Archaeological Excavation at Plot 3: Avonmouth Western Approach Pilning, South Gloucestershire Assessment Report

Worcestershire Archaeology

for RPS Consulting UK

November 2023

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PLOT 3
AVONMOUTH WESTERN APPROACH
PILNING
SOUTH GLOUCESTERSHIRE

Archaeological assessment report

Worcestershire Archaeology
Worcestershire Archive & Archaeology Service
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SITE INFORMATION

Site name:	Plot 3, Avonmouth Western Approach, Pilning
Site code:	P6143
Local planning authority:	South Gloucestershire Council
Planning reference:	SG4244
Central NGR:	ST 55326 84339
Commissioning client:	RPS Consulting UK
Client project reference:	-
WA project number:	P6143
WA report number:	3151
HER reference:	Unassigned
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Museum accession number:	2021/28

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Archaeological investigations at Plot 3, Avonmouth Western Approach, Pilning, South Gloucestershire: Assessment Report

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Summary

This assessment provides a review of the results of archaeological fieldwork on Plot 3 of the Avonmouth Western Approach Distribution Park, Pilning, South Gloucestershire (ST 55326 84339), and outlines the requirements for the completion of the post-excavation analysis. From August 2021 to October 2022 a programme of archaeological mitigation was undertaken here by Worcestershire Archaeology. This comprised a strip, map and sample of some 4.5ha of the site, and an archaeological watching brief maintained across a rhine ditch diversion. The project was commissioned by RPS Consulting UK, on behalf of their client, Equation Properties, in advance of a proposed industrial and distribution development.

Previous work at the site, including an archaeological evaluation undertaken by Worcestershire Archaeology in 2021, indicated the potential for archaeological remains within the Upper Wentlooge Formation, and this was reflected in the results of the investigation. For the most part, this activity could be identified as Romano-British in date, although some limited medieval to modern agricultural activity was also recorded. No prehistoric deposits of anthropogenic origin were identified at the site, and similarly no residual material of this date was identified in later assemblages.

Most of the archaeological features on site could be dated to the Romano-British period, suggesting widescale exploitation of the area did not occur until this time. Initial spot dating of the combined ceramic and metalwork assemblage has indicated that this activity began in the 1st century AD, with some continuity until the site was abandoned at some point in the 4th century AD. The most intensive occupation of the site is likely to have occurred in the late-2nd and 3rd centuries, based upon both structural and artefactual evidence, and could largely be characterised as the instatement of a complex network of drainage ditches, probably representing a formal process of land reclamation. Areas of more intensive activity, often associated with ditched enclosures or ring-gullies, were present in both the north, south-east, and west of the site, where the material evidence was more indicative of domestic and craft activities. A number of funerary deposits, including five cremation pits and a single inhumation, further attest to the occupation of the site.

A substantial artefactual assemblage was recovered, and whilst dominated by ceramics, it also included a range of other material types. An exceptional find was a sculpted, inscribed stone, a portable altar or marker stone, recovered from a later Roman enclosure ditch. Another notable object was a '*numerum omnium*' type belt mount, which particularly hinted at a military connection for the site at this later period. However, taking into account the broader site economy, this seemed to be pastoral in nature given eco-factual assemblage, and indeed, analysis of the animal bone seemed to indicate its specialisation in livestock farming, including potentially the rearing of equids.

Overall, the site was also more deeply sealed than usual and so was relatively well preserved, for instance being relatively unaffected by later ridge and furrow agriculture.

Report

1 Introduction

1.1 Background to the project

This assessment provides a review of the results of archaeological fieldwork on Plot 3 of the Avonmouth Western Approach Distribution Park, Pilning, South Gloucestershire, and outlines the requirements for the completion of the post-excavation analysis. From August 2021 to October 2022 a programme of archaeological mitigation was undertaken here by Worcestershire Archaeology. This comprised a strip, map and sample of some 4.5ha of the site (ST 55326 84339; Figure 1), and an archaeological watching brief maintained across a rhine ditch diversion.

The project was commissioned by Philip Bethell of RPS Consulting UK, on behalf of their client Equation Properties in advance of a proposed industrial and distribution development. The planning history of the site is unusual having been subject to an outline planning consent in 1957 which remains extant (planning reference SG4244), and the site forms part of the strategic Avonmouth Severnside area.

The mitigation areas were informed by a previous programme of archaeological trial trenching undertaken by Worcestershire Archaeology in 2021 (Walsh 2022). This site evaluation was undertaken across three plots (Plots 2, 3, and 4) of the wider development area, and produced limited archaeological results for both Plots 2 and 4. The most significant archaeological features were identified within Plot 3, and comprised several substantial ditches and a cremation deposit, all of Roman origin. Artefactual evidence, including pottery and metalwork indicated that the Roman activity could be dated from the 1st to late-3rd century AD.

The archaeological advisor to the local planning authority (Paul Driscoll; Archaeology and HER Officer, South Gloucestershire) considered that the proposed development had the potential to impact upon these heritage assets, and so, in consultation with RPS Consulting UK, a programme of mitigation was agreed for Plot 3. No brief was provided, but the project conforms to the generality of briefs previously issued. An overarching WSI for the project was produced by RPS Consulting UK and approved by the archaeological advisor (RPS 2021). The project also conforms to the industry guidelines and standards set out by the Chartered Institute for Archaeologists in *Standard and guidance: for archaeological excavation* (CIfA 2014a) and *Standard and guidance: for an archaeological watching brief* (CIfA 2014b).

1.2 Site location, topography and geology

The Plot 3 site is located in the north of the Avonmouth Western Approach Distribution Park, *c* 700m south of the village of Pilning, and *c* 1.3km south-east of Severn Beach. In a broader context, the site is located within an area known as the Avon Levels, and is located approximately 1.4km east of the River Severn estuary (Fig 1; Plate 1). The site was formerly in use as agricultural land laid out to pasture, more fields of which make up the north-western boundary. The site is bounded by the M49 to the south-west, and by Lanson Roberts Way and Plot 4 to the east. A number of extant drainage ditches, known locally as rhines, further bounded the south and east of the site.

Plot 3 was situated on broadly level ground, located at *c* 5.5m to 6.2m *above ordnance datum* (AOD). Various regimes of extant ridge and furrow earthworks, and a modern pond, were located within the site.

The geology of the site comprises a series of complex estuarine alluvial deposits and so is discussed in more detail within Section 2 below.

2 Geological, archaeological, and historical background

2.1 Introduction

An archaeological appraisal of the site (Plots 1-4) was undertaken in 2008 (Wessex Archaeology 2008). This reviewed the site in the context of a 2005 desk-based assessment (DBA) and a 2006 evaluation which covered Plot 1. A report on mitigation works undertaken at Plot 1 was produced in 2010 (Fitzpatrick 2010). These phases of work were all undertaken by Wessex Archaeology. As part of the present development proposals for Plots 2-4 a geophysical survey was undertaken by Magnitude Surveys (Garst and Wilkinson 2021) and a geoarchaeological assessment (Howard 2021; and see Section 5.3.1, this report), the latter of which forms the basis of Section 2.2 below.

2.2 Geoarchaeological and earlier prehistoric background, by Andy Howard

A geoarchaeological DBA (Howard 2021) for Plot 3 as well Plots 1 and 2 (which are immediately adjacent), indicates that the Pilning Levels have developed through the build-up (vertical accretion) of alluvial sediments over the postglacial period, though the area is now protected from estuarine inundation by extensive modern flood defences. Regional archaeological evidence suggests that flood protection became a feature of the landscape during the Romano-British period (Allen and Fulford, 1986). Prior to significant flood protection, the levels would have been characterised by seasonally flooded, semi-permanent coastal wetlands, providing significant resources to sustain local communities during both the prehistoric and historic periods.

The British Geological Survey mapping simply records the area as 'Tidal Flat Deposits' (clays and silts) overlying Triassic bedrock of the Mercia Mudstone Group (https://mapapps.bgs.ac.uk/geologyofbritain/home.html). In more detail, Allen and Rae (1987) define this entire postglacial sequence of alluvial deposits across the Severn Estuary Levels as the Wentlooge Formation, informally dividing the sequence into a tripartite sediment stack (Allen 2000): a lower sequence of thick silts with few if any thin peat layers; a middle sequence of thick peat units alternating with silts; and an upper sequence of thick silts with no peat layers. The silts are usually pale greyish to bluish green, though, in the upper sequence, they are commonly mottled pale brown.

Geotechnical investigations in Plot 3 indicate these fine grained alluvial deposits are at least 4m deep (Fairhurst 2021a; 2021b), though they do not record the full depth of these deposits. The closest open-source borehole record, which is in the village of Pilning, suggests the entire sequence of postglacial silts and clays extends to a depth of around 8m (British Geological Survey record ST58NE 18).

The chronologies of the peats have been investigated at a number of sites around the Severn Estuary, providing a robust framework for landscape evolution. For example, at Redwick (Allen 2000), on the Welsh side of the estuary, approximately 15km due west of the site, four discreet peat units have been dated, producing age estimates from 6550 ± 70 (peat 1; 5625 – 5635 cal BC) to 4910 ± 70 (base of peat 4, 3805 – 3620 cal BC). In addition to the peats, timbers from Bronze Age buildings have yielded age estimates ranging from 2950 ± 70 (1400 – 990 cal BC) to 2930 ± 70 (1390 – 930 cal BC), and a fish-trap in a palaeochannel has produced a date of 1500 ± 60 BP (AD 425–655). Such age estimates on a range of materials demonstrates the longevity of human interactions with this wetland landscape.

2.3 Later prehistoric

There is limited evidence for later prehistoric activity in the vicinity of the site and, indeed, throughout the majority of the Avon Levels. It is understood that throughout the Iron Age, and into the Roman period, the Upper Wentlooge formation continued to be deposited, and the Avon Levels underwent a cycle of mudflat/salt-marsh/mudflat, with temporary periods of stasis allowing for transhumant occupation (Gardiner *et al* 2002). One such period within the later Iron Age is likely to have been caused by a negative sea-level change, which created areas of 'dryland pasture' within the Levels, a

resource subsequently exploited by small communities, such as at Hallen Marsh and Northwick, discussed below (Allen and Scaife 2010).

Within the Western Approach Distribution Park, the only possible later prehistoric activity recorded was during the 2006 evaluation at Plot 1. Stratified ceramic evidence suggested this activity dated from the late Iron Age to early Roman transition. It was identified in a trench located on a slight rise in the natural topography which Wessex Archaeology identified as extending to the east and west. The activity was tentatively interpretated as representing seasonal occupation. This area was preserved *in situ* during the development of Plot 1, but, during the construction of a balancing pond 200m to the south-east of Holloway Road, a number of substantial drainage ditches, three curvilinear ditches and pits all of Romano-British date were identified (Fitzpatrick 2010). The spatial distribution and fill characteristics of the ditches in the east and south of the pond area indicated a probable settlement.

Until recently, the best example of Iron Age activity within the Avon Levels comprised the settlement at Hallen Marsh, located *c* 4km to the south of the site (Barnes *et al* 1993; Gardiner *et al* 2002; Allen and Scaife 2010). This settlement comprised two substantial, post-built roundhouses, and significantly, represented the first structural evidence for Iron Age occupation within the Levels. The roundhouses were defined by a series of semi-circular ditches, with internal features including a hearth or oven, and several floor deposits made from spreads of animal bone, pottery and stone (Gardiner *et al* 2002). Analysis of the site suggests it was short-lived, likely between the later 2nd to early 1st century BC, and likely represented seasonal occupation by a small population for the purpose of grazing livestock on the salt-marsh (*ibid*).

More recently, another significant Iron Age site has been identified near Easter Compton, *c* 2.90km south-east of the site (Barker and Brindle 2022). The settlement comprised up to seven roundhouses, defined by gullies, with other activity including several pits and ditches. The pottery assemblage indicated that the site was occupied from the middle to late Iron Age, which was confirmed by a programme of radiocarbon dating which produced consistent dates of *c* 360–170 cal BC. Environmental evidence from the site was limited, although like the Hallen Marsh settlement, it is thought that occupation of the site was seasonal, and based on pastoral transhumance.

A further site of Iron Age activity has been identified at Northwick, *c* 2km to the north of the Plot 3 site. This comprised a number of substantial, similarly orientated ditches, which contained pottery datable to the 1st century AD, likely within the later Iron Age to early Roman transition (Gardiner *et al* 2002). Although the full extent of the site was not revealed, evidence indicates that it was also likely to have been short-lived, and that the ditches would have been multifunctional in draining the site, and forming small paddocks or enclosures for livestock grazing.

2.4 Romano-British

Evidence for Romano-British activity across the Avon Levels is, by comparison, more extensive, and includes several sites within the Western Approach Distribution Park (Plots 1; 4000; 5000 for example). The closest activity is located at Plot 1, *c* 600m to the south-east of Plot 3, and as discussed above, has been interpreted as a small settlement site dating from the 2nd-4th century AD. Interestingly, environmental evidence suggests a mixed agricultural regime, indicating conditions were suitable for arable as well as pastoral practices (Fitzpatrick 2010).

More comprehensive evidence for Romano-British activity was identified at Plot 4000, *c* 725m to the south of the site. This comprised a Romano-British farmstead of 2nd-4th century AD date which was characterised by roundhouse gullies and a series of ditched enclosures (Ritchie *et al* 2007). Investigations at the site provided evidence of animal husbandry and agricultural exploitation of the Avonmouth Levels, in addition to some possible ironworking. In 2007 excavations by Oxford Archaeology about 850m south-west of the site uncovered a series of interconnecting enclosures and ‘droveways’ dating to the Roman period (2nd to 4th century AD), probably forming part of a pastoral settlement (Plot 5000; Champness and Hayden 2008). Several phases of enclosure here suggested that this was part of a managed landscape that saw frequent periods of reorganisation, perhaps in

response to environmental and sedimentary change. Lacking the structural features identified in Plot 4000, it was suggested that this activity represented agricultural enclosures associated with the nearby settlement.

Within the wider landscape of the Avon Levels, Romano-British activity has been identified at Crook's Marsh, Lower Knole Farm, and Easter Compton (Masser *et al* 2005). Activity on these sites was also dated to the 2nd-4th century AD, and similar to the sites mentioned above, environmental evidence indicating the practice of a mixed agricultural regime. The site at Crook's Marsh in particular, pointed to a settled farming community with evidence for crop-processing and a 'material culture typical of contemporary dryland settlements'. More recently, another Roman settlement site has been identified between the villages of Easter Compton and Over, *c* 2.90km to the south-east (Barker and Brindle 2022). This site was characterised by a series of enclosures, with some activity datable to the 1st century AD, although it remained unclear if this represented a continuation from the Iron Age settlement discussed above (see Section 2.3). The majority of the site was dated to the 2nd-4th century AD, although significantly an inhumation burial was radiocarbon dated to the early 5th to mid-6th century AD, indicating that the site continued to be occupied into the sub-Roman period. The animal bone assemblage was dominated by cattle, however the presence of a drier/oven combined with plant macrofossil evidence, suggested a mixed economy with some crop processing taking place.

Taking an even broader view, the wider region encompassing the Avon Levels as a whole can be shown to be a heavily Romanised landscape, with evident military connections. The Roman port of *Abonae* (Sea Mills) is located *c* 8km to the south, on the banks of the River Avon. Excavations at the site identified a mid-1st century AD origin, with artefacts, including stamped brick and tile, linking the settlement to the Second *Augusta* Legion, for which it likely acted as a supply post (Ellis 1987). A ferry crossing is known to have existed between *Abonae* and Sudbrook, on the western (north) side of the estuary. This is evidenced by a short stretch of road (Margary 1967, route **60aa**), which spurs off from the primary road between the Roman fortress of Caerleon and the *civitas* at Caerwent (Margary **60a**), south-east towards the estuary. A second ferry crossing is presumed at the village of Aust, located *c* 4.8km north-east of site, and is connected by road to the artery linking *Abonae* and *Glevum* (Allen *et al* 2015; Margary **54l**). Indeed, the place-name 'Aust' has been thought to be named after *Legio II Augusta* (the Second 'Augustan' Legion), although this is perhaps just speculative (Higgins 2011). As briefly mentioned above, the port at *Abonae* was also connected to the legionary fortress at Kingsholm, and civilian *colonia* of *Glevum* by a substantial road (Margary **54l**), which at its closest, was positioned approximately just 5km to the east of the Pilning site.

2.5 Early medieval, medieval, post-medieval and modern

The historical reclamation processes of the Avonmouth Levels are not wholly understood, but it is unlikely that the site was permanently settled during the early medieval or medieval periods. Any settlement that did take place was likely to be a 'recolonisation' of the landscape following abandonment due to marine transgression in the post-Roman period (Rippon 1997).

No Saxon or early medieval archaeological remains have been recorded within Plots 1-4, although it is likely a number of the drainage 'rhines' around the site are likely to date from this period. These features served to drain the low-lying meadows and, also, delineated landholdings. The appraisal noted that by the late 13th and early 14th centuries, land division and drainage appears to have become more organised. A single medieval drainage ditch was identified during the excavation of the balancing pond to the south of Plot 1 (Fitzpatrick 2010).

The surviving built heritage of the area suggests it was first permanently settled and farmed during the 16th century, and that the Avonmouth Levels were subject to further drainage and agricultural regimes throughout the post-medieval period and modern times. Historic Ordnance Survey maps record the area as crossed by a network of drainage rhines, and further sub-divided by fields and paddocks (OS maps dated 1881, 1901, 1920, 1955, 1969). Numerous small ponds are also recorded.

LiDAR data (1m resolution) also records this network of drainage features, as well as evidence of ridge and furrow which overlie the Plot 3 site (Fig 2).

The waterlogged character of the landscape is also evidenced within local place-names, and the nearby village of Pilning, named after the River Pill, testifies to this. The word 'Pîl' (including Pill, Pil or Pyll), derives from a Welsh place-name element, and is defined as the tidal reach of a waterway, suitable as a harbour (Owen 1803). It is common throughout the Severn Estuary.

2.6 Previous archaeological work on the site

Previous archaeological work across the site comprised a programme of geophysical survey and archaeological trial trenching (Fig 3).

Within Plot 3 the (fluxgate gradiometer) geophysical survey detected anomalies of agricultural origin including drainage features, field boundaries and ridge and furrow ploughing regimes (Garst and Wilkinson 2021). Although some anomalies were interpreted as of 'undetermined origin', no anomalies indicative of significant archaeological activity were identified. Variations in the geology and soils were detected relating to the site being located on a coastal tidal flat, and associated fluvial events.

Archaeological trial trenching was undertaken by Worcestershire Archaeology in 2021 (Walsh 2022). The evaluation was undertaken across three plots (Plots 2, 3, and 4) of the wider development area, and produced only limited archaeological results for both Plots 2 and 4. The most significant archaeological features were identified within Plot 3, and comprised several substantial ditches and a cremation deposit, all of Roman origin. Artefactual evidence, including pottery and metalwork, indicated the Roman activity could be dated from the 1st to late-3rd century AD.

3 Project aims

3.1 Aims and objectives

The aims and objectives for the excavation of the site were detailed in the WSI (RPS 2021) and were broadly to:

- mitigate the effect of development on any surviving buried archaeological remains within the site through excavation as required;
- and where appropriate, the implementation of any further archaeological investigation and recording;

Following completion of fieldwork, the aims for the post-excavation stage of the project are to:

- analysis of the excavated data, publication of the results, and deposition of an ordered project archive with an appropriate local museum for its long-term curation.

3.2 Research frameworks

In addition to the broader objectives outlined above, the WSI also specified that the project should inform the development and implementation of local, regional and national research agendas with specific reference to *The Archaeology of South West England. South West Archaeological Research Framework. Resource Assessment and Agenda* (Webster 2007), and *Archaeology of South West England: South West Archaeological Research Framework Research Strategy 2012-2017* (Grove and Croft 2012).

Following the excavation of the site, and the subsequent preliminary analysis presented in this report, it has been possible to identify several key research agendas towards which this project has the potential to contribute. These are outlined and discussed in Section 6.1 below.

4 Project methodology

4.1 Fieldwork strategy

A Written Scheme of Investigation (WSI) was prepared by RPS Consulting UK (RPS 2021). This document covered all stages of the fieldwork including the evaluation and all further mitigation works. Fieldwork was undertaken between August 2022 and October 2023, when the fieldwork could be split into three principal phases of work, including an initial watching brief, followed by two stages of excavation, the results of which are detailed below.

4.1.1 Watching brief stage

Initial mitigation of the site began with the monitoring of a rhine diversion ditch under an archaeological watching brief, between 12–16 August 2021.This comprised the monitoring of an easement strip, measuring approximately 12m wide, followed by the excavation of a drainage ditch within this area, measuring *c* 2m wide. The watching brief was maintained over a length of *c* 185m. This area of watching brief is indicated in Figure 3.

4.1.2 Excavation stages

In total an excavation area of some 4.5ha was stripped within the Plot 3 site (Plate 1). This was split over two stages, with excavation of the principal area, measuring *c* 4.4ha, undertaken between 25 October 2021 and 30 May 2022. This area covered the majority of Plot 3, including the footprint of the proposed building, car parking areas and associated landscaping.

A second stage of excavation, covering an area of 0.12ha, was undertaken between 3 and 26 October 2023. This covered a small area of landscaping, including the instatement of a drainage ditch, to the immediate north-west of the principal Plot 3 site.

The excavation areas are shown in Figures 2-5.

Deposits considered not to be significant were removed under constant archaeological supervision using a 360º tracked excavator, employing a toothless bucket (Plate 2). Subsequent excavation was undertaken by hand. Clean surfaces were inspected and selected deposits were excavated to retrieve artefactual material and environmental samples, as well as to determine their nature. Deposits were recorded according to standard Worcestershire Archaeology practice (WA 2012), and trench and feature locations were surveyed using a GNSS device with an accuracy limit set at <0.04m. On completion of excavation, trenches were reinstated by replacing the excavated material.

All fieldwork records were checked and cross-referenced. Analysis was undertaken through a combination of structural, artefactual and environmental evidence, allied to the information derived from other sources.

The project archive is currently held at the offices of Worcestershire Archaeology. Subject to the agreement of the landowner it is anticipated that it will be deposited at the City of Bristol Museum and Art Gallery.

4.1.3 General finds recovery policy

Artefacts were recovered according to standard Worcestershire Archaeology practice (WA 2012), with the exception that metal detecting was undertaken by Ian Lapraik at regular intervals. The majority of the artefacts collected in the field were recovered by hand, and a small quantity of further material was retrieved from environmental samples.

4.1.4 Environmental sampling policy

Samples were taken according to standard Worcestershire Archaeology practice (2012).

4.2 Post-excavation

This assessment process was primarily concerned with establishing the nature, quantification and significance of the fieldwork results. This has involved analysing the stratigraphic sequence and integrating the finds data for the purposes of a preliminary interpretation of the site and the determination of its potential for further analysis for final reporting and dissemination of results, taking into account the relevant research frameworks.

4.2.1 Discard policy – finds archive

Artefacts from topsoil and subsoil and unstratified contexts will normally be noted but not retained, unless they are of intrinsic interest (e.g. worked flint or flint debitage, featured pottery sherds, and other potential 'registered artefacts'). Large assemblages of post-medieval or modern material, unless there is some special reason to retain (such as local production), may be noted and not retained, or, if appropriate, a representative sample will be retained. Discard of finds from post-medieval and earlier deposits will only be instituted with reference to museum collection policy and/or with agreement of the local museum.

5 Archaeological assessment results

5.1 Structural remains

5.1.1 Introduction

The features recorded within the excavation area are shown in Figures 1-5, and further illustrated in Plates 1-18. The site record is summarised in Table 1 below.

The survival of features across the site was good, and, aside from the modern pond within the centre of the excavation area, there was little truncation to the archaeological horizon. It has been possible to assign the majority of features to a preliminary phase by combining spot-dating of contexts with stratigraphic analysis (where abbreviated = 'P' as prefixed) . Features have also been grouped as appropriate, with such context groups being indicated by a 'CG' prefix.

Record/catalogue type	Reference	Excavation	Watching Brief	Total
Context sheets	AS1	1737	-	1737
Fieldwork progress	AS2	31	1	32
Photographic register	AS3	28	-	28
Drawing number register	AS4	8	-	8
Context number register	AS5	21	-	21
Skeleton record	AS6	1	-	1
Recorded finds record	AS13	4	-	4
Spit sample record	AS16	2	-	2
Sample register	AS18	2	-	2
Scale drawings	AS34	578	-	578
Trench record	AS41	1	1	2
Digital photographs	n/a	2675	9	2684
Matrices	n/a	3	-	3

Table 1: Quantification of the fieldwork record

5.1.2 Site chronology and phasing

Site phase and date range	Sub phases	Character/main feature
Natural geology	N/A	- Mercia Mudstone recorded below Wentlooge formations - Not encountered on site

Phase 1: Prehistoric	1.1 Earlier prehistoric (late Neolithic – Bronze Age) 1.2 Later prehistoric (Bronze Age – Iron Age)	- Wentlooge Formation – Alluvial blocks / tidal flat deposits and peat horizons across the site - Peat horizons and organic-rich clays located *c* 1.40m-2.00m bgs (Middle Wentlooge Formation) - Alluvial blocks into which the Romano-British features are cut (Upper Wentlooge Formation)
Phase 2: Romano-British	2.1 Early Roman (mid-1st to mid-2nd century) 2.2 Mid to later Roman (mid-2nd to 4th century) 2.3 Later Roman (4th century)	- drainage features and field systems, including substantial ditches and smaller gullies - large waterholes, cutting as deep as the Middle Wentlooge Formation - central trackway sequence, re-established multiple times, with internal divisions - early Roman enclosures in the north-west of the site and several ring-gullies – possible roundhouses - later Roman enclosures in the west of the site, at the end of the trackway, with stone surface 'causeway' - Funerary deposits including cremations, an inhumation, and two animal burials
Phase 3: Medieval	N/A	- possibly includes a blue, gleyed alluvial layer, which seals a portion of the site, and fills uppermost level of Roman drainage features - overlying ridge and furrow - residual material
Phase 4: Post-medieval	N/A	- overlying, extant ridge and furrow earthworks - subsoil deposit - extant rhine ditches
Phase 5: Modern	N/A	- topsoil - extant rhine ditches and central pond - brick well and foundations in east of site
Undated	N/A	- several small pits/postholes and a possible rhine ditch

Table 2: Site phasing summary

5.1.3 Structural evidence

5.1.3.1 Phase 1: Prehistoric deposits

Prehistoric deposits on site were limited to the alluvial blocks and peat horizons of the Upper and Middle Wentlooge formations. No archaeological features could be dated as prehistoric, and no residual prehistoric material was recovered from any later deposits.

A peat horizon and a series of organic-rich clay layers were identified between *c* 1.40m - 2.00m below ground surface at *c* 3.90m AOD. These deposits are likely to represent the uppermost layers of the Middle Wentlooge Formation, which in the wider landscape have been dated to the later Neolithic and Bronze Age. These deposits were only identified when substantial features such as large ditches (i.e. CG86) and waterholes (i.e. CG98) were excavated to this depth (Plate 3).

5.1.3.2 Phase 2: Romano-British deposits

The vast majority of the archaeological features on site could be dated to the Romano-British period, suggesting that widescale exploitation of the area did not occur until this time. Initial spot dating of the combined ceramic and metalwork assemblage has indicated that this activity began in the 1st century AD with some continuity until the site was abandoned at some point in the 4th century (Table 2). The most intensive occupation of the site is likely to have occurred in the late-2nd and 3rd centuries, based upon both structural and artefactual evidence.

Subsequently, it has been possible to identify three phases of Romano-British activity (Phase 2.1 Early Roman; Phase 2.2 mid to later Roman; and Phase 2.3 later Roman) which are outlined below. A number of features could only be dated as broadly Roman, including several funerary deposits, and these are discussed at the end of this section.

Phase 2.1: Early Roman (mid-1st to mid-2nd century AD)
Archaeological features dating from the early Roman period were limited, and for the most part, confined to two clusters of activity in both the north-west and south-east corners of the site (Fig 5). In addition to these areas, residual early Roman pottery was recovered from a number of later features across the site, potentially hinting at more widespread activity not reflected in stratified features.

A number of ring-ditches (see CGs 6, 7, 9, 10, 11) in the south of the site may date from this phase of activity and possibly represent the remains of roundhouse structures (Plate 4). Aside from CGs 10 and 11, the gullies were irregular in character, did not form concentric rings, and were associated with several arcing drainage ditches. No dating material was recovered from the gullies and the backfills were largely sterile, comprising a redeposited upcast alluvial clay. Subsequently the dating is tentative and no material suitable for radiocarbon dating was present within the environmental samples. In the absence of any other prehistoric features or material from across the wider site, an earlier Roman date is considered the more likely. Two ditches (CG4 and 188) in this area may represent an attempt to enclose the ring-gullies and are truncated by Phase 2.2 drainage ditches (CG8 for example).

Alternatively, the irregularity of the gullies (particularly CGs 6 and 7), their small size (*c* 5m internal diameters) combined with the absence of any cultural material could infer that the features did not represent domestic occupation, but rather had a function as pens for corralling livestock. Two arcing ditches (CG25 and CG26), located in the north of the site, were similar in form and are likely to represent further activity of this type, whether domestic or agricultural. Clearly the dating of these features remains tentative, and in the absence of any other later prehistoric features or artefacts across the site, have been phased as early Roman (Phase 2.1), though potentially representing a continuation of later prehistoric practices.

A much more certain area of early Roman activity was located in, and extended beyond, the north-western limit of the site. This comprised a number of large, curvilinear enclosure or boundary ditches (CGs 40, 41, 56, 57, 58, 74, 106 etc), although the full extent of these features was not exposed within the site area. This area of activity, particularly ditches CG56 and CG106, contained an abundance of artefactual evidence, including pottery, metalwork and animal bone, indicating some level of domestic occupation (Plate 5). Pottery from the lowest fills of enclosure ditches CG56 and CG106 including some shell tempered wares, samian ware, and Severn Valley ware tankards, indicate a very early Roman origin for these features, likely within the mid to late 1st century AD. There is some evidence, particularly from ditch CG56, to suggest that some of these features may have continued in use throughout the 2nd century AD and potentially into the 3rd, although it should be noted that the pottery sherds of this date were recovered from high up in the sequence and could be more reflective of disuse. The most substantial animal bone assemblage of this phase was recovered from ditch CG56 and, whilst it had a predominance of sheep/goat, also included cattle, equid, pig. Significantly, the perinatal remains of calves, lambs and a foal were also recovered hinting at some level of husbandry. It is tempting to think that the exceptional animal burials (CG77/78) belong to this first major period of activity, but, so far, *two* attempts at radiocarbon dating these have failed.

No structural features associated with occupation, such as buildings or ovens, were located, and, instead, there were discrete features which included several small pits, and two postholes within the entrance to enclosure CG41/CG56/CG57/CG58.

The context groups provisionally allocated to Phase 2.1 are presented in Table 3 below:

Context Group	Brief Description
CG4	*An arcing boundary ditch to the west of, and potentially enclosing, ring-gullies CG6 and CG7. It is truncated by mid-Roman ditch CG21.*
CG5	*A row of five postholes associated with ring-gully CG6, potentially forming part of a roundhouse structure, or associated fence-line.*
CG6	*A ring-gully in the south-east of the site, possibly forming a roundhouse, and associated with CG6, CG7, and CG8.*
CG7	*A ring-gully in the south-east of the site, contemporary with CG6, and possibly forming a second roundhouse.*
CG8	*A curvilinear boundary or drainage ditch associated with ring-gullies CG6 and CG7.*
CG9	*A curving stretch of ditch located to the south of ring-gullies CG6 and CG7, and possibly representing another roundhouse.*
CG10	*A complete ring-ditch in the south of the site, likely forming a roundhouse, and potentially associated with similar features CG6 and CG7 to the south.*
CG11	*A ring-gully, associated with and likely forming same structure as CG10. This gully does not form a concentric ring and could represent a re-establishment of CG10.*
CG25	*An arcing ditch in the north of the site, possibly forming a roundhouse and associated with similar ditch CG26. It is heavily truncated by drainage ditch CG19.*
CG26	*An arcing ditch to the south of CG25 possibly forming a second structure, but heavily truncated by drainage ditch CG19.*
CG40	*A probable boundary or enclosure ditch in the north of the site, which may be enclosing smaller enclosures CG41 and CG56.*
CG41	*A curving enclosure ditch in the north of the site, re-cut by ditches CG56, CG57, and CG58.*
CG47	*A small, square ditch to the west of later Roman enclosure CGs 52, 53, 54. Unclear function but could represent a stock-pen or structure.*
CG55	*A gully associated with enclosure ditches CGs 41, 56, 57, 58.*
CG56	*A curvilinear ditch re-establishing enclosure CG41, containing an abundance of domestic refuse dating from the 1st to mid-2nd century, including tankards and glazed ware.*
CG57	*A curving ditch re-establishing south-western edge of enclosure CG41 and terminating in the west, potentially forming an entrance.*
CG58	*A ditch which truncates ditch CG56, potentially re-establishing the north side of the enclosure. It continues past the excavation limit, so the full extent was not exposed.*
CG71	*A pair of postholes associated with ring-ditches CG25 and CG26, potentially forming part of the structure.*

CG74	*A re-establishment of enclosure ditch CG40 which branches off in the south-west, enlarging the enclosed area.*
CG106	*The terminus of a substantial enclosure ditch located just within the northern limit of site. It contained an abundance of 1st century AD pottery.*
CG107	*Small gully in the north of the site associated with enclosure ditches CG40 and CG74.*

Table 3: Phase 2.1 Context Groups

Phase 2.2: Mid to later Roman (mid-2nd to 4th century)

Activity on the site became much more intensive in the middle to later Roman period and can largely be characterised as the instatement of drainage networks and field systems, seemingly as part of a formal process of land reclamation (Fig 5). A large trackway in the centre of the site was also dated to this period, and despite the lack of structural features, domestic activity was heavily represented in the material culture recovered. Artefactual evidence for this phase of activity was broad, including ceramics, metalwork and worked stone. Preliminary analysis of the pottery has indicated that much of this activity could be dated to the 3rd and 4th centuries AD, although activity throughout the 2nd century was also represented.

The network of drainage ditches could be separated into several substantial, primary 'channels' (i.e., CGs 19, 21, 23, 24, 37) which were often interconnected by a series of smaller ditches and gullies (e.g. CGs 28, 29, 32). It is apparent that, taken together, this represented a planned, formalised system of drainage, with features situated parallel to one another, and all located on a broadly north-west to south-east alignment. Notably, all the primary 'channels' continued past both the northern and southern limits of the site, hinting at a much wider drainage network, potentially on a landscape scale. Unsurprisingly, the drainage ditches were frequently re-established, likely reflecting the maintenance required on a wet, lowland site. However, despite the wet conditions on site, no organic deposits were identified in any of these features, and for the most part, environmental evidence such as plant macrofossils, was poor (Section 5.3.1); this indicates that the site must have had long periods of dryness, despite being wet on occasion, possibly pointing to the success of the drainage channels.

A central trackway, formed via two parallel ditches (CG20 and CG22), was also established in this period. This measured some 130m in length, was contemporary to several of the primary drainage ditches (CGs 19, 21, 24), and is also likely to have formed part of this wider system (Plate 6). Notably, a series of internal ditches were located throughout the trackway, and these appear to have formed a series of internal barriers, possibly with the intention of controlling (animal) movement. This intensified at the south-western limit, with considerable reworking of the trackway appearing to funnel movement to an access point, or causeway, located in the western corner. An intensification of activity in this area was also reflected in the backfills of the ditches, which were, comparatively, much richer in occupation-related material when compared to the rest of the feature. A number of animal burials were also located at the south-western end of the trackway, including a double burial of two young equids (CG77; Plate 7), a third truncated equid (or calf) burial (CG78), and a sheep/goat deposited at the base of a trackway ditch (undated so far; see above). The clustering of this activity at the terminal end of the trackway appears intentional, and could reflect a principle use in the movement of livestock across what appears to be a primarily pastoral site. It is currently unknown to which phase of activity the burials CG77 and CG78 belong, as both could be contemporary with any site phase in the absence of their being dated; so they are currently listed within the wider Phase 2 group table (Table 6).

Other activity dated to this phase included a cluster of large ditches against the north-western limit of the site. A number of these (CGs 86-91) are likely to be associated with drainage, as indicated by their size and character of the backfilled deposits. A substantial quantity of pottery was recovered from this confluence of ditches, including a smashed, burnished grey ware vessel containing an abundance of charred Celtic beans (context 1123; CG88; Plate 8). Additionally, two fragments of disarticulated human bone, comprising a fragment of cranium and a mandible were also recovered

from two of the ditches at this location (context 1132; CG90, and context 993; CG88 respectively), perhaps indicating the disturbance of an earlier inhumation in this vicinity. Radiocarbon dating on a fragment of the mandible (context 993) returned a date of 210–340 cal AD (SUERC-111621). A ditch (CG83) located to south-west of this confluence was likely to be occupation-related, although the full extent and function was not exposed. This had been backfilled periodically with numerous deposits rich in occupation refuse, including pottery, animal bone and metalwork. Significantly, the metalwork assemblage included a copper alloy shoulder-belt mount of *'numerum omnium*' type, as well as a disc brooch, the former in particular hinting at a military association on site.

Funerary activity across the site included just a single inhumation (CG51) and five cremations, which following a suite of radiocarbon dating, could be dated from the mid to late Roman period (Phase 2.2). Burial CG50 was located in the north-west corner of the later Roman (Phase 2.3) enclosure (CGs 52, 53, 54), and comprised an adult male, positioned on their left side with legs and arms flexed (Plate 9). The individual had been deposited within an unfurnished, north-east to south-west orientated grave and radiocarbon dating indicated a date of between 130–310 cal AD (SUERC-111197).

The five cremation deposits (cuts: 10506 (evaluation); 303; 547; 1053; and 1055) are considered likely to be mid to later Roman in date. None of the cremations were deposited within urns, with all seemingly deposited straight into shallow, circular pits (Plate 10). With the exception of deposit 304, the density of calcined bone was low, indicating that at least some of these deposits may represent cremation-related deposits, rather than specific burials. The cremations were all located in a broadly linear position, to the east of boundary ditch CG37, although an association with the central trackway is also possible. Radiocarbon dating on two of the cremation deposits (pits 303 and 1055) provided tight dates of early 3rd to 4th centuries AD, and a third deposit (pit 548) produced a date of 80–240 cal AD (SUERC-111623; Section 5.4 below).

As outlined above, there were no clear structural features or domestic enclosures assigned to this phase of activity, however the quantity and quality of artefactual material indicates some intensive occupation activity throughout this period. The pottery assemblage is typical of rural sites and lacks the 'fine-wares' of more high status settlements, although the fragments of samian depicting a hunting scene of Apollo in chariot with wild animals is a rare and interesting find. Analysis of the animal bone assemblage hints that the site may have had a specialised function in the procurement and processing of livestock. The assemblage was dominated by sheep/goat, but also included equids, cattle and pig, including juveniles, which may be indicative of husbandry.

