Grove Airfield, Grove, Oxfordshire

Archaeological Excavation Report

February 2021

Client: Persimmon Homes (Wessex) Ltd

Issue No.: 1
OA Reference No.: 7631
NGR: SU 3922 8948

oxfordarchaeology

Client Name:	Persimmon Homes (Wessex) Ltd
Document Title:	Grove Airfield, Grove, Oxfordshire
Document Type:	Excavation Report
Grid Reference:	SU 3922 8948
Planning Reference:	P12/V0299/O
Site Code:	GRAIR18
Invoice Code:	GRAIRPX
Accession/HER No.:	OXCMS:2017.108
OA Document File Location:	https://files.oxfordarchaeology.com/nextcloud/index.php/apps/files/?dir=/OA%20Post-ex%20and%20Publication/OAS%20PX/Current%20projects%20and%20tasklists/Grove%20Airfield/Post-ex/PX/Report&fileid=6211236
Issue No:	v. 2
Date:	February 2021
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Grove Airfield, Grove, Oxfordshire

Archaeological Excavation Report

Contents

List of Figures

List of Graphs

List of Plates

Summary

Oxford Archaeology carried out an archaeological excavation in 2018 on land at Grove Airfield, Oxfordshire, in advance of housing development. Preceding phases of trial-trench evaluation in 2006, 2010 and 2018 established the presence of numerous features of Iron Age and Romano-British date that appeared to have formed parts of a rural settlement concentrated in the south of the development site. The excavated area, totalling 1.9ha, was subsequently targeted upon these remains.

Evidence of a middle Bronze Age agricultural site included a field system and possible stock enclosures demarcated by ditches, together with some finds and charred plant remains. A seemingly isolated late Bronze Age crouched burial and distinctive perforated fired clay blocks provide limited evidence of activity at the site during this period.

In the late Iron Age/early Roman period, the site was used for agricultural purposes, with new land boundaries established and signs of habitation including a possible roundhouse that appeared to have been altered.

The settlement was reorganised around the beginning of the 2nd century AD and was enlarged in the 3rd century, having a more formal rectilinear layout with several enclosed areas and post-built structures, suggestive of different areas of activity. Two inhumation burials of possible early Roman date are indicative of rural burial practices in a non-cemetery context. The pottery assemblage is suggestive of a fairly low-status rural settlement, while the animal bone assemblage and charred plant remains highlight a mixed agricultural economy.

By the 4th century the settlement appears to have become more open, with a shift towards more intensive arable production and crop processing signified by the construction of a large corndryer and greater quantities of charred plant remains. The settlement was abandoned by the end of the 4th century.

Acknowledgements

Oxford Archaeology would like to thank Persimmon Homes (Wessex) Ltd for commissioning this project and Robert Masefield of RPS Heritage for his role in advising and managing the project as the client's archaeologist. Thanks are also extended to Hugh Coddington who monitored the work on behalf of Oxfordshire County Council.

The project was managed for Oxford Archaeology by Steve Lawrence (fieldwork) and Martyn Allen (post-excavation). The fieldwork was directed by Jim Mumford, who was supported by Ruben Alonso, Jody Bloom, Aidan Farnan, Andrea Forresu, George Gurney, Hadiqa Khan, Robert McIntosh, David Pinches, Emma Powell, Muhammed Quadir, Christopher Richardson, Jason Summers, Edward Tolley, Bethany Tucker, Peter Vellett and Katherine Webster. Metal detecting was undertaken by John Gray. Site survey and digitising were carried out Ben Brown, Caroline Souday, Diana Chard and Conan Parsons. The figures were produced by Lucy Gane, Charles Rousseaux and Magdalena Wachnik.

Thanks are 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 Persimmon Homes (Wessex) Ltd to undertake a *c* 1.9ha open-area excavation on the former Grove Airfield to the north of Wantage, Oxfordshire. The site was centred at NGR SU 3922 8948 (Fig. 1) and the work was undertaken in advance of residential development. Rob Masefield of RPS Heritage was the archaeological advisor and provided overall project management on behalf of Persimmon Homes Ltd.

1.1.2 Planning consent was granted by Oxfordshire County Council for the development of the site, including associated access and services (planning ref: P12/V0299/O). The targeted excavation was undertaken as a condition of planning permission. Condition 10 reads as follows:

a) Prior to any demolition and the commencement of development within the area shown in red on the attached plan (Archaeological Area Plan 1 dated 23 July 2014) a professional archaeological organisation acceptable to the Local Planning Authority shall prepare an Archaeological Written Scheme of Investigation, relating this to this archaeological area, which shall be submitted to and approved in writing by the Local Planning Authority.

b) Following approval of the Written Scheme of Investigation and prior to any demolition and the commencement of the development in the archaeological area (other than in accordance with the agreed Written Scheme of Investigation), a staged programme of archaeological evaluation and mitigation shall be carried out by the commissioned archaeological organisation in accordance with the approved Written Scheme of Investigation. The programme of work shall include all processing, research and analysis necessary to produce an accessible and useable archive and a full report for publication which shall be submitted to the Local Planning Authority.

1.1.3 This followed an earlier desk-based assessment (DBA) completed in 2004 (OAA 2004) and three phases of archaeological trial-trench evaluation in 2006, 2010 and 2018 (TVAS 2006; 2010; OA 2018a; Fig. 2). The evaluation undertaken by OA in May 2018 identified an area with numerous features of Iron Age and Romano-British date that appeared to have formed parts of a rural settlement in the south of the development site. Based on these results, it was recommended that an open-area excavation be undertaken in the south-east of the site. The *c* 1.9ha excavation area targeted the 2018 evaluation results and was undertaken between August and November 2018. The work was carried out in accordance with a written scheme of investigation (WSI) prepared by OA (2018b), based on a previous WSI by RPS Group (2017), which detailed the scope and the methodology for the archaeological works.

1.1.4 The results of the fieldwork were summarised in a post-excavation assessment (PXA), which included provisional interpretation and an initial assessment of the potential and significance of the site data (OA 2019). The PXA concluded that the results of the fieldwork were of local to regional significance and had potential for further analysis.

1.2 Location, geology and topography

1.2.1 The site lies to the north of Wantage and to the south and south-west of Grove, Oxfordshire, on land that was previously utilised as a World War II airfield (NGR SU 3922 8948; Fig. 1). The site is situated within the Upper Thames clay vales, a belt of open, lowland farmland that extends between the limestone plateau of the Cotswolds to the north and the chalk hills of the Chilterns, Berkshire Downs and Marlborough Downs to the south and east. The site lies only a few kilometres north of the slopes of the latter two.

1.2.2 The development boundary enclosed approximately 130ha of agricultural land. The site is relatively flat at *c* 85m aOD and some parts of the former airfield had been subjected to artificial levelling. The excavation area covered approximately 1.9ha. This area slopes from a low point of 83.8m aOD along the eastern boundary to 85.2m aOD along the western limit.

1.2.3 According to the British Geological Survey, the underlying solid geology comprises mudstone of the Gault Formation (BGS 2020). Although no superficial deposits are recorded overlying the mudstone within the excavation area, it is overlain to the north-west by sand and gravel of the Summertown-Radley sequence.

1.3 Archaeological and historical background

1.3.1 The Wantage and Grove area contains a considerable amount of archaeological remains, particularly dating to the Iron Age and Roman periods (OAA 2004). The following archaeological and historical background is drawn from the WSI (OA 2018b) and the DBA completed for the wider development site (OAA 2004), based on evidence held in the Oxfordshire Historic Environment Record (HER) and other readily available sources. The results of successive evaluations of the 130ha development area, undertaken by Thames Valley Archaeological Services in 2006 and 2010 (TVAS 2006; 2010), and OA in 2018 (OA 2018a), are also summarised.

Later Bronze Age

1.3.2 An evaluation at Stockham House, Wantage, 500m to the south of the site, encountered later Bronze Age ditches (OA 2012). A middle Bronze Age cremation cemetery was found at St Mary's and St Gabriel's Schools, Wantage, 1.8km south of the site (Lewis 2016). Excavations at Monks Farm and Williams Holdings, 2km to the north-west of the site, uncovered middle Bronze Age settlement features and field boundaries (Brady *et al.* 2017; in prep.).

Iron Age and Romano-British

1.3.3 The site lies *c* 600m to the west of the projected line of the Roman road between Alchester and Marlborough (*Cunetio*). Much of this road is not well known, though its route to the north-east of the site is likely to be followed by the modern A338 and probably connected somewhere to the east of Oxford with the N–S aligned road between Alchester and Dorchester-on-Thames.

1.3.4 Several investigations to the south of the site have recorded evidence for later prehistoric and Roman activity. An excavation at Mably Way, Wantage, 400m south-

west of the site, uncovered ditches of possible Roman date (OA 1998). The Stockham House evaluation, *c* 0.5km to the south, also encountered settlement features and a burial from the middle Iron Age and a Roman ditch (OA 2012). Evidence of middle–late Iron Age activity has been identified at Stockham Farm, 850m to the south-west of the site, in the form of ditches that were interpreted as drainage features that took water away from the low-lying area (CA 2017). Occupation appears to have continued into the Roman period, though the character of the site showed little sign of change.

1.3.5 Excavations at Mill Street and Denchworth Road in Wantage, located 1km to the south, revealed remains of a roadside Roman settlement (Holbrook and Thomas 1996; Barber and Holbrook 2001). The earliest features at Denchworth Road comprised a metalled trackway with associated boundaries and pits dating to the late 1st/early 2nd century AD. Around the same time at Mill Street, there were two small timber buildings and a well. A thick cultivation horizon accumulated across part of the Denchworth Road site in the 2nd–3rd century and a multi-roomed stone building was built sometime after AD 270. By the late 3rd century, one of the timber buildings at Mill Street was replaced by a square stone structure, which was interpreted as a tower granary. Further evidence of possible roadside settlement activity has been identified more recently at Naldertown, about 100m north-east of the Mill Street/Denchworth Road area (OA 2017).

1.3.6 Settlement remains and agricultural activity dating between the early Iron Age and the late Roman period is known at Crab Hill, 1.3km to the south-west (Allen *et al.* in prep.). Excavation here in 2018 revealed a sizable early–middle Iron Age settlement including numerous post-built and ditched roundhouses, several of which were found to have been replaced and rebuilt. Minimal evidence of late Iron Age activity was encountered, although this was followed by a reorganisation of the landscape in the early Roman period, beginning with enclosures and a trackway, followed by the construction of several corndryers in the middle and late Roman periods.

1.3.7 The Monks Farm and Williams Holdings excavations also uncovered Romano-British settlement features and field boundaries (Brady *et al.* 2017; in prep.), while evaluation trenching at Williams Holdings also encountered Iron Age and Roman features (OA 2015; 2018c).

1.3.8 A Roman villa is known from antiquarian excavations in the 1870s at Cranhill (now Cornhill), situated approximately 3km south-west of the site (Davey 1876). The villa building consisted of five rooms connected by a long corridor with a hypocaust inserted at the southern end. The villa was located at the foot of the Berkshire Downs and would have enjoyed views over the Vale of the White Horse. Coins and pottery suggested occupation between the 2nd and 4th centuries.

Anglo-Saxon

1.3.9 The nature and extent of known Anglo-Saxon settlement in the area is particularly limited, with a brooch recorded to the north of the site and Anglo-Saxon pottery and loomweights recovered from a number of ditched enclosures during excavations at Mill Street (Holbrook and Thomas 1996). A 5th–7th-century sunken-featured building was found at Crab Hill (Allen *et al.* in prep.). Although the archaeological record is

sparse, documentary evidence perhaps demonstrates the importance of this area in the 9th and 10th centuries with the development of Wantage (Page and Ditchfield 1924).

Medieval and post-medieval

1.3.10 The notably limited archaeological and documentary evidence for Grove during the medieval period demonstrates the general agricultural nature of the wider landscape. Grove lay within the hundred of Wantage, although it was not recorded as a separate entity during the 1086 Domesday survey. Lands around Grove were granted to Bermondsey Abbey in 1152 and may have lain in the area subsequently known at Wick's Green on the north side of Grove. In general, it is considered that the proposed development site formed part of an area of open agricultural fields surrounding the village of Grove. Remains of ridge and furrow were encountered on site during the 2018 evaluation (OA 2018a) and also to the south during the Stockham House evaluation (OA 2012).

1.3.11 Historic mapping dating to the post-medieval period demonstrates the continued agricultural character of the area during this period, with the medieval open fields and later communal strip fields being enclosed in 1803. Predating the 1803 Enclosure Map, Barwell Farm, located in the south-east of the development site, perhaps had a medieval precursor. Subsequent Ordnance Survey maps depict agricultural usage until the area of the proposed development was acquired by the RAF in the first half of the 20th century.

Modern

1.3.12 Airfield construction at Grove began in 1941 and it was intended as an RAF bomber base; however, when RAF Brize Norton transferred to become a glider-pilot training station, the airfield construction at Grove was also transferred to glider training in 1942. In 1943 the airfield was taken over by the US and remained under their control until 1946 when it was handed back to the RAF. In 1955 the airfield was partially taken over by the Atomic Energy Authority. The base was finally closed in 1958.

2006 and 2010 TVAS evaluations

1.3.13 The 2006 evaluation comprised the investigation of 21 trenches, of which three *c* 30m-long trenches contained archaeological remains (TVAS 2006; Fig. 2). Trench 12 identified two parallel ditches aligned NW–SE, *c* 2.6m apart, which produced two sherds of Iron Age pottery and 15 fragments of animal bone. Trench 14 identified an E–W aligned ditch and a gully aligned N–S. Both contained small numbers of Iron Age pottery sherds and animal bone. Trench 15 contained a ditch and a pit or ditch terminus, both of which were spot dated to the 2nd century AD.

1.3.14 The 2010 evaluation was undertaken to investigate the areas of the proposed road corridor and sports pavilion (TVAS 2010; Fig. 2). It comprised the excavation of seven trenches, including three to the north of 2006 evaluation Trench 15. Of these, only one trench located to the south of the existing substation produced archaeological remains

in the form of a ditch and an oval pit, both of which produced small quantities of Bronze Age pottery.

2018 OA evaluation

1.3.15 A total of 34 trenches were investigated in the south of the development site during a further phase of evaluation in 2018 (OA 2018a; Fig. 2). It revealed features dating from the later Iron Age to the end of the Roman period. The focus of the activity, in the form of pits, postholes and ditches, was identified in the south-eastern part of the evaluation area, while several other ditches located beyond this area probably related to associated field systems. The results confirmed the probable presence of the rural settlement suggested by the 2006 TVAS evaluation results. The recovery of pottery, ceramic building material and animal bone suggests the presence of domestic activity, with the pottery indicative of a fairly low-status rural settlement. This settlement does not appear to have extended further eastwards, as contemporary remains were not found in the 2010 TVAS evaluation, which only produced evidence for Bronze Age activity.

1.4 Aims and objectives

1.4.1 The original research aims of the project, as stated in the WSI (OA 2018b), were to:

i. Confirm the character of any remains present;
ii. Determine the date range of any remains from artefacts or otherwise;
iii. Define the archaeological remains to their full stratigraphic depth down to undisturbed geology;
iv. Recover geoarchaeological and palaeoenvironmental remains where present and where these have the potential to address specific research aims;
v. Recover suitable materials for scientific dating where appropriate;
vi. Produce a factual report, full archive and HER data submission; and
vii. Publish the results of the investigation at a level appropriate to their importance.

1.4.2 More specific research aims were focused on the Solent-Thames research agenda (Hey and Hind 2014). These were reviewed throughout the excavation to inform strategies for intervention and recovery. The specific research aims that were considered at the beginning of the project included:

viii. 10.1: The recovery of samples to provide natural pollen and insect sequences to map environmental change;
ix. 10.3: Chronology. The recovery of artefacts and C14 samples to refine existing chronologies. This may be particularly useful where artefact-rich deposits relating to the Iron Age activity exist;
x. 10.4: Landscape and land use. The excavation data may address several of the specific points listed in this section. The excavation will focus on establishing continuity or cycles of activity/abandonment throughout the period range represented on site;
xi. 10.5: Settlement. Similarly the site has the potential to address several of the specific questions raised in this section;

xii. 10.6: Social organisation. The form taken by above-ground boundaries and how these may have existed into subsequent phases;
xiii. 10.7: The built environment. 10.7.4, sampling of Iron Age contexts targeting four-post structures and ditches where appropriate;
xiv. 10.13: Drivers and inhibitors of change. The site data may add to the study of this research question;
xv. 12.2: Inheritance. With both Iron Age and early Roman deposits, features and artefacts present, the site has the potential to address the key area of socio-political change. Deposits from this period will be targeted for environmental sampling where appropriate deposits are present;
xvi. 12.3: Environmental evidence. Sampling strategies will also aim to inform how the site worked in terms of its agricultural and pastoral operations;
xvii. 12.4: Landscape and land use. The site has the potential to address several of the specific topics within the theme; and
xviii. 12.6: Settlement. The site is situated on the clay lands within the Vale of the White Horse. Settlement within the clay lands is identified as a key area to investigate to balance the bias towards gravel extraction sites in recent decades.

1.4.3 Following post-excavation assessment of the stratigraphic, finds and environment datasets collated from the excavation phase of investigation, the PXA report (OA 2019) concluded that the excavation results have the potential to contribute to several of the specific research aims presented in section 1.4.2, notably the investigation of the chronology and nature of land use activity during the later Bronze Age and Iron Age (Lambrick 2014) and the Roman period (Fulford 2014).

1.5 Fieldwork methodology

1.5.1 The excavation boundary enclosed an area covering approximately 1.9ha (Fig. 3). The work entailed a combination of detailed excavation and strip, map and sample investigation. The methods employed are presented below, following the statement outlined in the WSI (OA 2018b). It was agreed from the outset that rather than adhering to a single rigid methodology, a flexible approach would be undertaken, and an emphasis was placed on features or groups of features that clearly required greater attention in order to meet the specific research aims of the project.

1.5.2 The excavation was undertaken in accordance with the Chartered Institute for Archaeologists' *Standard and guidance for archaeological excavation* (CIfA 2014a), local and national planning policies, and the WSI (OA 2018b).

1.5.3 Metal detectors were used across the site after the area was stripped, prior to hand excavation of features. The spoil from excavated features was also scanned. This was undertaken to ensure good recovery of metal items, including coins.

Detailed excavation

1.5.4 Excavation is the most comprehensive and detailed level of archaeological sampling and, where required on site, the following methods were adhered to:

i. Excavate 20% of linear features with sampling of all terminals and intersections;

ii. Sample 50% of all pits and other discrete features as a minimum, with 100% excavation where deemed appropriate, where structured deposits have been identified or other evidence of an unusual or otherwise significant nature;
iii. Excavate 100% of postholes and other structural remains, such as hearths, beamslots, internal pits, etc;
iv. Excavate 100% of graves or other features/interventions containing human remains;
v. Environmental, geoarchaeological and other sampling (including sampling for scientific dating techniques) to be carried out at an appropriate level in accordance with Historic England guidance (EH 2011), and as recommended by the English Heritage Regional Science Advisor; and
vi. Detailed recording and reporting in accordance with the WSI (OA 2018b).

Archaeological strip, map and sample

1.5.5 Strip, map and sample (SMS) investigation is broadly similar to detailed excavation but is less intensive. It is most appropriately applied to areas of archaeological remains characterised by landscape features such as former field boundaries and trackways rather than central areas of settlement, industrial areas or ritual sites.

1.5.6 The main construction contractor undertook topsoil removal including sufficient subsoil removal/cleaning to allow clear identification of all archaeological features. This process was conducted under constant archaeological supervision and guidance using a mechanical digger. The archaeological supervisor had the authority to ensure that sufficient subsoil was removed to cleanly expose the surface with the first archaeological horizon. The exposed surface was planned and investigated by the monitoring archaeologists ahead of any further ground reduction. For instances where SMS investigation was deemed more appropriate, the following methods were applied:

vii. A minimum of one experienced archaeologist monitored two 360^{o} mechanical excavators during site stripping, provided machines were working in close proximity and health and safety protocols were adhered to;
viii. All exposed features were marked with spray paint by the machine supervisors for surveying;
ix. All archaeological features were planned pre-excavation for strategy review by RPS and the planning archaeologist, Hugh Coddington, ahead of further construction works that might affect archaeological remains within the areas;
x. A representative selection of features was sample excavated and fully recorded (no more than 5% of linear features and normally no more than 10% of the total number of tree-throw holes, pits and postholes); and
xi. Large features containing bulk homogenous fills were sampled by machine excavation subject to agreement with the planning archaeologist.

1.5.7 Following the stripping of designated site areas, OA provided a pre-excavation digital plan of the exposed features. A site meeting between the planning archaeologist, the RPS consultant archaeologist, OA and the developer was then held to determine the appropriate level of recording in response to the exposed archaeological remains. At this stage, it was agreed that work in the 1.9ha area was to be flexibly divided between

detailed excavation and SMS methods of investigation. The key variable that determined which methodology was employed was the relative complexity and significance of the archaeological remains exposed. SMS investigation was utilised in the first instance, undertaken where 'low-grade' features were apparent, as set out above. Areas identified as being of particular archaeological importance (ie settlement structures, enclosures or areas with specialised activities such as burials or industrial practices) were imposed with additional excavation within the stripped area as agreed with the planning archaeologist. To facilitate the SMS investigation, a rolling programme of archaeological recording was required. Archaeological works followed the stripping programme set out above and was signed off once completed prior to any further construction works in those areas.

1.5.8 While machine excavation was utilised where acceptable to investigate large ditch features (see SMS point xi above), this was only undertaken to supplement hand excavation and did not target complex intersections and multiple feature relationships. The main aim of machine excavation was to confirm ditch profiles and sequences and to recover additional artefacts.

2 STRATIGRAPHY

2.1 Introduction

2.1.1 Archaeological remains were present across the excavation area. Six phases of activity were identified, primarily based on the assessment of dateable artefacts, predominately the pottery, and stratigraphic relationships or where similarities in orientation and/or morphology suggest a relationship (Fig. 3).

2.1.2 A small quantity of residual finds, comprising worked flint of broadly prehistoric date (eg Mesolithic to early Bronze Age) and a single sherd of late Neolithic/early Bronze Age Beaker pottery, within later features suggests limited earlier prehistoric activity. The first clear evidence for land use is dated to the middle Bronze Age, with some remains indicative of activity on site during the late Bronze Age. The majority of remains encountered were dated to the Roman period, with four distinct phases of use and/or development identified. A number of archaeological features were undated/unphased, though many were probably associated with the Roman activity and less probably with the middle and late Bronze Age activity. The phases identified are as follows:

Phase 1: Middle Bronze Age (*c* 1600–1150 BC)
Phase 2: Late Bronze Age (*c* 1200–700 BC)
Phase 3: Late Iron Age/early Roman (*c* 100 BC–AD 100)
Phase 4: Early Roman (*c* AD 70–150)
Phase 5: Middle Roman (*c* AD 150–250)
Phase 6: Late Roman (*c* AD 250–400)

2.1.3 A relatively high density and range of archaeological remains were uncovered across the excavation area, with recorded features comprising field boundary/enclosure ditches, ring ditches, pits, wells and postholes (for structures and probable fence lines), and inhumation burials. Feature legibility was generally good, and a moderate level of stratigraphic complexity was observed.

2.1.4 The majority of archaeological features directly underlay topsoil and subsoil, cutting into the natural geology. A number of modern land drains were observed within the excavation area, cutting into archaeological features and deposits.

2.1.5 Most linear features contained one to two fills of light to dark grey-brown silty clay, with hues of yellowish/greenish grey and orangish/reddish brown also noted. In contrast, some of the larger enclosure ditches contained as many as six fills, though their compositions were consistent. Discrete features generally contained one or two fills similar to others found at the site, though the wells/waterholes contained between three and nine 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 Residual earlier prehistoric material

2.2.1 No archaeological features or deposits demonstrably predating the middle Bronze Age were identified within the excavation area. A small quantity of earlier prehistoric material, consisting primarily of worked flint (Mesolithic to early Bronze Age in date),

together with a single sherd of late Neolithic/early Bronze Age Beaker pottery, was residual in later features, and is suggestive of a limited and presumably transitory presence in the vicinity of the site during this time.

2.2.2 This paucity of earlier prehistoric remains encountered during the excavation corresponds with the limited evidence identified during the 2018 evaluation, which recovered small quantities of broadly prehistoric worked flint (some more specifically dated to the Neolithic or Bronze Age) that was residual in later features and the topsoil and subsoil (OA 2018a). No such material was recorded during the 2006 and 2010 evaluations (TVAS 2006; 2010).

2.3 Phase 1: Middle Bronze Age (*c* 1600–1150 BC)

2.3.1 The first clear phase of activity evidenced within the site occurred during the middle Bronze Age (*c* 1600–1150 BC) with features mainly in the south-western half of the site (Fig. 4). Archaeological remains of this date comprised shallow field boundary and enclosure ditches and one large pit. It is possible that a number of the undated discrete features were associated with this period of land use. Phase 1 represents the earliest demonstrable division of the landscape, with the remains suggestive of several enclosed areas of activity, probably agricultural in nature.

2.3.2 Slightly curved ditch 10061 appears to have broadly delineated the north-east extent of activity. It extended across the full width of the site for 143m on a roughly NW–SE alignment, which was in contrast to the later Roman ditches, and continued beyond the excavation limits. The ditch measured up to 1.64m wide and 0.64m deep, and generally had moderately sloping sides and a slightly concave to flat base (Plate 1). It was discontinuous along its length rather than being a single feature, and several terminals were noted (eg terminal 4478; Fig. 12, Section 4123). Ditch 10061 contained the largest assemblage of middle Bronze Age pottery from the excavation (20 sherds, mostly in terminal 4478), together with small quantities of broadly prehistoric worked flint and unworked burnt flint, disarticulated human bone, animal bone and fired clay. The fired clay assemblage from this ditch includes a late Bronze Age cylindrical perforated block (SF 4076). Given its dating, it may have been intrusive or indicates that the ditch was finally infilled in the late Bronze Age (see below). Small quantities of charcoal and charred plant remains, including wheat grains, indeterminate nutshell fragments and pieces of sloe stone, were recovered from soil sample 4014 from upper fill 4500.

2.3.3 Ditch 10041 post-dated ditch 10061 and followed a NE–SW alignment for at least 63m before it diverged to form an elliptical enclosure at the south-western end. The ditch measured a up to 1.2m wide and 0.36m deep, and generally had a V-shaped profile with a rounded base. A small amount of middle Bronze Age pottery and animal bone, together with an intrusive sherd of Roman pottery, was recovered from the ditch. The enclosure defined an area measuring *c* 23m (N–S) by 16m (E–W). The concave base, 0.1m deep, of an undated posthole (4586) was encountered within a break in the enclosure ditch at its southernmost point. There may have been an entrance into the enclosure on the north-western side, though this area was heavily disturbed by late Iron Age/early Roman features. No features of middle Bronze Age date were identified within the enclosure, perhaps suggesting that it was originally used to corral livestock.

It did contain late Bronze Age burial 4181 (see below), however, and may have remained extant into this later phase.

2.3.4 A subsidiary ditch (10056) extended along the south side of ditch 10041 for *c* 19m before being cut by Phase 5 boundary ditch 10018 and did not extend beyond this later ditch. Measuring 1m wide and 0.22–0.34m deep, and with steep sides and a concave base, ditch 10056 contained middle Bronze Age pottery (11 sherds, mostly from a single vessel).

2.3.5 Possible enclosure 10043 was located to the south-east of enclosure 10041 and is likely to have been contemporary. The main elements of enclosure 10043 comprised two ditches on roughly NW–SE and WNW–ESE alignments, which appear to have defined a roughly triangular area with an open north-west side. The ditches were up to 0.66m wide and 0.33m deep, with moderately sloping sides and flat bases. They contained a small amount of middle Bronze Age pottery and animal bone, together with an intrusive sherd of Roman pottery. The lack of discrete features within the enclosure suggests that it may have had an agricultural function like 10041.

2.3.6 The only other middle Bronze Age features of note were pit 4253, located 22m east of enclosure 10043, and tree throw-hole 5121. Sub-oval in plan, pit 4253 was 2.06m wide and 0.32m deep, with gently to steeply sloping sides and a flat base (Plate 7). It contained a few fragments of middle Bronze Age pottery and animal bone. Tree-throw hole 5121 was 2.05m wide and 0.15m deep, with moderately sloping sides and an uneven base. Thirteen sherds of middle Bronze Age pottery and a small amount of animal bone were retrieved from this feature.

2.4 Phase 2: Late Bronze Age (*c* 1200–700 BC)

2.4.1 Although there does not appear to have been a clear continuation of the middle Bronze Age agricultural phase into the late Bronze Age, limited evidence of activity was found in the form of a burial and a small quantity of fired clay. No other features or pottery of this date were encountered on site (Fig. 4).

2.4.2 Two fragments of perforated cylindrical blocks were recovered during the excavation and may have been used as loomweights or in association with ovens/hearths. While one fragment was residual within Phase 6 late Roman enclosure ditch 10036, a more complete example (SF 4076) was recovered from terminal 4478 of Phase 1 ditch 10061. It is possible that it was intrusive within the ditch, although it may instead suggest that ditch 10061 was not completely infilled until the late Bronze Age.

2.4.3 Burial 4181 was located in the western part of the excavation area, within Phase 1 enclosure 10041. The grave cut (4178) contained the body of an adult (SK 4179), buried in a tightly crouched/prone position on a N–S alignment (Plate 2). The grave cut was oval in plan and measured 1.2m long by 0.66m wide and 0.14m deep. A single fragment of animal bone was recovered, though no direct dating evidence was recovered from burial 4181. A sample of human bone, however, produced a radiocarbon date of 1004–900 cal BC (SUERC-94443, 95.4% confidence). The grave had an unclear relationship with 1.08m-wide shallow pit 4198, though a sherd of broadly Roman pottery recovered from its single fill indicates its later date (see below).

2.5 Phase 3: Late Iron Age/early Roman (*c* 100 BC–AD 100)

2.5.1 Phase 3 dates from the late Iron Age (here broadly defined as *c* 100 BC–AD 43) up to and including the immediate post-conquest period, with many features also containing 'Romanised' forms of late Iron Age-type pottery. Several ditches were identified, with some probably forming enclosures and possibly a trackway (Fig. 5). The majority of the Phase 3 remains were concentrated in the western part of the excavation area, with a small number of more discrete features found to the north.

2.5.2 Potentially the earliest features in this phase are penannular ditch 10029 and enclosure 10028. Penannular ditch 10029 was recut once, with the earlier ditch also being cut by enclosure 10028 (Fig. 13, Section 4214). The relationship between the recut and the enclosure was not clear, but it is possible that the two were either contemporary or that enclosure 10028 was the later addition given that the recut appears to have been a direct replacement of the first penannular ditch. The penannular ditches measured, on average, 0.3m wide and no more than 0.27m deep, and had moderately sloping sides and flat bases. Each had single fills, though the earlier of the two produced no dating evidence. The fill of the recut produced a few fragments of animal bone and four pottery sherds, including two in grogged (E80) fabric and the other two in Savernake reduced course ware (R95). Fabric E80 is common to the late Iron Age period, while R95 was produced in kilns *c* 60km ESE of the site from around AD 40 (cf Booth 2020, 153).

2.5.3 The larger, irregular enclosure (10028) had openings on its eastern and southern sides. Its more substantial ditch measured 0.72–1.40m wide and 0.40–0.84m deep and had a V-shaped profile (Fig. 13, Sections 4214 and 4233). The ditch consisted a basal silt and an upper backfill throughout its circuit. In contrast to other Phase 3 features, it contained a relatively large quantity (164 sherds) of pottery, together with 153 fragments of animal bone, small quantities of fired-clay oven/hearth furniture, and some worked and unworked burnt flint, and appears to have been a focus of domestic activity. The majority of the pottery was of later Iron Age type, mainly sand-tempered (E30) and flint-tempered (E60) fabrics that can date anywhere from the middle Iron Age through to *c* AD 100, but also included a sizable proportion of grog- (E80) and grog-and-sand-tempered (E810) fabrics that are both more firmly late Iron Age (and potentially very early Roman) in date. A couple of post-conquest sherds were also present, and while some may have been intrusive in the upper fill one sherd of sandy reduced ware (R30), which is distinctively post-conquest, was recovered from basal fill 4997. Given the large quantity of later Iron Age material in the ditch, it is thought that penannular ditch 10029 and enclosure 10028 originated pre-conquest, most likely in the first half of the 1st century AD, and survived in use until the immediate post-conquest period.

2.5.4 The north-eastern extent of activity in this phase appears to have been defined by ditch 10060. This ditch extended for *c* 103m on a similar NW–SE alignment to Phase 1 ditch 10061 and in contrast to the alignments of field boundaries belonging to the following Roman phases. It ranged in width from 0.60m to 2.44m and was up to 1.04m deep, with moderately steep sides and a slightly flat base. Small quantities of late Iron Age/early Roman pottery (27 sherds) and fired clay (oven/hearth furniture) were

recovered from this ditch, along with 43 animal bone specimens including remains of cattle, sheep/goat, pig, horse and dog.

2.5.5 The area to the north-east of ditch 10060 appears to have been unenclosed. A small number of features were found in this area including a narrow, L-shaped ditch (10052) that may have formed a small enclosure. It measured a maximum of 0.36m wide and 0.22m deep (Plate 3). Although no dating evidence was recovered from the ditch, it was cut by Phase 4 ditch 10015 and it cut a small, 0.5m-wide, shallow pit (4100) that contained a sherd of late Iron Age/early Roman pottery.

2.5.6 The only other feature recorded to the north-east of boundary ditch 10060 was waterhole 4391, which was 3.48m wide and in excess of 1m deep, with very steep sides; its base was not reached as it was deeper than could be excavated safely. It contained a sequence of at least nine fills suggestive of natural slumping and infilling (Fig. 11, Section 4106). The recovery of 134 animal bones, mostly cattle and horse, and small amount of late Iron Age/early Roman pottery (14 sherds, some post-conquest) from three fills is indicative of the deliberate deposition of waste material following its disuse.

2.5.7 In the north-west of the site, a possible enclosure ditch (4851) appeared to extend from the south-west side of ditch 10060 for 15.5m, at which point it turned to the south-east and continued for *c* 6m before it was cut by a Phase 5 ditch. Further south, a possible trackway aligned roughly NW–SE was defined by ditches 10039/10047 and 10030/10053. Ditches 10030 and 10039 formed the south-west and north-east sides of the trackway, respectively, and were recorded for *c* 34m. The continuation of the trackway south-eastward is suggested by ditches 10053 and 10047, and appear to have led to an open area in the south-east corner of the excavated area. The trackway ditches were 0.6–1.3m wide and up to 0.58m deep, generally with moderately sloping sides and concave bases (Plate 4). Finds retrieved from these features consist of residual worked flint and middle Bronze Age pottery alongside 89 sherds (1905g) of late Iron Age/early Roman pottery (mostly pre-conquest) and small quantities of animal bone and oven/hearth furniture. A tree-throw hole (4741) located near the western end of ditch 10030 also dated to this phase.

2.5.8 Ditch 10044 was most likely associated with the trackway, further defining the open area to the south-east and dividing it from the enclosures to the west. The ditch was roughly N–S aligned and was exposed for *c* 32m. A 1m-wide break near the northern end of the ditch may have provided access. Measuring 0.63–1.20m wide and up to 0.41m deep, the ditch had moderately steep sides and a slightly flat base and contained a few fragments of late Iron Age/early Roman pottery and animal bones.

2.5.9 To the west of enclosure 10028 were two ditches (10024 and 10040) that appeared to define a rectilinear field or enclosure in the south-western part of the excavated area, though its full extent was not exposed. Ditch 10024 extended from the south-west excavation limit on a north-eastward alignment for *c* 43.5m, at which point it was cut by NW–SE aligned ditch 10040. This ditch was exposed for a length of *c* 60.5m and extended beyond the western excavation limit; it is possible that it continued towards the south-east, being on the same alignment as Phase 4 enclosure ditch 10021, though if this was the case, its continuation had been completely removed by the later ditch.

Ditches 10024 and 10040 were up to 1.5m wide and 0.56m deep, and both generally exhibited a V-shaped profile. They contained one to two fills typical of the site.

2.5.10 A more complex arrangement of features (group 10042) was present in the westernmost part of the excavated area. This appears to have superseded the enclosure formed by ditches 10024 and 10040. It comprised several ditches, some on differing alignments. Owing to the restricted exposure of the features in this area, their overall form and function could not be discerned, though they contained late Iron Age/early Roman pottery that was contemporary with other Phase 3 features.

2.6 Phase 4: Early Roman (*c* AD 70–150)

2.6.1 Occupation of the late Iron Age/early Roman site continued in use, and the settlement was enlarged and modified towards the end of the 1st century AD. Ceramic dating evidence generally overlaps between phases 3 and 4, with the later phase including a much higher proportion of the 'Romanised' vessel forms that began to occur in Phase 3. Phase 4 is characterised by a more formalised arrangement of features, comprising several large rectilinear enclosures or fields that contained several smaller sub-divisions.

The enclosure system

2.6.2 Ditch 10023 appears to have delimited the western extent of a large field/enclosure system, with internal divisions denoted by ditches 10025, 10022 and possibly by ditch 10015 to the north. These ditches appear to have defined at least three separate areas of activity. Ditch 10023 crossed the excavation area for *c* 120m on a NNE–SSW alignment and extended beyond the excavation limits. It was up to 1.24m wide and 0.46m deep, with moderately steep sides and a slightly concave base. Pottery dating to the conquest period and more broadly to the Roman period in general was recovered from its single fill. However, the ditch's stratigraphic relationships with other phased features demonstrated its early Roman date.

2.6.3 In the southern part of the site, ditch 10025 was exposed for a distance of *c* 78m on a WNW–ESE alignment and extended in both directions beyond the excavation limits. It was *c* 0.7m wide and 0.17–0.23m deep and varied in profile, exhibiting steep sides with a flat base in some locations and moderately sloping sides with a concave base in others. Ditch 10025 bounded the southern activity area which was defined to the north by ditch 10022. This L-shaped feature extended parallel to ditch 10023, by which it was cut, before turning south-east and continuing for a further 92m. It was generally between 0.5 and 1.1m wide, and up to 0.66m deep with moderately steep sides and a slightly concave base. Maintenance of ditch 10022 is suggested by possible recuts observed during excavation.

2.6.4 The southern area enclosed by ditches 10023, 10022 and 10025 was subdivided by a post-built fence (10058), with two enclosures (10020 and 10026) located immediately to its east (see below). The fence extended between ditches 10022 and 10025 and comprised at least 26 postholes, of which five were excavated. They were sub-circular in plan, measuring 0.30–0.45m wide and 0.07–0.18m deep, often with steep sides and flat bases (eg Fig. 11, Section 4066). Although no finds were found within these postholes, the fence is clearly of this phase owing to its position and alignment.

2.6.5 Within the central area, defined by ditches 10023, 10022 and 10015 (see below), was L-shaped enclosure ditch 10021, which shared a similar orientation to 10022. Offset from ditch 10022 by *c* 1.8m to the north and 4.9m to the east, ditch 10021 was exposed for 77.5m WNW–ESE and at least 40m NNE–SSW. At its north-east end it appears to form part of enclosure ditch 10045. It was generally 1–2m wide (though it was 4m at its widest point) and up to 1.26m deep, with steep sides and a slightly concave base (Fig. 13, Section 4162). Recuts demonstrated that the enclosure ditch had been maintained. It contained sequences of two to seven fills from which 23 sherds of early Roman pottery and 365 fragments of animal bone (including articulating horse remains) were retrieved, along with smaller quantities of fired clay and oyster shell. Soil sample 4028 yielded small quantities of charred cereal chaff and weed/grass seeds, and mollusc shell.

2.6.6 Ditch 10015 divided the central and northern activity areas. Positioned on a slightly different alignment to other Phase 4 ditches, it was traced for *c* 46m ENE–WSW and ended in a rounded terminal to the east. It was cut by Phase 5 ditch 10018 to the west. The ditch measured 1.9m at its widest point and 0.38m at its deepest, and generally had moderately steep sides and a flat base (Fig. 12, Section 4143). Residual late Neolithic/early Bronze Age and middle Bronze Age pottery, early Roman pottery, animal bones, fired clay and an iron nail were retrieved from its fills. A small quantity of later Roman pottery recovered from its upper fill may be intrusive.

Internal divisions

2.6.7 The central area contained several adjoining sub-rectangular enclosures (10032, 10046 and 10045). Enclosure ditch 10045 defined an area of *c* 300m^2 and had a 2m-wide south-east-facing entrance gap. Owing to truncation by ditch 10021, the profile of enclosure ditch 10045 was only partially visible during excavation. Where exposed, it measured 1.2–1.5m wide and 0.70–0.98m deep, and had moderately steep sides and a concave base (Fig. 13, Section 4205). Its fills yielded early Roman pottery and animal bones. Enclosure 10046 cut enclosure 10045 and enclosed an area of 140m^2, with a 6m-wide access point also on its south-east side. Its ditch was 0.85–1.24m wide and up to 0.3m deep, with moderately sloping sides and a concave base. The single fill contained small quantities of Roman pottery and animal bone. To the north of enclosure 10045 was enclosure 10032. The two appeared to adjoin, although the stratigraphic relationship was not clear. This enclosure also cut boundary ditch 10015 to the north, demonstrating a shifting pattern of land-use during this phase. Defining an area of *c* 200m^2, enclosure ditch 10032 was up to 2.52m wide and 0.98m deep. It had moderately steep sides and a flattish base, and was filled by between three and six fills containing early Roman pottery and 87 animal bone fragments. It should be noted that late Roman pottery was found in a couple of upper fills of these enclosures, raising the possibility that they may have been partially extant in later phases.

2.6.8 Similar enclosures were located in the northern area (10010 and 4358) and to the west of the field system (10031). These enclosures were only partially revealed, extending beyond the limits of excavation. Ditch 10010 was 0.9–1.2m wide and 0.12–0.31m deep, with moderately sloping sides and a slightly flat base. It contained a single fill from which modest assemblages of early Roman pottery and animal bone were

recovered. Ditch 4358 was 1.84m wide and 0.62m deep at its rounded terminal, which contained two fills from which Roman pottery, animal bones and an iron bar fragment were retrieved. In contrast, ditch 10031 was more substantial, measuring 2.3m wide and 0.9m deep, with moderately steep sides and a flat base. It contained a sequence of up to six fills, which yielded smaller quantities of animal bone and Roman pottery, as well as residual middle Bronze Age pottery.

2.6.9 Two small penannular enclosures (10012 and 10054) may have represented roundhouses, which were positioned within the central field defined by ditches 10015, 10022 and 10023. Given the ceramic dating evidence from these features, it is possible that they were established in the late Iron Age and continued in use post-conquest. Enclosure/roundhouse ditch 10012 had an internal diameter of *c* 9–10m and a north-west-facing entrance *c* 1.7m wide, defined by two rounded terminals. The ditch was up to 0.68m wide and 0.38m deep, with moderately steep sides and a slightly concave to flat base (Plate 6). Pottery recovered from several interventions demonstrates the feature's early Roman date (27 sherds, 575g), including typically later Iron Age sand-tempered (E30) and flint-tempered (E60) fabrics alongside sherds from post-conquest reduced ware vessels (R20, R50, R90 and R95), that date no later than AD 150. Other finds included animal bones, two fragments of fired clay and an iron nail. Located approximately 7m to the north-east was enclosure/roundhouse ditch 10054, of which only the southern half of the circuit survived. Where exposed, it was 0.45–0.60m wide and no more than 0.1m deep, and had moderately sloping sides and a concave base. It also contained early Roman pottery, animal bones, iron nails and hobnails, and a folded sheet of copper alloy.

2.6.10 In the south of the site was irregular enclosure 10026. Its ditch varied in size along its length (0.18–0.76m wide and 0.12–0.40m deep), but it had steep sides and a slightly flat base, and contained a few pieces of early Roman pottery, animal bone and fired clay. The enclosure ditch was cut by sub-square enclosure ditch 10020, adjacent to fence 10058. It enclosed an area of approximately 875m^2 and was defined by several inter-cutting ditches, indicating that the enclosure had been altered and maintained. The ditches measured 0.4–1.9m wide and up to 0.62m deep, generally with moderately sloping sides and a concave base (Plate 7). Small assemblages of animal bone and pottery of residual middle Bronze Age, early Roman and broadly Roman date were recovered from the ditches, along with a few fragments of Roman CBM and an iron nail.

2.6.11 Also in the southern area was rectilinear ditch 10027, which perhaps formed another enclosure to the west of and post-dating ditch 10023. Extending from the southern excavation limit, the ditch was recorded for a distance of 14.3m to the NNE and 3m to the WNW, where it was cut by Phase 5 ditch 10018. It is unclear if it continued beyond the later ditch. Only three sherds of broadly Roman pottery were recovered from ditch 10027, which was 0.38–0.42m wide, 0.11m deep and had steep sides and a flat base. However, its stratigraphic relationship with middle Roman ditch 10018 and late Iron Age/early Roman ditch 10024 indicate its early Roman date.

Grave 4172

2.6.12 Grave 4172 was located towards the south-east of the site (Plate 8). SK 4170 was interred on a WNW–ESW orientation, aligned on the axis of the surrounding field boundaries. It was possibly placed within an enclosure delineated by ditch 5076, which was recorded on a N–S alignment for *c* 25m, and perhaps by ditch 4535 to the south, which was an E–W aligned, *c* 3m-long ditch with a rounded terminal. The elongated oval grave cut (4169) measured 1.4m long by 0.56m wide and 0.2m deep, and had moderately steep sides and a slightly flat base. Animal bones, four iron nail fragments and an incomplete curved iron rod were recovered from the grave fill, though no diagnostic dating evidence was found. It is included with the phase 3 description here, but it could conceivably date to any part of the Roman period.

Other features

2.6.13 Other notable features included a stone-lined well (5035) that may have been constructed during this phase (Plate 9). It measured 1.2m wide and in excess of 2.5m deep, and comprised a limestone lining (4978) and a series of five to six silt fills, though the base of the well was not reached. A small assemblage of finds was recovered from some of these deposits, comprising Roman pottery, animal bones and shell. Waterlogged plant remains reflecting an area of possibly neglected/waste ground surrounding the well, as well as small quantities of charred material, were recovered from soil samples 4023, 4025 and 4027 collected from well fills 4980, 4992 and 4993 respectively. The lowest excavated fill (4993) contained no finds and may represent silting while the well was still in use, while middle fills 4992 and 4980 were also silt deposits but contained finds, suggesting that the well had probably gone out of use by this time. The well was subsequently robbed (cut 4030) and backfilled during the late 2nd century or later, as suggested from the pottery recovered from four backfill deposits, which also contained a small amount of animal bone.

2.6.14 A large hollow (4513), measuring 5m by 6m and up to 3.0m deep, was recorded approximately in the centre of the site, cutting possible trackway ditch 10047. The pit fill contained mid–late 1st-century pottery, animal bones and, in contrast to other features of this phase, a moderate assemblage of mixed charred plant remains, including cereal grains and chaff, and wild weed/grass seeds (recovered from soil sample 4016).

2.6.15 Situated in the west of the site was pit 4198, which had an unclear relationship with Phase 2 burial 4181 (see above). A single sherd of Roman pottery recovered from the shallow pit indicates its later date; however, its early Roman phasing is only tentative.

2.6.16 Located in the north of the site, sub-circular pit 4124 measured 1.65m by 1.4m and 0.22m deep, with steep sides and a flat, albeit slightly uneven, base (Plate 11). It contained small quantities of mid 1st- to mid 2nd-century pottery and animal bone.

2.6.17 A sinuous ditch (10014) extended across the north of the site for a distance of *c* 36m on a roughly NE–SW alignment. It was 0.32–0.64m wide, 0.04–0.22m deep and contained one to two fills from which small quantities of early Roman pottery and animal bones were recovered. Located *c* 25.5m to the north-west was a possible enclosure (10016), which comprised two perpendicular ditches on NE–SW and NW–SE alignments, measuring a maximum of 11.75m in length, 1.58m in width and 0.28m

in depth. Small quantities of broadly Roman pottery and animal bones were retrieved from its single fill. The ditch was cut by late Roman ditch 10009, and given the density of Phase 4 features in this part of the site, ditch 10016 is considered to be of similar date.

2.6.18 A number of pits assigned to Phase 4 were revealed in the north-east of the site. Situated to the east of ditch 10014 was a cluster of inter-cutting pits, comprising at least five pits: 4106, 4108, 4113, 4116 and 4119. The pits were 0.44–1.00m wide, 0.04–0.18m deep and had gently sloping to moderately steep sides and concave to slightly flat bases. They contained one two fills from which small assemblages of early 2nd-century Roman pottery, animal bones and iron nail fragments were retrieved.

2.7 Phase 5: Middle Roman (*c* AD 150–250)

2.7.1 Occupation continued into the late 2nd and early 3rd centuries (Fig. 7). During this time, the layout of the site was reorganised but remained largely on the same alignments as the previous phase. Many of the smaller enclosures were abandoned and the north, central and southern areas defined in the early Roman period were replaced by one large enclosure containing several rectangular post-built structures and a second enclosure to the north with less evidence of activity.

Enclosure system

2.7.2 The western boundary of the enclosure was moved further west and replaced by a more-substantial ditch (10018) which extended north of the main enclosure. It generally comprised a ditch measuring up to 3m wide and 1m deep with moderately steep sides and a concave base, though several recuts along its length indicate that the boundary ditch had been redefined on several occasions. Small amounts of 3rd-century and broadly Roman pottery and Roman CBM were recovered, though a greater quantity of animal bone was found, perhaps suggestive of deliberate deposition.

2.7.3 Two inter-cutting ditches (10019 and 10051) defined the eastern side of the enclosure system, adjacent to the site boundary (Plate 10). They crossed the site on a generally NNE–SSW alignment for *c* 100m and were 0.78–2.28m wide and a maximum of 1.3m deep, and recuts were recorded along the length of both ditches. The ditches both contained pottery of early and middle Roman date (including samian ware) and animal bones, with pieces of fired clay (oven/hearth furniture), oyster shell, an iron nail and an eroded 1st- to 2nd-century dupondius (SF 4107) was also recovered from ditch 10019. Soil sample 4010 (ditch 10019) yielded small quantities of charcoal, charred cereal grains, chaff, wild weed/grass seeds and mollusc shell. Ditch 10019 turned westward from its N–S alignment to form the northern boundary of the main enclosure, dividing it from the enclosure to the north.

2.7.4 The southern boundary was defined by ditch 4164, which was exposed for a distance of *c* 65m on a roughly WNW–ESE alignment. It was 3.88m wide and 0.6m deep, and had moderately steep sides and a slightly concave base. Only a single sherd of broadly Roman pottery and a few pieces of animal bone were recovered from this ditch.

2.7.5 The central enclosure, measuring *c* 0.9ha, was sub-divided by roughly E–W aligned ditch 10034 near the southern end. This feature comprised an interrupted ditch that

may have allowed access. It was 0.40–0.92m wide and 0.10–0.22m deep, being slightly wider and deeper further to the east. A smaller rectangular enclosure (10033/10035) was built within the main enclosure. Ditches 10035 and 10033, which were positioned on NNE–SSW and WNW–ESE alignments, delineated the northern, southern and western extents of the enclosure, with ditch 10051 comprising its eastern extent. Defining an area of *c* 0.13ha, the ditches were 0.6–1.2m wide and 0.2–0.3m deep, with moderately sloping sides and a slightly flat base. Small amounts of Roman pottery, Roman CBM, animal bone and iron nails were retrieved from the ditches.

2.7.6 Two broadly E–W aligned ditches (10048 and 10049) were also recorded within the central field/enclosure and perhaps constituted further sub-divisions, though they were only exposed for 10.5–22m having been truncated to the east and west by other features. Ditch 10049 may have been a sub-division within enclosure 10033/10035, while ditch 10048, which cut across enclosure 10033/10035, was a later addition to the field/enclosure system. Ditch 10049 was 0.65–0.84m wide and only 0.17m deep, while ditch 10048 was wider and deeper, measuring 0.95–1.0m wide and 0.55–0.60m deep. Both had steep sides and flat bases. A few sherds of middle and broadly Roman pottery were recovered from shallow ditch 10049, while 35 sherds of 1st- to mid 2nd-century Roman pottery and a few fragments of animal bone and fired clay were retrieved from ditch 10048.

Other features

2.7.7 A few archaeological features were excavated in the northern area defined by ditches 10018 and 10019. Adjacent to ditch 10019 was a roughly L-shaped ditch (10038) that may have formed part of a small rectilinear enclosure. It measured *c* 11m (E–W) by 8m (N–S) and had two rounded terminals 0.5–0.6m wide and 0.1–0.3m deep. A few pieces of 2nd-century pottery and animal bone, as well as the pin and spring (SF 4057) of a copper alloy brooch dating to *c* AD 25–100, were found within this feature. A *c* 5.5m-long ditch (4377) on a NE–SE alignment was located *c* 13.7m to the north-east of ditch 10038. Its rounded terminal was excavated and found to have steep sides and a concave, albeit uneven, base, 0.56m wide and 0.14m deep. Its relationship with Phase 4 ditch 4358 was not investigated, though its single fill contained mid 2nd-century or slightly later pottery, animal bones and an iron nail.

