The Margin Walkers

PREHISTORIC AND ROMANO-BRITISH REMAINS AT THE EAST MIDLANDS GATEWAY LOGISTICS PARK

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with contributions from Lucy Allott, Rowena Banerjea, Alex Brown, Julie Dunne, Richard P. Evershed, Hugh Fiske, Toby Gillard, Erica Gittins, Richard Henry, Lorrain Higbee, Inés López-Dóriga, Katie Marsden, Jacqueline I. McKinley, Lorraine Mepham, J. M. Mills, Ian Rowlandson and Ruth Shaffrey

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Front cover
Dora Olah monitoring topsoil removal from the Horsecroft site

Back cover
Top: Michael Keech monitoring excavation of an evaluation trench near Lockington
Centre: Grey ware jar from Daleacre
Bottom: Excavations at Longfield

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'Margin Walker' is the 1989 EP from *Fugazi* (Dischord Records). Re-purposed with permission.

Abstract

Geophysical survey and evaluation trenching across 290 hectares of farmland in the parishes of Lockington-Hemington and Kegworth in North West Leicestershire led to the open area excavation of 12 sites (centred NGR SK 468 271). The project provided a valuable opportunity to investigate an area about which little was known archaeologically, despite it lying on the southern periphery of the Derwent/Trent/Soar confluence zone, an area rich in remains from prehistory onwards.

The work revealed relatively few indications of activity from the Bronze Age or earlier, with the earlier prehistoric evidence comprising sparse flintwork and a cluster of three Early to Middle Bronze Age burnt mounds and associated pits. A Middle Bronze Age inhumation grave and a pair of Late Bronze Age cremation graves were also found.

In keeping with regional norms, archaeologically visible activity increased dramatically during the Middle Iron Age. The excavated remains comprise pit alignments, roundhouses, field boundaries and enclosures. These sites had largely agricultural functions, characterised by mixed cattle and arable farming on a subsistence basis. Study of the animal bone and organic residue analysis of the pottery reveal dairying played a role in local farming practice. The significance of thresholds in ritual behaviour was apparent in the recovery of a human skull containing a concentration of spelt chaff placed alongside articulated horse bone in an enclosure entrance.

The use of the landscape appears to have been re-organised around the 1st century AD, with the Iron Age sites fallen or falling out of use and other areas forming foci of activity during the Romano-British period. The character of the later sites nevertheless resembled that of their Iron Age predecessors, having everyday finds assemblages and appearing small and chiefly agricultural in nature, albeit with slight evidence of agricultural intensification and an increased emphasis on exports following the Roman Conquest. After the abandonment of these sites in the 4th century AD, the land was given over to farming, with no evidence of its re-occupation until the 19th century. However, several examples of ancient boundaries persisting into the modern landscape point to some degree of continuity in the post-Roman period.

The fact that all of the excavated sites have been investigated and reported upon to a common methodology and lie in close proximity to each other means that the results represent a coherent 'package', perhaps more than the sum of its parts in terms of contributing to archaeological knowledge. In particular, insights have been gained into aspects of settlement form and layout, the use of pottery, trading links and agricultural practice, and how the sites fitted into the wider social and economic landscape in the centuries either side of the BC/AD transition.

Glossary of Conventions

Scheme boundary

Mitigation site boundary

Trench boundary (when superseded by site boundary)

S.1 Section identifier (arrows denote direction of section)

Ditch 60252 Feature group number for sections (colour denotes group unless phased)

Chapter 1
Introduction

Circumstances of the Project

The construction of the SEGRO East Midlands Gateway Logistics Park provided an opportunity for the archaeological investigation of some 290 hectares of land lying between Castle Donington, Hemington, Lockington and Kegworth in North West Leicestershire (centred NGR SK 468 271; Fig. 1.1). The work, which was carried out by Wessex Archaeology working on behalf of CgMs Consulting (now part of RPS Consulting Ltd), took place between 2013 and 2017.

Following production of a desk-based assessment (CgMs Consulting 2013), field surveys to better understand the archaeological remains within the development site commenced, with a phased sequence of:

- geophysical survey (Wessex Archaeology 2014a; 2016c);
- fieldwalking (Wessex Archaeology 2014b; 2016a; 2017a) (Pl. 1.1);
- trench evaluation and test pitting (Wessex Archaeology 2015a; 2016d; 2016e; 2017b; 2017c) (Pl. 1.2); and,
- earthwork survey (Wessex Archaeology 2016b; 2017a).

In brief, the field surveys established that numerous small enclosures and remnants of field systems dating from the Middle Iron Age to the Romano-British period lay across the development site. Little evidence was found of the earlier prehistoric periods, with even flintwork only rarely recovered, despite a programme of test pitting focused on flint findspots

Plate 1.1 Fieldwalking: Ashley Tuck and David Loeb during the initial survey

noted during fieldwalking. Similarly, there were few buried remnants of post-Roman activity other than traces of ridge and furrow cultivation and the remains of field boundaries grubbed out in recent years.

In consultation with Richard Clark, Principal Planning Archaeologist for Leicestershire County Council, 14 separate areas of archaeological interest were identified; these were subject to open area 'strip, map and sample' excavation in 2016–7. One area proved largely bereft of archaeological interest, despite encompassing the course of a proposed Roman road between Ratcliffe-on-Soar and Leicester (Lycett 1999), and is mentioned only tangentially in the text that follows. Two separate but closely adjacent areas are considered together below as the Field Farm site. Therefore, this volume presents the results of the excavation of 12 sites; these are summarised in Table 1.1 below. Their nomenclature reflects nearby topographic

Plate 1.2 Evaluation: Michael Keech monitoring trenching near Lockington

features or the names of the fields that the sites lay within, as recorded on enclosure maps or tithe awards.

The Landscape Setting

It has often been inferred that the Trent Valley served as a routeway to upland Derbyshire from the other, more culturally developed, areas of East Yorkshire and East Anglia (Posnansky 1955, 24)

The development area is bordered to the east and west by, respectively, the villages of Kegworth and Castle Donington, with East Midlands Airport lying along the southern site boundary, and Lockington and Hemington to the north (Fig. 1.1). It is located on the southern slopes of the Trent Valley, with the land surface generally descending from south to north, from around 85 m OD adjacent to the plateau upon which East Midlands Airport is located, to around 38 m OD on the edge of Lockington. Prior to the construction of the SEGRO Logistics Park, the ground surface in the southern part of the development area was creased by a number of small valleys, separated by slight spurs of land. In the northern part of the development area, on the edge of the Trent floodplain, the ground surface was flat (Fig. 1.2).

The underlying solid geology is mapped as Mudstones and Siltstones of the Tarporley Formation (British Geological Survey online viewer). No superficial deposits are recorded across much of the development area, but in its northernmost and lowest-lying reaches, areas of Clay, Silt and Gravel Head, along with Sands and Gravels, are recorded (ibid.). The soils are mapped across most of the development area as slightly acid loamy and clayey with impeded drainage. Freely draining slightly acid loamy soils are mapped in its northernmost and

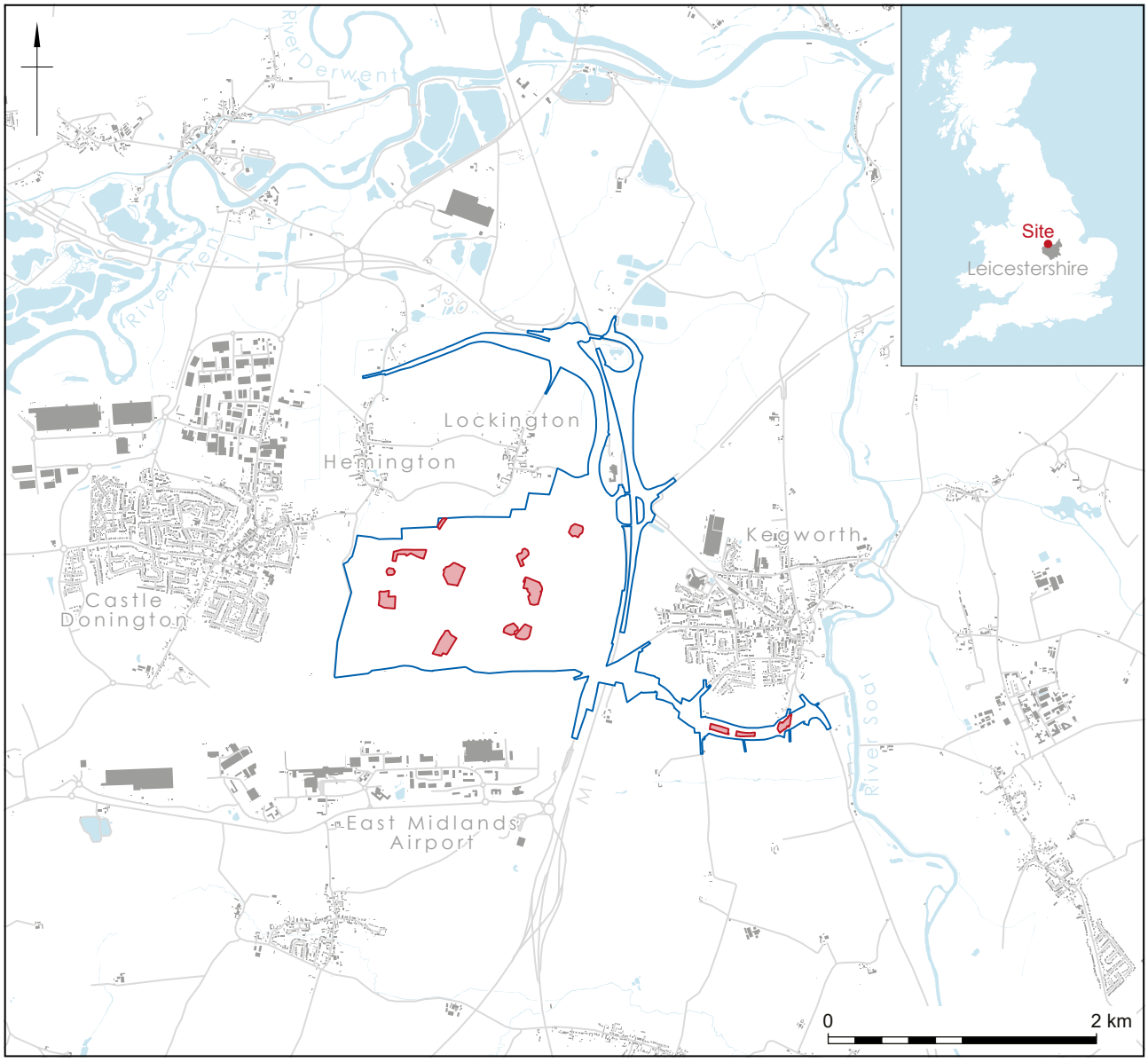

Figure 1.1 Location of development area

Table 1.1 Summary of excavation sites

Site name	*Principal period(s)*	*Summary of remains*	*NGR*	*Civil parish*	*Height (m OD)*	*Area (hectares)*
Field Farm	Bronze Age; Iron Age	Burnt mounds; potboiler pits and waterholes; field system with enclosures	446700, 326710	Kegworth	65	1.45
Daleacre (south)	Iron Age	Enclosure	445750, 327150	Lockington-Hemington	66	0.25
Long Lands	Iron Age	Pit alignment	446125 327510	Lockington-Hemington	63	0.20
King St Plantation	Iron Age	Enclosure with field system and pit alignment; MBA inhumation	446820, 326990	Kegworth	67	1.81
Great Dampits	Iron Age	Pit alignment with superimposed P-shaped enclosure	446730, 327270	Lockington-Hemington	63	0.57
Mill Close	Iron Age	Ditched enclosure surrounding ring gully and pit circle	446220, 327130	Lockington-Hemington	75	1.83
Horsecroft	Iron Age	Roundhouse ring gullies; field system with enclosures	448400, 325930	Kegworth	66	0.39
Horsecroft Watching Brief (WB)	Iron Age	Roundhouse ring gullies	448200, 325970	Kegworth	62	0.56
Longfield	Iron Age–Early Romano-British	Enclosures	447130, 327460	Kegworth	44	0.72
Over Field	Romano-British	Enclosures, inhumation, hollows (very large pottery assemblage from one)	445710, 326940	Lockington-Hemington	63	1.26
Daleacre	Romano-British	Field system with enclosure; LBA cremation graves	445900, 327290	Lockington-Hemington	70	1.09
Seven Geaves	Romano-British	Field system with enclosures; cremation grave	446155, 326600	Lockington-Hemington	75	1.72
Total						**11.85**

lowest-lying reaches (Cranfield Soil and Agrifood Institute Soilscapes online viewer).

At the time of the excavation, the land comprised agricultural fields separated by hedgerows. Many of these were farmed from Field Farm, a 19th-century structure demolished during the construction of the Logistics Park. According to the terminology of the Leicestershire, Leicester and Rutland Historic Landscape Characterisation Project, the development area was dominated by enclosed farmland, either 'Re-organised Piecemeal Enclosure' or 'Planned Enclosure' (CgMs 2013).

Archaeological and Historical Setting

There was little indication from the desk-based assessment (DBA) of the presence of the buried remains that went on to be excavated. Only 13 archaeological records were noted within the

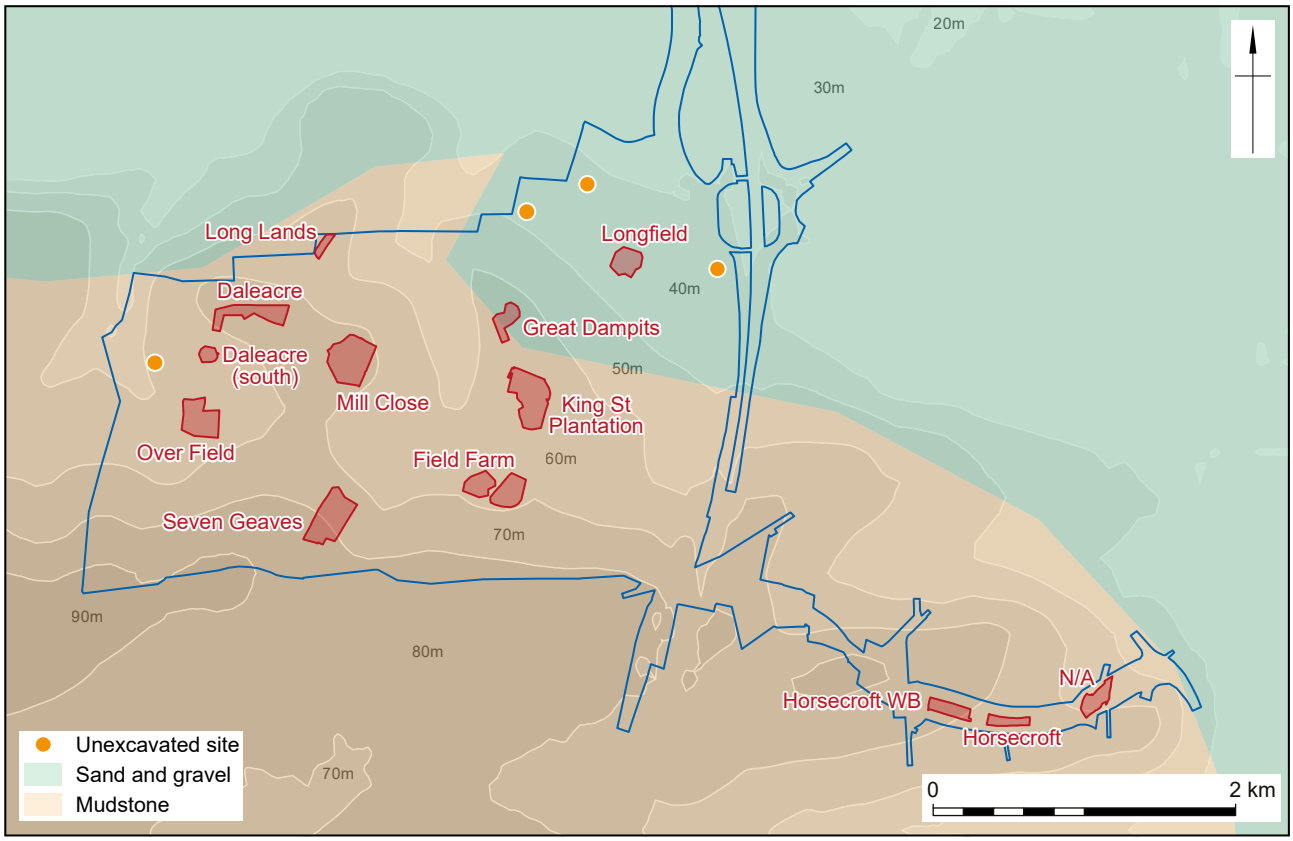

Figure 1.2 Location of sites within the development area

development site by the DBA, and none has any clear correspondence with the sites described below. The records include ring ditch cropmarks, prehistoric flint found during fieldwalking, the course of two possible Roman roads, a medieval field system, the site of a post-medieval windmill, and components of RAF Castle Donington (the predecessor to East Midlands Airport).

Situated some 2 km south-west of the Trent–Soar confluence, the development site does, however, lie on the fringes of a landscape of acknowledged archaeological importance (Cooper 2006). Between the confluence and the East Midlands Gateway site lie the Roman small town of Red Hill (Elsdon 1982), a Bronze Age barrow cemetery (Hughes 2000), an unexcavated villa and a partially explored Iron Age–Romano-British agricultural landscape (Thomas 2013). That this floodplain landscape can be seen to possess a long-established ceremonial and settlement focus is at least partly due to its gravel geology, which is reasonably conducive to aerial mapping (Cooper 2006). By comparison, the mudstone claylands to the south, where the East Midlands Gateway development lies, are rather harder to read archaeologically. Excavated sites to the south of the development site are fewer in number and include the Late Iron Age–Romano-British enclosures excavated at Gimbro Farm (Derrick 1998) and the Iron Age hilltop enclosure at Breedon-on-the Hill (Kenyon 1950; Wacher 1978; Whittaker 2019). See Chapter 5, Figure 5.1 for the locations of sites from the region mentioned in the text.

Chronological Note

Period divisions within this report largely follow the chronological framework of the Forum on International Standards in Heritage (FISH), but with subdivisions within the Iron Age following those of the East Midlands Historic Environment Research Agenda and Strategy (Knight et al. 2012). Thus:

- Bronze Age: 2600 to 700 BC
  - Early Bronze Age 2600–1600 BC;
  - Middle Bronze Age 1600–1200 BC;
  - Late Bronze Age 1200–700 BC.
- Iron Age: 700 BC to AD 50
  - Early Iron Age: 700–450 BC;
  - Middle Iron Age: 450–100 BC;
  - Late Iron Age: 100 BC–AD 50.

The sites are presented below in chronological order, so far as the often-imprecise dating evidence permits. Where it has not been possible to discern the relative dates of sites (and the lifespans of many are liable to have overlapped, eg, Mill Close and Horsecroft), they are described moving from north to south across the landscape.

Chapter 2
Excavation Results

Earlier Prehistory

Overview

The evidence from the Bronze Age and earlier periods represents only a very small subset of the remains discovered during the course of the project, despite the great spans of time involved. Flintwork was sparse, widely scattered and overwhelmingly from redeposited contexts, and adds little of significance to our understanding of how the landscape was used, although there are hints that the promontory on which the King St Plantation site was situated (Fig. 1.2) was a favoured location. The earliest features date to the Bronze Age, when pits were dug and three burnt mounds formed amidst a network of small palaeochannels at the Field Farm site. Various strands of evidence suggest the mounds were formed by complex processes and in intermittently wet conditions over a lengthy period from the end of the Early Bronze Age into the Middle Bronze Age. Pollen evidence from Field Farm suggests an open environment with pastoral, arable and disturbed ground in the Early Bronze Age. Other earlier prehistoric remains are funerary in nature, comprising a Middle Bronze Age crouched inhumation from King St Plantation and two Late Bronze Age cremation graves (neither contained an urn) at Daleacre. The dates of these features derive from radiocarbon results, with neither site providing any demonstrably contemporary remains other than, perhaps, worked flint.

Flintwork

The earliest evidence comprises worked flint and indicates a human presence during the Mesolithic or Early Neolithic periods. The bulk of the worked flint assemblage is suggestive of later Neolithic or Early Bronze Age activity. However (see Gittins, Chapter 4), for the size of the development area, it is very small (115 pieces), with the majority of the assemblage found redeposited in later contexts, of which many were subsoil and topsoil deposits.

The worked flint assemblage was widely dispersed, with no significant concentrations, other than, arguably, at the King St Plantation site. Here, five worked flints were recovered during pre-excavation fieldwalking survey (Wessex Archaeology 2016a, figs 2–3). The presence of the flints led to the excavation of an array of 31 test pits (Pl. 2.1). Although these test pits produced only a further 13 fragments of flint, these represented over 50% of the flint assemblage (by count) from a total of 205 test pits across the wider development area (Wessex Archaeology 2016d). It is possible that this minor grouping could indicate the location of a prehistoric lookout point or transitory hunting camp, as such sites are commonly found on the sort of promontories upon which King St Plantation was located (Clay 2002, 46).

Plate 2.1 Test pitting: findspots of worked flint were further investigated by arrays of test pits, although results were sparse

Field Farm

The Field Farm site was one of only three locations where features of proven pre-Iron Age date were identified. The remains comprised a group of three

burnt mounds and a number of pits within an area of former drainage channels (Fig. 2.1). The pits are presumed to have been associated with the burnt mounds as they contained heat-affected stone and charcoal-rich deposits of the same kind that made up the burnt mounds, although the digging of one the pits appears to have pre-dated the burnt mounds by more than five centuries.

Background

A baulk of unstripped ploughsoil as little as 9 m wide separated the Field Farm site into two halves; the earlier prehistoric remains were all contained within the western half. The stripped ground surface sloped gently down to the north. To the south, the site was overlooked by a relatively steep slope that led up to the plateau upon which East Midlands Airport is located; to the north lay the slight promontory upon which the King St Plantation and Great Dampits sites were perched (see below). Fieldwalking returned a sparse assemblage of Roman, medieval and post-medieval pottery, along with a single struck flint flake; more finds would probably have been collected were it not for the very boggy ground conditions hereabouts that hindered the fieldwalking survey (Wessex Archaeology 2016a, figs 2–3). Geophysical survey revealed pit-like anomalies 1.5–3 m in diameter (Wessex Archaeology 2016c, 3–4; fig. 7), which were found to correspond with deposits of fire-cracked stone representing a burnt mound and ancillary features when evaluation trenching was carried out on the site (Wessex Archaeology 2016d, 22–25, figs 21–23).

Burnt mounds

The most northerly of the three burnt mounds, 65217, was sub-oval in plan and measured 5 m east–west by 3 m north–south and was 0.3 m thick (Fig. 2.2). It comprised a deposit of small and medium-sized sub-angular and sub-rounded heat-affected stones in a matrix of dark blackish brown charcoal-enriched silty clay. Despite use of the term 'mound' for this feature, the upper surface of the deposit was slightly concave in section; perhaps this was its original form – alternatively, it may be due to disturbance. The burnt mound material had accumulated over an area of slightly undulating mid-reddish-brown silty clay (65216), up to 0.2 m thick. This sealed the natural mudstone bedrock, although in places the burnt mound material directly overlay the bedrock, with no interleaved clay present. This may reflect, as at another of the burnt mound sites (see below), that this spot had been deturfed prior to the accumulation of the mound. There was no evidence of *in situ* burning on either of the deposits sealed beneath the burnt mound, which had been cut into by a palaeochannel (65219) to the west.

The two remaining burnt mounds formed a closely set pair (5 m apart) 50 m to the south-west. The more northerly of the pair (65246) was oval in plan, with its long axis aligned north-east to south-west. It measured 8 m long by 7 m wide and was up to 0.5 m thick, with a dome-shaped form in section, more typical of burnt mounds (Fig. 2.2; Pl. 2.2). The mound comprised an extensive deposit of cracked and scorched stones (typically 6–10 mm across) in

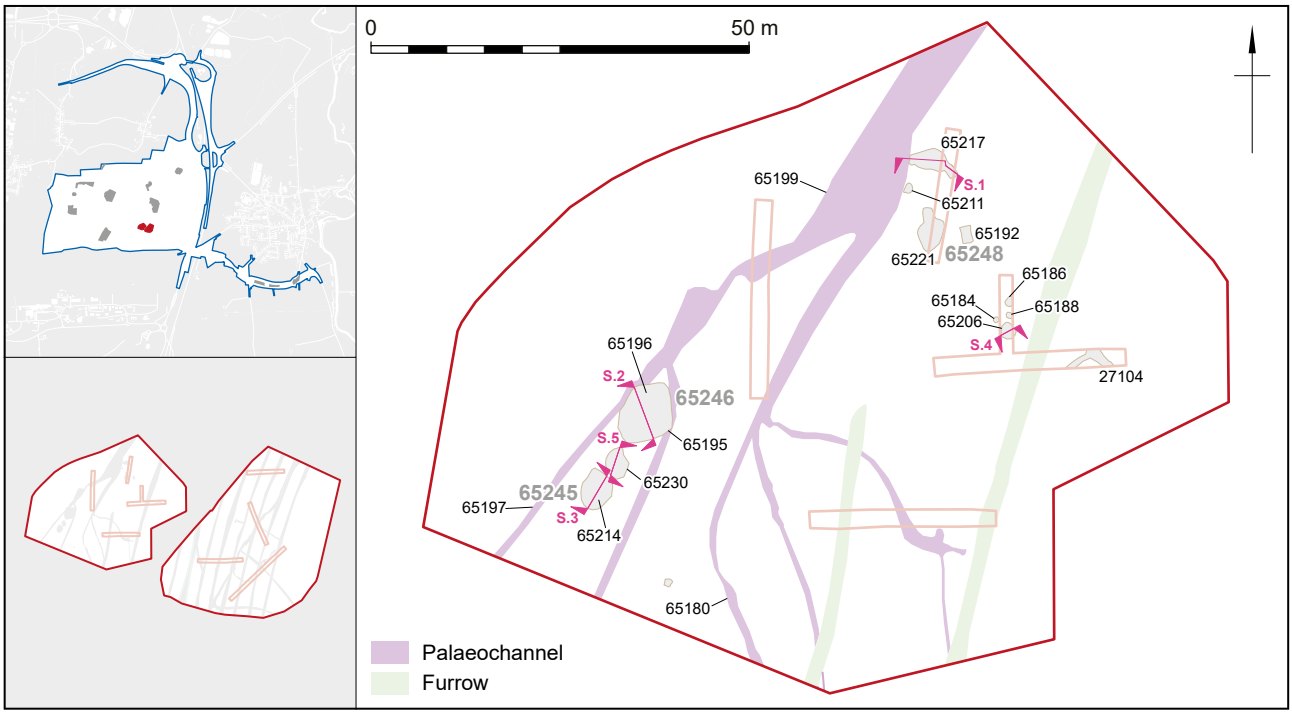

Figure 2.1 Burnt mounds and other remains at Field Farm

a charcoal-enriched black silty clay matrix (65196). This overlay an intermittent deposit of browner, somewhat less stony, clay (65205). The burnt mound material appears to have formed around and completely infilled a slight hollow (65195: 3 m diameter x 0.2 m deep) within the underlying ground surface (65194). As with the first mound, the underlying ground surface did not resemble a typical dark, humic, buried soil but instead comprised a mid-yellowish brown sandy clay. Burnt mound 65246 was initially investigated by the removal of a land drain that had cut through it. Two opposing quadrants were then excavated, after which the feature was recorded and sampled. Finally, the remaining quadrants were hand-excavated. Apart from one flint, no finds were collected from the burnt mound deposits, and other than hollow 65195, no cut features (such as the wood-lined troughs that are occasionally recorded beneath burnt mounds) were found sealed beneath it.

Mound 65246 supplied four radiocarbon dates (UBA-38546, UBA-38547, UBA-44095, UBA-44096), which were obtained from charred remains including a *Hordeum vulgare* (barley) grain, *Alnus glutinosa* (alder), *Fraxinus excelsior* (ash) charcoal and another diffuse porous species. The modelled dates, which are not internally consistent, fall into a single phase and suggest the mound formed over a period of 100–320 years in the Early to Middle Bronze Age, the range spanning the period between *1630* and *1280 cal. BC* (date ranges in italics have been modelled; see Chapter 3).

The third burnt mound (65245) lay 5 m to the south-west. It was a little smaller, measuring 5 m by 3.9 m and 0.5 m thick, although it shared the oval form and north-east to south-west orientation of its neighbouring mound. Its composition was broadly the same as the other mounds, although no deposit equivalent to 65205 (see above) was visible in this case (Fig. 2.2; Pl. 2.3). The deposit sealed beneath the mound was a reddish-brown silty clay (65228), similar to that below mound 65217. Two opposing quadrants were initially dug into the mound. A small pit (65237: 0.3 m diameter x 0.15 m deep; Pl. 2.3) was revealed beneath the southern quadrant. The fill of this was little different from clay 65228 sealed by the mound and was artefactually sterile. Finally, the remaining quadrants were machine-excavated. Again, no finds were noted, and no other features were present. In some places, a mixed interface, 27307, separated the burnt mound proper (65214) from the overlying subsoil. Burnt mound 65245 was dated by two consistent radiocarbon dates on *Salix*/*Populus* sp. (willow/poplar) charcoal (Poz-127405) and a charred *Hordeum vulgare* (barley) grain (UBA-43080) from the same context, revealing the deposit formed *1620–1440 cal. BC*, that is, in the Early to Middle Bronze Age, the same period as burnt mound 65246.

Micromorphological study
by Rowena Banerjea

Introduction

Four micromorphology slides were prepared from samples collected from burnt mounds 65245 and 65246 to identify whether any buried soil horizons were present underneath the burnt mounds, whether contexts contained cultural materials that would indicate land use prior to mound formation, the processes by which the mounds formed, and to understand whether there were any hiatuses during the accumulation of the mounds. The following summarises the

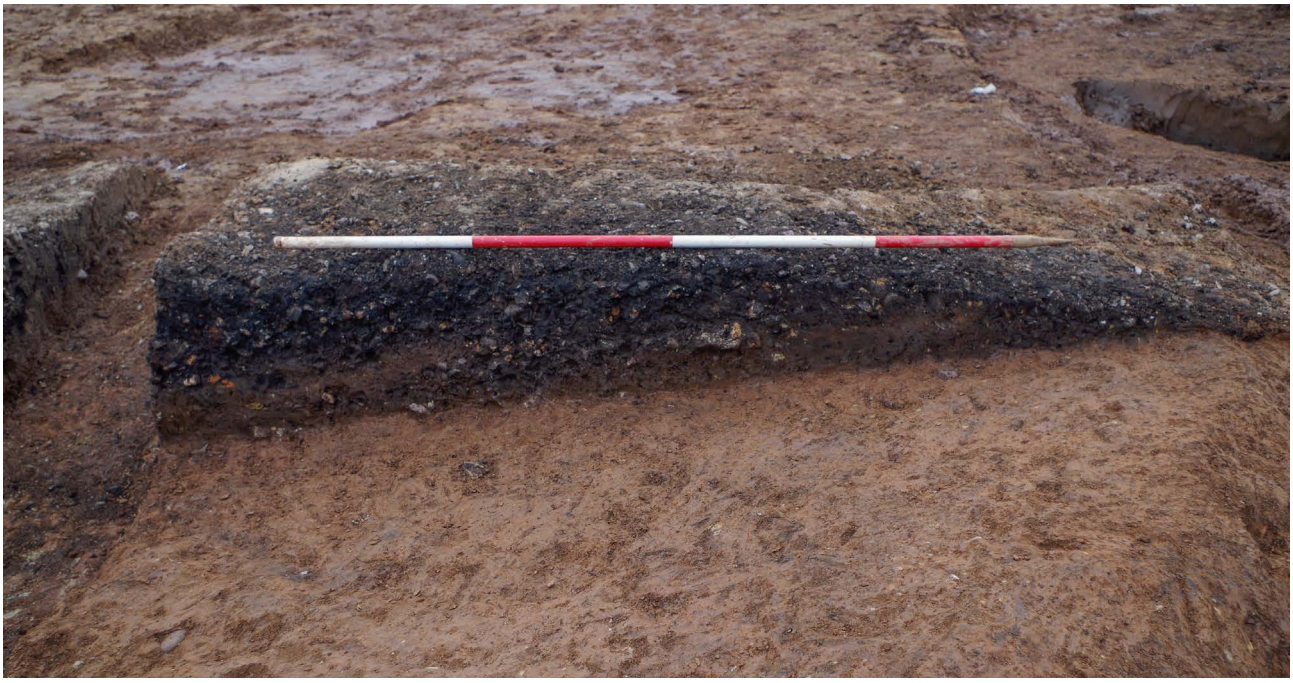

Plate 2.2 Burnt mound 65246, north-facing quarter section

Plate 2.3 Burnt mound 65245 and underlying pit 65237, south-east and south-west-facing sections

report on those slides as presented in the post-excavation assessment (Banerjea 2019).

Kubiena sample series 236 was collected from burnt mound 65246, through contexts (base to top) 65002 (natural clay substrate), 65194 (mid-yellowish brown sandy clay interface) and 65205 (burnt mound material). Samples 236.1 and 236.3 were selected for analysis: 236.1 spans the boundary between 65205 and 65194; and 236.3 spans the boundary between 65002 and 65194.

For burnt mound 65245, Kubiena sample series 252 was collected through contexts (base to top) 65228 (brown silty clay beneath burnt mound) and 65214 (burnt mound itself). Sample 252.1 comprises context 65228, and sample 252.2 spans the boundary between contexts 65228 and 65214.

Methods

The four thin-section slides, each measuring 115 x 70 mm, were prepared following University of Reading standard protocol. The samples were oven-dried to remove all moisture and then impregnated with epoxy resin while under vacuum. The impregnated samples were then left overnight so that the resin could enter all of the pores. The samples were then placed in an oven to dry for 18 hours at 70°C before they were clamped and cut to create a 10 mm slice through the sample. The surface of the 10 mm slice was flattened and polished. The prepared surface of the 10 mm slice was then mounted onto a frosted slide and left to cure. This was followed by cutting off the excess sample, so the sample was reduced to a thickness of 1–2 mm. The mounted sample was ground down to approximately 100 μm in thickness. The 100 μm section was lapped on a Logitech LP30 precision lapping machine to the standard geological thickness of 30 μm.

Micromorphological investigation was carried out using a Leica DMLP polarising microscope at magnifications of x40–x400 under Plane Polarised Light (PPL), Crossed Polarised Light (XPL), and where appropriate, Oblique Incident Light (OIL). Thin-section description was conducted using the identification and quantification criteria set out by Bullock et al. (1985) and Stoops (2003).

Results

Contexts 65194 and 65228 are buried soil horizons and show attributes that are associated with a B-horizon, such as a sub-angular blocky ped microstructure (Kovda and Mermut 2010). The peds are weakly developed and accommodated; however, despite this, these stratigraphic units show evidence of continuous pedogenesis, which is common in palaeosols (French 2003; Retallack 2001), such as relict pedofeatures – specifically, fragments of dusty clay and compound clay coatings in context 65194, silty clay and impure clay coatings in context 65228, and fragmented iron hypocoatings and reworked nodules in context 65228 (Fedoroff et al. 2010). These horizons fall within the category of 'soils with relict characteristics which cannot be detected in the field' (Fedoroff et al. 2010, 626). The buried soils show typical evidence of compaction that occurs when burial compresses the soil structure (French 2003; Retallack 2001). Deposits from both mounds 65245 and 65246 show extensive weathering, decay and bioturbation features.

Discussion and interpretation

Micromorphological analysis established that contexts 65194 and 65228 are buried soil horizons with sediment properties and features that are attributed to B-horizons, and as commonly observed with palaeosols, they show ongoing

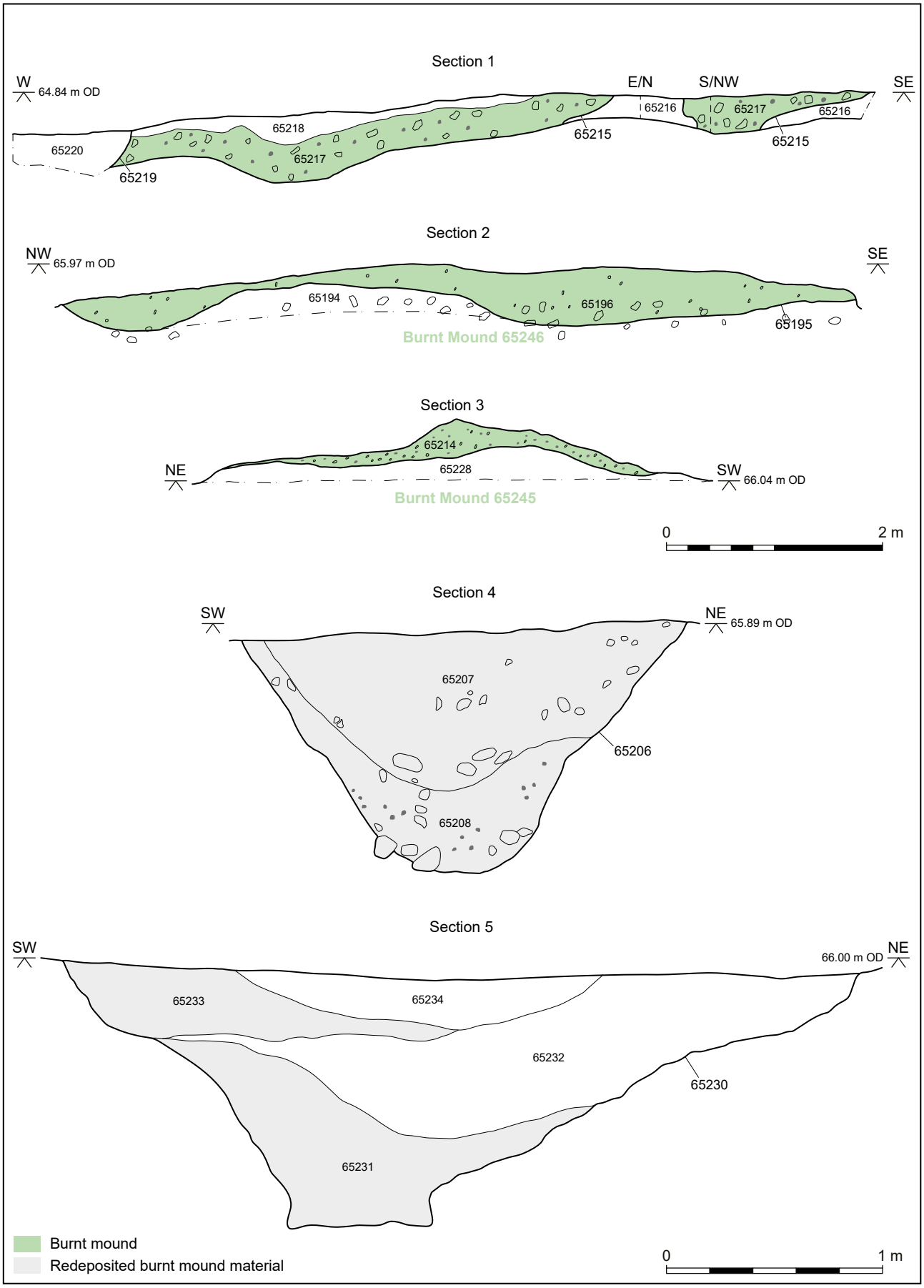

Figure 2.2 Cross sections through burnt mounds and associated features

pedogenesis after their deposition and burial, as evident by the presence of fragmented and reworked pedofeatures. There is no cultural material present in either buried soil that indicates any previous land use prior to the formation of the mounds. Context 65194 contains low abundances of charred wood, amorphous charred plant material and phytoliths, which (particularly the phytoliths) could have been reworked into the buried soil from the overlying context, 65205. The underlying A-horizon is absent in both mounds 65245 and 65246, which suggests that some event has removed the A-horizons in both mounds, but it is not possible to conclusively state whether this was the same event.

There is substantial evidence for repeated weathering of the sediments in both mounds, and particularly in mound 65245. There is also evidence for water percolation through the profile, which has moved silt and clay particles, and impregnative and depletion redoximorphic pedofeatures that result from long periods of saturation and fluctuations in the water table.

Mound 65245 shows more abundant redoximorphic pedofeatures than mound 65246, and also the units contained reworked nodules and fragmented iron hypocoating from previous periods of saturation and fluctuations in the water table. It is plausible that deturfing or perhaps flooding events have removed the A-horizons prior to the formation of both mounds. It is also plausible that flooding deposited, or redeposited, the fuel residues in context 65194. The only activities that are represented in micro-residues in contexts 65194 and 65205 are from the deposition of fuel materials – wood and possibly grasses too.

Features associated with the burnt mounds

A group of seven cut features (numbered group 65248 collectively; Fig 2.1) lay in a loose, 25 m-long, north-west to south-east alignment at the northern end of the site. They were found nearest to 65217, the northernmost of the trio of burnt mounds. All contained, to some degree, burnt mound material, and are likely to have stood open when that burnt mound (or perhaps the others nearby) were accumulating, although one feature (65206) appears earlier.

Two radiocarbon dates (UBA-43369 and Poz-127404) were obtained on fragments of charcoal (from two different taxa) recovered from the basal fill of feature 65206 (Fig. 2.2). Together, they date the formation of the deposit to *2290–2130 cal. BC*, and suggest the digging of this feature pre-dates the dated burnt mounds by more than five centuries. Feature 65206 was, however, predominantly filled with burnt mound material, suggesting there was some burnt mound activity before that responsible for those that were dated, or less likely, that the pit was partially recut before being backfilled with material from the dated mounds. Alternatively, it is possible that burnt mound 65217 (not radiocarbon dated) belonged to the earliest part of the Bronze Age. Features 65206 (2.2 x 1.9 x 1.1 m) and 65221 (6 x 3.5 x 1.4 m) were substantial and steep-sided, and therefore resembled waterholes, perhaps dug to collect and store the water necessary for whatever activity resulted in the generation of the burnt mounds (Fig. 2.2; Pl. 2.4).

Waterhole 65221 contained a sequence of brown, grey and orange clays, with a 0.5 m-thick dump of burnt mound material completing its infilling (Pl. 6). This material lay on the northern side of the pit indicating it may have derived from burnt mound 65217, which lay 6 m to the north.

Feature 65192 (2.4 x 1.3 m) appeared similarly extensive in plan, but was found to be just 0.16 m deep when excavated, and appears to represent a shallow spread of burnt mound material. The remaining four features within group 65248 were pits of relatively modest dimensions (65184, 65188, 65211 and 65186: up to 1.4 m across with an average depth of 0.3 m).

A third waterhole (65230: 3.6 m diameter x 1.2 m deep; Fig. 2.2, section 5) was not part of group 65248 but instead lay around 50 m to the south-west, directly between the southern pair of burnt mounds. It contained an interleaved sequence of brown clays and dumps of the characteristic heat-affected stone and black clay, which in this case seemed (to judge by the form of the material in section) to have originated from the southern burnt mound. The presence of this feature continues the functional association of burnt mound and waterholes suggested in the northern part of the site.

Six samples, three from the fills of waterhole 65206 and three from waterhole 65230, were assessed for phytoliths (Wessex Archaeology 2019). However, most samples contained few or no phytoliths, which is believed to be due to heavy weathering and poor preservation. The exercise was therefore uninformative, although the presence of wet conditions in the past was indicated for the base of waterhole 65230, in keeping with the nature of the feature. Pollen assessment was also undertaken for these two features, the results being a little more informative, as set out below.

Plate 2.4 Waterhole 65221, west-facing section

Pollen
by Alex Brown

Introduction
The following summarises the palynological report presented in the post-excavation assessment (Wessex Archaeology 2019). Six subsamples for pollen analysis were taken from deposits filling waterholes 65206 and 65230.

Methods
The subsamples of 1 ml volume were processed using standard pollen extraction methods (Moore et al. 1991). Pollen was identified and counted using a Nikon eclipse E400 biological research microscope. A total of 150 pollen grains was counted for each subsample in addition to aquatics, fern spores and algal *Pediastrum*. Where 150 counts were not possible, all pollen and spores were counted from four transects. One *Lycopodium* tablet was added to enable calculation of pollen concentrations. Pollen and spores were identified to the lowest possible taxonomic level. Plant nomenclature followed Stace (1997) and Bennett et al. (1994). Pollen sums are based on total land pollen (TLP) excluding aquatics and fern spores, which are calculated as a percentage of TLP plus the sum of the component taxa within the respective category. Identification of indeterminable grains was according to Cushing (1967).

Results
Pollen was found to be generally poorly preserved in both features, with only a single subsample from each preserving sufficient pollen for an assessment count (Table 2.1).

Waterhole 65206
Herbaceous pollen dominated (89.5%); this largely comprised Poaceae (grass family) (54%) with smaller but significant quantities of Brassicaceae (cabbage family) (9.2%), *Plantago lanceolata* (ribwort plantain) (7.2%) and Lactuceae (lettuce family) (8.5%). Smaller quantities of a limited range of herb pollen taxa were also recorded, including Fabaceae (legume family), *Centaurea nigra* (common knapweed) and Schropulariaceae (figwort family). Two pollen grains of *Avena-Triticum* (oat-wheat) and a single grain of *Hordeum* type (barley) were recorded from one subsample. Arboreal pollen occurred in small quantities (16 of the 153 land pollen grains), mostly *Pinus sylvestris* (pine) and *Alnus glutinosa* (alder) with one or two grains of *Betula* (birch), *Corylus avellana* type (hazel) and *Quercus*.