The context groups provisionally assigned to Phase 2.2 are presented in Table 4 below:

Context Group	Brief Description
CG13	*Ditch associated with central trackway. Located inside primary ditches CG20 and CG22, and appears to mirror the form of CG20. Re-established at western extent by ditch CG62*
CG14	*Short length of ditch located within central trackway. Located perpendicular to, and truncated by, CG13. Likely forming an internal barrier or partition*
CG16	*Short length of ditch within central trackway, and running parallel to principal ditches CG13, CG20, and CG22*
CG17	*Short length of ditch within central trackway and truncated by CG13. Possibly functioned as an internal barrier but notable for containing a dump of charcoal and pottery, including Samian sherds decorated with Apollo*
CG18	*Short spur of ditch associated with primary drainage ditch CG21*

CG19	*Large drainage ditch in the east of the site and paired with similar ditch CG23. Appears contemporary with trackway ditches CG13, CG20, and CG22 which do not continue east past this boundary.*
CG20	*Primary ditch, forming southernmost boundary, of the central trackway. Appears to be paired with ditch CG22 which forms the northern boundary. Likely to also be contemporary with CG21. Has a right-angled turn at the south-western limit creating a funnel-like exit to trackway*
CG21	*A large drainage ditch to the south, and likely contemporary to, the central trackway (CG20). Mirrored by drainage ditch CG24 on the northern edge of the trackway*
CG22	*Primary ditch, forming northernmost boundary, of the central trackway. Paired with ditch CG20 which forms the southern boundary*
CG23	*Large drainage ditch in the east of the site and paired with ditch CG19. It is re-established by ditch CG69 and also truncated by a modern rhine ditch to the north*
CG24	*A large drainage ditch, which runs parallel to CG19, and appears to respect the central trackway, feeding into ditch CG22. It is contemporary to CG27 and possibly forms a principle boundary for a field system represented by smaller gullies CG28, CG29, and CG32.*
CG27	*A drainage ditch, which feeds into ditch CG24, and continues past the north-west limit of the site. It truncated earlier Roman ditches CG40 and CG74 and contained an abundance of 2nd century black burnished ware within a localised dump*
CG28	*Small gully, filled with a blue, gleyed clay, which runs parallel to gullies CG29 and CG32, likely forming an irrigation / field system*
CG29	*Small gully, filled with a blue, gleyed clay, which runs parallel to gullies CG28 and CG32, likely forming an irrigation / field system*
CG30	*Short length of ditch which spurs south from CG22, likely attempting to create an internal division or barrier within the central trackway. Contained a number of large stones tipped into the base*
CG31	*A small, reverse 'L' shaped ditch in the north of the site and truncated by gully CG29. May represent an earlier drainage or field system.*
CG32	*Small gully, filled with a blue, gleyed clay, which runs parallel to gullies CG28 and CG29, likely forming an irrigation / field system*
CG33	*A small drainage gully, within the field system created by CGs 28, 29 and 32. It is positioned a slightly different alignment however, which like CG31, may indicate an earlier phase.*
CG34	*A drainage gully part of the same network / field system as CGs 28, 29, 32, 33. It truncates gully CG35, and appears to be contemporary with CG36 although this is not clear.*
CG36	*A drainage gully part of the network of blue drainage gullies in this area. It seems to be contemporary with CG34.*
CG37	*A primary drainage or boundary ditch in the centre of the site. Large feature with uppermost level filled with blue, alluvial clay. Broadly mirrored by later Roman boundary ditch CG38. Trackway appears to end when it reaches this boundary, and a row of postholes (CG44) in this location may hint at a causeway. Continues past both the northern and southern site boundaries.*
CG39	*A small gully within the central trackway (CG20/CG22) although it may be more closely associated with the field / drainage network (CGs 28, 29, 32, 34 etc) to the north*
CG42	*A re-establishment of the early Roman enclosure CG40 and CG74. This ditch is notably much richer in material, containing a large quantity of charcoal and pottery*

CG44	*A row of four postholes on the eastern edge of boundary ditch CG37, aligning with the north-western entrance to the central trackway.*
CG49	*A north-west to south-east aligned drainage ditch in the west of the site, which may represent an earlier incarnation of ditch CG43 and is truncated by the late Roman enclosure (CGs 52, 53, 54).*
CG51	*An adult inhumation, in a north-east to south-west aligned grave, located in the north-west corner of the late Roman enclosure (CGs 52, 53, 54). No grave-goods or dating material recovered but a radiocarbon date suggests 130 – 310 cal AD.*
CG59	*A large storage pit cut into the early Roman enclosure ditch CG41, indicating the enclosure was entirely backfilled by this point. It has a classic storage pit profile, with near-vertical sides and a flat base.*
CG60	*A large pit located at the northern terminus of the enclosure ditch CG57. The profile indicates a function as a waterhole, rather than for storage.*
CG61	*A re-establishment of the boundary/drainage ditch CG27. Localised to the north-western extent.*
CG62	*A re-establishment of the trackway ditch CG13, and also forming the right-angle or 'L' shape, which is likely to have been instated to control / focus movement to the north-west corner.*
CG64	*A stretch of ditch which spurs north-west from the trackway ditch CG20, forming an internal division or partition, which like CG62, appears to be attempting to control or re-focus movement.*
CG66	*A stretch of ditch which spurs south-east from the trackway ditch CG22, mirroring CG64, and also likely having a focus on controlling movement.*
CG67	*A ditch which re-establishes the western end of trackway ditch CG22. Appears contemporary with CG66.*
CG68	*A small gully which spurs south-east from ditch CG24 and forms part of the drainage network / field system in the centre of the site (see CG28, CG29, CG32 etc).*
CG70	*A drainage ditch located below CG23 which may represent an earlier incarnation of the boundary / drainage network.*
CG72	*A localised ditch which re-establishes the northern end of large boundary / drainage ditch CG37.*
CG73	*A second re-cut of large boundary / drainage ditch CG37, which also truncates CG72. Also localised to the northern extent of the feature.*
CG80	*Small drainage gully, paired with CG81, located in the west of the site, which terminates at the north-western corner of the later Roman enclosure CGs 52, 53, 54.*
CG81	*Small drainage gully, paired with CG80, located in the west of the site, which terminates at the north-western corner of the later Roman enclosure CGs 52, 53, 54.*
CG83	*A possible boundary ditch which continued past the north-western limit of the site and was notable for containing a backfill rich in cultural material with finds including a copper alloy shoulder-belt mount of '*numerum omnium*' type and a plate brooch.*
CG84	*A large waterhole or a much deeper ditch, truncated by ditch CG83, against the north-western limit of the site, so the full extent was not exposed.*
CG86	*A large ditch in the north of the site which forms part of a confluence of ditches (CG86-93) some of which are dated to Phase 2.3. All appear to have a primarily drainage function, but their full extent is not visible within the site area.*

CG87	*A re-cut of ditch CG86 and forming part of the confluence of drainage ditches including CG86-93.*
CG88	*A re-cut of ditches CG86 and CG87, following the same alignment.*
CG89	*A re-cut of ditches CG86, CG87, and CG88; following the same alignment.*
CG90	*A ditch which runs parallel to CGs 86 and 87, and forms part of the drainage system in this location.*
CG91	*A re-cut of drainage ditch CG90 which also truncates ditches CG88 and CG89.*
CG98	*A large waterhole in the south of the site measuring c 1.80m deep and truncating the peat horizon of the Middle Wentlooge Formation. Backfilled with sterile material.*
CG100	*A small length of ditch which spurs south-west from boundary / drainage ditch CG27 in the north of the site.*
CG105	*A gully in the north of the site which truncates early Roman ditches CG40 and CG106*
CG108	*Small gully part of drainage network in the centre of the site with CGs 28, 29, 32 etc.*
CG109	*Small gully part of drainage network in the centre of the site with CGs 28, 29, 32 etc.*

Table 4: Phase 2.2 Context Groups

Phase 2.3: Late Roman (4th century)

It has been possible, through a combination of stratigraphic, ceramic and numismatic analysis, to identify that the site remained occupied into the 4th century AD, although perhaps not into the latter half of the century. For the most part there appears to be a continuation in activity from Phase 2.2, with some evidence to suggest that several of the drainage ditches and the central trackway, were reworked at this time (Fig 5). A new enclosure (CGs 52, 53 54) was established at the western end of the trackway (Plate 11), and artefactual evidence remained plentiful, with 4th-century material including coinage and pottery, which comprised Dorset black-burnished, New Forest, Oxfordshire, and Mancetter-Hartshill wares. An exceptional find, comprising a portable stone altar (sf148), with a Latin inscription, also dates from this phase.

A sub-square enclosure (CGs 52, 53 54) was established in the south-west of the site, *c* 23m west of the terminal end of the central trackway (Fig 5; Plate 11). It was defined by a large U-shaped ditch (CG52), which was reworked at least twice (CGs 53 and 54), enlarging the enclosure from *c* 0.50ha to 0.72ha (Plate 12). All three enclosure ditches contained pottery and coins providing a 4th century *terminus post quem* (*tpq*; Plates 13-15), and it was from ditch CG53 that the portable stone altar (sf148) was recovered (Plate 16). The inscribed stone represents a significant find for the region, and preliminary analysis suggests that, whilst it was potentially produced as a portable altar stone, it was likely later re-used as a boundary marker. Four inverted lines of abbreviated Latin carved into the stone are difficult to read but may reference the place name *Moridunum* (or sea-fort), and the 'farm' or 'estate' of *Attius* / *Ateius* (Roger Tomlin pers comm; see below). Its findspot was also associated with stone blocks in the fill above. In addition to this, there remains the possibility of some sort of association with the nearby inhumation CG51, located *c* 5m to the south-west of the findspot. However, radiocarbon dating indicates the grave is likely to predate the late (Phase 2.3) enclosure, and so, instead, its later disturbance might have led to some of the contents of the later CG53 ditch fill.

During the third and final phase of the enclosure, a stone surface (CG50) was constructed on the top of the backfilled earlier enclosure ditch CG52 (Plate 17). The surface was constructed from flagstones, on a gravel bedding, and an upper layer of cobbles may indicate repair and maintenance. The surface appears to have formed a causeway or entrance into the enclosure, and aligns well with both the trackway, and a terminus of the final enclosure ditch CG54.

A large drainage ditch (CG43) was also instated in the west of the site, and, spatially, appeared to respect the line of the enclosure, although it did truncate it in places. A coin recovered from this feature is notable for providing the latest evidence for Roman occupation on the site, *viz* a Valentinian copper-alloy, *nummus*, dating from AD 364-378. It is likely that the central trackway (CG20 and CG22) remained in use throughout this time, and there was some evidence for remodelling or reinstatement with the excavation of ditches CG48 and CG63, the former of which contained the skeletal remains of a near-complete sheep/goat at the base (Plate 18).

Other notable features from this phase of activity include a large (19m by 6m) segmented ditch, or pit (CG45) in the north of the site. The feature appeared to be associated with the drainage ditch confluence in this area (e.g. CGs 86-92) and may have had a role associated with water management. A well-preserved rotary quern (again implying domestic activity) was recovered from the base, and the upper fills were reminiscent of midden material, being dark in colour and rich in charcoal, pottery and bone.

A blueish, alluvial clay was identified as a layer across the localised, deeper sections of the site (north-west and south-east). It is considered that this layer is likely to be the source of the final, blue-clay fills of the drainage features, consistently encountered across the site (Plate 6). In places, it contained black-burnished ware of late 3rd to 4th century dating, providing a broad *tpq*, although a sub-Roman date is possible. This alluvial layer may represent a sustained period of waterlogging/flooding in the 4th century AD or later, potentially, also, providing a clue as to the abandonment of the site.

The context groups provisionally assigned to Phase 2.3 are presented in Table 5 below:

Context Group	Brief Description
CG38	*A drainage or boundary ditch which runs parallel to ditch CG37, potentially re-establishing the boundary. Little cultural material recovered from the ditch but appears to truncate late Roman ditch CG43 in the south of the site.*
CG43	*A large boundary / drainage ditch in the west of the site. The top is filled with a blue, alluvial clay like most of the drainage features, although this ditch is notable for containing more cultural material, including a late 4th century coin. Spatially it appears to respect the late Roman enclosure (CGs 52, 53, 54) but does truncate it in places.*
CG45	*A very large feature (19m by 6m), which may be a pit or segmented ditch, in the north of the site. Appears to be aligned with the drainage ditch confluence (CGs 86-93) so a water management function is likely, though the upper fill could suggest a use as a midden.*
CG46	*A short length of ditch, aligned north-west to south-east, within the central trackway (CG20 and CG22) and is likely to have functioned as a barrier / internal partition to control movement.*
CG48	*A length of ditch within the trackway (CG20 and CG22) which has a similar alignment and function to ditch CG46. A near-complete sheep skeleton was located at the base of this ditch.*
CG50	*A stone surface, including gravel bedding layers, cobbles and flagstones which was constructed on top of the backfilled enclosure ditch CG52, creating a causeway into the enclosure. Appears to be contemporary with the final phase of the enclosure (CG54) as this ditch terminates adjacent to the surface, potentially creating an entranceway.*
CG52	*An enclosure ditch representing the first phase of a sub-square enclosure in the west of the site. Spot dating suggests a 4th century date and it is truncated by later enclosure ditches CG53 and CG54.*

CG53	*An enclosure ditch representing the second phase of a sub-square enclosure in the west of the site. Spot dating suggests a 4th century date and notably, finds recovered include a portable stone altar (rf148) with a Latin inscription.*
CG54	*An enclosure ditch representing the third phase of a sub-square enclosure. It truncates earlier enclosure ditches CG52 and CG53, but appears to be truncated by drainage ditch CG43. It is likely to be contemporary with the stone surface CG50, and together seem to create a causeway / entrance into the enclosure.*
CG63	*A localised, lozenge-shaped re-cut within the western limit of trackway ditch CG20. The backfill contained a dump of refuse including pottery, animal bone, and stone.*
CG69	*A ditch which re-establishes the large drainage ditch CG23 in the east of the site. The dating is tentative but contains pottery of mid-3rd to 4th century.*
CG75	*A ditch which re-establishes the northern extent of drainage ditch CG43 and does not appear to be continuous.*
CG76	*A large pit or waterhole in the north of the site, which is adjacent to, and likely associated with, CG45.*
CG79	*A ditch which spurs south-west from the corner of the late Roman enclosure CG52 and CG53. It truncates early Roman ditch CG47 and is truncated by the final phase of the enclosure (CG54).*
CG82	*A pair of shallow, possibly truncated, postholes in the north-east corner of the late Roman enclosure (CGs 52, 53, 54). Both contained some possible packing stones, but no clear structure remaining.*
CG85	*A small length of ditch in the north of the site, dated to the 4th century. It follows a north-west to south-east alignment, and like many in this location, continues past the north-western limit of the area.*
CG92	*A ditch which is associated with the confluence of drainage ditches (CGs 86-93) in the north of the site. Stratigraphically, this ditch is one of the latest in the sequence and also contained 4th century pottery.*
CG93	*A ditch which is associated with the confluence of drainage ditches (CGs 86-93) in the north of the site.*

Table 5: Phase 2.3 Context Groups

Phase 2: General Roman

A number of features and deposits were dated as broadly Roman and did not contain any material that could further refine their chronology. For the most part this comprised several drainage ditches and isolated pits or postholes, but also the exceptional animal burials (CG77 and CG78) discussed above (Fig 5). Where possible, features have been dated, though this could be only tentatively via some group association, for example cremation 1053, by its being grouped loosely with the radiocarbon dated cremation 1055. In this regard, it may be possible to return to the dating of the following features during final reporting, especially if more radiocarbon dates are attempted.

The context groups which have been provisionally phased as broadly Roman (Phase 2) are presented in Table 6 below:

Context Group	**Brief Description**
CG1	*A small, north-west to south-east, drainage gully in the south of the site, likely associated with parallel gullies CG2, CG3, and CG12.*

CG2	*A small drainage gully in the south of the site likely associated with nearby parallel gullies CG1, CG3 and CG12.*
CG3	*A small drainage gully in the south of the site likely associated with nearby parallel gullies CG1, CG2, and CG12.*
CG12	*A small drainage gully in the south of the site, likely part of the same network as parallel gullies CG1, CG2, and CG3. Appears to truncate trackway ditch CG20 and may be contemporary with ditch CG13, hinting at a mid-Roman date.*
CG65	*A small ditch in the south of the site that is truncated by trackway ditch CG20 and likely feeds into larger drainage ditch CG95.*
CG77	*Oval grave containing the complete skeletons of two young equids, located at the western end of the central trackway (CG20, CG22). The size difference between the burials suggests one of the horses may be an infant and the other a juvenile.*
CG78	*An animal burial also located at the western end of the central trackway (CG20, CG22). Very poorly preserved and so unclear if this represents a complete or partial interment. An association with horse burials CG77 is likely.*
CG94	*A pair of probable post-holes located to the north-west of drainage ditch confluence CG86-93.*
CG95	*A curving drainage ditch in the south of the site which appears to be truncated by ditches CG37 and CG20, however they are likely to be broadly contemporary, as this ditch connects the two.*
CG97	*A drainage gully in the south of the site which could be associated with gully CG12.*
CG102	*Two postholes within the curvilinear enclosure CGs 41, 56, and 57. Postholes are located within a possible entrance created by ditch CG57, hinting at an early to middle Roman date.*
CG104	*A shallow ditch in the north of the site which may be associated with the nearby early Roman activity.*

Table 6: Phase 2 Context Groups

5.1.3.3 Phases 3–5: Medieval, post-medieval, and modern deposits

Features post-dating the Roman period were limited, likely reflecting the agricultural character of the site up until the 21st century. Multiple, extant regimes of ridge and furrow were present across the Plot 3 site and are likely to date from the medieval to post-medieval periods (Figs 2-3). The ridge and furrow for the most part was contained within the topsoil and subsoil deposits, very rarely truncating into the Upper Wentlooge Formation. As mentioned above, a subsoil deposit, comprising a yellowish-clay, was located across the site, and appeared to have formed in the post-Roman periods. As well as a host of residual Roman material, a silver Edward I long-cross penny (AD 1279-1280) was recovered from this layer. Significantly, this has ensured that the underlying/earlier features were much better preserved that they otherwise would have been, and, therefore, the site has largely avoided the usual damage especially from truncation by agriculture.

Post-medieval to modern deposits included a large pond, a brick-built well, and numerous land-drains (Fig 4). A rhine ditch (CG111) of this date was located in the north of the site and was still in use until the start of the project, when it was diverted to the east of the site (Fig 5). The entirety of the area was overlain by a dark, clay-silt topsoil.

5.1.3.4 Undated deposits

A few features cannot currently be confidently assigned to any phase of activity on the site (Fig 5). This includes a small, curvilinear ditch (CG96) in the south of the site, which could be prehistoric in origin, being more irregular in plan and truncated by Roman ditch CG97.

A large ditch (CG110) in the north of the site may represent an earlier incarnation of the later rhine ditch CG111, but no dating material was recovered from it, although stratigraphic relationships indicate an origin post-dating the Roman period.

5.1.3.5 Discussion

The archaeological investigations covered a substantial area of some 4.5ha within Plot 3 of the Western Approach Distribution Park, close to the historic settlement of Pilning. Previous work at the site, and wider distribution park, indicated the potential for archaeological remains within the Upper Wentlooge Formation, and this was reflected in the results of the investigation. For the most part, this activity could be identified as Romano-British in date, although some limited medieval to modern agricultural activity was also recorded. No prehistoric anthropogenic deposits were identified at the site, and similarly no residual material of this date was identified in later assemblages. This is perhaps unsurprising given the alluvial sequence present, and that the investigations did not extend below the Upper Wentlooge Formation.

The vast majority of the archaeological features on site could be dated to the Romano-British period, suggesting widescale exploitation of the area did not occur until this time. This activity began in the 1st century AD with some continuity until the site was abandoned at some point in the 4th century. The most intensive occupation of the site is likely to have occurred in the late-2nd and 3rd centuries, based upon both structural and artefactual evidence, and could largely be characterised as the instatement of a complex network of drainage ditches, seemingly representing a formal process of land reclamation. More intensive activity was confined to ditched enclosures or ring-gullies, in both the north, south-east, and west of the site, and, overall, material evidence was certainly indicative of domestic activity and crafts. A number of funerary deposits, including five cremation pits and a single inhumation, further attest to the occupation of the site. This unusually well preserved site due to its deeper than usual burial as a result of its location, is also associated with a large artefactual assemblage including some exceptional objects (see below).

5.2 Artefactual evidence

The artefact report conforms to standards and guidance issued by the Chartered Institute for Archaeologists (CIfA 2014c), as well as further guidance on pottery analysis, archive creation and museum deposition created by various pottery study groups (PCRG/SGRP/MPRG 2016), the Archaeological Archives Forum (AAF 2011), and the Society of Museum Archaeologists (SMA 1993).

This assessment aims to identify, sort, spot date, and quantify all artefacts and describe the range of artefacts present. The information has been used to provide a preliminary assessment of the significance of the artefacts, and for an updated project design for final analysis.

5.2.1 Pottery, by Rob Perrin

5.2.1.1 Introduction

A large and significant assemblage was recovered from the excavations. A total of 9906 sherds weighing 166.771kg was recovered from 472 contexts in 233 features, together with subsoil and other layers. Over 80% of the contexts and features were assigned to one of 74 context groups.

5.2.1.2 Assessment methodology

The pottery was recorded per context by count of rims, body sherds and bases, together with weight in grams per fabric. Where possible the form of vessels was noted. The fabrics of imported continental and regionally-traded wares are assigned to the codes in the National Roman Pottery Fabric Reference Collection (Tomber and Dore 1998), and an attempt has been made to relate the other wares to the Gloucester pottery fabric type series (https://glospot.potsherd.net).

5.2.1.3 Fabrics and vessel forms

Table 7 shows the amounts of pottery per fabric. Four fabrics account for over 90% of the total by sherd count – DOR BB1 (33%), CSGW (31%), micaceous grey ware (14%) and SVW OX (13%). Continental imports comprise less than 2% of the total and other traded wares 2.5%. Over 1200 possible forms were noted and Table 8 lists their basic forms.

Fabric	Description	Glos Fab	NoSh	%	Wgt (g)	%	Vessels	%
Continental wares								
AMPH	Miscellaneous amphora		3	0.03	341	0.20	2	0.17
LGF SA	South Gaulish samian		29	0.29	154	0.09	18	1.49
LMV SA	Les Martres de Veyre samian		6	0.06	115	0.07	5	0.41
LEZ SA 2	Lezoux samian		96	0.97	1143	0.69	60	4.95
RHZ SA	Rheinzabern samian		29	0.29	388	0.23	18	1.49
TRI SA	Trier samian		9	0.09	292	0.18	6	0.50
EG SA	East Gaulish samian		4	0.04	53	0.03	2	0.17
IMP CC	Imported colour-coated		7	0.07	17	0.01	3	0.25
Regionally-traded wares								
DOR BB 1	Dorset black burnished		3286	33.17	46,416	27.83	332	27.42
SOW BB 1	South West black burnished		80	0.81	1368	0.82	19	1.57
SVW OX	Severn Valley		1237	12.49	23,117	13.86	192	15.85
NFO CC	New Forest colour-coated		13	0.13	156	0.09	3	0.25
OXF RS	Oxfordshire red-slipped		24	0.24	283	0.17	10	0.83
OXF WH/WS	Oxfordshire white/slipped		28	0.28	885	0.53	19	1.57
MAH WH	Mancetter-Hartshill white		6	0.06	312	0.19	6	0.50
CONG	Congresbury		94	0.95	3687	2.21	13	1.07
GLAZED	Miscellaneous glazed		4	0.04	18	0.01	1	0.08
Local wares								
NATIVE	Shell or flint-tempered	TF34, TF228	35	0.35	347	0.21	7	0.58
GROG	Grog-tempered	TF2A-E, TF6	98	0.99	1249	0.75	6	0.50
BUFF	Buff	TF9J-L?	22	0.22	253	0.15	6	0.50
CC	Miscellaneous colour-coated	TF12R, TR12V	5	0.05	42	0.03	4	0.33
CSGW	Coarse sandy grey	TF35, TF39	3049	30.78	54,859	32.89	282	23.29
FSGW	Fine sandy grey	TF26	46	0.46	897	0.54	13	1.07
CSOX	Coarse sandy oxidised	TF35	233	2.35	2880	1.73	12	0.99
FSOX	Fine sandy oxidised		34	0.34	363	0.22	13	1.07
MICA GREY	Micaceous grey	TF5/11A	1361	13.74	26,041	15.61	143	11.81
MICA OXID	Micaceous oxidised	TF3A-B	3	0.03	22	0.01	1	0.08
MORT GLOS?	?Gloucester mortaria	TF9B, TF9N	9	0.09	466	0.28	6	0.50
RED SLIP/OXF RS?	Red slipped/?Oxfordshire	TF12E-F	7	0.07	71	0.04	3	0.25
BR SLIP	Brown slipped	TF12D	6	0.06	15	0.01	0	0.00
WH SLIP	White slipped	TF7, TF15A	43	0.43	521	0.31	6	0.50
Total			**9906**		**166,771**		**1211**	

Table 7: Fabric quantification

Form	Count
Amphora	2
Bowls	114
Beakers	8
Cups	10
Dishes	250
Flagons	18
Jars	643
Lids	9
Tankards	75
Mortaria	39
Colander	1
Strainer	1
Misc.	40
Total	1210

Table 8: Vessel form quantification

Continental imports

The samian ware has been analysed by J M Mills (Section 5.2.2 below). She notes that samian from the three main centres of production was recorded; the kiln sites of La Graufesenque in South Gaul; Les Martres-de-Veyre and Lezoux in Central Gaul; Rheinzabern and Trier in East Gaul are all represented, three other sherds were also identified as East Gaulish, but the kiln sites were not identified. The earliest samian came from La Graufesenque, which accounts for 16% of the total samian by sherd count. The range of forms is quite limited, and includes Dragendorff forms 35, 36 and 37, and Curle 15. Closely-dated vessels are all but absent; there are no potters' stamps and very few decorated sherds. Only six Les Martres sherds were identified, but these include vessels with a stamp and decoration. The Lezoux samian forms by far the greatest proportion of the assemblage, accounting for *c* 60% by sherd count. The range of vessels includes a few Drag 18/31s, but many more Drag 31 dishes, together with forms Drag 31R, Drag 33, 36, 37, 38, 46, Wa 79 and Drag 45; four vessels are decorated and one has a stamp. Samian from the East Gaulish kilns of Rheinzabern, Trier and unidentified East Gaul kiln sites account for 22%. Forms occurring are Drag 31, 31R, 32, 33 or 46, 36 and mortaria. One Trier vessel and one East Gaul vessel have stamps. The three amphora sherds are from Dressel 2-4 and 20 types, and the imported colour-coated sherds are beakers from Central Gaul and the Mosel region of the Lower Rhineland.

Regionally-traded wares

As noted above, DOR BB 1 and SVW OX comprise two of the main fabrics in the assemblage. Over half of the vessels in DOR BB 1 are jars, together with around a hundred dishes and 40 bowls. Many of the jars have burnished lattice decoration and the bowls and dishes intersecting arc decoration; two of the latter are the oval 'fish' dish type. The SVW OX occurs in a much wider range of forms. As well as the iconic 'tankard', of which there are around 60, there are over 70 jars of various types, narrow-mouthed, wide-mouthed, storage and lid-seated, bowls with numerous rim types, bead, flat, grooved and flanged, as well as a carinated form, dishes with similar rim forms, bead, flat, grooved and plain, together with imitation samian forms; other vessels are flagons and lids. Some of the black-burnished ware jars and dishes can be attributed, on the basis of the presence of a clear slip, to SOW BB1 and at least some of the grey ware, mostly jars or bowls, is from kilns at Congresbury (A Thorp, pers comm). The remaining regionally-traded pottery comprises New Forest (NFO CC) colour-coated flagon and beaker sherds and possible parchment ware (NFO PA), Oxfordshire white (OXF WH) and white-slipped (OXF WS) mortaria, Oxfordshire red-slipped (OXF RS) imitation samian ware forms 31,

36, 38 and 45, MAH WH mortaria and a few glazed jar or beaker sherds, possibly from Wiltshire, the south-west or Caerleon (Arthur 1978).

Local wares

The few sherds with either shell, calcite or flint inclusions include jars with inturned bead rims, a bead-rimmed dish or bowl and a dish or lid. The vessels in grog-tempered ware are all jars, one of which is narrow-mouthed; some of the grog-tempered ware could be Savernake ware (SAV GT). The sherds of buff ware include a possible tankard and vessels which are flanged bowls or mortaria; the possible tankard might be a SVW fabric variant. The miscellaneous colour-coated sherds, including those with red or brown slips, include a beaker with roughcast decoration, a beaker or flagon with rouletted decoration, a bowl or wall-sided mortarium and imitations of samian ware Drag 31 dishes; the latter may be OXF RS.

The vessels in oxidised, white-slipped fabric are all flagons, three of which are ring-necked types, apart from one lid and three of the possible Gloucester mortaria, again in an oxidised fabric, which have flint trituration grits. The vessels in FSOX comprise a small flanged bowl, a flanged bowl or mortarium, four flagons, of which two are ring-necked and one cup-rimmed, two, possibly three, beakers, including one with roughcast decoration, a cup or bowl, an imitation samian Drag 38 bowl and two jars, one lid-seated with incised diagonal lines on its girth. Two of the oxidised mica-coated sherds are from a strainer and the other is from a dish or bowl. Three of the vessels in CSOX are flagons, five are jars, of which one is narrow-mouthed and another is a large vessel with a double rim, two are mortaria, one a wall-sided or hammer-head type, together with a bead-rimmed dish and a dish or lid.

Four of the vessels in the FSGW are jars, one narrow-mouthed, one, possibly two, are tankards, one is a cup similar in form to a samian Drag 33 and there are three dishes, one with a bead rim, one similar in form to a samian Drag 31 and one with internal base rouletting. The CSGW accounts for almost a third of the total assemblage. Jars comprise around 80% of the vessels, occurring in a range of sizes and with a variety of rim forms. There are over 30 narrow-mouthed types, 30 wide-mouthed types and 27 with simple curved rims; a few vessels are either jars or bowls or jars or beakers. Dishes and bowls account for another 16% of the total with plain-rimmed dishes (19) and flat-topped dishes (8) being the more common types, along with flanged and flat-topped bowls. There are also three, possibly six, tankards, two flagons and a colander. Mica occurs in most pottery fabrics, but the micaceous grey ware has particularly noticeable amounts and it accounts for almost 15% of the total pottery. Jars comprise three-quarters of the vessels with wide-mouthed (8), narrow-mouthed (11) and simple curved rim types (27) being the most common. Another 30 are dishes or bowls, of which 19 are plain rimmed dishes and four flanged bowls and there is also a dish or lid and one, possibly three, tankards.

Decoration

Burnished lattice decoration is common on vessels, mainly jars, in DOR BB 1. With DOR BB 1 jars the lattice zone tends to be smaller with time, so that later vessels have obtuse angled lattice as opposed to acute lattice on earlier types. Lattice also occurs on DOR BB 1 flat-topped dishes, but the later plain-rimmed dishes and flanged bowls in DOR BB1 have intersecting arcs or wavy lines. Some dishes and bowls have motifs similar to diagonal lines, inverted ‘V’s or ‘hairpins’ and some jars have a wavy line on their necks. Some bowls and dishes have burnished loop-like decoration on their external bases. Burnished acute and obtuse lattice is also found on some CSGW and micaceous grey ware jars, probably in imitation of DOR BB1, and some dishes have lattice, arcs or wavy lines. One or more burnished wavy lines, often on the girth and sometimes on the shoulder, occur on jars in CSGW, possible Congresbury ware and micaceous grey ware. Applied cordons also occur on some CSGW jars and incised grooves on both CSGW and micaceous grey ware jars. Some SEV OX tankards have burnished lattice or vertical or diagonal lines. Tankards can also have applied cordons and incised grooves, and the latter decoration also occurs on some jars. A few SEV OX vessels have traces or a slip or paint. A number of the sherds in FSOX appear to be red-slipped or painted with red lines and one of the MAH WH mortaria has red-painted decoration on its rim. Other FSOX sherds

have either roughcast or rouletted decoration and one has what appears to be an illegible stamp. A probable MOS BS sherd has part of a letter in white barbotine, and a sherd in CNG BS has a barbotine leaf. Rouletting occurs on a brown-slipped sherd and two probable NFO CC sherds. Sherds from jars in grog and shell-tempered jars have incised grooves.

Usage

A number of sherds have limescale deposits and evidence of sooting. Others have clearly been burnt either in or after use. Most of the assemblage is in good condition, but some sherds are abraded. Eight of the samian vessels have signs of repair and a CSGW jar has a lead rivet *in situ*. One samian vessel has a possible graffito. Six other vessels in other fabrics have drilled holes in their necks, which might be for repair or another purpose, two others have holes in their bases and two in the vessel wall. Four vessels have sherds which appear to have been trimmed and, interestingly, there are six vessels with slightly warped rims or sherds. Over 40 vessels occur as complete or near-complete.

Features and groups

Table 9 shows the amount of pottery from the main feature types. The bulk of the sherds clearly come from ditches and gullies, with only the pits and the well/waterholes having noticeable amounts.

Feature Type	Count	%	NoSh	%	Wgt (g)	%	Vessels	%
Burial	1	0.41	4	0.04	15	0.01	0	0
Curvilinear	2	0.83	10	0.10	185	0.11	2	0.17
Ditch	177	73.44	8519	86	145,080	87	1018	84.13
Gully	28	11.62	359	3.62	4737	2.84	27	2.23
Layer	4	1.66	182	1.84	1837	1.10	20	1.65
Pit	18	7.47	632	6.38	10,270	6.16	107	8.84
Post pad	1	0.41	3	0.03	72	0.04	0	0
Posthole	2	0.83	3	0.03	18	0.01	0	0
Water Trough	1	0.41	1	0.01	5	0	0	0
Waterhole	2	0.83	10	0.10	61	0.04	1	0.08
Well/waterhole	1	0.41	148	1.49	3764	2.26	25	2.07
Subsoil	1	0.41	21	0.21	520	0.31	9	0.74
Unknown	1	0.41	4	0.04	119	0.07	0	0
Furrow	1	0.41	2	0.02	7	0	0	0
Modern	1	0.41	8	0.08	81	0.05	1	0.08
Total	**241**		**9906**		**166,771**		**1210**	

Table 9: Feature type quantification

Tables 10 and 11 show the amounts of pottery from the main features and groups, based on those with around or over 100 sherds. Unsurprisingly, it is the ditches, pits and the well/waterholes that have the largest amounts. Within the features, ditches 721, 943/931 and particularly 1506 have the most pottery, but ditches 296, 872,1039, 1139, 1324, 1336, 1350, 1375, 1495, 1503, and well/waterhole 931 are also significant, when the weight is taken into account.

Feature	Description	NoSh	%	Wgt (g)	%	Vessels	%
296	Ditch	237	2.39	3299	1.98	22	1.82
652	Ditch	205	2.07	2445	1.47	19	1.57
696	Ditch	122	1.23	2090	1.25	20	1.65
721	Ditch	547	5.52	8028	4.81	88	7.27

760	Ditch	108	1.09	1735	1.04	10	0.83
855	Pit	126	1.27	2082	1.25	22	1.82
872	Ditch	216	2.18	5283	3.17	34	2.81
931	Well/Waterhole	148	1.49	3764	2.26	25	2.07
943/931	Ditch	432	4.36	7308	4.38	62	5.12
1039	Ditch	260	2.62	4652	2.79	29	2.40
1139	Ditch	190	1.92	3631	2.18	22	1.82
1150	Ditch	93	0.94	2655	1.59	11	0.91
1183	Pit	121	1.22	2322	1.39	13	1.07
1282	Ditch	138	1.39	2719	1.63	12	0.99
1324	Ditch	265	2.68	4311	2.58	25	2.07
1333	Ditch	109	1.10	2555	1.53	15	1.24
1336	Ditch	255	2.57	7085	4.25	23	1.90
1350	Ditch	162	1.64	3195	1.92	14	1.16
1375	Ditch	268	2.71	4761	2.85	12	0.99
1462	Ditch	153	1.54	1677	1.01	18	1.49
1495	Ditch	185	1.87	3602	2.16	16	1.32
1503	Ditch	317	3.20	5337	3.20	25	2.07
1506	Ditch	689	6.96	16,282	9.76	63	5.21
1511	Ditch	132	1.33	1619	0.97	24	1.98
1519	Ditch	116	1.17	979	0.59	14	1.16
1540	Ditch	180	1.82	2165	1.30	22	1.82
1552	Gully	134	1.35	1592	0.95	9	0.74
1686	Ditch	182	1.84	2017	1.21	12	0.99

Table 10: Main feature quantification

Groups 53, 54 and 83 have the most pottery along with and Groups 52 and 55; it is again no surprise that these groups include those features with the most pottery, given the volume of fills.

Group	Type	NoSh	%	Wgt (g)	%	Vessels	%
CG17	Ditch	288	3.49	4119	2.95	27	2.79
CG20	Ditch, Curvilinear	231	2.80	3881	2.78	23	2.38
CG27	Ditch	156	1.89	2515	1.80	25	2.58
CG42	Ditch	114	1.38	1899	1.36	12	1.24
CG43	Ditch	298	3.62	3352	2.40	38	3.93
CG45	Pit	187	2.27	3177	2.27	18	1.86
CG48	Ditch	202	2.45	3530	2.53	16	1.65
CG50	Layer	147	1.78	1413	1.01	15	1.55
CG52	Ditch	346	4.20	7333	5.25	45	4.65
CG53	Ditch	658	7.98	10,792	7.73	67	6.92
CG54	Ditch	1553	18.84	33,109	23.71	141	14.57
CG55	Ditch, Gully	594	7.21	8468	6.06	92	9.50
CG56	Ditch	230	2.79	3326	2.38	21	2.17
CG59	Pit	98	1.19	1271	0.91	25	2.58
CG62	Ditch	104	1.26	1602	1.15	14	1.45

CG63	Ditch	330	4.00	5165	3.70	35	3.62
CG83	Ditch	617	7.49	11,968	8.57	93	9.61
CG84	Well/Waterhole	142	1.72	3182	2.28	21	2.17
CG85	Ditch	86	1.04	1339	0.96	12	1.24
CG88	Ditch	154	1.87	3750	2.69	16	1.65
CG91	Ditch	107	1.30	1506	1.08	10	1.03
CG92	Ditch	220	2.67	3870	2.77	24	2.48
CG93	Ditch	132	1.60	3773	2.70	19	1.96
CG106	Ditch, Layer	252	3.06	3067	2.20	25	2.58

Table 11: Main context group quantification

Dating

The samian suggests that activity on the site began at some point after AD 70. The Lezoux samian, dates broadly from AD 125 to AD 200/210, and the Trier sherds include one stamped by Sidus (AD 230-260) is amongst some of the latest samian to reach Britain. The grog-tempered and flint-gritted sherds hint at some activity in the later Iron Age/early Roman period and, perhaps, earlier. The SOW BB1 is mainly of late 1st to late 2nd century in date, and the DOR BB1 ranges from late 1st to the 4th century. The SEV OX and the various grey wares also span the Roman period, particularly the 2nd and 3rd centuries. The small amount of imported colour-coated ware most likely belongs to the 2nd century, as does the glazed ware sherds. The New Forest and Oxfordshire pottery is almost certainly 4th century in date, but the Mancetter-Hartshill mortaria may be of 3rd to 4th century. There is nothing to suggest that occupation continued into the later 4th century.