2.7.8 Two pits were located in this area. Pit 4291 was significant in that it cut penannular ditch 10012 (phase 4), which likely represented an early Roman roundhouse (see above). The pit was circular in plan, measuring 0.92m across, and had a concave profile reaching a depth of 0.32m. Its single silty-clay fill contained eight sherds of middle Roman pottery dating after AD120, including remains of reduced ware vessels and one sherd from a cooking-pot-type jar in standard Dorset black burnished fabric (B11), and several fragments of animal bones. Pit 4421 was discovered adjacent to the eastern end of ditch 10038. Sub-circular in plan, it was 0.68m wide and 0.22m deep, with moderately steep sides and a flat, albeit uneven, base. A sherd of Roman pottery and a fragment of burnt animal bone was collected from its single fill.

2.7.9 Further to the north was roughly N–S aligned ditch 10017. It had a 2m-wide square terminal and continued northwards for 10.7m before it was cut by Phase 6 ditch 10009. Roman pottery of largely 2nd-century date, animal bones and two iron nails

were recovered from the ditch, which had moderately steep sides and a flat base, *c* 0.38m deep. A few sherds of later Roman pottery from its upper fill suggests that it was not completely infilled until the late Roman period, or had been disturbed by phase activity in this area. The function of the ditch is unclear.

2.7.10 Elongated pit 4036 measured 1.68m by 0.58m and 0.22m deep, with steep sides and a flat, albeit slightly uneven, base. Its two fills contained mid–late 2nd-century pottery, animal bones and shell. Although only one discrete feature of middle Roman date was identified, it is likely that a number of undated features (see below) were associated with this phase of activity.

2.8 Phase 6: Late Roman (*c* AD 250–400)

2.8.1 The pottery evidence suggests that there was an increase in activity during the late Roman phase, although features of this date were confined to the eastern half of the site (Fig. 8). By this time, the enclosure system of Phases 4 and 5 had been largely abandoned, and a less-regimented layout ensued comprising several individual enclosures and boundary ditches defining different areas of activity.

Boundary ditches

2.8.2 A substantial ditch (10009), aligned NE–SW, extended across the north of the excavation area for *c* 43m and continued beyond its limits. It was 2.48–3.10m wide and *c* 0.7m deep, with moderately sloping sides and a slightly concave base (Fig. 11, Section 4002). The remains of an earlier ditch at its eastern end suggests that the boundary had been modified at some point (Plate 12). In contrast to most other features on the site, ditch 10009 contained relatively large quantities of animal bone (191 fragments) and Roman pottery (638 sherds; 10.5kg), including sherds of early and middle Roman date, together with smaller amounts of fired clay (oven/hearth furniture), 41 iron nails, an iron structural fitting (SF 4015), an amorphous piece of waste lead (SF 4012) and a copper-alloy pin (SF 4014). A layer of crushed chalk (4053) had been laid down within and over the upper fills of the ditch, presumably as hardcore to create a solid surface (Plate 13).

2.8.3 NNE–SSW aligned ditch 10050 potentially defined the eastern extent of activity during this phase. It extended over *c* 84m and continued southward beyond the excavation limit. The ditch extended northward to where it abutted trackway 5168 (see below) and it did not continue further north. Ditch 10050 varied in size along its length, measuring 0.4–1.0m wide and 0.12–0.4m deep, and generally had moderately sloping sides and a concave base. Small quantities of residual late Iron Age/early Roman and late Roman pottery, animal bone and shell were recovered from its fills.

Enclosures

2.8.4 Near the southern end of the excavated area were two small sub-rectangular enclosures (10000 and 10036), one of which contained a large, rectangular, stone-built corndryer (10002). Defining an area measuring 13.4m N–S and 10.9m E–W, enclosure ditch 10000 measured 0.62–1.48m wide and 0.26–0.34m deep, though it was notably narrower (0.13m wide) and shallower (0.02m deep) on its northern side where there was also a gap 2.2m wide. An undated posthole cut one of the terminals and may have

been associated with the entrance. The ditch had moderately sloping sides and a flat base, and contained some late Roman pottery, animal bones and an iron hobnail.

2.8.5 Located *c* 11m to the east was enclosure 10036, measuring *c* 226m^2. The boundary ditch, which was up to 1m wide and 0.42m deep, had moderately sloping sides and a slightly flat base. It contained late Roman pottery, animal bones, two iron nails and a residual, perforated, fired-clay block of late Bronze Age date. The ditch had an 8m-wide entrance on its eastern side, where a large sub-oval pit (4539) was positioned.

2.8.6 A large pit (4349) that was dug into enclosure ditch 10036 in the south-east of the excavation area was interpreted on site to have been a robbed-out well (Plate 15). The sub-circular pit was 1.8m wide with near vertical sides. It was excavated to a depth of 1.5m and was found to contain a sequence of nine fills, though the base was not reached (Fig. 11, Section 4091). The lower fills appear to be naturally accumulated silts from the surrounding geology, some of which (eg 4891, 4354 and 4355) contained stones that possibly derived from the feature's original lining (if it was a well). The lowest silt to contain datable material was 4354, which produced a few sherds of later 3rd-century pottery, one a fragment of a possible O20 Young-type beaker. The uppermost fills (4356, 4357, 4350, 4351 and 4342) were quite different in appearance to the lower silts, representing later silt infilling probably from the surface rather than the surrounding natural. These fills variously contained residual early and middle Roman pottery and some animal bones.

2.8.7 Situated in the entranceway of enclosure 10036 was pit 4539. Measuring 3.5m by 1.3m and 0.64m deep, this pit had steep sides and a flat base. It potentially functioned as a well or waterhole before being used for waste disposal. Its three fills contained deposits of Roman CBM and mortar, as well as late Roman pottery, animal bones and an iron strip fragment perhaps from a blade.

2.8.8 Corndryer 10002 was situated in the western half of enclosure 10036. It comprised two adjoining flues nearly 4m long with rectangular chambers on either side measuring *c* 2.6m by 1.7m (Fig. 10; Plate 14). The north end of the corndryer appears to have been cut by an E–W aligned ditch (4443) of possible Roman date, though no finds were recovered. Charcoal-rich deposits (4370, 4375 and 4458) encountered within the structure (construction cuts 4369, 4374 and 4457 respectively) were associated with its use (Fig. 10, Section 4121). A metalled stone surface (4546) was also recorded in the south chamber. Pottery from its construction levels and the overlying deposits (4452, 4371, 4376, 4459, 4460) suggests that it was built no earlier than the mid–late 3rd century. Other finds recovered from the corndryer include structural fired clay, a large unworked cobble that was possibly used as a grain rubber, and two shards of glass, as well as a moderate assemblage of iron objects, including a flesh hook/fire rake (SF 4073), a possible fire poker (SF 4075), nails (SFs 4065, 4066, 4068–4072, 4091, 4090) and hobnails (SFs 4017 and 4092). Soil samples 4013 and 4017, collected from rake-out pits 4367 and 4372 respectively, produced charcoal and large quantities of charred plant remains, notably glume wheats and cereal chaff, as well as wild plant/grass seeds. Similarly, soil samples 4018–4021, collected from the inner chambers and associated flues of the corndryer, contained large quantities of charred cereal grains, chaff and weed/grass seeds, but smaller quantities of charcoal and a few pieces of egg shell. Further fragments of fired clay comprising possible

structural pieces were also recovered from these samples and were probably associated with rake-out debris from the corndryer.

2.8.9 Also within enclosure 10036, *c* 4.4m north-east of the corndryer, was a deposit (4691) of dark-grey silty clay with large stone inclusions that contained late Roman pottery, animal bones, burnt Roman CBM, a shard of glass, an iron nail (SF 4098) and iron joiners' dog, as well as two millstone fragments (SFs 4102 and 4103). This is suggestive of the deposition of waste material, some of which may have derived from corndryer 10002 following its disuse and from other nearby activity.

2.8.10 Located immediately to the south of corndryer 10002 was a curvilinear ditch (4330), which was 0.94m wide and 0.21m deep. It had gently sloping sides, a flat base and contained a single fill from which late Roman pottery, animal bones and burnt unworked flint were recovered. Its function is unknown, and it is not clear if it was related to the functioning of the corndryer.

2.8.11 A small penannular ditch (10001) was found immediately to the north of enclosure 10036. It measured *c* 4.7m across (N–S) internally and had an east-facing entrance *c* 2.1m wide, which was defined by two rounded terminals. The ditch was 0.38–0.60m wide and 0.12–0.24m deep, with steep sides and a slightly concave base. In addition to two residual prehistoric worked flints, a moderate amount of late Roman pottery (103 sherds; *c* 1kg), a small quantity of animal bone (21 fragments), an iron nail and an iron cleat were recovered. The feature potentially formed a small enclosure, but equally may have represented a small circular building that left no internal traces (see also penannular ditch 10013 below).

2.8.12 An elliptical-shaped enclosure (10011) was situated in the northern half of the excavation area, *c* 14m south of boundary ditch 10009. The enclosure was sub-divided at its western end where penannular ditch 10013 was also exposed. Enclosure ditch 10011 was 0.7–1.3m wide and a maximum of 0.5m deep, with moderately sloping sides and a slightly concave base. It defined an area in excess of 0.12ha that continued beyond the eastern excavation limit. It appears to have been recut along part of its length. Pottery of early and late Roman date was recovered from its fills (122 sherds; 1.3kg), alongside 82 animal bone fragments, Roman CBM, fired clay (oven/hearth furniture), iron hobnails and oyster shells.

2.8.13 A deep pit, possibly a waterhole (4256), was located near the north-western side of enclosure 10011 and was found to cut phase 4 ditch 10014. The pit was excavated to a depth of 1.2m deep but continued below this level (Fig. 11, Section 4068). It contained three fills, the earliest of which (4257) had clearly silted and slumped from the sides of the feature and was generally free of finds except for a tooth from a sheep or goat, several bones from mice or voles that had accidentally become trapped, shade-demanding land snails, and a small quantity of charcoal. The second fill (4258) was a firm clay fill containing a small number of sheep/goat bones and poorly dated Roman pottery, while the uppermost fill (4259) was significant in that in contained a sizable collection of late Roman pottery (22 sherds, 202g), including sherds from a black burnished ware cooking pot, a reduced ware vessel with black slip and white painted decoration, and the rim from a fine, Oxfordshire, narrow-mouthed whiteware jar or bottle. It is possible that this pit/waterhole was open and in use during phase 5

alongside pit 4291 (see above); however, the lack of clear dating evidence from the lower fills means that it has been phased in line with the material placed in its final backfilling.

2.8.14 The uppermost fill of pit/waterhole 4256 was cut by penannular ditch 10013, which completely overlay the earlier feature. Ditch 10013 had a 1.0–1.6m-wide and 0.26–0.48m-deep ditch, with two rounded terminals that defined a roughly east-facing entrance *c* 2.4m wide. Shallow basal fills were noted in several interventions, often slumped material from the sides of the ditch, while a thick backfill was recorded throughout its circuit. A notable quantity of pottery (120 sherds, 1762g) was recovered from the fills, with a significant proportion post-dating AD 250. Given the recovery of late Roman wares from pit/waterhole 4256, it possible that penannular ditch 10013 was a particularly late feature, perhaps in use during the 4th century AD. Pottery included a south Spanish amphora base, black burnished ware bowl and dish, fine colour-coated ware flagons, and a fine, Oxfordshire, parchment ware vessel. Nearly 200 animal bones were also recovered including a concentration of cattle, horse and sheep/goat remains in intervention 4289 on the western side of the ditch, which also included Roman CBM, an iron nail, an oyster shell and a burnt quernstone fragment (SF 406). The function of the ditch is uncertain but the quantity of domestic finds in its fills suggests the presence of a small building, perhaps of a similar type to the potential structure identified to the south (see ditch 10001 above). Only one internal feature was discovered in the form of a posthole (4158) that was located close to the north-western edge of the enclosure and which contained a small number of pottery sherds contemporary with that found in the ditch fills.

2.8.15 Enclosure 10011 was replaced by rectilinear enclosure 10037, which also continued beyond the excavation area and so its full extent is not known. Ditch 10037 extended from the northern excavation limit southwards over *c* 22m, at which point it turned to the east and was recorded for a further 11.6m. Measuring 0.4–0.8m wide and 0.14–0.25m deep, it had steep sides and a concave base, and contained mid–late Roman pottery, animal bones, Roman CBM, an indeterminate fragment of iron and an oyster shell.

2.8.16 Immediately to the south of enclosure 10011 was a small rectilinear enclosure (10055). It had a rounded western terminal from which it extended eastwards for 11.5m and then turned northwards and was traced for 3.9m until it was obscured/overlain by metalled surface 5168. The ditch was 0.7m wide and 0.24m deep, with moderately steep sides and a flat base. A residual sherd of middle Bronze Age pottery and a few pieces of late Roman pottery and animal bone were retrieved from the ditch.

Post-built structures

2.8.17 Four post-built structures were discovered towards the eastern edge of the excavation area. These may have represented individual buildings, perhaps with different phases of construction forming parts of a larger complex, or were elements of a one much larger building perhaps with some modification and maintenance occurring over time (Fig. 9). The complex consists entirely of postholes, most of which did not have any stratigraphic relationships, though the few that did were found in each case to cut

underlying features. The eastern side of the complex also closely followed the alignment of ditch 10050, suggesting their contemporaneity.

2.8.18 Structure 10004 was formed of a roughly square post alignment located at the southern end of the complex. It measured *c* 8m long by 7.5m wide and comprised 20 postholes, of which 11 were excavated. Sub-oval to sub-circular in plan, they measured 0.21–0.44m wide and 0.12–0.3m deep, and had steep sides and slightly concave bases (eg Fig. 11, Section 4155). Usually containing single fills, some of the postholes also had evidence of post-pipes. A few postholes contained animal bones and iron nails, while only a single sherd of broadly Roman pottery was recovered. When excavated, posthole 4632 was found to cut the fill of phase 5 ditch 10033.

2.8.19 Grave 10003 contained an infant (SK 4517) and was located within the area enclosed by post-built structure 10004. The burial seems likely to have been associated with the building, being placed within its south-western corner. The grave cut (4516) was sub-rectangular, measuring *c* 1m long by 0.48m wide and 0.36m deep, with moderately steep sides and a flat base. Although no finds were recovered from this burial, it cut Phase 3 ditch 10060 and lay next to a posthole of structure 10004.

2.8.20 Structure 10059 aligned on and possibly joined with the north-western corner of structure 10004. It consisted of at least 16 sub-circular postholes dug predominantly in two parallel lines on a NNE–SSW orientation, measuring *c* 11m long and 5m wide. Excavation of several of the postholes showed that they had near-vertical sides and slightly concave bases, measuring 0.34–0.50m wide and 0.12–0.30m deep. Some inter-cutting is suggestive of alterations and/or maintenance of the structure, while two central postholes may have been for internal supports. Towards its northern end, posthole 5072 was found to cut surface 5071. To the north of this were two postholes, including 4885, which appeared to align the northern end of structure 10059 to that of structure 10006/7. Posthole 4885 was quite large and roughly sub-rectangular in plan, measuring 0.92m by 0.86m across and 0.58m deep, with straight sides and a flat base. The feature cut surface 5071 and it contained a layer of placed stones that were clearly intended to support a post.

2.8.21 Structure 10006/7 was located on the same alignment to the east of structure 10059, where it appears to have respected the north-eastern corner of enclosure 10004. A 17.7m-long row of 12 postholes, aligned NNE–SSW, was recorded east of a series of *c* 21 postholes in a slightly irregular formation. It is unclear how these two groups of postholes were structurally related, though it is possible that they supported a building of similar dimensions to 10059, or alternatively represented two successive wall or fence lines. The postholes were sub-circular in plan, ranging in size from 0.30m to 0.64m wide and 0.06–0.30m deep, with generally steep sides and slightly concave to flat bases. All contained single fills, with a few yielding early–middle Roman pottery sherds and some animal bones. Soil sample 4022, collected from posthole 4873 (group 10007), produced small quantities of charcoal and charred cereal grains, as well as a larger amount of charred weed/grass seeds and a single fruit stone. Two postholes (4958 and 4651) at the southern end of structure 10006/7 cut phase 5 ditch 10033.

2.8.22 A third structure (10008) aligned at a right-angle to structure 10059. At least six sub-circular postholes were positioned on a WNW–ESE alignment and perhaps constituted

the remains of a fence, *c* 12m long, that may have been associated with the other structures in this area. The postholes were 0.40–0.68m wide and 0.25–0.40m deep, with near-vertical sides and slightly concave to flat bases. Two contained a few pieces of 2nd-century Roman pottery, burnt Roman CBM of mid 2nd-century or later date and animal bones.

Metalled surfaces

2.8.23 In the north-east of the site was an E–W-aligned metalled trackway (5168), *c* 4.5m wide, which extended perpendicular to ditch 10050, potentially into an open courtyard that appears to have been associated with the post-built structures (10008, 10059, 10006/7 and 10004). The metalling consisted of limestone cobbles in a light-grey silty clay matrix that overlay a slight depression filled with dark-grey silty clay (5071), which contained pottery dated to the mid 3rd–4th century and extended to the south and west from the metalled track.

2.8.24 Traces of further metalling or possibly an internal floor (4697) were revealed further to the west. Late Roman pottery, animal bones, a millstone fragment (SF 4105) and a Constantinian coin (SF 4106) dating to AD 321–3 were recovered from an underlying deposit (4698), perhaps the fill of an associated construction cut for the surface. This surface appeared to have been delimited by shallow wall foundation 4760, possibly a dwarf wall for a building. This wall foundation, which cut into Phase 4 enclosure ditch 10045, was aligned NNE–SSW, measuring 5.3m long by 0.75m wide, and comprised a single course of roughly hewn mudstone fragments. The structure may have been associated with, or possibly positioned within, enclosure 10055.

2.9 Undated/unphased

2.9.1 A number of pits, postholes and natural features, such as tree-throw holes, recorded across the excavation area were undated, as they contained no diagnostic artefacts and typically shared no stratigraphic or spatial relationships, or morphological characteristics with other dated features. Nevertheless, it is probable that the majority of these undated features were related to activity during the Roman period (Phases 3–6) and, perhaps less likely, the middle and late Bronze Age (Phases 1 and 2).

Pits

2.9.2 A total of 18 undated pits were encountered during the excavation. These pits were sub-oval to sub-circular in plan, ranging in size from 0.50m to 1.54m wide, and generally 0.1–0.4m deep, though undated pit 5156 was 1.24m deep. They varied in profile, exhibiting shallow, gently sloping to steep sides and flat to concave bases. Some pits did have stratigraphic relationships with dated features; however, they have been considered as undated, as no clear/close date could be determined. Some also contained fragments of animal bone, flint, fired clay, iron and stone, though this material was insufficient to assign a phase.

Postholes

2.9.3 Fifteen undated postholes were recorded across the site, none of which could be resolved into structures. The postholes were typically sub-oval to sub-circular in plan,

measuring 0.14–0.50m wide and 0.1–0.5m deep, with moderately steep sides and flat to concave bases. They contained one to two fills, none of which contained any finds.

Natural features

2.9.4 Features of probable natural origin, notably tree-throw holes, were identified across the excavation area. These features were typically sub-oval or irregular in plan and profile, and ranged in size measuring 0.65–1.16m by 0.3–1.6m and 0.07–0.40m deep. They generally contained single fills typical of the site, though two were recorded in feature 4126. Charcoal inclusions noted in the lower fill of 4126 is suggestive of the removal of the tree through burning. Of these features, only tree-throw hole 4503 in the west of the site contained artefactual evidence comprising a small quantity of animal bone, though this material probably became deposited within the feature through root action or perhaps derived from inter-cutting Phase 3 ditch 10042.

3 ARTEFACTS

3.1 Prehistoric pottery *by Alex Davies*

3.1.1 The excavation uncovered 70 sherds (1091g) of prehistoric pottery. All but one sherd belongs to the middle Bronze Age Deverel-Rimbury tradition dating *c* 1600–1150 cal BC. A single sherd (7g) of probable Beaker (late Neolithic/early Bronze Age) pottery was also discovered.

3.1.2 Individual vessels were separated out from each context, weighed, with body, rim and base sherds counted. Notes were made on forms, decoration, surface treatment, features, details of any carbonised residue and levels of abrasion. No refitting between contexts were attempted and vessel counts represent maximum numbers. Fabrics were defined following the guidelines of the Prehistoric Ceramics Research Group (PCRG 2010). The material was recorded on an excel spreadsheet and this is available in the archive.

Late Neolithic/early Bronze Age

3.1.3 A single undecorated body sherd probably belonging to a Beaker was discovered. This was in a fine, well-sorted fabric containing very common grog. The sherd seems too fine to date to elsewhere in the Bronze Age. The sherd was residual in early Roman ditch 10015.

Middle Bronze Age

3.1.4 Four middle Bronze Age fabrics were distinguished (Table 1). Three of these contained calcinated flint in varying grades. A single fine vessel (Fl1), possibly a globular urn, with an incised decorative line was discovered in late Iron Age/early Roman ditch 10039. Most of the sherds were made in a medium-coarse fabric (Fl2). Two of these vessels had fingernail impressed cordons, and there was one squared and one plain rim. One of the vessels was lightly burnished. The very coarse grade fabric (Fl3) was dominated by parts mainly from a large, thick base found in ditch 10056 accounting for nine of the sherds (530g). This single vessel accounts for nearly half of the middle Bronze Age assemblage by weight. A single vessel in a coarse fossil shell fabric (Sh) has been tentatively phased to the middle Bronze Age. Shell-tempered pottery was present in the middle Bronze Age Monks Farm, Grove, assemblage, although was a very uncommon inclusion type (eg Brown 2017, 230). Shelly fabrics were common in the earliest and early Iron Age assemblages at nearby Crab Hill (Allen *et al*. in prep.), although these were generally finer, and the vessel from Grove Airfield has the characteristics of middle Bronze Age material from the Upper Thames (particularly its large inclusions). Like the shelly material from Monks Farm, both might have been imported from this area (Brown 2017, 230). The shell-tempered vessel was from early Roman ditch 10031.

3.1.5 The middle Bronze Age pottery had an overall mean sherd weight (MSW) of 15.6g. This compares well to the assemblages from Monks Farm and west of Station Road (Brown in prep.; see also Raymond 2016 for further comparison). The MSW is biased by the reasonably large sherds from a single think-walled vessel (in fabric Fl3, see above). Four

of the vessels were recorded as freshly broken, fourteen as moderately abraded and two as highly abraded. All of the freshly broken and highly abraded pottery was retrieved from middle Bronze Age contexts, whereas half of the moderately abraded vessels were found in late Iron Age or Roman contexts.

3.1.6 Some 78% of the sherds were found in contexts dated to the middle Bronze Age, with the remainder found in late Iron Age or Roman contexts. Ditches were the major repository of middle Bronze Age pottery, with 78% of the sherds coming from 10 ditches over 12 interventions. Half of these were middle Bronze Age, the others being residual in late Iron Age or Roman ditches. A single pit (4253) and a single tree-throw hole (5121) were the only other features to produce middle Bronze Age pottery. Ditches 10056 and 10061 produced the largest quantities of material, respectively 11 sherds (539g) and 20 sherds (184g).

Table 1: Summary of middle Bronze Age pottery

Fabric	Sherds	Wt (g)	Vessels	Contexts	Description	Forms, features and decoration
Fl1	6 *9%*	18 *2%*	1 *5%*	1 *7%*	Flint: Fine grade, moderate quantity, very well sorted	Possible globular urn. Incised linear or curvilinear decoration.
Fl2	50 *73%*	487 *45%*	16 *80%*	14 *93%*	Flint: Medium to coarse grade, moderate to very common, moderately to well sorted	Two fingernail impressions on cordons. One burnished. One squared one plain rim.
Fl3	10 *15%*	532 *50%*	2 *10%*	2 *13%*	Flint: Very coarse grade, abundant, moderately well sorted	Body and base sherds
Sh	3 *4%*	47 *4%*	1 *5%*	1 *7%*	Shell: Coarse grade, moderate quantity, moderately well sorted	Sooting on outside. Possibly EIA.
Total	*69*	*1084*	*20*	*15*		

3.2 Late Iron Age/Roman pottery *by Kate Brady*

Introduction

3.2.1 The excavation produced a large assemblage of late Iron Age and Roman pottery comprising 4187 sherds (75.58kg). This was fully recorded on an Access database using the OA system for later prehistoric and Roman pottery (Booth 2014), with sherds assigned to subgroups or individual fabrics/wares within major ware classes. Quantification of wares within individual context groups is by sherd count and weight. Vessel types were quantified by rim equivalents (REs) and by a more subjective vessel count (MV) based on rim sherds. Details of decoration were recorded, as well as evidence of use and reuse where identifiable.

3.2.2 The pottery is in moderate to good condition. The mean sherd weight (18g) indicates a well-preserved assemblage, and the surface condition of sherds is variable but ranging from good to heavily eroded in a few cases. The assemblage includes material

that dates from the late Iron Age onwards, but the majority of the pottery is late Roman.

Fabric and forms

3.2.3 The identified late Iron Age and Roman fabrics are listed and quantified in Table 2 within the series of major ware groups defined by the OA system on the basis of significant common characteristics. Summary fabric descriptions or labels are given. Fuller descriptions can be found in the handbook to the National Roman Pottery Fabric Reference Collection (Tomber and Dore 1998). Fabric codes from the latter are cross referenced in the table. Attribution of sherds to ware groups or to individual fabrics was on the basis of macroscopic inspection, with use of a binocular microscope at x10 or x20 magnification as required.

3.2.4 The majority of the pottery was from local or regional sources, and the only imported material consists of 57 sherds of samian (Central, South and East Gaulish) ware and four sherds of South Spanish amphora. This constitutes 1.52% of the assemblage by sherd count and 2.52% by estimated vessel equivalent (EVE).

Table 2: Late Iron Age and Roman pottery fabric codes and descriptions

Ware code	Description	No. sherds	Weight (g)
E wares			
E30	Late Iron Age to early Roman sand-tempered ware	364	5238
E40	Late Iron Age to early Roman shell-tempered ware	3	28
E50	Late Iron Age to early Roman Limestone-tempered fabrics	10	66
E60	Late Iron Age to early Roman flint-tempered fabrics	123	1617
E80	Late Iron Age to early Roman grog-tempered fabrics	87	1266
E810	Late Iron Age to early Roman grog-and-sand-tempered fabrics	71	1463
Samian ware			
S	Samian (undefined)	7	30
S20	South Gaulish samian ware	26	216
S30	Central Gaulish samian ware (incl LEZ SA 2)	20	280
S32	Central Gaulish (Les Martres de Veyre)	2	12
S40	East Gaulish samian ware	2	10
Amphora			
A11	South Spanish Amphorae (BAT AM)	4	345
Fine wares			
F51	Oxford colour-coated ware (OXF RS)	207	2870
F54	New Forest 'stoneware' fabric (NFO CC)	1	38
F55	?Colchester (COL CC2)	1	5
F57	New Forest oxidised (NFO RS2)	27	228
F70	Other red/brown colour coated wares	2	5
Mortaria			
M22	Oxfordshire white ware (OXF WH)	14	702
M31	Oxfordshire white slip (OXF WS)	2	45
M41	Oxfordshire oxidised with red colour coat (OXF RS)	6	119

Ware code	Description	No. sherds	Weight (g)
M50	Oxidised	7	102
White wares			
W10	Standard white fabrics (general)	9	32
W11	Oxfordshire parchment ware (OXF PA)	1	9
W12		3	32
W20	Sandy white fabrics	74	1415
W21		5	81
W22	Oxfordshire sandy white ware	5	31
W23	Oxfordshire burnt white ware	2	19
White-slipped wares (except mortaria)			
Q10	Oxidised fabrics	10	61
Q11	Oxidised fabrics, fairly fine	1	3
Q20	Sandy oxidised fabrics	2	35
Q21	Oxford (Young 1977) fabric WC (OXF WS).	3	44
Oxidised 'coarse' wares			
O10	Fine oxidised coarse ware fabrics (general)	89	487
O20	Sandy oxidised coarse ware fabrics (general)	60	566
O21		3	13
O24	Sandy oxidised Portchester 'D' type/Overwey white/buff ware (OVW WH)	3	54
O80	Coarse tempered (usually grog) oxidised fabrics, equivalent to R90	40	2050
O81	Pink grogged ware (PNK GT).	13	443
Reduced 'coarse' wares			
R10	Fine reduced 'coarse ware' fabrics (general)	136	1108
R101	Very fine with occasional grog and fine flint	3	69
R20	Sandy reduced coarse ware fabrics (general)	337	4367
R30	Medium/fine sandy reduced coarse ware fabrics (general)	1583	28,232
R35	General fine abundantly sandy fabrics, probably North-Wiltshire	1	7
R39	Alice Holt fine sandy (ALH RE)	2	17
R40	Miscellaneous reduced fabrics	4	33
R50	Dark surfaced fabrics (Young 1977 reduced fabric 5)	13	194
R90	Coarse tempered (usually grog-tempered) reduced fabrics, eg Young 1977, 202 fabric 1	138	3629
R95	Savernake ware (SAV GT)	288	12,333
Black-burnished wares			
B11	Dorset BB1 (DOR BB 1)	140	2462
B30	Black-burnished type/imitation fabric. Regional?	67	624
Calcareous wares etc			
C10	Shell-tempered fabrics (general)	94	1488
C11	Southern shell-tempered ware, probably Harrold (incl. HAR SH)	39	475
C20	Limestone-tempered fabrics	8	48
Total		***4162***	***75146***

Coarsewares

3.2.5 The dominant reduced coarseware fabrics (R10, R20 and R30) constitutes 49.2% of the assemblage by sherd count and 54.8% by EVE, and are probable or certain Oxford products. General fabric codes are also used because the rather undiagnostic character of these fabrics means that attribution to an Oxford source cannot always be certain. Material from other (unknown) local sources using similar clays in the same tradition would not be distinguishable macroscopically. There are 288 sherds of Savernake ware (R95) making up 6.97% of the assemblage by sherd count and 6.9% by EVE. There are also an additional 138 sherds of a coarse grog-tempered ware from a less certain source, some of which may have been from the Savernake kilns. The presence of Savernake ware, and the end date of the wider distribution of the products around *c* AD 150, reflects the presence of activity, albeit on a less-intensive scale, on the site before this date.

3.2.6 Oxidised fabrics from a probable local origin (O10, O20 and O21) or slightly further afield were much less common and make up 3.6 % of the assemblage by sherd count and 2.3% by EVE. In addition, coarse usually grog-tempered sherds from storage jars make a small contribution to the oxidised assemblage. Forty of these sherds were in fabric O80, of probable fairly local origin, along with 13 sherds of O81: classic pink grogged ware (dated to AD 160–410). These are close to the southern limit of the distribution of this fabric. Combined, they make up 1.3% of the total assemblage by sherd count and 1.5% by EVE. Body sherds of a jar in soft pink grogged ware decorated with red paint in a band of crosses around the girth are the most distinctive of the sherds recovered in this fabric. They may be from the same vessel, as a rim with a fairly narrow neck and ridged cordon was recovered from the same feature (corndryer 10002).

3.2.7 There is a relatively small group of black-burnished ware (207 sherds) representing 4.9% of the assemblage by sherd count and 7.7% by EVE. Sixty-seven sherds in an imitation fabric are probably from a single vessel and were probably of fairly local/regional origin.

3.2.8 Shell-tempered wares form another component of the assemblage, making up 3.17% by sherd count and 1.21% by EVE, and include characteristic late Roman 'Harrold-type' products (fabric C11). It is possible that more of the sherds recorded as fabric C10 were also from this source, but some of these fragments lack diagnostic features, such as horizontal rilling of the surfaces characteristic of C11, and may have been from other sources.

3.2.9 Other coarsewares recovered include white wares, which comprise a fairly small component of the assemblage, numbering 99 sherds (2.4% of the assemblage by sherd count). The contribution by EVEs is comparable. This group includes two sherds of burnt white ware (W23) and were most likely from the Oxford kilns. Three sherds (just 0.07% of the assemblage by sherd count) of Portchester 'D' ware/Overwey white ware (O24) include two sherds from a probable lid dated to AD 300–410. The site is towards the western limit of the known distribution of this fabric. White-slipped wares are also present (16 sherds, 0.4% by sherd count), some of which are fairly fine (Q10, Q11). One of the coarser rim sherds is from a narrow, squat-necked spheroid jar with a folded

rim. Another, from a narrow-mouthed jar, has a flat fronted large folder bead rim and appears almost collared.

3.2.10 In terms of vessel form, jars dominate the assemblage in all phases by EVE. The proportion of jars to other forms decreased over time, from 82% in Phase 3 to 60% in Phase 4, 51% in Phase 5 and 52% in Phase 6. This demonstrates the increased use of table wares versus more utilitarian storage and cooking vessels throughout the Roman period, as Roman dining practices became more widespread, and reflects a trend seen in other Roman assemblages from the region. Table 3 shows the proportions of jars to bowls per phase by EVE and by percentage of the total for that phase.

Table 3: Estimated vessel equivalents (EVEs) by phase

Phase	Total EVEs	Jars EVEs	% of total	Bowls EVEs	% of total
3: LIA/ER	2.62	2.15	82%	-	-
4: Early Roman	8.06	4.82	60%	0.42	5.2%
5: Middle Roman	4.0	2.07	51%	0.72	18%
6: Late Roman	36.19	18.82	52%	2.0	5.5%

Fine and specialist wares

3.2.11 The fine and specialist ware assemblage constitutes 7.7% of the total assemblage by sherd count and a much greater 13.3% by EVE and consists of Oxford colour-coated wares (F51 and M41), samian wares (S20, S30, S40) and a small amount of New Forest wares (F54, F57). The group also includes white ware mortaria and amphorae.

3.2.12 A total of 30 individual vessels (including mortaria) in Oxford colour-coated ware were identified by rim sherds. Of these, 19 were closely identified to type with reference to the Oxford type series (Young 1977). Those more broadly identified to type could not be closely matched with the Oxford corpus, mainly due to the small size of the rim fragments present.

3.2.13 Some forms, such as the C51 bowl and C97 mortaria, were manufactured throughout the period of production for this fabric in the late Roman period (AD 240+), and at least 15 more broadly dated vessels of this type were present on the site. Others were more closely dated by comparison with the Oxford corpus.

3.2.14 The assemblage includes three disc-necked flagons, one of which is a Young C8 form and one a possible Young C10. Bowls are the most numerous, with at least 16 vessels recorded. There are two carinated bowls, one of which is an uncommon type (Young C53) with a short, stubby flange (Fig. 14 no. 4). A single straight-sided 'dog-bowl' type (Young C94) dates to the 4th century AD. The most common forms recorded are curving sided bowls, Young forms C44, C45 (Fig. 14 no. 1) and C47 (Fig. 14 nos 2 and 3), all dating to AD 270 at the earliest. There is one type C49 with an out-turned rim (turned up at the end) and two C51 flanged bowls. A variation on this form (C52) has white-painted decoration on the flange and is more closely dated to the latter half of the 4th century AD. Another of 4th-century date is a C68 with a bead rim. There is one necked bowl (Young C75) with a full curved body (Fig. 14 no. 5).

3.2.15 Other forms include two curving-sided dishes (Young C40), one with an up-turned rim and one with an in-turning rim and two parallel grooves on the outer surface . The four Oxford colour-coated mortaria are all type C97, which is the collared and most broadly dated form, with production spanning the late Roman period (AD 240+).

3.2.16 There are at least 15 samian ware vessels, together representing the South (S20), Central (S30) and East (S40) Gaulish production centres. Seven small body sherds could not be identified to source and were recorded under the code 'S'. Five South Gaulish vessels were identified to form, including a Drag. 15/17 platter dating to AD 40–110, but this is considered residual in a mid 2nd-century context and may have been curated. There are three Drag. 18 platters/dishes. The Central Gaulish vessels include two cups: a Drag. 27 with a double curved wall and bead rim, and a Drag. 33, a conical form, dating in this fabric to AD 150–200. Another cup in Central Gaulish Les Martres de Veyre fabric is also a Drag. 33 form and dates to AD 140–200. There are five dishes in the Central Gaulish fabric, but only two could be confidently identified to form, one being Drag. 31R and one Drag. 18/31R.

3.2.17 Other notable finewares include one slightly squared bowl rim sherd in New Forest 'stoneware' fabric (F54) paralleled in Fulford (2000, fig. 20) where it is dated to AD 300+. Body sherds and a pedestal base were recorded in New Forest oxidised fabric F57. The base sherd was part of a vessel with painted scroll decoration and is the type is dated by Fulford to AD 320–370 (ibid., fig. 15).

3.2.18 There are at least three Oxford White Ware mortaria (M22) represented by rims in the group. These are of three different forms, as identified by Young (1977), with one each of M17 (AD 240–300), M18 (AD 270–350) and M19 (AD 240–300).

3.2.19 Four sherds of South Spanish amphora (A11) are present in the assemblage. One was recovered from phase 2 ditch 10060, two were from phase 4 ditch 10019, and another (a pointed base) derived from phase 5 ditch 10013.

Context and chronology

Phase 3: Late Iron Age/early Roman (*c* 100 BC–AD 100)

3.2.20 Pottery from contexts assigned to Phase 3 number 334 sherds (4894g). This represents 8% of the site assemblage by sherd count and 6.5% by weight. The group is dominated by E-wares of late Iron Age/early Roman date, alongside a smaller number of Romanised wares in some contexts, dating these groups to the latter half of the 1st century AD.

3.2.21 The most commonly occurring fabrics in this group has been classified as E30: sand-tempered wares in a native handmade mid–late Iron Age or late Iron Age/early Roman tradition, as well as finer wheel-thrown 'Belgic' forms with cordoned decoration dating to the 1st century AD. There is also a flint-tempered component (some of which was finely crushed and used to temper wheel-thrown vessels) that may have come from the west, where these fabrics are common owing to the underlying geology (eg Silchester fabrics; Timby 2018), and a much smaller amount of grog-tempered and grog-and-sand-tempered wares that are more typically a tradition of south-east England (Thompson 1982). All identified forms include jars (medium-mouthed,

narrow-mouthed, bead-rimmed and lid-seated) or jar/bowls, with many of the latter also likely to represent jars.

Key features

3.2.22 Pottery from small enclosure 10028 numbers 178 sherds (1807g), representing a minimum of 14 vessels identified by rim (1.32 EVEs), and all are from jars or jar/bowls. One wheel-made bead rim jar (shows a Belgic influence and is dated to the first half of the 1st century AD, probably reflecting the date of the group as a whole. There are two other bead-rim jars in fine flint tempered fabric (E60). One of these has horizontal rilling on the surface, which may be a functional (for grip) and/or decorative addition. A lid-seated jar in sand-tempered fabric (E30) has a flat-topped rim with a groove for the lid seating. This vessel also has combed decoration on the surface.

3.2.23 Possible trackway ditch 10053 produced 85 sherds (1867g), including rims of three vessels from a single context (4752). There is a large portion (*c* 70%) of a handmade jar/cooking pot with sooting on the interior and exterior surfaces. Two other rims are from wheel-thrown vessels of 'Belgic' type and are 1st century AD in date. There are no Romanised sherds in this group, suggesting that it dates to the first half of the century.

3.2.24 Boundary ditch 10060 produced 27 sherds (809g) and the rim of one storage jar in sandy greyware (R30). The vessel form is paralleled in Young's Oxford corpus (R19) and has a large, squared, bead rim with a flat top. The remainder of the group is made up of body sherds, but several fabrics are represented including late Iron Age/early Roman E-wares, as well as Romanised greyware, sandy white ware (W20) and two sherds of Savernake ware (R95). This dates the group to *c* AD 40–100.

3.2.25 Waterhole 4391 contained a small assemblage, numbering only 14 sherds, mostly consisting of Romanised fabrics, placing it firmly in the post-conquest period of the 1st century AD. There are fine and sandy greywares and oxidised wares, along with Savernake ware and just two sherds of E-ware, both of which are rim sherds from a jar and jar/bowl. The other vessel, a bead rim jar, is a Savernake ware type and may be in this or a similar more local fabric, dating the group to *c* AD 40–100.

Phase 4: Early Roman (*c* AD 70–150)

3.2.26 Pottery from contexts assigned to Phase 4 numbers 930 sherds (20.05kg). Rims represent at least 82 vessels (8.06 EVEs). This represents 22.2% of the site assemblage by sherd count and 26.5% by weight. The group is dominated by reduced coarsewares (R codes; 48.2%) and early Roman E-wares (E codes; 35.2%), along with smaller amounts of oxidised coarsewares (7.8%) and minor contributions made by black-burnished ware (B11), shell-tempered coarseware (C10), white ware and South Gaulish samian ware (S20). There is also material of middle and later Roman date in this group assemblage. Although this later material is included in the sherd count for the group, it is not discussed in detail as it appears to have been deposited in the later stages of ditch infilling. The dominance of the group by Romanised coarsewares alongside E-wares dates this assemblage to the mid–late 1st century AD (*c* AD 40–100).

3.2.27 Several vessels are characteristic of an assemblage of this period. A fine greyware (R10) butt beaker dated to AD 43–120 and two fine greyware globular beakers that are paralleled in Young's Oxford corpus (form R31) dated to *c* AD 50–150. A curving sided dish in sandy greyware (R30) is not paralleled in Young and may be from further afield. This form is dated in Going's Chelmsford typology to *c* AD 70–120 (Going 1987). A globular bowl in sandy greyware with an in-sloping profile and bead rim dates to *c* AD 40–120. Storage jars and bead-rim jars/bowls in Savernake ware (R95) or similar coarse tempered fabrics (R90) are characteristic of the early Roman period in the region, and there are a minimum of ten such vessels in this phase group. These include a large high-shouldered storage jar with lattice decoration on the shoulder, a curving sided globular bowl with a bead rim and cordon decoration defined by two grooves, and a bead-rim jar with an incised cross-hatch decorated zone between two grooves on the body.

3.2.28 E-ware forms include mainly late Iron Age-type handmade vessels (that continued in manufacture throughout the 1st century AD) and a smaller number of finer 'Belgic' type wheel-made vessels with bead or everted rims, often with cordons, that broadly date to AD 1–100. Sand-tempered (E30) sherds are the most common in this phase, with lesser amounts of flint-tempered (E40), limestone-tempered (E50) and grog-tempered sherds recovered. Some of the sand-tempered jar/bowls appear to have been fairly thick bodied and smoothed, with occasional inclusions of larger lumps of limestone or flint, and appear particularly early in date, with a mid to late Iron Age character. The difference between these and the finer, wheel-made 'Belgic' influenced vessels is not always chronological and these vessels could have been in use concurrently in the 1st century AD.

3.2.29 Imported fine ware sherds in this phase are in South Gaulish samian ware fabric (S20) and there was one vessel identified to form, a Drag. 18 dish.

Key features

3.2.30 Pottery from field/enclosure ditch 10021 numbers 350 sherds (8997g) and includes rims of at least 27 vessels (2.91 EVEs). The group assemblage contains E-wares, including a storage jar in late Iron Age to early Roman fabric E80 and a bead-rim jar in fabric E810, together with Romanised greywares and early Roman Savernake ware vessels including two storage jars, one bead-rim jar, one globular bowl and a globular beaker in sandy greyware fabric R30. A South Gaulish samian ware dish confirms the early Roman date of this group. There is some material from this group that dates to the middle Roman period (not before AD 160), but it may be that this material represents the later infilling phase and does not represent the initial construction and use date of the enclosure/boundary ditch, which occurred during the early Roman period.

3.2.31 Pottery from enclosure ditch 10045 numbers 139 sherds (3162g), including rims of a minimum of 13 vessels (1.27 EVEs). This group includes a large proportion of sherds in E-ware fabrics, with vessels including a 'Belgic' type jar in flint-tempered fabric E60 and a cordoned bowl in grog-tempered fabric E80, which was burnished and has multiple grooved decoration on the shoulder. There is also a barrel-shaped jar with three cordons on the upper body defined by grooves and a zone of cross-hatched decoration

below. In addition, there are two high-shouldered 'Belgic' type jars in grog-and-sand-tempered fabric E810 (one of which is lid-seated), and a bead-rim jar in the same fabric. A globular bowl in sandy greyware fabric R30 dates to *c* AD 40–120 and, along with a good proportion of Savernake ware (21 sherds), confirms the early Roman date for this group. Only a single sherd of black-burnished ware dates to later than this (*c* AD 120+) and may have been deposited after the main phase of use of the ditch, in the final phases of infilling.

3.2.32 A platter from pit 4124 in reduced ware has a very unusual rim with internal hook that is probably devolved from a Gallo-Belgic type but not a copy of an exact known type. It probably dates to *c* AD 40–120.

Phase 4 features with later Roman material

3.2.33 Several features in this phase contained sherds that are dated to significantly later than the date range for the phase. This appears to be the result of later stages of infilling beyond the main period of construction and use of the open features, although of course still represents activity alongside it and possibly the use of an enclosure or boundary still visible in the landscape.

3.2.34 Groups in this phase with significant amounts of later material are enclosure 10032, from which part of an Oxford Parchment ware bead-rim jar with red painted rim dating to the 4th century AD was recovered. Ditch 10015 contained a globular beaker (Young form R30) in fabric R30 with a long inward-sloping neck, which dates to *c* AD 180–410, as well as a sherd of Oxford colour-coated fabric F51 and colour-coated mortaria M41 dating to post-AD 240. Group 10020 also contained Oxford colour-coated sherds.

3.2.35 A small portion of a moulded jug rim with slashed decoration in fabric R30 is a late Roman form (Young R9) and dates to the 4th century AD. It was recovered from enclosure ditch 10046, which has been assigned to Phase 4 (mid 1st–early 2nd century). However, the sherd was recovered from an upper fill and probably represents very late infilling of this feature beyond its period of use.

3.2.36 A straight-sided bowl in fabric R30 is a copy of a black-burnished ware 'casserole' dish with slightly beaded rim and chamfered base. The whole profile is present. There is lattice decoration on the sides and also on the 'base', suggesting it may have also been used as a lid. Heavy sooting is present on the interior and exterior surfaces and there is a burnt trivet mark on the base. It is a vessel form that dates to AD 180+ but was recovered from an intermediate backfill of Phase 4 well 5035, again probably representing much later infilling.

Phase 5: Middle Roman (*c* AD 150–250)

3.2.37 Pottery from contexts assigned to Phase 5 numbers 369 sherds (6.23kg). Rims represent at least 45 vessels (4.00 EVEs). This represents 8.8% of the site assemblage by sherd count and 8.2% by weight. The group is dominated by reduced coarsewares (R codes) (78%), almost wholly replacing E-wares, which in this phase are residual (12 sherds). There are a smaller number of other coarseware fabrics, including 23 sherds of oxidised coarseware (O codes), 10 sherds (one from a jar) of shell-tempered ware (C10) and five sherds of white ware. Oxford white ware mortaria are also present, but

the two sherds are not rims and so are not closely dated. In this phase, the introduction of black-burnished ware (B11) is evidenced, imported from South Dorset (10 sherds). Vessels represented include three straight-sided flat-rimmed bowls (one with lattice decoration) and a cooking pot. Imports from continental Europe in this phase are represented by six sherds of Central Gaulish samian ware (S30), one sherd of samian from East Gaul (S40) and two sherds of South Spanish amphorae (A11). The lesser amount of pottery in this phase suggests less intensive activity, although the presence of fine wares and imports shows that Roman dining practices had been adopted by the middle of the 2nd century AD, with Central Gaulish samian ware (S30) found alongside Savernake ware in the same context (4420) before the end of the wider distribution of vessels in the latter fabric (R95) at around this time. Exotic products were also clearly being used, as demonstrated by the presence of the olive oil amphora sherds.

Key features

3.2.38 Ditch 10017 yielded 42 sherds (657g) of pottery, which includes rims from a minimum of seven vessels (0.51 EVEs). The black-burnished ware vessels include a cooking pot and a flat-rimmed bowl. There is also a shell-tempered jar and a bead rim jar in Savernake ware with a small upright bead. A body sherd from a poppyhead beaker in fine reduced ware with barbotine decoration was also recorded. Some contexts in this group are dated by the combination of black-burnished ware and Savernake ware, which suggests a date in the second quarter of the 2nd century AD.

3.2.39 Boundary ditch 10019 yielded 109 sherds (2861g) with the rims of a minimum of seven vessels (0.73 EVEs). The group is similarly dated to the second quarter of the 2nd century AD, based on a combination of a Drag. 36 dish in Central Gaulish samian ware and Savernake ware. There is also a small rim fragment from a possible bowl in Central Gaulish samian ware along with medium-mouthed jars in Savernake ware. Two amphora sherds (A11) of South Spanish olive oil amphorae were also recorded.

3.2.40 The pottery recovered from sub-enclosure ditch 10048 is a small but well-dated group consisting of 25 sherds (355g) and rims of just four vessels (0.47 EVEs) but two of these are closely dated: a carinated bowl with an out-turned flat rim (Young form R57) in fine reduced ware, dating to the 2nd century AD, and a Drag. 27 cup in Central Gaulish samian ware, dating to AD 120–160.

Phase 5 features with later Roman material

3.2.41 Several features in this phase contained material that was of clear late Roman date and probably represent the later phases of infilling of boundary and enclosure ditches. This later material includes a lid in Overwey white-ware (or Portchester ‘D’ ware) dating to the 4th century AD and a late Roman (Young form R17) lid-seated jar from boundary ditch 10019, South Midlands shell-tempered ware with rilled surfaces from ditch 10017 and Oxford colour-coated ware from boundary ditch 10018.

Phase 6: Late Roman (*c* AD 250–400)

3.2.42 Pottery from contexts assigned to Phase 6 accounts for 56.4% of the site assemblage by sherd count and 53.1% by EVE. The phase group numbers 2362 sherds (40.16kg).

Rims represent a minimum of 266 vessels (36.19 EVEs). The group is dominated by reduced coarsewares (R codes; 68%). Oxidised coarsewares (O codes) make up 4.3% of the group. Reduced coarseware vessels of clear late Roman date in this group include a globular jar (fabric R30) with a moulded rim and groove on the shoulder with a vertical burnished lined band below. A jug/flagon in fabric R30 is probably a Young R9 form of 4th-century AD date, while another narrow-necked jar or bottle is probably late 3rd or 4th century AD in date. A straight-sided dish (Young form R53) with a plain rim has a wiped/burnished surface and is heavily sooted from use. A flanged bowl in fabric R30 is a copy of a late Roman black-burnished ware form. A jar in fabric R30 has an upright bifid rim (Young form R18) with burnished line and circle decoration on the shoulder. There is a significant amount of residual pottery in the group, with forms dating to the middle Roman period as well as a fairly large amount of Savernake ware.

3.2.43 The coarseware assemblage imported from other industries includes black-burnished ware (119 sherds) with forms including a cooking pot with a splayed rim of 3rd- to 4th-century AD date; another has an extremely flared, almost horizontal rim and may date to the 4th century AD (Fig. 14 no. 6). Another cooking pot has a wide-angled burnished lattice decoration, which is seen on vessels after *c* AD 200 having developed gradually from an acute lattice design (Gillam 1976). There is also a miniature cooking pot with a wide-angled lattice decoration in this phase assemblage, a form that generally dates to AD 240–370 (Fig. 14 no. 7). Three flanged bowls (two with intersecting arc decoration) were also recorded (Fig. 14 no. 8), along with a fragment of base from a dish that has a burnished squiggle decoration on the interior and exterior sides, a motif dating the vessel to after *c* AD 180. There are 102 sherds of oxidised coarseware (4.3% of the phase group) and this includes some fairly fine sherds, one of which is a rim of a beaker, possibly a Young form O20 dating to AD 240–300. The white ware assemblage from this phase (56 sherds, 942g) includes several late Roman forms. A small flagon (either a Young W15 or W18) dates to AD 240–300. There are two jars in burnt white ware, and one is narrow mouthed (Young BW2.1). Two sherds of Oxford Parchment ware (W21) are also consistent with the date of this phase.

3.2.44 The amount of shell-tempered ware increased in this phase, and although still only numbering 119 sherds, this is likely to reflect the import of vessels from the Harrold kilns, which were exporting products more widely in this period. Some sherds have distinctive rilling on the surface, which is characteristic of the Harrold vessels. Rims suggest that there is a minimum of five jars and a bowl.

3.2.45 The most notable addition in this phase is the presence of Oxford colour-coated ware (F51), numbering 183 sherds and 7.7% of the phase group by sherd count. There are a minimum of 23 vessels in this fabric, including a disc-necked flagon and a double-lipped disc-necked flagon (Young form C10), 13 bowls including a Young form C49 with an out-turned upsloping rim and a straight-sided 'dog bowl' (Young form C94). A necked bowl (Young form C75) and three curving- sided flanged bowls (Young C47; Fig. 14 no. 2) are also present. A shallow bowl or platter with an in-turning rim (Young form C40) was also recorded. A carinated bowl is an uncommon type, comprising a Young form C53 with a short stubby flange (Fig. 14 no. 4). One dropped-flange bowl (a Young C52) has white paint decoration on the flange and dates to the latter half of the 4th century AD.

3.2.46 A small component of the fineware total in this phase are oxidised colour-coated sherds from the New Forest industry (F57). They are all body sherds and two have roulette decoration. It is possible that these are all from the same vessel, possibly a flagon.

3.2.47 There is a minimum of three Oxford white-ware mortaria in this phase group, two of which (a Young M19 and a M17) are late Roman in date. There are also at least four Oxford colour-coated mortaria; all are the collared form (Young C97) broadly dating to the late Roman period.

