Ruddle Court Farm, Newnham, Gloucestershire

Archaeological Excavation Report

July 2022

Client: ARC Farming Ltd/RPS Group Ltd

Issue No.: v. 4
OA Reference No.: OANERPX
NGR: SO 68150 10580

oxfordarchaeology

Client Name:	ARC Farming Ltd/RPS Group Ltd
Document Title:	Ruddle Court Farm, Newnham, Gloucestershire
Document Type:	Excavation Report
Grid Reference:	SO 68150 10580
Planning Reference:	P1866/18/FUL
Site Code:	OANER19
Invoice Code:	OANERPX
Accession/HER No.:	SOYDH:2019.9
OA Document File Location:	https://files.oxfordarchaeology.com/nextcloud/index.php/apps/files/?dir=/Projects%20Working%20Folder/OAS/OANER19_Ruddle_Court_Farm/Post-excavation&fileid=6462379
Issue No:	v. 4
Date:	July 2022
Prepared by:	Charlotte Howsam (Project Officer)
Checked by:	Martyn Allen (Senior Project Manager)
Edited by:	Edward Biddulph (Senior Project Manager)
Approved for Issue by:	Leo Webley (Head of Post-Excavation)
Signature:	.....

OA South
Janus House
Osney Mead
Oxford
OX2 0ES

t. +44 (0)1865 263 800

OA East
15 Trafalgar Way
Bar Hill
Cambridge
CB23 8SQ

t. +44 (0)1223 850 500

OA North
Mill 3
Moor Lane Mills
Moor Lane
Lancaster
LA1 1QD
t. +44 (0)1524 880 250

e. info@oxfordarch.co.uk
w. oxfordarchaeology.com
Oxford Archaeology is a registered Charity: No. 285627

Director and Chief Executive
Gill Hey, BA PhD FSA MCIfA
Private Limited Company, No: 1618597
Registered Charity, No: 285627
Registered Office: Oxford Archaeology Ltd
Janus House, Osney Mead, Oxford OX2 0ES

Ruddle Court Farm, Newnham, Gloucestershire

Archaeological Excavation Report

By Charlotte Howsam

Contents

List of Figures

Summary

Oxford Archaeology carried out an archaeological excavation in 2019 at the site of Ruddle Court Farm in Newnham, Gloucestershire. Preceding trial-trench evaluation in 2019 of the *c* 1.9ha development site established the presence of significant archaeological remains, including a number of ditches, pits and cremation burials, as well as metalworking remains of regional archaeological importance. Four excavation areas, totalling *c* 0.5ha, were subsequently targeted upon these remains.

Remains of Roman burial activity were confined to the south of the site, evidenced by a small cremation cemetery that probably spanned the 2nd century AD. A group of six burials were recorded, four of which were urned. A notably rich burial included a glass cinerary urn placed within an amphora and probably represents the remains of a wealthy individual. A cremation burial of late Roman date was recorded away from the cemetery, demonstrating continual burial activity.

Further evidence of Roman activity includes a small-scale enclosure/field system demarcated by ditches, a possible post-built building or fence line, several pits, and a stone-lined water-tank and culvert. Pottery evidence suggests a focus of activity during the 2nd–3rd centuries AD, and continuing into the 4th century. Residual late Iron Age/early Roman pottery demonstrates a background presence within the immediate vicinity of the site during this period, while a gold *aureus* of Vespasian dating to the 1st century AD could indicate the purposeful deposition of a curated item. Many of the ditches contained slag waste from iron production and working, and two large slag deposits at the southern end of the site suggest industrial activity of the late Roman period, one being dated to the later 3rd or later 4th century AD from radiocarbon analysis of associated charcoal.

It is possible that small-scale industrial activity at the site continued or more likely reoccurred in the early medieval period. This is evidenced by two 8th–9th-century radiocarbon dates from charcoal samples recovered froma possible ore- or charcoal-burning furnace found close to the two slag deposits were recorded in the south-east of the site. Two pits or hearths containing burnt deposits, albeit undated, were either related to the later Roman or early medieval industrial activity.

Evidence of later medieval/post-medieval agricultural activity was largely concentrated in the south of the site, in the form of several ditches that appear to have defined two perpendicular trackways. A small number of pits containing later medieval and post-medieval finds also attest to associated land use. More modern land drains indicate continued agricultural activity, as demonstrated by historic mapping.

Acknowledgements

Oxford Archaeology would like to thank Nick Cooke of RPS Group for commissioning this project on behalf of ARC Farming Ltd. Thanks are also extended to Charles Parry who monitored the work on behalf of Gloucestershire County Council.

The fieldwork was managed for Oxford Archaeology by Gerry Thacker and the post-excavation programme was managed by Martyn Allen. The fieldwork was directed by Rebecca Peacock, who was supported by Elizabeth Connelly, Mark Dodd, Victoria Green, Elanor Stanley and Dan Sykes. Survey and digitising were carried out by Conan Parsons and Lucy Gane. Thanks are also extended to the teams of OA staff that cleaned and packaged the finds under the supervision of Leigh Allen, processed the environmental remains under the supervision of Rebecca Nicholson, and prepared the archive under the supervision of Nicola Scott.

1 INTRODUCTION

1.1 Background

1.1.1 Oxford Archaeology (OA) was commissioned by Nick Cooke of RPS Group on behalf of their client ARC Farming Ltd to undertake an archaeological excavation at the site of Ruddle Court Farm, Newnham, Gloucestershire, in advance of the construction of new farm buildings and associated work.

1.1.2 Targeted excavation of the *c* 1.9ha development site was undertaken to inform the planning authority in order to determine a submitted planning application (planning ref: P1866/18/FUL). A brief was set by Charles Parry, Historic Environment Advisor for Gloucestershire County Council, recommending that archaeological excavation be undertaken and an appropriate planning condition securing this work be attached to any planning permission that may be granted for the scheme.

1.1.3 This work followed an earlier archaeological investigation of the site, comprising a geophysical survey carried out in 2018 (Archaeological Surveys 2018) and subsequent trial trenching in 2019 (Border Archaeology 2019). The evaluation established the presence of significant archaeological remains, including a number of ditches, pits and cremation burials, as well as metalworking remains of regional archaeological importance.

1.1.4 Based on the results of the geophysical survey and trial-trench evaluation, it was recommended that a programme of archaeological excavation be undertaken across the site. A written scheme of investigation (WSI) was produced by CgMs Heritage (now RPS Group) detailing the local authority's requirements for work necessary to discharge the planning condition (CgMs 2019). Four excavation areas, totalling *c* 0.5ha, targeted the results of the preceding evaluation. This work was carried out by OA in June–July 2019 and in accordance with the WSI, which was approved by Gloucestershire County Council prior to the commencement of fieldwork.

1.1.5 The results of the fieldwork were summarised in a brief post-excavation assessment (PXA) statement, which concluded that the results of the fieldwork were of local to regional significance and had potential for further analysis (OA 2020).

1.2 Location, geology and topography

1.2.1 The site is located approximately 600m to the south-west of Ruddle Court Farm, which lies at the southern edge of Newnham village in west Gloucestershire (NGR 368150 210580; Fig. 1). A small stream forms the southern boundary of the site, while the western and northern sides are bounded by a farm track.

1.2.2 The underlying solid geology has been identified by the British Geological Survey as mudstone of the Mercia Mudstone Group, a sedimentary bedrock formed approximately 201 to 252 million years ago in the Triassic Period (BGS 2020). No overlying superficial deposits have been recorded.

1.2.3 The site consists of part of a field currently under pasture, roughly 2ha in extent. The land slopes down from north to south from 53.7m above Ordnance Datum (aOD) to *c* 41m aOD. The River Severn lies *c* 0.75km to the east of the site.

1.3 Archaeological and historical background

1.3.1 The archaeological and historic background of the site has been previously detailed in the WSI (CgMs 2019), based on information held in the Gloucestershire Historic Environment Record (HER) and other readily available sources. The following summary is drawn from this information and the results of the previous geophysical survey (Archaeological Surveys 2018) and archaeological evaluation (Border Archaeology 2019).

Prehistoric

1.3.2 There is a dearth of archaeological remains predating the later prehistoric period. Activity appears to have increased from the late Iron Age onwards and may have been linked to exploitation of local iron-ore sources. The scheduled Iron Age defended settlement at Soudley Camp lies *c* 2km west of Ruddle Court Farm, and an enclosure of probable prehistoric date is known *c* 1.6km to the north-west.

Roman

1.3.3 Evidence of Romano-British settlement is more extensive. This includes a possible villa some 1.5km north of Ruddle Court Farm at The Grange, near Cockshoots, where structural remains, including a probable tessellated pavement, and Malvernian pottery were recorded in the late 19th century. Another alleged Roman pavement was identified around the same time in the parish of Ruspidge and Soudley. A scatter of later Roman pottery, building material, industrial waste (including furnace lining) and human remains were discovered south of the Old Passage Inn, Arlingham. Much of the remaining known Roman evidence relates to land reclamation identified by the survey of Allen and Fulford (1990).

Medieval

1.3.4 Evidence for early medieval activity in the area is sparse and mostly limited to possible continued efforts at land reclamation. A manor at Ruddle belonging to the royal estate of Westbury-on-Severn was recorded by the Domesday survey. The manor was held by Walter Arblaster in 1086 and was passed to Gloucester Abbey in 1100. A medieval ringwork known to the south of Newnham is thought to date to the early post-conquest period and possibly served to command a bend in the river. A 13th-century farmstead called Haieden Green existed in Ruddle and is marked on the 1839 tithe map as 'Hayden Green'. A butcher's mill stood on the Whetstones Brook and can be traced back to 1227 when it was one of two mills in Newnham belonging to Hugh Charke.

1.3.5 Several open fields in the area are known to date to the 13th and 14th centuries, including 'Old field', 'Port field' and 'Bullo field'. These appear to have been enclosed by 1618, most likely as sheep pasture, though 10 selions of arable are recorded in

'Crookwiry field' in 1628. A possible late medieval boundary ditch was revealed during a watching brief in 1995 to the north of Newnham.

1.3.6 Much of the site and surrounding area was mapped as part of the Forest of Dean Mapping Project, which revealed earthwork remains of ridge and furrow, possible lynchets and headland banks (Small and Stoertz 2006).

Previous investigations

1.3.7 A geophysical survey of the site was undertaken in 2018, which identified areas of high magnetic signals, as well as linear anomalies thought likely to indicate archaeological features. Some of the signals were interpreted as possible ironworking furnaces and debris (Archaeological Surveys 2018).

1.3.8 A subsequent evaluation, comprising the investigation of seven trial trenches, was carried out by Border Archaeology (2019) in September–October 2018. The positions of six of these trial trenches are shown on Figure 2 where they were located close to the subsequently excavated areas—trench 1 was located slightly farther to the south-west. The evaluation revealed a number of archaeological features, including ditches, pits and cremation burials. Pottery recovered from features, mostly on the upper slope in the northern part of the site, was mostly of 2nd-/3rd-century AD date. Features on the upper slopes were interpreted as relating to Roman activity, though not necessarily of a domestic nature, since finds such as animal bones were notably scarce. Four of the seven trenches exposed material and features related to iron production, mainly concentrated on the lower slopes of the southern part of the site. Dating evidence from these areas, however, was slight. The archaeometallurgical study of the metalworking waste suggested that the industrial activity was either of later Iron Age or early medieval date, largely contradicting the Roman evidence found to the north.

1.4 Aims and objectives

1.4.1 As stated in the WSI (CgMs 2019), the primary aim of the excavation was to mitigate the effect of the proposed development on the surviving buried archaeological remains through archaeological investigation and recording, analysis of the excavated data, publication of the results and deposition of the project archive with an appropriate local museum.

1.4.2 More specific aims of the work were to establish a relative and absolute chronological framework for the site, particularly given the somewhat contradictory dating evidence produced during the evaluation.

1.4.3 The WSI stated that specific regard should be given to:

- Further define the extent, date and nature of the ironworking on the site; and
- Establish a clearer understanding of the date, form, function, evolution, extent and economic status of the Romano-British activity identified in the northern half of the site.

1.5 Fieldwork methodology

1.5.1 Excavation was undertaken in four areas (Areas A–D), totalling *c* 0.5ha, that were identified as requiring mitigation of archaeological remains prior to the development

of the site (Fig. 2). The excavation was undertaken in accordance with the brief set out by Charles Parry, Historic Environment Advisor for Gloucestershire County Council, and the WSI (CgMs 2019), and in compliance with OA standards and other professional guidelines (eg CIfA 2014a; 2014b).

1.5.2 Removal of the overburden deposits across all areas was undertaken by a mechanical excavator fitted with a toothless ditching bucket under constant archaeological supervision. The overlying topsoil and subsoil deposits were removed in spits down to the first archaeological horizon or the surface of the natural geology, whichever was uppermost.

1.5.3 After stripping, the resultant surfaces were hand-cleaned to expose the archaeological features, which were then surveyed to produce a digital pre-excavation site plan. All features were surveyed by GPS relative to the OS National Grid Refence system, and all levels were taken relative to Ordnance Datum. The survey data was capable of reproduction of plans at a scale of 1:100.

1.5.4 A sufficient sample of the revealed features was investigated by hand to establish their character and date, where possible. The seven cremation burials were excavated in their entirety by experienced OA staff in accordance with CIfA guidelines (McKinley and Roberts 1993). All pits including industrial hearths/furnaces were half-sectioned. One of the slag heaps was sampled with a 15m by 2m slot. All ditches and other non-structural linear features were subject to the excavation of a 20% sample, unless dating evidence was clear and the sampling strategy could be reduced (in consultation with the local planning archaeologist).

1.5.5 All features were hand-excavated stratigraphically and recorded using OA-standard context sheets in accordance with OA's recording system. Detailed plans were typically drawn at a scale of 1:20 and sections at a scale of 1:10. All detailed plans were subsequently related to the surveyed 1:100 plans.

1.5.6 A photographic record was maintained, comprising digital images illustrating both the archaeological features and the works in general.

1.5.7 All finds and environmental remains recovered by hand were recorded by context and subsequently washed and processed at OA South offices. All the stripped areas and the spoil heaps were scanned with a metal detector to increase the recovery of metal artefacts.

1.5.8 A total of 49 environmental bulk soil samples were collected from 36 contexts for the effective recovery of charred plant remains (including charcoal), waterlogged plant remains and cremated human remains from appropriate features. Typically, 40L bulk samples were collected from each deposit identified for sampling. Additional samples were collected from the alluvial deposit that was found to extend through Areas C and D.

2 STRATIGRAPHY

2.1 Introduction

2.1.1 Archaeological remains were encountered across the four excavation areas (Areas A–D). Four broad periods of activity have been identified based on the assessment of datable artefacts (predominately the pottery), radiocarbon dating and stratigraphic relationships, or where similarities in orientation and/or morphology suggest a relationship.

2.1.2 The majority of remains encountered on site have been dated to the Roman and post-medieval–modern periods, though evidence of Anglo-Saxon activity, notably ironworking, and medieval activity has also been identified. While a small proportion of the recorded features were undated/unphased, some were probably associated with Roman, Anglo-Saxon or post-medieval–modern activity.

2.1.3 A relatively low density of archaeological remains was uncovered across the excavated areas, though they comprised a range of features including ditches suggestive of enclosures and trackways, pits and postholes, cremation burials, a stone-lined pit and drain, alluvial deposits and deposits of ironworking slag.

2.1.4 The recorded archaeological features were generally found underlying topsoil and subsoil deposits, the majority cutting into the natural geology, which comprised orange-red silty clay (Areas A and B) and mixed brownish-red and grey silty clay (Areas C and D). The overlying topsoil and subsoil consisted of mid-to-dark reddish-brown silt/clay and mottled pinkish-grey silty clay respectively. An expanse of alluvium was exposed across Areas C and D and found underlying the subsoil. These deposits comprised mixed light grey-yellow, mid-blackish-grey and greyish-red clay.

2.1.5 Most features contained one to two fills of generally mid-to-dark greyish-/reddish-brown silty clay, though some of the large pits contained three to five fills. Notable deposits are described in more detail below, particularly where pertinent to the understanding of the nature/function of a deposit or feature.

2.2 Roman

Early–Middle Roman (mid-1st–early 3rd century AD)

2.2.1 The first phase of activity evidenced on site occurred during the early–middle Roman period (Fig. 3). No archaeological remains of demonstrably earlier date were identified within the excavated areas. Features dating to this phase included several ditches, a stone-lined pit and culvert in Area A (Fig. 4), and a cluster of cremation burials recorded to the south-west in Area C.

2.2.2 Ditch 69 extended from the northern edge of Area A to the south-east for a distance of *c* 12m, at which point it turned to the south-south-west and continued for a further *c* 30m beyond the southern limit of excavation. The ditch was 0.65–1.20m wide and 0.18–0.40m deep, with generally moderately sloping sides and a slightly concave base. It contained one to two fills from which small quantities of 1st- and 2nd-century pottery, animal bones, Roman ceramic building material (CBM), unworked burnt stone

and slag were recovered (Fig. 5). The pottery suggests that the ditch was infilled during the 2nd century.

2.2.3 Located in the south-east of Area A were two inter-cutting truncated lengths of ditches (73 and 74), both of which cut earlier ditch 69 (Fig. 3, see inset). Ditch 73 was stratigraphically the earlier of the two. It was slightly curved, positioned on a broadly E–W alignment. Measuring *c* 4.7m long with rounded terminals, it was 0.25–0.37m wide and 0.04–0.12m deep (Fig. 5, Section 6), with shallow sloping sides and a generally flat base. Small quantities of later 2nd-/3rd-century pottery and slag were recovered from its single fill. Ditch 73 was cut by NW–SE aligned ditch 74, which was *c* 5.2m long, up to 0.49m wide and 0.13m deep. It had shallow, sloping sides and a concave base, and contained a single fill from which three sherds of later 2nd-/3rd-century pottery were retrieved.

2.2.4 Approximately 3.5m to the south of ditches 73 and 74 was a stone-lined pit (67) and an associated stone-lined gully (48), interpreted as a water-tank and culvert respectively. Water-tank 67 comprised a sub-rectangular pit (37), *c* 2.15m (NW–SE) by 1.60m (NE–SE) and 0.35m deep (Fig. 4, Section 13). The cut of the feature (37) had steep, straight sides and a flat base that had been lined with roughly hewn stones (43). The stones appear to have been set into a clay lining (fill 68) that covered the sides and base of the pit. Overlying the stones was a sequence of five fills suggestive of natural silting following disuse. Slag was recovered from lower fill 42, while upper fills 38 and 39 contained two and five sherds of later 2nd-/3rd-century pottery respectively. Bulk soil sample 4, collected from charcoal-rich fill 38, and sample 6, collected from clay lining 68, did not produce any charred or waterlogged plant remains.

2.2.5 Extending off the south-west side of water-tank 67 was stone-lined culvert 48. It comprised a construction cut (49) with steep sides and a flat base, 0.60m wide and 0.34m deep (Fig. 4, Section 21). Its sides had been lined with stone (60 and 61), set into a lining/packing fill (62), and the drain capped with stone (66). The culvert had subsequently become infilled (fill 50). One sherd of broadly Roman pottery and a sherd of late post-medieval/modern pottery were recovered from this fill; the latter is considered to have been intrusive given the dating of the pottery from the fills of water-tank 67 and the density of other early–middle Roman features in Area A. Bulk soil sample 5, collected from fill 50, yielded frequent charred cereal grains of spelt wheat (the only charred plant material identified from the excavation). A ditch (58) extended from stone-lined culvert 48 towards the west-south-west for a distance of *c* 1.35m. Here the ditch was 0.50m wide and 0.20m deep, with moderately sloping sides and a flat base. No finds were recovered from this part of the drainage system.

2.2.6 Situated *c* 20m to the north-west of water-tank 67 and culvert 48 was a row of four postholes that may have formed a structure (71), perhaps a fence or one side of a small building. The four postholes were positioned on a NE–SW alignment for a distance of *c* 9.2m, spaced 1.7–2.6m apart. They were sub-oval in plan, ranging in size from 0.36m by 0.75m and 0.08m deep to 1.04m by 1.33m and 0.09m deep. None of the postholes exceeded a depth of 0.21m deep. Their profiles varied slightly, comprising moderately sloping to steep sides and concave to flat bases (Fig. 5, Section 2). They contained single fills of dark grey-brown silty clay. Small quantities of Roman CBM, slag and a single sherd of later 2nd-century pottery were recovered from posthole 21, while 26

sherds of 3rd-century pottery were retrieved from posthole 6, together with 2nd- or 3rd-century glass shards, slag and unworked burnt stone. Posthole 6 also contained two sherds of residual late Iron Age/early Roman pottery and a gold coin (SF 1) of Vespasian (AD 69–79), which may have been residual or was possibly a curated artefact. The pottery suggests that the potential structure fell out of use and was infilled in the 3rd century. Bulk soil samples 1 and 2, collected from the fills of postholes 6 and 11 respectively, produced further pieces of slag, as well as charcoal and coal fragments but no charred plant remains. The charcoal from sample 1 is dominated by oak and alder/hazel, with smaller quantities of ash.

2.2.7 Located in the north-east of Area A was pit 1003. Sub-oval in plan, it was 3.6m by 2m and 0.39m deep with a gently sloping east side and slightly steeper west side, breaking to a concave base (Fig. 5, Section 1002). It contained a basal fill (1004) indicative of initial silting of the pit. This was partially overlain by a stony deposit (1005) suggestive of a slump of material in the eastern side of the pit before it became completely infilled (1006). Small quantities of later 2nd-/3rd-century pottery, Roman CBM and slag were recovered from upper fill 1006.

2.2.8 Pit 160 was revealed in the south-west of Area C, where it was cut by post-medieval–modern trackway 217 (Fig. 6). Sub-circular in plan, the pit was 1.15m wide and 0.26m deep, with steep, straight sides and a flat base. It contained two fills: a lower fill of dark brown-black clay silt with frequent charcoal inclusions (162) overlain by a pink-brown silty clay with occasional charcoal and stone inclusions (161). A small shard of probable Roman glass and two pieces of amorphous fired clay were retrieved from its lower fill. The pit is characteristic of an oven/hearth, though its exact date is unclear.

Cremation burials

2.2.9 Evidence of early–middle Roman activity was also found to the south-west in the form of a cluster of six cremation burials (103, 108, 109, 112, 120 and 141) encountered in Area C (Fig. 6). Although heavily truncated from recent ploughing activities, the cremation burials, of which four were urned and two unurned, are presumed to have been a small unenclosed cemetery that probably spanned at least the 2nd century AD, though it may have originated in the 1st century (see below).

Lab. code	Material	Context/ sample no.	F14C value ($\delta^{13}C$ value)	RC Age BP	Calibrated Age 95% probability	Calibrated Age 68% probability
UBA-44472	Human bone	111 <102> (Burial 109)	0.7775	2022 ± 24	91–78 cal BC (2.5% confidence) 54 cal BC–cal AD 63 (97.5% confidence)	44 cal BC–cal AD 14 (100% confidence)
UBA-44473	Human bone	137 <108> (Burial 108)	0.7941	1852 ± 24	cal AD 127–238 (100% confidence)	cal AD 132–139 (8.8% confidence) cal AD 162–189 (34.6% confidence) cal AD 201–234 (56.6% confidence)
SUERC-105089	Charcoal: *Corylus avellana*	204 <129>	(-25.9 ‰)	1682 ± 24	cal AD 260–279 (11.6% confidence) cal AD 337–420 (83.8% confidence)	cal AD 268–271 (2.2% confidence) cal AD 362–415 (66.0% confidence)
UBA-44474	Charcoal: *Alnus* sp.	202 <128>	0.8625	1188 ± 17	cal AD 774–791 (17.4% confidence) cal AD 798–814 (6.8% confidence) cal AD 816–889 (75.9% confidence)	cal AD 775–776 (1.7% confidence) cal AD 780–788 (15.1% confidence) cal AD 828–860 (58.8% confidence) cal AD 868–883 (24.5% confidence)
UBA-44475	Charcoal: *Alnus* sp.	201 <127>	0.8590	1221 ± 29	cal AD 687–697 (1.6% confidence) cal AD 702–741 (16.5% confidence) cal AD 722–887 (81.8% confidence)	cal AD 709–711 (2.4% confidence) cal AD 774–776 (1.6% confidence) cal AD 785–835 (62.6% confidence) cal AD 845–877 (33.4% confidence)

Table 1: Summary of radiocarbon dating results (the calibrated age ranges were determined in CALIB REV8.2 using the IntCal20 curve)

2.2.10 Cremation burial 103 was placed in a sub-circular pit (104), measuring 0.5m in width and 0.05m in depth, with moderately sloping sides and a slightly flat base (Fig. 7, Section 100). Placed within the eastern half of this was a fragmented, incomplete 2nd-century jar (SF 100), which contained the cremated remains in a dark grey-brown silty clay (106) and retrieved as bulk soil samples 100, 122 and 142, from which oak and alder/hazel charcoal has been identified. A single sherd of later post-medieval/modern pottery was intrusive within cremation deposit 106. Jar SF 100 and its cremated remains may have been capped with a large, approximately square, grinding stone. The backfill of the burial pit comprised a mid grey-brown silty clay (105), collected as bulk sample 101. In total, 918.4g of cremated bone were recovered, identified as an adult individual of undetermined sex.

2.2.11 Located *c* 1.1m south of 103 was cremation burial 112. It comprised a small sub-circular pit (113), 0.3m wide and 0.06m deep (Fig. 7), with moderately steep sides and a slightly flat base. Placed with the centre of this was the lower part of a 2nd-century Severn Valley ware jar (SF 101), filled with cremated remains in a dark grey-brown silty clay (115), collected as bulk soil sample 105. The burial pit was filled with a reddish-brown silty clay (114), collected as soil sample 104. Just over 150g of cremated bone were recovered from deposits 114 and 115, which together was identified as the remains of an adult of undetermined sex.

2.2.12 Unurned cremation burial 109 was situated *c* 0.7m to the south-east of burial 112. It was formed of a small sub-circular pit (110) that measured 0.25m by 0.22m and 0.06m deep and had moderately steep sides and a slightly concave base. It was filled with a dark brown clay silt (111), collected as bulk soil sample 102, that contained a single pottery sherd of probable 2nd-century date and cremated bone fragments. Material collected during the cleaning of the burial prior to excavation was recorded as deposit 147 and collected as bulk soil sample 103. Only 26.5g of cremated bone were retrieved and identified as an adult of undetermined sex. A sample of human bone (comprising one skull and three long-bone fragments) from sample 102 produced a radiocarbon date of 91 cal BC–cal AD 63 (UBA-44472, 2022±24, 95% probability; Table 1). This late Iron Age/early Roman radiocarbon date is out of keeping with the result of a second radiocarbon date (see below) and all the artefactual material recovered from these burials which otherwise strongly suggest a 2nd-century date. It is possible that the radiocarbon date is correct and the pottery sherd from this feature is earlier than suggested, which would perhaps signify cremation burial 109 as a foundation burial for the group. Alternatively, it is feasible that the radiocarbon date has been biased by the 'old wood' affect, whereby the bone has become contaminated during the combustion process by the age of the wood used on the pyre, effectively taking on the older age of the timber (eg Olsen *et al.* 2013).

2.2.13 No more than 0.55m to the east of 109 was cremation burial 120, which was placed within a sub-circular pit (121). The cut of the pit was *c* 0.5m wide and 0.05m deep with a flat base (Fig. 7, Section 104). Located within the centre were nine body sherds from a 2nd-century jar (SF 105), which contained a fill of grey-brown silt (122) with cremated bone fragments and an additional, miscellaneous pottery sherd, retrieved as bulk soil sample 106. The burial pit was backfilled with a pinkish-brown clay silt (144), collected as soil sample 107. In total, only 15.6g of cremated bone was

recovered from deposits 122 and 144, which could be identified as the remains of an unsexed adult.

