seasoned. This is very light compared to 2.75kg for the Chertsey shield which is the only complete and therefore comparable shield.

Bosses

Shield bosses from the British Iron Age can be classified as long (e.g. Ratcliffe on Soar, Watkin et al 1996) or round (eg Wandsworth round, Spratling 1972). Examples of round Iron Age bosses comprise a circular bowl form with flange i.e. the shape and dimensions of the circular boss with flange is typical of the period. All identified bosses from Britain are metal, although a number of wooden examples of long bosses are known from Europe (e.g. Martens 2001). The nearest identified parallel for a woven boss comes from Iron Age bog deposits in Denmark (Engelhardt 1863, 49, plate 8), interpreted as an inner support (Engelhardt 1866, p50) or alternatively a liner. This latter example has no flange and does not appear to have a willow core, although the published description is minimal.

The Enderby boss is the first example of a round boss constructed from wicker.

Choice of woods

The bark of the shield is tentatively identified as alder, willow or poplar. Alder prefers damp conditions and will often be found in damp woodland alongside oak or with willow in wetter ground (Gale and Cutler 2010). The inner bark of alder, that is presumed to have formed this shield, is a light yellow colour. Alder is not well represented amongst the limited assemblage of prehistoric bark artefacts. However, two stitched bark containers recently recovered from Late Bronze Age site of Must Farm, Cambridgeshire, have been identified as such (Unpublished ongoing research by M Bamforth).

Shields from the Hjortspring boat (Denmark) were made from either Alder or Lime, and the Irish Bronze Age shields from Annandale, Co. Lantrim, and Cloonlara, Co. Mayo, were also made using Alder (Coles, 1962 p180). A shield made from Alder boards with a leather cover of probable Iron Age date was recovered from Clonoura, Littleton Bog (O'Kelly 1989, 271). Alder and willow were the most common identified species identified in a study of Anglo Saxon shield boards (Härke, 1992, 48). Alder has a low density when compared with other woods and does not split easily (Feehan, 2003 p327) which made it a preferred wood for the manufacture of clogs and sometimes bobbins (Fitzrandolph & Hay 1977, p43). Alder is claimed to be a traditional choice for the making of shields (Milner 2011, p31). An historic Irish text, the *Book of Ballymote* associates Alder and shield making (Calder 1917 p277) while in the Welsh 14th century poem the Battle of the Trees, 'Alder, front of the line, formed the vanguard' (The Book of Taliesin VIII.).

The handle is identified as *Salix* spp. (willow). In a study of British material, willow/poplar was the most common choice of wood for the handles of Early Anglo Saxon shields (Härke 1992, 38). The handle of the Chertsey shield is identified as ash (Stead 1991, 6).

The laths were identified as *Pomoideae* sp. (apple/pear/hawthorn/quince). This wood is hard with a tight grain and is well suited to carving. Prehistoric items identified to this genera include hafts, spears and handles (Gale and Cutler 2010).

Experimental work showed that laths of hawthorn could be successfully driven into channels cut with a knife perpendicular to the grain of sheets of Alder and Willow bark. Some difficulty was had in cutting channels that were diagonal to the grain, with the inner layer of the bark more prone to break away.

The shape of the shield

The shield was found flat in the ground, and it had been assumed that this shield like most of the other comparators whether full size or replica miniatures was also designed to be flat. However, study of the handle which is tapered at its end, has led us to the conclusion that the shield had to be concave at least in the area of the boss. This concavity is against the natural curvature of the bark, as the inside of the bark forms the outer face of the object, and the external surface of the bark forms the inner face.

Experimental work including the use of hawthorn laths and split hazel rim on shields made from sheets of Alder and Willow bark worked when green, resulted in shields that deformed while they dried: However, the laths and rim were fundamental to the final shape of the shields, as these components served to control the deformation. The distortion of bark sheets dried without both of these components was uncontrolled.

Of great interest is that when viewed from the front, both replica shields appear '*waisted*' or hour-glass shaped. This characteristic is displayed in some of the metal analogue shields, most notably the Battersea example (eg http://collection.britishmuseum.org/id/object/BCB8496)

The experimentation served to show that an organic shield made from these components needed to be assembled as a complete object, and that the shape it attained in the drying process was to a degree individual. It is possible that the boss could be replaced, but the laths and the rim were integral components of the whole. This compares with other shields that have been identified as composite artefacts assembled from a variety of components with possible different histories (Chittock, 2017)

Figure 80: Replica shied of Alder bark with hazel rim, hawthorn laths, willow boss and scored/hematite/scratched decoration. Note the curvature and *waisted* appearance

Decoration

The decoration appears to be in a form or chequer design, but of rectangles of uneven size. One of the miniature shields from the Salisbury hoard has a simple four part chequer design, although within the rectangular areas are curvilinear motifs (BM Accession 1998,0401) (Stead 1998, Fig 1, Plate 1) and http://collection.britishmuseum.org/id/object/BCB8495).

A wooden shield from Skanderborg was decorated with paint, but no further detail was ascertained (Andersen, 1959, 9).

Use

A number of marks and holes on the shield have come from use, of which some impact marks are not inconsistent with damage sustained in combat (Crellin p84). It is suggested that the damage has been caused by swords or spears. Spear heads from the 1st millennium include those made from the tibia, metacarpals, radius and long bones of sheep, cattle, pig and roe deer (Olsen, 2003 p92). The asymmetrical impact holes (eg Area E, and Area M, Crellin above p83) could possibly have been formed by bone spear heads and further work is needed to demonstrate the likelihood of such an association.

Radiocarbon dating indicates that the shield was at least 10 years old when it was buried.

Deposition

The shield had been buried in an incomplete and damaged state. The handle had been partially removed and much of the edging rim was missing. Subsequent to burial in the Middle Iron Age, one end of the shield had been truncated by the re-opening and expansion of the watering hole in the early Roman period.

The shield was found in a silty deposit, with no indicators of backfilling. Environmental indicators suggest that the shield was deposited into a body of water surrounded by waterside vegetation. Although the incomplete nature of the evidence makes discussion speculative, a dry shield deposited into a body of water will probably have floated until it became waterlogged, and would have needed to have been weighed on stake down to have remained immersed.

It is not clear why the shield was buried in the pit in which it was found. There are no other items which clearly point to a ritual deposit. However, the combination of its burial and the damage it had sustained prior to burial, indicate that the burial of a damaged shield that had been rendered unusable are connected.

Conclusion

Neither the raw materials used, the woodworking or basketry technology or the style / execution of the decoration are without parallel in the British Iron Age. Rather, it is the overall form and design and the use of these techniques together that provides an example of a bark shield, sporting a central basketry boss, unique within the  le Iron Age and British Prehistory.

Experimentation has suggested that the components used in the manufacture of the shield serve to affect the deformation of the bark as it dried leading to a curved body shape. When viewed from the front, this curvature gives the appearance of the shield body being *waisted* although the sheet from which it was made, was rectangular. This *waisted* appearance is paralleled in other metal shields known from the British Iron Age, and it is proposed that this shape has stemmed from a contemporary understanding of shield shape based on bark or organic examples.

Initial experimentation suggests that shields made from bark can offer surprising impact resistance while being very light and not impacting on mobility. Further controlled work is needed to test functionality and provide clear information on what protection a bark shield would have offered.

Alder appears to be a common choice for the body of a number of wooden shields in prehistory and possibly also the early medieval period, a choice which appears to have remained unexplained. Experimental work with Alder bark as part of this projects indicates that it is easily workable and of a more uniform thickness than other woods, and toughens as it dries.

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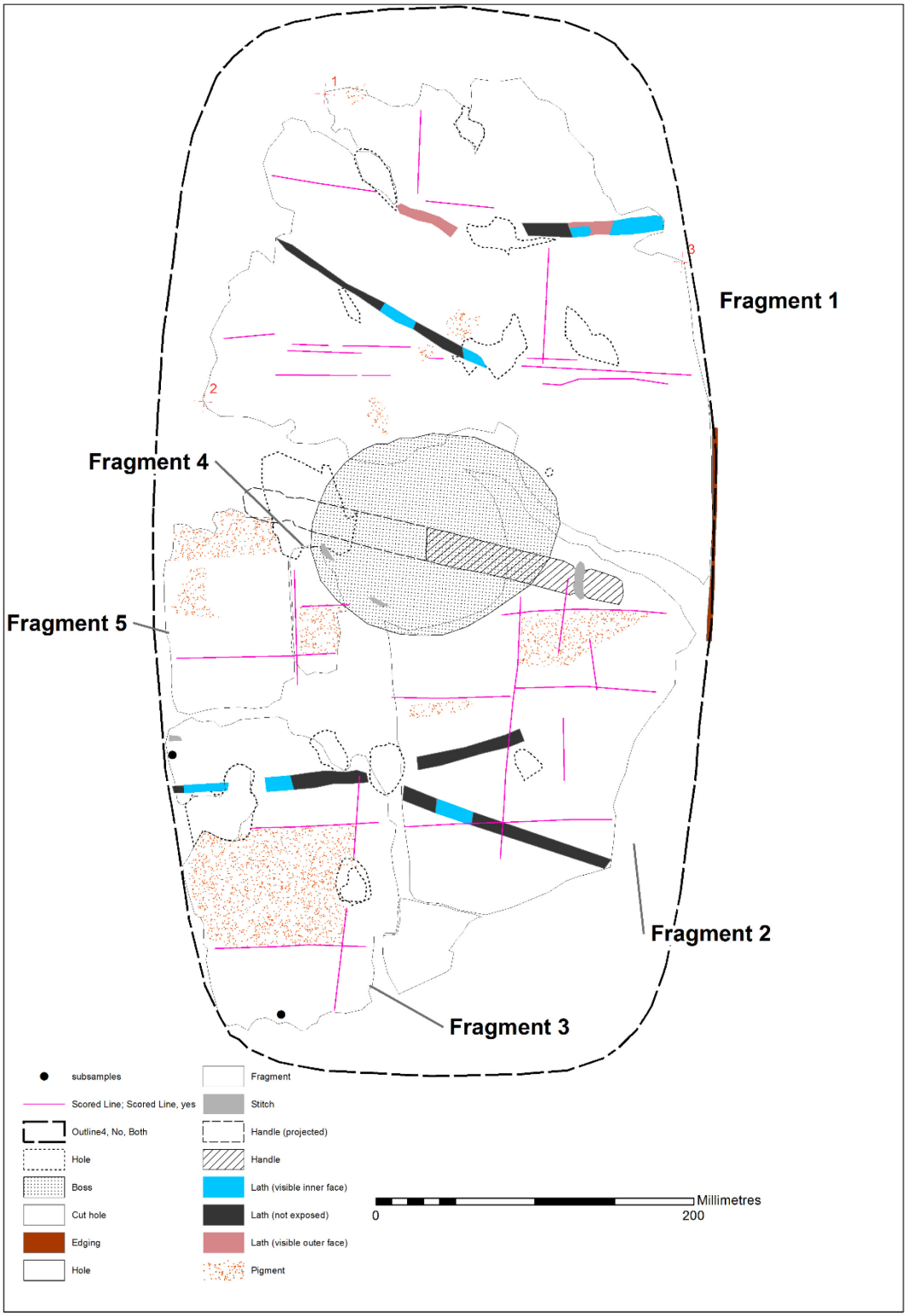

Figure 81: Schematic illustration showing key features of the shield and estimated original shape.

The Leather Shoe

Nicholas J. Cooper

Description

Sf3, [450] (451) leather sandal fragments

The partial remains of two, small, nailed leather sandals were recovered from waterlogged deposit (451). Fragments from the middle sole and insole from two shoes of different sizes are present, refuting the initial idea that they were a pair.

Sf3A comprises overlying fragments of the middle sole and insole from the heel part of a shoe, with a width of 48mm and with a pair of thong holes set centrally 30mm from the heel edge. Maximum length preserved 62mm.

Sf3B comprises overlying fragments of middle sole and insole from the heel part of a shoe, with a width of 40mm and with a pair of thong holes set centrally 26mm from the heel edge. There is a separate fragment of middle sole from the central part of the sole, giving a maximum length preserved of 110mm. The rear hole is occupied by a length of leather thong with a rectangular tab at one end, lying against the underside of the middle sole, and corresponding with a flattened circular tab on the upper surface of the insole, sitting between the two holes, preventing the thong from sliding. The other end of the thong is fed through the other hole, taking it to the underside of the middle sole, where it is torn transversely. A separate short length of flattened thong (52mm x 5mm) joining the stub was recovered and a stitching hole at each end, corresponding with two stich holes down the mid-line of the middle sole indicates it was secured to the underside of it.

Discussion

Though fragmentary, the remains indicate two nailed shoes of a similar type to those of Group 2 found at Roman Catterick, Yorkshire dating to the early 2nd century (Hooley 2002, 325-7, Fig.384). The construction of the shoe bottoms of Group 2 involved binding the middle sole and insole together with a thong, fed through holes set into a distinctive, lozenge shaped pattern on the tread of the sole with a single length running along the mid-line towards the heel, as seen in the fragments above. However, the occurrence of stitching holes in the thong and midline of the middle sole appears unparalleled and may represent a later repair when the thong tore.

The Lithics

Tara Harris & Wayne Jarvis

Of the 80 pieces of lithic material recovered during the work, all are of flint and the material is likely locally sourced drift flint which is generally poor-quality. Five of the pieces could be natural (e.g. plough damaged) material. Three-quarters of the struck lithics were flint flakes, including primary, secondary and tertiary flake debitage. There were also eight cores/core fragments. Six pieces may have been tools as they display some retouch. Two further pieces indicate that flint scrapers are present in the assemblage. Four of the pieces of flint were burnt.

All the lithic material was recovered from Iron Age or later contexts, and being therefore almost certainly residual in these assemblages. The absence of any concentrations of diagnostic material make estimates of a date for the original material difficult, but the lack of diagnostic types probably indicates that the majority of the material is of a Bronze Age date. The exception may be the presence of 2 blades/blade fragments, which may be earlier.

Table 15: Lithics

Group	Context	Cut	Feat type	Period	Sf	Frags	Description
113	293	289	Ditch	RB		3	1 x core, 1 x shatter, 1 x blade frag?
115	133	135	Pit	RB		2	2 x 3ry flake (possibly retouch x 1)

115	337	333	Ditch	RB		5	1 x 2ry flake, 1 x 2ry flake frag, 2 frags, 1 burnt or natural
115	343	334	Ditch	RB		2	1 x 2ry flake, 1 x flake frag
115	352	351	Ditch	RB		9	1 x core frag, 2 x 2ry flake, 2 x flake frag, 1 x shatter, 2 x burnt frags
115	360	358	Ditch	RB	2	4	1 x 2ry flake (retouch?/2\), 1 x 2ry flake, 1 x core frag?, 1 x burnt frag
115	471	471	Ditch	RB		1	1 x core
136	137	136	Pit	RB		1	1 x 3ry flake
136	202	201	Pit	RB		1	1 x 2ry flake frag
136	233	234	Pit	RB		1	1 x retouch? blade
136	247	246	Pit	RB		3	1 x 2ry flake, 1 x flake frag, 1 x core frag?
150	249	248	Ditch	RB		1	1 x 2ry flake
209	258	257	Ditch	IA		1	1 x 2ry flake-retouch? tool?
209	284	282	Ditch	RB		1	1 x core frag?
252	277	273	Ditch	RB		1	1 x 2ry flake frag
304	325	324	Ditch	RB		2	2 x flake frags-?real
304	326	324	Ditch	RB		1	1 x 2ry flake
304	384	373	Ditch	RB		1	1 x shatter or natural (or possibly flake frag?)
344	347	344	Pit	IA		1	1 x 2ry flake
400	401	400	Pit	RB		1	1 x core frag?
555	556	555	Gully	RB		1	1 x natural
555	568	567	Gully	RB		1	1 x 3ry flake
580	624	580	waterhole	RB		1	1 x 3ry flake frag
580	625	580	waterhole	RB		2	1 x 1ry flake, 1 x 2ry flake
611	579	578	Gully	RB		1	1 x 2ry flake
611	605	604	Gully	RB		2	1 x 3ry flake, 1 x 2ry flake
693	694	693	Ditch	rb		1	1 x 2ry flake frag
703	705	703	Waterhole	RB		1	1 x flint nodule
4 poster	490	489	Post-hole	IA		1	1 x 2ry flake
Enclosure 521	523	521	Ditch	RB		1	1 x 2ry flake
Enclosure 521	641	640	Ditch	RB		2	1 x 2ry flake, 1 x flake frag
Metalling	652	652		IA		2	1 x 3ry flake, 1 x 2ry flake
Metalling	672	672		IA		1	1 x flake frag
Pit Alignment	237	238	Pit	IA		1	1 x scraper
Pit Alignment	242	243	Pit	IA		1	1 x 2ry flake frag
Pit Alignment	268	269	Pit	IA		1	1 x 3ry flake
Pit Alignment	280	281	Pit	IA		1	1 x 3ry flake frag

Pit Alignment	284	282	Pit	IA		1	1 x shatter
Pit Alignment	287	288	Pit	IA		2	1 x 2ry flake (retouch?), 1 x 2ry flake frag
Pit Alignment	302	303	Pit	IA		2	1 x 2ry flake, 1 x core frag?
Pit Alignment	310	311	Pit	IA		1	1 x 2ry flake frag
Pit Alignment	368	366	Pit	IA		1	1 x 2ry flake
Pit Alignment	442	441	Pit	IA		1	1 x 3ry flake frag
Pit Alignment	502	501	Pit	IA		1	1 x 2ry flake frag
Pit Alignment	504	503	Pit	IA		5	1 x scraper?, 2 x 2ry flake, 1 x flake frag, 1 x shatter
Post Roman quarry pits	495	493		Modern		2	2 x flake frag
Post Roman quarry pits	520	515	Quarry	Modern		1	1 x 2ry flake

The Animal Bone

William Johnson

Introduction

This report presents the analysis of a small faunal assemblage recovered during excavations at Enderby, Leicestershire. The area was characterised by late Iron Age and Roman activity, the bone deriving primarily from a series of pit and ditch fills associated with boundaries and stock enclosures.

Provenance and dating

In total the faunal assemblage comprised 152 bone and tooth fragments recovered by hand during the excavation of 14 contexts. Four of the contexts dated to the very late Iron Age/early Roman period. These were all pit fills and represented 26% of the total bone fragments. The remaining 10 contexts dated to the Roman period. These represented pit fills (71% of fragments from this phase), ditch fills (26%) and a single post-hole (3%).

Table 16: Fragment and specimen counts by period

Period	Contexts	Fragments	Specimens	%Fragments	%Specimens
VLIA/ER	4	42	34	26.1	38.6
Roman	10	119	54	73.9	61.4

Methodology

Identification to element and taxon was attempted on all fragments of animal bone through comparison with reference material held at the School of Archaeology and Ancient History, University of Leicester. Recorded information was compiled directly into a standardised Excel spreadsheet. Anatomical zones present were recorded following the eight zones defined by Serjeanston (1996).

Determination between sheep and goat was attempted on elements listed in Boessneck (1969). A distinction between horse and donkey was attempted using the folds of the teeth according to Davis (1980).

Grant's (1982) system was used to record mandibular tooth wear in cattle, sheep/goat and pigs. For horse, tooth crown heights of cheek-teeth were measured following Levine (1982). Epiphyseal fusion data was

recorded for post-cranial elements and ages were estimated for these following the suggested age ranges by Silver (1970) and Schmid (1972).

Where identified, pathologies were recorded in full following Thomas and Worley (2014) and if appropriate a differential diagnosis was carried out considering all potential causes of lesion formation.

Measurements were taken on all mammal teeth and bones where possible following the criteria defined by Von den Driesch (1976) and Davis (1992). Withers heights for horses were calculated using the measurements and conversion factors of Kiesewalter (1888).

Butchery was recorded for all specimens by type as either a chop, cut or saw mark and the location was described. Burnt bone was also recorded across all specimens and categorised using three stages, singed, burned and calcined.

Joining fragments and those known to belong to the same bone were reassembled and the resulting specimen counted as one, although a record of the original number of fragments present was retained. The 'Number of Identifiable Specimens' (NISP) was calculated by counting the number of bone and loose tooth specimens (Wolverton 2002).

Results

Reassembly of joining fragments and the grouping of bone fragments known to derive from the same elements reduced the total counts of the bone from 161 fragments to 88 specimens. From this point on the analysis will refer to this number of specimens.

The four stages defined by Harland et al. were then ranked one to four with one being the best preservation 'excellent' and four the worst 'poor'. This was used to calculate average preservation scores for the assemblage in order to investigate differences in preservation both between phases of activity and feature types.

A noticeable difference was observed between the preservation of the late Iron Age/early Roman assemblage and the subsequent Roman assemblage with the average preservation score of the former 2.40 compared to 3.68 for the latter across all feature types (table 22).

Table 17: Preservation by period and feature type.

Feature	Period	Contexts	Fragments	Preservation
Pit fills	LIA/ER	4	40	2.4
Pit fills	Roman	5	71	3.7
Ditch fills	Roman	4	27	3.6
Post-holes	Roman	1	3	4

The generally poor preservation of the Roman contexts is most likely a product of an acidic burial environment, resulting in damage to the outer surfaces of the bone and leading to higher levels of fragmentation, both of which hindered identification to element and taxa. This was particularly evident from contexts (707) (p45)and (735) (p44) where the outer bone surface was very badly damaged and characteristic of acidic erosion.

By contrast, the enhanced survival of the faunal remains from the earlier period is likely a result of their deposition within waterlogged contexts. Three of the four early Roman contexts, (581), (603) and (713), came from the same pit feature [580] (p43) from which was also recovered a preserved timber post, indicating the waterlogging of the feature. The waterlogged conditions prevented the breakdown of the bone, leading to good surface preservation. However, subsequent drying of the bones following excavation had led to the development of surface cracks which, in some instances, were sufficient to prevent measurement and obstruct further recording.

The differential preservation of the bone as a result of waterlogging is clearly demonstrated by the faunal remains recovered from pit [703]. The bone from contexts (706) and (707) was starkly contrasting, the

former a lower down waterlogged deposit showing good preservation while the latter, from the top of the feature formed of free draining sands was very badly degraded (Fig.82).

Figure 82: Differential preservation of bone. Left) Cattle metapodial showing damage from acidic conditions. Right) Horse metatarsal from waterlogged deposit showing good surface preservation and subsequent cracking

To investigate the impact of fragmentation the number of fragments from each period was divided by the specimen count to provide an indication of the levels of damage with higher values corresponding to a greater degree of fragmentation.

The score for the late Iron Age/Early Roman assemblage was calculated at 1.2 fragments per specimen whilst the later contexts averaged 2.2 fragments per specimen, indicating a greater degree of destruction. This is likely to again be reflective of the conditions of the burial environment although it was also noted that a high degree of the fragmentation was the result of modern damage with the broken edges being markedly lighter in colour and retaining sharp edges.

The combination of relatively poorer surface preservation and higher rates of fragmentation from the later material hindered identification with only 37.0% of specimens able to be identified to both element and taxon compared to 61.8% of the late Iron Age/early Roman material.

Other taphonomic impacts were also present, most notably canine gnawing which was present on 34% of late Iron Age/early Roman specimens, all of which derived from the fill layers of pit [580] where they accounted for 65% of the identified specimens. No gnawing was identified from later phases although the poor surface condition of the surviving bone may have prevented its observation.

Taxon and element representation

The two assemblages, late Iron Age/Early Roman and later Roman, showed very different characteristics. The former assemblage comprised a range of elements from a number of different species but dominated by cattle remains which accounted for 73.7% of identified specimens. Of the other species represented equid was the next highest contributing 15.8% of identified elements whilst dog and sheep/goat were present as only single elements, contributing 5.3% each (table 18).

Table 18: Element representation and NISP of very late Iron Age/early Roman specimens.

	Cattle	Sheep/goat	Equid	Dog
HEAD				
Teeth	1		1	
SPINE				
Atlas			1	
FORELIMB				
Scapula	3			
Humerus	2			
Radius	1			
PELVIS				
Pelvis	1			
HINDLIMB				
Tibia	1	1	1	1
FEET				
Calcaneum	1			
Metacarpal	1			
Metatarsal	3			
TOTAL/NISP	14	1	3	1
%NISP	73.7	5.3	15.8	5.3

Elements from across the carcass were present in the case of cattle with no one body part or area seemingly favoured. Of the other taxa only equids were represented by more than single elements. An equid maxillary tooth was present but was unable to be further speciated. Dog and sheep/goat were each represented by single tibiae.

The later Roman contexts, by contrast, comprises a much more limited range of both elements and species. Only cattle and horse remains were able to be identified (table 19). Of these horse was the more common although the incidence of horse remains was inflated by the presence of a large number of loose teeth which likely derived from a relatively small number of cranial elements.

Table 19: Element representation and NISP of Roman contexts.

	Cattle	Equid
HEAD		
Cranium		1
Mandible		1
Teeth	1	15
FEET		
Metacarpal	1	
Metatarsal		1
TOTAL/NISP	2	18
%NISP	10	90

Loose teeth were by far the most commonly occurring elements. The equid maxillary teeth were speciated where possible on the basis of the protocone and were determined in all cases to belong to horses. Other cranial elements of equids were present including a highly fragmented mandible (context 735) and a horse skull (context 705) which had sustained slight modern damage to left side resulting in the loss of the left frontal, parietal and zygomatic. Other than these cranial elements the only other anatomical region represented was the feet, limited to the presence of a single metapodial from each taxon.

Age

Epiphyseal fusion data was recorded for nine elements, seven dated to the late Iron Age/early Roman period and the remaining two from Roman contexts (table 5).