Assemblage characteristics

The low quantities of amphora and what could be termed 'fine ware', either imported or regionally-traded, suggests that the occupation and activity was essentially utilitarian/rural in character, with neither the need nor resources for such material. This picture is supported by the relatively high repair rate in the samian assemblage, and the fact that cups and decorated forms of samian are also particularly rare, with dishes comprising almost 60% of the samian assemblage. It is also noteworthy that some vessels in other fabrics have holes which might have been related to repair and one has an *in situ* lead rivet (lead pot mends were also relatively common; see Hurst below). The 'fine ware' function may have been provided by vessels such as the SEV OX tankards, and the assemblage does include flagons and some imitation samian vessels. The numbers of mortaria are also relatively low, suggesting that the amount of food processing (at least in a Roman fashion) on site was limited, but the presence of a colander and strainer hint at specific activities, although not necessarily linked to food consumption. The sooting and burning on some sherds may also have been related to food production, but could also have been due to different activities; the trimming of some sherds might relate to some post-breakage functions. The limescale deposits, however, suggest a more human origin. The survival of over 40 relatively intact vessels could indicate deliberate disposal events, as these are less likely to be related to any ritual by this period.

5.2.2 Samian, by J M Mills

The excavation produced 189 sherds of samian weighing almost 2.4kg (4.18 rim EVEs). The mean sherd weight is 12g; however, almost 40% of sherds weigh 5g or less suggesting there is quite a large proportion of an assemblage that is very broken and has probably been subject to active soil processes and repeated re-deposition. The low mean sherd weight of 5.7g for the 1st-century samian from South Gaul would be expected if the earlier deposits were much disturbed.

Samian from the three main centres of production was recorded; the kiln sites of La Graufesenque in South Gaul; Les Martres-de-Veyre and Lezoux in Central Gaul; Rheinzabern and Trier in East Gaul are all represented. Three sherds were also identified as East Gaulish but the kiln sites were not identified (Table 12). In general terms the samian is in a fair to good condition with few heavily abraded sherds; three were noted as having lost all of the internal and external slip. Little evidence of

post-depositional burning was recorded. In total, ten sherds were noted as burnt; two of them, both Central Gaulish, heavily burnt. A few sherds, mostly from East Gaul have a slightly pock-marked appearance with small spots of slip missing.

The earliest samian came from La Graufesenque, amounting to 29 sherds (154g, 0.31 rim EVE) representing 20 vessels. The only vessel often associated with pre-Flavian activity is a Drag 15/17 dish (643) although this example is probably early-mid Flavian in date. The range of forms is quite limited, and includes several that first appeared *c* AD 70 including Dragendorff forms 35, 36 and 37, and Curle 15. Closely-dated vessels are all but absent; there are no potters' stamps and very little decorated samian (D1-3), the latest of which is an ovolo, probably that used by Sulpicius (D3, AD80-110). Almost 16% of the samian by count came from La Graufesenque, but less than 7% by weight and 7.4% by rim EVE which, along with the low mean sherd weight of less than 6g shows how broken this element of the assemblage is. The samian suggests that activity on the site began at some point after AD 70, while the small sherd size and small share of the assemblage from South Gaul may suggest that the focus of 1st-century activity was beyond the excavated area.

Fabric (fabric code)	Count	% of Total Nº	Weight (g)	% of Total Weight	Rim EVE	% of Total EVE	Mean Sherd Weight (g)
La Graufesenque (43.1)	29	15.5	154	6.5	0.31	7.4	5.7
Les Martres-de-Veyre (43.6)	6	3.2	115	4.8	0.12	2.9	19.2
Lezoux (43.2)	111	59	1285	53.8	2.55	61	11.6
Rheinzabern (43.3)	34	18.1	502	21	0.92	22	14.8
Trier (43.4)	5	2.7	286	12	0.28	6.7	47.7
EG (unspec) (43.5)	3	1.5	47	1.9			15.7
Site totals	**188**		**2389**		**4.18**		**12.6g**

Table 12: Summary of quantifications by fabric

Following the decline of the South Gaulish samian industry at the end of the 1st century, supply came to Britain from the Central Gaul; initially from the kilns of Les Martres-de-Veyre which was in turn replaced with samian from Lezoux around AD 125. Only six Les Martres sherds from six different vessels were identified, accounting for less than 5% of the assemblage. The mean sherd weight is quite high (19.2g) due to the presence of a large base sherd stamped by Dagomarus (SS 1). Four of the six vessels are Drag 18/31 dishes, with one small cup and one small Drag 37 sherd (D4). Approximately 10% of an assemblage, from a site continuously occupied throughout the 1st and 2nd centuries, may be expected have come from Les Martres-de-Veyre, and the much lower percentage here may be due to a low level of fabric identification, a function of the small assemblage size, or a result of a low level of occupation.

The Lezoux samian, which dates broadly from AD 125 to AD 200/210, forms by far the greatest proportion of the assemblage accounting for *c* 60% by sherd count and rim EVEs but only 53% by weight. This disparity suggests a moderate level of attrition. The range of vessel forms illustrates a continuation of the low level of consumption in the first half of the 2nd century suggested by the small quantity of vessels from Les Martres-de-Veyre. Of the common dish forms, just three examples of Drag 18/31 were identified, as opposed to nineteen Drag 31 dishes. Production of form 18/31 ceased around AD 160, and, although form 31 emerged before that, this 1:6 ratio indicates occupation intensity increased in the second half of the century. Lobed cup Drag 27 went out of production at a similar time to dish 18/31 and is totally absent from this assemblage.

A new range of vessels emerged in the second half of the 2nd century, including forms Wa 79 (2), Drag 31R (8), and mortaria Drag 45 (1). Closely-dated vessels include a single stamped vessel (SS2) and four Drag 37 bowls. All date from the second half of the 2nd century, the earliest and largest is a bowl in Cinnamus ii style (D5) of *c* AD 150-180; the other decorated sherds are dated AD 160-200, and little more than the ovolo survives from these bowls. The Drag 31 dish stamped by Geminus (M. F- Geminus) vii is dated AD 170-200.

Samian from the East Gaulish kilns of Rheinzabern and Trier supplemented the late 2nd-century samian supply from Lezoux. The import period from these kilns began *c* AD160 and continued, at varying levels, for the next century until samian exports stopped *c* AD 260. The 35 sherds of samian from East Gaul represent 28 vessels (MVN); the majority came from Rheinzabern (21 MNV) with just five sherds, from five different vessels from Trier. The other three vessels are from East Gaul although the kiln sites were not identified. More samian from Rheinzabern than Trier in a ratio of 7:3 is usual on British sites occupied in the 2nd and 3rd centuries (Bird 1993, 2). The proportion of Trier vessels is particularly low here, perhaps reflecting not only the comparative rarity of these vessels but also the distance from the kiln source. The Trier sherds are large, one of which, a Drag 31 (SS 3) stamped by Sidus (AD 230-260), is amongst some of the latest samian to reach Britain.

VESSEL CLASS	FORM CODE	FABRIC CODE					
		43.1	43.6	43.2	43.3	43.4	43.5
DISH	15/17	1					
	15/17 or 18	3					
	18	4					
	18/31		4	3			
	18R	1					
	31			19	8	3	
	18/31 or 31			3			
	18/31R or 31R			1			
	Wa 79			2			
	32				2		
	36	1		4		1	
	32 or 36				1		
	Curle 15	2					
	Curle 23			2			
	Curle 15 or 23			1			
	DISH	2		5	1		
DISH or BOWL	18/31R or 31R			1			
	DISH or BOWL	1		1	1		
DECORATED BOWL	30 or 37			1			
	37	4	1	10			
CUP	33			6			
	35	1					
	46			1			
	33 or 46						2
	CUP		1		1		
PLAIN BOWL	31R			8	6	1	1
	38			1			
	BOWL			3	1		
MORTARIA	45			1			
Sherds not identified to form	No form (no sh)	6		22	8		
	No form (wt)	10g		85g	27		
	Av weight of chips	1.7g		3.9g	3.4g		

Table 13: Maximum Vessel Numbers (MVN) of samian vessels by fabric

5.2.2.1 Use and repair

Evidence of heavy or prolonged use is limited to one or two sherds where patches of the internal slip had been worn away and one or two heavily worn foot-rings. One Rheinzabern Drag 31 base (1027) has been roughly chipped around the edge, perhaps to make a small lid or, turned upside down, a small dish. The centre of the base is abraded, but there is no wear evident under the base to suggest the inverted base had been used.

A total of seven vessels had evidence for leaded repairs, the details are summarised in Table 15. This amounts to 3.7% of vessels exhibiting evidence of repair. The two common types of repair are

represented, four have drilled holes and three have X-shaped or 'dovetail' cuts. The earliest example is a drilled hole in the plain band below the rim of a Drag 37 from Les Martres; the remainder are forms Drag 31 or 31R, and one body sherd from a bowl of unknown type; three from Lezoux and three from Rheinzabern. The repair rate is quite high for a small assemblage. The reasons usually put forward for a high repair rate are a lack of samian or the rural nature of the site; either could be a factor here.

The vessel function profile of the material is unusual, perhaps a function of the assemblage size, but perhaps also affected by the late date of much of the group. Dishes are clearly the most common class of vessel with almost 60% of the assemblage, cups are particularly rare with just 9% of identified vessels, and only 13% of the vessels are decorated forms. Low percentages of decorated vessels are often seen in rural assemblages, but cup numbers usually remain at or above *c* 20% (Willis 2005). It seems that for some reason this assemblage is in some way biased towards dish forms; perhaps a larger sample from the site might not exhibit the same profile but a more 'normal' one.

This assemblage is quite small and not large enough for the usual comparisons to be statistical viable. The observations offered in this report will hopefully be added to and refined by future work in the area.

VESSEL CLASS	FORM CODE	FABRIC				
		43.1	43.6	43.2	43.3	43.4
DISH	15/17	0.07				
	18	0.06				
	18/31		0.12	0.23		
	31			0.51	0.64	
	18/31 or 31			0.06		
	Wa 79			0.24		
	32				0.06	
	36			0.11		0.21
	Curle 15	0.11				
	Curle 23			0.04		
	DISH			0.05		
DISH or BOWL	DISH or BOWL			0.09		
DECORATED BOWL	37			0.07		
CUP	33			0.59		
	35	0.07				
PLAIN BOWL	31R			0.47	0.17	0.07
	BOWL			0.09	0.05	
Total Rim EVE's		**0.31**	**0.12**	**2.55**	**0.92**	**0.28**

Table 14: Samian vessels by Fabric (count by Rim EVE)

Context	Fabric code	Form	Type of repair
101	43.6	37	Drilled repair hole
903	43.2	Bowl	X-shaped cut
993	43.3	31R	Drilled repair hole
1015	43.3	31	Drilled repair hole
1275	43.2	31R	X-shaped cut
1327	43.3	31R	Drilled repair hole
1547	43.2	31R	X-shaped cut

Table 15: Vessels prepared for lead 'rivet' and lead 'cleat' repairs

5.2.2.2 Samian potters' stamps (J M Mills)

For assessment, only the spot dating of stamps is presented here:

AD110-130 (Context 725, CG56, P2.1-2.2)
c ?AD 160-220 (Context 1507, CG54 ditch basal fill, P2.3)

AD 170-200 (Context 1419, P2.3)
?AD 230-260 (Context 1038, P2.3)

5.2.2.3 Decorated samian (J M Mills)

The following catalogue is ordered by production area and, within that, approximately by date (and in context order if the dates are the same).

Abbreviations:

D.	Figure type in Déchelette 1904
O.	Figure type in Oswald 1936/37
Rogers	Motif in Rogers 1974

La Graufesenque, Drag 37. Scrap of trident-tongued ovolo. Flavian. (750, CG59, P2.2).

La Graufesenque, Drag 37. Basal wreath of vertical blade-like leaves. Flavian. (964, CG83, P2.2).

La Graufesenque, Drag 37. Scrap of ovolo with trident tongue curving to the right, used by Sulpicius. AD 85-110. (1642, CG41, P2.1-2.2).

Les Martres-de-Veyre, Drag 37. Body sherd with ovolo Rogers B28 and traces of a wavy border below it. The plain band above the ovolo is broken across a drilled repair hole. The ovolo was used by Drusus i and anonymous potter X-2 at Les Martres-de-Veyre. AD100-125 (101, subsoil, P4).

Lezoux, Drag 37. Ten body and rim sherds from a large bowl (220mm rim diam.) in Cinnamus ii style. The ovolo is Rogers B143 with a bead row below and a free-style scene of wild animals and Apollo, with a raised trident, in a chariot pulled by two horses. The animal figures include lion attacking boar O.1491; large lion O.1455 and the head and front legs of a panther, presumably O.1507. There are multiple partial leaf tip impressions in the field (Rogers H101). The Apollo figure is larger than O.101/O.102 the Apollo figures illustrated by Oswald (1936-7), whilst the horses' heads and front legs, and four-spoked wheel are similar to O.1165/O.1166, a figure type used in East Gaul. Déchelette illustrated three examples of Apollo in his chariot (D.60, 60a, 60b), only D.60a is complete and is equivalent to O.102 (not O.101 as referenced by Oswald 1936-7). The Pilning Apollo figure is a larger version and comparable to D. 60b (listed by Oswald as O.102 ii). The horses' legs and heads add some detail to the figure as illustrated by Déchelette. AD 150-80 (292 and 298; CG17, P2.2).

Lezoux, Drag 37. Body sherd in Advocisus' style with ovolo Rogers B102 and neat beads below. The panelled design is divided with similarly neat bead rows with a larger bead as a stop. A small medallion contains the head of lioness O. 1542. AD 160-200 (934, CG84, P2.2).

Lezoux, Drag 37. Flake of decoration with ovolo Rogers B208, the vestiges of beads and the edge of a double-bordered medallion below it. The ovolo was used by several potters including late Antonine potters Censorinus and Mercator. AD 160-200 (965, CG83, P2.2).

Lezoux, Drag 37. Body sherd with almost two impressions of an angular, single- bordered ovolo with attached tongue, possibly Rogers B147 which was used by Servus iv (II). AD160-200 (1128,CG89, P2.2).

5.2.3 Non-pottery finds, by Derek Hurst

5.2.3.1 Introduction

The artefact report conforms to standards and guidance issued by the Chartered Institute for Archaeologists (CIfA 2014c), as well as further guidance on pottery analysis, archive creation and museum deposition created by various pottery study groups (PCRG/SGRP/MPRG 2016), the Archaeological Archives Forum (AAF 2011), and the Society of Museum Archaeologists (SMA 1993).

5.2.3.2 Aims

This assessment aimed to identify, sort, spot date, and quantify all artefacts and describe the range of artefacts present. The information has been used to provide a preliminary assessment of the significance of the artefacts, and for an updated project design for final analysis.

5.2.3.3 Methodology

Recovery policy
Artefacts were recovered according to standard Worcestershire Archaeology practice (WA 2012).

The majority of artefacts collected in the field were recovered by hand but a small quantity of further material was retrieved from environmental samples (see below).

Method of analysis
All hand-retrieved finds were examined. They were identified, quantified and dated to period. A *terminus post quem* date was produced for each stratified context. This date was used for determining the broad date of phases defined for the site. All information was recorded on a Microsoft Access 2007 database, with tables generated using Microsoft Excel.

Artefacts from environmental samples were examined and those worthy of comment are included below. The material from samples comprised: CBM, fired clay, (natural) flint, fuel ash slag, glass, iron, pot and a stone object, and was all in small quantities except for the fired clay, which was produced in just small amounts by numerous samples/contexts. However, this assemblage from sample residues added nothing of significance as site data, except for an additional stone object (see below).

Discard policy
See Section 4.2.

5.2.3.4 Results

The results are summarised in Tables 16-18. Many of these finds were not inherently datable and so this material is largely reliant on site association for its dating, though there is generally also the possibility in later phases that it was residual. Much of the initial identification was done by Sam Elwell. Not all this material was strictly artefactual, as some was waste by-product of miscellaneous activities (e.g. slag).

material class	material subtype	count	weight(g)
?	?	1	13
bone	-	2	3
ceramic	-	19	1466
ceramic	fired clay	1102	14,303
glass	-	1	1
glass	colourless	1	1
glass	dark blue	1	2
glass	light blue	6	22
glass	yellow	1	3
metal	?copper alloy	2	9
metal	copper alloy	22	200
metal	iron	229	1755
metal	lead	69	798
organic	?	1	2
organic	shell	3	38
slag	iron	1	3
stone	?	50	123,938
stone	Blue Lias	5	302
stone	chalk	3	51
stone	coal	2	12
stone	flint	8	812
stone	limestone	1	51
stone	quartz	1	4

stone	sandstone	52	15,315
stone	shale	3	5
totals		**1586**	**159,109**

Table 16 Quantification of non-pottery finds by broad type

Phase	material class	count	weight(g)
1	metal	1	37
1	stone	2	266
subtotal		*3*	*303*
2	ceramic	3	38
2	metal	1	3
2	stone	3	6072
subtotal		*7*	*6113*
2.1	ceramic	79	769
2.1	glass	1	2
2.1	metal	21	196
2.1	stone	12	2102
subtotal		*113*	*3069*
2.1-2.2	?	1	13
2.1-2.2	ceramic	94	1360
2.1-2.2	glass	2	6
2.1-2.2	metal	10	144
2.1-2.2	stone	4	1229
subtotal		*111*	*2752*
2.2	bone	2	3
2.2	ceramic	376	7305
2.2	glass	1	4
2.2	metal	102	641
2.2	organic	1	2
2.2	stone	66	13,378
subtotal		*548*	*21,333*
2.3	ceramic	565	6217
2.3	glass	6	17
2.3	metal	160	1399
2.3	organic	3	38
2.3	slag	1	3
2.3	stone	37	117,436
subtotal		*772*	*125,110*
4	metal	23	209
4	stone	1	7
5	metal	3	109
6	ceramic	1	76

Table 17 Quantification of non-pottery finds by phase

material class	material subtype	object specific type	count	weight(g)
?	?	unidentified	1	13
bone		gaming piece	2	3
ceramic		?CBM	1	92
ceramic		?loomweight	2	280
ceramic		?weight	2	160
ceramic		CBM	4	197
ceramic		fragment	4	45
ceramic		spindle whorl	1	9
ceramic		tegula	1	193
ceramic		tile	1	4

ceramic		weight	5	745
ceramic	fired clay	?hearth	101	3632
ceramic	fired clay	?oven	50	981
ceramic	fired clay	fragment	946	9427
glass		intaglio	1	1
glass	colourless	fragment	1	1
glass	dark blue	vessel	1	2
glass	light blue	bead	1	4
glass	light blue	vessel	5	18
glass	yellow	vessel	1	3
metal	?copper alloy	rod?	1	8
metal	?copper alloy	scrap of sheet	1	1
metal	copper alloy	?bead	1	6
metal	copper alloy	bracelet	2	17
metal	copper alloy	brooch	7	64
metal	copper alloy	?brooch	1	1
metal	copper alloy	button	3	10
metal	copper alloy	cow horn tip cover	1	48
metal	copper alloy	mount	1	16
metal	copper alloy	terminal plate - shoulder buckle	1	19
metal	copper alloy	unidentified	5	19
metal	iron	?stud	1	4
metal	iron	corroded lump	88	1349
metal	iron	hobnails	120	167
metal	iron	nail	17	155
metal	iron	?nail	1	54
metal	iron	object	1	2
metal	lead	?object	2	44
metal	lead	?weight	2	44
metal	lead	folded lead sheet	1	58
metal	lead	fragment	32	141
metal	lead	object	12	170
metal	lead	pot mend	9	160
metal	lead	?pot mend	1	3
metal	lead	rod	1	32
metal	lead	sheet	2	64
metal	lead	sheet rolled	1	16
metal	lead	shot	1	18
metal	lead	strip	1	1
metal	lead	weight	1	23
metal	lead	window cames	3	24
organic		charcoal	1	2
organic	shell	cockle	1	2
organic	shell	oyster	2	36
slag	iron	slag	1	3
stone		?rubber	1	279
stone		fragment	7	149
stone	?		2	286
stone	?	?object	5	1451
stone	?	?quern blanks	2	86,000
stone	?	?saddle quern	2	8000
stone	?	?whetstone	2	369
stone	?	fragment	26	7763
stone	?	inscribed stone	1	3141
stone	?	millstone	1	2500
stone	?	quern	1	14,000
stone	Blue Lias	fragment	5	302
stone	chalk	fragment	3	51
stone	coal		2	12
stone	flint		6	38

stone	flint	debitage	2	774
stone	limestone	fragment	1	51
stone	quartz	fragment	1	4
stone	sandstone		1	348
stone	sandstone	?object	2	829
stone	sandstone	?quern fragment	1	664
stone	sandstone	fragment	48	13,474
stone	shale	bracelet	3	5

Table 18 Quantification of finds by material and specific object type

The results below provide a summary of the non-pottery finds and of their associated location or contexts by site phase, alongside comment on the importance of individual finds where appropriate.

5.2.3.5 Ceramic

Building material was scarce and was scattered throughout the Roman period. It included only one definite piece of tegula roofing tile (314, CG69, P2.3), and such a low level of this type of material implies no Roman style buildings, as the quantity was compatible with just a small amount imported to the site from elsewhere, as such items have many other incidental uses.

An unusual frilled ?rim (sf78, 649, CG42, P2.2) in a grey sandy fabric has an unusual cone-shaped indentation on the inside – this may be from a vessel.

A spindle whorl (sf159, 1547, CG52, P2.3) in a dark grey sandy fabric may have been used subsequently as a small rubbing stone.

5.2.3.6 Iron objects

Few object types overall could be identified though there were a few hobnails (e.g. 1294, CG0, P2.2), nails (ego 577, CG38, P2.3), and a 75mm long ?hinge pin (sf73, unstrat). This material was generally totally corroded, providing an indication of the saline conditions prevailing either/or during or after their deposition. Even after radiography of the more corroded items for the purposes of identification (Plates 19-20), little additional information could be gleaned, though a few more possible nails could be identified (i.e. from 732, CG56, P2.1-2.2; 961, CG83, P2.2; 962, CG83, P2.2; 1041, CG0, P2.3; 1513, P2.3).

5.2.3.7 Copper alloy objects

Personal objects were well represented in this relatively small group, notably the brooches, though this object type was normally numerous in the Roman period, and especially in early to mid-Roman times. The range of brooch types included Colchester Derivative (sf149, 1465, CG54, P2.3), Trumpet (sf63, 101, P4; decorated in enamel; Plate 21), divided bow (P-shaped; sf141, 1574, P2.3), and plate (sf90, 885, CG83, P2.2) types. These were mainly of mid-1st to 2nd century date, though the divided bow type may go into the 3rd century based on Portable Antiquities Scheme data. Examples of the latter are known from the South of England (cf Hattat 1985, fig 54, nos 495-6), though a preponderance of this type is cited here as being in the North, with such brooches being asserted as being of high status and often precious-metal plated.

A very unusual find was an open-work, hinged terminal plate of the '*numerum omnium*' type (sf91, 885, CG83, P2.2; Plate 22), with an exclusively military association. This displayed part of the motto (now partly missing as now broken) OPTIME MAXIME CON[SERVA] NUMERUM OMNIUM MILITANTIUM ('Jupiter, Best and Greatest, protect the company of all serving soldiers') (as described by Bishop and Coulston 1989, 52–3). Hoss (2017, 95) has dated these to the 2nd to 3rd century and draws attention to their being a display of status as part of the military belt with its sword, at a time when the shoulder belt was in use. Conservation investigation has suggested that the Pilning example was originally 'silvered'. It seemed to have been deliberately thrown out, as it came from an area of domestic dumping which also included two brooches, iron objects, scraps of lead, vessel glass, fired clay and pot.

5.2.3.8 Lead

Most of the lead was in amorphous lumps, though there were eight pot mends, which seems more than might be normally expected, and they were present in all Roman phases. Two different types of pot mend were in evidence, either simple plugs (e.g. 637, CG40, P2.1) or a staple type (e.g. 1474, CG53, P2.3), the latter having a thin strip on one side of the mend and a larger blob of metal on the other.

5.2.3.9 Glass

A small assemblage was mainly of light blue metal but no individual vessel forms could be determined. There was also a fragment from a single glass bead made from transparent light greenish blue metal combined with a twisted cable of opaque white and dark blue metal (only a sliver of the latter component survives; sf140, 1339, CG54, P2.3); this was a chunky bead *c* 30mm in diameter and *c* 18mm high, with a *c* 13mm diameter perforation, and could be classified as an example of Guido (1978) class 9a, considered to be a British design – it was very close to an example listed here (*ibid*, 183) from Charterhouse-on-Mendip (Somerset), which was potentially from an early Roman context. It may be one of the earliest objects from the site, though Guido does cite the possibility of examples going into the 2nd century AD (*ibid*, 77). The distribution of Class 9 beads clearly exhibits a western bias (*ibid*, Fig 27), so the Pilning example fits well.

An intaglio (sf147, 1437, CG52, P2.3; Plate 23) had been made out of glass of two different colours superimposed on one another in imitation of nicolo (i.e. for instance imitating agate), in this case where an opaque light blue glass is underlain by black (in worn condition). This object has been commented on by Martin Henig as follows:

> … leg action seems far more vigorous and the right leg is bent suggestive of movement. Moreover he wears a distinctive hat or helmet. and I am pretty sure it depicts a warrior. The closest parallel I have found from Britain is no. 491 in [the Henig 2007] Corpus, a cornelian from Weston-under-Penyard, Herefordshire. I have it as a gladiator for no particular reason and a heroic figure, probably Diomedes stealing the Palladium is perhaps meant. He should be holding a short sword in his advanced left hand and the palladium in his right though neither appears on this moulded intaglio ... So, although an intaglio of low quality, it most probably is a heroic scene.
>
> (for further explanation of Diomedes appearing on intaglios in a military context, see Henig 1970).

5.2.3.10 Fired clay

There seemed a substantial amount of fired clay compared to other materials, and this was found in all Roman phases, being most common in Phase 2.3. However, since such material would have been used for larger structures, such an amount was really quite minimal, and since very little could be assigned to a specific use such as for hearths/ovens, it seemed to imply only low level and/or shorter term domestic activity.

5.2.3.11 Worked Stone

An inscribed stone (sf148, 1450, CG53, P2.3; Plates 24-25) was an exceptional find. This had been sculpted out of oolitic limestone, and was 178mm tall, 120mm wide (tapering to 110mm at the top), and 100mm deep (tapering to 85mm). Roger Tomlin has commented as follows (quoted from a short report submitted to *Britannia* in August 2023):

> The capital is marked by a shallow rectangular recess (its focus) but is otherwise plain, like the slightly wider base. Between them is a shallowly recessed die which is inscribed, but the letters are inverted. They are coarsely incised and now damaged: FVNDO | ΛT.IIMO | RIDVNO | *traces*. Perhaps *fundo* | *At[t]ii Mo*|*riduno* | *[…]*, '(on) the property of Attius at Moridunum …'.

> The altar would have to be turned upside-down to read the text, meaning that a blank, uninscribed altar has been re-used for a different purpose. … *Mo*|*riduno* is an attractive reading since it is a well-attested place-name. Rivet and Smith [1979] identify *Moridunum* with Carmarthen and perhaps Sidford (Devon), but the sense of 'sea-fort' would also suit Pilning, since it adjoins the Severn Estuary at its crossing-place. This altar-like stone may then be a boundary marker, identifying the 'farm' or 'estate' of Attius/Ateius (for fundus in this sense, compare *Tab. Lond. Bloomberg* 50.6, with note), but a good parallel for the wording has not been found.

Other stone objects included querns and, most interestingly, some quern-stone blanks (1159, CG93, P2.3) representing incomplete manufacture. Other working quern pieces were also associated with the same phase. Saddle querns were also possibly represented by rubbers, but there were a number of stone objects which were not diagnostic enough to be firmly identified, including these possible rubbers.

There were also two shale bracelets of differing sizes the smaller (sf139, 1335, CG53, P2.3) being 50mm internal diameter and the larger (sf151, 1463, CG54, P2.3) being 60mm. Such sizes have been sometimes considered more compatible with their being for male use.

An oddly shaped natural pebble (544, CG39, P2.2; from sample 44), was hand-sized and L-shaped, with signs of wear at either end, strongly suggesting its use as a pestle.

5.2.3.12 Miscellaneous objects

There were two finely worked bone counters/gaming pieces (sf3, 299, CG17, P2.2; sf138, 1299, CG66, P2.2).

5.2.4 Coins, by Murray Andrews

5.2.4.1 Introduction

Thirty-seven coins (92.6g) were found during excavations at Pilning, Gloucestershire, of which 36 were made of copper alloy and one of silver. Most of the coins were hand-collected during excavation, with a smaller number recovered during metal-detecting of subsoil. The assemblage spans the Roman to post-medieval periods, and is mostly in good condition: 23 coins were identifiable to issuer or type prior to conservation, although 14 others were heavily worn and/or corroded and are not yet fully identifiable (conservation cleaning is therefore suggested for these). All coins are described in the catalogue (Table 19) below.

5.2.4.2 Assessment methodology

The finds were examined visually and with the use of a x10 magnification hand lens. Written descriptions were produced for all specimens, and included records of their dimensions and weights. Standard numismatic typologies (RIC; North 1989; Peck 1970) were consulted for the purpose of identification and dating. Wear and corrosion states were measured using the criteria set out in Frey-Kupper *et al* (1995).

Context	SF	Description	Date
101	8	Contemporary copy of a copper alloy halfpenny of George III. Copy of First Issue. Obv: G[EORGIVS III R]E[X], laureate and cuirassed bust r. Rev: [BR]I[TAN NIA] // […], Britannia seated l. Mint of "Tower". Die axis 180°, diameter 26.4mm, weight 4.52g. Wear 3/3, corrosion 2/2.	1770-1806
101	11	Copper alloy nummus of Constantine II. As RIC VII Treveri 455. Obv: CONSTANTINV[S IVN NOB C], laureate, draped, and cuirassed bust r. Rev: PROVIDEN [TIAE CAESS]/-/-//ST[…], camp gate with two turrets.	324-328

		Mint of Trier. Die axis 180°, diameter 18.4mm, weight 1.55g. Wear 2/2, corrosion 2/3.	
101	13	Copper alloy nummus of Crispus. RIC VII Treveri 372. Obv: [IVL CRISPVS] NOB CAES, laureate and cuirassed bust l holding spear and shield. Rev: BEATA TRAN QV[ILLITAS]/-/-//•STR•, globe on altar inscribed VO/TIS/XX. Mint of Trier. Die axis 0°, diameter 17.9mm, weight 1.94g. Wear 2/2, corrosion 4/3.	322-323
101	14	Copper alloy antoninianus of Carausius. RIC V Carausius 310. Obv: [IMP C CARAV]SIVS P[IVS FE]L AVG , radiate and draped bust r. Rev: [PAX] AVG/S/P//[C], Pax standing l holding olive branch and sceptre. Mint of 'C-mint'. Die axis 180°, diameter 21.6mm, weight 2.53g. Wear 3/3, corrosion 2/2.	286-293
101	17	Copper alloy antoninianus of Quintillus. RIC V Quintillus 33. Obv: [IMP C M AVR CL QV]INTILLVS AVG/-/Γ//-, radiate and draped bust r. Rev: [VICTOR]IA AVG, Victory advancing r with palm and wreath. Mint of Rome. Die axis 180°, diameter 17.1mm, weight 2.3g. Wear 3/2, corrosion 2/2.	270
101	33	Contemporary copy of a copper alloy antoninianus of Victorinus. Copy of RIC V Victorinus 67. Obv: [IMP C VI]C[TORINVS P F AVG], radiate and draped bust r. Rev: [SALVS] AV[G], Salus standing r holding snake. Die axis 0°, diameter 14.9mm, weight 0.46g. Wear 2/3, corrosion 2/2.	275-296
101	108	Silver penny of Edward I. Class 2a. Obv: EDW R ANGL DN[S H]YB, crowned bust facing. Rev: CIVI TAS L[O]N DON, Long cross with three pellets in angles. Mint of London. Die axis 210°, diameter 18.8mm, weight 1.23g. Wear 2/2, corrosion 1/1.	1279-1280
689	68	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 21.9mm, weight 2.12g. Corrosion 4/4.	260-400
776	16	Copper alloy denarius or antoninianus. Obv: Illegible, bust r. Rev: Illegible, Seated figure?. Die axis 180°, diameter 18.5mm, weight 1.64g. Corrosion 4/4.	96-296
850	136	Copper alloy farthing of George III. Third Issue. Obv: GEORGIUS III DEI GRAT[IA REX] // [1]79[9], laureate bust r. Rev: [BRI]T[A]N[NIA] // 1 FARTHING, Britannia seated l. Mint of Soho, Birmingham. Die axis 180°, diameter 23mm, weight 5.01g. Wear 3/3, corrosion 3/3.	1799
1071	127	Copper alloy Q-radiate of Allectus. RIC V Allectus 55. Obv: [IM]P C ALL[ECTVS P F] AVG, radiate, draped, and cuirassed bust r. Rev: [VIR]TVS A[VG]/ -/-//[QL], Galley. Mint of London. Die axis 180°, diameter 18.2mm, weight 1.71g. Wear 2/2, corrosion 3/4.	293-296
1194	112	Copper alloy antoninianus of Victorinus. RIC V Victorinus 118. Obv: [IMP C V]ICTORI[NVS P F AVG], radiate, draped, and cuirassed bust r. Rev: [P]A[X AVG]/V/*//-, Pax standing l holding olive branch and sceptre. Mint of 'Mint l'. Die axis 180°, diameter 18.1mm, weight 2.46g. Wear 2/3, corrosion 2/2.	269-271
1206	111	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 17.1mm, weight 2.2g. Corrosion 4/4.	260-400
1214	109	Copper alloy sestertius of Marcus Aurelius. RIC III Antoninus Pius 1245. Obv: [AVRELIVS CAE]SAR [AVG PII F COS II], bare head r. Rev: S C, Minerva standing l holding vertical spear and shield. Mint of Rome. Die axis 0°, diameter 34.3mm, weight 17.46g. Wear 3/3, corrosion 2/2.	145

1260	107	Copper alloy nummus of Constantine I. RIC VI Trier 899. Obv: CONSTA[N]TINVS AVG, laureate and cuirassed bust r. Rev: SOLI INVICTO//PTR, Sol standing l holding globe and raising hand. Mint of Trier. Die axis 180°, diameter 17.4mm, weight 1.68g. Wear 3/2, corrosion 3/2.	310-311
1327	61	Copper alloy antoninianus of an uncertain Central or Gallic Emperor. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 19.1mm, weight 0.98g. Corrosion 4/4.	260-296
1327	137	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 17.9mm, weight 1.03g. Corrosion 4/4.	260-400
1335	96	Contemporary copy of a copper alloy antoninianus of Tetricus I. Copy of RIC V Tetricus I 126. Obv: [IMP C TET]RICVS P F AVG, radiate, draped, and cuirassed bust r. Rev: [SALVS AVGG], Salus standing l feeding snake rising from altar. Die axis 240°, diameter 16.8mm, weight 2.09g. Wear 3/3, corrosion 2/3.	275-296
1335	97	Copper alloy antoninianus of Victorinus. RIC V Victorinus 78. Obv: [IMP C VICT]OR[I]NVS P F AVG, radiate, draped, and cuirassed bust r. Rev: [VIRT]VS AVG, soldier standing r holding shield and spear. Mint of 'Mint I'. Die axis 180°, diameter 17.7mm, weight 1.51g. Wear 2/2, corrosion 2/2.	269-271
1335	160	Copper alloy nummus of Licinius. Obv: LICINI[…], helmeted and cuirassed bust r. Rev: Illegible, indeterminate. Diameter 19.2mm, weight 3.05g. Corrosion 3/3.	308-324
1339	98	Copper alloy nummus of Crispus. RIC VII Treveri 431. Obv: IVL CRIS P[VS NOB CAES], laureate head r. Rev: [CA]ESAR[V]M NOSTR[OR]VM/-/-//PTR, VOT/X within wreath. Mint of Trier. Die axis 0°, diameter 18.5mm, weight 2.92g. Wear 3/2, corrosion 3/3.	323-324
1384	43	Contemporary copy of a copper alloy antoninianus of an uncertain Central or Gallic Emperor. Obv: Illegible, radiate bust r. Rev: [S]P[ES PVBLICA], Spes walking l holding flower and raising skirt. Die axis 0°, diameter 17.1mm, weight 2.36g. Wear 3/3, corrosion 3/2.	275-296
1423	18	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 15.5mm, weight 0.61g. Corrosion 4/4.	260-400
1439	42	Copper alloy nummus of Crispus. RIC VII Treveri 450. Obv: FL IVL CRISPVS NOB CAES, laureate, draped, and cuirassed bust r. Rev: PROVIDEN [TI]AE CAESS/-/-//PTR, camp gate with two turrets. Mint of Trier. Die axis 330°, diameter 17.8mm, weight 1.84g. Wear 2/2, corrosion 2/2.	324-325
1465	150	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 13.1mm, weight 0.74g. Corrosion 4/4.	260-400
1502	25	Copper alloy nummus of Constantine I. RIC VII Treveri 303 or 341. Obv: CONST[AN TINVS AVG], helmeted and cuirassed bust r. Rev: BEA[TA T]R[AN] QVILLITAS/-/-//[PTR], Globe on altar inscribed VOT/IS/XX. Mint of Trier. Die axis 180°, diameter 14.8mm, weight 0.89g. Wear 2/2, corrosion 3/2.	321-322
1505	26	Copper alloy antoninianus of Tetricus I, 272-274. Obv: […]TRICVS P F […], radiate bust r. Rev: Illegible, indeterminate. Diameter 18.1mm, weight 1.83g. Corrosion 3/4.	272-274

1518	40	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 11.7mm, weight 0.38g. Corrosion 4/4.	260-400
1518	145	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 20.3mm, weight 2.61g. Corrosion 4/4.	260-400
1518	146	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 16.8mm, weight 1.76g. Corrosion 4/4.	260-400
1525	101	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 18.5mm, weight 4.11g. Corrosion 4/4.	260-400
1525	106	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 19.6mm, weight 2.21g. Corrosion 4/4.	260-400
1544	128	Copper alloy Q-radiate of Allectus. RIC V Allectus 125. Obv: IMP C ALLECTVS P A[VG], radiate and cuirassed bust r. Rev: LA[ETITI]A AVG/-/-//QC, Galley. Mint of 'C-mint'. Die axis 30°, diameter 20.5mm, weight 2.95g. Wear 2/2, corrosion 2/3.	293-296
1544	153	Copper alloy nummus of House of Valentinian. As RIC IX Lyons 12-21. Obv: Illegible, pearl-diademed and cuirassed bust r. Rev: [SECVRITAS REIPVBLICAE], Victory advancing l with palm and wreath. Die axis 180°, diameter 16.4mm, weight 1.55g. Wear 3/2, corrosion 3/3.	364-378
1544	156	Copper alloy antoninianus or nummus. Obv: Illegible, indeterminate. Rev: Illegible, indeterminate. Diameter 19mm, weight 2.85g. Corrosion 4/4.	260-400
1552	27	Copper alloy nummus of Constantine I. RIC VII Treveri 347. Obv: IVL CRISPVS NOB CAES, laureate and cuirassed bust l holding spear and shield. Rev: [BE]ATA TR[AN] QVIL[LITA]S/-/-//PTR•, Globe on altar inscribed VO/TIS/XX. Mint of Trier. Die axis 330°, diameter 19.1mm, weight 3.14g. Wear 2/2, corrosion 3/3.	322
1552	31	Copper alloy nummus of Constantine I. RIC VII Arelate 345. Obv: [CONSTANTI] NVS MA[X AVG], rosette-diademed, draped, and cuirassed bust r. Rev: [GLOR] IA EXERC ITVS/(star)//PCONST, two soldiers holding two standards. Mint of Arles. Die axis 330°, diameter 17.4mm, weight 2.35g. Wear 2/2, corrosion 2/3.	330-331

Table 19: Catalogue of coins

5.2.4.3 Assemblage composition

Thirty-four of the coins date to the Roman period, and were found in 21 archaeological features and deposits, most of which were located in the south-west of the site. The bulk of these came from ditch fills (776, 1071, 1260, 1327, 1335, 1339, 1384, 1439, 1502, 1505, 1518, 1525, 1544), with smaller quantities found in pit fills (1194, 1206, 1214), a gully (1552), layers (689, 1465), subsoil (101), and an uncertain deposit (1423). The Roman coins consist mainly of low-value copper alloy *antoniniani* and *nummi* minted in the western Empire during the 3rd and 4th centuries AD, supplemented by small numbers of mid-value coins including a 2nd-century copper alloy *sestertius* and two 3rd-century copper alloy 'Q-radiates'. This denominational profile is typical of many Roman sites in southern Britain, and is consistent with an assemblage formed of separate casual losses accrued over an extended period of time (Walton 2012).