2.2.14 Unurned cremation burial 141 was adjacent to the southern side of 120. It comprised a similar *c* 0.5m wide and 0.05m deep sub-circular pit (142), with steep sides and a flat base. It contained a deposit of cremated bone fragments (137), collected as bulk soil sample 108, and had been backfilled with a dark grey-brown clay silt (143). Just 10g of cremated bone were retrieved from the burial, including a fragment of bone (recorded as context 138 and considered a part of burial 141) recovered *c* 0.10m south of pit 142. These remains have been identified as an unsexed adult. A human long-bone fragment from sample 108 produced a radiocarbon date of cal AD 127–238 (UBA-44473, 1852 ± 24, 95% probability; Table 1).

2.2.15 Cremation burial 108 was the most north-easterly of the burials and also the largest and most richly furnished. The burial pit (151) measured 1.76m by 1.56m and 0.13m deep, with steep sides and a concave, albeit uneven, base (Fig. 7, Section 111). The burial pit appears to have been lined or packed with stones (153) and a construction fill (152), with 20 iron nails/fragments and unworked burnt stone recovered from the latter. Placed roughly within the centre of the pit was the lower part of a mid-2nd-century, globular, Baetican Dressel 20 amphora (SF 113). Within the amphora base was a glass vessel (SF 112) of probable 2nd-century date, which was used as a cinerary urn and contained cremated bone remains within a yellowish-brown silty clay (149), retrieved as bulk soil samples 131–7. Only a small quantity of charcoal, including oak and alder/hazel wood, was found within the soil samples collected from within vessel SF 112. A small piece of pottery that had been deliberately shaped, and potentially used as a stopper, was also found in fill 149. Surrounding glass vessel SF 112 and filling amphora SF 113 was a yellowish-brown silty clay (154), collected as soil samples 113–17, which contained predominately oak and alder/hazel charcoal. Twenty-six iron nails/fragments and four sherds of 2nd-century pottery (SFs 106–9) were also recovered from this fill, with the latter having potentially capped the glass cinerary urn.

2.2.16 Within the burial pit, adjacent to the amphora, was a charcoal-rich deposit of dark brownish-grey silty clay (156), possibly representing pyre material, and the remains of another broken Gaulish amphora (SF 114) of mid-2nd-century date. Collected as soil sample 19, the deposit contained predominately oak, alder and alder/hazel charcoal. Owing to the fragmentary nature of the vessel, it is not clear if it originally contained deposit 156 or perhaps other goods/foodstuffs as part of the burial rite. In total, 161 iron nails/fragments (including SFs 103, 104, 110, 111, 115–20; Fig. 13) were also recovered from this deposit. The burial pit was then sealed by a yellowish-brown silty clay (157) from which 69 sherds of mid–late 2nd-century pottery and a further 54 iron nails/fragments were recovered. In contrast to the other cremation burials, a total of 2034.3g of cremated bone was retrieved from deposits 149, 152, 154, 155 and 157, the vast majority from deposit 149 within glass vessel SF 112, and have been identified as a possibly male adult. A further 16.5g of cremated bone, identified as an unsexed adult, were recovered from deposit 156.

Later Roman (3rd–4th century AD)

2.2.17 In Area A, ditch 70 extended south-westward from a rounded terminal for a distance of *c* 33.2m and was found to continue in this direction for a further *c* 4.3m in Area B (Fig. 3). The ditch was 0.30–0.80m wide and 0.05–0.20m deep and was generally narrower and shallower at its north-eastern end. The ditch had moderately sloping sides and a concave base, slightly irregular in places. It contained a single fill, with only two sherds of mid-3rd-century or later pottery and slag being recovered.

2.2.18 Located *c* 15.5m to the south-east was ditch 72. This ditch was parallel with ditch 70, but measured only 8.1m long. It had rounded terminals at each end and its north-east terminal cut posthole 6 of early–middle Roman structure 71 (Fig. 5, Section 2). The ditch was 0.49–0.67m wide, 0.07–0.22m deep and had moderately sloping sides and a slightly flat base. It contained one to two fills from which residual late 2nd-century pottery, later 3rd- to 4th-century pottery and glass, and slag were retrieved, most of which was concentrated in the upper fill of its north-east terminal. Bulk soil sample 3, collected from this upper fill, yielded further fragments of pottery as well as 16 iron nails/fragments.

2.2.19 Approximately 12m to the north of ditch 72 and *c* 7m west of ditch 70 was sub-oval pit 1009. The pit measured 1.55m by 1.65m and had steep straight sides that reached in excess of 1m deep. Its base was not reached, as the depth of the feature exceeded excavation safety regulations (Fig. 5, Section 1004). Within the pit, a clay lining and redeposited natural were identified, over which lay a sequence of four fills, suggesting that the pit may have originally functioned as a well or a tank to contain water before being backfilled. Finds recovered from the pit, comprising 3rd-century or later pottery, Roman CBM, unworked burnt stone and slag, were concentrated in two of the upper fills, 1011 and 1018. Bulk soil sample 1001, collected from fill 1018, produced further pieces of pottery, as well as fragments of animal bone, a piece of structural fired clay perhaps from a hearth floor and an amorphous iron fragment.

2.2.20 In the west of Area D, slag deposit 204 covered an area of c 5m (NW–SE) by *c* 4m (NE–SW) and comprised a dark blackish-grey silty clay, *c* 0.75m thick (Figs 9 and 10). It was found overlying alluvial deposit 198/205 and was overlain by a further alluvial deposit (197) (see below). Where excavated, slag was hand collected from deposit 204. A charcoal sample recovered from within this slag heap returned a radiocarbon date of cal AD 260–420 (95.4% confidence, 1682 ± 24 yrs BP, SUERC-105089), with a strong possibility that it had been charred in the second half of the 4th century AD (*c* cal AD 360–415, 66.0% confidence) (Table 1). A second area of a similar slag deposit was observed in the south-eastern part of Area D, though this was not fully exposed within the excavated area and was recorded in plan only.

Cremation burial

2.2.21 An isolated cremation burial (132) was located in the north-west of Area C, which was spatially and chronologically distinct from the cremation burial group found at the southern end of this excavated area (Figs 6 and 8). This comprised a sub-circular pit (133), *c* 0.30m by 0.28m and 0.12m deep, with moderately sloping sides and a concave base. Placed just to the west of the centre of the pit was the lower part of a later 3rd-/4th-century decorated Dorset black-burnished ware jar (SF 102) containing cremated bone fragments in a light blackish-grey silty sand (135), retrieved as samples 138–41.

The backfill of the burial pit consisted of a light yellowish-grey silty sand (134), collected as bulk soil sample 112. Overlying this was a possible alluvial deposit (136), collected as bulk soil sample 111. Two fragments of cremated bone were found within this alluvial deposit and were recorded separately (146), though it is probable that they originated from the main cremation deposit, perhaps having been disturbed by later ploughing. In total, 241.6g of cremated bone were retrieved from deposits 134, 135, 136 and 146, and were identified as an adult, possibly male, individual.

2.3 Anglo-Saxon

2.3.1 Pit 200 was found to cut alluvial deposit 198/205 about 22m east of late Roman slag heap 204 and 10m north-west of the undated slag heap in this area (Fig. 9). Sub-oval in plan, it was 1.42m by 1.08m and 0.22m deep, with moderately sloping sides and a slightly concave base, though this was not clear during excavation (Fig. 10). It contained three fills: a possible basal fill (203) comprised redeposited or mixed alluvium, though it was not clear during excavation if this was a true fill of the pit or part of alluvial deposit 198/205; overlying this was a dark greyish-black, charcoal-rich deposit (202), which was in turn overlain by an upper fill of mixed alluvium (201). Unworked burnt stone was hand-collected from the upper fill, while the lower fills were devoid of finds.

2.3.2 Bulk soil samples 127 and 128, collected from fills 201 and 202 respectively, produced charcoal from which radiocarbon dates have been obtained. A sample of alder charcoal from soil sample 128 produced a radiocarbon date of cal AD 774–889 (UBA-44474, 1188 ± 17 years BP, 95% probability), while alder charcoal from soil sample 127 produced a date of cal AD 687–887 (UBA-44475, 1221 ± 29 yrs BP, 95% probability) (Table 1). The morphology of pit 200 and its burnt deposits are suggestive of a furnace or charcoal-burning pit, albeit heavily truncated. Initially, it was thought that the pit was contemporary with the nearby slag deposits and was probably associated with iron production. However, the radiocarbon dates demonstrate that these features were clearly of different periods, though it is possible that pit 200 was associated with industrial activity in the early medieval period. No evidence of any other Anglo-Saxon features was revealed in the excavation areas, suggesting that any associated activity was located beyond the site boundary.

2.4 Later medieval

2.4.1 Located in the north-west of Area C, sub-oval pit 185 measured 1.30m by 1.05m and 0.20m deep, with steep sides and a flat base (Fig. 6). It contained a sterile lower fill (189) suggestive of natural infilling that was overlain by a charcoal-rich deposit (186) from which eight sherds of 13th- to 15th-century pottery were recovered.

2.4.2 Shallow sub-oval pit 139 was situated amongst the cluster of cremation burials in the south of Area C, *c* 21.7m south of pit 185. It was 0.96m by 0.73m and 0.06m deep with shallow, gently sloping sides and a slightly concave base. Two sherds of pottery were recovered from its single fill, one of broadly Roman date and the other of medieval date. The Roman pottery is likely to have been residual, though the pit's location within the cluster of Roman cremation burials and the degree of truncation in this part of the site may have resulted in the disturbance of a Roman pit. Further sherds of medieval

pottery were recovered as residual finds in later features of post-medieval–modern date.

2.5 Post-medieval–modern

2.5.1 Two parallel ditches on a NNE–SSW alignment, spaced *c* 3.3m apart, crossed the western part of Area C and continued beyond the excavation limits in both directions (Fig. 6). These ditches probably demarcated a trackway (216), with breaks in the ditches suggestive of possible entrances into adjacent fields. The ditches were 0.53–0.65m wide and, where excavated, 0.08m deep, with gently sloping sides and flat bases. No finds were recovered from these ditches, though the western ditch of trackway 216 appeared to have cut unexcavated ditch 126, the surface of which produced four sherds of post-medieval/modern pottery. Ditch 126, at 0.65m wide, extended to the north-west for *c* 10m, extending beyond the excavation limit, and in the other direction it did not continue to the south-east of the trackway ditches.

2.5.2 A tree-throw hole (183), measuring 0.80m wide and 0.20m deep, was adjacent to ditch 126. Irregular in plan, it had irregular sloping sides and a slightly concave, albeit uneven, base. A sherd of post-medieval pottery, a piece of 13th/14th-century roof tile, two fragments of possible medieval CBM or fired clay, a relatively large quantity of animal bones and three shards of post-medieval/modern glass were retrieved from its single fill. The remains of a red-brick-and-stone-wall foundation (125), measuring *c* 3.36m in length and 0.48m in height, were also recorded in this area within the north-west baulk of Area C (west of the alluvial deposit). They were not recorded in plan, but seven sherds of post-medieval/modern pottery were recovered from the rubble.

2.5.3 Trackway 216 was accompanied by a second perpendicular trackway (217) at its southern end where there was a break in the ditches. This second trackway was defined by two parallel ditches, *c* 2m apart, that crossed the south-west corner of Area C on a WNW–ESE alignment for *c* 6–13m. They were 0.58–0.88m wide, 0.12–0.26m deep and had moderately steep sides and a slightly concave base. The ditches each contained a single fill from which only slag was recovered. Nevertheless, their position and alignment are suggestive of their probable post-medieval date. The northern trackway ditch cut possible Roman pit/oven 160.

2.5.4 A large ditch (218) in the central-northern part of Area C cut into an alluvial deposit of light greyish-red clay, which formed part of a wide spread of alluvium that extended across the centre of the excavation area. The ditch extended from the northern limit of the excavated area to the south-west for *c* 12.1m at which point it turned to the north-west and continued for a further *c* 16.2m. Although the ditch was not identified in evaluation Trench 6, it was found to continue to the north-west where it cut trackway 216. At the southern corner of the ditch, it extended further south for approximately 7.5m, ending in a rounded terminal. The ditch was 1.20–1.44m wide and 0.24–0.27m deep with moderately sloping sides and a flat-to-concave base. Although slag and a sherd of medieval pottery were recovered from the ditch, the stratigraphic relationship of its probable north-west continuation with the post-medieval trackway ditches are suggestive of its post-medieval or later date.

2.5.5 The north-western continuation of ditch 218 was cut by pit (130). Extending beyond the northern limit of the excavated area, the pit was sub-oval in plan, measuring at least 1.90m long by 1.42m wide. Although unexcavated, 15 sherds of residual later medieval/early post-medieval pottery were recovered together with three sherds of 17th-century or later pottery, coal and slag from the surface of the pit.

2.5.6 Two inter-cutting pits were located *c* 4m to the south-west of ditch 218. Sub-rectangular pit 175 was 2.62m by 1.20m and generally had steep sides. It was excavated to a depth of 0.70m, though its base was not reached. Its single fill (176) contained two sherds of presumably residual medieval pottery, as well as a piece of medieval/Tudor CBM, animal bones and slag. Cutting into this fill was smaller, sub-oval pit 173. It was 1.7m by 1.4m and 0.21m deep, with moderately steep sides and a slightly flat base. Its single fill (174) contained a sherd of 17th-century or later pottery, animal bones and a fragment of post-medieval brick. These pits cut another, oblong-shaped pit to the south, which was similar in plan to three other pits farther south, though none of these produced datable material.

2.5.7 A series of inter-cutting ditches encountered in the eastern part of Area C, some of which were on similar alignments to ditch 218, and probably formed a series of small enclosures. Spaced no more than 0.95m apart, parallel ditches 192 and 194 were aligned NE–SW and recorded for a distance of 10m and 18.2m respectively. They were 0.76–0.84m wide and 0.06–0.08m deep, with shallow, gently sloping sides and flat bases. They contained similar single fills. A sherd of post-medieval pottery and slag were recovered from ditch 192, while a residual sherd of 2nd-/3rd-century pottery was retrieved from ditch 194.

2.5.8 Cutting ditches 192 and 194 was perpendicular ditch 171, which was recorded for a distance of *c* 27.8m from the eastern edge of Area C, ending in a slightly pointed north-west terminal, *c* 2.7m short of ditch 218. Ditch 171 cut into the alluvial deposits in the central part of the excavated area. Measuring 0.66m in width and 0.20m in depth, it had moderately sloping sides and a flat base. Although no finds were collected from this ditch, its position and alignment are suggestive of a post-medieval or later date.

2.5.9 Ditch 171 also cut ditch 163, which was perpendicular to it and roughly parallel to 192 and 194. Ditch 163 had a rounded south-west terminal and continued to the north-east for *c* 17.4m beyond the excavation limit. The south-east end of the ditch cut the alluvial deposits seen in the centre of the excavation area. Slag was retrieved from its single fill, but this may have been residual. The dating of this ditch remains unclear, but given its orientation in relation to the other ditches, and the fact that it cut the alluvium, suggests that it was post-medieval.

2.5.10 Crossing the north-east corner of Area C was NW–SE aligned ditch 206. Extending beyond the excavation limits in both directions, it was recorded for a distance of *c* 8m and was 1.2m wide. The ditch was not excavated, as an early 20th-century button was recovered from its surface, demonstrating its recent date.

2.5.11 Several modern, probably 20th-century, land drains found crossing the excavation areas on differing alignments to the post-medieval ditches demonstrate the continued agricultural use of the landscape into the modern era.

2.6 Undated features

2.6.1 A small number of undated archaeological features and alluvial deposits were recorded across the excavation areas. They contained no diagnostic artefacts and shared no significant stratigraphic or spatial relationships with other dated features. Most are likely to belong to the Roman period, though some may relate to early medieval, later medieval or post-medieval activity. These features include, but are not limited to, ditches 1014 and 1016, pits 29 and 63, and tree-throw hole 35 in Area A (Fig. 3), pits 123 and 179 in Area C (Fig. 6), and pit 190 in Area D (Fig. 9).

2.6.2 Of particular note is large sub-circular pit 179 located in the south of Area C. Measuring 3.02m in length by 2.95m in width and 0.20m in depth, it had shallow steep sides and an uneven base. It contained a lower fill (182) comprised an extremely charcoal-rich deposit, which was partially sealed by patches of mixed burnt clay and redeposited natural (181) (Fig. 8, Section 122). No finds were recovered from the feature. Given the character of the pit and its fills, it is possible that it comprised the remains of a furnace of charcoal-production pit, as it was similar to early medieval pit 200 in Area D.

2.6.3 Similarly, sub-oval pit 190 in Area D may have comprised the truncated remains of another potential furnace or charcoal-burning pit. It was located *c* 24.2m to the west of early medieval pit 200, just to the south of late Roman slag deposit 204. It was cut into alluvial deposit 198/205 and was also cut by a modern land drain. The pit was 2.08m wide and up to 0.14m deep, with shallow, gently sloping sides and a flat, albeit uneven, base (Fig. 10, Section 119). It contained a sequence of two fills: a lower fill (199) of mixed pinkish and greyish brown silty clays with occasional charcoal and burnt stone inclusions and an upper fill (191) of mottled dark greyish brown silty clay with frequent charcoal and burnt stone inclusions. No finds were hand collected from either fill.

2.6.4 Undated pit 123 was located *c* 10.5m to the west of pit/furnace 179, within the area of the Roman cremation burials. It was 0.76m by 0.46m and 0.07m deep, with shallow sides and a concave, albeit uneven, base. No finds were recovered from its single fill. It is possible that this pit was related to the Roman funerary activity but could have been a later feature.

Alluvial deposits

2.6.5 An extensive area of alluvial deposits was encountered across Area D (Fig. 9). In the west of the excavation area the following stratigraphic sequence was recorded. Underlying the subsoil was a pinkish-brown silty clay (196), *c* 0.22m thick, below which was a dark brownish-pink silty clay (197), *c* 0.08m thick. The latter contained frequent inclusions of slag and overlay undated pit 190 and late Roman slag deposit 204 in the west of Area D. Pit 190 and early medieval pit 200 both cut into an alluvial deposit of pinkish-brown silty clay (198/205), which was also found to underlie slag deposit 204. Alluvial deposit 198/205 was revealed across the majority of Area D. The thickness of the deposit is unknown, as excavation did not go below the proposed development impact depth. Where excavated, slag was collected from alluvium 198/205.

2.6.6 A wide spread of alluvial or hillwash deposits was also recorded extending across the centre of Area C on a NNW–SSE alignment (Fig. 6). Having accumulated in natural hollows within the underlying natural mudstone geology, sample excavation on the eastern edge of these deposits revealed a sequence of light greyish-yellow clay (165) overlying blackish-grey clay (166), which overlay greyish-red clay (167), all of which were *c* 0.20–0.24m thick. Towards the southern end of the excavation area, a 1m by 1m sondage (177) recorded two alluvial deposits of yellowish-orange silty clay and pinkish-orange silty clay, *c* 0.06–0.19m thick, which also contained some slag. Undated and post-medieval features, as well as later land drains, cut into these alluvial deposits.

3 ARTEFACTS

3.1 Pottery *by Jane R. Timby*

Introduction

3.1.1 The archaeological excavation produced an assemblage of some 1493 sherds, weighing *c* 22kg, and with 4.25 estimated vessel equivalents (EVE) dating to the Roman and medieval periods. In addition, there are some 19 sherds (215 g) dating to the post-medieval period, which are not considered further.

3.1.2 Pottery was recovered from 35 individually recorded cuts all within Areas A, B and C, some of which have been amalgamated into feature groups. Quantities ranged from single sherds to a maximum of 48 sherds from ditch 72, but the sherd count is slightly biased by vessels from the burials. Following a summary of the composition of the pottery, the distribution of material across the site is discussed and a final summary placing the assemblage into its local and regional context.

Methods

3.1.3 The pottery was recorded using recommendations outlined in published pottery standards (Barclay *et al*. 2016). Known or traded Roman wares are coded with reference to the *National Roman Fabric Reference Collection* (NRFRC) (Tomber and Dore 1998). Other Roman wares are either coded using a similar format to that used in the NRFRC or coded more generically according to the firing colour, inclusion type and texture. The medieval sherds are coded using the Gloucester type fabric codes (Timby and Tyers 2020).

3.1.4 The sorted assemblage was quantified by sherd number and weight. Freshly broken sherds were counted as single pieces. Rims were additionally coded to form and measured for the diameter and the estimation of rim equivalence (EVE) (cf Orton *et al*. 1993). Existing published corpora have been used where relevant. Details of decoration and surface treatment, unless not clear from the fabric designation, have been added, along with any evidence of vessel modification or use. The data were entered onto an MS Excel spreadsheet, a copy of which is deposited with the site archive.

Description of Roman fabrics and forms

3.1.5 Most of the assemblage, 1465 sherds (99.5%), dates to the Roman period, with a mixture of continental and regional imports alongside wares of more local origin (Table 2). Continental imports include fine tablewares (eg samian and black-slipped ware) and amphorae. The samian is limited to just four sherds: three of Central Gaulish (Lezoux) origin and one East Gaulish (Argonne) piece. The former include single sherds from dishes Dragendorff 35/6 and 79 (Dragendorff 1895). One very small sherd of Central Gaulish black-slipped beaker came from a posthole of structure 71. Amphorae sherds are particularly well represented, accounting for 59.2% of the overall sherd count and 81.8% by weight, but largely represented just two vessels associated with cremation burial 108: one from Baetica, Southern Spain, and the other a Gaulish wine

amphora. The Baetican sherds have all come from the lower part of a single vessel in fragmented condition but of globular form and probably a Dressel 20, originally used to transport olive oil. Most, although not all, the Gallic sherds were from the same burial and include a small rim fragment to suggest the form is a Gauloise form 4 (Laubenheimer 1985, 288–90), used to transport wine.

3.1.6 Regional wares are dominated by Dorset black-burnished wares (DOR BB1), comprising jars, plain-sided dishes, a grooved-rim bowl and flanged-rim conical bowls. The jars include examples with right-angle burnished latticing and oblique angle latticing that, together with the bowls, suggest a later 2nd- to 4th-century date for this material. Other regional imports are limited to small numbers of sherds with products from the Oxfordshire industries, Mancetter-Hartshill, South-west and North Somerset areas. Amongst the Oxfordshire products is a whiteware (OXF WH) bowl (Fig. 11, no. 1) (Young 1977, type W54 variant) current in the 2nd–3rd centuries and a late Roman red-slipped (OXF RS) mortarium sherd. The North Somerset vessel is a single jug with a bifid rim and the Mancetter-Hartshill sherds (MAH WH) are from mortaria.

3.1.7 Amongst the more local wares are three sherds of Palaeozoic limestone-tempered ware (MAL RE B) probably from the Woolhope Hills area, along with several sherds of Severn Valley ware (SVW OX) and Lower Severn Valley grey micaceous ware (Gloucester TF 5). Severn Valley wares account for 14.9% of the Roman assemblage and include examples of necked and flared rim jars (Fig. 11, nos 2–4), tankards and at least one handled bowl. Amongst the Lower Severn Valley wares (LSV RE) is a beaded rim jar (Fig. 11, no. 5). There are at least eight grog-tempered 'native' wares (Glos TF 2) and a few unprovenanced sherds likely to be of local origin.

Medieval wares

3.1.8 A small group of 28 sherds of medieval date were recovered (Table 2). Most of the sherds are local wares from the Herefordshire area (Glos TF 42 and 52), accompanied by two pieces of Minety ware from North Wiltshire. Most of the sherds are from plain jars (Fig. 11 no. 8), but there is one glazed jug with a round-section handle (Fig. 11 no. 7).

	Fabric code	Description	No.	No. %	Wt (g)	Wt %	EVE	EVE %
Roman								
Imports	LEZ SA 2*	Central Gaulish samian (Lezoux)	3	0.2	22.5	0.1	0.06	1.5
	ARG SA*	Argonne samian	1	0.1	8	0.0	0	0.0
	CNG BS*	Central Gaulish black-slipped ware	1	0.1	0.5	0.0	1	24.6
	BAT AM2*	Baetican amphora	538	36.7	16185	75.3	0	0.0
	GAL AM*	Gallic amphorae	330	22.5	1389.5	6.5	0.05	1.2
Regional	DOR BB 1*	Dorset black burnished ware	320	21.8	649	3.0	0.96	23.6
	MAH WH*	Mancetter-Hartshill whiteware	2	0.1	28	0.1	0	0.0
	NSOM RE	N Somerset grey ware	1	0.1	31	0.1	0.25	6.1

	Fabric code	Description	No.	No. %	Wt (g)	Wt %	EVE	EVE %
	OXF RS*(M)	Oxford red-slipped mortaria	1	0.1	2	0.0	0	0.0
	OXF WH*	Oxford white ware	4	0.3	3	0.0	0.19	4.7
	SOW OX*	South-west oxidised ware	4	0.3	13	0.1	0	0.0
Local	MAL RE B	Palaeozoic-limestone-tempered	3	0.2	7	0.0	0	0.0
	SVW OX*	Severn Valley ware (oxidised)	218	14.9	2903	13.5	1.48	36.4
	LSV RE	Lower Severn Valley micaceous ware	21	1.4	205.5	1.0	0.08	2.0
	BWSY	Black sandy ware	5	0.3	9.5	0.0	0	0.0
	GYSY	Grey sandy ware	1	0.1	2	0.0	0	0.0
	GYOR	Grey organic-tempered	1	0.1	3	0.0	0	0.0
	MISC SY	Misc. Reduced sandy	2	0.1	9	0.0	0	0.0
	OXID	Misc. Oxidised ware	1	0.1	0.25	0.0	0	0.0
Grog	GR2A	Grog-tempered (Glos TF 2A)	2	0.1	4	0.0	0	0.0
	GR2B	Grog-tempered (Glos TF 2B)	6	0.4	13	0.1	0	0.0
Total			*1465*	*100.0*	*21487*	*100.0*	*4.07*	*100.0*
Medieval								
	Glos TF42	Sandy wares (?Herefordshire)	12	42.9	170	32.1	0.07	38.9
	Glos TF44	Minety ware	2	7.1	21	4.0	0	0.0
	Glos TF52	Herefordshire Border ware	14	50.0	338	63.9	0.11	61.1
Total			*28*	*100.0*	*529*	*100.0*	*0.18*	*100.0*

Table 2: Quantification of Roman and medieval pottery fabrics (*NRFRC codes)

Chronology and site distribution

Area A

3.1.9 Area A produced 178 sherds of pottery, weighing 1572g. Many of the groups are very small and dating is only approximate. One of the earliest features appears to be ditch 69, with 17 sherds of pottery including grog-tempered wares, SVW OX and two sherds of Mancetter-Hartshill (MAH WH) mortaria. The last suggest the ditch was abandoned during the 2nd century, although the grog-tempered wares usually indicate an earlier Roman or pre-Roman date. Other features suggesting a later 2nd- to 3rd-century focus include the stone-lined water-tank 67, curvilinear ditches 73 and 74, and pit 1003. The water-tank (67) produced a tiny sliver of Lezoux samian and the OXF WH bowl, which could be 2nd- or 3rd-century in date. Possible structure 71 probably also has a 3rd-century date of abandonment, as demonstrated by an oblique latticed DOR BB1 jar, a samian dish Drag. 79, LSV RE ware, the small chip of imported beaker (CNG BS) and SVW OX ware; two sherds of MAL RE B from this feature are presumably redeposited sherds. Pit 1009 contained 47 sherds that include a North Somerset jug, a bifid rim jar and handled bowl in SVW OX, a DOR BB1 jar decorated with an oblique lattice and LSV RE ware, all likely to be of 3rd-century or later date. Ditch 72 produced 48 sherds, amongst which are DOR BB1 grooved-rim and flanged-rim conical bowls, further

samian (including one East Gaulish piece), LSV RE and SVW OX, and is one of the later features dating to the later 3rd–4th century.