Key features

3.2.48 A large assemblage was recovered from the fills of stone-built corndryer 10002. The group numbers 775 sherds (15.9kg), comprising 35% of the pottery recovered from features in this phase. There are five black-burnished ware cooking pots, of which three are late Roman forms with sharply flared rims and/or wide-angled lattice decoration. All but one of these were recovered from the fill of the flue. One is scorched around the rim. A copy of a black-burnished ware cooking pot in sandy greyware (R30) was also identified (Fig. 14 no. 11). A miniature cooking pot (Fig. 14 no. 7) was recovered from the fill of the corndryer construction cut, suggesting a date range of AD 240–300 for its construction. The phase group also included 39 jars and five jars/bowls (where there is not enough of the rim to determine if it is a jar or bowl) in reduced coarseware fabrics, shell-tempered fabrics, sandy oxidised ware and white ware. Nineteen of the jars are medium mouthed (Fig. 14 no. 12), but there are also two identified as narrow mouthed, one globular jar and one larger storage jar in soft pink grogged ware with a fairly narrow neck and ridged cordon (Fig. 14 no. 13). Body sherds in the same fabric are decorated with red paint in a band of crosses around the girth.

3.2.49 An oxidised flagon neck with white colour coat was also recorded. It is an unusual vessel and not recorded among the white colour-coated forms in Young's Oxford typology but is a common form in the red/brown colour-coated vessels (form C8) so may be of broadly similar date.

3.2.50 There are ten bowls, seven of which are closely dated to the late Roman period. There are five dishes/platters (Fig. 14 no. 9) and two white ware mortaria (Fig. 14 no. 14), and combined the group shows a good variety of forms of utilitarian cooking and food processing vessels alongside fine table wares, indicating that these activities took place relatively nearby, indicated by the high mean sherd weight (MSW) for the group (20g), which suggests an assemblage that is not highly fragmented.

3.2.51 Enclosure 10013 is another that is well dated and yielded a group numbering 118 sherds (1.74kg). The MSW for this group is lower (14g), which suggests it may have been redeposited from its original point of discard, although it is not highly fragmented so may still be fairly close to its original place of use. The group includes seven jars and six jars/bowls. There are also the rims of two bowls and one dish, again reflecting a range of domestic vessels, though no fine or specialist vessels such as late Roman tablewares or mortaria were represented by rim sherds. A few body sherds of Oxford

and New Forest colour-coated ware, however, do attest to the presence of these vessels.

3.2.52 Enclosure ditch 10036 yielded another clearly late Roman assemblage. The ditch contained five jars of unclear form in reduced ware (R30) and one cooking pot in black-burnished ware. The jars are broadly dated to the Roman period, and two are the common Young form R24. However, these were found alongside the flange from a colour-coated bowl with white painted decoration, which closely dates this context to the latter half of the 4th century AD. A hemispherical bowl in Oxford colour-coated ware with a double bead rim (Young form C64) dates to the 4th century AD and a hooked-rim flanged bowl in the same fabric (Young form C47) is late 3rd- to 4th-century in date, as are the body sherds of an indented beaker. A shallow bowl/platter (Young form C40) with in-turning rim has two parallel grooves on its outer surface is broadly late Roman in date, as is an Oxford colour-coated collared mortaria and a flagon with a double disced neck (Young form C10). The ditch also contained a small number of other fine ware sherds, including two from the New Forest industry.

Other notable sherds

3.2.53 Three jars with similar decoration were found in different Phase 6 contexts and were clearly different vessels: contexts 4284 (ditch 10001), 4331 (ditch 4330) and 4442 (corndryer 10002). All were in reduced ware (R30) and had burnished line and circle decoration on the shoulder. One has an everted rim and is a Young form R20, and one has an upright bifid rim.

3.2.54 A single sherd has been recorded under fabric code F70. It is probably from the lower part of the wall of a cup and has applied scale decoration. It is most likely an import. It is similar to a South Gaulish colour-coat or Lyon type fabric but is not either of these. However, it is likely residual here, in late Roman boundary ditch 10009.

Use

3.2.55 The most common indicator of use exhibited on sherds is sooting or limescale concretions from cooking or heating water. Two sherds in handmade sand-tempered E-ware have limescale concretions on the interior sides of the sherds and one has lines of limescale, perhaps showing the levels of water heated within the vessel. A jar in Savernake wear was also heavily concreted with limescale on the interior.

3.2.56 Sherds of a black-burnished ware cooking pot, one of which is burnt white around the rim (corndryer 10002), as is a jar in reduced ware from the same group. A black-burnished ware dish, also from corndryer 10002, is sooted on the base (Fig. 14 no. 10). A straight-sided bowl in reduced ware from well 5035 is heavily sooted on its interior and exterior surfaces. There is also a burnt trivet mark on the exterior/base. Six curving-sided bowls in Oxford colour-coated ware show evidence of wear internally, probably from stirring or mixing. Another has patchy wear all over the interior, the cause of which is not clear. One small Oxford white ware mortaria from corndryer 10002 is burnt around the rim.

3.2.57 A small number of vessels have been modified. One body sherd and one base in black-burnished wear appear to bear graffito. Two adjoining body sherds (from ditch 10014)

from a reduced ware vessel have post-firing holes. One body sherd in late Iron Age/early Roman fabric E810 also has a small post-firing hole, and the base of a bowl in Oxford colour-coated ware has a post-firing hole in the base.

Status

3.2.58 At 7.9 % by sherd count and 13.3% by EVE, the proportion of fine and specialist wares is low. The range for all sites analysed by Booth (2004) is between 11% and 30% by sherd count, with all sites with above 20% fine and specialist wares being either nucleated settlements, villa sites or towns. The sites confirmed as lower status rural sites generally have percentages between 13% and 18%. This may indicate that the site at Grove Airfield was a low-status rural settlement, comparable to other sites in the region.

Conclusions

3.2.59 The late Roman (Phase 6) emphasis of the assemblage is clear and suggests a lower level of activity during Phase 5, when several features in use in Phase 4 were not maintained and accumulated rubbish in their fills, a process that continued into Phase 6. Overall, late Iron Age and Roman activity on the site spanned the period, with handmade vessels of mid–late Iron Age form and fabric comprising the earliest vessels. Possible trackway ditch 10053, assigned to Phase 3, may be the feature that most convincingly dates to the pre-conquest or conquest period, being the only one that contained no material of certain post-conquest date. From this late Iron Age settlement activity, deposition increased in the early Roman period (Phase 4), declined in Phase 5 (middle Roman) and increased in the late Roman period (Phase 6). Closely dated vessels in Oxford colour-coated ware show that deposition was still occurring into the latter half of the 4th century AD.

3.2.60 The site was receiving pottery mainly from the kilns at Oxford and other fairly local sources but also a small number of fine wares from the later Roman New Forest industry. Other coarsewares came from the west, from the Savernake and black-burnished ware industries, and from the north (the South Midlands), which was the likely source of most of the shell-tempered wares in Phase 6 and the very small amount of soft pink grogged ware from *c* AD 160 onwards.

3.2.61 As discussed above, the assemblage contains a low proportion of fine wares as would be expected of a low-status rural settlement in the region. That said, the inhabitants were clearly using fine table wares and taking part in Roman dining practices as the norm and had access to olive oil from southern Spain.

Catalogue of illustrated pottery (Fig. 14)

1. Shallow, curving-sided bowl with bead rim in Oxford colour-coated ware (F51) with interior use wear. Context 4371, Group 10002, Phase 5.

2. Curving-sided bowl with everted overhanging rim in Oxford colour-coated ware (F51). Context 4371, Group 10002, Phase 5.

3. Footring base of curving-sided bowl with internal wear and hole in base in Oxford colour-coated ware (F51). Context 4371, Group 10002, Phase 5.

4. Carinated, curving-sided bowl with short stubby flange and bead rim in Oxford colour-coated ware (F51). Context 4371, Group 10002, Phase 5.

5. Necked bowl with full curved body in Oxford colour-coated ware (F51). Context 4371, Group 10002, Phase 5.

6. Cooking pot with widely flared rim in black-burnished ware (B11). Context 4371, Group 10002, Phase 5.

7. Miniature cooking pot with flared rim and lattice decoration in black-burnished ware (B11). Context 4371, Group 10002, Phase 5.

8. Drop-flange, straight-sided bowl with burnished arc decoration in black-burnished ware (B11). Context 4371, Group 10002, Phase 5.

9. Plain rim, straight-sided dish in medium sandy greyware (R30). Context 4371, Group 10002, Phase 5.

10. Straight-sided dish in black-burnished ware (B11) with sooted base. Context 4371, Group 10002, Phase 5.

11. Cooking pot in sandy greyware (R30). Context 4371, Group 10002, Phase 5.

12. Medium-mouthed jar with cordon at base of neck in medium sandy greyware (R30). Context 4371, Group 10002, Phase 5.

13. Storage jar with narrow neck and ridged cordon at base of neck in Soft-Pink Grogged ware (O81). Context 4371, Group 10002, Phase 5.

14. Small mortaria in Oxford white-ware (M22) with burning around the rim. Context 4371, Group 10002, Phase 5.

3.3 Worked flint *by Mike Donnelly*

3.3.1 The excavation yielded a small assemblage of 70 struck flints and 31 pieces of burnt unworked flint weighing 467g (Table 4). The assemblage included some tools of probable Neolithic date alongside early prehistoric blade forms, as well as undiagnostic debitage. Fine sieved chips made up a large percentage of the assemblage (61.43%) but could include mechanically struck pieces generated from flint cobbles and pebbles. Cores were absent, but one crested flake attested to core working.

3.3.2 The assemblage was in a variable condition, with fresh (39.13%) and lightly damaged (43.48%) pieces dominating, but also a relatively high proportion of heavily damaged (13.04%) fragments present. Cortication varied considerably, and levels of breakage and burning were relatively high.

3.3.3 The assemblage was largely recovered from ditch fills (61.43%), but pit fills (11.43%), a series of well fills (1.71%) and a waterhole (5.71%) all contained flints. In addition to this, three pieces were recovered from the subsoil (4.29%). Burnt unworked material showed a similar pattern with material from ditches dominating (19 pieces, 402g), followed by a single posthole with five pieces (50g), pits (5 pieces, 11g) and the well (2 pieces, 4g). Overall, there is a very strong indication that most or all of the flintwork is residual in later features.

Table 4: Summary of the flint assemblage

Type	Total
Flake	16
Blade	1
Bladelet	2
Blade index	3/19 (15.79%)
Irregular waste	3
Chip	1
Sieved chip 10–2mm	43
Crested piece	1
Scraper disc	1
Knife other	1
Retouch other	1
Total	70
Burnt unworked no./weight (g)	31/467g
No. burnt (%)	3/27 (11.11%)
No. broken (%)	11/27 (40.74%)
No. cores/core deb (%)	1/27 (3.70%)
No. retouched (%)	3/27 (11.11%)

3.4 Ceramic building material *by Cynthia Poole*

3.4.1 A small assemblage of ceramic building material (CBM) amounting to 26 fragments weighing 4925g was recovered from pits, postholes, ditches and a corndryer, all of Roman date with the majority of the assemblage occurring from late Roman (Phase 6) contexts. The material is fragmentary, though in a fresh unabraded condition with a high mean fragment weight of 189g. No complete tiles were present and, whilst most pieces had a complete thickness surviving, all other dimensions were incomplete.

3.4.2 The assemblage has been fully recorded on an Excel spreadsheet in accordance with guidelines set out by the Archaeological Ceramic Building Materials Group (ACBMG 2007). The record includes quantification and details of fabric type, form, surface finish, forms of flanges, cutaways, markings and evidence of use/reuse (mortar, burning etc). The terminology for Roman tile follows Brodribb (1987); coding for markings, tegula flanges, etc, follows that established by OA for the recording of CBM and tegula cutaway types are linked to those classified by Warry (2006). Fabrics were characterised on the basis of macroscopic features supplemented by the use of x20 hand lens for finer constituents.

Roman CBM

Brick

3.4.3 A single brick (1454g) measuring 60mm thick was probably one of the larger forms such as *sesquipedalis* or *bipedalis*, based on this single dimension. It has a striated wiped upper surface, rough base and sides with knife trimming along the upper arris of the edge. It was made in an orange red fine sandy clay containing clumps of

occasional red ferruginous sand and small flint grits. The moulding sand on the base had been slightly vitrified creating a silvery grey veneer. The brick was recovered from a thick deposit of chalk rubble and mortar that overlay a thin black layer within pit 4539, which may have been used for burning chalk to produce lime. The vitrification on the brick may have occurred if the brick had been utilised during the process in some way.

Roofing: tegula and imbrex

3.4.4 Roof tile accounted for two thirds of the assemblage comprising tegula (15 fragments, 3090g), large flat tiles with a flange along both sides, and imbrex (3 fragments, 214g), a curved tile that covered the joint between adjacent tegulae flanges. The tiles have a smooth upper surface, sometimes with fine striations, and a rough or irregular underside and on tegulae the edges were often knife trimmed. The tegulae measure 17–28mm thick with most concentrated at 24–26mm, whilst the imbrices are slightly thinner at 16–22mm thick. Both types were made in the same orange red sandy fabrics, containing varying grades and quantities of quartz sand, together with occasional iron oxide inclusions and small flint grit of the same type as previously found in the area.

3.4.5 The flange survived with complete profile on two tegulae and broken on one other and measured 20–26mm wide and 47mm and 51mm high. Four of the tiles exhibited a double finger groove alongside the base of the flange, a feature that has been noted previously at Monks Farm, Grove (Brady *et al*. in prep.). Double finger grooves are not a common feature of tegulae in this region but are commonly found in Winchester (Foot 1994; Poole and Shaffrey 2011) suggesting an influence from tilers moving from the south into the southern areas of Oxfordshire.

3.4.6 Cutaways survived on four corner fragments, three of which were standard rectangular upper cutaways measuring 41–46mm long. Only one lower cutaway of type D16 was found, which can be dated to AD 240–380 (Warry 2006). Its length was incomplete, but its width measured 25mm tapering to 10mm at the top.

3.4.7 One tile had a small section of a signature mark in the form of a curved finger groove, which is probably of the most common type of mark in the form of a hoop.

Flue tile

3.4.8 Flue tile was represented by two fragments (134g), both made in the same orange sandy fabric containing frequent fine–medium quartz sand and sparse iron oxide. Only one piece had a complete thickness, of 26mm, whilst only the outer surface of the other survived. This was identified from the combed keying on the two adjacent outer faces, of which only the ends survived. All bands are at a diagonal to the edge including two bands on one face, which probably formed a series of crosses down the face of the tile. The combing is quite coarse, measuring >21mm wide with 3+ teeth set 7–8mm apart. Combing on adjacent faces is sometimes indicative of voussoirs, but the surfaces are at right angles suggesting this is of a standard box flue form.

3.4.9 The second tile was identified on the basis of an edge cut to a chevron profile, which is atypical of any standard tile edge but is likely to be the edge of a vent cut through the plain face of a flue tile.

Discussion of the Roman tile

3.4.10 The quantity of tile is sparse and does not represent the use of tile for buildings on the site, though it is probable the material had previously been used in masonry buildings, such as a villa, where ceramic roofing and heated rooms indicated by the flue tile and brick would be expected. A suitable source could have been the villa at Cranhill, where brick and combed flue tile was noted (Davey 1876, 385). Too little detail is available for the Cranhill tile to be able to link the sites with any degree of certainty. The evidence of burning on much of the tile suggests it was brought to the site for reuse in ovens kilns and hearths. Two tegulae were found in the flue of the corndryer, where they may have been used to create the arch covering the flue and the brick associated with possible lime production has already been noted above. The quantity of tile, however, suggests it was not used extensively, either because it could not be easily obtained, which might suggest the site had no direct link with a higher-status site such as villa, or because other materials were more readily sourced. The corndryer was constructed of stone and stone would have been a suitable fireproof material for structures such as ovens, kilns and hearths.

3.5 Fired clay *by Cynthia Poole*

3.5.1 A modest assemblage of fired clay amounting to 156 fragments weighing 11,024g was recovered from late Iron Age–Roman features, predominantly ditches, except for a single item from a middle Bronze Age ditch. The material is fragmentary, and no complete objects survive. Though much of the fired clay is moderately to heavily abraded, it has a high mean fragment weight of 67g and includes several large fragments including one 225mm long. Fired clay is not intrinsically dateable in general, except in the case of certain diagnostic forms. The dominance of one distinctive late Iron Age–Roman form has resulted in a high proportion of the assemblage being spot dated to this period.

3.5.2 The assemblage has been fully recorded on an Excel spreadsheet in accordance with guidelines set out by the Archaeological Ceramic Building Materials Group (ACBMG 2007), which whilst not specifically designed for fired clay provide appropriate guidance. The record includes quantification, fabric type, form, surface finish, organic impressions, dimensions and general description. Fabrics were characterised on macroscopic features and with the aid of x20 hand lens for finer constituents.

Bronze Age

3.5.3 A single item (SF 4076) that can be firmly dated as late Bronze Age was recovered from curvilinear boundary ditch 10061, phased to the middle Bronze Age. This is a cylindrical drum-shaped block with flat ends and vertical sides with rounded angles. It measures 101mm in diameter and 75mm high. The ends are pierced by a central cylindrical perforation 19–20mm by 23–24mm wide. One side is damaged, but it survives *c* 80% complete. It is well fired and lightly burnt grey on one end. It was made in a cream/pale

brown fine sandy laminated clay, containing fine-medium quartz and glauconite sand together with occasional angular flint grit 12–35mm. A second possible fragment of perforated block with a perforation 20mm in diameter but little exterior surface surviving, was found residually in late Roman ditch 10036.

3.5.4 There is increasing evidence from late Bronze Age sites to associate cylindrical, cuboid and pyramidal perforated blocks with ovens, hearths or pottery production. This has been discussed in some detail in relation to the assemblages from Bestwall Quarry (Ladle and Woodward 2009, 296–9) and Tinney's Lane, Sherborne, Dorset (Best and Woodward 2012, 231–4), where detailed analysis of the unusually large assemblages suggested that they had been used in the firing of pottery. Evidence of pottery production is rarely present on most late Bronze Age sites and the sparser distribution on most sites may result from a more general use as furniture in domestic ovens or hearths rather than as specialised items for pottery production. At the present site, the example was found in the upper fill of a ditch also associated with a tip of charcoal and occupation debris.

Late Iron Age–Roman

Fabrics

3.5.5 The fired clay was made in a sandy micaceous clay containing frequent fine and medium quartz and glauconite sand generally fired to an orange-brown or dark brown colour. Variations on this included additionally rounded inclusions of white siltstone (or very fine sandstone) and, in a small number, the deliberate addition of organic temper in the form of chaff or crushed straw. This clearly derives from the local Gault Clay mixed with sand from the Upper Greensand. The mix of materials may have arisen through natural processes of weathering and erosion of the geological deposits, though it is possible that there was some deliberate mixing of the geological constituents taking place.

Structural fired clay

3.5.6 A small quantity of fired clay (16 fragments, 171g) was identified as structural or probably so. Most pieces were amorphous or irregular fragments, or had a single flat moulded surface. Several pieces had been recovered from sieved samples and are the typical small irregular fragments that occur mixed with the ash and charcoal fuel remnants from raking out ovens, pulled up from the flue floor or fallen from the walls. Almost half of the structural material was recovered from the stone-built corndryer 10002 and includes a small flat disc 41mm wide and 13mm thick coated in chaff impressions, which probably formed part of the lining. Although the corndryer was stone built, clay may have been used to plug gaps and cracks in the structure.

Portable oven/hearth furniture

3.5.7 Portable furniture (137 fragments, 10,221g) accounted for the majority of the assemblage and consists exclusively of a single type of portable furniture in the form of oven/hearth plates or discs. Where edges are present, nearly all examples appear to have been straight sided and rectangular in shape and only one circular or oval disc

was identified, where the curvature suggested a diameter in excess of 400mm if circular. The largest surviving piece of the rectangular plates was a corner fragment measuring over 225mm by 180mm. Thickness ranged from 17mm to 39mm, with an even distribution of examples across that range except for a slight increase at 31–35mm. Some of the pieces could arguably be locally made tile, either tegulae or bricks, but certain features such as surface finish, the moulding of flanges and the presence of chaff impressions suggest they are more compatible with fired clay plates. Without complete examples, however, it is impossible to be certain that this assertion is correct and future finds could demand a reassessment of this identification.

3.5.8 The plates invariably have a very smooth well-finished upper surface, either flat or slightly convex, and some have a distinctive sheen, which may indicate that they had been burnished. The base surface is usually flat, and generally has a slightly less even finish than the top, frequently because of chaff impressions coating the surface. On a few pieces, the base is as equally well finished as the top. Occasionally, chaff or straw/grass impressions occur on the upper surface, but these are sparse and accidental. Edges were mostly vertical, either flat or convex in profile, and more rarely bevelled or in one case cut to a chevron. Four examples have a flanged edge hand moulded to a triangular shape measuring between 26mm and 42mm wide and 49–59mm high at the external edge. One piece has the edge of a curving lip that seems to indicate some sort of rounded boss was attached to the surface.

3.5.9 Over half the plates had organic impressions on the surfaces. In most cases, these were cereal chaff impressions, often very densely coating the base of the plate. On a few, the impressions appear to be mostly thin stems of either straw or hay/grass, and these usually seem to occur on the upper surface and are generally sparser than the chaff. The clarity of the impressions is very variable, but some are probably identifiable.

3.5.10 A high proportion of the plates have evidence of burning on at least one surface resulting in a grey colouration. This occurred most frequently on the smoother upper surface, observed on 18 plates, and ranged from quite light superficial burning to intense blackening sometimes penetrating to a depth of 25mm. Burning on the underside was less common and noted on five plates, but six had been heat discoloured to purple or red. Similar heat discolouration only occurred on the upper surface of two pieces. Only three plates had been burnt grey or blackened on both upper and lower surfaces, whilst a third had patchy burning on the base. One of these had a circular blackened patch on the base 125mm in diameter, suggesting the plate had rested over a flue or vent and had been partly protected from direct flames.

Discussion

3.5.11 The fired clay includes oven structure and furniture, but the structural material is very limited in quantity and the only *in situ* structure noted was the stone-built corndryer 10002. No other sub-surface oven or hearth bases were identified and the dominance of fired clay plates must reflect some alternate form of structure that left no sub-surface trace. It is possible that all ovens or hearths were constructed on plinths well above ground level and therefore no evidence would have survived.

3.5.12 The largest number of plates were found in boundary ditches 10009 and 10021, with smaller numbers in ditches 10011, 10019 and 10028. In most other features, they occurred singly, except for two plates in corndryer 10002, where they may have been reused in the structure. None were found in a primary situation in relation to an oven or hearth.

3.5.13 They occurred in features spanning Phases 3 to 6 but were most frequent in Phase 4 (mid 1st to early 2nd century AD) features. The fewest occurred in the succeeding Phase 5 (mid 2nd to early 3rd century AD) features before rising again in those dated to Phase 6 (mid 3rd to 4th century AD). No differences in characteristics could be discerned during these phases, except in Phase 3 when no examples had chaff impressions on their surfaces nor within their fabric.

3.5.14 Circular discs and rectangular/polygonal plates are a regional type that form a regular component of late Iron Age and early Roman fired clay assemblages in Oxfordshire, the Upper Thames Valley and the south Midlands. Examples of circular discs have been found at Alchester from early Roman contexts made in a shell-tempered fabric (Booth 2001) and in a chaff-tempered fabric from the Roman military phase (Poole 2018a, 172). Circular discs are also known from Watkins Farm (Allen 1990, 53), Farmoor (Lambrick and Robinson 1979, 53–4), Old Shifford (Barclay *et al*. 1995, 138) and Oxford (Biddulph 2005), where they are all associated with the Roman period. Rectangular plates have been found at Castle Hill (Booth 2010, 67) and both varieties of discs and plates were found at Gill Mill, where the main period of use of this form was during the 2nd and 3rd centuries AD (Poole 2018b, 473–5). Although some standard plates and discs have a thickened, often bulbous edge, distinct large flanges are less common. Flanged plates have been found in early Roman contexts at Chalgrove (Poole forthcoming b), with flanges of similar form and size and in similar fabric to the Grove Airfield examples. Comparable flanged examples have been found at Thame (Poole 2017) and Great Western Park, Didcot (Poole forthcoming a), both from Roman phases. The function of the standard discs and plates has been debated, with few conclusions reached, and they are usually regarded as being related to cooking or food preparation in some manner (Lambrick *et al*. 2009, 164). At Thame and Great Western Park, Didcot there was an indication that some might have been associated with pottery production (Poole 2017; Poole forthcoming a). Examples from Water End East, Bedfordshire, included circular, rectangular and flanged forms made in chaff-tempered fabrics and one was found in an early to mid 2nd-century AD kiln, where it was associated with firebars and a portable pedestal (Poole 2007, 112–4, 274).

3.5.15 Whilst a mix of fired clay forms is expected on most sites, the complete dominance of a single form is less usual; however, in the case of plates and discs, a small number of sites have produced only this form. In addition to Grove Airfield, other sites that have produced a similar limited group of material are the early Roman phase sites at Chalgrove (Poole forthcoming b) and Dunmore Road, Abingdon (Poole 2019b), both in Oxfordshire, and Lay Wood, Devizes, Wiltshire (Poole 2020), while at the nearby sites of Crab Hill, Wantage (Allen *et al*. in prep.) and Williams Holdings, Grove (Poole in prep.), discs/plates formed a high proportion of the assemblages.

3.5.16 There appears to have been a sharp break with earlier Iron Age traditions, as no evidence of triangular perforated bricks exists at these sites, though these often

continued in use and to coexist with new forms at other Roman sites, such as at Great Western Park, Didcot (Poole forthcoming a). The appearance of this form in the late Iron Age–early Roman period may be a manifestation of significant changes in the preparation or method of cooking certain foods introduced in the late Iron Age or early Roman period. Alternately, it may represent changes in living or working patterns, whereby the portable plates were seen as a more useful item or served a very specific purpose in the community. They are clearly carefully made and well finished, and were locally produced to serve the needs of the local community.

3.6 Querns and millstones by Ruth Shaffrey

3.6.1 A total of five fragments of querns/millstones were recovered. These were recorded in full and details entered into a Microsoft Excel spreadsheet, which can be found in the archive.

3.6.2 A fragment of lower rotary quern (SF 406) of Lodsworth stone was found in the fill of enclosure ditch 10013. This has been well used and exposed to fire at some point during its post-quern life. A complete quartzite cobble had been used in the construction of corndryer 10002. It has not been deliberately modified in shape, but one wide curved convex face appears to be more worn than the other faces, suggesting it was used as a rubber with a saddle quern or for some other grinding purpose.

3.6.3 Two millstone fragments were found in deposit 4691 (SFs 4102 and 4103). They do not adjoin but appear to be from the same millstone as they have the same pattern of rotational wear on the grinding surface. These are likely to be from a substantial stone measuring at least 800mm in diameter and weighing in the region of, or greater than, 100kg. A further millstone fragment (SF 4105) was found in fill 4698 of possible construction cut 4699 underlying metalled/floor surface 4697. This fragment also lacks the circumference, but a substantial eye of 140mm diameter and the surviving stone of 540mm diameter are clear evidence that it is also a millstone. It is half as thick as the other millstone, indicating that at least two millstones are represented. The millstone from deposit 4691 is made from a medium- to coarse-grained feldspathic sandstone that is typical of Millstone Grit querns and millstones found in the region, while that from fill 4698 is a slightly finer grained and less feldspathic sandstone that may also be from the Millstone Grit but from a different bed.

Discussion

3.6.4 Querns of Lodsworth Greensand and millstones of Millstone Grit are typical of the Upper Thames Valley during the Roman period. Both were imported to the region: the Lodsworth Greensand from Sussex and the Millstone Grit from Derbyshire (although the precise source is not known). Although millstones were made of Lodsworth stone during the Roman period, they are not found in the Upper Thames Valley, and Roman millstones here (which number 53 at the time of writing) are almost always made from Millstone Grit or Old Red Sandstone (Shaffrey and Roe 2011; Shaffrey 2015). The only exceptions are two examples of Mayen lava from Wantage (Roe 1996, 153) and one millstone of possible Roman date from Oxford of Lower Greensand (Booth and Hayden 2000, 320). This limited range of stone types, in comparison to the wider selection

used for hand-operated rotary querns at the same time, suggests different mechanisms for supply.

3.6.5 The substantial size of the millstones at Grove Airfield is an indication that they were used in a water-powered mill. Such a mill must have been located outside the current excavation area but was likely to have been situated within a few kilometres of the site. It is possible that it was positioned on the Woodhill Brook located 1km to the west of Grove Airfield or perhaps more likely on the Letcombe Brook, which runs through Wantage and had several medieval and post-medieval mills along it.

3.6.6 Millstones are evidence for the centralisation of the final stages of grain processing and a move away from the production of flour at a household level. Evidence suggests that watermills were introduced in the 1st century AD in Britain but were very few in number at that time and are most likely to date to the 3rd–4th centuries AD. Millstones are the best evidence we have for Roman mills, both water and animal or human powered, because they survive well in the archaeological record. Although fragments of millstone are well suited to reuse, they are not likely to have moved very far from their original point of use, so that even the recovery of one fragment is evidence for the existence of a mill, whilst concentrations of fragments can provide clearer evidence of a likely origin. Although a detailed survey has not been undertaken for this project, millstones have also been found during excavations in Wantage at Mill Street and Denchworth Road (Roe 1996, 153; Saunders 2001, 319), and it is therefore highly likely that a Roman mill was located in or very close to the town.

Catalogue of worked stone (not illustrated)

Lower rotary quern. Lodsworth stone with obvious cherty swirls. Fragment missing both the centre and the circumference. The grinding surface is sloped, pecked and worn into rotational wear. There is some burning/blackening to the grinding face. The base is flat and roughly worked. Measures >100mm thick. Weighs 1094g. SF 406. Ctx 4290. Fill of 10013 enclosure ditch intervention 4289. Phase 6. Mid 3rd–4th century.

Rubber. Quartzite. Large complete cobble. Not worked and generally smooth all over but possibly used as a rubber on the largest convex and rounded face. Measures 220 x 106 x 96mm. Weighs 3453g. Ctx 4452. Fill of construction cut 4448 for corndryer 10002. Phase 6. Mid 3rd-4th century.

Lower millstone. Millstone Grit. Medium- to coarse-grained moderately well-sorted feldspathic sandstone with pink feldspar. Of thick, flat disc type without centre or circumference. The grinding surface is pecked, with three deep rotational grooves and with more smoothing towards the circumference. There is deep spaced pecking on the lower face. It is probably part of same millstone as SF 4103. Measures 110 x 245mm surviving radius, but radial grooves survive on the grinding surface from 400–600mm diameter and there is a further 90mm of stone (180mm diameter) without grooves indicating that the stone must have measured >780mm diameter. Weighs *c* 8kg. SF 4102. Ctx 4691. Phase 6. Mid 3rd–4th century.

Millstone. Millstone Grit. Coarse-grained well-sorted quartz sandstone with frequent pink feldspar. Poorly cemented. Greyish red in colour (burnt). No edges or centre survives but there is rotational wear to the flat grinding surface including one

substantial groove. The other face looks to be roughly dressed but not much survives. The stone is heat affected and pinker than normal as a result. It looks very much like part of the same millstone as SF 4102, but they do not adjoin. Measures 115mm thick. Weighs 2071g. SF 4103. Ctx 4691. Fill of pit 10005. Fragment of large millstone. Phase 6. Mid 3rd–4th century.

Upper millstone. Probable Millstone Grit. Medium-grained well-sorted beige quartz sandstone with some white feldspar. Fragment of flat disc type without circumference. The grinding surface is worn smooth with some rotational grooves. The upper face has some peck marks and some chisel marks. The circular cylindrical eye measures 140mm diameter. The millstone measures >540mm diameter x 58mm thick. Weighs 2805g. SF 4105. Ctx 4698. Fill of construction cut 4699. Phase 6. Mid 3rd–4th century.

3.7 Small finds *by Anni Byard*

3.7.1 The excavation recovered 195 small finds weighing *c* 2086g. The majority of these (171 pieces, *c* 1919g) are of iron and includes 99 nails or nail fragments. Other materials comprise copper alloy (ten pieces, *c* 45g), lead alloy (nine pieces, *c* 119g), glass (three shards, *c* 4g) and worked bone (one piece, *c* 16g). The coins are reported on separately below. Most finds were recovered from archaeological contexts and layers, with 18 pieces being recovered from the topsoil/subsoil or by metal detector. Nearly all are of Roman date, with a small number of post-medieval/modern items that were recovered from cleaning layers. A total of 20 pieces could not be assigned a date due to their fragmentary or amorphous condition. A range of artefacts are represented in the assemblage, including objects of personal adornment and elements of footwear, tools, vessels and structural elements.

3.7.2 Following the recommendations of the PXA report (OA 2019), the assemblage was X-rayed. The metalwork was then examined with reference to the X-rays, and a spreadsheet detailing all small finds was created. Objects were weighed and measured where practicable, with hobnails quantified by weight and count. Unidentifiable fragmentary remains were recorded by weight and count. A summary table is presented below. As recommended in the updated project design, this report builds on and adds to the previous assessment.

Results

Phase 3: Late Iron Age/early Roman

3.7.3 A fragment of an iron nail was recovered from small enclosure ditch 10028. This is of probable Roman date and is the only small find from a context of this phase.

Phase 4: Early Roman

3.7.4 Most of the objects of this phase are iron nail fragments (17 examples), recovered from the fills of ditches. Three unidentified iron pieces were recovered from two ditches (4358 and 4535). Three incomplete nails were recovered from the fills of two postholes associated with structure 10004, while two others were associated with pits (4106 and 4113). An iron penannular ring or hoop, possibly incomplete and of uncertain function, was recovered from the fill of pit 4845.

3.7.5 The fill of grave 4172 yielded fragments of four nails and an incomplete curved iron rod of circular section. This was discovered on the vertebrae of the skeleton close to where the left arm and hand were lying. This may be a fitting of some kind; a complete diameter would measure approximately 40mm and would therefore be too small for a bracelet. X-radiography did not reveal any more detail.

3.7.6 Part of a possible buckle plate or strap fitting comprising a small, folded sheet of copper alloy, was recovered from ditch 10054. The object is incomplete and undecorated, making dating speculative; although more common during the medieval period, Roman examples are recorded on the Portable Antiquities Scheme database. Enclosure/roundhouse ditch 10054 also yielded three iron nail fragments and six complete iron hobnails, which may suggest the disposal of part of a shoe.

Phase 5: Middle Roman

3.7.7 A total of nine nails or nail fragments were recovered from the fills of Phase 5 ditches. Where present the nails all have circular heads, and all vary in size and length. The total includes four fragmentary nails from enclosure ditch 10035. One large nail with an arrow-shaped head was recovered from the single fill of posthole 4520 of structure 10059.

3.7.8 A pin (SF 4057) from a copper alloy brooch was recovered from L-shaped enclosure ditch 10038. With a basal loop and four coils to the spring (one of which is broken), the pin is likely to be from a late Iron Age or early Roman 'Nauheim' style brooch, dating to *c* AD 25–100.

Phase 6: Late Roman

3.7.9 As with the other phases, nails dominate the metalwork assemblage, the majority recovered from boundary and enclosure ditches. A group of 15 hobnails weighing 19g were the only metal finds recovered from elliptical enclosure ditch 10011, and a single leather boot or strap cleat was recovered from the fill of penannular enclosure ditch 10001. The corndryer (10002) produced the largest collection of small finds from a single feature, and this is discussed below.

3.7.10 Possible rubbish/dumping deposit 4691 yielded a nail with T-shaped head (SF 4098) and an iron joiners' dog, a rectangular-sectioned bar 52mm in length with tapered spikes at right angles to the bar. These were used to join timber or masonry elements together. A shard of light blue glass (SF 4101) possibly from a square bottle was also recovered from this deposit.

3.7.11 The double chambered corndryer yielded a total of 39 iron finds and two shards of glass. Nine nails were found in various fills across the feature. The fills of the southern chamber of the corndryer did not produce any metal finds, while the southern flue produced a single shard from the neck of a glass vessel. In contrast, the northern chamber, flue and rake-out pit fills yielded several objects, including a tiny dark blue glass bead (SF 4017). An incomplete iron two-pronged probable fire rake (SF 4073; Fig. 15 no. 9) with two tines set at right angles to the rod survives to a length of 227 mm. Although more similar in form to flesh hooks (see Manning 1985, 105–6), there is no evidence that the tines were hooked and, given its recovery from a backfill of the

corndryer flue, it seems plausible that the tool could have also been employed as a fire rake. In support of this, a near-complete iron spatulate tool (SF 4075; Fig. 15 no. 10) was recovered from the upper fill of the northern flue. The spatulate tool measures 800mm in length, retaining the entire length of the square-sectioned handle and its terminal hanging loop. The opposing end has a flat, rounded, incomplete blade measuring 100mm at its widest point. Although few directly comparative objects have been recorded, similar tools with elongated sub-rectangular (spatulate) blades are usually described as fire pokers (Piggott and Seaby 1937; Manning 1985). These tools, however, are more commonly associated with the Iron Age, and very few Roman examples have been recorded. The northern chamber of the corndryer yielded a collection of 24 iron hobnails (SF 4092), found arranged in a circle. This probably represents the remains of a leather shoe; hobnails could be arranged on the sole of a shoe in varying patterns.

Unphased/unstratified objects

3.7.12 Thirty-one objects were recovered from layers with no associated dating or were unstratified; 11 objects were recovered from unstratified layers by metal detector. These include ubiquitous nails and other iron fragments, as well as amorphous lumps and fragments of lead. Other metal-detected finds include an incomplete 1st-century AD copper alloy bow brooch (SF 4028), a possible copper alloy Roman vessel fragment with repair hole (SF 4026) and an iron boot or leather cleat (SF 4031), also of Roman date. A metal-detected Roman chisel-ended iron tool (SF 4062) may be an awl that was used for leatherworking rather than a small example of a carpenter's paring chisel. Manning illustrates similar tools (1985, pl. 10, no. B30 and pl. 16, no. E27) that have been dated to the mid 1st to 2nd century AD. The base of a copper alloy Roman seal box (SF 4080; Fig. 15 no. 2) is also unstratified. Seal boxes would have contained a wax seal, secured to a document or package. They were most common during the 2nd century AD, with manufacture ceasing during the 3rd century AD (Crummy 1983, 103). A bone hair pin (SF 4063) was also recovered from an unstratified context, while a 1st- or 2nd-century AD disc brooch (SF 4038; Fig. 15 no. 3) was recovered from the subsoil. Its pin is unusual as it appears to have been intentionally looped, which would have facilitated the securing of a thicker fabric fold than the usual straight pins would have allowed.

Discussion

3.7.13 Nails are the most found artefact on Roman period sites, and smaller undiagnostic pieces of iron are also common. Most of the ironwork recovered during the excavation consists of nails and iron fragments of various sizes, found across all phases mostly in ditches and pits. Hobnails are also relatively common finds and the three groups recovered are almost certainly representative of the decayed remains of Roman footwear. Commonly associated with the military open sandal-like 'boot' (*caliga*), hobnails secured the pieces of leather together that made the shoe, while also providing grip and comfort (Bishop and Coulston 2006, 112). By the 2nd century AD, however, hobnailed boots and shoes were worn by both the military and civilians (Crummy 2011, 49, after van Driel-Murray 1987).

3.7.14 The iron nail and rod fragments found in Phase 4 grave 4172 may have already been present in the soil when the grave was backfilled, although their presence could indicate a wooden casket.

3.7.15 The Nauheim-style brooch pin from Phase 5 ditch 10038 is probably residual from later Iron Age or early Roman activity in the vicinity. Although brooches of this type have been found in 3rd-, 4th- and even 5th-century AD contexts (see Mackreth 2011, 14–16), they are far more common in 1st- and early 2nd-century AD contexts. The presence of a second complete, although unstratified, Nauheim-style brooch (SF 4016; Fig. 15 no. 1) is also indicative of activity of late Iron Age to early Roman (Phases 3 and 4) date on site.

3.7.16 The Phase 6 corndryer produced the largest assemblage of metalwork from the site. The flesh hook/fire rake and the possible fire poker were both recovered from possible disuse/rubbish deposits within the structure of the corndryer. Although these two objects, and the associated pottery, may have been gathered from other areas of the site and deposited within the corndryer following its disuse, the presence of two objects that could quite feasibly have been used in fire maintenance associated with the structure is of interest. The flesh hook/fire rake could certainly have been used to rake out burnt debris from the flues into the rake-out pit (4372) associated with the northern flue. The poker could have functioned similarly; however, spatulate-ended pokers are more common in late Iron Age contexts (Manning 1985, 12; Darbyshire 1995). Although the tool could have been used to remove or spread embers or place more fuel on to the fire, it does not have raised edges that would indicate it being a fire shovel; the roundness and flatness of the blade is of distinctive form, quite dissimilar to published examples of 'spatulate' (or other) pokers. The closest examples in form are from the site of Tre-r Ceiri in Gwynedd, found in a hut of probable early Roman date (Fell 1990, 320, fig. A2 no. 22; Darbyshire 1995, vol. 2 no. A27), and another found with blacksmith's tongs at Nikolausberg, Austria, dating from the 4th to 3rd centuries BC. Indeed, it must be questioned if this object is a poker at all. The object is similar to bakers' peels or bread paddles, as seen in a late 1st-century BC mosaic of the baker Eurysaces from Saint-Romain-en-Gal in France, where Eurysaces uses what looks like a metal paddle of very similar form to the Grove example to remove or insert bread into an oven. Therefore, the context for the Grove Airfield object suggests that it was employed in the use of the corndryer, possibly as a fire poker but possibly as a type of peel. Another object with a flat, vase-shaped poker end from Rossington Bridge, Doncaster, has been described as a possible 'blacksmith's paddle or slice, rather than a … poker' (Buckland *et al*. 2001, 21, fig. 17). The example from Grove Airfield seems likely to have fulfilled such a function, although whether associated with blacksmithing or domestic activity is unclear, as no evidence for metalworking was recovered during the excavation. Its temporal allocation does, however, seem robust.

Catalogue of selected finds

1. Brooch (Fig. 15 no. 1). Cast La Tène III Nauheim derivative, with zig-zag decoration down centre of bow. Missing tip of catch plate, otherwise complete and in good

condition. Cu alloy. L: 67.5mm; W: 13.1mm. Unstratified. SF 4016. Early 1st century BC/1st century AD.

2. Seal box (Fig. 15 no. 2). Cast seal box base, teardrop (piriform) in plan with knop terminal and hinge lug. Two notches for cord, three holes in base. Crummy type 4. Cu alloy. L: 50mm; W: 22.1mm. Unstratified. SF 4080.

3. Brooch (Fig. 15 no. 3). Cast disc brooch, very worn with surface corrosion. No decoration visible on inspection nor in x-ray. Looped pin on reverse secured by iron rivet through double lug hinge. Cu alloy. D: 43.6mm. Unstratified (subsoil 4001). SF 4038. Probably 2nd century AD.

4. Cut sheet (Fig. 15 no. 4). Flat, rectangular sheet possibly cut down from a vessel. Cast with horizontal banding below the angled rim. Large hole punched through from inside of sheet may have been for a plug or rivet. Linear incisions around the cut edges may be additional decoration. The rim appears to have been filed or cut. Cu alloy. L: 29mm; W: 22mm. Unstratified. SF 4026. Roman.

5. Brooch (Fig. 15 no. 5). Incomplete T-shaped bow brooch comprising enclosed spring case and upper section of bow, which has been bent under to touch the underside of the arms, possibly deliberately. Appears to have a high lead content to alloy. Cu alloy. L: 19.7mm; W: 14.8mm. Unstratified. SF 4028. 1st or early 2nd century AD.

6. Chisel (Fig. 15 no. 6). Chisel or chisel-edged awl with slender tapering stem. Complete. Fe. L: 93mm; W: 13.7mm. Unstratified. SF 4062. 1st to 2nd century AD?.

7. Cleat (not illustrated). Leather cleat for a shoe or boot. Fe. L: 19mm; W: 14.8mm. Unstratified. Roman.

8. Brooch (not illustrated). Pin and spring of four coils from a Nauheim-style brooch. Cu alloy. L: 37.6mm; W: 10mm. Context 4303. Fill of L-shaped Phase 5 boundary ditch 10038. Residual. SF 4057. Early 1st century BC/1st century AD.

9. Flesh hook/fire rake (Fig. 15 no. 9). Incomplete square-sectioned stem with two tines (one broken) set above one another at right angles at the end of the stem. Fe. L: 227mm. Context 4376. Fill of Phase 6 corndryer 10002 flue. SF 4073. Roman.

10. Poker. (Fig. 15 no. 10). Near-complete hearth spatulate ended poker or peel with long square-sectioned stem with looped terminal. The flat spatulate end is damaged and incomplete. Fe. Context 4376. Fill of Phase 6 corndryer 10002 flue. SF 4075. Roman.

11. Pin (not illustrated). Spherical headed pin with short section of shank. No decoration to head. Cool (1990, 148–82) Group 1D. Cu alloy. L: 19.6mm; D: 11.8mm. Context 4017. Fill of Phase 6 boundary ditch 10009. SF 4014. Roman.

12. Structural fitting (not illustrated). Loop-headed spike, for insertion into wood or masonry and which may have served a variety of uses. Manning 1985, 131, no R32. Fe. L: 100mm. Context 4017. Fill of Phase 6 boundary ditch 10009. SF 4015. Roman.

13. Structural fitting (not illustrated). Joiner's dog comprising a rectangular sectioned bar with tapered ends at right angles to the bar. For joining timber or masonry. Fe. L: 52mm; W: 8.3mm. Context 4691. Phase 6 rubbish/dumping deposit. Roman.

3.8 Worked bone pin *by Leigh Allen*

3.8.1 An incomplete worked bone pin (SF 4063) was recovered from the flue of corndryer 10002. The pin has a globular head with a small, flat area on the very top. The shaft is incomplete but swells from below the head (D: 1.5mm) to the break (D: 2.5mm). The shaft is smooth and lightly polished through use, the head is hand-cut and roughly finished. Based on the Colchester typology, this is a type-3 pin, first appearing *c* AD 200 and surviving to the end of the Roman period (Crummy 1983, 21–2).

3.9 Coins *by Paul Booth and Anni Byard*

3.9.1 A total of 39 coins were recovered (Table 5). All were of copper alloy, with one coin being silver plated. Most coins are in worn or very worn condition, and many are incomplete and eroding, restricting accurate identification.

3.9.2 Following the recommendations of the PXA updated project design (OA 2019), the coins were examined to refine identification after specialist cleaning and X-radiography. The condition of the coins is quite variable, ranging from very good to very poor. The condition of the coins means that it is difficult to judge how many issues are irregular. Detailed identifications were made where possible, with notes on obverse and reverse types and mintmarks. Standard references referred to the Royal Imperial Coinage volumes (Mattingly *et al*. 1923–1984). Wear was recorded (approximately) using the categories defined by Brickstock (2004). An updated catalogue was produced and forms the basis of the information presented herein.

Results

3.9.3 Only two coins were recovered from archaeological contexts, the remainder coming from the topsoil or subsoil and recovered using a metal detector. These are presented below phased by date of coin issue, not loss, although in most cases the two are likely analogous.

Phase 3: Late Iron Age/early Roman

A worn silver-plated Roman Republican *denarius serratus* (SF 4052) is the earliest coin from the site. It was struck in Rome by the moneyer Fabati in 64 BC. Official Republican *denarii* had a high silver content and therefore many remained in circulation until the late 1st century AD, if not later. This coin is a contemporary copy of silver-plated copper alloy; once this was discovered, its value was reduced to almost nothing.

Phase 4: Early Roman

3.9.4 An eroded 1st- to 2nd-century AD *dupondius* (SF 4107) was excavated from middle Roman enclosure ditch 10019. It is too worn for further identification. Three other coins dating to the 1st or 2nd century AD, including two *sestertii* (SFs 4008 and 4034), were recovered during metal detecting.

Phase 5: Middle Roman

3.9.5 Two *sestertii* and one *as* were recovered by metal detector. A *sestertius* (SF 4035) issued by Antoninus Pius (AD 138–61) commemorates the death of his wife Faustina

in AD 141, while the *as* (SF 4053) is probably an issue of Commodus dating to *c* AD 181–2. The remaining *sestertius* (SF 4082) is too worn for accurate identification.

Phase 6: Late Roman

Thirty-one coins date from this phase, and all but one were recovered by metal detector. Two coins are too corroded to be ascribed to either the late 3rd or 4th century AD. Ten 'radiate' coins (SFs 4001, 4004, 4011, 4018, 4032, 4037, 4049, 4078 and 4079) struck between AD 260 and AD 296 were recovered, with identifiable emperors including Tetricus I and II (AD 271–4 and AD 272–4 respectively). Single coins each of the British usurper emperors Carausius (AD 286–93; SF 4079) and Allectus (AD 293–6; SF 4011) were recovered. A single Constantinian coin (SF 4106) recovered from the fill of possible construction cut 4699 underling floor 4697 dates to AD 321–3. The remaining coins are all worn 4th-century AD issues from the houses of Constantine (AD 306–61) and Valentinian (AD 364–78), while one worn issue (SF 4039) of either Magnentius or Decentius (AD 350–3) was recovered.

Conclusion

3.9.6 The relative frequency of late Roman coinage is characteristic of rural settlements in the region and more widely and represents a common rural coin-loss pattern. The most frequently encountered coins on this site date to Reece (1991) Period 17 (AD 330–48), which is in keeping with similar sites in the area, including at Denchworth Road (20 coins; Guest 2001). The small size of these assemblages, however, means that detailed interpretation cannot be inferred.

Table 5: Catalogue of coinage by phase

Phase	SF no.	Context	Coin date	Reece period	Denomination/ size	Ruler	Obverse	Reverse	Mint	Ref	Wear	Comment
3	4052		64 BC	1	Republican denarius serratus		Head of Juno Sospita, R	Girl facing snake	//FABA[TI] (Rome)	RRC 412/1	W/W	Irregular (plated)
4	4008	MD	1–2C		sestertius 31mm	Uncertain		Illegible			EW/EW	
4	4034	4001	1–2C		sestertius 31mm	Uncertain		Figure standing facing			VW/VW	
4	4029	MD	1C		29–30mm	Uncertain		Figure standing			EW/EW	
4	4107	4408	1–2C		dupondius/as 27mm	Uncertain		Illegible			VW/VW	
5	4035	4001	141–161	7	sestertius 30–31mm	Antoninus Pius	DIVA FAVSTINA	AETERNITAS S C	Rome	RIC Antoninus Pius 1105	W/VW	
5	4053		181–182?	9	as 23–25mm	Commodus?	M ANTONINVS [COMMODVS] AVG?	Figure standing			VW/VW	
5	4082		2nd		sestertius 30mm	Uncertain	[…]VS[…]	Female seated left	Rome		VW/VW	
6	4032	MD	260–296		radiate 16–20mm	Uncertain		Figure standing L			VW/VW	
6	4078		260–296		radiate 20–21mm	Uncertain		Illegible			VW/VW	
6	4004	4014	271–274	13	radiate 16–18mm	Tetricus I	IMP C TETRIC[…]	Illegible			W/W	
6	4037	4001	272–274	13	radiate 14–16mm	Tetricus II		PIETAS AVGVSTOR[UM]			W/W	
6	4001	4014	275–285		radiate 12–13mm	Uncertain		Figure L			W/W	Barbarous
6	4018	MD	275–285		radiate 15–16mm	Uncertain		Illegible			W/VW	Irregular, possible barbarous
6	4079		286–293	14	radiate 24–25mm	Carausius	IMP C CARAVSIVS PF AVG	PAX [AV]GGG	S/P//C	RIC V, pt 2, 334	SW/SW	
6	4011		293–296	14	radiate' 18mm	Allectus	IMP C ALLECTVS P AVG	Galley (VIR)TV(S) AVG	//QC	RIC V, pt 2, 128	SW/W	
6	4106	4698	321–323	16	AE3 17–18mm	Hse of Constantine		[BEATA TRANQVILLITAS]	//?PTR Trier		SW/SW	

Phase	SF no.	Context	Coin date	Reece period	Denomination/ size	Ruler	Obverse	Reverse	Mint	Ref	Wear	Comment
6	4036	4001	330–335	17	AE3 16mm+	Constantius II as Caesar	[CON]STANTINVS IV[…]	[GLORIA EXERCITVS], 2 standards			SW/SW	
6	4050		330–335	17	AE3 14mm	Hse of Constantine	CONSTANTINOPOLIS	Victory L on prow			SW/SW	
6	4047		330–360?		AE3 14mm+	Uncertain	(...ANT…)	Illegible			VW/VW	
6	4084		332–333	17	AE3 17mm	Hse of Constantine	[CONSTANTINOPOLIS]	Victory L on prow	//TRP*	RIC VII Trier 548	SW/SW	
6	4083a		335–341	17	AE3 13mm	Hse of Constantine		[GLORIA EXERCITVS] one standard			W/W	
6	4041		337–341	17	AE3 15mm	Helena	FL IVL HELENAE AVG	PAX PVBLICA			SW/SW	
6	4086		337–341	17	AE3 13mm+	Helena		PAX [PVBLICA]	//[TRP]	RIC VIII Trier 42	SW/SW	
6	4040		341–348	17	AE3 14mm	Hse of Constantine		VICTORIAE DD AV]GG Q N[N			W/W	
6	4083b		341–348?	17	AE4 12mm	Constans	DN CONS]TAN [S PF AVG	Illegible			W/EW	
6	4022	MD	348–350	18	AE3 18mm	Constans	DN CONSTA [NS PF AVG]	FEL TEMP REPARATIO, phoenix on pyre			SW/SW	
6	4033	MD	348–350	18	AE3 16mm	Constans	DN CONSTA NS PF AVG	FEL TEMP REPARATIO, phoenix on pyre			SW/W	
6	4005	4014	3–4C?		AE4 9–11mm	Illegible		Illegible			EW/EW	Possible FTR
6	4048		3–4C?		20–21mm	Uncertain		Illegible			EW/EW	Possible radiate
6	4039		350–353	18	AE3 16–18mm	Magnentius or Decentius		[VICTOR]IAE D[D NN AVG ET CAES]			VW/VW	
6	4007	4014	350–364	18	AE4 12–13mm	Hse of Constantine		[FEL TEMP REPARATIO], fallen horseman?			W/W	
6	4020	MD	350–364	18	AE3 17mm	Hse of Constantine		[FEL TEMP REPARATIO], phoenix on pyre	//TRP		SW/W	Irregular
6	4010a	MD	364–378	19	AE3 16mm	Hse of Valentinian		GLORIA ROMANORVM			W/W	
6	4013	MD	364–378	19	AE3 18mm	Hse of Valentinian		GLORIA ROMANORVM	//[.]ON (Arles)		W/W	
6	4001	4014	271–274		radiate 14mm	Tetricus I		Figure standing L with vertical sceptre			VW/W	

Phase	SF no.	Context	Coin date	Reece period	Denomination/ size	Ruler	Obverse	Reverse	Mint	Ref	Wear	Comment
6	4027		4C		15mm	Uncertain	[…]VS PF [AVG]	Figure			VW/VW	
6	4010b	MD	4C		AE3 16mm	Uncertain		Illegible			EW/EW	
6	4049		late 3C		radiate 20mm	Uncertain		[PROVID] AV[G]			VW/VW	

4 ENVIRONMENTAL AND OSTEOLOGICAL EVIDENCE

4.1 Animal bone *by Martyn Allen*

Introduction

4.1.1 A total of 3790 animal bone specimens were recorded from phased contexts, including 205 specimens recovered during the trial-trench evaluation that are included in this analysis. Hand-collected material accounted for 3515 specimens, and 275 specimens were recovered via environmental sieving. The bulk of the assemblage derived from Roman contexts dating between the 1st and 4th centuries AD, with a possible late Iron Age component in Phase 3. A small number of specimens (*c* 100) were recovered from middle Bronze Age features (Phase 1). Preservation of the assemblage was exceptionally good throughout. There was relatively little surface erosion and a low level of fragmentation allowing for a high level of recording.