The earliest coin from the site is a moderately-worn *sestertius* of Marcus Aurelius (SF109), minted at Rome in 145 and almost certainly lost before the coinage reforms of *c* 260 (Abdy 2003). There is a gap in the series until the later 3rd century, which is represented by nine debased *antoniniani* and two 'Q-radiates' dated 269-96. Five of the *antoniniani* are official issues of the Central (SF17), Gallic (SFs 26, 97, 112), and British Empires (SF14) dated 269-93, while three are unofficial 'barbarous' copies

(SFs 33, 43, 96) dated 275-96. The copies are of poor style and probably of British manufacture, and include specimens imitating *antoniniani* of Victorinus (SF33) and Tetricus I (SF96) as well as an indeterminate prototype (SF43). One *antoninianus* (SF61) is heavily corroded, and cannot be more precisely dated at present. The two contemporary 'Q-radiates' (SFs 127, 128) are somewhat unusual finds, and were issued at London and the enigmatic 'C-mint' during the reign of Allectus in 293-6.

Fourth-century coins are reasonably well-represented, and include 10 copper alloy *nummi* of the Tetrarchy (SF160), House of Constantine (SFs 11, 13, 25, 27, 31, 42, 98, 107), and House of Valentinian (SF153). These coins are mainly official *nummi* produced at the large western mints of Arles (SF31) and Trier (SFs 11, 13, 25, 27, 42, 98, 107), although two are of uncertain manufacture (SFs 153, 160). Twelve copper-alloy coins were heavily corroded, and could only be broadly dated to the Roman period: they include one 1st to 3rd-century *denarius* or *antoninianus* (SF16) and 11 mid-3rd- to 4th-century *antoniniani* or *nummi* (SFs 18, 40, 68, 101, 106, 111, 137, 145, 146, 150, 156).

Preliminary analysis of Pilning's Roman coin assemblage using Reece's (1995) system of 21 issue periods reveals some distinctive patterns (Diagram 1). While Pilning exhibits the same 3rd- and 4th-century 'peak' in coin loss seen in Roman Britain as a whole, the assemblage contains noticeably more coins dated 317-30 and vastly fewer mid- to late 4th-century coins than might otherwise be expected. The pattern is particularly striking in its local context: while nearly a third of the identifiable Pilning coins are dated 317-30, just 4% of the 596 identifiable coins from the nearby small town of Sea Mills (*Abonae*) date to the same period (Reece 1991, no. 59). These figures must be treated with caution given the large number of as-yet unidentified Roman coins, but might plausibly reflect an early 4th-century peak in on-site activity followed by abandonment in the mid-4th century.

Medieval and post-medieval activity at the site is represented by three coins, which include a silver penny of Edward I (SF108) minted in London in 1279-80 and a late 18th-century halfpenny and farthing of George III (SFs 8, 136). These coins are typical examples of 'small change' designed for use in everyday currency, and are paralleled by local finds from Bristol Upper Maudlin Street (Ponsford *et al* 1990, 180), Gloucester Tanners' Hall (Heighway 1983, 99), and Saintbridge (Darvill and Timby 1986, 59). The halfpenny of George III (SF8) is of special interest as a contemporary counterfeit, and was probably struck in Birmingham in *c* 1770-1806 (Smith and Mossman 2012). Illicit '*Brummagem ha'pence'* are known to have circulated widely in the bronze-starved currency of Georgian and Regency England, and comparable examples have been found in late 18th- and early 19th-century hoards from Bayton (Worcestershire; Andrews 2022) and Bromyard (Herefordshire; Andrews and Ghey 2021, 223, no. 105).

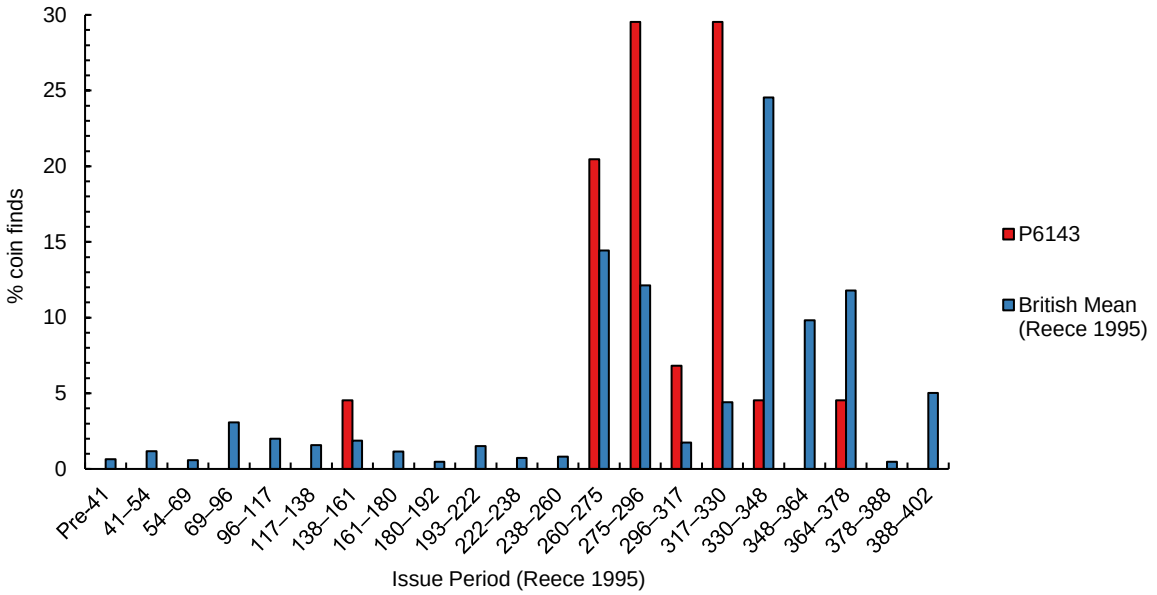

Diagram 1: Distribution of Roman coins by issue period

5.2.4.4 Assessment of significance

The coins from Pilning are a significant component of the overall finds assemblage, and have potential to contribute to an understanding of the chronology and nature of activity at the site. In particular, the Roman coins supply important new evidence for occupation in the hinterland of the small town of Sea Mills (*Abonae*), and chronological patterns in the coin finds might reflect a peak of on-site activity in the early 4th century followed by abandonment in the mid-4th century. However, this conclusion should be treated with caution given the numerous as-yet unidentified late Roman coins from the site. The post-Roman coins, meanwhile, supply independent material evidence for commerce and monetary activity in rural Gloucestershire during the medieval to post-medieval periods, and also provide evidence of currency crime in the form of an 18th-century counterfeit *'Brummagem ha'penny'*.

Note: Murray subsequently corresponded as follows:

> The latest coin from this site does indeed show moderate to heavy wear. That said, I'm wary of making definitive statements about longevity on the basis of use wear alone, since this is heavily influenced by the velocity of circulation: hypothetically, a coin that changes hand once a year over ten years might be just as worn as one that changes hands ten times over one year. We're on safer grounds if we look at the representation of *nummi* of this type (and contemporary types) in hoards. Here's a few relevant examples:
>
> • Kings Langley, TPQ 378: nummi dated 364-78 made up 1409 of the 1550 bronze coins;
>
> • Wiveliscombe I, TPQ 387: nummi dated 364-78 made up 864 of the 1139 bronze coins;
>
> • Bishops Canning, TPQ 402: nummi dated 364-78 made up 1128 of the 5837 bronze coins
>
> With this and the wear in mind, I'd be happy to hedge my bets on this coin having been lost in the 380s, or possibly as late as the early 390s.

5.3 Environmental evidence

The environmental project conforms to guidance by CIfA (2014a) on archaeological excavation and further guidance by English Heritage (2011).

The underlying geology comprises bedrock of the Mercia Mudstone Group - Mudstone formation - overlain by superficial deposits of Tidal Flat Deposits (BGS 2023), and overlain by loamy and clayey soils of coastal flats with naturally high groundwater with moderate fertility soils (Cranfield and Agrifood Institute 2023).

5.3.1 Geoarchaeological assessment, by Andy Howard

5.3.1.1 Introduction

A site visit was made to the Plot 3 excavation in December 2021. Machine excavation of the site was still in progress, and so the following assessment was made in reference to the exposed easternmost portion of the site. The following short assessment augments discussions between the author and field staff from Worcestershire Archaeology.

5.3.1.2 Site Discussion

The excavated features within Plot 3 are close to the contemporary ground surface, beneath approximately 0.50m of modern topsoil/subsoil; geologically, this would suggest that they are cut into the tidal deposits of the Upper Wentlooge Formation.

Allen and Rae (1987) have previously described this unit as pale greyish to bluish green silt, which is commonly mottled pale brown in the upper part of the sequence. Whilst field sections show some variation in sediment texture and character, the sediments exposed at the southernmost end of Plot 3 provides an accurate record of the broad stratigraphy; comprising upper greyish-olive brown silty clay underlain by stiff blue clay. The deposits contain variable amounts of shelly debris, including intact

shells. Mottling associated with periodic oxidation and iron pan development is particularly notable in the lower blue clay, which probably reflects proximity to, and fluctuation of, groundwater levels. As a general rule, the majority of changes in colouration observed across the Plot are associated with post-depositional chemical change (weathering); for example, the olive green and grey colouration is often the result of waterlogging (gleying).

The deposition of these sediments in a tidal environment often within small channels dissecting the site would result in many irregular, amorphous features lacking clear structure. Therefore, any such features observed after stripping, which lack structure or symmetry are almost certainly natural. The observed cleaving of sediments on the stripped surface reflects weathering along natural bedding planes associated with tidal ripples.

There are no obvious coarser horizons observed within any sections or fills, which might indicate periodic inundation of the area, for example during storm events. There are also no obvious signs of pedogensis of stand-still horizons within the sequence.

Within the east of Plot 3, the upper part of a large, broadly linear, shallow depression is infilled with stiff blue clay. This deposit was also present within the tops of ditches CG21 and CG24 which were located within, and may have utilised, the pre-existing depression. The clay is similar to the lower blue clay observed at the southern end of the site and distinct from the surrounding greyish brown silty clay. As well as within the central depression, this upper blue clay can be observed at the edges of the site and within some of the smaller features. The change in sediment texture from the underlying sediments suggests a change in sediment supply and source. The blue colour is typical of marine sediments and it begs the question as to whether there has been some past reconnection to direct tidal influence. Analysis of samples of blue clay and the surrounding material for diatoms may help establish the depositional character of these blue clays (but see below where, as part of this assessment, no diatom survival was demonstrated).

Some of the uppermost, long linear ditch features (see CGs 19, 21, 23, and 24 for example), drainage ditches possibly interpreted as water meadows, also contained a blue clay fill, though it was less homogenous, for example containing charcoal and other small woody debris; together, these attributes give the fills a darker appearance.

In the northern-central part of Plot 3, scattered small patches of gravelly material are found, appearing to underlie at least one linear feature. The gravels are matrix-supported and comprise fine to coarse clasts of sub-rounded material (they appear to reflect river gravels). The clasts include quartz and quartzite which are fairly ubiquitous in terms of their distribution across England and could certainly have been introduced into the region via the Severn and Wye Valleys. However, there are also clasts of weathered, nodular flint, which does not have a local source. Flint is typically derived from the direct erosion of Chalk areas in eastern England or is derived from glacial deposits in that same region (the nearest chalk bearing tills are in Leicestershire). Therefore, it seems highly unlikely that this material is natural, but rather it has been imported to the site. It certainly does not reflect an underlying natural gravel island. Other large stones are found across the site and it is highly unlikely that this material was deposited during natural tidal activity. Therefore, the majority of this material should be considered imported and hence archaeological. It includes reddish sandstones and conglomerates, and whitish shelly limestones which could all come from further upstream (e.g. Forest of Dean). Other larger polished igneous and sedimentary material, typically grey or black in colour, may derived from beach localities.

5.3.2 Plant macrofossils and charcoal, by Elizabeth Pearson

5.3.2.1 Sampling policy

Samples were taken according to standard Worcestershire Archaeology practice (2012). A total of 147 samples (each of up to 40 litres) were taken from the site, of which 64 were fully assessed (Table 20).

5.3.2.2 Processing and analysis

The samples were processed by flotation using a Siraf tank. The flots were collected on a 300µm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds.

The residues were scanned by eye and the abundance of each category of environmental remains estimated. A magnet was also used to test for the presence of hammerscale. The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by Worcestershire Archaeology, and a seed identification manual (Cappers *et al* 2012). Nomenclature for the plant remains follows Stace (2010).

Charcoal was examined under a low power MEIJI stereo light microscope in order to determine the presence of oak and non-oak charcoal.

5.3.2.3 Results

Context	Sample	Spit/Sub-sample	Feature type	Fill of	Phase	Group number	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
111	1		Ditch	109	2.2	CG18	20	10	Yes	Yes
139	5		Ditch	133	2.2	CG20	40	0	No	No
146	4		Gully	145	2	CG03	40	0	No	No
215	16	0.92-0.97m	Ditch	214	2.2	CG21	10	9	No	No
216	3		Ditch	214	2.2	CG21	40	0	No	No
217	16	0.41-0.46m	Ditch		2.2	CG21	10	9	No	No
219	16	0 - 0.05m	Ditch	214	2.2	CG21	10	9	No	No
234	2		Gully	220	2.2	CG16	10	0	No	No
255	7		Gully	253	2.2	CG16	20	0	No	No
257	6		Gully	253	2.2	CG16	20	0	No	No
261	8		Gully	258	2.1	CG10	10	10	Yes	Yes
291	9		Ditch	289	2.2	CG17	40	0	No	No
292	10		Ditch	289	2.2	CG17	20	0	No	No
298	11		Ditch	296	2.2	CG17	30	0	No	No
299	12		Ditch	296	2.2	CG17	10	0	No	No
301	13		Ditch	296	2.2	CG17	40	0	No	No
302	14		Ditch	296	2.2	CG17	40	0	No	No
304	29	NW spit2 0.05-0.10m	Cremation	303	2		2	2	Yes	Yes
304	29	NW spit3 0.10-0.15m	Cremation	303	2		2	2	Yes	Yes
304	29	SW spit1 0-0.05m	Cremation	303	2		3	3	Yes	Yes

Context	Sample	Spit/Sub-sample	Feature type	Fill of	Phase	Group number	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
304	29	SW spit2 0.05-0.10m	Cremation	303	2		2	2	Yes	Yes
304	29	NE. Spit3. 0.10-0.15	Cremation	303	2		4	4	Yes	Yes
304	29	NE. Spit2. 0.05-0.10	Cremation	303	2		3	3	Yes	Yes
304	29	SW spit3 0.10-0.15m	Cremation	303	2		2	2	Yes	Yes
304	29	SE. Spit1. 0-0.05m	Cremation	303	2		2	2	Yes	Yes
304	29	NE.Spit1 0-0.05m	Cremation	303	2		2	2	Yes	Yes
304	29	NE. Spit4. 0.15-0.17	Cremation	303	2		1	1	Yes	Yes
304	29	SE spit2 0.05-0.10m	Cremation	303	2		3	3	Yes	Yes
304	29	SE spit3 0.10-0.15m	Cremation	303	2		2	2	Yes	No
304	29	NW Spit1 0-0.05m	Cremation	303	2		2	2	Yes	No
332	30		Ditch	331	2.2	CG19	40	0	No	No
336	31		Ditch	331	2.2	CG19	10	0	No	No
343	32		Ditch	337	2.2	CG19	40	0	No	No
365	33		Ditch	364	2.2	CG19	40	0	No	No
382	34		Gully	381	2.2		40	0	No	No
424	35		Ditch	423	2.1	CG26	20	20	Yes	Yes
426	38		Ditch	425	2.1	CG26	20	10	No	No
429	37		Ditch	427	2.2		20	0	No	No
431	36		Ditch	427	2.2		40	0	No	No
482	34		Ditch	480	2.2	CG30	40	0	No	No
482	39		Ditch	480	2.2	CG30	350	0	No	No
520	40		Pit	518	2		40	0	No	No
533	41		Pit	518	2		20	0	No	No
541	42		Pit	539	2.2	CG44	10	10	Yes	Yes
548	43	North. 0-0.05m	Pit	547	2		4	4	Yes	Yes
548	43	North 0.05-0.10m	Pit	547	2		4	4	Yes	Yes
548	43	South 0-05-0.10m	Pit	547	2		3	3	Yes	Yes
548	43	South 0-0.05m	Pit	547	2		2	2	Yes	Yes

Context	Sample	Spit/Sub-sample	Feature type	Fill of	Phase	Group number	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
588	44		Ditch	586	2.2	CG62	10	10	Yes	Yes
593	45		Ditch	586	2.2	CG62	40	10	Yes	Yes
608	48		Ditch	606	2.3	CG48	40	0	No	No
609	47		Ditch	606	2.3	CG48	40	10	Yes	Yes
610	46		Ditch	606	2.3	CG48	40	0	No	No
627	49		Gully	625	2.1	CG55	20	10	Yes	Yes
631	50		Gully	629	2.1	CG55	20	10	Yes	Yes
645	56		Ditch	644	2.2	CG42	20	10	Yes	No
647	57		Ditch	644	2.2	CG42	20	10	Yes	Yes
666	54		Ditch	652	2.1	CG106	10	10	Yes	Yes
670	53		Ditch	652	2.1	CG106	40	10	Yes	Yes
676	52		Ditch	652	2.1	CG106	20	10	Yes	Yes
682	51		Ditch	688	2.1	CG106	40	10	Yes	Yes
705	58		Ditch	699, 700	2.1-2.2	CG56	20	10	Yes	Yes
722	59		Ditch	721	2.1-2.2	CG56	3	3	Yes	Yes
736	60		Ditch	721	2.1-2.2	CG56	40	10	Yes	Yes
750	64		Pit	749	2.2	CG59	40	10	Yes	Yes
767	62		Ditch	760	2.2	CG42	20	10	Yes	Yes
773	61		Ditch	760	2.2	CG42	20	10	Yes	No
773	63		Ditch	760	2.2	CG42	0.1	0	No	No
856	65		Pit		2.3		40	0	No	No
885	66		Ditch	872	2.2	CG83	40	10	Yes	Yes
929	102		Layer		1	CG113	10	0	No	No
934	68		Pit	931	2.2	CG84	20	10	Yes	Yes
934	67		Pit	931	2.2	CG84	40	0	No	No
934	78		Pit	931	2.2	CG84	1.5	0	No	No
936	77		Pit	931	2.2	CG84	1	0	No	No
948	69		Ditch	943	2.2	CG83	40	0	No	No
950	70		Ditch	943	2.2	CG83	10	0	No	No
956	71		Ditch	943	2.2	CG83	10	0	No	No
959	103		Ditch	943	2.2	CG83	20	0	No	No
960	72		Ditch	943	2.2	CG83	10	0	No	No
962	76		Ditch	943	2.2	CG83	40	0	No	No
970	73		Well	931	2.2	CG84	20	0	No	No
970	74		Well	931	2.2	CG84	10	0	No	No
970	75		Well	931	2.2	CG84	30	0	No	No
1006	79		Ditch	1003	2.2	CG86	40	0	No	No
1021	80		Ditch	1018	2.2	CG91	40	0	No	No
1043	81		Ditch	1039	2.3		40	0	No	No
1054	82	0-0.05m SSpit1	Cremation	1053	2		2	2	Yes	Yes
1054	82	0-0.05m NSpit1	Cremation	1053	2		2	2	Yes	Yes
1054	82	0.05-0.10m NSpit2	Cremation	1053	2		2	2	Yes	No
1054	82	0.05-0.10m SSpit2	Cremation	1053	2		2	2	Yes	Yes

Context	Sample	Spit/Sub-sample	Feature type	Fill of	Phase	Group number	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
1056	83	0.0 - 0.05m SSpit1	Cremation	1055	2		2	2	Yes	Yes
1056	83	0.0 - 0.05m NSpit1	Cremation	1055	2		2	2	Yes	No
1058	83	0.0 - 0.05m NSpit1	Pit	1057	2		2	2	Yes	Yes
1058	83	0.05-0.09m NSpit2	Pit	1057	2		2	2	Yes	Yes
1096	85		waterhole	1103	2.2	CG98	0	0	No	No
1097	86		waterhole	1103	2.2	CG98	10	0	No	No
1102	87		waterhole	1103	2.2	CG98	20	0	No	No
1105	84		Layer		1	CG113	10	0	No	No
1113	94		Ditch		2.2	CG86	10	0	No	No
1123	90		Ditch	1122	2.2	CG88	5	5	Yes	Yes
1132	91		Ditch	1130	2.2	CG90	10	10	Yes	Yes
1134	95		Ditch	1130	2.2	CG90	20	0	No	No
1152	97		Ditch	1150	2.3	CG93	0	0	Yes	Yes
1152	96		Ditch	1150	2.3	CG93	10	0	No	No
1157	97		Ditch	1150	2.3	CG93	10	0	No	No
1182	89		Posthole	1179	2.2	CG44	20	0	No	No
1186	99		Pit	1183	2.3	CG45	20	10	Yes	Yes
1194	100		Pit	1191	2.3	CG45	20	0	No	No
1198	98		Ditch	1197	2.3	CG46	20	0	No	No
1202	92		Posthole	1200	2.2	CG44	10	0	No	No
1206	101		Pit	1203	2.3	CG45	20	0	No	No
1226	119		Gully	1225	2.1	CG47	40	10	Yes	Yes
1228	104		Gully	1227	2.1	CG47	20	0	No	No
1239	106		Ditch	1237	2.3	CG76	20	0	No	No
1245	107		Gully	1244	2.1	CG47	10	0	No	No
1255	109		Ditch	1252	2.3	CG53	40	10	Yes	Yes
1292	110		Ditch	1282	2.2		20	0	No	No
1330	112		Ditch	1328	2.3	CG52	20	10	Yes	Yes
1331	111		Ditch	1328	2.3	CG52	10	0	No	No
1356	115		Posthole	1307	2.3		10	0	No	No
1368	116		Ditch	1366	2.3	CG53	20	10	Yes	Yes
1377	117		Ditch	1375	2.3	CG54	10	10	Yes	Yes
1402	118		Layer		1	CG113	10	0	No	No
1418	120		Ditch	1420	2.3		40	10	Yes	No
1419	121		Ditch	1420	2.3		20	0	No	No
1463	122		Ditch	1462	2.3	CG54	20	10	Yes	Yes
1500	123		Ditch	1495	2.3	CG52	10	10	Yes	Yes
1521	124		Ditch	1519	2.3	CG43	40	0	No	No
1527	126	skull	Grave	1526	2	CG51	5	5	Yes	Yes
1527	127	Right hand	Grave	1526	2	CG51	1	1	Yes	Yes
1527	128	Left hand	Grave	1526	2	CG51	1	1	Yes	Yes

Context	Sample	Spit/Sub-sample	Feature type	Fill of	Phase	Group number	Sample volume (L)	Volume processed (L)	Residue assessed	Flot assessed
1527	129	pelvis	Grave	1526	2	CG51	6	6	Yes	Yes
1527	130	feet	Grave	1526	2	CG51	5	5	Yes	Yes
1528	132	grave base	Grave	1526	2	CG51	10	10	Yes	Yes
1529	131	decomp' layer	Grave	1526	2	CG51	10	10	Yes	Yes
1538	125		Ditch	1536	2.3	CG53	20	10	Yes	Yes
1547	133		Ditch	1545	2.3	CG52	40	10	Yes	Yes
1552	139		Gully	1551	2.3		10	10	Yes	Yes
1571	140		Gully	1551	2.3		20	10	Yes	Yes
1597	144		Pit	1596	2		10	10	Yes	Yes
1626	141		Ditch	1624	2.1-2.2	CG58	20	0	No	No
1644	146		Posthole	1643	2	CG102	10	10	Yes	Yes
1648	145		Pit	1647	2		10	10	Yes	missing
1654	147		Pit	1653	2		10	10	Yes	Yes
1692	142		Ditch	1686	2.1-2.2	CG56	40	10	Yes	Yes
1732	143		Layer		1		10	10	Yes	Yes

Table 20: List of bulk samples

The results are summarised in Tables 21 and 22.

Sample locations were from across the whole site. Nevertheless, for the most part, environmental remains from samples (consisting of mainly charred cereal and legume crop remains) were sparse, although in a small number of samples they were abundant. These samples merit further analysis (see proposal below).

5.3.2.4 Phase 2.1-2.2 early to mid-Roman (mid-1st to 3rd century AD)

Unusually high numbers of charred weed seeds (mostly rush or *Juncus* sp) were associated with chaff (spelt wheat glume bases and cereal awn fragments) and small, unidentified grass grains from fill 722 of ditch 721, within a curvilinear enclosure (CG56).

Occasional Celtic beans (*Vicia faba*) found in (666).

5.3.2.5 Phase 2.2 mid to later Roman (mid-2nd to 4th century AD)

Charred cereal crop remains were moderately abundant in fill 588 of ditch (CG62). These remains included emmer/spelt wheat, hulled barley and unidentified grass grains, in association with melilot/medick (*Melilotus*/*Medicago* sp), and other weed seeds.

The most abundant and significant remains, however, from a pot found in basal fill 1123 of ditch 1122 (CG88, the recut of ditch CG86). Well preserved Celtic bean (*Vicia faba*), pea (*Pisum sativum*) and oat grains (*Avena sativa*) were found in the pot. A small number of weed seeds (presumably contaminants of the crop(s)) were also recorded. Counts for whole Celtic bean and pea and fragments are made in order to facilitate assessment of their suitability for stable isotope analysis (Table 23).

The circumstance is unusual in that there was no sign of burning/sooting on the pot, and no sign that wear abrasion would have removed any of these residues (Rob Perrin pers comm). There were also three holes in the base of the pot, which could be interpreted as facilitating drying of the contents.

Occasional *Pisum*/pea remains were also found in fill 885 of ditch 872.

5.3.2.6 Phase 2.3 later Roman (4th century AD)

Moderately abundant charred cereal and legume crop remains were noted in two fills (1186 and 1500; CGs 45 and 52 respectively). Charred cereal remains in fill 1538 of ditch 1536 (CG53) were dominated more by seed remains, with occasional grains. Evidence of interest, in small numbers, were pea remains in pit fill 1463 (CG54) and possible cultivated flax (*Linum* cf *usitatissimum*) in the fill of gully 1551.

5.3.2.7 Phase 2 Roman

Charcoal from cremations was abundant, and included some non-oak wood (which would be suitable for radiocarbon dating, if needed), but were not particularly well preserved assemblages.

For all phases, uncharred remains, consisting of mainly root fragments are assumed to be modern and intrusive as they are unlikely to have survived in the soils on site for long without charring or waterlogging.

Context	Sample	Spit/Sub-sample	Large mammal	Small mammal	Human bone	Mollusc	Eggshell	Charcoal	Charred plant	Unch*	Artefacts	Comments
111	1	1 of 2	occ*			occ		occ	abt	mod	mod pottery	*=burnt
261	8	1 of 1				occ		occ*		occ		*=<4mm
304	29	NE Spit1 0-0.05m			abt					occ	occ fired clay, cremation slag, pot	
304	29	NE spit2 0.05-0.10m			abt			occ			mod cremation slag, occ fired clay	
304	29	NE spit3 0.10-0.15m			abt			occ		occ	occ fired clay, cremation slag	
304	29	NW spit1 0-0.05m			abt			occ			occ fired clay, cremation slag	
304	29	NW spit2 0.05-0.10m			abt			occ			occ fired clay, cremation slag, fe objects	
304	29	NW spit3 0.10-0.15m			abt						occ fired clay, cremation slag	
304	29	NE spit4 0.15-0.17m			abt			occ			occ fired clay, cremation slag	
304	29	SE spit1 0-0.05m			abt			occ			occ fired clay, cremation slag	
304	29	SE spit2 0.05-0.10m			abt			occ			occ fired clay, cremation slag	
304	29	SE spit3 0.10-0.15m			abt			occ			occ fired clay, cremation slag	
304	29	SW spit3 0.10-0.15m			abt			occ			mod fired clay, occ cremation slag	
304	29	SW spit2 0.05-0.10m			abt			occ			occ fired clay, cremation slag, Fe objects	
304	29	SW spit1 0-0.05m			abt			occ			occ fired clay, cremation slag	
424	35					occ					occ fired clay	
541	42	1 of 1						occ*	abt*	occ		*=<4mm
548	43	south 0.05-0.10m			abt			occ			occ cremation slag	
548	43	N. spit2. 0.05-0.1m			abt			occ			occ fired clay, pyre ash	
548	43				abt			occ			occ fired clay, pyre ash	

Context	Sample	Spit/Sub-sample	Large mammal	Small mammal	Human bone	Mollusc	Eggshell	Charcoal	Charred plant	Unch*	Artefacts	Comments
548	43	N. spit1. 0-0.05m			abt			occ			occ fired clay, pyre ash	
588	44		occ					occ	mod	mod	mod fired clay, occ pot, whetstone??, fuel ash	
593	45	4 of 4	occ*			occ		mod	occ	mod	occ fired clay	*=burnt
609	47	4 of 4	occ	occ*		occ		occ*	occ	occ	occ CBM	*=<4mm
627	49	1 of 2	occ*			mod-abt		occ			occ pottery, fired clay	*=burnt
631	50	1 of 2	mod*			occ		mod**			occ pottery, fired clay	*=some burnt, **= most <4mm
645	56										occ fired clay	
647	57		occ*			occ					occ pottery, fired clay	*=burnt
666	54		occ					occ	occ		occ fired clay, pot	
670	53	3 of 4	occ			occ		occ*			occ pottery, fired clay, flint	*mostly <4mm
676	52	2 of 2	occ			occ		occ			mod pottery, occ fired clay	
682	51	1 of 4	occ*					occ*			occ pottery, fired clay	*=<4mm
705	58	1 of 2	occ*	occ**		occ					mod fired clay, occ pottery	*=burnt, **=1 piece
722	59							v abt			occ fired clay*	*=not certain.
736	60		occ*					occ	occ		mod fired clay, occ pottery, Fe slag	*=burnt
750	64		occ*			occ		occ**			mod fired clay, occ pottery, flint	*=burnt, **=<4mm
767	62	2 of 2	mod*			occ					occ fired clay, Fe object	*=burnt
773	61		occ					occ			occ pottery, fired clay	
885	66		occ*			occ					occ pottery, fired clay	*=burnt, occ mites (arthropods)
934	68		abt					occ			occ fired clay	
972	75	3 of 3	mod								occ fired clay	

Context	Sample	Spit/Sub-sample	Large mammal	Small mammal	Human bone	Mollusc	Eggshell	Charcoal	Charred plant	Unch*	Artefacts	Comments
1054	82	S. spit1. 0-0.05m			abt			occ			Occ fired clay, pyre as/debris, Fe objects	
1054	82	S. spit2. 0.05-0.1m	occ		abt			occ			occ Fe objects	
1054	82	N. spit1. 0-0.05m			abt			occ				
1054	82	N. Half 0.05-0.10m			abt*			occ			occ fired clay, Fe objects	*=burnt
1054	82	North. 0 - 0.05m			abt*			occ			occ Fe objects	*=burnt
1056	83	S.Half.Spit1 0-0.05m			abt*			occ			occ fired clay	*= burnt
1056	83	North.Spit1. 0-0.05m			abt*			occ			occ Fe objects	*=burnt
1056	83	S.Half. 0.05-0.10m			mod*							*=burnt
1058	83	N.Half..0.05-0.10m			occ*							*=burnt
1058	83	N.Half. 0- 0.05m			abt*						occ Fe objects	*=burnt
1123	90		occ*			occ		occ	abt		mod fired clay, occ pot	*=burnt
1132	91					abt			occ	occ		
1186	99	2 of 2	occ					occ*	abt*		mod pottery, fired clay	*=<4mm
1226	119	3 of 4	occ						occ		occ fired clay	
1255	109	3 of 4	mod			occ		occ			occ pottery, fired clay	
1330	112	1 of 2	occ*			occ		mod**			occ pottery, fired clay	*=burnt, **=<4mm
1352	114	1 of 1					abt					
1368	116	2 of 2	occ			occ		mod*			mod fired clay	*=mostly <4mm
1377	117		occ	mod*		abt		occ*	occ*		mod pottery	*=<4mm
1463	22		occ			occ		occ	occ		occ fired clay, pot	
1500	123	1 of 1	occ*					occ**	mod		occ pottery,	*=burnt, **=<4mm

Context	Sample	Spit/Sub-sample	Large mammal	Small mammal	Human bone	Mollusc	Eggshell	Charcoal	Charred plant	Unch*	Artefacts	Comments
1527	126	skull sample			abt						occ fired clay	
1527	129	Pelvis sample			mod	occ					occ fired clay.	
1527	132				occ						occ fired clay	
1527	127		occ									
1527	127		occ									
1527	128		mod*									*small fragments
1527	130		occ*									*small fragments
1529	131	Torso/pelvis sample			occ							
1538	125	1 of 2	occ	occ*		occ		abt**	abt**		ab*t* fired clay	*=possibly amphibian, **=some <4mm
1547	133	2 of 4	mod*								occ pottery, fired clay	*= some burnt
1552	139		occ	occ				occ*			occ pottery, glass	*=<4mm
1571	140	2 of 2	mod					mod*	occ*		mod fired clay, occ pottery	*= mostly <4mm
1626	141							occ	occ		occ fired clay	
1644	146		occ*			occ		occ	occ		Mod fired clay, occ pot	*=burnt
1692	142		occ*			occ		occ	occ		occ fired clay, pot	*=burnt

*Table 21: Summary of environmental remains; occ = occasional, mod = moderate, abt = abundant, * = probably modern and intrusive*

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
424	35		ch	unidentified wood fragments	misc	+/low	Tiny fragments
424	35		unch*	unidentified root fragments (herbaceous)	misc	+/low	
548	43		unch*	unidentified root fragments (herbaceous)	misc	++/low	
1152	97		ch	unidentified wood fragments	misc	+/low	
1527	126		wa	unidentified root fragments (herbaceous)	misc	+/low	
1529	131		unch*	unidentified root fragments (herbaceous)	misc	+/low	
111	1		ch	*Triticum dicoccum*/*spelta* grain, *Triticum* sp grain, *Hordeum vulgare* grain (hulled), Cereal sp indet grain, *Avena* sp grain, Poaceae sp indet grain (2mm size)	grain	+/low	
111	1		ch	*Rumex acetosella*, Juncus sp	seed	+++/low	
111	1		ch	Poaceae sp indet stem frags	chaff	+/low	
111	1		unch*	unidentified wood fragments	misc	++/low	
261	8		unch*	unidentified stem fragments, unidentified root fragments (herbaceous)	misc	+/low	
304	9	0.00 - 0.05m	unch*	unidentified root fragments (herbaceous)	misc	+++/low	
304	29	0.05 - 0.10m	unch*	unidentified root fragments (herbaceous)	misc	+++/low	
304	29	0.05 - 0.10m	ch	unidentified wood fragments	misc	+/low	Tiny fragments
304	29	0.10 - 0.15m	unch*	unidentified root fragments (herbaceous)	misc	+++/low	
304	29	0.15 - 017m	unch*	unidentified root fragments (herbaceous)	misc	+/low	
541	42		unch*	unidentified wood fragments	misc	+/low	
548	43		ch	unidentified wood fragments	misc	+/low	
548	43		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
548	43	0.0 - 0.05m North	unch*	unidentified root fragments (herbaceous)	misc	++++/low	
548	43	0.05 - 0.10m	unch*	unidentified root fragments (herbaceous)	misc	++++/low	
588	44		ch	*Triticum dicoccum*/*spelta* grain, *Hordeum vulgare* grain (hulled), Poaceae sp indet grain, Poaceae sp indet grain (3mm size)	grain	++/low	
588	44		ch	*Melilotus*/*Medicago* sp, *Chenopodium*/*Atriplex* sp,	seed	++/low	

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
				Schoenoplectus tabernaemontani			
593	45		ch	*Melilotus*/*Medicago* sp, Poaceae sp indet grain (1mm)	seed	+/low	
593	45		ch	unidentified wood fragments	misc	+/low	Tiny fragments
593	45		unch*	unidentified root fragments (herbaceous)	misc	++/low	
609	47		ch	Cereal sp indet awn fragments, Poaceae sp indet stem frags	misc	+/low	
609	47		ch	Poaceae sp indet grain (small), Poaceae sp indet grain (1mm)	grain	+/low	
609	47		unch*	unidentified herbaceous fragments	misc	+/low	
627	49		ch	*Hordeum vulgare* grain (hulled)	grain	+/low	
627	49		ch	Poaceae sp indet stem frags	misc	+/low	
627	49		unch*	*Chenopodium album*	seed	+/low	
627	49		unch*	unidentified root fragments (herbaceous)	misc	++++/low	
631	50		unch*	unidentified root fragments (herbaceous)	misc	++++/low	
647	57		ch	Cereal sp indet grain, Poaceae sp indet grain	grain	+/low	small fragments
647	57		ch	unidentified seed	seed	+/low	
647	57		unch*	unidentified root fragments (herbaceous)	misc	+/low	
666	54		ch	Poaceae sp indet grain, Poaceae sp indet grain (small), Poaceae sp indet grain (1mm)	grain	+/low	
666	54		ch	*Vicia*/*Lathyrus* sp, cf *Pisum sativum*, *Mentha aquatica*, *Schoenoplectus tabernaemontani*, *Carex* sp (3-sided) nutlets	seed	+/low	
666	54		ch	Poaceae sp indet stem frags	misc	+/low	
666	54		unch*	unidentified root fragments (herbaceous)	misc	+/low	small fragments
670	53		ch	Fabaceae sp indet, Cyperaceae sp indet	seed	+/low	
670	53		ch	Poaceae sp indet grain (2mm size)	grain	+/low	
670	53		unch*	*Juncus* sp	seed	+/low	
670	53		unch*	unidentified root fragments (herbaceous)	misc	+/low	
676	52		ch	*Juncus* sp	seed	++/low	

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
676	52		unch*	unidentified root fragments (herbaceous)	misc	++++/low	
682	51		unch*	unidentified root fragments (herbaceous)	misc	++++/low	
705	58		ch	unidentified wood fragments	misc	+/low	tiny fragments
705	58		unch*	Unidentified root fragments (herbaceous), unidentified herbaceous fragments	misc	+/low	
722	59		ch	Poaceae sp indet grain (small)	grain	+/low	
722	59		ch	*Triticum dicoccum*/*spelta* glume base, Cereal sp indet awn fragments	chaff	+/low	
722	59		ch	*Ranunculus acris*/*repens*/*bulbosus*, *Juncus* sp, *Schoenoplectus tabernaemontani*, *Carex* sp (2-sided) nutlets, *Carex* sp (3-sided) nutlets	seed	++++/low	High numbers *Juncus* sp
722	59		ch	unidentified wood fragments	misc	++++/low	very small fragments
736	60		ch	Cereal sp indet grain, Poaceae sp indet grain (small), Poaceae sp indet grain (2mm size)	grain	+/low	Poorly preserved
736	60		ch	Poaceae sp indet stem frags	misc	+/low	
736	60		ch	Fabaceae sp indet, *Chenopodium*/*Atriplex* sp, unidentified seed	seed	+/low	
736	60		ch	cf *Vicia faba*	seed	+/low	
736	60		unch*	unidentified root fragments (herbaceous)	misc	+/low	
750	64		ch	*Triticum dicoccum*/*spelta* grain, *Hordeum vulgare* grain (hulled)	grain	+/low	
750	64		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
767	62		ch	*Triticum dicoccum*/*spelta* grain, Poaceae sp indet grain (small)	grain	+/low	
767	62		ch	Poaceae sp indet stem frags	misc	+/low	
767	62		unch*	*Chenopodium glaucum*/*rubrum*	seed	+/low	
767	62		unch*	unidentified root fragments (herbaceous)	misc	++/low	
885	66		ch	Poaceae sp indet stem frags	misc	+/low	
885	66		ch	cf *Vicia faba*, *Pisum sativum*, *Melilotus*/*Medicago* sp, *Brassica* sp, *Rumex* sp,	seed	+/low	cf *Brassica* sp?