Area B

3.1.10 This excavation area yielded just two sherds of pottery (5g) from ditch 70, one of which is a sherd of OXF RS mortaria, indicating a late Roman presence.

Area C

3.1.11 Area C yielded a very mixed assemblage of 1123 sherds dating to the Roman, medieval and post-medieval periods. Nearly all the Roman pottery from this excavation area was associated with five of the seven burials, in particular cremation burials 103, 108, 112, 120 and 132.

3.1.12 Urned cremation burial 103 produced 130 sherds (1815g), one of which is an intrusive sherd of modern china. The other sherds come from a fragmented, incomplete, flared rim jar in SVW OX.

3.1.13 Urned cremation burial 108 produced a total of 865 sherds of pottery (17.5kg), most of which belongs to two amphorae. The lower part of a globular Baetican amphora (SF 113), probably a Dressel 20, accounts for 62% of the sherds. This contained the glass cremation vessel (SF 112). As the glass vessel would have been too large to insert into a compete amphora, it must be assumed that the amphora was deposited in an already broken state. A further 37% of the sherds came from a flat-bottomed Gaulish amphora (SF 114), Gauloise form 4, which was located adjacent to the first vessel and from which just a very small rim fragment survived. Also from the same burial was a very small sherd of south-west oxidised sandy ware (SOW OX) and one small sherd of LSW RE. One small piece of pottery recovered from inside the glass vessel has been deliberately cut into a small rectangular shape, measuring 18mm by 7mm by 7mm (Fig. 11 no. 6). The fabric is difficult to discern but may be GAL AM, and its purpose is unclear.

3.1.14 A very small sherd of possible SVW OX was recovered from cremation burial 109, presumably a redeposited piece in the fill.

3.1.15 Several sherds were recovered from urned cremation burial 112, comprising the lower part of a SVW OX jar.

3.1.16 Urned cremation burial 120 produced 10 bodysherds, nine from a SVW OX jar and one small miscellaneous oxidised piece.

3.1.17 Urned cremation burial 132 contained a collection of 49 sherds from the lower part of a DOR BB1 jar decorated with a burnished-line oblique lattice.

3.1.18 Close dating of the cremation burials is slightly limited by the associated pottery. Cremation burials 103, 112 and 120 all seem to feature single SVW OX jars. The production of Severn Valley ware spans most of the Roman period, with quite a conservative range of forms that are difficult to date closely particularly in the absence of rims. As far as it can be determined, a 2nd-century date would seem likely here. Cremation burial 108, featuring the amphorae (SFs 113 and 114) and glass vessel (SF 112), is also likely to fall within this chronological frame. Both amphorae were widely

imported for their contents from the mid-1st to 3rd centuries, but empty vessels were often repurposed, as in this case. The latest cremation burial, 132, which was set away from the others, contained a vessel dating to the later 3rd–4th century.

3.1.19 The cemetery was presumably located on the periphery of a contemporary settlement, and this is reflected in all the other features investigated in Area C that contained mainly medieval or post-medieval sherds and only occasional Roman pieces.

Discussion

3.1.20 The pottery assemblage intimates activity in the area from the 1st century AD from a few redeposited native wares, but the pits and ditches largely suggest a focus of activity in Area A in the 2nd–3rd centuries. Odd sherds suggest that the area may have still been in use into the later Roman period, but evidence is slight with the only definite late Roman feature being cremation burial 132. This complements the evidence from the preceding evaluation (Evans 2019), where most of the pottery was dated to the 2nd–late 3rd century. The assemblage is small but entirely typical of the area.

3.1.21 The cremation cemetery comprises a mixture of urned and unurned burials, with fragmentary jars associated with four burials, with four including SVW OX jars and one with a DOR BB1 jar. The use of these wares as cremation urns or accessory vessels is quite well documented in Gloucestershire, for example in the Wotton cemetery, Gloucester, where DOR BB1 cremation urns dating to the 2nd century have been noted (Heighway 1980, 63) and the Barton cemetery where a cremation was found in a late 3rd-/4th-century DOR BB1 jar (ibid., 66). Dorset black-burnished jars were similarly frequently used in Cirencester in the 2nd–3rd centuries (Wright *et al*. 2017, 15 ff). Cremation burial 108 containing the substantial parts of two amphorae (SF 113 and 114) and the glass vessel (SF 112) is much more unusual in this area and is likely to reflect the social status of the individual buried. Although the two most-common amphora types to be imported into Britain, they are not that common on rural sites in this area, although they are well represented at the urban centres. The Dressel 20 amphora base (SF 113) holding the glass cinerary urn (SF 112) was presumably already broken when deposited to accommodate the glass vessel and was perhaps taking the symbolic role of a casket or cist, or was simply functional to protect the glass vessel, although the upper body could have been truncated. Similar instances of amphora as secondary containers were encountered at the eastern cemetery in London, where 18 amphora cremation burials were investigated, 12 using Dressel 20 forms and two using Gallic types but as single occurrences (Barber and Bowsher 2000, 107). In most cases, the neck of the vessels had been removed to allow other items to be inserted. The eastern cemetery examples are dated to the late 2nd or 3rd century, although earlier examples of amphora burials have been documented from London. Amphora burials were discussed by Callendar (1965, 25) who regarded them as cheap and easily accessible containers but also as symbolically representing the wine and oil the deceased required in the afterlife. It is not known whether the Gallic amphora (SF 114) here was deposited intact with contents or was deposited broken or empty, with perhaps the contents consumed as part of the ceremony. Wright *et al.* (2017, 92) noted a moderately high incidence of Gallic amphora sherds in the grave fills of the walled

cemetery investigated at Cirencester, which could imply such commodities may have been integral to the funeral ceremony. What is clear from the distribution map produced by Callendar (1965, fig. 27), which although quite dated probably still holds true in outline, is that amphora burials are very rare in western Britain but demonstrate an origin in Britain that dates back to the later Iron Age, particularly in the territories of the Trinovantes and Catuvellauni to the east. Not only is this burial unusual for the area, but examples of burials with both amphora types present are very rare, suggesting that burial 108 was someone of high rank or social standing.

Catalogue of illustrated sherds (Fig. 11)

1. Hemispherical bowl, a variant of Young (1977) type W54. Fabric: OXF WH. Date: 2nd-3rd century. Area A, stone-lined tank 67, [37] (39).
2. Bifid rim narrow-necked jar as Webster (1976) form 11. Fabric: SVW OX. Area A, pit 1009, fill 1011.
3. Bifid rim, narrow necked, jar. Fabric: NSOM RE. Area A, pit 1009, fill 1011.
4. Flared rim, wide-mouthed jar similar to Webster (ibid.) form 21. Fabric: SVW OX. Cremation burial 103, [104] (105), SF 100.
5. Beaded rim jar. Fabric: LSV RE. Ditch 73, cut 15, fill 16.
6. Small-shaped fragment from the glass vessel (SF 112), perhaps a stopper. Probably fashioned from a sherd of ?GAL AM. Cremation burial 108, cut 151, fill 149.
7. Medieval jug with a round-section, slashed handle. Patchy thin glaze on the exterior. Fabric: TF 52. Pit 129, fill 130.
8. Medieval jar. Fabric: TF 42. Subsoil 101.

3.2 Ceramic building material and fired clay *by Cynthia Poole*

Introduction

3.2.1 A small assemblage of fired clay and ceramic building material (CBM) of mixed character, diverse in date and function, comprising pieces of Roman and post-Roman date, was recovered from the excavation in Areas A and C. The material is fragmentary and its condition variable, for the most part comprising small pieces with a mean fragment weight (MFW) of 15g, except for a half brick, which raises the MFW to 54g. The assemblage has been recorded on an Excel spreadsheet that forms part of the site archive.

Fired clay

3.2.2 Fired clay amounts to a total of 24 fragments, weighing 124g. Apart from two small amorphous fragments of indeterminate function from pit 160, the remainder was recovered from a sieved soil sample collected from fill 1018 of pit 1009 and is probably from the surface of a hearth. This material comprises pieces up to 27mm thick with one smooth, flat, well-finished surface, one or two pieces with a slightly rougher surface and some very slightly convex. The underside is broken and irregular. On a few

pieces, the surface had been lightly burnt grey; otherwise the fragments are oxidized fired red and pinkish brown. They were made in a fine sandy micaceous clay containing sparse rounded medium quartz sand <0.5mm, probably derived from local clay deposits.

Ceramic building material

3.2.3 The CBM amounts to 14 fragments, weighing 1936g. The Roman tiles (nine fragments, 302g) were made in sandy fabrics utilising a fine sandy micaceous clay matrix, sometimes with the addition of coarser sand, iron oxide inclusions and clay pellets. The tile includes a possible broken tegula flange, an imbrex 25mm thick and a brick over 41mm thick. Other fragments of broken flat tile are probably pieces of brick or tegula. Three fragments have light burning on the upper surface, indicative of reuse in hearths. There were notably fewer Roman tiles recovered from the excavation and more poorly preserved than those from the evaluation, which produced examples of tegula, imbrex and box flue tiles. Overall, the density of tile is not indicative of masonry buildings in the immediate vicinity of the site. It is possible that the tile was obtained from the villa situated 1.5km to the north, or another building as yet unknown, for reuse in hearths or furnaces on the site.

3.2.4 The post-Roman CBM comprises brick and roof tile. Half a brick of late medieval or Tudor date was recovered from a post-medieval agricultural pit (175). The brick was crudely made with rough, uneven surfaces and varies considerably in thickness between 55–65mm and measures 112mm wide. It was made in dark grey/pinkish-brown fine sandy clay containing frequent fine-medium quartz sand and some black slaggy grits up to 15mm in size. A few amorphous fragments from context 174 are probably also brick fragments, as the fabric, a red fine sandy clay containing sparse medium quartz sand and dark brown earthy inclusions 1–2mm, is the same as that used for post-medieval brick found in and around Gloucester. Roof tile is represented by a crested ridge tile made in Malvernian fabric and dates to the 14th–16th century. The fragment is coated in a mottled dark green glaze and comes from the tile apex. The crest retains one long, low triangular spur cut to form a wide, curving, concave hollow between spurs. The spur measures over 89mm long, 26mm wide tapering to 13mm at the peak of crest and 10mm in height. The presence of late medieval–Tudor CBM may derive from the 13th-century farmstead recorded at Haieden Green situated *c* 0.5km to the south-west of the site.

3.3 Stone *by Ruth Shaffrey*

3.3.1 A large, roughly square slab had been used as a capstone over a cremation urn in pit 104 (cremation burial 103). The Pennant sandstone slab is naturally thin and flat but has been used on both faces. One face is flat and evenly smooth, and the other has a shallow dished area. The slab was imported to the area, possibly from the Bristol region, but may have been part of a shipment of material intended for stone roofing or construction (Clifton-Taylor 1987; Shaffrey 2009).

3.3.2 Small quantities of burnt (friable and reddened) stone were found in pits 1009 and 200, and in boundary/enclosure ditch 69 (139g, 27g and 133g respectively).

Catalogue of worked stone

Grinding stone. Pennant sandstone. Grey-green, fine to medium grained, well-sorted micaceous sandstone. Large, approximately square slab. All four edges are broken. The slab is thin and flat but has been extensively used on both faces for grinding, rubbing or sharpening. One face is flat and evenly smooth. The other face is also heavily smoothed, but with shallow dished areas. Measures 350mm by 350mm by 28mm. Ctx 107. Used as a capstone over a cremation urn (backfill of pit 104).

3.4 Glass *by Anni Byard*

Introduction

3.4.1 A total of 227 shards of glass, weighing 1486.6g, were recovered from five contexts. All the shards are of Roman date. Six shards (2.8g) were recovered from posthole 6 of structure 71. These are small, thin and delicate, and are transparent light-aqua shards from unidentified vessel forms. Four of the shards are of 2nd- or 3rd-century date. Most of the glass was recovered from cremation burial 108. This feature yielded 215 shards (1451.9g) of an aqua-coloured globular jar (SF 112), which had been used as a cinerary urn. Ditch 72 yielded two very small fragments of glass (0.2g) of probable 3rd/4th-century date. One fragment is possibly an applied decorative trail in dark green, while the other is a fragment of colourless transparent glass.

3.4.2 Three shards (30.7g) of a dark olive-green jar of probable post-medieval/modern date were recovered from the fill of a tree-throw hole (183), while a small, probable Roman shard of light green glass, weighing 1g, was recovered from the lower fill of pit 160. It is unclear whether this reflects the date of the feature or was residual.

Cinerary urn

3.4.3 The aqua-coloured cinerary urn (SF 112) from cremation burial 108 appears to be incomplete, with up to three-quarters surviving (Fig. 12). The base of the vessel survives intact and has a pushed-in or concaved base, without a pontil mark, measuring *c* 120mm in diameter. Scratches on the basal edges indicate that this vessel had been previously used, probably in a domestic context, and that its function as a cinerary urn was secondary.

3.4.4 The rim of the vessel is approximately half complete and measures *c* 40mm wide. The rim is broad and flat with the edge rolled in and flattened. The outer diameter of the rim is estimated at *c* 190mm, putting it in the larger size range for vessels of this type (Cool and Price 1995, 109). The inner rim/neck aperture is approximately 85mm. The jar is plain and undecorated, which is usual for these vessels.

3.4.5 Similar globular jars have been recovered from funerary contexts across Roman Britain, often discovered to have been reused as cinerary urns. A funerary urn from Mersea Barrow in Essex, buried in a square lead cist, dates to AD 100–120 and appears to be of identical type (Hazzledine Warren 1913; Allen 1983, type E4). The Ruddle Court Farm urn is comparable to two examples in the British Museum (British Museum collections online: accession nos. 1936,0611.21 and 1924,0410.1), plus an example in the Museum of London collection (ID no. 31.137) that dates to the mid-1st–2nd

century AD, measures 245mm tall and retains its glass lid. This vessel is comparable in both form and size to the Ruddle Court Farm urn.

3.4.6 Glass cinerary urns increased in popularity during the 2nd century (Philpott 1991, 26), and although Cool and Price (1995, 109) note that securely dated globular cremation urns range in date from *c* AD 50 to *c* AD 200 and cremation was losing favour by the end of the 2nd century, jars continued to be used domestically into the 3rd century (ibid.).

3.4.7 The cremation burial was discovered in a stone-lined/packed pit (151) that contained a Dressel 20 amphora (SF 113) into which the glass urn was placed upright. Vessels within vessels, usually ceramic but sometimes glass, wooden boxes or other organic containers, have been found in Roman cemeteries, such as the cemetery east of the City of London (Barber *et al*. 1990; Barber and Bowsher 2000, 106). At this cemetery, amphoras were the second most-common secondary container, many of which had had their necks and handles (or bases) removed (Barber *et al*. 1990, 8) to facilitate the insertion of the primary cremation urn.

Discussion

3.4.8 Using glass containers for cremated remains was a Roman introduction to Britain. Glass bottles are most frequently encountered, with globular urns less so, and cremated remains contained within glass vessels are more common on rural sites than in major urban centres outside of London (Philpott 1991, 26–7). Although Philpott's study is 30 years old, it is likely that the general pattern remains. However, his observations are at odds with the appearance of the amphora (SF 113) used to contain the glass urn (SF 112). Timby (see *Pottery* above) notes that Dressel 20 amphorae are far more common on urban sites than they are on rural ones, though amphora burials are also more common in central and eastern England, being comparatively rare in the west. The presence of both the amphora and the globular urn in this context suggests that the burial was of someone of higher social status or rank and in keeping with a tradition more commonly seen in eastern England. The glass urn is likely to be of 2nd-century date.

3.5 Metalwork *by Anni Byard*

Introduction

3.5.1 A total of 291 objects and fragmentary metal items, weighing 340.7g, were recovered from six contexts. This total consists of 289 (334g) objects of iron, one of copper alloy (0.6g) and one of gold (6.1g). Nail fragments and other small amorphous fragments (count 3, 3.6g) were recovered from the fill of posthole 6 of structure 71. The gold object, an *aureus* (SF 1) of Vespasian, was also recovered from this feature and is discussed further below.

3.5.2 Numerous small iron nails or tacks and other nail fragments were recovered from cremation burial 108, from both the fill (154) within the amphora (SF 113) and the adjacent deposit (156) of possible pyre material. This assemblage comprises 267 nails and fragments weighing 305.2g in total.

3.5.3 An amorphous iron fragment of Roman date was recovered from pit 1009, while two nails of Roman date were recovered from ditch 72. A modern copper-alloy button manufactured by Rowley and Co. is of early 20th-century date (WW1-era) and was recovered from the surface of ditch 206.

The coin

3.5.4 A slightly worn *aureus* of Vespasian (SF 1) was recovered from posthole 6 of structure 71 (Fig. 13, no. 1). The obverse of the coin depicts the laureate bust right of Vespasian and reads CAESAR VESPASIANVS AVG. The reverse depicts Annona seated left holding a bundle of corn ears on lap and reads ANNONA AVG. The coin was struck in Rome in AD 77–8 (RIC II 963).

3.5.5 Gold Roman coins are very rare in Britain. Bland and Loriot (2010) detailed 192 *aurei* of Vespasian, of which 61 are single coin finds. More recent discoveries, including the Ruddle Court Farm coin, take this number to 198. While it is generally assumed that coins circulated within and around their date of issue and little beyond, and a restricted circulation chronology may be true of later 3rd/4th-century issues, 1st- and 2nd-century (and some Republican) coins did circulate over a long period (eg Hammerson 2002, 237), especially those of silver and gold. Indeed, Howgego (2015, 136) asserts that Vespasianic gold was still in circulation in the 2nd century, noting that gold was so valuable that even one coin could have been deliberately concealed and may be considered a 'hoard' of wealth in its own right (ibid., 128).

3.5.6 Pottery recovered from the feature comprises fabrics in use between the 1st and 4th centuries (see *Pottery*, above). While it is possible that the Vespasian *aureus* is residual, consideration should be given to the possibility that it indicates a purposeful deposit of a curated item or a purposeful non-recovery.

Cremation metalwork

3.5.7 Several cremation burials at King Harry Lane cemetery at St Albans were covered with wooden planks (Stead and Rigby 1989), while the lining of cremation deposits with wood is seen elsewhere in the archaeological record (Philpott 1991, 7). For example, at Westhampnett, grave linings and secondary containers were absent, but wooden boxes were placed as grave goods alongside cremation burials (Fitzpatrick and Powell 1997). However, at Ruddle Court Farm, there was no evidence of wooden planks or grave goods within cremation burial 108. The nails (Fig. 13, no. 2) are, therefore, likely to have derived from the funeral pyre or articles placed upon it.

Catalogue of illustrations

1. Vespasian *aureus* (Fig. 13, no. 1). AD 77–8. Area A. Pit/posthole 6, possible structure 71. SF 1.

2. Selected nails/tacks (Fig. 13, no. 2). 2nd century. Area C. Deposit 156, cremation burial 108. SF 103, SF 119 and SF 120.

3.6 Worked bone *by Mandy Kingdom*

3.6.1 A very small (13mm by 11mm by 12mm) triangular piece of animal bone decorated with a dot and circle, part of a possible gaming piece, was found with the cremated human bone from burial 112 (deposit 115, sample 105).

3.7 Industrial residues *by Gerry McDonnell*

Introduction

3.7.1 The following report comprises an edited version of the archaeometallurgical assessment report written by Gerry McDonnell and presented in the Border Archaeology field evaluation report (Border Archaeology 2019), completed following the trial-trench evaluation of the site in 2019. It focuses on the material classified as slag recovered from the trial trenches and follows the guidelines issued by English Heritage (Dungworth 2015, 13–14). The location of the 2019 evaluation trenches in relation to Areas A–D are shown on Figure 2. See the full report (Border Archaeology 2019) for accompanying graphs and photographs.

Methodology

3.7.2 The 2019 evaluation methodology included extensive bulk sampling, and hence a very high proportion of small slag fragments (<3cm maximum dimension) were recovered. These small fragments cannot easily be ascribed as either tap slag or smelting slag. Thus, the slag assemblage from each context was categorised on the basis of the identification of the larger pieces. The number of fragments in a context containing a lot of slag fragments are estimated and should be used as indicative numbers rather than as absolute numbers.

3.7.3 The slags were visually examined, and the classification is based on morphology. The debris associated with metalworking, or submitted in the understanding that they were associated with metalworking, can be divided into two broad groups: residues diagnostic of a particular metallurgical process and non-diagnostic residues that may have derived from any pyrotechnological process (McDonnell 2001). The diagnostic ferrous debris can be attributed to a particular ironworking process; these comprise ores and the ironworking slags, that is, the macro, hand-recovered smelting and smithing slags and the micro-residues such as hammerscale and slag fragments recovered from sieving programmes. The diagnostic non-ferrous metalworking debris comprise the crucibles, moulds and metal droplets. The non-diagnostic slags are those that could have been generated by a number of different processes but show no diagnostic characteristics that can identify the process. In many cases the non-diagnostic residues, for example hearth or furnace lining, may be ascribed to a particular process through archaeological association. The residue classifications used in the report are defined below.

Diagnostic ferrous slags and residues

- Ore – Iron-rich natural mineral, may be identifiable to a particular type, eg goethite or hematite.

- Smelting Tap Slag – Iron silicate slag generated by the smelting process, ie the extraction of the metal from the ore. Tap slag is one of the most characteristic forms and is distinguished by either a ropey morphology of the upper cooling surface or a fine crystalline fracture with spheroidal vesicles. The tap slag lumps range in size from fragments <50mm maximum dimension to larger sized lumps ~200mm maximum dimension.
- Smelting Slag – This iron smelting slag is characterised by its viscous appearance (compared with the relative free flowing morphology of smelting tap slags), often with dribbles indicative of some flow. The lumps are irregularly shaped and may have adhering fired clay.
- Slag Tube – A solid tube-shaped piece of slag that may have formed in a small taphole or blowhole in the wall of the furnace, or may represent evidence for the production of cast iron.
- Hearth Bottom (HB) – A plano-convex accumulation of iron silicate slag formed in the smithing hearth. The range of dimensions of the hearth bottoms are presented and compared to data from other sites.
- High Metal (Fe) bearing slag – Slag that may contain a high metallic iron content, indicated either by active corrosion or strong response to a magnet.
- Slagged lining – The slag attached to the clay lining of a furnace.
- Magnetic Iron Smelting Residue – The component of small fragments extracted from soil samples (either the residue from the environmental sieving programme or from soil residues in the bags of slag). On smithing sites this will contain the hammerscale, but the micro residues from iron smelting have not been characterised, so the generic term magnetic residue is used.

Non-diagnostic slags and residues

- Hearth or Furnace Lining – The clay lining of an industrial hearth, furnace or kiln that has a vitrified or slag-attacked face. It is not possible to distinguish between furnace and hearth lining.
- Slagged Lining – Heavily slagged furnace lining, although it is not diagnostic of smelting sites, it normally only occurs as substantial pieces on smelting sites.
- Cinder – A high silica residue that may derive from a range of activities.
- Heat Affected Stone – Stone subjected to heat, evidenced either by reddening or alteration to the texture of the stone, eg vesicles.
- Coal – Fragments of (Forest of Dean?) coal.
- Other – Non-slag material, eg stone fragments etc.

Description

3.7.4 The assemblage comprises *c* 153kg of iron smelting slag, with small quantities of other material. A list of the count and weight of each slag type recovered from the evaluation is presented and ordered by trench and context number in Table A1a for the diagnostic slags and Table A1b for the non-diagnostic slags (Appendix A). Table A2 lists the heat-affected stone recovered from the site.

3.7.5 The assemblage is dominated by the two iron smelting slag types: the classic free-flowing tap slags and the viscous furnace smelting slag. There was one possible hearth

bottom identified with the typical plan-convex shape of a hearth bottom (171g) measuring 66mm by 71mm across and 29mm deep, but it may be a curved piece of slag, for example having peeled away from the furnace wall. It is unstratified from Trench 5 and is subsequently ignored. Small quantities of other material, that is, ore and furnace lining, was recovered. The assemblage is discussed in trench order (no slag was recovered from Trenches 2 and 6), and then the sieved residues are summarised followed by discussion of the heat-affected stone and the coal.

Trench 1

3.7.6 The slags recovered from Trench 1 are dominated by fragments of tap slag (Table A3). The vast majority was recovered from context 1008, a slag spread, the dispersed slag heap. A small amount was recovered from the fills (contexts 1006 and 1007) of ditch 1005. Slagged lining and one piece of high metal-bearing slag was identified in the assemblage. There are large pieces of smelting slag (one piece weighs over 900g) and tap slag present in the assemblage. The material classed as other are pieces of unburnt stone, and there are 178g of reddened stone fragments (Table A2) present in the slag assemblage.

Trench 3

3.7.7 A small amount of iron smelting slag was recovered from Trench 3 (Table A4), mostly from the subsoil (context 3002) but with a few pieces in the fill (context 3005) of a ditch (3004).

Trench 4

3.7.8 A total of 11kg of material was recovered from Trench 4 (Table A5). The majority of the smelting slag and the tap slag, and all the high metal bearing slag, the slagged lining and the fired clay was recovered from the upper fill (context 4005) of ditch 4004 and includes a single tube fragment. There is a small amount present in the primary fill or basal layer of the ditch (context 4006). This suggests that the slag filled the ditch after it was abandoned. Both the smelting slag and the tap slag occur as small fragments; there are no large pieces, suggesting that a smaller grade of slag had been utilised in the area of Trench 004, possibly as the equivalent of a gravel type surface. A smaller quantity of slag was recovered from the fill (context 4008) of ditch 4007.

Trench 5

3.7.9 A total of 56kg of material was recovered from Trench 5 (Table A6). Two contexts (5009 and 5026) had a combined weight of smelting slag and smithing slag in excess of 10kg. Context 5026 (combined slag weight = 17.7kg) was a slag spread contained within a curvilinear ditch (context 5004), possibly forming a floor. The majority of slag pieces were small (less than 5cm maximum dimension), suggesting screening of the slag to utilise pebble-sized material. Context 5009 was another slag spread, again of smaller-sized fragments. The slag had also infilled some pits, for example context 5021 was the upper fill of pit 5020 and contained *c* 6kg of smelting slag and tap slag. The curvilinear ditch (5010) was also filled with slags (contexts 5005 and 5011).

Trench 7

3.7.10 Nearly 50kg of material was recovered from Trench 7 (Table A7), with the largest quantity of slag (43kg of smelting slag plus tap slag) recovered from context 7004, the plough-damaged slag heap. Three pieces of slagged lining were also identified, as well as a possible fragment of iron ore, which may be heavily corroded metal. One large specimen of high metal bearing slag (300g) is present, and a single piece of fired clay was identified in the context material. Three tube fragments were recovered. A sample collected from the fill (context 7008) of ditch 7007 contained smelting and tap slag and one tube fragment.

Sieved fraction

3.7.11 The contexts were subjected to environmental sieving and the magnetic residue extracted (Table A8). The quantity of magnetic residue is small and indicates that the contexts sampled have been disturbed, eg plough-spread slag or redeposited slag. In the magnetic residue, there are very few fragments that could have derived from ironworking, and although they have the appearance of hammerscale, it is probable that they did not derive from smithing. The spheroidal droplets may have derived from spatter when, for example, the bloom was extracted from the furnace. The flakes are oxidised scale from the bloom. These residues have not been the subject of detailed research, eg in iron smelting experiments, but have been observed on some occasions (Crew pers. comm.).

Heat-affected stone

3.7.12 The majority of heat-affected stones are reddened but display no further evidence of intense heating, for example vitrification. The largest number and greatest weight were recovered from Trenches 4 and 5 (Table A2).