4.1.2 Cattle bones dominate the assemblage and account for nearly twice as many specimens as sheep/goats, while horse remains are very well represented, outnumbering hand-collected sheep/goat bones in Phase 4. Biometric analyses suggest a bias towards male cattle. Two equid bones are of notably different shape to the main group, one possibly from a gelding. Butchery marks are present on horse bones in each of the Roman phases, indicating that equid carcasses were being processed and horse meat may have been eaten on occasion. Bones of very young cattle and horse are also present, and there are hints that specialised breeding and management of working stock was occurring at the site, which is consistent with the evidence for extensive arable cultivation and cereal processing.

4.1.3 Both sheep and goat specimens were identified, and although the majority of caprid remains could not be distinguished between the two species, sheep are likely to predominate. Pig bones are relatively well represented but slightly less so in the later Roman phases. Both sheep/goats and pigs appear to have been fairly intensively raised for meat.

4.1.4 Dog bones are present but relatively rare. One canid, either a small dog or a fox, had been intentionally buried. This individual had recovered from a severe leg break, perhaps indicating that it was a dog rather than a fox. Otherwise, dog bones were found as isolated specimens and several exhibit cut marks. It is not clear whether dog meat was being consumed, and while some may have been skinned; a ritual explanation is possible for some of the dog remains.

4.1.5 Wild mammal bones are rare, represented by a single, worked, red deer antler tine, four hare bones and three rat bones. The rat bones probably belonged to the brown rat, based on their relatively large size, and thus may have been intrusive. Frog/toad bones were recovered via environmental sampling of Roman contexts. Bird bones are also rare and were largely confined to the later Roman phases.

Methods

4.1.6 Each fragment was identified to taxon and element, where possible, with the aid of the author's skeletal reference collection. Refitting fragments were counted as single specimens. Long-bone shaft fragments, ribs and vertebrae were recorded according to a relative size category, either as large-, medium- or small-sized mammals. Elements were recorded according to the anatomical zone present following Serjeantson's (1996) scheme. Specimens with recurring zones were quantified to calculate the minimum number of elements (MNE) present for a particular taxon, and the minimum number of individuals (MNI) was calculated by taking body side into account. Articulating specimens were recorded where present.

4.1.7 Ageing data were collected from the analysis of tooth-wear patterns following Grant (1982), and estimated ages were drawn from comparisons with modern livestock data following the work of Jones and Sadler (2012) for cattle and Jones (2006) for sheep. Pig tooth-wear data were collected, and age stages attributed following O'Connor (1988), with estimated ages based upon eruption timings using data collected by Legge (2013). Horse estimated ages followed Levine (1982) for eruption/early wear timings and crown height measurements. Epiphyseal fusion of post-cranial elements was also recorded, and age estimates were calculated using the timings presented by Sisson and Grossman (Getty 1975).

4.1.8 Measurements were taken using the standards of von den Driesch (1976). Withers' heights for cattle and sheep/goats were calculated using the factors published by von den Driesch and Boessneck (1974), and those for horses used the factors modified from Vitt (1952) by May (1985; after Johnstone 2004, 156). Cattle metapodials were sexed using the breadth/length ratio formulated by Howard (1963), calculated as the distal breadth divided by the greatest length multiplied by 100 (Bd/GL*100). See below for further details.

4.1.9 Butchery marks were recorded in detail in terms of mark type and location on the bone. Evidence of burning was recorded based on colour (eg black, grey or white, ie calcined). Gnaw marks were recorded where present. Signs of pathology were recorded in detail.

Taphonomy and preservation

4.1.10 The assemblage is exceptionally well preserved. Fragmentation is relatively limited with numerous specimens still in a largely complete state. Surface condition is generally good, allowing for taphonomic markers such as butchery, burning and gnaw marks to be fairly easily seen and recorded (Table 6).

4.1.11 A total of 178 specimens exhibit butchery marks, accounting for just less than 5% of the total assemblage, including sieved specimens. Only three bones from middle Bronze Age features were found with butchery marks. Most derived from Roman contexts, ranging between 3.4% of the Phase 5 assemblage to 5.0%+ in the other three Roman phases. The majority of butchery marks were made by sharp knives, and there was comparatively little evidence for chopping and deliberate breakage of bones, though this was observed on some cattle and horse bones. A more detailed analysis of butchery practices for each taxon is presented below.

4.1.12 Signs of burning are rare in the assemblage, found on 23 specimens in total (0.6%). Small numbers of burnt bones were identified in each phased group, the highest number being the 14 specimens (1.0%) recovered from Phase 4 mid 1st–early 2nd-century contexts. Most of these are blackened and/or greyed specimens, mostly of unidentified mammal bones. This includes a horse metacarpal from well 5035 that had been burnt to a grey colour, particularly at each end of the bone. Well 5035 was one of a number of Phase 4 features with burnt remains; others included ditches 10032, 10023 and 10021, grave 4172, pit 4421 and hollow 4513.

4.1.13 Gnawed bones account for *c* 2% of the assemblage. The relative lack of carnivore activity probably contributed to the low level of fragmentation. None of the middle Bronze Age specimens exhibit gnawing marks. In the Roman phases the percentage ranges between 1.8% (Phase 4) and 2.8% (Phase 3). All the gnaw marks identified appear to have been caused by dogs, suggesting that canids had some access to carcass detritus, although this was limited and most remains were probably deposited fairly quickly following butchery and consumption.

Table 6: Number and percentage of animal bones with taphonomic markers by phase

Phase	Butchered		Burnt		Gnawed		Total no.
	No.	%	No.	%	No.	%	
1: MBA	3	2.6	4	3.5	0	0.0	114
3: LIA–ER	25	5.3	3	0.6	13	2.8	470
4: M1–E2C	71	5.0	14	1.0	26	1.8	1425
5: M2–E3C	27	3.4	1	0.1	17	2.1	791
6: M3–4C	52	5.3	1	0.1	26	2.6	990
Total	*178*	*4.7*	*23*	*0.6*	*82*	*2.2*	*3790*

Table 7: Number of animal bones by phase and feature type

Feature type	1: MBA	3: LIA–ER	4: M1–E2C	5: M2–E3C	6: M3–4C	Total	%
Ditch (n=207)	75	323	1212	757	783	3150	83.1
Pit (n=21)	4	1	128	18	60	211	5.6
Posthole (n=12)			5	16	6	27	0.7
Well/waterhole (n=3)		134	69		11	214	5.6
Corndryer (n=1)					97	97	2.6
Grave (n=2)			6			6	0.2
Other (n=8)	35	12	5		33	85	2.2
Total	*114*	*470*	*1425*	*791*	*990*	*3790*	—

Middle Bronze Age

4.1.14 A total of 114 specimens derived from middle Bronze Age features, ten of which came from environmental samples. Ditches accounted for 75 specimens, mostly from ditch 10061 and a smaller number from ditch 10041 (Table 7). Tree-throw hole 5121 also produced 35 specimens.

4.1.15 Cattle bones account for 22 of the middle Bronze Age specimens (Table 8). These include large parts of a fragmented skull from ditch 10061 found along with mandible, humerus, femur and metacarpal specimens from the same context. Mandible and tooth fragments were recovered from ditch 10041. Tree-throw hole 5121 contained cattle scapula, mandible and femur specimens.

4.1.16 The remaining taxa identified from middle Bronze Age features includes six specimens of sheep/goat, two of pig, and one horse femur fragment.

Late Iron Age/Roman

4.1.17 The late Iron Age/Roman assemblage consists of 3676 specimens recovered by hand and from environmental samples. These were spread unevenly across Phases 3–6. The majority of these (*c* 84%) derived from ditch interventions, about 5% each from pits and wells/waterholes, about 100 specimens from the late Roman (Phase 6) corndryer, and small numbers from other features types (Table 7).

Taxonomic representation

4.1.18 Cattle bones dominate the Romano-British assemblage overall, being the most common taxon in each phase (Table 8). Cattle remains account for 42–3% of the identified number of specimens (NISP) in Phases 3 and 4, increasing to 57% in Phase 5 but decreasing to 41% in Phase 6 (Graph 1).

4.1.19 Sheep/goat was the next most common taxon overall. Five sheep bones were distinguished from goat in Phases 3, 4 and 5, while one probable goat bone (a short and very thick-set metacarpal) was identified from Phase 6 ditch 10009. Sheep/goat remains range between 22% and 34% NISP in each Roman phase, being most common in Phases 3 and 6. Sheep/goat bones also include 16 specimens from environmental samples (Table 9).

4.1.20 Horse bones follow sheep/goat specimens in terms of overall NISP from Roman contexts, although a higher number of hand-collected horse bones were recorded from Phase 4 contexts. Horse bones account for 16% of the identified taxa in each phase, increasing to 26% in Phase 4, before decreasing in Phases 5 and 6 with 10% and 11% NISP respectively. The higher proportion of horse specimens in Phase 4 is partially accounted for a large deposit containing at least two horses in ditch 10021, including several probably articulating torso and limb bones.

4.1.21 The percentage of pig bones in each Roman phase varies from 5% to 7%. The majority of pig bones were recovered from ditch fills, with sizable collections recovered from interventions into ditches 10009, 10021 and 10045. Dog bones are represented by 24 specimens recovered from all the Roman phases and seven bones belonging to either a small dog or a fox found in articulation within ditch 10021.

4.1.22 Wild mammals are represented by a single, worked, red deer antler tine from ditch 10028. A lower permanent 1st or 2nd molar from a red deer was recovered from undated ditch 1304, and thus is possibly Roman in date. Four hare bones, all likely from the same animal, were recovered from Phase 6 corndryer 10002. Three rat bones were recovered from Phase 6 ditch 3128, though may be intrusive in this context. All the remaining wild mammal bones derived from mice, voles and shrews identified from

environmental samples recovered from all four Roman phases (Table 9). Frog/toad bones were also identified from environmental samples.

4.1.23 Birds are represented by one bone each from Phase 4 (a passerine) and Phase 5 (a chicken) contexts, while 21 bird bones (mostly chicken) were recovered from Phase 6 contexts. Other taxa from the last Roman phase include a wading bird (possibly a plover), duck and crow/rook.

4.1.24 Two fish bones were recovered from environmental samples. One of these was identified by Rebecca Nicholson as pike, this bone being recovered from Phase 4 well 5035, and the other was a very small vertebra from an unknown, probably riverine species, recovered from Phase 4 ditch 10032.

Table 8: Number of hand-collected specimens by phase

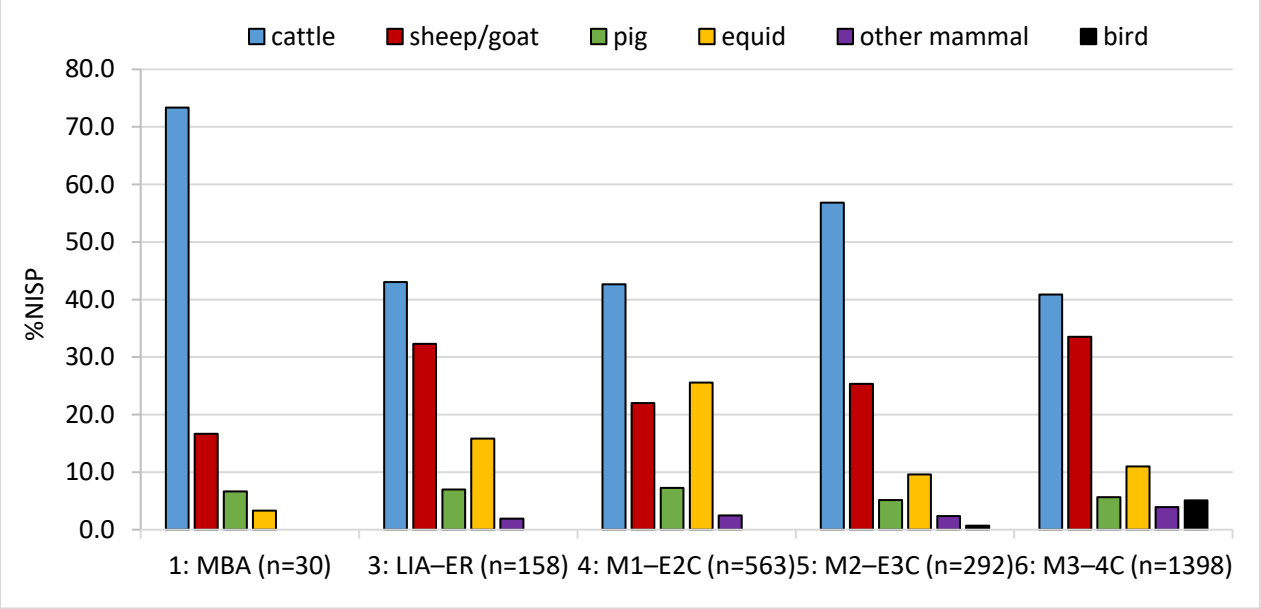
Taxon	1: MBA	3: LIA–ER	4: M1–E2C	5: M2–E3C	6: M3–4C	Total	%NISP
Cattle	22	68	240	166	145	641	45.9
Sheep/goat	5	49	122	73	118	367	26.3
Sheep		2	2	1		5	0.4
Goat					1	1	0.1
Pig	2	11	41	15	20	89	6.4
Equid	1	25	125	28	39	218	15.6
Cf. Equid			19			19	1.4
Dog		2	7	7	7	23	1.6
Dog/fox			7			7	0.5
Red deer		1				1	0.1
Hare					4	4	0.3
Cf. Rat					3	3	0.2
Chicken				1	12	13	0.9
Duck					2	2	0.1
Wader					1	1	0.1
Crow/rook					1	1	0.1
Bird					2	2	0.1
cf. Bird				1		1	0.1
Large mammal	29	129	446	216	345	1165	—
Medium mammal		40	117	57	104	318	—
Small mammal		2	2		7	11	—
Unidentified	45	112	142	194	130	623	—
Total	*104*	*441*	*1270*	*759*	*941*	*3515*	

Table 9: Number of specimens from environmental samples by phase

Taxon	1: MBA	3: LIA–ER	4: M1–E2C	5: M2–E3C	6: M3–4C	Total	%NISP
Cattle			2			2	1.8
Sheep/goat	1	3	7	3	2	16	14.0
Dog			1			1	0.9
Mouse			4		2	6	5.3

Taxon	1: MBA	3: LIA–ER	4: M1–E2C	5: M2–E3C	6: M3–4C	Total	%NISP
Bank vole		2			3	5	4.4
Mouse/vole		6	27	1	19	53	46.5
Shrew			1		2	3	2.6
Passerine			1		1	2	1.8
Bird					2	2	1.8
Frog/toad			18	2	2	22	19.3
Pike			1			1	0.9
Fish			1			1	0.9
Large mammal			3		1	4	—
Medium mammal		11	12	2		25	—
Small mammal			2		3	5	—
Unidentified	9	7	75	24	12	127	—
Total	*10*	*29*	*155*	*32*	*49*	*275*	

Graph 1: Change in relative frequencies of taxa over time (hand-collected only)



Cattle

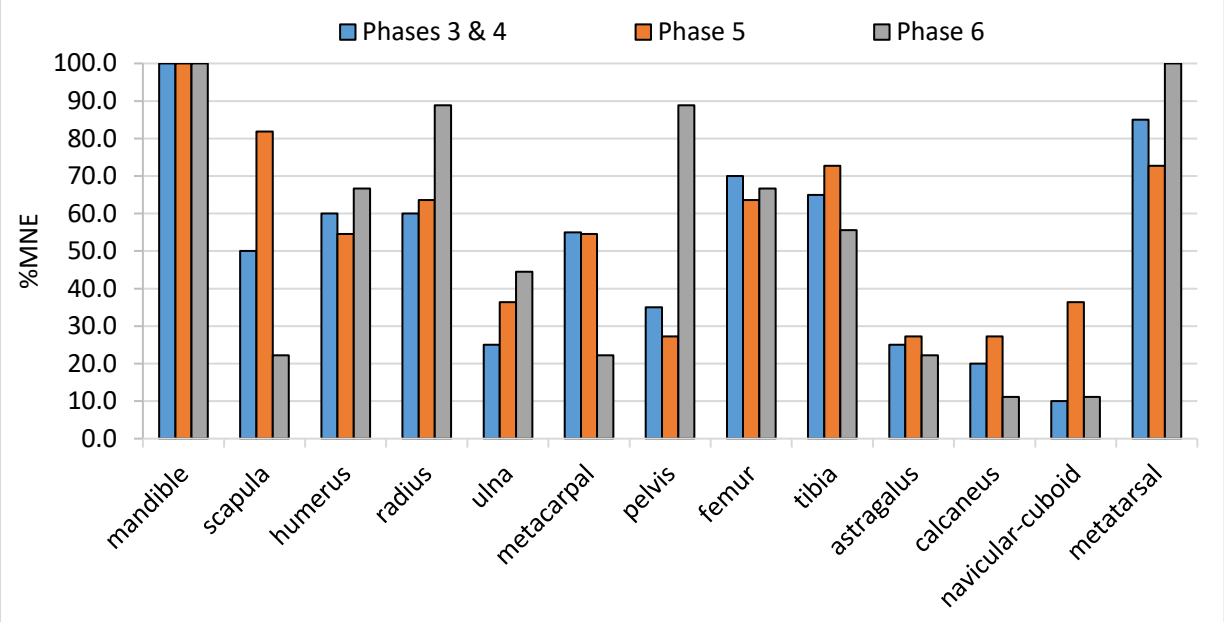
Body-part patterns

4.1.25 Cattle are represented by a minimum of 11 animals in Phases 3 and 4 (combined owing to a lower sample size), seven animals in Phase 5 and six animals in Phase 6 (Tables A1–3, Appendix A). In each phase, mandibles are the most common element in terms of both MNI and MNE, although in Phase 6 the MNI for mandibles is the same as humeri, radii and metatarsals (six each), and the MNE for mandibles and metatarsal is also equal (nine each).

4.1.26 Overall, the relative frequencies of different skeletal elements are fairly similar in each phase (Graph 2). Humerus, radius, femur and tibia elements are all generally well represented, and the good recovery of all the major limb bones is testament to the

high level of preservation. This is particularly true for femora, which are often not well represented compared to other limb elements. The representation of some elements is more varied between different phases, ie scapulae are most prevalent in Phase 5, while radius and pelvis bones are better represented in Phase 6, and metacarpals tend to be slightly better represented in Phase 6, and metacarpals tend to be slightly better represented in Phases 3, 4 and 5. Such variation can be attributed to differences in the spatial deposition of certain body parts in different periods, alongside recovery bias through sampled excavation. Overall, however, it is clear that cattle were being slaughtered on site, with whole carcasses being butchered and divided up for a variety of products.

Graph 2: Cattle element representation by phase



Butchery

4.1.27 Proportions of cattle bones exhibiting butchery marks ranges from 11.0% in Phase 6 to 19.2% in Phase 4. These are relatively high figures undoubtedly aided by the good preservation of the faunal material (Table A23, Appendix A). Both knife cuts and heavier chop marks were recorded on different parts of the cattle skeleton. Chop marks are particularly notable on Phase 4 material. The most commonly butchered elements identified include metapodials (13 metatarsals and 5 metacarpals), mandibles (16), tibiae (12) and radii (11).

4.1.28 One largely complete skull fragment from Phase 4 ditch 10021 exhibits a large hole in the centre of the frontal bone, possibly indicating that the animal had been slaughtered by pole-axing, as no modern breakage was noted around the damage. The left horncore was possibly sawn off, although the horns are very small and the right one was untouched. Several cattle horncores were found in the assemblage, though many are fragmented, and only one had clearly been sawn. This example, from ditch 10060 (fill 4700), is very large and may have been selected for its size, having been sawn through the shaft about 10cm from the base.

4.1.29 Mandibles commonly exhibit knife cuts, mostly on the posterior or lateral side of the ascending ramus and around the condyloid and coronoid processes, all made to

remove the jaw from the skull and possibly to access the tongue. Similar marks were sometimes found on the horizontal ramus, perhaps related to skinning, while a small number exhibit superficial chop or blade marks along the horizontal ramus. Two skull fragments have cut marks around the eye sockets, one on the zygomaticus and another on the frontal bone, and both probably represent skinning of the head.

4.1.30 Butchery marks on metapodials are predominantly knife cuts related to skinning, often around the proximal and less so along the shaft and the distal end. Five 1st phalanges also have similar skinning marks. Chop marks made by heavier implements were found on five metatarsals, including one that was chopped axially to split the shaft and three that were chopped obliquely into or through the middle of the shaft.

4.1.31 Of the major bones, radius and tibia bones commonly have butchery marks, though some humerus and femur specimens also exhibit marks. These are predominated by knife cuts, with only a small number present with heavier chopping marks. Knife cuts on all the major limb bones appear along the main shafts of the bones and seem to have been made during defleshing, rather than at the ends, which might otherwise reflect disarticulation, though this is apparent in a small number of cases. Of the four femur bones with butchery marks, three had been chopped and one had cuts around the femoral head, suggesting that disarticulation of the rump/hip area was more common. This is somewhat supported by the four pelvis butchered specimens, three of which have cut marks near the acetabulum and one was chopped through the ilium shaft.

Ageing

4.1.32 A total of 17 cattle dental specimens allowed for tooth-wear analysis, providing data to estimate the relative age of the animals when they were slaughtered. No specimens from Phase 3 features could be aged, six derived from Phase 4 features and 11 were recovered from Phase 5 and 6 contexts combined (Table A18, Appendix A). Little difference between the two phased groups is evident, although in both there is a larger proportion of older cattle, particularly animals aged 40 months–6.5 years old (Jones and Sadler (JS) stage G) and above. When the data from the phased groups are combined, the resulting data suggest that *c* 80% survived to 16–28 months old (JS stage D) and *c* 70% to 34–43 months old (JS stage F), but thereafter a more intensive cull pattern reduced the population to 17.6% at 5–10 years (JS stage H) and 5.9% at 8–16 years (JS stage J). One specimen was aged at 14–20 years (JS stage K). Overall, the data suggest a good survival rate through the early and young-adult years, perhaps indicating that a large proportion of cattle were not primarily kept for beef consumption.

4.1.33 Some very young cattle were identified in the assemblage from the post-cranial remains, including a neonatal femur from Phase 6 ditch 3128 and a very juvenile metatarsal from the same context. These suggest that cattle were being bred and reared at the site or nearby, and this is somewhat supported by the presence of unfused, early fusing elements in the Phase 3, 4 and 5 assemblages. In all three periods, however, epiphyseal fusion data suggest that the pattern of survivorship to older ages found in the dental-wear data is broadly correct (Tables A10–12, Appendix A). In Phase 3 the percentage of fused specimens in elements that fully develop by

ages 7–15 months, 15–24 months and 24–36 months ranges between *c* 82% and *c* 92%, but the percentage of fully developed late-fusing elements reduced to 37%. A similar pattern is found in the Phase 5 assemblage, where the percentage of fused elements reduces from 92.3% at 24–36 months to 46.2% at 36–48 months. In Phase 6 an increase in culling of animal at slightly younger ages is evident, as the percentage reduction is greatest between 15–24 months (94.4%) and 24–36 months (58.3%), and hints at an increased slaughter of prime beef animals in this later phase.

Pathology

4.1.34 A total of 16 cattle specimens, mostly from Phases 4 and 5, exhibit pathologies (Table A25, Appendix A). The majority of these are arthropathies, essentially conditions affecting the joints, with a small number of dental conditions and pathologies relating to trauma or inflammation. Exostosis and abnormal bone growth were recorded primarily on foot bones, including three metatarsals and seven phalanges. The degree of exostosis growth ranges from small areas of lipping around the epiphyses to far more extensive abnormal growth impacting the size and shape of some areas of the bone. One metatarsal from ditch 10051, for example, had been impacted before the distal epiphysis had fused to the shaft causing the condyles to mis-align with excessive growth occurring at the fusion interface. In addition, two metacarpals also display heavily splayed distal ends, which one from ditch 10022 also exhibits mild periostitis on the anterior of the shaft.

4.1.35 Of the three mandibles with dental pathologies, two were likely caused by bacterial infections that had resulted in significant bone resorption around the molar sockets, and one that exhibits a considerable degree of abnormal wear on the occlusal surfaces of the 4th premolar and the 1st and 3rd permanent molars.

Size and shape

4.1.36 A total of 231 measurements were taken from cattle bones (Table A26, Appendix A), including measurements of 14 complete long bones allowing for estimated withers' heights (shoulder heights) to be calculated, while several metapodials were also complete enough for sex to be estimated.

4.1.37 Cattle withers' heights were collated for all the Roman phases and compared with data from Romano-British sites at Haddon, Cambridgeshire (Baxter 2003), Bainesse, North Yorkshire (Stallibrass 2002), and Carlisle, Cumbria (Stallibrass 1993) (Graph 3). Withers' heights from comparative site were calculated by this author from long bone measurements presented in the original reports in order to standardise the estimates and reduce the level of error between each. The Grove Airfield withers' heights have been aggregated from each phase, owing to the small sample size. However, the shortest (1086mm) and the tallest (1325mm) heights recorded both derived from Phase 6 features; all the other data fall within the overall range. Compared to the withers' height data from other sites, the Grove Airfield cattle appear to have been towards the taller end of the range, averaging 1242mm. This is also supported by data from a wider study of cattle withers' from a range of Romano-British rural sites, which show that average heights normally register below 1200mm, even in the late Roman

period when taller cattle tended to become more common (Allen 2017, 99–101, fig. 3.23).

4.1.38 Analysis of distal tibia breadths allow for an assessment of cattle breadth (Graph 4). Here, the Grove Airfield results have been compared to Romano-British data from Shakenoak, Oxfordshire (Cram 2005), Heybridge, Essex (Johnstone and Albarella 2015), Frocester Court, Gloucestershire (Noddle 2000), and Dragonby, Lincolnshire (Harman 1996). Although the Grove Airfield sample is fairly small, the distal tibia breadths fall within the range for Romano-British rural sites but tend to cluster towards the upper end. This would suggest that most of the cattle that came to be deposited at Grove Airfield were comparatively large in both breadth and height.

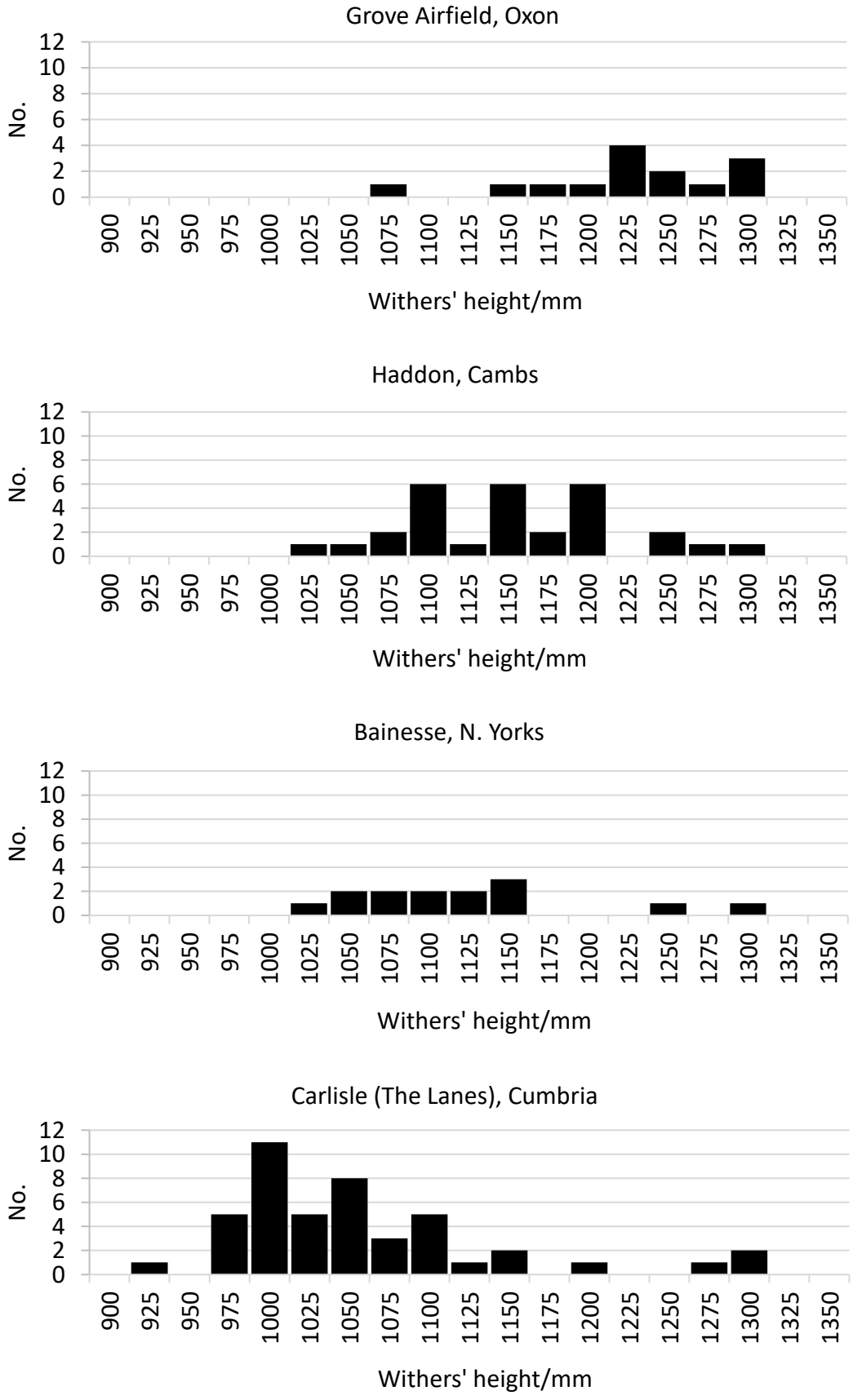
4.1.39 Part of the reason why most of the Grove Airfield cattle tended to be comparatively large may be because the assemblage is dominated by bones from bulls. Sex estimations have been made by analysing the shape of the metapodials using the distal breadth vs greatest length ratio. A greater breadth to length ratio represents a stockier metapodial (and by inference, a stockier animal), and in theory a broad metapodial should relate to a bull with the opposite belonging to a cow. When applied to the Grove Airfield material, the results suggest a clear split between four metacarpals with ratios over 33 and one below 28 (Table A22, Appendix A) and this applies to Howard's (1963) work that suggested a male/female split either side of 30. The difference here, therefore, can be confidently attributed to sexual variation. Although not as reliable as metacarpals, the same calculation was here applied to metatarsals (cf Albarella 1997), which also produced two clusters in the data: two specimens have a ratio of *c* 22–24 and three with a ratio of *c* 26–30, and have been tentatively categorised as possible females and males respectively.

4.1.40 Maltby (2010, 147–50, fig. 39) was further able to show that comparison of the distal breadth (Bd) and distal depth at the fusion (Ddf) point of cattle metacarpals is a good separator of bulls and cows, and thus can aid in sexing specimens of unknown sex (ie metacarpals with only the distal ends present). To test this with the Grove Airfield material, the Bd/Ddf results from seven metacarpals have been plotted and show that two unsexed bones are also very likely to be from males, since they cluster with the 'known' male group (Graph 5). The same test was applied to the metatarsals, although this was slightly less successful as one of the possible female specimens clusters with the larger group (Graph 6). This would suggest that either the Bd/GL shape ratio does not apply as well to the metatarsal or that size alone is not a strict identifier of sex. Nonetheless, both datasets show some fairly distinctive patterns, and both would argue that the Grove Airfield cattle metapodials are more commonly from bulls.

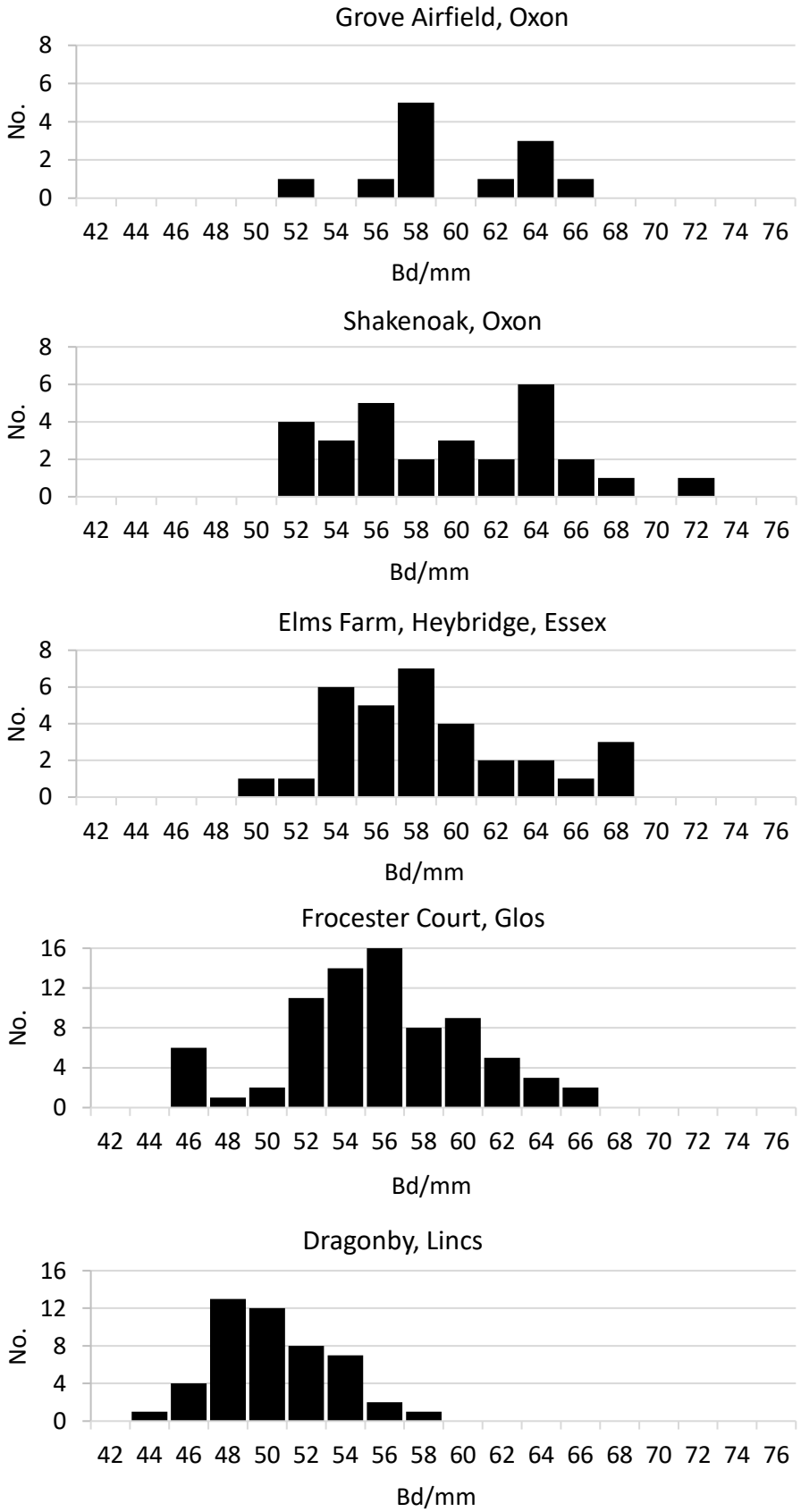
4.1.41 Variation was also identified when comparing withers' heights with both shape and size. A plot of metacarpals comparing withers' heights against proximal shape index (Bp/GL*100) shows four specimens representing the tallest animals in the sample ranged between 1238mm and 1319mm tall (a difference of 81mm) but varied by only 1.3% in terms of the proximal shape index (Graph 7). One individual, however, has a shape index of 27.2, a difference of 4.2% from the lowest value in the cluster, and has a withers' height of *c* 1200mm. Therefore, this metacarpal is significantly more slender than the others, but the animal was not significantly shorter at the shoulder. A similar pattern was apparent when comparing metatarsal proximal breadths with withers'

heights (Graph 8). Here, the width of the proximal breadth of the four clustered specimens range between 53.1mm and 54.6mm, while the difference in heights range from 1166mm to 1315mm. The shortest specimen at 1086mm (the shortest cattle withers' calculation in the assemblage) has a significantly narrower proximal end measuring 41.3mm.

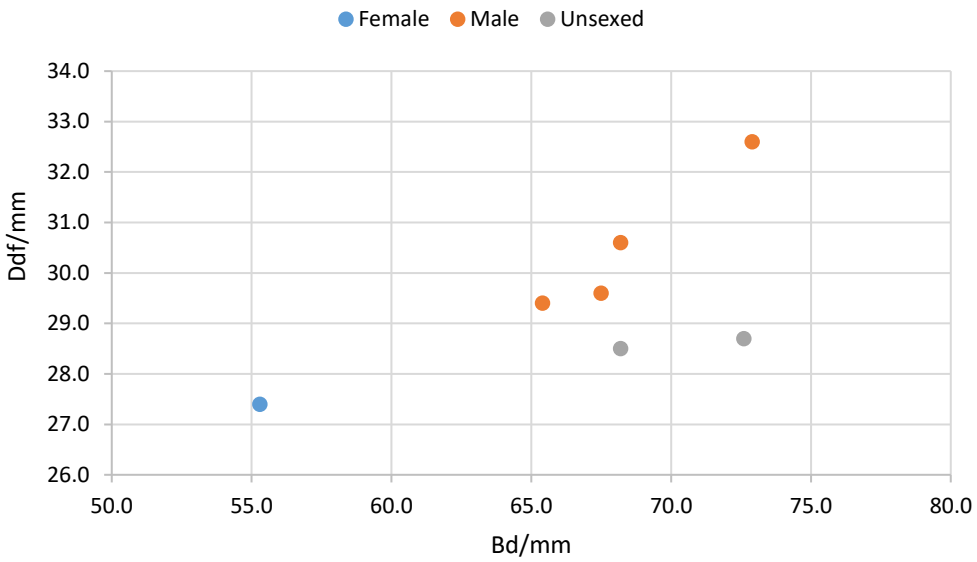
4.1.42 While analysis of withers' heights can give a useful picture of how tall cattle stood in the past, the comparison of these data with shape indices and breadth measurements can give far more insightful information about variation within the herd. Use of sex estimation shows that much of this variation is likely to reflect the presence of bulls and cows, and possibly oxen, though how far castrates are potentially represented is not known. However, we must be mindful of potential factors other than sex, as Albarella (1997) has argued that the impact of breed/type and age should also be taken into account.



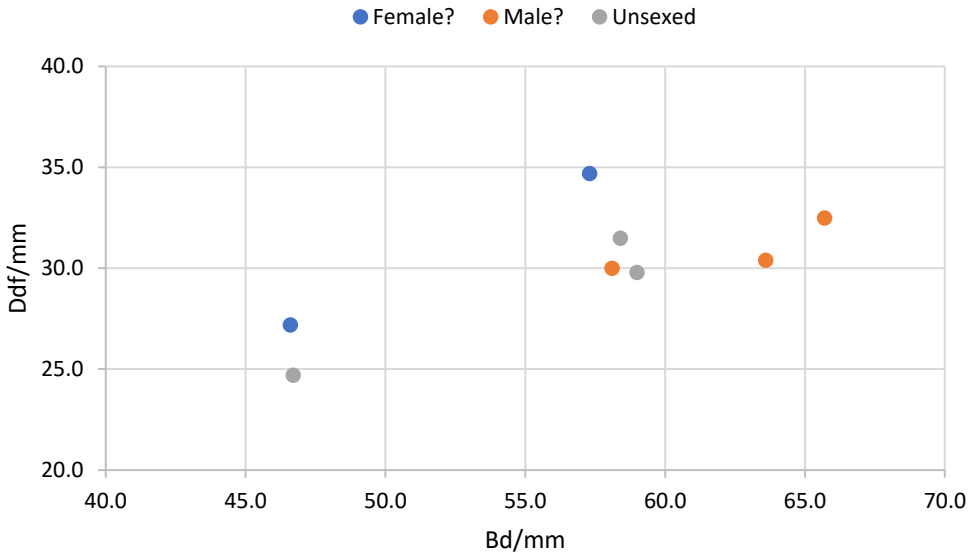
Graph 3: Distribution of cattle withers' heights from selected Romano-British sites



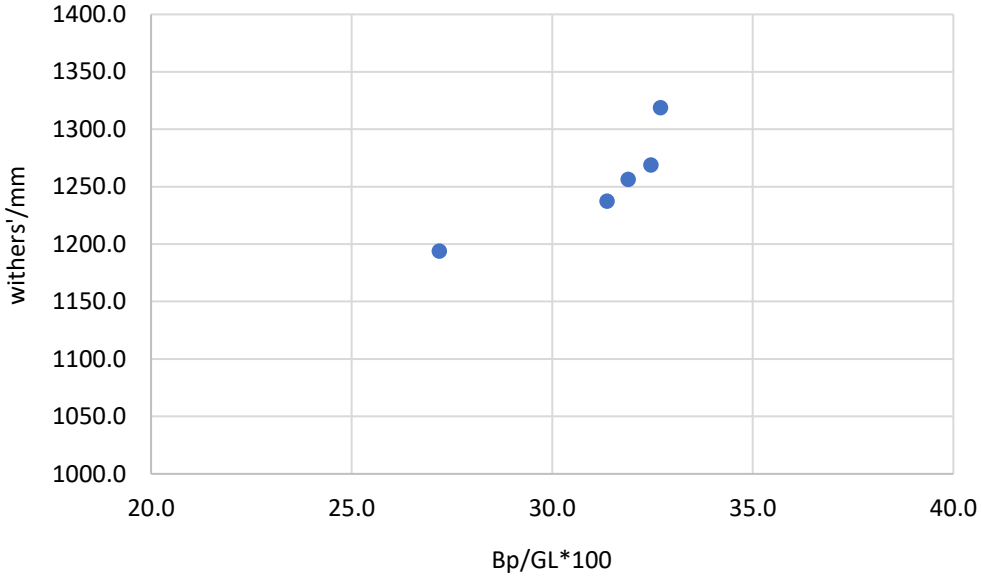
Graph 4: Distribution of cattle distal tibia widths from selected Romano-British sites



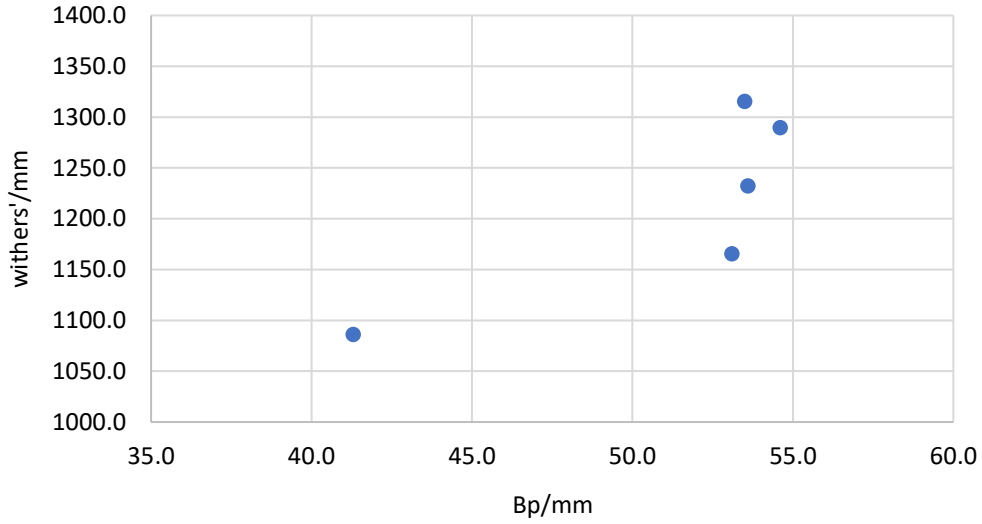
Graph 5: Cattle metacarpals by distal breadth vs distal fusion depth (sex estimated from distal breadth/length ratio)



Graph 6: Cattle metatarsals by distal breadth vs distal fusion depth (sex estimated from distal breadth/length ratio)



Graph 7: Cattle withers' height vs shape index (metacarpal proximal breadth/length ratio)



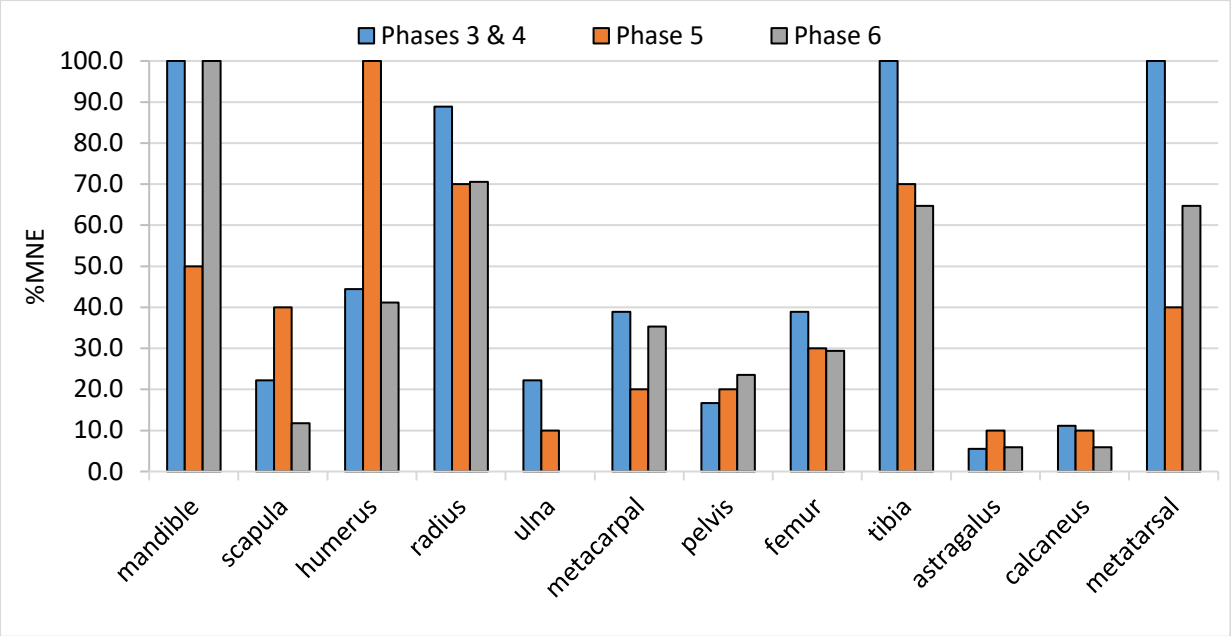
Graph 8: Cattle withers' height vs metatarsal proximal breadth

Sheep and goats

Body-part patterns

4.1.43 Both sheep and goats are represented in the assemblage, though sheep are likely to be more common overall. In terms of minimum numbers, 11 individuals are represented in Phases 3 and 4 combined (Table A4, Appendix A), six in Phase 5 (Table A5) and nine in Phase 6 (Table A6). Similar patterns of skeletal element representation occur between each phase, though Phase 5 varies slightly from the other two groups (Graph 9). Mandibles, radii, tibiae and metatarsals dominate the Phase 3 and 4 group, and while mandibles dominate the Phase 6 group, while radii, tibiae and metatarsals are also well represented. In the Phase 5 group, humerus bones are the best represented element, followed by radii and tibiae, while mandibles account for only

half the minimum number of humeri. In Phases 3, 4 and 6, humeri are represented in similar proportion to metacarpals and femora. Scapulae, ulnae, pelves, and tarsal bones are often very poorly represented in each phase, most likely owing to recovery bias.



Graph 9: Sheep/goat element representation by phase

Butchery

4.1.44 A total of 18 sheep/goat bones exhibit butchery marks (Table A23, Appendix A). Butchered remains account for between 1.4% in Phase 5 and 6.7% in phase 6. These bones almost exclusively exhibit knife cuts; a superficial blade mark possibly caused by a cleaver was identified on a pelvis from ditch 10009. The butchered sheep/goat elements include four each of humerus and pelvis, two each of scapula, radius, tibia and metatarsal, plus an ulna and an astragalus. Cut marks on the humerus can be seen on the shaft and on the distal end, while those on the pelves are often located on the ilium shaft. Those on the radii and the ulna are located at the proximal ends and were probably made when disarticulating the elbow, while those found on the tibia, the astragalus and the metatarsal were made when disarticulating the ankle joint.

Ageing

4.1.45 A total of 22 sheep/goat dental specimens provide dental ageing data (Table A19, Appendix A). These were combined into two groups, one with Phases 3 and 4 and one with Phases 5 and 6, to aggregate the sample sizes. The pattern in each group is fairly similar, so the survival percentage was combined for all four phases to provide a kill-off pattern. Given the wide time span reflected by these data, the results should be viewed with caution. Nonetheless, both phased groups include a high proportion of mandibles at Jones stage E, representing animals aged *c* 20–36 months, suggesting that there was a conscious effort to cull sheep/goats in their third year.

4.1.46 Around 20% of specimens represent animals slaughtered within their first year, a further *c* 14% in their second year and 50% in their third year. With less than 20%

surviving from their fourth year, the data suggest that it may not have been economically viable to keep large numbers of sheep/goats into older ages, perhaps with smaller numbers being maintain for breeding requirements. It is possible that the recovered sheep/got bones reflect animals brought in specifically for slaughter and consumption, thus causing a bias towards two to three-year-olds.

4.1.47 As with dental ageing, the epiphyseal fusion data are reliant on fairly small sample sizes. Material from Phases 3 and 4 have been combined to be compared with Phases 5 and 6 (Tables A4–6, Appendix A). In each case the data suggest a pattern of minimal culling in the first year, as early fusing specimens are relatively rare, but a higher proportion of middle-fusing elements, especially distal metapodials and some distal tibiae and calcaneus bones, are present. This suggests a cull pattern focused on animals aged 15–36 months and perhaps supports the dental ageing data for a concerted cull of sheep/goats in their third year. The epiphyseal fusion data suggest a higher survival rate of animals within their fourth year and later compared with the dental ageing data, though again the small sample size should be considered here.