Table 5. Epiphyseal fusion data, ages in months, based on data from Reitz and Wing (2008: 72).

Context	Cut	Feature	Period	Element	Taxa	Proximal	Distal	Age (months)
581	580	Pit fill	VLIA/ER	Humerus	Cattle		Fused	>12
581	580	Pit fill	VLIA/ER	Scapula	Cattle	Fused		>7
581	580	Pit fill	VLIA/ER	Humerus	Cattle	Fused	Fused	>42
581	580	Pit fill	VLIA/ER	Metatarsal	Cattle		Fused	>24
581	580	Pit fill	VLIA/ER	Tibia	Cattle		Fused	>24
581	580	Pit fill	VLIA/ER	Pelvis	Cattle	Fusing		6-10
706	703	Pit fill	Roman	Metatarsal	Equid		Fused	
707	703	Pit fill	Roman	Metacarpal	Cattle		Fused	>24
713	580	Pit fill	VLIA/ER	Tibia	Equid	Fused	Fused	

The small range of elements does not provide a very detailed picture of the ages of the animals being exploited. Of note, however, is the presence of a cattle pelvis from the late Iron Age/early Roman period that was not fully fused, indicating an age of between six and ten months, attesting to the presence of a younger animal.

In addition to the ages from epiphyseal fusion, crown height measurements were taken of the equid teeth where identifiable to tooth type. The Roman mandible from context (735) included P3, P4 and all three molars. The combined measurements of these teeth returned an age between nine and eleven years. Two loose third maxillary molars from Roman context (623) were also measured, both providing ages ranges between ten and eleven years.

Measurements

The measurements taken during the analysis are recorded in table 20. Due to the small number of measurable elements and fragmentary nature of the assemblage very few measurements could be taken. Whilst there are not enough for intra-site comparison, they may contribute to wider studies. Two equid long bones were measured and the results used to calculate withers heights. Firstly, a late Iron Age/early Roman tibia returned a withers height of 12.3 hands high and a Roman metatarsal returned a height of 13.1 hands high, meaning both animals were ponies.

Butchery

Butchery marks were recorded on only two elements, both of which were dated to the late Iron Age/early Roman and were found in context (581) accounting for 6.9% of specimens from this fill. The two bones included a cattle humerus which had a well-defined cut mark on the medial surface of the distal end, roughly level with the top of the trochlea. The other butchered bone was a sheep/goat tibia shaft which had a deep cut into the medial surface. Both of these marks are likely to relate to disarticulation and defleshing activities prior to consumption.

Pathology

A late Iron Age/early Roman equid tibia from context (713) showed evidence for an ossified haematoma (figure 2). The pathology was located on the medial surface of the distal third of the shaft. The abnormality took the form of a raised, oval-shaped platform of very well remodelled bone approximately 5cm in length (along the shaft) and 2xm in width (across the shaft). The pathology had well defined margins. The most likely diagnosis is an ossified haematoma. The most likely aetiology for such a pathology would be a traumatic event leading to sub-periosteal bleeding resulting in the lifting of the periosteum. Over time the swelling is gradually replaced with smooth bone. The non-specific aetiology of this pathology limits interpretation.

Figure 83: Ossified haematoma on equid tibia from (713)

Discussion

The bones from the late Iron Age/early Roman were primarily located within the fills of a single pit, [580]. The nature of the assemblage indicates that it is the result of the disposal of general domestic refuse. The high proportion of cattle remains and the presence of butchery evidence implies that the deposit is formed, at least in part, of the waste from food consumption. The presence of elements from across the body including those of potentially lower or different value such as cranial elements and those of the feet indicate that carcass processing may have taken place in the vicinity of the site as it is less likely that such elements would have been widely transported.

The relative lack of age data and small size of the assemblage for the assemblage prevents detailed examination of the husbandry strategies followed at the site although animals from a range of ages were represented.

The bones' deposition within the pit feature identified as a watering hole possibly indicates the feature falling out of use and being used as a rubbish pit with the assemblage building up over time. That the bones were not buried immediately is evidenced by the very high incidence of canine destruction and gnawing, indicating that the bone lay exposed on the surface for some time where they were scavenged.

Very little can be inferred from the later Roman remains due to their poor preservation, fragmentary nature and scarcity. The abundance of loose teeth within the assemblage is a good indicator of the poor preservation. Only a few cattle and equid elements were present from a limited anatomical range which prevents any detailed discussion of the role these animals may have played at the site. The most notable aspect of the assemblage was a partial horse skull recovered from a watering hole, [703]. The good preservation of this bone due to the waterlogging of the context and the absence of any other fragments indicate this specimen may have been deposited on its own. The cranium showed no indicators of how the animal died and the nature of this deposit is uncertain.

Conclusion

Overall, the variable preservation between the waterlogged and non-waterlogged deposits means that only a fragmentary picture can be built up of the role that animals played at the site. The only deposit

with a sufficient number of bones to support interpretation was the fill of watering hole [580] which indicated a slow build-up of general domestic refuse during the late Iron Age/early Roman period.

Table 20: All measurements recorded in millimetres, codes follow Von den Driesch (1976)

Period	Taxa	Element	Bp	SD	Bd	Dp	Dd	BT	GL	Ll
Late Iron Age/Early Roman	Cattle	Metatarsal	39.2	23.1	45.1				198	
Late Iron Age/Early Roman	Cattle	Humerus		28.1	66.9	85.6		65.0		
Late Iron Age/Early Roman	Equid	Tibia	76.8	30.7	63.2		40.3		324	287
Roman	Equid	Metatarsal	47.8	28.2	49.5	40.1			258	250
Period	Taxa	Element	10	22	22a	48				
Roman	Horse	Cranium	327	159.3	155	109.9				

Radiocarbon dating

Matthew Beamish & Derek Hamilton (SUERC)

Four single-entity samples of waterlogged wood from the Enderby shield and surrounding deposit (161) were submitted to the Scottish Universities Environmental Research Centre (SUERC) for radiocarbon dating by accelerator mass spectrometry (AMS). The samples were pretreated following the protocols described in Dunbar et al. (2016). Graphite targets were prepared and measured following Naysmith et al. (2010). SUERC maintains rigorous internal quality assurance procedures and participation in international inter-comparisons (Scott et al. 2003, 2007, 2010) indicates no laboratory offsets; thus, validating the measurement precision quoted for the radiocarbon ages.

Conventional radiocarbon ages (Stuiver and Polach 1977) are presented in Table 1, where they are quoted in accordance with the Trondheim convention (Stuiver and Kra 1986). Calibrated date ranges were calculated using the internationally agreed calibration curve of Reimer et al. (2013) and OxCal v4.3 (Bronk Ramsey (1995, 1998, 2001, 2009). The date ranges in Table 1 have been calculated using the maximum intercept method (Stuiver and Reimer 1986) and quoted with the endpoints rounded outward to 10 years. The probabilities shown in Figure 1 were calculated using the probability method of Stuiver and Reimer (1993).

Methodological Approach

The chronology of the deposition of the Enderby shield has been interpreted using a Bayesian approach (Buck et al. 1996). The date of this activity can be estimated using information from radiocarbon measurements on samples and sample context. The methodology combines the archaeologivcal information with the radiocarbon date probabilities to produce realistic estimates of the dates of archaeological interest. The output of the modelling is the posterior density estimate. These are not absolute but are instead interpretive estimates that can and will change as further data become available. Posterior density estimates are usually presented in italics to separate modelling and calibration results. The methodology has been applied using the program OxCal v4.3, which uses a form of Markov Chain Monte Carlo sampling. The algorithm used in the models described below can be derived directly from the model structure shown in figure 84 and described below.

Samples and the model

Of the four samples that were submitted for radiocarbon dating, two were derived directly from the shield and two were recovered in the matrix of the deposit. Although all four samples are waterlogged wood, the two samples from the deposition matrix are of species (blackthorn and field maple) that are not represented in the shield (see section on the wood identifications for the shield). Therefore, there is a high degree of confidence that this material is not derived from the shield.

The chronological model serves two purposes:

1) to provide a date estimate for the construction of the shield; and

2) provide a date for its deposition.

The radiocarbon results from two samples taken from the bark forming the main body (SUERC-66149) and plant fibre from the shield boss (SUERC-66150) presumably date to construction, and have been combined prior to calibration using the R_Combine function in OxCal, which follows the method of Ward and Wilson (1978). The mean date (2249 ±21 BP) provides an estimated construction date.

As the shield was constructed prior to deposition, this date can be used in a chronological model as a terminus post quem, providing informative prior information for constraining the two dates (SUERC-68963 and -68967) from the field maple and blackthorn, respectively, in the deposit (. The 'Last' function is used in the chronological model to estimate the date of the later probability in the group from the deposit.

There is good agreement between the radiocarbon dates and the modelled archaeology (Amodel=76). The modelling estimates the shield was constructed in either 395–345 cal BC (66% probability; Fig.84; Enderby shield construction) or 315–255 cal BC (29% probability). Furthermore, the estimated date of deposition is either 360–350 cal BC (1% probability; Fig. 1; Enderby shield deposition) or 300–195 cal BC (94% probability) for the deposition of the shield.

These two modelled probabilities can be used to also provide an estimate for how long the shield was in 'use' prior to deposition. Subtracting the date probability for Enderby shield construction from that for Enderby shield deposition provides an estimated use-life for this artefact of 10–170 years (95% probability; Fig. 2; use of Enderby shield), and probably 75–165 years (68% probability).

Table 21: Radiocarbon results from the Enderby shield and its deposition

Lab no.	Material	δ¤C (‰)	Radiocarbon age (BP)	Calibrated date (95% confidence)
SUERC-68963	Wood: field maple	−29.9	2272 ±27	400–230 cal BC
SUERC-68967	Wood: blackthorn	−28.3	2212 ±27	380–190 cal BC
SUERC-66149	Bark from shield	−28.2	2253 ±29	400–200 cal BC
SUERC-66150	Wood/Plant fibre from shield boss	−27.3	2245 ±29	400–200 cal BC

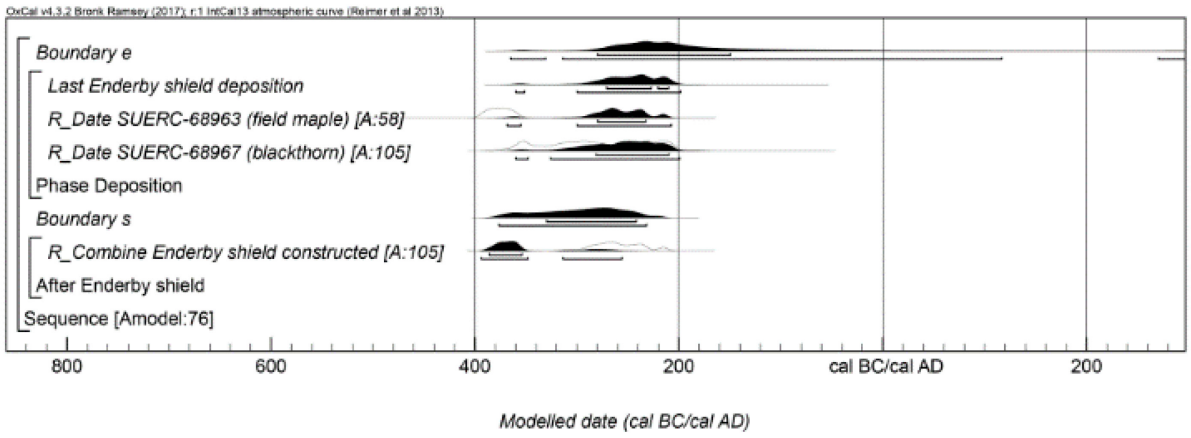

Figure 84: Chronological model for the date of the construction and deposition of the Enderby shield. For each of the radiocarbon measurements two distributions have been plotted, one in outline, which is the result of simple radiocarbon calibration, and a solid one, which is based on the chronological model use. The other distributions correspond to aspects of the model. The large square 'brackets' along with the OxCal keywords define the overall model exactly.

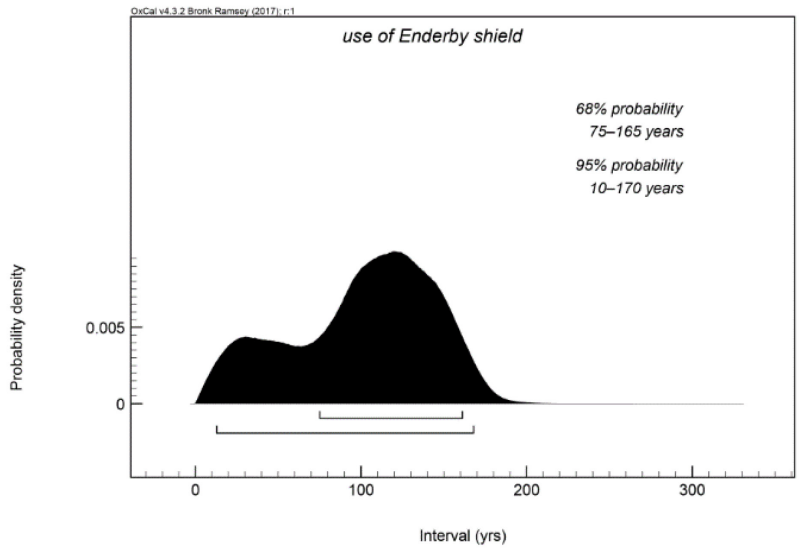

Figure 85: Probability for the use-life of the Enderby shield

The Charred and Waterlogged Plant Remains

Adam Santer and Rachel Small

Introduction

Fifteen bulk soil samples were taken and processed for the analysis of plant remains. One of these, a sample of waterlogged deposit from around the waterlogged wooden artefact is reported separately (W.Smith p110).

Of the remaining 14 samples, five were taken from waterlogged deposits – four from watering hole [580] and one from pit/watering hole [703]. The remaining nine samples were taken from dry deposits and included charred plant remains. All the samples were from pit fills, except for samples 2 and 8 which were from ditches [148] and [674] respectively. The samples dated from the mid-late Iron Age to late Roman period.

The analysis of the charred and waterlogged plant remains recovered from the samples is presented here, together with a discussion of what this can potentially tell us about past diet, crop husbandry strategies and environment at the site.

Methodology

Bulk samples were processed in a York tank using a 0.5mm mesh with flotation into a 0.3mm sieve. The flotation fractions (flots) were sorted for plant remains and other artefacts under an x10-40 stereo microscope. The residues were air dried and the fractions over 4mm were sorted in their entirety whilst the fraction under 4mm was only scanned for remains. For waterlogged samples, a 500 ml sub sample was processed using the wash-over method following Kenwood (*et al.* 1980). The flot and residue were both retained in 0.3mm sieves and kept wet. Both were sorted under an x10-40 stereo microscope, specimens were extracted and stored in glass vials in water. Plant remains were identified by comparison to modern reference material available at ULAS and their names follow Stace (1991). Quantification was as follows: each glume base was counted as one and each fragment of seed was counted as one.

Results

Charred plant remains

Charred plant remains were present in seven of the dry bulk samples in low densities, less than 1 item per litre. The majority of specimens were wild seeds and goosefoots (*Chenopodium* spp.) were most commonly identified. Sedge (Carex spp.) was also found in sample 2 (142) and a seed of ivy-leaved speedwell (*Veronica hederifolia* L.) in sample 5 (369). A single glume base (*Triticum* sp.) was identified in sample 11 (656).

Table 22: The charred plant remains

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Sample	2	3	4	5	8	10	11	
Context	142	155	262	369	675	706	656	
Cut	148	154	263	366	674	703	655	
Feature	Ditch	Pit	Pit	Pit	Ditch	Pit	Pit	
Date	Roman. Late 1st - Early 2nd C.	Iron Age	Iron Age	Iron Age	Middle-Late Iron Age	Roman. 2nd - 3rd C.	Roman. Late 1st - 2nd C.	
Chaff								
Triticum sp. glume base						1		Wheat glume base
Wild seeds								
Carex sp.	5							Sedge
Chenopodium sp.	1	2	1	5	2	2		Goosefoots
Veronica hederifolia L.				1				Ivy-leaved speedwell
Indeterminate seed							1	Indeterminate seed
Total	6	2	1	6	2	3	1	
Soil volume (L)	8	7	8	9	8	8	7	
% Analysed	100%	100%	100%	100%	100%	100%	100%	
Items per litre	0.75	0.28	0.125	0.66	0	0.25	0.142	

Waterlogged plant remains

All of the waterlogged samples contained high densities of plant remains (over 50 items per litre). The highest density of plant remains was found in sample 13 which was the fill (715) of water hole [580], totalling 394 items per litre. The majority of plant remains were wild seeds.

Some of the seeds are indicative of the surrounding environment. Stinking chamomile (*Anthemis cotula* L.), pale persicaria/redshank (*Polygonum lapthifolium/persicaria* L.), and common chickweed (*Stellaria media* (L). Villars) are all indicative of agricultural land. Common knapweed (*Centaurea nigra* L.), wild carrot (*Daucus carota* L.), large and medium grasses (Poaceae) are all indicative of grassland vegetation. Cinquefoils (*Potentilla* sp.) and elder (*Sambucus nigra* L.) are present in shrubbery.

Other seeds which could not be identified beyond their genus were found in medium to high quantities; including mayweed (*Tripleurospermum* sp.), nettle (*Urtica* sp.), knotweeds (*Polygonum* sp.) and sedges (*Carex* sp.). Sedges are commonly found in wetland environments but the lack of identification to species limits this interpretation.

A small quantity of charred plant material was found. In sample 14 (713) (the basal fill of [580] the Roman recut of pit [722]) two charred wheat glume bases (*Triticum* spp.), a straw culm and two blackthorn fruit stones (*Prunus spinosa* L.) were present. In sample 7 (581) also from [580] there was a fragment of hazelnut shell (*Corylus avellana* L.).

Table 23: The waterlogged plant remains

Sample	**6**	**7**	**9**	**13**	**14**	
Context	**659**	**581**	**705**	**715**	**713**	
Cut	**722**	**580**	**703**	**580**	**580**	
Feature	**Water hole**	**Water hole**	**Pit**	**Water hole**	**Water hole**	
Date	**MIA**	**Roman. Late 1st - Early 2nd C.**	**Undated**	**Roman. Late 1st - Early 2nd C.**	**Roman. Late 1st - Early 2nd C.**	
Chaff						
Triticum sp. glume base					2	Wheat glume base
Straw culm node					1	Straw culm node
Nut shell						
Corylus avellana L.		1				Hazel nut shell fragment
Fruit stone						
Prunus spinosa L.					2	Blackthorn
Wild seeds						
Anthemis cotula L.			2			Stinking chamomile
Asteraceae					1	Daisy
Brassica sp.				2		Wild cabbage
Carex sp.	1	19	1	11	7	Sedge
Centaurea nigra L.	2		1	6	1	Common knapweed
Chenopodium sp.	3	2	3	6	1	Goosefoots
Cf. *Daucus carota* L.	1				1	Cf. Carrot
Polygonum sp.	7	25	3	31	11	Knotweed
Polygonum lapthifolium/persicaria L.	1			7	2	Pale persicaria/redshank
Poaceae (Large)				1		Large grass
Poaceae (Small)	4					Medium grass
Potentilla sp.		20	12	22	13	Cinquefoils
Prunella vulgaris L.	1					Selfheal
Ranunculus sp.	1	1	4	3		Buttercup
Rubus sp.	1			1		Bramble
Rumex sp.			1	1	1	Docks
Sambucus nigra L.				2		Elder
Stellaria media (L.) Villars	9	8	3	21	6	Common chickweed
Cf. *Tripleurospermum* sp.		22		25		Cf. Mayweed
Urtica sp.	1	53	1	58	6	Nettle
Indeterminate seed	3					Indeterminate seed
Total	**35**	**151**	**31**	**197**	**55**	
Soil volume (L)	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	
% Analysed	**100%**	**100%**	**100%**	**100%**	**100%**	
Items per litre	**70**	**302**	**62**	**394**	**110**	

Discussion/Conclusion

Eighteen samples were taken and analysed. The waterlogged samples contained high densities of uncharred plant remains whereas the non-waterlogged samples contained low densities of charred plant remains. The waterlogged material from the sampled deposits of Middle Iron Age and Romano-British date were similar in their composition and was dominated by wild seeds indicative of the surrounding environment which in both phases would look to comprise agricultural land, grassland and shrubbery. They likely represent windblown accumulations in the open features. The results compliment those from the soil from around the shield (W.Smith p114).

The Waterlogged Plant Remains *Wendy Smith*

(Date submitted: 7 October 2016)

Introduction

Seven samples were collected from the deposit associated with the waterlogged wooden artefact (context (661) sample [illegible] and submitted for assessment. The plant macrofossils and insect remains were examined from one of these samples (Sample 17/5) in order to determine the environmental potential. Unfortunately, the insect remains were not particularly rich or well-preserved (Hill and D. Smith p130); however, the plant macrofossils were of obvious archaeological potential and, therefore, it was recommended that they were fully analysed. The following report presents the results of the archaeobotanical analysis of this single sample.

Method

In total, 7 kg of sediment was collected for sample [17/5]. A 500 ml sub-sample for the recovery of waterlogged plant remains (hereafter WPR) was removed and processed using the wash-over technique (*sensu* Kenward *et al*. 1980). The flot and heavy residue (the material which does not float) from the plant macrofossil sub-sample were both retained in 0.3mm geological sieves and stored in water. Six knotgrass (*Polygonum aviculare* L.) achenes were extracted and [redacted] and submitted to ULAS to support potential radiocarbon determination of the plant remains within this deposit. The remaining 6.5 Kg of sediment was processed for the recovery of insect remains, which were assessed by Dr. Geoff Hill and Dr. David Smith (University of Birmingham). At the time of the assessment, it was noted that the heavy residue component of the WPR sub-sample had not fully disaggregated; therefore, the heavy residue fraction was washed over a 0.3mm geological sieve prior to sorting for full analysis.

The sample's flot and heavy residue were sorted in a water and ethanol mixture, under a low-power binocular microscope (MEIJI EMZ) at magnifications between x10 and x15. Identifications were made at magnifications up to x45, and in comparison to modern plant material housed in the Department of Classics, Ancient History and Archaeology and/ or the author's personal comparative collection. Standard botanical keys (e.g. Cappers *et al*. 2006; Schoch *et al*. 1988) also were consulted during analysis. All sorted WPR were stored in ethanol. Nomenclature and taxonomic order follows Stace (2010).

The purpose of this report is to elucidate the nature of the deposit from which the artefact was recovered and to attempt to consider whether the WPR data could establish what the nature of Feature 722 might have been. Was the artefact deposited into a body or water? or a bog? Is this feature merely a pit and the artefact was deposited here along with other settlement waste? Do the plant remains reflect the natural environment in and around this feature or indicate settlement activity?

The artefact and the sediment in which it was buried have been independently dated (Hamilton & Beamish p.133) and this determined that deposition took place between 360–350 cal BC (1% probability) or 300–195 cal BC (94% probability).

Results

Table 24 presents the result for both the flot and heavy residue components for Sample 17/5. Figure 86 presents the relative proportion of plants by habitat group. The recovery of significant quantities of WPR in the heavy residue was due to the incomplete disaggregation of the clayey sediment during initial processing. The plant macrofossil assemblage is dominated by weed/ wild taxa which most likely reflect the immediate environment into which the shield was deposited.

The plant remains indicate that the shield was deposited in relatively damp to wet conditions; however, plants indicative of open grassland also were recovered. The open ground/ grassland plants may be indicative of the wider environment, but potentially could have arrived through other means. A few of the plant remains recovered suggest the proximity of woodland/ woodland edge. In addition, a small quantity of cereal chaff also was recovered from this sub-sample ([17/5]). The recovery of cereal chaff from this deposit suggests proximity to human activity but, similar to the plants of open ground/ grassland, these cereal remains may be re-deposited into this feature.

Plants of damp to wet ground

Several of the plant taxa identified are obligate plants of damp to wet conditions and form the largest habitat group in this assemblage (N = 183 or 42.5%). This group includes blink (*Montia fontana* L.), possible bristle club-rush (cf. *Isolepis setacea* (L.) R. Br.), possible bog bean (cf. *Menyanthes trifoliata* L.), crowfoot (*Ranunculus* subgenus BATRACHIUM (DC.) A. Gray), lesser celandine (*Ficaria verna* Huds.), narrow-fruited water-cress (*Nasturtium microphyllum* (Boenn.) Rchb.), rush (*Juncus* spp.), sedge (*Carex* sp.), sweet-grass (*Glyceria* spp.), water starwort (*Callitriche* spp.) and wood-rush (*Luzula* sp.). Common nettle occurs in a wide range of habitats, but also can occur in fens; and many of the buttercups (*Ranunculus acris* L./ *repens* L./ *bulbosus* L. and *Ranunculus* sp. – small-sized) and knotweeds (*Persicaria* spp.) can tolerate seasonally damp conditions.

The majority of these plants are not obligate aquatic plants and are more likely to occur in damp to wet conditions; however, narrow-fruited watercress (*Nasturtium microphyllum* (Boenn.) Rchb.) and water

starwort (*Callitriche* spp.) frequently occur in standing water, within ponds or ditches. The raised water table locally, which is clearly responsible for the waterlogged preservation of these plant remains, could easily explain the presence of narrow-fruited watercress and water starwort, especially if Feature 722 was seasonally flooded.

The insect remains recorded in the Hill and Smith (p130) assessment suggest that areas of still or stagnant water were present locally and certainly the recovery of copepod and water flea egg cases in the WPR sample also confirms this. This independently supports an interpretation that an area of still or slow-flowing water was present. It is likely that this deeper area of water (?pool) was surrounded by areas of damp or wet ground which supported many of the wetland plants listed above. This interpretation of the plant and insect remains does suggest that the shield was deposited (either intentionally or accidentally) into a body of water surrounded by waterside vegetation.