Waterhole 65230
The subsample from waterhole 65230 that preserved sufficient pollen for an assessment count contained a very different mixed assemblage, comprising both arboreal (38.7%) and herbaceous taxa (61.3%), with herbs largely comprising Poaceae and a significant quantity of *Plantago lanceolata*. Arboreal pollen largely comprises *Tilia* (14%) and *Corylus avellana* type (12%) with lesser quantities of *Quercus* (5.3%) and *Alnus glutinosa* (6%). Fern spores were present in large quantities, particularly Pteropsida, *Pteridium aquilinum* (bracken) and *Polypodium vulgare* (common polypody). A large quantity of fern spores, particularly of Pteropsida with lesser quantities of *Polypodium vulgare*, were recovered from one of the otherwise uninformative subsamples from this waterhole.

Palaeochannels
Various irregular fissures and gullies filled with pale natural sand representing former water channels were present (Fig. 2.1). The overall network was only clear in places, and its investigation was further complicated by the fact that following topsoil stripping of the site (which occurred during a wet winter) the network appeared to be partly reinstated as an active drainage line. Where investigated at the southern end of the site, its components proved relatively modest (65180: 1.3 m wide x 0.45 m deep; 65197: 0.75 m wide x 0.3 m deep), but towards the northern part of the site, 65199, the main channel, was found to be 10 m wide x 1.3 m deep. It was filled with a sequence of four brownish clays of various red and orange hues little different from the natural substrate. A small deposit of darker material with charcoal was visible spilling into the top of the channel on its eastern side. The infilling of waterhole 65221 (which lay less than 5 m further to the east) had been completed by a 0.5 m-thick dump of burnt mound material, and the charcoal-rich channel fill is assumed to represent the same material. This would suggest the palaeochannel was at least partly open when the burnt mound activity was occurring. The sense of a functional association between the palaeochannel and the burnt mounds is reinforced by the location of burnt mounds 65245 and 65246 within the fork between two drainage lines. It is widely accepted that the activity responsible for burnt mounds required the provision of large quantities of water (Topping 2011), as such features are commonly associated with streams, rivers and other water sources. In this regard, the burnt mounds at Field Farm are typical. As mentioned above, micromorphological study has suggested the mounds were occasionally flooded, with their deposits showing evidence of saturation and fluctuations in the local water table.

A monolith sample was taken through the fills of the palaeochannel 65199 and studied for the presence of diatoms, in the hope of clarifying the depositional environment within the feature. However, there were no diatoms nor any calcareous fossils in the sample (the absence was attributed to taphonomic processes), so the exercise was uninformative (Cameron 2020).

Bronze Age funerary remains at King St Plantation and Daleacre
The majority of the archaeological remains at the King St Plantation and Daleacre sites post-dated the Bronze Age, and the sites are therefore discussed more fully in the following chapters. Both had,

Table 2.1 Results of the pollen assessment

	Sample series 237 Waterhole 65206			*Sample series 243 Waterhole 65230*		
Taxon	237 T5	237 T8	237 T11	245	248	251
Context						
Lycopodium spores*	781	88	148	267	127	88
Betula (birch)	2	-	-	-	1	1
Pinus sylvestris (pine)	7	-	-	-	-	1
Corylus avellana type (hazel)	2	-	-	-	3	18
Quercus (oak)	1	-	-	-	-	8
Tilia (lime)	-	-	-	1	-	21
Alnus glutinosa (alder)	4	-	-	1	-	9
Avena-Triticum type (oat-wheat)	2	-	-	-	-	-
Hordeum type (barley)	1	-	-	-	-	-
Chenopodiaceae (goosefoot family)	2	-	-	-	-	7
Brassicaceae (cabbage family)	14	-	-	-	-	-
Polygonum aviculare (common knotgrass)	-	-	-	-	-	4
Poaceae (grass family)	83	-	-	8	2	32
Cyperaceae (sedge family)	3	-	-	-	-	3
Ranunculus undiff. (buttercups)	-	-	-	2	-	1
Caryophyllaceae (Pink family)	-	-	-	-	-	1
Silene type (campion)	-	-	-	-	-	1
Rosaceae (rose family)	3	-	-	-	1	3
Filipendula (meadowsweet)	-	-	-	-	-	1
Fabaceae (legume family)	1	-	-	-	-	4
Plantago lanceolata (ribwort plantain)	11	-	-	2	-	22
Scrophulariaceae (figwort family)	3	-	-	-	-	-
Lactuceae (lettuce family)	13	-	-	2	5	13
Centaurea nigra (common knapweed)	1	-	-	-	-	-
Pteropsida undiff. (fern spore)	21	1	-	165	17	69
Pteridium aquilinum (bracken)	5	-	-	-	1	39
Polypodium vulgare (common polypody)	-	-	-	10	-	6
Lycopodium clavatum (stag's-horn clubmoss)	-	-	-	-	1	-
Indeterminables	62	-	-	1	1	43
Total Land Pollen (TLP)	153	0	0	16	12	150
% trees and shrubs	10.5	0.0	0.0	12.5	33.3	38.7
% herbs	89.5	0.0	0.0	87.5	66.7	61.3
% fern spores	14.5	100.0	0.0	0.0	61.3	43.2

* contained in tablet added during laboratory pollen extraction – see *Methods*

however, witnessed funerary activity during the Bronze Age, as revealed by the radiocarbon dating of human remains.

At King St Plantation a Middle Bronze Age radiocarbon date (1420–1220 cal. BC; 3060±35; Poz-127847) was obtained on the femur from an inhumation found in grave 75417 (see Fig. 2.5), which lay in the site's northern portion. The poorly preserved skeletal remains were those of an adult ??male aged 35–55 years at death. The individual was buried in a flexed position on their right side with their head to the north. No grave goods were found.

Two unurned cremation graves were located in the north-eastern part of the Daleacre site (see Fig. 2.18). The most northerly, 80232, was subcircular in plan with a maximum diameter of 0.5 m. Excavation revealed that it was just 0.05 m deep, with a shallow dish-shaped profile. The cremated bone (148.8 g) derives from a subadult/adult ??female (15–30 years). The second cremation burial (80227: 0.4 m diameter x 0.2 m; 714.1 g cremated bone) lay 28 m to the south-west (Pl. 2.5). The second cremated individual is also a ??female and thought to have been aged 15–18 years at death. As López-Dóriga outlines below, radiocarbon modelling suggests the individuals died within a short period of time in the earlier part of the Late Bronze Age, with the person in grave 80232 (*1130–930 cal. BC*; 2875±30; Poz-128386) pre-deceasing the individual in grave 80227 (*1110–900 cal. BC*; 2825±30; Poz-128385) by 20–70 years. Although discoveries continue to be made (eg, Finn 2011), Late Bronze Age funerary remains are rare in the region (Clay 2002, 41).

Plate 2.5 Cremation grave 80227, south-facing section

At neither King St Plantation nor Daleacre was there evidence of any demonstrably contemporary activity, with the revelation that these locations had a Bronze Age phase being brought about by the radiocarbon dating programme alone. The human remains are described in detail in Chapter 4 below.

The wood charcoal from cremation grave 80227
By Lucy Allott

Methods

Charcoal was extracted from the residues of 11 samples from cremation grave 80227 to provide information on the species composition and selection of fuel for funerary practices.

Preparation and examination of wood charcoal fragments greater than 2 mm followed standard procedures as described by Leney and Casteel (1975) and Hather (2000). The fragments were fractured along three planes to reveal transverse, tangential longitudinal and radial longitudinal surfaces and viewed under a stereozoom microscope (for initial sorting) and a metallurgical incident light microscope at x50–x400 (for identification).

Observations on the size and condition of fragments, such as the presence of sediment or mineral deposits in each sample, were recorded. Specimens were identified to the highest taxonomic level possible through comparison with reference texts (Hather 2000; Schoch et al. 2004; Schweingruber 1990). Habitat information and nomenclature used follows Stace (1997). All taxa are referred to by their Latin names in the first instance then by their common English name thereafter, with the exception of the Maloideae (a subfamily which includes a range of taxa).

Results

Five taxonomic groupings were identified, all hardwoods (Angiosperms) indigenous to southern England (Table 2.2).

The charcoal assemblages were very small and composed almost exclusively of fragments measuring <4 mm in size. The fragments were rounded and often comprised hardened amalgams of sediment with flecks of charcoal and, in some instances, small fragments of calcined bone rather than pure charcoal. Where 'pure' charcoal fragments were present, preservation of internal anatomical features was generally poor. The fragments displayed some distortion of the wood anatomy (prior to charring), vitrification, sediment infiltration or a combination of these factors, which resulted in a low proportion of the assemblage being identified. A total of 88 fragments across all the cremation grave samples were assigned either a taxonomic identification (48 fragments) or were classed as indeterminate (40 fragments). The minimum recommended number of fragments (=100) was not achieved, and any interpretation of these assemblages is therefore constrained.

Oak (*Quercus* sp.) was recorded in each of the three sample series and in almost all of the samples analysed. It was also the only taxon identified in samples from SS (sample series) 320 as many of the fragments within this assemblage were indeterminate, with ill-defined anatomical features, sediment deposits and vitrification. Cherry/blackthorn (*Prunus* sp.) was present in each sample in SS310 and in one of the samples from SS315. Maloideae group taxa and hazel (*Corylus avellana*) were identified in cremation grave samples 304 and 311, respectively. Although small twigs, measuring <3 mm diameter, were noted in some of the assemblages, they were too small to successfully fracture

Table 2.2 Charcoal analysis data from cremation grave 80227 at Daleacre

Context	*Sample code*	*Quercus sp*	*cf Quercus sp. (v small or poor pres)*	*cf Quercus sp/ vitri/dist*	*cf. Prunus sp*	*cf Maloideae*	*cf Corylus avellana*	*Indet (totals)*
80228	101409_310							
	302	5			3			3 (1 twig, 2 dist)
	304				2	2		4 (3 poor pres, 1 V)
	308	1			3			
80233	101409_320							
	319		6					14 (13 SE&P, 1 V)
	318		1					1 (SE&P)
	317		4					2 (SE&P)
	316	3						5 (part V)
80234	101409_315							
	314	8		3				9 (SE&P)
	313		1		1			1 (V)
	312		1					1 (V)
	311	3					1	

Key: V = vitrified, SE&P = sediment encrusting and percolation, dist. = distorted

and identify. The wood anatomy of such very small twigs can display high levels of variation, which further hampers their identification to taxonomic groups.

Discussion

For the purposes of analysis, it is assumed that charcoal within feature 80227 is associated with the funerary processes, perhaps specifically being used as fuel for the cremation. It is, however, possible that some of the assemblage could derive from other activities undertaken at the site or in the vicinity, becoming incorporated in the backfill of the grave. Oak was the most commonly identified taxon, with some evidence for the use of cherry/blackthorn, hazel and taxa in the Maloideae group. The distribution of charcoal within the samples, particularly the apparent focus of cherry/blackthorn in SS310, may suggest some stratification within the deposits. It should be noted that the quantities are, however, very low and the cherry/blackthorn may only equate to an individual piece of wood that became fragmented rather than a true concentration of this type of wood.

Although the fragments were very small, much of the better-preserved oak charcoal fragments display no discernible ring curvature and, in some instances, tightly spaced growth rings were noted. This indicates that wood from comparatively mature, slow-grown oak was present. Such wood would be eminently suited to being used as fuel and in pyre construction. It also suggests good access to well-established deciduous woodland, which may also have supported hazel and cherry/blackthorn in the understorey or at the woodland margins. Taxa within the Maloideae group are wide-ranging with some, such as hawthorn, that are more indicative of open scrub. All of the identified taxa could have been used as fuel, perhaps providing raw materials for the different aspects of the pyre elements, and are common in funerary-related deposits from many sites and of many different periods.

The Iron Age

> *In the Celtic period there already existed in the hill and vale country of the East Midlands…some single farmsteads, of the kind usually associated with Celtic settlement* (Thirsk 1973, 278)

Overview

Archaeologically impactful activity dramatically increased during the Iron Age. Nine of the excavation sites date to the period. There was very little clear evidence of Early Iron Age activity, with most of the sites producing Scored ware instead, which is indicative of a Middle to Late Iron Age chronology. This is supported by the radiocarbon dates from the project, which focus on the 3rd to 4th centuries BC. The excavated remains comprise pit alignments, roundhouses, field system remains

and enclosures. The sites are largely agricultural in nature and reveal a population engaged in mixed pastoral (cattle) and arable farming on a subsistence basis. Organic residue analysis of the pottery reveals dairying played a role in the agricultural economy. The Iron Age finds assemblage is dominated by pottery and animal bone, with a few querns and small amounts of metalworking waste. This material appears to relate to work-a-day and routine activities, with people having little access to, or inclination to use, exotic artefacts. There was very little evidence of crafting or small-scale

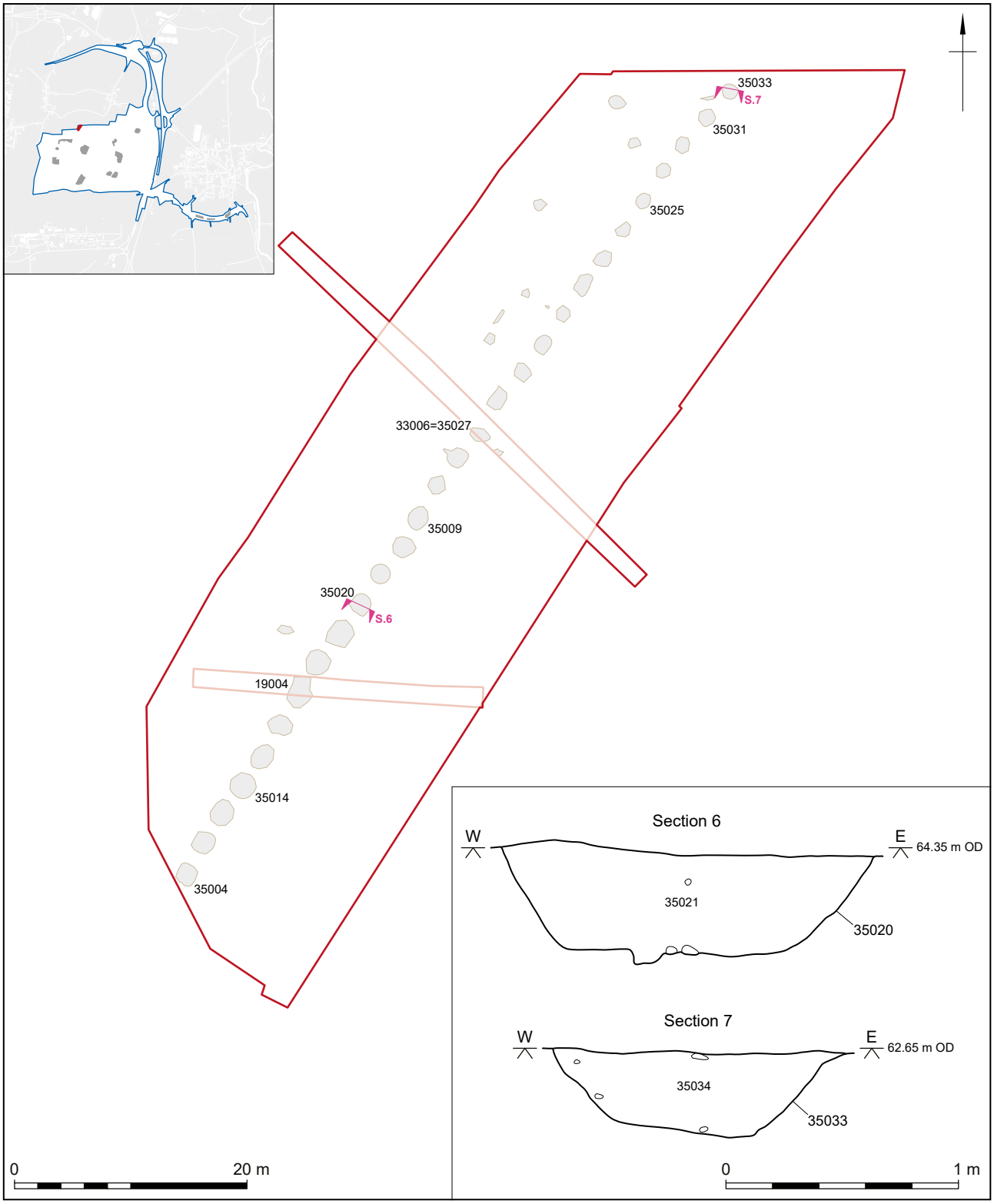

Figure 2.3 The Long Lands pit alignment

industrial production. A Middle Iron Age deposit of a human skull containing a concentration of spelt chaff placed alongside articulated horse bone in an enclosure entrance provides the clearest evidence of structured deposition. Other human remains were scarce, comprising an inhumation and a small amount of disarticulated human bone.

Long Lands

This, the smallest of the excavation areas, followed the crest of a slight spur that descended from the south-west towards the floor of the Trent valley to the north-east (Fig. 1.2).

Background

Geophysical survey detected a probable ditch of archaeological origin (Wessex Archaeology 2014a, fig. 49), which was targeted by evaluation trenches 190 and 330, with corresponding positive results (Wessex Archaeology 2016d, 15, fig. 9).

Fieldwalking produced a small assemblage of finds dominated by medieval and post-medieval pottery and ceramic building material (CBM); a sherd of Roman pottery was also recovered (Wessex Archaeology 2016a, fig. 3). A single fragment of a non-diagnostic broken flint flake was collected from the spur upon which the excavated site lay.

The line of the 'ditch' was stripped of overburden, along with a 12 m-wide buffer either side of the feature. Only at this stage did it become apparent that the anomaly detected by the geophysical survey was in fact a pit alignment extending over at least 85 m. In all, 28 pits were exposed, along with a handful of outlying minor features (Fig. 2.3).

Pit alignment

Twelve of the pits were excavated, with each being half-sectioned and environmental samples then collected from the opposite half (Pl. 2.6).

The pits were generally 1–2 m wide and around 0.5 m deep (Fig. 2.3, sections 6 and 7). They formed a single alignment and were fairly regularly spaced, with each generally lying somewhere between 1 m and 1.5 m from its neighbour. The features typically had flared concave profiles and contained one or two fills of grey/brown sandy silt; there were few signs of recutting or rapid backfill. Artefacts were sparse; three of the pits (19004, 35004 and 33006=35027) contained pottery of Iron Age date; the last feature also contained struck flint, as did pits 35020 and 35025. Very little environmental evidence was present in any of the features.

Plate 2.6 Looking north-east along the Long Lands pit alignment

Table 2.3 Long Lands pit alignment

Cut	*L x W x D (m)*	*Shape in plan*	*Fills (upper/lower)*	*Finds*	*Environmental*
35033	1.3 x 0.9 x 0.34	Circular	Pale greyish brown sandy silt	None	N/A
35031	1.6 x 1 x 0.32	Circular	Pale greyish brown sandy silt	None	Charcoal
35025	1.2 x 0.6 x 0.2	Circular	Pale brown sandy silt	Flint	N/A
35035	1.15 x 1 x 0.6	Oval	Pale greyish brown sandy silt	None	N/A
35024	1.6 x 1.33 x 0.53	Circular	Mid-brownish grey sandy silt Dark brownish grey sandy silt	None	Charcoal, terrestrial molluscs
33006 = 35027	2.2 x 0.75 x 0.67	Circular	Mid-brownish grey sandy silt	Pottery; flint	Naked wheat remains (prob. intrusive)
35037	2.05 x 0.9x 0.5	Oval	Pale greyish brown sandy silt Orangey reddish brown clayey silt	None	N/A
35009	1.8 x 0.98 x 0.51	Oval	Mid-greyish brown sandy silt	None	Charcoal
35020	1.75 x 0.8 x 0.48	Oval	Pale greyish brown sandy silt	Flint	N/A
19004	2.8 x 1.1 x 1.15	Subcircular	Mid-brown silty clay	Pottery	Charcoal, terrestrial molluscs
35014	2.2 x 1 x 0.53	Subcircular	Mid-yellow-grey sandy silt Dark yellow-grey sandy silt	None	Charcoal
35004	2.2 x 1.03 x 0.52	Subcircular	Pale grey sandy clay	Pottery	N/A

Because of the nature of the remains, further details have been tabulated above (Table 2.3). The uppermost row of the table relates to the most northerly of the excavated pits; the following rows move south along the pit alignment, to the lowest row of the table, which presents information on the southernmost pit.

The pit alignment appeared to continue beyond both the southern and northern site boundaries (the latter corresponded with the northern limit of the overall development area). There was no sign of the pit alignment continuing across trench 333, which lay 20 m south of the excavation site, so it presumably turned or terminated within the intervening area.

Approximately 190 m to the south-east, however, at the Daleacre site, Romano-British boundary 80360 appears to match the projected south-westward course of the pit alignment. This may be entirely coincidental, or the arrangement could mark the maintenance of a significant line within the landscape over several generations (see Chapter 5, Fig. 5.6). This is discussed further below.

Daleacre (south)

The ground surface within the site descended gently to the south and west. Archaeological deposits were at their highest in the north-east corner (67.1 m OD), and at their lowest in the opposite corner (65.4 m OD).

Background

The site's archaeological potential was first signalled by geophysical survey, which detected weak readings suggestive of a small subrectangular enclosure (Wessex Archaeology 2014a, fig. 40). Subsequent evaluation exposed the ditches defining a then-undated enclosure with a probable internal feature (Wessex Archaeology 2015a, 9–10, fig. 5; 2016d, 14, fig. 7).

Enclosure

Machine-removal of topsoil exposed a subrectangular east–west-aligned enclosure with an internal area of 555 m^2, revealing it to be relatively small when compared to others in the region (Speed 2010, fig. 24). Well-defined terminals marked a 3 m-wide entrance gap in the south-east corner of the enclosure (Fig. 2.4). No Scored ware was present within the site's Iron Age pottery assemblage, suggesting activity here belongs to the earlier part of the Iron Age. Two sherds of Romano-British grey ware were, however, recovered from the enclosure ditch, although these are likely to be intrusive.

The northern and eastern sides of the enclosure were defined by ditch 86120; ditch 86121 formed the southern and south-western sides. The two ditches were probably contemporary, but a later furrow obscured their junction. Ditch 86120 was 0.75–2 m wide and up to 0.9 m deep. Evidence of recutting was recorded along its length. A fairly shallow bowl-shaped profile was evident; fills were typically brown clays/silts of various yellowish or greyish hues. Ditch

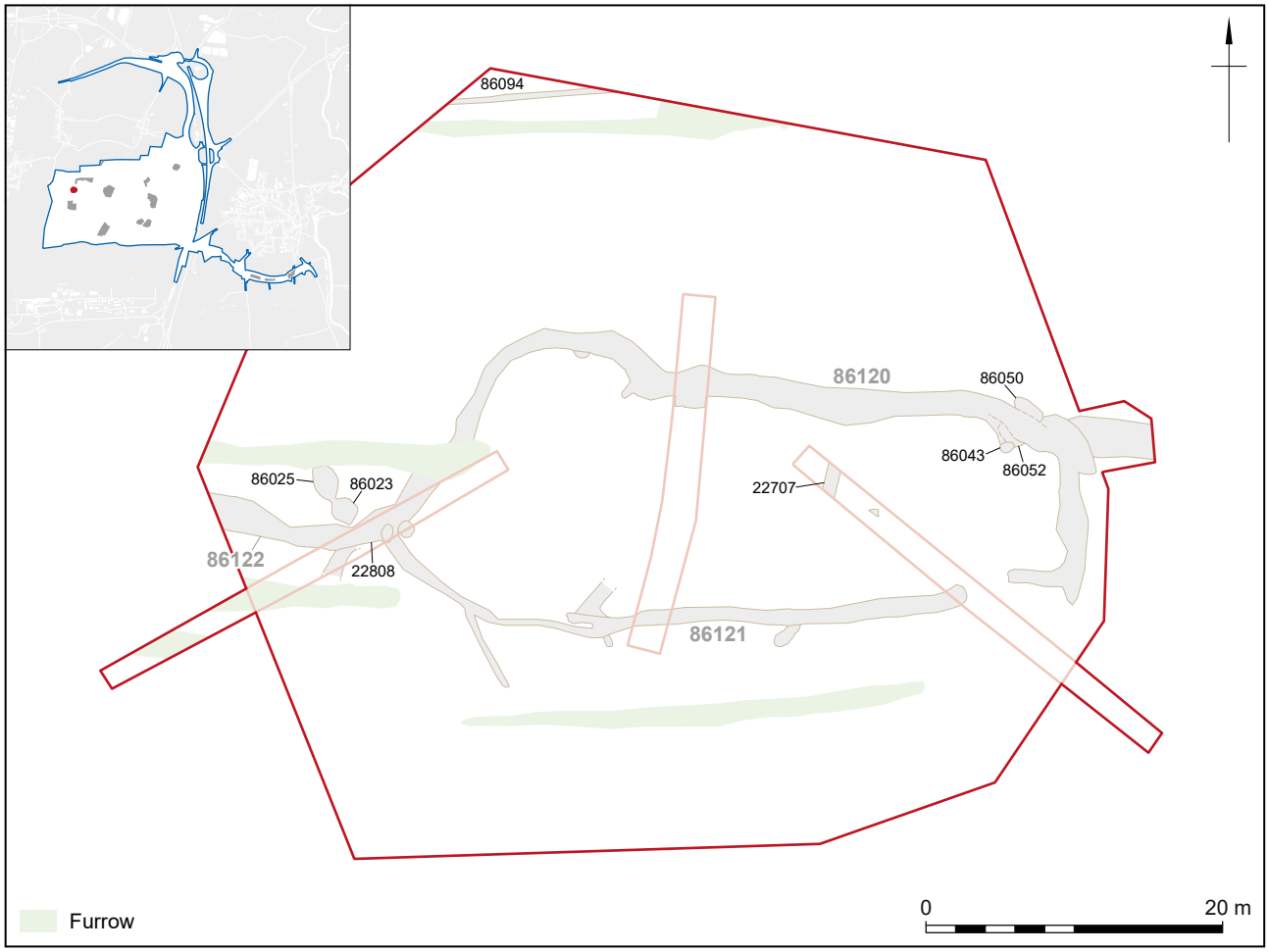

Figure 2.4 The Daleacre (south) enclosure

86121 shared these characteristics, but was a little slighter, typically 1 m wide and 0.4 m deep. Finds from the ditches defining the enclosure include Iron Age pottery and animal bone.

A linear ditch (86122: over 12 m long and up to 2.2 m wide and 0.8 m deep) would have drained the enclosure ditch downslope to the west. It contained animal bone, slag, a flint and a fragment of human bone. Its form and fill resembled those of the main enclosure ditch. The arrangement overall appears contemporary, with no relationship visible at the junction of ditch 86122 and the enclosure. The human bone, an unburnt fragment of humerus shaft, appeared faintly polished in places, suggestive of repeated handling, and also showed evidence of canid gnawing. It was recovered during the evaluation stage from slot 22808 (context 22807), dug close to ditch 86122's junction with the enclosure. The slag was related to iron smelting and may have been generated by activity carried out in or near the enclosure, although no similar evidence was recorded nearby.

The enclosed area was largely empty. One feature, 22707, was investigated at the evaluation stage. It was found to be 1 m wide and 0.25 m deep with an irregular bowl-shaped profile. A fragment of rock-tempered pottery of Iron Age date was recovered from its mid-brown silty clay fill.

Two broad, shallow pits (86023 and 86025) were recorded just beyond the western side of the enclosure. These features were 1.6–2 m in diameter, 0.2 m deep and contained dark brown silty clay fills that contained small amounts of animal bone, Iron Age pottery and fired clay.

Three smaller pits (86043, 86050 and 86052) were also recorded at the north-eastern corner of the enclosure, where they were stratigraphically interleaved between the original cut of ditch 86120 and its recut.

Modern features

The archaeological horizon had been truncated by a series of east–west-aligned cultivation furrows. Parallel with the furrows, a grubbed-out field boundary (86094) seen along the northern edge of the site was detected during the geophysical survey and matches a boundary marked on Ordnance Survey maps from the 1880s until the 1960s.

King St Plantation

The Iron Age activity here lay immediately south of the patch of woodland that gives the site its name.

The stripped ground surface lay at around 67 m OD, with a very slight fall from north-west to south-east. Although the site occupied fairly flat ground, it was sat atop a slight north-west to south-east-aligned ridge that became more prominent further to the north-west, where the Great Dampits site was located (see below).

Background

Geophysical survey detected a ditched enclosure with an area of increased magnetic response within its interior (Wessex Archaeology 2014a, 10, fig. 55). Trenching recovered Iron Age pottery and found that significant archaeological remains did not extend beyond the area of the geophysical anomalies (Wessex Archaeology 2016d, 21–2, figs 19–20).

Fieldwalking and test pitting returned modest amounts of medieval and post-medieval pottery and ceramic building material (CBM), along with the minor flint concentration described above.

Topsoil stripping exposed a ditched enclosure matching the geophysical survey results; within its interior lay a possible post-built roundhouse (75502), an inhumation (75415) and a four-post structure (75290). Also exposed were a pit alignment and boundary ditches; some of the latter appear contemporary with the enclosure. A series of minor meandering gullies lay in the southern portion of the site (Fig 2.5).

Phase 1

Three broad stages of development in the layout of the site can be discerned, although this is probably a simplification of what was most probably an ongoing process of piecemeal adaptation and modification.

The earliest features were a series of sinuous, shallow gullies and ditches in the southern part of the site (features 75125, 75504, 75506, 75508 and 75510 and 75229). These were insubstantial, usually less than 1 m wide with an average depth of 0.2 m. Each generally contained a single deposit of reddish or greyish-brown silty clay. These were not finds-rich features: the total assemblage from them amounted to 50 g of animal bone and a single rock-gritted Scored ware sherd.

In its western reaches gully 75506 matches the position of a boundary depicted on historic maps produced from the 1880s to the 1980s. There was no indication of a modern date for gully 75506, however, and in its form and position it resembles the other sinuous phase 1 features hereabouts. Along with gully 75510 to the north, gully 75506 possibly defined a 5 m-wide trackway or boundary.

Phase 2

Enclosure

A rectangular enclosure occupied the northern part of the site. It measured at least 75 m long by 70 m wide and enclosed an area of over 4000 m^2. Its eastern and western halves were defined by ditches 75503 and 75500 respectively. These ditches were relatively substantial, typically 1–2 m wide with an average depth of 0.65 m (Pl. 2.7). The profile of the ditches also differed from the other boundaries on site, often being 'V'-shaped in section. Neither ditch showed

Plate 2.7 Ditch 75500, north-west-facing section

any clear evidence of recutting; tip lines within some slots suggested the former existence of an internal bank. The fills of the enclosure ditch returned an artefactual assemblage dominated by animal bone, with Iron Age pottery and a handful of slag and worked flints also recovered. A cattle mandible from slot 75363 dug across ditch 75503 returned a Middle Iron Age radiocarbon date (SUERC-92150: *390–200 cal. BC*; 2207±30 BP). The teeth were largely intact within the mandible, indicating it had come to rest in the ground not long after the animal had died, affording confidence that the radiocarbon date is contemporary with the use of the enclosure.

The enclosure had a 3.5 m-wide entrance gap in its southern side. The ditches either side terminated in large, north–south aligned lozenge-shaped pits (75475: 3 x 1.7 x 0.8 m; 75484: 2.9 x 1.6 x 0.8 m; Fig. 2.6, section 9). Both had a relatively complex backfill sequence. A large fragment of human skull (deriving from an adult ??female aged 18–35) was recovered from the base of the uppermost fill of the westernmost pit (75484), along with articulated horse bone, the overall assemblage probably representing a ceremonial deposit. A fragment of the horse bone returned an Early–Middle Iron Age radiocarbon date (SUERC-92155; 2320±32 BP; 480–220 cal. BC), as did the skull (Poz-12784; BC; 2335±30 BP; 520–230 cal. BC). The skull had a slightly 'polished' appearance suggestive of handling (see McKinley, below), interesting in terms of mortuary process, but also implying that there was a passage of time between the death of the individual and the remains being deposited here. This would not appear to be the case with the horse, as its remains were articulated. Both pits contained Iron Age pottery.

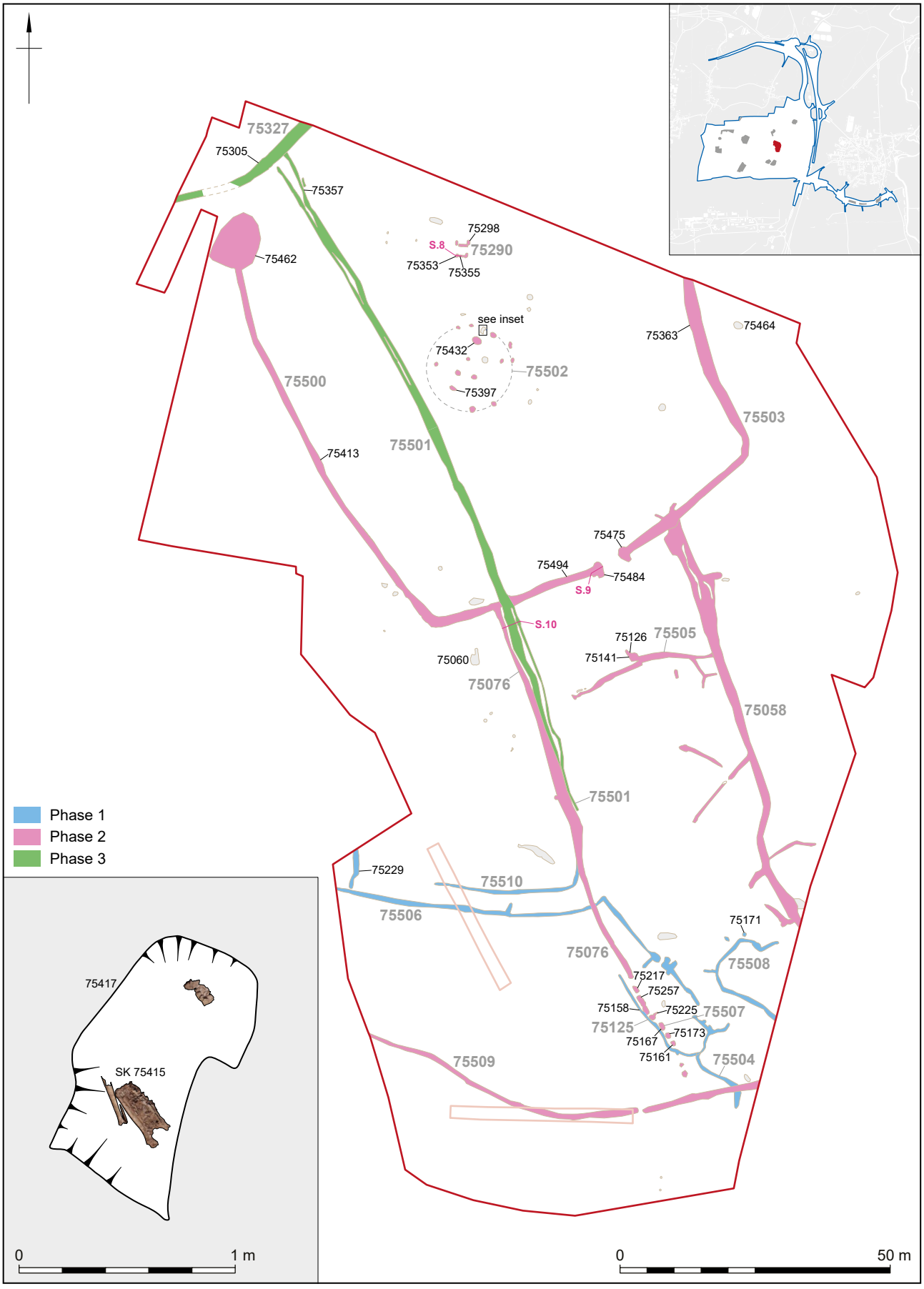

Figure 2.5 King St Plantation

The western side of the enclosure was less clear in the north-western part of the site. Ditch 75500 appeared to terminate in a large cut feature interpreted as a quarry pit (75462: 10.5 x 8.0 x 1.2 m). There was no sign of it continuing to the north-west of the pit either on the ground or within the geophysical survey data, although that area of the site had been affected by disturbance from a gatehole. More generally, it was not possible to discern the full footprint of the enclosure within the geophysical survey data, as its northern portion lies under woodland (the eponymous plantation) that could not be surveyed and that has been retained within the East Midlands Gateway development.

Possible roundhouse

Geophysical survey detected a spread of increased magnetic response within the enclosure (Wessex Archaeology 2014a, 10, fig. 55) and this was found to correspond with a cluster of 18 pits and postholes. These were typically round or oval in plan, up to 1.2 m across (usually significantly less) and with an average depth of 0.3 m. A certain circularity can be discerned within the overall arrangement, and it is possible that it represents the remains of a circular post-built structure of 15.8 m diameter, with seven internal features and two or three outliers. There was little difference between the 'structural' pits forming the cluster's circumference and the others, although the 'structural' pits were on average slightly smaller and tended to have shallow, dish-shaped profiles, as opposed to the concave bowl-shaped profiles more characteristic of the other features. None of the features within cluster 75502 showed any sign of postpipes or post packing; all were filled with reddish or greyish-brown silty clays. Where two or more fills were identified within a cut, the upper deposit tended to be darker and greyer than those beneath. This characteristic might reflect occupation of the postulated structure staining the ground with organic matter. Few finds were recovered from cluster 75502: there were four sherds of Iron Age pottery and some animal bones, one of which (a sheep/goat vertebra from pit 75432) returned a Middle Iron Age radiocarbon date (SUERC-92154; *390–210 cal. BC*; 2253±30 BP).

Dating of activity in this part of the site is not entirely straightforward, however, in that one of the 'structural' pits forming the cluster's circumference was an inhumation grave, 75417, the occupier of which was dated to the Middle Bronze Age (see

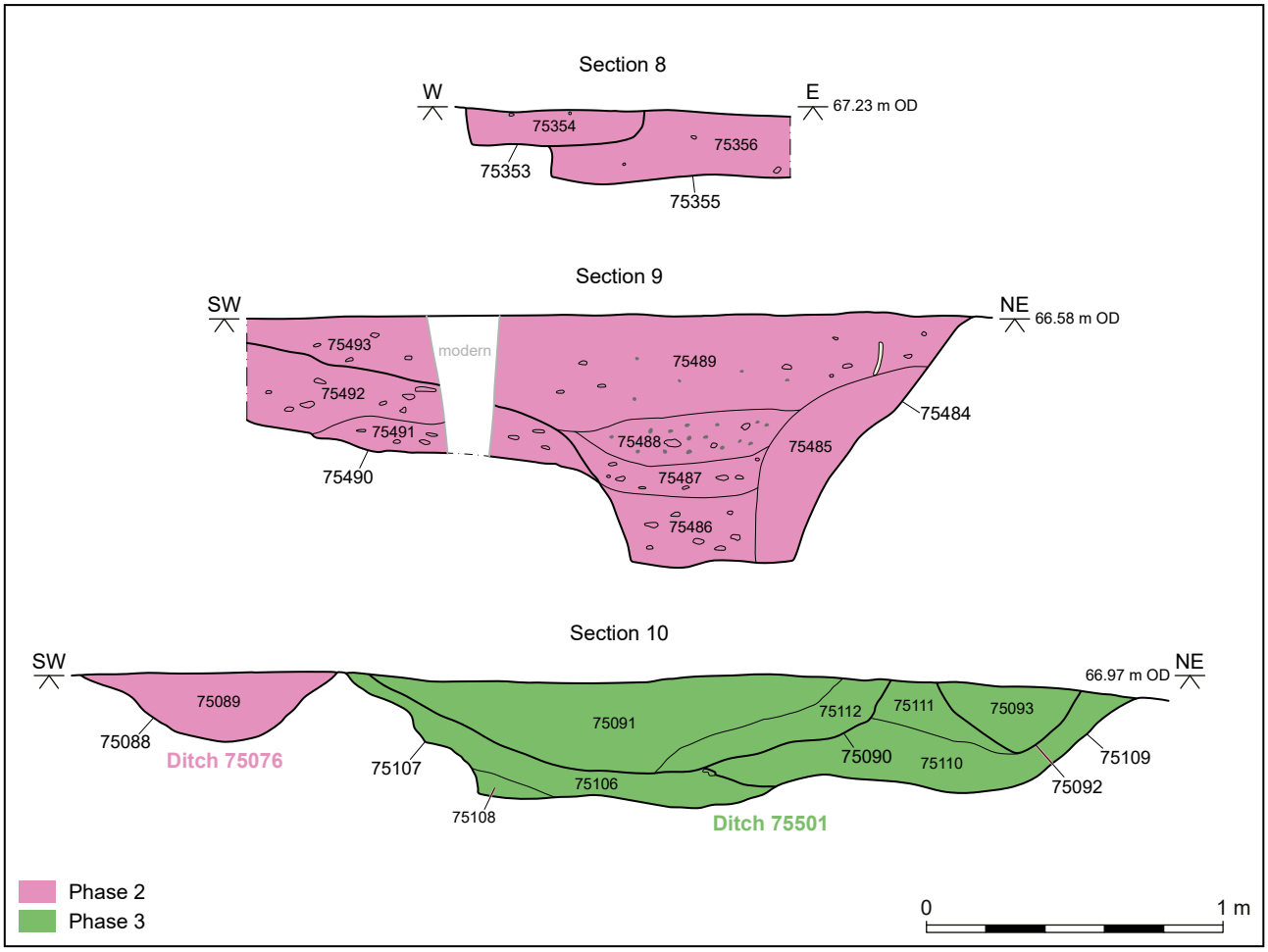

Figure 2.6 King St Plantation (sections)

above). Moreover, this was recorded on site as cutting through another of the structural pits. This casts doubt on the assumed Iron Age chronology for the remaining undated features within this group, and indeed its integrity as a whole.

Although the available evidence renders a clear understanding of developments here elusive, the setting out of the enclosure so that the inhumation lay central within it and the later activity focusing on the area around the grave appears purposeful. This is intriguing if not coincidental, as it would appear that the Iron Age occupants of the site were aware of the c. 1000-year-old grave that they were living alongside.

Four-post structure

Four-post structure 75290 lay 12.5 m to the north of the outer edge of the possible roundhouse. It measured around 2.3 m square, and therefore was at the smaller end of the scale for such features, which are generally around 3 m square (Thomas 2011a, 155). The eastern postholes (1 x 0.55 x 0.5 m deep) were slightly larger and significantly deeper than those to the west (0.8 x 0.5 x 0.15 m deep). The two pairs of postholes also differed in that the eastern pair showed more signs of burning, with quantities of charcoal and heat-affected clay within their fills.

The two northernmost postholes and the two southernmost postholes each cut an east–west aligned linear feature (up to 0.5 m wide x 0.3 m deep) that ran between them (eg, posthole 75353 cut feature 75355 – Fig. 2.6, section 8). These linear features were interpreted as beam slots on account of their form in plan and vertical sides. They may have defined an earlier feature that was replaced by the four-post structure, or possibly formed an integral element of the four-post structure. The beam slots and postholes forming group 75290 contained a finds assemblage that included Iron Age pottery, a few struck flints, animal bone, and fuel ash slag with hearth or furnace lining attached, likely to have been associated with ironworking. A small quantity of wood charcoal and small pieces of slag (but no charred plant remains) was retrieved from the environmental samples collected from the features. The evidence of burning and slag may reveal this feature had a role in ironworking, or at least was filled with material generated by such activity nearby.

Boundaries to the south of the enclosure

Two ditches, 75058 and 75076, extended to the south-east from the enclosure's southern side. These lay around 35 m apart and may have defined an ancillary plot of land appended to the enclosure. An alternative interpretation is that they formed an avenue leading to the enclosure, although they were a little offset from its entrance, perhaps making this less likely. Where dug through the horizontally banded bedrock, both ditches displayed a stepped, flat-based profile. Both contained a simple backfill sequence of red-brown clay.

The eastern ditch (75058: typically 1.4 m wide and up to 0.6 m deep) continued beyond the southern site limit, whereas the western ditch (75076, and of similar dimensions) terminated after 73 m, although pit alignment 75507 continued its course for a further 20 m.

Together these ditches provided an assemblage of animal bone and Iron Age pottery including some possible Late Iron Age material. Several struck flints were also recovered, adding to the relatively sizeable assemblage recovered during the fieldwalking and test pitting on and around the site.

Table 2.4 King St Plantation pit alignment

Cut	*L x W x D (m)*	*Shape in plan*	*Fills (upper/ lower)*	*Finds*
75217	1.4 x 0.7 x 0.2	Lozenge	Greyish brown clayey silt	Flint x 2
75257	1+ x 0.9 x 0.15	Lozenge	Greyish brown clayey silt	-
75158	3.9 x 0.85 x 0.15	Lozenge	Greyish brown silty clay	-
75225	1.1 x 0.9 x 0.18	Oval	Greyish brown clayey silt	-
75167	1.5 x 0.8 x 0.13	Lozenge	Dark greyish brown sandy silt	-
75173	1.14 x 0.93 x 0.2	Oval	Greyish reddish brown clayey silt	Undated pot (crumbs)
75161	0.9 x 0.7 x0.16	Oval	Reddish grey-brown clayey silt	-

Ditches 75076 and 75058 each formed a T-junction with the enclosure, indicating they were all broadly contemporary. Investigation of the junction between ditch 75076 and the enclosure indicated the latter had silted up when ditch 75076 was dug, whereas the junction of ditch 75058 and the enclosure had been obscured by a later feature (itself possibly a recut of the enclosure ditch).

Ditch 75076 seems to have been recut in phase 3 by boundary 75501, which followed its course but stretched further to the north-west, crossing the interior of the enclosure (see below).