Coal

3.7.13 A very small amount of coal (*c* 300g) was recovered from the sieving programme (Table A9). The majority are very tiny fragments (<10mm maximum measurement), and the largest quantity was recovered from Trench 4. Coal was not used in iron smelting prior to the industrial revolution, but it has been used on smithing sites. Its presence here probably related to domestic activity, but a small quantity was recovered from Trench 1.

HH-XRF analysis and metallographic analyses of selected samples

3.7.14 The geophysical, archaeological and slag evidence clearly indicates that there is evidence of one or more iron smelting events at Ruddle Court Farm. To address two key questions, first whether the slags recovered from Trenches 4 and 5 potentially derived from the smelting events close to Trenches 1 and 7 and second, the nature of the smelting technology, a limited scientific programme of analysis was undertaken.

3.7.15 The slag assemblage collected during the 2019 evaluation mainly comprises iron smelting slags and tapped slags. The smelting slags tend to be large irregularly shaped pieces or smaller pieces, but all lack the characteristic ropey flowed appearance of the

tap slags. Some have large charcoal impression indicative of a viscous slag only just above its fully liquid temperature. The tapped slags range in size from small fragments to very large pieces, suggestive of a large tapping channel. The bulk sampling strategy resulted in samples containing a large number of unidentifiable slag fragments, but they can be assumed to comprise fragments of either the smelting or the tapped slags. The initial analysis of the distribution of the slag types showed that both slag types are present across the site. However, it appears that that the slag fragments in Trenches 4 and 5 are small, whereas there are larger fragments from Trenches 1 and 7. This reflects the geophysical evidence, which indicates that the furnace(s) were located at the southern end of the site to the south of Trenches 1 and 7.

3.7.16 To assess whether the tap slag and the smelting slag are indicative of different technologies or are different slag morphologies derived from the same smelting operation, selected samples from each trench were analysed by hand-held x-ray fluorescence (HH-XRF; see Border Archaeology 2019, Appendix 4 for details of the methodology used). Overall, the x-ray spectra are typical of ironworking slags but with a significant iron content. This is confirmed by the semi-quantitative data obtained from the spectra (Tables A10 and A11) and also shows that the slags are low in MnO, which is consistent with the composition of the Forest of Dean ores (Percy 1864, 207). However, the slags are rich in P_2O_5, which is inconsistent with Dean ores. Table A10 shows that the tap slags have reasonably consistent results as indicated by the small standard deviation values, especially for silica and iron oxide. In contrast the smelting slags, as expected, show greater variation in composition (Table A11). Table A12 compares the mean values obtained from the tap slags and the smelting slags, demonstrating no clear difference between the slag types. The mean values of the analyses for each of the trenches (Table A10) show that the value obtained from the analysis of the Trench 4 slags show elevated P_2O_5 and lime (CaO).

Metallographic analysis

3.7.17 Five specimens of slag were sectioned, mounted in resin, ground and polished to a one-micron finish and then examined using a metallurgical reflected light microscope (Table A15). The texture of the slag mineralogy was studied and digital images recorded. The polished specimens were analysed using HH-XRF. The mineralogy of pre-blast furnace iron smelting slags (and pre-industrial revolution smithing slags) comprise three major phases: free iron oxide (wustite), iron silicate (normally approximating to fayalite, $2FeO.SiO_2$) and a glassy phase. Other phases, such as hercynite ($2FeO.Al_2O_3$) or leucite ($K_2O\ Al_2O_3\ 4SiO_2$), may also be present.

3.7.18 There is extensive literature on the interpretation of slag microstructures, but in summary the texture, ie the shape and size of the minerals, indicates the cooling regime, and the amount of free iron oxide present in smelting slags is indicative of the 'efficiency' of the process. A highly efficient smelting process would result in no or very little free iron oxide being present, and a high temperature process followed by rapid cooling would result in a high glass content. Metallic iron prills may also be present and are indicative of the furnace operating conditions.

Sample RF1: surface find from the south end of the site

3.7.19 The tap slag comprises globular free iron oxide (FeOx), lath and blocky silicate with some hercynite in a glassy matric. Eutectic iron oxide is present in some areas, but no metal prills were observed. The volumetric phase percentages are provided in Table A16.

Sample RF2: Trench 4, Context 5

3.7.20 The furnace slag has the same mineral texture as RF1 (Table A16).

Sample RF3: Trench 4, Context 5

3.7.21 Tap slag sample RF2 displays a similar microstructure to the previous examples (Table A16), but the free iron oxide occurs as skeletal dendrites, and lath silicate is more prevalent than the blocky form. There is less hercynite, which occurs as veins rather than as larger crystals. The volumetric phase percentage of free iron oxide is lower than the previous samples and consequently the amount of silicate higher.

Sample RF4: Trench 5, Context 26

3.7.22 Tap slag sample RF4 has a similar microstructure to samples RF1 and RF2, but it also contains small pools of leucite, a potassium aluminium silicate (Table A16).

Sample RF5: Trench 5, Context 26

3.7.23 The examination of the smelting slag in sample RF5 displays a similar microstructure to sample RF4 (Table A16).

HH-XRF analyses of the mounted samples

3.7.24 The mounted samples were also analysed by HH-XRF. The results of the semi-quantitative analyses are presented in Table A17 and show that the slags show considerable variation in the levels of SiO_2 and FeO. They are low in MnO, which is consistent with Dean ores, but they have elevated P_2O_5 levels, which is not consistent with the bedded Dean ores and agrees with the initial HH-XRF analyses.

Discussion

3.7.25 The slag assemblage collected during the 2019 evaluation of the site confirms the presence of significant iron smelting activity close to and within the development area. The geophysical magnetometry survey clearly indicates that the ironworking activity is concentrated at the southern end of the site along the stream edge, with two foci of activity (Archaeological Surveys 2018), both of which are typical of disturbed/ploughed out slag heaps (Powell *et al.* 2002; Vernon 2004; Vernon *et al.* 1998; 1999). The quantity of the combined weights of smelting slag and tap slag, and furnace lining and slagged furnace lining, are presented in Table A18 and show that the majority of slag derived from Trenches 1, 5 and 7.

3.7.26 The distribution of the heat-affected stone does not mirror that of the major slag types, with the majority being recovered from Trenches 4 and 5. This suggests a domestic origin for the majority of the heat-affected stone. Similarly, the coal fragments were concentrated in Trench 4.

3.7.27 Trench 1 revealed the fringe of the western slag spread (context 1008), which was dominated by tapped slag. The ditch (1005) contained slag in the primary fill/basal surface (context 1006) and the upper fill (context 1007), indicating it was either contemporary with or later than the smelting activity.

3.7.28 Trench 7 sampled the eastern slag spread, which contained large specimens of smelting slag and tap slag (Table A7), with approximately equal quantities of smelting slag and tapped slags (noting that the smaller fragments, which dominate the assemblage, cannot be ascribed to a specific slag type with confidence).

3.7.29 The different profile of the slag assemblages from Trenches 1 and Trench 7, with tap slag dominating in the slag spread (heap) exposed in Trench 1 and equal quantities of smelting slag and tap slag in the slag spread/heap in Trench 7, may suggest that they represented two separate phases of smelting with slightly different technologies. It may also be significant that slag tubes were only recovered from Trench 7 and none from Trench 1.

3.7.30 In Trench 5, context 5026 was a slag-filled curvilinear ditch that surrounded a slag spread (5026; Table A6), probably utilised as cobbling. Trench 4 produced a small quantity of slag from ditch 4004 but with more smelting slag (67%) than tap slag. The HH-XRF analyses of the Trench 4 slags indicate they were higher in P_2O_5 and CaO, but this may reflect the variation in composition observed in this slag type.

3.7.31 A distinct group of tap slag are the slag tubes, which do not occur on all smelting sites, and some occur on smithing sites. Five fragments of slag tubes were recovered, four from Trench 7 and one from Trench 4. They have a mean diameter of 26mm (Table A19), which compares to a mean diameter value of 24mm of three tubes recovered from the excavation of a medieval smelting site at Cawston Lane, Rugby (McDonnell 2017) and a mean diameter of 23mm of 28 examples from the excavation of Christchurch, Canterbury, where extensive Saxon smithing evidence was recovered (McDonnell 2014). They are a poorly researched slag type, and a number of explanations have been presented for them, such as accidental slag flow into the blowhole/tuyere or the deliberate production of cast iron, which was cast into thin tubes, but the tube also contained slag which was left on site.

3.7.32 The HH-XRF analyses of the slags indicate a low MnO content consistent with the brown hematites of the Forest of Dean (Percy 1864, 207), but little is known of the composition of the ores in other geological strata near the site (including to the west and possible occurrence of bog ores). The slag is unusual in having a high P_2O_5 content (compared with an average derived from *c* 20 smelting sites across Britain; Table A14) and may indicate the use of a bog ore.

3.7.33 Examination of the mineral texture of the five slag samples shows that they are broadly similar, comprising dendrites of free iron oxide, with blocky or lath silicate and some hercynite in a glassy matrix. Two samples (RF4 and RF5) have leucite ($K_2O.Al_2O_3.4SiO_2$) present, and none of the samples have metallic prills present. The HH-XRF analyses show some variation in the levels of the major oxides, which does not correspond with the metallographic analyses, but importantly shows the slags have a low MnO content consistent with Dean ores, but they have significant P_2O_5 levels, which is not typical of slags derived from Dean ores.

3.7.34 The chemistry and mineralogy of the slags show that the smelting process was not fully efficient because unreduced iron oxide in the form of the iron oxide dendrites remained in the slag. There is no significant difference in the texture between the tap slag and the smelting slags; the form of the silicate (usually a solid solution approximating to fayalite ($2FeO.SiO_2$)) is lath/blocky indicating a relatively slow cooling rate for the slag, which is supported by the low volumetric phase percentage of the glass phase.

3.7.35 The metallographic and HH-XRF analyses provide evidence that the slags derived from the smelting of a low manganese but high phosphorus bearing ore. This excludes the known bedded Dean ores and almost certainly indicates the use of bog ores. The mineral texture indicates a smelting technology that resulted in some of the available iron oxide not being reduced to metal, ie a less-than-efficient process. The higher free iron oxide content would raise the overall melting point of the slag, resulting in a more viscous slag at furnace operating temperatures. This has resulted in the slower-cooled mineral texture as observed in the micrographs, including the rounded iron oxide dendrites, the blocky silicate and the low glass phase content.

4 ORGANIC REMAINS

4.1 Human skeletal remains *by Mandy Kingdom*

Introduction

4.1.1 The excavation recovered five urned cremation burials and two unurned cremation deposits from seven features. Urned cremation burials 103, 108, 109 and 120, and unurned cremation deposits 109 and 141 were found in a group close to the southern end of Area C. Urned burial 132 was located 25m due north of these, also in Area C (Tables B1 and B2, Appendix B).

4.1.2 Cremation burial 108 is of special interest because it comprised a blue glass vessel (SF 112) that was placed within a large ceramic urn (SF 113), which was surrounded and capped by deliberately placed packing stones, with no evidence of truncation or post-depositional disturbance. A charcoal-rich deposit (156), which contained small fragments of bone and iron nails/fragments, lay between the pottery vessel (SF 114) and the cremation. This deposit may be a separate deposit of pyre debris arising from the cremation that resulted in burial 103, but it has been analysed separately here.

4.1.3 The glass vessel (SF 112) from cremation burial 108 has been provisionally dated to the 2nd century AD. Cremation burials 103, 112 and 120 have all been dated by pottery to the early–middle Roman period (*c* 2nd century), while cremation burial 132 has been dated by pottery to the late Roman period (mid-3rd–4th century). Deposit 109 has been radiocarbon dated to the late Iron Age/early Roman period (91 cal BC–cal AD 63, 2022 ± 24, 95% probability, UBA-44472) and deposit 141 to the middle Roman period (cal AD 127–238, 1852 ± 24, 95% probability, UBA-44473) (Table 1). As mentioned above, the LIA/early Roman result could be biased by the 'old wood' affect of the bone being contaminated by the age of the timber used in the pyre.

Methodology

4.1.4 The cremation burials were recovered, processed and analysed in accordance with published guidelines (McKinley 2004a; Mitchell and Brickley 2017). In the field, burial groups 103, 109, 120 and 141 were fully excavated and were assigned separate context numbers to distinguish the primary fill from disturbed soil or associated material from around the edges of the pits. Urn SF 102, from burial 132 (pit 133), was block-lifted and the fill (135) excavated in four 5cm spits in the laboratory. Separate context numbers were assigned to associated deposits from in and around pit 133 in the field. Large urn SF 113 associated with burial 108 was excavated in five 5cm spits in the field, whilst glass vessel SF112, containing the primary cremation deposit (149), was block lifted and excavated in seven 5cm spits in the laboratory. Again, separate context numbers were assigned to associated cleaning deposits from in and around the large urn and glass vessel.

4.1.5 Processing involved wet sieving the deposits by individual sample number to sort them into >10mm, 10–4mm, 4–2mm and 2–0.5mm sized fractions. The >10mm and 10–4mm sieve fractions were fully sorted, separating the burnt bone from the extraneous material (eg stones). The 4–2mm fractions for all the samples except 122 and 142

(deposit 106), 135–137 (deposit 149) and 105 (deposit 115) were also sorted. The 4–2mm fractions from the above samples were not fully sorted. Instead, a 20g sample from each was sorted and the percentage of bone weight calculated. These percentages were then applied to the total weight of the unsorted material to provide more informed bone weight estimates for each fraction (Table B3).

4.1.6 The smallest fraction sizes from each sample (2–0.5mm) were not sorted but were rapidly scanned for identifiable skeletal remains and artefacts. The proportions of bone present within the 2–0.5mm fractions were estimated visually (Table B4). Each sieve fraction was examined for identifiable bone elements and the presence of pyre and/or grave goods. All bone was analysed to record colour, weight and maximum fragment size. The minimum number of individuals (MNI) present was estimated based on the identification of repeated elements and/or the presence of juvenile and adult bones in the same deposit. Estimations of age were based on the development stage of tooth roots (AlQahtani 2009), observations of completely fused epiphyses (Scheuer and Black 2000) and, more generally, the overall size/morphology of identified bones. Sex estimations were limited due to the absence of sexually diagnostic features in most deposits. A small number of diagnostic cranial and metric features were present in deposits 135 (burial 132) and 149 (burial 108) (Buikstra and Ubelaker 1994; Bass 2005). The bone fragments were also examined macroscopically for evidence of pathology and/or trauma, which was described and differential diagnoses explored, where present, with reference to standard texts (for example Aufderheide and Rodríguez-Martin 1998; Ortner 2003; Roberts and Connell 2004).

Bone weights

4.1.7 The total bone weights presented above do not include bone from the 2–0.5mm fractions, but do include the weight estimates calculated for the 4–2mm fractions (Tables B3 and B4).

4.1.8 The total bone weight for the urned/glass vessel burial 108 is 2034.3g, with over 97% (1988.7g) being recovered from deposit 149 within the glass vessel (SF 112). The total bone weight from deposit 156 associated with burial 108 is 16.5g and if added to the above gives a total bone weight of 2050.8g. The bone weight for burial 108 is at the upper limit of weights expected from a complete modern cremation (1000–2400g; McKinley 2000, 269) and well above the average bone weight for archaeological cremation burials (600–900g; McKinley 2013, 154), although archaeological bone weights can range from 117.2–3105.1g (McKinley 1993).

4.1.9 For cremation burial 103, the bone weight is 918.4g, with over 78% (721.8g) recovered from deposit 106, within the urn (SF 100). The bone weight for burial 103 is just below the range of weights expected from a modern cremation but at the upper limit of the average archaeological deposit as noted above.

4.1.10 The total bone weights for the remaining urned cremations 112, 120 and 132 are 150.4g, 15.6g and 241.6g respectively, with the majority of bone coming from the fills of the broken urns. The unurned deposits 109 and 141 weigh 26.5g and 10g respectively. These bone weights are all well below these expected weights, most likely the result of truncation and post-depositional disturbance of the burials/deposits.

Fragmentation

4.1.11 The level of fragmentation varies between the cremation burials (Table B1). Cremation burials 103, 112 and deposit 109 have a moderate level of fragmentation, with a high level of material from the 10–4mm sieve fraction (103: 47.8%, 112: 49.4%, 109: 57%). Cremation burial 132 has a moderate to low level of fragmentation, with nearly equal percentages of bone coming from the >10mm (45.6%) and the 10–4mm sieve fractions (42.3%). The remaining cremation burials/deposits (108, 120 and 141) have low levels of fragmentation, with the highest percentage of material coming from the >10mm sieve fraction (108: 64.5%, 120: 72.4%, 141: 94%). The high proportion of >10mm fragments from cremation burial 108 is most likely a reflection of the protection that the glass vessel, surrounding ceramic urn and packing stones had afforded the deposit from the pressure of the surrounding soil during burial (McKinley 1994, 341).

4.1.12 The largest bone fragments from all but deposit 156 (a spinous process 18mm by 5mm from possible pyre debris) are long bone diaphysis fragments. They range in size from 26mm by 15mm (unidentified long-bone fragment from cremation burial 109) to 69mm by 19mm (humeral diaphysis fragment from cremation deposit 149 from within the glass vessel of cremation burial 108).

Skeletal representation

4.1.13 As is common archaeologically, the proportion of unidentified bone outweighs that of identified bone from all the cremation burials except for burial 108. Under a third of the bones are identifiable to a skeletal region from cremation burials 103 (24.7%; mainly lower limb and cranial fragments), 112 (21.1%; mainly limb and cranial fragments), 120 (32.2%; upper limb and cranial fragments) and cremation deposit 109 (28.3%; mainly cranial fragments). Just over a third of bones are identifiable from cremation burial 132 (38.2%; mainly cranial fragments) and cremation deposit 141 (39%; mainly cranial fragments).

4.1.14 Over half of the total deposit weight (54.2%, 1084.2g) from cremation burial 108 was identified to skeletal region, with all regions represented. This high level of identification reflects the high proportion of larger fragments (>10mm) present. Table B5 presents the weights of bone per skeletal region separately for each spit, with spit 1 representing the uppermost layer of the vessel and spit 7 the lowermost layer of the vessel. Of the 1084.2g of identified bone, the axial region is the best represented and accounts for 31.5% of the identified bone weight. The lower limbs (317.7g) and skull (228.6g) account for 29.3% and 21.1% of identified bone weight, respectively, with the upper limbs (196.9g) being the least well represented at 18.2%. Figure 14 shows the proportions of each skeletal region within each spit containing identifiable bone. There is no clear pattern of bone deposition within the glass vessel (SF 112). Although the proportion of upper limb is highest in spit 4, all body regions are represented in each spit, suggesting that there was little, if any, structure to the way which the bone had been deposited within the vessel.

Bone colour

4.1.15 The colour of cremated bone reflects the degree of oxidation and is therefore an indication of the efficiency of the cremation, in terms of the quantity of fuel used to build the pyre, the temperature attained in various parts of the pyre, and the length of time over which the cremation was undertaken (McKinley 2004a, 11). Colours encompass brown/orange (unburnt), black (charred, *c* 300°C), hues of blue and grey (incompletely oxidised, up to *c* 600°C), and white (fully oxidised, >600°C) (ibid.).

4.1.16 The burnt bone from cremation burials 103, 112 and 132 and cremation deposit 141 is predominantly white in colour (99%, 90%, 98%, 98% respectively). The remainder is white/grey with grey tinges on the internal surfaces of some long-bone fragments and fragments of joint surfaces. At least 50% of the burnt bone from cremation deposit 109 is fully oxidised (white in colour) and 50% white/grey with tinges on the internal surfaces of the long bone fragments. The burnt bone from cremation burial 120 is predominantly white/grey (90%). Although the majority of the fragments are white, their edges and internal surfaces all have a grey hue. The remaining 10% of the burnt bone—poorly preserved long bone fragments that had lost their cortical surfaces—is black in colour.

4.1.17 The predominant colour of the burnt bone from cremation burial 108 is white (60%) followed by blue/grey (30%), then black (10%). The skull, ribs, upper vertebrae and upper limb diaphyses are mainly white in colour, while the lower vertebrae, sacrum, proximal and distal joint regions and internal surfaces of the lower limb bones are blue/grey in colour. The small proportion of black colouring is concentrated on the inner surfaces of a few diaphyseal, joint and lower spine fragments. The thickness of soft tissue varies across the body, and cremation of the bone beneath this cannot commence until the overlying tissues have been removed (McKinley 2013). Therefore, the joint surfaces, lower spine and internal long bone surfaces may have reached a lower temperature than the rest of the body, due to overlying soft tissue and the presence of cartilage.

4.1.18 Another observation relating to colour, although not to oxidation, was the presence of staining, in the form of a faint blue spot on three bone fragments from cremation burial 103 (sample 106). Two of the fragments are skull fragments and one is an unidentifiable long-bone fragment. This staining may refer to the proximity of a metal object (possibly copper alloy) to the bone, although no such object was found.

Demography

4.1.19 The different deposits that make up each burial group (Table B1) represent one burial event each. No repeated elements were observed in any of the burial groups, and the estimated minimum number of individuals present in each is one.

4.1.20 Sex estimation was not possible for urned cremation burials 103, 112 and 120 and cremation deposits 109 and 141 due to the absence of any sexually diagnostic traits. The individual from cremation burial 132 was tentatively estimated to be male. This was based on a fragment of frontal bone from deposit 135 with a well-developed supra orbital ridge/glabella, which is suggestive of a male individual. The individual from cremation burial 108 was also tentatively estimated to be male, based on a fragment of rounded orbital margin and the maximum transverse diameter (45mm) of an

incomplete femoral head. Male orbital margins tend to be more rounded and less sharp than those of females (Buikstra and Ubelaker 1994), while a maximum transverse diameter of 45mm would place the individual above the male mean (40.4mm) established by Gonçalves (2011) for cremated bone. Estimations of sex using a single cranial trait or measurement of the femoral head should be treated with caution as ideally the whole skeleton should be considered (Mays 2021).

4.1.21 Although there are no specific age indicators in any of the cremation burials or deposits, the size and morphology of the identified fragments suggest that they are the remains of late adolescents or adults. It was noted that cranial sutures observed on fragments from cremation burial 103 are fully fused but not obliterated, indicating the individual is likely to have been an adult rather than an adolescent (Meindl and Lovejoy 1985). A fully fused rib head and fused radial head within cremation burial 132 and fused vertebral annular rings in cremation burial 108 indicate that the individuals are both adults (>18 years) (Scheuer and Black 2000).

Pathology and non-metric traits

4.1.22 No pathology or non-metric traits were observed in cremation burials 108, 112, 120 and 132 or in cremation deposits 109 and 141. A small unidentified fragment of long bone from cremation burial 103 exhibits healed periosteal, 'new bone' formation. In addition, non-specific bone inflammation was observed on a small unidentified fragment (possibly cranium).

Pyre/grave goods

4.1.23 No pyre or grave goods were observed within the sieved deposits associated with cremation burials 103, 108, 120 and 132 and cremation deposits 109 and 141. A very small (13mm by 11mm by 12mm) triangular piece of animal bone decorated with a dot and circle, part of a possible gaming piece, was found with the cremated bone from burial 112 (deposit 115, sample 105). Faint blue staining indicative of pyre/grave goods was observed on three small bone fragments from cremation burial 103, as mentioned above. In addition, charcoal pieces and occasional to frequent charcoal fragments were observed in deposit 106 (cremation burial 103) and deposit 156 (associated with burial 108), respectively. More generally, very occasional, or occasional charcoal and fired clay were observed in most deposits.

Discussion

4.1.24 The cremation burials each comprised the remains of at least one individual, two of which (132 and 108) were possibly males. Burials 103, 108 and 132 are most likely adults (>18 years), while the others (109, 112, 120 and 141) are of older adolescents or adults. No non-metric traits were observed on any of the bones, and only two small fragments from cremation burial 103 exhibit pathology in the form of healed periostitis. Periostitis refers to fine pitting, striations or plaque-like formations on the bone surface and is frequently observed in archaeological human skeletal assemblages (Roberts and Manchester 2010, 174). It may result from infection or occur as the result of other conditions, including metabolic disease, neoplastic disease and trauma (Ortner 2003, 88). The new bone formation on the fragments from cremation burial

103 are smooth and dense, indicating that the inflammation had healed some time prior to death.

4.1.25 The bone from deposit 149, from within the glass vessel (SF 112, cremation burial 108) is likely to represent most of a formal adult cremation burial. The weight (1988.7g) is within the full range that has been observed from other archaeologically recovered burials of single adults (100–3000g) and more than double that of the reported average (600–900g) (McKinley 2013, 154). Material (45.6g) associated with this burial was also retrieved from deposits 152, 154, 155 and 157 and probably represents bone that had originally been contained in the vessel but was subsequently spilt during deposition and/or dispersed as a result of post-depositional bioturbation.

4.1.26 Deposit 156, recovered from around small, broken vessel SF 114 and urn SF 113, and associated with cremation burial 108, is probably redeposited pyre debris, considering the weight (16.5g) of the identifiable fragments and the presence of charcoal and nails. Pyre debris generally comprises a mixture of bone fragments and fuel waste such as this (McKinley 2004a, 10).

4.1.27 Cremation burial 103 had been truncated by machine and suffered possible plough damage. Although some bone may have been lost as a result of this, the weight of the recovered bone (918.4g) is still greater than the expected range for an archaeological adult cremation burial (see above). Therefore, what remains is likely to represent most of a single formal adult cremation burial (McKinley 2013).

4.1.28 The remaining urned cremation burials (112, 120 and 132) were all heavily truncated and disturbed by post-depositional agricultural ploughing. This is reflected in their low bone weights 150.4g, 15.6g and 241.6g, respectively. The fact that most of this material was recovered from within or around partial and broken pottery urns would indicate that these had once been formal cremation burials. However, it is not possible to ascertain how much of the original deposits have been recovered.

4.1.29 The two unurned cremation deposits 109 and 141 have low bone weights (26.5g and 10.0g respectively) and were recovered from shallow pits. These had also been truncated and disturbed by ploughing. Low bone weights are a common finding archaeologically, and where undisturbed examples occur, they have been termed cremation-related deposits (McKinley 2004a, 9). This interpretation could apply to the present deposits but cannot be confirmed because they have been disturbed. Furthermore, the combination of the location of deposit 141 (in pit 142 located just south-east of urned cremation burials 112 and 120), its low bone weight and radiocarbon date, suggest that the bone could represent material that had been disturbed/washed in from urned burials 112 and 120. However, this also cannot be confirmed.

4.1.30 Overall, the bone from most contexts is predominantly white or white/grey in colour (fully/partially oxidized), indicating that the bodies had been placed on the pyre in a way as to maintain a good oxygen supply and high temperatures (300–>600°C) (McKinley 2013, 158). Some internal surfaces, joint surfaces and fragments of the lower spine, particularly in cremation burial 108, are grey or blue grey in colour indicating full oxidisation was not achieved. It is probable that these areas were

protected by cartilage and/or soft tissue, or that the pyre temperature was not maintained at a constant heat or for a long enough period of time (McKinley 2013).

4.1.31 Placing cremated remains within ceramic containers was commonplace during the Roman period and indicates a cultural and social choice (Biddulph 2005, 23; Williams 2004, 417). In general, 'everyday' pots were often used, as seen in cremation burials 103, 112, 120 and 132. The only evidence of pyre or grave goods is the small piece of worked bone recovered from deposit 115 (cremation burial 112). It is possible that this was once part of a gaming piece or die. Gaming items occur sporadically in Romano-British cremations in both glass and bone form, with single counters recorded from several burials (Philpott 1991, 185).