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
				Schoenoplectus tabernaemontani			
885	66		ch	*Triticum dicoccum*/*spelta* grain, *Avena* sp grain, Poaceae sp indet grain (1mm), Poaceae sp indet grain (2mm size)	grain	+/low	Poorly preserved
885	66		unch*	unidentified root fragments (herbaceous)	misc	+/low	
934	68		ch	unidentified wood fragments	misc	+/low	Tiny fragments
972	75		unch*	*Urtica urens*, *Atriplex* sp, *Juncus* sp	seed	+++/low	
972	75		unch*	unidentified root fragments (herbaceous)	misc	+/low	
1016	9		ch	Cereal sp indet grain	grain	+/low	Poor preservation
1054	82	0.0 - 0.05m NSpit1	ch	unidentified wood fragments	misc	+++/low	
1054	82	0.0 - 0.05m SSpit2	unch*	unidentified root fragments (herbaceous)	misc	++++/low	
1056	83	0.0 - 0.05m SSpit2	unch*	unidentified root fragments (herbaceous)	misc	++++/low	
1058	83	0.0 - 0.05m Nspit1	ch	unidentified wood fragments, non-oak wood	misc	++++/low	
1058	83	0.05 - 0.09m NSpit2	unch*	unidentified root fragments (herbaceous)	misc	++++/low	
1123	90		ch	*Avena* sp grain, Poaceae sp indet grain	grain	+++/low	
1123	90		ch	Cereal sp indet awn fragments	chaff	+/low	
1123	90		ch	*Vicia sativa* ssp *nigra*, *Vicia faba*, *Pisum sativum*, *Rumex acetosella*, *Agrostemma githago*, *Chenopodium glaucum*/*rubrum*	seed	+++/low	Mostly *Vicia faba* and to lesser degree, *Pisum sativum*
1123	90		ch	unidentified wood fragments	misc	++++/low	Very small fragments
1132	91		ch	Poaceae sp indet grain	grain	+/low	
1132	91		ch	unidentified wood fragments	misc	+/low	
1132	91		unch*	unidentified root fragments (herbaceous)	misc	+/low	
1186	99		ch	*Triticum dicoccum*/*spelta* grain, *Hordeum vulgare* tail grain (hulled), Cyperaceae sp indet, *Bromus* sp grain, Poaceae sp indet grain	grain	++/low	

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
				(small), Poaceae sp indet grain (2mm size)			
1186	99		ch	cf Fabaceae sp indet, Malva sp	seed	++/low	
1226	119		ch	*Hordeum vulgare* grain (hulled)	grain	+/low	Poorly preserved
1226	119		unch*	*Salix* sp (fruit), unidentified root fragments (herbaceous)	misc	++++/low	
1226	119		unch*	*Chenopodium* sp	seed	+/low	
1255	109		ch	Cereal sp indet grain	grain	+/low	Poorly preserved
1255	109		ch	Poaceae sp indet stem frags	chaff	+/low	
1255	109		ch	*Melilotus*/*Medicago* sp, Lamiaceae sp indet	seed	+/low	v small Lamiaceae
1255	109		unch*	unidentified leaf fragments, unidentified root fragments (herbaceous)	misc	+++/low	
1330	112		ch	Cereal sp indet grain	grain	+/low	
1330	112		ch	cf Fabaceae sp indet	seed	+/low	Fragments
1368	116		ch	unidentified wood fragments	misc	+/low	
1368	116		ch	*Triticum dicoccum*/*spelta* grain, Poaceae sp indet grain (small)	grain	+/low	
1368	116		ch	*Rumex acetosella*, unidentified seed	seed	+/low	Unidentified seed very small - possibly Juncus
1377	117		ch	*Hordeum vulgare* grain (hulled), Cereal sp indet grain (fragment)	grain	+/low	Poor preservation
1377	117		unch*	unidentified root fragments (herbaceous)	misc	++/low	
1463	122		ch	*Triticum* sp (free-threshing) grain, *Hordeum vulgare* grain (hulled), Cereal sp indet grain	grain	+/low	Poor preservation
1463	122		unch*	unidentified root fragments (herbaceous)	misc	++/low	
1463	122		ch	cf *Pisum sativum*	seed	+/low	
1500	123		ch	*Melilotus*/*Medicago* sp	seed	++/low	
1500	123		ch	*Triticum dicoccum* glume base, Poaceae sp indet culm node	chaff	+/low	
1500	123		ch	*Triticum dicoccum*/*spelta* grain, *Hordeum vulgare* grain (hulled), Cereal sp indet grain, cf *Avena* sp grain, cf *Bromus* sp grain, Poaceae sp indet grain, Poaceae sp indet grain	grain	++/low	

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
				(small), Poaceae sp indet grain (1mm)			
1527	127		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
1527	128		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
1527	129		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
1527	130		unch*	unidentified root fragments (herbaceous)	misc	++/low	
1527	130		ch	unidentified wood fragments	misc	+/low	Tiny fragments
1527	131		ch	unidentified wood fragments	misc	+/low	
1527	131		unch*	unidentified root fragments (herbaceous)	misc	+/low	
1527	132		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
1538	125		ch	*Ranunculus acris*/*repens*/*bulbosus*, *Vicia sativa* ssp nigra, *Vicia faba*, *Melilotus*/*Medicago* sp, *Brassica nigra*, *Polygonum aviculare*, *Carex* sp (2-sided) nutlets, *Carex* sp (3-sided) nutlets	seed	++/low	*Vicia faba* dominant
1538	125		ch	*Triticum dicoccum*/*spelta* grain, *Triticum* sp grain, *Rumex* sp, Poaceae sp indet grain (3mm size), Poaceae sp indet grain (2mm size)	grain	+/low	
1538	125		ch	Cereal sp indet	grain	+/low	
1552	139		unch*	unidentified root fragments (herbaceous), unidentified herbaceous fragments	misc	+++/low	
1552	139		ch	*Triticum*/*Secale* sp grain, Cereal sp indet grain	ch	+/low	
1538	125		ch	unidentified wood fragments	misc	+/++/low	
1547	133		ch	*Triticum* sp grain, Poaceae sp indet grain	grain	+/low	
1547	133		ch	*Melilotus*/*Medicago* sp, cf Fabaceae sp indet, *Chenopodium glaucum*/*rubrum*	seed	+/low	
1571	140		ch	*Melilotus*/*Medicago* sp, *Linum* cf *usitatissimum* seed, *Brassica nigra*, *Rumex acetosella*	seed	+/low	
1571	140		ch	unidentified wood fragments	misc	+/low	
1571	140		unch*	unidentified root fragments (herbaceous)	misc	+++/low	
1597	144		unch*	unidentified root fragments (herbaceous)	misc	+/low	

Context	Sample	Spit/Sub-sample	Preservation type	Species detail	Category remains	Quantity/diversity	Comment
1644	146		ch	*Triticum* sp grain, Cereal sp indet grain, Poaceae sp indet grain	grain	+/low	Poor preservation
1644	146		ch	Cereal sp indet embryo shoot, Poaceae sp indet stem frags	chaff	+/low	
1644	146		ch		seed		
1644	146		unch*	unidentified root fragments (herbaceous)	misc	+/low	
1654	147		ch	unidentified wood fragments	misc	+/low	
1654	147		unch*	*Lemna* sp	seed	+/low	
1654	147		unch*	unidentified root fragments (herbaceous)	misc	+/low	
1692	142		ch	Cereal sp indet grain	grain	+/low	Poor preservation
1692	142		unch*	unidentified root fragments (herbaceous)	misc	++/low	
1727	143		unch*	unidentified leaf fragments, unidentified root fragments (herbaceous), unidentified herbaceous fragments	misc	+++/low	Many fragments look humified

Table 22: Plant remains from bulk samples

Key:

preservation	quantity
ch = charred	+ = 1 - 10
unch = uncharred	++ = 11- 50
	+++ = 51 - 100
	++++ = 101+
	* = probably modern and intrusive

Latin name	Family	Common name	Habitat	1123 (1/2 fraction)
Carex sp (3-sided) nutlets	Cyperaceae	sedge	CDE	1
Cereal sp indet grain	Poaceae	cereal	F	23
Cereal sp indet culm node	Poaceae	cereal	F	1
Avena sp grain	Poaceae	oat	AF	93
Avena sp grain (small)	Poaceae	oat	AF	13
Vicia faba	Fabaceae	broad bean	AF	70
cf *Vicia faba*	Fabaceae	broad bean	AF	4
Vicia faba fragments	Fabaceae	broad bean	AF	319
Pisum sativum	Fabaceae	garden pea	AF	20
Pisum sativum fragments	Fabaceae	garden pea	AF	19
Fabaceae sp indet	Fabaceae	legume	ABCDE	10

Latin name	Family	Common name	Habitat	1123 (1/2 fraction)
Persicaria/*Polygonum* sp	Polygonaceae	knotgrass	AB	3
Rumex acetosella	Polygonaceae	sheep's sorrel	ABD	19
Atriplex sp	Amaranthaceae	orache	AB	100
Bromus sp grain	Poaceae	brome grass	AF	4
Poaceae sp indet grain	Poaceae	grass	AF	161
Poaceae sp indet grain (small)	Poaceae	grass	AF	67
Poaceae sp indet spikelet fork	Poaceae	grass	ABCD	1
unidentified wood fragments	unidentified			28

Table 23: Plant remains from pot fill 1123 (1/2 fraction)

5.3.3 Animal bone, by Matilda Holmes

5.3.3.1 Introduction

A sizeable assemblage of 3358 refitted, hand-collected animal bones and teeth were recovered from 417 contexts, of which 1178 were identified to taxon. The majority of the zooarchaeology came from Roman features along with a few post-medieval and undated deposits. This report aims to characterise the zooarchaeology, assess the potential for understanding human-animal interactions at the site, and its significance on a local, regional and national level. Full analysis is recommended to aid understanding of the nature and status of the Roman settlement (see proposal below).

5.3.3.2 Methodology

All hand-recovered bones and teeth were scanned and recorded by context including those that could not be identified to taxon, and potential biometrical and mortality data (tooth wear and bone fusion) were quantified for the major domesticates. Other information noted included condition, the incidence of burning, gnawing, butchery, loose/ broken teeth and refitted fragments. For some elements a restricted count was employed to reduce fragmentation bias: vertebrae were recorded when the vertebral body was present, and maxilla, zygomatic arch and occipital areas of the skull were identified from skull fragments. A number of sieved samples were made available, but because of high fragmentation a selective process was undertaken, whereby fragments were recorded only if they could be identified to species or showed signs of taphonomic processes. Recording methods and analysis are based on guidelines from Baker and Worley (2014).

5.3.3.3 Zooarchaeological evidence

The assemblage was in varied condition, mostly fair to good (Table 24), though a few contexts (in phase order: 722, CG56, P2.1-2.2; 811, CG27, P2.2; 1021, CG91, P2.2; 1145, P2.2; 821, CG85, P2.3; 1156, CG93, P2.3; 1236, CG79, P2.3; 1275, CG53, P2.3; and 1417; P2.3) included material in good and poor condition implying different taphonomic pathways, or that the deposit was uncovered for some time, allowing exposed bones to become weathered, while protecting those below. The assemblage was highly friable, and over half the contexts contained refitted fragments (Table 24). Nearly a third of all contexts contained loose teeth, and almost a quarter included bones with canid gnawing, suggesting that the animal remains were not always buried immediately following discard, but were exposed long enough to allow dogs or foxes access, and for teeth to fall out of the mandibles. This implies either delayed burial of a midden or similar, that they were redeposited, and/ or that features were left open.

Evidence for processing in the form of butchery or burning was minimal, observed in approximately a tenth of all contexts, suggesting that carcasses were not intensively butchered, and bones were not

routinely exposed to fire during cooking, processing or disposal. It is notable that two later Roman horse bones bore knife cuts. Within the hand collected material there were no major groups of calcined or burnt fragments, those present being recovered alongside unburnt material and so likely to represent the deposition of hearth waste. This was generally true of the samples, but a few larger concentrations of calcined fragments came from early Roman ditch CG106 (context 666), early to mid-Roman ditch CG56 (context 736), mid to later Roman ditch CG42 (context 767) and Roman pit 1596 (context 1597). Of note were groups of calcined sheep/goat bones from ditch fill 767 (humerus, ulna, zygomatic and possible scapula fragments; CG42, P2.2) and later Roman ditch fill 1327 (radius, pelvis, femur, tibiae and an astragalus; CG63, P2.3).

There were no obvious, specific deposits of butchery, craft working or skin-processing waste, and the general impression is one of a mixture of processing and food waste disposed of together. Two later Roman sheep/goat metapodials with polish on the shaft were recovered from pit CG76 (context 1214) and ditch GC85 (context 821), the latter with a hole in the proximal end, which may have been used during skin processing. Several antler fragments were present, two of which may be offcuts from working, having been sawn through, and a red deer skull had the antler removed for working.

Primary contexts were identified from finds of unfused long bones recovered alongside their associated epiphyses (growth plates), in early Roman gully CG55 (context 631) and later Roman ditch CG52 (context 1386) as well as numerous associated bone groups (ABGs) (Table 25) that showed some interesting temporal, spatial and categorisation trends:

- Three equid (horse or donkey) burials came from Phase 2. Two from pit 77 that included a foal skeleton (contexts 1303 and 1309), and an older juvenile skeleton in context 1304. The presence of the foal provides a season of deposition as early spring to late summer. A further partial skeleton was recovered from ditch 1280 (context 1281), also from a juvenile animal.
- Early to mid-Roman ditch CG56 is of note, as it produced several cattle and sheep/ goat ABGs, including those of a lamb and calf. With the exception of a nearly complete sheep skeleton from context 1689, the remains reflect the deposition of numerous carcass parts from several animals in contexts 722, 724 and 725 that would have provided a considerable quantity of meat.
- Periods 2.1 and 2.2 are typically represented by groups of food waste (upper limb bones that most likely represent joints of meat), or butchery waste (lower limbs that have relatively little meat value) from cattle and sheep/ goats including young animals. It is possible that the latter groups were not simply discarded following processing, but were deliberately and symbolically buried as an offering following the culling of an animal (Holmes forthcoming). Taken together, this group of ABGs represent the processing of a large quantity of meat, apparently removed in several events, which implies either provisioning for a large population, or the preservation of meat through salting or brining.
- This pattern continues into the later Roman period, but includes a more diverse array of taxa, including canids (dog/ fox) and equids. Some may be from disturbed burials, but their similarity to the ABGs from the major domesticates suggests a similar taphonomic pathway.

	Preservation						Total N	Bone Modification				
Period	Good	Good-fair	Fair	Fair-poor	Poor	Good-poor	Contexts	Gnawed	Butchered	Burnt	Refit	Loose teeth
2: Roman	6		8		1		15	3		1	6	2
2.1: Early Roman	2	1	16	2	3		24	1		6	11	5
2.1-2.2: Early to mid-Roman	4	1	14	1	5	1	26	3	4	7	12	8
2.2: Mid to later Roman	29	10	77	4	24	3	147	28	11	18	85	38
2.3: Later Roman	44	10	87	12	11	5	169	50	26	22	105	56
4: Post-medieval			1		1		2					1
6: Undated	10	2	14	2	6		34	9	8	3	18	6
Total	95	24	217	21	51	9	417	94	49	57	237	116

Table 24: Preservation and bone modifications observed for each context

Phase	Context number	Group/ cut	Taxon	Possible interpretation	ABG
2	1281	Ditch 1280	Equid	?burial	Juvenile lower leg (tarsal, metatarsal, lateral metatarsal)
2	1303/9	Burial CG77	Equid	Burial	Foal skeleton
2	1304	Burial CG77	Equid	Burial	Juvenile skeleton
2.1	192	Posthole CG5	Sheep/ goat	Food/ Processing	Hind quarters (Thoracic vertebrae, pelvis, femur)
2.1-2.2	725	Ditch CG56	Calf	Butchery/ symbolic	Lower legs (carpals and tarsals to 3rd phalanges)
2.1-2.2	724	Ditch CG56	Cattle	Butchery/ symbolic	Carpals x3
2.1-2.2	725	Ditch CG56	Cattle	Food/ processing	Hind leg (Femur, tibia, metatarsal)
2.1-2.2	725	Ditch CG56	Lamb	Food/ processing	Hind leg (femur, tibia, thoracic vertebra)
2.1-2.2	1689	Ditch CG56	Sheep	Burial	Skeleton
2.1-2.2	725	Ditch CG56	Sheep/ goat	Butchery/ symbolic	Vertebrae (lumber x3, thoracic)
2.1-2.2	722	Ditch CG56	Sheep/ goat	Butchery/ symbolic	Lower leg (metatarsal to 3rd phalanges)
2.2	298	Ditch CG17	Calf	Food waste	Fore leg (radius and humerus)
2.2	298	Ditch CG17	Lamb	Food waste	Hind leg (femur, tibia, tarsals x2)
2.2	1314	Ditch CG20	Cattle	Butchery/ symbolic	Lower leg (Metacarpal to 3rd phalanges)

Phase	Context number	Group/ cut	Taxon	Possible interpretation	ABG
2.2	449	Ditch CG27	Cattle	Food waste	Hind leg (Tibia,tarsals) gnawed
2.2	481	Ditch CG30	Sheep	Butchery/ symbolic	Lower leg (tarsals to 1st phalanges)
2.2	583	Ditch CG37	Calf	Butchery/ symbolic	Lower leg (Metacarpal to 3rd phalanges)
2.2	1216	Ditch CG62	Cattle	Butchery/ symbolic	Vertebrae (ribs, thoracic, lumber, sacrum, caudal)
2.2	1219	Ditch CG62	Sheep/ goat	Butchery/ symbolic	Lower leg (metacarpal to 1st phalanges)
2.2	964	Ditch CG83	Sheep	Butchery/ symbolic	Head and feet (skull, mandibles, metapodials to third phalanges)
2.2	989	Ditch CG86	Cattle	Butchery/ symbolic	Vertebrae (lumber x4)
2.2	1021	Ditch CG91	Sheep	Butchery/ symbolic	Lower legs (metacarpals and metatarsals to 3rd phalanges)
2.2	972	Well CG84	Equid	Food waste/ burial	Fore leg (humerus, radius)
2.2	972	Well CG84	Sheep	Food/ processing	Hind quarters (lumber vertebrae, pelvis, femur, tibia)
2.3	1517	Ditch 1511	Cattle	Butchery/ symbolic	Tarsals
2.3	1533	Ditch 1530	Canid	?burial	Fore and hind legs (radius, ulna, femur, tibia)
2.3	1351	Ditch CG48	Sheep	Food/ processing	Partial skeleton (mandibles, vertebrae, ribs, humeri-3rd phalanges)
2.3	1498	Ditch CG52	Sheep/ goat	Food/ processing	Hind quarters (sacrum, pelves, tibia, calcaneus)
2.3	1539	Ditch CG53	Dog	Butchery/ symbolic	Lower leg (tarsals to 3rd phalanx)
2.3	1358	Ditch CG53	Equid	Food waste	Fore leg (radius to metacarpal)
2.3	1360	Ditch CG53	Horse	?burial	Fore leg (humerus to 3rd phalanx) young adult, possible knife cuts
2.3	1507	Ditch CG54	Cattle	Butchery/ symbolic	Lower leg (carpals to 3rd phalanges)
2.3	1507	Ditch CG54	Equid	?symbolic	Partial skeleton (mandibles, pelves)
2.3	909	Pit 908	Calf	Butchery/ symbolic	Lower leg (metapodial to 3rd phalanges)
2.3	909	Pit 908	Horse	?burial	Hind leg (femur to metatarsal)

Table 25: Summary of associated bone groups by site phase

Period	Unidentified	Cattle		Sheep/ goat		Pig		Equid	Canid	Cat	Deer	Hare	Domesticfowl	Corvid	Bird	Landsnail	Marineshellfish	Totalidentified
		Bones	Teeth	Bones	Teeth	Bones	Teeth											
2: Roman	34	4	2	7	5	1		7										26
2.1: Early Roman	116	12	4	15	5	1		4								1		42
2.1-2.2: E-Mid Roman	171	21	6	24	7	3	2	5								1		69
2.2: Mid to later Roman	602	63	31	132	57	8	6	27	4		2	2	1			1	10	344
2.3: Later Roman	1123	154	47	212	107	18	20	48	14	1	3	1		1	1	2	4	633
4: Post-medieval	3				1													1
6: Undated	131	23	7	20	5	1		8										64

Table 26: Number of fragments recorded for the major domesticates, birds and other taxa (hand collected)

5.3.3.4 Phase 2: Romano-British (mid-1st to 4th century AD)

A few animal remains were recovered from Phase 2 features, most notably the two equid burials in CG77, the presence of several juvenile equids being unusual on any site in this period. The rest of the assemblage took the form of small quantities of bones and teeth scattered throughout ditches 1312, 1490, 835 and CG104, gully CG12, pit 1613 and well 125. Sheep, cattle, equid and pig remains were recorded, as well as micro-mammal bones from the samples (Tables 26 and 27).

5.3.3.5 Phase 2.1: Early Roman (mid-1st to mid-2nd century AD)

Sheep/ goats and cattle were recovered in similar quantities (Table 26), along with a few equid and pig remains. The zooarchaeology was scattered throughout ditches 353 and CG6, gullies CG47, pit 622 and posthole CG5, with larger groups recovered from ditch CG106 and gully CG55 (Table 28). This was a small group, though ditch CG106 is notable for including calf, foal and piglet remains and posthole CG5 for the sheep/ goat hindquarters (Table 25).

5.3.3.6 Phase 2.1-2.2: Early to mid-Roman (mid-1st to 3rd century AD)

Deposits dated to Phases 2.1-2.2 were produced from ditch groups CG41, CG56 and CG57 and gully CG107. The largest assemblage came from CG56, which was dominated by sheep/ goats, roughly half as many cattle and a few pigs and equids (Table 28). Cattle were most common in other features, resulting in similar quantities of sheep/ goat and cattle overall (Table 26). As well as numerous ABGs (described in Table 25), the perinatal remains of calves, lambs and a foal were also recovered from ditch CG56, suggesting that these animals were bred close by, and putting the season of deposition between early spring and late summer.

5.3.3.7 Phase 2.2: Mid to later Roman (mid-2nd to 4th century AD)

A moderate assemblage was recovered from many features, with more dense deposits coming from ditches CG17, 20, 27, 37, 42, 62, 66, 83 and 86 and well CG84 (Table 28), many of which produced the ABGs noted in Table 25. Smaller quantities of identified remains came from ditches 1001, 1282, 1426, 1493, 392, 427, 715, 831, 867, CG105, 18, 19, 21, 22, 23, 24, 30, 61, 64, 70, 72, 87, 90, 91 and 98, gully 358, CG13, 16, 36 and 81 and pits 1143 and CG59. Sheep/ goat remains were roughly twice as numerous as those of cattle (Table 26), with equids next most common then pigs. A few canid, deer, hare and shellfish including oyster and basket shells (*Varicorbula gibba*), were recorded alongside isolated finds of domestic fowl and a land snail (Table 28). The predominance of sheep/goats can be observed in most of the larger zooarchaeological deposits (Table 28), although cattle were more numerous in ditches CG20 and 37.

The increase in species diversity may be due to the larger sample size, and small-scale antler working is evident from the two pieces of red deer antler recovered. Of interest was a dog canine recovered from ditch CG20 (context 1431) that had a highly polished surface, and it may have been used as a talisman or memorial. As in preceding phases, evidence for breeding came from calf, lamb and puppy remains.

5.3.3.8 Phase 2.3: Later Roman (4th century AD)

The largest assemblage was produced from this phase, sheep/goats more commonly recovered than cattle, with equids the next most frequent taxon followed by pigs and canids and occasional finds of cat, deer, hare, birds (including corvid), land and marine snails (including scallop, mussel and oyster) and further finds of micro-mammals and frogs/toads from the samples (Tables 26-27). Animal remains were scattered throughout numerous features, the larger groups are identified in Table 28, but smaller quantities came from ditches 1035, 1379, 1478, 1530, 840, 903, 927, 967, and CGs 38, 46, 49, 69, 75, 76, 79, 88, 89 and 92, gullies 1177, 1264, 1551 and CG43, layer 1570, pits 1343 and 1409, and waterhole 1559. Fills were homogenous, with greater diversity from larger samples.

Deer were represented by two fragments of antler and a skull fragment with the antler removed, those that could be identified were from red deer. A goat was also present, and a large cattle evident. The latter is not uncommon in mid- and later Roman assemblages, reflecting the importation of new stock

to increase power and meat production (Albarella *et al* 2008). Breeding of livestock is reflected by the presence of calves and lambs; and two juvenile equid bones hint at either breeding horses in the area, or the rounding up of young animals from wild or semi-wild herds – though residuality could now be an issue for interpretation.

Of particular note is the deposit recovered in pit 909. Where cattle, equid and sheep/ goat skulls were found alongside the equid and calf ABGs (Table 25). These may indicate structured deposits, though it is entirely possible that they relate to processing waste as with the ABGs.

Phase	Cattle	Sheep/ goat	Equid	Micro-mammal	Frog/ toad
2: Roman		1		2	
2.1: Early Roman	1	1			
2.1-2.2: E-mid Roman		1		1	
2.2: Mid to later Roman		5	2		
2.3: Later Roman	1	3		1	10

Table 27: Taxa represented in environmental samples

5.3.3.9 Phase 4: Post-medieval

A single sheep/ goat tooth was identified from a small deposit in gully CG99 (Table 26).

Phase	2.1-2.2		2.1		2.2										2.3																				
Taxa	D CG56	G CG107	D CG106	G CG55	D CG17	D CG20	D CG27	D CG37	D CG42	D CG62	D CG66	D CG83	D CG86	W CG84	D 1039	D 1420	D 1511	D CG43	D CG48	D CG52	D CG53	D CG54	D CG63	D CG85	D CG93	G 1552	L 689	L CG50	P 855	P 908	P CG45	P CG76			
Cattle	15	8	5	8	4	11	6	10	2	9	5	9	5	3	13	2	6	17	5	18	15	35	8	2	3	7	9	6	2	8	13	3			
Sheep / goat	28	3	11	5	40	9	17	2	24	5	16	23	5	11	10	7	2	28	12	23	21	57	8	10	20	11	5	9	9	21	14	6			
Pig	5		1		1	1	1		1			5			4	2	1	4		2	1	9		2	1	1	2				3	1			
Equid	3		4		1	2	2	3				4	2	4	2		1	3		2	6	8	2		1	2	2	2	3	4					
Canid						1							1					1	1		3	2	1		1				1	1	1				
Other mammal						2	1			1			1				1	1		2	5	2													
Bird												1								1				1											
Total	51	11	21	13	46	26	27	15	27	15	21	42	14	18	29	11	11	54	18	48	51	113	19	15	26	21	18	17	16	34	31	10			

Table 28: Summary of the larger deposits >9 identified fragments. B = burial, D = ditch, P = pit, W = well, G = gully, L = layer, Ph – posthole, Wh = waterhole

Period	Cattle			Sheep/ goat			Pig		
	TWS	Fus	Meas	TWS	Fus	Meas	TWS	Fus	Meas
Unphased	4	9	11		7	4		1	
2: Roman	1	3	1	3	1				
2.1: Early Roman	1	9	8	1	5	4			
2.1-2.2: E-Later Roman	4	12	7	4	11	28		2	
2.2: Mid to later Roman	11	34	22	13	80	55	3	6	
2.3: Later Roman	15	83	78	37	87	30	7	6	

Table 29: Number of bones and teeth likely to provide ageing and metrical data for the major domesticates. TWS= wear stages from mandibles and individual teeth; fus= bone fusion; meas= metrical data

5.3.4 Diatoms, by Tom Hill

5.3.4.1 Introduction

A total of three diatom samples were submitted for assessment from ditch 112 (CG21) dated from the mid to later Roman period (Phase 2.2) and thought to represent a primary drainage channel in the network of ditches observed on site. The ditch contained an unusual blue clay layer believed to relate to the abandonment phase of the settlement. As a consequence, three samples were taken for diatom assessment: a basal sample from the deposits that underlie the blue clay unit, a second sample from the blue clay unit of interest, and a final sample from towards the top of the ditch.

Table 30 summarises the sampling strategy applied to the sequence, highlighting selected samples chosen for the assessment of diatoms. Simplified stratigraphic descriptions are also provided to assist subsequent discussions.

Feature	Sample	Generalised stratigraphy
Ditch 112 (CG21)	(117) <18>	Upper clayey silt
	(116) <20>	Blue clayey silt
	(113) <26>	Lower clayey silt

Table 30: Summary of the samples submitted for pollen and diatom consideration from Pilning

5.3.4.2 Methodology – laboratory

For diatom preparations, 0.5g of sediment was required. Samples were to be treated with hydrogen peroxide and/or hydrochloric acid depending on organic and/or calcium carbonate content, respectively. Samples were finally sieved using a 10µm mesh to remove fine minerogenic sediments. A minimum of 100 diatoms were to be identified for each sample depth. If diatoms were found to be in low abundance, 10 slide traverses were undertaken. Diatom species would be identified with reference to van der Werff and Huls (1958-74), Hendy (1964), and Krammer and Lange-Bertalot (1986-1991). Ecological classifications for the observed taxa were then achieved with reference to Vos and de Wolf (1988; 1993), Van Dam *et al* (1994), Denys (1991-92; 1994) and Round *et al* (2007).

5.3.4.3 Results

Unfortunately, diatoms were found to be absent from all three samples under consideration. As such, no potential diatom-based palaeoenvironmental information can be derived from the samples of interest. There was also very little supporting microscopic evidence encountered in the samples. Iron oxide staining was relatively common, which could explain the absence of diatoms in these samples, as iron oxides are often evidence for water table fluctuations, which can cause the destruction of the diatom frustules biogenic silica through redox processes. The basal sample (113 <26>) contained

occasional microcharcoal fragments. Microcharcoal however was much more common in the blue clay layer (116 <20>), reducing in abundance once again in the upper sample (117 <18>). Pollen and spores were encountered occasionally, typified by ferns and polypody. Goosefoot was also noted, but it is stressed that the diatom preparation method does not necessarily provide a fair reflection of pollen present (due to lack of staining and, hence, only the morphologically distinct grains are identifiable).

5.3.5 Mollusca remains, by Andrew Mann

5.3.5.1 Methodology

Flots and molluscs sorted from residues were scanned, and the abundance estimated, using a low power MEIJI stereo light microscope. Molluscs were identified using modern reference collections maintained by Worcestershire Archaeology; Nomenclature follows Kerney (1999).

5.3.5.2 Results

Phase 2.1

Low levels of *Hydrobia neglecta*, a small brackish water snail and *Pupilla muscorum* were recorded in gully fill 627. The latter (moss chrysalis snail) is common in dry meadows and sand dunes, which is consistent with the environment at this site.

Phase 2.2

Mollusc remains were generally found in low levels in a small number of samples, with the exception of *Hydrobia ulvae* (found along coastlines on brackish tidal mudflats) which was abundant in ditch fill 217 (Table 31). Occasional *Hydrobia* and *Assiminea grayana* (also found in salt marsh environments) were recorded in fill 1132 of ditch 1130.

Other species such as *Pupilla muscorum* and *Hellicella itala* (heath snail) are characteristic of dry, calcareous grassland and/or sand dunes, showing a continuation of conditions described above.

Phase 2.3

The only indication of brackish water (hence possibly tidal inundation) was occasional *Hydrobia* in fill 1418 of ditch 1420. Otherwise, species recorded are likely to have inhabited open, calcareous grassland, aquatic habitats (*Lymnaea*) or ground litter (*Oxychilus* sp), which are expected in this low-lying tidal flat environment.

Large molluscs, such as scallop, mussel, oyster were hand-collected (Section 5.3.3), suggesting foraging for food, along with basket shells (*Varicorbula gibba*).

Context	Sample	Spit/sub-sample	Phase	Species	Abundance
217	16	0.41 – 0.46m	2.2	*Hydrobia ulvae?*	+++
627	49		2.1	*Hydrobia neglecta*	+
627	49		2.12.2	*Pupilla muscorum*	+
885	66		2.2	*Trichia hispida, ,*	+
885	66		2.2	*Pupilla muscorum*	+
885	66		2.2	*Hellicella itala*	+
1132	91		2.2	*Assiminea grayana*	+

Context	Sample	Spit/sub-sample	Phase	Species	Abundance
1132	91		2.2	*Hydrobia* sp (*neglecta*)?	++
1368	116		2.3	*Trichia* sp	+
1368	116		2.3	*Hellicella* sp	+
1368	116		2.3	*Oxychilus* sp	+
1368	116		2.3	*Vertigo pygmaea*	+
1368	116		2.3	*Pupilla* sp	+
1377	47		2.3	*Vallonia* sp	+
1377	47		2.3	*Lymnaea peregra*	+
1377	47		2.3	*Trichia hispida*	+
1377	47		2.3	*Pupilla muscorum*	+
1418	120		2.3	*Vallonia* sp	+
1418	120		2.3	*Hydrobia* sp	+
1418	120		2.3	*Pupilla muscorum*	+
1418	120		2.3	*Vertigo pygmaea*	+
1418	120		2.3	*Oxychilus* sp	+
1500	123		2.3	*Trichia hispida*	+
1500	123		2.3	*Vallonia* sp	+
1500	123		2.3	*Hellicella* sp	+
1500	123		2.3	*Lymnaea peregra*	+

Table 31: Molluscs from bulk samples

Key:

quantity
+ = 1 - 10
++ = 11- 50
+++ = 51 - 100

5.3.5.3 Discussion

The presence of brackish water molluscs are of interest as they indicate inundation from the estuary, and hence any changes in their distribution through profiles may have resulted from changes in drainage or protection against inundation from the estuary over time.

5.3.6 Coprolite, by Elizabeth Pearson

Possible coprolite fragments were found in fill 609 from ditch terminus 606 (Phase 2.3; CG48) and secondary fill 1299 of ditch 1297 (Phase 2.2; CG66). Inclusions were difficult to identify, but impressions were noted that may be grass grain and stem fragments in remains from both coprolites. These may be the remains of human faeces, but dog faeces cannot be ruled out. In the case of coprolite 609, which was recovered from a bulk sample, no other evidence of cess waste, such as phosphate concretions were noted during residue scanning.

5.3.7 Human bone by Gaynor Western

5.3.7.1 Introduction

One human skeleton (SK1527) in a flexed position, with right leg crossed over left, was excavated from a grave aligned on a north-east to south-west axis (cut 1526; CG51). In addition, two further contexts were found to contain disarticulated human remains, in that numerous human and animal skeletal elements were recovered from context 993, the primary fill of a ditch (990; CG86), as well as in context 1132, the secondary fill of ditch 1130 (CG90) that also contained hobnails, pottery and fired clay.