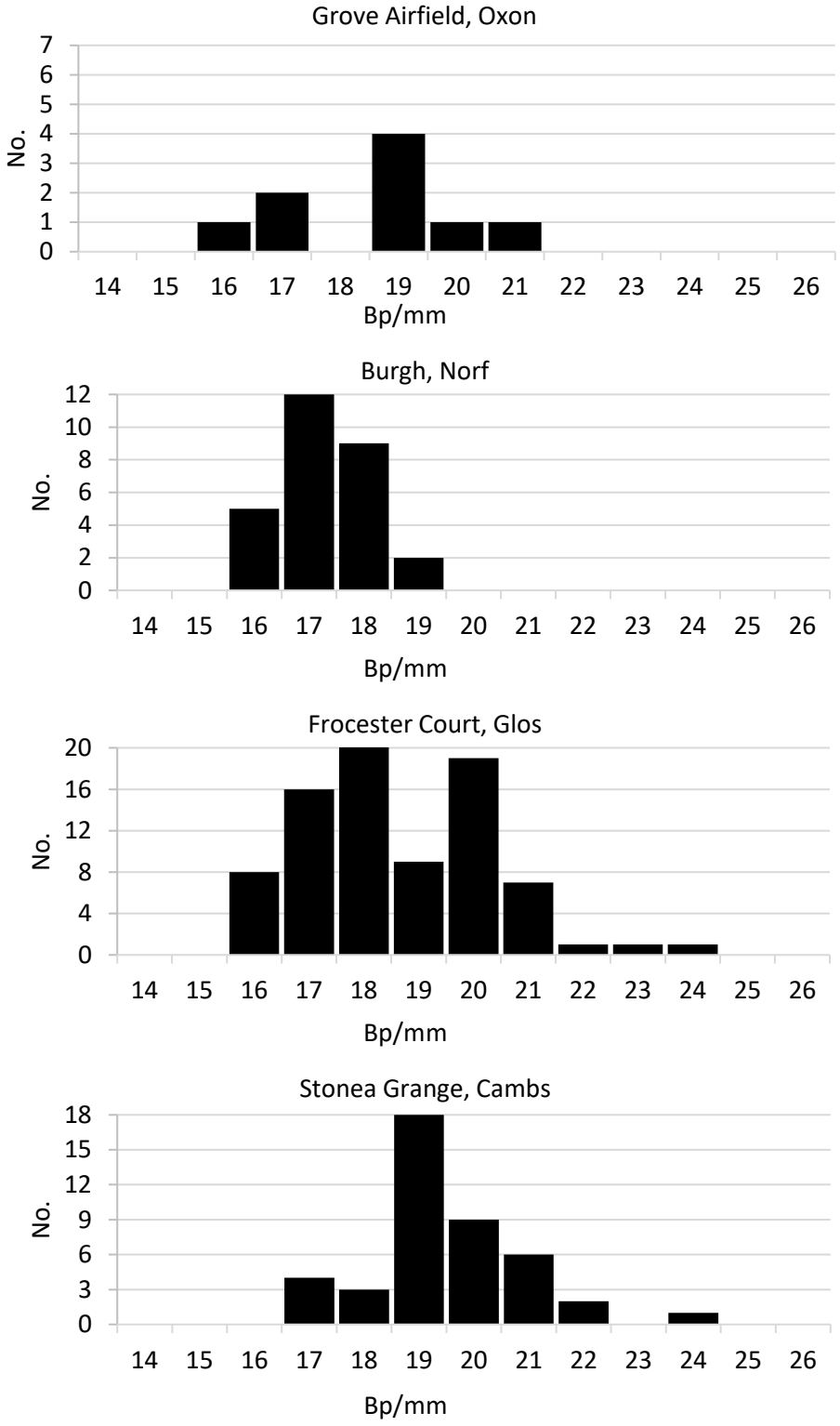
Pathology

4.1.48 Five sheep/goat specimens exhibit pathologies (Table A25, Appendix A). These include the goat metacarpal from ditch 10009, which shows abnormal bone growth along the posterior of the shaft and exostosis around the proximal epiphysis. A tibia has exostosis on the tubercle tuberosity. Two mandibles from Phase 6 features show signs of malocclusion. One astragalus appears to have lost some of its bone structure, similar to osteoporosis, although the degeneration could have been caused by acid attack from being digested.

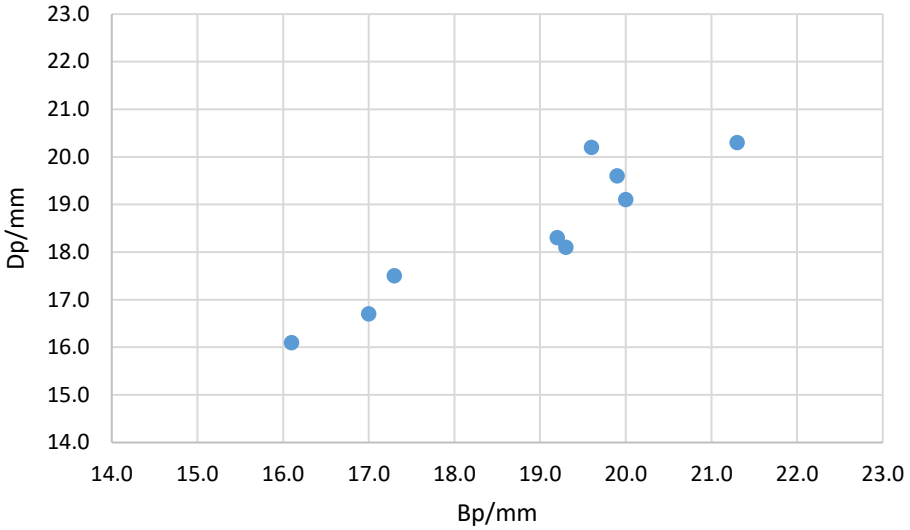
Size

4.1.49 Around 100 measurements were taken from sheep/goat bones, though only six specimens were complete enough for withers' height estimations to be calculated (Table A27, Appendix A). These suggest a fairly wide range of heights, from 518mm to 655mm. This is similar to the height ranges found at other Romano-British rural sites where larger samples have been recorded (Graph 10). Analysis of the width of the proximal metatarsal also suggests a similar range as that found at other Romano-British rural sites (Graph 11). Widths at Grove Airfield range between 16.1mm and 21.3mm, which is similar to that found at Burgh, Norfolk (Jones *et al.* 1988), though several broader sheep/goat were identified at Frocester Court, Gloucestershire (Noddle 2000), and Stonea Grange, Cambridgeshire (Stallibrass 1996).

4.1.50 Comparison of the breadths and depths of the proximal metatarsals indicates the presence of two groups. The smaller group has breadths and depths of less than 18mm and the larger group has breadths greater than 19mm and depths greater than 18mm. This separation may be due to a variety of factors, such as age, and it is possible that one of the smaller specimens could have been slightly juvenile, though the other two were certainly skeletally mature. The likelihood, however, is that the difference relates to sex. If so, the data suggest a dominance of males in the assemblage, similar to the pattern for cattle.



Graph 10: Distribution of sheep/goat proximal metatarsal widths from selected Romano-British sites



Graph 11: Sheep/goat proximal metatarsal breadths vs depths

Pigs

Body-part patterns

4.1.51 Pig bones are too few to reconstruct body-part patterns for individual phases, so the data for all phases were aggregated to provide an overall picture of pig exploitation (Table A7, Appendix A). A total of seven pigs were identified within the assemblage, represented by 13 mandibles. Scapulae, ulnae, and femora are also fairly well represented, and most of the remaining limb bones are also present. Only small bones such as the calcaneus, astragalus and some phalanges are absent, which is most likely due to recovery bias.

Butchery

4.1.52 A total of ten pig bones exhibit butchery marks, which although low in number represents a comparatively high proportion of the pig assemblage (Table A23, Appendix A). Butchered pig bones appear in each of the phases, and all the specimens exhibit knife cuts with no sign of heavy chopping. The femur is the most commonly butchered element (four specimens), which either have cuts on the shaft or around the femoral head, possibly to disarticulate the hip joint. Two scapulae were cut around the neck to disarticulate the shoulder blade. The remaining specimens are all limb bones with cuts on the shaft made during meat filleting.

Ageing

4.1.53 Ageing data were collected from ten pig mandibles, mostly recovered from Phase 4 features but also one or two from each of the other Roman phases (Table A20, Appendix A). The data suggest that the majority of pigs were slaughtered before the end of their second year. Two were found to have been culled around 5–6 months old, three at *c* 11–14 months and four at *c* 21–24 months old. Only one specimen was found to have been from an older animal than this.

4.1.54 There are not enough post-cranial pig bones to reconstruct slaughter patterns for each phase, so epiphyseal fusion data were aggregated from each (Table A16, Appendix A). Only one unfused pelvis bone was recorded, indicating that the culling of piglets in their first year was fairly minimal. The main stage of culling appears to have occurred in the second year, mirroring the dental eruption data, signified by the number of unfused distal metapodials and humeri. Very few pigs survived beyond three to four years, as only one late-fusing element (a distal tibia) was found to have fused, with the remaining 11 elements all yet to reach skeletal maturity.

Pathology

4.1.55 Only one pig bone exhibits pathology. A skull fragment from Phase 4 ditch 10032 presents some abnormal periosteal growth around the eye socket.

Horses

Body parts

4.1.56 At least six horses are represented by a minimum of ten femur bones recovered from Phase 3 and 4 features (Table A8, Appendix A). Mandible, radius, metacarpal and tibia bones are also fairly well represented in these phases. Only two horses are represented by metapodials in Phase 5 and 6 features (Table A9). To an extent the difference in the MNI and MNE counts between the earlier and later Roman phases is mirrored by the higher NISP counts also found in earlier-dated contexts.

Butchery

4.1.57 Butchered horse bones were found in all four Roman phases (Table A23, Appendix A). A total of 18 were identified, half of which were recovered from Phase 4 contexts, though this phase also produced the highest number of horse bones. To these can be added three more butchered horse bones from unphased contexts. Both knife cuts and heavier chops were recorded, with chopping marks noted on Phase 4 and 5 material. Several long bones had been split axially or had been chopped at one end, seemingly with the intention of splitting the bone to access the marrow, though some may have been utilised for bone working. One tibia had been chopped through the shaft horizontally.

4.1.58 Two mandibles had been butchered. One has cut marks on the coronoid process made to detach the jaw from the skull, and the other has several vertical cuts on the lateral side of the ramus, posterior to the foramen, possibly made when skinning the animal. Eleven metapodials exhibit butchery marks. Some of these were chopped as specified above, but most present cut marks on the shaft made during skinning.

4.1.59 One pelvis has a cut on the medial side of the ischium. Two radii exhibit cut marks, one at the proximal end and one at the distal end. A scapula had been cut obliquely on the posterior side of the neck and horizontally at the distal end of the blade. Several tibiae exhibit chop marks, though one had knife cuts along the shaft.

Ageing

4.1.60 Most of the post-cranial bones suggest that horses tended to reach skeletal maturity, as between *c* 95–100% of elements had fused at the epiphysis (Table A17, Appendix A). However, single atlas and axis bones found in Phase 3 waterhole 4391 were unfused, and Sisson and Grossman state that these vertebrae usually close at around six months old (Getty 1975, 259–60). The bone therefore must represent the remains of a young foal.

4.1.61 Aside from these bones, a small, unfused, distal metacarpal with a porous cortical surface was found in Phase 4 ditch 10045. Distal metapodials fuse between 12 and 18 months, though this specimen is likely to have been from an animal that died in its first year given the small size and porous texture of the cortical surface. The only other immature specimen is a femur with an unfused proximal end and a fused distal end from ditch 10021. This bone appears to have been in articulation with a complete and fully developed tibia, a bone that also fuses at the proximal end between 36 and 42 months.

4.1.62 Most of the horse dental ageing data derived from material recovered from ditch 10021. This context contained the remains from at least three horses, and this is supported by the number of dental specimens that produced ageing data (Table A21, Appendix A). Four specimens, including left and right maxillae, a left mandible and a loose lower 3rd molar, may derive from a single animal. The loose 3rd molar was only just coming into wear and the upper 3rd molar in the right maxilla was beginning to erupt, while the opposite maxilla and mandible both have heavily worn deciduous premolars with permanent premolars beginning to erupt underneath. If these were all from the same horse, eruption data suggest that it probably died between 2.5 and 3.5 years old (following Levine 1982; after Hillson 2005, 240). It is quite possible that this skull belonged to the same animal as the articulating femur and tibia bones, suggesting that it had survived into the first half of its fourth year.

4.1.63 Two other specimens in this context indicate the presence of two more animals. A lower 2nd molar was coming into very slight wear, indicating that it belonged to a horse aged *c* 16–24 months old. A mandible that was very fragmented but otherwise mostly complete was aged at *c* 5–6 years, based upon crown heights of the 2nd permanent molar (CH = 73.3mm) and the 3rd permanent molar (CH = 85.4mm).

Pathology

4.1.64 Two bones, a horse metatarsal and a possible horse rib, display signs of pathology. The metatarsal from ditch 10019 exhibits slight exostosis on the anterior side of the proximal end. The rib was from ditch 10032 and also exhibits exostosis around the proximal end. The specimen was recorded as possibly horse, as it was found with a group of articulating vertebrae and several other horse limb bones; cattle bones were absent from this context.

Size and shape

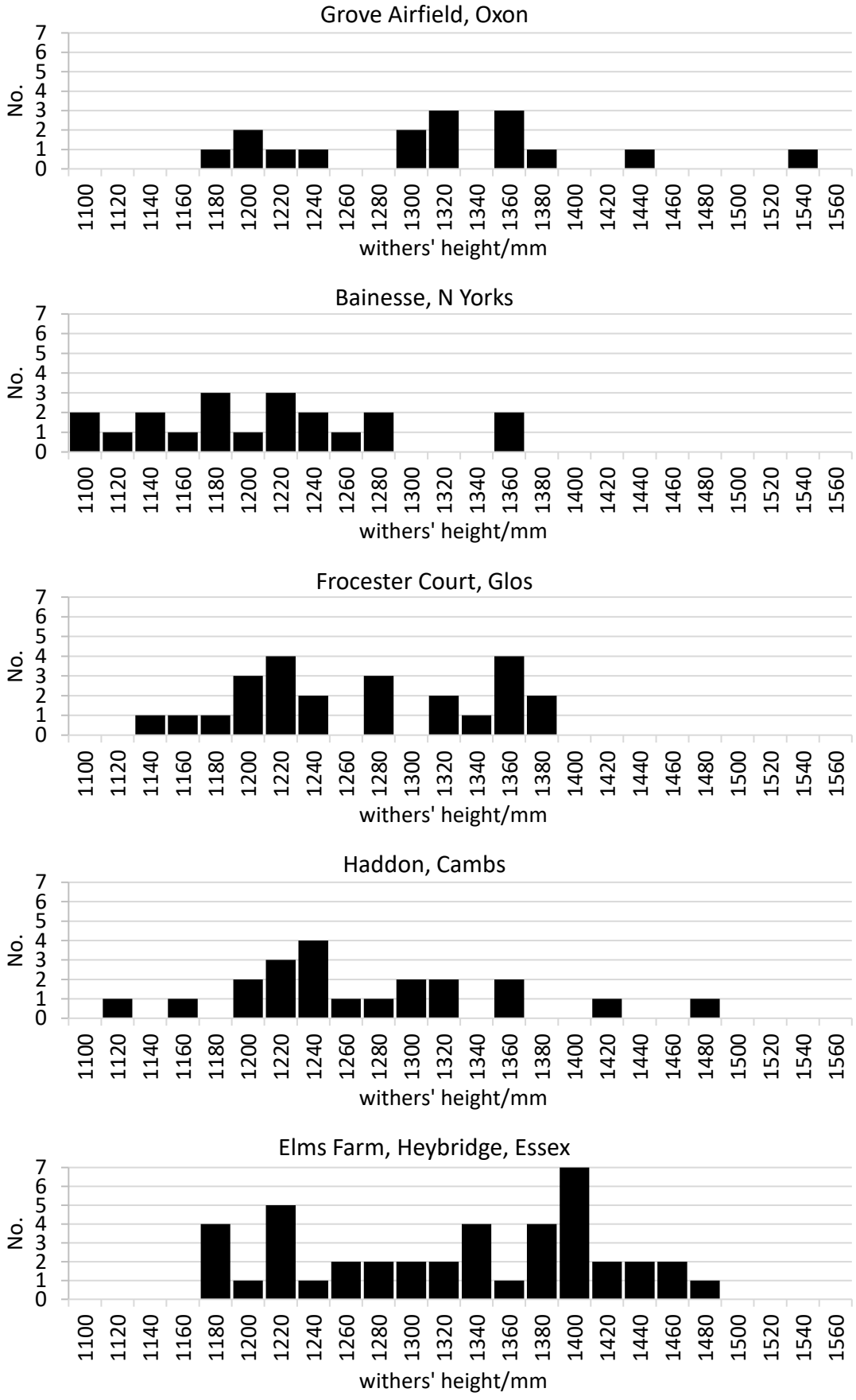
4.1.65 A total of 110 measurements were taken from horse bones, allowing for some detailed biometric analyses. This included measurements of 15 complete long bones, which

provided data for withers' heights estimations to be undertaken. Horse withers' range fairly widely from 1190mm to 1550mm (Graph 12). A small cluster of heights was observed at *c* 1190–1240mm with another slightly larger group at *c* 1300–1380mm. Two taller outliers were estimated at 1446mm and 1550mm. The lower end of the Grove Airfield range is above that estimated from Romano-British sites at Bainesse, North Yorkshire (Stallibrass 2002), Frocester Court, Gloucestershire (Noddle 2000), and Haddon, Cambridgeshire (Baxter 2003), where shorter equids of *c* 1100–1160mm have been identified. At the upper end of the range, some of the Grove Airfield horses appear to have been relatively tall. The two outlying withers' heights suggest animals taller than all those recorded from Bainesse and Frocester Court. Horses taller than 1400mm are generally rare at Romano-British sites (cf Allen 2017, 129, fig. 3.52). Only two specimens were calculated above this height at Haddon, both late Roman examples, while a larger proportion (mostly mid–late Roman) was recorded at Elms Farm, Heybridge (Albarella *et al*. 2008, 1838). Small numbers of horse bones with estimated withers' heights between 1400mm and 1500mm have been identified in Roman deposits at Winchester (Maltby 2010, 211–12) and Lincoln (Dobney *et al*. 1996, 124). To the author's knowledge, however, no Romano-British horse has been estimated to significantly exceed a shoulder height above 1500mm, making the Grove Airfield example potentially the tallest yet discovered from any site of this period.

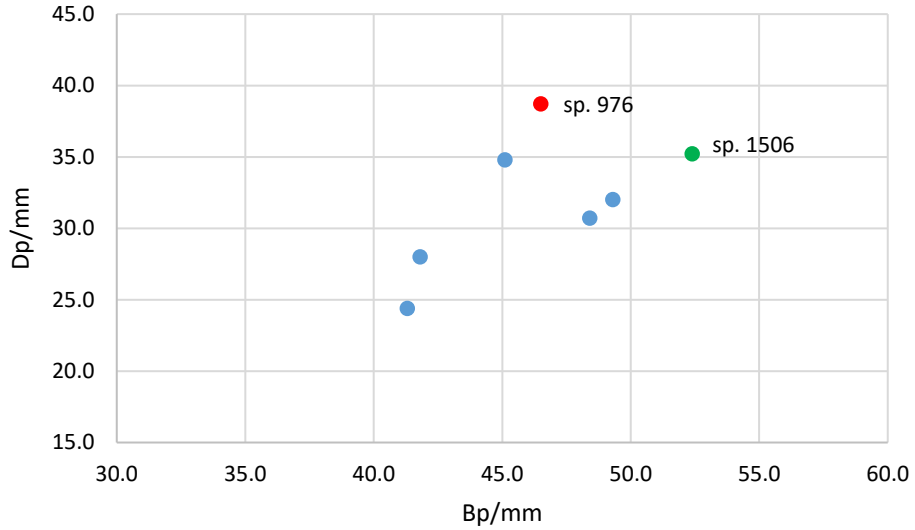
4.1.66 Analysis of the dimensions of the proximal metacarpals shows further variation in horse size (Graph 13). This variation becomes more apparent when shape indices of the metacarpals were explored, with two specimens that stand out as being unusual within the assemblage: sp. 976 (ditch 10017) and sp. 1506 (ditch 10062). Based on measurements of the distal ends, these two metacarpals appear to be relatively large but are not out of keeping with the other specimens. However, comparison of the distal-breadth/greatest length and shaft-breadth/greatest length ratios clearly separate sp. 1506 from all the other horse metacarpals (Graph 14). The values for this specimen are 24.5 (Bd/GL) and 16.5 (SD/GL), while the ranges for the other metacarpals equate to 20.6–22.5 and 13.8–15.0 respectively (Table A30, Appendix A). This essentially shows that metacarpal 1506 is significantly broader along the shaft and distal axes compared to its overall length. The shape index for the proximal end (Bp/GL) of this specimen further supports this with a value of 23.5. This is greater than nearly all the other metacarpals, which range 21.0–22.3. The only other specimen not within this narrow range is sp. 976, which has a much lower Bp/GL ratio of 18.3 and a SD/GL ratio of 11.5 (see below). Comparison of the metacarpal distal breadth/length ratios with withers' heights show that sp. 1506, whilst notably broader than the other specimens in the assemblage, measured within the height range of the group (Graph 15). This animal stood 1361mm at the shoulder and although relatively tall, it was not as tall as several other horses represented by metacarpals. Horse sp. 1506, however, was clearly a stockier individual, perhaps unrelated to the local breeding group.

4.1.67 Sp. 976 had a damaged distal end that could not be measured. However, analysis of the proximal breadth/length ratio allowed for sp. 976 to be included in comparisons of shape and withers' heights (Graph 16). As before, sp. 1506 separates from the main group of metacarpals, representing a broader but not necessarily taller individual. In contrast, sp. 976 is marked not only by the fact that it is significantly more slender than its counterparts, but also represents a much taller individual with a withers' height

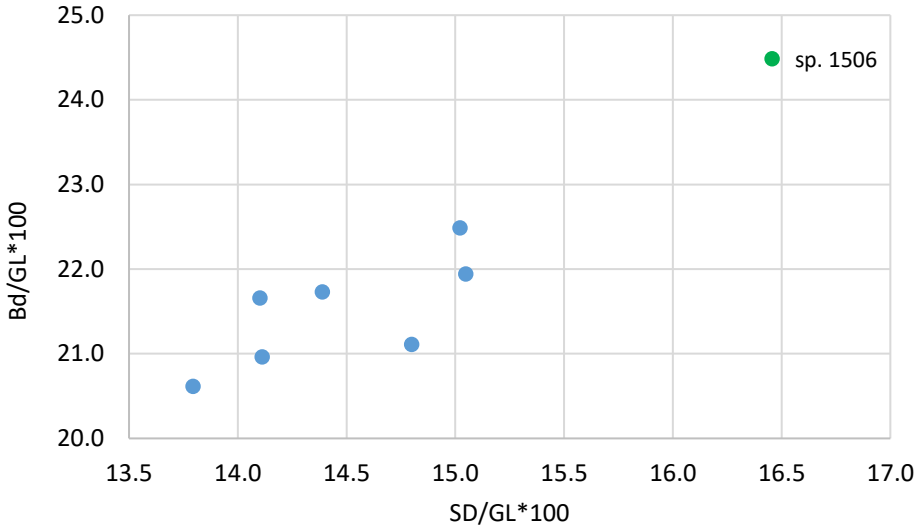
calculation of 1550mm (as mentioned above, this is exceptionally tall for Romano-British equids). Two possibilities may account for this variation, and these are not necessarily mutually exclusive. The first is that sp. 976 belonged to a genetically different group of equids, perhaps a mule which tend to be taller and more slender than horses, or that it was a gelding, essentially a male horse or mule that had been castrated fairly early in life (cf Johnstone 2004, 307–8, 367–9). Castration prolongs bone growth in long bones by delaying the fusion of the epiphyses, thus affecting size and shape by producing a taller, more slender animal.



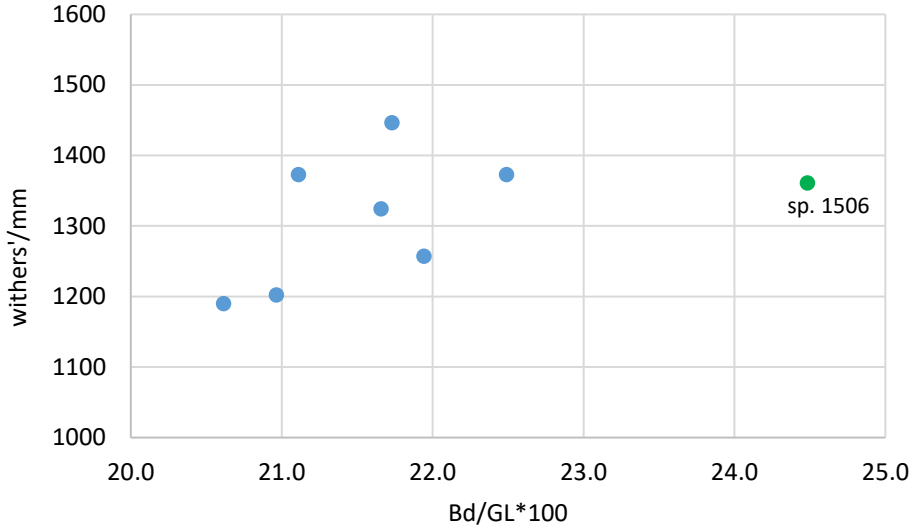
Graph 12: Distribution of equid withers' heights from selected Romano-British sites



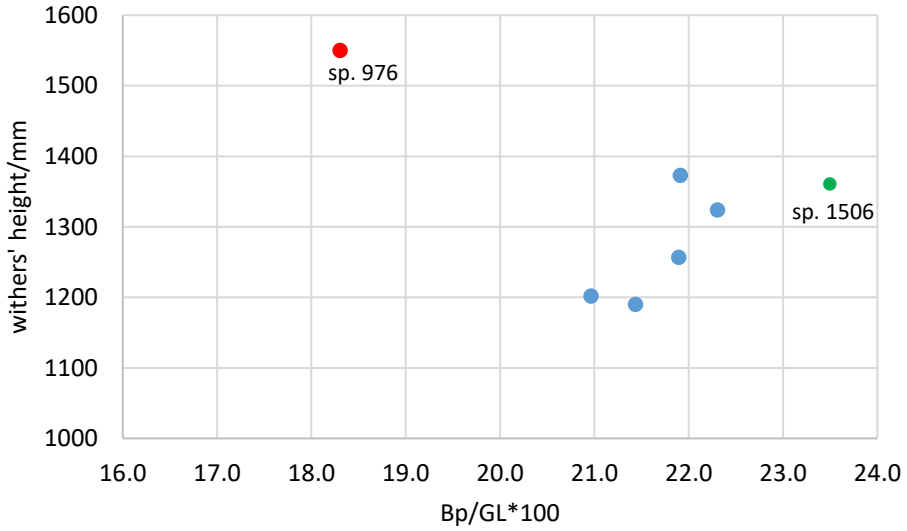
Graph 13: Equid metacarpal proximal widths vs proximal depths



Graph 14: Equid shape indices (metacarpal distal breadth/length vs shaft breadth/length ratios)



Graph 15: Equid withers' height vs shape index (metacarpal distal breadth/length ratio)



Graph 16: Equid withers' height vs shape index (metacarpal proximal breadth/length ratio)

Dogs/foxes

4.1.68 Bones of canids were recorded from nine features dating to the Romano-British phases. Most of these were domestic dogs, although the partial skeleton of a canid from Phase 4 ditch 10021 may have been from either a small dog or a fox, owing to the size and slender shape of the bones. Collections of dog bones also occurred in Phase 5 ditch 10019 and Phase 4 ditch 10021, although these were often recovered from different fills. While some may have belonged to the same animal within certain features, this was not always obvious and there were occasional signs that remains of multiple dogs were present together. For example, fill 4808 of ditch 10019 contained a left and right humerus, but they differed in size sufficiently to indicate that they derived from different animals. All the dog bones recorded were from skeletally mature animals.

Partial skeleton in ditch 10021

4.1.69 The partial skeleton of a small dog/fox in Phase 4 ditch 10021 represents the only clear sign of an articulating specimen of this taxon. This group consists of seven mostly or partially complete elements from the posterior end of the skeleton, including left and right pelves, the baculum, left and right femora, the right tibia (with a fused fibula) and the left fibula. The presence of the baculum (penis bone) demonstrates that the animal was male.

4.1.70 All the long bones and the pelvis had reached skeletal maturity, indicating that the animal was at least 1.5 years old or older based on the fusion timings of the femur and the tibia (cf Getty 1975, 1451). None of the bones exhibit any butchery marks.

4.1.71 The tibia had been fractured completely through the shaft closer to the distal end and had subsequently fully healed with the distal end of the bone pointing *c* 45 degrees in the anterior direction. The bone had clearly broken and had pressure applied to it as the dog continued to walk around on the injury, pushing the lower end of the bone forward and fusing in this position.

Butchery

4.1.72 Three dog bones were found with butchery marks. An ulna recovered from Phase 3 ditch 10060 has a very small cut on the medial side of the shaft, just below the articulating surface. A tibia from Phase 4 ditch 10021 exhibits an oblique cut on the anterior of the shaft between the centre and the distal end. A pelvis from Phase 6 construction cut 4699 displays several cuts on the lateral and dorsal sides of the ischium and on the ilio-pubic ridge. In each case, the butchered bones represent isolated specimens.

Pathology

4.1.73 Aside from the healed fracture observed on the tibia of the partial skeleton (see above), two dog bones display pathologies. A humerus from Phase 5 ditch 10019 had mild exostosis lipping around the proximal epiphysis, and a tibia from Phase 6 ditch 10013 exhibits abnormal bone growth all along the posterior of the shaft, possibly caused by bacterial infection, although this diagnosis is uncertain.

Size

4.1.74 Five long bones were complete enough to estimate withers' heights. These include two humeri from Phase 5 ditch 10019, a tibia from Phase 4 ditch 10021, a tibia from Phase 4 ditch 10032, and the femur from the articulated individual in Phase 4 ditch 10021 (see above). These produced shoulder heights of 503.4mm, 580.6mm, 458.4mm, 586.9mm and 361.2mm respectively, all falling within the range for Romano-British dogs (Harcourt 1974, 64–6; Clark 2012, 165–6).

Birds

4.1.75 Bird bones are generally rare within the assemblage but were most common in Phase 6 contexts. One passerine bone was found in a Phase 4 context (well 5035) and one chicken bone was recovered from Phase 5 ditch 10038.

4.1.76 A total of 12 chicken bones were found in Phase 6 contexts, mostly recovered from corndryer 10002. Some of these bones may have originally been in articulation, but they represent the remains of at least two birds, owing to the identification of two complete right femurs. All the chicken bones were from adult birds. A chicken humerus from ditch 10013 displays cut marks on the posterior of the shaft at the distal end.

4.1.77 The late Roman corndryer (10002) also produced a complete right femur from a wading bird, possibly a plover, and two duck bones, a humerus and an ulna, most likely from a teal (cf Cohen and Serjeantson 1996). A crow or rook ulna was identified from ditch 10011.

Discussion

4.1.78 Grove Airfield is located in the Upper Thames clay vales, which today is a landscape of fertile, undulating lowland suitable for arable and pastoral farming. The Romano-British settlement was fundamentally agricultural, and this is broadly represented in the range of livestock present. Cattle bones dominate the assemblage in terms of identified specimens. These increased in frequency relative to other livestock from the late Iron Age/early Roman phase (1st century AD) through to the middle Roman phase (2nd–3rd century), before decreasing again in the late Roman phase (3rd–4th century). The high proportion of cattle bones on Romano-British rural settlements is not unusual for the Upper Thames Valley. In this region, sites have consistently produced high proportions of cattle, increasing on average from 30–40% in the late Iron Age to 40–50% in the middle Roman period, and remaining high during the late Roman period (Allen 2017, 92–3). The Grove Airfield data, therefore, follows this broader regional pattern. Given the sampling strategies employed at Grove Airfield, variation in cattle frequencies between different phases may be biased by spatial distribution and recovery. However, given the good preservation and low levels of fragmentation in the assemblage, such biases are unlikely to be significant.

4.1.79 The discovery of bones from very young animals, including neonatal, indicates that cattle were being bred and reared at the site or close by. The cull pattern for cattle, gathered from the analysis of dental-wear and bone-development stages, indicates that while small numbers of young, ‘prime beef’ animals (eg 2–3 years old) were slaughtered, more were maintained to older ages. Epiphyseal-fusion data suggest that perhaps as many as nine out of ten cattle survived into their fourth year in Phases 3, 4 and 5, and while a slightly higher proportion were killed in their third year during Phase 6, a higher proportion also survived into their fourth year in this phase. The dental-wear data demonstrate the presence of cattle several years older than this, surviving up to around 8–10 years old and perhaps beyond. These results suggest the importance of cattle as working animals, with the presence of some very young perhaps pointing to dairying.

4.1.80 Sex data indicate that males were more common in the assemblage. These were estimated through calculations of the shape of cattle foot bones (metapodials), which are often quite broad and thick set, suggestive of bulls. A prominence of male cattle was also identified at Owslebury in Hampshire, using the same methods as employed here. Maltby (2010, 147–52) contrasted the Owslebury data with that from Roman Winchester, arguing that female cattle may have been exported from rural settlements

to urban markets after their use as calf and milk producers had ceased, while higher occurrences of males (steers) may point to their role on the plough. Grove Airfield was not near a major Roman urban centre, although its proximity to the roadside settlement at Wantage may have provided access to a local market. Here, excavations have produced faunal assemblages also dominated by cattle, although there is no clear evidence of a bias towards females (Maltby 1996, 40; 2001, 324).

4.1.81 The use of cattle on the plough at Grove Airfield is further suggested by the foot arthropathies observed in the assemblage, which point to excessive pressure being placed on the joints (cf De Cupere *et al*. 2000). Exostosis lipping and abnormal bone growth around the articular ends of several metapodials, including some with splayed condyles, are a clear indication of cattle pulling heavy loads over a significant period of time. One specimen has splayed condyles that had misaligned with the main shaft, indicating that considerable pressure had been applied before the epiphyses had fused. Therefore, it is likely that this animal had been heavily worked prior to reaching skeletal maturity, in this case prior to 24–30 months old (Getty 1975, 748). A similar pattern of cattle foot pathologies was recorded at Heybridge, Essex, where an interpretation of overburden from traction was also highlighted (Albarella *et al*. 2008, 1836).

4.1.82 Horses may have been kept for a variety of purposes. Ranging between 10% and 25% in each of the Romano-British phases, equid bones occurred on site in greater proportions than at most other contemporary rural sites, where percentages above 10% are rare (cf Allen 2017, 124–6). Biometric evidence suggests that some of the equids may not have been part of the local breeding herd and thus were imported or provide evidence of intensive breeding practices undertaken on site or nearby. Analysis of metacarpal sp. 1506 shows that it represented a comparatively stocky individual and although not taller than other horses at the site was statistically much broader. This individual may have been brought in specifically as a work animal or for riding. In contrast, metacarpal sp. 976 represents an exceptionally tall equid that was statistically much more slender than other horses at the site. It is possible that this bone derived from a mule, cross-bred from a male donkey and a female horse. Whether or not this was a horse or a mule, it is highly likely that the bone belonged a gelding. Geldings are male equids that have been castrated early in life, which causes the development of long bones to be prolonged. Castration of equids is undertaken to change the behaviour of the animal, essentially to make it calmer and easier to control, thus making them more suitable as work animals or when riding in groups. The presence of castrated equids in Romano-British assemblages has not received much attention from a zooarchaeological perspective, mostly owing to a lack of suitable material. However, it has been recently suggested that an increase in mules and/or geldings may at least partially explain the apparent increase in the frequency of taller equids in Britain during the later Roman period (ibid., 129–30). An increase in horse withers' heights at Heybridge, Essex, from the late Iron Age/early Roman group to the middle Roman group was argued to reflect selective breeding practices at the site, possibly with stock imported from the continent (Albarella *et al*. 2008, 1838, 1844).

4.1.83 The presence of bones from juvenile equids, including at least two animals less than a year old, suggests that the breeding of horses may have been undertaken at the site. Evidence for horse breeding at Romano-British rural settlements is generally rare, but

it is being increasingly recognised (Allen 2017, 126–7). Unlike cattle and sheep, animals that would have been widely reared in the countryside, horse breeding is much more likely to have been a specialised activity. There is evidence from contemporary literary sources that stud farms were set up across the empire specifically to produce animals for the army (Hyland 1990, 77; Johnstone 2008, 130). If so, larger farming estates may have benefitted from excess stock in these areas.

4.1.84 Some horse bones were found in articulation, where body parts had been placed in ditches. However, several specimens display butchery marks. Horse skins were probably being processed into hides, while a few elements may have been taken for bone working and/or split open to access bone marrow. Horse meat may have been occasionally consumed, and cut marks found on the pelvis, scapula and some limb bones certainly indicate meat filleting. Several cut and chop marks found on horse bones mirror those seen on cattle remains. However, there is otherwise little evidence for specialised/intensive carcass-processing practices (Maltby 2007). Even on cattle bones, cut marks made with knives are far more common than chops made by cleavers (a distinctive aspect of Roman urban butchery). Meat was more often removed from the bone before cooking, while dissection of the carcass appears to have been restricted to certain parts of the body. Roasting joints on the bone was perhaps less frequent, as indicated by the relative lack of burning in the assemblage, and there is comparatively little evidence of secondary butchery, particularly the splitting of long bones.

4.1.85 Sheep/goats and pigs appear to have been specifically raised for meat. This is suggested by the cull profiles for both animals, which suggest a focus on fairly young stock. Sheep/goats were consistently slaughtered in their third year and pigs were often killed in their second year. Such patterns suggest fairly intensive culling practices, and it is possible that some livestock were brought to the site from elsewhere, rather than being reared on site.

4.1.86 Dogs are less common than other domestic mammals in terms of specimen numbers. The presence of one articulated individual may be the remains of a small pet dog or working animal, although it could have been the skeleton of a fox that was killed and deposited. If this individual was a small dog, the fact that it had suffered from a severe leg break that had subsequently healed suggests that it may have been cared for, although the healing did occur with the bone almost at a right angle and it certainly was not reset properly. Nonetheless, a fox would probably not have survived such a serious break. Aside from this specimen, dog bones were more often found as isolated examples. It is interesting to note the discovery of three butchered dog bones, which might explain the fact that most canid remains were found disarticulated. It is possible that some dogs were being skinned for furs. However, while the marks identified may have been caused by skinning, they were more likely caused by disarticulation. It is possible that some dog meat was consumed, although the possibility of ritual practices such as animal sacrifice and body manipulation should be considered (eg Allen 2018, 193–5; De Grossi Mazzorin and Minniti 2006).

4.1.87 Birds are conspicuous by their general absence, expect for a few bones in later Roman contexts. The majority were found in Phase 6 corndryer 10002, indicating that they were deposited following the disuse of the structure, perhaps at the very end of the

Roman period. Aside from this feature, the lack of chicken bones is fairly unusual for a Romano-British rural settlement in southern England by the middle and late Roman periods (Maltby *et al.* 2018), although it is worth noting that chicken bones were also fairly rare in faunal assemblages recovered from nearby Wantage (Maltby 2001, 43). The good preservation of faunal material at Grove Airfield along with extensive environmental sampling suggests that the lack of bird bones cannot be fully attributed to recovery biases. One explanation is that the site was fairly specialised as a rural agricultural settlement, focusing on the breeding and rearing of cattle and horses alongside extensive arable production and processing, such that the husbandry of other animals was less of a concern. The presence of small numbers of hare, duck and wader bones, along with some fish, indicates that hunting, wildfowling and fishing were occasionally practised.

Conclusions

4.1.88 The animal bone assemblage has provided an important new faunal dataset for a Roman rural site in this region. It covers the full period of the Roman occupation and can be interrogated to understand change in animal exploitation over time. The good level of preservation and recovery means that the data presented here are relatively robust, particularly with regards to the biometric results. Overall, the remains indicate that the Grove Airfield settlement may have been engaged in some fairly intensive animal-management practices, perhaps linked to extensive arable farming and cereal processing. Specialised cattle and horse management, and possibly importation of improved stock, were potentially significant. The data can be usefully compared with future assemblages as they become excavated and analysed in due course.

4.2 Human remains *by Mark Gibson*

4.2.1 Three articulated skeletons (SKs 4170, 4179, 4517) and one unburnt disarticulated human bone (fill 4336, cut 4335, ditch group 10061) were recovered during the excavation. The articulated skeletons comprise two adults (SK 4170 and SK 4179) and one juvenile (SK 4517).

4.2.2 Skeleton 4170 lay in a discrete WNW–ESE aligned grave (cut 4169, group 4172). The grave of skeleton 4517 (group 10003) was aligned N–S and was cut into the top fill (4554) of phase 3 ditch 10060 (4553). Both were dated to the Roman period. A radiocarbon date was obtained for Skeleton 4179 and places it in the late Bronze Age (1004–900 cal BC; SUERC-94443, 95.4% confidence). Its grave (4181) was truncated by pit 4178.

4.2.3 The disarticulated bone was recovered from slump deposit 4336 at the base of a curvilinear boundary ditch 10061. Pottery dates this feature to the middle Bronze Age.

4.2.4 Osteological analysis was undertaken in accordance with published guidelines (Brickley and McKinley 2004; Mitchell and Brickley 2017). All skeletal remains, which had been cleaned prior to analysis, were examined macroscopically and digitally recorded. The information recorded for each skeleton includes preservation status, an inventory of the bones, joints and teeth, and where preservation allowed an estimation of ancestry, sex and age, the calculation of stature, other metrical data, scoring the presence and absence of non-metric traits, and a full record of pathological lesions observed.

Results

Phase 1: Middle Bronze Age

Disarticulated bone

4.2.5 The human bone from ditch 10061 (fill 4336) comprises 14 adjoining fragments of a right femur. It is approximately 90% complete, missing the distal metaphasis and joint. The bone is fragmented as a result of both modern and historic damage, evidenced by the variable condition of the fracture margins. Much of the surface of the bone has some degree of erosion, although it is only slight, with very limited penetration, consistent with grade 2, after McKinley (2004, 16).

4.2.6 The greater trochanter was still in the process of fusing to the femoral shaft. This indicates that the individual was an adolescent, aged between 14 and 18 years. It was not possible to estimate the sex of the skeleton.

4.2.7 No pathology or abnormality were present on the remains.

Phase 2: Late Bronze Age

Skeleton 4179

4.2.8 The burial position of skeleton 4179 in grave 4181 was tightly crouched with both legs hyper flexed and adjacent to the chest (Plate 2). The torso was prone, and the skull

was lying on its left side. The arms were by the sides, slightly flexed at the elbow with the hands under the pelvis.

4.2.9 The skeleton is approximately 80% complete, highly fragmented and with surface preservation that is consistent with McKinley's grade 2 (2004, 16).

4.2.10 The pubic symphysis does not survive on skeleton 4179, but a complete auricular surface is present, indicating that the individual was a young adult (18–25 years) at the time of death. Attritional wear on the molars of 4179 is consistent with this (Brothwell 1981; Miles 1963).

4.2.11 Due to the high level of fragmentation, the only sexually diagnostic traits to survive on the pelvis are the preauricular sulcus and the ilium auricular surface. Most skull features used to estimate sex were observable. Together, the pelvic and skull traits suggest the individual was probably female (?F).

4.2.12 There were no complete long bones with which to estimate the stature of skeleton 4179, but it was possible to calculate the platymeric and platycnemic indices as 76.47 and 61.1 respectively. This means that the femur is platymeric (index below 84.9, Brothwell 1981, 89), indicating a flat or broad, proximal femur shaft, and the tibia is platycnemic, indicating transverse flattening, which is often seen in hunter-gather groups and earlier man (ibid., 89).

4.2.13 The dentition of 4179 is nearly complete with 31 permanent teeth and 28 tooth positions present. The sockets for both maxillary third molars and both left mandibular premolars are absent. The only missing tooth is the left mandibular third molar, which had been lost ante-mortem. Seven teeth have slight calculus, whilst one tooth (right maxillary third molar) has a one moderately sized caries cavity.

4.2.14 The skeleton could be scored for cranial and post-cranial non-metric traits. On the right femur an Allen's fossa and exostosis in the trochanteric fossa are present. A hypotrochanteric fossa is present on the left femur. The anterior facet is absent on the right calcaneus, and it is of the double form on the left calcaneus. A pseudo facet for a calcaneus secondarius is present on the right calcaneus; however, the calcaneus secondarius itself was not recovered.

4.2.15 Pathology includes cribra orbitalia and Schmorl's nodes. Cribra orbitalia (CO) is present on both orbits. This condition is defined as thinning of the compact bone of the orbit roof (eye socket) and subsequent porosity due to the pressure from the expanding, underlying diploë (trabecular bone). Several hypotheses exist as to the aetiology of these changes, and one of these is iron deficiency anaemia (Stuart-Macadam 1982; 1991), a result of the body's attempt to produce more red blood cells in the marrow to compensate for the lack of iron (Roberts and Manchester 1995, 167). This may be caused by a diet deficient in iron, excessive blood loss through injury, chronic disease such as cancer, and parasitic infection of the gut (ibid., 166); however, more recently it has been suggested that CO may not be related to iron deficiency but may result from a lack of vitamin B12 and/or folic acid instead (Walker *et al.* 2009).

4.2.16 Schmorl's nodes are present on two thoracic and two lumbar vertebrae. Fragmentation of the vertebral bodies and arches precluded identification of the exact vertebrae involved.

Phase 4: Early Roman

Skeleton 4170

4.2.17 Skeleton 4170 was found within grave 4172 lying in a supine position with the right arm slightly flexed and the hand resting on the pelvis (Plate 7). The left arm was flexed with the hand on the chest and both legs were slightly flexed at the knees. Due to horizontal truncation most of the right tibia and fibula, and all the right foot, were missing.

4.2.18 The skeleton is 95% complete and moderately fragmented. Surface erosion is slight and patchy in keeping with McKinley's (2004, 16) grade 1. Degenerative changes on the auricular surface (Lovejoy *et al*. 1985) indicate that the individual was probably a mature adult, over 45 years of age (ibid.: Phase 6, 45–49 years). Fragmentation of both the skull and pelvis limited the number of diagnostic traits observable for estimating sex. The skeleton is probably female (?F).

4.2.19 Based on the maximum length of the left femur, it is estimated that the individual was 1.54m tall (5 feet 0.5 inches) with an error margin of 32.7mm. The platymeric and platycnemic indices of skeleton 4170 were calculated to be 89.7 (eurymeric) and 70 (eurycnemic) respectively (Brothwell 1981, 89).

4.2.20 Exostoses (bony spicules) were observed in the left trochanteric fossa and are the only post-cranial non-metric trait present. No cranial non-metric traits were observed.

4.2.21 Both maxillary and mandibular dentitions are present and had a total of 31 tooth positions and 18 permanent teeth. A total of ten teeth had been lost ante-mortem (maxillary left PM1, M1-3, maxillary right PM2, M1-2, mandibular left M1, Mandibular left M2 and M3) and three teeth had been lost post-mortem (maxillary left I2, mandibular left I2 and M3). The mandibular left first incisor and its socket are absent. Four teeth exhibited caries (maxillary right I2, C and M3, mandibular left M2) and two of these (the maxillary right canine and second incisor) have gross caries, meaning that the cavities had destroyed all of the tooth crowns. As a result of the carious lesions, the sockets of the right maxillary second incisor and third molar have periapical cavities. A third socket, that of the left mandibular second premolar, also has a periapical cavity, although it is most probably due to the exposure of the pulp cavity by heavy attritional wear. Both maxillary central incisors and both right mandibular incisors are present only as roots, having lost their crowns to attritional wear.

4.2.22 Spinal joint disease was observed in the form of Schmorl's nodes in the thoracic and lumbar spines. Schmorl's nodes are identified on dry bone as indentations on the vertebral end plates and are essentially 'pressure defects' arising from herniation of the intervertebral disc (Rogers and Waldron 1995, 27). Disc herniation is usually a gradual, age-related occurrence in adults, associated with weakening of the posterior longitudinal ligaments of the spine, but it may also occur in younger individuals as a result of activity or an injury, such as a jump or fall from height (Jurmain 1999, 165; Lovell 1997, 159). The inferior articulatory facets of the fifth lumbar vertebra and the superior articulatory facets of the first sacral vertebra have surface porosity, marginal osteophytes and joint contour change indicating spinal osteoarthritis (OA).

4.2.23 Multiple healed fractures are present on skeleton 4170 involving the right and left hands, left wrist and left tibia. Two distal phalanges of the right hand have comminuted fractures, including one at the distal end and one at the base. The left hand and wrist also exhibit multiple healed fractures involving a second proximal phalanx and a third intermediate phalanx. The base of the second proximal phalanx has a well healed chip fracture involving 75% of the articulatory surface. As a result the joint surface has shifted in a dorso-medial direction. The base of the third intermediate phalanx has a healed comminuted fracture with secondary OA. The ulna has a crush fracture to the styloid process. The left ulna is reduced in length compared with the right ulna, and there is secondary OA on the joint. Lastly, the anterior aspect of the lateral plateau of the left tibia has a depression fracture with some comminution, which had depressed the anterior surface approximately 5mm in comparison with the posterior aspect.

4.2.24 Extra-spinal OA is present on the left elbow. Eburnation was observed on the radial head and the capitulum.

4.2.25 Inflammation of the periostium (periostitis) is present on the medial and posterior aspects of the left tibial shafts. Periostitis may arise as a result of either a soft tissue infection extending to the bone, a more generalised disease process or by involvement from infection (osteitis or osteomyelitis) of the underlying bone (Aufderheide and Rodríguez-Martín 1998, 172). Thus, the lesion does not always relate to infection; trauma, neoplastic disease and haemorrhage may all produce periosteal new bone (ibid., 172). Periostitis is frequently observed on the tibia in archaeological material, as it is more easily affected by mild recurrent trauma than other bones in the skeleton (Roberts and Manchester 1995, 130).

4.2.26 Further inflammation is present on 4170 in the form of capillary lesions (type 3, after Lewis 2004) on the endocranial surface of a fragment of occipital bone. Endocranial lesions in juvenile skeletons are thought to result from inflammation or haemorrhage of the meninges, although the exact aetiology is a matter of debate. Trauma, infection and vitamin deficiencies, such as vitamin D deficiency, or rickets, are amongst the possibilities (Lewis 2004, 93; Brickley and Ives 2008, 103).

Skeleton 4517

4.2.27 Skeleton 4517 was found lying on the left side with both arms flexed so that the hands were by the face. Both legs were flexed at the knees.

4.2.28 Despite being highly fragmented, the skeleton is approximately 90% complete with grade 1 surface erosion after McKinley (2004, 16).

4.2.29 The remains are those of a young juvenile. The maximum lengths of a complete (reconstructed) left humerus (61mm) and femur (70mm) indicate that death had occurred around the time of birth (38–40 weeks gestation), classified here as neonate (birth–1 month). In accordance with accepted practice (Brickley 2004, 23), no attempt was made to estimate the sex of this juvenile skeleton.

4.2.30 Neither mandibular nor maxillary tooth sockets have survived, but the right maxillary central and lateral incisors are present. They are both only half complete, having still

been undergoing development at the time of death (consistent with the estimated age at death).

4.2.31 The only pathology present on 4517 are endocranial lesions, in the form of porosity (type 1, after Lewis 2004). They were observed on the internal surface of a fragment of occipital bone, which included the occipital eminence.

Summary and discussion

4.2.32 In summary, the assemblage comprises one unburnt disarticulated femur and three discrete, articulated skeletons. The disarticulated femur was recovered from the base of middle Bronze Age curvilinear boundary ditch 10061 (fill 4336) and was that of an adolescent (14–18 years), as indicated by the incomplete fusion of the greater trochanter. No pathological changes or modifications (for example, cut marks, animal scavenging, etc) were observed on this bone. Such modifications are often encountered on prehistoric disarticulated bones from ditches and pits, and have been interpreted as evidence of excarnation and/or other mortuary processing activities (Carr and Knüsel 1997).

4.2.33 Of the articulated skeletons, skeleton 4179 was an adult female dated to the late Bronze Age. The preservation was fair: the bone surface had undergone limited post-mortem erosion, but it is highly fragmented. Pathology includes dental disease (caries, calculus and ante-mortem tooth loss), cribra orbitalia and Schmorl's nodes, all of which are typical with burials of this period.

4.2.34 The remaining two skeletons, one adult female (4170) and one juvenile (4517), have been dated to the Roman period. The preservation of these skeletons was also fair: there is moderate to high fragmentation of the bones with limited post-mortem erosion of the surfaces. Observed pathology includes dental disease (ante-mortem tooth loss, caries and periapical cavities), osteoarthritis, endocranial lesions and healed trauma.

4.2.35 Interpretation of this assemblage is limited because of its small size. In general, the range and type of disease on the articulated skeletons are consistent with those seen among Bronze Age and Roman burials from the region and nationally (Roberts and Cox 2003). The presence of multiple healed fractures on skeleton 4170, however, is uncommon. The fractures, which involved both hands, the left wrist and the left tibia, show the same degree of healing and remodelling, suggesting that they had all occurred at the same time. The fractures to the hands only affected the phalanges and are all interarticular chip fractures. Interarticular chip fractures are caused by axial loading along the finger as well as angulation and possible subluxation (Galloway 1999, 240–2) rather than by direct blows to the finger. Similarly, axial loading or impact can cause the type of crush fracture, observed on the left ulna styloid process (ibid., 229). Furthermore, the left tibia comminuted lateral plateau fracture is consistent with the tibia having been driven into the femur whilst the knee was fully extended with some considerable force (ibid., 275). In modern populations this type of fracture is frequently caused by car accidents and falls from height (ibid.).

4.2.36 Thus, the type and pattern of fractures support the interpretation that they were sustained as the result of the same incident. Considered together, they suggest that

mature adult female 4170 had fallen from a height. She had landed with her left leg fully extended, causing the lateral tibia plateau to fracture. Fractures occurred in the phalanges and left wrist when she put her hands down to brace the fall. Despite the extent of their injuries, healing and remodelling indicate that the individual survived the fall.

4.3 Marine shell *by Rebecca Nicholson*

4.3.1 The assemblage of marine shell comprises 39 individual items weighing 677g in total. All are valves of European flat oyster (*Ostrea edulis* L.) and, with the exception of three shells from two soil samples, the assemblage was recovered by hand during excavation. All the shells came from contexts that have been dated as Roman, with the greatest quantity collected from mid 3rd to 4th-century (Phase 6) contexts.