Details of the pits forming alignment 75507 are tabulated above (Table 2.4), moving from north to south along its course. The pits predominantly lay less than 1 m apart; the long axis of individual pits matched the north-west to south-east orientation of the overall boundary.

Part of the pit alignment appeared to run alongside curvilinear gully 75125 from phase 1, although the two did not intercut. Furthermore, two of the phase 1

gullies (75506 and 75510) turned through 90 degrees at around the same point that the phase 2 ditch 75076 crossed over them. These relationships suggest that the boundaries marked in phase 1 remained of importance later in the history of the site, when further features were dug adjacent to them. In a similar vein, the line of ditch 75076 and pit alignment 75507 appears to continue the south-eastward course of the ditch and pit alignment recorded some 200 m to the north-west at Great Dampits.

Pit alignment 75507 respected ditch 75509 (average width 0.9 m and depth 0.3 m), which ran on an east–west course across the southern part of the site, cutting phase 1 feature 75504. Ditch 75509 marked the southern limit of archaeologically detectable activity and appears to have divided the core of the site from an area of open land to the south. The feature produced a small assemblage of finds, including Iron Age rock-gritted pottery.

Phase 3

As mentioned above, ditch 75076 was recut on its eastern side by a new feature that extended its course to the north, across the interior of the enclosure (which had likely fallen out of use by this time). The new, extended boundary, 75501, comprised a closely set pair of parallel ditches (Fig. 2.6, section 10; Pl. 2.8). There was some evidence that the eastern ditch was the later of the pair, but for most of their course they did not intercut. The western ditch (average width 1 m and depth 0.34 m) had a bowl-shaped profile; its successor to the east was smaller by around one-third with more of a dish-shaped, shallow profile.

Plate 2.8 Ditch 75076/boundary 75501, south-east facing section

Where the ditches forming boundary 75501 lay within the interior of the enclosure their fills tended to be darker with a more greyish hue; to the south they were more sterile and of reddish-brown colour. This variation might be due to the proximity of deposits enriched by occupation activity associated with the use of the enclosure, and perhaps might even signal that the circular post-built possible structure (group 75502) belongs to this phase. This does not quite tally with the ceramic evidence, however: the pottery assemblage from boundary 75501 contained some Late Iron Age material, whereas that from possible structure 75502 was only attributable to the Iron Age generally.

The line of boundary 75501, along with ditch 75076 and pit alignment 75507 from phase 2, appear to continue the south-eastward course of the ditch and pit alignment recorded some 200 m to the north-west at Great Dampits (see below).

Boundary 75501 formed a T-junction with boundary 75327, which ran across the north-west corner of the site. Boundary 75327 also consisted of two parallel ditches, with the more southerly of the pair being the later. The earlier, more northerly ditch had a flared U-shaped profile, up to 1.5 m wide and 0.65 m deep. Its successor to the south was shallower (0.46 m deep) and had a flat-based bowl-shaped profile. The western ditch within boundary 75501 respected the line of boundary 75327, whereas the eastern ditch (75357) had been cut by it (but did not extend beyond it). Overall, the arrangement appears broadly contemporary. Boundary 75327 produced an assemblage of Iron Age pottery, animal bone and a struck flint.

A final remark with regard to boundary 75327 is that it appears to continue the line of a curvilinear earthwork (visible within LiDAR data) running through the woodland to the immediate north (Fig. 5.7). This earthwork accompanies a field boundary shown on mapping from the 1880s onwards, which here marks the current boundary between the civil parishes of Lockington-Hemington and Kegworth, and is discussed further below alongside other examples of boundaries visible within the modern landscape which potentially have very early antecedents.

Great Dampits

The site at Great Dampits lay on a fairly well-defined promontory that descended from the south-east towards the floor of the Trent valley to the north (Fig. 1.2; Pl. 2.9). The stripped ground surface sloped down from 65 m at the southern end of the site to 61.5 m in the north.

Background

A probable enclosure defined by lengths of curvilinear ditch was detected by the magnetometer survey (Wessex Archaeology 2014a, 12, fig. 76). Fieldwalking of the plot of land surrounding the Great Dampits site returned modest amounts of medieval and post-medieval pottery and CBM, along with one sherd of Romano-British pottery and three worked flint flakes (Wessex Archaeology 2016a, figs 2–3). Trench evaluation uncovered ditches containing Iron Age pottery and animal bone; these

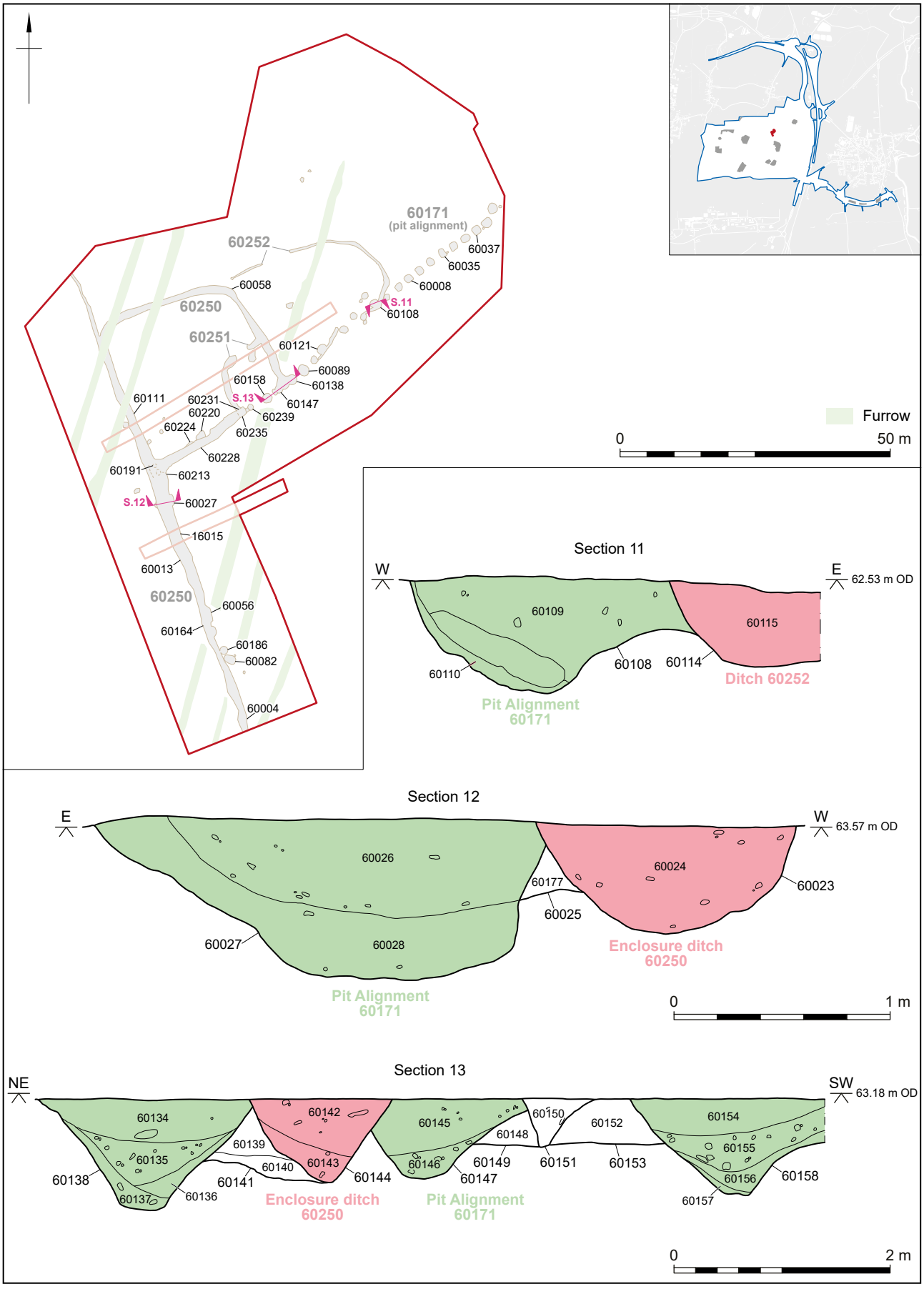

Figure 2.7 Great Dampits

corresponded with the probable enclosure visible within the magnetometer data (Wessex Archaeology 2015a, 11–12, fig 11; Wessex Archaeology 2016d, 12, figs 17–18). North-east to south-west-aligned cultivation furrows were also revealed.

Subsequent more extensive topsoil stripping exposed a right-angled pit alignment (60171), a superimposed P-shaped enclosure (60250), and a scatter of minor discrete features (Fig. 2.7).

Pit alignment 60171

An alignment of pits entered the site from its eastern edge and extended for 80 m to the south-west, at which point it turned through 90 degrees to run for 50 m towards the south-east where it presumably continued beyond the southern edge of site (Fig. 2.7). The easternmost portion (ie, the first 50 m) of the pit alignment could be easily discerned in plan, but beyond this its course was obscured by the imposition of the P-shaped enclosure. Pit alignment 60171 consisted of over 35 features.

The great majority of the pits were subcircular or subsquare in plan and 1.5–2 m across. However, other characteristics of the features appeared to differ according to their position within the alignment. Those within the easternmost portion of the alignment (ie, those that were not overlain by the P-shaped enclosure) were relatively shallow (typically 0.4–0.5 m deep) and had concave, bowl-shaped profiles (Fig. 2.7, section 11). The remainder of the pits tended to be deeper (typically 0.7–0.9 m across and up to 1.1 m deep; Fig. 2.7, section 12) with flared U-shaped profiles. Such variation might suggest that the pits were dug at different times or for different purposes. It may be significant that the zone of change between the two types of pit broadly correlates with the eastern edge of the P-shaped enclosure.

All of the pits had relatively simple fill sequences, typically comprising two or three deposits of silty or sandy brown clays, with shades grading from grey to red or orange with depth. No postpipes or any signs of post packing were visible in any of the pits. At the eastern end of the alignment, the pits formed a single line and were fairly regularly spaced, with each generally lying somewhere between 1 m and 1.5 m from its neighbour.

The pits appear to be the earliest features on the site. Along one stretch of the pit alignment, however, there was slight evidence for an underlying linear feature. Numbered 60141/60149/60153, this lay between pits 60138 and 60158 and was at least 4 m long, typically 0.4 m deep and had a reddish/brownish orange clay fill (Fig. 2.7, section 13). This may have been a boundary feature forming a precursor of the pit alignment, or perhaps more likely the deposits represent an eroded natural subsoil that the pits had been cut into. Certainly, with their red colouration, these early deposits do not resemble the feature fills typically recorded on the site.

A fragment of articulated dog sacrum from pit 60220 returned a Middle Iron Age radiocarbon date (SUERC-92148; 380–170 cal. BC; 2210±32 BP). A small group (eight sherds) of pottery of broad Iron Age date was also recovered from the feature. A few small groups of similar Iron Age (yet otherwise chronologically undiagnostic) pottery were recovered from six of the other pits within the alignment (16015, 60008, 60013, 60121, 60164 and 60213).

Further details are tabulated below. Table 2.5 relates to those pits that were unobscured (ie, easternmost within the alignment), moving from north-east to south-west along the course of the alignment. Table 2.6 relates to the pits within the alignment that were obscured by enclosure 60250. The pits are again presented relating to their position within the alignment, starting at pit 60037 and finishing at the southernmost pit 60004 (the alignment turned through 90 degrees between pits 60213 and 60191).

P-shaped enclosure 60250

This comprised a 90 m-long, north-west to south-east-aligned ditch with a broadly square enclosure of 610 m^2 appended to its eastern side (Fig. 2.7).

Table 2.5 Great Dampits – easternmost pits within alignment 60171

Cut	*L x W x D (m)*	*Shape in Plan*	*Profile*	*Fills (upper/lower)*	*Finds*
60037	1.7 x 1.32 x 0.4	Subrectangular	Bowl	Dark greyish brown silty clay	
60035	1.82 x 1.16 x 0.42	Subrectangular	Bowl	Dark greyish brown sandy silt	
60008	1.45 x 1.4 x 0.43	Subsquare	Bowl	Brownish grey silty clay	Pottery
60108	Diam. 1.4 x 0.55	Circular	Bowl	Pale yellowish brown sand/dark greyish brown sandy silt	
60121	1.94 x 1.68 x 0.44	Subcircular	Bowl	Brownish grey sandy clay/reddish brown silty clay	Animal bone, pottery
60089	Diam. 2 x 0.63	Circular	Deep bowl	Grey brown sandy clay/reddish brown grey sandy clay	

Table 2.6 Great Dampits – pits within remainder of alignment 60171

Cut	*L x W x D (m) NS=Not seen*	*Shape in plan NS=Not seen*	*Profile*	*Fills (upper/lower)*	*Finds*
60138	NS x 2 x 0.5	NS	Flared U	Brownish grey silty clay/dark brownish grey silty clay/orange brown silty clay/ pale brownish red clayey silt/	
60147	NS x 1.5 x 0.72	NS	Flared U	Greyish brown silty clay/ orange brown silty clay	
60158	NS x 1.8 x 0.9	NS	Flared U	Brownish grey sandy silt/dark brownish grey silty clay/reddish brown silty sand/ brownish orange clayey silt	
60239	Diam 1.1 x 0.35	Circular	Bowl	Greyish brown clayey silt	
60235	NS x 1.8 x 0.9	NS	Flared U	Greyish brown clayey silt/blueish grey sand/reddish brown silty clay	
60220	NS x 1.8+ x 1	Subrectangular	NS	Brown sandy clay/dark brown sandy clay/ orange brown sandy clay	Animal bone, pottery
60224	NS x 1+ x 1	Subrectangular	NS	Brown sandy clay/ orange brown clayey sand/ brown sandy clay	
60213	NS x 1.7 x 1.1	Subcircular	Flared U	Brownish grey silty clay/dark greyish brown silty clay/ dark brownish grey silty clay	Animal bone, pottery
60191	NS	NS	NS	Dark greyish brown silty clay/reddish brown silty clay	
60027	NS x 2.2 x 0.75	Subcircular	Irregular bowl	Reddish brown clay loam/brown sandy clay loam	Animal bone, flint
16008	NS x 2.4 x 0.8	NS	Irregular bowl	Brownish grey silty clay/ dark orange brown silty clay/ brownish orange silty clay/ dark grey brown sandy silt	
16015	NS x 1.5 x 0.53	NS	Flared U	Reddish brown silty clay/orange brown silty clay/orange red silty clay	Animal bone, pottery, flint
60013	NS x 1.3 x 0.82	Rectangular	Flared U	Greyish brown silty clay/reddish brown silty clay	Pottery
60056	Diam 1.75 x 0.83	Circular	Deep bowl	Reddish brown clayey silt/yellowish brown silty clay	
60164	Diam 2 x 0.93	Subcircular	Deep bowl/ flared U	Greyish brown silty clay/orangey brown silty clay	Animal bone, pottery
60186	1.6 x 1.4 x 0.78	Subcircular	Flared U	Dark greyish brown silty clay/reddish brown silty clay	Animal bone
60082	NS x 1.5 x 1.1	Subsquare	Flared U	Greyish brown clayey silt/reddish brown clayey silt	
60004	NS x 1.7 x 0.85	Subcircular	Flared U	Greyish brown silty clay/brownish grey sandy clay	

Plate 2.9 Excavations at Great Dampits, looking north-east to Ratcliffe-on-Soar

Where the enclosure joined the main ditch, the two elements were found to be dug to the same depth and appeared to have become infilled at the same time, suggesting the arrangement overall represents a single entity: a P-shaped enclosure. Furthermore, the linear ditch petered out somewhat at the northern end of the site, becoming relatively shallow and diffuse (0.6 m wide by 0.3 m deep). This portion of the feature is, therefore, thought to represent a run-off channel, leading downhill from the ditch proper, rather than part of a formal boundary.

The linear ditch followed the spine of the promontory upon which the Great Dampits site was situated. Here, the ditch was typically around 1 m wide and 0.4–0.5 m deep. The ditch defining the enclosure was generally found to be a little deeper (typically 0.6–0.7 m), but a bowl-shaped profile and greyish or reddish-brown silty clay fill were common throughout. Finds from ditch 60250 include pottery (including Middle or Late Iron Age wares), animal bone and a few struck flints. The enclosure may have had a gap of up to 10 m in its south-eastern side: at this point no convincing evidence of the ditch was visible, with the boundary hereabouts defined by a stretch of the pit alignment instead (Fig. 2.7, section 13).

The weight of the evidence suggests that the pits were infilled when the P-shaped enclosure was constructed. Although the relationships where the P-shaped enclosure and pit alignment intercut were usually vague and equivocal (due to similarity of fills), the overall sense is that the ditch was the later feature. The pottery evidence, with Scored ware (in use during the Middle and Late Iron Age) present within fills of the enclosure ditch but absent from pit alignment 60171, whose ceramics can only be dated to the Iron Age generally, reinforces the impression that the enclosure represents a development of the boundary works initiated by the pit alignment.

Ditch 60251

Ditch 60251 was a curvilinear feature that defined an internal division within the south-east corner of enclosure 60250. The area it defined was small, measuring approximately 8.5 m by 7 m internally. The ditch itself was typically 1.0–1.5 m wide and up to 0.8 m deep, with a deep bowl-shaped profile and a greyish-brown clay fill. The feature was, however, much shallower at is northern end where it appeared contemporary with enclosure 60250. An entrance gap was present in the northernmost stretch of the ditch. Finds from ditch 60251 included small amounts of animal bone, pottery (including Scored ware) and a complete quartzite saddle quern (see Shaffrey, below).

Ditch 60252

Ditch 60252 formed a D-shaped extension (occupying 430 m^2) appended to the eastern side of enclosure 60250. The ditch was relatively slight (typically 0.4 m wide and up to 0.35 m deep) with a dish or bowl-shaped profile containing a reddish-brown clay fill. It did not intersect with enclosure 60250, but is assumed to be contemporary. Gaps

were present along the length of ditch 60252; the feature was very shallow adjacent to these gaps, so they are thought to represent the effects of truncation rather than original entranceways. As with the main enclosure, there were no internal features within the area encircled by the ditch to provide an insight into the enclosure's function. The finds assemblage from ditch 60252 included Scored ware.

Medieval features

The archaeological horizon had been truncated by a series of north-east to south-west-aligned cultivation furrows. Their orientation was askew to that of the site's Iron Age phase, demonstrating a lack of continuity in the organisation of the landscape hereabouts.

Field Farm

The Field Farm site comprised two adjacent portions. The western portion contained burnt mounds and associated features (see above), whereas parts of a co-axial field system of Iron Age date were recorded in the eastern area (Fig. 2.8; Pl. 2.10). The latter remains are described below.

Ditch 65240

This formed the primary boundary within the co-axial field system at Field Farm. It was at least 115 m long and crossed the entire length of the site on a north-east to south-west alignment. The ditch was typically 1.7 m wide and 0.7 m deep, with a flat-based V-shaped profile (Fig. 2.9, section14; Pl. 2.11). Its fills were generally reddish-brown clays, with little convincing evidence of recutting. Finds included Iron Age pottery, animal bone and the unburnt shaft of a human femur from slot 65062. The bone was from an adult and showed some evidence of canid gnawing. It returned a Middle to Late Iron Age radiocarbon date (350–50 cal. BC; 2130±30 BP; Poz-127846).

No features of Iron Age date were found to the west of ditch 65240, indicating that it delimited archaeologically visible activity on the site during that period.

'Spur' ditches

Four 'spur' ditches extended from ditch 65240; all lay on its south-eastern side. Ditch 65244 was the most substantial of these (up to 1.6 m wide and typically 0.6 m deep) and resembled ditch 65240 in its form and dimensions (Fig. 2.9, section 15).

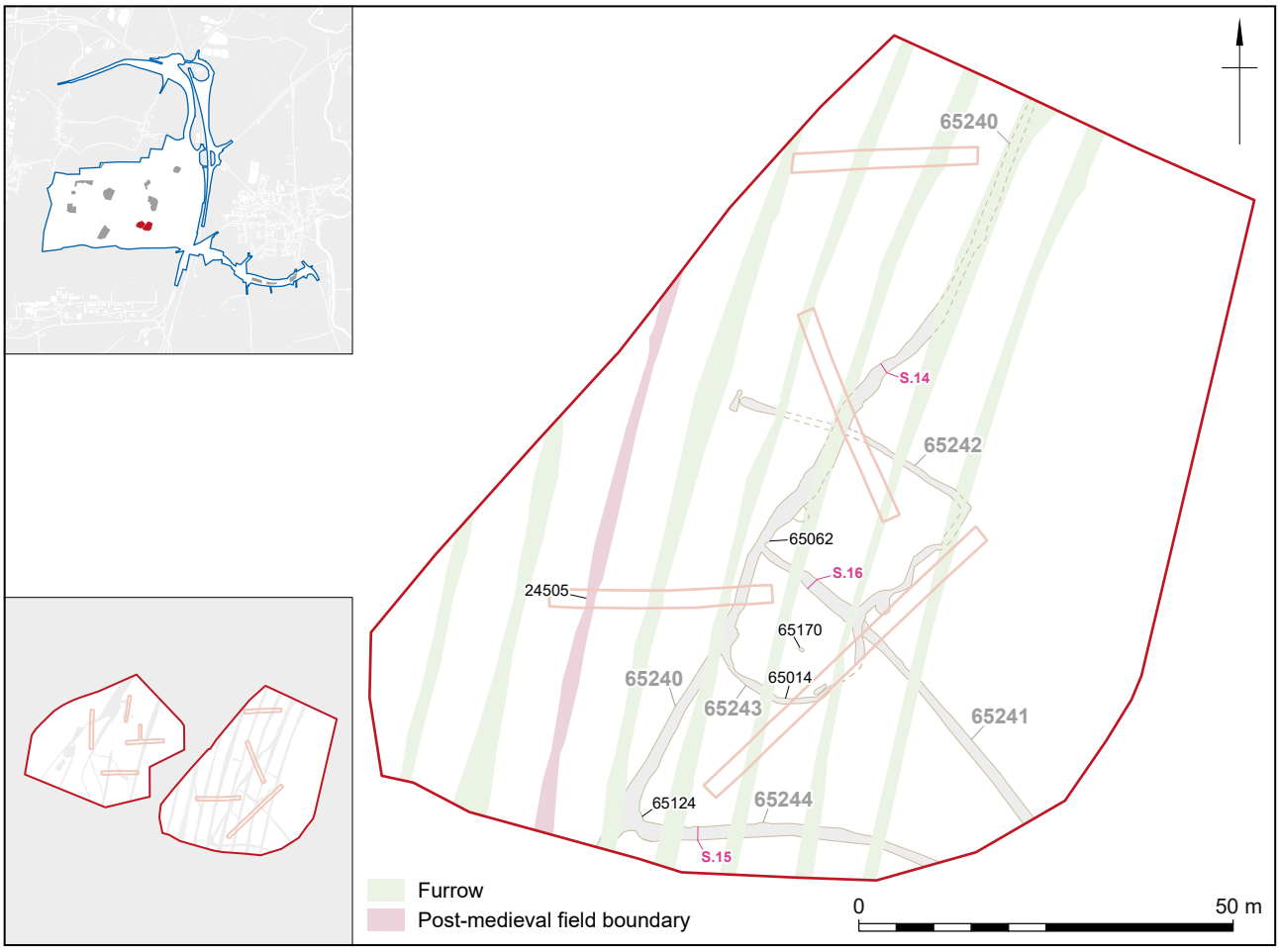

Figure 2.8 Iron Age boundaries at Field Farm

Plate 2.10 Archaeologists at work on the eastern portion of the Field Farm site, looking north/downslope to King St Plantation, and the Trent Valley beyond

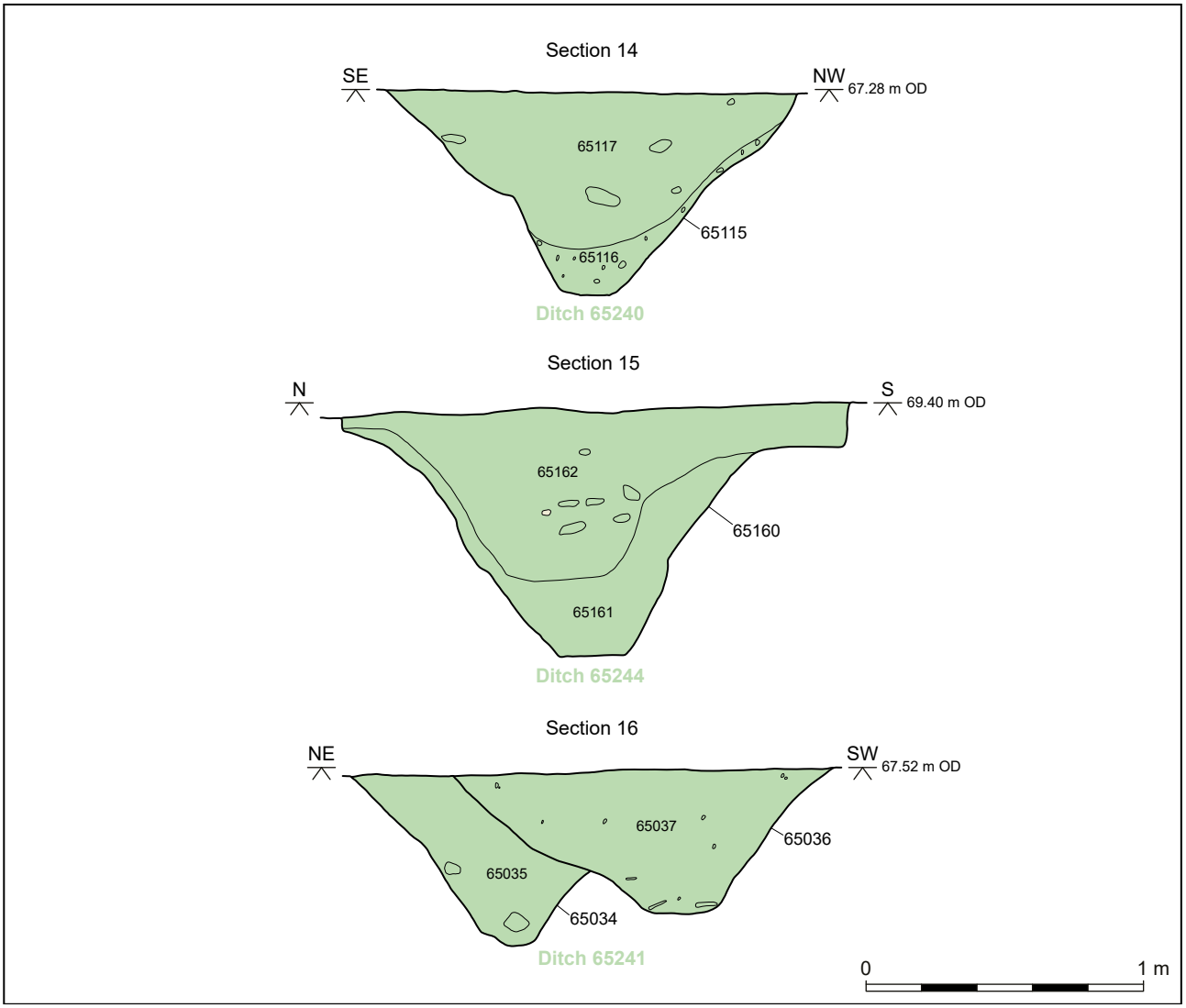

Figure 2.9 Field Farm (sections)

Plate 2.11 Intersection of ditches 65240 and 65243 at Field Farm, north-east facing section

It followed an east–west orientation, however, and therefore was set somewhat askew from the co-axial alignment of the remainder of the field system. At the junction of ditches 65240 and 65244 their fills appeared identical, and the features may therefore have been contemporary. However, Scored ware was present in ditch 65244 and absent from ditch 65240, suggesting a later date or longer lifespan for ditch 65244.

To the north of ditch 65244, a further two spur ditches appear to have defined a subrectangular enclosure appended to the southern side of ditch 65240. This enclosure measured 34 m by 15 m (530 m^2) and its northern and southern halves were defined by ditches 65242 (1 m wide by 0.3 m deep; bowl-shaped profile) and 65243 (0.7 m wide and 0.3 m deep; regular bowl-shaped profile) respectively. Ditch 65243 cut 65240 and provided an assemblage of pottery including Scored ware, and animal bone and slag. A certain circularity can be discerned to the form of ditch 65243; its external 'diameter' would be around 19 m. The subcircular form in plan and relatively dark and finds-rich fills of the feature suggests that it may be associated with habitation, perhaps defining the former site of a roundhouse or other structure that once stood at the south-west end of the suggested subrectangular enclosure. The only feature visible within the enclosed area (65170) was, however, small, artefactually sterile and of questionable archaeological provenance.

Ditch 65241 (1.4 m wide and 0.5 m deep; bowl- or V-shaped profile) was the fourth of the spur ditches. It ran on a perpendicular alignment to ditch 65240, was over 50 m long and extended beyond the south-eastern edge of site. Clear evidence of recutting was occasionally apparent along the feature (Fig. 2.9, section 16), which also contained pottery of Middle or Late Iron Age date.

Although it seems clear that ditch 65240 was the earliest boundary hereabouts, the relative sequence of ditch 65241 and the components of the subrectangular enclosure has been rendered uncertain by the similarity of clay fills on the site (Pl. 2.11). The likeliest scenario is that ditch 65240 and the first manifestation of spur ditch 65241 were contemporary (no relationship could be discerned at the junction of the two features). The subrectangular enclosure defined by ditches 65242 and 65243 was then set out, slighting ditch 65241. This, however, was comparatively short-lived, as it was in turn slighted by the recutting of ditch 65241.

Medieval and later features

A series of north-east to south-west-aligned cultivation furrows were recorded across the site, with their alignment, like that of ditch 65240, reflecting the local slope of the ground. A ditch (24505: 1.25 m wide and 0.25 m deep) corresponding with a field boundary marked on Ordnance Survey maps from 1883 to the 1970s shared the alignment of the cultivation furrows. Post-medieval whiteware pottery was recovered from this feature.

Mill Close

Mill Close, the largest of the excavation sites, was centred on a slight hillock, on whose summit the archaeological horizon lay at 74.5 m OD (Pl. 2.12).

Background

The archaeological potential of Mill Close was first indicated by geophysical survey, which recorded the presence of two probable ring gullies set within a subrectangular ditched enclosure (Wessex Archaeology 2014a, 9–10, fig. 46). Ten evaluation trenches were dug across and around the geophysical anomalies. The results generally supported the findings of the geophysical survey and supplied a modest artefactual assemblage, chiefly Iron Age pottery and animal bone (Wessex Archaeology 2015a, 10, fig. 6; 2016d, 16–17, fig. 12).

Scored ware was recovered from all the feature groups at the site, indicating activity was occurring in the Middle/Late Iron Age.

Enclosure

The site at Mill Close contained a rectangular enclosure (50187) of the sort frequently recorded in the East Midlands and beyond, although its large size – 96 m by 80 m with an internal area of 7050 m^2 – positions it at the upper end of the range for such features (Speed 2010, 69–70, fig 24). Its long axis was aligned ENE–WSW. It had a 3.5 m-wide entrance in its western side, and there was also evidence for an infilled entrance (perhaps originally 7.5 m wide) in the south-western corner. In addition, there was an interruption in the south-eastern corner, although this area had been disturbed by trees and poles for overhead electricity cables, so this may not reflect its original form.

Plate 2.12 Topsoil stripping of the Mill Close site, as seen from Seven Geaves

For most of its circuit, the enclosure was defined by a single ditch. This varied in width between 2 m and 4 m, and attained a maximum depth of 1.2 m (Fig. 2.11, section 17). Its profile was generally wide, flat-based and bowl-shaped. On its southern and western sides, the enclosure was defined by up to three parallel, occasionally slightly overlapping, ditches (Fig. 2.11, section 18; Pl. 2.13). These were typically between 1 m and 1.5 m wide and were less than 1 m deep (0.3–0.6 m on average). On the three occasions where a relationship was visible between the various components of this multivallate part of the enclosure, the innermost ditch was consistently recorded as the earliest feature in the sequence, indicating the enclosure had expanded outwards, if only very slightly, over time, and any bank was perhaps more likely to have been on the inside edge of the ditch.

Fills were generally recorded as greyish or brownish silty clays of various orange or red hues. Along its northern and eastern sides, a deposit of dark grey clay completed the infilling of the enclosure. The most artefactually productive excavated slots were located along the eastern side of the enclosure, with a relatively large proportion of finds coming from slots 50192/50194 and 50129, which lay closest to ring gully 50188.

Plate 2.13 Ditches defining west side of enclosure 50187 at Mill Close, north-facing section

There were few features recorded within the enclosed area, with none of the pit clusters that might be expected in a typical Iron Age enclosed settlement. Those features that were present within the enclosed area are detailed below.

Ring gully 50188

Ring gully 50188 was circular in plan, had an external diameter of 16 m and enclosed an area of approximately 122 m². The ditch formed a complete circuit with no obvious entrance. Hand excavation of the feature revealed it to have a bowl-shaped profile with a concave base; it was typically 1.8 m wide and 0.7 m deep with a single dark brown sandy clay fill (Fig. 2.11, section 19). Initial difficulty in establishing the level of the archaeological horizon in this part of the site led to the over-machining (by some 0.3 m) of the south-western half of the feature.

The finds assemblage from ring gully 50188 comprises Iron Age pottery, including Scored ware, animal bone and a small amount of slag.

The precise function of ring gully 50188 is not certain; as a complete circuit it does not resemble the typical footings trench for a roundhouse, nor is it steep-sided enough to sustain such an interpretation. It is more likely that it represents an eavesdrip gully to relieve the drainage around a house site, although no internal features were present and it might be thought somewhat over-engineered for an eavesdrip gully, considering its hilltop location. However, the distribution of finds and environmental remains from

Mill Close appear to indicate a focus for occupation in the area of ring gully 50188, and its neighbour, pit circle 50189, increasing confidence that these features were related to habitation.

Pit circle 50189

The geophysical survey indicated a second ring-shaped feature in Mill Close, with this lying approximately 10 m north-west of the outer edge of ring gully 50188. Following topsoil removal, however, this anomaly was found to consist of a circle of pits (collectively numbered 50189), rather than a continuous ditch. Unfortunately, the over-machining that affected the preservation of ring gully 50188 also led to the removal of some of the circle's relatively shallow component pits, with only the north-eastern

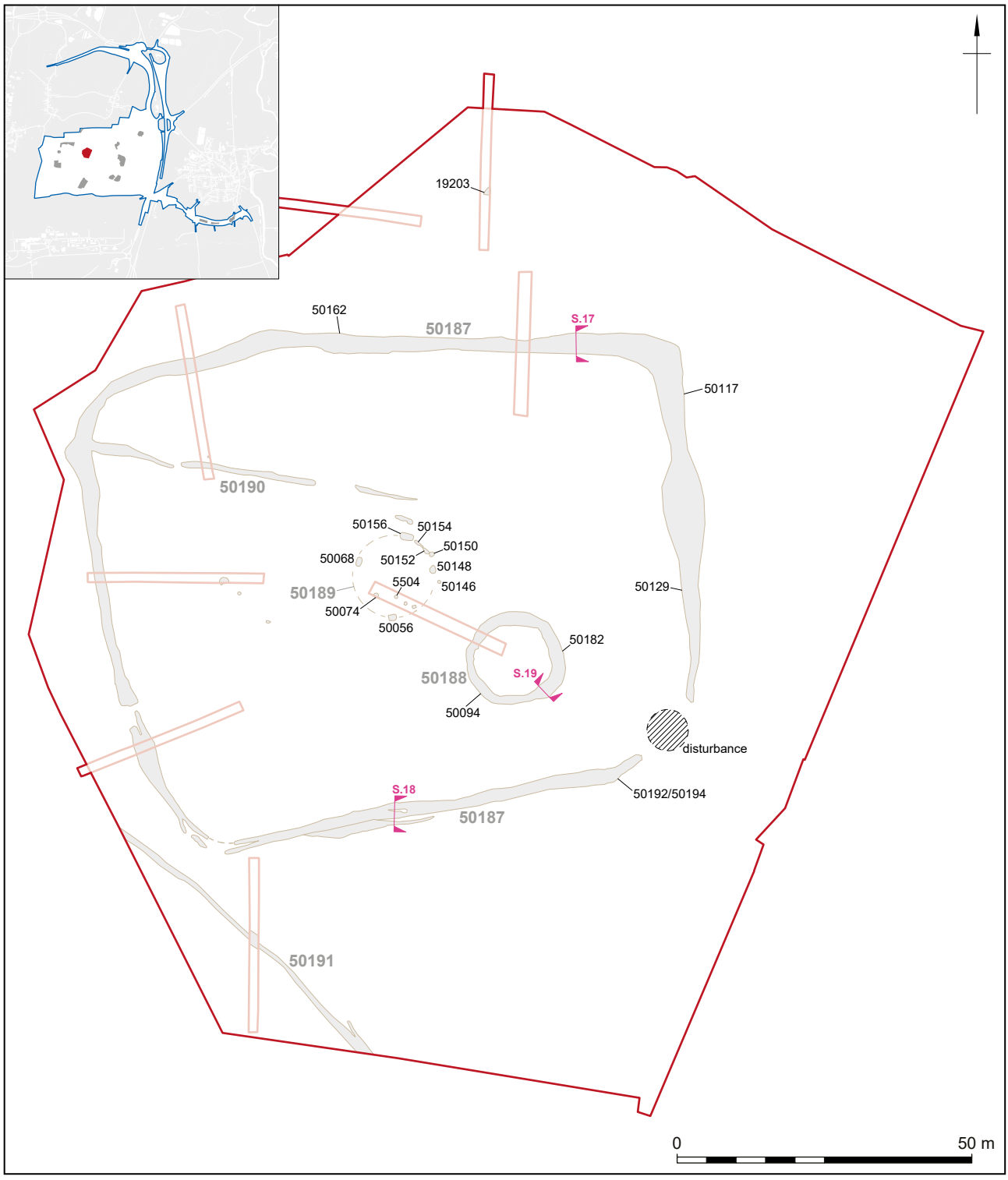

Figure 2.10 Mill Close

Table 2.7 Mill Close – features within pit circle 50189

Pit	*L x W x D (m)*	*Shape in Plan*	*Fills*	*Finds*	*Environmental*
50156	2.3 x 0.92 x 0.22	Lozenge	Mid-greyish brown silty clay	Pot, animal bone	Charcoal
50154	1.8 x 0.5 x 0.16	Lozenge	Mid-greyish brown silty clay	N/A	N/A
50152	1.5 x 0.6 x 0.21	Oval	Mid-greyish brown silty clay	Animal bone, flint	N/A
50150	0.8 diam x 0.24	Circular	Dark greyish brown silty clay	Animal bone	Charcoal, fuel ash slag
50148	1.4 x 1 x 0.28	Subcircular	Mid-greyish brown silty clay	Animal bone	Charcoal, *Triticum* cf. *spelta*
50146	0.55 diam x 0.19	Circular	Dark greyish brown silty clay	Pot, animal bone	Charcoal
50056	0.9 x 0.9 x 0.25 (truncated)	Subcircular	Yellowish brown sandy clay	Pot, animal bone	N/A
50068	1.6 x 0.97 x 0.1 (truncated)	Oval	Black silty clay	Animal bone, fired clay	*Triticum* sp., charred other, fuel ash slag, terrestrial molluscs

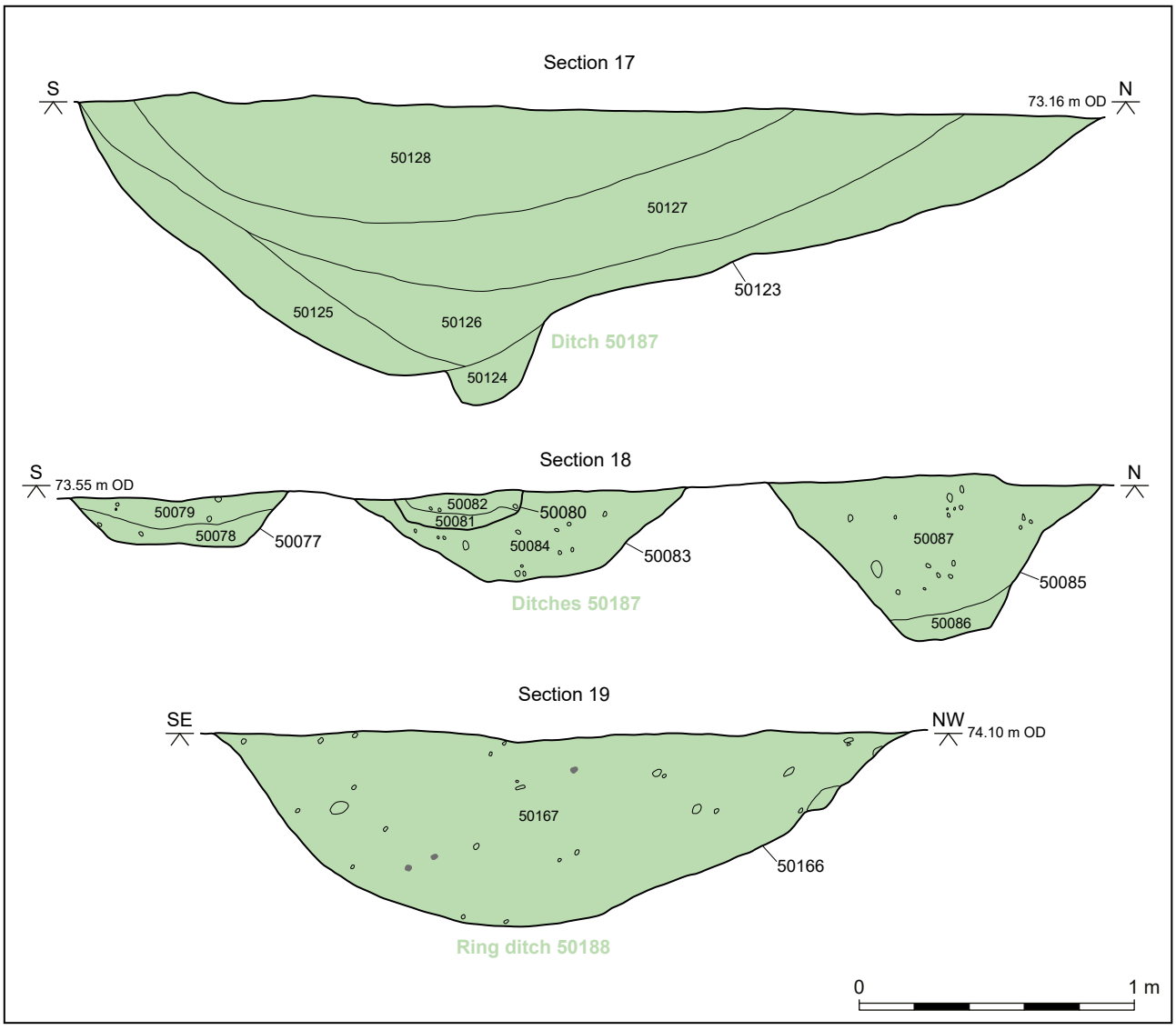

Figure 2.11 Mill Close (sections)

Plate 2.14 An eastward view across the Soar valley from Horsecroft

quadrant of the circle exposed intact. Six pits were present in this quadrant; the majority were oval or lozenge-shaped in plan, with their long axis following the circumference of the overall circle. Details of all the component features of pit circle 50189 are tabulated above (Table 2.7), moving clockwise from the northernmost pit.

To judge by the combined excavation and geophysical evidence, the circle as whole was 13 m in diameter. It was situated within the exact centre of enclosure 50187, suggesting commonality of design, and it is thought that the pits may have once contained posts forming a roundhouse. The pits lacked post-packing stones and were not particularly deep, although the remains were clearly truncated.

Two features were recorded within the area enclosed by the pit circle. Posthole 5504 was subcircular in plan, measured approximately 0.5 m in diameter and 0.22 m deep, and was filled with an artefactually sterile greyish-brown silty clay. A small (0.6 m diameter) deposit of dark greyish-brown silty clay lay nearby; numbered 50074, this contained pottery and animal bone.

Ditch 50190

Ditch 50190 extended from just north of pit circle 50189 to the north-western corner of enclosure 50187. It was 56 m in length and comprised three separate segments. The width of the feature varied between 0.8 m and 1.35 m, with a maximum depth of 0.4 m. The feature produced a small assemblage of Iron Age pottery and animal bone. Ditch 50190 seems to represent an internal boundary, perhaps subdividing the enclosure for different activities, although there is insufficient evidence to elaborate further.

External features

Few remains were recorded lying beyond enclosure 50187, with this appearing to largely constrain archaeologically visible activity.

Pit 19203 (1.3 x 0.65 x 0.55 m deep) lay 24 m beyond the northern edge of enclosure ditch 50187 and had a stepped, irregular profile. Two fills were recorded: a basal fill of reddish/greyish-brown silty clay that contained Iron Age sandy ware, overlain by a darker and more charcoal-rich silty clay, with further Iron Age pottery and animal bone. The form of the feature, and its fills/finds assemblage, suggest that it was a refuse pit associated with the enclosure to the south.

Field boundary ditch 50191 (up to 0.6 m wide and 0.4 deep) ran for 55 m on a north-west to south-east alignment across the south-west corner of the site. Its finds assemblage amounted to seven scraps of animal bone and a single Iron Age pot sherd. It may represent part of a field system contemporary with the enclosure, although this is uncertain.

Horsecroft

The site at Horsecroft occupied a finger of land that descends eastwards to the River Soar from the mudstone plateau upon which East Midlands Airport is situated (Fig. 1.2; Pl. 2.14). This east–west ridge is defined to the north by the floor of the Trent valley and to the south by a small stream, unnamed on Ordnance Survey mapping, which flows due east into the Soar. The archaeological horizon sloped gently from 68 m OD in the west to 65 m OD in the east.