Plants of open ground or grassland

In addition to plants of damp to wet conditions, the WPR assemblage includes plants more typically associated with open and/ or grassland environments, accounting for 21.8% (N = 98) of all identifications in sample 17/5. Plants such as buttercups (*Ranunculus acris* L./ *repens* L./ *bulbosus* L. and *Ranunculus* sp. – small-sized achene), dock (*Rumex* spp.), common chickweed (*Stellaria media* (L.) Vill.), greater plantain (*Plantago major* L.), knotgrass (*Polygonum avilucare* L.); mouse-ear (*Cerastium* spp.) and sheep's sorrel (*Rumex acetosella* L.) are typical of open (or unshaded) grassland environments.

Although it is clear that areas of better drainage are represented by these open ground/ grassland plants, it is not certain whether these plants were located in close proximity to the damp/ wet areas indicated by the majority of taxa recovered in this sample or whether these plant remains were brought into the deposit by some other means. Zoochorous dispersal of seeds (i.e. the movement of seeds in a landscape through animal faeces) also is a valid explanation for the recovery of these dryland plants in this otherwise wet environment. Certainly, in their assessment, Hill and Smith (p130) reported that *Aphodius* spp. dung beetles were relatively abundant and this could support such an explanation for the presence of dryland plant taxa in an otherwise wetland habitat.

Wild grass (POACEAE) seed (technically caryopses) often are difficult to identify to species level and, in the case of Enderby, typically were quite flimsy remains of the outer epidermis of the caryopsis, which lacked distinctive features and, therefore, could not be identified further. However sweet-grass (*Glyceria* spp.) is distinctive, with its deep red colour and barbs at the apical end of the caryopsis. The wide range of small-/ medium-/ large-sized grass caryposes, however, cannot be specifically attributed to a habitat and may be tolerant of either wet to drier conditions. Finally, we cannot rule out the possibility that grasses were collected as hay in this period and may have been used as fodder for livestock or potentially as packing/ padding (potentially at the back of or even around the shield).

In general, grass stalks were not particularly abundant in the sample, so it seems most likely that the caryopses recovered were in fact naturally dispersed into this feature. Plant stalks will survive consumption by livestock and would be abundant if hay or grass was grazed. As a result, it seems most likely that the majority of plant remains recovered represent the immediate environment around the sampling site.

Plants of woodland or woodland edge plants

There only is limited evidence for plants of woodland or woodland edge. A few indeterminate thorns most likely from the Rose Family (ROSACEAE), and possibly of blackthorn (*Prunus spinosa* L.) type, were noted. In addition wood-rush (*Luzula* sp.), which can occur in woodland or damp to wet conditions was recovered. Although common nettle (*Urtica dioica* L.) most typically occurs in nitrogen enriched waste ground, it also frequently occurs in woodland or at the edge of woodland in a range of dry to wetland woodland habitats (Taylor 2009: 1440–1).

These 'woodland' indicators were recovered in such low numbers that it seems likely that woodland/ scrub represented only a minor component of the environment in the immediate area of the sampling site. It also is possible that this small quantity of woodland taxa represents material washed into Feature 722, possibly during flooding events.

The recovery of waterlogged emmer spikelets/ glume fragments

Notably, two intact waterlogged emmer (*Triticum dicoccum* Schübl.) spikelets (= two glume bases, the internode was not present) and one waterlogged emmer glume base were recovered from sample 17/5 (see Figures 2–4). This is a very minor component of the assemblage, representing <2% of all identifications, but these cultivars clearly only occur through human agency and their presence in an otherwise natural deposit does require explanation.

Emmer would not successfully grow in the immediate environment of Feature 722 which appears to represent damp to wet conditions; therefore, these emmer chaff remains must be derived from an environment beyond this feature, although possibly within close proximity. Alternatively, the emmer chaff remains could be re-deposited into this feature. Like the grassland plants discussed above, it is possible that these remains entered the deposits through zoochorous dispersal. Again, there is evidence from the Hill and Smith (p130) insect assessment to suggest that *Aphodius* dung beetles were present in this deposit and indicates grazing animals were in the vicinity, which supports such an interpretation.

Finds of small quantities of Iron Age charred emmer grain/ chaff (including possible emmer grain/ chaff) have been made previously from a number of sites in Leicestershire: including Hallam Fields, Birstall (Browning *et al*. 2010); Humbertstone (Pelling 2000); Huncote (Jarvis 2004); Kirby Muxloe (cited in Monckton 2001); Normanton le Heath (Monckton 1994); Rushey Mead (Monckton 2001); Tixover (cited in Monckton 2001) and Wanlip (Monckton 1998). Previous archaeobotanical work at Enderby has not produced finds of emmer grain or chaff (e.g. Monckton 1992a, 2004); however, Monckton (1992b) has identified a possible emmer grain impression in pottery from Grove Farm, Enderby. Monckton (1995: 35) has commented on a consistent pattern of sites in the Iron Age of Leicestershire producing a low level of charred cereal remains and suggested that cereal chaff, in particular, may have been used in other ways and possibly away from settlement sites.

What is notable about small quantities of waterlogged emmer chaff from the Enderby Iron Age shield site, is that this is a deposit in an otherwise rural setting. The recovery of *Aphodius* dung beetles from the same context suggests animal dung was present (possibly within the feature itself). Certainly, Monckton (1995: 35) has theorised that cereal chaff may be used as fodder away from settlement sites in Leicestershire. Unfortunately the limited data from this deposit cannot decisively prove Monckton's theory; however, this result strongly indicates that the regular use of cereal chaff for livestock fodder in Leicestershire is worth investigating and sampling of rural sites/ off site should be undertaken in order to investigate this theory further.

Wider comparison of the Enderby archaeobotanical results: Fiskerton

Ritual disposal of Iron Age objects is now well-recognised in Britain (e.g. Hingley 2006; Manning 1972). The archaeobotanical and archaeoentomological results from this single sample cannot explain why or how the Enderby shield entered this deposit, but do establish that this feature contained slow-flowing/ stagnant water and was set within a landscape with grazing animals. Because this is such a unique archaeological context, it also is difficult to identify suitable sites for comparison; however, the Late Iron Age site of Fiskerton (Field and Parker Pearson 2003) in Lincolnshire also has votive offerings (in this case both weaponry and tools) and was sampled for plant and insect remains. At Fiskerton, the environmental evidence (Greig 2003; Osborne 2003) suggests that votive objects (both weaponry and tools) were deposited into a fen wetland with some evidence for dryland plants and grazing animals, most likely occurring off site. In some ways, this is unsurprising, as pasture is often the most sensible agricultural use for marshy or seasonally flooded land in Britain. This pattern of wetland with indicators for grazing off site also appears to be the case for Flag Fen (Pryor 2001)

Unlike Fiskerton, however, Enderby does not appear to have been a major wetland site, even though it is situated near to the River Soar. Indeed previous work in the area (e.g. Clay 1992; Meek *et al*. 2004) suggests that much of the Iron Age settlement in Enderby was more typical of dryland Iron Age settlements with circular buildings, ditch systems, enclosures and four post structures. This may also go some way to explaining why the Enderby shield sample has produced arable crops; which certainly were not in evidence at Fiskerton.

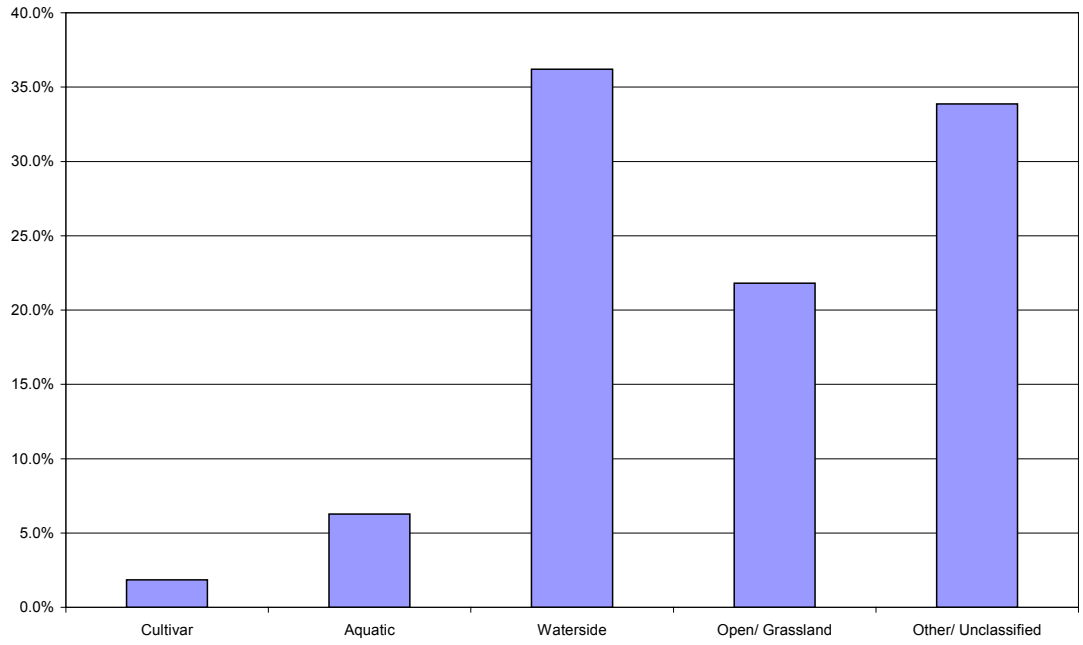
Conclusions

Only the deposit around the shield has been sampled and analysed here. Unfortunately, it was not possible to determine what the overlying deposits infilling Feature 722 may have contained, because these deposits were re-cut by a later Roman feature, truncating the deposits overlying the shield (see p25). In an ideal world, samples from the shield deposit would also be worthwhile as certainly in the case of votive metalwork offerings, there is the possibility that the weight of the object may result in it migrating downward in highly hydrated sediments, ultimately becoming incorporated into earlier deposits (see discussion of this possibility by Parker Pearson in Field and Parker Pearson 2003: 175).

Although just a single archaeobotanical sample, the results from this deposit clearly establishes the value of environmental sampling of sediment directly related to extraordinary archaeological finds. Because the corresponding pollen core from Feature 722 was effectively taken through the later Roman re-cut of this feature, which was not obvious at the time of excavation (see p25), pollen data could not be integrated with the archaeobotanical and archaeoentomological results (*pers. com*. Matthew Beamish).

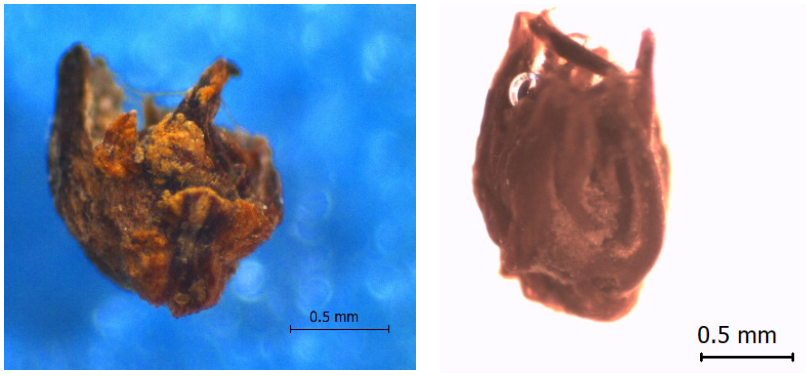
It is apparent that environmental sampling at sites such as Fiskerton or Flag Fen, has not always been directly related to the archaeology or specific archaeological finds, and this makes ULAS's approach to environmental sampling at Enderby unique. Certainly, in future it is recommended that direct sampling of deposits with votive offerings/ significant archaeological finds, should always include sampling of the immediate deposit as well as any overlying sediments. If possible, sampling should ensure that multiple lines of environmental evidence are applied to the same block of sediment, rather than carried out separately, thereby avoiding the production of environmental results which cannot be integrated easily (e.g. Fiskerton – Field and Parker Pearson 2003 or Flag Fen – Pryor 2001).

The recovery of small quantities of waterlogged emmer (*Triticum dicoccum* Schübl.) chaff in this deposit is notable. Low levels of charred cereal chaff are common in Iron Age deposits in Leicestershire and Monckton (1995) has theorised that this may be because cereal chaff was used off-site, possibly as fodder. The small quantity of waterlogged emmer chaff recovered from the Enderby shield sample is not sufficient to prove Monckton's theory is correct, but it suggests that there may be a basis for such an assumption and should inform archaeobotanical sampling at Iron Age Leicestershire sites in future.



[Total number of identifications = 431]

Figure 86: Relative proportion of habitat groups from sample 17/5 (context 661)



(Note both spikelets have a strong primary keel – clearest on left hand side)

Figure 87: Two waterlogged emmer spikelets from sample 17/5 (context 661)

Figure 88: Side profile of left glume base of the right hand spikelet from 87

(Note that the face of the glume does not have strong vertical grooves for nerves – the slight groove or vertical tear toward the centre is where the glume has split or torn – possibly during excavation or processing).

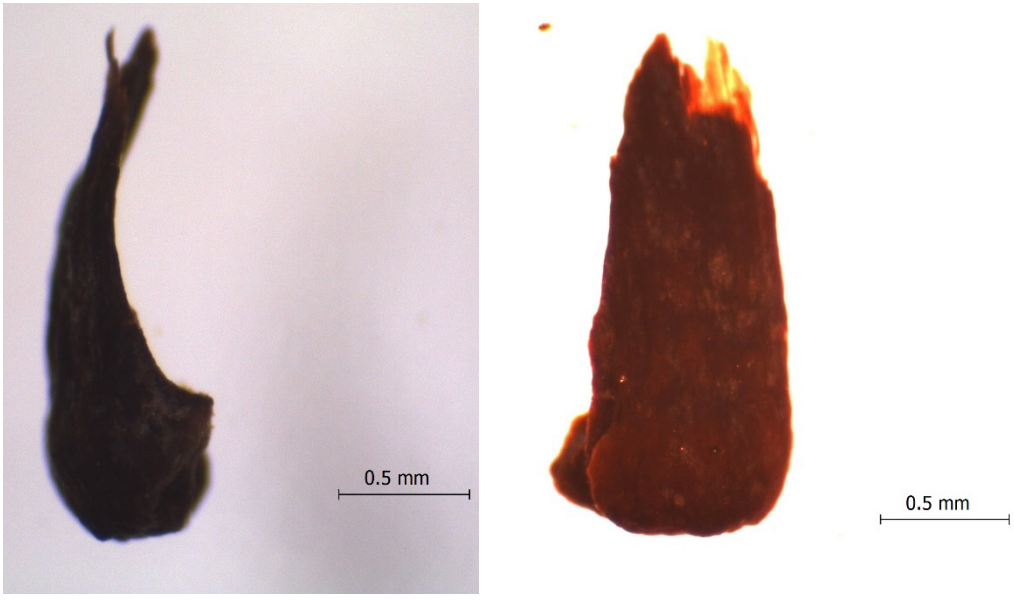


Figure 89: Emmer glume base from sample 17/5 (context 661)

(left: front view/ right: side view. Again note that although there are some nerves on the face of this glume, they are not particularly strong (as they would be in spelt) and do not run the full length of the glume to the insertion scar, which is very faint on this specimen, at the base of the glume.)

Table 24: Waterlogged plant remains from Sample 17/5

Site	**XA33:2012**			
Sample	**17/5 (4 of 7)**			
Context	**661**			
Sample Volume	**500 ml**			
	Flot	**HR**		
LATIN BINOMIAL			**English Common Name**	**Habitat Code**
Cultivated Plants				
Triticum dicoccum Schübl. - spikelet fork (= 2gb)	1	2	emmer	C
Triticum dicoccum Schübl. - glume base	-	1	emmer	C
Cereal/ Late POACEAE - culm node	2	2	cereal/ large grass	?C
Weed/ Wild Plants				
Ranunculus acris L./ *repens* L./ *bulbosus* L.	1	1	meadow/ creeping/ bulbous buttercup	TG
Ranunculus subgenus BATRACHIUM (DC.) A. Gray	6	12	crowfoot	DW
Ranunculus sp. - small-sized achene	1	-	buttercup	TG
cf. *Ranunculus* sp. - seed coat fragment	-	1	possible buttercup	TG
Ficaria verna Huds.	-	1	lesser celandine	D/W
Rubus spp. - indeterminate seed coat fragment	1	1	indeterminate blackberry/ rapsberry	Wa
ROSACEAE - thorn (? *Prunus spinosa* L. type)	1	1	Rose family	Wd
Urtica dioica L.	7	8	common nettle	Wa/ N/ F
cf. *Urtica dioica* L. - highly decayed	1	-	possible common nettle	
Nasturtium microphyllum (Boenn.) Rchb.	25	-	narrow-fruited water-cress	DW
Persicaria maculosa Gray/ *lapathifolia* (L.) Delarbre	1	5	redshank/pale persicaria	Wa/ O/ C
Persicaria spp.	-	-	knotweed	
Persicaria spp./ *Polygonum* spp. - internal structure	1	2	knotweed/ knotgrass	
Persicaria spp./ *Polygonum* spp. - seed coat fragments	-	10	knotweed/ knotgrass	
Polygonum aviculare L.	7	21	knotgrass	
Polygonum sp.	1	-	knotgrass	O
cf. *Polygonum* sp. - compressed	-	1	possible knotgrass	
Rumex cf. *acetosella* L.	-	2	sheep's sorrel	G
cf. *Rumex acetosella* L.	-	1	possible sheep's sorrel	
Rumex spp. - achene	-	5	dock	TG
Stellaria media (L.) Vill.	8	15	common chickweed	O/ C
Stellaria spp.	-	3	stitchwort	
Cerastium spp.	2	1	mouse-ears	TG
CARYOPHYLLACEAE/ CHENOPODIACEAE - internal struct.	2	-	indeterminate Pink/ Goosefoot Family	
Chenopodium spp.	1	5	goosefoot	
Chenopodium spp./ *Atriplex* spp. - indeterminate	1	5	goosefoot/ orache	
Atriplex spp.	1	-	orache	
Montia fontana L.	1	8	blink	D/ W
cf. *Montia fontana* L. - fragment	-	-	possible blink	D/ W
cf. *Anagallis* sp. - compressed	1	-	pimpernel	
Plantago major L.	17	15	greater plantain	O/ TG
cf. *Plantago major* L./ *Callitriche* spp. - internal structure	2	3	indet. greater plantain/ water starwort	
Callitriche spp.	2	-	water-starwort	D/ W
cf. *Mentha* spp. - seed coat fragment	1	-	possible mint	
cf. *Menyanthes trifoliata* L. - highly decayed	2	1	possible bog bean	W
Cirsium sp.	-	1	thistle	
ASTERACEAE - *Taraxacum* type	1	-	Daisy Family - dandelion type	
Juncus spp.	133	2	rush	D/ W
Luzula sp.	1	-	wood-rush	TS/ Wd
cf. *Isolepis setacea* (L.) R. Br. - seedcoat fragment	1	-	possible bristle club-rush	W
Carex sp.	-	1	sedge	D/ W
Glyceria sp.	1	5	sweet-grass	D/ W
POACEAE - small caryopsis	27	14	grass - small-sized seed	

Site	**XA33:2012**		
Sample	**17/5 (4 of 7)**		
Context	**661**		
Sample Volume	**500 ml**		
	Flot	**HR**	
POACEAE - medium caryopsis	1	5	grass - medium-sized seed
POACEAE - large caryopsis	1	-	grass - large-sized seed
Unidentified - bud	1	2	
Unidentified - bud scar	1	-	
Unidentified - calyx	-	1	
Unidentified - internal structure	1	-	
Unidentified - thorn	1	-	
Other remains noted			
Copepod egg sac - *Diaptomus castor* type	++	+	
Fly puparia (Diptera)	+	+	
Insects (Coleoptera)	+	+	
Moss fragments	+	-	
Water flea (*Daphnia*)	++	+	

Key for semi-quantified remains: + = <5 items, ++ = 5 – 25 items, +++ = 25 – 100 items

Habitat Codes: C = cultivated land, D = damp ground, F = fen, G = grassland, N = nitrogen enriched soils, O = open places (unshaded), S = shaded places, T = typically occurring, W = wet places (aquatic plant), Wa = waste places and Wd = woodland

The Insect Remains

Geoff Hill and David Smith

Background

Four samples from a Middle Iron Age pit [722] recut in the Early Roman period [580], and a further sample from a waterlogged pit fill, Feature [703], were analysed for their insect remains, particularly Coleopteran (beetle). Initially it was presumed that the bulk samples from the watering hole [722]/[580] would not produce preserved insect remains, since they consisted mainly of large pebbles (4 – 10 cm) and sandy clays. However, these samples did infact produced an extensive set of insect faunas. As a result, it has been possible to produce a detailed reconstruction of the landscape and the nature of human activity in the area.

Laboratory Methods

The waterlogged bulk samples were processed following the standard paraffin flotation methods outlined in Kenward *et al.* (1980). Waterlogged insect remains were sorted and identified under a low-power binocular microscope, at magnifications between x15 – x45. Where achievable, the insect remains were identified to species level by direct comparison to specimens in the Gorham and Girling insect collections, housed in the Department of Classics, Ancient History and Archaeology, University of Birmingham. The nomenclature and taxonomic order presented follows the BugsCEP database (Buckland, 2006) which uses Lucht (1987), revised Böhme (2005), and Gustafsson (2005).

Analytical Methods

Analysis of the insect remains follows a functional group (FG) approach specifically designed to incorporate aspects of both archaeological and palaeoenvironmental studies of beetle assemblages (Hill 2015a). This is a revision of both Robinson's (1981) and Kenward and Hall's (1995) approaches, combining the environmental and synanthropic elements of each of these ecological groupings. Where possible, individual taxa are allocated a functional group code, reflecting their environmental or habitat requirements (see Tables 25 – 26). Ecological information is derived from the BugsCEP database (Buckland and Buckland 2006), with particular reference to the descriptions of Koch (1989, 1992). Where other sources of ecological information have been used, these will be cited within the following discussion.

If a taxon is fairly ubiquitous in terms of its ecological preference, or the identification of the taxonomic group to which it belongs is very broad, and a functional group cannot be assigned, the taxa is designated 'uncoded'.

The relative proportion of aquatic and waterside species is initially calculated from the total assemblage, or, minimum number of individuals (MNI). The remaining ecological groupings are calculated only from the terrestrial taxa in the assemblage (tMNI) (i.e. with aquatic and uncoded taxa have been removed, Table 26).

Finally, the relative proportion of Kenward's (Hall and Kenward 1990) 'house fauna', which comprises a suite of beetles with a particular affinity to human settlement and waste, is calculated as a proportion of all terrestrial taxa recovered.

The third column in Table 11 indicates the host plants of any phytophage (plant feeding species) recovered. The nomenclature for the plants follows that of Stace (2010).

Results

Both the preservation and recovery of beetle sclerites was excellent across the five samples examined allowing identification to species level in most cases. The species list is presented below in Table 1. A single rat flea, *Xenopsylla cheopis*, was identified in Sample 6 (659)/[722]. This find will be discussed separately in Section 5.3. The proportional results for the functional group calculations are presented in Tables 26 – 27 and Figures 90 – 91. The relative proportions of the 'house fauna' recovered in each sample is presented in Figure 92.

Discussion

General Nature of the Faunas Examined

The five insect faunas recovered from the waterholes at Enderby were all broadly similar in terms of the ecology of the insects recovered. The five samples, therefore, will be discussed by their ecological functional groups as a whole, but any substantial differences between the individual samples or features will be indicated.

Aquatic taxa

Helophorus brevipalpis (type) dominates all of the samples recovered, particularly Sample 9 (705) [703]. This taxon is generally indicative of shallow stagnant pools of water in open conditions (Hansen).

The two other *Helophorus* species recovered also are associated with temporary pools and muddy water margins (Hansen 1987). *Hydrobius fuscipes, Anacaena globosus, Ochthebius* spp., *Limnebius* spp., and *Hydraena* sp. are all typical of temporary pools and stagnant ditches (Hansen 1987). *Dryops* spp. and *Hydrochus carinatus* tend to be associated with similar water conditions and would not be out of place in a stagnant watering hole.

Oulimnius trogolodytes is more normally characteristic of clear rivers and lakeshores, though it is more tolerant of muddy waters than the other Elmids (Holland 1972; Foster, 2000; Smith 2000). Its presence here may indicate that the water holes may have occasionally been flooded by a nearby river. The identification of *Hydroporus ?flavipes* is tentative, but as it is frequently found in acidic sphagnum filled ponds (Atty 1983; Hansen 1987; Merritt 2006), it may indicate that areas of moorland existed in this landscape at the time.

Wetland and Waterside Taxa

Wetland and waterside taxa are underrepresented in these samples (see Table 13 and Figure 72). Most of these taxa recovered relate to the conditions directly on the edge of the watering holes. The Carabids, *Bembidion doris*, *B. mannerheimi* and *Pterostichus gracilis* along with *Cercyon sternalis,* typically are associated with damp watersides and can be found in a variety of moist environments. A number of taxa recovered are associated with muddy or sandy watersides, such as *Bembidion doris* and *Platystethus cornutus* (Koch 1989), as well as cattle trampled flushes (Anderson *et al*. 2007). A single *Notaris*

acridulus, from Sample 13 (715) in Feature [580] suggests the presence of reed sweet-grass (*Glyceria maxima* – the host plant for this phytophage) near the watering hole.