4.1.32 The special treatment accorded to cremation burial 108 sets it apart from the others in the group. The use of glass vessels as cinerary containers was a Roman introduction to Britain, with the late 1st and early 2nd centuries seeing an extension of its use into rural contexts, mainly at roadside settlements or villas (ibid., 26–7). Other examples of glass cinerary urns have been found at Bishopsgate, London, King Harry Lane, St Albans, Colchester and Kelvedon, Essex (ibid., 26; Biddulph 2005, 35). They were clearly important and associated with high-status burial rites (ibid., 34; Williams 2004, 418). The placing of the glass vessel within a larger ceramic urn and subsequent burial with deliberately placed packing stones shows that care was taken to protect the glass vessel and its contents. In addition, it is possible that the individual from this burial had been placed upon a bier or bench to be transported and laid out for cremation (Boston and Witkin 2006, 40), if the nails found within deposit 156 are considered to be associated pyre debris.

4.1.33 The archaeological context suggests that the individual from cremation burial 108 was an important member of society and this is also reflected osteologically. For example, it is rare that the skeletal remains of an entire individual are present in cremation burials (McKinley 1997, 137), as seen here. Furthermore, the bone weight, large fragment size and high representation of fragile elements from the axial region of the skeleton can be considered to reflect the fact that time and care had been invested in collecting the remains of this individual from the pyre for burial. The lack of any stratigraphic arrangement of body parts within the urn suggests that the remains were raked together and bone picked out for burial rather than any preference given to specific skeletal regions (Boston and Witkin 2006, 59).

4.2 Charcoal *by Denise Druce*

Introduction

4.2.1 Following the assessment of some 44 samples collected during the excavations at the site, further analysis was carried out on the charcoal from two of the Roman cremation burials from Area C (urned cremation burials 108 and 103) to explore associated funerary practices, including the nature of wood selection for pyre construction (eg fill 156 from urned cremation burial 108). The contents of two funerary urns (SF 113 from cremation burial 108 and SF 100 from cremation burial 103) and a glass vessel (SF 112 from cremation burial 108) were analysed, which, along with the cremated bone evidence, provide information about the nature of the funerary process. The charcoal

from early–middle Roman posthole 6 of structure 71 was also analysed to provide comparative data on non-funerary wood selection and the character of local woodland.

Methodology

4.2.2 Each sample was processed using a modified Siraf-type flotation machine. The resulting flots were collected onto a 250µm mesh and air dried. The residue was also dried and checked for any residual organic material and finds. The flots were examined with a Leica MZ6 binocular microscope, and, initially, any archaeobotanical remains, such as charred plant material and charcoal, were quantified. The presence of other remains, such as coal, bone and pottery fragments were also noted.

4.2.3 Charred plant remains, comprising cereal grains, including spelt wheat (*Triticum spelta*), were recorded in just one feature, early–middle Roman stone-lined culvert 48. The overall quantity of charred plant remains, however, did not warrant further analysis. The most common archaeobotanical material recovered was charcoal, which was most abundant in the non-funerary features in Area A, including analysed posthole 6. Most of the cremation deposits, including the urns and the surrounding cremation burial pit deposits/backfills contained only small amounts of comminuted charcoal. It was felt, however, that the possible pyre deposit (156), and the amalgamated spit samples from urn SF 113 (fill 154) and urn SF 100 (fill 106), produced enough charcoal to warrant further analysis. The contents of the glass vessel (SF 112) were also analysed, given it came from the same cremation burial (108) as urn SF 113.

4.2.4 Charcoal analysis followed standard methods, where *c* 100 fragments (or the entirety if less than this) of >4mm, or failing this >2mm, in size were identified. The percentage volume of the analysed material in relation to the whole flot was also calculated. The charcoal fragments were sorted initially into groups based on the features visible in transverse section using a Leica MZ6 binocular microscope at up to x40 magnification. Representative fragments of each group were then fractured to reveal both radial and tangential sections, which were examined under a Meiji incident-light microscope at up to x400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. Characteristics, such as possession of tyloses in hardwoods, and growth ring curvature were also noted as an aid to identify wood maturity. Other remains were quantified on a scale of 1 to 4, where 1 = <5 items, 2 = 6–25, 3 = 26–100, and 4 = >100 items.

Results

4.2.5 Charcoal preservation was generally good, although high levels of mineral encrustation on some of the material meant that many fragments, in particular alder (*Alnus glutinosa*) and hazel (*Corylus avellana*), could not be differentiated as some of the key diagnostic features needed to distinguish the species were not observed. The taxonomic level of identification varies due to the morphological similarity of species within a family or genus, for example willow (*Salix* sp.) and poplar (*Populus* sp.), sloe/blackthorn, wild cherry or bird cherry (*Prunus* sp.) (referred to as blackthorn-type), or Maloideae, which includes hawthorn, apple, pear or whitebeam (referred to as hawthorn-type) (Table 3).

4.2.6 Possible pyre material 156, and the contents of urn SF 113 from the same cremation burial (108), and urn SF 100 from cremation burial 103 produced mixed assemblages dominated by oak (*Quercus* sp.) and alder and/or hazel. Although much of the alder/hazel could not be differentiated, hazel is the only taxon that was positively identified. Other taxa are generally rare and comprise a diverse range, including hawthorn-type, field maple (*Acer campestre*), willow/poplar, blackthorn-type, holly (*Ilex aquifolium*) and ash (*Fraxinus excelsior*). The lack of any obvious oak heartwood and the presence of frequent oak sapwood, and small roundwood, especially in pyre deposit 156, suggests that the pyre wood comprised the trunks of young trees and/or branch wood.

4.2.7 Modern experiments using traditional pyre construction techniques suggest that roughly one ton of wood is required to cremate an average human body (McKinley 2004b), and although trunks/branches of young trees might provide a reasonable fuelwood, very large quantities were likely to have been required. Small quantities of other taxa are often recorded in cremation deposits, which tend to be interpreted as comprising the remains of kindling, packing or pyre goods (Challinor 2009).

4.2.8 The small volume (less than 2.5ml) of charcoal recovered from the urns and the glass vessel may indicate that these funerary items were not utilised for the deposition of pyre material. It is possible that the charcoal contained within them represents casually dispersed pyre material or settlement debris, which was present in the soil used to backfill the cremations. Indeed, this may be supported by the presence of coal fragments in the urns and glass vessel. In turn, it is possible that certain funerary items received carefully hand-picked cremated bones. It is notable, for example, that appreciable amounts of human bone were only recovered from the glass vessel.

4.2.9 Middle Roman posthole 6 produced a very similar range of wood taxa to the cremation features. The charcoal assemblage from this feature is dominated by oak and alder/hazel (both alder and hazel were positively identified) but also contained relatively more ash. The deposit also contained frequent fragments of coal, including pieces larger than 4mm. The precise origin of the coal is unclear, though it is possible that coal was used as fuel at this time, perhaps to supplement wood as a fuel.

Area		C	C	C	C	A
Context No.		156	154	149	106	7
Feature No.		Urned cremation burial pit 151	Urned cremation burial pit 151	Urned cremation burial pit 151	Urned cremation burial pit 104	Pit/posthole 6
Description		Possible pyre material	Contents of urn SF 113	Contents of glass vessel SF 112	Contents of urn SF 100	Pit/posthole fill
Group No.		108	108	108	103	71
Date/phase		E–MR	E–MR	E–MR	E–MR	E–MR
Sample Size L		40	70	8.75	16	36
Notes		Alder/hazel mostly twig fragments	Amalgamation of 5 spit samples	Amalgamation of 7 spit samples	Amalgamation of 3 spit samples	Several >4mm coal pieces

Area		C	C	C	C	A
Context No.		156	154	149	106	7
Flot size (ml)		70	2.5	2	1	250
% >4mm charcoal analysed		100%	100%	100%	100%	50%
% >2mm charcoal analysed		100%	100%	100%	100%	-
Acer campestre	field maple	5r	4		1	4
Alnus glutinosa or *Corylus avellana*	alder/hazel	32r	38	2	21	50
Alnus glutinosa	alder					2
Corylus avellana	hazel	24r				3r
Fraxinus excelsior	ash		1			18sr
Ilex aquifolium	holly		1		3	2r
cf Maloideae	hawthorn-type	6r	3		4	6
Prunus sp.	blackthorn-type	2r	1	1	4	4r
Quercus sp.	oak	36	54s	3	9	32sr
cf *Salix* sp./*Populus* sp.	willow/poplar		4	1r		
Indeterminate		10r	20	2r	3	
No. of charcoal fragments analysed		115	126	8	45	121
Other remains						
<2mm charcoal		(4)	(3)	(3)	(3)	(4)
<2mm cremated bone fragments			(1)	(3)		
Pottery fragments			(2)			
Glass fragments			(1)			
Coal fragments			(2)	(2)	(2)	(3)

Table 3: Results of charcoal analyses from selected features (Charcoal figures are actual counts where r = abundant round wood, and s = abundant sap wood. Other remains are quantified on a scale of abundance, where (1) = <5 items, (2) = 6-25, (3) = 26-100, and (4) = >100 items)

Discussion

4.2.10 There is much evidence to suggest that one type of tree, often oak or ash, was used for both prehistoric and Roman cremation practices in southern Britain (Robinson 1995; Gale 2004; Challinor 2007; 2012), and this has been argued to be evidence of ritual selection (Challinor 2007). The charcoal content of Roman cremation assemblages, however, does vary and was probably influenced by the availability of local woodland and/or proximity to other activities that may have generated wood by-product. Previous evidence from a Romano-British cremation site in Kempsford Quarry, Gloucestershire, for example, shows a preference for either oak, hawthorn-type, or blackthorn-type charcoal (Challinor 2007). Similarly, a late Roman cremation deposit from Longford, also in Gloucestershire, was dominated by hawthorn-type charcoal, with a sub-component of oak (Druce in prep).

4.2.11 The data presented here inform understanding of local fuelwood availability and selection. The extent of woodland clearance in the region prior to the Roman period

is difficult to gauge. However, the evidence from Ruddle Court Farm suggests that at least some young oak, ash and hazel woodland was present in the area during the early–middle Roman period. Though limited, the evidence is consistent with previous data from the Gloucestershire region indicating the non-specific selection of pyre material, which may be attributed to a reduction in mature woodland. The small volume of charcoal recovered from the cremation urns and glass vessel suggests that pyre charcoal may have been purposefully avoided for placement in the funerary items.

5 DISCUSSION

5.1 Roman activity

5.1.1 No features encountered on site pre-date the Roman period, and no prehistoric material culture, even as residual finds, was recovered during the excavation. This correlates with the results of the 2019 evaluation (Border Archaeology 2019) and the paucity of known prehistoric remains within the surrounding landscape.

5.1.2 The late Iron Age/early Roman period is represented by a small quantity of pottery, generally as residual finds in later features, and a 1st-century AD gold Vespasian *aureus* (SF 1). The latter may have been residual, but it could indicate the purposeful deposit of a curated item. Human bone from a cremation burial was also radiocarbon dated to this period, but may have been contaminated and biased by the 'old wood' affect (see below). The first substantial evidence of activity at the site is evidenced by a small number of ditches that divided the landscape, a stone-lined water-tank and associated culvert, and a small number of pits and postholes (some of which may have formed a possible structure) all concentrated in the north of the site in Area A. These all dated to the early–middle Roman period, mostly from the 2nd and into the 3rd century AD. A group of cremation burials, probably forming a small cemetery, located to the south-west in Area C also date to this phase of activity.

5.1.3 The pottery evidence also demonstrates that land division and burial activity at the site continued into the later Roman period. Another cremation burial, located away to the north of the early–middle group, also dated to this phase.

Land division and industrial activity

5.1.4 The first phase of land division occurred during the later 1st–2nd centuries. Ditch 69 crossed the northern area and perhaps marked part of a small enclosure or field. Associated pottery suggests that ditch 69 was infilled during the 2nd century. Broadly parallel ditch 70 may have been contemporary with ditch 69, forming the western extent of an enclosure or field, though it is possible that this was a later phase of land division, as a small quantity of pottery suggests it became infilled during the later Roman period. Undated ditches 1014 and 1016 further to the north-west may have also been related to the Roman activity in this area. Situated between ditches 69 and 70 were the remains of a possible structure (71), perhaps a post-built building or a fence. The pottery suggests that the structure was abandoned in the 3rd century. This was superseded by a later Roman ditch (72) that was aligned parallel to ditches 69 and 70. Evidence of Romano-British field-systems is otherwise poor from the Forest of Dean, with known examples associated with settlements with masonry buildings, such as at Stock Farm and Rodmore Farm (Hoyle 2019, 62–3). There are few signs of buildings at Ruddle Court Farm, and the small CBM assemblage does not indicate any substantial structures on site but rather represents re-used material from elsewhere.

5.1.5 Following the cessation of ditch 69, curved ditch 73 was dug during the later 2nd/early 3rd century and was superseded by ditch 74 shortly after, albeit on a slightly different alignment. The ditches may have been related to stone-lined water-tank 67 and culvert 48. The function of the tank is uncertain. However, of the archaeological features

sampled during excavation for environmental analysis, only culvert 48 produced quantities of charred cereal grains, including spelt wheat. Excavations at Whitelands Farm, near Bicester in Oxfordshire, uncovered an early Roman stone-lined tank and culvert of similar type to that at Ruddle Court Farm, though it was slightly larger and more elaborate with the remains of a sluice, and found nearby several corndryers (Martin 2011, 182). The remains of a probable malthouse complex were excavated at Weedon Hill, Buckinghamshire (Wakeham and Bradley 2013). In this case, a large rectangular stone-floored structure was located at the entrance to a small a double-ditched enclosure, within which an oven or corndryer was also situated. Germinated grains were recovered from the fills of the rectangular structure, which was supplied by a natural stream rather than a stone-lined culvert (ibid., 6–8). Other examples of similar structural remains have been found at a small number of Roman sites across Britain, though the lack of supporting environmental evidence from these sites means that it cannot be established whether they were specifically associated with malting (Lodwick 2017, 64).

5.1.6 An alternative explanation is that the tank and culvert were associated with iron working. Iron slag was recovered from the basal fill of the feature, which although could represent dumped material may be *in situ* working waste. Water tanks would have been an important feature of a smithy, used to cool or quench metal objects after they had been formed (HE 2018). This feature dated much earlier than the late Roman slag deposit (204) in area D. However, it is worth noting that slag material was found right across the site during the excavation, including in many of the Roman ditches and pits in Area A, and in features dating to the Roman period discovered during the evaluation (Border Archaeology 2019). Features dating to both the earlier and later Roman periods contained quantities of pottery, animal bones, fired clay and slag, suggestive of settlement and ironworking activity. The post-built structure may represent a windbreak or a small smithy shelter. Pit 1009 probably comprised the remains of a well that was subsequently used for refuse disposal, including pottery, CBM, unworked burnt stone, fired-clay hearth lining and ironworking waste, following its disuse in the later Roman period. The low density of features on site, particularly in Area A, and the generally shallow nature of the majority of Roman features suggests that later ploughing had truncated the upper parts of existing features and may have removed even-shallower features that could have been present. This would also explain the quantities of slag found in sub-soil layers in the evaluation and the excavation. It is unclear whether the large slag heap (204) discovered in Area D represented a 'ramping up' of iron production during the later period or if this was simply a product of the single radiocarbon date of this period. Nonetheless, it would appear that iron production and iron working was occurring from the 2nd to 4th centuries AD, with some activity occurring beyond the excavated areas. A possible iron-production furnace was identified during the geophysical survey close to evaluation trench 1 (Border Archaeology 2019, 8, fig. 2), though this area was not investigated during the excavation.

5.1.7 The Roman iron industry is well attested in the Forest of Dean District (Walters 1993; Small and Stoertz 2006, 26–7; Hoyle 2017, 139–42; 2019, 131–7; Smith 2017, 179–80), with nearby sites including Church Lane, Alvington (Hood 2013), Millend Lane,

Blakeney (Barber and Holbrook 2000), and The Chesters, Woolaston (Fulford and Allen 1992). Within this area, small-scale rural production sites associated with some villas and small settlements appears to have been the norm and generally without political, religious or military control (Hoyle 2017, 142; Smith 2017, 183–5; Border Archaeology 2019, 29). If the site was engaged with industrial activity, it may have had access to wider markets since it lay less than 500m west of the A48, which is thought to be 'more or less' the line of the Roman road from Caerwent northwards to Newnham, *c* 1.4km north-east of the site, where a ford (passable at low tide until 1802) crossed the Severn to Arlingham (Hoyle 2019, 77–8).

Burial and status

5.1.8 Cremation burial was the predominant rite in southern Britain during the early Roman period and continued into the middle Roman period, but by the late 3rd century it had largely been replaced by inhumation burial, though later cremation and earlier inhumation burials have been documented (Pearce 2008, 30, 35–6). A typical Roman cremation burial often comprised the deposition of the cremated remains within a pottery cinerary urn that was then buried either in a hole in the ground, placed in tile, stone or wooden cists, in masonry *mausolea* or under barrows (Smith 2018, 259). There are a number of known cemeteries and burials of the Roman period within the Forest of Dean area and the wider region, often being found associated with farming settlements (Heighway 1980; Webster 2007, 159; Hoyle 2017, 75–6). However, evidence is especially limited for those dating to the earlier Roman period and cremation burials in particular (eg Webster 2007, 159; Smith 2018, 216). Therefore, the burial remains found at Ruddle Court Farm provide an important example of a rural cremation cemetery of earlier Roman date.

5.1.9 Set away from the agricultural activity in Area A, the land to the south-west in Area C appears to have been used for burial in the 2nd century AD. Six cremation burials were discovered dating to this phase, four of which were urned. In contrast to inhumation burials, cremation burials are often shallower and, particularly when unurned and without substantial grave goods, are more vulnerable to post-depositional disturbance (Pearce 2008, 37). This has been the case at Ruddle Court Farm, with the truncated burials generally containing only small quantities of cremated bones. Nevertheless, a notably rich cremation burial (108) within a stone-lined/packed pit was recorded, suggesting that the burial was someone of high rank or social standing. The cremated remains were deposited within a glass vessel (SF 112) that may have been stoppered by a small, deliberately shaped piece of pottery. The glass vessel was placed within a broken Baetican Dressel 20 amphora (SF 113), adjacent to which was potential pyre material that may have been contained within a Gaulish amphora (SF 114), though the fragmentary nature of this vessel makes this unclear. Within the burial pit, other pottery sherds were recovered, including several sherds (SFs 106–9) that may have capped the burial, as well as a large number of iron nails/fragments that may suggest that organic boxes or caskets were deposited within the burial pit. Similar amphora burials have been recorded in the eastern cemetery in London (Barber and Bowsher 2000), mostly dating to late 2nd or 3rd century. Urned cremation burials have been found in the wider region, including within the urban cemeteries of Gloucester (Heighway 1980, 63, 66; Ellis and King 2014) and Cirencester (McWhirr *et al*. 1982, 97–

100), as well as isolated examples from Syreford (Bunt 1968), Gloucester (McWhirr 1981), and Lechlade (Allen *et al*. 1993; see below). The use of a glass vessel as a cinerary urn in burial 108 is a rare example in the region, particularly as it is in a rural context (Smith 2018, 259). An example, however, was recorded in a cemetery outside of the south gate of the Roman town of Cirencester, where a glass cinerary urn containing cremated remains was wrapped in lead and placed within a stone container (McWhirr *et al*. 1982, 207). Examples of cremation burials containing glass cinerary urns have also been identified further away in the major Roman towns of Colchester, St Albans, York and Caerleon (Allen 1983). However, the use of glass vessels as grave goods appears to have been more prevalent (ibid., 471–2).

5.1.10 Recent analysis of Roman burial practices has identified that there are significant differences in the burial records found at various Roman occupation sites, including towns, roadside settlements, villages, military *vici*, villas and farmsteads (Smith 2018, 235). It is possible that smaller rural farmsteads, which were more numerous during the earlier Roman period, were more likely to have continued traditional funerary practices that did not involve the formal interment of the dead (ibid., 249–50). For example, a small mid 2nd-century inhumation cemetery was discovered during archaeological investigations in Dymock, Gloucestershire, and may have been a continuation of late Iron Age traditions (Catchpole 2007, 216). Another possibility is that individuals from such settlements may have been buried some distance from the main occupation areas, which has been argued to account for ostensibly isolated rural burials, including one or two burials interspersed among field systems to larger rural cemeteries that may have served a number of different communities (Smith 2018, 250). An isolated urned cremation burial of early 2nd-century date was found at Roughground Farm, Lechlade, Gloucestershire, though this example was situated within a square ditched enclosure rather than as part of a cemetery and was some distance from the contemporary settlement (Allen *et al*. 1993, 52–3). It is likely that the cremation cemetery at Ruddle Court Farm was associated with nearby rural settlement that was possibly located further northwards beyond the limits of the site, as suggested by the concentration of Roman agricultural remains revealed in Area A.

5.1.11 The numbers of rural cemeteries increased during the early Roman period, although their fairly modest sizes suggest that communities were being highly selective in the individuals that they interred and were most likely governed by different social, cultural and economic factors (Smith 2018, 250, 261). Evidence of settlement activity directly associated with the cremation cemetery at Ruddle Court Farm was not clearly identified by the excavations. However, the small number of burials and the notably rich burial (108) most probably indicate elements of high-status earlier Roman activity at the site and within the surrounding landscape. The glass cinerary urn, the amphorae, iron nails and other pottery sherds that comprised burial 108, as well as the stone-lined pit in which they were deposited, probably indicates a wealthy individual was interred (see ibid., 259, 261).

5.1.12 The high status of earlier Roman activity is also reiterated by the presence of a 1st-century AD gold Vespasian *aureus* (SF 1), recovered from the pit/posthole of a possible structure (71). The coin may have been deliberately deposited as a curated item sometime prior to or during the 3rd century, perhaps relating to the foundation or

abandonment of the possible structure in which it was found. Furthermore, the burial of another cremated individual, also within an urn, during the late Roman period, albeit located separately from the earlier burials, may demonstrate the continued importance and status of this location in the landscape. It is also worth pointing to the fact that Romano-British burial evidence in the Forest of Dean region is otherwise poor and currently restricted to disarticulated remains found at Reddings Lane, Staunton, and a possible stone sarcophagus discovered at Whitecliffe, Coleford (Hoyle 2019, 74–75). Further evidence of high-status activity dating to the middle Roman period has recently been discovered *c* 12km to the south of Ruddle Court Farm at Clanna Lane, Alvington. Small-scale excavation here revealed part of a V-shaped ditch that contained a late 2nd-century AD pottery assemblage, about 30% of which was imported samian ware alongside mortaria and course ware bowls, jars and cups (GA 2021). The remains were thought to reflect the location of a relatively wealthy settlement, possibly linked to a contemporary iron-working site 400m to the south.

5.2 Anglo-Saxon activity

5.2.1 Early medieval activity at the site is restricted to one feature (pit 200) that was dated by two radiocarbon samples to the 8th–9th centuries cal AD. There is no evidence for continued activity following the later Roman phase, when it appears that the site was abandoned in the intervening period, although it is possible that industrial activity perhaps continued sporadically through much of the 1st millennium AD. Although heavily truncated, pit 200 in Area D is suggestive of a furnace or perhaps more likely an ore- or charcoal-burning pit/hearth. The form of nearby undated pits 190 (also in Area D) and 179 (in Area C) are suggestive of similarly associated features, though these could have been Roman in date. While pit 200 may have been related to iron production, it did not contain any slag or iron ore; if it produced charcoal, this may have been for use in smelting furnaces, though any link to iron production here is only tentative.

5.2.2 In contrast to the Roman period, there is very limited evidence of Anglo-Saxon ironworking within the Forest of Dean (Hoyle 2017, 139–42; 2019, 137–8). It is worth noting that iron-smelting sites were often located away from settlements during the Anglo-Saxon period and it has been argued that this was due to taboos surrounding metalworking (Birch 2011). Pit 200 in particular is similar in size and form to a pit excavated at Staveley Lane, Eckington, in Derbyshire, where evidence of a similar sequence of Roman and Anglo-Saxon activity was encountered (Allen *et al*. 2018). At Eckington, pit 37 was interpreted as the remains of a charcoal-burning pit that had been backfilled with large quantities of iron-processing debris, rather than a furnace, due to its large size (ibid., 85). Although similar in morphology to the Eckington feature, pit 200 had not been backfilled with quantities of waste material. Similarly large pits that have been related to Anglo-Saxon smelting (dated to the 8th–9th centuries) have been recorded at Clearwell Quarry, St Briavels, Gloucestershire (Pine *et al*. 2009), Ramsbury, Wiltshire (Haslam *et al.* 1980), and Peterborough, Cambridgeshire (Wall 1999). These pits were interpreted as ore-roasting and charcoal-burning pits/hearths and were found in association with furnaces and other features related to iron production.

5.2.3 The reuse of the abandoned Roman site at Ruddle Court Farm may have been significant. The reuse of the ancient site during the early medieval period may have formed an integral aspect of Anglo-Saxon social and political structures as is seen in other contexts of reuse, particularly of prehistoric and Roman monument sites for Anglo-Saxon burial (Williams 1997). A comparable example is the site at Eckington, Derbyshire, where an early Roman settlement enclosure was reused as the location for iron production in the Anglo-Saxon period (Allen *et al.* 2018, 86). The upper fills of the Roman ditched enclosure contained Anglo-Saxon iron slags and other related materials that were radiocarbon dated to the later period, suggesting that the Roman ditch remain extant within the landscape long after the settlement had been abandoned (ibid., 68). Owing to truncation at Ruddle Court Farm, it is not clear if any of the Roman features would have remained sufficiently unfilled to still be identifiable in the landscape by the 8th–9th century.

5.3 Medieval/post-medieval–modern activity

5.3.1 Evidence of medieval/post-medieval activity was largely concentrated in Area C in the south of the site, in the form of several ditches that appear to have defined two perpendicular trackways and others that further divided the landscape, presumably for agricultural purposes. A small number of pits containing medieval and post-medieval finds also attest to associated agricultural land use. The presence of a small quantity of medieval–Tudor CBM, in particular, suggests the reuse and deposition of building materials from a medieval/early post-medieval building, perhaps from a nearby farmstead.

5.3.2 Analysis of historic mapping dating to the 18th–20th centuries demonstrates the agricultural nature of the landscape of which the site formed a part. The three excavation areas were located in a former/extant agricultural field, with field boundaries falling outside the excavation areas. The trackways and various ditches revealed in Area C do not correlate with any features illustrated on historic Ordnance Survey mapping, suggesting that these land entities either pre-dated the late 19th century or did not warrant inclusion on the historic maps.

5.3.3 The remains of a red brick and stone wall foundation revealed in the baulk of Area C also demonstrate the presence of a building during the later post-medieval/modern period. A rectangular building is depicted on late 19th- and 20th-century OS maps, located on the western edge of the extant field in which the site is situated. However, its location does not correspond with the building remains revealed by the excavation.

5.3.4 The insertion of more-recent land drains across the site also demonstrates the continued agricultural use of the landscape, as reflected on late 19th- and 20th-century OS maps.

6 PUBLICATION AND ARCHIVING

6.1 Publication

6.1.1 The results of the excavation are described comprehensively in this excavation report, which will be submitted to Gloucestershire HER and disseminated online, being made available for download as a PDF through OA's online library (https://library.oxfordarchaeology.com/6043/).

6.1.2 A synthetic article will also be prepared for publication in the Gloucestershire county archaeological journal, *Transactions of the Bristol and Gloucestershire Archaeological Society*. This will include the salient elements of the project, including the more important data, and a full interpretation of the site, presenting its significance within its wider regional context. The journal article will be fully cross-referenced with the online excavation report.

6.2 Archiving, retention and disposal

6.2.1 On completion of the reporting stage of the project, the finds and documentation archive will be prepared for deposition in accordance with the methodology set out in the WSI (CgMs 2019) and current professional standards (UKIC 1990; Brown 2011; CIfA 2014c; GCC 2018).

6.2.2 Subject to agreement with the legal landowner, the site archive will be deposited with Dean Heritage Centre under accession number SOYDH:2019.9.