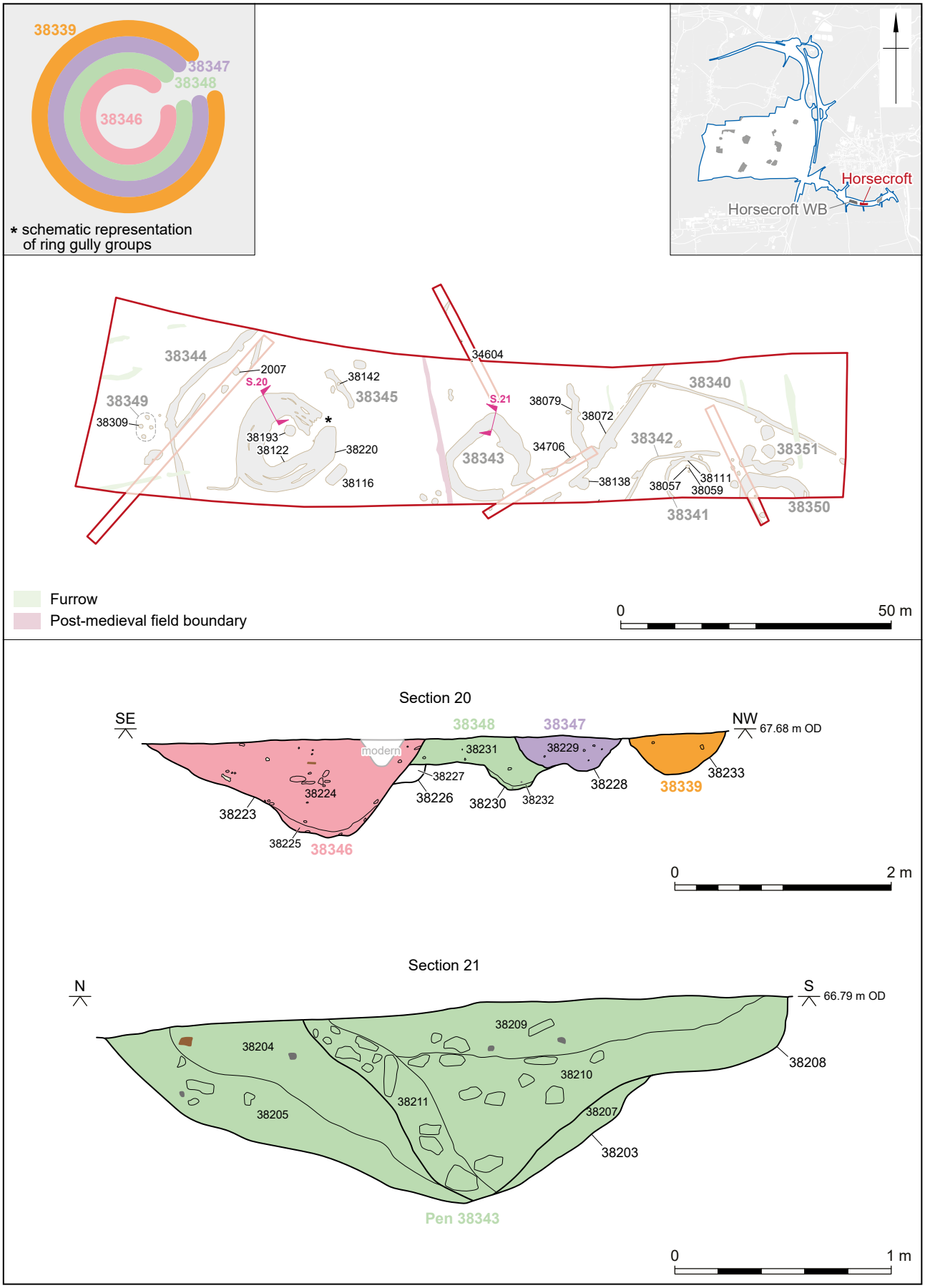

Figure 2.12 Horsecroft

Background

Works were undertaken at the Horsecroft site in response to the re-routing of the A6, which was carried out as part of the East Midlands Gateway development. The gradiometer survey here gave only slight indication of buried remains, with only a handful of anomalies of archaeological interest (Wessex Archaeology 2014a, figs 17–25). Some of these features produced Middle to Late Iron Age pottery when evaluated by trenching (Wessex Archaeology 2015a, 12–13; figs 12–15; Wessex Archaeology 2017c).

Roundhouses

Two roundhouse sites were revealed (Fig. 2.12). The most westerly showed signs of rebuilding (Pl. 2.15). The earliest element of this was eavesdrip gully 38348 (typically 1 m wide and 0.3 m deep, with a shallow, bowl-shaped profile and reddish/greyish-brown silty sand fills; Fig. 2.12, section 20). This had a diameter of around 13 m, with an ENE-facing entrance. There were no signs of any associated structural features. A small assemblage of pottery, including a Scored ware sherd of Middle–Late Iron Age date, was collected from the feature.

Eavesdrip 38348 was cut by a pair of nested penannular features: eavesdrip 38339 and beam slot 38347; these appear to mark the replacement and slight enlargement of the original structure. Eavesdrip 38339 (up to 1.3 m wide and 0.4 m deep; shallow-sided with reddish/greyish-brown silt/sand fills) had an external diameter of 17 m, and surrounded beam slot 38347 (0.5 m wide and 0.4 m deep on average, with a deep and straight-sided profile). Eavesdrip 38339 and beam slot 38347 appear contemporary and are believed to be the remains of a single structure; this had a 2-m wide ENE-facing entrance whose position matched that of the first roundhouse. The features produced a modest ceramic assemblage similar to that from the original structure.

A single internal feature was noted: pit 38193 (2 m diameter and 0.4 m deep, with a shallow bowl-shaped profile). This contained scraps of animal bone and Iron Age pottery and was likely associated with occupation of one or other of the roundhouses. Two other features lay close by and may also relate to use of the roundhouses. The first feature, ditch 38345 (8.4 x 1.35 x 0.25 m deep), ran on a north-west to south-east alignment 5 m to the north-east beyond the outer eavesdrip. It had a dish-shaped profile containing a single greyish-brown silty sandy fill, which produced a medium-sized assemblage (just over 1 kg) of later Iron Age pottery. The second feature, pit 38116, lay just 1.5 m to the south-east of the outer eavesdrip. The feature was rectangular, measuring 4.2 m long by 2 m wide, but only 0.15 m deep. It contained a single fill of mid-brown silty clay which produced a few sherds of pottery datable only to the Iron Age generally, although carbonised residue on one of the sherds returned a Middle Iron Age radiocarbon date (SUERC-94428; 2209±24 BP; 380–170 cal. BC).

The later roundhouse, that marked by eavesdrip 38339 and beam slot 38347, was subsequently slighted by the construction of feature 38346. This feature, which possibly better resembles an animal pen than a domestic structure, is discussed further below.

The second of the two roundhouse plots revealed at Horsecroft lay 65 m to the east of that just described. This was a simpler structure, marked by a single ring gully: 38341 (9 m external diameter; 0.8 m wide and 0.15–0.4 m deep, with a deep bowl-shaped profile and a dark greyish-brown silty sand fill). The southern limit of the feature was not seen, as it lay beyond the limit of excavation. The deep profile and dark fill of the feature suggest it was a beam slot; no sign of an accompanying eavesdrip gully was evident. The feature had a gap of at least 4.5 m in its eastern side; this may be at least partly due to plough truncation, although the one investigated terminal was fairly well-defined. A small quantity of Iron Age pottery including Scored ware was collected. Two internal features were noted: intercutting postholes 38057 and 38059; both were artefactually sterile.

Possible animal pens

Three possible animal pens were recorded at Horsecroft. Each of these features was subcircular, around 12–15 m across externally, and defined by relatively substantial ditches. The westernmost, 38346, was centred on the main roundhouse site, whose earliest eavesdrip gully (38348) it cut into (Fig. 2.12, section 20). Its narrow (1.3 m wide) entrance coincided with those of the earlier roundhouses. The ditch was much larger (up to 2.6 m wide with an average depth of 0.7 m; Pl. 2.16) than the eavesdrip gullies and had a larger footprint than the area it enclosed. In light of this disparity, one interpretation might be that this and the other similar features were dug as animal pens, possibly to corral a ram, bull, etc. Alternatively, it may represent an oversized drainage gully. This is discussed further below.

Plate 2.15 Footprint of the rebuilt roundhouse at Horsecroft, looking north-east

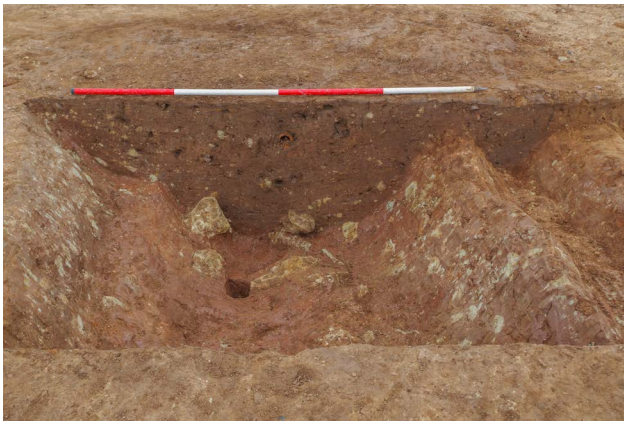

Plate 2.16 Pen 38346 and beam slot 38347, north-facing section

Pen 38343 lay 22 m to the east of pen 38346. This consisted of a ditch 1.9–3.9 m across by up to 0.95 m deep, with a wide, stepped, bowl-shaped profile (Fig. 2.12, section 21; Pl. 2.17). It enclosed an area measuring 10 x 10 m with a well-defined, 1.9 m-wide south-east-facing entrance. A stone-filled recut was seen within the northern corner of the ditch. Forty metres further east lay pen 38350. The full extent of this feature was not seen as it extended beyond the site to the south. Pen 38350 consisted of a ditch with a funnel-shaped profile that measured 1.45–2.5 m wide by up to 0.8 m deep. It appeared to enclose an area approximately 7 m across, with no evidence of an entranceway within the site limits.

Each of the possible animal pens was found to contain Iron Age pottery including Scored ware. A fragment of cattle patella from pen 38346 was radiocarbon dated to the Middle Iron Age (SUERC-92156; 2211±32 BP; *380–190 cal. BC*), revealing it to be probably contemporary with pit 38116 to the south-east, which produced a similar radiocarbon date. However, residuality cannot be ruled out. Animal pen 38350 appeared later with a radiocarbon date from burnt residue on pottery spanning the Middle to Late Iron Age (SUERC-94427; 2038±24; 150 cal. BC–cal. AD 60).

Drainage channels

Two L-shaped drainage channels were recorded on the site (38342 and 38344; up to 1.5 wide and 0.4 m deep). Although it may appear that ditch 38344 formed part of an enclosure surrounding the Horsecroft settlement, its modest dimensions suggest a more utilitarian function instead, with this and ditch 38344 perhaps set out to prevent surface water flowing eastward along the fall of the site from reaching the roundhouses. Finds were sparse, but included Middle/Late Iron Age pottery.

Ditch 38340 (1 m wide and 0.4 m deep) also appeared to be L-shaped in plan, but its north-east to south-west-orientated portion was hard to discern against a Y-shaped arrangement of rather irregularly defined ditches (38072/38079: 1.8 m wide and 0.5 m deep). Posthole 38138 lay at the south-western end of these features. It was relatively large (2 m in diameter and 1.1 m deep, with a well-defined, 0.6 m-diameter postpipe). Its basal fill contained plentiful charred evidence of crop processing, with pottery of Middle/Late Iron Age date from its upper fill.

Other features

A variety of other features associated with the Iron Age exploitation of the Horsecroft site was recorded, with the most significant outlined below, moving from west to east along the site.

A four-post structure, 38349, rhomboidal in plan, lay close to the western limit of excavation and 15 m from the rebuilt roundhouse site. Its sides measured 2 m by 2 m, around a third less than the typical size of square or rectangular four-post structures (Thomas 2011a, 155). Its component postholes were 0.8–0.9 m in diameter and 0.35–0.45 m deep, with bowl- or funnel-shaped profiles. Finds were restricted to a single flint.

Pit 34706 (3 m long by 0.5 m deep; bowl-shaped profile) lay 2.5 m to the east of possible animal pen 38343. This feature contained a large assemblage (almost 5 kg) of Middle–Late Iron Age pottery, which may represent domestic refuse linked to the occupation of the nearby roundhouses.

An area of disturbed, trampled ground and pitting (38351) covered a 12 m^2 area in the south-eastern corner of the site. It appeared constrained to the north by the line of drainage channel 38340, indicating that it had been created whilst the channel was open, and that the channel had a role in determining land use within the settlement.

Medieval–modern features

Medieval/post-medieval cultivation furrows and a north-west to south-east-aligned ditch were recorded at Horsecroft. The latter feature matches the line of a field boundary shown on the First Edition six-inch Ordnance Survey map of 1885. Calf bones representing a burial of assumed fairly recent date were recovered from shallow pit 38142.

Plate 2.17 Pen 38343, north-east-facing section

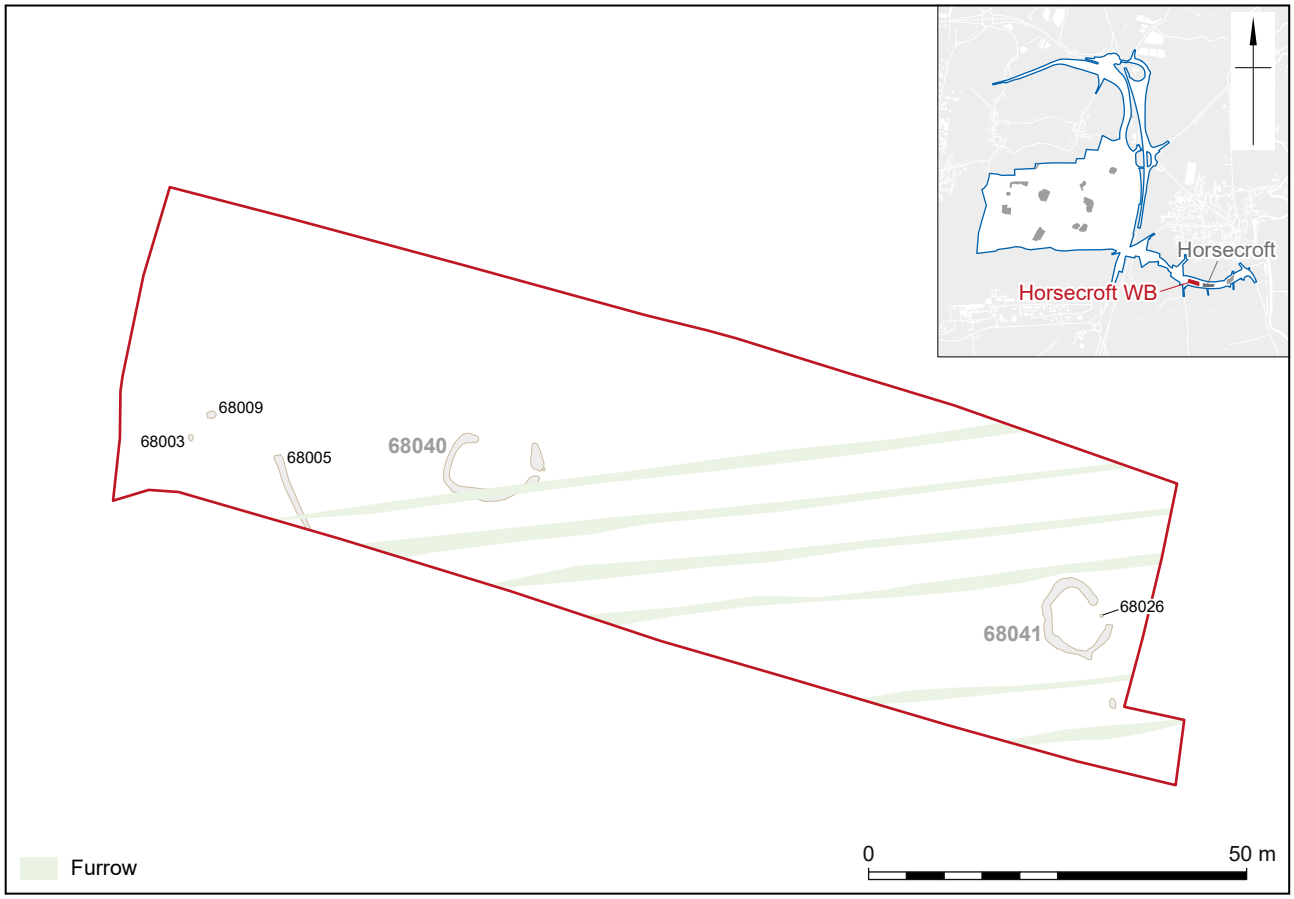

Figure 2.13 Horsecroft Watching Brief area

Horsecroft Watching Brief (WB)

Two rather irregular and artefactually sterile ring gullies (probably associated with roundhouses), three pits and a ditch were recorded in a 0.56-hectare watching brief area located 60 m west of the Horsecroft site (Fig. 2.13).

The western ring gully, 68040, was slightly subcircular in plan, had a typical external diameter of 12 m and enclosed an area of approximately 75 m². Gaps in its eastern and northern side were 0.9 m and 6 m wide respectively. The terminals defining both gaps were shallow and poorly defined, indicating that the interruptions were at least partly the product of ground truncation rather than reflecting the original width of any entrance. Hand excavation revealed the ring gully had a steep-sided, irregular U-shaped profile up to 0.95 m wide and 0.5 m deep, with a single fill of mid-reddish/greyish-brown silty sand.

The eastern ring gully (68041) was smaller, with a typical external diameter of 9.5 m and an internal enclosed area of approximately 37 m². Ring gully 68041 was generally 1.2 m wide and 0.2 m deep with a shallow, dish-shaped profile containing a pale greyish-brown silty sand fill. There was a 3 m gap in its eastern side, the northern terminal of which was well defined, suggesting the plan broadly reflects the original entrance arrangement. However, this part of the ring gully may have been disturbed by a field boundary shown on historic mapping. An artefactually sterile pit (68026; 0.5 m diameter and 0.1 m deep) lay in the middle of the gap. Two pits (68003 and 68009: both approximately 0.5 m diameter x 0.4 m deep) and a north-west to south-east-aligned ditch (68005: 0.8 m wide and 0.4 m deep) were recorded in the south-western corner of the watching brief site. The ditch and one of the pits contained a small amount of Iron Age pottery.

Longfield

Situated at the foot of the slope where the mudstone plateau descends to the floor of the Trent valley, this was the lowest-lying of the excavation sites. Longfield was overlooked from the south-west by the promontory on which the Great Dampits and King St Plantation sites were located (Pl. 2.18). The site had a very slight drainage fall from south-west (45 m OD) to north-east (43 m OD).

Aspects of the pottery assemblage suggest Longfield was the latest of the Iron Age sites investigated; some Romano-British ceramics were also recovered here, but there was no evidence of prolonged or intense use of Longfield after the Conquest.

Plate 2.18 The view south-west/upslope from Longfield to King St Plantation

Background

Geophysical survey of Longfield detected a group of incomplete small enclosures with internal dividing ditches and pits (Wessex Archaeology 2014a, 12, fig. 73). Evaluation trenching confirmed the results of the geophysical survey; artefacts from the trenches, whilst sparse, suggested an Iron Age date. The overall evaluation results suggested that the buried remains did not extend further than the geophysical data had indicated (Wessex Archaeology 2015a, 6–7, fig. 10; 2016d, 27–28, figs 27–8).

Fieldwalking of the area recovered modest amounts of medieval and post-medieval pottery, two sherds of Romano-British pottery and eleven worked flints (Wessex Archaeology 2016a, figs 2–3). Three of the flints came from where the excavation site was later opened. Two arrays of test pits (comprising 41 test pits in total) were dug within the field to prospect for further evidence, although this work produced only five worked lithics (Wessex Archaeology 2016d, 30–1). The test pit arrays did not overlap with the limits of the Longfield excavation site.

The character of the natural substrate varied. Within the southern half of the site it was the same reddish-pink clay seen across much of the wider development area, albeit with occasional small patches of yellowish gravelly sand. Within the northern half of the site, the pinkish clay was far less prevalent, with sand and gravel predominating instead. The change was a gradual one, but roughly corresponded with the 'principal boundary' (see below). The sand and gravel represent the southern edge of the fluvial deposits that extend across the floor of the Trent valley (British Geological Survey online viewer), and thus the site seems to lie on the interface of two distinct geologies.

Earlier features

Longfield witnessed a fairly continual process of boundary definition, renewal and amendment (Fig. 2.14). It is difficult to discern any coherent 'phases' to the site layout earlier in its history because of the disturbance from subsequent activity. The final arrangement is, however, a little clearer. Described below are the features appearing to belong to the earlier stages of the site chronology.

Four right-angled ditches (41474–5 and 41470 with its recut 41480) and a linear gully (41476) were recorded in the south-eastern part of the site and are stratigraphically early. They could not, however, have been contemporary: gully 41476 (0.6 m wide and 0.15 m deep) was perhaps the earliest feature. It was cut by ditch 41475 (typically 2–2.9 m wide and up to 1 m deep), which was cut in turn by ditch 41474. It is thought the right-angled ditches were the remains of small enclosures, although all had been partially erased by later developments.

These earlier features produced Iron Age pottery (including some Middle/Late Iron Age Scored ware) and a handful of animal bone, slag and flint.

The southern terminal of ditch 41470 (typically 1.3 m wide and 0.55 m deep) appeared to respect the 'principal boundary' (see below). This would suggest that the principal boundary was marked at an early point within the site sequence, although subsequent recutting means that no traces of its original iteration survived.

The principal boundary

Ditch 41477 (of variable proportions up to 3.4 m wide and 1.3 m deep) extended for over 85 m on a north-west to south-east alignment across the full width of the site (Fig. 2.14). It was generally found to contain one or two greyish or orange-brown silty

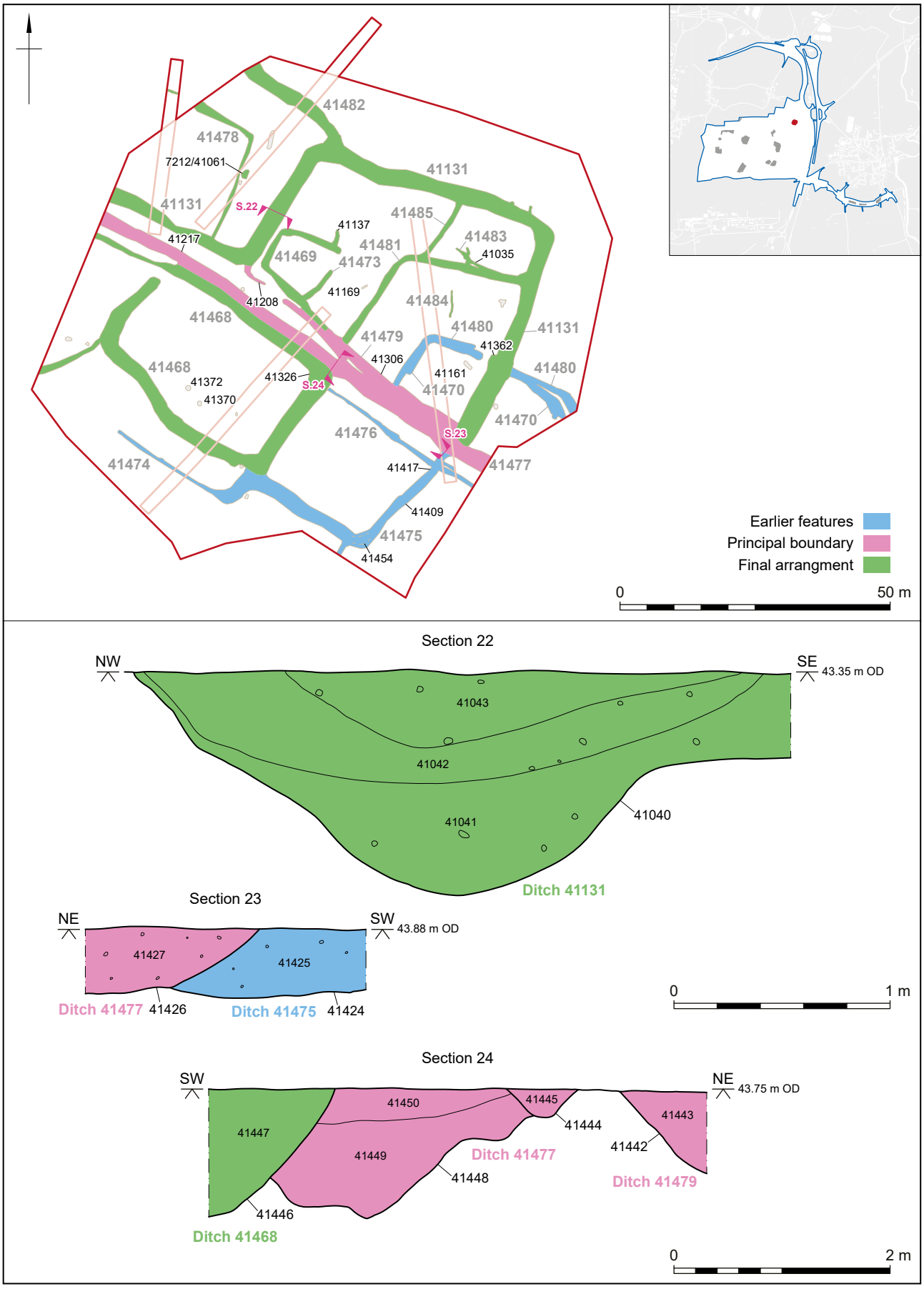

Figure 2.14 Longfield

sand fills within a flat-based, bowl-shaped cut. At its eastern end, ditch 41477 cut across ditch 41475, one of the right-angled boundaries from the site's earlier layout (Fig. 2.14, section 23). Other than ditch 41479 (see below), there was no evidence of any coherent recutting along ditch 41477, which produced pottery of similar date to the earlier features. The surviving manifestation of the principal boundary appears to belong to the middle period of the site's occupation.

Following the infilling of ditch 41477, it was cut on its northern edge by ditch 41479 (average 1.55 m wide and 0.6 m deep). Ditch 41479 shared the alignment of the principal boundary, but was a shorter feature, and did not extend across the full width of the site. It is possible that ditch 41479 marked the southern and only remaining side of an enclosure overwritten when the enclosure marked by ditch 41131 (see below) was set out. The earlier, poorly preserved enclosure may have had a 4.2 m-wide entrance in its south-western corner, marked by the western terminal of ditch 41479 and ditch 41208.

A total of eight pottery sherds were recovered from ditch 41479; seven were of a broad Iron Age date, whilst the eighth was an abraded, probably intrusive, sherd of Romano-British grey ware.

Final arrangement: the main enclosures

There was consistent evidence of the principal boundary (ditch 41477) having been cut along its southern edge by a rectangular enclosure, 41468, that measured 34 m by 18 m internally (610 m^2; Fig. 2.14, section 24). The enclosure had a narrow (1.75 m-wide) entrance in its north-western corner, marked by well-defined ditch terminals. Ditch 41468 typically measured 2.5–3.0 m wide and 1.05 m deep, and was up to 1.4 m deep in its south-east corner. Its profile was usually bowl-shaped (Pl. 2.19), becoming more V-shaped in places. Enclosure ditch 41468 contained Scored ware, animal bone, flint and slag. There was no evidence of any subdivision of the area enclosed by ditch 41468, and only two internal features were present: pits 41370 and 41372.

On the opposite (northern) side of the principal boundary, the crooked course of ditch 41131 (average 3.05 m wide and 1 m deep) marked, along with ditch 41482 (of similar dimensions), a further two enclosures. The easternmost measured up to 48 x 38 m internally (1435 m^2); the westernmost enclosure measured 28 x at least 27 m, and extended beyond the north-western site limit. With regard to the eastern enclosure, the well-defined terminal of its boundary ditch (41131), and some of its apparent subdivisions, cut ditch 41479 which, as mentioned above, had cut the principal boundary. It is therefore unclear how, or even if, the southern side of the eastern enclosure was defined. It may be the case that, although principal boundary ditch 41477 had become infilled, the boundary itself was marked by other means, possibly a hedge, and it was this that secured the southern edge of the eastern enclosure.

Examination of the three right-angled corners of ditch 41131, which defined much of the eastern and western enclosures, could find no evidence that its various lengths were anything other than contemporary. Ditch 41131 generally had a bowl-shaped profile (Fig. 2.14, section 22), although the stretch that defined the northern side of the eastern enclosure tended to be broader and shallower. There was no evidence of any coherent recutting along its full length, although there were occasional very clear signs of localised recutting, principally around its terminal cut into ditch 41479.

Ditch 41131 contained Iron Age pottery (including Scored ware), sparse animal bone, and flint. Carbonised residues on one of the handmade pottery sherds provided a Middle Iron Age radiocarbon date (SUERC-94426; 2265±24; 400–200 cal. BC). A small proportion of the assemblage was of transitional Late Iron Age/Early Romano-British date, suggesting that the feature remained in use until the middle of the 1st century AD. These sherds derived from a single intervention (41362, dug into the eastern side of the eastern enclosure).

If, as discussed above, the construction of ditch 41131 did mark the overwriting of an earlier enclosure whose southern edge is represented by ditches 41479 and 41208, it is perhaps significant that such remodelling involved the construction of a ditch that was significantly more substantial than that which had preceded it. Such a development in boundary works could relate to an increase in concerns surrounding defence or status, or perhaps the introduction of larger species or breeds of stock into the enclosure system.

Ditch 41131 is assumed to be contemporary with ditch 41482 (which defined the northern edge of the western enclosure), although this was not confirmed during the excavation. Ditch 41482 was of similar proportions to ditch 41131, but tended to have a slightly more V-shaped profile. Only a single potsherd was collected from ditch 41482, of broad Iron Age date.

Plate 2.19 Ditch 41468, north-west-facing section

Internal features

In contrast to the relatively 'open' space within the southern enclosure, the eastern and western enclosures showed evidence of organisation and subdivision of their internal areas through an arrangement of narrow ditches and gullies. Right-angled ditch 41478 (average 0.8 m wide and 0.3 m deep) seems to have marked a subdivision within the western enclosure. It contained a small assemblage of pottery datable only to the Iron Age generally.

Within the eastern enclosure, there was evidence of internal 'cells' in all but its north-western corner. Ditches 41469 and 41473 (up to 1.5 m wide and 0.5 m deep) defined the small (10 x 10 m) south-western cell and contained sparse amounts of Iron Age and Romano-British pottery. The Romano-British material was found alongside glazed modern ware and may, therefore, be intrusive. There was an entrance in the north-east corner of this enclosure. Ditch 41481 (of similar proportions to 41473) defined the larger (28 x 24 m) south-eastern cell. The addition of ditch 41485 to the northern side of the south-eastern cell created another cell measuring 17 x 10.5 m. Ditches 41481 and 41485 also produced a small amount of Iron Age and Romano-British pottery.

Where the intersections of the internal boundary ditches with ditch 41131 were examined, the elements appeared contemporary. There was, however, clear evidence of ditch 41469 having cut ditch 41479, which appeared to belong to the site's middle period of use. However, the disposition of the southern side of the south-western sub-enclosure suggests it may have been respecting the same line as that followed by the earlier ditch 41479. Some evidence of remodelling within the north-eastern cell was also apparent: gully 41483 (up to 1 m wide and 0.7 m deep) clearly cut ditch 41481. As outlined above, some of the pottery from the internal boundaries was relatively late within the site ceramic sequence, being of confirmed or likely Romano-British manufacture.

Evidence of the use of these cells again consisted of very little, with only a handful of internal features observed. These included gully 41484 and pits 41161, 41169 and pit 7212/41061, all of which contained Iron Age pottery.

The Romano-British Period

Agreeably to your request, I send you a few particulars as to the finding of the Roman Earthenware, &c., and a short description of the country round the place where they were buried

Letter from Mr C Simkin to Mr J Thompson (Thompson 1855–6, 76)

Overview

Three parts of the development area formed foci of activity during the Romano-British period: Over Field, Daleacre and Seven Geaves. None of these sites displayed evidence of intense use during the preceding Iron Age so there appears to have been something of a disconnect between the two periods. However, the character of the archaeological remains post-dating the Roman Conquest did not diverge markedly from those pre-dating it. The Romano-British sites comprised co-axial field boundaries and enclosures and were chiefly agricultural in nature, although, in contrast to the Iron Age evidence, no definite evidence of buildings was exposed. The animal bone evidence indicates that the farming of cattle remained of primary importance to the local agricultural economy, with sheep maintaining a lesser role. Organic residue analysis of pottery suggests the role of dairying reduced a little in the Romano-British period. The material culture used by the local people seems to have reflected the land's continuing rural character, remaining work-a-day, with a continuing lack, overall, of fancy objects and 'elite' goods. The Romano-British pottery assemblage reveals activity from the later 1st to the 4th century AD, and is typical of basic rural settlements, with a scarcity of regional and continental imports. The composition of one of the site ceramic assemblages suggests that, for a certain period at least, the inhabitants sourced their pottery from over the Trent at the settlement and fort at Derby, rather than the civilian town of Leicester. A stone-and-pot-filled hollow, interpreted as a probable midden, at the Over Field site, was a significant feature in this regard, supplying around one-third of the pottery from the entire development area. The tendency for the project area to contain isolated human remains continued into the Roman-British period, with a disturbed cremation-related deposit of the period recorded at Seven Geaves.

Over Field

The Over Field site lay immediately south of an east-to-west flowing canalised stream, which takes on a more natural meandering course downstream towards the village of Hemington. In general, the stripped ground surface sloped gently down towards the stream, from approximately 65 m OD at the southern site limit, to around 62 m OD along its banks. However, it dipped down fairly steeply along the northern edge of the site, and next to the stream were alluvial/colluvial deposits of brown/grey sandy clay up to 1.5 m thick. The presence of this material indicates that the slope leading to the stream would have been more pronounced in the past.

Background

The geophysical survey recorded linear and subrectangular anomalies of probable archaeological origin (Wessex Archaeology 2016c, fig. 4). Subsequent evaluation exposed Romano-British agricultural enclosure ditches, pits and a spread, alongside medieval/post-medieval cultivation furrows (Wessex Archaeology 2016e).

Machine clearance of topsoil exposed elements of a co-axial field system set out on a north–south/east–

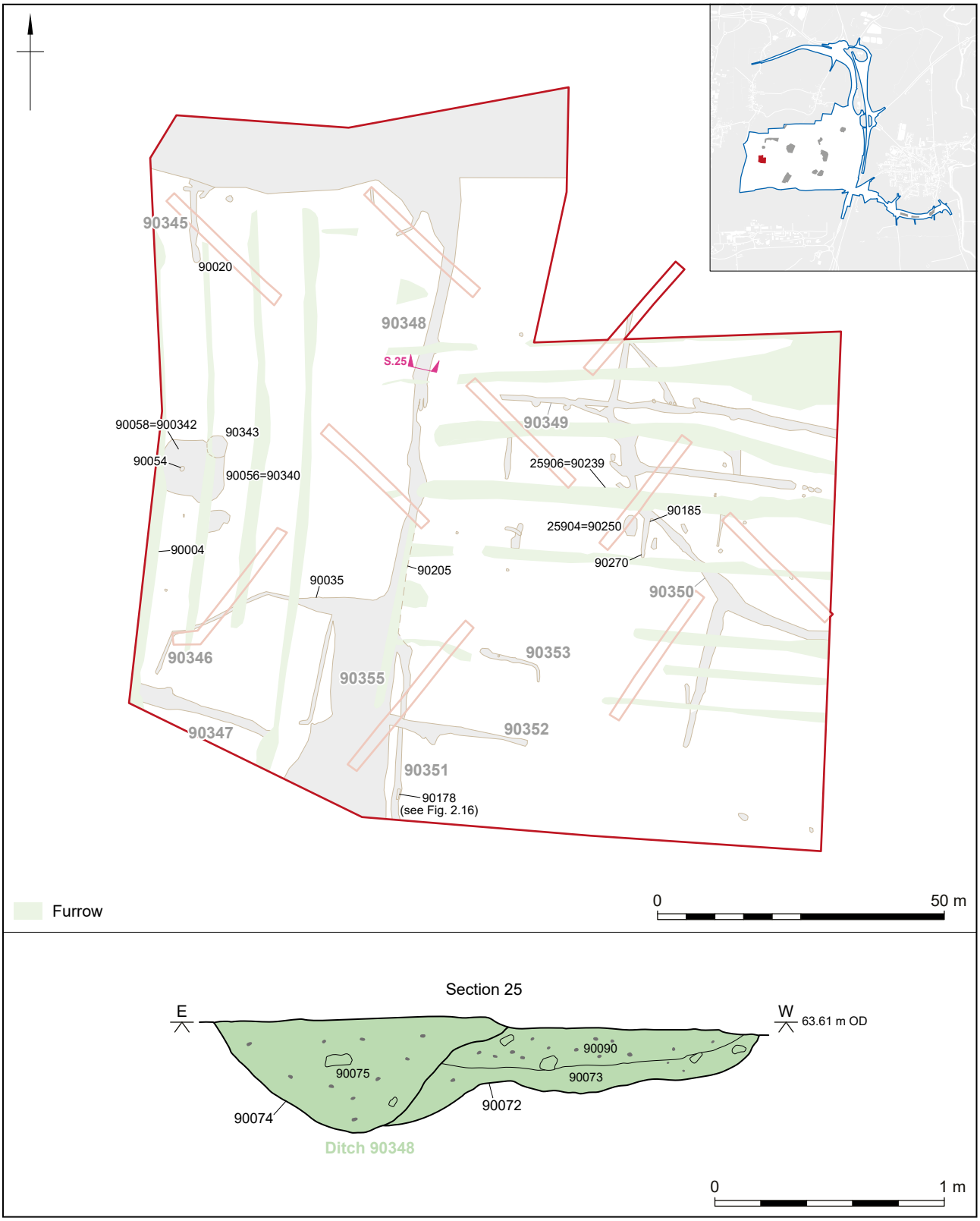

Figure 2.15 Over Field

west alignment (which conformed to the natural ground fall to the north), an inhumation burial within one of the field boundaries, an infilled pond/hollow, a smaller hollow containing a marked concentration of pottery and cobbles, and various discrete pits and postholes (Fig. 2.15). The remains overwhelmingly dated to the Romano-British period.

Hollow 90355

Hollow 90355 lay in the south-central part of the site; it measured over 33 m north–south by 20 m east–west and extended beyond the southern edge of excavation. This sediment-choked natural depression would have originally contained standing water at some points of the year, and was possibly used as a watering hole or pond. Excavation revealed it had fairly gently sloping edges and attained a maximum depth of 0.9 m. It contained a fairly simple fill sequence, with one or two deposits of brownish-grey silty clay with variable amounts of orange mottling present within the various slots hand-dug across it. Finds included Romano-British pottery (dating to the later 2nd to 3rd century AD) and animal bone. Environmental bulk samples from the fills contain cereal remains and charcoal.

Several of the ditches exposed at Over Field intersected the hollow, but in no instance was a chronological relationship established. The ditches and the hollow generally contained very similar fills, and the arrangement as a whole may have been largely contemporary.

Hollow 90056/90340

Hollow 90056/90340 was situated next to the western edge of site; it was subsquare, measuring 11 m east–west by 10 m north–south. The feature presented in plan as an expanse of brownish-grey silty clay, although excavation revealed this deposit to contain a marked concentration of both angular and rounded rocks and cobbles (Pl. 2.20); these typically measured around 0.1 m across. The stones became more apparent with depth (the deposit was 0.25 m thick); some were waterworn, some heat-affected. There was no sense that the stones represented a packed surface, nor were any wall lines discernible within the material, which instead resembled a disordered spread.

The fill of this feature was, therefore, unusually stony but was also anomalous in the quantity of Romano-British ceramics it contained: over 4000 sherds weighing almost 50 kg, representing 80% of the site pottery assemblage (and 39% of that from the entire project). The ceramics comprise local wares, alongside smaller quantities of regional and continental imports. The material spans the 2nd to late 3rd–4th century AD. A paired radiocarbon measurement on charred plant remains and wood charcoal from the hollow (UBA-44093 and UBA-44094) returned an inconsistent result (1957±24; 40 cal. BC–cal. AD 130 and 1762±24; cal. AD 230–370), possibly due to residuality of the earlier-dated sample.

Other finds were limited to relatively small amounts (less than 1 kg in each instance) of animal bone, CBM and slag, a copper alloy armlet or penannular brooch and a fragment of lead (ON (object number) 350 and ON 362). Bulk samples from the fills of hollow 90056/90340 were found to contain cereal remains and charcoal.

A pit (90054; 0.7 m diameter and 0.2 m deep) was cut into the base of the hollow close to its centre. The pit contained a single deposit of stony reddish-brown clay that produced pottery of 2nd–4th-century date. Two other potential cut features were noted in the north-east and south-east corners of the hollow. These were 2–3 m in diameter, but shallow (maximum 0.3 m deep) and diffuse, and may represent undulations within the underlying natural substrate.

Hollow 90056/90340 lay adjacent to the western edge of site. Subsequent evaluation trenching in the field to the west targeted the likely westward continuation of the feature, but no traces were observed (Wessex Archaeology 2017d), suggesting the limits of the hollow as revealed at Over Field represent its full extent.

An initial interpretation of the feature as a threshing floor was not supported by the unconsolidated form of the spread or the environmental results. A midden area is thought more likely, an interpretation offered for similar features found nearby at Warren Farm, Lockington (Thomas 2013, 126). The feature may represent a building platform, although no details of the overlying superstructure remained. It can be noted that this feature contained very different material to that recorded within the nearby and much larger hollow 90355.

Ditch 90348

Ditch 90348 (1.5 m wide and just 0.2–0.4 m deep) ran the entire length of the site on a north–south

Plate 2.20 Orthomosaic image of hollow 90056/90340

alignment. Its northern limit was obscured within the alluvial/colluvial spread along the northern site limit; its southern limit blended with hollow 90355. As such, ditch 90348 would have drained hollow 90355 into the stream at the northern edge of the site. Evidence of recutting was occasionally apparent within the slots dug along its length (Fig. 2.15, section 25). Finds include animal bone and pottery that suggests the ditch was probably open from the late 2nd to 3rd century AD until at least the later 3rd century AD.

Ditch 90349

Three east–west aligned ditches were recorded lying to the east of ditch 90348, and are presumed to form part of a broadly contemporary field system. Ditch 90349 (1.4–1.8 m wide and 0.2 m deep) was the best preserved and most extensive of these, running for 55 m in the north-east corner of the site. It became somewhat diffuse at its eastern end and had been lost to truncation to the west. Where it crossed curvilinear boundary 90350 (see below) no relationship could be discerned due to similarity of their brown silty clay fills. Ditch 90349 was artefactually sterile, apart from a Colchester-derivative bow brooch (ON 363) in poor condition and dating to the later 1st century AD.

Ditch 90349 was accompanied by parallel ditches 25906/90239 (16 m to the south but obscured beneath a cultivation furrow) and ditch 90352 (42 m further south). Ditch 25906/90239 was 2.4–3.1 m wide and up to 0.5 m deep; ditch 90352 was 1.2–2 m wide and up to 0.9 m deep. Both features contained Romano-British pottery. Ditch 90352 was recorded as cutting north–south ditch 90351, into which an Iron Age burial had been inserted (see below).

Curvilinear ditch 90350

Within the north-eastern corner of the site, a 71 m long curvilinear ditch, 90350, continued beyond both its northern and eastern edges; a 25 m long spur extended to the south. The feature measured 1.05–1.95 m wide and was typically around 0.35 m deep. It contained a simple fill sequence, with only a single deposit recorded in most interventions, and there was little evidence of recutting, suggesting a fairly limited life span overall. Finds from the feature included pottery of 3rd-century or later date. As indicated above, no relationship could be discerned where curvilinear ditch 90350 crossed east–west ditch 90349, although it is possible (but unlikely) that the two boundaries were contemporary.

Ditch 90350 enclosed an area of at least 1600 m^2. There were few internal features noted within the enclosed area, which may have been used for stock handling or cultivation.

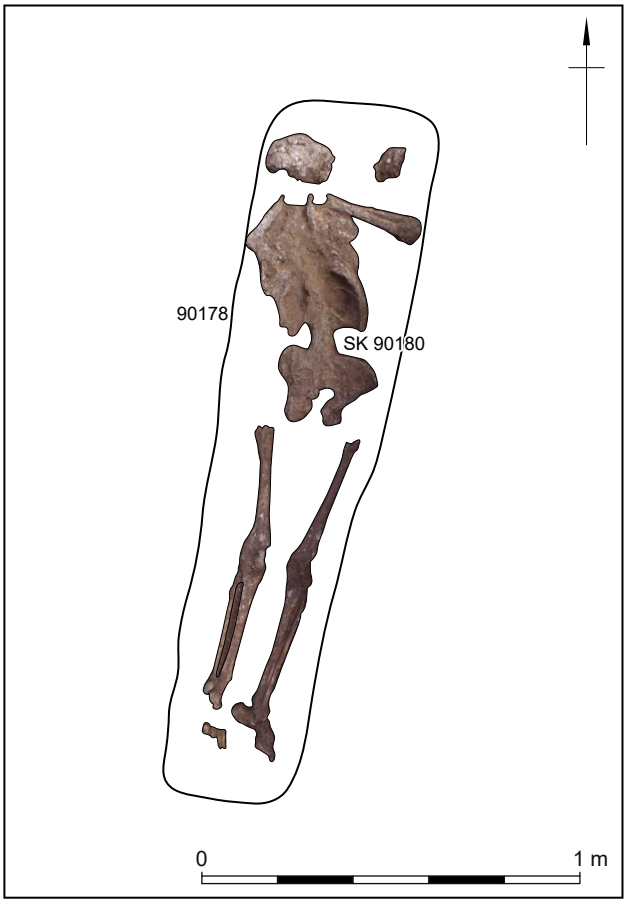

Figure 2.16 Inhumation grave 90178

Ditches 90346, 90035 and 90351

These features lay in the south-western part of Over Field and appeared to demarcate the area occupied by hollow 90355.