Four deposits of cremated bone were also identified, recorded as 304, 548, 1054 and 1056 (cuts 303, 547, 1053, and 1055 respectively). Each deposit of bone was contained in a small subcircular pit along with pyre debris consisting of charcoal, fired clay and fuel ash slag. None of the cremated bone deposits were contained in an urn, nor were there any associated finds. The pits containing 1054 and 1056 were located outside of the occupation enclosure, and possibly on an alignment with those containing 304 and 548. Deposits 548, 1054 and 1056 contained very small amounts of bone, however, and likely represented cremation related deposits, while 304 contained a significant amount of cremated bone, and so more likely represented a cremated bone burial.

Osteoarchaeological analysis of the inhumated and disarticulated remains was undertaken to assess the condition and completeness of the remains recovered as well as to determine age at death, biological sex, stature and any evidence for pathology. Analysis of the cremated bone was undertaken to establish the quantities of bone present, whether it was human and the nature of the deposits, as well as to gain an insight into the pyre technologies employed. An overview of the observations is presented here – a summary catalogue is available in archive.

5.3.7.2 Skeletal human remains

The skeletal material was analysed according to the standards laid out in the guidelines recommended by the British Association of Biological Anthropologists and Osteologists, in conjunction with CIfA guidelines (Brickley and McKinley 2004, updated 2017 by Mitchell and Brickley, (eds)), as well as English Heritage (2002).

Recording of the material was carried out using the recognised descriptions contained in Standards for Data Collection from Human Skeletal Remains by Buikstra and Ubelaker (1994). Full recording forms are supplied separately to be archived with any other archaeological recording forms. All skeletal data has been recorded using an MS-Access database(s) which is archived as a digital file.

The material was analysed macroscopically and where necessary with the aid of a magnifying glass for identification purposes. Where relevant, digital photographs have been used for illustration, and a full digital image archive of all pathologies and any other features of interest has also been provided.

The material was analysed without prior knowledge of associated artefacts so that the assessment remained as objective as possible.

Comparison of the results was made with published osteological data from contemporary skeletal populations where relevant.

5.3.7.3 Cremated human bone

The cremated material was analysed according to the standards laid out in the guidelines recommended by the British Association of Biological Anthropologists and Osteologists, in conjunction with the CIfA guidelines (Brickley and McKinley 2004, updated 2017 by Mitchell and Brickley, (eds)) as well as English Heritage (2002).

The material was analysed macroscopically and where necessary with the aid of a magnifying glass for identification purposes. The material was sorted into three fractions of 10mm, 5mm and 2mm using UKAS accredited calibrated sieves, and weighed using calibrated digital scales to an accuracy

of 0.1g. The material was recorded on an Access database, a copy of which was provided for the archive.

The material was analysed without prior knowledge of associated artefacts

5.3.7.4 Articulated skeletal human remains

Condition of the bone present
The condition of the bone was assessed macroscopically according to the categories and descriptions provided by Brickley and McKinley (2004). Since most skeletons exhibit more than one grade of state of preservation, these categories are simplified into 4 main groups of preservation: Good (grades 0-2), Fair (grades 2-4), Poor (grades 4-5+) and Varied (more than 4 grades of condition). The condition of human bone can be influenced by both extrinsic (i.e. taphonomic conditions) and intrinsic (i.e. robustness) factors (Henderson 1987).

SK1527 was found overall to be in a fair state of preservation, though the condition of the bone was varied, with elements such as the long bones and cranium being of good to fair condition, though somewhat fragmentary, whereas those skeletal elements consisting of more cancellous (spongy) bone such as the vertebral bodies, pelvis and ribs were poorly preserved or absent. The overall bone condition was recorded as grades 2 to 4.

Completeness of skeletons
Completeness of remains is gauged through an assessment of the amount of material representing different areas of the body. A complete skeleton comprises of: Skull = 20%, Torso = 40%, Arms = 20%, and Legs = 20%. Each area of the skeleton was assessed and then placed into the following four categories of completeness: <25%, 25-50%, 50-75% and 75%> (Buikstra and Ubelaker 1994).

SK1527 was assessed as being approximately 75% complete, though several elements of the torso were absent.

Age assessment and sex determination
The age-estimate for SK1527 was based on the analysis of the auricular surface and dental attrition. The auricular surfaces were only partially preserved, and observation was limited to the superior portions. However, the partial surfaces present exhibited some degeneration and density, and were graded as a category 7, with an average age of 50-59 years at death. Dental attrition was restricted to observations of the right mandibular teeth only, but these suggested a younger age at death, between 25 and 35 years old at death, and did not exhibit a high degree of occlusal wear. The anterior dentition, however, was heavily worn, and it was unclear due to the absence of the remaining molar teeth whether the wear observed was representative and reliable for the basis of an age estimate. Heavy dental calculus was also observed, making it unlikely the individual was a young adult. Overall, the total range of age at death was assessed as being between 35-55 years, and that it was likely that the individual was a middle-old adult.

SK1527 was assessed to be male from observations made of morphological cranial features and metric measurements of the femoral head, humeral epicondylar breadth, and circumference at the nutrient foramen of the tibia.

Non-metric traits
Non-metric traits are morphological features that occur both in bone and dentition. No non-metric traits were observed in this individual.

Stature and morphometric analysis
Stature is the result of many factors including genetics and environmental influences (Floud *et al* 1990), such as malnutrition and poor health. Height can be used as an indicator of health status and there is a wide range of literature on the relationships between height, health and social status. Estimated stature was calculated by taking the measurements of the individual long bones and using the formula provided by Trotter (1970). Variation in estimated stature can be up to 3cm.

Stature was estimated for SK1527 as 1.65m from the left tibia.

Skeletal pathology
Palaeopathology is the study of diseases of past peoples and can be used to infer the health status of groups of individuals within a population as well as indicate the overall success of the adaptation of a population to its surrounding environment. Pathologies are categorised according to their aetiologies; e.g. congenital, metabolic, infectious, traumatic, neoplastic etc. (Roberts and Manchester 1997).

There was little evidence of skeletal pathology was observed in the remains of SK1527. Minor cribra orbitalia (grade 1, Stuart-Macadam 1999) consisting of trabecular impressions only was observed on the superior surface the left eye orbit (Plate 26). This non-specific condition is thought to be associated with megaloblastic or haemolytic anaemias commonly occurring as a result of parasitic infestation or possibly conditions such as malaria (Walker *et al* 2009; Gowland and Western 2012).

SK1527 also exhibited minor degenerative changes in the zygapophyseal joints in some of the observable in the twelfth thoracic vertebra and lumbar vertebrae (T12-L5) of the lower spine and cervical vertebrae (C3-C4) in the upper spine. Changes were only recorded as grade 1 and were represented by minor periarticular osteophytic formation and microporosity to the joint surfaces.

Dental pathology
Dental diseases include conditions that not only directly affect the teeth but also the soft tissue surrounding them, sometimes observable in changes to the underlying alveolar bone (Hillson 1986). Each condition can give an indication of different aspects of lifestyle and health of the individual. For example, caries is associated with diets high in sucrose content. The presence of calculus can inform us about dental hygiene whilst enamel hypoplastic defects testify to developmental stresses that an individual has undergone in childhood (Goodman and Armelagos 1985, Hutchinson and Larsen 1988, Dobney and Goodman 1991). The analysis of dental disease, therefore, not only informs us of specific oral conditions but provides complimentary data regarding overall health status and cultural practices. A detailed summary of dental pathology is provided in Table 32 below.

SK1527 was noted to have heavy dental calculus deposits, particular affecting the mandibular anterior dentition, indicating that the teeth were not cleaned regularly (Plate 27). A large cary was also present on the cement-enamel junction of the distal surface of the right 3rd molar. Periodontal disease, which can often be found in cases of severe dental calculus, could not be assessed due to the post-mortem damage that had occurred to the alveolar bone around the tooth sockets. However, three maxillary teeth had been lost ante-mortem, which poor dental hygiene may have contributed towards.

There was no evidence for dental enamel hypoplasia on any of the teeth, indicating that this individual did not suffer any chronic episodes or febrile diseases or malnutrition that would affect the development of the dental enamel from physiological stresses.

5.3.7.5 Disarticulated human skeletal remains

Two contexts representing ditch fills contained disarticulated human bone. Context 993 was the secondary fill of ditch 990 (CG86) and contained 21 fragments of cranial bone (frontal, parietal and temporal bones), some of which could be refitted, a single fragment of right scapular spine, 25 fragments of femur, some of which could be refitted and were identified as from a left femur, as well as twelve fragments of a mandible associated with eleven permanent teeth. It was not possible to identify whether these skeletal elements all originated from the same individual, but there were no repeated skeletal elements, and they represented a minimum of only one individual. Both the mastoid process of the right temporal bone and the mentum (chin) of the mandible were recorded as a grade 1 and were both likely to represent a female individual. The other elements present could not be estimated for sex using any analytical methods, but they were observed to be relatively gracile or small. It is estimated that the elements present belonged to an individual of at least adolescent age, possibly adult from their size and development. The mandible only contained permanent dentition and although no observation of occlusal attrition could be made due to the lack of molar teeth present, heavy calculus deposits present on the anterior dentition might suggest an individual older than a very young adult (25+ years), though this is only a tentative suggestion. One large cary that had destroyed the crown of the first left mandibular molar was also present, in addition to a right canine that was not

fully erupted though the root was fully developed, and some rotation and overlap of the left canine and 1st premolar, a sign of mandibular anterior crowding.

Evidence for anthropogenic incisive cut and chop marks was present on the two large fragments of left femur that could be refitted, possibly representing defleshing and perhaps also interpersonal violence. Possible evidence for defleshing consisted of sharp-edged incisive cuts running transversely across the diaphysis that were relatively shallow and two series of parallel narrow sharp edged grooves that were likely the result of scraping using an irregular or serrated edged blade. One cut mark was present on the anterior aspect of the diaphysis, which was 8.9mm in length (Plates 28 and 29). This mark ran transversely across the diaphysis and was *c* 0.5mm in depth. Three shorter similar marks were also present adjacent to this cut mark that were more superficial and not as sharp. Two sets of scrape lines are present on the distal third of the diaphysis on the medial side of the linear aspera, running horizontally across the diaphysis adjacent to what appears to be a post-mortem break (Plate 30).

In addition, two wedge shaped shallow chop marks, or nicks, caused by a sharp-edged blade or weapon were also located on the anterior aspect of the femur inferior to the cut marks described (Plates 28 and 31). These consisted of a shallow angulated chop ending with a sharp vertical wall on the superior side. The superior most chop or nick was 8.76mm in length but only *c* 0.5mm in depth. Slight spalling was present on the cortical surface of the vertical wall. The inferior chop mark, or nick, was identical in form though not as wide (*c* 4mm in width), and at a more oblique angle.

A long series of short diagonal grooves/linear marks were also noted along the anterior aspect of the diaphysis on the medial edge, in total running along a length of 55mm (Plate 32). Some lighter discolouration of the surface was seen along the length of these marks, possibly indicating that the modification of this part of the bone occurred more recently post-mortem. It was unclear if some rodent gnawing has occurred, or if these marks were caused by some more modern scraping action. Some of the grooves appeared flat bottomed, as might be typical of rodent gnawing.

Context 1132 (CG90) contained eight fragments of human bone consisting of frontal and nasal bones. The cranial bones were robust but the observable sexually dimorphic features present, the supra orbital margins and glabella were classified as grade 3 and, therefore, indeterminate of sex. No pathology was observed.

5.3.7.6 Cremated human bone

Type of deposit and disturbance
Four deposits of cremated bone were identified, recorded as 304, 548, 1054, and 1056 (cuts 303, 547, 1053, and 1055 respectively). Each deposit of bone was contained in a small subcircular pit along with pyre debris consisting of charcoal, fired clay and fuel ash slag. None of the pits contained an urn or associated finds. The pits containing 1054 and 1056 were located outside of the occupation enclosure and possibly on an alignment with 304 and 548. Deposits 548, 1054 and 1056 contained very small amounts of bone, however, and likely represented ‘’cremation related’ deposits, compared to 304, which contained a significant amount of cremated bone and more likely represented a cremated bone burial.

Identification and quantification of cremated bone
Identification of particular elements of the human body serves to confirm the presence of human material and also may give an insight into any particular areas of the body which may have been purposefully collected following cremation. The absence of elements, especially those that are smaller, may be due to the lack of their survival as a result of fragmentation during the cremation, post-depositional preservation conditions, or may be due to their loss during the cremation itself. There may also be a bias in elements identified due to certain elements like the flat bones of the cranial vault being much easier to identify than small fragments of long bone, for example.

The results of the quantification analysis are summarised in Table 32 below:

Context	304	548	1054	1056
Total weight of cremated materials (g)	1129.1	37.3	250.5	52
Total weight of identifiable human fragments (g)	410.8	6.6	17.9	2.1
Minimum number of individuals	1	1	2	1

Table 32: Overall quantification of total bone present

Overall, human bone was positively identified in each context. The total weight of the fragments for each context varies, and it is clear that context 304 contains a much larger amount of bone that likely represents a whole individual. In comparison, contexts 548, 1054 and 1056 contain much smaller amounts of bone and, therefore, these represent only a small proportion of burnt remains expected from a complete individual. There were no repeated identified skeletal elements nor any elements from individuals of different ages in contexts 304, 548 and 1056, suggesting these deposits contained the remains of a single individual.

However, elements originating from both an adult and a sub-adult individual were present in 1054, consisting of a deciduous tooth root and sub-adult distal hand phalanx (Plate 33) as well as cranial fragments and the distal portion of a likely proximal hand phalanx fragment of an adult. This indicates that both an adult and a sub-adult individual were present in context 1054. The sub-adult distal hand phalanx was relatively small and may have originated from an older child or younger juvenile.

The identifiable fragments of bone originated from all four of the main areas of the body in context 304 (i.e., cranium, torso, upper and lower limbs), and was present in much higher quantities compared to the other deposits (Table 33), further corroborating the observation that this deposit represented a cremation burial of a complete individual.

Context	304	548	1054	1056
Total weight of identifiable fragments(g)	410.8	6.6	17.9	2.1
Skull fragments weight (g)	234.8	2.9	12.1	0
Skull fragments %	*57.2*	*43.9*	*67.6*	*0*
Axial fragments weight	17.3	1.5	2.6	0.7
Axial fragments %	*4.2*	*22.7*	*14.5*	*33.3*
Upper limb fragments weight	38.3	2.2	1.5	0
Upper limb fragments %	*9.3*	*33.3*	*8.4*	*0*
Lower limb fragments weight	120.4	0	1.7	1.4
Lower limb fragments %	*29.3*	*0*	*9.5*	*66.7*

Table 33: Quantification of identified human bone present

Several elements were present from the extremities including a number of complete adult distal hand phalanges (Plate 34) and numerous tooth roots, suggesting a thorough and careful collection of the cremated bone from the pyre area prior to deposition. It was also noted that although most quadrants contained a mix of bone from all areas of the body, spit 2 of the SE Quadrant of context 304 contained a high number of tooth roots as well as numerous hand phalanges, perhaps indicating that these elements had been picked out together in a relatively orderly fashion as part of the deposition process.

Although bone could be identified from the four main areas of the body from context 1054, the quantity of bone was much smaller and more comparable to contexts 548 and 1056, where some areas of the body were not represented, indicating a more tokenistic or random grouping of cremated bone fragments.

Demographic data

In context 304, the thickness of the cortices of the long bone present as well as the thickness of cranial bones, general size and development of elements present such as a partial mastoid process of the temporal bone suggested that the individual was likely to be an adult or older adolescent. All

the tooth roots present also appeared to represent permanent dentition, although it should be noted that the permanent teeth first develop during childhood.

Similar observations were made for context 548 and 1056. However, for context 1054, elements that were likely to be adult as well as sub-adult were recorded, including two tooth roots likely to belong to a deciduous molar, and a distal hand phalanx that was very small and sub-adult, possibly belonging to an older child or younger juvenile. Although deciduous teeth can be retained in adulthood, the distal hand phalanx is clear evidence of the remains of a second individual of sub-adult age present in this cremated bone deposit.

Overall, it is likely that context 304 represents the burial of the remains of a single adult, whereas 1054 contains sparse skeletal elements from an adult and a sub-adult. Deposits 548 and 1056 both contain fragments that appear to be at least older adolescent or adult in age, with no evidence for sub-adult remains present.

It was not possible to assess the sex of any of the cremated remains contained in the deposits due to the incomplete nature of the skeletal elements present.

Pathology data

In context 304, one likely mid thoracic vertebral zygapohyseal joint exhibited microporosity across the whole joint surface that is typical of degenerative joint disease. Degenerative joint disease in the lower spine is very common and typically occurs in middle and older aged adults as a result of microtrauma resulting from mechanical factors or 'wear and tear' of the joint over time (Salter 1999). However, it is not possible to infer the age of an individual from the presence of degenerative joint disease, however, as this can be highly dependent on lifestyle factors such as physical exertion, occupation and weight, and in addition can be secondary to trauma (*ibid*).

Bone fragmentation

The majority of the fragments were between 5mm and 10mm in size, with a substantial proportion being even smaller, measuring between 2 mm and 5mm (Table 34). Only a small percentage of the fragments were above 10mm in length, the largest being 32.2mm.

Context	304	548	1054	1056
Total weight (g)	1129.1	37.3	250.5	52
>10mm weight (g)	399.9	5.1	39.3	5.1
>10mm percentage of total	35.4	13.7	15.7	9.8
>5mm weight (g)	611	25.4	76.7	34.6
>5mm percentage of total	54.1	68.1	30.6	66.5
>2mm weight (g)	86	6.8	134.5	10.7
>2mm percentage of total	76.6	18.2	53.7	20.6
Assessment of bone content Percentage <2mm residue	100	100	100	100
Maximum bone fragment size (mm)	35.8	19.2	15	2.1
Average bone fragments size (mm)	9	7.3	4	1

Table 34: Quantification of bone present according to fraction

The considerably larger maximum and average bone fragment sizes, as reflected in the much higher proportion of >10mm fragments present in context 304 compared to the other contexts is likely a product of the collection of the larger and more visible cremated bone fragments to be deposited in a burial. A small number of fragments in this context could be re-associated and refitted, indicating that some of the fragments of bone may have initially been larger when deposited. For example, two fragments of humeral diaphysis when reassembled gave a total maximum fragment size of 69.6mm. In comparison, the remaining smaller deposits of bone also contained much smaller fragments of bone, suggesting that these more likely represented cremation related deposits of fuel ash and bone remnants, or token burials.

Efficiency of cremation
Overall, it was estimated that approximately 90-95% of the bone present was white in colour and that most elements were completely oxidised. Most of the variation seen outside of this were blue/grey changes that were mainly observed on the inside (endosteal) surfaces of dense long bones. A small amount of bone that consisted of small fragments of very robust long bones with dense cortices was consistently blue/grey inside the bone. This density of the bone suggested that these fragments were likely to be animal bone. Some of the more distal elements of the extremities and vertebral joints also exhibited more of a blue/grey colour, where these may have become separated from the main area of the pyre prior to complete oxidation.

Some transverse and longitudinal fissuring was observed in long bone fragments, as well as concentric fissuring around zygapophyseal joints of the vertebrae and convex joint surface fragments.

Presence and type of pyre goods
A small amount of bone that was identified as likely to be animal bone was present in two contexts, 304 and 1054 (Table 35).

Context	304	548	1054	1056
Total weight (g)	1129.1	37.3	250.5	52
Weight of pyre goods (g)	32.2	0	0	1.6
Pyre goods percentage of total	*2.9*	*0*	*0*	*3.1*

Table 35: Quantification of non-human bone present

Presence and type of pyre debris
Pyre debris was observed to be present in the fills of all the pits containing cremated bone, largely consisting of a charcoal as well as some fired clay and small amounts of fuel ash slag, the latter of which was also observed among the processed cremated bone samples.

5.3.8 Overall environmental discussion, by Elizabeth Pearson

5.3.8.1 Wentlooge Formation

Geoarchaeological assessment showed that archaeological features are cut into areas of Upper Wentlooge Formation (tidal flat deposits) of later prehistoric date, but the latter appeared to be of low potential for detailed sampling here. Extensive palaeoenvironmental sampling and analysis has previously been undertaken in this part of the Severn Estuary (Allen 2000; Allen and Rae 1987).

5.3.8.2 Phase 2 – crop consumption and farming

Charred cereal crop waste was concentrated in only a small number of samples, suggesting that crop processing, and most likely arable farming, was not a significant part of the farming economy. As might be expected for low-lying tidal mud flats, the settlement is likely to have been mainly pastoral, with some grazing on saltmarsh.

Emmer or spelt wheat is the dominant crop, with some hulled barley and oat, but of particular significance is the well-preserved assemblage of Celtic bean, pea and oat within a broken pot (from 1123) in ditch 1122 (CG88). As there are three holes in the base of the pot, it could be interpreted that the contents were dried, and accidentally burnt, in the pot. However, as there is no evidence for sooting on the pot (Rob Perrin, pers comm), the remains appear to have been selected in their charred state and deliberately placed in the pot. A similar circumstance is known from a site excavated by Albion Archaeology, where charred spelt grains, spelt chaff and peas were found in a pot within a deep ditch. The pot also showed no signs of burning (Irene Sala, pers comm), but, in contrast to the example at Pilning, had no holes in the base.

There are similarities with the environmental evidence from other adjacent sites. Pea and a few fragments of Celtic bean, along with crop waste from emmer and spelt wheat were recorded at Plot One Western Approach, Pilning (Ritchie *et al* 2007). Crop waste from emmer and spelt wheat were

recovered from adjacent sites (Plot One, Plot 4000, Crooks Farm and Farm Lane; Fitzpatrick 2010), but at Farm Lane, chaff (glumes) were predominant. These remains need to be seen in the context of a low-lying area where pastoral farming has always been dominant. An emphasis on pastoral activity has been suggested by Gardiner *et al* (2002) for late prehistory in the Avon Levels of the Severn Estuary.

5.3.8.3 Phases 2.3-3 – abandonment and silting

An upper, gleyed, blue-clay deposit (sampled within ditch 112; CG21) was observed within numerous infilled Roman ditches across the site and could represent a post-abandonment layer of later Roman, sub-Roman, or early-medieval date. Assessment of samples from this layer, and immediately below, showed no survival of diatoms from which interpretation of the post-abandonment phase could be determined, although occasional mollusc remains consistent with brackish conditions were noted. This silt deposition may have resulted from cessation of drainage and water management during Roman occupation. Howard has suggested (Section 5.3.1) that this is typical of marine sediments, implying a return to brackish, estuarine inundation. Although it was not possible to confirm this using diatom analysis, molluscs do not suggest more brackish conditions, and these remains, instead, show more evidence of brackish conditions during earlier phases. As well as a decline in drainage efforts during this later Roman phase, inundation from inland should not be ruled out. In this scenario, a return to colder, wetter conditions during post-Roman times, could also have caused renewed silting or alluviation.

5.4 Radiocarbon dating

Radiocarbon dating has been undertaken for a single inhumation, a group of human cremations and a horse burial. All samples dated to the mid to later Roman period (Phase 2.2), except the horse burial, the results of which are still pending due to two failed samples (possibly due to insufficient collagen, despite very large sample being sent second time).

Samples on the human remains were dated at SUERC (Glasgow) by AMS, and the equid sample at Beta Analytic by AMS (Appendix 2).

The results are conventional radiocarbon ages (Stuiver and Polach 1977) and are listed in Table 36. The calibrated date ranges for the samples have been calculated using the maximum intercept method (Stuiver and Reimer 1986), and are quoted with end points rounded outwards to ten years. The probability distributions of the calibrated dates, calculated using the probability method (Stuiver and Reimer 1993) are shown in the graphs presented in Appendix 3. They have been calculated using OxCal v4.2 (Bronk Ramsey 2009) and the current internationally-agreed atmospheric calibration dataset for the northern hemisphere, IntCal13 (Reimer *et al* 2013).

Laboratory code	Context	Material	$\delta^{13}C$	BP date	2 sigma re-calibration
SUERC-111621	993	Bone - human	-19.9 %	1791 ± 27	210 - 340 cal AD
SUERC-111622	304	Bone - human cremated	-21.7 %	1810 ± 27	200 - 330 cal AD
SUERC-111623	548	Bone - human cremated	-21.7 %	1866 ± 27	80 - 240 cal AD
SUERC-111624	1056	Bone - human cremated	-19.2 %	1767 ± 27	230 - 370 cal AD
SUERC-111197	1527	Bone - human	-19.9 ‰	1829 ± 24	130 - 310 cal AD
Beta-674285	1304	Bone - equid	pending	pending	pending

Table 36: Radiocarbon dating results

6 Post-excavation proposal

6.1 Updated project aims

Preliminary analysis (assessment) of the combined stratigraphic, artefactual, and environmental evidence has now identified a series of specific site-related questions/aims, as follows:

- Is it possible to further refine the chronology of the site? More specifically, is there a phase of later prehistoric activity that precedes the early Roman origins; likewise, when in the 4th century AD is the site finally abandoned (e.g. coins v pottery evidence)?
- What is the significance of the equid burials?
- Does the sophisticated network of drainage ditches represent a deliberate attempt at Roman land reclamation, as observed elsewhere in the Severn estuary?
- Does the animal bone assemblage indicate a specialisation in the production of food (possibly salting of meat on large scale) and farming economy (livestock)? Can this be advanced further via the use of isotope analysis to characterise the site economy?
- What does the material culture indicate about the function and status of the site, as well as its relationship to production and trade?
- It is noted that the quantity of non-pottery finds seemed quite low for such a long occupied Roman site, especially when this is set alongside the amount of pottery. The implications of this are not fully understood, and the plotting some classes of non-pottery finds could also help with intra-site interpretation.
- How does the Plot 3 Pilning site relate to the other Romano-British activity identified within the Western Approach Business Park, and in general, the wider landscape?
- To what extent can an association to a wider militarised landscape along the Severn Estuary (especially its north bank) be inferred, for instance from the presence of military metalwork within the artefactual assemblage?
- What can the funerary deposits tell us about Roman mortuary practice, and specifically, to what extent can the lives, work, and health of the settlement inhabitants be inferred from the human remains?
- What does the site add to the corpus of knowledge about specifically non-villa rural settlement sites in this area?
- How far can the Romano-British landscape be reconstructed via the environmental evidence? For example, was the site tidal and saltmarsh, or dry-land pasture, or did this alternate over time, possibly seasonally?
- To what extent is the purported 4th-century AD abandonment of the site (and beyond) influenced by environmental factors?

6.2 Research agendas

While focussing on the questions outlined above, the project also has the potential to contribute to the following Research Themes and specific Research Aims, as outlined in section 15 of *The Archaeology of South West England. South West Archaeological Research Framework. Resource Assessment and Agenda* (Webster 2007):

Past environments

- **Research Aim 19**: Improve our understanding of wild and domestic animals in the past.
- **Research Aim 20**: Improve our understanding of wild and cultivated plants in the past.

- **Research Aim 21**: Improve our understanding of the environmental aspects of farming.
- **Research Aim 23**: Improve our understanding of past climate and sea level changes together with their effects on the peoples relationships with landscapes and the sea.

Rural Settlement

- **Research Aim 29**: Improve our understanding of non-villa Roman rural settlement.

Food production

- **Research Aim 41**: Assess the impact of the Roman empire on farming.

Identities and interactions

- **Research Aim 50**: Improve understanding of the effects of the Roman army on the local population.

Mortuary practice

- **Research Aim 58**: Widen our understanding of Roman burial traditions.

6.3 Statement of potential for further analysis

6.3.1 Geoarchaeology

An overview of the site geoarchaeology and its environs has already been undertaken as part of the assessment. Some minor adjustment/revisions may be expected once the final results of full analysis are known, and so some provision for this is recommended.

6.3.2 Structural analysis

The individual sections presented below, whilst discussing potential for analysis, are also touch upon the significance of the various parts of the archive and assemblage. Taking a broader view of the entire site, however, the Romano-British archaeology at Pilning can be considered of **local to regional importance**. Whilst at first glance, the site may be considered typical of Roman rural farmsteads, the position of the site within the wider landscape context of the Avon Levels, is of considerable interest and represents an important opportunity to contribute to our understanding of Roman resource exploitation within a wetland environment. It is apparent that the site includes elements of land-reclamation, which have been recorded elsewhere within the Severn Estuary, and investigating the chronological and morphological development of this network, combined with the associated livestock management and field systems will contribute greatly to our understanding of the site. Pastoral evidence is well represented within the eco-factual assemblage, and indeed, analysis of the animal bone may indicate a specialisation at the site for food and its involvement with livestock farming, including equids. The inscribed stone, whether a portable altar or boundary marker, is an exceptional find of some significance, and together with several pieces of metalwork, may represent a military association at the site. If correct, this raises further questions about the role of the Pilning settlement within a wider landscape encompassing the Severn Estuary, which sustained a heavy military presence from the 1st to 3rd centuries AD.

To realise the full potential of this site, the following further structural analysis/work is recommended:

> A site database was created at the start of the post-excavation analysis, including data on stratigraphy and artefacts, as well as phasing, context grouping, and feature type. This will continue to be updated with developments following continued stratigraphic, artefactual, and environmental analysis.

Additional context groups will be identified, or existing groups removed, where necessary. Likewise, the preliminary stratigraphic matrices will be cross-referenced with artefactual evidence, updated, phased, and finalised.

Fuller reporting description of features and deposits should be undertaken. Structural analysis will draw heavily upon the associated environmental and artefactual evidence, as relationships on site were often difficult to determine within the alluvial deposits. This will allow a more detailed site narrative to be produced, including a detailed description on the chronological and morphological development of the site, with an emphasis on the aims and objectives identified above.

Structural, artefactual, and environmental information will be combined and synthetic text prepared, placing the site within a local and regional archaeological context, which in this instance, will have a focus on the Roman landscape of the Avon Levels and wider Severn Estuary.

A final series of phased site plans of the site will be produced, together with more detailed illustration of selected features and artefacts.

6.3.3 Pottery, by Rob Perrin

6.3.3.1 Potential

Such a large assemblage with many significant deposits has considerable potential both locally and regionally. The significant quantities of DOR BB1, SEV OX and the various oxidised and grey wares will allow meaningful comparison with other local and regional sites and there is the potential to identify new vessel forms or variations on previously known forms, especially with the SEV OX types. It will be informative to attempt to trace the actual source(s) of the local oxidised and grey wares, including the mortaria, together with the glazed sherds. The identification of probable Congresbury ware in the assemblage is also of considerable interest and significance.

Further specialist work is, therefore, recommended on the following aspects:

- Revisions to the dating in relation to the revised sequence and chronology of the site, including earliest and latest dates (re latter compare with coin dating).
- Further work on the pottery from the burial and the curvilinear features to attempt to refine their dating.
- Identification and analysis of key features and groups and further analysis of their pottery assemblages.
- Research into the sources of the local wares, including the possibility of production in the vicinity.
- Identification of possible additional Congresbury, SOW BB1 and Savernake wares within the assemblage to indicate trade routes and economic links (e.g. possible influenced by military supply).
- Identification of possible residual pottery within the main pottery groups.
- Research into specific functions and activities on the site as evidenced by the pottery.
- Integration of the pottery evidence with the results of the analyses of other artefacts and ecofacts/biofacts.
- Comparison with other local and selected regional assemblages.
- Selection of pottery for illustration to reflect the key features and groups, together with sherds and vessels of intrinsic interest.
- Designation of sherds for discard as part of final creation of excavation archive.

6.3.4 Non-pottery finds, by Derek Hurst

This assemblage was notable for several exceptional individual artefacts and its overall final analysis will contribute towards further characterising the site. The recommendations below comprise additional research, consultation with external specialists, distribution plotting of select artefactual classes, and then final reporting.

Ceramic

Apart from checking over the identifications/data, and updating the assessment report text, no further work required.

Iron objects

Apart from checking over the identifications/data , and updating the assessment report text, no further work required.

Copper alloy objects

Further analysis is needed of the personal items such as brooches and bead, but also especially the '*numerum omnium'*-type belt fitting, to finalise their identifications, and including arranging appropriate illustration. Undertake spatial distribution plotting.

Lead

Apart from checking over the identifications/data, and undertaking spatial distribution plotting, updating the assessment report text.

Glass

Apart from illustrating the intaglio and the bead, and checking with the external specialist, and updating the assessment report text, no further work required.

Fired clay

No further work required.

Stone

Further study of the inscribed stone (including liaison with the external specialist), querns, shale bracelets, and the possible pestle is needed together with their illustration before reporting can be completed.

Miscellaneous

Further study is needed of the bone gaming pieces to provide parallels, together with their illustration and updating the assessment report text.

6.3.5 Coins

Fourteen coins (SFs 16, 18, 40, 61, 68, 101, 106, 111, 137, 145, 146, 150, 156, 160) should be cleaned to permit identification. The latest coin dating for the site also needs checking against the pottery evidence, to see if it is accounted for by just a casual loss of a passer-by or could be a pointer to more concerted later 4th-century site activity.

Any further publication should include a standalone specialist report discussing the coins in their local, regional, and national contexts, and should be accompanied by a full catalogue of the assemblage.

6.3.6 Plant macrofossils/charcoal

The analyses with the most unique potential to contribute towards interpretation of activities at this site, not covered by neighbouring sites, are the stable isotope analysis of the charred contents (beans etc) of pot 1123, in order to investigate manuring and water management of Celtic bean and pea crop regimes.

Charred plant remains (beans) – stable isotopes

A table of quantified results from a ½ fraction of pot contents 1123 included in this report (Table 23) has been included as part of the assessment and this should be enhanced in the final analysis stage to inform the stable isotope work.

6.3.7 Animal bone, by Matilda Holmes

6.3.7.1 Potential

This is a well-preserved assemblage that produced a moderate sample of animal remains from mid to later Roman and later Roman deposits, which have potential to provide good data regarding several aspects of life at the Pilning settlement. Earlier phases were less well represented and will serve only to provide a comparison for later phases rather than reliable trends in the animal economy. A general lack of understanding of Roman animal husbandry has been noted in the regional research framework (Webster 2007) and comparative sites with substantial zooarchaeological assemblages in the area around Pilning on the Severn Estuary region are scarce. Small quantities of animal remains have been recorded at Avonmouth (Strid 2010), Kenn Moor (Hamilton-Dyer 2000), Hall End (Young 2006), Crandon Bridge (Noddle 1978) and *Abonae* (Bennett 1985). Larger assemblages from slightly further afield but still along the estuary include Bawdrip (Langdon 2000) and Hinkley Point (Holmes 2019). The moderate data set from Pilning is, therefore, of some significance for understanding the contribution of this region to the animal economy of Roman England.

Some specific research themes that can be applied to the data are summarised here:

- Diet and the nature of the site: One of the most notable observations of the animals present at the site is the under-representation of taxa more commonly associated with settlements with good contacts to the Roman culture, such as pigs, domestic fowl and larger animals. This implies that either it was inhabited by a population that had little contact with the Roman system and continued to practice a way of life more typical of the Iron Age, or that it was a settlement with a specific function and those living and working at the site had access to only a limited range of animals. A consideration of the relative proportions of different taxa and evaluation with other sites in the region will provide a more objective picture of what type of site the zooarchaeology compares with.
- The presence of several juvenile equids is unusual on any site in this period, and it suggests that these animals were bred close by or were gathered up from wild herds. A better understanding will be provided by investigating the age profiles in greater detail, and there is potential for isotope analysis to provide an indication of whether they were local or herded from further afield.
- Animal processing: The large quantity of ABGs have good potential to further elucidate the nature of the site, as they could represent a variety of activities: domestic food consumption; butchery waste; carcass processing for trade and transport; provision for communal feasts; and/ or symbolic offerings. Particular attention should be given to the role of equids and canids in these deposits, as it could be that these animals were included in the meat diet. Salt production was common in the area (Holbrook 2007), and it is possible that beef and mutton were preserved and exported from this site. A calculation of the minimum number of individuals represented in these deposits will provide better insight of the quantity of meat

produced in one event, and whether this was consistent with domestic use, resulted from feasting, or more likely to have been part of a larger trade network. Salt marshes produce a high ^{15}N signature in animal bone isotope values and by testing carefully selected cattle and sheep/ goat bones it may be possible to establish if they were locally raised or brought in from further away.

- Season of occupation: The inclusion of perinatal remains from a wide range of taxa in all phases is interesting and provides evidence for occupation of the site between early spring and late summer, although this is not to say that the site was not occupied at other times of the year, and a detailed consideration of the mortality data may help understand if the site was in use all year round.
- The underlying animal economy: Age and sex profiles are good indicators of the relative importance of cattle and sheep/goats for meat and secondary products such as traction, wool, and milk production, which can be useful to better understand if this was a self-sufficient settlement, one aimed at producing animals for trade or a consumer site that brought animals in from elsewhere. Table 29 provides quantification of mortality and metrical data likely to be produced during full analysis, reflecting good sample sizes in the mid to later Roman and later Roman period for cattle and sheep/goats.
- Temporal change: there is some indication for an increase in sheep/goats at the site from the mid to later Roman phase, though this is compared to a very small early Roman sample. Consideration of change or continuity in the animal economy and nature of the site will be more reliable between the mid to later and later Roman phases that are better represented.

6.3.7.2 Further analysis

The zooarchaeology of the mid to later Roman and later Roman phases is well represented and has highlighted several significant aspects of the site that mark it out as unusual, from the potential for specialised processing of carcasses to the presence of juvenile equids. The animal remains will be vital to understand the nature of the site and the work undertaken by those living at the settlement. Data from the earlier Roman phase should be included as a comparison with later phases, though the sample is too small for anything beyond a basic analysis to be reliable.

It is, therefore, recommended that the animal remains go ahead to full analysis based on (but not restricted to) the research themes described above. Because of this, recommendations for selection and retention of the zooarchaeological assemblage for archiving will not be made until all work has been completed.

The presence of sheep and cattle petrous (small bone in the skull) were noted and these could be incorporated in a wider project run by the Smurfitt Institute of Genetics, Trinity College Dublin, investigating the genetic changes affecting cattle and sheep in Europe between the Neolithic and late medieval periods. This project is ongoing and the author is working alongside the researchers to procure suitable material for inclusion in the project at no cost to the client.