6.2.3 It is recommended that the finds be retained in the archive, with the exception of undiagnostic fired clay and CBM, burnt stone, and the early 20th-century copper-alloy button, which can be considered for disposal. The Roman pottery, glass and metalwork in particular have the potential to inform local and regional research questions. The gold Vespasianic *aureus* is a significant find, and a separate comparative study should be considered and the results published in a regional or national journal.

6.2.4 The human skeletal assemblage is currently held at OA South under Ministry of Justice burial licence 19-0135. This licence is valid until 02 June 2024, by which time the remains must have been reburied. In the event that the remains are not ready for reburial by this time, the licence should be deferred by application to the Ministry of Justice.

7 BIBLIOGRAPHY

Allen, D, 1983 Roman glass from selected British sites, unpubl PhD thesis, Univ College Cardiff

Allen J R L, and Fulford M G, 1990 Romano-British and later reclamations on the Severn salt marshes in the Elmore area, Gloucestershire, *Trans Bristol Gloucestershire Archaeol Soc* 108, 17–32

Allen, M, Young, T, Simmonds, A, and Champness, C, 2018 A Roman enclosed settlement with evidence for early medieval iron smelting at Staveley Lane, Eckington, *Derbyshire Archaeol J* 138, 61–91

Allen, T, Darvill, T, Green, S, and Jones, M, 1993 *Excavations at Roughground Farm, Lechlade, Gloucestershire: a prehistoric and Roman landscape*, Thames Valley Landscapes: The Cotswold Water Park, volume 1, Oxford

AlQahtani, S, 2009 *Atlas of tooth development and eruption*, Queen Mary University of London, Queen Mary and Westfield College, Barts and the London School of Medicine and Dentistry, London

Archaeological Surveys, 2018 Ruddle Court Farm, Newnham, Gloucestershire: magnetometer survey report, unpubl Archaeological Surveys Ltd Rep J761

Aufderheide, A C, and Rodríguez-Martin, C, 1998 *The Cambridge encyclopedia of human paleopathology*, Cambridge

Barber, B, and Bowsher, D, 2000 *The eastern cemetery of Roman London: excavations 1983–1990*, Museum of London Monogr 4, London

Barber, B, Bowsher, D, and Whittaker, K, 1990 Recent excavations of a cemetery of 'Londinium', *Britannia* 21, 1–12

Barber, B, and Holbrook, N, 2000 A Roman iron-smelting site at Blakeney, Gloucestershire: excavations at Millend Lane 1997, *Trans Bristol Gloucestershire Archaeol Soc* 118, 33–60

Barclay A, Knight D, Booth P, Evans H, Brown D, and Wood I, *2016 A standard for pottery studies in archaeology*, Prehistoric Ceramics Research Group, the Study Group for Roman Pottery and the Medieval Pottery Research Group, http://romanpotterystudy.org/new/wp-content/uploads/2016/06/Standard_for_Pottery_Studies_in_Archaeology.pdf

Bass, W, 2005 *Human osteology: a laboratory and field manual*, Columbia

BGS, 2020 *Geology of Britain viewer*, British Geological Survey, DOI: http://mapapps.bgs.ac.uk /geologyofbritain/home.html

Biddulph, E, 2005 Last orders: choosing pottery for funerals in Roman Essex, *Oxford J Archaeol* **24 (1)**, 23–45

Birch, T, 2011 Living on the edge: making and moving iron from the 'outside' in Anglo-Saxon England, *Landscape History* **32 (1)**, 5–23

Bland, R, and Loriot, X, 2010 *Roman and early Byzantine gold coins found in Britain and Ireland: with an appendix of new finds from Gaul*, Royal Numismatic Society, London

Border Archaeology, 2019 Archaeological field evaluation: Ruddle Court Farm, Newnham, unpubl Border Archaeology Rep BA1862RCFN/REP

Boston, C, and Witkin, A, 2006 Human remains from the Roman cemetery at Pepper Hill, Southfleet, Kent, CTRL Specialist Archive Report, London

British Museum Collections online, DOI: https://www.britishmuseum.org/collection/term/BIB 8182

Brown, D, 2011 *Archaeological archives: a guide to best practice in creation, transfer and curation*, 2nd edn, Reading

Buikstra, J E, and Ubelaker, D H, 1994 *Standards for data collection from human skeletal remains*, Arkansas Archaeol Survey Res Ser **44**, Fayetteville, AR

Bunt, J S, 1968 Romano-British cinerary urn from Syreford, Glos, *Trans Bristol Gloucestershire Archaeol Soc* **87**, 202

Callendar, M H, 1965 *Roman amphorae*, Oxford

Catchpole, T C, 2007 Excavations at the Sewage Treatment Works, Dymock, Gloucestershire 2002, in Roman Dymock: Archaeological investigations 1995-2002 (T Catchpole, T Copeland, and A Maxwell), *Trans Bristol Gloucestershire Archaeol Soc* **125**, 137–219

CgMs, 2019 Written scheme of investigation for a programme of archaeological mitigation: land at Ruddle Court Farm, Newnham, Gloucestershire, unpubl CgMs Rep

Challinor, D, 2007 The wood charcoal, *in A Roman rural landscape at Kempsford Quarry, Gloucestershire* (P Booth and D Stansbie), Oxford Archaeol Occ Paper **15**, Oxford

Challinor, D, 2009 Charcoal, in *Kentish sites and sites of Kent: a miscellany of four archaeological excavations* (P Andrews, K Egging Dinwiddy, C Ellis, A Hutchenson, C Philpotts, AB Powell and J Schuster), Wessex Archaeology Rep **24**, Salisbury, 127–8

Challinor, D, 2012 Wood Charcoal, in *A road through the past: archaeological discoveries on the A2 Pepperhill to Cobham road-scheme in Kent* (T Allen, M Donnelly, A Hardy, C Hayden, and K Powell), Oxford Archaeol Monogr **16**, Oxford

CIfA, 2014a, *Code of conduct*, Chartered Institute for Archaeologists, Reading

CIfA, 2014b *Standard and guidance for archaeological excavation*, Chartered Institute for Archaeologists, Reading

CIfA, 2014c *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*, Chartered Institute for Archaeologists, Reading

Clifton-Taylor, A, 1987 *The pattern of English building*, London

Cool, H E M, and Price, J, 1995 *Roman vessel glass from excavations in Colchester, 1971–85*, Colchester Archaeol Rep **8**, Colchester

Dragendorff, H, 1895 Terra sigillata, ein Beitrag zur Geschichte der grieschichen und römischen Keramik, *Bonner Jahrücher* **96**, 18–155

Druce, D, in prep The charred plant remains and charcoal from Longford, Gloucestershire, Oxford Archaeology Rep

Dungworth, D (ed.), 2015 *Archaeometallurgy guidelines for best practice*, reissued edn, Swindon

Ellis, P, and King, R, 2014 Gloucester: the Wotton cemetery excavations, 2002, *Britannia* **45**, 53–120, DOI: https://doi.org/10.1017/S0068113X14000397

Evans, C J, 2019 Appendix 5: pottery and ceramic building material, in Border Archaeology 2019, 93–5

Fitzpatrick, A P, and Powell, A B, 1997 *Archaeological excavations on the route of the A27 Westhampnett bypass, West Sussex, 1992, volume 2: the cemeteries*, Salisbury

Fulford, M G and Allen, J R L. 1992. Iron-making at the Chesters villa, Woolaston, Gloucestershire: survey and excavation 1987–91, *Britannia* **23**, 159–215

Gale, R, 2004 Charcoal from later Neolithic/early Bronze Age, Iron Age and early Roman contexts, in *Gravelly Guy, Stanton Harcourt, Oxfordshire: the development of a prehistoric and Romano-British community* (G Lambrick and T Allen), Thames Valley Monogr **21**, 445–56, Oxford

GCC, 2018 *Gloucestershire archaeological archive standards*, revised edn, Gloucester

Gonçalves, D, 2011 The reliability of osteometric techniques for the sex determination of burned human skeletal remains, *Homo J Comparative Human Biol* **62**, 351–8

Hammerson, M J, 2002, The Roman coins, in *Settlement in Roman Southwark: archaeological excavations (1991–8) for the London Underground Limited Jubilee Line Extension Project* (eds J Drummond-Murray, P Thompson and C Cowan), MoLAS Monogr 12, 232–40, London

Haslam, J, Biek, L, and Tylecote, R F, 1980 A middle Saxon iron smelting site at Ramsbury, Wiltshire, *Medieval Archaeol* 24 (1), 1–68, DOI: 10.1080/00766097.1980.11735420

Hather, J G, 2000 *The identification of the Northern European Woods*, London

Hazzledine Warren, S, 1913 The opening of the Romano-British barrow on Mersea Island, Essex, *Trans Essex Archaeol Soc* xiii, 114–41

HE, 2018 *Pre-industrial ironworks: introductions to heritage assets*, Historic England, Swindon

Heighway, C, 1980 Roman cemeteries in Gloucester district, *Trans Bristol Gloucestershire Archaeol Soc* 98, 57–72

Hood, A, 2013 Evidence for Roman iron working at Church Lane, Alvington, Forest of Dean, *Trans Bristol Gloucestershire Archaeol Soc* 131, 103–22

Howgego, C, 2015 The circulation of the gold coinage of Vespasian struck in the East, in, *Studies in ancient coinage in honour of Andrew Burnett* (eds R Bland and D Calomino), London, 125–37

Hoyle, J 2017 *Research framework for Forest of Dean district, Forest of Dean archaeological survey stage 4, module 3, volume 1: introduction*, Gloucester

Hoyle, J, 2019 *Hidden landscapes in the Forest of Dean*, Swindon

Laubenheimer, F, 1985 *La production d'amphores en Gaule Narbonnaise sous le haut-empire*, Annales Littéraires de l'Université de Besançson, Franche-Comté

Lodwick, L, 2017 Arable farming, plant foods and resources, in *New visions of the countryside of Roman Britain, volume 2: the rural economy of Roman Britain* (M Allen, L Lodwick, T Brindle, M Fulford and A Smith), Britannia Monogr 30, 11–84, London

McDonnell, J G, 1986 The classification of early ironworking slags, unpubl PhD thesis, Aston Univ

McDonnell, J G, 2001 Pyrotechnology, in *Handbook of archaeological sciences* (eds D Brothwell and A M P Pollard), London, 493–506

McDonnell, (J) G, 2014 Examination of the ironworking assemblage recovered from excavations at Christchurch, Canterbury, 1986–1997, unpubl Gerry McDonnell Archaeometals Rep

McDonnell, (J) G, 2017 Report on the ironworking slags and residues recovered from the excavation at Cawston Lane, Rugby, site code: RCL, unpubl Gerry McDonnell Archaeometals Rep

McKinley, J I, 1993 Bone fragment size and weights of bone from modern British cremations and the implications for the interpretation of archaeological cremations, *Int J Osteoarchaeol* **3**, 283–7

McKinley, J I, 1994 Bone fragment size in British cremation burials and its implications for pyre technology and ritual, *J Archaeol Sci* **21**, 339–42

McKinley, J I, 1997 Bronze Age 'barrows' and funerary rites and rituals of cremation, *Proc Prehist Soc* **63**, 129–45

McKinley, J I, 2000 Cremation burials, in *The eastern cemetery of Roman London: excavations 1983–1990* (B Barber and D Bowsher), MOLAS Monogr **4**, London, 264–77

McKinley, J I, 2004a Compiling a skeletal inventory: cremated human bone, in *Guidelines to the standards for recording human remains* (eds M Brickley and J I McKinley), British Association for Biological Anthropology and Osteoarchaeology and Institute of Field Archaeologists Paper No. **7**, Reading, 9–13

McKinley, J I, 2004b The human remains and aspects of pyre technology and cremation rituals, in *The Roman cemetery at Brougham, Cumbria: excavations 1966–67* (H E M Cool), Britannia Monograph **21**, London, 283–310

McKinley, J I, 2013, Cremation: excavation, analysis and interpretation of material from cremation-related contexts, in *The Oxford handbook of the archaeology of death and burial* (eds L Nilsson-Stutz and S Tarlow), Oxford, 142–72

McKinley, J, and Roberts, C, 1993 *Excavation and post-excavation treatment of cremated and inhumed human remains*, Chartered Institute for Archaeologists Technical Paper **13**, Reading

McWhirr, A, 1981 *Roman Gloucestershire*, Gloucester

McWhirr, A, Viner, L, and Wells, C, 1982 *Cirencester excavations II: Romano-British cemeteries at Cirencester*, Cirencester

Martin, J, 2011 Prehistoric, Romano-British and Anglo-Saxon activity at Whitelands Farm, Bicester, *Oxoniensia* **76**, 173–240

Mays, S, 2021 *The archaeology of human bones*, London

Meindl, R, and Lovejoy, C, 1985 Ectocranial suture closure: a revised method for the determination of skeletal age at death based on the lateral-anterior sutures, *American J Physical Anthropol* **68**, 57–66

Mitchell, P D, and Brickley, M, 2017 *Updated guidelines to the standards for recording human remains*, British Association for Biological Anthropology and Osteoarchaeology and Chartered Institute for Archaeologists, Reading

Museum of London Collections, DOI: https://collections.museumoflondon.org.uk/online/object/739437.html [accessed 15 February 2021]

OA, 2020 Ruddle Court Farm, Newnham, Gloucestershire: post-excavation assessment statement, unpubl Oxford Archaeology Rep

Olsen, J, Heinemeier, J, Hornstrup, K M, Bennike, P, and Thrane, H, 2013 'Old wood' effect in radiocarbon dating of prehistoric cremated bones?, *J Archaeol Sci* **40 (1)**, 30–4

Ortner, D J, 2003 *Identification of pathological conditions in human skeletal remains*, 2 edn, London

Orton, C, Tyers, P, and Vince, A, 1993 *Pottery in archaeology*, Cambridge

Pearce, J, 2008 Burial evidence from Roman Britain: the un-numbered dead, in *Pour une archéologie du rite: nouvelles perspectives de l'archéologie funéraire* (ed J Scheid), Collection de L'École française de Rome **407**, Rome, 29–42

Percy, J, 1864 *Metallurgy, volume 2, part 1: properties of iron, iron ores, direct reduction processes*, reprinted by the Historical Metallurgy Society, London

Philpott, R A, 1991 *Burial practices in Roman Britain: a survey of grave treatment and furnishing AD 43–410*, BAR Brit Ser **219**, Oxford

Pine, J, Allen, J R L, and Challinor, D, 2009 Saxon iron smelting at Clearwell Quarry, St Briavels, Lydney, Gloucestershire, *Archaeol Severn Estuary* **20**, 9–40

Powell, A J, McDonnell, J G, Batt, C M, and Vernon, R W, 2002 An assessment of the magnetic response of an iron-smelting site, *Archaeometry* **44 (4)**, 651–65

Roberts, C A, and Connell, B, 2004 Guidance on recording pathology, in *Guidelines to the standards for recording human remains* (eds M Brickley and J I McKinley), British Association for Biological Anthropology and Osteoarchaeology and Institute of Field Archaeologists Paper No. **7**, Reading, 34–9

Roberts, C, and Manchester, K, 2010 *The archaeology of disease*, 3 edn, Ithaca, NY

Robinson, M, 1995 The charred plant remains, in Excavations at the former Jewsons Yard, Harefield Road, Uxbridge, Middlesex (A Barclay, A Boyle, P Bradley and MR Roberts), *Trans London Middlesex Archaeol Soc* **47**, 20–2

Scheuer, L, and Black, S, 2000 *Developmental juvenile osteology*, Oxford

Schweingruber, F H, 1990, *Microscopic wood anatomy*, 3 edn, Swiss Federal Institute for Forest, Snow and Landscape Research

Shaffrey, R, 2009 Other worked stone, in *Between villa and town: excavations of a Roman roadside settlement and shrine at Higham Ferrers, Northants* (S Lawrence and A Smith), Oxford Archaeology Monogr, Oxford, 254–7

Small, F, and Stoertz, C (eds), 2006 *The Forest of Dean mapping project, Gloucestershire: a report for the National Mapping Programme*, English Heritage Research Department Report Series 28/2006, Swindon

Smith, A, 2017 Rural crafts and industry, in *New visions of the countryside of Roman Britain, volume 2: the rural economy of Roman Britain* (M Allen, L Lodwick, T Brindle, M Fulford and A Smith), Britannia Monogr 30, London, 178–236

Smith, A, 2018 Death in the countryside: rural burial practices, in *New visions of the countryside of Roman Britain, volume 3: life and death in the countryside of Roman Britain* (A Smith, M Allen, T Brindle, M Fulford, L Lodwick and A Rohnbogner), Britannia Monogr 31, London, 205–80

Stead, I M, and Rigby, V, 1989 *Verulamium: the King Harry Lane site*, English Heritage Archaeol Rep 12, London

Timby, J, and Tyers, P, 2020 *Gloucester pottery fabric type series*, DOI: http://glospot.potsherd.net/

Tomber, R, and Dore, J, 1998 *The national Roman fabric reference collection: a handbook*, London, DOI: http://romanpotterystudy.org.uk/nrfrc/base/

UKIC, 1990, *Guidelines for the preparation of excavation archives for long-term storage*, UKIC Archaeology Section, London

Vernon, R. W, 2004 Application of archaeological geophysical techniques to the investigation of British smelting sites, 2 volumes, unpubl PhD thesis, Univ Bradford

Vernon, R W, McDonnell, G, and Schmidt, A, 1998 The geophysical evaluation of an iron-working complex: Rievaulx and environs, North Yorkshire, *Archaeological Prospection* 5 (4), 181–201

Vernon, R W, McDonnell, J G, and Schmidt, A, 1999 Medieval iron and lead smelting works: a geophysical comparison, in *Geoarchaeology: exploration, environments, resources* (ed. A M Pollard), Geological Society Special Publications 165, London, 15–34

Wakeham, G, and Bradley, P, 2013 A Romano-British malt house and other remains at Weedon Hill, Aylesbury, *Rec Buckinghamshire* **53**, 1–45

Wall, W, 1999 *Middle Saxon iron smelting furnaces and other sites along the Wing to Peterborough pipeline: archaeological evaluation and excavation*, Cambridgeshire Archaeol Field Unit Rep **158**, Fulbourn

Webster, C J, 2007 *The archaeology of South West England: South West archaeological research framework, resource assessment and research agenda*, Taunton

Webster, P V, 1976 Severn Valley wares, *Trans Bristol Gloucestershire Archaeol Soc* **94**, 18–46

Williams, H, 1997 Ancient landscapes and the dead: the reuse of prehistoric and roman monuments as early Anglo-Saxon burial sites, *Medieval Archaeol* **41 (1)**, 1–32, DOI: 10.1080/00766097.1997.11735606

Williams, H, 2004 Potted histories: cremation, ceramics and social memory in early Roman Britain, *Oxford J Archaeology* **23 (4)**, 417–27

Wright, J, Weavill, T, Barber, A, McSloy, E R, and Geber, J, 2017 Grave catalogue, in *The western cemetery of Roman Cirencester: excavations at the former Bridges Garage, Tetbury Road, Cirencester, 2011–2015* (N Holbrook, J Wright, E R McSloy and J Geber), Cirencester Excavations **VII**, Cirencester, 15–75

Young, C J, 1977 *The Roman pottery industry of the Oxford region*, BAR Brit Ser **43**, Oxford

APPENDIX A INDUSTRIAL RESIDUE TABLES

Context	Smelt slag count	Smelt slag weight (g)	Tap slag count	Tap slag weight (g)	Ore count	Ore weight (g)	High Fe slag count	High Fe slag weight (g)
1006			37	120				
1007			123	190				
1008	1349	6793	10,300	30,229			1	63
3002			3	197				
3005	2	4	15	21				
4005	15	2390	5813	8339			1	20
4006			97	464				
4008	33	50						
5005	10	1036	340	1910	5	57		
5009	411	4100	1386	8610				
5011			777	3011				
5013			69	582				
5015			218	224				
5018	1523	3222	1239	4898	2	30		
5021	230	1913	905	4068				
5023	950	3000	200	450				
5026	1262	5043	2811	12,705				
5027			122	246				
7004	76	20,001	8666	23,392	1	12	1	300
7006	2	66	13	699				
7008	19	2739	461	1854				
Total	*5882*	*50,357*	*33,595*	*10,2209*	*8*	*99*	*3*	*383*

Table A1a: List of the diagnostic slags, ordered by trench and context

Context	FL Count	FL weight (g)	Slagged lining count	Slagged lining weight (g)	Fired clay count	Fired clay weight (g)	Cinder count	Cinder weight (g)	Other
1006									
1007									
1008			36	1671					72
3002									
3005									42
4005			1	30	2	39			
4006									
4008									
5005			2	137					
5009	10	55	13	310					
5011			4	38					
5013									
5015									
5021			6	199			15	40	
5023									
5026			9	180					2
5027									
5028	4	51							
7004			3	290	1	56			
7008									
Total	*14*	*106*	*74*	*2855*	*3*	*95*	*15*	*40*	*116*

Table A1b: List of the non-diagnostic slags, ordered by trench and context

Context	Stone count	Stone weight (g)
1006	546	178
1007	318	356
1008	463	2261
3005	13	66
4005	624	4165
4006	72	861
4008	912	1770
5005	33	819
5011	6	41
5019	200	6557
5021	8680	2500
5023	49	166
5026	75	583
5027	23	313
5028	128	1091
7004	211	1244
7008	13	34
Total	*12,366*	*23,005*

Table A2: List of the heat-affected stones

Context	Smelt slag count	Smelt slag weight (g)	Tap slag count	Tap slag weight (g)	Slagged lining count	Slagged lining weight (g)	High Fe slag count	High Fe slag weight (g)	Other
1006			37	120					
1007			123	190					
1008	1349	6793	10,300	30,229	36	1671	1	63	72
Total	*1349*	*6793*	*10,460*	*30,539*	*36*	*1671*	*1*	*63*	*72*

Table A3: List of slags recovered from Trench 1

Context	Smelt slag count	Smelt slag weight (g)	Tap slag count	Tap slag weight (g)	Other
3002			3	197	
3005	2	4	15	21	42
Total	*2*	*4*	*18*	*218*	*42*

Table A4: List of slags recovered from Trench 3

Context	Smelt slag count	Smelt slag weight (g)	Tap slag count	Tap slag weight (g)	Slagged lining count	Slagged lining weight (g)	Fired clay count	Fired clay weight (g)	High Fe slag count	High Fe slag weight (g)
4005	15	2390	5813	8339	1	30	2	39	1	20
4006			97	464						
4008	33	50								
Total	*48*	*2440*	*5910*	*8803*	*1*	*30*	*2*	*39*	*1*	*20*

Table A5: List of slags recovered from Trench 4

Context	Smelt slag count	Smelt slag weight (g)	Tap slag count	Tap slag weight (g)	FI count	FI weight (g)	Slagged lining count	Slagged lining weight	Ore count	Ore weight (g)	Cinder count	Cinder weight (g)	Other
5005	10	1036	340	1910			2	137	5	57			
5009	411	4100	1386	8610	10	55	13	310					
5011			777	3011			4	38					
5013			69	582									
5015			218	224									
5021	230	1913	905	4068			6	199			15	40	
5023	950	3000	200	450									
5026	1262	5043	2811	12705			9	180					2
5027			122	246									
5028	1523	3222	1239	4898	4	51			2	30			
Total	*4386*	*18314*	*8067*	*36704*	*14*	*106*	*34*	*864*	*7*	*87*	*15*	*40*	*2*

Table A6: List of slags recovered from Trench 5

Context	Smelt slag count	Smelt slag weight (g)	Tap slag count	Tap slag weight (g)	Slagged lining count	Slagged lining weight (g)	Fired clay count	Fired clay weight (g)	Ore count	Ore weight (g)	High Fe slag count	High Fe slag weight (g)
7004	76	20001	8666	23392	3	290	1	56	1	12	1	300
7008	19	2739	461	1854								
Total	*95*	*22740*	*9127*	*25246*	*3*	*290*	*1*	*56*	*1*	*12*	*1*	*300*

Table A7: List of slags recovered from Trench 7

Context	Magnetic residue weight	Result
1007	3	
1008	1	few spheds and flakes
3005	0.1	few flakes
4005	7.3	few spheds and flakes
4006	0.1	1 sphed
5018	0.1	1 sphed
5021	0.2	few flakes
5026	4	
7004	19.4	few spheds and flakes
7008	0.1	few flakes

Table A8: Summary of the sieved samples

Context	Coal fragments count	Coal fragments weight (g)
1007	342	12
1008	29	3
3005	46	1
4005	1717	88
4006	610	125
4008	4	1
5005	320	40
5011	158	7
5015	63	8
5019	2	1
5023	19	1
5026	54	2
5027	14	1
5028	131	15
Total	*3509*	*305*

Table A9: List of the coal fragments

	Surface find at south end of the site	Trench 3 Context 2	Trench 4 Context 6	Trench 5 Context 9	Trench 7 Context 6	Trench 5 Context 26	Trench 1 Context 1008	Mean	SD
MgO	4.4	n.d.	5.3	0.2	n.d.	2.0	3.3	3.1	2.5
Al_2O_3	1.5	7.6	4.7	6.6	6.4	5.9	12.6	5.2	3.7
SiO_2	12.9	21.6	11.1	19.7	21.4	15.5	27.3	16.3	6.4
P_2O_5	1.4	2.8	12.2	3.2	2.3	5.4	1.6	3.5	3.3
S	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	n.d.
K2O	0.9	1.0	0.6	0.3	0.9	0.3	1.1	0.7	0.3
CaO	1.3	1.4	2.2	1.4	1.7	1.6	2.3	1.6	0.4
TiO_2	0.0	0.3	0.3	0.2	0.3	0.2	0.5	0.2	0.2
V_2O_5	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1
Cr_2O_3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
MnO	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.1
FeO	77.0	64.6	62.9	67.6	66.2	68.3	50.1	68.7	9.4
CoO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
NiO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CuO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

Table A10: Semi-quantitative data obtained from the HH-XRF spectra for the tap slag samples (weight %, n.d. – not detected)

Context	4005				5004	5009	50026	7006	7004		
Sample	1	2	3	4	1	1	1	1	1	Mean	SD
MgO	0.0	3.2	6.5	19.0	2.8	n.d.	n.d.	2.8	4.7	4.6	5.4
Al_2O_3	19.7	4.1	1.9	8.0	4.0	5.0	12.3	2.5	5.9	6.4	5.5
SiO_2	37.7	10.6	13.4	13.2	15.6	19.4	28.4	10.7	14.9	17.4	8.8
P_2O_5	7.2	4.8	1.8	5.5	2.5	2.3	3.6	2.4	1.2	3.6	1.8
S	2.1	0.3	0.3	13.2	0.3	0.4	0.3	0.3	0.6	2.0	3.8
K_2O	0.5	0.1	0.9	0.4	0.7	0.6	0.1	0.2	0.0	0.5	0.3
CaO	4.2	1.1	1.1	12.1	1.3	1.2	1.4	0.9	1.2	2.7	3.3
TiO_2	1.2	0.1	0.1	0.4	0.1	0.2	0.5	0.0	0.2	0.3	0.4
V_2O_5	0.5	0.1	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.2	0.1
Cr_2O_3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
MnO	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.1
FeO	26.5	75.3	73.6	28.0	72.4	70.5	52.6	79.9	71.0	62.2	19.3
CoO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
NiO	0.1	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CuO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

Table A11: Semi-quantitative data derived from the HH-XRF analyses of the smelting slags (weight %, n.d. – not detected)

	Tap slags	Smelting slags
MgO	3.1	4.6
Al_2O_3	5.2	6.4
SiO2	16.3	17.4
P_2O_5	3.5	3.6
S	0.3	2.0
K_2O	0.7	0.5
CaO	1.6	2.7
TiO_2	0.2	0.3
V_2O_5	0.1	0.2
Cr_2O_3	n.d.	n.d.
MnO	0.3	0.2
FeO	68.7	62.2
CoO	n.d.	n.d.
NiO	n.d.	n.d.
CuO	n.d.	n.d.