Ditch 90346 (0.5–0.7 m wide and 0.2–0.4 m deep) was a sinuous feature that had a fairly deep and well-defined profile in relation to its narrow width. Its eastward continuation was marked by a wider feature with evidence of recutting (90035). Ditch 90351 lay just to the east of hollow 90355, was cut by ditch 90352, and may have continued the line marked by ditches 90346 and 90035 southward

Plate 2.21 Looking north-west across Over Field from inhumation 90180

Plate 2.22 Looking north across Daleacre to the Trent Valley

beyond the southern site limit. Ditch 90351 was 0.7–2 m wide and up to 0.3 m deep.

The most noteworthy discovery relating to ditch 90351 was inhumation grave 90178, inserted into it 3.5 m from the southern edge of the site. The grave contained the poorly preserved remains of an adult aged 20–40 years buried in an extended prone position (Fig. 2.16; Pl. 2.21). The grave (like the ditch it was in) was aligned north–south; the body was placed with the head to the north. A number of small nails were recorded (ON 353–358) and are presumed to be the remains of a small box; no other grave goods were present. This was probably an Iron Age individual: a bone sample returned a radiocarbon date of 370 cal. BC–cal. AD 70 (2110±80; Poz-128383). Excavations across the ditch recovered only a couple of scraps of grey ware pottery, datable only to the Romano-British period generally. Given the date of the inhumation in the ditch, the presence of the pottery might suggest the infilling of the full length of the ditch was not completed for some time, possibly with pottery dragged into the ditch by later ploughing.

Discrete features

Approximately 30 discrete features were recorded at the Over Field site, variously recorded as pits, postholes and possible tree-throw holes. There was no particular pattern to most of them, and so no indication that they formed fence-lines or post-built structures. The most finds-rich was pit 90250. This was first investigated at the evaluation stage when a 1st–3rd-century AD copper alloy hairpin, grey ware and a mortarium fragment were recovered from its distinctively dark greyish-brown silty clay fill. The feature was fully exposed during the subsequent topsoil strip, when it was found to be oval in plan (3.5 x 2.4 x 0.3 m deep) and further Romano-British finds including 2nd–3rd-century pottery and a large iron ring were recovered. Environmental samples produced a relatively rich assemblage of charred cereal (some germinated) and other charred plant remains. Pit 90250 would, therefore, appear to signal occupation in the near vicinity.

Later features

Later activity is evinced by cultivation furrows; these were set out on the same co-axial alignments as the Romano-British field system and in some cases followed the underlying Romano-British field boundaries. To the east of ditch 90348, which contained Romano-British pottery, the cultivation furrows ran on an east–west alignment; to its west they followed a north–south course (see Fig. 5.9). This arrangement is discussed further in Chapter 5.

Daleacre

The ground surface here descended gently to the south, from approximately 71 m OD at the northern limit of excavation to around 68 m OD at the southern edge. Just to the north of the site, however, the ground surface dropped away relatively steeply towards the floor of the Trent valley, and the site as a whole occupied a scarp-edge position with a commanding aspect over the river valley to the north (Pl. 2.22).

Background

Geophysical survey detected a concentration of enclosures (Wessex Archaeology 2014a, fig. 40; Fig. 2.17) from which subsequent evaluation trenching recovered Romano-British ceramics. A stone-built well and a fragment of dry-built rubble wall were also exposed during the evaluation (Wessex Archaeology 2015a, 7–9; fig. 5).

Removal of topsoil revealed a succession of three principal enclosure schemes, sundry gullies, two

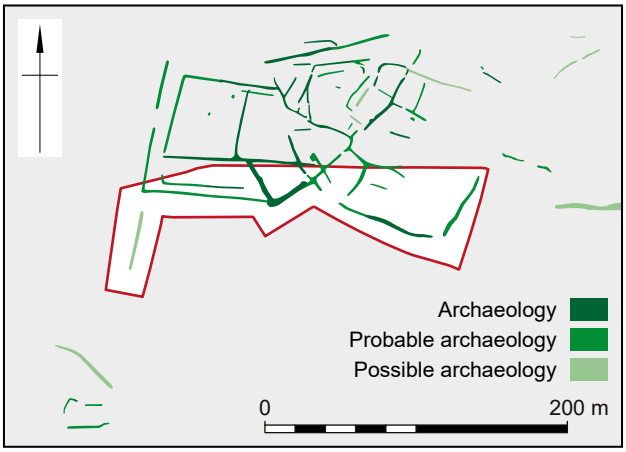

Figure 2.17 Daleacre: geophysical survey results

cremation graves and a scatter of discrete features such as pits and postholes (Fig. 2.18). Although pottery appearing to be of Iron Age manufacture was recovered from the site, it was found redeposited in later features, which were of Romano-British date. Much of the pottery can be dated from the late 1st to 2nd century AD, although the presence of Derbyshire ware suggests that the site may have received fresh pottery as late as AD 350.

Later activity is evidenced by cultivation furrows; these were set out on the same east–west alignment as some of the Romano-British boundaries, and in some cases obscured them.

The 'site' as revealed by the geophysical survey occupied approximately 2.6 hectares, although only the southern portion (occupying 1.1 hectares) was excavated. The northern part (including the portion containing the well and wall identified during the evaluation) remained unexcavated, preserved *in situ* beneath a soil bund (Fig. 2.17).

Phase 1

A ditch (80357) and an enclosure (80360 = 80361) surrounding a group of narrow ditches and linear and right-angled gullies (possibly defining small plots or stands for inhabited structures) represent the earliest features on the Daleacre site (Fig. 2.18).

Ditch 80357

Ditch 80357 crossed the full width of the site on a north–south alignment close to its western edge. It was broad and shallow (typically 3 m wide and just 0.3 m deep) with a dish-shaped profile. Four of the six slots dug across it showed recutting and a simple deposit profile comprising a single fill of reddish-brown silty clay. Artefacts consisted of just three sherds of Romano-British pottery. As these artefacts were collected from a slot dug where ditch 80357 was crossed by a later, fairly finds-rich feature (ditch 80358), it is possible that these finds have been misattributed.

The disparity between the quantities of the finds from boundary 80357 and the other phase 1 features (see below) might indicate this is the earliest boundary on site and represents a pioneering episode of land division, perhaps involving the creation of large ownership blocks, some of which were later subdivided and settled.

Enclosure (80360 = 80361)

The second phase 1 feature was the enclosure defined by boundaries 80360 and 80361, which had a combined length of 165 m and together appeared to define the south-eastern corner of a subrectangular enclosure with an area of at least 3150 m^2. To judge from the geophysical evidence from beyond the excavated area, the complete enclosure may have occupied a total area of some 5840 m^2 (Fig. 2.17).

Boundary 80360 was aligned north-east to south-west. It was typically 7 m wide in plan although excavation established that it was made up of numerous (never fewer than three) parallel intercutting ditches, with a maximum depth of 1.4 m (Fig. 2.18, section 26). Fills tended to be mid-reddish-brown or dark greyish-brown sandy silty clays. The finds assemblage is dominated by pottery, with lesser amounts of animal bone, CBM and flint. The pottery is largely of Iron Age and general Romano-British date, with very little material clearly post-dating the first two centuries AD.

Boundary 80361 marks the north-westward return of boundary 80360. It shared the general characteristics of 80360, measuring approximately 6.5 m wide and with a maximum depth of 1.15 m. Excavation recorded a similar arrangement of up to four intercutting ditches. The combined pottery assemblage from boundary 80361 suggests it was open from the first half of the 2nd century AD, or earlier, until the later 2nd or earlier 3rd century AD. The evidence for it having been cut by elements belonging to the phase 2 and phase 3 enclosure schemes was relatively clear.

The fact that boundaries 80360 and 80361 consisted of a number of parallel ditches would suggest the enclosure they defined was subject to regular episodes of maintenance. However, the digging of adjacent ditches suggests a somewhat counter-intuitive approach to boundary renewal, as it would presumably have been easier to simply clean out the original line than dig a new ditch into the local clay. This may explain why the later features in the sequence recorded in each slot tended to be narrower and shallower than those they replaced. Alternatively, the sequence recorded in the slots may reflect the replacement of one double-ditch boundary by a slighter one in the same position (Fig. 2.18, section 26). However, such an arrangement is not coherently visible around the full circuit of the phase 1 enclosure.

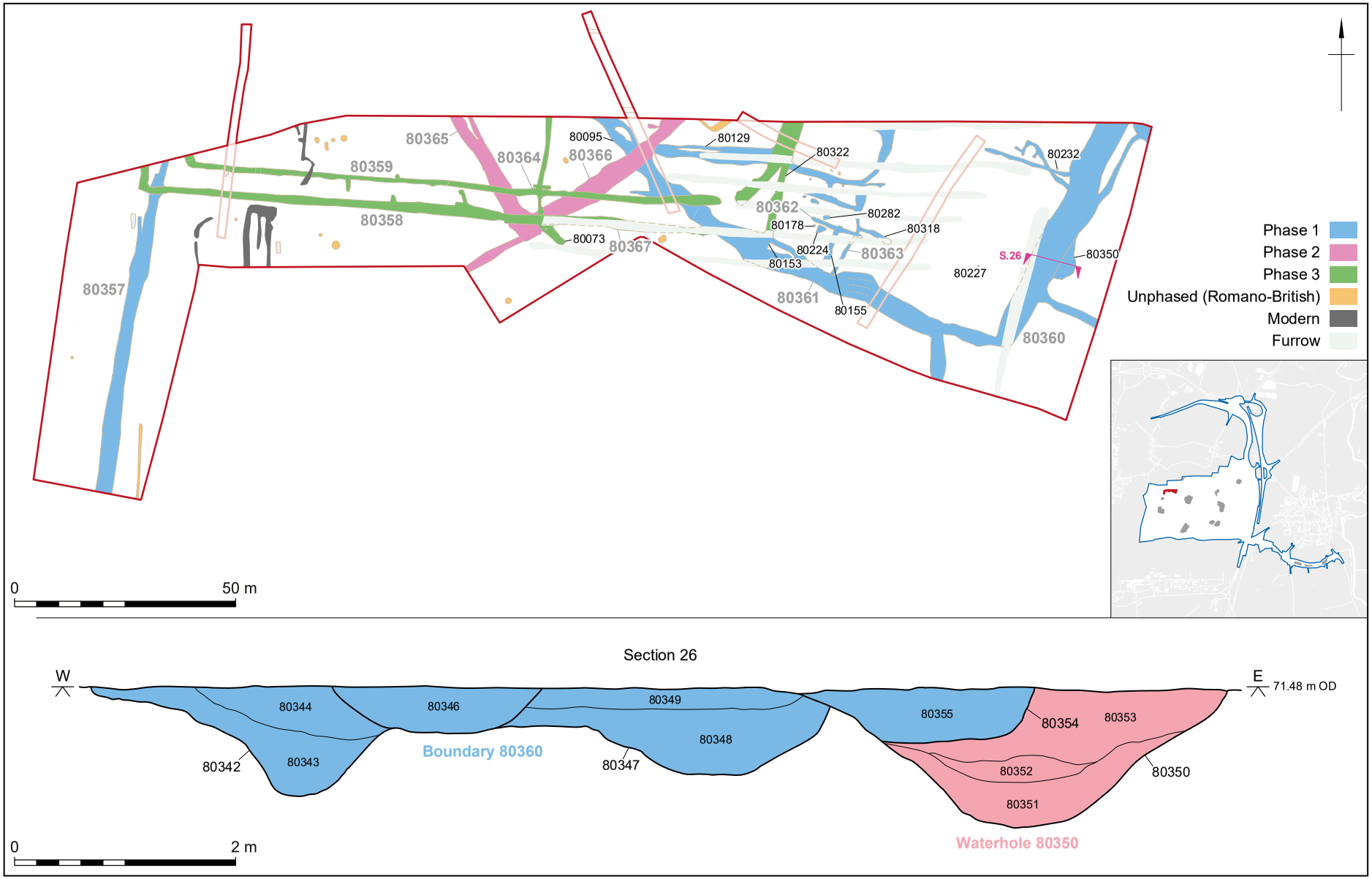

Figure 2.18 Daleacre: excavation results

Internal features

A group of narrow ditches and linear and right-angled gullies defined a series of small rectangular spaces within the enclosure defined by boundaries 80360 and 80361. The narrower features within this group were set out on the same co-axial grid as the two boundaries, with some extending into, but not beyond, the sides of the main enclosure. This arrangement would suggest broad contemporaneity overall, although it is possible that some of the features continued in use after the enclosure had been succeeded by the developments of phase 2 and phase 3.

A sequence of two T-shaped ditches and gullies was recorded close to the northern edge of boundary 80361. That formed by ditches 80363 and 80318 (whose constituent features were up to 1.25 m wide and 0.4 m deep) was cut by a later T-shaped arrangement: 80362 and 80155 (similar maximum dimensions: 1.2 m wide and 0.4 m). Finds were relatively profuse (ditch 80362 contained almost 3 kg of pottery, predominantly of 2nd- and 3rd-century date; Pl. 2.23), which would suggest an occupation focus hereabouts, as would the fills of these features, which were often darker than typical for Daleacre.

It is possible that the T-shaped gullies were dug to partially define small rectangular plots of land adjacent to the edge of the phase 1 enclosure and within which structures were placed. Such plots would have been 9–14 m wide and of uncertain length.

The presence of a number of discrete pits and postholes close to these features increases confidence that some form of occupation activity was focused here. Excavated pits include 80178 (0.6 m diameter and 0.1 m deep), 80224 (2.5 x 1.5 x 0.5 m deep) and 80282 (2.1 m diameter x 0.5 m deep). Pit 80282 produced pottery of late 1st to mid-2nd-century AD date.

To the north-west of this possible occupation focus, a right-angled ditch (80129) probably formed an internal boundary subdividing the phase 1 enclosure. The feature was broad and shallow (up to 3.8 m wide and 0.3 m average depth) with a brown/orange clay fill. Its orientation was somewhat askew from that of the phase 1 enclosure. The artefactual assemblage consisted of two sherds of grey ware and a tiny samian scrap.

Phase 2

During this phase, boundaries forming the right-angled corner of an enclosure were dug across the phase 1 enclosure defined by boundaries 80360 and 80361. The new enclosure broadly followed the same orientation as its predecessor but was displaced some 110 m to the west.

The north-west to south-east side of the new enclosure was marked by boundary 80365. This was 3–4 m wide and had a maximum depth of 0.8 m. Excavation revealed that it was marked by two intercutting parallel ditches. The later of the two was approximately 1.4 m wide and had a well-defined, regular bowl-shaped profile filled with dark greyish-brown sandy silt clay. Despite its scale, boundary 80365 contained a relatively meagre finds assemblage comprising pottery, animal bone and a couple of struck flints.

Plate 2.23 Romano-British pottery in ditch 80362, east-facing section

At its south-east end, boundary 80365 turned to run to the north-east as 80366. Boundary 80366 shared the same characteristics of 80365, with the later, well-defined, bowl-shaped, dark-filled cut again visible. Towards its north-east end it cut the phase 1 enclosure (boundary 80361). Boundary 80366 also contained a fairly sparse amount of pottery. The pottery from the ditches defining the phase 2 enclosure appears to be broadly contemporary with that from the phase 1 enclosure.

To judge by the results of geophysical survey of the wider area (Fig. 2.17), the phase 2 enclosure was triangular in plan, and almost all of it lay within the excavated area, though without excavation of its full extent this cannot be confirmed. The triangular enclosure seems to have been appended to a long ditch whose east–west alignment is reminiscent of the phase 3 scheme (see below). This ditch, and thus the northern edge of the phase 2 enclosure, lay just beyond the northern edge of the excavation. Within the confines of the site, no internal features to illuminate the function of the phase 2 enclosure were observed.

Plate 2.24 Looking north-east from Seven Geaves to King St Plantation (the site offices occupy the area where the King St Plantation excavations had taken place)

There is nothing within the site stratigraphic sequence to suggest that the phase 2 triangular enclosure need have marked the termination of the small square plots whose inception (but not lifespan) has been assigned to phase 1. They would, however, have lain outside its circuit.

Phase 3

The ditches of phase 3 were set out on a different alignment from the earlier large enclosures, following a north–south or east–west orientation instead. One of these (ditch 80358: 1.8 m wide and 0.5–0.75 m deep) cut the phase 1 ditch 80357. Its eastward continuation (below a furrow) was probably marked by ditch 80367 (2.2 m wide and 0.8 m deep), which similarly cut the phase 1 boundary 80361. Ditch 80358 was accompanied on its northern side by ditch 80359 (0.85–2 m wide and 0.3–0.6 m deep) and the pair may together have defined a 4.5 m wide double-ditched boundary.

Together, this pair of phase 3 features formed the southern edge of a rectangular enclosure which measured 140 m east–west, with its eastern edge defined for at least some of its length by ditch 80322 (1.8 m wide and 0.55 m deep). The western edge of this proposed enclosure lay on the line of the north–south aligned phase 1 ditch 80357, suggesting that this line continued to be of importance. To judge by the geophysical evidence from the wider area (Fig. 2.17), the south-western corner of the phase 3 enclosure may have been dug to mark a perimeter or outer boundary work around this part of the site as it then existed.

The boundaries of phase 3 were slighter than those that defined the main phase 1 enclosure. A different approach to boundary maintenance is also evident, with less evidence of the sprawling, braided recuts that characterised the earlier phases.

Pottery from the phase 3 boundaries includes late 3rd- and 4th-century material. This is later than the phase 1–2 assemblage and so supports the recorded stratigraphic sequence. Two coins, a copper alloy nummus of the House of Constantine minted in Trier AD 330–1 and a silver denarius of Nero dating to AD 64–68, were recovered from ditch 80358 during metal detector survey. The 4th-century coin appears contemporary with the pottery, although the denarius is much older, and may be residual or represent deposition of a curated object.

The occupation plots attributed to phases 1–2 produced pottery of earlier date, and it is therefore

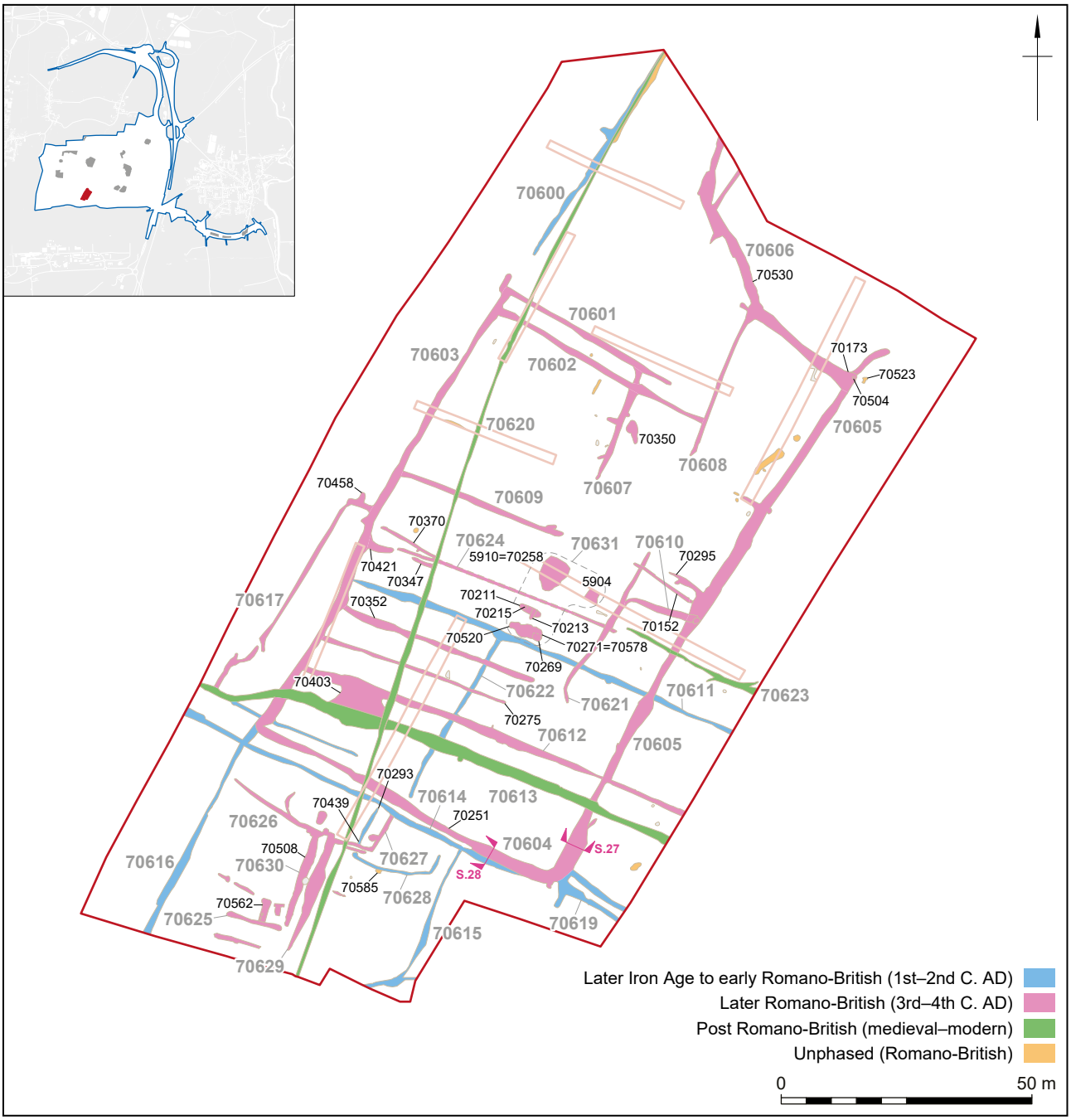

Figure 2.19 Seven Geaves

likely that they were no longer in use by the time the phase 3 features were becoming infilled.

Medieval and modern features

The archaeological horizon had been truncated by a series of east–west aligned cultivation furrows. These followed the same alignment as the phase 3 boundaries, and in some cases obscured them. The furrows were about 2 m wide, typically less than 0.1 m deep, and lay around 3.5–4 m apart.

Towards the western side of the site, the remains of a north–south field boundary grubbed out at some point in the 1980s were seen.

Seven Geaves

The Seven Geaves site occupied a relatively lofty vantage point overlooking the Trent valley to the north; directly to its south lay the clayland plateau upon which East Midlands Airport is situated (Pl. 2.24). The stripped ground surface descended relatively steeply from 85 m to 71.5 m from south to north. A slight downward slope from west to east was also perceptible.

Background

A probable rectangular enclosure was detected by the magnetometry survey (Wessex Archaeology 2014a, 8–9; fig. 43). Fieldwalking of the plot of land

that the site lay within produced modest amounts of medieval and post-medieval pottery and CBM, along with one sherd of Romano-British pottery and three worked flint flakes (Wessex Archaeology 2016a, figs 2–3). Trench evaluation uncovered ditches containing Romano-British pottery and animal bone; some of these corresponded with the probable enclosure detected by the magnetometry survey (Wessex Archaeology 2015a, 10–11, fig. 7; 2016d, 18–19, figs 14–15).

Topsoil stripping of the Seven Geaves site exposed a co-axial grid of ditches upon which a 0.6-hectare enclosure and several pit clusters had been superimposed (Fig. 2.19). The enclosure conformed to the same orientation as the earlier field system. The majority of the remains, including a small, disturbed deposit of cremated human bone, date to the Romano-British period. The site also contained a succession of two post-medieval ditches, both of which, for part of their course, followed ancient boundary lines.

Phase 1: Late Iron Age–Early Romano-British

Three main stages to the development of boundaries on the site are apparent. The earliest (phase 1) field system consisted of a co-axial grid of ditches defining and subdividing fields. However, the original extent of the field system is hard to discern, as the boundaries during all phases followed the same north-west to south-east/north-east to south-west orientation (presumably dictated by the fairly steep slope upon which the site lay) and in many places the earliest boundaries were obscured by later features.

Ditch 70611 (0.75–1.9 m wide and up to 0.85 m deep) appears to have been one of the earliest features on the site: it cut nothing other than the natural ground surface, but was cut by several later features, and contained a small assemblage of Iron Age pottery with no later material present. It may have defined the northern edge of two small plots of land whose southern boundaries were marked by ditch 70614 and which were separated by ditch 70622. The western edge of the westernmost of these two plots could not be seen and had probably been erased by the construction of ditch 70603 in phase 2. Ditches 70611, 70614 and 70622 contained Iron Age and Late Iron Age–Early Romano-British pottery.

Ditch 70614, in turn, defined the northern edge of a field of at least 1800 m^2. The eastern and western sides of this field were defined by ditches 70615 and 70616 respectively; its southern limit lay beyond the edge of site. Both ditches 70615 (0.8 m wide and 0.2 m deep on average) and 70616 (less than 1.5 m wide and 0.3 m deep on average) displayed bowl-shaped profiles and dark reddish-brown clay fills; the features produced a modest pottery assemblage (0.5 kg) of 1st–2nd century AD date. This field may have contained a small (15 x 10 m) sub-enclosure or pen in its north-eastern corner. This was defined by artefactually sterile ditches 70628 and 70293/70439.

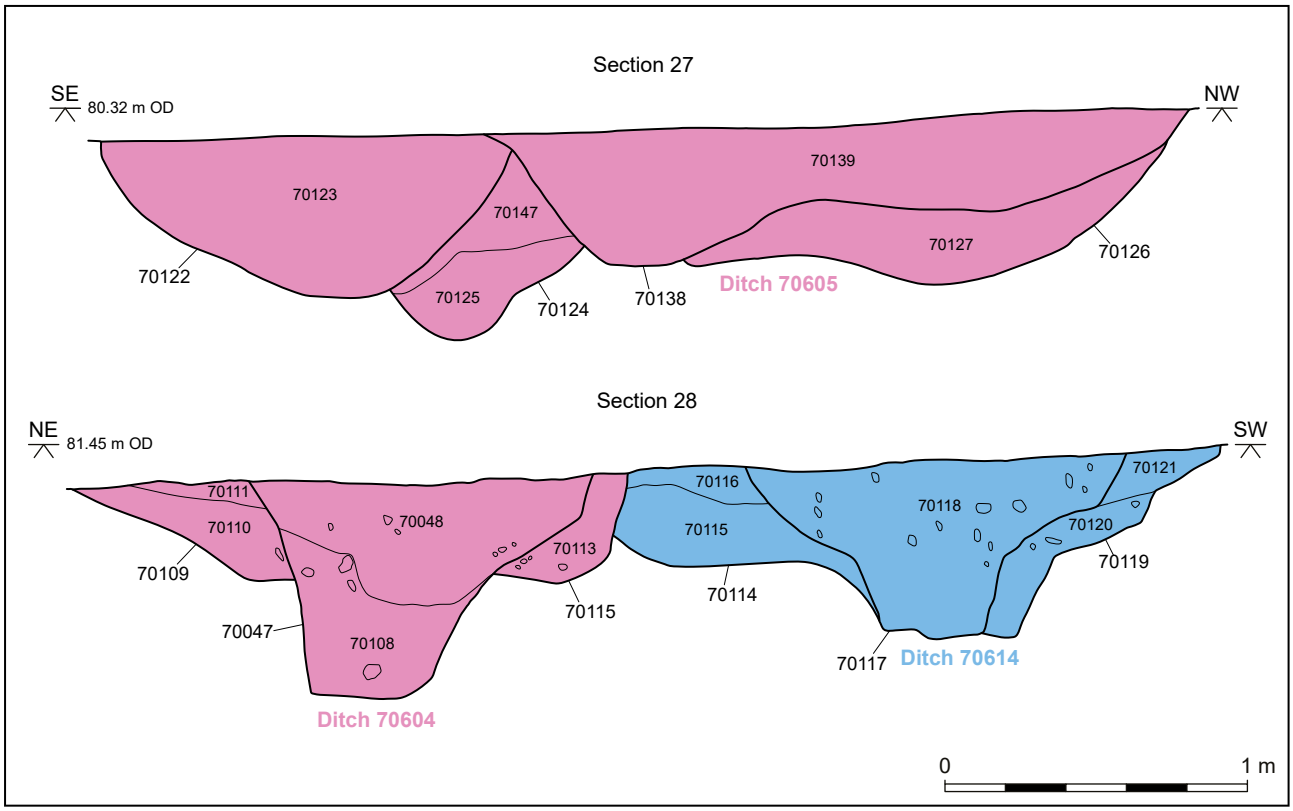

Figure 2.20 Seven Geaves (sections)

At the northern end of the site, ditch 70600 (up to 1.8 m wide and 0.55 m deep, with a bowl-shaped profile and a greyish/orange-brown silty sandy clay fill) may have defined the north-eastern continuation of a phase 1 boundary largely obscured by construction of phase 2 enclosure ditch 70603 along the same line to the south. The sole datable artefact was a sherd of possible Late Iron Age pottery; the absence of later material might suggest this feature also belongs to phase 1.

Phase 2: mid–late Romano-British

During phase 2, a large enclosure (110 x 60 m, 0.61 hectares) was constructed, with some of its sides directly overlying earlier ditches. The western, southern and eastern sides of the enclosure were defined by ditches 70603 (1.5 m wide and 0.4–0.6 m deep), 70604 (1.7 m wide and 0.4–1 m deep) and 70605 (1–3 m wide and 0.5 m deep) respectively. The ditches had variable profiles (dish, bowl or U-shaped), contained a simple backfill sequence of greyish/orange-brown silty clays, and were at their deepest where they defined the south-east corner of the enclosure. The ditches forming the phase 2 enclosure, where examined at its corners, appeared contemporary, although signs of recutting were intermittently visible along its eastern and western sides (Fig. 2.20, section 27). In these cases, the earlier manifestations of the boundary may belong to phase 1. The phase 2 enclosure appeared to cut across many of the phase 1 boundaries including ditch 70614 (Fig. 2.20, section 28). The curvilinear course of ditch 70606 marks the northern side of the enclosure and is somewhat unusual on the site, with its curving course possibly revealing an origin as a natural drainage feature, later adopted to drain the field system.

Finds from the ditches defining the phase 2 enclosure include Romano-British pottery (with a chronological emphasis on the 3rd–4th century) along with animal bone, CBM and a few pieces of residual struck flint. A cow skull with articulated vertebrae was recovered from one section of ditch 70604, with a possible hybrid Hod Hill/Rosette-type brooch, potentially of early 1st century AD date, from another (see Marsden, below).

Artefactually sterile ditch 70608 (0.85 m wide and 0.25 m deep) ran northwards into the curvilinear ditch (70606) defining the northern edge of the enclosure. Ditch 70602 (1.25 m wide and 0.4 m deep; bowl-shaped profile) joined 70608 from the west, thus connecting the western side of the enclosure and its northern side, allowing the former to drain into the latter.

At least two pens or sub-enclosures had been set out within the main enclosure, the clearest of which was located on its north-western side. The northern, eastern and southern sides of the pen were defined by ditches 70601, 70607 and 70609 respectively, and it measured 40 x 33 m. A 12.5 m-wide entrance lay in its south-eastern corner. Ditches 70607 and 70609 contained pottery potentially dating as late as the mid-4th century AD.

The second pen (32 x 12.5 m) was set against the main enclosure's eastern side and defined by ditches 70621 and 70295, though there was evidence of realignment (eg, 70610) at the northern end. This space appears relatively open, with no surviving boundary on its southern side, and a 4.6 m-wide entrance in its north-western corner. The sub-enclosure produced three small sherds of pottery datable only to the Romano-British period generally.

The phase 2 enclosure had a somewhat irregular space (45 x 7 m) appended to its western side. Defined by ditch 70617 (up to 1.2 m wide and 0.14–0.38 m deep), this enclosure had in its western side a narrow (0.75 m-wide) entrance defined by staggered terminals.

The phase 2 enclosure contained a number of narrow north-west to south-east-aligned gullies, from north to south: 70370, 70624, 70347, 70352, 70275 and 70612. These features were typically around 1 m wide with dish-shaped profiles and brownish-grey silty clay fills. None was more than 0.25 m deep. To judge by their form and shallow profiles, they may have functioned as bedding trenches, although the overall arrangement lacks the regular, repetitive spacing typical of such features. The gullies appear to respect the phase 2 enclosure, which implies a Romano-British date, although finds were sparse: a handful of flint and scraps of animal bone and a few sherds of pottery, with the most chronologically distinctive Romano-British material belong to the 3rd century AD or later. Romano-British glass (the concave base of a probable cylindrical bottle in blue/green glass, dating to the later 1st or early 2nd century AD) and presumably intrusive post-Roman pottery were present in gully 70612. This cut a phase 1 boundary (70622) and crossed ditch 70605, the eastern side of the main enclosure, with the latter relationship not firmly established. At its

Plate 2.25 Ditch 70629, north-facing section

Plate 2.26 Site visit to Seven Geaves: examining quarry pit 70403

western end, 70612 appeared contemporary with ditch 70603.

It is noteworthy that these features followed the local contours and cut across the site's slope. This characteristic has helped support their interpretation as bedding trenches rather than furrows, which would perhaps be more likely to run downslope.

A series of shallow (never more than 0.4 m deep) linear features set out on the site's co-axial grid lay in the southern part of the site, to the south of ditch 70604. In their form, profile and fills they (70562, 70627, 70629 and 70630) resembled the other Romano-British features. There was an unusual element to some of these features, however, with concentrations of stones found along their bases, presumably lain deliberately (Pl. 2.25). The stones comprised fragments of unworked mudstone bedrock, typically fist-sized or a little larger.

It is clear these features belong to the site's main Romano-British phase – the pottery found within them has a clear emphasis on the 3rd and 4th centuries AD, and this is supported by the late Romano-British radiocarbon date supplied by a cattle mandible from ditch 70630 (SUERC-92149: 1736±32 BP; cal. AD 240–410). In addition, one of them, 70627, post-dates phase 1 ditch 70614 and the small sub-enclosure defined by ditches 70628 and 70293/70439. The function of these features is discussed further in Chapter 5.

A large hollow (70403: 8 m diameter and 1 m deep) in the south-east corner of the main enclosure had been dug down to, but had not penetrated, the underlying mudstone bedrock (Pl. 2.26). The feature has been interpreted as a clay quarry pit. It had been cut by ditches 70612–3 (see below). The pottery assemblage was predominantly Romano-British (nine sherds), with a sherd of presumably intrusive post-medieval pottery.

A cluster of pits lay in the centre of the site: group 70631. This consisted of two discrete features (5904 and 5910/70258) and two clusters of intercutting pits (70211–15 and 70269, 70271, 70578 and 70520). The pits within group 70631 were generally broad and shallow (up to 6.8 m across x 0.1–0.5 m deep) and contained dark, finds-rich fills. As such, the fills appear to represent the remains of a midden area, perhaps located over a number of shallow, pre-existing clay extraction pits. The majority of the pottery appears to have been deposited during or shortly after the late 3rd and 4th centuries AD.

Finally with regard to phase 2, two surface spreads of cremation-related material (deposits with some link to the cremation rite, but which cannot be categorised more precisely; see McKinley 2013) were identified at Seven Geaves. These were located at the north-east corner of the enclosure, at the junction of ditches 70605 and 70606. One, 70505 (in cut 70504: 0.6 m diameter and 0.1 m deep), overlay ditch 70606. The second (70524, in cut 70523: 1.25 m diameter and 0.05 m deep) lay just 2 m to the east. The cremated human bone in both deposits derived from a subadult/adult of indeterminate sex, reinforcing the impression that the two spreads represent the disturbed remnants of

what was originally a single deposit (see McKinley below). A Romano-British radiocarbon date was obtained on cremated human bone from 70505 (Poz-128384; 1860±30; cal. AD 80–250).

Phase 3: post-Romano-British features

Ditch 70623 (1.4 m wide and 0.3 m deep, with a distinctive dark orange-brown fill) contained a brown-glazed bowl sherd and cut the eastern side of the main enclosure.

Ditch 70613 (2 m wide and 0.3 m deep) crossed the full width of the site. The feature had a shallow, bowl-shaped profile and contained a sherd of modern pottery, but this may be intrusive. A dogleg in its course corresponded with the western side of the main enclosure, to the west of which it shared the course of one of the phase 1 boundaries.

The latest feature at Seven Geaves was ditch 70620 (at least 200 m long, 0.8 m wide and 0.3 m deep), which crossed the full length of the site from north to south. During the evaluation it was found to contain a brick and a fragment of clay tobacco pipe. It represents the grubbed-out portion of an extant field boundary visible to the south, and tallies with a field boundary depicted on Ordnance Survey maps from the 1880s until the 1960s.

Roman Roads

The development area was crossed by the postulated course of two north–south Roman roads. The possible existence of one is partly based on the place name King Street, which is often associated with the course of Roman roads. The name King Street appears in a 1625 terrier as a landmark, and the location of the modern King St Plantation may give a clue as to its whereabouts (Kegworth Museum 2000). However, no evidence of such a road was apparent in the geophysical or excavation data. One evaluation trench (no. 64) targeted a potential trackway detected by the geophysical survey to the east of the plantation, although only post-medieval material was recorded from the trench, with no clear evidence of a trackway present (Wessex Archaeology 2015a, 12). The second postulated Roman road passed through the development area to the east of Horsecroft and corresponded with a public footpath between Long Whatton and Kegworth (Lycett 1999). A watching brief in this area recorded only a ditch matching a field boundary marked on modern mapping (Wessex Archaeology 2019, 55). No evidence of a Roman road was, therefore, recorded within the development area. Interestingly, the linearity of the parish boundary between Kegworth and Lockington-Hemington, and which runs through King St Plantation, has been used to support the notion of a Roman road hereabouts (CgMs Consulting 2013, 19). Although no evidence of an associated road was recorded, there is now evidence to suggest the route of the boundary – within the woodland at least – is based on an Iron Age land division (see below and Fig. 5.7).

Table 2.8 Summary of unexcavated sites

NGR	*Civil parish*	*Height (m OD)*	*Geology*	*Summary of results*	*WA reference*
445570, 327120	Lockington-Hemington	62	Sandstone of the Helsby Formation, with no superficial deposits recorded	Geophysics: L-shaped ditch. Eval (Trs 216 & 217; 1035 & 1036). Ditch (3.2 m wide x <0.8 m deep) provided good assemblage of Iron Age pot incl. Scored ware bowl; environmental samples were relatively rich in grains and chaff from spelt wheat. Iron Age pit.	2014a, 7 2016d, 13 2017c, 4
446800, 327620	Lockington-Hemington	46	Mudstone of the Edwalton Member overlain by Head - Clay, Silt, Sand & Gravel	Geophysics: subrect. enclosure 40 x 25 m. Eval (Trs 79 & 325): ditches up to 1.95 m wide by 0.9 m deep, Iron Age pottery and remains of spelt and emmer wheat.	2014a, 13 2015a, 6 2016d, 20
447000, 327710	Kegworth and Lockington-Hemington	42	Mudstone of the Edwalton Member overlain by Sand and Gravel of the Wanlip Member	Geophysics: enclosures and double-ditched boundary. Eval (Trs 74–77, 97): ditches, pits & postholes, some with Romano-British pottery.	2014a, 13 2015a, 5
447430, 327430	Kegworth	40	Mudstone of the Edwalton Member overlain by Egginton Common Sand and Gravel	Geophysics: at least three small rectangular enclosures, poss. used for settlement or agriculture. Eval (Trs 66–69 & 108–111): ditches up to 3 m wide and over 0.7 m deep. Artefacts were sparse, but included Iron Age pottery, with no later material collected.	2014, 6 2015a, 7 2016d, 28

Unexcavated Sites

In addition to the twelve excavated sites described above, an additional four sites were identified by the geophysical survey, subsequently investigated by evaluation trenching but then not excavated further (Fig. 1.2; Table 2.8). The ceramic assemblages recovered from the evaluation of these sites suggest that they formed further foci of local activity in the Iron Age and Romano-British period. These sites represent an addendum to those more-thoroughly investigated examples detailed above, and complete the description of the overall area's archaeological component.

That the non-excavated sites largely lie in the northern portion of the overall development area partly reflects the fact that the design of the development featured large earthwork bunds hereabouts, affording the opportunity to preserve the remains *in situ*. Such was the case for the sites that bordered Lockington (the second and third of those tabulated above). Nevertheless, the distribution of these sites, along with that at Longfield, creates a relatively dense concentration of activity on the flatter, lower-lying ground overlying the gravel substrate in the north of the development area, indicating it was relatively heavily exploited in the past.

The Lockington sites lay as little as 100 m apart, but on the basis of the geophysical survey results and the differing chronology of the pottery they contained, are thought to represent two discrete foci of activity, rather than a wider spread of contemporary activity across the landscape.

So far as can be ascertained from the evaluation results, the overall impression of the character and chronology of the non-excavated sites resembles that from the rest of the development area: there is a focus of activity in the Iron Age, when activity was centred on small enclosures, with similar but fewer remains from the Romano-British period. None of the excavated sites displayed evidence of intense activity in the Iron Age continuing uninterrupted into the Romano-British period, and this picture resembles that from the trenches placed over the sites that were preserved *in situ*. However, these were not fully excavated, and their chronologies are not fully understood.

Overall, the non-excavated sites complement the results from the overall development area, and the combined impression is of a busy landscape that was extensively used for agriculture associated with small enclosures in the centuries either side of the start of the 1st century AD.

Chapter 3
Radiocarbon Dating

by Inés López-Dóriga

Introduction

Thirty-two samples were submitted for radiocarbon dating with the aim of achieving an improved understanding of the chronology of human activity at the sites. The dating programme was undertaken in two stages, firstly to inform the post-excavation assessment (Wessex Archaeology 2019) and subsequently during the analysis phase, following the recommendations set out in the post-excavation assessment, which were made based on published research priorities (eg, Knight et al. 2012).

The proposals were constrained by the availability of suitable entities (ie, likely to supply reliable dates for the deposits they were recovered from and with a secure stratigraphic provenance for those deposits).

One group of samples focused on the burnt mounds and associated features at the Field Farm site, in order to better understand the duration of activity there. The majority of the dates targeted Iron Age deposits, in an attempt to improve understanding of the chronology of some of the features and key pottery groups. The human remains that lacked independent dating evidence were also selected for radiocarbon measurement.

Methods

Sample selection was undertaken by the relevant project specialists after identification and analysis of the material, taking particular note of the osteological analysis to avoid sampling the same individual where the human remains could occur in more than one discrete deposit. In line with best practice, pairs of dates from features were obtained where possible, with each pair comprising different non-residual entities (eg, short-lived plant remains, articulated bone groups, mandibles with complete sets of teeth).

The radiocarbon samples were submitted to the ^{14}CHRONO Centre, Queen's University, Belfast (UBA), the Scottish Universities Environmental Research Centre (SUERC), and the Poznań Radiocarbon Dating Laboratory (Poz). Reporting of the radiocarbon dating results (see Table 3.1) follows international conventions (Bayliss 2015; Millard 2014).

The macrofossil samples measured at UBA were treated with acid and the measurement corrected using AMS δ^{13}C values. Detailed descriptions of the methods employed by the Poznań and the SUERC Radiocarbon Laboratories can be found in Goslar (2015) and Dunbar et al. (2016).

In the case of samples of unburnt bone, δ^{13}C and δ^{15}N stable isotopes were measured on the IRMS and are expressed as $\delta C^{13}‰$ and $\delta^{15}N‰$ values. The measurements were made on bulk collagen extracted as part of the radiocarbon dating process, in order to be able to infer any potential reservoir effects affecting the dates; samples reported by SUERC were measured at that institute, and samples reported by Poznań were measured at the Goethe University in Frankfurt.

The calibrated age ranges were calculated with OxCal 4.4 (Bronk Ramsey and Lee 2013) using the IntCal20 curve (Reimer et al. 2020). All radiocarbon dates are cited including the lab code and are quoted as uncalibrated years before present (BP), with the calibrated date range (cal. BC/AD) at the 2σ (95.4%) confidence and the end points rounded out to the nearest 10 years. The ranges in plain type in the radiocarbon tables have been calculated according to the maximum intercept method (Stuiver and Reimer 1986), modelled dates are given in italics (Bayliss 2015), and the models used are given with each of the radiocarbon figures below. The degree of reliability of the radiocarbon date and the event that was hoped to be dated is assessed following Waterbolk (1971) and Pelling et al. (2015).

Results

Of the 32 radiocarbon samples submitted for radiocarbon dating, 27 provided successful results, including a sample with a poor C:N ratio, which must be taken tentatively. Five measurements failed due to insufficient carbon (Table 3.1).

Discussion

The radiocarbon-dated articulated dog bone (SUERC-92148, 2210 ± 32 BP, 380–170 cal. BC) serves as an accurate *terminus ante quem* for the pit digging activity at Great Dampits. The result is imprecise due to the nature of the calibration curve for the period, but the highest density on the 2σ probability concentrates on 380–190 cal. BC (92.8%).