4.3.2 Oysters were identified as either right or left valves, and only fragments that included the hinge were counted unless only body fragments were present in the context, in which case a note of this was made. Evidence of parasitic infestations, encrustations and other modifications were recorded using the method and illustrations provided by Winder (2011).

4.3.3 Although the valves are generally well preserved, any biometrical results would be difficult to interpret as no context produced more than one or two measurable left valves. Consequently, the shells have not been measured, but notes have been made of the general size, shape, hinge shape and growth pattern. Hinge shape was noted as either rounded (the classic broad-based triangular shape typical of *O. edulis*), elongated (straight-sided hinges), angled (growing at an angle from the main body of the shell) or irregular (hinges that appeared to change shape part way through the growth of the oyster, often changing from rounded to elongated or angled).

Results and discussion

4.3.4 Generally, the shell is in good condition, and many of the oyster valves are complete, or largely so. Most of the oysters are of moderate size and the typical rounded shape for this species. Several shells are elongated or irregularly shaped, and two shells have flattened heels, probably from growth on a hard substrate. The hinges vary from relatively small and rounded to elongate and, in a few examples, angled. Oysters living in sheltered locations such as harbours or lagoons tend to have small regular hinges, while those living in faster turbulent currents offshore tending to grow broader, stronger hinges (Campbell 2010). There is no obvious distinction between phases in terms of either oyster valve shape or size, but the number of valves in Phases 4 and 5 is particularly small, and hand collection is likely to have skewed results in favour of larger specimens (Table 10). It is not clear from this small sample whether the oysters were collected from wild or managed beds, but there is no clear evidence of crowding. One valve has clear opening notches, and another has faint cuts from scraping meat from the shell. In both cases this suggests the shellfish were opened while alive.

4.3.5 One valve, from corndryer construction fill 4452, exhibits tunnelling to the inside of the shell typical of the polychaete bristleworm worm (*Polydora hoplura Claparède*), which form u-shaped tunnels in the shell and is now a serious pest of cultivated oyster beds worldwide. *Polydora hoplura* is most common in oysters living on muddy ground,

such as that found in creeks and inlets where warm still conditions prevail. It is thought that, as the *P. hoplura* species now has a distribution in the UK restricted to south-western coasts, oysters with evidence of this worm may have been traded from this area (Winder 1985), but with few examples this suggestion is very tentative. Several shells from seven contexts exhibited evidence of tunnelling to the outside of the valve likely to have been caused by the related but smaller marine polychaete worm (*Polydora ciliata* Johnston), which is more widespread and prevalent on hard, sand or clay ground particularly in shallow water (Winder 1980). Evidence for growth in an estuarine or creek environment is scant: two shells have some evidence of internal chalky deposits that may relate to this (Orton *et al*. 1927).

4.3.6 The presence of oysters from contexts dating from the mid 1st–2nd century AD (Phase 4) to the mid 3rd–4th century AD (Phase 6) at this site demonstrates a trade in this foodstuff from the coast as far inland as Grove throughout the Roman period. The small number of shells may indicate that oysters were not eaten regularly, though the shells are relatively large and robust. Even though oysters can survive out of water for over a week if carefully packed and kept cool and moist (Winder 1985), they are a relatively heavy/bulky and perishable item, and it is likely that transport would have been expensive. Shellfish are rarely recovered from inland sites pre-dating the Roman period, and in this regard the absence of shells from contexts of Phases 1, 2 and 3 is unsurprising. It seems likely that the eating of oysters is an indication of Romanisation, if not of the presence of Romans then their influence on the local rural population.

Table 10: Number of oyster (Ostrea edulis L.) valves by context and phase

Context no.	Sample no.	Phase 4 (AD70–150)	Phase 5 (AD 150–250)	Phase 6 (AD 250–400)
4035			2	
4105				1
4139				1
4206			2	
4261				1
4292				1
4303			1	
4348				1
4371				3
4373				2
4376				1
4442				1
4452				12
4603		1		
4614				1
4923				1
4980		3		
4980	4023	2		
5071		1		
5140	4028	1		
Total		*8*	*5*	*26*

4.4 Egg shell *by Rebecca Nicholson*

4.4.1 Small fragments of avian eggshell were recovered from the dried residues of bulk soil samples 4019 and 4020, both of which were collected from charcoal-rich deposits (4370 and 4375 respectively) found within corndryer 10002. In each case 1g of eggshell was extracted. The fragments are cream–white in colour and are likely to be from domestic chicken or duck, although further attempts at identification have not been undertaken.

4.5 Land and freshwater mollusca *by Elizabeth C. Stafford*

Introduction and methodology

4.5.1 Following an initial stage of assessment, five of the bulk flot samples processed primarily for the recovery of charred plant remains were submitted for analysis of land and freshwater molluscs. The selected samples were collected from a middle Bronze Age ditch and a series of Roman features including two ditches, a pit and a feature interpreted as a possible waterhole.

4.5.2 The bulk samples were primarily processed for the recovery of charred plant remains using a modified Siraf-type water flotation machine to 250µm. No samples were collected on site specifically for the recovery of land and freshwater molluscs. The flots derived from the processing of 36–40 litres of sediment, and no fine residues were retained specifically for mollusc shell. Flots were sorted using a low power (x10–x40) binocular microscope for identifiable whole shells and apical fragments, and counted according to species. Identifications were made with the aid of a modern reference collection. Nomenclature follows Anderson (2005) and habitat information mainly from Evans (1972) and Sparks (1961), with supporting information from Boycott (1936), Davies (2008), Kerney (1999) and Kerney and Cameron (1979). The results are presented in tabular format in Table 11.

4.5.3 Broad percentage frequencies have been calculated for the main habitat groups, although caution is exercised when interpreting minor fluctuations in individual species abundance given the absence of shells from the fine residues, together with the rather low shell abundance in three of the five samples examined (<100 shells per sample). It should also be noted that each bulk sample was recovered by context/fill number and incorporates a considerable depth of the feature profiles, and only one context was examined from five separate interventions.

Results

4.5.4 Shell abundance varied between the five samples examined. Two samples, 4010 from ditch 10019 and 4016 from hollow 4513, produced assemblages of >100 individuals. Of the remaining samples, 4014 and 4028, collected from ditches 10061 and 10024 respectively, produced smaller assemblages of 58 and 77 individuals, respectively. The assemblage from sample 4011, from pit/waterhole 4256, produced a very small assemblage of only 20 shells. Shell preservation has been calculated in the order of 1–9 shells/litre, which overall is very low. However, the shell was generally in good condition with little pitting or fragmentation.

4.5.5 Overall, the assemblages were dominated by terrestrial molluscs at 80–100% of the total shell counts. The majority of the terrestrial component comprises open-country taxa, mainly grass snails of the family Valloniidae. Of those specimens identified beyond the two-whorl stage, *Vallonia excentrica* and *Vallonia costata* are most numerous, with adult shells of *Vallonia pulchella* occurring only sporadically. Occasional specimens of other open-country species include *Helicella itala*, *Pupilla muscorum* and *Vertigo pygmaea*. The latter, *V. pygmaea*, was quite numerous in sample 4016 from Roman hollow 4513. Second to the Valloniidae, the next most abundant species is the catholic snail *Trochulus hispidus*. Other catholic species include *Cochlicopa* sp. and *Cepea/Arianta* sp. in much lower numbers. Shade-demanding species occurred in all samples apart from sample 4011 from pit/waterhole 4256, albeit in very low numbers and mainly comprise the zonitids *Oxychilus cellarius*, *Aegopinella nitidula* and *Vitrea* sp. Other species present as occasional specimens include *Punctum pygmaeum*, *Carychium* sp. and a single Clausiliidae fragment.

4.5.6 Freshwater taxa were present in three of the five samples. From sample 4016 from hollow 4513 and sample 4028 from ditch 10021, these are restricted to a small number (3–8 individuals) of *Galba truncatula*. However, in sample 4010 from ditch 10019, 73 individuals were recorded (20% of the total shell count). Here *G. truncatula* was joined by *Radix balthica* and *Anisus leucostoma*.

Interpretation and Discussion

4.5.7 Overall, the terrestrial assemblages appear broadly similar and are dominated by open-country taxa. The species composition, dominated by Valloniidae grass snails, occurring alongside other xerophile species such as *Helicella itala*, *Pupilla muscorum* and *Vertigo pygmaea* suggests a stable and established cleared landscape, largely free of shade. There is little indication of woodland or scrub in the immediate vicinity of the features. Of the small shade-demanding component present in the samples, the preponderance of the zonitids, which tend to have more catholic affinities, along with larger numbers of the catholic species *Trochulus hispidus*, may suggest ground cover that was not heavily grazed, growing either within the sheltered micro-environment of the features as they infilled and/or around the feature edges (Robinson 1988). However, Roman hollow 4513 is notable for the higher numbers of the xerophile snail *Vertigo pygmaea* in sample 4016. This, alongside the dominance of *Vallonia excentrica* over *Vallonia costata*, may suggest the fill derived from soil formed under established, perhaps more intensively grazed, short-sward grassland in the wider area.

4.5.8 No freshwater taxa were identified in the middle Bronze Age ditch 10061, suggesting this feature remained relatively dry during infilling. Three of the Roman features produced freshwater taxa, albeit confined to only three species. No freshwater molluscs were found to be preserved in the feature potentially identified as a waterhole (4256). Of the Roman features, *Galba truncatula* was occasionally present in samples 4016 from hollow 4513 and 4028 from ditch 10021. In sample 4010 from ditch 10019, it was more numerous where it was also joined by joined by *Anisus leucostoma*. Both species are included in Sparks' Slum Group 1 (Sparks 1961), comprising individuals tolerant of poor and stagnant water conditions, often subject to desiccation and seasonal drying. This suggests damp conditions for at least part of

the year within or in the vicinity of these features, especially ditch 10019, although this is unlikely to represent a significant depth of water for long periods at a time. *Radix Balthica* (the wandering snail) from Sparks' Catholic Group 2 (ibid.), was also occasionally present in ditch 10019. This is an amphibious species that has a propensity to colonise across terrestrial habitats, being able to survive for short periods out of water (O'Connor 2017, 136). It can also find its way into features through dumping of material from an adjacent riverine environment, eg alluvial clay, reeds or river water, or through accidental transport by mammals, birds or amphibians.

Table 11: Molluscan assemblage

Sample no.	4014	4016	4028	4010	4011
Context no.	4500	4513	5140	4213	4257
Feature type	Fill of ditch	Fill of hollow	Fill of ditch	Fill of ditch	Fill of waterhole
Feature group	10061		10021	10019	
Date	1: MBA	4: M1-E2C	4: M1-E2C	5: M2-E3C	6: M3-4C
Sample vol. (L)	36	40	40	40	37
Shells/litre	2	4	2	9	1
MNI total shells	58	141	77	366	20
% Terrestrial	100	98	90	80	100
% Freshwater	0	2	10	20	0
TAXA					
TERRESTRIAL					
Shade-demanding species					
Carychium sp.		2			
Clausiliidae				1	
Aegopinella nitidula (Draparnaud 1805)	2				
Oxychilus cellarius (O. F. Müller 1774)	3		3	12	
Vitrea sp.	1		2		
Punctum pygmaeum (Draparnaud 1801)	2				
Catholic species					
Cochlicopa sp.		1	4	5	
Cepaea/Arianta sp.				3	
Trochulus hispidus (Linnaeus 1758)	12	27	25	61	8
Open-country species					
Helicella itala itala (Linnaeus 1758)	1	1		3	
Pupilla muscorum (Linnaeus 1758)		4	1	8	
Valloniidae	10	43	16	134	6
Vallonia costata (O. F. Müller 1774)	4	2	13	45	1
Vallonia excentrica (Sterki 1893)	22	15	5	16	2
Vallonia pulchella (O. F. Müller 1774)	1	1		2	2
Vertigo pygmaea (Draparnaud 1801)		42		3	1
MNI terrestrial	58	138	69	293	20
% Shade-demanding	14	1	7	4	0
% Catholic	21	20	42	24	40
% Open-country	66	78	51	72	60
FRESHWATER					
Galba truncatula (O. F.Müller 1774)		3	8	45	
Radix balthica (Linnaeus 1758)				2	
Anisus leucostoma (Millet 1813)				26	
MNI freshwater	0	3	8	73	0

4.6 Charred plant remains *by Sharon Cook*

4.6.1 Eighteen bulk samples ranging in size (1–40 litres) and representing the range of feature types and phases across the excavated area were processed primarily for the retrieval of charred plant remains, small bones and artefacts. After initial assessment, ten flots from features dating to the middle Bronze Age and Roman period were selected for analysis based on the quantity and quality of the charred remains in order to provide some temporal and spatial coverage.

4.6.2 The bulk soil samples were processed in their entirety using a modified Siraf-type water flotation machine to 250µm (flot) and 500µm mesh (residue). The residue fractions were sorted by eye and all bone and artefacts removed, while the flot material was sorted using a low power (x10) binocular microscope to extract cereal grains and chaff, smaller seeds and other quantifiable remains.

4.6.3 Identifications were carried out using standard morphological criteria for the cereals (Jacomet 2006) and with reference to both the *Digital seed atlas of the Netherlands* (Cappers *et al*. 2012) and *A manual for the identification of plant seeds and fruit* Cappers and Bekker 2013) for identification of wild plant remains, as well as comparison with modern reference material. Classification and nomenclature of plant material follows Stace (2010). Quantification of remains given in Table 12 were calculated based on the following criteria: cereal grains and the seeds of wild plants were only quantified for items of which more than half was observed, meaning that all cereal and seed counts may be used to reach an MNI (Minimum Number of Individuals); seeds of vetches (*Vicia/Lathyrus*) are the exception in that their easily recognisable structures enabled fragments to be quantified, although these are always recorded as such. For nutshell fragments the count is for all observed fragments, meaning these figures are not suitable for use in calculating MNI. Chaff has been divided into quantifiable remains, ie glume bases and spikelet forks, and non-quantifiable remains, ie fragments. Awns have been calculated in terms of abundance only, with this categorised as: rare, occasional, common and abundant. Goosefoot (*Chenopodium* sp.) seeds are extremely common on this site but when broken the majority of them appear not to have been charred; many still have fragments of uncharred pericarp attached. For the quantification of these seeds, only those that could be determined to have been definitely charred have been counted.

The assemblages

4.6.4 The condition of the charred material on the site was variable, with a moderate amount of clinkering and fragmentation in features from across the site, although particularly in the samples within and surrounding the corndryer.

4.6.5 As a result of this clinkering and fragmentation, many cereal grains could not be formally identified, and those grains listed in Table 12 as indeterminate are generally too badly damaged to identify to species, although the general appearance of the majority is consistent with wheat (*Triticum* sp.). The wheat grains that have been firmly identified are generally large and oval, with the appearance of spelt wheat (*Triticum spelta*). There is evidence in the form of both detached coleoptiles and coleoptile-scarred cereal grains suggestive of some sprouting of the crop.

4.6.6 Rare hulled barley (*Hordeum vulgare*) grains are present, although these are mainly within the earlier dated features. This, however, is likely to be related to the fact that many of the later samples came from the corndryer and its associated deposits, as well as to the paucity of charred remains within other features. It is therefore unclear whether barley ceased to be cultivated and utilised at the site after the 2nd century AD.

4.6.7 Oats (*Avena* sp.) and oat/brome (*Avena/Bromus*) are present in only small quantities through all periods. Occasional grains appear to have collapsed and perhaps significantly these are all within deposits that also contain collapsed or coleoptile scarred wheat grains.

4.6.8 Cereal chaff is not present within the Bronze Age ditch, although it does appear across the site in small quantities within all other sampled features except for the postholes. Within the corndryer and rake-out pits cereal chaff is extremely abundant, particularly glume base fragments from spelt wheat. A few small rachis fragments that may be from a free-threshing wheat are present but in insignificant numbers, too few to indicate there was meaningful cultivation of this cereal. Samples relating to the corndryer also include a few oat awn fragments and the silicified fragments of wheat awns.

4.6.9 Uncharred seeds are present in all samples in very small quantities, with the exception of those from the fills of well 5035, which were waterlogged and are reported separately (see below). In most features the uncharred seeds are goosefoots (*Chenopodium* sp.) with a modern appearance; these have not been quantified.

Phase 1: Middle Bronze Age

Ditch 10061 – sample 4014

4.6.10 Sample 4014 is the only sample that could be positively dated to the middle Bronze Age. Unfortunately, charred material was generally not abundant, and the sample yielded only a few cereal grains, one of which is consistent with wheat. A few small unidentified nutshell fragments and some fragments of sloe (*Prunus spinosa*) stone may possibly be related to human consumption, although they could also have derived from the burning of hazel and blackthorn wood.

Phase 4: Early Roman

Hollow 4513 – sample 4016

4.6.11 Most features from this period produced few charred plant remains. Sample 4016 collected from hollow 4513, which contained the richest assemblage from this phase, has a mixed cereal assemblage that includes both hulled barley and glume wheat (*Triticum dicoccum/spelta*), together with small quantities of oat and oat/brome.

4.6.12 Small quantities of cereal chaff, mainly glume bases and associated fragments, are generally not sufficiently preserved for a firm identification, but all those that are identifiable are spelt wheat.

4.6.13 The wild plant remains largely comprise seeds from those species that are generally found on disturbed or arable land, such as docks (*Rumex* sp.), vetches (*Vicia/Lathyrus*), grasses (Poaceae), cleavers (*Galium* sp.) and mayweed (*Tripleurospermum* sp.). A single fragment of indeterminate nutshell and a small fragment of a possibly cultivated legume hint at the use of other resources.

Well 5035 – samples 4023 and 4025

4.6.14 Samples 4023 and 4025 derived from fills of well 5035 that represent the middle/upper silting deposits, possibly after the feature had ceased to be in use. These samples contained the largest quantities of charred material from this feature. Cereal grain is present in smaller quantities than within hollow 4513, but the samples are broadly similar in composition with small quantities of glume wheat and barley, together with occasional oat and oat/brome.

4.6.15 Chaff fragments, particularly glume bases, are well preserved with most identifiable as spelt wheat. A few small rachis fragments may be from a free-threshing variety of wheat (*Triticum aestivum/turgidum*), but this identification is tentative. Rare coleoptiles show at least some cereal grains had begun to sprout; however, given the small number it is perhaps more likely that these represent the burning of spoilt grain rather than deliberate sprouting associated with malting.

4.6.16 A single charred fragment of hazelnut is present within sample 4025. The wild flora is broadly similar to that from hollow 4513 with a slight increase in those plants that have a preference for damp ground, such as sedges (*Carex* sp.) and rushes (*Juncus* sp.; *Eleocharis* sp.), perhaps indicating that marginal ground was under cultivation.

4.6.17 Both samples also include abundant quantities of uncharred waterlogged material, and it is difficult to determine whether a few seeds are charred or not. These are quantified in Table 12 and are mainly chickweeds (*Stellaria* sp.).

Phase 6: Late Roman

Corndryer 10002

4.6.18 Most samples collected that date to this period are associated with corndryer 10002 situated at the southern end of the site. Samples 4013, 4017, 4018, 4019, 4020 and 4021 all originated within either the corndryer structure itself or the associated rake-out pits.

The rake-out pits – samples 4013 and 4017

4.6.19 The rake-out pits are rich in charred cereal remains, the vast majority of which appear to be from glume wheats. The condition of the grain is variable with very few well-preserved examples and many clinkered and fragmented ones. Some grains can be seen to have completely collapsed, which is usually a result of sprouting, and a few better-preserved examples still have sprouted coleoptiles attached.

4.6.20 Cereal chaff is abundant within the assemblage and includes some large and well-preserved glume bases, together with thousands of small fragments from the glumes themselves, as well as oat and wheat awns (the latter largely silicified). Detached

coleoptiles are present in large numbers and are generally well developed and of similar size, although in some cases fragmentary.

4.6.21 Of the wild plant seeds, most are from species commonly found on disturbed ground or the margins of arable field; however, these samples also generally contain a larger number of wild plant seeds compared to other samples from this site and include a number of species that do not appear elsewhere on the site. There is a marked increase in the quantity of grass seeds, especially fescues and ryegrasses (many of those quantified as medium grass seeds are of a similar type but too damaged to identify with certainty), and the presence of a small number of yellow rattle seeds (*Rhinanthus minor*) is indicative of a grassland environment.

The structural samples – samples 4018, 4021, 4019 and 4020

4.6.22 Samples 4018 and 4021 were collected from the chambers of the corndryer, while 4019 and 4020 were from the associated flues. The contents of these samples are very similar to those from the rake-out pits in terms of the charred cereal remains, but charcoal is rare inside the corndryer, whilst being fairly common in the pits.

4.6.23 Chaff fragments are extremely common, which may be an indication that at least some of the material had been present for more than one firing. The poor condition of much of the grain may also indicate that it had been charred more than once, although it is possible that the condition is a result of part-germinated grains collapsing and burning more quickly resulting in greater external damage. While only a few grains could be seen to have sprouted, the presence of quantities of coleoptiles indicates that many sprouted grains had passed through the corndryer.

4.6.24 The most obvious difference within the corndryer samples when compared to those from the rake-out pits is in the quantity of wild plant taxa. While seeds have been found within both the corndryer and the pits, the pits have a greater quantity and diversity of species. In addition, the volume and size of charcoal fragments varies considerably between the pits and the corndryer itself. This may be a result of cleaning the corndryer after use, with the larger charcoal fragments and the majority of other larger charred fragments being transferred to the pits, while only smaller fragments remained within. Alternatively, the pits may have contained material from more than one process or place of origin.

Discussion

4.6.25 The Grove Airfield excavation is one of a number that have taken place in the vicinity of Grove and Wantage over the last few years. Of these, the excavations at Monks Farm, Williams Holdings, and land west of Station Road, Grove (Brady *et al.* 2017; in prep.), and at Crab Hill, Wantage (Allen *et al*. in prep.) are very comparable in terms of both archaeological features and charred plant remains.

Bronze Age

4.6.26 Few Bronze Age features were identified at this site, and the majority are shallow boundary ditches indicating that this was unlikely to have been an area of intensive settlement activity. The archaeobotanical material is sparse, comprising only a small

quantity of charcoal, rare charred cereal grain, nutshell and a small quantity of charred seeds from uncultivated plants.

4.6.27 The lack of cereal chaff, which would usually be used to corroborate the identification of the cereal grains, as well as the poor condition of most grains, means that these cannot be conclusively identified to species. Their general shape and appearance, however, are very similar to those from the Roman features, suggesting that these grains may have been intrusive.

4.6.28 The presence of the fragments of sloe (blackthorn), as well as other similar-sized unidentified fragments, is interesting as sloe is edible (although somewhat tart to the modern palate) so these could represent harvested and consumed fruits. In contrast, blackthorn wood burns slowly with a good heat and little smoke (Scout Association 1999) and therefore may have been a potential firewood source. It is possible that the charred fruit stone fragments and the nutshell may have been inadvertently burnt along with the firewood.

Roman

4.6.29 Archaeobotanical assemblages for the Iron Age and Roman periods on British rural sites are typically charred and are often dominated by the by-products of grain dehusking and cleaning, which are deliberately burnt as either fuel or waste (van der Veen 2016, 809). This generally results in assemblages of chaff and weed seeds, with only little grain. The analysed assemblages from this site are typical of the period, with occasional cereal grains and larger quantities of chaff present within most sampled features.

4.6.30 All identifiable chaff has been identified as spelt wheat, and the general shape and size of most grains is appropriate for this identification. Spelt wheat is commonly found in samples from the late Iron Age and Roman periods across the majority of Britain, spelt having largely replaced emmer (*Triticum dicoccum*) during the early to middle Iron Age because of its ability to produce higher yields on poorer fertility soil (van der Veen 1992, 145–6; Lodwick 2017, 17–18). Spelt requires less labour in the form of tillage and manuring (van der Veen and O'Connor 1998, 131–3) and is suitable for less intensive farming.

4.6.31 It is generally accepted that in the Iron Age glumed wheats were customarily stored in the glume and processed as and when needed, resulting in a generalised but reasonably low-level distribution of crop-related charred material across areas of occupation, accompanied by seeds from wild plants growing alongside and within the crop (Stevens 2003, 62–3; van der Veen 2016, 809). This pattern of storage and later processing has also been assumed for the Roman period (Stevens 2003, 71; Allen and Lodwick 2017, 149), although expansion of farming in many areas and the introduction of possible large-scale or communal processing (shown by the development of corndryers) mean that volumes of chaff are often much larger in Roman features. While free-threshing wheats have been identified in both the Iron Age and Roman periods in Britain, they have generally been found to be a minor crop.

4.6.32 Barley is usually considered to be a secondary crop largely because it is less commonly found within prehistoric and Roman assemblages (Lodwick 2017, 18–19). There has

been some debate as to whether barley was used for food or fodder, but its common occurrence in the British Isles probably suggests that it was sometimes a main food crop; barley bran fragments have been recorded in human faecal waste from sites around Hadrian's Wall, for example (ibid.). While only present within the earlier Roman features on this site, it is unclear if this represents a change in crop cultivation or is only a consequence of the later period samples being either relatively poor in charred remains or related to the corndryer structure in the south of the site. Well 5135 was located in the north of the site and hollow 4513 is situated more centrally, so both features are distant from the corndryer both spatially and temporally. As mentioned above, barley is also less likely to have been parched during processing.

4.6.33 Oat in prehistoric and Roman samples is usually interpreted as a crop weed due to the larger proportions of wild to domestic oats present archaeologically (Lodwick 2017, 18–19). As a free-threshing crop, oats, like barley, are less likely to encounter fire during processing, which probably leads to an underestimation of their presence in general. There is some evidence on this site for domestic oats, but this is based on a single floret base. The distinction between wild and domestic varieties relies on the recovery of the floret base, but the majority of those recovered from the site were too badly damaged to formally identify. Therefore, the extent to which oats were deliberately cultivated on site is not clear.

4.6.34 The corndryer samples contain most of the charred crop material and especially in terms of the volume and proportion of glume wheat chaff. This material is very broken up, which in part explains the very large numbers of fragments, but the chaff-rich samples all contain considerable quantities of >2mm fragments that, while often in poor condition, are still large enough to represent the majority of the glume base. The presence of cereal awns (particularly oat but occasionally also wheat/barley) may indicate that this crop processing waste includes some debris from threshing, as well as glume bases derived from dehusking. Very few rachis internodes and no culm nodes or straw fragments were identified, which suggests that the assemblages do not represent the accidental charring of whole ears.

4.6.35 These chaff-rich samples also contain quantities of charred grain, with evidence of germination within some deposits, especially those from the rake-out pits and inner chambers with large numbers of detached coleoptiles, and evidence of occasional collapsed and sprouting grains.

4.6.36 An increase of the quantity of charred chaff and cereal grains and the presence of germinated grains, which is typically seen on some rural sites from central-southern and eastern England, has been interpreted as evidence of an increase in the scale of cereal production relating to trade or taxation in the Roman period (van der Veen 2016, 809). This increase in chaff material, the presence of corndryers and its apparent use as a fuel source may indicate that grain was no longer dehusked on a day-to-day basis but instead bulk processed (ibid., 813). The germination of the grains may have been accidental (as a result of poor storage) or deliberate as part of the malting process associated with brewing.

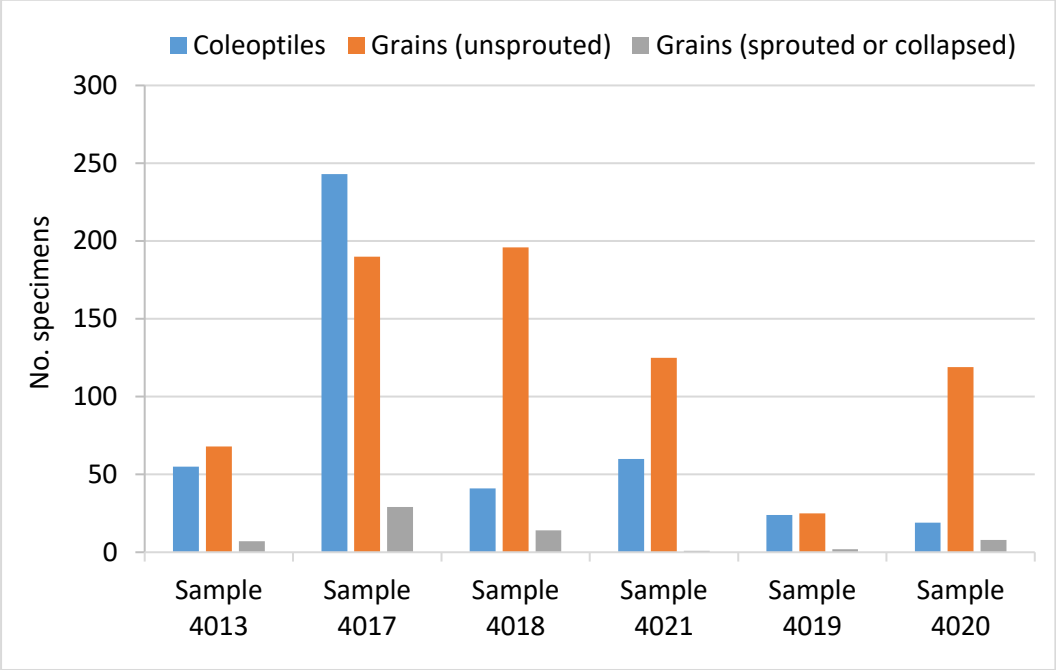
4.6.37 Germinated grains and coleoptiles are often found in samples associated with crop drying ovens, such as at Northfleet, Kent (Smith 2011), Parnwell, Peterborough

(Webley 2007), and Weedon Hill, Aylesbury (Wakeman and Bradley 2013). It has been suggested that these structures may have been used to produce malt rather than to dry grain (Reynolds and Langley 1979, 41; Reynolds 1981, 43), but the current consensus appears to be that crop drying ovens were often multifunctional and that cereal chaff was used as fuel in these structures (van der Veen 1989, 302; Campbell 2017, 140; Lodwick 2017, 55). When producing malt, once the grain has sprouted it is heated to stop the germination process during which the starch is converted to fermentable glucose and then to alcohol (Cappers 2018, 77).

4.6.38 Sampling of corndryers west of Station Road, north-east of Grove (Brady *et al*. in prep.), produced a similar pattern with large quantities of glume wheat chaff accompanied by evidence of sprouting wheat grains. On this site, the presence of more than one corndryer showed a bias of germinated material, with the samples closest to crop drying oven 102 containing only small quantities of germinated material while the richer samples were generally closer to crop drying oven 2042, raising the question of differential use of the two structures, although there was insufficient evidence to form firm conclusions.

4.6.39 Excavations at Crab Hill in Wantage (Cook in prep.) also produced abundant evidence of sprouted grain in the form of both the detached coleoptiles, which were abundant, but also in the form of large numbers of grains with coleoptiles still attached. Where samples were rich in coleoptiles, the length of the sprouts tended to be similar with a certain uniformity across several assemblages associated with corndryers, which suggested deliberate attempts to produce malt. The length of the coleoptiles was significant, as uniformity in sprouting stage is usually associated with deliberate sprouting of grain for brewing (Campbell 2017, 140–1) as opposed to accidental germination, which would be more random.

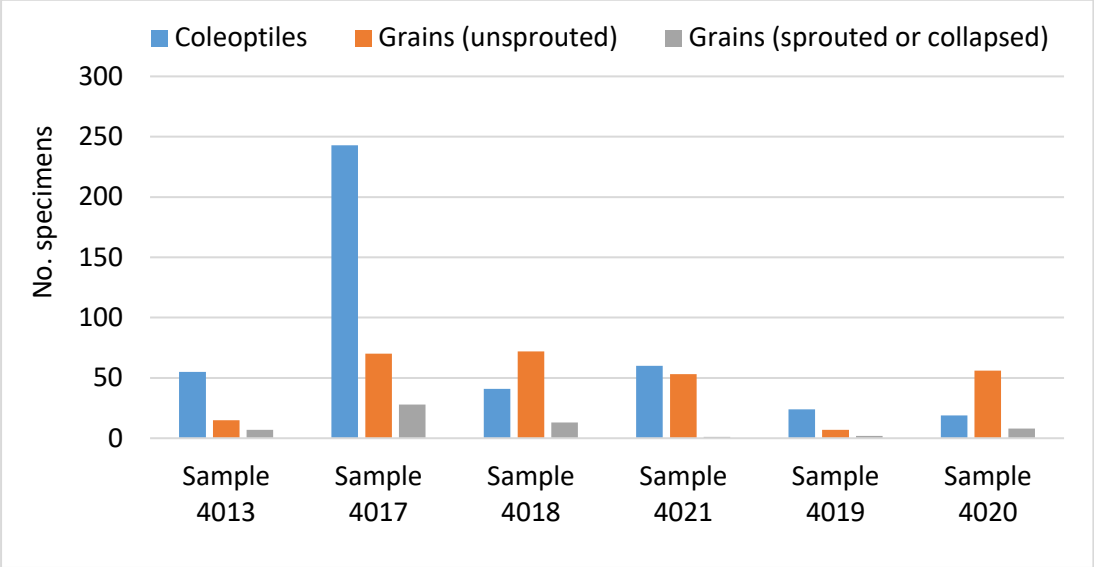
4.6.40 As at Crab Hill, the coleoptiles within the corndryer samples are robust and well grown, with an appearance of similarity in shape and size, although many intact grains show no sign of sprouting. The grain assemblage, however, is smaller than that at Crab Hill, and the damage to many of the grains makes it impossible to identify whether they had begun to germinate. It has been suggested that accidental sprouting is less likely in grain within the spikelet and that over 20% of sprouted grains within a deposit is a good indicator of deliberate germination (Parks 2012, 91; Lodwick 2017, 62) or if the number of coleoptiles present was 20% or more of the total amount of grain (Parks 2012, 91). At Grove Airfield the assemblage contains many more coleoptiles than cereal grains: sample 4017 has a total of 243 coleoptiles not including the fragments and 218 cereals (again not including fragments), of which 28 show evidence of sprouting in the form of either an attached coleoptile or the scar caused by its presence or having collapsed.



Graph 17: Comparison of coleoptiles with all grains not proven to be germinated

4.6.41 When plotted using the assumption that all grains which cannot be seen to have germinated are un-sprouted (Graph 17), it appears that, with the exception of sample 4017, the majority of the assemblage represents non-germinated material. A substantial proportion of the cereal grain, however, is badly damaged and in many cases it is impossible to tell if a grain has begun to germinate. The grains recorded as indeterminate and those identified as probably wheat are missing many external characteristics due to fragmentation, and this damage probably affects how easily germination is recognised. If these are removed from the calculations and the non-quantifiable fragments of coleoptiles excluded, the pattern alters (Graph 18).

4.6.42 It is tempting to interpret this latter pattern as evidence of malting, especially when compared with the assemblage from Crab Hill (Cook in prep.), which has many similarities in the appearance of the coleoptiles, though the charred fills may have accumulated from many firings and therefore true percentages are impossible to calculate. It is interesting, however, to see these similarities in two sites relatively close to one another, and it does raise the possibility that this area was a production site for brewing during the later Roman period. More evidence for malting comes from multiple corndryers found in two different areas during excavations at Great Western Park, Didcot, where five structures were discovered close to a potential villa to the north of the Wantage Road (Hayden *et al*. forthcoming), while a further three were discovered within an enclosure just over 1km to the south of Wantage Road (Davies *et al*. in prep.). These structures were not all contemporary but suggest intensive processing of grain for malt in several cases, particularly in those to the south, through the middle and late Roman periods. The southern corndryers were also accompanied by large pits or hollows that we filled with dumps of cereal waste and seem to have been directly related to the functioning of corndryers.



Graph 18: Comparison of coleoptiles with all grains not proved to be ungerminated

4.6.43 Grass seeds are also common at this site, and the presence of seeds from some grassland plants, albeit in small numbers, hints at the existence of at least some open grassland. Taking into account the lack of evidence for occupation activity and arable cultivation during the Iron Age, it is possible that this presence of grassland plants reflects previously uncultivated land being brought into use for the cultivation of cereals during the Roman period. This could result in a larger than usual amount of grasses present within the fields for several years. Another potential explanation is that the grass-rich samples derive from hay, with spoiled hay forming a part of the fuel used to heat the corndryer along with the threshing waste. It may be significant that the majority of grass seeds appear to be from the fescue/ryegrass (*Festuca/Lolium* sp.) genus or of similar type, and this contains a number of species commonly found in hay meadows and utilised as animal fodder.

4.6.44 There is evidence during the Roman period in the British Isles for the establishment of hay meadows; however, the small quantity of wild seeds present within the Grove Airfield assemblage is insufficient to conclusively demonstrate the presence of hay. In traditional hay meadows, the hay is mown before animals are put out to graze (Rodwell 1992, 57; Campbell 2017, 144), giving the plants within the meadow the opportunity to grow and set seed before being consumed. Plants that are seen as typical of hay meadows include buttercups (*Ranunculus* sp.) and yellow rattle (*Rhinanthus minor*), which are both present within this assemblage. Lesser hawkbit (*Leontodon saxatilis*) and henbane (*Hyoscyamus niger*), which are also grassland plants, are present within the waterlogged assemblage (see below). Henbane is known to thrive on cattle manure.

4.6.45 The site has many similarities with other sites excavated in recent years in the Wantage and Grove area. In general, there appears to have been settlement and agricultural activity from the Bronze Age period within this area, with the main settlement activity discovered in the vicinity of the Monks Farm/Williams Holdings/west of Station Road excavations (Brady *et al.* 2017; in prep.), while work at Crab Hill (Allen *et al*. in prep.) revealed remains with an Iron Age focus that follows the expected pattern of Iron Age

agriculture. The whole area, however, appears to have undergone some considerable changes during the Roman period, with wholesale redrawing of boundaries across the area. It is interesting that the sites at Crab Hill, west of Station Road and Monks Farm all show similar alignments to their enclosures, possibly an indication of centralisation of some kind, although it could be coincidental.

4.6.46 These sites all contained evidence of arable expansion in the Roman period, in the form of plant remains not seen within earlier features, an increase in the quantity of charred crop-related material and the presence of specialised structures such as corndryers. The presence of sprouted grains has raised the question of deliberate germination, certainly at both Crab Hill and Grove Airfield and potentially at West of Station Road. Although the evidence is persuasive, the fact that all the features have the potential to contain multiple deposition episodes means that it is difficult to prove conclusively.

4.6.47 If, however, this is not deliberate germination, the considerable number of sprouted grains hints at potential bulk storage of grain in granaries, but no archaeological evidence of such structures has been identified on most of these sites. The Grove Airfield revealed a number of post-built structures that are likely to have been rectangular buildings.

Conclusion

4.6.48 It is generally accepted that during the 2nd and 3rd centuries AD an expansion of arable farming took place into areas previously under-exploited, as evidenced by an increase in weeds associated with low soil fertility such as stinking chamomile, which is associated with heavier clayey soils, and medicks and vetches, which are commonly found on sites with low nitrogen values (Lodwick 2017, 40). At Grove Airfield, the evidence indicates land reorganisation over this period, with alterations to the organisation of field systems. When considered together with the presence of large quantities of cereal grain accompanied by weeds of damp places and heavier, clay rich-soils, this is suggestive of the expansion of cereal cultivation into new areas (the site itself is situated on sand and gravels). Other evidence suggests the presence of hay meadows and grassland, potentially indicating the utilisation of many different parts of the landscape.

4.6.49 There is some evidence for the increased cultivation of spelt on site during the later Roman period, with the grain having been either deliberately germinated to create malt for brewing or stored in bulk, presumably for shipment elsewhere. Together with weed seeds from cultivation and waste ground, seeds of grasses and grassland plants are suggestive of the presence of either pasture or hay meadow, evidencing a mixed economy of both arable and pastoral cultivation throughout the Roman period.

Table 12: Charred plant remains

Sample no.		4014	4016	4023	4025	4013	4017	4018	4021	4019	4020
Context no.		4500	4512	4980	4992	4368	4373	4451	4458	4370	4375
Feature		4478	4513	5035	5035	4367	4372	4448	4457	4369	4374
Group		10061				10002	10002	10002	10002	10002	10002
Description		Upper fill of ditch	Fill of pit	Well	Well	Fill of rake-out pit from corndryer	Fill of rake-out pit from corndryer	Fill of S chamber of corndryer	Fill of N chamber of corndryer	Fill of flue of corndryer	Fill of flue of corndryer
Phase		1: MBA	4: M1-E2C	4: M1-E2C	4: M1-E2C	6: M3-4C	6: M3-4C	6: M3-4C	6: M3-4C	6: M3-4C	6: M3-4C
Vol. processed (L)		36	40	25	25	36	32	18	15	20	20
Flot vol. (ml)		25	35	40	150	20	75	20	20	20	22
Proportion of flot sorted		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Charcoal											
	>4mm	24	1	16	25+	4	25+	0	0	0	0
	4-2mm	25+	11	25+	50+	25+	100+	1	2	2	6
Cereal grain											
Triticum sp.	wheat	1	21	10	5	15	70 + 6c + 18~	72 + 3c	53 +1~	7 + 1~	56 + 6~
cf *Triticum* sp.	probable wheat		7		4	10 + 2c + 4~		37	10	2	21
Hordeum vulgare	barley (hulled)		14	4							
cf *Hordeum* sp.	probable barley								2		
Avena sp.	oat		1		2	1c	3	1 + 1c	2		1
Avena/Bromus	oat/brome		5	2	2	1	12 + 1c	2	5	5	1
Cerealia	indeterminate cereal	3#	59#	16#	25#	43# + 1c	120# + 3c + 1~	87# + 10c	62#	16# + 1c	42# + 2c
Chaff											
Triticum spelta L.	spelt glume base		3	31	47	103	481	260	588	124	53
Triticum dicoccum/spelta	emmer/spelt glume base		15	9	21	14					

Sample no.		4014	4016	4023	4025	4013	4017	4018	4021	4019	4020
Context no.		**4500**	**4512**	**4980**	**4992**	**4368**	**4373**	**4451**	**4458**	**4370**	**4375**
Triticum dicoccum/spelta	emmer/spelt glume base fragments		26	72	128	2000+e	4000+e	3000+e	4000+e	2000+e	2000+e
Triticum spelta L.	spikelet fork			1	3	2	3	2			2
Triticum dicoccum/spelta	emmer/spelt spikelet fork		1		1						
Triticum sp.	rachis (free threshing type)		5f		4f		20f		9f		2f
Hordeum sp.	rachis internode				1						
Triticum/Hordeum	rachis internode		1	2	5						
Hordeum sp.	rachis node		1	5	1						
Triticum/Hordeum	rachis node		2	5	18			1	1	2	
Triticum/Hordeum	awns				*	***s	***s	*s	***s	*s	*s
Avena sp.	oat awns		**	*	*	***	***	**	***	**	**
Avena sp.	oat floret base						4			1	1
Avena sativa	domestic oat floret base							1			
Cerealia	culm node		1		1						
Cerealia	coleoptile				2 + 1f	55 + 118f	243 + 709f	41 + 70f	60 + 130f	24 + 137f	19 + 85f
Cerealia	scutellum						20	10	4	6	
Cerealia	detached embryos		6	5	3	2	6		5	3	7
Nuts/fruit/legumes etc											
Prunus spinosa		5f									
Corylus avellana	hazelnut shell				1f						
Indet.	nutshell	5f	1f								
Fabaceae	>5mm		1f								
Wild species											
Ranunculus acris/repens/bulbosus	buttercup			2							

Sample no.		4014	4016	4023	4025	4013	4017	4018	4021	4019	4020
Context no.		4500	4512	4980	4992	4368	4373	4451	4458	4370	4375
Vicia/Lathyrus sp. 4-2mm	vetch/vetchling/tare, etc.		4	2(1/2)	1 + 5(1/2) + 1f	1	4 + 2(1/2) + 3f				4 + 3(1/2)
Vicia/Lathyrus sp. <2 mm	vetch/vetchling/tare, etc.		2	6 + 7(1/2) + 3f	10 + 18(1/2) + 6f	4 + 14(1/2) + 1f	11 + 18(1/2) + 5f	1(1/2)		2 + 1(1/2)	9 + 5(1/2)
*Medicago*sp.	medick			6			12				3
Medicago/Trifolium/Melilotus	medick/clover/trefoils		2		29	3					
Medicago/Trifolium/Lotus	medick/clover/trefoils			6	14	7	38				
Urtica dioica L.	common nettle	1									
cf. Brassica sp.	cabbages		4		1						
Rumex sp.	docks (3 sided)		4	5	16	12	49	3	8	9	8
*Rumex acetosella*L.	sheep's sorrel				1		10		2		
Rumex/Carex	dock/sedge (3 sided)			1	1						
Caryophyllaceae	pink family		1								
Stellaria media (L.) Vill.	common chickweed		2	1	7?						
Stellaria graminea L.	lesser stitchwort				2?						
Silene flos cuculi(L.) Clairv.	ragged robin				1						
Chenopodium sp.	goosefoots	4	2	8	4		5		1		
Atriplex sp.	orache		5								
Montia fontana L.	blinks				1?						
Sherardia arvensis L.	field madder						1				
Galium sp.	bedstraws	1	4	3	1						
Galium aparine L.	cleavers	1		4	1	2		1			1
Lithospermum arvense L.	field gromwell		1				4				
Plantago lanceolata L.	ribwort plantain						1		1		
Euphrasia/Odontites	eyebrights/bartsias		2								
cf *Euphrasia/Odontites*	cf eyebrights/bartsias		3								
Asteraceae	daisy family		1#		1#		4#	1#			

Sample no.		4014	4016	4023	4025	4013	4017	4018	4021	4019	4020
Context no.		4500	4512	4980	4992	4368	4373	4451	4458	4370	4375
Rhinanthus minor L.	yellow rattle					1	6				
Centaurea sp.	knapweeds				3#		1#				
Centaurea cf cyanus L.	cornflower		1								
Anthemis cotula L.	stinking chamomile					1	4				
Tripleurospermum sp.	mayweeds		4	2	3		4				
Tripleurospermum inodorum (L.) Sch. Bip	scentless mayweed		2	2	7	3	5				
Valerianella dentata Mill	narrow-fruited cornsalad			1	1						
Apiaceae	carrot family						1				
Juncus sp.	rushes			2	3	1	7				
Eleocharis sp.	spike-rushes		1		4						
Carex sp.	sedges (3 sided)			2	1		2			1	
Carex sp.	sedges (2 sided)				2		5				
Poaceae	grass seeds (small)		18	13	15	13	51	1	2	1	5
Festuca/Lolium	fescues/ryegrasses			6	3	58	163	3	8	42	36
Poaceae	grass seeds (medium)		6	3	9	33	210		5	23	18
Poaceae	grass seeds (large)		6	5	3	2	12		7		2
Bromus sp.	brome		5								
Other											
Indeterminate	seed/fruit			10#	6#	4#	16#	1#	2#	4#	5#

Key: # item is very damaged f = fragment only * fragments rare ** fragments occasional *** fragments common (1/2) half only present s = silicified
? = unclear if charred ~ = coleoptile scar m = mineralised c = collapsed e = estimate

4.7 Waterlogged plant remains *by Sharon Cook*

4.7.1 Five samples were collected from the fills of middle Roman well 5035. From these, 1l subsamples were processed primarily for the retrieval of waterlogged plant remains. Following assessment, three of the flots were selected for further analysis (Table 13). Those flots were taken from the upper, middle and lowermost fills in order to give the most complete picture of the contents.

4.7.2 The 1 litre subsamples were processed by hand flotation using the 'wash-over' technique, and both flots and residues were collected onto 0.25mm mesh and kept wet to facilitate preservation. The flot material was sorted using a low power (x10) binocular microscope to extract waterlogged seeds and other quantifiable remains.

4.7.3 Identifications were carried out using standard morphological criteria for the cereals (Jacomet 2006) and with reference to the *Digital seed atlas of the Netherlands* (Cappers *et al*. 2012) for identification of wild plant remains, as well as comparison with modern reference material. Classification and nomenclature of plant material follows Stace (2010).

The assemblages

4.7.4 The waterlogged material from well 5035 is generally in good condition. Whilst frequently damaged, the seeds are generally identifiable, although unidentifiable fragments of more delicate items demonstrate that some decomposition has taken place. The suite of plant taxa is generally consistent across the well fills. Wood fragments, although present, were mostly soft, pliable and unidentifiable. Insect fragments are common within the lower fills and are accompanied by ostracods and *Daphnia* sp. ephippia, an indication of the presence of standing freshwater, as would be expected in a well.

4.7.5 Occasional fragments of charred plant material are present in all the sampled well contexts and include the remains of cultivated plants such as wheat (*Triticum* sp.), as well as probable weeds of cultivation including oat/brome (*Avena/Bromus*), vetches (*Vicia/Lathyrus*), medicks (*Medicago* sp.), cleavers (*Galium aparine*) and scentless mayweed (*Tripleurospermum inodorum*). Samples 4025 and 4027 also contain rare uncharred wheat chaff fragments and a single uncharred oat (*Avena* sp.) grain.

4.7.6 The uncharred wild plant seeds are dominated by a relatively small number of species, primarily common nettle (*Urtica dioica*), common chickweed (*Stellaria media*) and goosefoots (*Chenopodium* sp.), with buttercups (*Ranunculus* sp.), orache (*Atriplex* sp.), henbane (*Hyoscyamus niger*), small grass seeds (Poaceae) and rushes (*Juncus* sp.) also well represented. Seeds from most other taxa are present in small numbers only. Most of these plants are generally associated with disturbed ground in or around areas of human activity, although a small number of seeds are of plants with a preference for damp conditions, including sedges (*Carex* sp.) and rushes (Juncaceae). It is likely that these plants reflect damp conditions immediately surrounding the well, although the remains of rushes are often associated with settlements due to their use as flooring or roofing material. Rushes may also be found growing in damp field margins or the base of ditches.

4.7.7 A few uncharred seeds come from plants likely to have been growing in arable fields, such as poppies (*Papaver* sp.) and probable corncockle (cf *Anthemis cotula*). Grassland plants are represented by lesser hawkbit (*Leontodon saxatilis*) and henbane (*Hyoscyamus niger*), which can often be found on land manured by cattle (Stace 2010). Plants that are diagnostic of grassland or grazed pasture are absent; most of the other seeds come from plants that have a broad range of tolerance.

Discussion and conclusion

4.7.8 Waterlogged plant remains often derive from plants growing close to the sampled feature, so the consistency of plant remains within the well fills may indicate landscape continuity during the period of infilling.

4.7.9 Although the assemblage includes a few plants of grassland or pasture, these are not common and, while seeds indicative of hay meadow such as yellow rattle (*Rhianthus minor*) and ribwort plantain (*Plantago lanceolata*) have been identified in the charred assemblages from the corndryer, no such evidence was discovered in the sampled well fills. Most of the seeds from the well are either from plants with a preference for damp conditions, probably related to the environment in the immediate vicinity of the well itself, those that may have been weeds of cereal crops, and plants often found in disturbed and waste areas around cultivated land. There is no evidence to suggest a hedgerow or overhanging trees were located nearby, and the presence of large quantities of nettle and goosefoot seeds in all the fills, as well as bramble in the lower fills, probably indicate that an area of waste or perhaps neglected ground surrounded the feature. This may indicate that most of the seeds accumulated after the well fell out of use.

4.7.10 Charred plant remains that were also recovered from the samples represent crop plants and accompanying arable weeds, and probably represent material scattered during crop processing activities. The charred remains are consistent with the material found within the larger dry flots (see above) and are likely to have been blown into the open well or carried in with other material. The presence of a few small fragments of uncharred cereal chaff may indicate that some crop processing, perhaps sieving or threshing, was carried out nearby.