Open and Disturbed ground and Dung taxa

Thirty-six taxa were identified which are associated with open and disturbed ground, of these 15 are associated with sandy ground, and further three are relatively common on sandy substrates. Fourteen taxa from these thirty-six are common on arable or cultivated land, with some also considered as pests of crops. *Calthus fuscipes*, *Nebria brevicollis Syntomus foveotus*, *Ocypus olens* (the 'devils coach horse') *Bembidion lampros* and *B. illegeri* are associated with sandy and cultivated/ agricultural soils (Koch 1989 ; Luff 1998). *Amara curta*, *A. lucida* and *A. tibialis* are all found in sandy grasslands (Koch 1989). *A. lucida* is found in dry pastures (Koch 1989) along with *Cleonis pigra* (Koch, 1992), which favours sandy soils often covered in thistles (*Cirsium* spp./ *Carduus* spp.). *Derocrepis rufipes, Calathus erratus*, *Scymnus frontalis, Silpha obscura* and *Sitona striatellus* are all taxa that are associated with cultivated land and dry pasture (Koch, 1989, 1992; Hyman, 1992) as well.

Agriotes obscurus, Neocrepidodera ferruginea, Phyllotreta vittula and Chaetocnema hortensis (Mohr 1966; Jones and Jones 1974; Cox 2007). Phyllotreta cruciferae and Blitophaga opaca are both known pests of cultivated Brassicas, particularly turnip and beat crops (Brassica rapa) (Jones and Jones 1974; Koch 1989; Hyman 1992).

Weevils *Sitona sulcifrons* and *S. lepidus* are associated with clover (*Trifolium* spp.) in agricultural and pasture lands (Koch 1992; Morris 1997). *Rhinoncus castor* is associated with dock (*Rumex acetosella* L) on sandy land (Koch 1992, Bullock 1993; Duff 1993). *Alophus triguttatus* is often associated with short-turf pasture and may feed on plantains (*Plantago* spp.) (Koch 1992). *Barynotus obscurus* is typical of damp soils, in open terrain and at field margins (Koch 1992).

A further twelve taxa are associated with herbivores dung. The majority of those recovered were Scarabaeidae 'dung beetles' particularly *Aphodius sphacelatus*, which dominated most of the assemblages. *A. sphacelatus*, *A. ater*, A. *granarius* and *A. contaminatus* are found predominately in cattle and horse dung (Koch 1989; Jessop 1986). The latter species also has been noted in sandy pastures (Koch 1989).

Tree and Woodland associates

There were only few taxa associated with woodland and trees (see Table 12, Figure 72). These are taxa which are not strictly associated with trees or timber, as such, but rather with plants that are common at the woodland edge or, as probably as in this case, with hedging and field margins. *Eusphalerum primulae* is frequently found on primrose (*Primula* spp.) and *Datonychus urticae* on hedge woodwort (*Stachys sylvatica* L). The ground beetle *Pterostichus niger* is predominately a woodland species, although can be found in pasture (Eyre and Luff,1990).

The only true wood feeder is *Anobium punctatum,* the 'furniture beetle'. This is typically considered a member of the 'house fauna' group, but does occur) in dry, dead timbers in woodland and hedgerows.

Foul Material species and the 'House Fauna'

A number of the species recovered can be associated with foul settlement material but given the evidence of pasture in the area are probably, in this instance, associated with animal dung. This includes *Cercyon analis*, *Anotylus rugosus, A. sculpturatus*, *A. nitidulus, Tachinus marginellus/ Tachinus* spp. and possibly the histerid, *Acritus nigricornis*. A few taxa were recovered are normally associated with human settlement (Hall and Kenward 1990; Kenward and Hall 1995). This includes *Monotoma* spp., *Lathridius* spp., *Atomaria* spp., and *Cryptophagous* spp. *Anobium punctatum.* It is possible that these taxa may indicate that hay or straw might have entered the deposit. However these species can occur in small numbers away from settlement.

Comparisons Between the Samples Examined

There is little difference between samples in terms of the range of species or the proportions of the functional groups recovered., Although at first sight, sample 9 (705) [703] contains a larger proportion of aquatic species by comparison to the [580] samples (Table 13, Fig. 72), this is most likely due to the very large numbers of a single species, *Helophrous brevipalpis*, which accounts for 38% of all identifications (using MNI) within this sample. The larger number of individual insects recovered from this sample may also be due to the fact that this deposit clearly contained more organic matter than those from Feature [580] and fewer cobbles or pebbles were noted during processing.

The Rat Flea (Xenopsylla cheopis)

A single individual of the 'rat flea' *Xenopsylla cheopis* was recovered in Sample 6 (659) [722] which is sealed below the shield deposit dated to no later than 195 cal BC (Hamilton and Beamish p107). This item was identified using the keys and illustrations in Whitaker (2007). This flea is infamous for having been the vector for the bubonic plague (*Yersina pestis* von Logham) that caused the 'black death'. Black rats (*Rattus rattuse*), however, are not believed to have been introduced until the Romano-British period. Although a single Late Bronze Age black rat bone was reported from the Breen Down settlement excavations in Somerset (Levitan 1990), there remain questions as to the stratigraphic integrity of these bones (Schrev, D., *pers comm* 2015). Currently the earliest confirmed black rat zooarchaeological finds are from a Roman granary in South Shields (Younger 1994) and from Ossoms Eyrie, near Wetton, in the Peak District (Bramwell *et al*. 1990). However, *X. cheopsis* also is associated with a number of other rodents such as mice and the presence of these hosts at Enderby cannot be ruled out.

Conclusions

The samples recovered from Enderby have provided a rich insect assemblage that allows us to clearly indicate the local environment for Enderby in the Middle Iron Age and Early to Middle Roman periods. The dominance of beetles associated with both open ground (Fig. 73; avg, 35%) and dung (Fig. 73 avg, 26%), coupled with a near absence of woodland fauna (Fig. 2), indicate that within roughly 1000m of the waterhole, the landscape was open (Hill 2015a). There is clear evidence from the relatively large numbers of dung beetles recovered, and other indicators for pasture, that grazing land and grassland existed nearby to the waterhole. However, other taxa indicate that arable and cultivated land, some perhaps under *Brassicas*, also occurred locally. The few woodland species, mainly from woodland edge or from hedgerows, would suggest any cover would be light scrub or hedgerow. Despite the presence of a limited number of 'house fauna' members, there is no clear evidence for the presence of human settlement in the immediate area.

In terms of the Midlands, similar insect faunas have been recovered from Roman waterhole deposits at Whitemoor Haye, Staffordshire (Smith 2002) and Covert Farm, Northamptonshire (Smith 1999). Similar insect faunas have been recorded from a number of Iron Age sites, and increasingly from Late Bronze age sites, with waterholes (Robinson 1978, 1979, 1993; Robinson and Lambrick 2009; Smith, 2009a, 2009b, 2014; Hill 2015b, 2015c), all of which indicate the development of an open, cultivated and grazed landscape.

Table 25: List of insect remains recovered from a Middle Iron Age and Early Roman waterhole, and a pit

Ecological Functional Groups (F.G.) listed below in Table 26.

'Host' refers to plant host of phytophagous beetles.

COLEOPTERA	F.G.	Host Plant	Sample No.				
			[703]	[722] (MIA)	[580] (L1/E2 RB)		
			9	6	7	13	14
CARABIDAE			705	659	581	715	713
Carabidae indet.	u		2		1		
Nebria brevicollis (F.)	ELW		1		1		
Clivina fossor (L.)	OD			1			
Bembidion lampros (Hbst.)	OD		1	2	1		
Bembidion illigeri (Net.)	OD					1	
Bembidion ?normannum (Dej.)	OD		1				
Bembidion doris (Panz.)	MFC		1	3			
Bembidion mannerheimi (Sahl.)	MFC		1			2	
Bembidion spp.	u				2	1	1
Pterostichus gracilis (Dej.)	MFC		1				
Pterostichus niger (Schall.)	WT			1			
Pterostichus spp.	u			2	2	1	
Calathus fuscipes (Goeze)	OD		1	6		2	1
Calathus erratus (Sahl.)	OD			1			
Calathus spp.	u		1		2	1	
Amara curta (Dej.)	OD			2			
Amara lucida (Duft.)	OD					2	
Amara tibialis (Payk.)	OD					1	
Amara sp.	u				1		
Syntomus foveotus (Geoff.)	OD				1		
DYTISCIDAE							
Hydroporus spp.	A		2	1			
Agabus spp.	A		1	1	1		1
HYDRAENIDAE							
Hydraena sp.	A					1	
Ochthebius minimus (F.) type	A					5	
Ochthebius spp.	A		6	2	5		4
Limnebius spp.	A		4		1		
Hydrophilidae indet.	A				1		
Hydrochus carinatus (Germ.)	A				1	1	
Hydrochus sp.	A		1				
Helophorus aquaticus (L.)	A		7	4		2	2
Helophorus brevipalpis (type)	A		78	22	19	21	10
Helophorus ?flavipes (F.)	A		9	1		3	
Helophorus spp.	A				2		
HYDROPHILIDAE							
Sphaeridium bipustulatum (F.)	DUNG*		1				
Cercyon ?depressus (Steph.)	R		2	1			

COLEOPTERA	F.G.	Host Plant	Sample No.				
			[703]	[722] (MIA)	[580] (L1/E2 RB)		
			9	6	7	13	14
CARABIDAE			705	659	581	715	713
Cercyon haemorrhoidalis (F.)	DUNG*					1	
Cercyon quisquilius (L.)	DUNG*		2	1	1		
Cercyon sternalis (Sharp)	MFC		4	2		3	1
Cercyon analis (Payk.)	FM			3	2	1	2
Cryptopleurum minutum (F.)	DUNG*						1
Hydrobius fuscipes (L.)	A		2	6	1	2	1
Anacaena globulus (Payk.)	A		1				
HISTERIDAE							
Acritus nigricornis (Hoff.)	FM*						1
Kissister minimus (Laporte)	OD*		1	1	1	2	1
Margarinotus purpurascens (Hbst.)	DUNG*					1	
SILPHIDAE							
Blitophaga opaca (L.)	OD*	Beta vulgaris (L.) / Brassica rapa (L.)				1	1
Silpha obscura (L.)	OD					1	
STAPHYLINIDAE							
Eusphalerum primulae (Steph.)	ELW	Primula spp.			1		
Philorinum sordidum (Steph.)	OD	Ulex spp.	1		1		
Lesteva longoelytrata (Goeze)	R		1	2	1	1	
Lesteva spp.	u			1	1		1
Carpelimus spp.	u			1	2	1	
Anotylus rugosus (F.)	FM*		3				
Anotylus sculpturatus (Grav.)	FM*			1	2		
Anotylus nitidulus (Grav.)	FM*		2	5		2	
Platystethus cornutus (Grav.)	R		4	3	2	2	3
Platystethus sp.	u					1	
Stenus spp.	u		1	1	1	1	1
Lathrobium spp.	u		1	1		1	1
Leptacinus spp.	FM*					1	1
Xantholinus linearis (Ol.)	FM		3	4	5	2	
Xantholinus spp.	u				1		2
Philonthus spp.	u		6	3	3	1	1
Ocypus olens (Müll.)	OD		1			1	
Tachinus marginellus (F.)	FM		3			2	1
Tachinus spp.	FM				2	4	
Aleocharinidae indet.	u		3	3	3	2	1
CANTHARIDAE							
Cantharis rustica (Fallen)	ELW				1	1	1
ELATERIDAE							

COLEOPTERA	F.G.	Host Plant	Sample No.				
			[703]	[722] (MIA)	[580] (L1/E2 RB)		
			9	6	7	13	14
			705	659	581	715	713
CARABIDAE							
Agriotes ?obscurus (L.)	OD*	Cereals (pest)		1			
Agriotes spp.	OD		1			1	
DRYOPIDAE							
Dryops spp.	A			2	1	1	
Oulimnius troglodytes (Gyll.)	A			1			
Meligethes spp.	u				1	1	1
CUCUJIDAE							
Monotoma sp.	FM*		1				
CRYPTOPHAGIDAE							
Cryptophagus spp.	FM*~		1		1		
Atomaria spp.	FM*~		1		1		
LATRIIDIDAE							
Latridius spp.	FM**~		1	1		2	
Corticaria spp.	FM*		1			1	1
COCCINELIDAE							
Scymnus frontalis (F.)	OD		1				
ANOBIIDAE							
Anobium punctatum (Deg.)	WT*~		1				
SCARABAEIDAE							
Geotrupes spp.	DUNG*		1	1	3		1
Oxyomus sylvestris (Scop.)	DUNG*		1				
Aphodius contaminatus (Hbst.)	DUNG*						2
Aphodius sphacelatus (Panz.)	DUNG*		12	16	7	10	
Aphodius ater (Deg.)	DUNG*		1		1		1
Aphodius granarius (L.)	DUNG*		1	4	1	1	2
Aphodius spp.	DUNG*			3			2
CHRYSOMELIDAE							
Phyllotreta vittula (Redt.)	ELW	*Brassica* spp. & POACEAE (pest)	2				
Phyllotreta cruciferae (Goeze)	OD	*Brassica* spp. (inc. cultivars)	1	1			
Phyllotreta spp.	u					1	1
Neocrepidodera ferruginea (Scop.)	OD	*Cirsium* (poss. pest)	1				
Neocrepidodera sp.	OD	Cirsium spp.				1	
Derocrepis rufipes (L.)	OD	Vicia spp.		2	1		1

COLEOPTERA	F.G.	Host Plant	Sample No.				
			[703]	[722] (MIA)	[580] (L1/E2 RB)		
			9	6	7	13	14
CARABIDAE			705	659	581	715	713
Chaetocnema ?hortensis (Geoff.)	OD	POACEAE (inc. cultivars)		2	1		1
Chaetocnema spp.	u					2	
CURCULIONIDAE							
Perapion hydrolapathi (Marsham)	OD	Rumex spp.	1			1	
Apion spp.	OD	Rumex spp./ Malva spp.	4	4	3	5	2
Otiorhynchus sp.	u		1				
Barynotus obscurus (F.)	OD		1	3	1	1	
Sitona striatellus (Gyll.)	OD	Ulex spp.		2			
Sitona sulcifrons (Thun.)	OD	Trifolium spp.		1			1
Sitona lepidus (Gyll.)	OD	Trifolium spp.			1		1
Sitona spp.	OD		1			1	1
Cleonis pigra (Scop.)	OD	Cirsium spp./ Cardium spp.			1		
Notaris acridulus (L.)	MA	Glyceria maxima (Hartm.) Holmb.				1	
Tychius sp.	OD	? Trifoliumspp.	1				
Alophus triguttatus (F.)	OD	Plantago spp.	1	1			1
Rhinoncus castor (F.)	OD	Rumex acetosella L.	2				1
Datonychus urticae (Bohe.)	ELW	Stachys sylvatica L.		1	1		
Ceutorhynchus spp.	OD		2	1	1		5
Rhynchaenus sp.	ELW		1				
Minimum number of individuals per sample			203	135	98	109	65
SIPHONAPTERA							
Xenopsylla cheopis (Rothschild)	The 'rat flea'			1			

~ indicates member of the 'House Fauna'
* indicates facultative synanthrope
** indicates typical synanthrope
*** indicates strong synanthrope

Table 26: Functional group codes & definitions utilised in this report

	FG	Code	Definition
True Aquatics	Aquatic	A	"Beetles which spend the majority of their adult life in water". *(Taxa in this group are <u>not</u> included in terrestrial sum).*
Wetland & Waterside taxa	Waterside	R	Hygrophilous taxa, littoral, usually in the bare waterlogged soils besides water both running and still. Also associated with emergent vegetation. *(Taxa*

			in this group are included in terrestrial sum).
	Marsh and Aquatic Plants	MA	"*Chrysomelidae* and *Curculionidae* species which feed exclusively on marsh and aquatic plants". *Included in terrestrial sum*.
	Marsh, Fen & Carr	MFC	Hygrophilous, and often eurytopic taxa, found across a variety of semi-aquatic environments, such as marsh, swamp, fen, and floodplains. *Included in terrestrial sum*.
Generalists	Foul Material	FM	"Species living on various types of foul (decaying) organic material. Such as the *Staphylinidae"* Often, but not exclusively synanthropic. Foul material includes dung, but these taxa are not dung specialists. *Included in terrestrial sum*.
Open landscapes	Dung	DUNG	Taxa strongly associated with the faeces of herbivores. *Included in terrestrial sum*.
	Open and Disturbed	OD	Taxa found in open and vegetated, or disturbed and relatively bare conditions, wet or dry (but not strictly 'wetlands'). *Included in terrestrial sum*.
Woodland associates	Edge of, or Light, Woodland	ELW	Species which show strong preference to forest margins, forest-steppe, copses/felled trees within woodlands, open or pasture woods, pine heaths, hedgerows, single or sun exposed trees (e.g. certain Elateridae); or whose larval and adult stage alternate between their obligates in open spaces and forest (e.g. certain Cerambycidae). *Included in terrestrial sum*.
	Woodlands and Trees	WT	"Includes the Coleoptera which feed on wood in varying stages of decay, leaves, fruit, and bark and live wood, fungal feeders and

			predators strictly associated with woodland." Except where a taxa can be defined within **ELW**. *Included in terrestrial sum*.
Uncoded or Ubiquitous		u	Taxa to whom none of the other FGs can be applied owing to either lack of taxonomic resolution or ubiquity of taxa. *Not included in terrestrial sum.*

Table 27: Comparison of the relative proportion of aquatic, waterside, terrestrial and uncoded groups from Enderby

Feature	**[703]**	**[722]**	**[580]**		
Sample	9	6	7	13	14
MNI	203	135	98	109	65
Aquatic	55%	30%	33%	33%	28%
Waterside	6%	8%	3%	9%	7%
Terrestrial (Dry)	30%	54%	43%	46%	51%
uncoded	7%	9%	20%	13%	15%

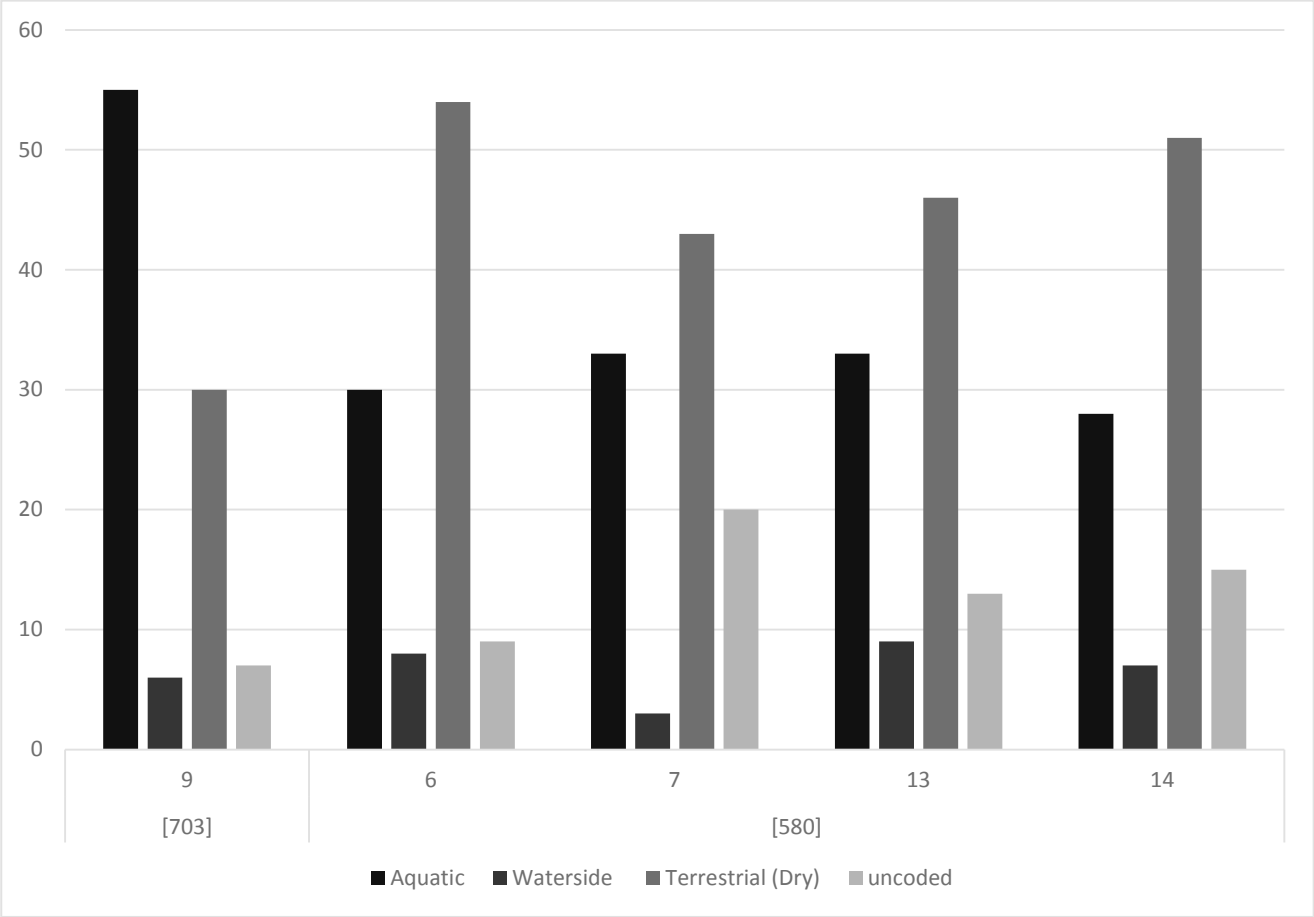


Figure 90: Comparison of the relative proportion of aquatic, waterside, terrestrial and uncoded insect groups from the Enderby samples, by feature - [703] = pit feature, [580] = watering hole. Comment from M.Beamish: Sample 6 is from earlier Iron Age pit cut [722]

Table 28: Comparison of only the terrestrial functional groups MNI and relative proportions from Enderby samples. (calculated from all taxa MNI recovered minus aquatics and uncoded taxa)

Functional Group	Terrestrial only	Sample				
		9	6	7	13	14
DUNG	MNI	19	25	13	13	9
	%	25%	30%	28%	22%	24%
ELW	MNI	4	1	4	1	1
	%	5%	1%	9%	2%	3%
FM	MNI	16	14	13	15	6
	%	21%	17%	28%	25%	16%
MA	MNI	0	0	0	1	0
	%	0%	0%	0%	2%	0%
MFC	MNI	7	5	0	5	1
	%	9%	6%	0%	8%	3%

OD	MNI	22	31	13	21	17
	%	29%	37%	28%	36%	46%
R	MNI	7	6	3	3	3
	%	9%	7%	7%	5%	8%
WT	MNI	1	1	0	0	0
	%	9%	7%	7%	5%	8%

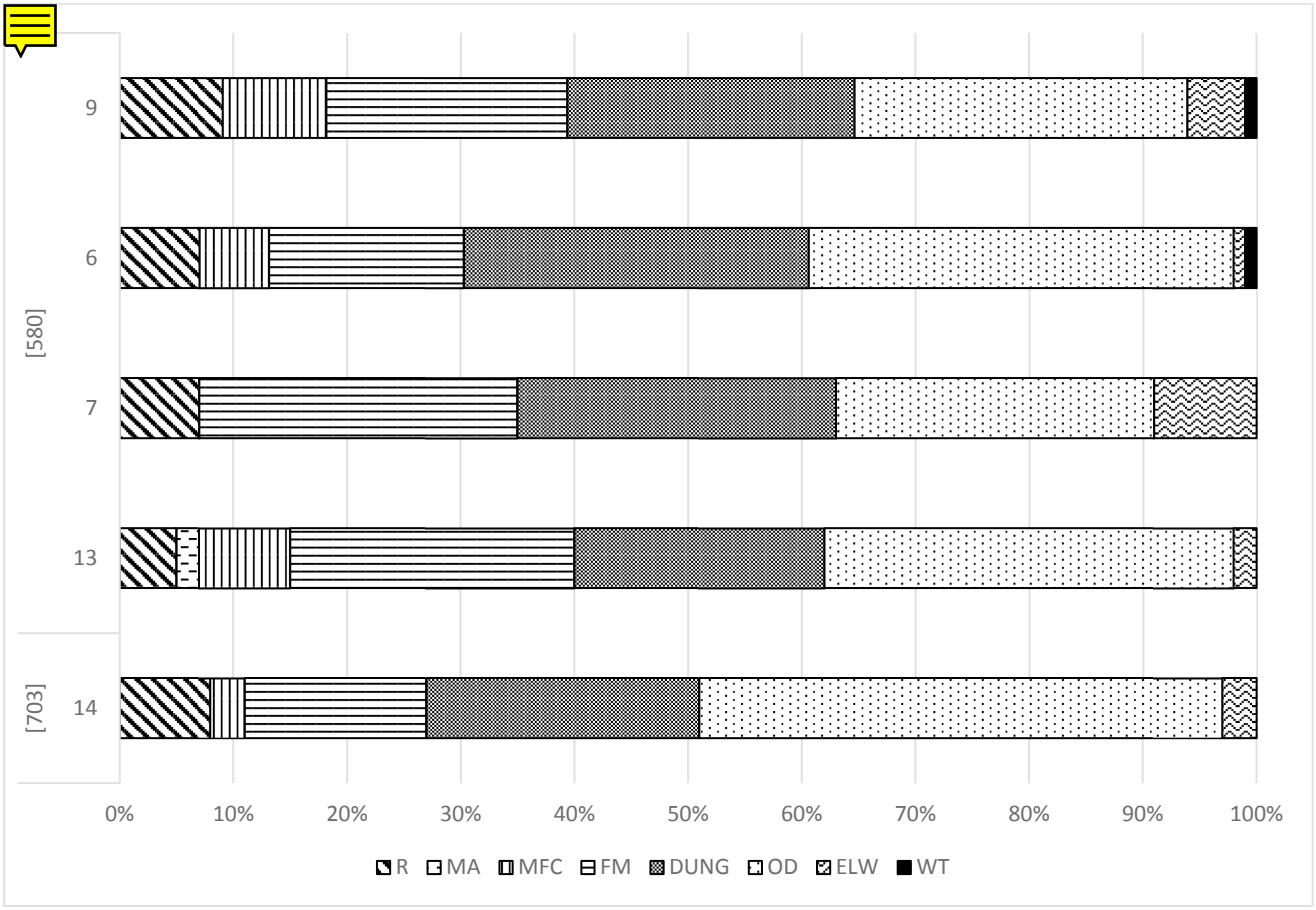


Figure 91: Chart comparison of the relative proportion of Functional Groups (excluding aquatics and uncoded taxa) from Enderby, by feature - [703] = pit feature, [722] [580] = watering hole.