The slightly enriched values of the $\delta^{13}C$ (>-20‰) and $\delta^{15}N$ (>10‰) stable isotopes in the dog bone suggest an input of protein food sources from aquatic environments (ie, fish) in a proportion of about 1 ± 10%. A similar phenomenon is observed in some of the prehistoric human remains from some of the sites (but not observable in the Romano-British remains). Although no fish bones were retrieved from any of the sites, this is attributed to poor preservation in the slightly acidic soils (Wessex Archaeology 2019). The location of the sites in proximity to the floodplains and historical meanders of the rivers Trent and Soar suggest these may have been the sources of the fish. A significant reservoir effect in radiocarbon ages due to the release of old carbon from the local geology of sedimentary rock could be expected in higher proportions of aquatic protein, hence justifying the consideration of the stable isotope evidence prior to any calibration. However, the small proportion of fish in the diet in this case is unlikely to have had significant effects in most of the radiocarbon ages and, therefore, no reservoir correction has been applied to any of the dates.

A redeposited fragment of human bone of presumed Iron Age date, found in a ditch at Field Farm, returned a result confirming this hypothesis (Poz-127846, 2130 ± 30 BP, 350–50 cal. BC) and provides a *terminus post quem* for the infilling of the ditch in which it was found. Again, the result is imprecise due to the nature of the calibration curve for the period, but the highest density on the 2σ probability concentrates on 210–50 cal. BC (84.6%).

The two dates obtained on fragments of charcoal (Poz-127404 and UBA-43369) from two different taxa from one of the pits in pit group 65248 at Field Farm, initially presumed associated with the nearby burnt mounds 65245/6 at the site, were internally consistent (function *R_Combine* in OxCal returned a pass χ^2 *test: df=1,T=0.0 (5% 3.8)*) and allowed greater precision of the date for the formation of the basal deposit of the pit to *2290–2130 cal. BC*, preceding known activity on the burnt mounds by more than five centuries (see Fig. 3.1 and text below).

Burnt mound 65245 was radiocarbon dated via two measurements on samples of charred plant material (Poz-127405 and UBA-43080), providing consistent results (passing the χ^2 *test* under the function *R_Combine* in OxCal returning: *df=1,T=0.9 (5% 3.8)*) and improving the precision of the time of formation of the deposit to *1620–1440 cal. BC* (Fig. 3.1). This burnt mound is contemporary with some activity at neighbouring burnt mound 65246, but not with at least one of the pits in group 65248.

Two radiocarbon dates were obtained at the assessment stage from burnt mound 65246 (UBA-38546 and UBA-38547; Wessex Archaeology 2019). Although the dates fit into the Middle Bronze Age, they were not internally consistent. This suggested that the burnt mound probably accumulated over a relatively long period of time. Although this does not accord with the radiocarbon data obtained for burnt mound 65245, it is consistent with the evidence obtained for this type of feature elsewhere (eg, Gardner 2019) and the results from the micromorphological analysis (see Banerjea, Chapter 2 above). The two new dates (UBA-44095 and UBA-44096) do not extend the period of formation of the deposit, which lasts between 100 and 320 years (Fig. 3.2; function *Span* in OxCal). Interestingly, if only two of the measurements obtained for this mound are combined (UBA-38547 and UBA-44095), the results are consistent (χ^2 *test: df=1, T=0.4 (5% 3.8)*); this suggests that acquiring only two radiocarbon dates on material accumulated within a burnt mound may not provide a reliable indication of their age.

The two samples (SUERC-92149 and Poz-128384) from Seven Geaves are both late Romano-British. The date on the articulated animal bone confirms the presumed late 3rd to 4th-century AD date of feature 70630 (cal. AD 240–410), which is based on the pottery assemblage (colour-coated beakers, a Black Burnished ware 1 jar, shell-gritted ware, a Mancetter-Hartshill mortarium and a grey ware straight-sided bead-and-flanged bowl). Unfortunately, the calibration curve for the period does not allow greater precision. The cremated human bone from the same site is older, with the highest density of the 95% probability concentrating on the 2nd to mid-3rd century AD (cal. AD 110–250, 94.5%). This date could appear misleadingly old if a long-lived species of wood was used in the cremation, due to the exchange of carbon between the wood and the bone during the process (eg, Olsen et al. 2013).

The King St Plantation samples are Bronze Age and Iron Age. The Bronze Age date was obtained on human bone from an inhumation burial (Poz-127847, 3060 ± 35 BP, 1420–1220 cal. BC) situated within pit cluster 75502, preceding the other dated activity carried out there by one millennium. The remainder of the dates from King St Plantation are Iron Age and fall within two phases of activity (Fig. 3.3). A pair of dates on human and animal bone (SUERC-92155 and Poz-127848) from the terminal of the main enclosure (75484) provided similar but not identical results, which may be explained by the different types of samples and laboratories. However, due to the consistency of these results (they pass the χ^2 test when running the function *R_Combine* in OxCal, providing the results *df=1 t=0.1 (5% 3.8)*), it is likely that they represent part of the same seemingly ceremonial depositional activity occurring between *420–370 cal. BC*.

The other three samples probably represent activity within the enclosure in a slightly later period, between *390–200 cal. BC* (Fig. 3.3). For pit cluster 75502 (which coincided spatially with the

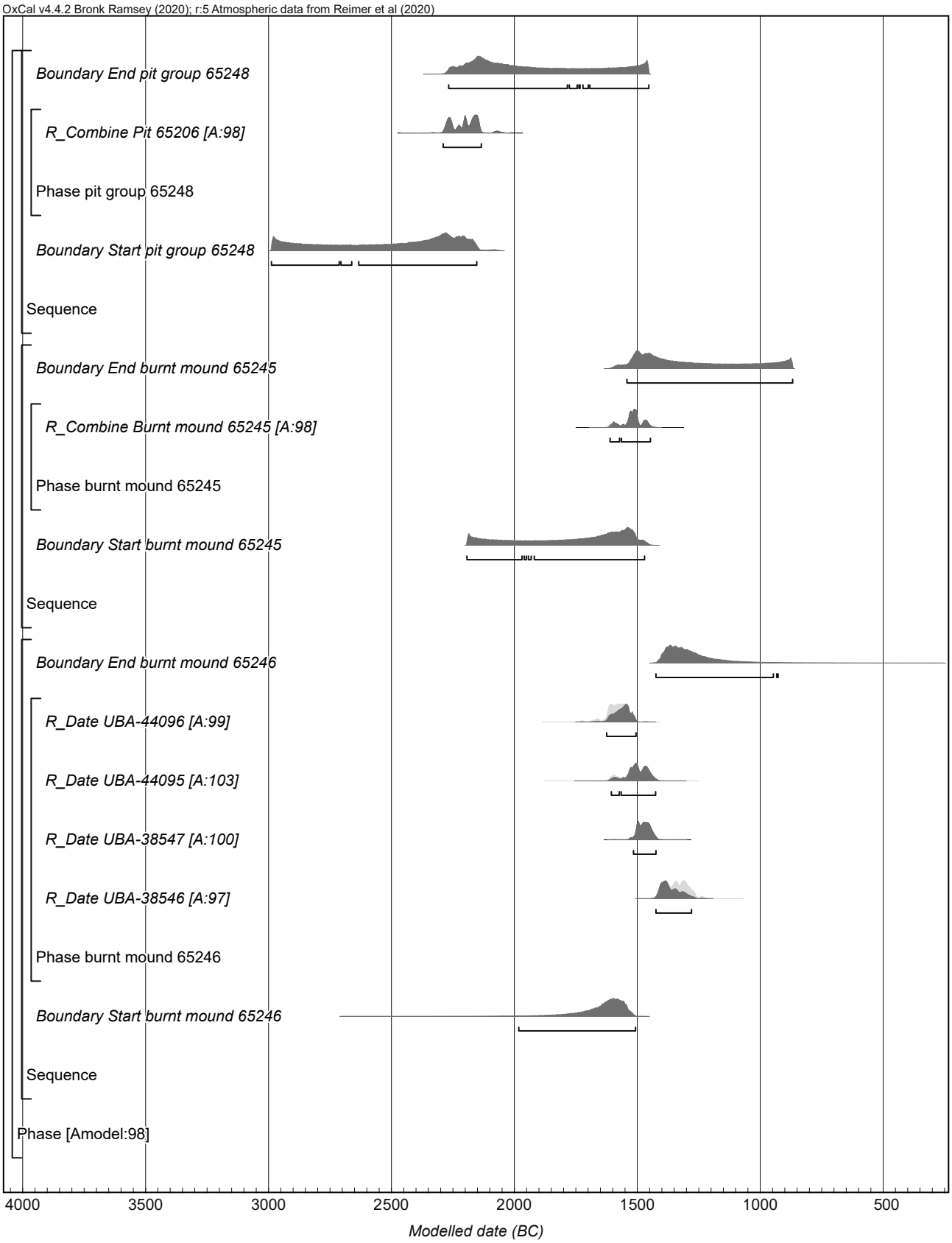

Figure 3.1 Posterior density estimates for radiocarbon dates from burnt mounds and nearby features at Field Farm modelled into three overlapping phases

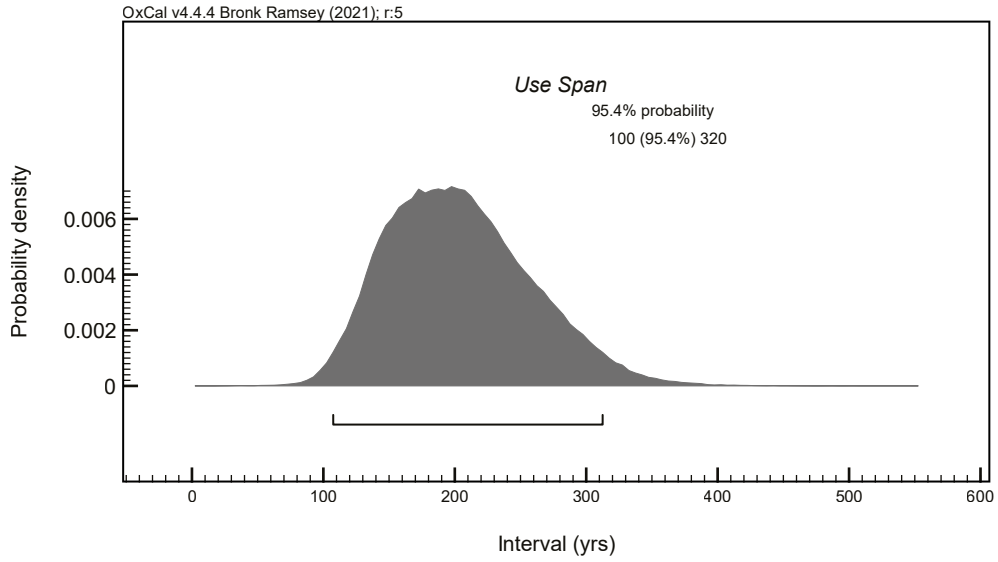

Figure 3.2 Length of the formation (function Span) of burnt mound 65246

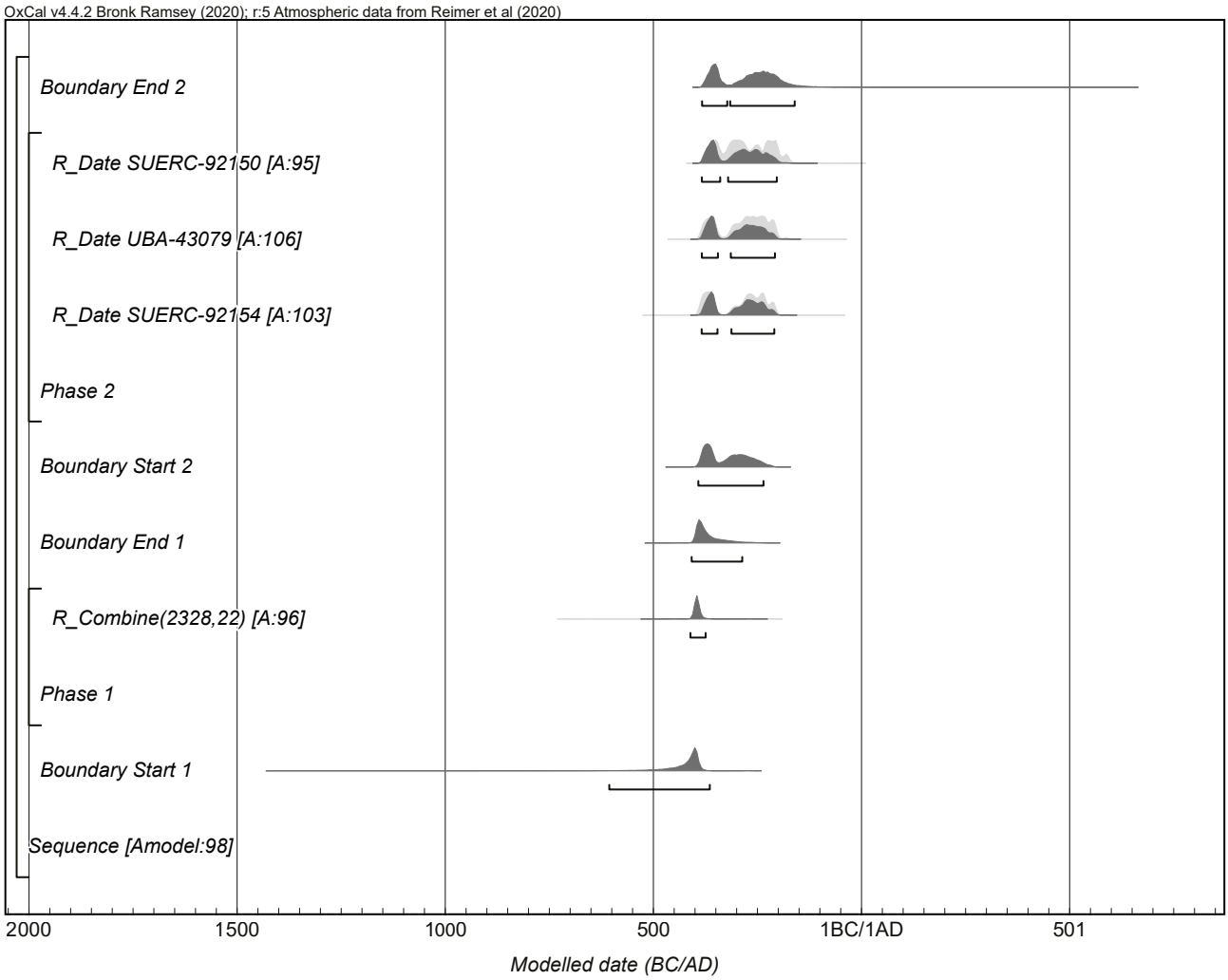

Figure 3.3 Posterior density estimates for radiocarbon dates from Iron Age deposits at King St Plantation modelled as two sequential phases

Middle Bronze Age inhumation), a rather imprecise Middle Iron Age date was obtained on animal bone (SUERC-92154), but the highest density of the 95% probability concentrates largely on the 3rd century BC (310–200 cal. BC, 63.3%). A similar age range (320–200 cal. BC on the 70% of the 2σ probability) was obtained for pit 75126, which contained Scored ware sherds that could be typologically dated to the Middle to Late Iron Age, and was radiocarbon dated from charred plant remains (UBA-43079). For enclosure ditch 75503, from which only handmade sherds of broadly Iron Age date were retrieved, a date on animal bone (SUERC-92150) was obtained, allowing the deposit to be dated to the 4th–2nd century (*390–200 cal. BC*).

At Over Field, a paired measurement on charred plant remains and wood charcoal (UBA-44093 and UBA-44094) returned an inconsistent result (*R_Combine χ^2 test fails at 5% df=1 T=33.0 (5% 3.8)*) that confirms the mixed nature of the deposit within hollow 90056, where a significant pottery assemblage of over 4000 sherds weighing almost 50 kg was recovered, with local, regional and exotic wares spanning the 2nd to late 3rd–4th century AD. Radiocarbon dating of other items (two attempts on animal bone, GU54105) within the assemblage failed due to insufficient collagen. Human bone from inhumation grave 90178, cutting into ditch 90351, has a Middle Iron Age–Romano-British radiocarbon age (Poz-128383, 2110 ± 80 BP, 370 cal. BC–cal. AD 70), although the laboratory noted a poor C:N ratio (0.5%N 2.4%C, 0.05%coll), which casts some doubts over the reliability of the measurement.

The results from the two cremation graves at Daleacre (Poz-128386 and Poz-128385) were modelled into a single phase of activity, providing a posterior density estimate of *1130–930 cal. BC* and *1110–900 cal. BC* respectively (Fig. 3.4), suggesting the individuals probably died within a relatively short period of between 20 and 70 years (function *Difference* in OxCal), with the individual buried in 80232 slightly older than the one in 80227. An important consideration when estimating how short this period is that the old-wood effect (eg, Olsen et al. 2013) may be affecting the age of one or both samples to an unknown degree, due to the use of wood from long-lived species such as oak (see Allott, Chapter 2 above) in the cremation process.

Of the three Iron Age sherds with residues submitted from Longfield, only one was successfully measured (SUERC-94426), this dating to 400–200 cal. BC, which in spite of the imprecision indicates a pre-Conquest chronology for the seemingly 'late' pottery assemblage.

The three samples from Horsecroft provide dates for the significant Scored ware pottery assemblage and use of the site: two samples from animal pen 38346 and associated feature (SUERC-92156 and SUERC-94428) are both *380–190 cal. BC*, while animal pen 38350 (SUERC-94427) is slightly later (150 cal. BC–cal. AD 60 at 92.5% of the 2σ probability) (Fig. 3.5).

Conclusion

The radiocarbon dating programme has permitted greater understanding of the chronology of activity at the excavated sites. Although entities of sufficient taphonomic and stratigraphic quality to return archaeologically enlightening dates were rare, the high volume of well-targeted soil samples meant

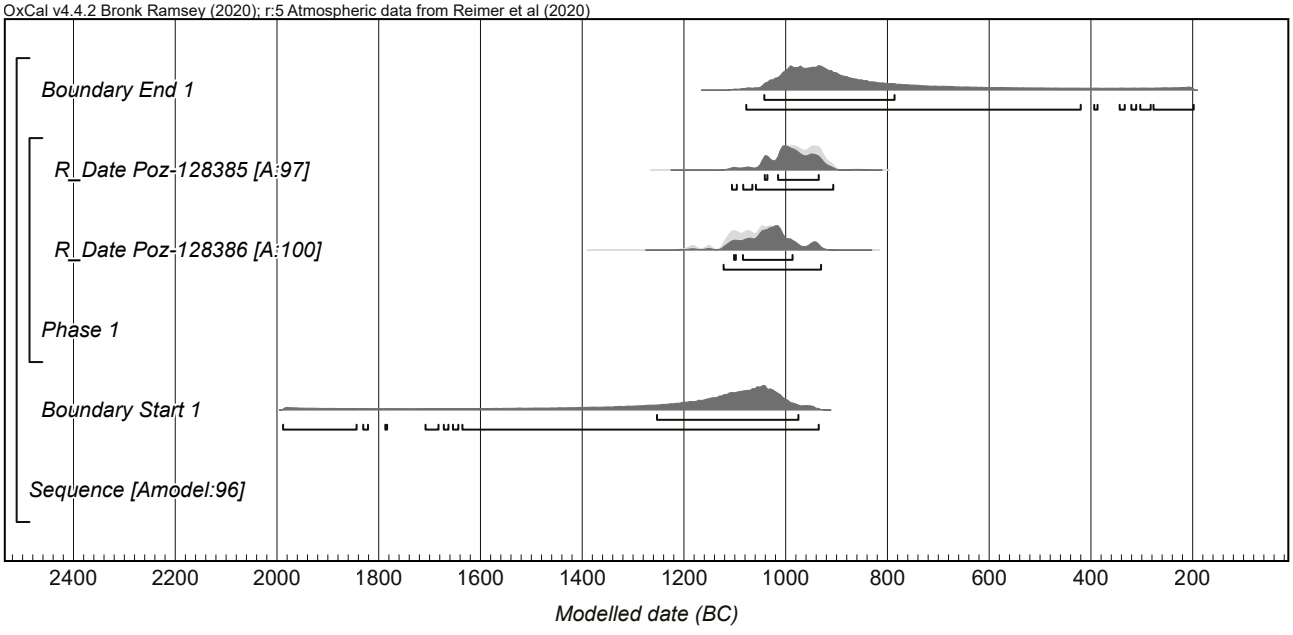

Figure 3.4 Posterior density estimates for radiocarbon dating results on cremation burials at Daleacre

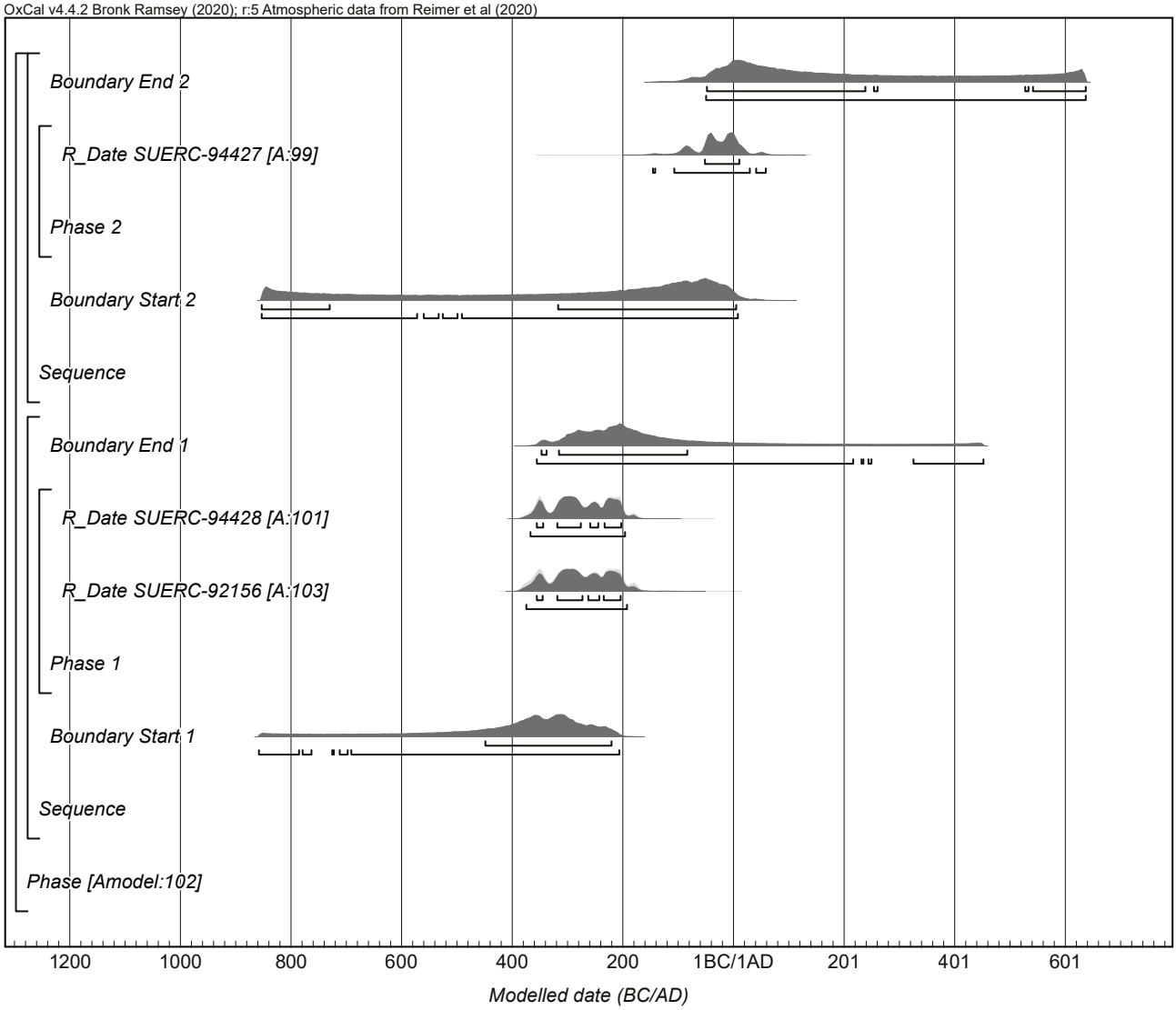

Figure 3.5 Posterior density estimates for radiocarbon dating results from Iron Age structures in Horsecroft modelled as overlapping phases

that they were generally available. Appropriate treatment of the pottery assemblage (by which burnt residues were retained rather than removed during post-excavation cleaning) has also been useful in this regard. Nevertheless, some of the questions that prompted the selection of samples have had to remain unanswered, although this is not unusual.

On a more positive note, the insights offered by the radiocarbon dating are numerous and considerable. The long duration of hot stone activity recorded at the Field Farm site, despite the superficial similarity of the features in question, is instructive. Of equal interest is the detection of an otherwise archaeologically invisible phase of Bronze Age activity away from the Field Farm site, with a Middle Bronze Age inhumation and Late Bronze Age cremation burials now confirmed. The majority of the radiocarbon dates refine understanding of the timing of the Iron Age activity on the sites, and enhance knowledge of the pottery chronology for the 1st millennium BC, which is an established research aim (Knight et al. 2012). The results of the radiocarbon dating programme exist as comparators for other work elsewhere and can be incorporated in future studies.

Table 3.1 Radiocarbon dating results

Submitted			*Lab Code*	*Radiocarbon age*			*Stable isotopes (IRMS)*		*C:N Ratio / graphite mg*	*Calibration (IntCal20) (2σ=95% probability)*	
Sample code	*Material*	*ID*		*Date BP*	*Error*	*Modern F14C*	*δC13‰*	*δ15N‰*		*Unmodelled age – cal. BC/AD*	*Modelled age – cal. BC/AD*
Great Dampits (101409 Area 6) 60250 [60058] (60059) EMG37	Residue	Carbonised residue	GU55433						Failed		
Great Dampits (101409 Area 6) 60171 [60220] (60223)	Bone (animal)	Dog sacrum (1.2 g)	SUERC-92148 (GU54100)	2210	32	-	-20.80	10.10	3.3	380–170 cal. BC	-
Field Farm (101409 Area 20) [65062] (65063)	Human bone	Right femur (2 g)	Poz-127846	2130	30	-	-20.2‰	11.1‰	1.7%N 4.4%C, 2.7%coll,	350–50 cal. BC	-
Field Farm (101409 Area 20) 65248 [65206] (65208) <223> I	Wood charcoal	Hazel (*Corylus avellana*)	Poz-127404	3775	35	-	-	-	-	2340–2040 cal. BC	*2290–2130 cal. BC* [χ^2 test: df=1, T=0.0 (5% 3.8))]
Field Farm (101409 Area 20) 65248 [65206] (65208) <223> II	Wood charcoal	Plum/sloe/cherry (*Prunus* sp.)	UBA-43369	3778	29	0.6248 ± 0.0022	-	-	0.995	2300–2050 cal. BC	
Field Farm (101409 Area 20) 65245 (65214) <211> I	Wood charcoal	Willow/poplar (*Salix*/ *Populus* sp.)	Poz-127405	3235	35	-	-	-	-	1610–1420 cal. BC	*1620–1440 cal. BC* [χ^2 test: df=1, T=0.9 (5% 3.8))]
Field Farm (101409 Area 20) 65245 (65214) <211> II	Charred plant remain	Barley (*Hordeum vulgare*) grain	UBA-43080	3287	43	0.6642 ± 0.0035	-	-	0.981	1680–1440 cal. BC	
Field Farm (101409 Area 20) 65246 [65195] (65196) <207> I	Charred plant remain	Barley (*Hordeum vulgare*) grain	UBA-38546	3073	27	0.6821 ± 0.0022	-	-	-	1420–1260 cal. BC	*1430–1280 cal. BC*
Field Farm (101409 Area 20) 65246 [65195] (65196) <207> II	Wood charcoal	Alder (*Alnus glutinosa*)	UBA-38547	3211	27	0.6705 ± 0.0022	-	-	-	1520–1420 cal. BC	*1520–1420 cal. BC*
Field Farm (101409 Area 20) 65246 [65195] (65196) <204> I	Wood charcoal	Ash (*Fraxinus excelsior*)	UBA-44095	3241	40	0.6680 ± 0.0033	-	-	1.2	1620–1420 cal. BC	*1610–1420 cal. BC*
Field Farm (101409 Area 20) 65246 [65195] (65196) <204> II	Wood charcoal	Medium-lived species (Other diffuse porous, not *Fraxinus* sp.)	UBA-44096	3318	28	0.6616 ± 0.0023	-	-	0.976	1680–1500 cal. BC	*1630–1500 cal. BC*
Seven Geaves (101409 Area 25) 70630 [70508] (70509)	Bone (animal)	Cattle mandible (1.5 g)	SUERC-92149 (GU54101)	1736	32	-	-21.70	5.60	3.4	cal. AD 240–410	-

Submitted			*Lab Code*	*Radiocarbon age*			*Stable isotopes (IRMS)*		*C:N Ratio / graphite mg*	*Calibration (IntCal20) (2σ=95% probability)*	
Sample code	*Material*	*ID*		*Date BP*	*Error*	*Modern F14C*	*δC13‰*	*δ15N‰*		*Unmodelled age – cal. BC/AD*	*Modelled age – cal. BC/AD*
Seven Geaves (101409 Area 25) [70504] (70505)	Human bone (cremated)	1.2 g	Poz-128384	1860	30	-	-	-	0.1%N 0.5%C carbonate	cal. AD 80–250	-
King St Plantation (101409 Area 27) 75502 [75432] (75433)	Bone (animal)	Sheep/goat vertebra (2.7 g)	SUERC-92154 (GU54103)	2253	30	-	-21.70	6.70	3.3	400–200 cal. BC	*390–210 cal. BC*
King St Plantation (101409 Area 27) [75126] (75127) <908>	Charred plant remain	12x *Triticum* sp. glume bases	UBA-43079	2238	30	0.7568 ± 0.0028	-	-	0.764	390–200 cal. BC	*390–210 cal. BC*
King St Plantation (101409 Area 27) 75503 [75363] (75364)	Bone (animal)	Cattle mandible (2.8 g)	SUERC-92150 (GU54102)	2207	30	-	-21.30	6.40	3.3	380–170 cal. BC	*390–200 cal. BC*
King St Plantation (101409 Area 27) 75502 [75417] (75415)	Human bone	Femur (5 g)	Poz-127847	3060	35	-	-20.8‰	10.2‰	0.9%N 2.3%C, 1.3%coll,	1420–1220 cal. BC	-
King St Plantation (101409 Area 27) [75484] (75489) I	Bone (animal)	Horse radius (2.5 g)	SUERC-92155 (GU54101)	2320	32	-	-22.50	6.20	3.3	480–220 cal. BC	*420–370 cal. BC* [χ^2 test df=1 t=0.1 (5% 3.8]
King St Plantation (101409 Area 27) [75484] (75489) II	Human bone	Parietal vault (5 g)	Poz-127848	2335	30	-	-20.3‰	10.4‰	1.9%N 5.6%C, 2.5%coll,	520–230 cal. BC	
Over Field (101409 Area 30) [90058] (90056) <661> I	Charred plant remain	8x *Triticum spelta* glume bases	UBA-44093	1957	24	0.7838 ± 0.0024	-	-	0.912	40 cal. BC–cal. AD 130	-
Over Field (101409 Area 30) [90058] (90056) <661> II	Wood charcoal	Roundwood	UBA-44094	1762	24	0.8031 ± 0.0024	-	-	0.91	cal. AD 230–370	
Over Field (101409 Area 30) [90058] (90056) I	Bone (animal)	Cattle pelvis (3.5 g)	GU54105	Failed							
Over Field (101409 Area 30) [90058] (90056) II	Bone (animal)	Cattle femur (9 g)									
Over Field (101409 Area 30) 90351 [90178] (90180)	Human bone	left? femur shaft (2.7 g)	Poz-128383	2110	80	-	-	-	0.5%N 2.4%C, 0.05%coll (poor)	370 cal. BC–cal. AD 70	-
Daleacre (101409 Area 37) [80232] (80234)	Human bone (cremated)	3 g	Poz-128386	2875	30	-	-	-	0.1%N 0.4%C carbonate	1200–930 cal. BC	*1130–930 cal. BC*
Daleacre (101409 Area 37) [80227] (80228)	Human bone (cremated)	3.8 g	Poz-128385	2825	30	-	-	-	0.2%N 0.5%C carbonate	1110–900 cal. BC	*1110–900 cal. BC*

Submitted			*Lab Code*	*Radiocarbon age*			*Stable isotopes (IRMS)*		*C:N Ratio / graphite mg*	*Calibration (IntCal20) (2σ=95% probability)*	
Sample code	*Material*	*ID*		*Date BP*	*Error*	*Modern F14C*	*δC13‰*	*δ15N‰*		*Unmodelled age – cal. BC/AD*	*Modelled age – cal. BC/AD*
Longfield (101409 Area 41) [41035] (41036) EMG22	Residue	Carbonised residue	GU55434	Failed							
Longfield (101409 Area 41) 41131 [41362] (41363) EMG36	Residue	Carbonised residue	SUERC-94426 (GU55435)	2265	24	-	-26.70	-	-	400–200 cal. BC	-
Longfield (101409 Area 41) 41475 [41417] (41418) EMG35	Residue	Carbonised residue	GU55436	Failed							
Horsecroft (102972 KBEA2) 38346 [38122] (38123)	Bone (animal)	Cattle patella (2.2 g)	SUERC-92156 (GU54106)	2211	32	-	-22.00	8.00	3.3	380–170 cal. BC	*380–190 cal. BC*
Horsecroft (102972 KBEA2) [38116] (38117)	Residue	Carbonised residue	SUERC-94428 (GU55438)	2209	24	-	-25.00	-	-	380–170 cal. BC	
Horsecroft (102972 KBEA2) 38350 [38111] (38107)	Residue	Carbonised residue	SUERC-94427 (GU55437)	2038	24	-	-24.90	-	-	150 cal. BC– cal. AD 60	-

Chapter 4
Specialist Studies

The Pottery

by Ian Rowlandson and Hugh Fiske, with a contribution on the samian by J M Mills

Overview of Assemblage

A total of 9833 sherds (124.536 kg, 73.52 RE (Rim Equivalent)) were recovered from the excavation areas. The majority of the pottery could be dated to the Iron Age and Roman periods. Several good groups of pottery in the Middle or Middle to Late Iron Age Scored ware tradition were recovered. There was more limited evidence for Early and Late Iron Age activity.

The assemblages of Roman pottery ranged in date from the later 1st to the 4th century AD, and the majority were typical of what might be expected from basic rural settlements. However, large assemblages were recovered from a feature at the Over Field site that were unusual in their volume and freshness.

As the project has a large sample of pottery from a number of settlement foci in a limited area that range from the earlier Iron Age to the 4th century AD, organic residue analysis (ORA) was utilised to investigate changes in diet and methods of food production over this period (Dunne et al. below).

Methodology

An archive has been produced to comply with the requirements of the Study Group for Roman Pottery (Darling 2004) and Standard for Pottery Analysis in Archaeology (Barclay et al. 2016) using the codes and system developed by the City of Lincoln Archaeological Unit (Darling and Precious 2014) and by Knight for the Iron Age forms and terminology (1998; PCRG 1997), as well as the Leicestershire Museum fabric codes (eg, Pollard 1994; 1999; Clark 1999), and prehistoric fabric codes from the excavations at Humberstone (Marsden 2011). To accommodate the range of Derbyshire ware jars from this site additional codes JDBY1-3 and JCUR were added, following the scheme used by the authors elsewhere and paralleled to Birss (1985). A maximum vessel count and rim equivalents were recorded following Pollard (1990). In the absence of scientific analysis, no distinction has been made between vessels with grog or mudstone inclusions (Firman and Leary 2001; Rowlandson 2015). It would appear likely that mudstone may be more prevalent as deposits of this type are known from a number of locations in the region. It is also likely that a proportion of the pottery recorded in the handmade 'Grog' group may contain mudstone inclusions. Detailed context-by-context descriptions have been tabulated and provided in the archive, along with a fully quantified record of the pottery and tabulated summaries of the data relating to the rims, bodies and bases recovered. There are 15 sherds of insecure stratigraphic provenance; these have been recorded in the archive but are not discussed further here.

Brief Summary by Site

Long Lands

Fifteen sherds (35 g, 0 RE; Table 4.1) were recovered. These sherds were retrieved from a pit alignment, typically considered to be an Iron Age phenomenon in the East Midlands, although often with few associated finds (eg, Rowlandson 2015; Knight and Howard 2004; Mellor 2007, 22–3; Willis 2006). This small quantity of quartz-gritted handmade pottery would support an Iron Age date, but it offered no potential for providing closer dating for the pits.

Daleacre (south)

A total of 312 sherds (2.681 kg, 0.35 RE; Tables 4.2 and 4.3) were recovered from ditches and pits within the Daleacre (south) site. The pottery was almost exclusively handmade Iron Age types. No examples of Scored ware surface treatment were noted so it is possible that this assemblage pre-dated the Middle to Late Iron Age.

Of the 312 sherds, 272 sherds were retrieved from ditch 86120. There were a few feature sherds, including a large proportion of a jar with an externally bevelled rim (Fig. 4.1.1) similar to an example from Gretton, Northamptonshire (Jackson and Knight 1985, fig. 7.40) considered to be of Early Iron Age date. A single grey ware sherd was retrieved from this feature and was probably intrusive.

A further 19 sherds were retrieved from ditch 86121. The majority of sherds were featureless handmade Iron Age examples, along with a single grey ware sherd.

Table 4.1 Long Lands: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	15	100.00%	35	100.00%	0

King St Plantation

This site produced 457 sherds (3.388 kg, 1.15 RE; Tables 4.4 and 4.5). The majority consisted of small groups of handmade Iron Age pottery with few diagnostic feature sherds. With the exception of a single modern sherd that was probably intrusive, all of the sherds could be dated to the Iron Age, with a small proportion of material possibly of Bronze Age date. Two small sherds of transitional reduced ware may date to the 1st century AD. It was noticeable that there was a proportion of grog- or mudstone-gritted wares from this assemblage, although there were few feature sherds and the mean sherd weight of 4.33 g was low. The only diagnostic sherd in this fabric was from a barrel-shaped jar with an in-turned internally bevelled rim from context 75297 that might conceivably have been of Bronze Age or Iron Age date. Investigations at Hamilton produced a similar fragmentary and predominantly featureless assemblage from a group of pottery considered to include Late Bronze Age/earlier Iron Age material. Cooper (in Beamish and Shore 2008) highlighted the higher proportion of grog-gritted wares among the group that he studied from the Hamilton site, with further comparison to the more substantial assemblage from Gretton, Northamptonshire (Jackson and Knight 1985), where grog-gritted wares were also much more common. It was also noticeable that Scored ware surface treatment was only recorded on three vessels (pit 75126 and ditch 75125), suggesting that although there was some material likely to date to the Middle Iron Age present, this did not make up a high proportion of the assemblage.

The assemblages were mostly very small and there were few diagnostic feature sherds, Scored ware tradition vessels or examples of thin-walled Late La Tène III type vessels present to help date the features. This is a problem that has been recognised with many sites from the East Midlands (Willis 2002; 2006; Knight 2002). This area is within the core distribution zone of Scored ware (Elsdon 1992; Knight 2002) and many Iron Age assemblages from here have an abundance of sherds with this distinctive surface treatment (eg, Mill Close and Great Dampits, below). The low level of Scored ware sherds present at King St Plantation may, therefore, suggest that some of the activity on the site pre-

Table 4.2 Daleacre (south): fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
GW5	Reduced	Medium sandy grey ware	1	0.32%	3	0.11%	0
CG	Shell gritted	Misc shell gritted	1	0.32%	1	0.04%	0
S1	Shell	Moderate–very common shell or platey voids	35	11.22%	224	8.36%	11
G2	Grog	Sandy fabric with rare, rounded grog	1	0.32%	10	0.37%	0
Q1	Quartz	Quartz sand common–abundant	22	7.05%	131	4.89%	0
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	103	33.01%	721	26.89%	10
R1	Rock gritted	Granitic rock (rare–moderate) & quartz sand	1	0.32%	34	1.27%	0
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	148	47.44%	1557	58.08%	14

Table 4.3 Daleacre (south): forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
J	Jar	Unclassified form	15	4.81%	170	6.34%	21
JB	Jar/Bowl	Unclassified form	148	47.44%	1557	58.08%	14
-	Unknown	Form uncertain	149	47.76%	954	35.58%	0

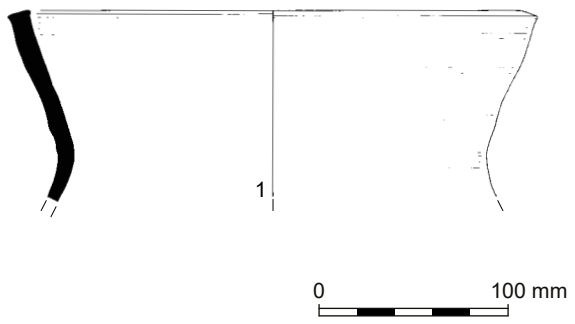

Figure 4.1 Iron Age pottery from Daleacre (south)

dated the introduction of Scored ware in the Middle Iron Age (see discussion below) or, less likely, may represent activity after such vessel types fell out of common use.

Willis (2002, 18) has noted that greater quantities of pottery are typically retrieved from later phases of Iron Age sites, and this can hinder dating. Early Iron Age pottery is rarer in Leicestershire, Nottinghamshire and Lincolnshire than that of the Middle to Late Iron Age (Clay 2002; Knight and Howard 2004, Rowlandson 2017). The majority of the significant Early Iron Age assemblages from the East Midlands derive from Northamptonshire or Cambridgeshire (Knight and Howard 2004, 86; Knight 1984; 2002). Knight and Howard (2004, 86–7) have also noted a similar pattern of Early Iron Age find spots in the Trent Valley, and a similar distribution is known from Lincolnshire (listed in Rowlandson 2017). In addition, Brudenell (2008) has also noted the difficulty of recognising Early Iron Age pottery, with a dependence upon finding distinctive fine ware or decorated forms to isolate pottery of this period from other pottery from the 1st millennium BC.

Research at the Exeter Down site in Lincolnshire found Early to Middle Iron Age pottery on a site that continued in use after the introduction of Earlier La Tène Scored ware (Rowlandson 2017; Daniel 2016). A project of radiocarbon dating and Bayesian analysis helped to refine activity on the site as occurring from the 5th to early 2nd century BC. The radiocarbon dates from the King St Plantation site suggest a longer chronology on the site, stretching into the 2nd millennium BC. The range of dates include the Early and Middle Iron Age, with one bone fragment dating to the Middle Bronze Age. With the low level of feature sherds retrieved from this assemblage, the dating of much of the handmade pottery must be tentative, and it would appear likely that the low level of vessels with Scored ware surface treatment may reflect the presence of some pottery that pre-dated the introduction of this technique in the Middle Iron Age (Knight 2002; 2010; Rowlandson 2017; Daniel 2016).

The pottery by feature

Ditch 75058 was tentatively dated to the Middle–Late Iron Age on the basis of a sherd from fill 75447 and a shell-gritted jar rim from fill 75471 with fingertip decoration. The reduced transitional sherd (RT1) from this group and a necked jar in the Q4 fabric suggested a date in the later Iron Age.

A medium-sized group of small handmade sherds was retrieved from ditch 75076; the vessels were nearly all rock-gritted with little diagnostic material to assist closer dating as the rim fragments were tiny. An Iron Age or perhaps Bronze Age date for this group might be possible.

A single rock-gritted sherd of Scored ware was retrieved from ditch 75125.

Four-post structure 75290 contained small, handmade, broadly Iron Age sherds which, in the absence of feature sherds, could not be closely dated.

Ditch 75327 contained a small quantity of handmade shell- and rock-gritted Iron Age sherds which could not be closely dated.

Ditch 75500 produced 56 mostly small sherds of Iron Age type handmade wares. A single sherd in a transitional grog-gritted fabric that probably dated to the mid- to late 1st century AD was retrieved from cut 75413.

Ditch 75501 produced 40 sherds, mostly rock-gritted Iron Age types with a few shell-gritted sherds from three contexts, which may suggest that the feature remained open into the 1st century AD (fills 75389, 75381 and 75403), but little diagnostic material was present.

Two small probable Iron Age sherds were retrieved from pit group 75502. A radiocarbon date of 400–200 cal. BC (2253±30 BP: Middle Iron Age) was obtained from animal bone recovered from pit 75432 within this group, which coincided spatially with an inhumation burial radiocarbon dated to 1420–1220 cal. BC (3060±35 BP: Middle Bronze Age).

A total of 41 handmade rock- or shell-gritted sherds were retrieved from ditch 75503. Plain and pinched-out basal sherds were the only feature sherds recorded. This small group of pottery could be only broadly dated to the Iron Age, but a radiocarbon date of *390–200 cal. BC* (2207±30 BP: Middle Iron Age) was obtained from animal bone recovered from cut 75363 within this group.

Nineteen sherds from a single thin-walled burnished jar or beaker were retrieved from ditch 75505 (Fig. 4.2.3). It is likely that this vessel dates to the Middle to Late Iron Age.

Powdery small ceramic fragments of uncertain date were the only material from pit alignment 75507.

A small group of handmade sherds retrieved from ditch group 75509 could only be attributed a broad Iron Age date.

Ungrouped features included pits 75357, 75475, 75484, 75257, 75060, 75464, 75126, 75141 and 75171.