6.3.7.3 Faunal remains – stable isotopes

A moderately abundant faunal assemblage is of significance because it suggests just limited evidence of animal processing for food, as a characteristic of settlement and domestic activities (Section 5.3.3). Instead, finds of calves, lambs and juvenile horse/pony indicate breeding of sheep, cattle and possibly horse. There are also circumstantial indications that the site may have been positioned on a long-distance droving route, along which animals are likely to have been moved, in particular from Wales, and eastward across England, and so the settlement appears to have developed at a critical crossing point around 5km south of a known Roman crossing point of the Severn Estuary which runs from Beachley, near Chepstow, to Aust on the eastern bank of the River Severn. Pilning is also close to a former ferry route across the English Stones (closed by Cromwell, after the drowning of Parliamentary

troops in 1645). The stones are an expanse of rocks which are exposed in the estuary at low tide - a route which, post-Cromwell, became known as the 'New Passage'. The location close to known crossings of the estuary, combined with the presence of major Roman settlements at Carleon, near Newport, and Caerwent, near Chepstow, provide indications that the site at Pilning may have existed on an important connecting route. The settlement may also have intersected north-west to south-east droving routes, running parallel to the Severn Estuary, although this currently speculative.

Long distance movement of animals can be researched using stable isotope analysis (mainly sulphur, strontium and oxygen isotopes). The assemblage is ideal in that well-preserved mandibles with intact teeth can be selected for this analysis (Table 37 below).

Animal	Context	Feature	CG	Anatomical parts	Comments	Phase
Sheep	964	Ditch	83	Head & feet (skull, mandibles, metapodials to 3rd phalanges)	Butchery/symbolic	2.2
	1351	Ditch	48	Partial skeleton	food/processing	2.3
	1689	Burial	56	Whole skeleton		2.1 – 2.2
Horse	1304	burial	77	Whole skeleton	Juvenile skeleton	2
	1507	Ditch	54	Partial skeleton (mandibles, pelves	Butchery/symbolic	2.3

Table 37: Potential mandibles for analysis

6.3.8 Diatoms, by Tom Hill

Due to the absence of diatoms in the sequence of ditch CG21, no further works are recommended.

6.3.9 Molluscs, by Andy Mann

Mollusc remains may contribute towards investigating phases of inundation of the site from the Severn estuary, or potential land reclamation, during the Roman period and immediately during a post-Roman phase. Although species diversity and abundance of these remains is limited, this question may prove to be important for understanding management of the site environment, and even its availability for human exploitation, and the ambient possibly changing climate.

6.3.10 Coprolite

No further work needed.

6.3.11 Human remains, by Gaynor Western

The discovery of human remains on this site at Pilning, Avonmouth, has provided further archaeological evidence for funerary practices in the area. In order to understand the burials of the inhumated and cremated remains, further work should be undertaken. This should include:

- Collation of the observations made with the discoveries made during previous excavations at the site
- Identification of the animal bone recovered from the cremated bone deposits
- Contextualisation of the site with archaeological evidence for funerary activities in the region of contemporary date, of both inhumated remains and disarticulated elements, as well as cremated bone burials and related deposits.

- Further work on the inhumated individual SK1527 could include stable isotope analysis to identify the origins of the individual as well as dietary intake
- Further work on the disarticulated elements could include analysis of the cut marks at high magnification to shed further light on how they were made and by what kind of tools.

6.3.12 Radiocarbon dating

Five radiocarbon dates on human remains have been produced as part of the assessment stage of the project (SUERC; Section 5.4 above; Appendix 3). A sixth radiocarbon date, on samples from the equid burial, is currently pending with Beta-Analytic (Beta-674285), though included/funded as part of the assessment stage.

An additional ten radiocarbon dates may be sought to answer potential chronological questions arising from the stratigraphic narrative, in preparation for final reporting. These have so far been determined as follows: four additional radiocarbon dates are suggested for the animal remains to be submitted for stable isotope analysis; radiocarbon dating of the Celtic beans (1123; CG88) to help inform the results of the stable isotope analysis and present a more comprehensive set of data for future research.

6.4 Proposed programme for analysis – resources

Note: Illustration requirements have been extracted and are listed separately in the programme of proposed work presented below.

6.4.1 Geoarchaeology

Task	person	cost
Geoarchaeology (final update of report, including with reference to interpolated section)	A Howard	£150

6.4.2 Structural analysis and overall reporting

Task	person	Hours
Finalise phasing / matrices	JAW	16
Update database	JAW	16
Undertake research	JAW	24
Produce structural narrative	JAW	40
Create interpolated section to link with adjacent sites for purposes of landscape in interpretation	JAW	4
Illustration liaison etc	JAW	40
Collate specialist reports and produce final archive report	JAW	60
Total:		**200**

WA – Worcestershire Archaeology: DH, Derek Hurst; LG Laura Griffin; AH Abbie Horton; Andy Mann; EAP, Liz Pearson; AR, Adrian Robins; ACM, LT, Laura Templeton; JAW, Jamie Wilkins;

6.4.3 Artefactual analysis

Task	person	Hours/cost
Pottery analysis	Rob Perrin	£7610
External specialist (samian)	J M Mills	£500
Pottery analysis	LG	8hrs
Metalwork - coins	M Andrews	£500
Other non-pottery	DH	55hrs
Specialist finds reporting		£500
Conservation (coins)	Drakon Heritage	£400
Illustration, external specialist liaison, checking etc	DH	40hrs

DH 95 hours; LG 8hrs; R Perrin £7610; J M Mills £500; M Andrews £500, specialist £500; Drakon £400

6.4.4 Environmental analysis (plant macrofossils and charcoal etc)

Task	person	Hours/cost
Processing samples and sorting residues	AR	12 hrs
Flot sorting and quantification	EAP	8 hrs
Couriering	EAP	3hrs
Isotope analysis (Celtic beans)	Mike Church team (Durham)	£3120
S I/C14 dating submission and admin		£1300 (SUERC) for S.I and x5 further associated C14s £2500
Reporting on above (plant macrofossils)	EAP	20hrs (charred remains only)
Overall management (environmental reporting)	EAP	30hrs

AR 12hrs; EAP 61hrs; SUERC £3800; Mike Church (Durham Univ) £3120

Stable isotope analysis of Celtic bean and pea – details (as included in above table)

The stable isotope composition of archaeological crop remains provides a direct method of investigating crop-growing conditions in the past, potentially allowing variation within and between harvests to be identified (Bogaard *et al* 2013). Modern field trials have revealed that stable $\delta^{15}N$, $\delta^{13}C$ and $\delta^{34}S$ isotope compositions in crop remains reflect the application of nitrogen-enhanced organic matter (manure, household midden, seaweed or fish remains) and the level of water availability for crops respectively (Gröcke *et al* 2021; Treasure *et al* 2016; Wallace *et al* 2013).

- Specialist analysis and reporting: £1800 (£450 per day for 4 days)
- Instrumentation costs for 30 Carbon, Nitrogen and Sulphur stable isotope measurements (10 single-entity measurements each on bean, pea and oat): £1320 (at UKRI agreed prices)

Total: £3120 (ex VAT)

6.4.5 Mollusca

Task	person	Hour
Processing samples and sorting residues	AR	15
Analysis of mollusc remains through 10 spit samples from a column of spit samples through ditch 214, and report	AM	37

AR 15hrs; AM 37hrs

6.4.6 Animal bone

Task	person	Hours/cost
Analysis - tabulate or otherwise illustrate data, including quantification of taxa and anatomical elements, mortality, sex, metrical and taphonomic data	MH	14hrs
Isotope analysis - analysis and interpretation of isotopes (C/N) for cattle and sheep/ goats and (Sr/O) for equids	SUERC	£1950 (1st phase); contingency £2000 (2nd stage); reporting estimated at £1100
C14 dating for animals used in stable isotope analysis		£2000 (SUERC)
Interpretation - consider the findings in relation to the research themes described above	MH	21hrs
Coordination/report liaison	EAP	30hrs

EAP 30hrs; M Holmes 35hrs @ £250/day = £1250; SUERC £7050

Stable isotope analysis of animal bone – details (as included in above table)

This is recommended in order to research possible long-distance droving. A staged approach with a first phase of analysis is suggested, to include sulphur ($\delta^{34}S$) of mandibles and top, bottom of three teeth (molars or premolars), and a single strontium ($^{87}Sr/^{86}Sr$) result from the mandible.

Animal	Context	Anatomical	^{34}S	Comments	Cost (C14 & ^{34}S)
Sheep	964	Mandibles (& teeth?)	X 4	Assume one ^{34}S result from C14 dating of mandible	£450
Sheep	1351	Mandibles (& teeth?)	X 4	Assume one ^{34}S result from C14 dating of mandible	£450
Sheep	1689	Mandibles (& teeth?)	X 4	Assume one ^{34}S result from C14 dating of mandible	£450
Horse	1304	Mandible & 3 teeth	X 5	C14 with Beta Analytic, therefore no free ^{34}S measurement	£150
Horse	1507	Mandible & 3 teeth	X 4	Assume one ^{34}S result from C14 dating of mandible	£450

Total for initial assessment of stable isotope potential on animal bone - £1,950 ex VAT

Should the first phase of results suggest that either of the individuals have moved during their lifetime, a second phase of results may provide useful information relating to droving (details to be determined). 2nd phase analysis, up to £2000

Reporting costs (SUERC) – estimated at £1100.

6.4.7 Human remains

Task	person	Hours/cost
Arranging stable isotope research	GW	2 days
Stable isotope analysis	Durham University	£2000
Answering queries and finalising report	GW	2 days
Coordination/liaison	EAP	8hrs

EAP 8hrs; G Western 4 days @ £230/day = £920; Durham University £2000

6.4.8 Radiocarbon dating

Five additional radiocarbon dates are proposed yet to be determined at the outset of full analysis

Task	person	Hours/cost
Radiocarbon dates (x5)	?SUERC	£2500
Coordination/liaison	EAP	5hrs

EAP 5hrs; ?SUERC £2500

6.4.9 Illustration

Task	person	Hours
Location	LT	1hrs
Archaeological context	LT	1
Site areas – eval trenches, mitigation areas, geophysics, LiDAR	LT	2
5 phased plans	LT	8
Artefact distribution plots	LT	8
Phase 2.1 sections and additional plans	LT	20
Phase 2.2 sections and additional plans	LT	12
Phase 2.3 sections and additional plans	LT	15
Artefacts – *c* 50 pottery illustrations	LT	25
Artefacts – other finds, metalwork / worked-stone etc	LT	40
Artefacts – digitisation and layout of above	LT	16
Mounting plates and specialist figures (*c* 40-50)	LT	15
Edits	LT	37
Reconstruction illustration	AH	50

LT 200hrs; AH 50hrs

6.4.10 Outreach and public engagement

See Appendix 3 – maximum cost £9913 ex VAT

6.4.11 Publication and dissemination

Task	person	Hours/ cost
Feature article in *Transactions of the Bristol and Gloucestershire Archaeological Society* and/or *Archaeology in the Severn Estuary*	JAW, and other main contributors	60hrs
Management and editing (overall)	DH	16hrs
Publication fees to TBGAS including rejigging figures to fit		£6000

JAW 60hrs; DH 16hrs; journal article £6000 (estimated)

6.4.12 Archiving

Task	person	Hours/cost
Digital archiving – with ADS costs (estimated)	KW	36 + £7000
Physical archive – including sorting and ordering	KW	40hrs
Other publication, OASIS etc – admin		£500
museum costs (estimated)		£7000
Overall archive admin	KW	4hrs

KW 80hrs; other costs £12,500

6.4.13 Overall project management

Task	person	Hours/cost
Project team meetings	All	£2500
Store inventory and in-house conservation (finds archaeologist)	SE	16hrs
Project management/ main text editing	DH	100hrs

SE 16hrs; DH 100hrs; on-line project team meeting(s) £2500

7 Proposal financial details (Confidential)

Proposed cost of final analysis/reporting, publication and archiving £123,866.00.

As itemised below:

Cost breakdown	**Rates**	**Report**	**Archiving etc**
WA staff		**Stage 4**	**Stage 5**
Senior Project Manager	£82.50	£3,712.50	£0.00
Post Excavation Manager	£82.50	£17,407.50	£0.00
Senior Finds Archaeologist	£62.50	£500.00	£0.00
Senior Environmental Arch	£62.50	£6,500.00	£0.00
Senior Illustrator	£62.50	£15,625.00	£0.00
Project Officer	£52.50	£13,650.00	£0.00
Field Supervisor	£45.00	£0.00	£0.00
Finds Archaeologist	£52.50	£840.00	£0.00
Archaeological Archivist	£52.50	£0.00	£4,200.00
Archaeologist/Trainee	£34.00	£0.00	£0.00
Technician (finds/environmental)	£34.00	£918.00	£0.00
staff sub-total		*£59,153.00*	*£4,200.00*
project team meeting		£2,500.00	£0.00
coins		£500.00	
pottery-external		£7,610.00	
conservation		£400.00	
stable isotope-animals		£6,650.00	
stable isotope-human		£2,000.00	
C14		£4,500.00	
specialist finds-eg sfs		£500.00	
specialist-samian		£500.00	
h/bone		£920.00	
a/bone		£1,250.00	
Specialist - Geoarchaeologist		£150.00	
ext_enviro-diatoms		£0.00	
ext_enviro-beans		£3,120.00	
Outreach		£9,913.00	
Oasis digital archive			£7,000.00
Museum fees			£7,000.00
Publication fees			£6,000.00
project cost sub-total		*£40,513.00*	*£20,000.00*
stage total		£99,666.00	£24,200.00

8 Project personnel

The fieldwork was principally led by Jamie Wilkins, ACIfA, although also variously by Peter Lovett, ACIfA, Michael Nicholson, ACIfA, Andrew Walsh, ACIfA, and Beth Williams, ACIfA. They were assisted by a Worcestershire Archaeology site team of Tim Cornah, ACIfA, Sophie Hobday, PCIfA, Elspeth Iliff, ACIfA, John Jackson, PCIfA, Jo Losh, Constance Mitchell, PCIfA, Yago Terroba-Souto, and Hazel Whitefoot PCIfA. Worcestershire Archaeology were also assisted by Brent Culshaw, Jamie Gibbons, James Goodall, Chris Hambleden, Roy Krakowicz, and Victor Jerjotoma Ortin from Wessex Archaeology. Metal-detecting of the site was undertaken by Ian Lapraik.

The fieldwork stage of the project was managed by Tom Vaughan, MCIfA, and the post-excavation stage by Derek Hurst. The report was produced and collated by Jamie Wilkins.

9 Acknowledgements

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Figures

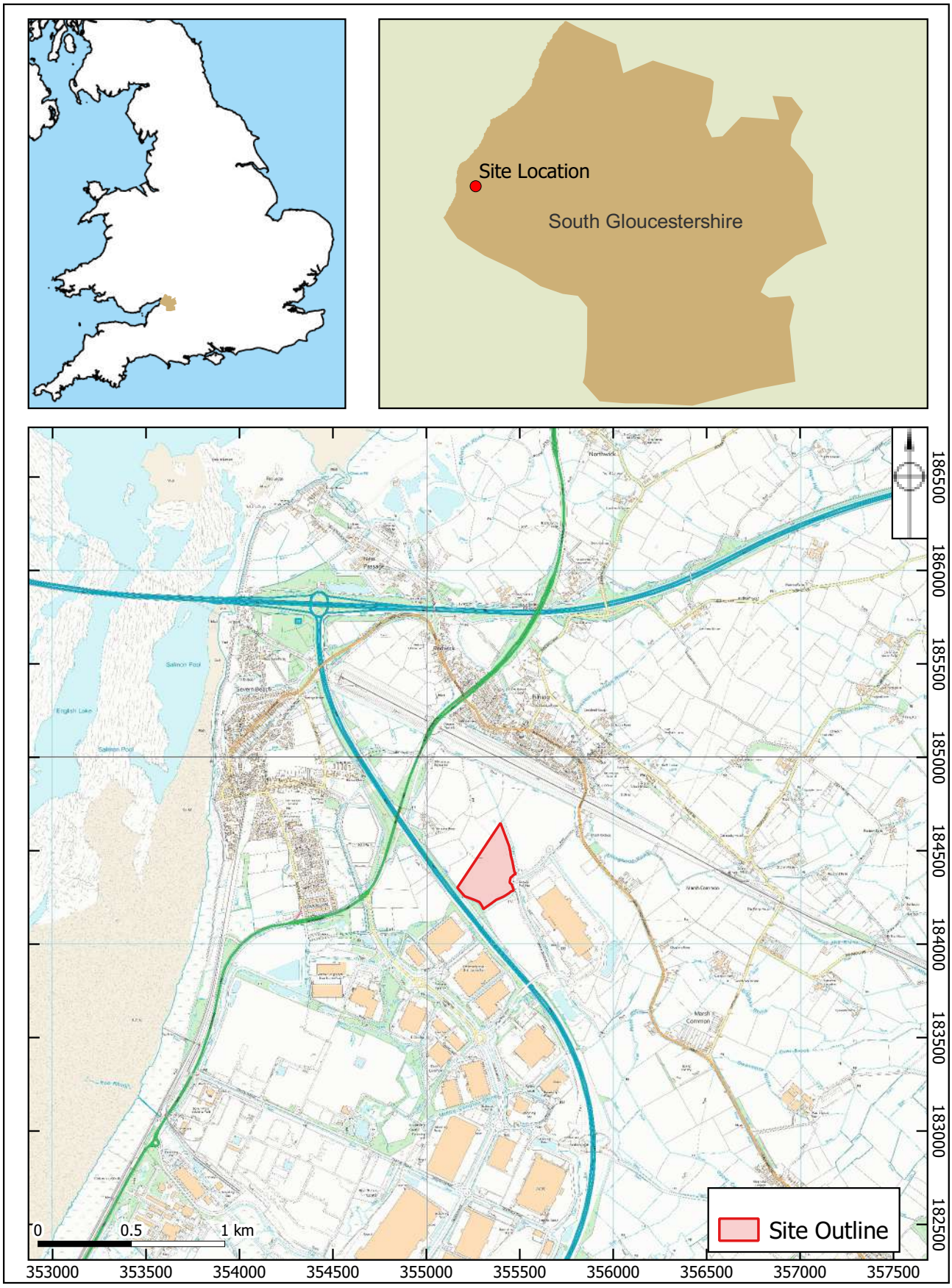
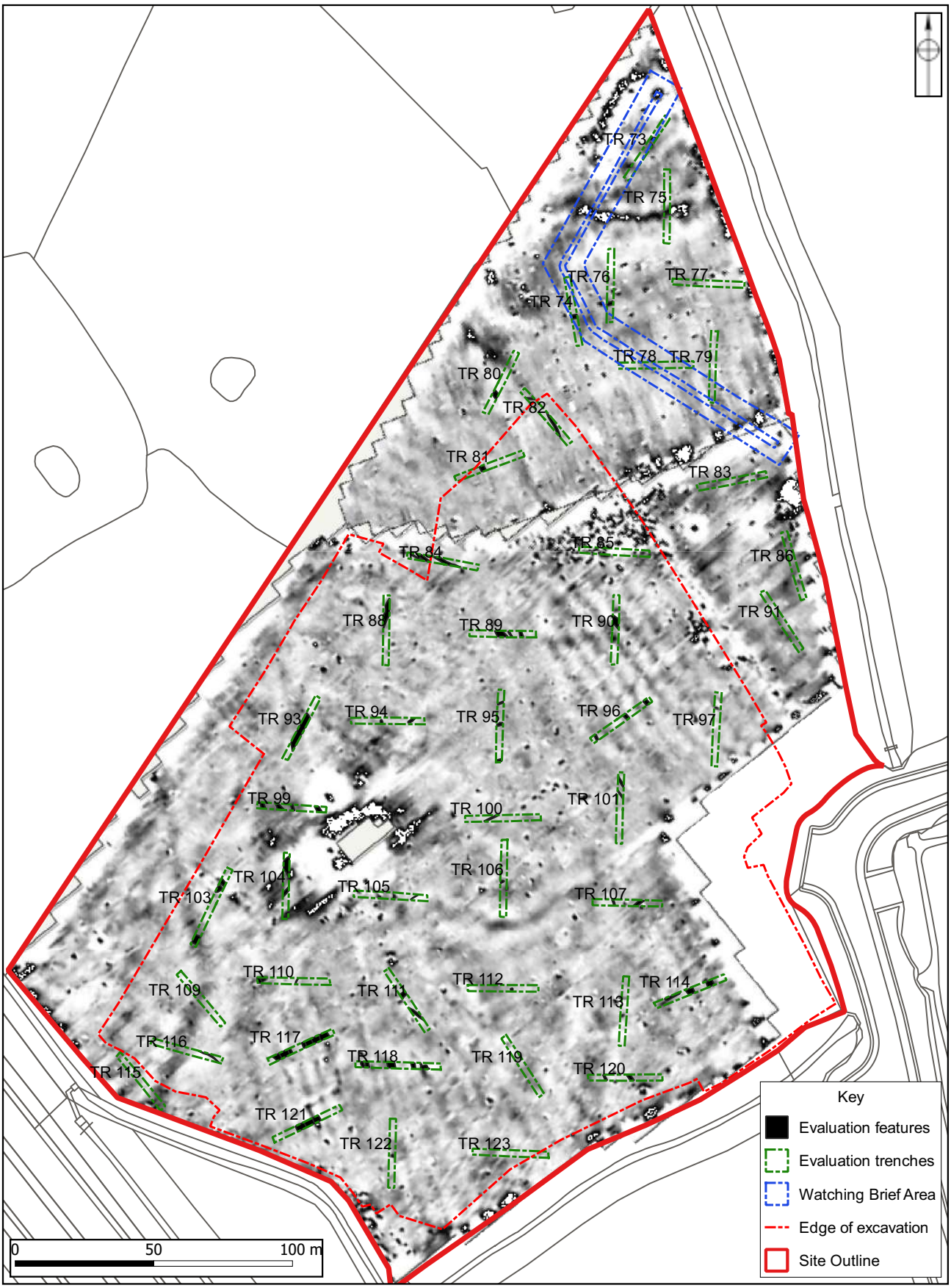


Figure 1

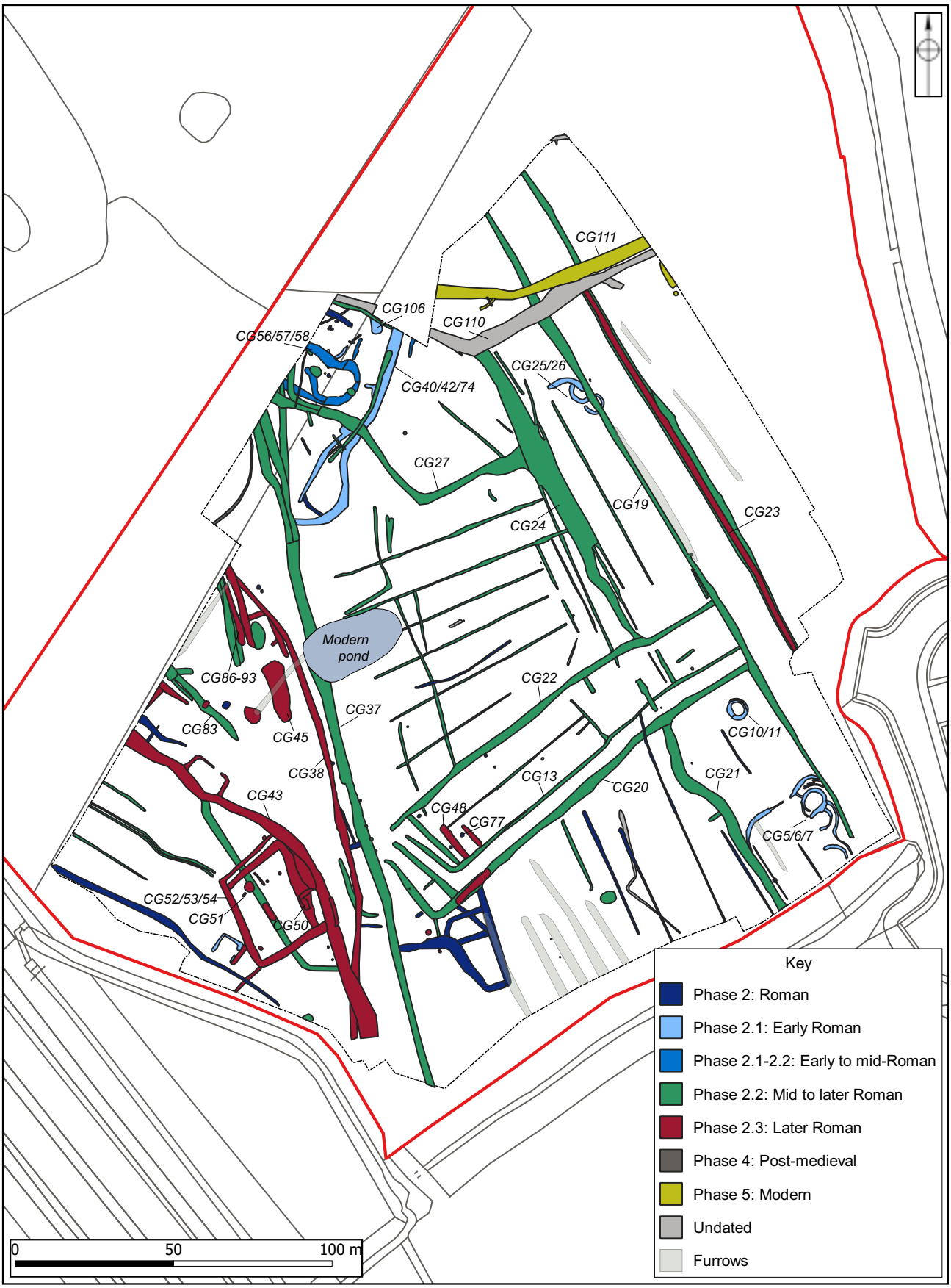
Location of the site

Site outline and excavation area with LiDAR imagery *Figure 2*



Evaluation trenching and mitigation areas overlying the geophysical survey plot *Figure 3*

All archaeological features within the mitigation area *Figure 4*



Preliminary phasing of archaeological features (key context groups indicated) *Figure 5*

Plates

Plate 1: Plot 3 Pilning site, located approximately 1.40km east of the Severn Estuary and the M4 Prince of Wales Bridge.

Plate 2: Machine excavation of the site in autumn 2021. View north-west.

Plate 3: Organic-rich peat and alluvial deposits of the Middle Wentlooge Formation were exposed when deep features, such as this Phase 2.2 waterhole (CG98), were cut into them. The uppermost layer, which was exposed universally across site, comprised the Upper Wentlooge Formation, a tidal flat deposit. 1m scales.

Plate 4: View north-east across the potential early Roman roundhouse gullies CG6/CG7/CG8/CG9. The features were sterile, being backfilled with redeposited alluvium and did not contain any cultural material such as pottery or animal bone. 1m scales.

Plate 5: South-east facing section of early to mid-Roman enclosure ditch CG56, which contained an abundance of animal bone and pottery, including tankards and glazed sherds, the latter potentially manufactured in Caerleon. 1m scales.

Plate 6: North-east facing section of mid to later Roman trackway ditch 475 (CG20). The upper, gleyed deposits of blue clay were common in most drainage ditches across the site. 1m scale.

Plate 7: Burial pit containing two young equids (CG77); located at the south-western, terminal end of the central trackway. 0.50m scale.

Plate 8: Smashed pot, containing an abundance of charred Celtic beans recovered from the base of mid to later Roman drainage ditch CG88 (fill 1123, cut 1122). 0.40m scale.

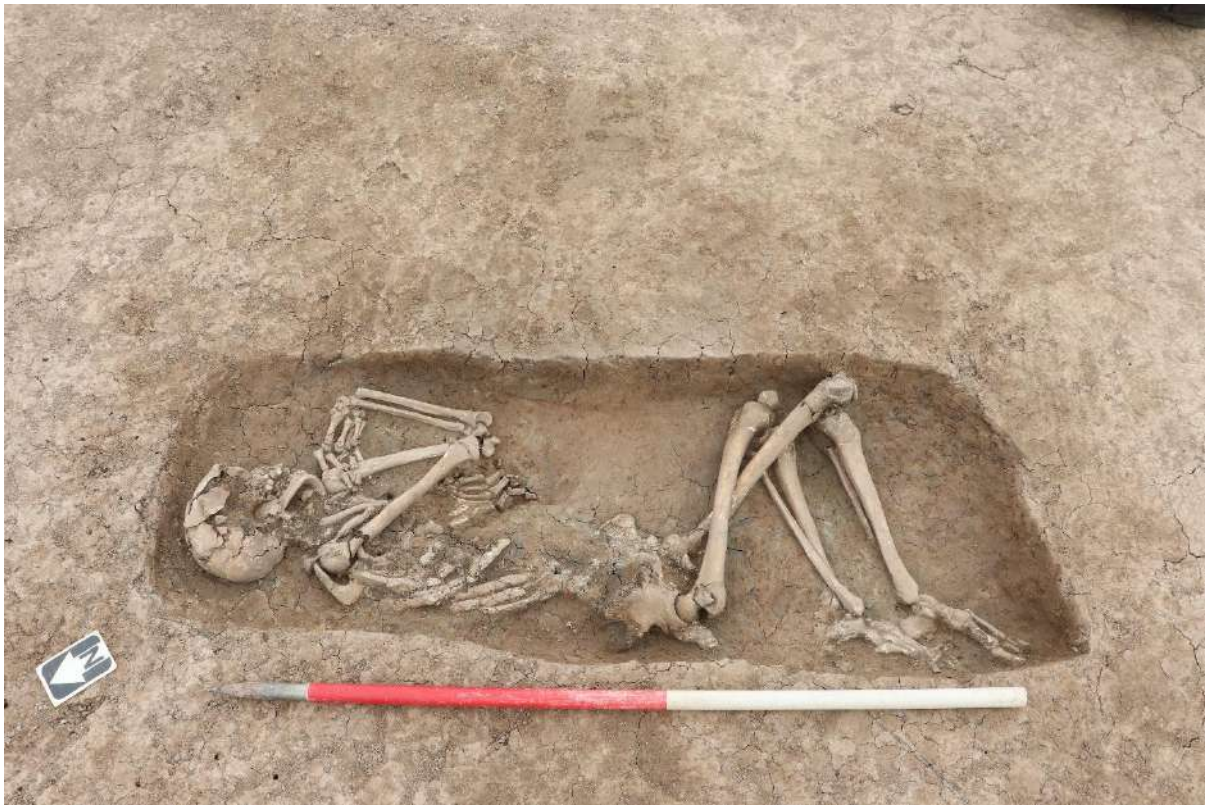


Plate 9: A burial (CG50) containing the remains of an adult male (SK1527) represents the only inhumation identified on site, and has been radiocarbon dated to 130–310 cal AD. 1m scale.

Plate 10: Cremation pit (cut 304, fill 303) prior to excavation. Of the cremation deposits on site, this pit contained enough calcined bone to suggest the burial of a complete individual. Radiocarbon dating indicates a date range of 200–330 cal AD. 0.50m scale.

Plate 11: Aerial shot of the sub-square, later Roman enclosure (CGs 52, 53, and 54) in the west of the site. The later Roman drainage ditch CG43 appears to respect the line of the enclosure, indicating some level of contemporaneity. View north.

Plate 12: View west across the south-western corner of the late Roman enclosure CG52/53/54. 1m scales.

Plate 13: A substantial dump of pottery and animal bone in deposit 1501 (cut 1506; CG54) of the final phase of the late Roman enclosure. 0.50m scale.

Plate 14: A near-complete black burnished ware vessel deposited at the top of the late Roman enclosure ditch CG54 (fill 1339; cut 1336). 0.30m scale.

Plate 15: A near-complete black burnished ware vessel deposited within fill 1507 of later Roman enclosure ditch 1506 (CG54). 0.20m scale.

Plate 16: View west across later Roman enclosure ditches CG52, CG53, and CG54. The inscribed portable altar or marker stone (sf148; fill 1450; cut 1453; CG53) is visible in situ *within the section. 1m scales.*

Plate 17: Stone surface (CG50) constructed over the backfilled first phase of the later Roman enclosure ditch CG52. The surface is likely to be contemporary with the final phase of the enclosure (CG54) and may have established an entranceway.

Plate 18: A later Roman remodelling of the central trackway included ditch CG48 which contained a near-complete sheep/goat skeleton at the base (fill 1351; cut 1350). View south-west, 1m scale.

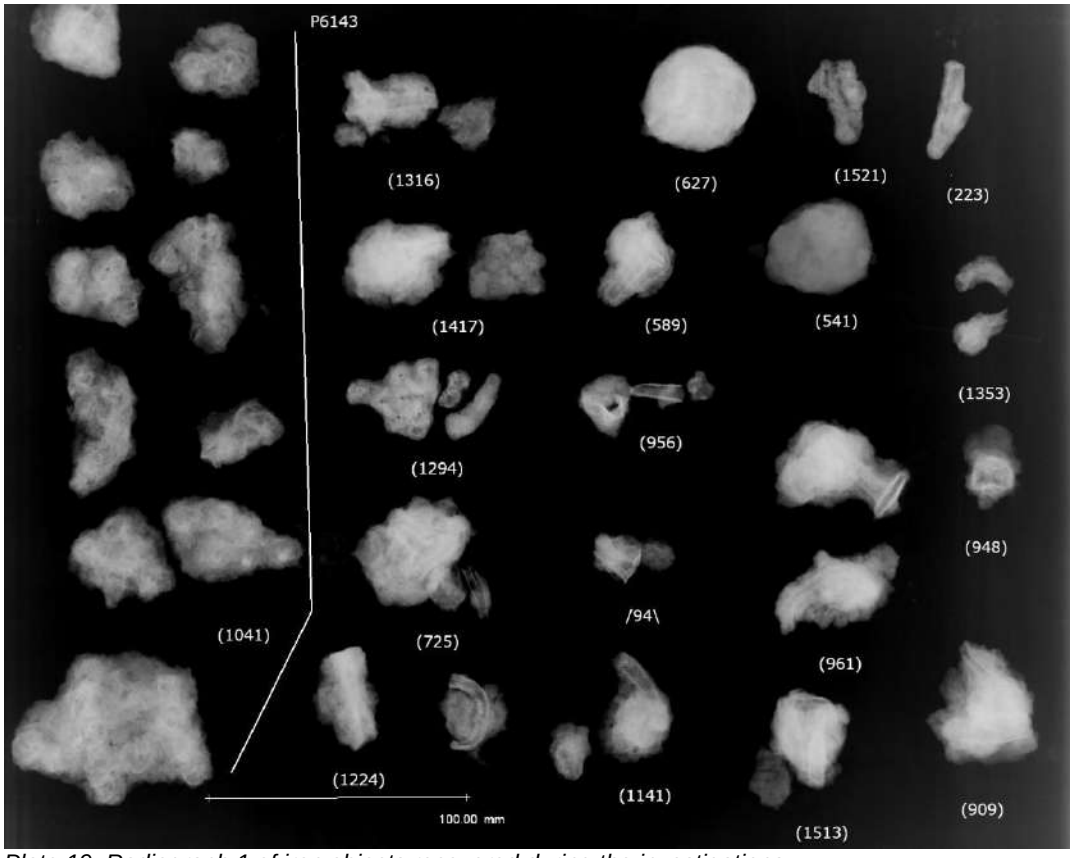


Plate 19: Radiograph 1 of iron objects recovered during the investigations.

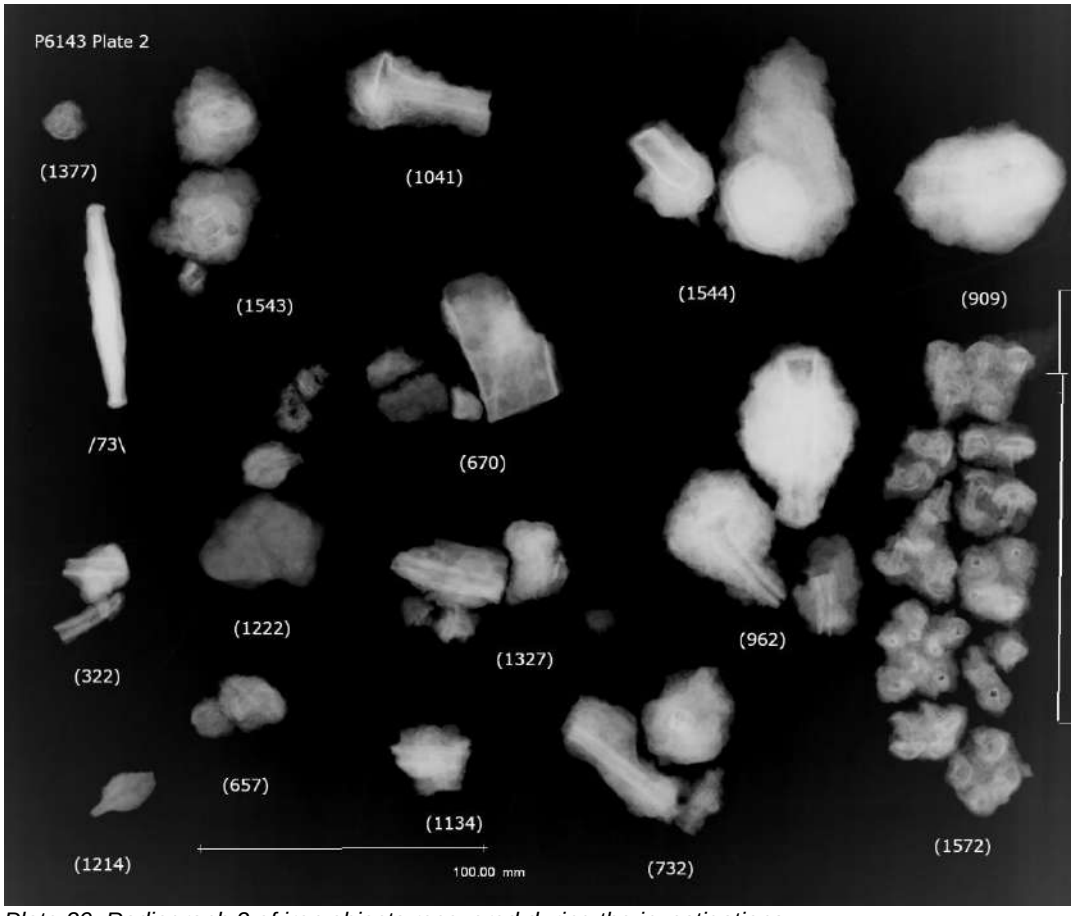


Plate 20: Radiograph 2 of iron objects recovered during the investigations.

Plate 21: Broken enamelled brooch sf63 (context 101).

Plate 22: Military shoulder belt mount of 'numerum omnium' type following conservation (sf91). Military mounts of this type date from the 2nd-3rd century AD and there was some evidence to indicate this example had been coated in silver. Photograph courtesy of Drakon Heritage and Conservation.