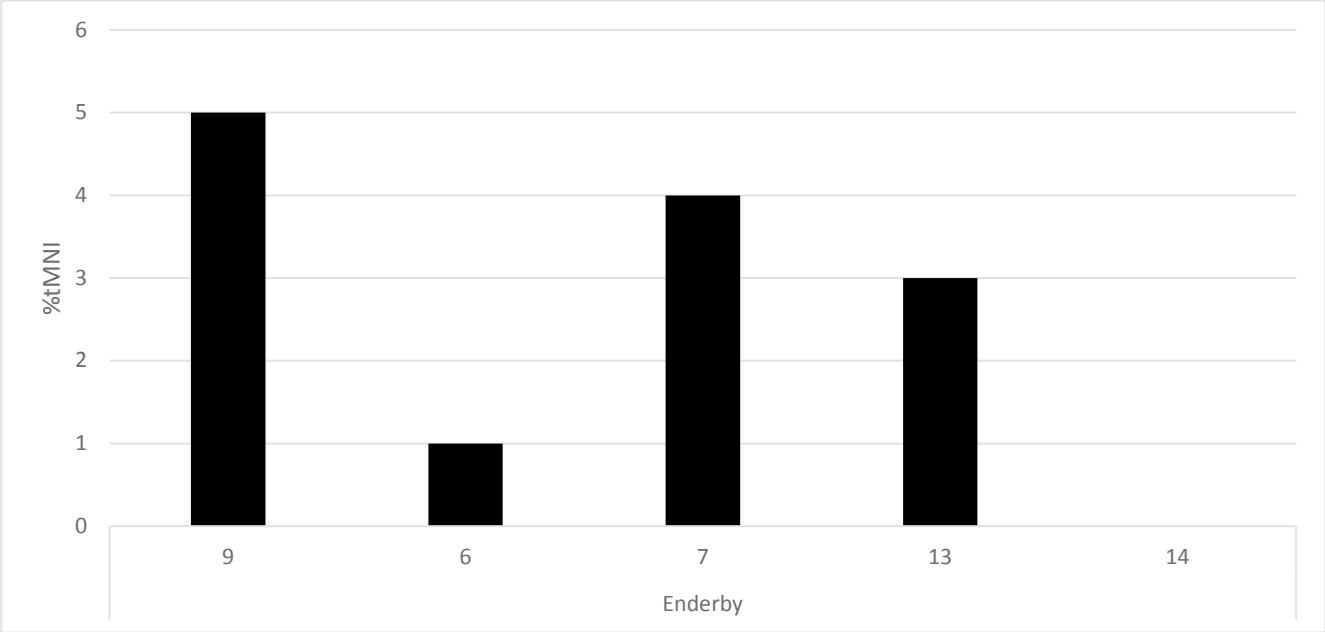


Figure 92: Relative proportions of 'house fauna' group taxa recovered from Enderby samples

Assessment of the Insect Remains from the shield deposit *Geoff Hill and David Smith*

University of Birmingham Environmental Archaeology Services Report No. 255.

Introduction

This assessment outlines the potential of the insect remains from a single small sample ([17/5] ~~'4 of 7'~~) which came from underneath the bark shield (Bamforth et al, p60).

Methods

The sample was processed using the standard method of paraffin flotation as outlined in Kenward *et al.* (1980). The system for 'scanning' faunas, as outlined by Kenward *et al.* (1985), was followed in this assessment.

When discussing the faunas recovered, the following considerations should be taken into account:

1) Identifications of the insects present are provisional. In addition, many of the taxa present could be identified down to species level during a full analysis, producing more detailed information.

2) The various proportions of insects suggested are very notional and subjective. As a result, the faunas described here should be regarded as incomplete and possibly biased.

Results

The insect taxa recovered are listed in table 29. The taxonomy follows that of Lucht (1987) for the Coleoptera (beetles). The numbers of individuals present for each taxa is estimated using the following scale: + = 1-2 individuals, ++ = 2-5 individuals, +++ = 5-10 individuals, ++++ = 10-20 individuals, +++++ = 20+ individuals.

The nature of the preservation and the potential for archaeological interpretation is outlined in Table 2.

All of the insect fauna were Coleoptera (beetles). The single sample produced a very small and poorly preserved fauna. The material was also very fragmented and desiccated suggesting that identification to species level would be difficult.

Discussion

The poor preservation and low numbers of individuals mean that it is difficult to reconstruct the landscape around the site in detail. The fauna is dominated by aquatic taxa, notably *Helophorus* spp. (most likely the small species will be *H. brevipalpis* while the large species will be *H. aquaticus*) which alongside *Ochthebius* spp., *Hydrobius fuscipes* and *Limnebius* spp. are indicative of small and temporary pools of water. There is no indication from the Coleoptera as to any marsh/aquatic plants being present in the area.

The only other taxa present in numbers were the *Aphodius* spp.'dung beetles'. Their presence here suggests the local environment was grazed or that the pool was used as a watering hole. The complete lack of woodland fauna would further suggest the landscape was entirely open, typical of many analysed Iron Age landscapes.

Recommendations

Due to the low numbers of insect remains recovered little would be accomplished by fully analysing this fauna alone. Further samples from this deposit would have to be analysed if we were to gain definitive indications as to the water conditions in the pool and the nature of the surrounding landscape. Further samples from this deposit are available for analysis and it is recommended that that they are processed and analysed, and the results included in publication if results warrant it.

Table 29: The scanned insect fauna recovered from Enderby shield sample

Feature	5
Sample	4 of 7
COLEOPTERA	
Carabidae	
Pterostichus spp.	+
Dystiscidae	
Agabus/Rhantus spp.	+
Hydraenidae	
Ochthebius spp.	+
Limnebius spp.	+
Helophorus (small) spp.	+++
Helophorus (large) spp.	+++
Hydrophilidae	
Cercyon spp.	+
Hydrobius fuscipes	+
Staphylinidae	
Xantholinus spp.	+
Philonthus spp.	+
Anotylus spp.	++
Platystethus spp.	+
Tachyporus spp.	+
Stenus spp.	+
Elateridae	
?Melanotus spp.	+
Scarabaeidae	
Aphodius spp.	+++
Chrysomelidae	
Chaetocnema concinna	++
Phyllotreta spp.	+
Curculionidae	
Apion spp.	+

Key
+ = 1-2 individuals
++ = 2-5 individuals
+++ = 5-10 individuals
++++ = 10-20 individuals
+++++ = 20+ of individuals

Table 30: Summary of the nature of the insect faunas from Enderby shield

Sample	Context/Cut	Degree of Preservation	Size of fauna	Water conditions	Landscape	Overall potential of sample
[17.5] 4 of 7	(661) [722]	Poor	Small	Still / temporary pool	Open, grazed	Poor

The Pollen

Suzi Richer

Summary

One subsample was examined from a monolith taken through deposits from within a Middle Iron Age/Romano-British waterlogged pit from an excavation at Enderby, Leicestershire. Pollen within the sample was not preserved in a sufficient state or concentration to be able to draw any firm interpretations about the site.

Aims

The aims of the pollen presence/absence assessment were to determine the state of preservation, type, and quantity of remains recovered from the samples and information provided. This information will be used to assess the importance of the pollen remains.

Methods

Sampling Policy

A subsample was taken from monolith <Tin 2> by the author from deposits considered to be of high potential for the recovery of pollen, in this instance a band of grey clay from within context (715) of feature [580], a waterlogged pit dating from the Late 1st or Early 2nd AD century date (see Fig. 27).

Processing and Analysis

One pollen samples, of 2cm3, was selected from a clay deposit. The sample was submitted to the laboratories of the Department of Geography & Environment at the University of Aberdeen for chemical preparation following standard procedures as described by Barber (1976) and Moore et al (1991). The full methodology is described in Appendix 1.

Where preservation allows, a presence/absence assessment is intended to be made whereby the preservation, abundance and main taxa in each sample is noted. A GS binocular polarising microscope at x400 magnification was used and identification was aided by the pollen reference slide collection maintained at the Worcestershire Archaeology office, and the pollen reference manuals by Moore et al (1991) and Beug (2004). Nomenclature for pollen follows Stace (2010) and Bennett (1994).

Fungal spores and parasite ova were noted with rapid identification being undertaken to genus level. Identifications were aided through reference material maintained at the Worcestershire Archaeology office and reference manuals, Kirk et al (2008) and Grant-Smith (2000).

Monolith Information

Two monolith samples, Tin 1 and Tin 2, were taken from deposits within a waterlogged pit [580], a possible waterhole of Romano-British date. The pit was a recut of a Middle Iron Age pit, also interpreted as a waterhole. The sediments contained within both monoliths were found to contain sand and rounded pebbles of varying size. Despite the deposits

being waterlogged, the abrasiveness of the sand, in conjunction with the pebbles (indicative of a high energy waterlain deposit), were not considered to be conducive to the survival of pollen. However, a band of grey clay was observed within context (715), at 0.19m below the top of the monolith tin. This clay deposit is likely to have formed in slack conditions and contained less sand, therefore a sample was taken from this location in Tin 2 for pollen analysis.

Pollen Results

The results of the pollen analysis are summarised in table 31

Table 31: Summary of the pollen; no dominant taxon was present

Depth m (from top of monolith)	Context	Sediment	Pollen present	Pollen abundance	Pollen preservation	Observed taxa
0.05	715	Grey clay	Yes	Extremely low	Good	Poaceae, Plantago lanceolata

Preservation and Abundance

Pollen was preserved within the subsample, but in extremely low numbers, only two pollen grains being noted. This pollen was well preserved, suggesting it was of local origin and not re-deposited (Tipping 2000), however its low quantity would preclude full analysis counts (300 land pollen grains being required).

Vegetational History and Human Activity

Given that only two pollen grains were noted, it is not possible to draw any firm conclusions about the nature of the local and/or regional environment or human activity. However, this limited pollen evidence, grass (Poaceae) and ribwort plantain (Plantago lanceolata), is suggestive of an open/disturbed environment.

Conclusion

One subsample was examined from a monolith taken through deposits from within an Early Roman waterlogged pit from an excavation at Enderby, Leicestershire. Pollen within the subsample was not preserved in a sufficient state or concentration to be able to draw any firm interpretations about the site.

Recommendations

No further work is recommended based on the poor level of pollen survival.

The non artefactual Waterlogged Wood

Michael Bamforth BSc MA MCIfA

A total of sixteen pieces of waterlogged timber were recovered from the excavation. The lifted pieces were all sampled separately for species identification, ring counts and potential for radiocarbon dating. These samples were then stored in a water tanks prior to further recording.

Introduction

This report considers 23 pieces of waterlogged wood recovered in the summer of 2015 and recorded off site by M. Bamforth in September 2018. The shield (T1) and an associated piece of willow roundwood (T14) are considered in a separate report (Bamforth et al. p60). The wood has been assigned to Iron Age, Middle Iron Age and Romano-British phases. The wood was situated in waterlogged deposits which created the anaerobic conditions necessary for organic preservation.

Methodology

This document has been produced in accordance with Historic England guidelines for the treatment of waterlogged wood (Brunning and Watson 2010) and recommendations made by the Society of Museum Archaeologists (1993) for the retention of waterlogged wood. The system of categorisation and interrogation developed by Taylor (1998; 2001) and the condition scale developed by the Humber Wetlands project (Van de Noort et. al. 1995: Table 15.1) have been adopted within this report. Items were identified as oak (*Quercus* sp.) via anatomical characteristics visible with a hand lens. Microscopic identifications were carried out by Michael Bamforth and Graham Morgan using a transmitted light microscope at x40, x100 and x400 magnification with preparation following Gale and Cutler (2000) and identifications following Schoch et al. (2004) and modern reference material.

Results

Table 32: Wood categories by phase

	RB	IA	MIA	total
artefact	0	0	1	1
Bark	0	0	1	1
Debris	0	1	3	4
roundwood	7	0	10	17
Timber	0	0	0	0
Total	7	1	15	23

The assemblage is described below by phase and context and a full catalogue is provided at the end of this document. The majority of the assemblage is good condition with one item (T19) in moderate condition and one item (Shield T1) in excellent condition. With the exception of timber, all the major wood categories are present (Table 1). The single item classed as an artefact is bark shield T1 (reported in detail in a separate artefact report (Bamforth 2018). The majority of the assemblage is formed of roundwood much of which is unworked, naturally accumulated debris recovered in association with the shield T1. The remainder are driven stakes used to revet deeper features. With the exception of T3, that appears to be an off-cut used as a revetting stake, all the debris is naturally occurring material. There is no primary debris, such as woodchips, to suggest that woodworking is taking place in the immediate vicinity of the waterlogged features.

Contexts (654) (659) (661), Middle Iron Age Watering Hole [722], Phase 1

Fourteen small fragments of predominantly unworked wood were recovered from the underside of the shield during micro-excavation of context (660) in the laboratory. The single worked item was a small piece of willow roundwood T14, one end of which had possibly been trimmed from one direction. The unworked material consisted of a small piece of bark (T12) and three small fragments of debris (T13, T15 and T18), one of which was identified as oak. There were also nine broken fragments of small diameter roundwood twigs, all [580], (603)of which had their bark intact. Seven (T11, T19, T20, T22, T23, T24 and T25) were identified as alder blackthorn, microscopic examination of two of which suggests a summer cutting. One (T21) is field maple and one (T16) was unidentifiable. The wood recovered from around the shield appears to represent naturally accumulating unworked debris, with the possible exception of T14 that may have been trimmed with an edged tool, presumably an axe.

A deposit below the shield (659) contained T17 a side-branch of medium diameter oak roundwood that has been torn from the tree at the proximal end and trimmed from one direction at the distal end.

A single piece of radially cleft, oak debris (T3) was recovered from context (654) which lay below (659). Formed of relatively slow grown material, one face and one edge of this item displayed tool facets where it has been hewn.

Context (603), Romano-British watering hole [580], Phase 2, Re-cut of [722]

A second piece of medium diameter, worked, oak roundwood was recovered from the Roman recut feature. T2 (603) was a vertical driven stake leaning against the west side of the cut the base of which had been trimmed to a pencil point and the top of which had degraded away. A side branch had also been trimmed away. The tool facets were notably small and choppy.

Context (705), Romano-British watering hole / quarry pit [703]

Five, medium diameter, roundwood, driven stakes were recovered from this feature (T4/5, T6, T7. T8 and T9). All were driven near vertically to support a squared piece of masonry towards the edge of the pit. Three had been trimmed to a point at the base from 1 or two directions with an edged tool, probably an axe. All had degraded away at the top. They were identified variously as oak, blackthorn, hazel and ash. Microscopic examination of T4 suggests a spring cutting and T7 a summer cutting.

Discussion and conclusion

The woodworking – trimming to a point with an edged tool and splitting in the radial plane – is typical of basic woodworking of the periods the material is assigned to. Five wood species have been identified (Table 2). The most

frequent species is blackthorn, the majority of which (seven items) is unworked small diameter roundwood recovered in association with the MIA bark shield T1 in (661) [722], alongside a single trimmed piece from RB pit (705) [703]. Blackthorn is a spiny shrub that grows in marginal woodland and can form dense thickets, the wood is fairly strong and hard (Gale and Cutler 2000). The next most frequent species is oak which occurs across all phases variously as small pieces of naturally occurring unworked debris, medium diameter unworked roundwood and roundwood and cleft stakes. Oak occurs ubiquitously throughout the Prehistoric and Historic period as an excellent hard-wearing timber that has incredibly wide-ranging uses. Oak is an easily worked timber that can be split readily in both planes (Wilson and White 1986; Gale and Cutler 2000). Oak grows in stands and mixed woodland and will also tolerate damp soils. There is a single piece each of hazel (a frequent understory plant in ash and oak woods), field maple (a tall, deciduous tree generally found in open and woodland habitats) and willow (grows in a broad range of conditions, but is particularly common on damper ground)– all the species represented commonly occur in mixed deciduous woodland and are likely to have been growing in the vicinity of the site.

Table 33: Identified wood by phase

		RB	IA	MIA	total
oak	Quercus spp.	4	1	2	7
hazel	Corylus spp.	1	0	0	1
blackthorn	Prunus spinosa	1	0	7	8
field maple	Acer campestre	0	0	1	1
unidentifiable		0	0	4	4
various		0	0	1	1
willow	salix	0	0	1	1
total		6	1	16	23

Archiving and retention

With the exception of artefact shield T1, which has already been submitted for conservation, the reminder of the wood assemblage is not of sufficient interest to warrant conservation and retention. It is suggested that this analysis report and associated catalogue, alongside the various site records, form the wood archive. It is suggested that once the analysis phase has been completed, the waterlogged wood is discarded.

Table 34: The Waterlogged wood Catalogue – all measurements are given in mm

Timber	Small Find	Phase	Context	Cut	Type	Species	Rings	Age	Condition	bark / sapwood / heartwood	Notes	Length	Width	Thickness	Context notes
T01	SF5	MIA	(661)	[722]	art	various			excellent		Please see artefact report for full description	722	360		
T02	SF6	RB	(603)	[580]	round wood	oak			good	BSH	One end trimmed from all directions to pencil point - choppy tool facets. One side branch trimmed away near point. Top degraded.	520	90	90	vertical stake against west side of [580]. Driven into natural clay 150mm minimum.
T03	SF8	IA	(654)	[722]	debris	oak	31	60+	good	SH	Slow grown, radially cleft baton. Light tool facets from hewing along one face. Original diameter c.120	770	60	18	poss same fill as T1 / shield
T04 / 5	SF12 / 13	RB	(705)	[703]	round wood	hazel	10	10	good	BSH	One end trimmed from one direction. Other end broken. Suggests a spring cutting	190	22	18	Driven stake supporting a squared piece of masonry in western edge of pit [703]
T06	SF14	RB	(705)	[703]	round wood	oak			good	BSH	Both ends broken	540	47	47	Driven stake supporting a squared piece of masonry in

Timber	Small Find	Phase	Context	Cut	Type	Species	Rings	Age	Condition	bark / sapwood / heartwood	Notes	Length	Width	Thickness	Context notes
															western edge of pit [703]
T07	SF15	RB	(705)	[703]	round wood	oak	16	16	good	SH	Both ends broken. Suggests a summer cutting	390	50	50	Driven stake supporting a squared piece of masonry (744) in western edge of pit [703]
T08	SF9	RB	(705)	[703]	round wood	oak	c.10	10	good	BSH	One end trimmed from two directions to broken point. Other end broken. Fast grown	240	45	45	
T09	SF10	RB	(705)	[703]	round wood	black-thorn	15	17	good	BSH	One end trimmed from two directions to point. Other end broken	100	30	30	
T11		MIA	(661)	[722]	round wood	black-thorn	5	3	good	BSH	Both ends broken	130	14	14	below shield acetate 6
T12		MIA	(661)	[722]	bark	uniden-tifiable			good	BSH	All edges broken	70	12	4	below shield acetate 6
T13		MIA	(661)	[722]	debris	uniden-tifiable			good	H	Broken fragment	62	20	20	below shield acetate 6
T14		MIA	(661)	[722]	round wood	willow			good	BSH	One end possibly trimmed from one direction, one end broken	183	34	30	below shield
T15		MIA	(661)	[722]	debris	uniden-tifiable			good	H	Broken fragment	50	5	5	below shield acetate 6

Timber	Small Find	Phase	Context	Cut	Type	Species	Rings	Age	Condition	bark / sapwood / heartwood	Notes	Length	Width	Thickness	Context notes
T16		MIA	(661)	[722]	round wood	uniden-tifiable			good	BSH	Both ends broken	30	3	3	below shield acetate 6
T17		MIA	(659)	[722]	round wood	oak			good	BSH	Proximal end torn, distal end trimmed from one direction	770	22	22	
T18		MIA	(661)	[722]	debris	oak	N/A	N/A	good	H	Tiny fragment of larger piece of oak. All edges and ends broken	35	5	2	below shield acetate 5
T19		MIA	(661)	[722]	round wood	black-thorn	2.5	2.5	moderate	BSH	Both ends broken. Suggests a summer cutting	50	5	5	below shield acetate 5
T20		MIA	(661)	[722]	round wood	black-thorn	2.5-3	2.5-3	good	BSH	Both ends broken	60	6	6	below shield acetate 5
T21		MIA	(661)	[722]	round wood	field maple	4	4	good	BSH	Both ends broken	70	10	10	below shield acetate 5
T22		MIA	(661)	[722]	round wood	black-thorn	7	7	good	BSH	Both ends broken	83	12	12	below shield acetate 5
T23		MIA	(661)	[722]	round wood	black-thorn	2.5	2.5	good	BSH	Both ends broken. Suggests a summer cutting	40	5	5	below shield acetate 5
T24		MIA	(661)	[722]	round wood	black-thorn	3	3	good	BSH	Both ends broken	40	5	5	below shield acetate 5
T25		MIA	(661)	[722]	round wood	black-thorn	7	7	good	BSH	Both ends broken	35	12	12	below shield acetate 5

Discussion

The excavation was characterised by landscape subdivision and evidence of agricultural activity during both the Middle and Late Iron Age and the earlier Roman period. There is no clear continuity in the chronological indicators from the site, although this is at variance with the archaeological deposits which suggest similar land-use in both 4th century BC and 2nd to 3rd centuries AD.

Much of the archaeology of the site is unremarkable but for the preservation, discovery and excavation of a bark shield, unparalleled in its construction.

Iron Age

The Shield

The site is remarkable for the preservation of a decorated bark and wicker shield, which is internationally unparalleled. The shield was made and used in the 4th or 3rd centuries BC before being deposited face down in to a water bearing pit. Experimental work has indicated that a bark shield may have greater strength and resistance than might be assumed.

Deposition

The nature of the deposition – whether casual discard or formal offering, is not completely clear. The matrix that the shield was within was noted by the excavator for its silty character and for absence of evidence of backfilling.

That the pit in which the shield was found remained waterlogged is not in doubt by virtue of its preservation. Indicators of still or stagnant water were present in the insect remains (p132) and water logged plant remains (p112). It would seem likely that the shield is placed in water and that the pit remained waterlogged and then silted up.

The shield had been damaged prior to deposition, with half of the handle removed and much of the rim missing. Some of the holes in the shield have been made by blade edged implements, probably spears. Exactly how and when the damaged was sustained is not clear. It is possible that some or all of the damage occurred at the time of deposition or some may have been sustained while in use. It is likely that the handle is damaged at the time of, or shortly before, deposition. If this were the case, then the shield can be regarded as having been de-commissioned, before being deposited in a watery context.

Radiocarbon dating indicates an offset between the construction of the shield probably between 395–345 cal BC (66% probability, Beamish & Hamilton p. 107) and its deposition. Indications of the re-marking of some of the scored lines on the face of the shield in places is evident, and this could support the notion that the shield was used for a period of time after it had been first made.

The deposition of swords, spears and shields in watery contexts is a well-documented phenomena in later prehistory although the running water of major rivers is a more common context (e.g. Ratcliffe on Soar shield, Watkin et al 1996, Witham shield, Brailsford 1975), but depositions into smaller channels not unknown (Megaw 1976, p169).

Samples from the shield deposit analysed for environmental remains were found to contain small quantities of emmer chaff (W. Smith p114). Cereal chaff is not found in significant quantities on domestic Iron Age site and this has been interpreted as signalling that chaff is used as fodder (Monckton 1995). It is not possible to conclude if the presence of chaff in the layers infilling the waterhole in which the shield had been buried is due to a functional livestock connection or due to some other explanation. From other

remains found on site it is likely that domestic occupation is close by, and certainly livestock is moved through and probably held in this immediate area which must surely be accompanied by other human activity.

Environmental remains evidence a pastoral regime with limited evidence of woodland or woodland edge (W Smith p112) and abundant dung beetles (Hill and D Smith p131) and an open environment (W Smith p112). Pollen evidence was not preserved sufficiently to enable any conclusions to be drawn (Richer p133)

Pit Alignment

The most substantial landscape feature on the site was represented by a linear grouping of 62 pits running broadly north-south along the western edge of the excavation forming a single, 212m line heading directly south across the site from its northern boundary before angling sharply to the south-west and exiting the site at its south-west corner.

The north-south length of pit alignment is parallel with the 65m contour. The area is 250m west of alluvial deposits as marked which indicate the western edge of the flood plain which here is around 600m wide having become broader below the confluence of the River Sence with the River Soar 1.2km to the south.

Pit alignments are often found to deviate or change course in the landscape where an earlier monument lies (Thomas 2008, 147), although no obvious topographic or archaeological feature has been identified in the angle of the pit alignment in this instance.