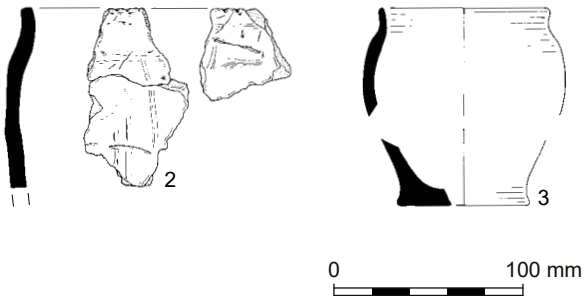

Figure 4.2 Iron Age pottery from King St Plantation

A radiocarbon date was obtained from a human skull recovered from pit 75484 (located at the main enclosure entrance) of 520–230 cal. BC (2335±30 BP: Early to Middle Iron Age); it was supplemented by a further radiocarbon date of 480–220 cal. BC (2320±32 BP: Early to Middle Iron Age) from animal bone recovered from the same deposit. The two small featureless body sherds from this pit can, therefore, be dated by association. Pit 75126 contained Scored ware sherds which could be dated to the Middle Iron Age, confirmed by a radiocarbon date obtained from charred plant remains from the same pit of *390–210 cal. BC* (2238±30 BP: Middle Iron Age); the remaining features could only be broadly dated to the Iron Age.

Illustrated vessels

Fig. 4.1

1. R2, Handmade rock-gritted vessel. Vessel with a splayed neck probably dated to first half of 1st millennium BC (Jackson and Knight 1985, fig. 7.40). Ditch 86120, cut 86109, fill 86106, D47

Fig. 4.2

2. Q1, Quartz-gritted jar, perhaps similar to earlier Iron Age examples from Gretton (Jackson and Knight 1985), with a slashed rim tip. Pit 75464, fill 75466, D34
3. Q1, Small jar with a rounded rim and pinched-out base in a black fired burnished fabric. Similar examples are known from later Iron Age sites in Northamptonshire (Elsdon 1996a, E9; Williams 1974, nos 2 and 6). No other material to assist dating was found in this feature. Ditch 75505, cut 75045, fill 75046, D35

Great Dampits

This site produced 365 sherds (3.698 kg, 0.74 RE; Tables 4.6 and 4.7). These came from 42 contexts and had an average sherd weight of 9.89 g. The majority of the pottery was retrieved from ditches and pits. With the exception of a single sherd of Derbyshire ware, all the pottery was handmade and was considered to broadly date to the Iron Age. Diagnostic sherds of Scored ware dating to the Middle to Late Iron Age were present in 12 of the contexts, from a maximum of 14 vessels including

Table 4.4 King St Plantation: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
RT1	Sandy wares	Misc reduced transitional wares – coarse	2	0.44%	8	0.24%	0
S1	Shell	Moderate–very common shell or platey voids	28	6.13%	211	6.23%	2
S2	Shell	As S1 with common–very common quartz sand	4	0.88%	8	0.24%	0
G2	Grog	Sandy fabric with rare, rounded grog	27	5.91%	117	3.45%	7
Q1	Quartz	Quartz sand common–abundant	74	16.19%	693	20.45%	57
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–-5 mm)	300	65.65%	2181	64.38%	49
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	11	2.41%	133	3.93%	0
MISC	Misc	Misc uncategorised	10	2.19%	1	0.03%	0
FCLAY	Fired clay	Fired clay	1	0.22%	36	1.06%	0

Table 4.5 King St Plantation: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
J	Jar	Unclassified form	65	14.22%	646	19.07%	81
JEV	Jar	Everted rim	1	0.22%	4	0.12%	2
JIR	Jar	In-turned rim	15	3.28%	108	3.19%	30
JL	Jar	Large	17	3.72%	212	6.26%	0
-	Unknown	Form uncertain	359	78.56%	2418	71.37%	2

illustrated vessel number Figure 4.3.6. No feature sherds from other periods or in the Late La Tène III tradition were noted. A small proportion of grog- or mudstone-gritted sherds were recorded, with the majority in the quartz-gritted Q1 and Q3 groups. Of the 14 sherds in the G1 and G2 fabrics, three vessels showed signs of Scored ware surface treatment. In the sandy Q1 fabric only illustrated vessels Figure

Table 4.6 Great Dampits: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
DBY	Oxidised	Derbyshire ware; Belper area	1	0.27%	5	0.14%	0
IV	Voids	Handmade indeterminate	1	0.27%	5	0.14%	0
G1	Grog	Shelly & sandy fabric with sparse rounded grog	9	2.47%	148	4.00%	0
G2	Grog	Sandy fabric with rare, rounded grog	29	7.95%	190	5.14%	0
Q1	Quartz	Quartz sand common–abundant	99	27.12%	1280	34.61%	41
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	177	48.49%	1304	35.26%	22
R1	Rock gritted	Granitic rock (rare–moderate) & quartz sand	7	1.92%	40	1.08%	0
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	41	11.23%	720	19.47%	11
FCLAY	Fired clay	Fired clay	1	0.27%	6	0.16%	0

Table 4.7 Great Dampits: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
J	Jar	Unclassified form	58	15.89%	1453	39.29%	72
JIR	Jar	In-turned rim	1	0.27%	6	0.16%	2
JL	Jar	Large	7	1.92%	255	6.90%	0
-	Unknown	Form uncertain	299	81.92%	1984	53.65%	0

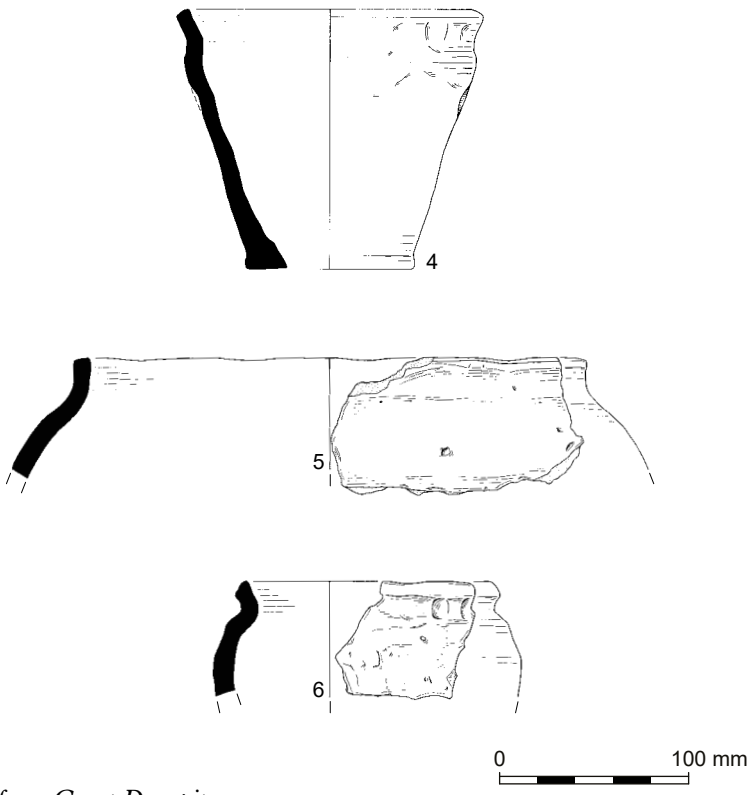

Figure 4.3 Iron Age pottery from Great Dampits

Table 4.8 Field Farm: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
G2	Grog	Sandy fabric with rare, rounded grog	310	69.20%	2244	59.24%	37
Q1	Quartz	Quartz sand common–abundant	70	15.63%	726	19.17%	13
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	18	4.02%	197	5.20%	25
R1	Rock gritted	Granitic rock (rare–moderate) & quartz sand	3	0.67%	104	2.75%	0
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	46	10.27%	514	13.57%	23
FCLAY	Fired clay	Fired clay	1	0.22%	3	0.08%	0

4.3.4 and 4.3.5 could be reconstructed. The coarse quartz-gritted Q4 fabric included a barrel-shaped jar with an in-turned rim and at least five Scored ware vessels, including illustrated vessel Figure 4.3.6. Rock-gritted vessels were present in smaller numbers (maximum 25 vessels) and included up to four Scored ware vessels. The range of fabrics appeared similar to those recorded by Johnson (2011, 70–6) from Warren Farm, Lockington, with much of the pottery in the sandy quartz or coarser quartz-gritted fabrics, and smaller quantities of shell or rock-gritted wares. The grog/mudstone-gritted wares were slightly more common from the Great Dampits site. Organic residue analysis of two Scored ware vessels (Fig. 4.3.4 EMG25 and Fig. 4.3.6 EMG24) suggested that jars with Scored ware surface treatment on this site were used for heating carcass or dairy products.

Illustrated vessels

Fig. 4.3

4. Q1, Small jar with an externally bevelled rim and external finger marks. Lipids analysis suggested that this vessel had been used to process ruminant dairy products. Pit 60224, fill 60226, D41; also ditch 60228, fill 60230, D41, ORA EMG25
5. Q1, Globular handmade jar. Pit 60235, fill 60238, D48
6. Q4, Jar with Scored ware surface treatment and external carbonised residue. Lipids analysis suggested that this vessel was used for processing ruminant carcass products. Ditch 60111, fill 60112, D40, ORA EMG24

Field Farm

Overall, 448 sherds (3.788 kg, 0.98 RE; Tables 4.8 and 4.9) were recovered. These came from 30 contexts and had an average sherd weight of 8.31 g. Nearly all the pottery from this area could be dated to the Iron Age, with Scored ware the main diagnostic type. Although features pre-dating the Iron Age were identified, the pottery assemblages mostly contained Scored ware and were similar to those recorded from the Great Dampits site. No pottery was retrieved from the features radiocarbon dated to the Bronze Age.

Grog/mudstone-gritted ware G2 was well represented, with 310 sherds from a maximum of 84 vessels. Over half of the sherd count comprised small fragments from a single Scored ware vessel retrieved from enclosure ditch 65243. Ten of the vessels had Scored ware surface treatment, with a further three vessels showing signs of scored diagonal lines and probably of a similar date. The majority of the remaining vessels were in the quartz sand- and coarse quartz-gritted wares group (maximum 46 vessels), including six vessels with Scored ware surface treatment. Sherds in the rock-gritted group (R1–2, 12 vessels) were present in smaller quantities, including five vessels with Scored ware surface treatment.

The pottery by feature

Four contexts from boundary ditch 65240 contained pottery, including a small quantity of handmade Iron Age sherds and a pinched-out base. A radiocarbon date of 350–50 cal. BC (2130±30 BP) was obtained from a human bone sample recovered from an aceramic slot (65062) dug across this feature.

An assemblage including sherds from 20 vessels was retrieved from boundary ditch 65241. Ten vessels showed signs of Scored ware surface treatment, including a jar with an in-turned rim and a further jar with an in-turned rim with scored diagonal line decoration. This assemblage should also be dated to

Table 4.9 Field Farm: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
J	Jar	Unclassified form	227	50.67%	1892	49.95%	80
JIR	Jar	In-turned rim	28	6.25%	187	4.94%	18
JL	Jar	Large	9	2.01%	213	5.62%	0
-	Unknown	Form uncertain	184	41.07%	1496	39.49%	0

the Middle to Late Iron Age, most probably to the Middle Iron Age. A single handmade Iron Age sherd was retrieved from ditch 65242.

The majority of pottery from this area was retrieved from enclosure ditch 65243. Three contexts contained Scored ware, with a particularly large assemblage from fill 65015 (slot 65014). This included fragmentary sherds (average sherd weight 5.76 g) from a small number of vessels. Five vessels showed signs of Scored ware surface treatment and a further vessel had scored diagonal lines. Two vessels had everted rims, and examples of plain and pinched-out bases were recorded. No diagnostic later Iron Age material was noted, favouring a date in the Middle Iron Age for this group.

Seven contexts from ditch 65244 contained Iron Age pottery, including sherds with Scored ware surface treatment. A jar or bowl with burnished surfaces from fill 65123 (slot 65124) was also noteworthy. Eight vessels had Scored ware treatment and a further example had scored diagonal lines. The majority of the vessels had rounded everted rims, with a single vessel having a stabbed or slashed rounded rim tip and another with a fingertip-decorated everted rim. Examples of two necked jars from this feature were also noted, one with external burnished decoration.

Mill Close

A total of 293 sherds (3.812 kg, 1.0 RE; Tables 4.10 and 4.11) were recovered. These came from 38 contexts and had an average sherd weight of 12.75 g. The pottery almost exclusively consisted of handmade vessels in quartz- or sandy grog-gritted fabrics. One context included a fine shell-gritted sherd that may have been in the Late La Tène III tradition (CG1A) and thus datable to the Late Iron Age (Knight 2002); a few small sherds of grey ware (pit circle 50189) and the transitional RT1 and OT2 fabrics suggested limited activity on the site in the early Roman period.

The majority of pottery was retrieved from ditch fills. Diagnostic sherds of Scored ware suggested that the majority of the pottery could be dated to the Middle or perhaps the Middle to Late Iron Age. There were a maximum of 15 vessels (55 sherds) with Scored ware surface treatment, including vessels in the G1, G2, Q1, Q4 and R2 fabrics. One vessel in the grog-gritted G2 fabric showed signs

Table 4.10 Mill Close: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
OT2	Oxidised	Oxidised transitional ware – fine	1	0.34%	1	0.03%	0
GW6	Reduced	Moderately coarse wheel-made grey ware	1	0.34%	18	0.47%	0
RT1	Sandy wares	Misc reduced transitional wares – coarse	3	1.02%	6	0.16%	0
CG1A	Shell	Shell gritted, low quartz, LIA–ERB	1	0.34%	4	0.10%	2
S1	Shell	Moderate–very common shell or platey voids	3	1.02%	9	0.24%	0
G1	Grog	Shelly & sandy fabric with sparse, rounded grog	11	3.75%	198	5.19%	0
G2	Grog	Sandy fabric with rare, rounded grog	81	27.65%	937	24.58%	38
Q1	Quartz	Quartz sand common–abundant	102	34.81%	1410	36.99%	37
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	63	21.50%	961	25.21%	23
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	15	5.12%	180	4.72%	0
FCLAY	Fired clay	Fired clay	12	4.10%	88	2.31%	0

Table 4.11 Mill Close: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
BK?	Beaker	Unclassified form	1	0.34%	12	0.31%	19
J	Jar	Unclassified form	125	42.66%	1919	50.34%	57
JIR	Jar	In-turned rim	10	3.41%	156	4.09%	22
JL	Jar	Large	22	7.51%	504	13.22%	0
JNK	Jar	Necked	1	0.34%	4	0.10%	2
-	Unknown	Form uncertain	134	45.73%	1217	31.93%	0

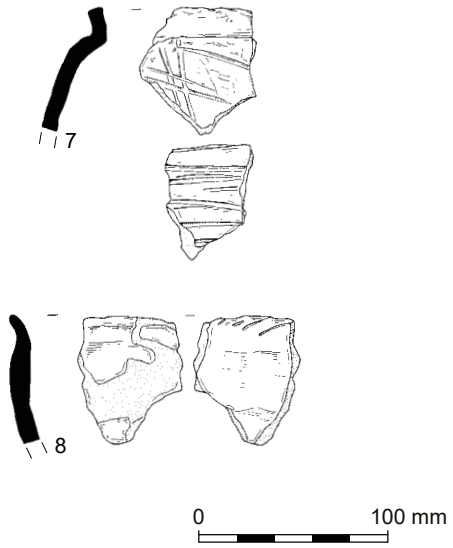

Figure 4.4 Iron Age pottery from Mill Close

of external burnishing. A single vessel appeared to have a fingertip-decorated rim top (Fig. 4.4.7), and a further three vessels had a slashed rim (eg, Fig. 4.4.8). A single small sherd from layer 50074 appeared to have a stabbed wall. A very abraded vessel in the transitional RT1 fabric had a scored horizontal groove (ring gully 50188).

The pottery from Mill Close was associated with an Iron Age enclosure and settlement. Many enclosures of this type in this part of the East Midlands have only limited finds assemblages (Rowlandson 2015). As much of the assemblage may have fallen into the Middle to Late Iron Age date range, it is unclear whether it represented a short period of settlement or that the inhabitants were using a limited quantity of pottery during a longer occupation.

Organic residues were analysed from two vessels (Dunne et al. below). The sample from a 'Barrel-shaped jar' (Challis and Harding 1975; Johnson 2011, fig. 43.3) with an in-turned rounded rim (ring gully 50188, D45, ORA29) had been exclusively used for dairy processing, perhaps suggesting some vessels were allocated specific purposes. This vessel was found stratified with Scored ware vessels. Three other examples of barrel-shaped jars were recorded from this site. Organic residue analysis of illustrated Scored ware vessel Fig. 4.4.7 would suggest a mixture of ruminant dairy and carcass fats were processed within the vessel during its lifetime.

Horsecroft

The assemblage comprised 461 sherds (6.632 kg, 1.03 RE; Tables 4.12 and 4.13), recovered from ditches, ring gullies, pits and waterholes. Most of the groups could be dated to the Middle to Late Iron Age on the basis of the presence of Scored ware sherds. A few thinner-walled burnished sherds may have dated towards the end of the Iron Age. A number of the groups contained fresh sherds, many from gullies or ring gully features, suggesting some primary waste was present. The ring gullies from the site typically contained some vessels with Scored ware surface treatment, many with carbonised residues. The radiocarbon dates from Horsecroft would suggest that the Scored ware assemblages would broadly fit with the prevailing orthodoxy for the dating of vessels of this type (Knight 2010; 2002; Elsdon 1992). The majority of the sherds were in the sandy (Q1) or the coarse quartz-gritted fabrics (Q4), with a range of sherds with some grog/mudstone inclusions (G2). There were limited ranges of igneous rock-gritted and fossil shell-gritted sherds, which is similar to other groups from the development area and from the general vicinity (Johnson 2011).

The pottery by feature

Ring gully 38339 contained five handmade Iron Age sherds. Ring gully group 38341 contained eight handmade sherds including Scored ware.

Pen 38343 produced 41 handmade sherds including Scored ware. A jar with a grooved or channelled rim was illustrated from this context (Fig. 4.5.11).

A single Iron Age sherd was retrieved from drainage channel 38344.

Ditch 38345 contained 46 sherds that probably dated to the later Iron Age. This fresh group included sherds from a handmade lug-handled jar, handmade rock-gritted sherds, burnished sherds including a vessel with a short pedestal base, and the rim from a jar with a rounded lip.

Pen 38346 contained 27 sherds including Scored ware. A radiocarbon date of *380–190 cal.*

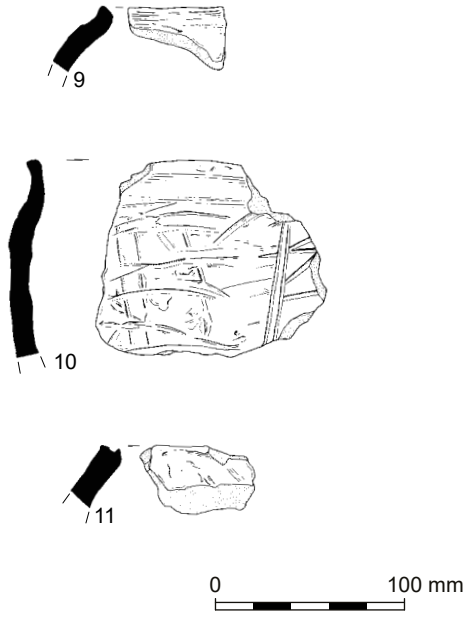

Figure 4.5 Iron Age pottery from Horsecroft

Table 4.12 Horsecroft: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
S1	Shell	Moderate–very common shell or platey voids	1	0.22%	11	0.17%	4
S2	Shell	As S1 with common–very common quartz sand	2	0.43%	46	0.69%	0
G1	Grog	Shelly & sandy fabric with sparse rounded grog	5	1.08%	59	0.89%	0
G2	Grog	Sandy fabric with rare, rounded grog	119	25.81%	1752	26.42%	20
GT	Grog	Coarse	2	0.43%	29	0.44%	0
Q1	Quartz	Quartz sand common–abundant	171	37.09%	2359	35.57%	59
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	141	30.59%	2081	31.38%	20
Q4?	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	2	0.43%	16	0.24%	0
R1	Rock gritted	Granitic rock (rare–moderate) & quartz sand	14	3.04%	213	3.21%	0
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	1	0.22%	42	0.63%	0
FCLAY	Fired clay	Fired clay	1	0.22%	21	0.32%	0
FCLAY?	Fired clay	Fired clay	2	0.43%	3	0.05%	0

Table 4.13 Horsecroft: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
J	Jar	Unclassified form	46	9.98%	1065	16.06%	44
JEV	Jar	Everted rim	3	0.65%	17	0.26%	13
JIR	Jar	In-turned rim	6	1.30%	84	1.27%	20
JL	Jar	Large	27	5.86%	1305	19.68%	0
JLH	Jar	Lug-handled	4	0.87%	73	1.10%	0
JNK	Jar	Necked	54	11.71%	918	13.84%	10
-	Unknown	Form uncertain	321	69.63%	3170	47.80%	16

Table 4.14 Horsecroft WB: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
Q1	Quartz	Quartz sand common–abundant	16	72.73%	120	70.18%	0
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	2	9.09%	14	8.19%	0
R1	Rock gritted	Granitic rock (rare–moderate) & quartz sand	4	18.18%	37	21.64%	0

BC (2211±32 BP: Middle Iron Age) was obtained from animal bone recovered from slot 38122 dug across this feature. It had cut beamslot 38347, which contained 21 handmade sherds that could be broadly dated to the Iron Age. Eavesdrip 38348 included 35 handmade sherds including Scored ware.

Thirty-two sherds were retrieved from animal pen 38350, including Scored ware dated to the Middle to Late Iron Age. A jar with an in-turned rim and carbonised deposits provided a radiocarbon date of 150 cal. BC–cal. AD 60 (2038±24 BP: Middle Iron Age to Roman), which presumably represents a Middle to Late Iron Age date for the last use of this vessel. Ring gully 38220 contained three Scored ware vessels (eg, Fig. 4.5.10) and a further vessel with internal carbonised deposits (Fig. 4.5.9).

A total of 17 handmade sherds, broadly datable to the Iron Age, were recovered from area of pitting 38351.

Pit 38116 yielded a sherd with internal carbonised residue that provided a radiocarbon date of 380–170 cal. BC (2209±24 BP: Middle Iron Age).

Illustrated vessels

Fig. 4.4

7. Q4, Scored ware jar with a fingertip-decorated rim. Lipids analysis suggests the vessel was used for the processing of both ruminant dairy and carcass fats. Ring gully 50188, cut 50182, fill 50184, D44, ORA EMG28
8. Q1, Jar with an everted and internally slashed rim. The form of this vessel was similar to an example from Warren Farm, Lockington (Johnson 2011, fig. 44.12). Pit circle 50189, pit 50146, fill 50147, D43

Fig. 4.5

9. G2, Handmade jar with internal carbonised deposits. Ring gully 38220, fill 38218, D56
10. Q1, Handmade Scored ware jar. Ring gully 38220, fill 38218, D55
11. Q1, Handmade jar with a grooved or channelled rim. Animal pen 38343, cut 38118, fill 38119, D54

Horsecroft (WB)

A further 22 sherds (0.171 kg, 0 RE; Table 4.14) were recovered from the watching brief area to the west of the main Horsecroft site. All the sherds were handmade and could be broadly dated to the Iron Age.

Longfield

In total, 646 sherds (13.693 kg, 2.84 RE; Tables 4.15 and 4.16) were recovered from ditches and gullies within the Longfield site. Nearly all of the sherds from this area were handmade Iron Age types with a few grog-gritted sherds that may have dated to the Conquest or post-Conquest period. A large necked storage jar with combed decoration from ditch 41480 was one of the best examples of the Late Iron Age 'Late La Tène III' style from the project. A majority of features contained vessels with Scored ware surface treatment and could be dated to the Middle to Late Iron Age. A few sherds in transitional fabrics suggest that some activity may have continued until the mid- to late 1st century AD. A number of the jars submitted for lipids analysis appear to have been used to process ruminant dairy products.

The pottery by feature

Ditch group 41131 produced 191 sherds, with most contexts containing fresh sherds with Scored ware surface treatment. A number of the handmade sherds from one vessel (D57) had surviving carbonised deposits, which provided a radiocarbon date of 400–200 cal. BC (2265±24 BP: Middle Iron Age). A small quantity of transitional sherds was present that might suggest that the feature remained in use until the middle of the 1st century AD. A further 204 sherds were retrieved from ditch 41468. These included a range of fresh sherds with Scored ware surface treatment (Fig. 4.6.13–14); a small number of sherds from fill 41327 suggested that this feature may have remained open until the Late Iron Age.

A single rock-gritted Iron Age sherd came from ditch 41469.

Ditch 41470 produced 84 sherds. Scored ware sherds from this group would suggest a Middle to Late Iron Age date.

Six sherds including modern and Roman vessels were retrieved from ditch 41473.

Sixteen handmade Iron Age sherds came from ditch 41475. One vessel from fill 41418 had internal carbonised deposits. An attempt to radiocarbon date this material was not successful (GU55436). One handmade jar had been used for processing ruminant dairy produce (Fig. 4.6.15, ORA EMG23).

Ditch 41477 produced 13 handmade Iron Age sherds and ditch 41478 19 similar sherds. Ditch 41479 contained eight sherds including a Romano-

Table 4.15 Longfield: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
GW6	Reduced	Moderately coarse wheel-made grey ware	1	0.15%	6	0.04%	0
S1	Shell	Moderate–very common shell or platey voids	2	0.31%	21	0.15%	0
S2	Shell	As S1 with common–very common quartz sand	1	0.15%	7	0.05%	0
G1	Grog	Shelly & sandy fabric with sparse rounded grog	1	0.15%	3	0.02%	0
G2	Grog	Sandy fabric with rare, rounded grog	114	17.65%	1569	11.46%	27
GT	Grog	Coarse	1	0.15%	8	0.06%	0
GT3	Grog	Coarse – mid–late Roman	5	0.77%	43	0.31%	2
Q1	Quartz	Quartz sand common–abundant	252	39.01%	5340	39.00%	164
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	180	27.86%	5667	41.39%	91
R1	Rock gritted	Granitic rock (rare–moderate) & quartz sand	69	10.68%	640	4.67%	0
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	16	2.48%	376	2.75%	0
MISC	Misc	Misc uncategorised	4	0.62%	13	0.09%	0

Table 4.16 Longfield: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
BK	Beaker	Unclassified form	3	0.46%	59	0.43%	17
3E.1	Jar	Ledged/everted rim	1	0.15%	8	0.06%	2
J	Jar	Unclassified form	300	46.44%	8034	58.67%	189
JIR	Jar	In-turned rim	44	6.81%	615	4.49%	72
JL	Jar	Large	87	13.47%	2781	20.31%	2
-	Unknown	Form uncertain	211	32.66%	2196	16.04%	2

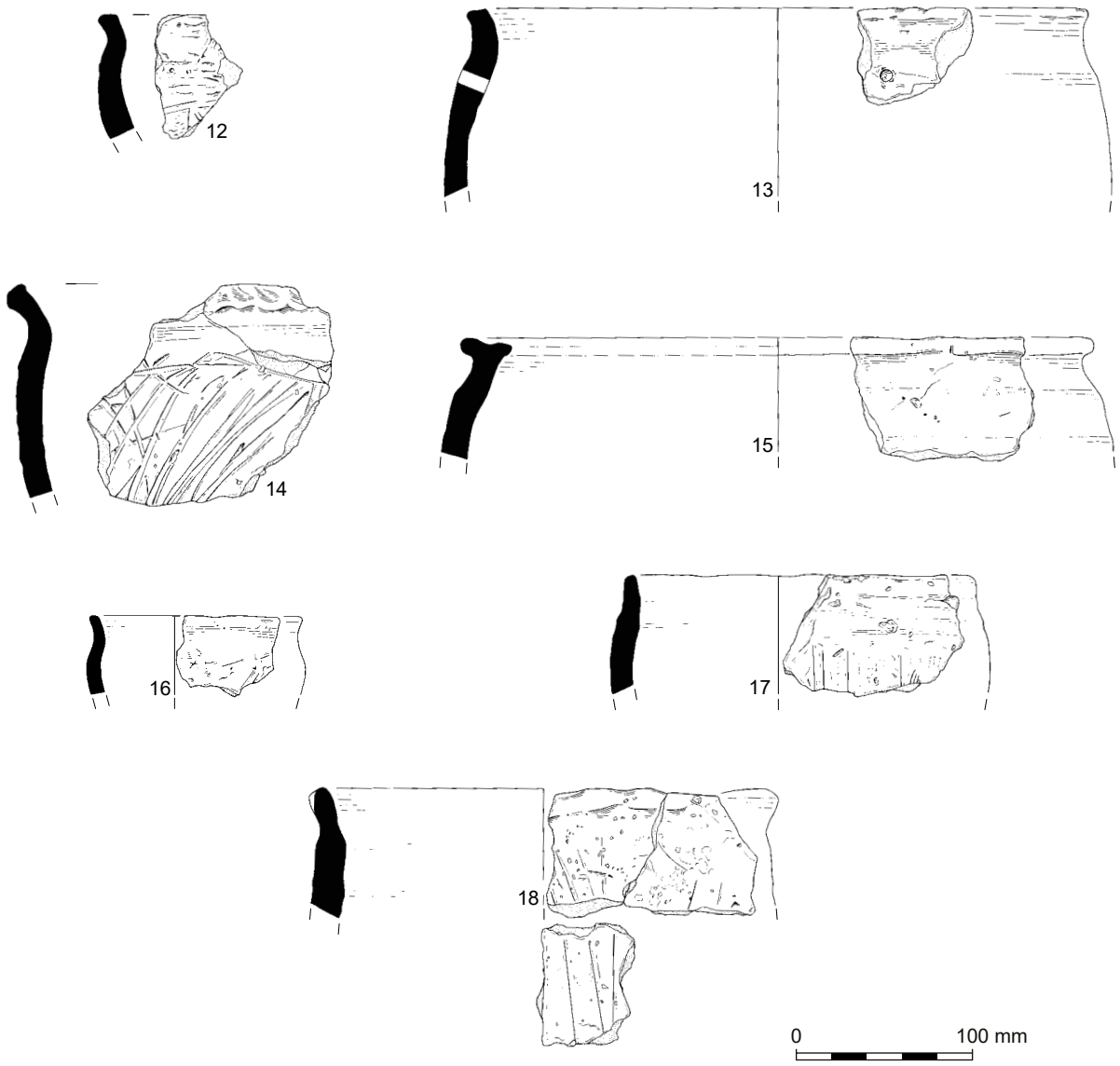

Figure 4.6 Iron Age pottery from Longfield

British grey ware sherd and handmade types. One handmade jar had been used for processing ruminant dairy produce (Fig. 4.6.16, ORA EMG26)

Twenty fresh handmade sherds from ditch 41480 included Scored ware (Fig. 4.6.17), and a further jar with scored diagonal line decoration (Fig. 4.6.18).

Two handmade Iron Age sherds were retrieved from ditch 41481, and a single example from ditch 41482. Four sherds came from ditch 41483, including Scored ware sherds; one vessel bore an external

carbonised deposit. A further 30 fresh handmade sherds from gully 41484 include Scored ware. The single grog-gritted sherd retrieved from ditch 41485 may date to the 1st century AD.

Illustrated vessels

Fig. 4.6

12. G2, Scored ware jar. Ditch 41137, fill 41138, D51
13. Q4, Scored ware jar pierced post-firing. Ditch 41468, cut 41333, fill 41334, D36
14. Q4G, Coarse quartz and grog/mudstone-gritted jar with scored decoration and a slashed rim tip. Ditch 41468, cut 41386, fill 41387, D37, ORA EMG21
15. Q1, Large jar with an internal projection. Lipids analysis found ruminant dairy lipids. Ditch 41475, cut 41409, fill 41410, D39, ORA EMG23
16. Q1, Handmade jar. Lipids analysis found ruminant dairy lipids. Ditch 41477, cut 41306, fill 41307, D42, ORA EMG26
17. Q4, Handmade jar with Scored ware surface treatment. Ditch 41480, cut 41118, fill 41147, D49
18. Handmade jar with scored diagonal lines. Ditch 41480, cut 41143, fill 41144, D50

Over Field

This produced the largest pottery assemblage of all the sites investigated, 5008 sherds (58.244 kg, 45.93 RE; Tables 4.17 and 4.18), from a Romano-British activity area and ditch system that had been truncated by medieval ploughing. A number of substantial groups were recovered, most notably from hollow 90056/90340, which contained the largest single group from the entire project. The majority of the pottery could be dated to after AD 140–150, but smaller quantities of early Roman pottery were present, which would suggest that the site was occupied throughout much of the period. There was little evidence of the handmade pottery normally found on sites dating to before the Roman Conquest. It was also noticeable that the pottery from this site contained a far higher proportion of Derbyshire ware than would be expected from other sites in Leicestershire (Cooper 2004), even higher than the assemblage studied from Warren Farm, Lockington (Johnson 2011, 78–9, 6.1% of sherds). The proportion from Over Field (20.41% by sherd count) plotted more closely with sites from Little Chester, Derby (Johnson 2008; 2011, 24.5% of sherds) and Highfields Farm, Derby (Rowlandson and Fiske 2021, 36.23% of sherds), although not as high as some seen from Derbyshire and Nottinghamshire, such as the assemblages from Barrow-on-Trent, Nottinghamshire (Leary 2001; Johnson 2011, 52% of sherds) and Lodge House, Smalley, Derbyshire (Leary 2013, 29.81% of sherds). The presence of oxidised 'proto-Derbyshire ware'-type coarse wares, likely to date to the 2nd century AD (recorded here with the Leicester code OW3), also highlights the likely integration of the inhabitants of this site with the exchange networks across the Trent at Derby. The fairly small quantities of samian, amphorae, mortaria and other fine wares would otherwise appear to fit with the patterns observed by Cooper (2004) for rural sites in Leicestershire, with jar forms and grey wares well represented.

The pottery by feature

Hollow 90056/90340

The largest quantity of material from the site was retrieved from hollow 90056/90340. This group of pottery was deposited above the fill of pit 90054. The 24 sherds from pit 90054 included Central Gaulish samian, a grey ware lipped bowl and sherds from Derbyshire ware jars that indicated an earliest date for deposition of this fill in the second half of the 2nd century AD. This would suggest that the backfilling of hollow 90056/90340 began no earlier than the middle of the 2nd century AD.

Looking at dating of the material from the hollow 90056/90340, the contexts from the north-east quadrant of the feature (90340) appeared to have a slightly earlier bias. Some 832 sherds (9.654 kg) were retrieved from the fills of 90340. This large, fragmentary group included a samian form 31 bowl, Dressel 20 amphora body sherds, Mancetter-Hartshill mortaria with flanged rims, a colour-coated plain-rimmed beaker and flagon, an oxidised beaker with an everted rim, a white ware flagon with an expanded rim, and a range of Derbyshire ware jars and native tradition ware. Reduced wares included Black Burnished ware 1 jars and bowls, grey ware necked jars and bowls, and a lipped bowl. This group was probably deposited in the early to mid-3rd century AD.

The remainder of the hollow (90056) produced 3,492 sherds (38.478 kg), with a relatively high average sherd weight of 11.02 g, including both fresh and abraded sherds (Pl. 4.1). The latest material dated the group to the later 3rd or perhaps 4th century AD. The key vessels likely to be of this date were examples of vessels variously known

Plate 4.1 Emily Eastwood (WA) and Richard Clark (Principal Planning Archaeologist for Leicestershire County Council) examining Romano-British pottery from hollow 90056/90340

as straight-sided bead-and-flanged bowls or conical flanged bowls (forms 6F.1–2). Eighteen examples of this type were recorded in Black Burnished ware 1 and local grey wares (Fabrics BB1, GW1, GW4 and GW6) from fill 90058, and a single Black Burnished ware 1 example from underlying fill 90057. The dating of these vessels has been considered by Holbrook and Bidwell (1991, 98) to be after AD 270 and would perhaps offer a *terminus post quem* for the final backfilling of the hollow. None of these diagnostic types were recorded from the large groups from fills 90341 and 90342 (from 90340, the north-eastern quadrant of the hollow), where the material present may have dated to earlier in the 3rd century AD. The distinction between these fills may be fortuitous rather than of any great significance, suggesting that the material from the feature may have largely been dumped in the 3rd century AD. A sample of the vessels from this group has been illustrated (Fig. 4.7.19–33). The group also contained a proportion that could be dated to AD 150–270, and small quantities that may relate to earlier 2nd-century AD activity. Samian forms included form 31 and 38 bowls and a form 33 cup (see Mills, below). Mortaria were mostly Mancetter-Hartshill type vessels with

Table 4.17 Over Field: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAMCG	Samian	Central Gaulish	36	0.72%	318	0.55%	54
SAMEG	Samian	East Gaulish	5	0.10%	58	0.10%	21
SAMRZ	Samian	Rheinzabern samian ware	4	0.08%	50	0.09%	5
SAMRZ?	Samian	Rheinzabern samian ware	2	0.04%	5	0.01%	0
SAMSG	Samian	South Gaulish	1	0.02%	1	0.00%	0
SAMTR	Samian	Trier samian (Trier I and Trier II)	5	0.10%	39	0.07%	10
SAMTR?	Samian	Trier samian (Trier I and Trier II)	1	0.02%	2	0.00%	2
AM9	Amphora	Dressel 20	1	0.02%	23	0.04%	0
AM9A	Amphora	Dressel 20 – BAT AM1	4	0.08%	1026	1.76%	0
MO	Mortaria	Unknown source	24	0.48%	734	1.26%	78
MO19	Mortaria	Mancetter-Hartshill fabric	2	0.04%	231	0.40%	2
MO4	Mortaria	Fine Mancetter fabric with fine-grained black and dark red argillaceous trits	77	1.54%	4021	6.90%	162
MO7	Mortaria	Verulamium region. Flint & quartz trits	1	0.02%	95	0.16%	0
C	Fine	Misc colour-coated	6	0.12%	18	0.03%	14
C11	Fine	Dark oxidised, dark reduced slip	2	0.04%	7	0.01%	4
C2	Fine	Colour-coated with 'white' fabrics	74	1.48%	415	0.71%	30
C3	Fine	Colour-coated with a light oxidised core	55	1.10%	244	0.42%	5
DBY	Oxidised	Derbyshire ware; Belper area	1022	20.41%	15,640	26.85%	1337
OT2	Oxidised	Oxidised transitional ware – fine	1	0.02%	7	0.01%	4
OW2	Oxidised	Midlands oxid. Misc fine and fine sandy fabrics	15	0.30%	112	0.19%	38
OW3	Oxidised	Sources incl Verulamium & Midlands. Coarse sandy	537	10.72%	2642	4.54%	82
OW4	Oxidised	As Ebor 3	1	0.02%	24	0.04%	0
OW5	Oxidised	Medium sandy oxidised, may incl unrecognised medieval	18	0.36%	243	0.42%	4
WW	Oxidised	White ware, unspecified	2	0.04%	2	0.00%	0
WW1	Oxidised	Includes white grog – ?Northamptonshire source	13	0.26%	116	0.20%	14
WW2	Oxidised	Fine white pipe clay fabric incl Mancetter-Hartshill	11	0.22%	151	0.26%	119
BB1	Reduced	Black burnished 1, unspecified	97	1.94%	1238	2.13%	153
GW	Reduced	Misc grey ware	1	0.02%	9	0.02%	0
GW1	Reduced	BB1 type copies	161	3.21%	1720	2.95%	245
GW4	Reduced	Light firing types as 'Nene Valley grey ware'	14	0.28%	207	0.36%	8

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
GW5	Reduced	Medium sandy grey ware	989	19.75%	12,290	21.10%	1117
GW6	Reduced	Moderately coarse wheel-made grey ware	1662	33.19%	15,133	25.98%	1030
RT1	Sandy wares	Misc reduced transitional wares – coarse	50	1.00%	293	0.50%	3
CG	Shell gritted	Misc shell gritted	1	0.02%	6	0.01%	0
CG1	Shell	Shell gritted, coarse frequent–abundant	65	1.30%	484	0.83%	38
GT2	Grog	Fine grog gritted 'Belgic' type	2	0.04%	14	0.02%	0
GT3	Grog	Coarse – mid–late Roman	2	0.04%	58	0.10%	0
GT3A	Grog	Coarse – mid–late Roman pink	1	0.02%	180	0.31%	14
GT5	Grog	Grey grog gritted (Mo-Fr) with Quartz (Mo-Fr)	6	0.12%	38	0.07%	0
MG	Mixed grit	Misc mixed grit	1	0.02%	8	0.01%	0
MG1	Mixed grit	Coarse	3	0.06%	33	0.06%	0
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5–5 mm)	31	0.62%	286	0.49%	0
FCLAY	Fired clay	Fired clay	1	0.02%	3	0.01%	0
CBM	CBM	Ceramic building material	1	0.02%	20	0.03%	0

fired clay trituration grits, the forms including hook-rimmed, flange-rimmed, triple-ribbed rims, hammer-head types and a paint-decorated hammer-head vessel. A mortarium with a soft white fabric and abundant ferrous-rich inclusions may be a local product. Colour-coated wares made up a small proportion of the assemblage, with forms including a Castor box lid fragment, a flagon neck and beakers. White ware sherds, possibly from a flagon, were present in small quantities, along with a Nene Valley grey ware barbotine-decorated copy of a samian form 36 bowl and grog-gritted native tradition wares. Oxidised wares mostly comprised Derbyshire ware jars (Gillam 1970 type 152; Birss 1985, nos 79–80), which were present in abundance along with smaller quantities of 'proto-Derbyshire' wares. Other oxidised wares included sherds from a beaker. Black Burnished ware 1 type vessels included cavetto-rimmed jars, jars decorated with obtuse lattice, lipped bowls, grooved flange bowls, plain-rimmed dishes and straight-sided bead-and-flange bowls, suggesting a 3rd to 4th-century AD range. Grey wares included grooved rim dishes, jars with bifurcated rims, a cavetto-rimmed jar, jars with out-curved rims, bowls with grooved flanges and straight-sided bead-and-flange bowls. The majority of the grey ware vessels were necked jars or large necked bowls. The similarity in composition of the material from this group with an assemblage recently studied by the authors from Highfields Farm on the outskirts of the modern town of Derby (Rowlandson and Fiske 2021) was interesting and, with the range of Derbyshire wares, proto-Derbyshire wares, Black Burnished ware 1, Black Burnished ware 1 type wares and finer grey wares, it is possible that a proportion of the material from the Over Field site was manufactured north of the River Trent, and that the inhabitants primarily looked towards the settlement and fort at Derby rather than the civilian town of Leicester for provisions.

Pit 90343, which had been cut into the north-east corner of the hollow, produced an assemblage of 98 fresh sherds of pottery (2638 g) that dated the feature to the middle of the 3rd century AD. The group included samian, a base from a colour-coated bag-shaped beaker, Mancetter-Hartshill mortaria, a proto-Derbyshire ware channel-rimmed jar, a grey ware necked bowl and a wide-mouthed bowl. The group was dated by a Black Burnished ware 1 bowl with a grooved flange and a jar with a curved rim and obtuse lattice decoration. The material from this feature would appear similar in date to that recorded from the hollow (90340) that it was cut into.