Table 13: Waterlogged plant remains

Sample no.		4023	4025	4027
Context no.		4980	4982	4993
Feature		5035	5035	5035
Description		Fill of well	Fill of well	Fill of well
Phase		4: M1-E2C	4: M1-E2C	4: M1-E2C
Vol. (L)		1	1	1
Flot vol. (ml)		10	75	10
Proportion of flot sorted		100%	50%	100%
Cereal grain				
Triticum sp.	wheat		1c	
Avena/Bromus	oat/brome	2c		1#
Cerealia	indeterminate cereal	1c	1c	
Chaff				
Triticum spelta L.	spelt glume base	4c	1 + 4c	
Triticum dicoccum/spelta	emmer/spelt glume base fragments	4c#	1f + 5c#	13c#
Triticum spelta L.	spikelet fork			1
Triticum/Hordeum	rachis internode			2c#
Triticum/Hordeum	rachis node	4c#		
Triticum/Hordeum	coleoptile			1c#
Cerealia	detached embryos			1c
Nuts/fruit etc				
Corylus avellana L.				1f
Wild species				
Papaver sp.	poppy	1	4	5
Papaver cf somniferum L.	opium poppy		1	1
Fumaria officinalis L.	common fumitory		1	1
Ranunculus acris/repens/bulbosus	buttercup	4	16	4
Ranunculus arvensis L.	corn buttercup	2	1	1
Ranunculus sub genus *Batrachium*	crowfoot	2	4	3
Vicia/Lathyrus	vetch/vetchling/tare4-2mm	1c		
Vicia/lathyrus	vetch/vetchling/tare<2mm	1c + 1(1/2)c		
Medicago sp.	medick	2c	5c	2c
Medicago/Trifolium/Lotus	medick/clover/trefoils		2c	
Rubus sp.	brambles	1	3	
Potentilla sp.	cinquefoils	2	1	
Urtica dioica L.	common nettle	122	161	142
Urtica urens L.	small nettle	17	5	3
cf Sinapsis arvensis L.	charlock		1	
Persicaria sp.	knotweeds		1#	
Fallopia/Persicaria	knotweeds	22	16	
Rumex spp.	docks (3 sided)	5 + 2c	15	4
Rumex sp.	docks (with exocarp)		4	1
Caryophyllaceae	pink family		1#	1#
Stellaria media (L.) Vill.	common chickweed	10 + 2c	63	29
Stellaria graminea L.	lesser stitchwort	4	10	2
cf *Agrostemma githago* L.	corncockle		1c	
Amaranthaceae	goosefoot family	2	10	
Chenopodium sp.	goosefoots	49	55	29
Chenopodium/Atriplex	goosefoot/orache	17	10	4

Sample no.		4023	4025	4027
Context no.		4980	4982	4993
Atriplex sp.	orache	8	6	11
Montia fontana L.	blinks	2		
Sheradia arvensis L.	field madder	1c		
Galium aparine L.	cleavers	1c	1 + 1c	
Hyoscyamus niger L.	henbane	2	9	6
Solanum nigrum L.	black nightshade		1	
Lamiaceae	dead-nettle family		1#	
cf *Clinopodium acinos* (L.) Kuntze	cf basil thyme	2		1
Asteraceae	*Leontondon/Crepis* type			1#
Cirsium/Carduus	thistle			1#
Leontodon saxatilis Lam.	lesser hawkbit	1		
Sonchus asper (L.) Hill	prickly sowthistle		5	2
cf *Anthemis cotula* L.	stinking chamomile		1#	
Tripleurospermum cf *inodorum* (L.) Sch. Bip	scentless mayweed	3c	7# + 1c	
Sambucus sp.	elder		1	
Valerianella dentata (L.) Pollich	narrow-fruited cornsalad	1		
Aethusa cynapium L.	fool's parsley	7	2	
Juncus sp.	rushes	6	11	20
Carex spp.	sedges (3 sided)	9	9	9 + 1c
Carex sp.	sedges (2 sided)	1		
Carex cf divulsa Stokes	grey sedge (with exocarp)		1	
Carex/Rumex	sedge/dock		4#	
Poaceae	grass seeds (small)	2 + 2c	1 + 1c	19
Other				
Indeterminate	seed/fruit	5	6 + 2c	1 + 1c
Medicago lupulina L.	black medick infructescence	1f	2f	
Key: # = badly damaged f = fragment only c = charred (1/2) = half only				

5 DISCUSSION

5.1 Middle–Late Bronze Age

5.1.1 The first substantial evidence of activity at the site dates from the middle Bronze Age (Phase 1), comprising the remains of a series of linear ditches that appear to have defined a field system perhaps with an axial trackway to the north-east. These remains provide evidence of the earliest demonstrable division of the landscape, suggestive of several enclosed areas of activity of a probable agricultural nature.

5.1.2 The onset of the middle Bronze Age is considered to define the transition from monument-dominated landscapes and mobile settlement patterns to the establishment of more permanent settlements and a greater emphasis on agriculture (Lambrick 2014, 121). There is limited archaeological evidence of more permanent settlement and agricultural activity pre-dating the middle Bronze Age within the wider region (ibid., 122), though a number of excavated middle Bronze Age sites have produced evidence of earlier associated activity, demonstrating continuity in land use (Yates 2007, 38). No clear evidence, however, was identified at Grove Airfield, suggesting that the middle Bronze Age activity was established in an area that had not been previously occupied. Nevertheless, a small assemblage of worked flint of broadly Mesolithic to early Bronze Age date, as well as a single sherd of late Neolithic/early Bronze Age Beaker pottery, was recovered from a number of later features as residual finds, providing evidence of a limited and perhaps transitory presence in the landscape during the earlier prehistoric period. This is comparable with the excavation results from the nearby sites at Monks Farm and west of Station Road (Brady *et al.* 2017; in prep.).

5.1.3 The establishment of permanent land divisions during the middle Bronze Age is perhaps indicative of an intensification in agricultural activity within the landscape (Yates 2007, 120). The paucity of other features associated with the boundary/enclosure ditches, such as pits and postholes, is suggestive of the overall agricultural nature of land use. A later Bronze Age ditch and pit excavated in Trench 22 of the 2010 evaluation (TVAS 2010) may suggest an eastward continuation of the field system. No structural evidence of settlement, such as the remains of houses, was present within the defined areas, though it is possible that such evidence could have been removed by Roman or later activity and/or was located beyond the limit of excavation. The pottery and animal bones recovered from the middle Bronze Age ditches, however, attest to nearby settlement and associated activity.

5.1.4 The remains encountered on site are suggestive of a mixed agricultural regime typical for the period (ibid.), with the enclosures and potential axial trackway suggestive of livestock management. The single charred wheat grain recovered from a middle Bronze Age context may attest to arable farming, although it could have been intrusive having derived from subsequent Roman activity. Small quantities of charred nutshell and sloe stone fragments may also be suggestive of the exploitation of other nearby resources, perhaps for food but also as fuel.

5.1.5 Comparable middle Bronze Age remains have been excavated nearby at Monks Farm (Brady *et al*. 2017), which revealed an extensive rectilinear field system and associated trackways and possible roundhouse structures. Middle Bronze Age field systems have

also been increasingly found in the southern part of Oxfordshire, including examples at Didcot, Appleford and Abingdon (Ruben and Ford 1992; Hearne 2000; Booth and Simmonds 2008; Lambrick 2014, 124). Middle and Late Bronze Age sites have also been found more recently during two phases of excavations at Great Western Park, Didcot, including a small roundhouse settlement with four-post structures dating *c* 1650–1500 cal BC, a U-shaped enclosure dating *c* 1500–1300 cal BC, a field system with an enclosed house dating *c* 1500–1200 cal BC, and a roundhouse settlement with a possible granary dating *c* 1100–1000 cal BC (Hayden *et al*. forthcoming; Davies *et al*. in prep.).

5.1.6 The excavation results demonstrate that there was only limited late Bronze Age activity on site. The recovery of a late Bronze Age perforated fired clay block that was perhaps used as a loomweight or in association with an oven/hearth (perhaps for pottery production) from a middle Bronze Age ditch suggests that the earlier field system became completely infilled in the late Bronze Age. A further probable fragment of this type was residual in a late Roman enclosure. Such artefacts are considered to distinctively belong to the late Bronze Age and have been found in the Middle Thames Valley (Lambrick 2014, 121).

5.1.7 Perhaps more significant is the crouched inhumation burial excavated in the west of the site. The human remains have been radiocarbon dated to the middle part of the late Bronze Age (1004–900 cal BC; SUERC-94443, 95.4% confidence). Although no other features indicative of contemporary occupation were revealed by the excavation, it is possible that associated late Bronze Age activity did not leave any trace in the archaeological record or that remains of such activity had been completely removed by Roman and later land use. Apparently isolated late Bronze Age burials occur within the wider region (ibid., 137), and it is possible that the Grove Airfield burial was positioned within a field or near the boundaries of a contemporary site located nearby. However, previous evaluation of the wider development site revealed limited features of largely middle Bronze Age date (TVAS 2006; 2010; OA 2018a).

5.1.8 Evidence of late Bronze Age funerary activity is varied within the region (Lambrick 2014, 137). A similarly unaccompanied inhumation burial radiocarbon dated to 1160–940 cal BC was uncovered during excavations at Roughground Farm, Lechlade, Gloucestershire (Allen *et al*. 1993, 28). Whilst such seemingly isolated inhumation burials are more unusual, with burials of late Bronze Age date more typically comprising cremations (ibid., 35), the remains discovered at Grove Airfield add to a growing body of evidence for the region.

5.2 Late Iron Age–Roman

Site morphology and development

5.2.1 No early or middle Iron Age features were encountered on site, although a few sherds of tentatively dated middle Bronze Age shell-tempered pottery may alternatively be ascribed an earliest/early Iron Age date, as is the case at Crab Hill (Allen *et al*. in prep.). This material potentially reflects low-level activity. A general hiatus in Iron Age activity was also seen at Monks Farm and west of Station Road (Brady *et al*. 2017; in prep.). It is possible that Iron Age activity was focused elsewhere within the wider landscape,

with evidence of middle Iron Age activity revealed at Stockham House, Wantage, *c* 0.5km to the south of the site (OA 2012).

5.2.2 The excavation results give an understanding of the nature of a rural settlement at Grove Airfield that was first established in the late Iron Age/early Roman period and continued to be occupied into the latter half of the 4th century AD. In contrast to the more structured arrangement of the subsequent phases of the Roman site, the layout of late Iron Age/early Roman (Phase 3) occupation was concentrated in the west of the excavation area and is suggestive of a fairly low level of activity signified by a small number of field boundaries/enclosures and a possible trackway. The remains of two inter-cutting ring ditches are suggestive of a roundhouse structure that was modified or rebuilt during its lifespan, whilst a small number of scattered discrete features, including a waterhole, are indicative of associated activity.

5.2.3 Occupation continued with the reorganisation and enlargement of the site in the early Roman period (Phase 4). The Phase 3 trackway appears to have fallen out of use by the early Roman period, though other Phase 3 features may have continued into the latter part of the 1st century AD. These earlier features were superseded by several large rectilinear enclosures or fields, most likely for livestock and arable management, which resulted in a more formalised arrangement. Domestic activity may have been focussed in the northern end of the excavated area where one or possibly two roundhouses were identified (10012 and 10054). Although it is tempting to see a sequence of roundhouse development between these structures and the late Roman (phase 6) penannular ditch, 10013, the dating and stratigraphic evidence suggests that any relationship is superficial and coincidental. The settlement further developed in the middle Roman period (Phase 5), with the abandonment of the smaller early Roman enclosures and the simplification of the existing field/enclosure system involving the establishment of fewer larger fields/enclosures.

5.2.4 Activity continued into the late Roman period (Phase 6), though by this time there appears to have been another change in the organisation and layout of the settlement while the broad N–S alignment was maintained, indicating continuity. The large field/enclosure systems of the early and middle Roman periods (Phases 4 and 5) had been abandoned and by a more-open layout with features concentrated in the eastern half of the site, comprising several enclosures, land boundaries, and several buildings.

5.2.5 The morphological development of the settlement is typical for lowland Roman Britain, originating as an open or simple enclosed farmstead characteristic of the later Iron Age (Allen and Smith 2016, 21–2). Whilst there are no clear boundaries between what is considered Iron Age and Roman in the region, numerous new sites and types of settlements, together with the abandonment or transformation of others, emerged between the 1st century BC and late 1st century AD (Fulford 2014, 157; Allen and Smith 2016). The archaeological remains encountered at Grove Airfield are suggestive of the establishment of a newly formed agricultural settlement in the late Iron Age/early Roman period that was subsequently overlain by or reorganised into a new sub-divided enclosure complex in the early and middle Roman periods, demonstrating a change in local land management (Allen and Smith 2016, 21–2, 27). It is probable that different areas of the complex served various domestic and agricultural functions during the early and middle Roman periods. The landscape continued to develop into the late

Roman period, by which time there appears to have been a significant increase in arable cultivation and the processing of surplus resources. Contemporary rural settlement sites have been recorded nearby at Monks Farm and west of Station Road (Brady *et al*. 2017; in prep.) and also in Wantage along Mill Street (Holbrook and Thomas 1996) and Denchworth Road (Barber and Holbrook 2001), demonstrating the expansion of settlement and agriculture within this part of the landscape during the Roman period.

Late Roman structures

5.2.6 Several rectangular post-built structures were established in phase 6 and their close positioning suggests that they were individual elements of the same complex or possibly formed one large compartmentalised building. If the latter interpretation is correct, taking structures 10004, 10059 and 10006/7 into account (Fig. 9), the building would have measured somewhere between 20m and 25m long and *c* 18m across, and possibly forming a three-sided structure with a central area. Post-built buildings are not uncommon on Romano-British rural settlements, though they can range considerably in form and layout (Smith 2016a, 51–4). Most examples are fairly simple, single-space, rectangular buildings, sometimes with central supports and in other cases using a combination of beamslot and timber support (ibid., 64, fig. 3.16, 66, fig. 3.18; Allen 2016, 106, fig. 4.36, 108, fig. 4.40). Construction techniques are difficult to establish for such buildings, but the use of timber alongside mass-walling seems likely. The almost complete lack of CBM and structural worked stone at Grove Airfield would suggest that organic materials were used for buildings.

5.2.7 If the overall plan of the posthole complex as one large post-built structure (albeit with different phases of construction/maintenance) is accepted it suggests a building of relative complexity on a fairly low-status farmstead. However, its function is difficult to identify and there are few direct comparisons with this particular example in terms of its layout. The extensive clay surface (5071) and the overlying metalled trackway (5168) to the north of the building appear to have been associated with it and perhaps signal that the structure originally faced northwards and was entered from this side. It is possible that the building was a domestic structure, perhaps reflecting a quasi-villa-style layout with two 'side aisles', a central courtyard or hallway, and a private space to the south represented by structure 10004. Such a layout brings to mind the 4th-century arrangement at Lullingstone villa, Kent, which was entered via fronting verandah into a central audience chamber through to a dining room at the rear, all flanked by rooms to each side (cf Meates 1979). Although clearly very different in construction and in terms of the level of wealth on display, the scales of these two buildings is not too dissimilar and the size of structure 10004 is a fairly close match with Lullingstone's dining room. Obviously, Lullingstone villa is not a direct comparison and it is simply highlighted here to illustrate how the layout of the Grove Airfield building might have operated as a cohesive domestic building.

5.2.8 An alternative to the domestic-residence interpretation is that the building, or parts of it, had agricultural functions. This would potentially associate it with the evidence for cereal-processing at the site, in relation to corndryer 10002 and the millstone fragments recovered from enclosure ditch 10036 and surface 4698. No clear evidence for grain storage was recovered from the building in the form of archaeobotanical

remains as none of the postholes underwent environmental sampling. Timber-built granaries and barns must have been present at many Romano-British rural settlements, though defining them is very difficult owing a lack of corresponding evidence (Smith 2016a, 58–60). Two post-built buildings, constructed at a right-angle to each other and positioned away from domestic buildings, were interpreted as barns at Beddington, Surrey (Howell 2005, 27, fig. 30, 32–5). Both buildings measured *c* 7m by 18m and, thus, were slightly larger but with very similar dimensions to structures 10059 and 10006/7 at Grove Airfield. Most granaries at rural sites are interpreted from the presence of internal post pads, as at Lullingstone, Kent (Meates 1979), or a series of closely aligned beam slots or sleeper walls, as at Camp Ground, Cambridgeshire (Evans 2013) and Horton Kirby, Kent (Philp and Mills 1991), which would have allowed for raised floors and the underflow of air. No internal supports were found at Beddington, hence their interpretation as barns rather than granaries, but the presence of internal postholes within structures 10059 and 10006/7 allow for this possibility.

5.2.9 A third possible but less likely explanation is that the building provided a ritual function. The seemingly regular, squared and concentric layout of the building plan is reminiscent of a Romano-Celtic temple with a south-facing porch. Timber-built temples are rare in Britain, however, although some are known or thought likely to have had timber structural elements, as at Scole, Suffolk (Ashwin and Tester 2014, 207–8), and possibly Woodeaton, Oxfordshire (Goodchild and Kirk 1954, 23–6). No votive finds or structural deposits were found within or close by the present building, though the infant burial (grave 10003) located within the south-west corner of structure 10004 provides a possible ritual element. Formal burials are not often associated with Romano-British shrines or temples, although neonates are more commonly found at ritual sites (Smith 2001, 157; 2018, 253). For example, three neonates were found in timber structures in the late Iron Age/early Roman shrine at Uley, Gloucestershire, where they were argued to have served as foundation offerings (Woodward and Leach 1993, 30). However, infant burials are also commonly found in domestic contexts during this period, often laid below floors or close to walls within houses, a phenomenon that has been described as the result of various spiritual concerns and the maintenance of continued familial links (Moore 2009, 48; Millett and Gowland 2015). The infant burial in structure 10004 need not suggest that the building had a ritual function, but was more likely reflective of a particular spiritual/emotional concern of the inhabitants that was perhaps focussed on this area of the building.

5.2.10 Aside from the post-built structures, two east-facing penannular ditches—10013 to the north and 10001 to the south—may either represent two circular buildings or very small enclosures. One posthole was found within 10013 close to the edge of the ditch, providing a hint that some form of timber structure once stood within, while internal features were absent from 10001. Although some CBM and fired clay was recovered from the fills of ditch 10013 these do not necessarily represent the remains of structural material relating to this feature. Nonetheless, the size of the enclosed areas and the quantities of finds (pottery, butchered animal bones, etc.) do suggest that possible structures may once have stood within. The late Roman date of ditch 10013 is demonstrated by the fact that it cut a pit/waterhole that contained a sizable collection of late 3rd-/4th-century pottery, with ceramics of a similar date also found

in the fill of the ditch. The quantity of finds from ditch 10013 is suggestive of a small house; however, if the post-built building to the south was the main domestic focus of the settlement in this phase it is perhaps less likely that 10013 performed the same function. Instead, a working area, defined and enclosed by elliptical ditch 10011, may provide a more-likely explanation, with carcass processing and waste disposal occurring here, while the area around the post-built structure was generally kept clear of debris. Circular buildings have been interpreted as 'workshops' at other Romano-British rural settlements, such as at Gill Mill, Oxfordshire (Booth and Simmonds 2018).

5.2.11 An alternative interpretation is that ditch 10013 represents a circular shrine. Although only a proportion of the fills of the ditch was excavated, there are some signs of possible structured deposition, with the main concentration of material placed in the ditch towards the rear of the enclosure. This consisted of butchered remains of horse, cattle and sheep/goat, each consisting elements that were deposited in articulation, alongside two dog bones, a lower rotary quern and a large collection of pottery with some relatively high-status vessels including south Spanish amphora and Oxfordshire fine wares.

5.2.12 Religious foci need not be defined in architectural terms at Romano-British sites, as they are often represented by structured/placed deposits (Chadwick 2012). Smith (2016b, 653–4) has noted that while coins, personal items and intrinsically religious objects are frequently found at overtly sacred sites (eg temples), these artefacts are comparatively rare in structured deposits at domestic settlements, where pottery and articulated animal remains are far more common. It is also possibly of note that a dog pelvis with cut marks was recovered from surface 4697 immediately south of elliptical enclosure 10013, perhaps denoting ritual practices in this area. A second aspect of potential relevance here is that areas set aside for ritual practices were often explicitly enclosed, demarking areas of sacred space (Smith 2018, 140–4). The elliptical ditch (10011) that enclosed penannular ditch 10013 was unusual in that it did not follow the predominant alignment of the settlement up to that point, cutting and seemingly disregarding several earlier features, such as phase 4 roundhouse 10012 and phase 5 enclosure ditch 10019. Ditch 10011 also separated the area within from the metalled and otherwise surfaced area to the south that seems to have been associated with the post-built structure/s. A recent survey of Romano-British shrines found that *c* 20% were located on or in association with a farmstead, and despite considerable variability, the majority were represented by a circular structure, mostly within a ditched boundary, and over 50% had some kind of structured deposit (ibid., 136–44, 148–52).

5.2.13 Penannular ditch 10001 was similar in size and orientation to 10013; however, it was not enclosed and contained no evidence of structured deposition. Instead its location next to enclosure 10036, which contained corndryer 10002, suggests that it is likely to have been associated with the arable-processing activities that took place at the southern end of the site. The stone-built corndryer was constructed no earlier than the mid–late 3rd century AD and may have functioned well into the 4th century. The structure is a developed form of a type also recently discovered nearby at Crab Hill (1240), which has one long masonry flue entering into a heating chamber on one side, effectively doubling the size of the structure in plan (Allen *et al*. in prep.). This feature was in use by the early 3rd century AD, as indicated by C14 dating of charred cereal

remains from the flue. The Grove Airfield corndryer consisted a symmetrical layout with two long flues and heating chambers on each side, representing a much larger version of the Crab Hill version and presumably with a much greater capacity.

Agriculture and the economy

5.2.14 Charred cereal remains from corndryer 10002 bore striking similarities to that found in the corndryer at Crab Hill (Allen *et al*. in prep.), and also at Great Western Park, Didcot, where five corndryers were found close to a villa and another three within enclosures further south (Hayden *et al*. forthcoming; Davies *et al*. in prep.). High number of detached coleoptiles suggests that several of these structures were wholly or partially involved in malting grain for subsequent brewing, though drying for storage and milling was also no doubt carried out. The presence of two millstones in ditch 10036 surrounding corndryer 10002, and three in total from this phase, strongly suggest that milling was undertaken on-site or very nearby. Mill buildings are incredibly difficult to identify in the absence of supporting structural remains on Romano-British sites (Shaffrey 2015). Nonetheless, the presence of some large, predominantly male cattle, some with considerable foot pathologies, as well as larger horses and possibly mules in the zooarchaeological assemblage, provide convincing evidence that animal power of some significance for the working of the farm, mostly likely in the form of ploughing and cart pulling, but potentially also for animal-driven mills.

5.2.15 The animal bone and plant assemblages provide evidence of a mixed agricultural economy throughout the Roman period. These remains demonstrate fairly intensive animal management practices alongside extensive arable cultivation, which intensified as the Roman period progressed. This is also reflected in the change in the organisation of the site from the late Iron Age/early Roman period to the late Roman period. The larger quantities of charred grains and chaff, of spelt wheat in particular, recovered from late Roman features are indicative of the intensification of cultivation practices. Together with the double rectangular corndryer and quern/millstone fragments, these remains indicate a shift towards the production and processing of surplus resources for market (van der Veen 2016; Lodwick 2017, 82–3).

5.2.16 The quantity and range of finds recovered from Roman features at Grove Airfield provide clear evidence of domestic and agricultural activities. The material includes large assemblages of pottery and animal bone, as well as oven/hearth furniture, nails, hobnails, brooches, tools, coins, quern and millstones, and marine shells. The pottery assemblage is suggestive of a relatively low-status settlement, although the presence of fine table wares and imported wares, albeit in small quantities, together with imported food stuffs such as oysters, are characteristic of inhabitants incorporating more ‘Romanised’ cultural elements into their daily lives and good connections to regional markets and industries. The proximity of the Roman road to the east of the site and its route south to Wantage and north to Marcham/Frilford may be significant here. Similarly varied finds assemblages have been recovered from comparable sites in the vicinity (eg Brady *et al*. 2017; in prep.) and the wider region (Fulford 2014).

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 Oxford County Council HER and disseminated online, being made available for download as a PDF through OA's online library (https://library.oxfordarchaeology.com/5916/).

6.1.2 A synthetic article will also be prepared for publication in the Oxfordshire county archaeological journal, *Oxoniensia*. This will include the salient elements of the excavation report, along with an interpretative discussion, but it may not include some of the more technical elements of the specialist reports and some of the data tables.

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 (OA 2018b) and current professional standards (CIfA 2014b; OCC 2020).

6.2.2 Subject to the agreement of the legal landowner, the site archive will be deposited with Oxfordshire Museums Service under accession number OXCMS:2017.108.

6.2.3 It is recommended that the finds be retained in the archive, with the exception of the CBM and fired clay (though diagnostic fragments and representative samples of fabric types are to be retained), and unworked and burnt flint and stone, which can be considered for disposal.

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APPENDIX A ANIMAL BONE DATA TABLES

Table A1: Cattle element representation, Phases 3 and 4

Element	MNI	MNE	%MNE
Mandible	11	20	100.0
Scapula	6	10	50.0
Humerus	7	12	60.0
Radius	6	12	60.0
Ulna	4	5	25.0
Metacarpal	7	11	55.0
Pelvis	5	7	35.0
Femur	9	14	70.0
Tibia	7	13	65.0
Astragalus	3	5	25.0
Calcaneus	3	4	20.0
Navicular-cuboid	1	2	10.0
Metatarsal	8	17	85.0
1st phalanx	—	4	—
2nd phalanx	—	2	—
3rd phalanx	—	3	—

Table A2: Cattle element representation, Phase 5

Element	MNI	MNE	%MNE
Mandible	7	11	100.0
Scapula	5	9	81.8
Humerus	4	6	54.5
Radius	5	7	63.6
Ulna	4	4	36.4
Metacarpal	3	6	54.5
Pelvis	3	3	27.3
Femur	4	7	63.6
Tibia	6	8	72.7
Astragalus	2	3	27.3
Calcaneus	3	3	27.3
Navicular-cuboid	2	4	36.4
Metatarsal	6	8	72.7
1st phalanx	—	5	—
2nd phalanx	—	4	—
3rd phalanx	—	2	—

Table A3: Cattle element representation, Phase 6

Element	MNI	MNE	%MNE
Mandible	6	9	100.0
Scapula	1	2	22.2
Humerus	6	6	66.7
Radius	6	8	88.9
Ulna	3	4	44.4
Metacarpal	1	2	22.2
Pelvis	5	8	88.9
Femur	2	6	66.7
Tibia	4	5	55.6
Astragalus	2	2	22.2
Calcaneus	1	1	11.1
Navicular-cuboid	1	1	11.1
Metatarsal	6	9	100.0
1st phalanx	—	8	—
2nd phalanx	—	6	—
3rd phalanx	—	1	—

Table A4: Sheep/goat element representation, Phases 3 and 4

Element	MNI	MNE	%MNE
Mandible	11	18	100.0
Scapula	3	4	22.2
Humerus	7	8	44.4
Radius	7	16	88.9
Ulna	3	4	22.2
Metacarpal	4	7	38.9
Pelvis	2	3	16.7
Femur	4	7	38.9
Tibia	9	18	100.0
Astragalus	1	1	5.6
Calcaneus	2	2	11.1
Metatarsal	9	18	100.0
1st phalanx	—	2	—
2nd phalanx	—	1	—
3rd phalanx	—	0	—

Table A5: Sheep/goat element representation, Phase 5

Element	MNI	MNE	%MNE
Mandible	3	5	50.0
Scapula	3	4	40.0
Humerus	6	10	100.0
Radius	3	7	70.0
Ulna	1	1	10.0
Metacarpal	1	2	20.0
Pelvis	2	2	20.0
Femur	3	3	30.0
Tibia	4	7	70.0
Astragalus	1	1	10.0
Calcaneus	1	1	10.0
Metatarsal	2	4	40.0
1st phalanx	—	0	—
2nd phalanx	—	0	—
3rd phalanx	—	0	—

Table A6: Sheep/goat element representation, Phase 6

Element	MNI	MNE	%MNE
Mandible	9	17	100.0
Scapula	2	2	11.8
Humerus	5	7	41.2
Radius	6	12	70.6
Ulna	0	0	0.0
Metacarpal	5	6	35.3
Pelvis	2	4	23.5
Femur	3	5	29.4
Tibia	7	11	64.7
Astragalus	1	1	5.9
Calcaneus	1	1	5.9
Metatarsal	8	11	64.7
1st phalanx	—	1	—
2nd phalanx	—	1	—
3rd phalanx	—	0	—

Table A7: Pig element representation, Phases 3–5

Element	MNI	MNE	%MNE
Mandible	7	13	100.0
Scapula	4	8	61.5
Humerus	2	3	23.1
Radius	2	3	23.1
Ulna	3	5	38.5
Metacarpal	1	1	7.7
Pelvis	1	2	15.4
Femur	5	6	46.2
Tibia	3	4	30.8
Astragalus	0	0	0.0
Calcaneus	0	0	0.0
Metatarsal	1	1	7.7
1st phalanx	—	0	—
2nd phalanx	—	1	—
3rd phalanx	—	0	—

Table A8: Horse element representation, Phases 3 and 4

Element	MNI	MNE	%MNE
Mandible	3	5	50.0
Scapula	1	2	20.0
Humerus	1	1	10.0
Radius	3	6	60.0
Ulna	1	2	20.0
Metacarpal	5	8	80.0
Pelvis	2	2	20.0
Femur	6	10	100.0
Tibia	4	6	60.0
Astragalus	2	2	20.0
Calcaneus	0	0	0.0
Metatarsal	1	2	20.0
1st phalanx	—	0	—
2nd phalanx	—	0	—
3rd phalanx	—	1	—

Table A9: Horse element representation, Phases 5 and 6

Element	MNI	MNE	%MNE
Mandible	1	2	50.0
Scapula	0	0	0.0
Humerus	0	0	0.0
Radius	1	2	50.0
Ulna	1	1	25.0
Metacarpal	2	3	75.0
Pelvis	2	2	50.0
Femur	1	1	25.0
Tibia	0	0	0.0
Astragalus	2	4	100.0
Calcaneus	1	2	50.0
Metatarsal	2	4	100.0
1st phalanx	—	3	18.8
2nd phalanx	—	3	18.8
3rd phalanx	—	0	0.0

Table A10: Cattle epiphyseal-fusion timings, Phases 3 and 4

Fusion stage	Element	Fused	Unfused	% fused
7–15 months	Scapula	4	0	
	Pelvis	7	3	
	P radius	8	1	
	Total	*19*	*4*	*82.6*
15–24 months	2nd phalanx	2	0	
	D humerus	4	1	
	1st phalanx	3	1	
	Total	*9*	*2*	*81.8*
24–36 months	D tibia	11	0	
	D metapodial	9	2	
	Calcaneus	2	0	
	Total	*22*	*2*	*91.7*
36–48 months	P femur	1	3	
	P humerus	1	1	
	D radius	2	1	
	P ulna	0	1	
	D femur	3	6	
	P tibia	3	5	
	Total	*10*	*17*	*37.0*

Table A11: Cattle epiphyseal-fusion timings, Phase 5

Fusion stage	Element	Fused	Unfused	% fused
7–15 months	Scapula	4	1	
	Pelvis	2	1	
	P radius	7	0	
	Total	*13*	*2*	*86.7*
15–24 months	2nd phalanx	5	0	
	D humerus	4	0	
	1st phalanx	4	0	
	Total	*13*	*0*	*100.0*
24–36 months	D tibia	2	1	
	D metapodial	9	0	
	Calcaneus	1	0	
	Total	*12*	*1*	*92.3*
36–48 months	P femur	1	2	
	P humerus	0	1	
	D radius	2	0	
	P ulna	0	1	
	D femur	1	0	
	P tibia	2	3	
	Total	*6*	*7*	*46.2*

Table A12: Cattle epiphyseal-fusion timings, Phase 6

Fusion stage	Element	Fused	Unfused	% fused
7–15 months	Scapula	1	0	
	Pelvis	3	0	
	P radius	7	0	
	Total	*11*	*0*	*100.0*
15–24 months	2nd phalanx	6	0	
	D humerus	3	1	
	1st phalanx	8	0	
	Total	*17*	*1*	*94.4*
24–36 months	D tibia	4	1	
	D metapodial	2	4	
	Calcaneus	1	0	
	Total	*7*	*5*	*58.3*
36–48 months	P femur	3	1	
	P humerus	2	1	
	D radius	2	1	
	P ulna	0	1	
	D femur	1	2	
	P tibia	1	1	
	Total	*9*	*7*	*56.3*

Table A13: Sheep/goat epiphyseal-fusion timings, Phases 3 and 4

Fusion stage	Element	Fused	Unfused	% fused
3–10 months	D humerus	4	0	
	P radius	4	1	
	Scapula	2	0	
	Pelvis	2	0	
	2nd phalanx	1	0	
	1st phalanx	1	1	
	Total	*14*	*2*	*87.5*
15–36 months	D tibia	4	1	
	D metapodial	2	8	
	Calcaneus	0	2	
	Total	*6*	*11*	*35.3*
36–42 months	P femur	1	1	
	P humerus	0	0	
	D radius	0	2	
	P ulna	1	1	
	D femur	0	0	
	P tibia	2	0	
	Total	*4*	*4*	*50.0*

Table A14: Sheep/goat epiphyseal-fusion timings, Phase 5

Fusion stage	Element	Fused	Unfused	% fused
3–10 months	D humerus	3	1	
	P radius	3	0	
	Scapula	0	0	
	Pelvis	2	0	
	2nd phalanx	0	0	
	1st phalanx	0	0	
	Total	*8*	*1*	*88.9*
15–36 months	D tibia	0	0	
	D metapodial	0	1	
	Calcaneus	1	0	
	Total	*1*	*1*	*50.0*
36–42 months	P femur	1	0	
	P humerus	1	0	
	D radius	1	1	
	P ulna	1	0	
	D femur	0	1	
	P tibia	0	1	
	Total	*4*	*3*	*57.1*

Table A15: Sheep/goat epiphyseal-fusion timings, Phase 6

Fusion stage	Element	Fused	Unfused	% fused
3–10 months	D humerus	3	0	
	P radius	3	0	
	Scapula	0	0	
	Pelvis	1	0	
	2nd phalanx	0	1	
	1st phalanx	1	0	
	Total	*8*	*1*	*88.9*
15–36 months	D tibia	2	1	
	D metapodial	5	3	
	Calcaneus	0	1	
	Total	*7*	*5*	*58.3*
36–42 months	P femur	0	1	
	P humerus	0	0	
	D radius	1	1	
	P ulna	0	0	
	D femur	1	1	
	P tibia	0	0	
	Total	*2*	*3*	*40.0*

Table A16: Pig epiphyseal-fusion timings, all phases

Fusion stage	Element	Fused	Unfused	% fused
9–12 months	Scapula	4	0	
	Pelvis	1	1	
	2nd phalanx	1	0	
	Total	*6*	*1*	*85.7*
12–18 months	D metapodial	0	4	
	D humerus	1	2	
	P radius	2	0	
	Total	*3*	*6*	*33.3*
24–42 months	D tibia	1	2	
	P femur	0	5	
	P humerus	0	1	
	D radius	0	1	
	P ulna	0	2	
	Total	*1*	*11*	*8.3*

Table A17: Horse epiphyseal-fusion timings, all phases

Fusion stage	Element	Fused	Unfused	% fused
9–12 months	Scapula	2	0	
	Pelvis	4	0	
	2nd phalanx	3	0	
	Total	*9*	*0*	*100.0*
12–24 months	D humerus	1	0	
	P radius	7	0	
	D tibia	8	0	
	D metapodial	12	1	
	1st phalanx	3	0	
	Total	*31*	*1*	*96.9*
36–42 months	P tibia	3	0	
	P femur	0	1	
	D femur	6	0	
	D radius	5	0	
	P ulna	1	0	
	Calcaneus	2	0	
	Total	*17*	*1*	*94.4*

Table A18: Aggregated cattle dental-wear data by phase (JS Stage refers to Jones and Sadler 2012)

JS stage	Estimated age	Phase 4	Phases 5–6	Total % survival
A	Perinatal	0	0	100.0
B	0–6 months	0	0	100.0
C	5–18 months	0.5	2	85.3
D	16–28 months	1	0	79.4
E	26–36 months	0.5	0	76.5
F	34–43 months	0	1	70.6
G	40 m–6.5 years	1	3	47.1
H	5–10 years	2	3	17.6
J	8–16 years	1	1	5.9
K	14–20 years +	0	1	0.0

Table A19: Aggregated sheep/goat dental-wear data by phase (J Stage refers to Jones 2006)

J stage	Estimated age	Phases 3–4	Phases 5–6	Total % survival
A	0–1 months	0	0	100.0
B	1–3 months	0.5	0	97.7
C	3–12 months	2.5	1	81.8
D	10–24 months	2	1	68.2
E	20–36 months	5	6	18.2
F	2.5–4.5 years	1	1	9.1
G	4.5–e. 9 years	0	0.5	6.8
H	e. 6–e. 11+ years	0	0.5	4.5
J	e. 8–e.13+ years	1	0	0.0

Table A20: Aggregated pig dental-wear data by phase (stages following O'Connor 1988 and estimated ages following Legge 2013)

Stage	Estimated age	No.	% survival
A	0–1 month	0	100.0
B	5–6 months	2	80.0
C	11–14 months	3	50.0
D	21–24 months	4	10.0
E	24–36 months	1	0.0
F	36 months +	0	0.0

Table A21: Ageable horse specimens (estimated ages follow Levine 1982 for eruption/early wear timings and crown height measurements)

Context	Feature	Phase	Element	Comment	Estimated age
4394	Waterhole 4391	3: LIA–ER	Mandible	Dp2, dp3 and dp4 in wear, m1 visible in crypt	7–12 months
5140	Ditch 10021 (cut 5138)	4: M1–E2C	Maxilla	M3 beginning to erupt	2.5–5 years
5140	Ditch 10021 (cut 5138)	4: M1–E2C	Maxilla	P2 erupting and DP2 clearly fits over, P1 also present. Several loose teeth possibly from same animal, includes heavily worn deciduous premolars, unworn permanent premolars and slightly worn molars	2.5–3.5 years
5140	Ditch 10021 (cut 5138)	4: M1–E2C	Mandible	Contains dp2 and dp3 with p2 and p3 erupting beneath	2.5–3.5 years
5140	Ditch 10021 (cut 5138)	4: M1–E2C	Lower 3rd molar	Slight wear	2.5–5 years
5140	Ditch 10021 (cut 5138)	4: M1–E2C	Lower 2nd molar	Slight wear	16–24 months
5140	Ditch 10021 (cut 5138)	4: M1–E2C	Mandible	Very fragmented but mostly complete (M2 CH = 73.3mm; M3 CH = 85.4mm)	5–6 years
4471	Ditch 4425	5: M2–E3C	Mandible	M1 CH = 33.7mm; M2 CH = 41.7mm; M3 CH = 40.5mm	10–11 years

Table A22: Sex estimation of cattle metapodials based on the distal breadth/greatest length ratio

Spec no	Context	Phase	Element	GL/mm	Withers'	Bd/GL*100	Sex
460	4426	5: M2–E3C	Metacarpal	201	1256.3	33.93	Male
1424	4575	4: M1–E2C	Metacarpal	203.0	1268.8	33.25	Male
1734	4274	4: M1–E2C	Metacarpal	198.0	1237.5	33.03	Male
2036	4698	6: M3–4C	Metacarpal	211.0	1318.8	34.55	Male
619	3020	5: M2–E3C	Metacarpal	199.0	1194.0	27.79	Female
495	4426	5: M2–E3C	Metatarsal	237.0	1315.4	26.84	Male?
1834	4617	5: M2–E3C	Metatarsal	222.0	1232.1	29.59	Male?
949	4041	4: M1–E2C	Metatarsal	210.0	1165.5	27.67	Male?
1009	4038	5: M2–E3C	Metatarsal	241.0	1289.4	23.78	Female?
1313	4017	6: M3–4C	Metatarsal	203.0	1086.1	22.96	Female?

Table A23: Number of butchered specimens by phase and mark type

Taxon	1: MBA			3: LIA/ER				4: M1–E2C				5: M2–E3C				6: M3–4C			
	Cut	Chop	Total	Cut	Chop	Total	%	Cut	Chop	Total	%	Cut	Chop	Total	%	Cut	Chop	Total	%
Cattle	1		1	5	3	8	11.8	29	17	46	19.2	18	4	22	13.3	13	3	16	11.0
Sheep/goat	1		1	2		2	3.7	7		7	5.6	1		1	1.4	7	1	8	6.7
Pig				3		3	27.3	2		2	4.9	2		2	13.3	3		3	15.0
Equid				3		3	12.0	5	4	9	7.2	2		2	7.1	2	2	4	10.3
Dog				1		1	–	1		1	–				–	1		1	–
Chicken							–				–				–	1		1	–
Unidentified	1		1	4	4	8	–	6	2	8	–	2		2	–	14	5	19	–
Total	*3*	*0*	*3*	*18*	*7*	*25*	–	*50*	*18*	*69*	–	*25*	*4*	*29*	–	*41*	*10*	*51*	–

Table A24: Details of associated/articulating bone groups

Feature	Context	Phase	Taxon	Elements present	Comments
Ditch 10021	Fill 5064	4: M1–E2C	Dog/Fox	Pelvis (l & r), baculum, femur (l & r), tibia, fibula	The tibia and fibula were completely fractured through the shafts, which had rehealed with the distal end pointing anteriorly
Ditch 10021	Fill 5140	4: M1–E2C	Equid	Several lumbar vertebra, sacrum, pelvis, femur, tibia	Large number of horse bones in this context from at least two animals, some with butchery marks
Ditch 4040	Fill 4038	5: M2–E3C	Cattle	Navicular-cuboid, tarsal, metatarsal, 1st phalanges (x2), 2nd phalanges (x2), 3rd phalanges (x2)	Complete foot with multiple cuts all around the metatarsal; calcaneus present may also be associated

Table A25: List of animal bone specimens with pathological markers

Feature	Context	Phase	Taxon	Element	Pathology	Description
Ditch 2205	Fill 2206	3: LIA–ER	Cattle	Scapula	Other	Bone loss on blade surface
Ditch 10015	Fill 4574	4: M1–E2C	Cattle	1st phalanx	Arthropathy	Lipping at distal end
Ditch 10021	Fill 4713	4: M1–E2C	Cattle	Mandible	Arthropathy	Exostosis on proximal end of coronoid process
Ditch 10032	Fill 4595	4: M1–E2C	Cattle	Metatarsal	Arthropathy	Exostosis on shaft near distal end
Ditch 10021	Fill 4719	4: M1–E2C	Cattle	1st phalanx	Arthropathy	Exostosis around proximal and distal ends
Ditch 10021	Fill 4810	4: M1–E2C	Cattle	Mandible	Dental	Severe tooth infection p4–m3 with significant bone resorption
Ditch 10023	Fill 4667	4: M1–E2C	Cattle	Mandible	Dental	Bone resorption around the sockets of the lm3
Ditch 10022	Fill 5115	4: M1–E2C	Cattle	Metacarpal	Trauma/inflammation	Periostitis on anterior of shaft at distal end
Ditch 10051	Fill 4617	5: M2–E3C	Cattle	Metatarsal	Arthropathy	Considerable new bone growth around the shaft next to the distal condyles, which had not fused properly
Ditch 10036	Fill 4683	6: M3–4C	Cattle	Metatarsal	Arthropathy	Extensive abnormal growth around proximal end
Ditch 10009	Fill 4012	6: M3–4C	Cattle	1st phalanx	Arthropathy	Extensive lipping and bone enlargement around the proximal end
Ditch 10011	Fill 4366	6: M3–4C	Cattle	1st phalanx	Arthropathy	Slight exostosis on the dorsal surface at the distal end
Ditch 10009	Fill 4013	6: M3–4C	Cattle	2nd phalanx	Arthropathy	Exostosis around distal end
Ditch 10013	Fill 4290	6: M3–4C	Cattle	3rd phalanx	Arthropathy	Some abnormal growth on shaft
Ditch 10013	Fill 4290	6: M3–4C	Cattle	3rd phalanx	Arthropathy	Slight exostosis around articulation
Ditch 10011	Fill 4366	6: M3–4C	Cattle	Mandible	Dental	Malocclusion on the p4, m1 and m3
Ditch 10021	Fill 5061	4: M1–E2C	Sheep/goat	Tibia	Arthropathy	Exostosis on tubercle tuberosity
Ditch 10019	Fill 4808	5: M2–E3C	Sheep/goat	Astragalus	Other	Signs of bone degeneration (digested?)
Pit/Waterhole 4256	Fill 4258	6: M3–4C	Sheep/goat	Mandible	Dental	Malocclusion on the anterior m1 cusp
Ditch 10013	Fill 4290	6: M3–4C	Sheep/goat	Mandible	Dental	Slight malocclusion on the m2
Ditch 10009	Fill 4017	6: M3–4C	Goat	Metacarpal	Arthropathy	Abnormal growth along the posterior shaft and exostosis at proximal end
Ditch 10032	Fill 4929	4: M1–E2C	Pig	Skull	Trauma/inflammation	Abnormal periosteal growth around eye socket
Ditch 10019	Fill 4419	5: M2–E3C	Equid	Metatarsal	Arthropathy	Slight exostosis on anterior side of proximal end
Ditch 10032	Fill 5146	4: M1–E2C	Equid?	Rib	Arthropathy	Exostosis around proximal end
Ditch 10019	Fill 4808	5: M2–E3C	Dog	Humerus	Arthropathy	Lipping on proximal epiphysis

Feature	Context	Phase	Taxon	Element	Pathology	Description
Ditch 10013	Fill 4290	6: M3–4C	Dog	Tibia	Trauma/inflammation	Abnormal growth all along posterior of shaft
Ditch 10021	Fill 5064	4: M1–E2C	Dog/fox	Tibia/fibula	Trauma/inflammation	Complete fracture through shaft with re-healing at abnormal angle
Ditch 10045	Fill 4869	4: M1–E2C	Large mammal	Vertebra	Other	Bone degeneration with notable pitting on the centrum
Ditch 10018	Fill 4426	5: M2–E3C	Large mammal	Vertebra	Other	Some degeneration on posterior of thoracic spine
Ditch 10017	Fill 4047	5: M2–E3C	Large mammal	Long-bone shaft	Trauma/inflammation	Severe abnormal growth likely resulting from a fracture
Ditch 10036	Fill 4687	6: M3–4C	Large mammal	Rib	Infection	Deep oval lesion within the centre of the rib with some enlargement around the lesion and some degeneration at both edges
Corndryer 10002	Fill 4371	6: M3–4C	Chicken	1st phalanx	Arthropathy	Slight exostosis around proximal end

Table A26: Cattle measurements (dimension codes follow von den Driesch 1976; *=estimated)

Phase	Taxon	Element	Dimension						
3: LIA–ER	Cattle	Astragalus	GL	66.6					
			Bd	46.0					
			GLl	60.6					
		Metatarsal	Bp	45.3					
			Dp	45.7					
		Tibia	GL	359.0					
			SD	34.8	38.0	39.6			
			Bd	53.7	64.0	64.5			
			Dd	42.5	47.7	48.8			
4: M1–E2C	Cattle	Astragalus	GL	59.8	61.1	64.9			
			Bd	36.2	41.5	42.5			
			GLl	53.2	55.4	57.3			
		Metacarpal	GL	183*	198.0	203.0			
			Bp	53.3	54.3	58.4	58.5	62.1	65.9
			Dp	32.6	33.4	35.3	35.9	36.1	38.8	41.8
			SD	31.8	33.1	34.4	34.5	34.6	35.7
			Bd	65.4	67.5	72.6			
			BFd	59.8	60.1	61.3			
			DFd	28.7	29.4	29.6			
		Metatarsal	GL	210.0					
			Bp	40.1	42.3	48.1	50.8	53.1	
			Dp	38.1	40.5	44.5	46.6	50.0	
			SD	22.3	25.9	30.3			
			Bd	58.1	58.4				
			BFd	51.1	53.5				
			DFd	30.0	31.5				
		Radius	Bd	79.7					
			BFd	75.3					
		Tibia	SD	34.6					
			Bd	59.0	59.5	59.6			
			Dd	42.7	42.9	43.2			
5: M2–E3C	Cattle	Astragalus	GL	63.2	63.6	65.4			
			Bd	38.1	38.7	42.2			
			GLl	58.5					
		Humerus	Bd	98.9					
			HTC	38.5					
			BT	85.4					
		Metacarpal	GL	199.0	201.0				
			Bp	54.1	64.1				
			Dp	31.6	39.6				
			SD	31.2	35.6				
			Bd	55.3	68.2				
			BFd	50.0	57.1	58.1			
			DFd	27.4	28.5	30.6			
		Metatarsal	GL	222.0	237.0	241.0			
			Bp	43.0	53.5	53.6	54.6		
			Dp	42.0	48.9	49.1	50.6		
			SD	23.4	28.1	28.9	30.2		
			Bd	46.7	57.3	59.0	63.6	65.7*	
			BFd	43.6	54.9	56.7	59.9	57.8*	
			DFd	24.7	29.8	30.4	34.7	32.5*	
		Radius	GL	284.0	289.0				
			Bp	75.6	77.2	82.9	83.3	83.4	
			SD	40.0	40.3	40.5	42.2	44.4	
			Bd	76.9	79.5				
			BFd	70.4	74.5				

Phase	Taxon	Element	Dimension					
			BFp	68.9	74.7	75.0	75.1	
		Tibia	SD	35.4	36.3			
			Bd	56.9	58.7	62.8		
			Dd	41.3	41.7	48.3		
6: M3–4C	Cattle	Astragalus	GL	60.3	65.6			
			Bd	37.6	38.7			
			GLl	57.0	60.5			
		Humerus	GL	320.0				
			Bd	85.1	91.6			
			HTC	33.4	34.1			
			BT	73.5	81.5			
		Metacarpal	GL	211.0				
			Bp	69.0				
			Dp	39.6				
			SD	38.6				
			Bd	72.9				
			BFd	64.2				
			DFd	32.6				
		Metatarsal	GL	203.0				
			Bp	41.3	45.2	45.5	49.4	52.8
			Dp	37.4	42.5	43.1	45.5	48.2*
			SD	23.3	23.4	24.1	28.2	30.4
			Bd	46.6				
			BFd	44.6				
			DFd	27.2				
		Radius	Bp	85.6	88.5			
			Bd	76.2				
			BFp	78.2	79.1			
		Tibia	SD	38.8	40.3			
			Bd	58.8	64.4	67.6		
			Dd	43.6	48.8	49.6		
		Ulna	DPA	72.6	78.8			
			LO*	>62.9	>94.8			
			SDO	58.0	65.9			

Table A27: Sheep/goat measurements (dimension codes follow von den Driesch 1976; *=estimated; ^=goat)

Phase	Taxon	Element	Dimension					
3: LIA–ER	Sheep/Goat	Metacarpal	Bp	20.0				
			Dp	14.2				
			SD	11.6				
		Metatarsal	Bp	16.1	17			
			Dp	16.1	16.7			
			SD	9.4	10.1			
		Radius	Bp	27.6				
			BFp	25.3				
			SD	15.3				
4: M1–E2C	Sheep/Goat	Astragalus	GL	26.8				
			Bd	16.7				
			GLl	25.4				
		Metatarsal	GL	121.5				
			Bp	17.3	20.0			
			Dp	17.5	19.1			
			SD	10.0	12.7			
			Bd	20.5				
			DFd	12.3				
		Radius	Bp	25.2	26.0	27.9		
			SD	12.9	13.8			
			BFd	24.0				
			BFp	23.01	23.2	25.4		
		Tibia	SD	11.5	13.2	14.7		
			Bd	21.7	24.4	24.5		
			Dd	16.1	19	19.3		
5: M2–E3C	Sheep/Goat	Metacarpal	Bp	19.0				
			Dp	12.5				
		Metatarsal	Bp	18.4				
		Radius	GL	163.0				
			Bp	29.7	31.6			
			BFp	27.3	29.4			
			SD	16.9	17.5			
			Bd	27.5				
			BFd	21.0				
6: M3–4C	Sheep/Goat	Metacarpal	Bp	21.7	24.4^			
			Dp	15.7	16	17.1^		
			SD	13.6	14.6	17.0^		
		Metatarsal	GL	114.1	139.4	129.8*		
			Bp	19.2	19.3	19.6	19.9	21.3
			Dp	18.1	18.3	19.6	20.2	20.3
			SD	10.9	11.8	12.1	12.4	12.7
			Bd	21.6	23.2			
			BFd	21.2	23.2			
			DFd	12.1	13.1			
		Radius	Bp	28.1	30.1			
			BFp	24.8	27.4			
			SD	14.8	14.9			
			Bd	24.2				
			BFd	21.5				
		Tibia	SD	12.4	13.1			
			Bd	24.0	24.3			
			Dd	18.0	19.3			

Table A28: Pig measurements (dimension codes follow von den Driesch 1976)

Phase	Taxon	Element	Dimension		
5: M2–E3C	Pig	Rad	Bp	30	33.1
			SD	20.4	

Table A29: Horse measurements (dimension codes follow von den Driesch 1976 and Levine 1982)

Phase	Taxon	Element	Dimension					
3: LIA–ER	Horse	Metacarpal	GL	197	225			
			Bp	41.3				
			Dp	24.4				
			SD	27.8	33.8			
			Bd	41.3	50.6			
			BFd	40.9	47.6			
		Radius	GL	292				
			Bp	67.4	68.4			
			SD	28.5				
			Bd	60.9				
			BFd	49.7				
			BFp	62.2				
		Tibia	Bd	64.3				
			Dd	42.7				
4: M1–E2C	Horse	2nd molar	CH	73.3	86.7			
		3rd molar	CH	85.4				
		1st molar	CH	84.8				
		Metacarpal	GL	195	217	223	225	237
			Bp	41.8	48.4	49.3	52.4	
			Dp	28	30.7	32	35.2	
			SD	26.9	30.6	33.3	34.1	36.7
			Bd	40.2	47	47.5	51.5	54.6
			BFd	38.3	48	49.5	51	
		3rd	CH	65.1				
		Radius	GL	298	321			
			Bp	71.9	72.7	84.5		
			SD	32.5	34.2	40.1		
			Bd	67				
			BFd	54.6				
			BFp	78				
		Tibia	GL	334	351			
			SD	34.7	35.5	36	41.5	
			Bd	63	63.7	64.7	65.1	
			Dd	38.4	39.8	40	40.2	
5: M2–E3C	Horse	1st molar	CH	33.7				
		2nd molar	CH	41.7				
		3rd molar	CH	40.5				
		Metacarpal	GL	254				
			Bp	46.5				
			Dp	38.7				
			SD	29.2				
		Metatarsal	GL	252				
			Bp	45.5				
			Dp	41.5				
			SD	27.9				
			Bd	43.3				
			BFd	43.3				
6: M3–4C	Horse	Metatarsal	SD	30.2				
			Bd	43.1				

Phase	Taxon	Element	Dimension	
			BFd	45.4
		Radius	GL	319
			Bp	71.2
			SD	32.4
			Bd	66.1
			BFd	53.8
			BFp	65.2

Table A30: Shape index and withers' height calculations for horse metacarpals

Spec. no.	Phase	Bp/GL*100	SD/GL*100	Bd/GL*100	Withers' height/mm
253	4: M1–E2C	22.3	14.1	21.7	1324.1
590	Roman	21.9	15.0	21.9	1257.0
951	4: M1–E2C	–	14.4	21.7	1446.2
976	5: M2–E3C	18.3	11.5	–	1549.9
1506	4: M1–E2C	23.5	16.5	24.5	1360.7
1553	4: M1–E2C	21.4	13.8	20.6	1189.9
1935	3: LIA–ER	–	15.0	22.5	1373.0
2052	4: M1–E2C	21.9	14.8	21.1	1373.0
2115	3: LIA–ER	21.0	14.1	21.0	1202.1
	Min	*18.3*	*13.8*	*20.6*	
	Max	*23.5*	*16.5*	*24.5*	
	Mean	*21.5*	*14.7*	*21.9*	
	St. dev.	*1.49*	*1.25*	*1.13*	

Table A31: Dog measurements (dimension codes follow von den Driesch 1976)

Phase	Taxon	Element	Dimension		
4: M1–E2C	Dog	Femur	GL	120	
			Bp	24.4	
			SD	7.5	
			Bd	22.8	
		Lower 1st molar	GL	21.6	
			GB	8.7	
		Tibia	GL	157	201
			Bp	30	
			SD	10.3	15.5
			Bd	19.8	27.9
			Dd	14.4	19.3
5: M2–E3C	Dog	Humerus	GL	124	143
			Bp	21.8	24.1
			SD	8.9	11.4
			Bd	25.5	26.2
		Lower 1st molar	GL	20	
			GB	7.8	
6: M3–4C	Dog	Lower 1st molar	GL	21.3	21.2
			GB	8.7	8.6

APPENDIX B SITE SUMMARY DETAILS

Site name:	Grove Airfield, Grove, Oxfordshire
Site code:	GRAIR18
Grid Reference	SU 3922 8948
Type:	Excavation
Date and duration:	August–November 2018
Area of Site	1.9ha

Location of archive: The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES, and will be deposited with Oxfordshire Museums Service in due course, under the following accession number: OXCMS:2017.108.