Pit alignments have also been shown to mark the maximum extent of floodwater (Rylatt and Bevan 2007 p226), but here the pit alignment is some 250m from marked alluvial deposits which can be taken as marking the extent of flood deposits in the Holocene.

The inclusion of some Iron Age pottery in the pit fills indicates that settlement areas are nearby. That the pottery is restricted to pits to the north of the intersecting ditches [304] and [209] is of note and may indicate that a settlement area is in close proximity to this northern section, and probably closer than the excavated settlements which are known to have been located 300m upslope to the west (MLE79, 112) just below the 70m contour. It is nonetheless quite plausible that some contemporaneity exists between known settlement sites and land management features. The Iron Age pottery was generally in a poor condition when compared with the Romano-British assemblage (E. Johnson p.50), and this does suggest that the Iron Age pottery has suffered relatively more abrasion prior to deposition.

One interpretation might be that the southern end of the pit alignment is backfilled following the cutting of ditch [209] or ditch [304]. Debris from subsequent occupation in the near vicinity is then incorporated into the remaining length of pit alignment which remains open. The pits on the north side of the ditch intersections have more complex infills when compared to those on the south side, perhaps indicative of episodic backfilling.

Pit alignments are not completely understood as the evidence of their function is incomplete. An assumption that the pits provided quarries for a continuous bank is neither supported by the evidence where land surfaces survive, nor in the layout of pits at the junctions of pit alignments where they would be expected to respect the lines of the accompanying banks (Rylatt and Bevan 2007 p221). Some pits have been shown to hold water, and to have been waterlogged for periods of time, and this may have been part of the intention in their original excavation. Some pit alignments run parallel with water courses, and some at right angles.

It is not clear if the pit alignment is enclosing land to the east or to the west. However, when viewed in the wider landscape with contemporary remains, this pit alignment can be interpreted as part of a more substantial system (Figure 94). A double ditch boundary found 150m to the south (MLE16060) like the pit alignment on the Soar Valley Way site appears to be turning to the west, away from the flood plain of the River Soar which lies some 300m to the west. It is suggested that these two land boundaries articulate to form a system of land management designed to control grazing and access to valuable pasture and, arguably in the Late Iron Age and Roman periods, hay meadows. A complete lack of woodland fauna in the Iron Age deposits analysed suggests the landscape was entirely open, typical of many analysed Iron Age landscapes (D. Smith p131).

An example of the use of boundary systems as part and parcel of pastoral management can be found at Whetstone, 2.5km to the south, there the crop mark of a double ditch boundary appears to enclose an area of land within a meander of the River Soar (MLE366, Figure 94).

A probable contemporaneity between pit alignments and double ditch boundaries can be identified in many Iron Age landscapes that have been studied in any detail (e.g. Ling Hall, Palmer 2002, Fig 2).

Four post structure

An arrangement of four post-holes was found 10m to the north of a pit alignment recorded at Wollaston (Chapman & Jackson 1992, p.69)

Romano-British

The transition into the Roman period does not appear to have been characterised by any marked change in character of land use which remains but to have remained agricultural and predominantly pastoral in nature.

The evidence of activity clearly begins in the north in the late 1st or early 2nd century AD, with the enclosure and watering holes of 2nd to 3rd century date, and possible 4th century material incorporated into the infill of a pit in the south of the site.

Gullies, Pits and ditches

The nature of the evidence in the northern part of the site is particularly complex and perhaps reflects a lengthy occupation which is otherwise little represented. There are few direct indications of occupation and the paucity of domestic refuse supports the clear picture provided by the environmental evidence of an open landscape.

Stretton Road, Great Glen

Excavations in 2011 by Albion Archaeology established that the original 1st century farmstead had been the subject of a major remodelling during the mid-2nd century, resulting in a new, more extensive arrangement of enclosures and fields, retaining few of the original plan elements. The new plan demonstrated clear evidence of zoning of activities, separating domestic and agricultural functions, the latter including cereal processing and animal holdings (Luke et al, 2005: 6).

The enclosures were regimented and rectangular in form, with a distinctive ‘ladder’ system of narrow sub-enclosures, some of which were curved in character, suggesting a livestock paddock function. Enclosures measured between 10m x 11m and 11m x 18m, defined by ditches around 0.9m wide and 0.4m deep. The arrangement was approached by a funnel-like entrance.

Hamilton North, Humberstone, Leicester

Excavated in 2001-2 by ULAS and dating to the 3rd-4th centuries with limited structural evidence suggesting a low status rural farmstead with attendant agricultural processing activities including corn drying and iron smelting and smithing (Shore & Clay 2004: 33).

Ditches defined several irregular square and rectangular enclosures, at least one containing evidence for crop processing, whilst another had a curving butt end terminal suggestive of a cattle stockade.

The presence of a D-shape enclosure in addition to elongated rectangular enclosures with C-shaped ends at Stretton Road does suggest parallels with the distinctive interconnected C-shaped ditches encountered at Enderby. However, there are clear differences in form; (a) the latter were open-sided and not defining fully enclosed spaces as appears evident at Stretton Road, and (b) the Stretton Road examples are grouped in a parallel, ladder arrangement.

The distinctive C-shaped ditched structures encountered at Enderby are problematic in that there no apparent close parallels feature in the archaeological literature. Furthermore, an absence of associated finds evidence offers no assistance in terms of functional explanation.

Double ditch feature

Ditches [150] and [252] are stratigraphically of the same phase. They are broadly parallel between 5 and 6m apart widening to 8m apart at the northern end, and may have formed a drove or corridor for livestock.

A number of sites, including regional examples including those discussed here such as Stretton Road, Great Glen and Seagrave Road, Sileby, (L.Hunt pers comm) feature elements associated with Romano-British farmsteads and encountered at Enderby; namely probable drove roads in the form of parallel twin ditches and square or rectangular stock enclosures. However, the C-shaped Enderby structures do not feature in these other sites.

Figure 93: Soar Valley Way, Hamilton North (Shore & Clay 2004), Seagrave Road, Sileby (L.Hunt pers comm) and Stretton Road, Great Glen (Luke et al, 2005)

The Enderby ditched features appear to represent several phases of C-shaped ditches, of which three or four appear interlinked and contemporary, and with a further three separate arcs of ditch; it was not possible to establish whether the latter represent individual actions or were contemporary with one another. It may be significant that the open sides of the structures were east- and north-facing, suggestive of attempts to provide shelter from prevailing winds.

In addition, the Enderby interlinked C-shaped structures are linked to a contemporary ditch running south, possibly providing drainage; the base of ditch [150] did have a small but discernible fall in slope towards the south.

Hence the Enderby evidence would appear to suggest that these structures represent either some form of stock enclosure, their curving form a characteristic of such features, in which case would have

necessitated the use of fencing or hedging on the open north side to function as holding pens or enclosures.

Alternatively, they may have functioned as shelters, in a ditch and bank arrangement, for associated activities and/or structures, of which no structural evidence has survived. However, a lack of environmental and/or finds evidence from ditch fills, as has been recovered from elsewhere, such as at Hamilton North, would argue against this theory.

The local geology of the northern excavation area at Enderby was very sandy, and this may be of significance when considering further explanations of the archaeology as erosion may be a contributing factor to the incomplete survival of evidence.

The absence of features in the area which is *enclosed* by the ditches and gullies, and their likely drainage function and asymmetric profile which has a more gradual slope on *internal* as compared with *external* edges. This indicates that the features are serving as drains taking run off from within, with the inner edge of the ditch eroding more than the outer. It is possible that the run off was from the rooves of timber structures which have otherwise left no archaeological trace. The apsidal foot print might indicate the location of a porch or doorway.

Trackway and Enclosure

The largest area of metalling appears contemporary with the largest watering hole [722], and is also located just outside and to the side of the entrance to the enclosure. The gully to the south of the metalling terminates in line with end of the metalling and it is probable that the enclosure, the metalling, watering hole [722] and gully all these deposits are in use at the same time at least in part.

The entrance to the enclosure is almost 12m wide. As the enclosure is so proximal to the area of waterhole and metalling, it seems likely that one of the uses of the enclosure was to hold livestock. The entrance must have required further structures which have left no trace to make the gap sufficiently narrow for a gate or moveable hurdle. A probable structural feature [613/614] perpendicular to the enclosure ditch and broadly equidistant between the terminal, may suggest that a more complex entrance arrangement did exist.

The enclosure was constructed within 2.5m of the Iron Age pit alignment. The close spatial relationship between the two suggests that the pit alignment remained visible in the landscape when the Roman activity occurs and was not obliterated by the new structure.

The trackway may have extended to provide access to the Fosse Way Roman road, located 200m to the west, although the preservation of the trackway immediately outside the entrance to the enclosure supports a direct association between the features.

Roman Watering Holes or Quarry Pits

The grouping of three Romano-British watering holes is unusual. The evidence is not sufficiently complete to enable certain interpretation but nonetheless some suggestions on function can be made. The pits may originate as sand and gravel quarries. Later quarrying predating 19th century field ditches is evident in the north of the site while an active quarry is shown 70m to the east of the site in 1st edition Ordnance Survey mapping.

More gradual edges tend to be found on the west side on all three watering holes, and this may indicate that all were designed to be approached by livestock from the west side, at least in their final uses. This interpretation is not contradicted by the fragmentary survival of revetments on the lower western and north-western edges of pits [580] and [703]. This is demonstrated by the clear spatial association between the metalling (652) and watering hole [580]. Both [703] and [655] have pit or post-hole features, cutting their infills on their northern edges, and no explanation can easily be offered to make sense of this.

Location

Watering holes are generally associated with, and in certain instances located within, enclosures, frequently in prominent, central locations. Examples of the latter include the two 2nd or 3rd century

examples at Eaton Socon, Cambridgeshire (Gibson 2005, p38) and a 2nd century feature at Bower Road, Smeeth, Kent (Diez 2006, p11). Examples of watering holes on the corners of enclosures are also known, for example as at Chigborough Farm, Essex (Wallis & Waughman 1998, p77).

Form

Evidence of revetment, as encountered at Enderby, appears rare. One in a group of Early Iron Age possible water holes at Milton, Cambridgeshire, had a wattle lining and a partial log ladder (Philips 2013, p19).

In terms of livestock access, a number of watering holes feature sloping sides, as at HMP Littlehey, West Perry, Cambridgeshire (Brown 2010:, p9), whilst a 2nd or 3rd century example from Eaton Socon, Cambridgeshire, featured possible steps cut into the edge of the feature, presumably to aid maintenance (Gibson 2005, p38).

In the majority of cases, water supply to stock watering holes was provided by excavation to sufficient depth in order to reach ground water, as appears to have been the case with the Enderby examples, or elsewhere at Fenstanton, Cambridgeshire (Nicholson et al. 2004, p8). At Broadway Fields, Yaxley, Huntingdonshire, a substantial pond associated with a late Roman enclosure appears to have been repurposed as an animal watering hole when the settlement shifted location (Brown 2005, p18).

Controlled access of stock to the watering holes was in certain instances provided by parallel twin ditches, as at Enderby, and/or narrow channelled entrances, as at Bower Road, Smeeth, Kent (Diez 2006, p11).

Environment

Insect evidence may also indicate areas of moorland in the vicinity (D. Smith & Hill p118) and also indicators of occasional flooding (ibid). Insects shows open ground and also arable /cultivation and dry pasture (ibid). Arable also indicated by possible cereal pests while grazing of cattle or horses is directly evidenced by the presence of dung beetles.

Field edges or margins are represented by some species, while there are some indicators of domestic activity which can also be found in small numbers away from settlement (D. Smith & Hill p119).

Evidence from the infill of the largest watering hole [580] indicates disposal of domestic debris into open features with dog gnawing damage. The condition of the animal bone indicates that they were exposed to scavenger damage for a period of time prior to burial.

These indicators suggest that human activity is an important part of the archaeology even though habitation is not directly evidenced.

Conclusions

The archaeological excavation at Soar Valley Way, Enderby, provided evidence for archaeological activity between the Middle to Late Iron Age and the 2nd century AD.

During the Iron Age period, the majority of the site appears to have been utilised for agricultural, probably stock rearing purposes via a network of ditches which demarcated stock enclosures and pens, notably in the northern sector. An earlier pit alignment provided further evidence for land subdivision. To the south, a trackway leading from the west appears to have afforded access to watering hole(s) and probable quarry pits occupying the south-east corner of the excavation.

A small rectangular ditched enclosure was set out adjacent to the trackway in the early Roman period; activity in the remainder of the site appears to have ceased in the later Iron Age period, except for continuing sand and gravel quarrying into the Roman period in the north-east.

The absence of archaeological evidence in the eastern area is possibly explained by a variation in the geology between the upslope, more permeable geology of sands and gravels (hence more suited to settlement observed to the west, and as such typical of the locality) and the heavier, alluvial geology characterising the eastern part of the site.

Archaeological fieldwork carried out since the 1980s in the vicinity of the present excavation have presented a complex picture of a heavily exploited landscape during the later prehistoric and Roman periods associated with a major Roman road (the Fosse Way) and, possibly, an earlier precursor. It is hence highly probable that archaeological elements revealed at Soar Valley Way, including the pit alignment, trackway and certain possible stock enclosures were linked with local lines of communication and settlement *foci*.

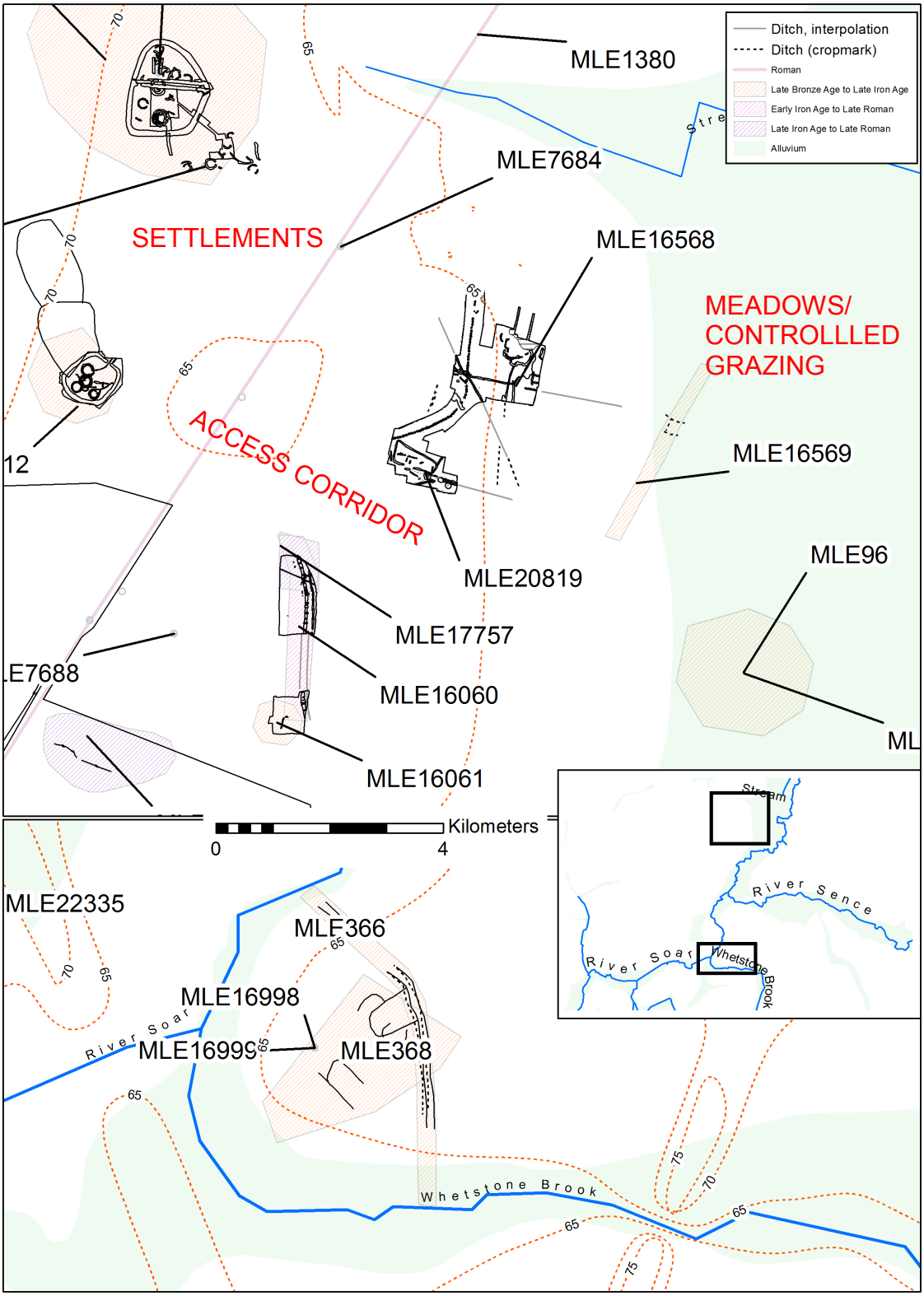


Figure 94: Lower Soar Valley with known Iron Age sites and landscape interpretation.

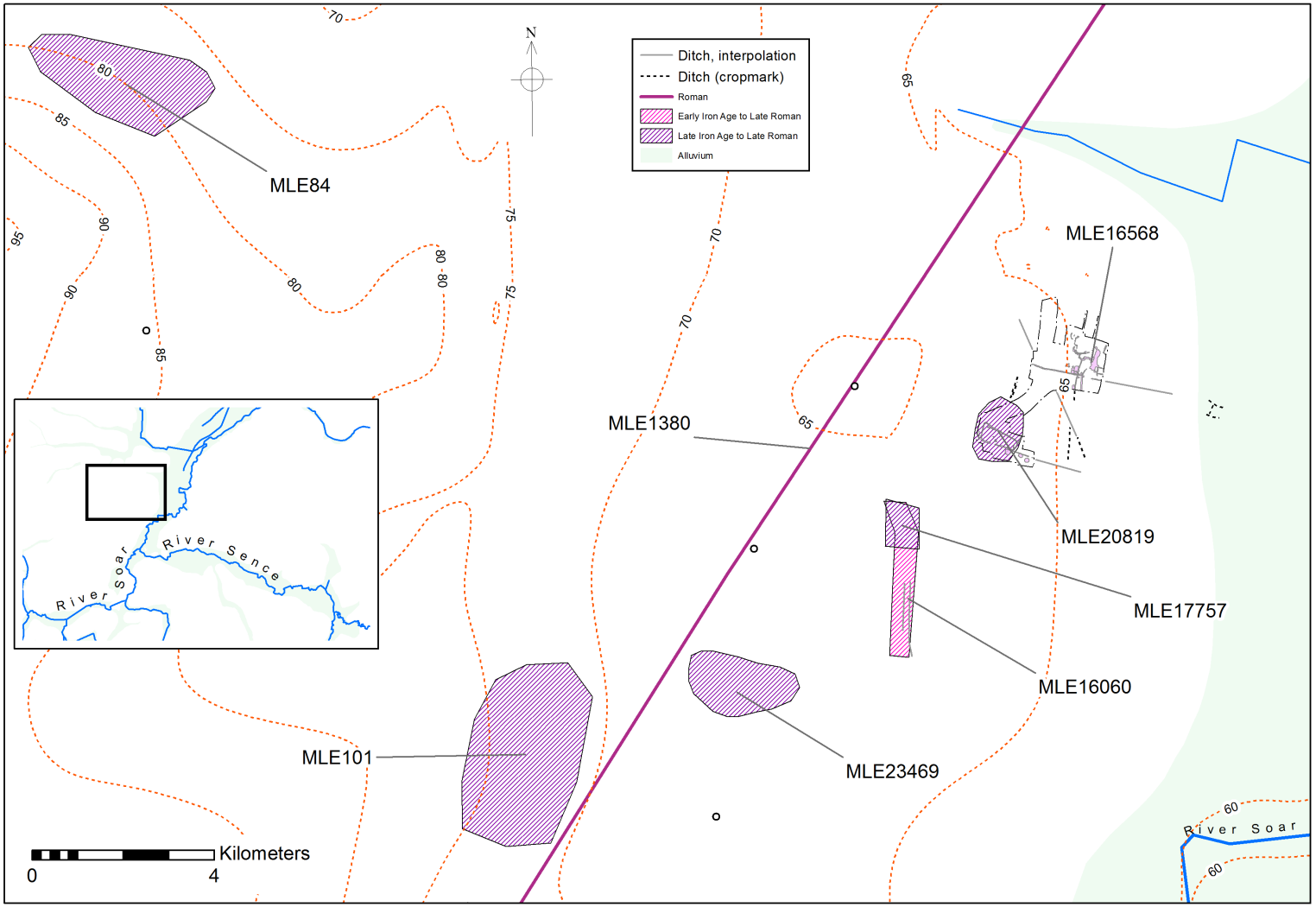


Figure 95: Lower Soar Valley with known Roman period sites

Archive and Publications

The site archive (X.A15.2012), consisting of paper and photographic records, will be housed with Leicestershire County Council.

The archive consists of:

- 8 trench record sheets
- 644 single context record sheets
- Context, drawing and photographic record indices
- 842 digital photographs
- 45 x A2 drawing sheets
- A risk assessment form

Table 35: Trenches

TRENCH	ORIENTATION	LENGTH AND WIDTH (metres)	DESCRIPTION/NOTES	DEPTH TO NATURAL (metres)
18	NE-SW	29 x 1.6	Negative.	0.25-0.41
19	NE-SW	27 x 1.60	Plough furrows.	0.30-0.43
20	SE-NW	30.2 x 1.60	Ditch [101] (Field Boundary), drain [105]	0.36-0.43
21	SE-NW	29.5 x 1.60	Negative	0.28-0.39
22	N-S	30.2 x 1.60	Ditch [109]	0.29-0.35
23	NE-SW	29.10 x 1.60	Negative	0.29-0.37
24	NNE-SSW	31 x1.60	Ditch [107]	0.28-0.41
25	N-S	29.50 x 1.60	Ditch [111]; modern field drains	0.29-0.39

OASIS Data Entry

PROJECT DETAILS	Oasis No	universi1-319297
	Project Name	Soar Valley Way, Enderby, Leicestershire
	Start/end dates of field work	01-05-2015 - 30-08-2015
	Previous/Future Work	Yes
	Project Type	Excavation
	Site Status	None
	Current Land Use	Cultivated Land
	Monument Type/Period	Pit alignment/Iron Age Stock enclosure/Iron Age/Roman Watering hole/Iron Age/Roman Quarry pit/Iron Age/Roman Enclosure/Roman Trackway/Roman
	Significant Finds/Period	Bark and wicker shield / Iron Age
	Development Type	Commercial development
	Reason for Investigation	NPPF
	Position in the Planning Process	Planning condition
	Planning Ref.	
PROJECT LOCATION	Site Address/Postcode	Soar Valley Way, Enderby, Leicestershire LE19 2BX
	Study Area	7.7ha
	Site Coordinates	SP 7864 8473
	Height OD	68m OD
PROJECT CREATORS	Organisation	ULAS
	Project Brief Originator	Local Planning Authority (LCC)

	Project Design Originator	ULAS		
	Project Manager	Patrick Clay		
	Project Director/Supervisor	Roger Kipling		
	Sponsor/Funding Body	Everards Limited		
PROJECT ARCHIVE		Physical	Digital	Paper
	Recipient	ULAS	ULAS	ULAS
	ID (Acc. No.)	X.A33.2012	X.A33.2012	X.A33.2012
	Contents	Pottery CBM Animal bone Timber artefacts Iron artefacts	Photos	Site records Field notes Plans
PROJECT BIBLIOGRAPHY	Type	Grey Literature (unpublished)		
	Title	An Archaeological Excavation at Soar Valley Way, Enderby, Leicestershire		
	Author	Kipling, R.		
	Other bibliographic details	ULAS Report No 2018-108		
	Date	2018		
	Publisher/Place	University of Leicester Archaeological Services / University of Leicester		
	Description	Developer Report A4 pdf		

Publication

A version of the excavation summary (see above) will appear in due course in the *Transactions of the Leicestershire Archaeological and Historical Society*.