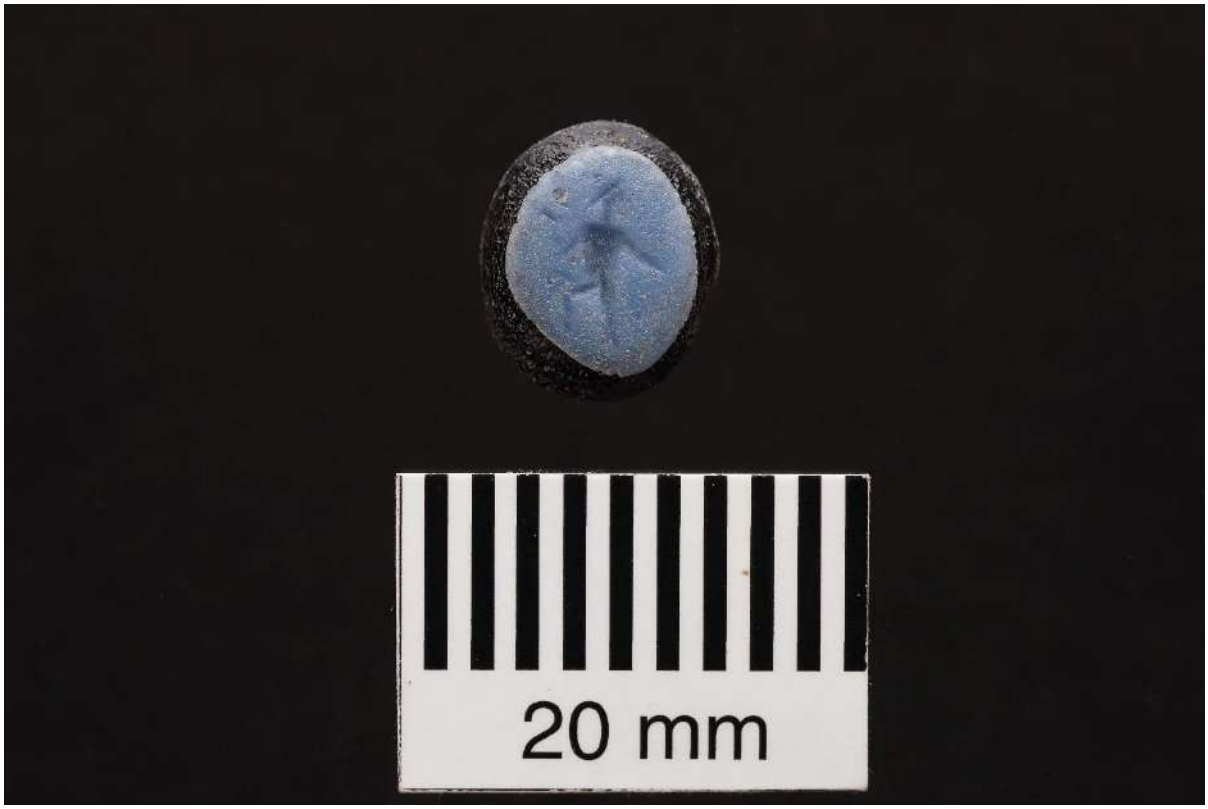


Plate 23: A glass intaglio (sf147) likely depicting Diomedes was recovered from late Roman enclosure ditch CG52.

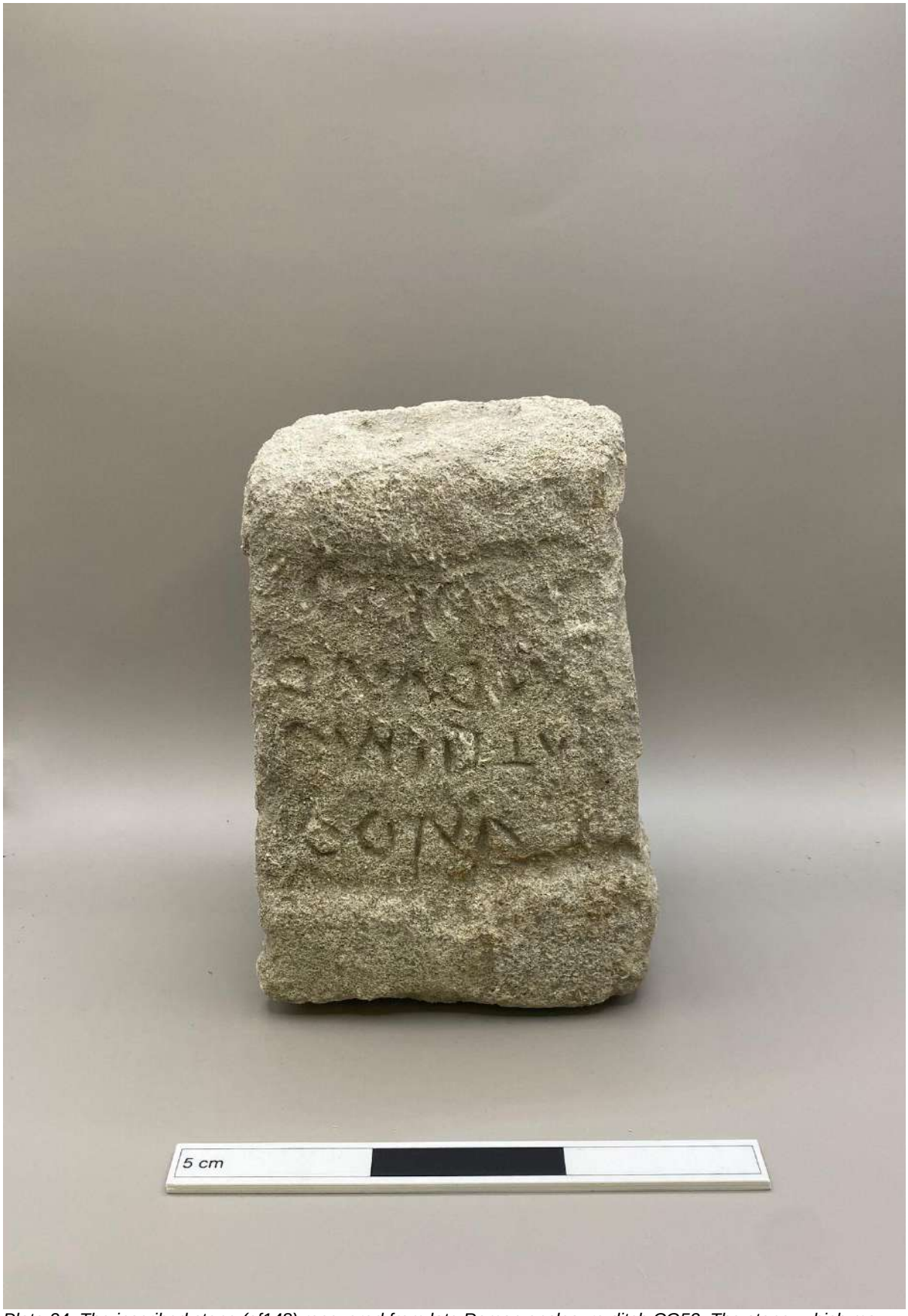


Plate 24: The inscribed stone (sf148) recovered from late Roman enclosure ditch CG53. The stone, which may have initially been used as a portable altar, has four rows of an inverted Latin inscription, potentially indicating it was later re-used as a boundary or grave marker.

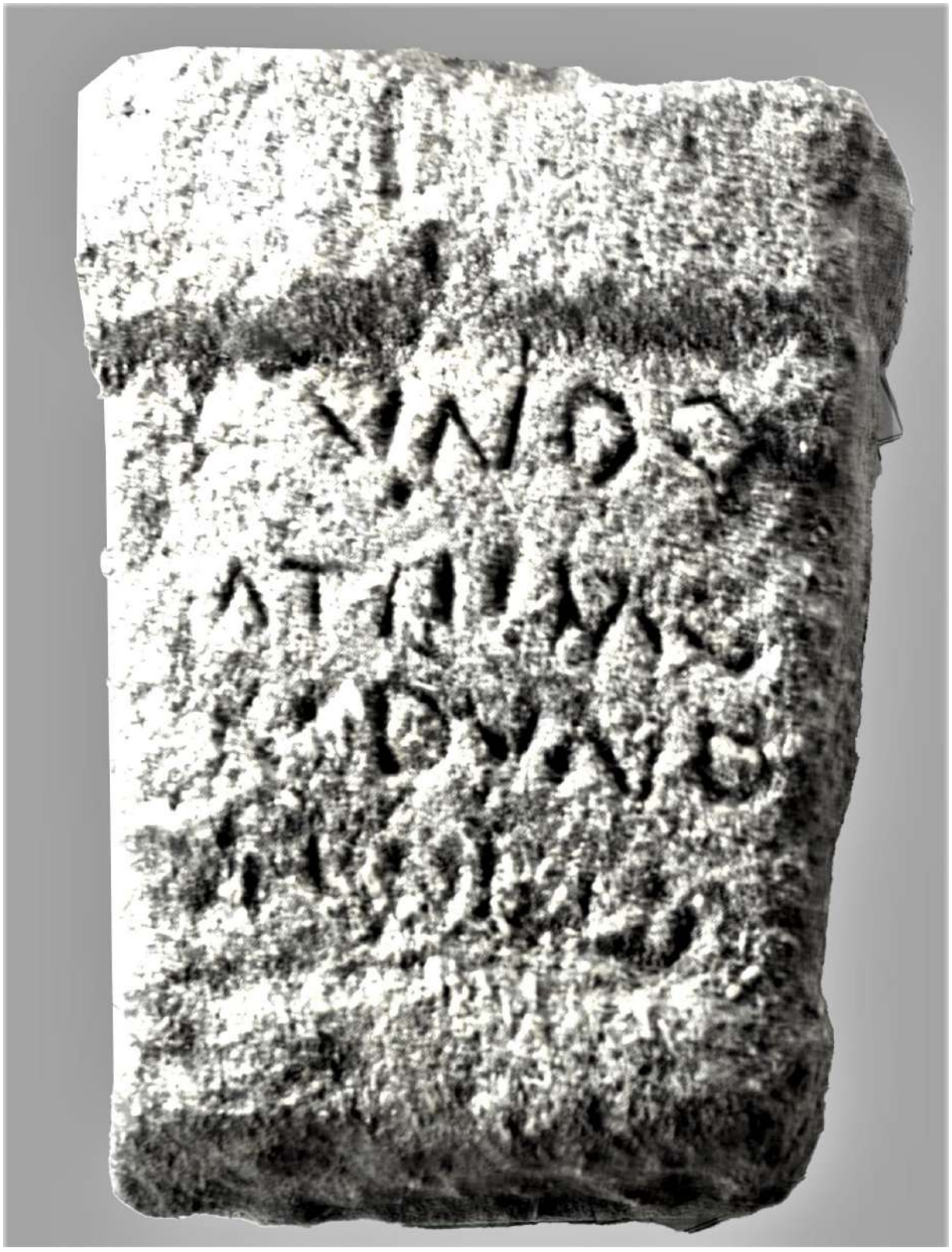


Plate 25: Reflectance Transformation Imaging (RTI) of the inverted inscribed stone sf148.

Plate 26: Trabecular impressions characteristic of cribra orbitalia (arrowed) – SK1527

Plate 27: Heavy dental calculus on the anterior mandibular dentition (arrowed) – SK1527

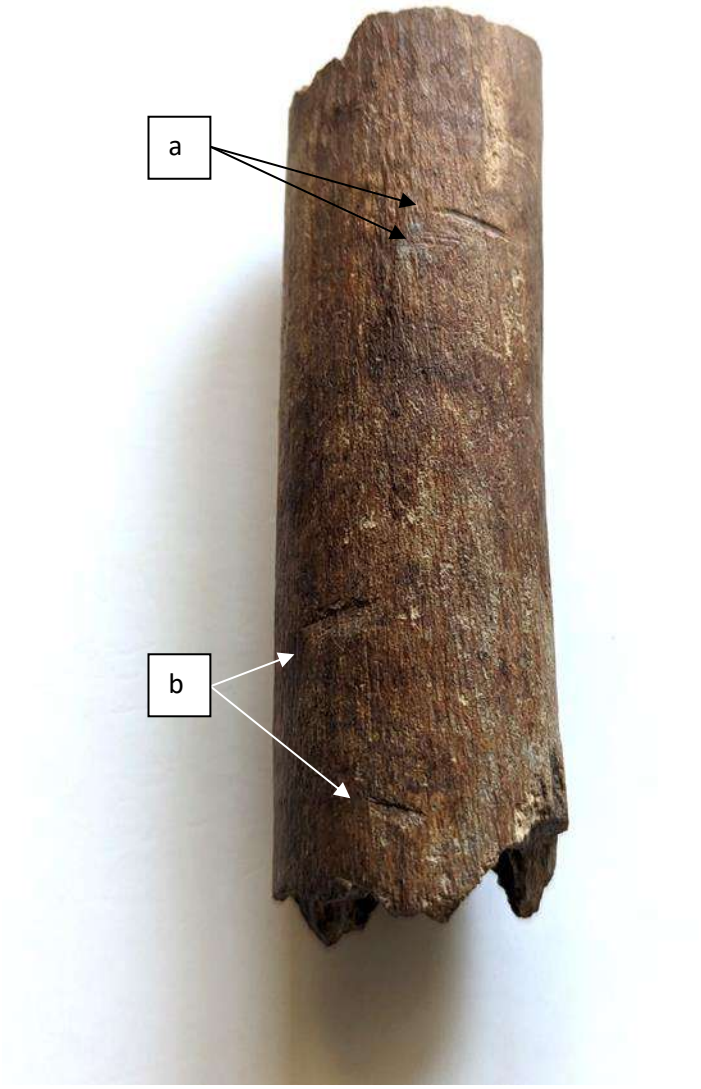


Plate 28: Cutmarks (a) and chop marks (b), anterior left femur [3] – SK1527

Plate 29: Detail of cutmarks, anterior left femur [3] – SK1527

Plate 30: Scrape marks (arrowed), posterior left femur [3] – SK1527

Plate 31: Anterior left femur [3] detail of chop marks – SK1527

Plate 32: Scraping or gnawing marks with discolouration, anterior left femur [3] of SK1527

Plate 33: Sub-adult distal hand phalanx (cremation context 1054)

Plate 34: Adult distal hand phalanges, including a first distal phalanx (cremation context 304)

Appendix 1: Summary of project archive (P6143)

OASIS ID: fieldsec1-516855

TYPE	DETAILS*
Artefacts and Environmental	Animal bones, Ceramics, Environmental, Glass, Human bones, Metal, Worked bone, Worked stone/lithics
Paper	Context sheet, Diary (Field progress form), Drawing, Plan, Section
Digital	Database, GIS, Images raster/digital photography, Spreadsheets, Survey, Text

**OASIS terminology*

The project archive is currently held at the offices of Worcestershire Archaeology. Subject to the agreement of the landowner it is anticipated that it will be deposited at City of Bristol Museum and Art Gallery.

Appendix 2: Radiocarbon dating reports (SUERC)

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

25 July 2023

Laboratory Code	SUERC-111197 (GU64485)
Submitter	Liz Pearson Worcestershire Archaeology The Hive Sawmill Walk The Butts Worcester WR1 3PD
Site Reference	Pilning Mitigation, South Gloucestershire
Context Reference	1527
Sample Reference	P6143/1527
Material	Bone : Human

$\delta^{13}C$ relative to VPDB	-19.9 ‰	**$\delta^{34}S$ relative to VCDT**	9.0 ‰
$\delta^{15}N$ relative to air	12.0 ‰	**C/S ratio (Molar)**	458
C/N ratio (Molar)	3.3	**N/S ratio (Molar)**	140

Radiocarbon Age BP 1829 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

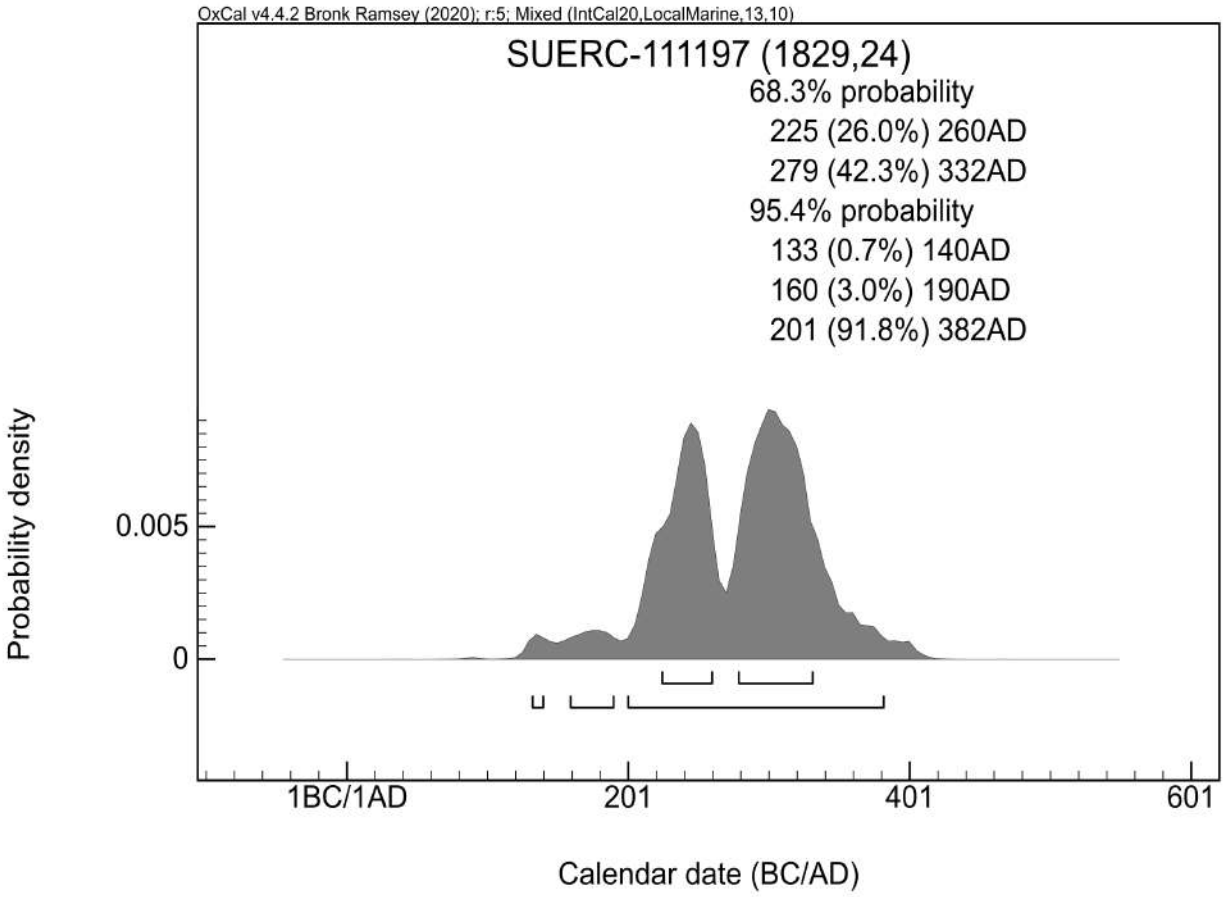
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by : E. Dunbar



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using a mix of the IntCal20† and Marine20‡ calibration curves.

Human bone collagen with a $\delta^{13}C$ value above -20‰, accompanied by a raised $\delta^{15}N$ value, is taken to indicate a marine component in the diet. The percentage contribution of this marine component is calculated using end-members of -21.0‰ (fully terrestrial) and -12.5‰ (fully marine) with an uncertainty of 10% applied.

The $\delta^{13}C$ value of -19.9‰ gives a 13% marine contribution (±10%).

A regional marine offset (ΔR) of -150 ± 52 years has been used in the calibration.

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*
‡ Heaton et al. (2020) *Radiocarbon 62(4) pp.779-820*

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

15 August 2023

Laboratory Code	SUERC-111621 (GU64751)
Submitter	Liz Pearson Worcestershire Archaeology The Hive Sawmill Walk The Butts Worcester WR1 3PD
Site Reference	Pilning Mitigation, South Gloucestershire
Context Reference	993
Sample Reference	P6143/993
Material	Bone : Human

$\delta^{13}C$ relative to VPDB	-19.9 ‰	**$\delta^{34}S$ relative to VCDT**	8.9 ‰
$\delta^{15}N$ relative to air	11.6 ‰	**C/S ratio (Molar)**	436
C/N ratio (Molar)	3.3	**N/S ratio (Molar)**	130

Radiocarbon Age BP 1791 ± 27

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

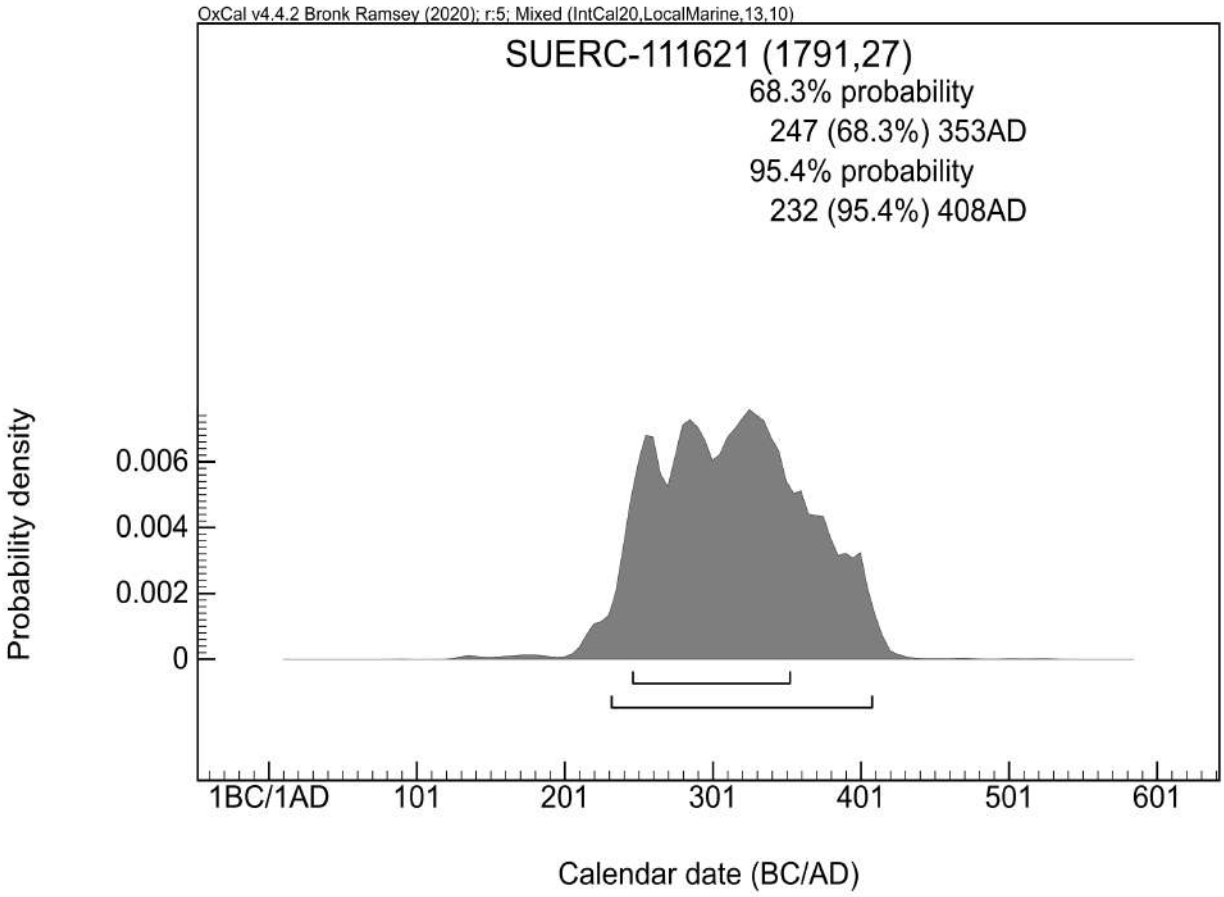
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by : E. Dunbar



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

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Human bone collagen with a $\delta^{13}C$ value above -20‰, accompanied by a raised $\delta^{15}N$ value, is taken to indicate a marine component in the diet. The percentage contribution of this marine component is calculated using end-members of -21.0‰ (fully terrestrial) and -12.5‰ (fully marine) with an uncertainty of 10% applied.

The $\delta^{13}C$ value of -19.9‰ gives a 13% marine contribution (±10%).

A regional marine offset (ΔR) of -150 ± 52 years has been used in the calibration.

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*
‡ Heaton et al. (2020) *Radiocarbon 62(4) pp.779-820*

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RADIOCARBON DATING CERTIFICATE

15 August 2023

Laboratory Code	SUERC-111622 (GU64752)
Submitter	Liz Pearson Worcestershire Archaeology The Hive Sawmill Walk The Butts Worcester WR1 3PD
Site Reference	Pilning Mitigation, South Gloucestershire
Context Reference	304
Sample Reference	P6143/304/29
Material	Cremated bone : Human
$\delta^{13}C$ relative to VPDB	-21.7 ‰
Radiocarbon Age BP	1810 ± 27

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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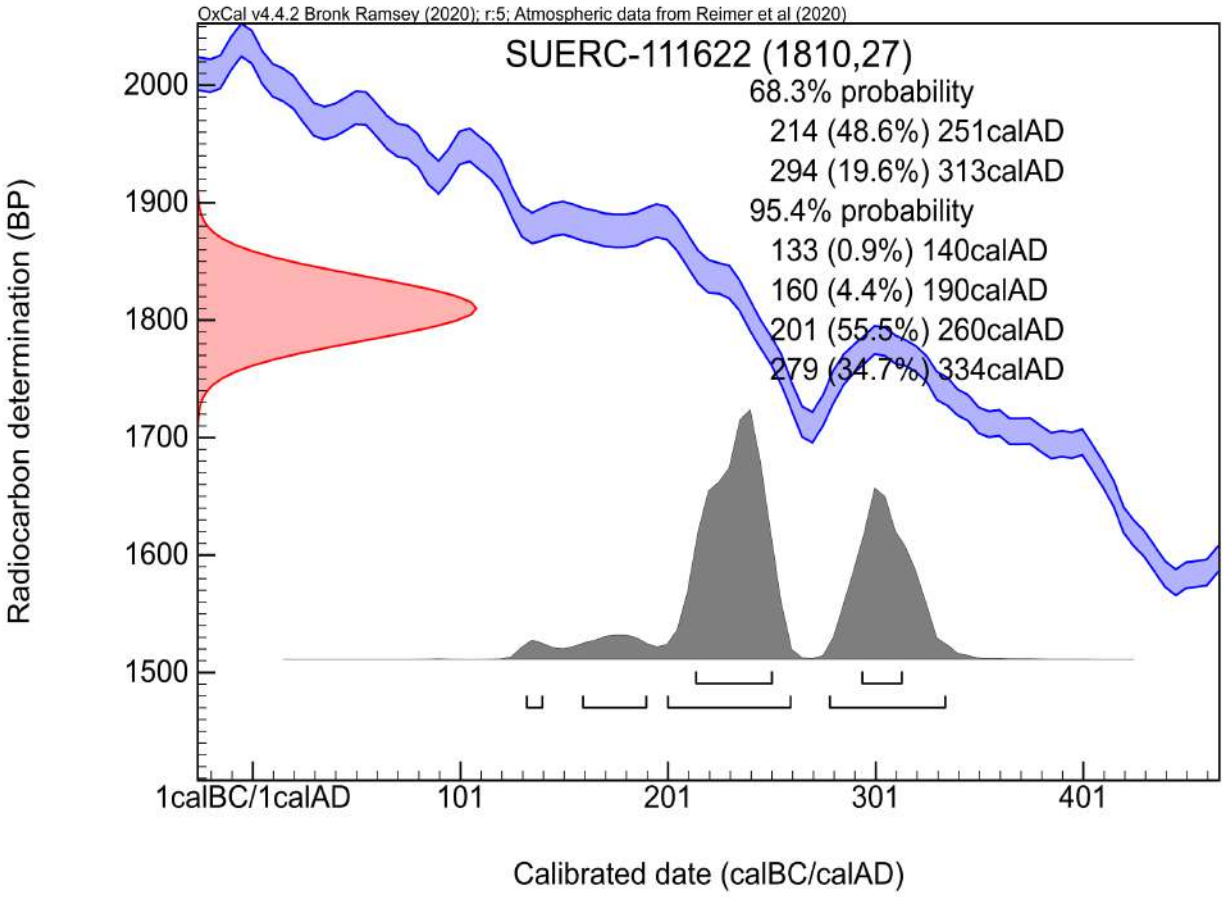
Conventional age and calibration age ranges calculated by :

Checked and signed off by : E. Dunbar



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

15 August 2023

Laboratory Code	SUERC-111623 (GU64753)
Submitter	Liz Pearson Worcestershire Archaeology The Hive Sawmill Walk The Butts Worcester WR1 3PD
Site Reference	Pilning Mitigation, South Gloucestershire
Context Reference	548
Sample Reference	P6143/548/43
Material	Cremated bone : Human
$\delta^{13}C$ relative to VPDB	-21.7 ‰
Radiocarbon Age BP	1866 ± 27

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

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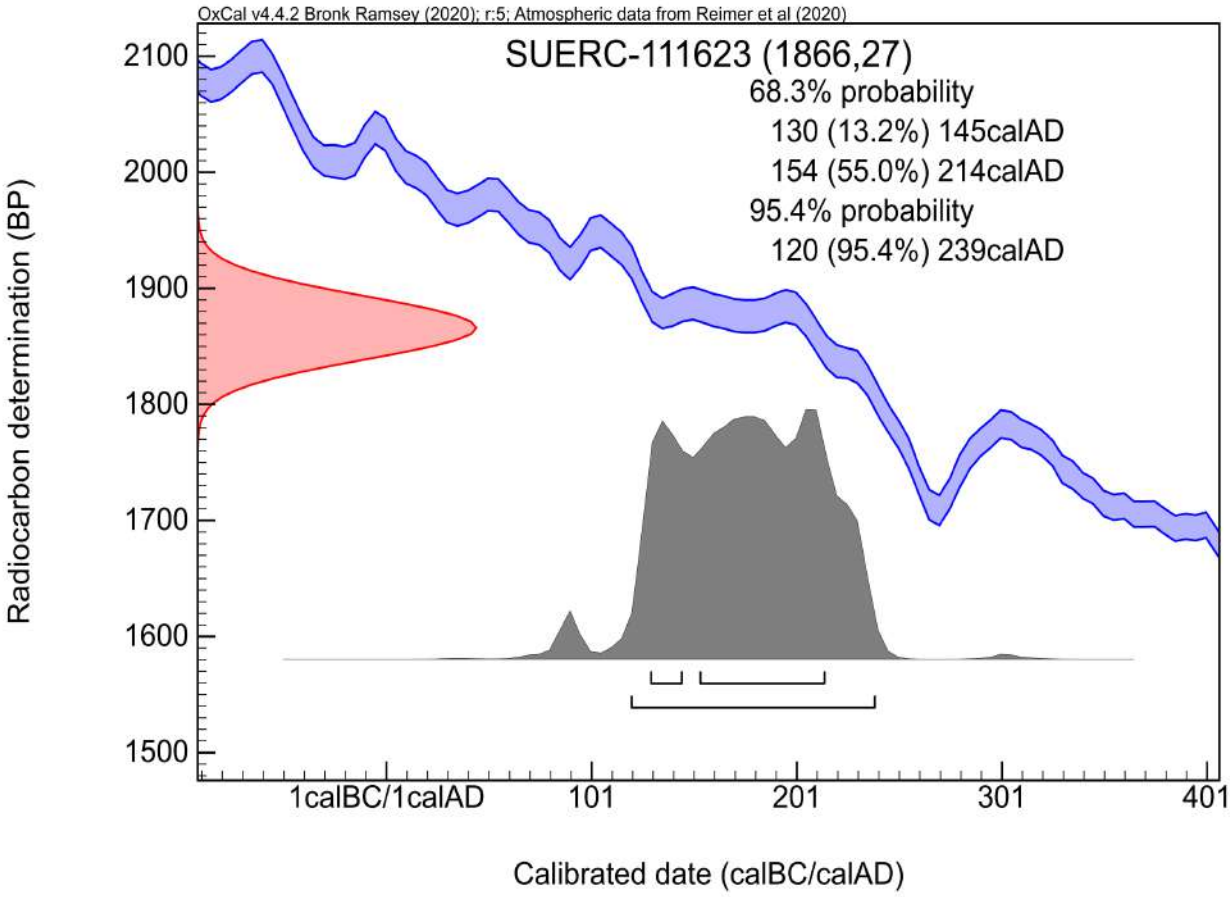
Conventional age and calibration age ranges calculated by :

Checked and signed off by : E. Dunbar



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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Director: Professor F M Stuart Tel: +44 (0)1355 223332 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

15 August 2023

Laboratory Code	SUERC-111624 (GU64754)
Submitter	Liz Pearson Worcestershire Archaeology The Hive Sawmill Walk The Butts Worcester WR1 3PD
Site Reference	Pilning Mitigation, South Gloucestershire
Context Reference	1056
Sample Reference	P6143/1056/83
Material	Cremated bone : Human
$\delta^{13}C$ relative to VPDB	-19.2 ‰
Radiocarbon Age BP	1767 ± 27

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

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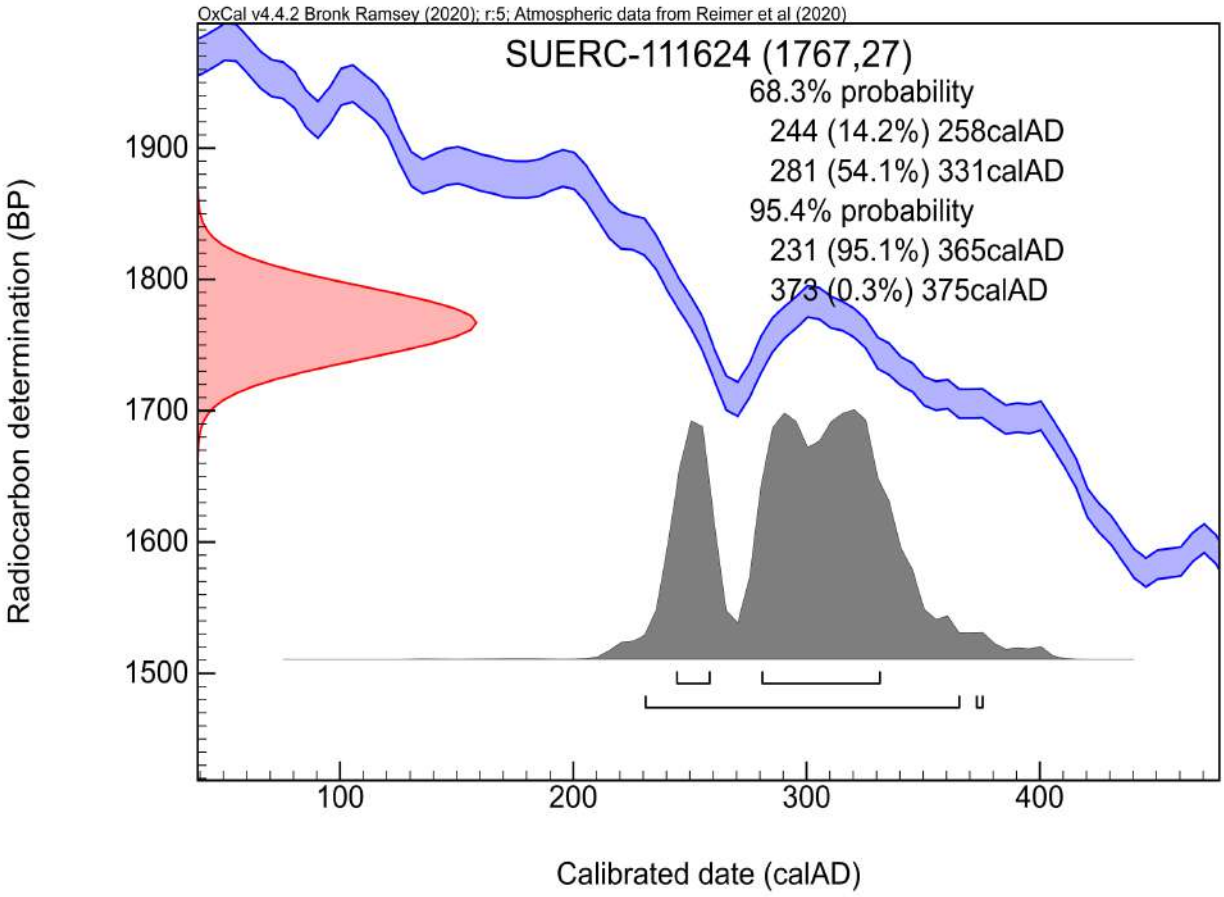
Conventional age and calibration age ranges calculated by :

Checked and signed off by : E. Dunbar



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve†

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* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

Appendix 3: Outreach proposal

Options for archaeological outreach P6143 Pilning

Case for archaeological public engagement

Archaeological work in advance of development has revealed interesting Romano-British activity. There is considerable potential for engaging local communities with this heritage, especially given that the site's narrative is tied to broader landscape changes. Public engagement would not only disseminate the results and awareness of the project to a wider audience, but also help to meet social value responsibilities by positively engaging with local communities and enhancing their sense of place.

Controlled information

The work outline below would draw on information from the technical archaeological report – it is a repackaging of report's information in ways that are accessible to a range of local groups.

Full programme

To be delivered in late 2024 and/or early 2025, alongside the release of the full archaeological report. Programme includes:

- 6 primary school workshops
- Youth group visit
- 2 public talks
- Public artefact handling and Q&A session
- Publicity content (e.g. parish newsletter article, blog or series of social media posts)
- Online exhibition, including reconstruction illustrations

Cost: £9,913 + VAT (this includes 6% inflation on current staff rates)

Individual options

All options assume that activities are being undertaken as part of a programme, and therefore draw on preparation work for the school sessions – if standalone, then extra preparation time will be required. Costs exclude VAT, but use projected 2024-25 rates.

1. **School visits x 4** = £1273 (assuming 2 x 2 back-to-back sessions)
   School visits x 6 = £1485 (assuming 2 x 3 back-to-back sessions)

2. **Additional youth group sessions** = £319 per session

3. **Artefact handling session** = £743 (plus any venue hire fee)

4. **Publicity content** (equivalent to a newsletter article, blog or *c.*4 social media posts) = £371

5. **Public talk** initial talk = £981 (plus any venue hire fee)

   repeats = £292

6. **Online exhibition** – alongside archaeological reporting = £5725
   For reference see 'Excavating Wolverhampton's Old Hall', which is interactive and was viewed over 850 times in two weeks: www.explorethepast.co.uk/project/wolverhampton-clq

Worcestershire Archaeology outreach team

WA have two dedicated Community Project Officers who specialise in sharing heritage and working with communities. Work would be led by Nina O'Hare (PCIfA), Senior Community Project Officer, who has a background in commercial field archaeology and has been with Worcestershire Archaeology since 2015.