Table A12: Comparison of the mean analyses of the tap slags and the smelting slags derived from the HH-XRF analyses, (weight %; n.d. – not detected)

	South end	Trench 3	Trench 4	Trench 5	Trench 7
MgO	5.6	0.0	6.8	1.0	1.4
Al_2O_3	0.9	7.6	7.7	6.8	4.4
SiO2	10.1	21.6	17.2	19.7	16.0
P_2O_5	1.2	2.8	6.3	3.4	2.4
S	0.4	0.3	3.2	0.3	0.3
K_2O	0.8	1.0	0.5	0.4	0.6
CaO	1.2	1.4	4.1	1.4	1.3
TiO_2	n.d.	0.3	0.4	0.3	0.1
V_2O_5	0.1	0.2	0.2	0.2	0.1
Cr_2O_3	n.d.	n.d.	n.d.	n.d.	n.d.
MnO	0.2	0.2	0.2	0.3	0.2
FeO	79.5	64.6	53.3	66.3	73.1
CoO	n.d.	n.d.	n.d.	n.d.	n.d.
NiO	n.d.	n.d.	n.d.	n.d.	n.d.
CuO	n.d.	n.d.	n.d.	n.d.	n.d.

Table A13: Mean analyses of the slags from the different trenches. (weight %; n.d. – not detected; south end – a surface find from the south end of the site)

	Smelting slags	
	Mean	SD
Na_2O	0.2	0.2
MgO	1.0	1.3
Al_2O_3	5.5	2.6
$Si0_2$	28.4	6.0
P_2O_5	1.0	0.6
S	0.1	0.1
K_2O	1.5	0.8
CaO	5.1	4.7
$Ti0_2$	0.4	0.2
V_2O_5	0.0	0.0
Cr_2O_6	0.0	0.0
MnO	3.4	3.0
FeO	53.1	10.3
CoO	0.2	0.2
NiO	0.1	0.1

Table A14: Mean quantitative analyses of *c* 20 smelting from various British sites (after McDonnell 1986, SEM data)

Trench	Context	Slag type	Code
-	Surface find at south end over furnaces	Tap	RF1
004	5	smelting	RF2
004	5	tap	RF3
005	26	tap	RF4
005	26	smelting	RF5

Table A15: List of mounted samples

Sample	Silicate	FeOx	Hercynite	Glass	Metal?	Eutectic FeOx
RF1	40	20	10	30	n	y
RF2	40	20	10	30	n	y
RF3	60	10	10	20	n	y
RF4	60	10	10	20	n	y
RF5	60	20	5	15	n	y

Table A16: Summary of volumetric phase percentage for each of the samples

	RF1	RF2	RF3	RF4	RF5	Mean	SD
MgO	4.3	7.4	0.0	0.6	0.0	2.4	2.9
Al_2O_3	1.7	0.9	14.3	2.9	10.0	5.9	5.3
SiO_2	13.8	9.3	44.5	18.5	30.3	23.3	12.7
P_2O_5	1.4	2.1	3.7	1.7	3.2	2.4	0.9
S	0.4	1.9	0.4	0.3	0.3	0.7	0.6
K_2O	0.8	0.2	0.9	0.7	1.3	0.8	0.3
CaO	1.3	1.5	2.4	2.3	1.9	1.9	0.5
TiO_2	n.d.	n.d.	0.9	0.1	0.5	0.3	0.3
V_2O_5	0.1	0.1	0.4	0.1	0.2	0.2	0.1
Cr_2O_3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
MnO	0.2	0.1	0.3	0.2	0.2	0.2	0.1
FeO	75.9	76.5	32.3	72.4	52.0	61.8	17.3
CoO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
NiO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CuO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

Table A17: Semi-quantitative HH-XRF analyses of the mounted slag samples (weight %)

Trench	Smelt + tap weight (g)	FL+ slagged lining weight (g)
001	37332	1671
002		
003	222	
004	11243	30
005	55018	970
006		
007	47986	290

Table A18: Quantity of smelting slag (plus tap slag) and furnace lining (plus slagged furnace lining) recovered from each trench

Context	Weight (g)	Length (mm)	Diameter (mm)
4005	33	37	27
7004	46	61	17
7004	59	56	26
7004	71	56	25
7008	110	79	34
Mean	*64*	*58*	*26*

Table A19: Dimensions of the tubes

APPENDIX B HUMAN SKELETAL REMAINS TABLES

Group no.	Pit no.	Deposit no.	Sample no.	Description	Soil/deposit type	Deposit depth
103	104	105	101	Back fill of pit	Mid grey, brown silty clay with occasional stones	0.05m
		106	100	*In situ* material of crushed urn	Soft mid–dark grey silty clay with charcoal	0.05m
			122	Disturbed material from around urn		
			142	Contents of urn SF 100		
108	151	149 (fill of glass vessel sf112)	131	Spit 1 (upper 5cm)	Soft mid yellow-brown silty clay	5cm spits total depth of 0.35m
			132	Spit 2 (2nd 5cm)		
			133	Spit 3 (3rd 5cm)		
			134	Spit 4 (4th 5cm)		
			135	Spit 5 (5th 5cm)		
			136	Spit 6 (6th 5cm)		
			137	Spit 7 (lowest 5cm)		
		152	121	Material from exterior of large pot SF 113	Soft mid yellow-brown silty clay	-
			126	Material from cleaning of cut 151		
		154 (fill from large pot sf113)	113	Spit 1 (upper 5cm)	Soft mid yellow-brown silty clay	5cm spits total depth of 0.25m
			114	Spit 2 (2nd 5cm)		
			116	Spit 3 (3rd 5cm)		
			115	Spit 4 (4th 5cm)		
			117	Spit 5 (5th 5cm)		
		155	118	Cleaning deposit from exterior of glass vessel	Soft mid yellow-brown silty clay	-
		156	119	Deposit from small, crushed pot SF 114 next to large pot SF 113	Charcoal rich, soft dark brown, grey silty clay	0.1m
		157	120	Cleaning deposit from around pit 151	Firm mid-yellow brown silty clay	0.1m
109	110	111	102	Fill of shallow pit in natural	Firm dark brown silty clay	0.06m

Group no.	Pit no.	Deposit no.	Sample no.	Description	Soil/deposit type	Deposit depth
		147	103	Cleaning layer around pit 110	Firm mid-greyish-brown silty clay with flecks of charcoal	0.05m
112	113	114	104	Cleaning layer from around urn and pit 113	Soft mid-reddish brown silty clay with occasion charcoal flecks	0.06m
		115	105	Remaining fill of broken urn SF 101	Dark brown silty clay	0.04m
120	121	122	106	Fill of broken urn sf105	Mid grey, brown silt	Approx. 0.07m
		144	107	Material from around pit 121	Firm mid-pinkish brown silty clay	Approx. 0.07m
132	133	134	112	Backfill of pit133 around urn	Soft light, yellow grey silty sand	0.12m
		135 (fill of urn SF 102)	138	Spit 1 (upper 5cm)	soft light blackish grey silty sand	5cm spits total of 0.2m
			139	Spit 2 (2nd 5cm)		
			140	Spit 3 (3rd 5cm)		
			141	Spit 4 (lowest 5cm)		
		136	111	Upper colluvial layer above cremation deposit	Soft light grey, yellow silty sand	0.4m
		146	-	Collection of cremated bone likely to have fallen from urn		-
141	142	137	108	Fill of cut in natural	Friable light grey soil	0.03
		138	109	Material collected from around 142	Friable light grey soil	-
		143	110	Slit from around deposit 138	Dark greyish brown clayey silt	0.05

Table B1: Summary of cremation deposit contexts

Group/feature (Deposit no.)	Type	>10mm (g) (% of total weight)	10-4mm (g) (% of total weight)	4-2mm (g) (% of total weight)	Total weight (g)	Maximum fragment size	Identified elements	Colour	MNI, age, sex, pathology etc.
103/104 (105/106)	Urned	253.8 (27.2%)	439 (47.8%)	225.6 (24.6%)	918.4	58mm x 19mm (Femur diaphysis)	Skull vault, mandible, vertebral body and arch, ribs, humeral, radial, ulna and femur diaphyses	White (99%) Grey (1%)	MNI = 1 Sex unknown Adult unspecified (>18 yrs)
108/151 (149/152/154/ 155/157)	Urned	1311.2 (64.5%)	578.8 (28.5%)	144.3 (7.1%)	2034.3	69mm x 19 mm (Humeral diaphysis fragment)	Skull vault, zygomatic, mandibular condyles, vertebral arch and bodies, ribs, scapula spine, proximal radii, distal humerus and femora heads, diaphyseal fragments from all long bones, innominate, phalanges	White (60%) Blue/grey (30%) Black (10%)	MNI = 1 Sex ??M Adult unspecified (>18 yrs)
108/151 (156)	Urned	0.0	10.4 (63%)	6.1 (37%)	16.5	18mm x 5mm (Spinous process)	Partial nasal bone, skull vault, vertebra arch	White (40%) Grey (60%)	MNI = 1 Sex unknown Adult unspecified (>18 yrs)
109/110 (111/147)	Urned	8.0 (30.2%)	15.1 (57%)	3.4 (12.8%)	26.5	26mm x 15mm (Unidentified long bone fragment)	Skull vault, ulna and radius diaphyses	White (50%) White/grey (50%)	MNI = 1 Sex unknown Adult unspecified (>18 yrs)

Group/feature (Deposit no.)	Type	>10mm (g) (% of total weight)	10-4mm (g) (% of total weight)	4-2mm (g) (% of total weight)	Total weight (g)	Maximum fragment size	Identified elements	Colour	MNI, age, sex, pathology etc.
112/113 (114/115)	Urned	45.1 (30%)	74.3 (49.4%)	31 (20.6%)	150.4	38mm x 17mm (Tibial diaphysis fragment)	Skull vault, radius, ulna and tibial diaphyses	White (85-90%) Grey (10-15%)	MNI = 1 Sex unknown Adult unspecified (>18 yrs)
120/121 (122/144)	Urned	11.3 (72.4%)	3.4 (21.8%)	0.9 (5.8%)	15.6	34mm x 15mm (Unidentified long bone fragment)	Possible radial diaphysis, possible partial hamate	White/grey (90%) Black (10%)	MNI = 1 Sex unknown Adult unspecified (>18 yrs)
132/133 (134/135/136/ 146)	Unurned	110.2	102.3	29.1	241.6	43mm x 13mm (Humoral diaphysis fragment)	Skull vault, vertebral arch, rib, humerus, radius and ulna diaphyses, tibia diaphysis	White (98%) White/grey (2%)	MNI = 1 Sex ??M Adult unspecified (>18 yrs)
141/142 (137/138/143)	Unurned	9.4 (94%)	0.4 (4%)	0.2 (2%)	10.0	31mm x 17mm (Unidentified long bone fragment)	Skull vault	White (98%) White/grey (2%)	MNI = 1 Sex unknown Adult unspecified (>18 yrs)

Table B2: Summary of osteological findings: cremation deposits

Group/ feature no.	Deposit no.	Sample no.	Total weight (g) of unsorted 4-2mm fraction A	Weight (g) of bone in a 20g sample B	% bone weight (calculated (B/20 x 100) C	Estimated weight of cremated bone in unsorted 4-2mm fraction (C/100 x A)
103/104	106	122	262.7g	3.4g	17.00%	44.66g
		142	225.3g	15.1g	75.50%	170.1g
108/151	149	135	71.3g	11.3g	56.50%	40.3g
		136	67.9	8.9g	44.50%	30.2g
		137	52.9g	9.4g	47.00%	24.9g
112/113	115	105	115.3g	5.2g	26.00%	30g

Table B3: Bone weight calculations for the unsorted 4-2mm fractions

Group/feature no.	Deposit no.	Sample no.	Total weight (g) of unsorted 2–0.5mm fraction	Bone content (high/moderate/low)	Estimated % bone content (by volume)
103/104	114	104	234.7	very low	<1%
	115	105	61	low	10-15%
108/151	149	131	84	very low	1%
		132	84.4	very low	<1%
		133	106.1	very low	1%
		134	71.7	moderate	10-15%
		135	81.1	moderate	15-20%
		136	48.1	moderate	30%
		136	55.7	moderate	15-20%
	152	121	1383.8	very low	<1%
		126	1621.8	very low	<1%
	154	113	900.6	very low	<1%
		114	742	very low	1%
		115	596.5	none	0%
		116	760.6	very low	<1%
		117	618.9	very low	<1%
	155	118	87.8	very low	1%
	157	120	2518.5	very low	<1%
108/151	156	119	2598.7	very low	1%
109/110	111	102	402.5	very low	1%
	147	103	86.6	very low	<1%
112/113	114	104	234.7	very low	<1%
	115	105	61	low	10-15%
120/121	122	106	24.8	very low	<1%
	144	107	162.8	very low	<1%
132/133	136	111	55	very low	<1%
	134	112	180.5	very low	1%
	135	138	50.2	very low	2%
		139	33.7	low	5%

Group/feature no.	Deposit no.	Sample no.	Total weight (g) of unsorted 2–0.5mm fraction	Bone content (high/moderate/low)	Estimated % bone content (by volume)
		140	23.7	very low	3%
		141	10.6	very low	3%
141/142	143	110	49.5	very low	<1%

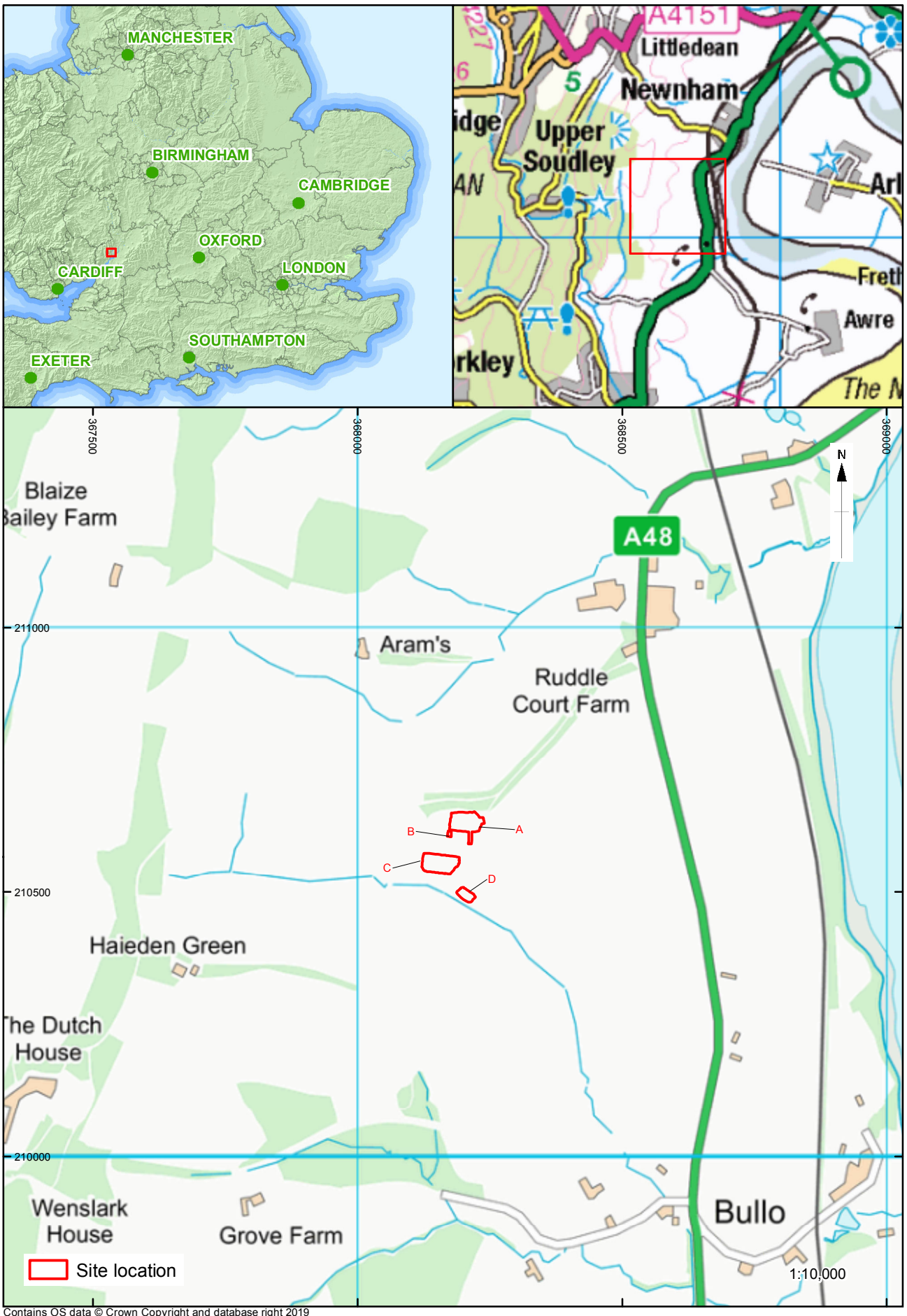
Table B4: Estimated bone content in the unsorted 2-0.5mm residues

Spit no.	Skull (g)	Axial (g)	Upper limb (g)	Lower limb (g)	Unidentified (g)	TOTAL weight (g) per spit
Spit 1	0	0	0	0	<0.1	<0.1
Spit 2	0	0	0	0	0.4	0.4
Spit 3	4.9	13.4	2.2	8.9	39.4	68.8
Spit 4	64.7	101.7	95.1	56.7	241.7	559.9
Spit 5	59.5	101	67.4	118.7	288	634.6
Spit 6	55.1	87.8	19.4	63.4	181.1	406.8
Spit 7	44.4	37.1	12.8	70	153.9	318.2
TOTAL (% of whole deposit weight 1988.7g from context 149)	*228.6 (11.5%)*	*341 (17.1%)*	*196.9 (9.9%)*	*317.7 (16%)*	*904.5 (45.5%)*	*1988.7 (100%)*

Table B5: Contents of glass vessel, deposit 149 – weights of bone per skeletal region (by spit)

APPENDIX C SITE SUMMARY DETAILS

Site name:	Ruddle Court Farm, Newnham, Gloucestershire
Site code:	OANER19
Grid Reference	SO 68150 10580
Type:	Watching Brief
Date and duration:	June–July 2020
Area of Site	*c* 0.5ha
Location of archive:	The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES, and will be deposited with Dean Heritage Centre in due course, under the following accession number: SOYDH:2019.9.
Summary of Results:	Preceding trial-trench evaluation in 2019 established the presence of a range of archaeological remains, including a number of ditches, pits and cremation burials, as well as metalworking remains, upon which four excavation areas, totalling *c* 0.5ha, were targeted. Evidence of a Roman agricultural site was in the form of a small-scale ditched enclosure/field system, a possible structure such as part of a post-built building or fenceline, several pits, and a stone-lined water-tank and culvert that may have been related to malting. Pottery evidence suggests a focus of activity during the 2nd–3rd centuries AD. Residual late Iron Age/early Roman pottery demonstrates a background presence during this period, while a 1st-century AD gold Vespasian *aureus* could indicate the purposeful deposition of a curated item. The pottery evidence also demonstrates that land division continued into the later Roman period. Remains of Roman burial activity were confined to the south of the site, evidenced by a small cremation cemetery that probably spanned the 2nd century AD. A group of six burials were recorded, four of which were urned. A notably rich burial included a glass cinerary urn placed within an amphora. A cremation burial of late Roman date was also recorded away from the cemetery, demonstrating continual burial activity. The next phase of activity at the site is characterised by evidence of iron production radiocarbon dated to the 8th–9th centuries cal AD. A possible ore-/charcoal-burning pit/hearth and two extensive slag deposits were recorded. Two further pits/hearths, albeit undated, were probably related. Remains post-dating the early medieval period are indicative of medieval/post-medieval and modern agricultural activities.



Contains OS data © Crown Copyright and database right 2019

Figure 1: Site location

X:\n\Newnham_Ruddle_Court_Farm_EX\010Geomatics\03 GIS Projects\OANEREX_Figure 1_2019-10-23.mxd*matt.bradley*23/10/2019

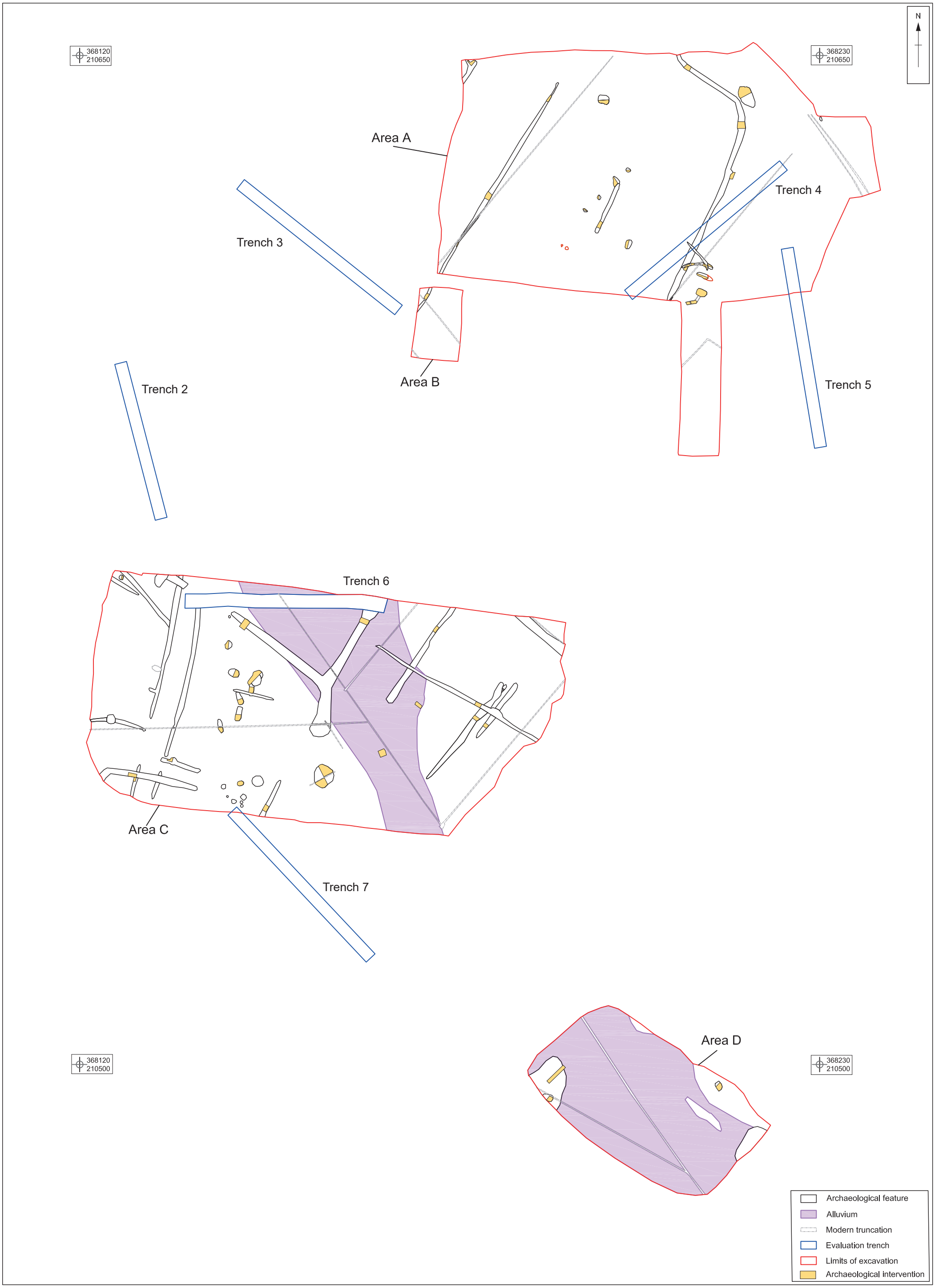


Figure 2: Excavation areas with previous evaluation trenches

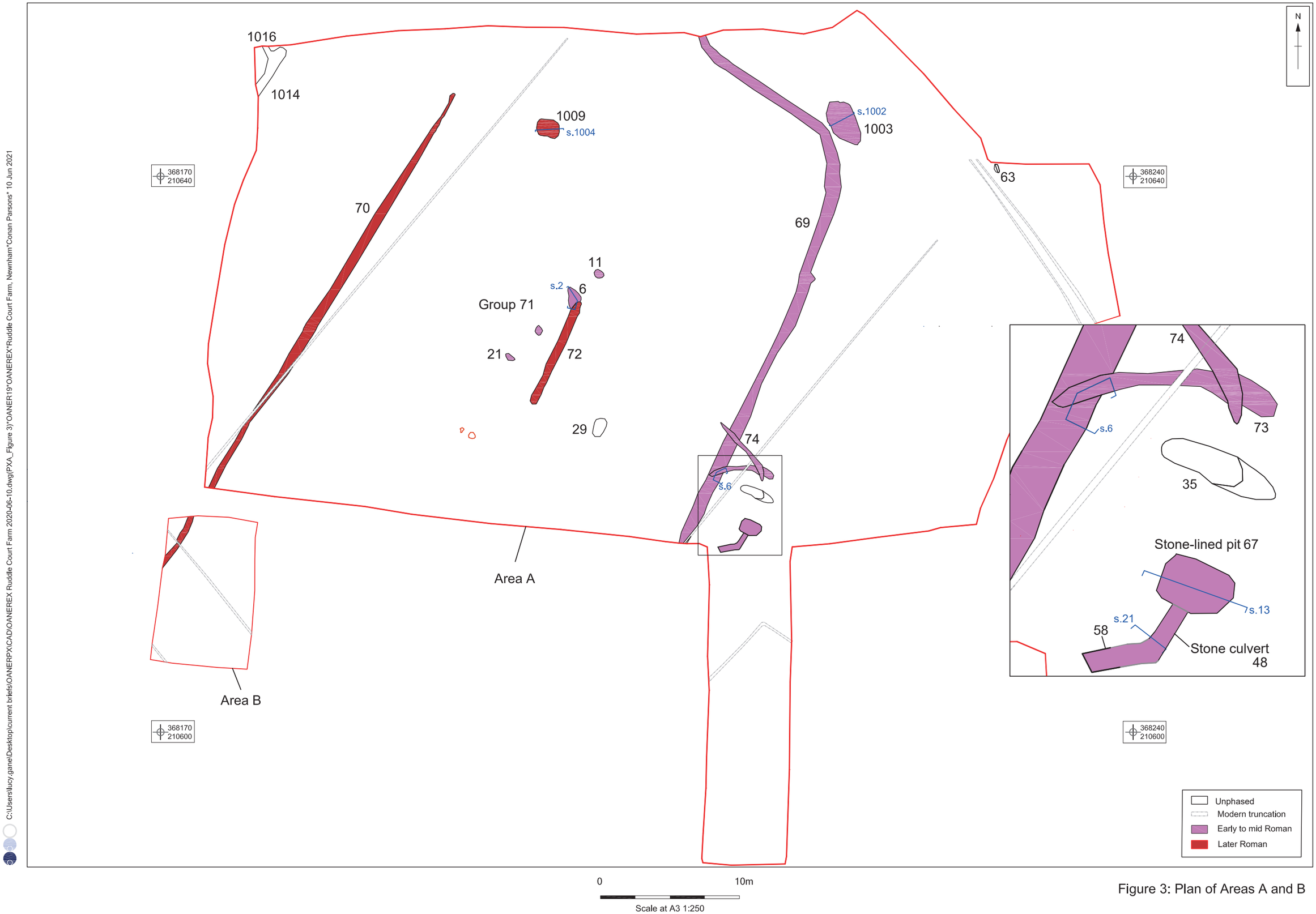
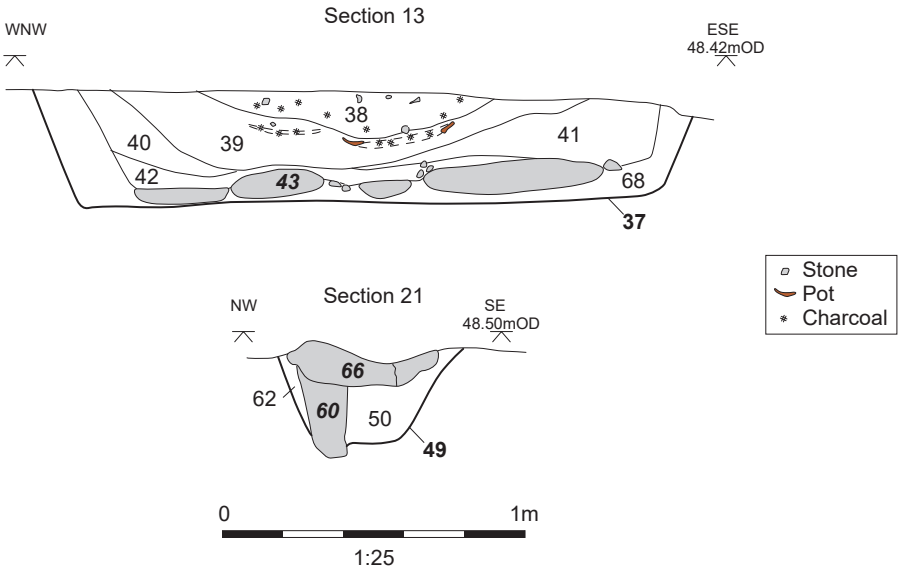