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Appendix: Context and Sample Tables

Table 36: Environmental Samples

Sample	Context	Cut	Description	Size	Period	WPL	Insects	Pollen	An Bone
1	136	137	Bulk	1	?IA				
2	142	146	Bulk	1	LIA/EROM				
3	155	154	Bulk	1	LIA/EROM				
4	262	263	Bulk	1	IA				
5	369	366	Bulk	1	IA				
6	659	722	Waterlogged	4	IA		Yes (rat flea)		
7	581	580	Waterlogged	2	RB				
8	675	674		2	IA				
9	705	703	Waterlogged	2	RB		yes		
10	706	703		3	RB				
11	656	655		2	RB				
12	718	717		2	RB				
13	715	580		2	RB		yes	yes	
14	713	580	Waterlogged	4	RB				
15	T3				MIA				
16	T3				MIA				
17	661	722	Waterlogged		MIA	yes			
18	705	703	Cattle skull	1	RB				

Table 37: Context descriptions

Context	Cut	Type	Feature	Description	Note	Same as
101	101	Cut	Ditch	Ditch, 2.5m w x 0.35m d. Truncated by drain	E-W, Trench 20	
102	101	Fill	Drain	mid orangey brown silty sand		
103	101	Fill	Gully	mid brownish orange silty sands		
104	105	Stone	Ditch	granite blocks used as structure in drain		
105	105	Cut	Ditch	Drain, truncates ditch 101.	Trench 20	

Context	Cut	Type	Feature	Description	Note	Same as
106	105	Fill	Ditch	mid dark orangey brown silty sand		
107	107	Cut	Ditch	Gully 0.50w x 0.20d	Trench 24	
108	107	Fill	Ditch	mid dark brownish grey silty sand		
109	109	Cut	Ditch	Ditch, 0.48m w x 0.24m d	Trench 22	
110	109	Fill	Pit	mid greyish brown silty sand		
111	111	Cut	Ditch	1.14m w x 0.20m d	Trench 25	
112	111	Fill	Ditch	mid grey brown silty sand		
113	113	recut	Ditch	1.8m w x 0.35m d . Recut of 114		
114	114	Cut	Ditch	Ditch, 0.45m d minimum. Diffuse cut.		
115	115	recut	Ditch	Shallow recut of 116 , shallower and wider than 116.		
116	116	Cut	Ditch	Early ditch cut, truncated by recuts	Enclosure	
117	114	Fill	Ditch	mid dark grey brown silty sand		
118	113	Fill	Ditch	mid brownish grey sandy silts	very clean silty fill	
119	113	Fill	Pit	mid orangey grey silty sands		
120	116	Fill	Pit	dark blackish grey silty sand		
121	116	Fill	Pit	mid brownish orange sandy gravels		
122	116	Fill	Pit	dark brownish grey silty sand		
123	116	Fill	Ditch	mid brownish orange silty gravels		
124	116	Fill	Pit	light orangey brown silty sand		
125	116	Fill	Ditch	mid brownish grey silty sand		
126	115	Fill	Ditch	light brownish grey silty sand		
127	115	Fill	Ditch	mid orangey brown silt	? Alluvial, sterile	
128	128	Cut	Ditch	2.5m x 0.49 m		
129	128	Fill	Ditch	mid light orangey grey silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
130	131	Fill	Ditch	light greyish brown silty sandy gravels		
131	131	Cut	Ditch	0.6m w x 0.19m d		
132	132	Cut	Ditch	2.48m w x 0.49m d		
133	132	Fill	Ditch	mid greyish brown clay silty sand	fills are silting not backfill	
134	134	Cut	Gully	2.3m w x 0.81m d. Straight steep sides, flat base.	terminus	
135	135	Cut	Gully	1.8m w x 0.61m d. Irregular sides, flat base.	terminus	
136	136	Cut	Gully	1.16m di x 0.38m d. Steep sides, flat base.	circular	
137	135	Fill	Gully	Dark grey brown sandy silt, charcoal frags at base		
138	134	Fill	Gully	dark brownish grey silty sand		
139	134	Fill	Gully	dark brownish grey silty sands		
140	134	Fill	Post-hole	brownish orange silty gravels		
141	148	Fill	Post-hole	mid brownish grey silt sand		
142	148	Fill	Pit	dark greyish black	charcoal rich	
143	134	Fill	Pit	light orangey grey silty sand	terminus	
144	134	Fill	Pit	dark brownish grey silty sand	terminus	
145	134	Fill	Ditch	mid orangey grey silty gravels	terminus	
146	134	Fill	Ditch	dark brownish grey silty sands	terminus	
147	134	Fill	Ditch	mid light orangey grey silty sands	terminus	
148	148	Cut	Ditch	2.3m w x 0.53m d. Recut of 134. Shallower and wider than previous cut.		? 113, ?115
149		Fill	Gully	leached orangey grey silty sand	silty alluvial layer	
150	150	Cut	Gully	0.80m w x 0.40m d. moderate sides, concave base.	N/S	
151	150	Fill	Pit	light orangey greyish brown silty sandy gravels		

Context	Cut	Type	Feature	Description	Note	Same as
152	152	Cut	Pit	0.85m di x 0.36m d. Vertical sides, flat base.	circular	
153	152	Fill	Pit	Dark grey brown sandy silt	?quern and pot fragments	
154	154	Cut	Gully	1.2d x 0.68m d. Deepest of three pits with 153 and 159. Charcoal fill at base.		
155	154	Fill	Gully	dark bluish grey charcoally silty sand		
156	154	Fill	Pit	mid grey sandy silt		
157	158	Fill	Pit	dark greyish brown silty clay sand		
158	158	Cut	Pit	1.7w x 0.85m d, V shaped, irregular moderate sides		
159	159	Cut	Pit	1.2m x 1.0 x 0.33m sub oval, steep sides		
160	159	Fill	Pit	dark bluish grey silty sand		
161	159	Fill	Gully	mid greyish brown sandy silt		
162	162	Cut	Gully	1.85m w x 0.46m d, moderate sides to concave base. Cuts 172		
163	163	Cut	Gully	2.24m w, probably truncated by 164.		114, 134
164	164	Cut	Gully	3.95m x 0.80m d. possible wider shallower cut of 163. Truncates 163 and possibly cut by 162 on eastern edge.		115, 148
165	162	Fill	Ditch	mid orangey brown silty sands		
166	162	Cut	Ditch	mid dark grey silty sand		
167	163	Fill	Ditch	dark brownish grey very silty sand		
168	163	Fill	Ditch	mid brownish orange silty gravels		
169	163	Fill	Gully	dark greyish brown very silty sands		

Context	Cut	Type	Feature	Description	Note	Same as
170	164	Fill	Gully	mid brown orange silt abundant gravel		
171	164	Fill	Ditch	dark grey brown very silty sand		
172	164	Fill	Ditch	mid grey brown silty sand		
173	164	Fill	Ditch	mid brown orange silt abundant gravel		
174	175	Fill	Ditch	mid dark brownish grey sandy silt		
175	175	Cut	Ditch	1.3m w x 0.35m d, V shaped irregular sides and base.		150, 157
176	176	Cut	Ditch	0.65m w x 0.14m d shallow gully	E-W	178, 180
177	176	Fill	Ditch	mid grey brown silty sand		
178	178	Cut	Ditch	0.80m w x 0.16m d, shallow concave profile	E-W	176, 180
179	178	Fill	Pit	mid grey brown silty sand		
180	180	Cut	Gully	0.50m w x 0.08m d shallow concave profile		176, 178
181	180	Fill	Ditch	mid grey brown silty sand		
182	182	Cut	Post-hole	0.45 di x o.19m d. Straight sides, flat base. Some burning in fill		
183	182	Fill	Ditch	dark grey brown silty sand		
184	184	Cut	Ditch	1.84m w x 1.92l x 0.60m d steep irregular sides, flat base		
185	184	Fill	Ditch	dark blueish grey silty sand		
186	184	Fill	Ditch	mid grey brown sandy silt		
187	188	Fill	Pit	light brown grey sandy silt		
188	188	Cut	Ditch	0.90m w x 0.24m d, shallow concave profile	Easternmost of three	
189	190	Fill	Gully	mid light brownish grey sandy silt		
190	190	Cut	Gully	0.37m w x 0.16m d, shallow concave profile flat base.	Middle of three	

Context	Cut	Type	Feature	Description	Note	Same as
191	192	Fill	Pit	mid light brownish grey sandy silt		
192	192	Cut	Pit	0.25m w x 0.10m d, shallow concave U-shaped profile	Westernmost of three	
193	193	Cut	Pit	2.5 x 1.85m w x 0.45m d, sub oval straight sides to flat base		
194	194	Cut	Ditch	1.52m x 1.44m w x 0.42m d. Concave profile, steep sides to flat base		
195	194	Fill	Pit	mid grey brown sandy silt		
196	197	Fill	Pit	light brown grey sandy silt		
197	197	Cut	Gully	3.3m l x 0.60m w x 0.27m d. V shaped steep sides	W-E	
198	198	Cut	Pit	4m l x 3.6m w x 0.3m d. Steep sides, irreg. base		
199	198	Fill	Pit	mid orangey grey sandy silt		
200	193	Fill	Pit	mid grey brown silty sand		
201	201	Cut	Pit	3.7m l x 3.6m w x 0.3m d		
202	201	Fill	Pit	mid grey brown sandy silt		
203	204	Fill	Pit	light brown grey sandy silt		
204	204	Cut	Gully	1.6m l x 0.45m w x 0.20m d. Shallow and irregular		
205	206	Fill	Pit	mid brownish grey silty sand		
206	206	Cut	Gully	1.2m w x 0.20m d	terminus in north	
207	208	Fill	Ditch	mid brownish grey sandy silt		
208	208	Cut	Ditch	1.5m w x 0.50m d V shaped concave base		
209	209	Cut	Ditch	0.5m x 0.86m w x 0.34m d. U shaped profile	W-E	
210	209	Fill	Ditch	mid grey brown sandy silt		
211	212	Fill	Ditch	light brown grey silty sand		
212	212	Cut	Ditch	1.5m w x 0.51m d, concave profile and irregular base, terminus in south	N-S	206

Context	Cut	Type	Feature	Description	Note	Same as
213	214	Fill	Pit	light brown grey silty sand		174
214	214	Cut	Pit	1.1m w x 0.12m d, Irregular concave profile		175
215	216	Fill	Ditch	light brown grey silty sand		187
216	216	Cut	Ditch	0.20m w x 0.13m d irregular shallow profile, poor definition		188
217	218	Fill	Ditch	light brown grey silty sand		189
218	218	Cut	Ditch	0.5m w x 0.17m d. irregular concave profile		190
219	220	Fill	Pit	light brown grey silty sand		191
220	220	Cut	Gully	0.20m w , concave sides and base		192
221	221	Cut	Pit	3.28m l x 2.6m w x 0.2m d, Sub oval, irregular sides, shallow profile		
222	221	Fill	Pit	mid grey brown sandy silt		
223	224	Fill	Gully	grey pebbly sand - backfill?		
224	224	Cut	Ditch	0.90m w x 0.50m d, vertical sides to concave base	Terminus	
225	225	Cut	Ditch	0.46m w x 0.18m d, shallow profile, flat base		
226	225	Fill	Pit	mid grey brown sandy silt		
227	227	Cut	Pit			
228	227	Fill	Pit			
229	229	Cut	Ditch	4.07m l x 2.32m w x 0.53m d, steep sides to irregular base.	Cut by 221 & 225	
230	229	Fill	Pit	mid grey brown sandy silt		
231	232	Fill	Ditch	mid grey brown clayey sand and gravel		
232	232	Cut	Pit	0.56m w x 0.20m d, shallow concave profile	N-S	
233	234	Fill	Ditch	mid grey silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
234	234	Cut	Pit	2m x 4.6m x 0.50m , sub circular, shallow profile, irregular base	Rel. with 236 not clear	
235	236	Fill	Ditch	mid grey silty sand		
236	236	Cut	Ditch	1.2m w x 0.30m d, U shaped profile.		
237	238	Fill	Ditch	mid to light greyish orange sandy silt		
238	238	Cut	Pit	3.58 x 1.2 x 0.32m x, sub oval steep sides, irregular base, homogeneous fill		
239	234	Fill	Pit	dark grey silty sand		
240	241	Fill	Ditch	light to mid grey silty sand		
241	241	Cut	Ditch	1.9m w x 1.6 l x 0.24m d, shallow concave profile		
242	243	Fill	Ditch	mid grey silty sand		
243	243	cut	Pit	0.90 x 1.2 x 0.25, U shaped profile concave base,		
244	245	Fill	Pit	light greyish yellow silty sand, pottery and CBM		
245	245	Cut	Pit	1.1 x 1.10 x 0.45, concave profile		
246	246	Cut	Pit	6.2m w x 0.42m d, concave profile irregular base, could be several intercutting pits		
247	246	Fill	Ditch	mid orangey grey silty sand, very leached		
248	248	Cut	Ditch	1.72m w x 0.32m d concave profile and base	Truncates 246 on eastern edge.	
249	248	Fill	Ditch	mid orangey grey silty sand, rare charcoal		
250	250	Cut	Pit	2.15m l x 1.60m w x 0.37m d, shallow concave profile, irregular base, possibly 2 intercutting		

Context	Cut	Type	Feature	Description	Note	Same as
251	250	Fill	Ditch	mid grey brown silty sand		
252	252	Cut	Ditch	1.75m w x 0.60m d, V shaped with concave base	N-S	266, 273
253	252	Fill	Pit	light grey sandy silt		
254	252	Fill	Pit	mid grey sandy silt		
255	256	Fill	Pit	mid yellowish grey silty sand		
256	256	Cut	Pit	1.4 x 1.3 x 0.40, concave base		
257	257	Cut	Ditch	1.2m w x 0.37m d, steep sides, flat base	E-W	
258	257	Fill	Gully	mid brownish grey silty sand		
259	259	Cut	Gully	0.75m w x 0.20m d, shallow concave profile	N-S	
260	259	Fill	Pit	mid orangish grey silty sand	Cut by 259	
261	263	Fill	Pit	light grey orange silty sand		
262	263	Fill	Ditch	light grey sand		
263	263	Cut	Pit	2.7 x 1.5 x 0.40, straight sides, flat base		
264	264	Cut	Ditch	0.45m w x 0.15m d. very shallow	terminus, NE-SW to E-W	
265	264	Fill	Ditch	mid grey brown silty sand		
266	266	Cut	Pit	1.22m w x 0.44m d, moderate sides to concave base.	N-S	252, 273
267	266	Fill	Pit	mid to light greyish orange silty sand abundant gravel		
268	269	Fill	Pit	beige grey clayey sand, large cobbles to base		
269	269	Cut	Pit	1.3 x 1.3 x 0.30, sub circular shallow profile		
270	270	Cut	Ditch	0.24m d. Identified in section only.	Cut by 271	
271	271	Cut	Ditch	0.35m d. Concave profiles, flat base.	Cut by 263, Cuts 270	
272	272	Cut	Pit	2.3m w x 0.24m d, shallow sides, flat base	Cut by 273	

Context	Cut	Type	Feature	Description	Note	Same as
273	273	Cut	Ditch	1.5m w x 0.50m d, vertical sides irregular base.	?Cuts 271.	266
274	270	Fill	Pit			
275	271	Fill	Pit	dark brownish grey silty sand		
276	272	Fill	Pit	dark orangey grey silty sand		
277	273	Fill	Pit	light grey silty sand		
278	273	Fill	Ditch	mid brownish orange silty sand		
279	273	Fill	Ditch	mid brownish grey silty sand		
280	281	Fill	Pit	light yellowish grey clayey sand		
281	281	Cut	Pit	2.4 x 1.3 x 0.40, oval, concave base.		
282	282	Cut	Ditch	1.2m w x 0.59m d, U shaped with concave base.	E-W	209, 298
283	282	Fill	Ditch	light grey brown silty sand		
284	282	Fill	Ditch	mid grey brown silty sand		
285	229	Fill	Ditch	mid yellow orange fine to medium sand		
286	229	Fill	Ditch	mid blue grey sandy silt		
287	288	Fill	Pit	light orangey grey clayey sand		
288	288	Cut	Pit	2.4 x 1.2 x 0.35, oval, concave profile. Nth end disturbed		
289	289	Cut	Gully	1.85m w x 0.75m d, irregular sides, flat base	terminus	
290	289	Fill	Gully	dark grey brow silty sand		
291	289	Fill	Ditch	mid to dark grey brown silty sand		
292	289	Fill	Ditch	mid orangey brown silty sand		
293	289	Fill	Ditch	mid orangey brown silty sand		
294	295	Fill	Ditch	light orangey grey clayey sand		
295	295	Cut	Ditch	2.4 x 1.6 x 0.35,. sub oval, poor edges, concave base. Shelf on northern edge.		

Context	Cut	Type	Feature	Description	Note	Same as
296	296	Cut	Pit	0.76m w x 0.12m d, circular, U shaped profile.	Cut by 298	
297	296	Fill	Ditch	mid brownish grey sandy silt		
298	298	Cut	Ditch	1m w x 0.24m d, V shaped	W-E Cuts 296	209, 282
299	298	Fill	Ditch	mid brownish grey sandy silt		
300	301	Fill	Ditch	light brownish grey silty sand		
301	301	cut	Ditch	0.9m w x 0.47m d, concave, flat base.	E-W	224
302	303	Fill	Ditch or pit	light orangey grey silty sand		
303	303	Cut	Pit	2.2 x 1.4 x 0.45, sub rectangular, concave. ?shelf on northern edge		
304	304	Cut	Pit	1.15m w x 0.45m d. Shallow and irregular.	NW-SE	320
305	304	Fill	Ditch	orangey greyish brown silty sand, abundant gravels		
306	304	Fill	Ditch	light grey brown silty sand		
307	304	Fill	Ditch	mid grey brown silty sand		
308	308	Cut	Pit	1.32m l x 0.84m w x 0.18m d. Sub oval		
309	308	Fill	Ditch	mid grey brown sandy silt. , contained some fire cracked stones.		
310	311	Fill	Ditch	mid orangey grey clayey sand		
311	311	Cut	Pit	1.65 x 1.65 x 0.28, sub circular, concave profile.	cut by 323	
312	312	Cut	Ditch	0.9m w x 0.15m d, moderate sides, flat base	N-S. Below 314	
313	312	Fill	Ditch	very pale grey sandy silt		
314	314	Cut	Ditch	2m x 1.3m w		
315	314	Fill	Ditch	very pale grey sandy silt		
316	316	Cut	Pit	1.4m l x 1.4m w x 0.40m d, incomplete plan	Below 314	

Context	Cut	Type	Feature	Description	Note	Same as
317	316	Fill	Ditch	pale grey sandy silt rare mottling		
318	318	Cut	Pit	1.25m l x 0.80m w x 0.20m d, incomplete plan	Below 314	
319	318	Fill	Ditch	pale grey sandy clay silt		
320	320	Cut	Ditch	1.5m w x 0,56m d, V shaped		304, 324, 327
321	320	Fill	Pit	light brownish grey silty sand		
322	323	Fill	Pit	light grey pebbly sand		
323	323	Cut	Pit	Sub rectangular, irregular sides, poor definition	cuts 311	373, 430
324	324	Cut	Ditch	1.1m w x 0.36m d, Concave profile	NW-SE	304, 320, 327
325	324	Fill	Pit	light greyish brown silty sand and gravel		
326	324	Fill	Pit	mid greyish brown mottled orange silty sand		
327	327	Cut	Ditch	1.1m w x 0.39m d, V shaped.	NW-SE	304, 320, 327
328	327	Fill	Pit	light grey orange flecks silty sand with gravel		
329	329	Cut	Pit	0.8m l x 0.52m w x 0.14m d, oval, U shaped profile		
330	329	Fill	Ditch	mid greyish brown sandy silt orange flecks		
331	332	Fill	Ditch	light grey brown clay sand		
332	332	Cut	Ditch	0.80m w x 0.25m d, V shaped profile		363
333	333	Cut	Ditch	0.51m d, terminus	cut by 358	
334	334	Cut	Ditch	2.3m w x 1.1m d, steep sides, flat base. Recut	cut by 355	
335	335	Cut	Ditch	not seen, steep sided	Cuts 358, 355	
336	333	Fill	Ditch	mid brownish grey silty sand		
337	333	Fill	Ditch			

Context	Cut	Type	Feature	Description	Note	Same as
338	334	Fill	Ditch	mid reddish brown sand with some silt		
339	334	Fill	Pit	dark brownish black silty sand		
340	334	Fill	Pit	mid grey orange silty sand		
341	334	Fill	Pit	light brownish yellow silty clay		
342	334	Fill	Pit	mid brownish orange silty sandy gravels		
343	334	Fill	Pit	mid brownish orange silty gavels		
344	344	Cut	Pit	3m w x 0.42m d, Steep sides		
345	344	Fill	Pit	light brownish grey with orange sand silt sandy clay		
346	344	Fill	Pit	light brownish grey with yellowy brown flecks silty clay		
347	344	Fill	Gully	light greyish brown with yellowy brown flecks silty sand		
348	344	Fill	Gully	mid orangey greyish brown silty sand		
349	349	cut	Pit	0.79m l x 0.62m w x 0.1m d, sub oval pit, concave profile		
350	349	Fill	Pit	mid grey brown sandy silt		
351	351	cut	Ditch	second recut of terminus, moderate sides.	N-S. Cuts 355.	
352	351	Fill	Pit	mid orangey grey silty sand with some clay patches		
353	351	Fill	Ditch			
354	351	Fill	Ditch	mid organgey brown silty gravels		
355	355	Cut	Ditch	Recut of 334. Straight sides. Shallow.	cuts 334	
356	355	Fill	Ditch	dark brownish grey silty sand		
357	355	Fill	Ditch	mid orangey brown silty gravels		
358	358	Cut	Ditch	2.7m w x 0.70m d. Irregular sides, concave base. Final recut.	Cuts 351 & 333	

Context	Cut	Type	Feature	Description	Note	Same as
359	358	Fill	Ditch	mid brown grey silty clay		
360	358	Fill	Ditch	light to mid grey silty sand		
361	335	Fill	Ditch	mid reddish brown silty sand		
362	363	Fill	Ditch	light greyish brown clay sand		
363	363	Cut	Ditch	0.65m w x 0.25m d, V shapes profile and base.	North terminus	332
364	365	Fill	Ditch	mid orangey grey clayey sand		
365	365	Cut	Ditch	1m w x 0.35m d. V shaped, concave profile.		
366	366	Cut	Pit	1.98 x 1.72 x 0.51. Oval, steep sides. Multiple fills		
367	366	Fill	Pit	light brownish grey sandy silt		
368	366	Fill	Pit	mid brown grey sandy silt		
369	366	Fill	Pit	Dark grey brown sandy silt, frequent charcoal		
370	366	Fill	Pit	mid orangey grey sandy silt		
371	372	Fill	Pit	mid greyish brown clayey sand		
372	372	Cut	Pit	1.6 x 1.6 x 0.60, sub oval, irregular base. Many cobbles on base		
373	373	Cut	Ditch	1m w x 0.39m d. Concave profile and base.		324430
374	374	Cut	Pit	2.7m l x 1.80m w x 0.35m d. Unclear relationship with 374	west of 373	
375	375	Cut	Pit	2.90m l x 2.26m w x 0.56m d. Oval, steep sides, flat base.	south of 374	
376	376	Cut	Ditch	2.9m w x 0.77m d. Moderate sides, flat base.	Terminus	
377	377	Cut	Ditch	0.4m w x 0.40m d, Moderate concave profile and base.		402
378	378	Cut	Ditch	0.93m w x 0.20m d. Shallow sides, flat base.	N-S. Cuts 404	
379	379	Cut	Pit	2m w x 0.50m d. sub oval, flat base	Cut by 380	

Context	Cut	Type	Feature	Description	Note	Same as
380	380	Cut	Ditch	Latest in series of cuts	Cuts 379	
381	373	Fill	Ditch	light brownish grey with orange patches silty sand		
382	373	Fill	Ditch			
383	373	Fill	Ditch	mid yellowy greyish brown silty sand		
384	373	Fill	Ditch	light greyish brown with orange flecks clayey silty sand		
385	374	Fill	Pit	mid brownish grey orange flecks clayey silty sand		
386	375	Fill	Pit	light bluish grey sandy silt		
387	375	Fill	Pit	mid yellowy brown silty sand		
388	375	Fill	Pit	mid greyish brown clayey sandy silt		
389	390	Fill	Pit	light greyish brown silty sand		
390	390	Cut	Pit	2.3 x 1.5 x 0.60, sub oval, concave base. Possible post setting in base.	Cut by 394	
391	392	Fill	Pit	light orangey grey silty sand		
392	392	Cut	Pit	1.7 x1.4 x 0.60, oval, concave base	Cuts 394	
393	394	Fill	Gully	grey orange sandy silt		
394	394	Cut	Gully	0.40m w x 0.30m d. Gully or elongated pit. Shallow sides concave base.	Cuts 390	
395	379	Fill	Pit	mid orangey grey silty sand		
396	379	Fill	Pit	mid grey orange silty gravels		
397	379	Fill	Pit	mid dark brownish grey sandy silt		
398	379	Fill	Pit	mid grey brown silty sand		
399	376	Fill	Ditch	mid orange brown silty gravels		
400	400	cut	Ditch	1.57m w. Recut of 376	cuts 376, cut by 404	
401	400	Fill	Ditch	mid grey brown silty sand		
402	402	cut	Gully	0.80m w x 0.40m d. V shaped.	cuts 376 and 400	377