Summary of Results: Preceding phases of trial-trench evaluation in 2006, 2010 and 2018 established the presence of numerous Iron Age and Romano-British features that appeared to have formed parts of a rural settlement, upon which the excavated area, totalling 1.9ha, was subsequently targeted.

Evidence of a middle Bronze Age agricultural settlement site was in the form of a field system and possible stock enclosures demarcated by ditches, together with a limited range of finds and charred plant remains. A seemingly isolated late Bronze Age crouched burial and distinctive perforated fired clay blocks provide limited evidence of activity at the site during this period. In the late Iron Age/early Roman period, the site was once again used for agricultural purposes, with new land boundaries established and a possible roundhouse that appeared to have been altered.

The settlement was reorganised around the beginning of the 2nd century AD and was enlarged in the 3rd century, having a more formal rectilinear layout and several enclosed areas that contained several post-built structures. Two inhumation burials of possible early Roman date are indicative of rural burial practices in a non-cemetery context. The pottery assemblage is suggestive of a fairly low status rural settlement site, whilst the animal bone assemblage and charred plant remains highlight the importance of a mixed agricultural economy.

By the 4th century the settlement appears to have become more open, with a shift towards more intensive arable production and crop processing signified by the construction of a large corndryer and greater quantities of charred plant remains.

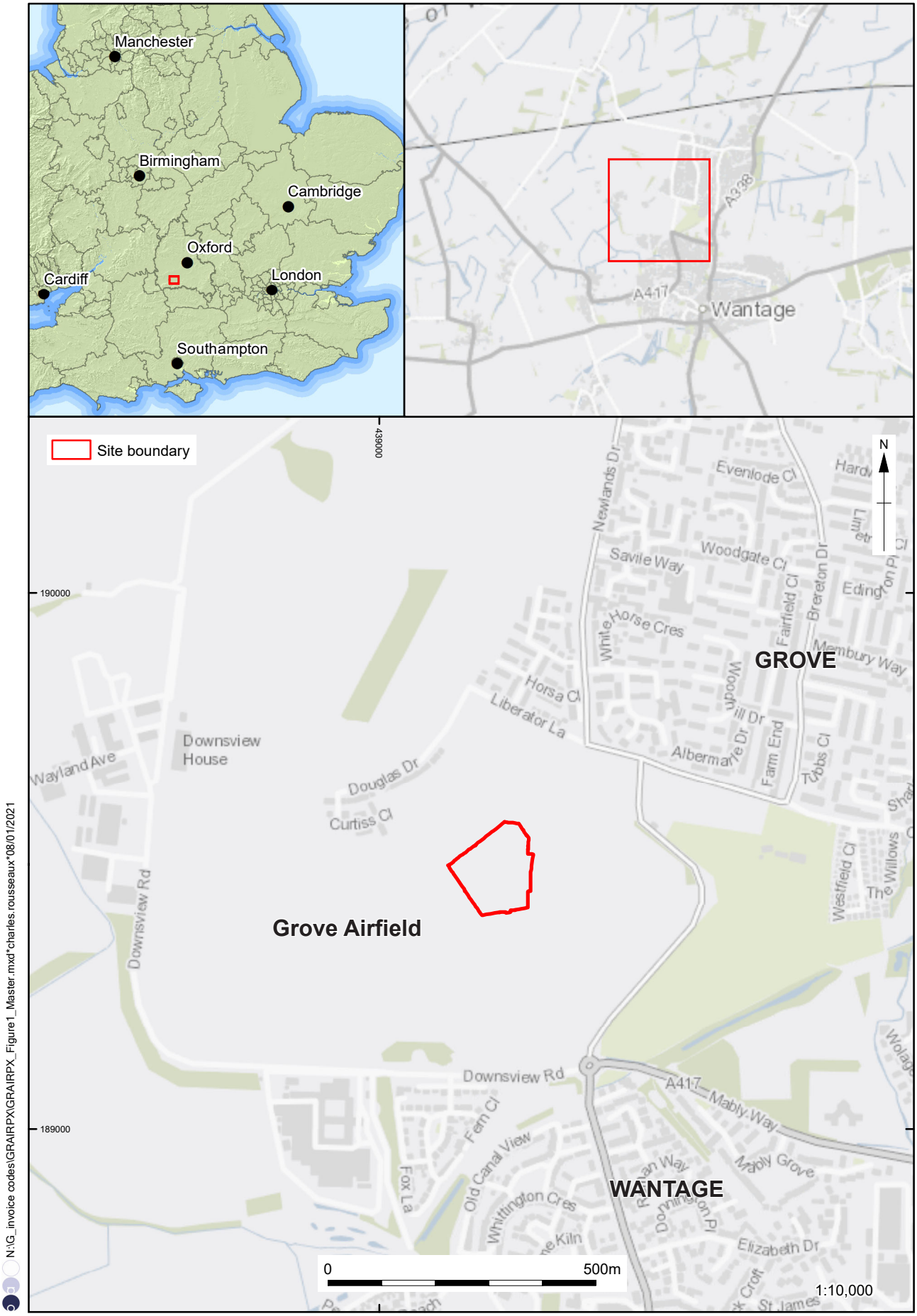

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Figure 1: Site location

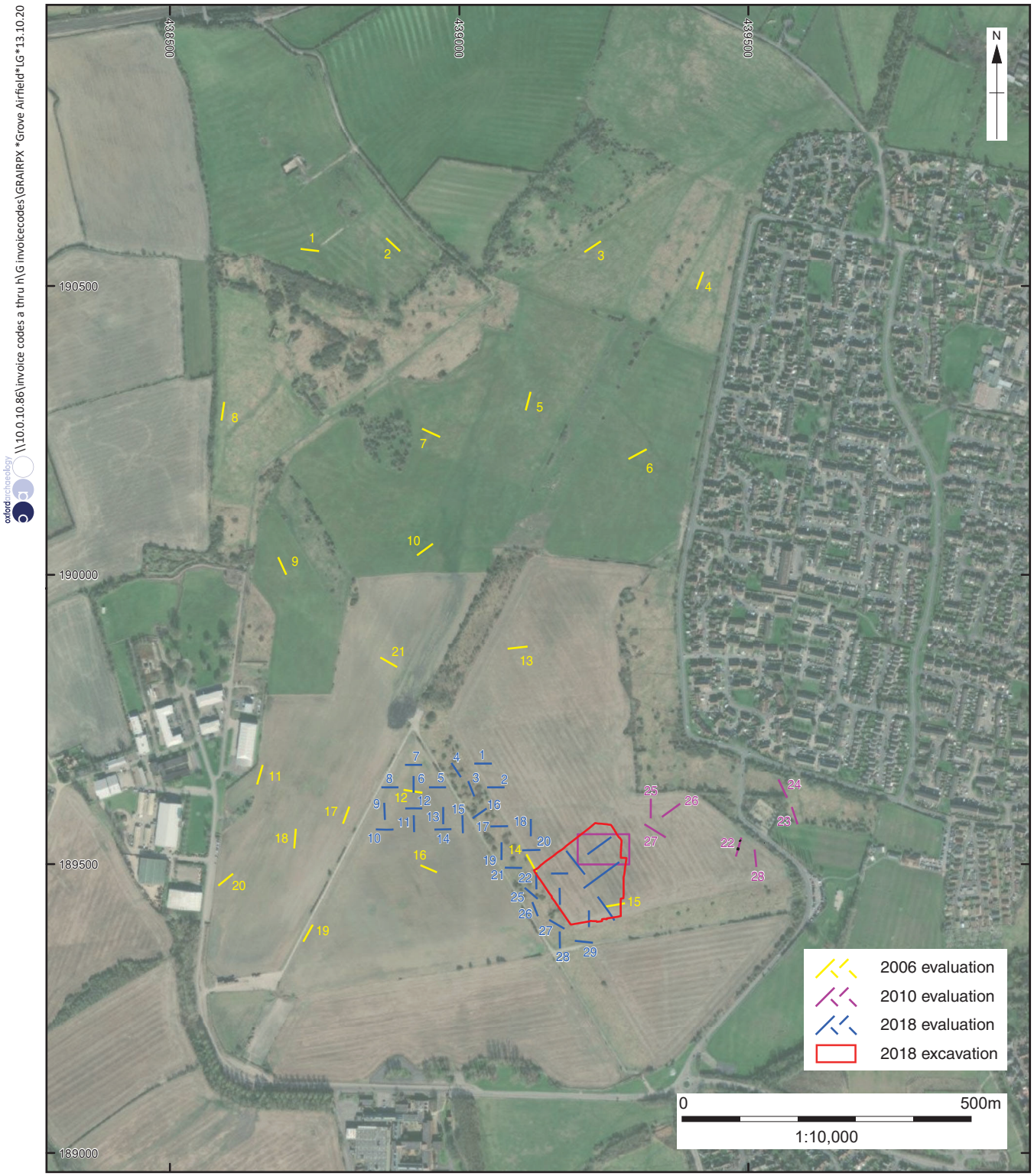

Figure 2: Location of excavation area and previous investigations

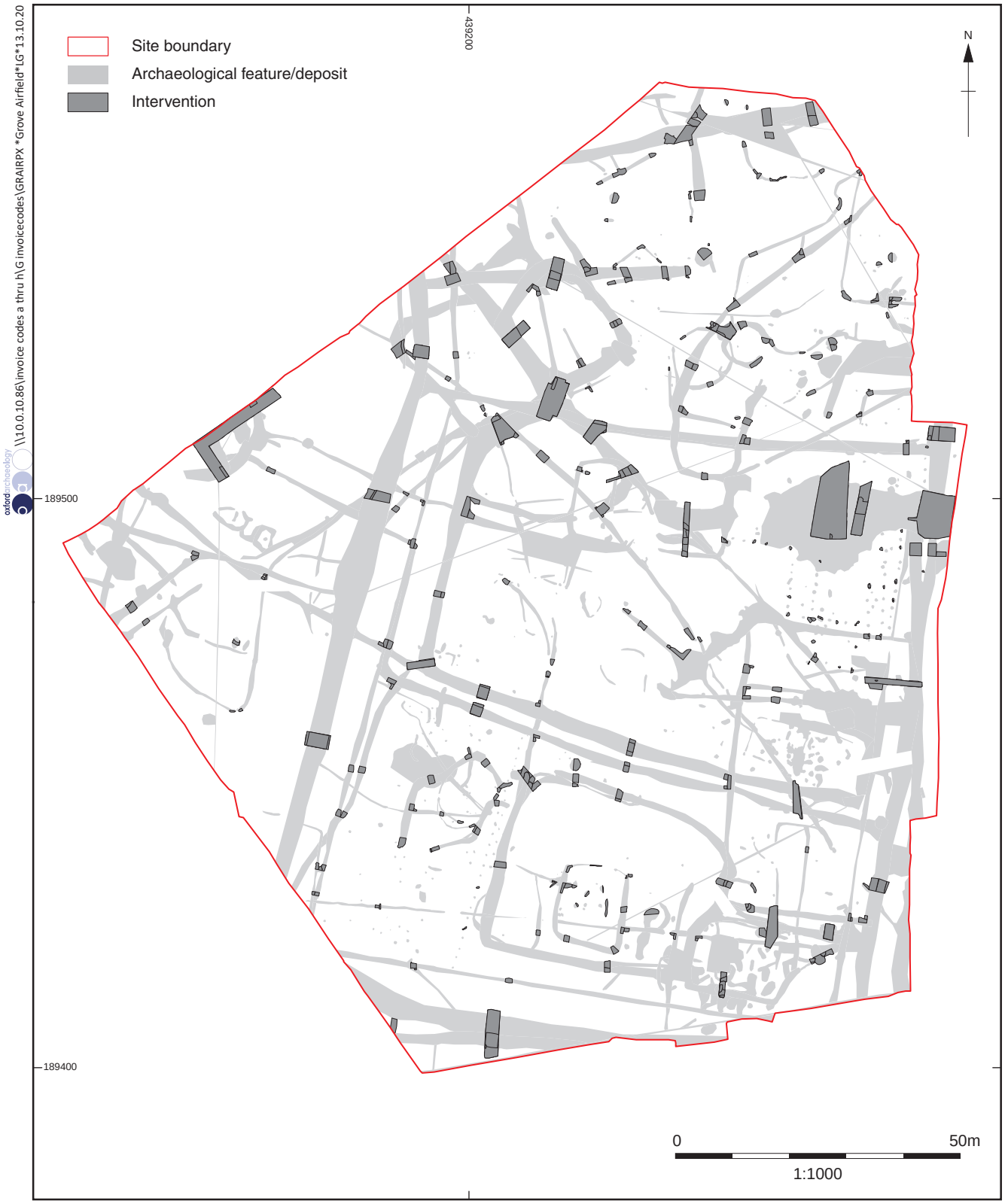

Figure 3: Plan of excavation area: all features

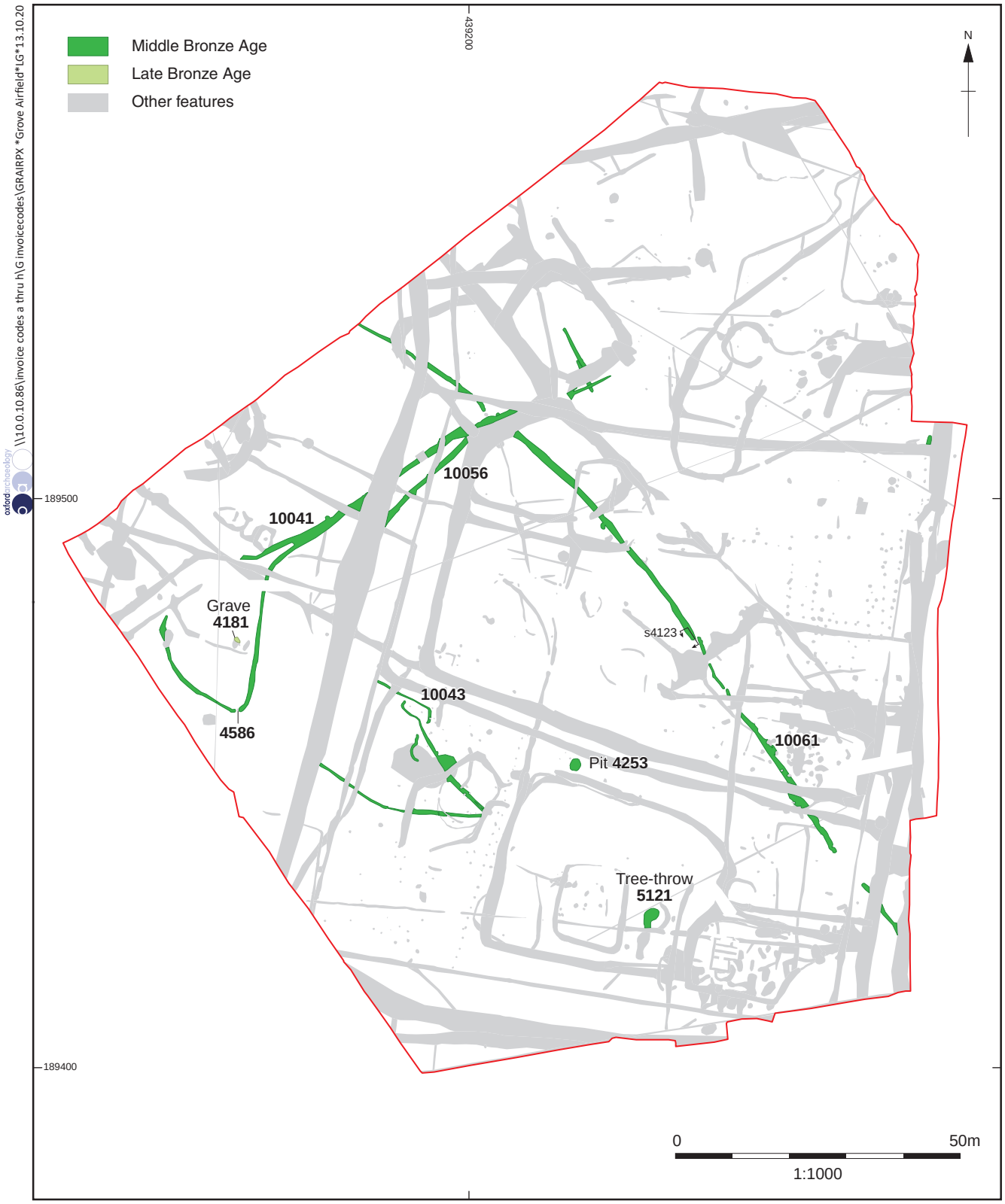

Figure 4: Phases 1 and 2 plan

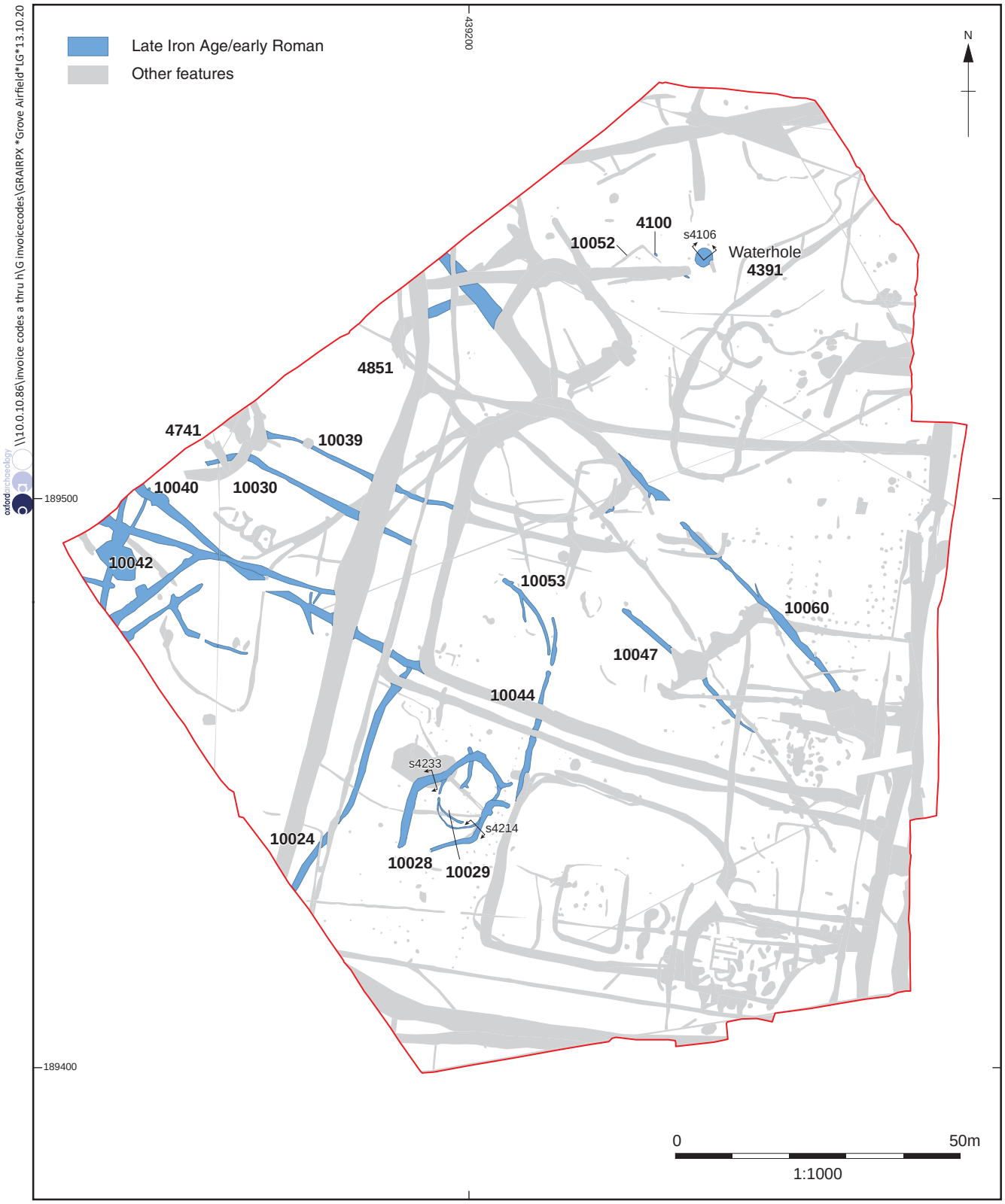

Figure 5: Phase 3 plan

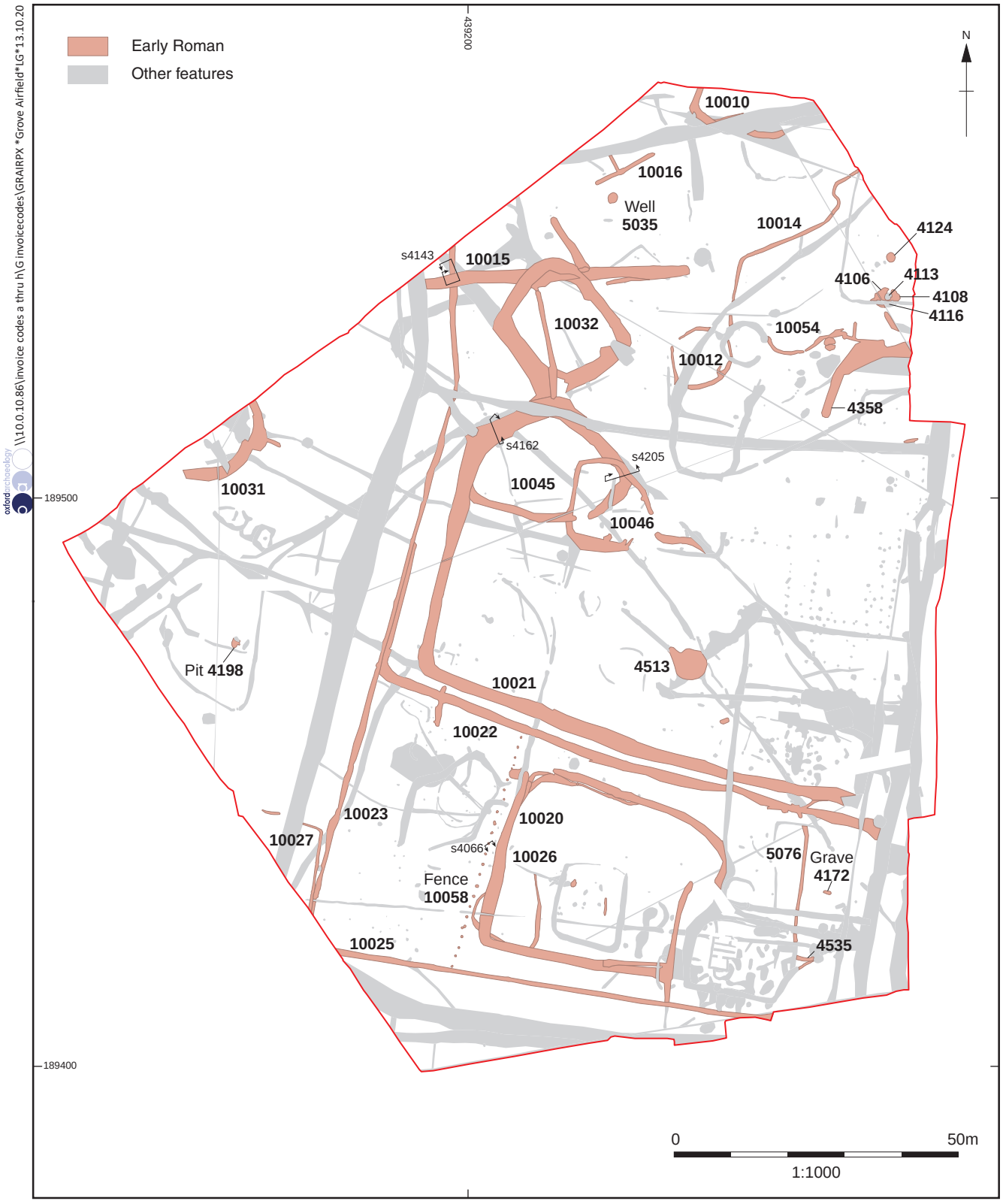

Figure 6: Phase 4 plan

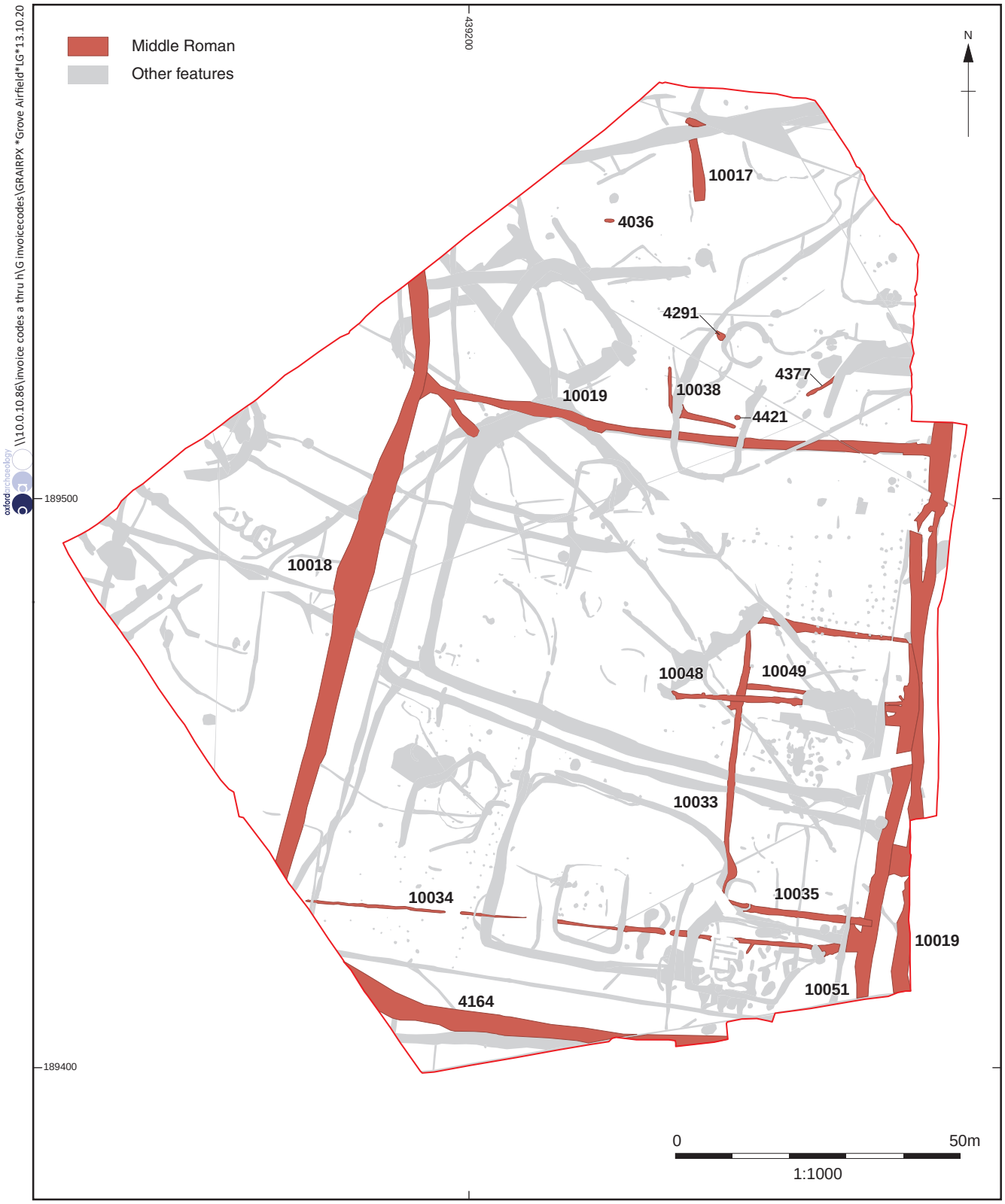

Figure 7: Phase 5 plan

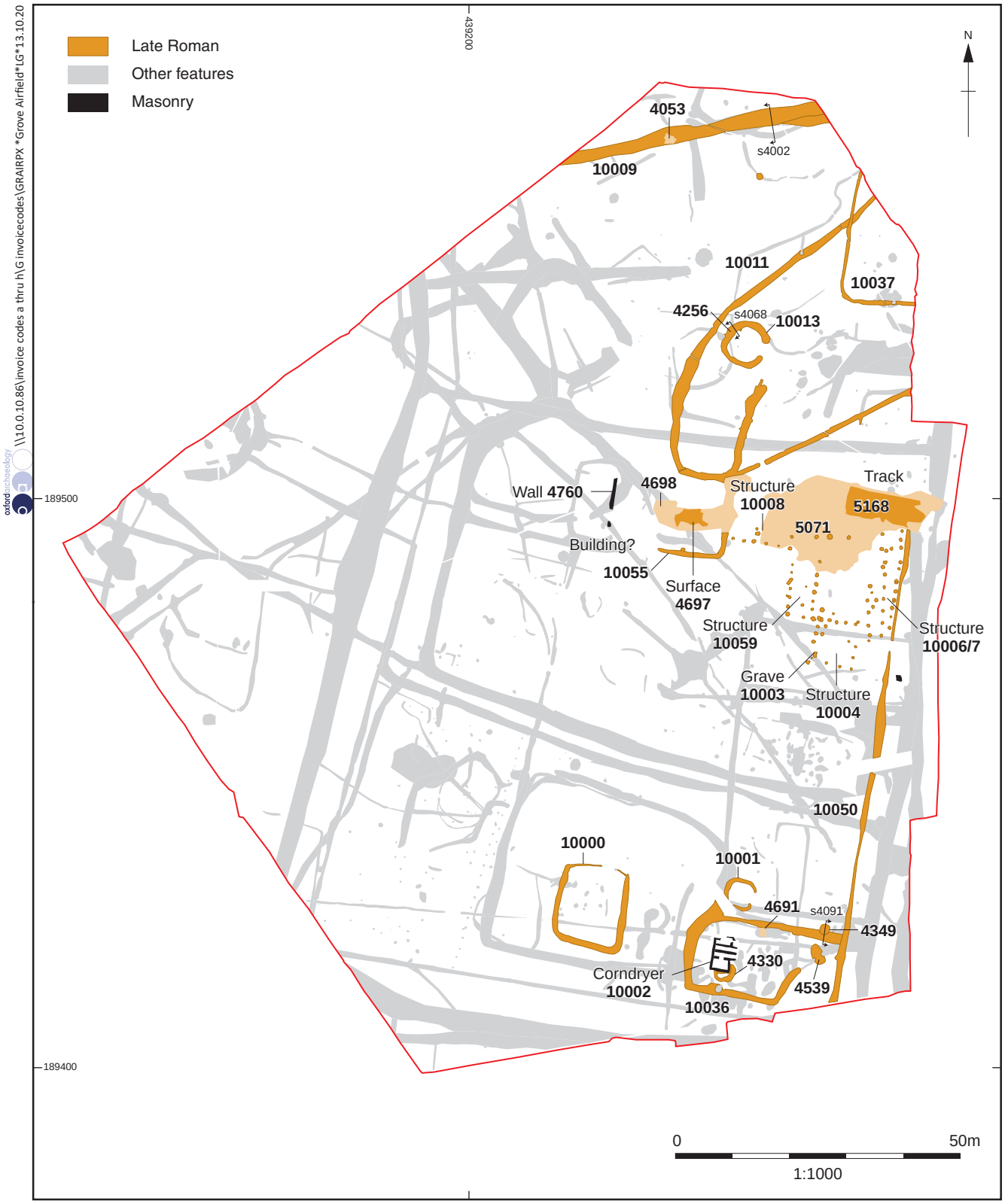

Figure 8: Phase 6 plan

Figure 9: Plan of possible building represented by structures 10004, 10006/7, 10008, and 10009

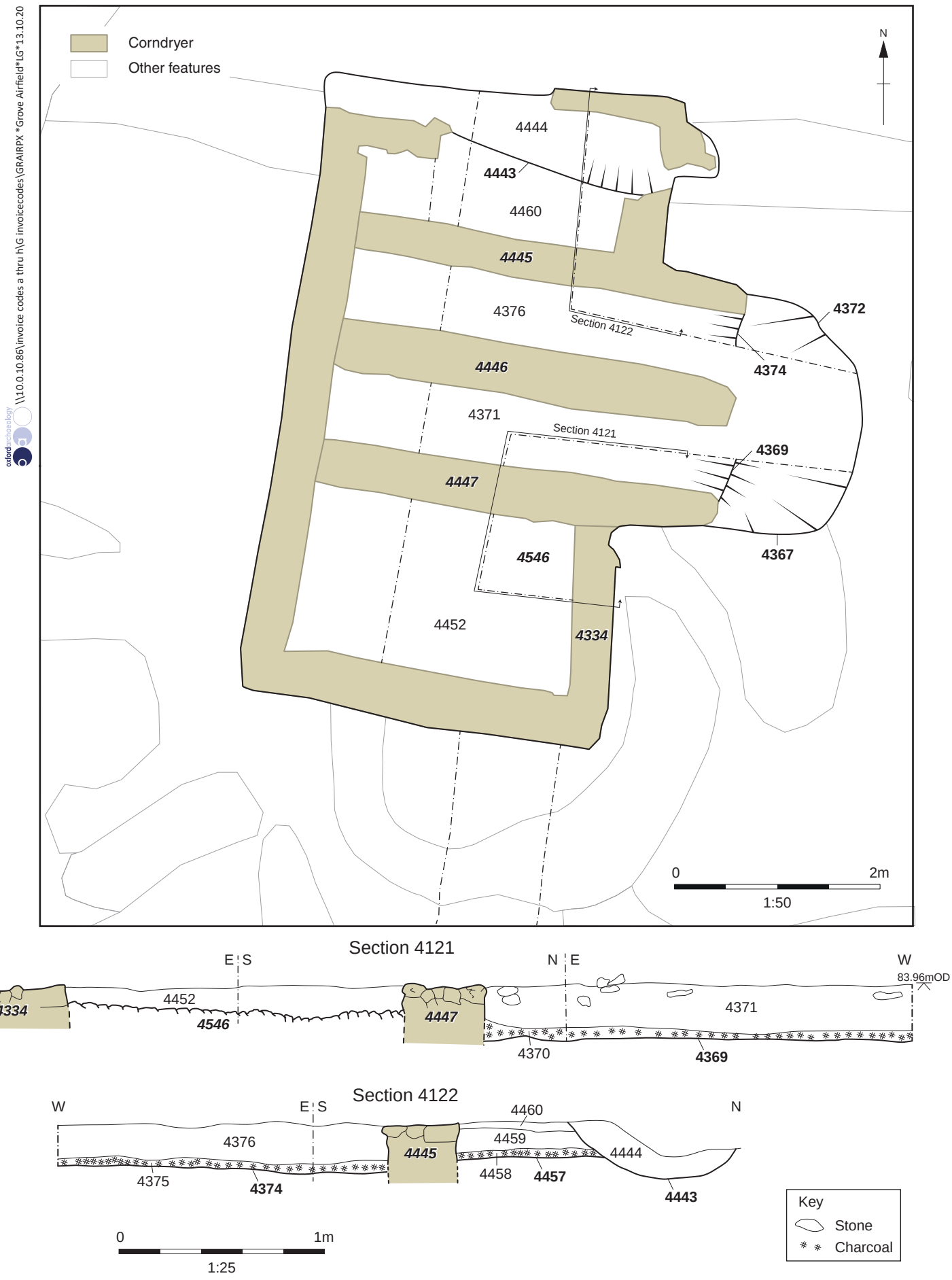

Figure 10: Plan and section of corndryer 10002

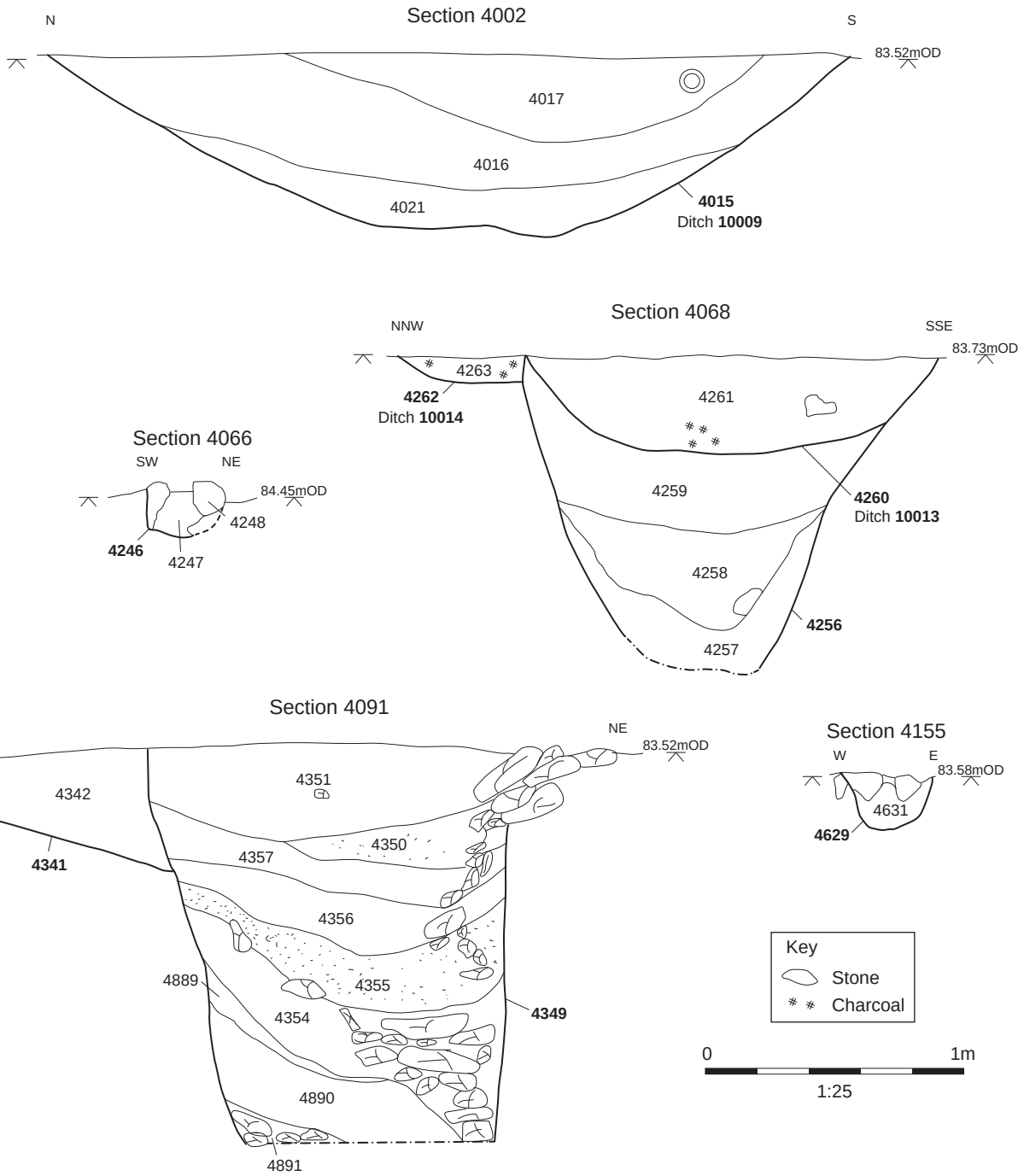

Figure 11: Sections 4002, 4066, 4068, 4091, 4155 and 4106

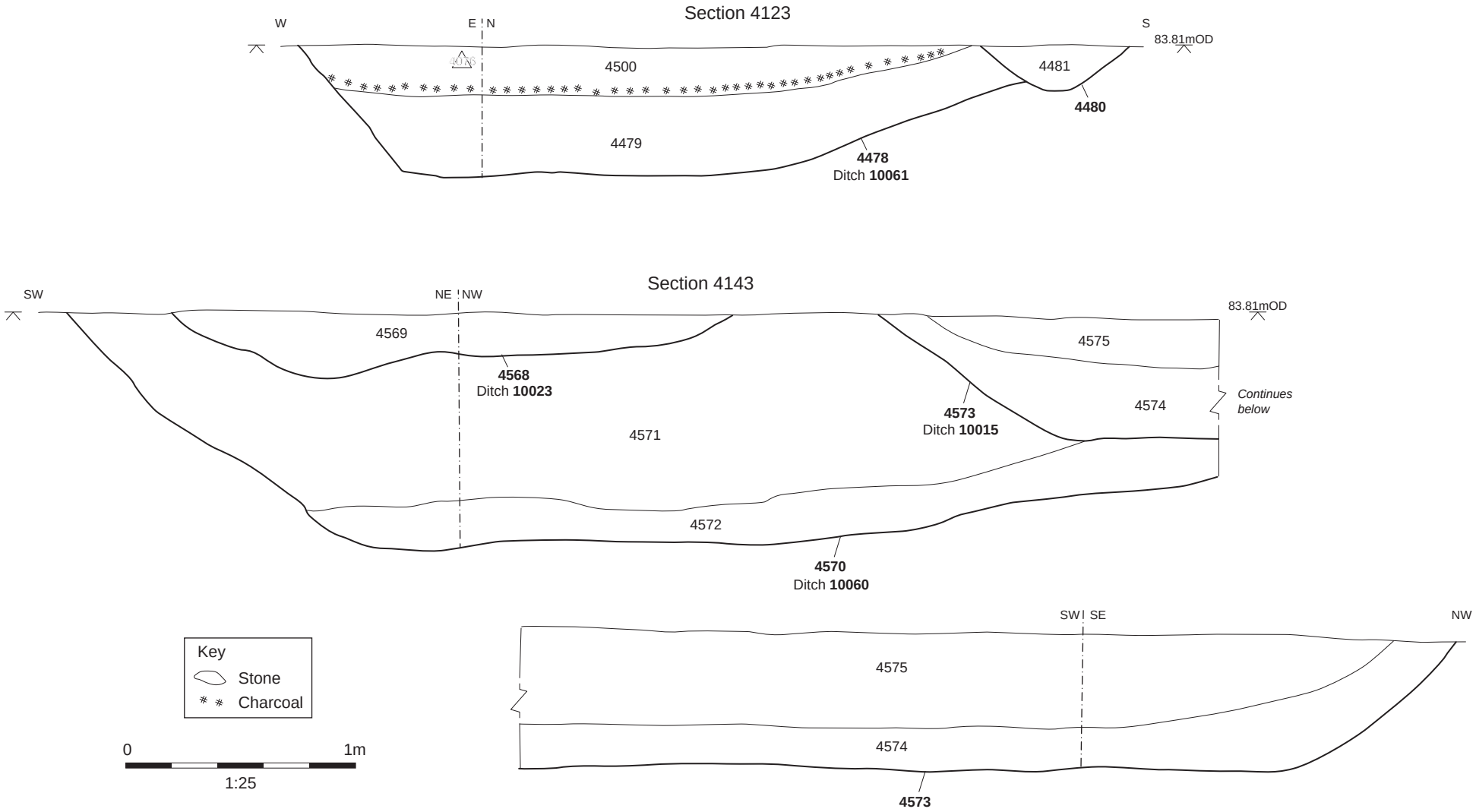

Figure 12: Sections 4123 and 4143

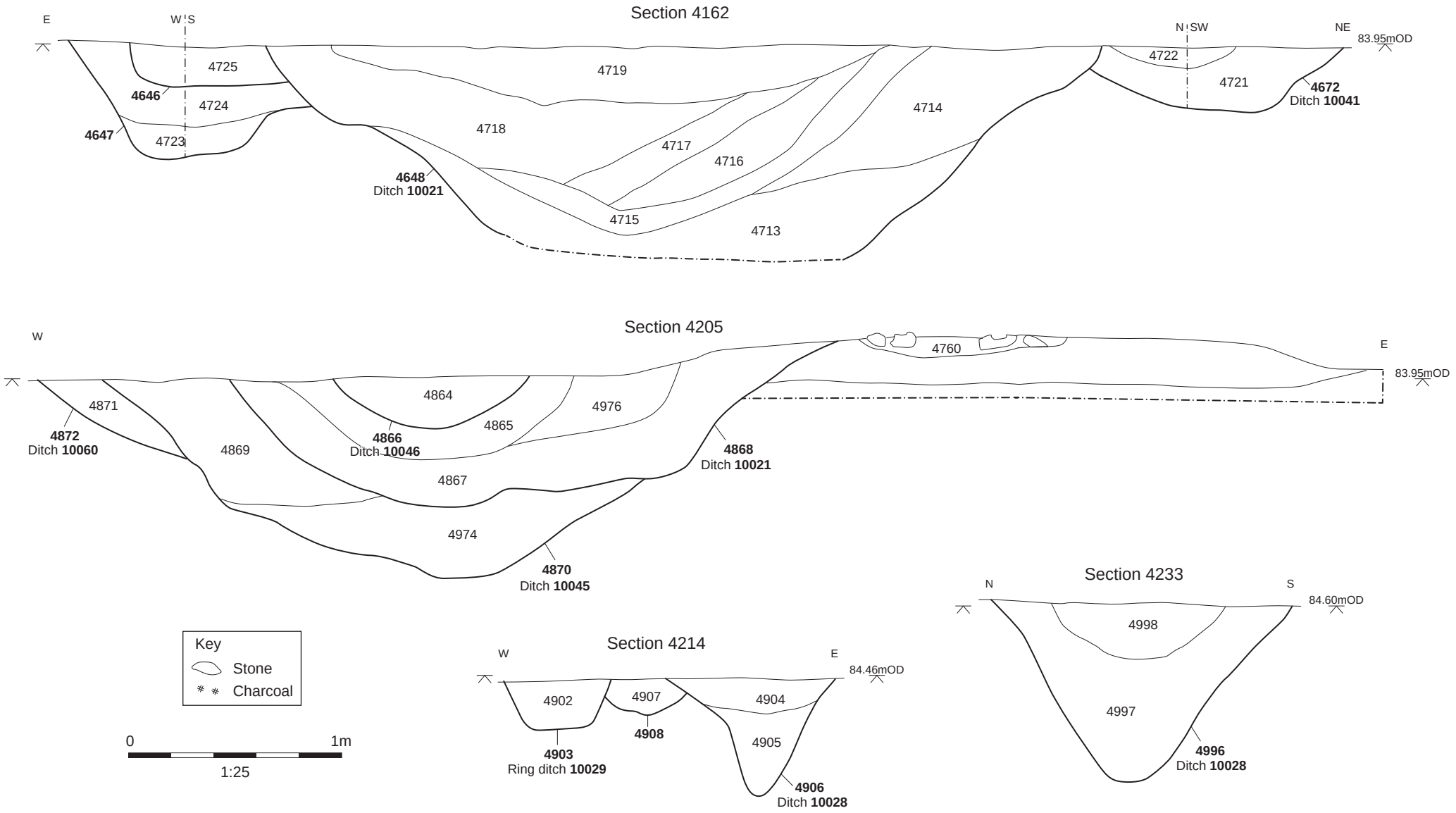

Figure 13: Sections 4162, 4205, 4214 and 4233

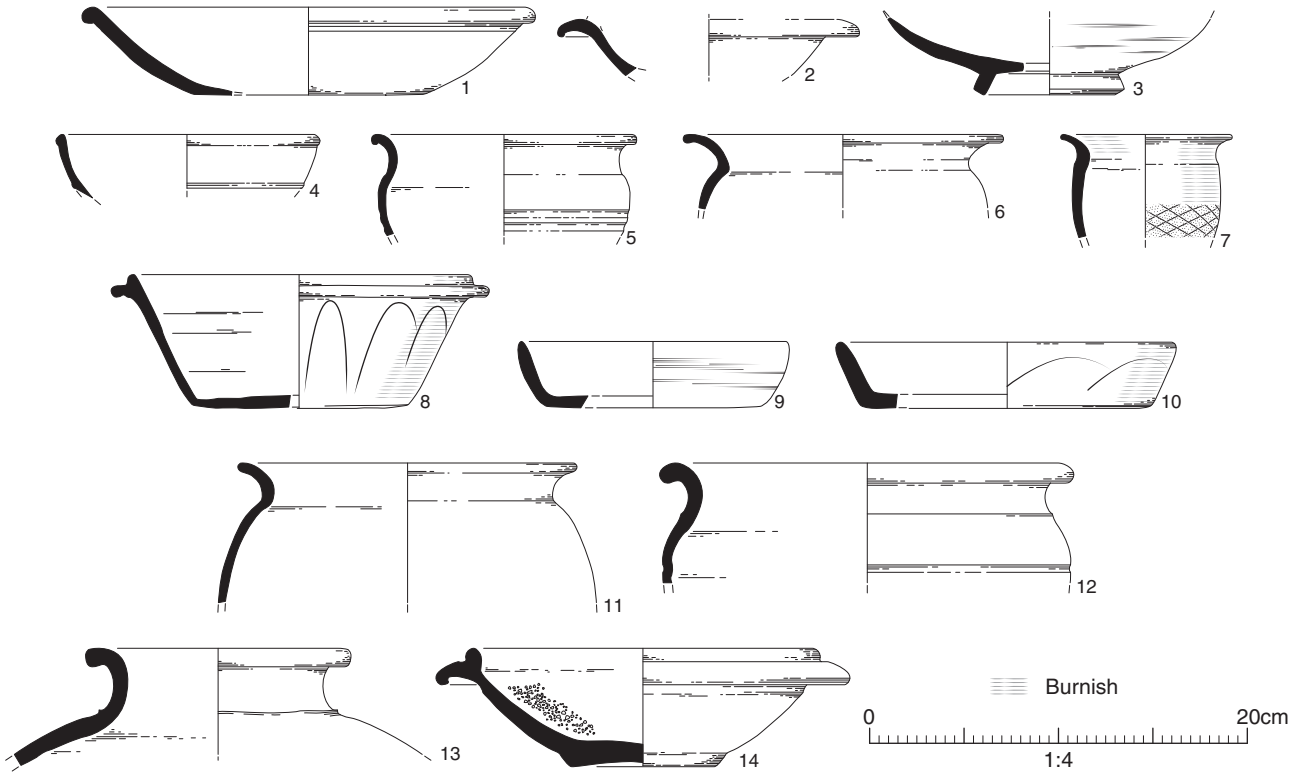

Figure 14: Roman pottery

Figure 15: Metal finds

Plate 1: Ditch 10061, looking west-south-west (1m scale)

Plate 2: Inhumation burial 4181 (SK 4179), looking north-east (1m scale)

Plate 3: Ditch 10052, looking south-south-east (0.3m scale)

Plate 4: Trackway ditch 10030, looking east-south-east (0.3m scale)

Plate 5: Ditch 10024, looking north-east (1m scale)

Plate 6: Ditch 10012, looking west-south-west (0.3m scale)

Plate 7: Pit 4253 and ditch 10020, looking south-west (2m scale)

Plate 8: Inhumation burial 4172 (SK 4170), looking south (1m scale)

Plate 9: Well 5035, looking north-west (2m scale)

Plate 10: Pit 4202 and ditch 10019, looking south-east (2m scale)

Plate 11: Pit 4124, looking south-east (1m scale}

Plate 12: Ditch 10009, looking south-east (1m scale)

Plate 13: Surface 4053, looking north (1m scale)

Plate 14: Corndryer 10002, looking south-west

Plate 15: Pit/well 4349, looking west-north-west (2m scale)

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