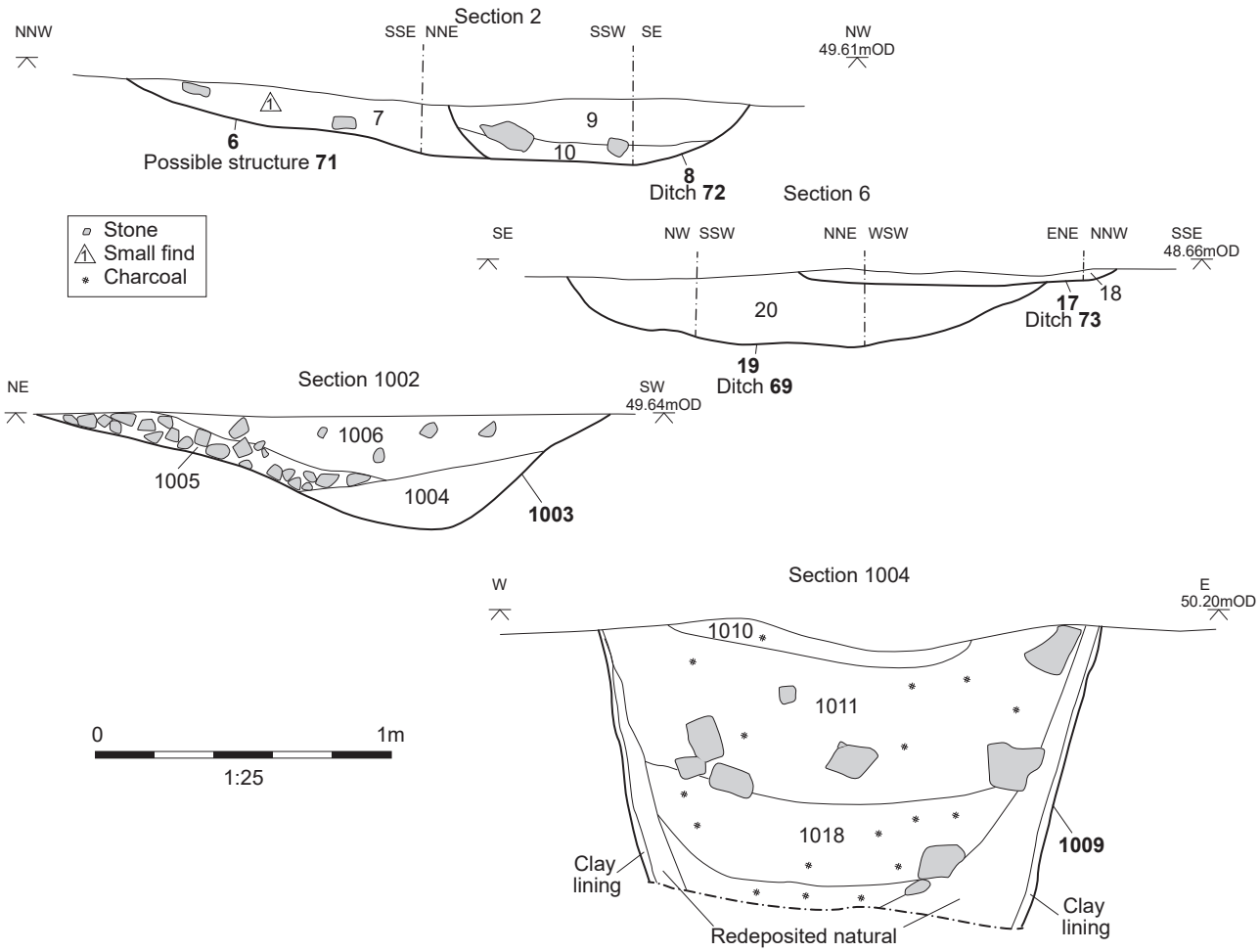
Figure 3: Plan of Areas A and B

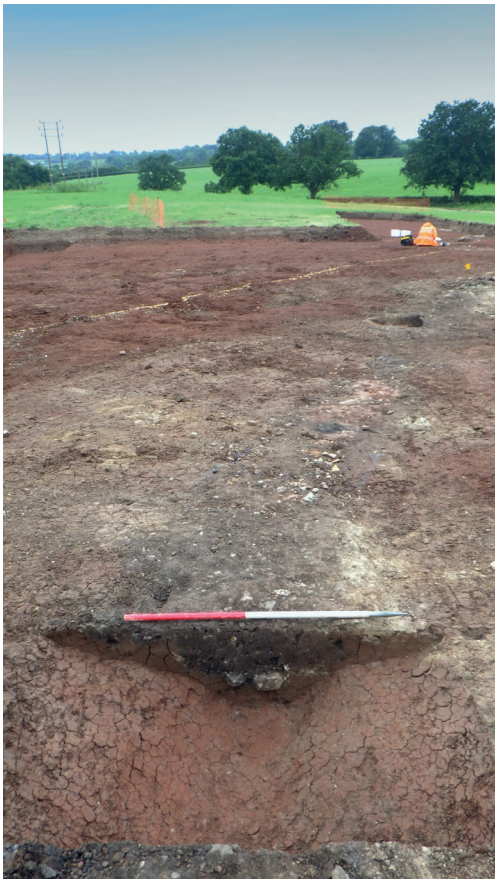


Stone-lined base of water tank 67, looking south-south-west

Stone-lined culvert 48, looking north-west

Figure 4 : Stone-lined water tank 67 and culvert 48





Ditch 69, looking south

Ditch 72, looking south-west

Figure 5: Excavation Area A: selected sections and photographs

368125 210575

368180 210575

N

130

183

Evaluation trench 6

126

Cremation burial
132

185

218

206

163

216

175

173

165

171

194

192

160

177

179

s.122

217

Cremation burial group

123

108

103

112

139

109

120

141

187

368125 210535

Area C

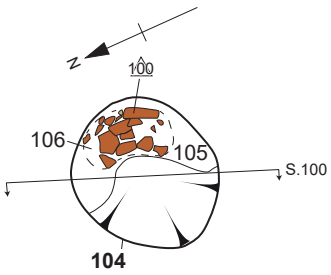
368180 210535

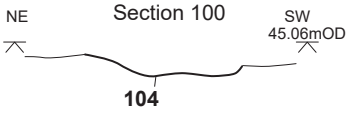
Unphased
Alluvium
Modern truncation
Early-mid Roman
Later Roman
Medieval
Post-medieval - modern

0 10m

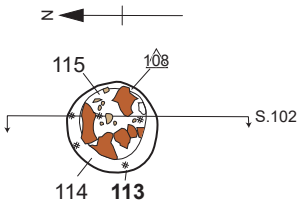
Scale at A3 1:200

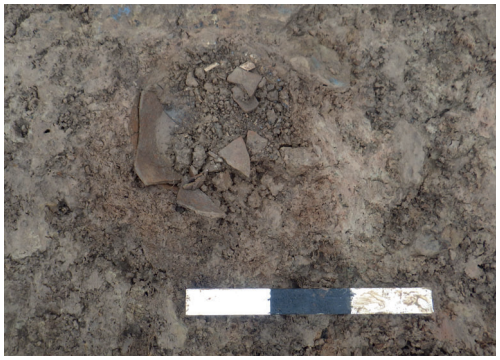
Figure 6: Phased plan of Excavation Area C



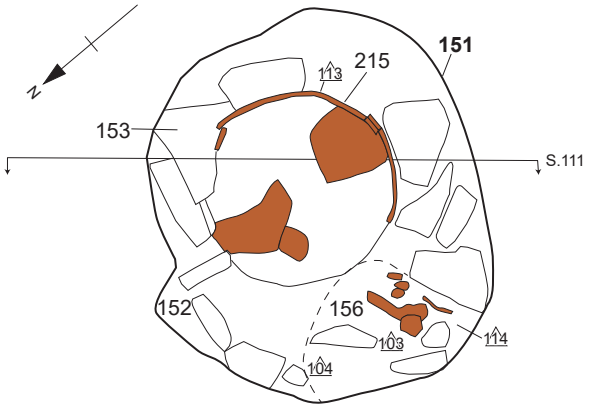


Cremation burial 103



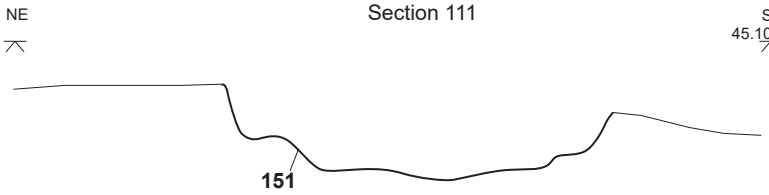


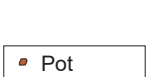
Cremation burial 112

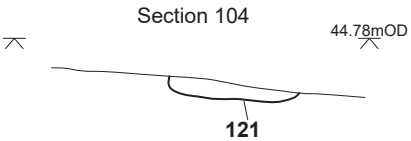


Section 111

Cremation burial 108

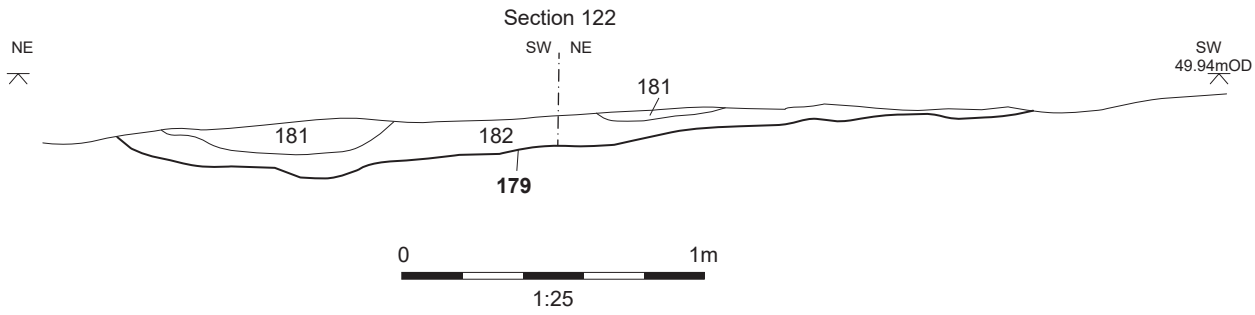




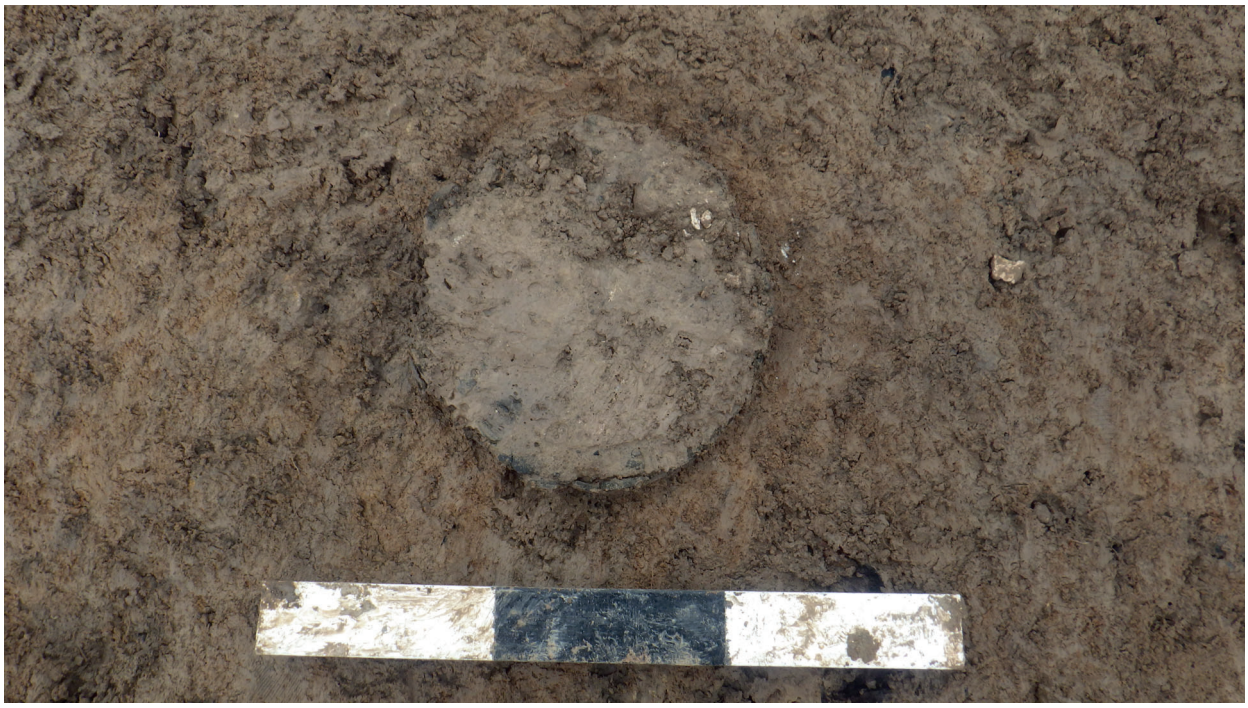


Cremation burial 120

Figure 7: Early-middle Roman urned cremation burials



Pit/furnace 179, looking south-east



Cremation burial 132

Figure 8: Excavation Area C: selected sections and photographs

C:\Users\lucy.gane\Desktop\current briefs\OANERPX\CAD\OANEREX Ruddle Court Farm 2020-06-10.dwg(PXA_Figure 5)*OANER19*OANEREX*Ruddle Court Farm, Newnham*lucy.gane* 15 Jun 2021

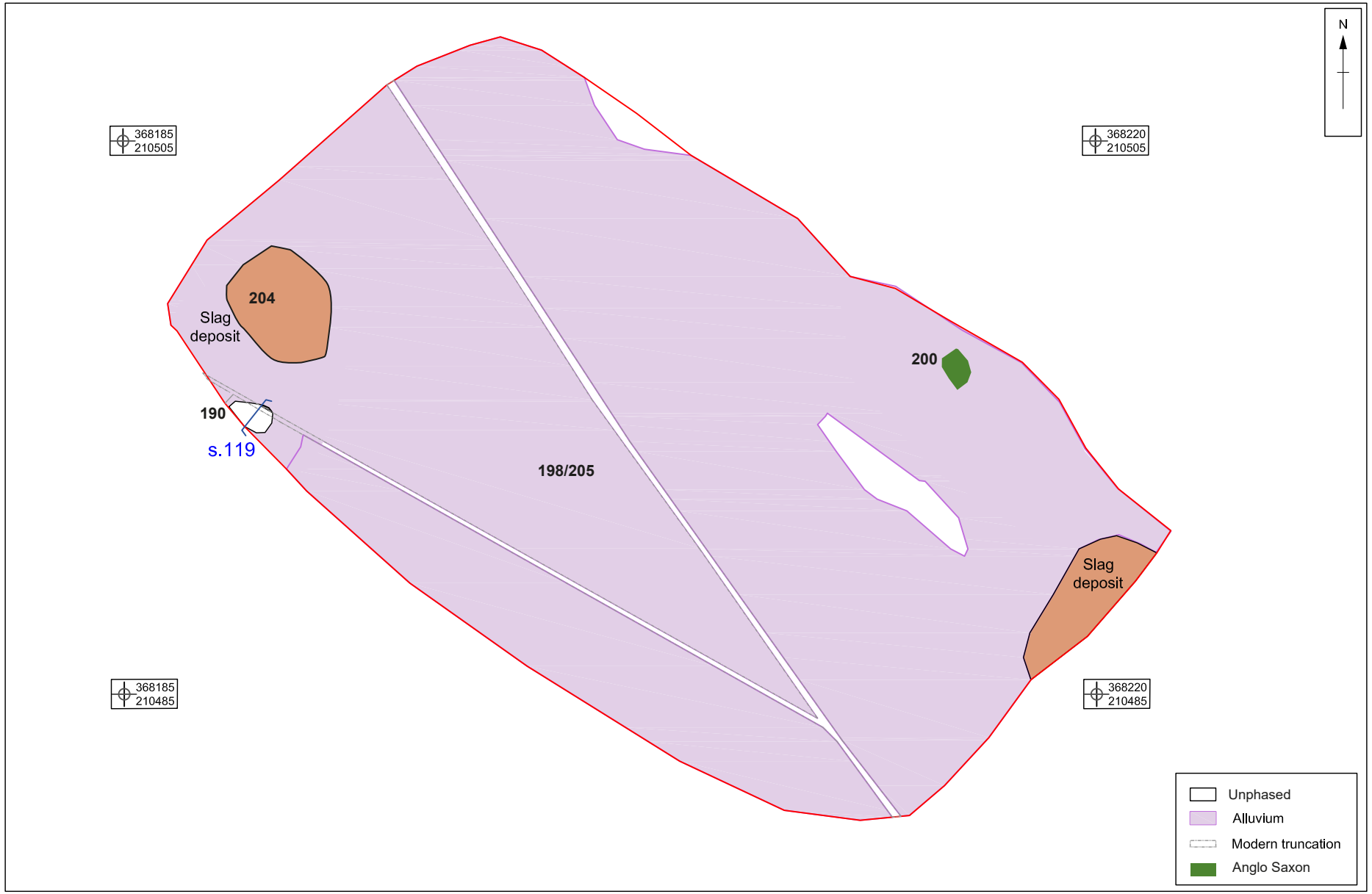
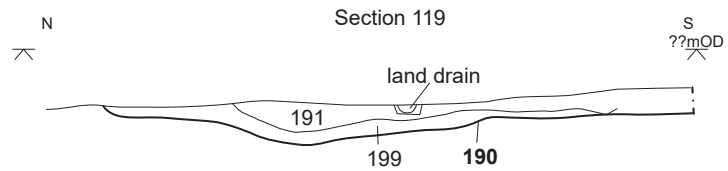


Figure 9: Phased plan of Area D



Slag deposit 204 and pit 190, looking south-west

Pit 200, looking north-west

Figure 10: Excavation Area D: selected sections and photographs

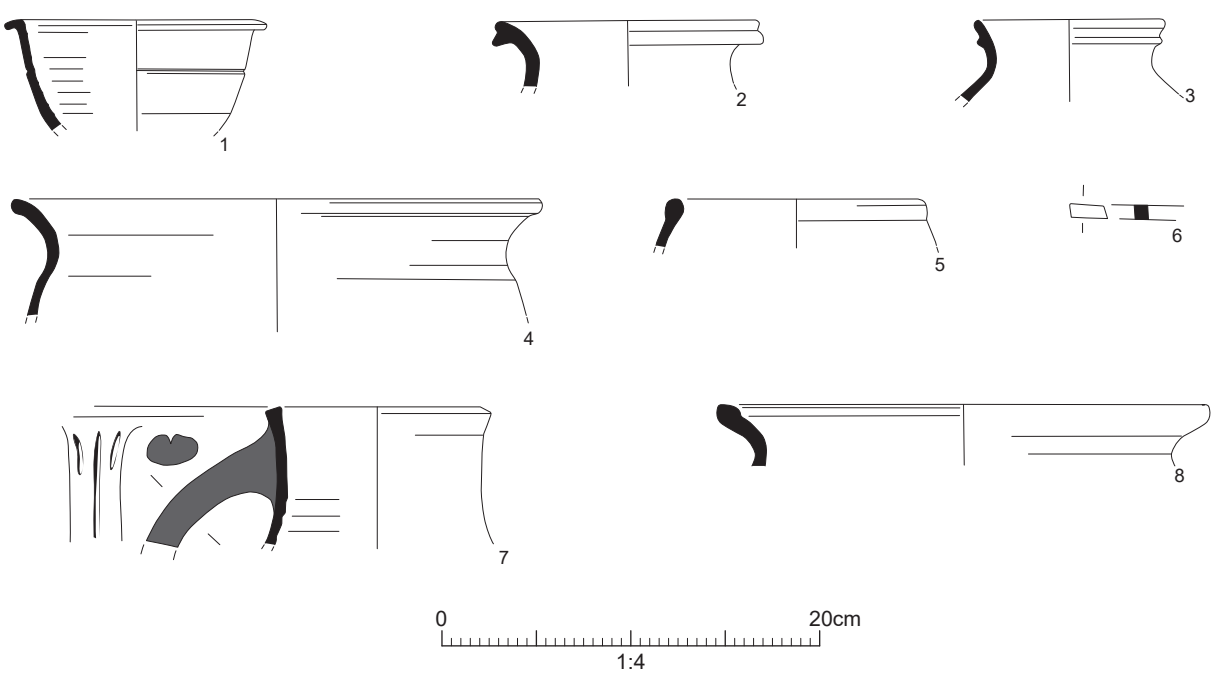


Figure 11: Roman pottery

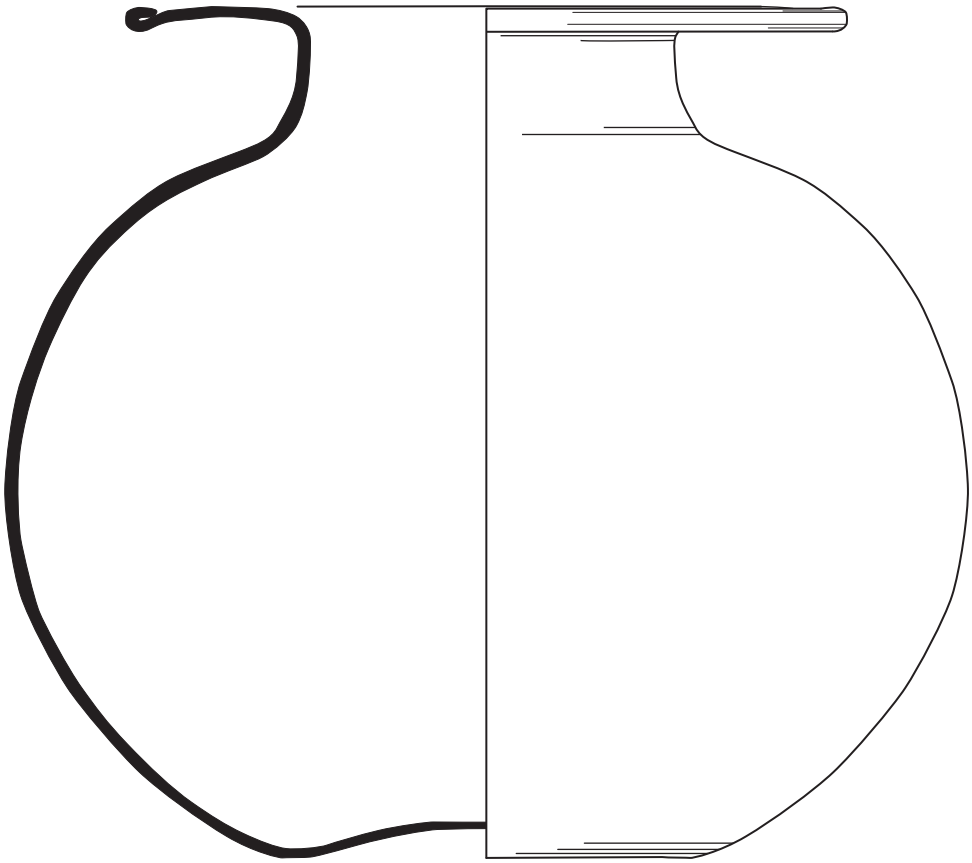


Figure 12: Glass

1.

2.

Figure 13: Metalwork

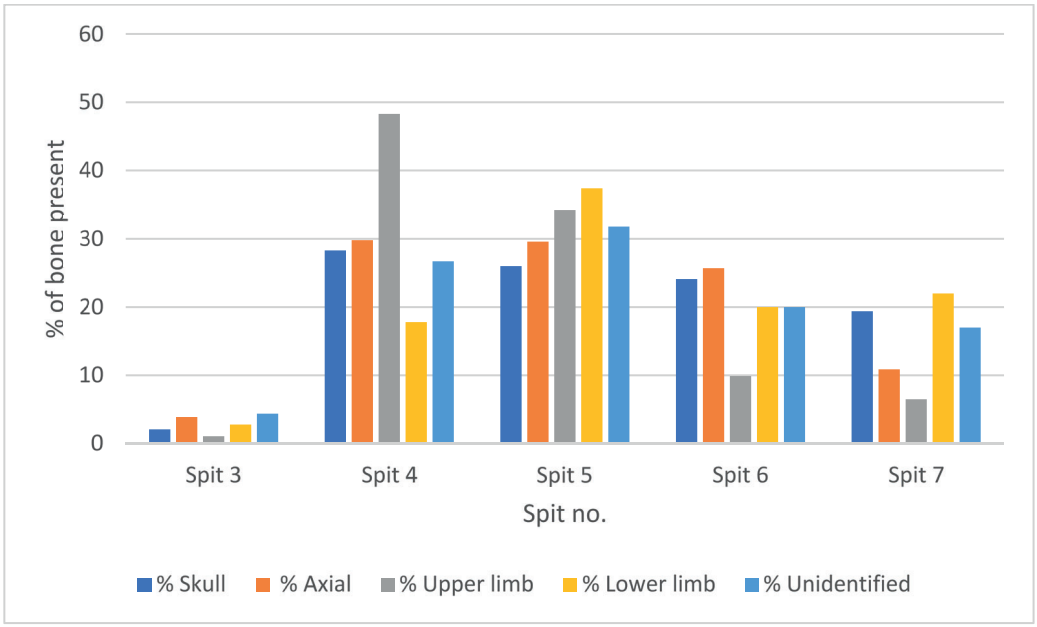


Figure 14: Urned cremation burial 108, deposit 149 – representation of skeletal regions by spit

oxfordarchaeology

Head Office/Registered Office/ OA South

Janus House
Osney Mead
Oxford OX2 0ES

t: +44 (0) 1865 263 800
f: +44 (0) 1865 793 496
e: info@oxfordarchaeology.com
w: http://oxfordarchaeology.com

OA North

Mill 3
Moor Lane
Lancaster LA1 1QD

t: +44 (0) 1524 541 000
f: +44 (0) 1524 848 606
e: oanorth@oxfordarchaeology.com
w: http://oxfordarchaeology.com

OA East

15 Trafalgar Way
Bar Hill
Cambridgeshire
CB23 8SQ

t: +44 (0) 1223 850500
e: oaeast@oxfordarchaeology.com
w: http://oxfordarchaeology.com