Context	Cut	Type	Feature	Description	Note	Same as
403	402	Fill	Gully	mid orangey brown silty sand		
404	404	Cut	Ditch	2.7m w x 0.51m d. Final recut, concave profile	Cuts 376, 400, 402. Cut by 378	
405	404	Fill	Ditch	mid brownish grey silty sand		
406	404	Fill	Ditch	mid grey brown silty sand		
407	377	Fill	Ditch	mid brownish grey silty sand		
408	378	Fill	Ditch	mid brownish grey silty sand		
409		Fill		mid brown orange silty gravels		
410	390	Fill	Pit	greyish orange clay sand		
411	380	Fill	Ditch	mid brownish grey silty sand		
412	413	Fill	Pit	mid light brownish grey sandy silt with pebbles		
413	413	Cut	Pit	2.10 x 0.50 x 0.15, oval, shallow. Clean fills		
414	392	Fill	Pit	mid orange brown clayey sand		
415	415	Fill	Pit	0.84 x 0.90 x 0.26,sub circular, steep sides.		
416	415	Fill	Pit	mid grey orange sandy silt		
417	417	Fill	Ditch	1.30m w x 0.35m d. U shaped to flat base	E-W	427
418	417	Fill	Ditch	mottled orange grey sandy silt		
419	419	Fill	Pit	2.04 x 1.52 x 0.46, Sub oval, steep sides to flat base		
420	419	Fill	Pit	light grey orange silty sand		
421	421	Fill		1.5m w x 0.38m d. Concave profile.		
422	421	Fill		dark brown grey silty sand		
423	423	Cut	Pit	2.5m w x 0.38m d, Sub circular pit, straight sides to flat base		
424	423	Fill	Pit	mid brownish grey silty sand		
425	425	cut	Pit	1.2m l x 1.05m w x 0.36m d. Concave profile.		
426	425	Fill	Pit	mid Orangey grey silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
427	427	Cut	Ditch	1.22m w x 0.44m d. Shallow sides, concave base.	E-W. Cuts 429	417
428	428	Cut	Pit	1.72 x 1.20 x 0.40. Oval, moderate sides, concave base.		
429	429	Cut	Ditch	1.06m w x 0.38m d. Shallow sides, concave base.		373
430	427	Fill	Ditch	light brownish bluish grey sandy silty		
431	427	Fill	Ditch	mid yellowy orangey brown silty sandy clay		
432	427	Fill	Ditch	light brownish grey with orange flecks sandy silt		
433	428	Fill	Pit	mid yellowy orangey brown silty sandy		
434	428	Fill	Pit	mid orangey brown silty sand		
435	428	Fill	Pit	light brownish grey stoney silty sand		
436	429	Fill	Ditch	light brownish grey silty sand		
437	429	Fill	Ditch	mid orangey grey brown silty clay sand		
438	429	Fill	Ditch	light greyish brown with orange flecks sandy silt		
439	419	Fill	Pit	mid orange grey with dark flecks sand		
440	419	Fill	Pit	light grey brown medium sand		
441	441	Cut	Pit	1.90 x 1.50 x 0.50, oval, U shaped profile, sloping base.		
442	441	Fill	Pit	pale mottled grey brown sandy clay silt		
443	443	Cut	Pit	Unknown dimension. Edge of quarrying.		
444	443	Fill	Pit	mid orangey brown silty sand		
445	443	Fill	Pit	mid dark brown grey silty sand		
446	447	Fill	Pit	mid light brown grey sandy silt with cobbles		

Context	Cut	Type	Feature	Description	Note	Same as
447	447	Cut	Pit	2.7 x1.80 x 0.35, Oval, flat base.		
448	443	Fill	Pit	mid orangey grey silty sand		
449	447	Fill	Pit	grey silts and orange silty sand		
450	450	Cut	Pit	1.7m l x 1.0m w x 0.86m d. Irregular edges. Waterlogged.		
451	450	Fill	Pit	greyish orange sandy silt		
452	452	Cut	Pit	1.53 x 1.08 x 0.18, Sub oval		
453	452	Fill	Pit	light orange grey silty sand		
454	454	Cut	Pit	0.75m x 0.76m x 0.23m d. Sub oval, moderate sides to concave base . Not part of pit alignment. Some charcoal		
455	454	Fill	Pit	mid brownish grey silty sand		
456	456	Cut	Pit	1.6 x 1.60 x 0.50. Circular, U shaped profile		
457	456	Fill	Pit	mottled pale grey sandy clay silt		
458	458	Cut	Ditch	2.16m w x 0.71m d. V shaped profile, partial exposure.		
459	459	Cut	Pit	1.25m w x 0.66m d. Oval plan, concave profile. One of number of intercutting		
460	460	Cut	Pit	1.70m w x 0.50m d. Irregular profile, poor definition		
461	461	Cut	Pit	1.80m w x 0.22m d. Sub circular, irregular sides, concave base. poor definition.		
462	462	Cut	Pit	1.8 x 0.74 x 0.36, sub oval, steep sides to irregular base.		
463	462	Fill	Pit	mid brownish grey loamy sand		
464	458	Fill	Ditch	greyish brown silty sand		
465	458	Fill	Ditch	grey with orange flecks silty sand		
466	450	Fill	Pit	orange grey silty sand		
467	450	Fill	Pit	mid grey silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
468	459	Fill	Pit	orange with grey flecks silt sandy gravel		
469	461	Fill	Pit	light grey with orange flecks silty sand		
470	460	Fill	Pit	bright orange silty sand with gravels		
471	460	Fill	Pit	light grey with orange flecks silty sand		
472	472	Cut	Pit	2.0 x 1.56 x 0.51, oval plan, U shaped profile, shallow sides.		
473	472	Fill	Pit	very pale grey with orange mottle sandy clay silt		
474	474	Cut	Post-hole	0.22 x 0.22 x 0.08, circular, U shaped profile.		
475	474	Fill	Post-hole	dark grey brown fine sandy silt		
476	476	Cut	Post-hole	0.92 x 0.92 x 0.15. Sub circular, truncated on west side by burrow.		
477	476	Fill	Post-hole	mid brownish grey course sand		
478	478	Cut	Gully	0.50m w x 0,25m d. Concave profile, flat base.	Cut by 482	
479	478	Fill	Gully	mid orangey brown silty sand, rare charcoal		
480	480	Cut	Gully	0.40m w x 0.20m d, Concave profile and base	Cuts 482	
481	480	Fill	Gully	mid brownish grey silty sand		
482	482	Cut	Pit	2.2m l x 1.3m w x 0.70m d. Sub rectangular, steep sides to concave base.	Cuts 478, cut by 480	
483	482	Fill	Pit	dark brown grey silty sand		
484	482	Fill	Pit	mid orangey brown silty sand		
485	478	Fill	Gully	mid orangey brown silty sand, rare charcoal		479
486	478	Fill	Gully			478

Context	Cut	Type	Feature	Description	Note	Same as
487	478	Fill	Gully			478
488	480	Fill	Gully	silty fill no finds		488
489	489	Cut	Post-hole	0.78 x 0.78 x 0.1, sub circular, shallow to concave base. Not part of pit alignment		
490	489	Fill	Post-hole	mid grey brown fine sandy silt		
491	491	Cut	Post-hole	0.62 x 0.56 x 0.26		
492	491	Fill	Post-hole	mid brownish grey medium sand		
493	493	Cut	Pit	2m l x 1.25m w x 0.40m d. Sub circular, concave profile to flat base.		
494	493	Fill	Pit	mid orangey grey silty sand		
495	493	Fill	Pit	mid brown grey silty sand		
496	496	Cut	Pit	2.2 x 0.88 x 0.14, oval, U shaped profile to flat base		
497	496	Fill	Pit	light grey orange fine to medium sand		
498	500	Fill	Pit	mid light brown grey clay silt		
499	500	Fill	Pit	mixed grey orange silty sand		
500	500	Cut	Pit	2.50 x 1.90 x 0.70, sub circular, steep sides to flat base.		
501	501	Cut	Pit	1.78 x 0.90 x 0.18. Oval, U shaped, concave base. Adjacent to 476, 489, 491, 496.		
502	501	Fill	Pit	light orange grey fine to medium sand		
503	503	Cut	Pit	1.88 x 1.40 x 0.38. Sub oval, moderate sides to irregular base. N-S axis. Near to 496, and 501		
504	503	Fill	Pit	dark grey brown silty sand		
505	505	Cut	Pit	0.68m d. Moderate sides to flat base. Heavily truncated	Cut by 506, 512	

Context	Cut	Type	Feature	Description	Note	Same as
506	506	Cut	Ditch	1.1m w. Not bottomed. Post Med.	Cuts 505	
507	505	Fill	Pit	dark brown grey silty sand		
508	505	Fill	Pit	light to mid grey brown silty sand.		
509	506	Fill	Ditch	mid brown orange silty sand		
510	506	Fill	Ditch	mid orangey grey silty sand		
511	506	Fill	Ditch	mid orangey brown silty sand abundant gravels		
512	512	Cut	Ditch	1.1m w. Not bottomed. Post med	Cuts 505	
513	512	Fill	Ditch	mid orangey brown silty sand		
514	512	Fill	Ditch	mid brownish orange silty sand abundant gravels		
515	515	Cut	Pit	3.34m w x 0.85m d. Irregular sides and base. Post med quarry.		
516	515	Fill	Pit	mid grey silty sand		
517	515	Fill	Pit	light grey silty sand		
518	515	Fill	Pit	greyish orange silty sand		
519	515	Fill	Pit	mid grey silty sand		
520	515	Fill	Pit	brownish orange silty sand		
521	521	Cut	Ditch	0.44m w x 0.4m d. V shaped profile, flat base.		522, 527
522	522	Cut	Ditch	0.94w x 0.16m d. rectangular, shallow sides.		521, 525
523	525	Fill	Ditch	dark greyish brown silty clay		
524	522	Fill	Ditch	light grey orange flecks sand		
525	525	Cut	Ditch	0.25w x 0.12m d. U shaped profile.		
526	525	Fill	Ditch	light grey silty sand		
527	527	Cut	Ditch	0.78m w x 0.22m d. V shaped to flat base.		521, 522
528	527	Fill	Ditch	mid dark greyish brown silty clay		

Context	Cut	Type	Feature	Description	Note	Same as
529	529	Cut	Ditch	3.3m l x 0.58m w x 0.12m d. Oval, U shaped.		
530	529	Fill	Ditch	mid greyish brown silty sandy clay		
531	531	Cut	Ditch	0.80m w x 0.30m d. V shaped profile		
532	531	Fill	Ditch	greyish orange clayey sand		
533	533	Cut	Ditch	1.28m w x 0.55m d. Concave profile and base.	Cuts 536 in plan.	
534	533	Fill	Ditch	greyish yellow silty clay		
535	533	Fill	Ditch	yellowish grey silty clay		
536	536	Cut	Ditch	0.82m x 0,38m d. V shaped profile. Relationship with 533 not clear in section		
537	536	Fill	Ditch	greyish yellow silty clay		
538	536	Fill	Ditch	Yellowish grey silty clay		
539	539	Cut	Pit	1.08 x0.88m w 0.22m d. Concave profile, truncated		
540	539	Fill	Pit	mid grey brown sandy clay		
541	541	Cut	Pit	0.76m l x 0.6m w x 0.08m d. Very shallow, irregular base.		
542	541	Fill	Pit	mid greyish brown sandy clay		
543	545	Fill	Ditch	mid dark brownish grey silty clay, charcoal flecks		
544	545	Fill	Ditch	mid light greyish orange sandy clay		
545	545	Cut	Ditch	1.6m w x 0.50m d, concave profile to flat base.		527, 529, 531
546	546	Cut	Ditch	1.4m w x 0.60m d, V shaped profile to concave base		586
547	546	Fill	Ditch	orangish grey silty sand		
548	546	Fill	Ditch	greyish brown silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
549	549	Cut	Pit	1.01m dia x 0.16m d. Sub circular, steep sides, irregular base. Truncated by furrow		
550	549	Fill	Pit	light greyish brown silty sand		
551	551	Cut	Ditch	1.5m w x 0.65m d, straight sides to flat base.		
552	551	Fill	Ditch	dark grey sandy clay (compact)		
553	551	Fill	Ditch	yellowy orange clay, burnt flecks		
554	551	Fill	Ditch	dark greyish black silty sand		
555	555	Cut	Pit	1.25 x 1.1m x 0.25m Oval plan, steep sides to flat base.		
556	555	Fill	Pit	mid greyish brown silty clay		
557	557	Cut	Unclear	irregular		
558	557	Fill	Unclear	mid greyish brown silty clay		
559	559	Cut	Unclear	irregular		
560	559	Fill	Unclear	mid greyish brown silty clay		
561	561	Cut	Unclear	irregular		
562	561	Fill	Unclear	mid greyish brown silty clay		
563	563	Cut	Unclear	irregular		
564	563	Fill	Unclear	mid greyish brown silty clay		
565	565	Cut	Unclear	irregular		
566	565	Fill	Unclear	mid greyish brown silty clay		
567	567	Cut	Unclear	irregular		
568	567	Fill	Unclear	mid greyish brown silty clay		
569	569	Cut	Unclear	irregular		
570	569	Fill	Unclear	mid greyish brown silty clay		
571	571	Cut	Unclear	irregular		
572	571	Fill	Unclear	mid greyish brown silty clay		
573	573	Cut	Unclear	irregular		
574	573	Fill	Unclear	mid greyish brown silty clay		
575	577	Fill	Unclear			

Context	Cut	Type	Feature	Description	Note	Same as
576	577	Fill	Unclear	mid greyish brown silty clay		
577	577	Cut	Unclear	irregular		
578	578	Cut	Unclear	irregular		
579	578	Fill	Unclear	mid greyish brown silty clay		
580	580	Cut	Pit	9m w x 2.0m d. Sub circular concave sides. Waterlogged. Hand and machine excavated.	Cuts 722	
581	580	Fill	Pit	Plastic dark grey waterlogged silty clay		
582	582	Cut	Ditch	1.1m w x 0.36m d. U shaped profile to concave base		
583	582	Fill	Ditch	dark grey sandy clay		
584	584	Fill		5.70m w x 0.60m d, rectangular plan, shallow sides to flat base.	Cuts 586, 588	
585	584	Fill		mottled pale greyish brown sandy silt		
586	586	Cut	Ditch	1m w x 0.30m d. U shaped, moderate sides to flat base		546
587	586	Fill	Ditch	pale greyish brown sandy silt		
588	588	Cut	Pit	1.2m l x 1.40m w x 0.50m d, oval plan, U shaped sides to flat base		
589	588	Fill	Pit	dark grey sandy clay silt		
590	588	Fill	Pit	pale greyish brown sandy silt		
591	590	Fill		pale greyish brown sandy silt		
592	592	Cut	Pit	1m l x 0.30m + w x 0.40m d. Sub circular, sloping sides. Base not seen		
593	592	Fill	Pit	pale grey sandy silt		
594	594	Cut	Unclear	0.50m w x 0.30m d, moderate sides to concave base		
595	594	Fill	Unclear	mid greyish brown silty clay		
596	596	Cut	Unclear	irregular		
597	596	Fill	Unclear	mid greyish brown silty clay		

Context	Cut	Type	Feature	Description	Note	Same as
598	598	Cut	Pit	1.35m w x 3.30m l x 0.80m d. Oval plan, U shaped.	Cut by 598	
599	599	Cut	Pit	1.35m w x 3.30m l x 0.80m d. Oval plan, U shaped.	Cuts 598	
600	598	Fill	Pit	greyish yellow sandy silty clay		
601	599	Fill	Pit	greyish yellow sandy silty clay		
602	599	Fill	Pit	brownish grey sandy clay		
603	580	Fill	Pit	Soft mid orange brown silty sand;		
604	604	Cut	Unclear	irregular		
605	604	Fill	Unclear	mid greyish brown silty clay		
606	555	Fill	Pit	mid greyish brown silty clay		
607	607	Cut	Gully	0.55m w x 0.18m l. U shaped profile, flat base.	Rel with 609 unclear	
608	607	Fill	Gully	pale grey sandy silt		
609	609	Cut	Gully	1.0m w x 0.29m d, U shaped profile, flat base.	Rel with 607 unclear	
610	609	Fill	Gully	pale grey sandy silt		
611	611	Cut	Ditch	0.50m w x 0.20m d. Concave profile straight sides, flat base.		
612	611	Fill	Ditch	dark grey sandy silt		
613	613	Cut	Pit	0.30m w x 0.05m d. Deeper cut in base of 614		
614	614	Cut	Pit	1.00m w x 0.8m x 0,25m d. Linear pit, U shaped profile and base		
615	614	Fill	Pit	orangey brown sand		
616	614	Fill	Pit	dark orangey brown clay some burning		
617	614	Fill	Pit	dark grey sand		
618	580	Fill	Pit	Friable light-mid grey brown silty sand		
619	580	Fill	Pit	Plastic mid grey silty clay with rare charcoal flecks		

Context	Cut	Type	Feature	Description	Note	Same as
620	580	Fill	Pit	Friable dark grey black silty sand; common charcoal flecks,		
621	580	Fill	Pit	Friable light/mid grey silty sand.		
622	580	Fill	Pit	Firm mid orange brown silty gravels;		
623	580	Fill	Pit	Friable mid grey silty sands		
624	580	Fill	Pit	Firm plastic mid orange-grey silty clay;		
625	580	Fill	Pit	Firm mid grey brown silty clay with some sands		
626	722	Fill	Pit	Friable mid grey silty sands;		
627	722	Fill	Pit	Friable mid grey orange silty sands		
628	722	Fill	Pit	Friable light-mid grey silty sand.		
629	722	Fill	Pit	Firm/friable mid grey brown silty sands		
630	722	Fill	Pit	Friable mid orange brown silty sand.		
631	722	Fill	Pit	Friable mid orange silty sand		
632	722	Fill	Pit	Friable mid orange brown silty sand;		
633	580	Fill	Pit	Friable mid orange grey silty sand		
634	634	Cut	Pit	0.9m l x 0.6m w x 0.45m d, steep sides to flat base		
635	634	Fill	Pit	orange sand		
636	634	Fill	Pit	orangey brown clay		
637	634	Fill	Pit	light grey sand		
638	638	Cut	Pit	0.28m x 0.20m x 0.08m. U shaped shallow profile		
639	638	Fill	Pit	reddish orange sand with some charcoal		
640	640	Cut	Ditch	1.40m w x 0.60m d. E-W ditch		

Context	Cut	Type	Feature	Description	Note	Same as
641	640	Fill	Ditch	light brownish grey silty clay		
642	642	Cut	Ditch	0.90m w x 0.37m d. Concave profile and base		
643	642	Fill	Ditch	light brownish grey silty clay		
644	644	Cut	Pit	0.90m w x 0.63m d., oval plan steep sides to concave base.		
645	644	Fill	Pit	light brownish grey silty clay		
646	646	Cut	Pit	0.40m w x 0.25m d, stepped sides to sloping base not fully exposed.		
647	646	Fill	Pit	light brownish grey silty clay		
648	648	Cut	Post-hole	0.40mx 0.42m x 0.20m d. Below metalling 652.		
649	648	Fill	Post-hole	mid brownish grey silty clay sand		
650	650	Cut	Post-hole	0.40 x 0.12m d., square plan shape moderate sides to concave base, below 652		
651	650	Fill	Post-hole	mid greyish brown silty sand		
652	652	Fill		light brownish grey silty clay, abundant pebbles	Truncated by enclosure, but also within enclosure ditch	
653	640	Fill	Ditch	light brownish grey silty clay		
654	722	Fill	Pit	Firm/friable mid green brown silty sand		
655	655	Cut	Pit	4.2m x 4.5m x 1.28m. Oval plan, V shaped profile, U shaped base. Waterlogged.	Cuts 736, cut by 717	
656	656	Fill		dark bluish grey silty clay, very organic		
657	657	Fill		mid orangey brown silty sand		
658	658	Fill		mid grey brown silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
659	722	Fill	Pit	Soft/friable mid green grey silty sand with occasional grey clay patches		
660	722	Fill	Pit	Plastic/friable mid/dark grey silty clay; occasional charcoal flecks.		
661	722	Fill	Pit	Soft mid green brown silty sand.		
662	662	Cut	Ditch	0.49m w x 0.13m d. Concave profile and base, NW-SE.		665
663	662	Fill	Ditch	light greyish brown silty clay		
664	662	Fill	Ditch	cobbles sat within brownish grey silt		
665	665	Cut	Gully	0.548m w x 0.1m d. U shaped profile.		662
666	665	Fill	Gully	light brownish grey sandy silt	Truncated by 599	652
667	667	Cut	Ditch	0.65m w x 0.20m d. Shallow sides, terminus		678
668	667	Fill	Ditch	mottled pale grey brown sandy silt		
669	669	Cut	Unclear	0.35m w x 0.37m d. Confusion with plough damage.		
670	669	Fill	Unclear	mid yellowish greyish brown sandy clay silt		
671	671	Fill		mid greyish brown silty sand		
672	672	Fill		grey pebbles and cobbles . Overlies [688] and [690]		?652; ?654
673	690	Fill	Ditch	mid greyish brown silty clay sand		
674	674	Cut	Ditch	1.90m w x 0.67m d., moderate sides to flat base. W-E ditch.		678
675	674	Fill	Ditch	mid light brownish grey silty clay sand		
676	676	Cut	Gully	0.56m w x 0.38m d. U shaped profile and base.	Below 680	682
677	676	Fill	Gully	light greyish brown silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
678	678	Cut	Ditch	1.70m w x 0.56m d. Irregular sides to flat base. Silted fill.		667, 674
679	678	Fill	Ditch	mid greyish brown silty sand		
680	680	Fill		light orangey brown pebbles with some sandy clay	Seals gully fills [676] and [678]	
681	678	Fill	Ditch	mid orangey brown clay sand		
682	682	Cut	Gully	0.75m w x 0.30m d., concave sides to flat base. W-E	Below metalling	676
683	682	Fill	Gully	mid greyish orange sandy clay		
684	680	Fill		light brown sandy pebbles	Seals [674] ad [682]	680
685	674	Fill	Ditch	mid orangey grey sandy silty clay		
686	674	Fill	Ditch	bluish grey sandy silty		
687	674	Fill	Ditch	light greyish orange silty sand		
688	688	Cut	Ditch	1.80m w x 0.50m d. Steep sides to concave base	Recut as 690. Below metalling	
689	688	Fill	Ditch	light brownish grey silty clay		
690	690	Cut	Ditch	0.95m w x 0.25m d. Concave sides and base.	Recut of 688. Below metalling	
691	691	Cut	Field drain			
692	691	Fill	Field drain	mid greyish brown silty clay		
693	693	Cut	Gully	0.59m w x 0.15m d. Concave sides to flat base	Cut by 695	
694	693	Fill	Gully	mid orangish brown silty sand		
695	695	Cut	Gully	0.7m w x 0.24m d. Moderate sides to flat base.	Cuts 693	
696	695	Fill	Gully	mid brownish grey silty clay sand		
697	698	Fill	Post-hole	mid brownish grey silty sand		
698	698	Cut	Post-hole	0.53 x 0.42m x 0.22m d. Sub circular plan, concave side and base.	below metalling	
699	700	Fill	Post-hole	mid brownish grey silty sand		

Context	Cut	Type	Feature	Description	Note	Same as
700	700	Cut	Post-hole	0.6 x 0.45 x 0.17m d. Sub circular, concave profile, flat base		
701	702	Fill	Post-hole	mid brownish grey silty sand		
702	702	Cut	Post-hole	0.62 x 0.60m w x 0.18m d. Sub circular, concave profile to flat base		
703	703	Cut	Pit	6m dia x 1.30m d. Substantial circular, flat base pit. Waterlogged organic fills.		
704	703	Fill	Pit	pale greyish brown / reddish orange sandy silt		
705	703	Fill	Pit	mid dark grey sandy clay silt		
706	703	Fill	Pit	mid grey sandy clay silt, some orange mottling		
707	703	Fill	Pit	pale grey clay silt		
708	708	Cut	Pit	1.06 x 1.04m w x 0.6m d. Oval plan, steep sides to flat base.	Disturbed by drain	
709	708	Fill	Pit	mid greyish brown sandy silty clay		
710	710	Cut	Linear	0.50m w x 0.18m d. Irregular sides, concave base, W-E.		
711	710	Fill	Linear	mid grey brown silty clay		
712	722	Fill	Pit	Firm mid orange/brown/yellow silty gravels with abundant gravel inclusions.		
713	580	Fill	Pit	Friable mid grey green silty sands		
714	580	Fill	Pit	Friable mid yellow green brown silty sand;		
715	580	Fill	Pit	Friable mid/dark grey brown silty sand with some clay		
716	690	Fill	Ditch	mid brownish grey silty sand		
717	717	Cut	Pit	1.10m dia x 1.23m d., sub circular cut, straight sides to	Cuts 655 and 736	

Context	Cut	Type	Feature	Description	Note	Same as
				concave base. Near complete pot in uppermost fill		
718	717	Fill	Pit	mid orangey brown clayey sand		
719	719	Cut	Ditch	1.18m w x 0.4m d., Steep sides to V shaped base. NE-SW.		
720	719	Fill	Ditch	light bluish grey med sand		
721	719	Fill	Ditch	light orangey grey med/fine sand		
722	722	Cut	Pit	Sub oval cut 4.2m l x 2.4m w x 2m d. Iron Age pit, much obliterated by 580.	Cut by 580. Possibly recut as 745	
723	655	Fill	Pit	mid pinkish brown silty clay		
724	655	Fill	Pit	light bluish grey fine silty clay		
725	655	Fill	Pit	mid orange sandy clay		
726	655	Fill	Pit	dark blackish grey silty clay		
727	655	Fill	Pit	black sandy clay with charcoal		
728	655	Fill	Pit	mid orangey brown clay sand		
729	655	Fill	Pit	mid orangey brown med/course sand		
730	655	Fill	Pit	light grey silty sand		
731	655	Fill	Pit	mid orangey brown med/course sand		
732	655	Fill	Pit	light grey silt and medium sand		
733	655	Fill	Pit	mid orangey brown med/course sand		
734	655	Fill	Pit	mid brownish grey silty sandy clay		
735	717	Fill	Pit	mid blackish grey sandy clay, organic		
736	736	Cut	Gully	0.60m w x 0.20m d. not excavated	Cut by 717	676, 682
737	736	Fill	Gully	light greyish brown silty clay sand		

Context	Cut	Type	Feature	Description	Note	Same as
738	738	Cut	Pit	4m l x 3.17m w x 0.74m d. Irregular plan U shaped profile, steep sides to flat base		
739	738	Fill	Pit	mid blue grey sandy clay		
740	738	Fill	Pit	mid orangey brown sandy clay		
741	738	Fill	Pit	mid greyish brown silty sand		
742	742	Cut	Post-hole	0.4m di x 0.10m d. Small post-hole cutting shoulder of 703, U shaped profile and base.		
743	742	Fill	Post-hole	dark grey brown medium sand		
744	705	Fill		Pale grey , angular granite blocks 0.33 < 0.55 x 0.15<0.30 x 0.05<0.15m		
745	745	Cut	Pit	Possible recut of 722 identified from section drawing. 1.6m deep, dimensions otherwise unknown		

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