Examples of dumps of pottery of this size are rare, and it may perhaps be considered that this material was part of a positive feature such as a midden mound which was subsequently levelled by later activities. Studies of site formation at Pompeii and Worcester has shown how significant the reworking of rubbish dumps has been to the formation of site sequences (Dicus 2014; Bryant 2011). Examples of sites in the East Midlands with large dumps of material include Coventry Road, Hinckley, where a considerable proportion of the assemblage was retrieved from hollows on the site (Chapman 2004), but it should be noted that this was only a fairly small assemblage in comparison to that from Over Field. At Warren Farm, Lockington, the excavators also recorded similar deposits interpreted as structures (Thomas 2011b, late Roman structures 2 and 3) or middens (Thomas 2013, 108). Most of the groups recovered from these features at Lockington were relatively small, with an assemblage of 515 sherds from late Roman structure 2 being the only reasonably comparable assemblage, although the pottery from this feature had a higher mean sherd weight of 20.07 g (Johnson 2011). Other large concentrations of stone from the East Midlands, as found in the pottery-rich hollow at Over Field, include the collapsed gable end wall from Carsington

Table 4.18 Over Field: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
A	Amphora	Unclassified form	5	0.10%	1049	1.80%	0
9	Beaker	Unclassified	65	1.30%	259	0.44%	2
9B	Beaker	Globular & high-shouldered	3	0.06%	35	0.06%	16
9F.1	Beaker	Plain rim	7	0.14%	30	0.05%	35
9F.2	Beaker	Plain rim	41	0.82%	126	0.22%	0
9J	Beaker	Biconical, carinated	1	0.02%	11	0.02%	17
BK	Beaker	Unclassified form	4	0.08%	6	0.01%	0
29/37	Bowl	Samian form – see Webster 1996	1	0.02%	1	0.00%	0
31-31R	Bowl	Samian form – see Webster 1996	1	0.02%	15	0.03%	0
37	Bowl	Samian form – see Webster 1996	1	0.02%	1	0.00%	0
5	Bowl	Unclassified	4	0.08%	46	0.08%	9
5A	Bowl	Necked/s-shaped, beaded, rolled, everted	20	0.40%	676	1.16%	152
5A.1	Bowl	Necked/s-shaped, beaded, rolled, everted	4	0.08%	255	0.44%	31
5B	Bowl	Everted, curved body	15	0.30%	155	0.27%	86
5C	Bowl	Vestigial neck	1	0.02%	19	0.03%	7
5D	Bowl	Low carination	1	0.02%	44	0.08%	2
5D.1	Bowl	Low carination	2	0.04%	14	0.02%	3
5H.3	Bowl	Hemispherical	1	0.02%	27	0.05%	8
5H.6	Bowl	Hemispherical	1	0.02%	19	0.03%	8
5O	Bowl	Segmental/shallow as samian 18/31	1	0.02%	19	0.03%	5
5O.2	Bowl	Segmental/shallow as samian 18/31	1	0.02%	16	0.03%	7
6	Bowl/Dish	Unclassified	22	0.44%	525	0.90%	14
BD	Bowl/dish	-	2	0.04%	20	0.03%	0
4A	Bowl/Jar	Everted/recurved	54	1.08%	696	1.19%	303
4B	Bowl/Jar	Necked/beaded, rolled, everted	55	1.10%	1309	2.25%	409
4B.2	Bowl/Jar	Necked/beaded, rolled, everted	15	0.30%	519	0.89%	48
CLSD	Closed	Uncertain closed form – jar, beaker, flagon, etc	32	0.64%	864	1.48%	0
33	Cup	Samian form – see Webster 1996	2	0.04%	10	0.02%	8
31	Dish	Samian form – see Webster 1996	18	0.36%	175	0.30%	16
31R	Dish	Samian form – see Webster 1996	11	0.22%	180	0.31%	55
6A	Dish	Plain rimmed	12	0.24%	130	0.22%	48
6A.1	Dish	Plain rimmed	11	0.22%	140	0.24%	38
6A.3	Dish	Plain rimmed	14	0.28%	152	0.26%	64
6B	Dish	Reeded & ledge-flanged rim	1	0.02%	4	0.01%	4
6C	Dish	Curving flange	3	0.06%	42	0.07%	23
6C.1	Dish	Curving flange	3	0.06%	33	0.06%	2
6D	Dish	Stubby/flanged rim	3	0.06%	74	0.13%	20
6D.1	Dish	Stubby/flanged rim	62	1.24%	708	1.22%	260
6D.2	Dish	Stubby/flanged rim	1	0.02%	7	0.01%	7

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
6E	Dish	Groove-rimmed	4	0.08%	110	0.19%	26
6E.1	Dish	Groove-rimmed	1	0.02%	6	0.01%	2
6E.2	Dish	Groove-rimmed	10	0.20%	176	0.30%	54
6F.1	Dish	Bead-and-flange rimmed with squared flange	8	0.16%	164	0.28%	32
6F.2	Dish	Bead-and-flange rimmed with triangular flange	18	0.36%	334	0.57%	38
6F.3	Dish	Bead-and-flange rimmed with grooved flange	2	0.04%	28	0.05%	4
1	Flagon	Unclassified	8	0.16%	123	0.21%	0
F	Flagon	Unclassified form	1	0.02%	3	0.01%	19
1C.5	Flagons & Jugs	Ring and screw neck	1	0.02%	77	0.13%	100
3	Jar	Unclassified	168	3.35%	2838	4.87%	182
3B	Jar	Bead rim, neckless	4	0.08%	21	0.04%	7
3D.1	Jar	Ledge rim	5	0.10%	38	0.07%	26
3E	Jar	Ledge/everted rim	3	0.06%	54	0.09%	33
3E.1	Jar	Ledged/everted rim	12	0.24%	111	0.19%	14
3F	Jar	Angular/everted rim	6	0.12%	44	0.08%	21
3H	Jar	Curved/cavetto	4	0.08%	80	0.14%	52
3H.1	Jar	Curved/cavetto	16	0.32%	283	0.49%	83
3H.2	Jar	Curved/cavetto	18	0.36%	337	0.58%	62
3H.3	Jar	Curved/cavetto	14	0.28%	230	0.39%	101
3J	Jar	Everted/recurved	5	0.10%	59	0.10%	47
3M	Jar	Necked, bead/rolled/everted tips	12	0.24%	368	0.63%	97
3M.1	Jar	Necked, bead/rolled/everted tips	2	0.04%	54	0.09%	19
3M.2	Jar	Necked, bead/rolled/everted tips	10	0.20%	163	0.28%	131
J	Jar	Unclassified form	33	0.66%	488	0.84%	0
JCUR	Jar	Curved	45	0.90%	1114	1.91%	365
JDBY	Jar	Derbyshire lid-seated – broadly as Gillam type 152	18	0.36%	346	0.59%	97
JDBY1	Jar	Derbyshire lid-seated – as Gillam type 152 with grooved rim	125	2.50%	2902	4.98%	430
JDBY2	Jar	Derbyshire lid-seated – as Birss 1985 fig. 42.80 with un-grooved rim	59	1.18%	1484	2.55%	411
JDBY3	Jar	Derbyshire lid-seated – as Birss 1985 fig. 42.99 with squat rim	13	0.26%	189	0.32%	69
4	Jar/bowl	Unclassified	53	1.06%	1728	2.97%	95
JB	Jar/bowl	Unclassified form	7	0.14%	234	0.40%	0
10A.6	Lid	Castor box lid	1	0.02%	4	0.01%	4
11A	Misc	Strainers & colanders	3	0.06%	45	0.08%	0
M	Mortaria	Unclassified form	58	1.16%	2687	4.61%	0
MFL	Mortaria	Flange-rimmed as Gillam 246	25	0.50%	1381	2.37%	93
MHH	Mortaria	Hammerheads as Gillam 279-84	14	0.28%	508	0.87%	92
MHK	Mortaria	Hook-rimmed as Gillam 237-45	6	0.12%	410	0.70%	45
MTRB	Mortarium	With triple ribbed rim	1	0.02%	95	0.16%	12
-	Unknown	Form uncertain	3714	74.16%	30,517	52.40%	23

(Ling 1992; Ling et al. 1990) and feature F5 at Ockbrook (Palfreyman 2001). Few examples from Lincolnshire spring to mind as larger groups of pottery from rural sites are more typically found within pits or ditches. Stone spreads at sites such as the Roman phases at Dragonby were typically considered to be associated with buildings (May 1996). It is possible that the concentration of pottery retrieved from hollow 90056/90340 represents the build-up of a midden on top of a rubble surface or collapsed building. The build-up of pottery, rubbish and earth onto the stones may have prevented them from being disturbed. The composition of the group would appear to represent a similar type of feature to those recorded from Warren Farm, Lockington, although with a much more substantial assemblage of pottery. Closer comparisons around the relative sizes of the assemblages would need to reflect upon the proportion of the features that were excavated if more detailed conclusions were to be drawn.

Dunne, in her study of the lipid samples from pottery from this feature (below), showed that ruminant carcass fats from cattle or sheep/goats were more prevalent than dairy fats. It appears that, in contrast to the Iron Age vessels sampled, there was a greater proportion of carcass fats from jars. It was noticeable that a higher proportion of the bowls and dishes showed evidence of dairy fats in contrast to the Derbyshire ware jars that were sampled. Dunne has suggested that this may be a feature of how the dish/small bowl type vessels were used for cooking. A single vessel (Fig.4.7.32, ORA EMG19) showed evidence of porcine products, an unusual feature amongst groups recently sampled from the East Midlands (Dunne et al. below; Dunne and Evershed 2018a and b; Dunne et al. 2021, forthcoming). The mortarium in a Midlands fabric appears to have been used to process ruminant carcass products and waxy plant products in a similar fashion to other mortaria studied from Britain. Dunne has indicated that lower levels of dairy material were recovered in contrast to the samples from Highfields Farm, Derby, and has suggested that proximity to the consumers at the fortress sites at Derby may have made dairying more productive for the latter. In conclusion, the 16 samples from hollow 90056/90340 can provide a good comparison for future lipids analysis in the East Midlands region.

Ditches

A relatively small proportion of the assemblage was retrieved from ditch groups, described below.

Ditch 90345 contained two sherds (15 g) of later Iron Age or early Roman date. Ditch 90346 produced 10 sherds (34 g) that could be only broadly dated to the Roman period. Ditch 90347 contained samian and a sherd from a Mancetter-Hartshill mortarium that dated the group to AD 150 or later.

A total of 100 sherds (1.268 kg) were retrieved from main north–south boundary ditch 90348. This group contained Roman pottery ranging in date from early Roman material, such as a grog-gritted channel-rimmed jar, through to a small quantity of late Roman material. The majority of fills contained Derbyshire ware, which suggested that the feature was probably open from the late 2nd to 3rd century AD. A small group from fill 90204 (slot 90205) included a sherd from a colour-coated beaker with rouletted decoration, a Derbyshire ware sherd, a grey ware plain-rimmed dish and a large necked jar or bowl, suggesting that the feature remained open until at least the later 3rd century AD.

A further 97 sherds (1.412 g) were retrieved from curvilinear ditch 90350. The group included sherds from a Derbyshire ware jar (Gillam 1970, type 152), a grey ware necked jar, a basal sherd from a colour-coated beaker and a rim sherd from a large necked grog-gritted storage jar similar to the pink grog-gritted examples from the South Midlands (Booth and Green 1989, nos 11–12). This group suggests activity in the 3rd century AD or later.

Ditch 90351 contained two grey ware sherds that could only be broadly dated to the Roman period. A radiocarbon date was obtained from a human bone recovered from inhumation grave 90178, dug into ditch group 90351, of 370 cal. BC–cal. AD 70 (2110±80 BP: Middle Iron Age to Roman).

Ditch 90353 contained 17 sherds from a single fill that could be dated to the late Roman period, including Derbyshire ware, grey ware and a Black Burnished ware 1 jar with a cavetto rim and burnished lattice decoration.

A second hollow at Over Field, 90355, produced only 36 sherds, including Derbyshire ware, Mancetter-Hartshill mortaria, grey ware, Black Burnished ware 1 and a Dressel 20 amphora sherd. The pottery from this group dated to the later 2nd to 3rd century AD.

Post-Roman features

Small quantities of mixed Roman and modern pottery were retrieved from sections cut across furrows and modern features.

Illustrated vessels

Fig. 4.7

19. MO4, Flanged mortarium of a type commonly dated from the later 2nd to mid-3rd century AD (Darling and Precious 2014, appendix V). Burnt post breakage. Hollow 90056, fill 90058, D14

20. MO4, Mortarium commonly dated from the late 2nd to mid-3rd century AD. Hollow 90056, fill 90058, D15

21. MO, Mortarium with common soft red ferrous-rich inclusions and orange fired clay trituration grits, with a fine white fabric with fine quartz and mica. An atypical fabric for a Mancetter-Hartshill product, perhaps produced elsewhere at a site such as Little Chester (form as Hartley in Dool and Wheeler 1985, fig. 49.10). Not a good match for fabrics with the Leicestershire fabric series (L. Johnson and N. Cooper pers. comm.). Hollow 90056, fill 90058, D13; also hollow 90340, fill 90342, D13. See also Plate 4.2.

22. DBY, Typical Derbyshire ware jar (JDBY1). Hollow 90056, fill 90058, D4

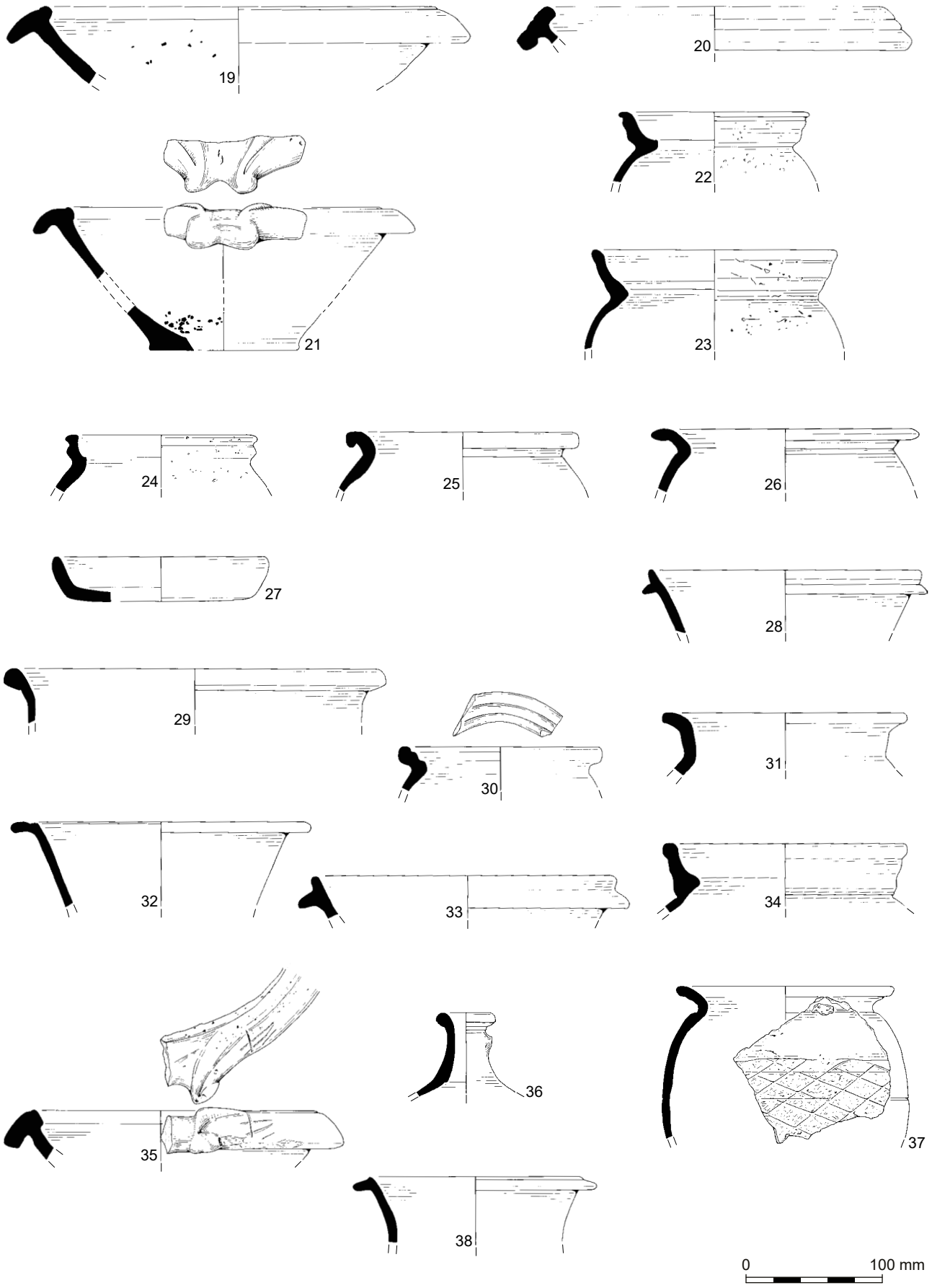

Figure 4.7 Romano-British pottery from Over Field

23. DBY, Derbyshire ware jar (JDBY2). Hollow 90056, fill 90058, D2
24. DBY, Derbyshire ware jar with carbonised deposits (JDBY). Hollow 90056, fill 90058, D3
25. DBY, Jar with a curved rim in a Derbyshire ware fabric (JCUR). Hollow 90056, fill 90058, D1
26. GW1, Bowl in a Black Burnished ware type fabric. Hollow 90056, fill 90058, D7
27. GW1, Plain-rimmed dish in a Black Burnished ware type fabric. Evidence of ruminant dairy lipids. Hollow 90056, fill 90058, D6, ORA EMG 11
28. GW1, Straight-sided bead-and-flanged bowl in a Black Burnished ware type fabric. Evidence of ruminant adipose and dairy lipids. Hollow 90056, fill 90058, D5, ORA EMG09
29. GW5, Large grey ware vessel. Hollow 90056, fill 90058, D8
30. GW6, Grey ware jar with a multi-channelled rim. Hollow 90056, fill 90058, D12
31. GW6, Grey ware necked jar. Evidence of ruminant adipose lipids. Hollow 90056, fill 90058, D11, ORA EMG20
32. GW6, Grey ware bowl with a grooved flange. Evidence from lipids analysis suggests that this vessel was used to process animal products from cattle, sheep, goats and pigs. Hollow 90056, fill 90058, D10, ORA EMG19
33. GW6, Straight-sided bead-and-flanged grey ware bowl with evidence of heating both ruminant dairy and carcass fats. Hollow 90056, fill 90058, D9, EMG18
34. DBY, Derbyshire ware jar (as Gillam 1970, Type 152). Layer 90254, D20
35. MO4, Mortarium rim in a Mancetter-Hartshill type fabric. Scratching near to the spout may represent pre- or post-firing marks, but the condition of the sherd makes it difficult to be certain (Plate 4.3). Hollow 90340, fill 90342, D58
36. WW2, White ware flagon with an expanded top rim. Hollow 90340, fill 90342, D23
37. BB1, Black Burnished ware 1 jar with obtuse burnished lattice decoration and external carbonised cooking residues. Pit 90343, fill 90344, D22
38. BB1, Black Burnished ware 1 bowl with a grooved lip. Pit 90343, fill 90344, D21

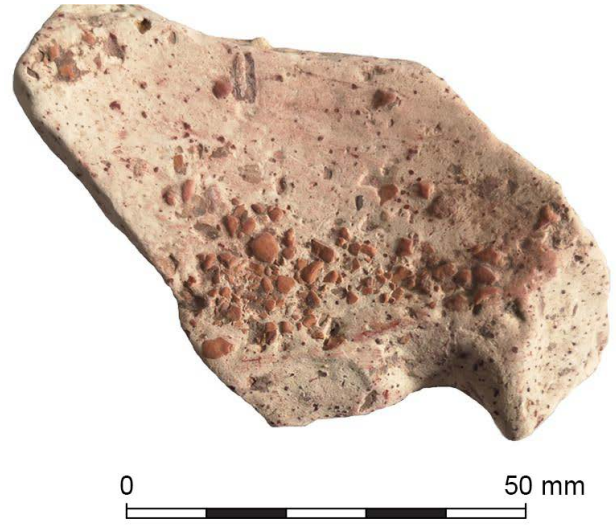

Plate 4.2 a. Mortarium Fig. 4.7.21 showing trituration grits. b. Close up of fabric of mortarium Fig. 4.7.21

Plate 4.3 Mancetter-Hartshill mortarium Fig. 4.7.35 showing scratching near spout

Daleacre

A total of 882 sherds (15.121 kg, 9.22 RE; Tables 4.19 and 4.20) were recovered from Daleacre. Most of the pottery belongs to the Roman period, with the majority of contexts being ditch fills. A number of earlier Roman pottery sherds including from shell-gritted channel-rimmed jars were noted and much of the pottery could be dated from the late 1st to 2nd century AD. Activity on the site appeared to have continued into the 3rd century AD. The presence of Derbyshire ware indicates that some of the features may have received fresh pottery as late as AD 350, with a few ditches receiving pottery in the 4th century AD. Small quantities of handmade rock-gritted sherds suggest that there was only limited Iron Age activity on the site. Medieval and modern pottery was present but scarce, mostly retrieved from furrows or modern features.

The pottery from the Daleacre site provides a good contrast with the Over Field assemblage and represents material from the Late Iron Age to the 4th century AD. Little of the pottery was retrieved from structural features although the volume of

pottery would suggest domestic activity on the site. Small quantities of fine ware and mortaria were recorded, and no amphora sherds were present. The proportion of Derbyshire ware was much lower than from the Over Field assemblage, but this was probably due to a chronological bias, with a much higher proportion of Iron Age to Roman transitional wares being present at Daleacre. Sandy grey wares still made up a high proportion of the assemblage, as might be expected from the small proportion of Iron Age wares recorded.

The pottery by feature

Ditch 80153 provided 166 fragments from a single, large, undecorated shell- and grog-gritted necked storage jar with excoriated internal surfaces (broadly as Leicester form 3M.1). This vessel could be dated to the mid-1st to mid-2nd century AD.

Five sherds were retrieved from ditch 80357, dated to the mid-3rd to 4th century AD by the presence of a Mancetter-Hartshill wall-sided mortarium with painted decoration (Fig. 4.8.40).

Thirty sherds were retrieved from ditch 80358 including samian, Derbyshire ware, a native tradition jar, a white ware mortarium, grey ware and a grey ware rusticated jar, which suggested activity in the 2nd to 3rd century AD. A painted Mancetter-Hartshill mortarium and a colour-coated copy of a samian form 38 bowl date the group to the late 3rd to 4th century AD.

A further 30 sherds were retrieved from ditch 80359. The group included samian, Black Burnished ware, grey ware, Derbyshire ware, a colour-coated paint-decorated beaker, a Mancetter-Hartshill mortarium and a grey ware straight-sided bead-and-flange bowl. This feature appears to have received pottery in the 4th century AD.

An assemblage of 93 sherds came from ditch 80360. The material featured handmade Iron Age tradition sherds, a white ware mortarium with a hooked rim, oxidised wares and native tradition wares, these indicating that the feature was open in the first half of the 2nd century AD if not earlier. A sherd of Derbyshire ware suggests that the feature was not backfilled until sometime after AD 140.

A larger assemblage of 225 sherds was retrieved from ditch 80361. Pottery types present ranged from handmade Iron Age tradition sherds, a white ware mortarium with a hooked rim, a grey ware jar (Fig. 4.8.42), oxidised wares and native tradition wares, these suggesting that the feature was open in the first half of the 2nd century AD or earlier. Derbyshire ware sherds (Fig. 4.8.41) and a Mancetter-Hartshill mortarium with fired clay trituration grits indicate that the feature remained open until the later 2nd or earlier 3rd century AD.

A further 127 sherds were retrieved from ditch 80362, including a samian form 31 bowl, a Mancetter-Hartshill mortarium with fired clay trituration grits, a dish with a grooved rim, a white ware flagon, a large grey ware necked bowl and the base from a colour-coated beaker. Illustrated from this feature were five vessels in the GW1 and GW6 fabrics including small bowls and jars (Fig. 4.8.43–47). This group would suggest a closure date in the late 2nd to early 3rd century AD.

A small group of grey ware and oxidised sherds was retrieved from gully 80363, which could be broadly dated to the Roman period.

Ditch 80364 produced 23 sherds, including some from a straight-sided bead-and-flanged bowl that was dated to the late 3rd to 4th century AD.

Eleven sherds were retrieved from ditch 80365, including handmade Iron Age types and sherds from a Roman grey ware narrow-necked jar.

Ditch 80366 contained 29 sherds including handmade Iron Age types and a transitional carinated and cordon-decorated bowl in a fine oxidised ware (Fig. 4.8.48) that may have dated to the 1st century AD, along with a sherd from a Mancetter-Hartshill mortarium with a triple-ribbed rim that dated to the late 2nd to 3rd century AD.

Finally, 28 sherds were retrieved from ditch 80367, including handmade sherds, samian, sherds from a grey ware jar with an everted rim and nodular rustication, and proto-Derbyshire ware, these suggesting activity in the later 1st to 2nd century AD.

Illustrated vessels

Fig .4.8

39. GT1A, Channel-rimmed jar with surviving external carbonised cooking residues. Lipids analysis found evidence the vessel was heavily used for processing ruminant carcass fats. Waterhole 80350, fill 80352, D46, ORA EMG30
40. MO4, Mancetter-Hartshill mortarium (Darling and Precious 2014, no. 1738). Ditch 80357, cut 80340, fill 80341, D31
41. DBY, Derbyshire ware jar with external carbonised residue. Ditch 80361, cut 80329, fill 80330, D30
42. GW6, Grey ware jar. Ditch 80361, cut 80095, fill 80096, D32
43. GW1, Black Burnished ware type dish with a grooved rim. Ditch 80362, cut 80254, fill 80256, D16
44. GW6, Grey ware narrow-necked jar. Ditch 80362, cut 80254, fill 80256, D19
45. GW6, Grey ware jar. Ditch 80362, cut 80254, fill 80256, D18
46. GW6, Grey ware lipped bowl. Ditch 80362, cut 80254, fill 80255, D29
47. GW6, Grey ware lipped bowl. Ditch 80362, cut 80254, fill 80256, D17
48. OW2, Oxidised necked vessel. Ditch 80366, cut 80098, fill 80099, D33

Table 4.19 Daleacre: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAMCG	Samian	Central Gaulish	12	1.36%	109	0.72%	12
SAMRZ	Samian	Rheinzabern samian ware	3	0.34%	27	0.18%	10
MO12	Mortaria	Mancetter-Hartshill, sandy with quartz & mixed trits	7	0.79%	80	0.53%	11
MO18	Mortaria	Mancetter 'pipe clay' fabric with mixed trits	1	0.11%	28	0.19%	0
MO4	Mortaria	Fine Mancetter fabric with fine-grained black and dark red argillaceous trits	8	0.91%	510	3.37%	43
MO6	Mortaria	Nene Valley fabric with slag trits	1	0.11%	12	0.08%	0
C12CG	Fine	'Rhenish' wares – Central Gaulish	1	0.11%	1	0.01%	0
C2	Fine	Colour-coated with 'white' fabrics	7	0.79%	78	0.52%	14
DBY	Oxidised	Derbyshire ware; Belper area	40	4.54%	822	5.44%	47
OT1	Oxidised	Oxidised transitional ware – coarse	5	0.57%	45	0.30%	0
OW2	Oxidised	Midlands oxid. Misc fine and fine sandy fabrics	11	1.25%	69	0.46%	22
OW3	Oxidised	Sources incl Verulamium & Midlands. Coarse sandy	3	0.34%	16	0.11%	0
OW5	Oxidised	Medium sandy oxidised, may incl unrecognised medieval	34	3.85%	316	2.09%	12
WS4	Oxidised	Sources incl Verulamium. Coarse sandy, cf OW3	1	0.11%	4	0.03%	0
WW2	Oxidised	Fine white 'pipe clay' fabric includes Mancetter-Hartshill	17	1.93%	111	0.73%	0
BB1	Reduced	Black burnished 1, unspecified	5	0.57%	31	0.21%	2
GW1	Reduced	BB1 type copies	25	2.83%	423	2.80%	49
GW3	Reduced	Fine sandy grey ware	3	0.34%	16	0.11%	0
GW4	Reduced	Light firing types as 'Nene Valley grey ware'	2	0.23%	9	0.06%	0
GW5	Reduced	Medium sandy grey ware	55	6.24%	705	4.66%	89
GW6	Reduced	Moderately coarse wheel-made grey ware	270	30.61%	5039	33.32%	445
GW9	Reduced	Very coarse grey ware	6	0.68%	116	0.77%	14
RT1	Sandy wares	Misc reduced transitional wares – coarse	58	6.58%	482	3.19%	43
RT2	Sandy wares	Misc reduced transitional wares – fine	5	0.57%	13	0.09%	0
CG	Shell gritted	Misc shell gritted	2	0.23%	15	0.10%	0
CG1	Shell	Shell gritted, coarse frequent–abundant	4	0.45%	12	0.08%	0
CG1A	Shell	Shell gritted, low quartz, LIA–ERB	4	0.45%	315	2.08%	4
S1	Shell	Moderate–very common shell or platey voids	3	0.34%	12	0.08%	0
G1	Grog	Shelly & sandy fabric with sparse rounded grog	18	2.04%	78	0.52%	0
G2	Grog	Sandy fabric with rare, rounded grog	23	2.61%	135	0.89%	2
GT1A	Grog	Transitional fabric	2	0.23%	55	0.36%	18
MG	Mixed grit	Misc mixed grit	1	0.11%	2	0.01%	0
MG1	Mixed grit	Coarse	150	17.01%	4279	28.30%	74
MG1A	Mixed grit	Coarse	1	0.11%	183	1.21%	0
Q1	Quartz	Quartz sand common–abundant	17	1.93%	134	0.89%	0
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5– 5 mm)	68	7.71%	781	5.17%	11
R2	Rock gritted	Quartz sand (common–abundant) & rare granitic rock	6	0.68%	33	0.22%	0
CBM	CBM	Ceramic building material	3	0.34%	25	0.17%	0

Table 4.20 Daleacre: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
9	Beaker	Unclassified	26	2.95%	111	0.73%	28
9J.2	Beaker	Biconical, carinated	7	0.79%	55	0.36%	18
36	Bowl	Samian form – see Webster 1996	1	0.11%	12	0.08%	0
5A.2	Bowl	Necked/s-shaped, beaded, rolled, everted	1	0.11%	19	0.13%	5
5B	Bowl	Everted, curved body	9	1.02%	342	2.26%	57
5C	Bowl	Vestigial neck	3	0.34%	41	0.27%	17
5D.1	Bowl	Low carination	3	0.34%	26	0.17%	7
5G	Bowl	Curved or bulbous	2	0.23%	21	0.14%	0
5L	Bowl	Hemispherical or segmental with flange	1	0.11%	39	0.26%	14
5O	Bowl	Segmental/shallow as samian 18/31	1	0.11%	7	0.05%	4
6	Bowl/Dish	Unclassified	7	0.79%	117	0.77%	2
4B.2	Bowl/Jar	Necked/beaded, rolled, everted	16	1.81%	273	1.81%	55
31	Dish	Samian form – see Webster 1996	3	0.34%	27	0.18%	17
31R	Dish	Samian form – see Webster 1996	5	0.57%	83	0.55%	5
6A	Dish	Plain rimmed	4	0.45%	209	1.38%	33
6A.1	Dish	Plain rimmed	3	0.34%	76	0.50%	20
6D	Dish	Stubby/flanged rim	18	2.04%	492	3.25%	76
6D.1	Dish	Stubby/flanged rim	6	0.68%	210	1.39%	43
6E.2	Dish	Groove-rimmed	3	0.34%	55	0.36%	12
6F.1	Dish	Bead-and-flange rimmed with squared flange	10	1.13%	122	0.81%	28
1	Flagon	Unclassified	9	1.02%	62	0.41%	0
2A.2	Jar	Narrow necked, everted	5	0.57%	74	0.49%	32
3	Jar	Unclassified	32	3.63%	1135	7.51%	13
3C	Jar	Bead rim, carinated shoulder	1	0.11%	51	0.34%	27
3E.1	Jar	Ledged/everted rim	2	0.23%	94	0.62%	15
3F	Jar	Angular/everted rim	4	0.45%	34	0.22%	21
3H	Jar	Curved/cavetto	1	0.11%	7	0.05%	2
3H.2	Jar	Curved/cavetto	5	0.57%	63	0.42%	16
3M	Jar	Necked, bead/rolled/everted tips	5	0.57%	99	0.65%	11
3M.1	Jar	Necked, bead/rolled/everted tips	179	20.29%	4473	29.58%	147
3M.2	Jar	Necked, bead/rolled/everted tips	9	1.02%	920	6.08%	57
J	Jar	Unclassified form	37	4.20%	369	2.44%	13
JDBY	Jar	Derbyshire lid-seated – broadly as Gillam type 152	2	0.23%	83	0.55%	10
JDBY2	Jar	Derbyshire lid-seated – as Birss 1985 fig. 42.80 with un-grooved rim	4	0.45%	179	1.18%	30
4	Jar/bowl	Unclassified	6	0.68%	99	0.65%	23
M	Mortaria	Unclassified form	5	0.57%	195	1.29%	0
MHH	Mortaria	Hammerheads as Gillam 279–84	4	0.45%	244	1.61%	27
MHK	Mortaria	Hook-rimmed as Gillam 237–45	7	0.79%	80	0.53%	11
MTRB	Mortarium	With triple ribbed rim	1	0.11%	111	0.73%	16
7E	Platter	Misc upright walls/mouldings	1	0.11%	12	0.08%	4
-	Unknown	Form uncertain	434	49.21%	4400	29.10%	6

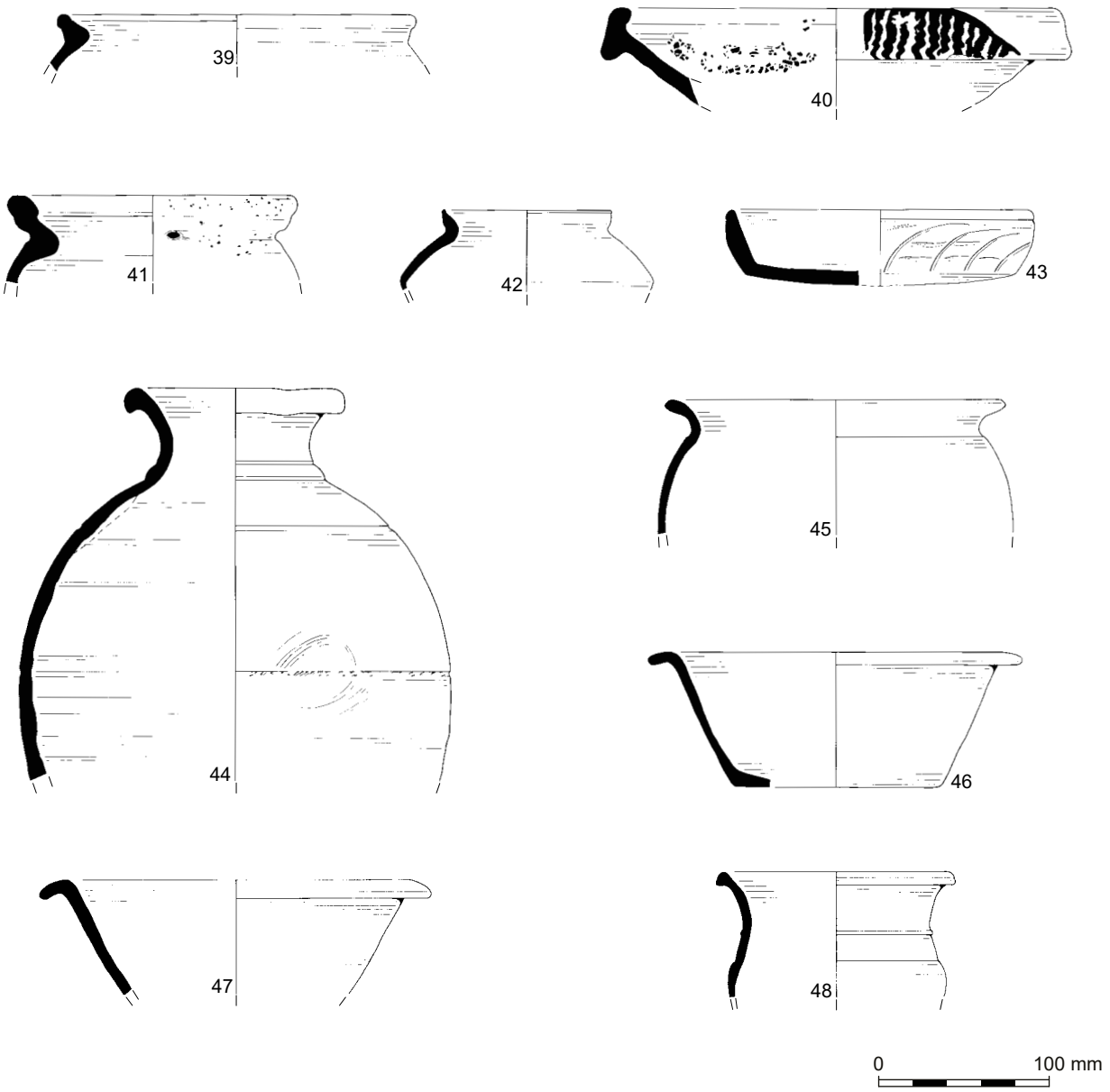

Figure 4.8 Romano-British pottery from Daleacre

Seven Geaves

The final site produced 902 sherds (12.966 kg, 10.18 RE; Tables 4.21 and 4.22), recovered from 101 contexts; the average sherd weight was 13.88 g. The site consisted of an area of rectilinear fields and associated features dating to the Romano-British period; only a small quantity of handmade pottery was noted. Small amounts of post-medieval to modern pottery were also present. Most of the pottery was retrieved from ditches, with smaller quantities from pits and other features. In all, 92 contexts contained fewer than 25 sherds, but more sizable groups were retrieved from some of the pits and ditches, particularly those containing mudstone rubble. A few groups contained handmade sherds of Iron Age tradition ware, but there was only limited evidence of Iron Age and early Roman activity on the site.

The pottery by feature

Groups with Iron Age to early Romano-British pottery

Ditch 70421 contained a sherd from a channel-rimmed jar that could date to the 1st to earlier 2nd century AD. An Iron Age Scored ware sherd was retrieved from gully 70370, but was found with a Roman sherd. Ditch 70622 contained a small group of handmade sherds, probably of Iron Age date, along with post-Roman glazed sherds that were certainly intrusive. Ditch 70611 included a small group of handmade Iron Age sherds from two contexts, including a jar with an in-turned rim.

A few other small sherds of handmade pottery were also present, but were associated with Roman pottery. The limited quantity of Iron Age tradition or early Roman pottery from this site would suggest that the first ditch system may have been established in the Iron Age period,

although these sherds may have been residual and included in a later feature established in the 2nd century AD, particularly as the transitional Iron Age tradition pottery was present in only small quantities (eg, Fig. 4.9.51). On this basis it might be suggested that this group of ditches was marginal to any settlement during the Iron Age to early Roman period. This assertion should be viewed with caution, however, as many Iron Age settlements in this area produce only limited pottery assemblages and it appears that pottery became more commonly used on rural sites from the Antonine period onwards, when assemblages are both more common and voluminous (eg, Rowlandson and Fiske 2021; Rowlandson 2015, Clifton Site 28; Johnson 2011).

Mid- to late Romano-British features

Most of the groups of pottery could be dated to the mid- to late Roman period, from the time of the emperor Hadrian onwards, and it would seem that much of the ditch system was established in the 2nd century AD (see above). Although earlier material was present, it was retrieved from features containing later wares. The presence of Derbyshire ware in a number of groups is a key indicator of date. At Derby and in proximity to the kiln sites this distinctive fabric appears to have first appeared in the Antonine period but was most common in the 3rd century AD. Groups of pottery from stone-rich ditches in the south of the site suggest activity in the 3rd to 4th century AD. Seven Geaves had a relatively high proportion of Derbyshire ware for a site in the modern county of Leicestershire, but the group is similar in composition to the assemblage from Warren Farm, Lockington, and the proximity to Derbyshire may explain why this ware was well represented (Johnson 2011).

Ditch 70601 contained a small quantity of pottery from two contexts, including Derbyshire ware dating the group to AD 140–350.

Ditch 70602 also contained little pottery, but included a samian vessel showing signs of repair, Derbyshire ware and Black Burnished ware 1, which date the group to sometime after AD 140.

Ditch 70603 produced a medium-sized group of pottery including excoriated scraps of samian, a base from a large colour-coated beaker, Derbyshire ware, grey ware and a fragment from a Mancetter-Hartshill mortarium with a hammer-head rim that dates the group to the mid-3rd century AD or later. An intrusive modern glazed sherd also came from the feature.

Ditch 70604 contained a medium-sized group of Romano-British pottery, from eight contexts, ranging in date from the 1st to 4th centuries AD. Most of the groups could be dated to after AD 150 by the presence of Derbyshire ware and Mancetter-Hartshill mortaria sherds with fired clay trituration grits. A small number of sherds from fills 70048 and 70248 included a channel-rimmed jar (Fig. 4.9.51), fine oxidised ware (Fig. 4.9.49) and samian likely to date to the later 1st to earlier 2nd century AD. A further grey ware jar from this feature has also been illustrated (Fig. 4.9.50). A sherd from a colour-coated slit-folded beaker from fill 70250 would suggest the feature remained open until the 4th century AD.

Ditch 70605 produced a medium-sized group of Romano-British pottery from 12 contexts. Small numbers of handmade sherds came from fill 70191 and mixed-gritted wares from fill 70193, which may have dated to the 1st century AD. The majority of the contexts could be dated to after AD 140 because of the presence of Derbyshire ware and colour-coated wares. A sherd from a Mancetter-Hartshill mortarium with painted decoration suggested that this feature remained open until at least the middle of the 3rd century AD.

Ditch 70606 contained five grey ware sherds, from two fills, that could be only broadly dated to the Romano-British period.

Ditch 70607 included a single abraded sherd from a decorated samian bowl. Ditch 70609 included a small group of Romano-British pottery, from four contexts, including grey ware, shell-gritted sherds and Derbyshire ware that dated the group to after AD 140. Ditch 70610 included a small group of grey ware from two contexts probably dating to the 3rd to 4th century AD.

Ditch 70615 contained a range of pottery, mostly dating to the 2nd century AD, including samian ware and 'Little Chester' type grey wares with finer fabrics. The most notable vessel was a necked bowl (Fig. 4.9.52). The presence of Derbyshire ware suggested that the feature remained open until sometime after AD 140.

Ditch 70616 produced a small group of pottery, from two contexts, which dated to the mid-2nd century AD or later because of the presence of samian and a Black Burnished ware 1 lipped bowl.

Ditch 70617 also contained a small quantity of Romano-British pottery, mostly consisting of colour-coated sherds from a bowl or dish likely to date to the 3rd century AD or later.

Ditch 70619 produced two small Romano-British grey ware sherds from a jar.

Ditch 70621 also contained a small group of Romano-British sherds from a single context.

Ditch 70626 contained a medium-sized assemblage including grey ware, Derbyshire ware, Black Burnished ware 1 and sherds from a grey ware straight-sided bead-and-flange bowl, which date the group to the late 3rd to 4th century AD.

Stone-rich ditch 70627 contained pottery dating to after AD 150, including grey ware, Derbyshire ware and a Mancetter-Hartshill mortarium sherd.

Another stone-rich ditch, 70629, included several small assemblages that probably all date to at least the 3rd century AD, with diagnostic material suggesting a latest date of late 3rd to early 4th century. The range of pottery present included sherds from colour-coated bowls, Derbyshire ware, Black Burnished ware 1, shell-gritted sherds, a Mancetter-Hartshill mortarium with a hammer-head rim, and a grey ware straight-sided bead-and-flanged bowl.

A final stone-rich ditch, 70630, also appears to have dated to the late 3rd to 4th century AD, and included sherds from

Table 4.21 Seven Geaves: fabrics summary

Fabric code	*Fabric group*	*Fabric details*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
SAMCG	Samian	Central Gaulish	8	0.89%	114	0.88%	22
SAMRZ	Samian	Rheinzabern samian ware	1	0.11%	3	0.02%	0
SAMSG	Samian	South Gaulish	2	0.22%	31	0.24%	0
SAMTR?	Samian	Trier samian (Trier I and Trier II)	1	0.11%	2	0.02%	0
MO22	Mortaria	Swanpool fabric	1	0.11%	18	0.14%	2
MO4	Mortaria	Fine Mancetter fabric with fine-grained black and dark red argillaceous trits	29	3.22%	1370	10.57%	122
MO5	Mortaria	Lower Nene Valley colour-coated	1	0.11%	5	0.04%	0
C11	Fine	Dark oxidised, dark reduced slip	1	0.11%	64	0.49%	0
C2	Fine	Colour-coated with 'white' fabrics	50	5.54%	432	3.33%	60
C3	Fine	Colour-coated with a light oxidised core	1	0.11%	1	0.01%	0
C7	Fine	Dark oxidised fine sandy fabric, reduced slip	1	0.11%	13	0.10%	0
DBY	Oxidised	Derbyshire ware; Belper area	82	9.09%	1293	9.97%	63
OT1	Oxidised	Oxidised transitional ware – coarse	1	0.11%	3	0.02%	0
OW2	Oxidised	Midlands oxid. Misc fine and fine sandy fabrics	16	1.77%	88	0.68%	47
OW3	Oxidised	Sources incl Verulamium & Midlands. Coarse sandy	10	1.11%	50	0.39%	0
OW5	Oxidised	Medium sandy oxidised, may incl unrecognised medieval	11	1.22%	93	0.72%	16
WW	Oxidised	White ware, unspecified	2	0.22%	13	0.10%	0
BB1	Reduced	Black burnished 1, unspecified	7	0.78%	67	0.52%	6
GW1	Reduced	BB1 type copies	80	8.87%	442	3.41%	26
GW5	Reduced	Medium sandy grey ware	110	12.20%	1279	9.86%	120
GW6	Reduced	Moderately coarse wheel-made grey ware	373	41.35%	6803	52.47%	465
GW9	Reduced	Very coarse grey ware	1	0.11%	13	0.10%	0
RT1	Sandy wares	Misc reduced transitional wares – coarse	33	3.66%	237	1.83%	0
RT2	Sandy wares	Misc reduced transitional wares – fine	1	0.11%	8	0.06%	0
CG	Shell gritted	Misc shell gritted	9	1.00%	60	0.46%	9
CG1	Shell	Shell gritted, coarse frequent–abundant	13	1.44%	74	0.57%	26
CG1A	Shell	Shell gritted, low quartz, LIA–ERB	2	0.22%	34	0.26%	8
CG1B	Shell	Shell gritted, low quartz, Late Roman	16	1.77%	74	0.57%	17
CG3B	Shell	Greetham type, wheel-made	1	0.11%	2	0.02%	0
G2	Grog	Sandy fabric with rare rounded grog	1	0.11%	22	0.17%	0
GT	Grog	Coarse	1	0.11%	2	0.02%	0
GT1	Grog	Coarse- 'Belgic' influence	3	0.33%	31	0.24%	0
MG	Mixed grit	Misc mixed grit	1	0.11%	14	0.11%	0
MG1	Mixed grit	Coarse	13	1.44%	54	0.42%	2
Q1	Quartz	Quartz sand common–abundant	13	1.44%	107	0.83%	7
Q4	Quartz	As Q1 with rare to sparse larger quartz (0.5-5mm)	1	0.11%	3	0.02%	0
FCLAY	Fired clay	Fired clay	1	0.11%	1	0.01%	0
CBM	CBM	Ceramic building material	4	0.44%	46	0.35%	0

Table 4.22 Seven Geaves: forms summary

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
9	Beaker	Unclassified	36	3.99%	197	1.52%	11
9B	Beaker	Globular & high-shouldered	1	0.11%	2	0.02%	7
9C.3	Beaker	Medium & tall, straight & curved, everted	2	0.22%	5	0.04%	9
9F.2	Beaker	Plain rim	1	0.11%	3	0.02%	0
9J	Beaker	Biconical, carinated	10	1.11%	145	1.12%	54
36	Bowl	Samian form – see Webster 1996	1	0.11%	2	0.02%	0
36?	Bowl	Samian form – see Webster 1996	1	0.11%	2	0.02%	5
37	Bowl	Samian form – see Webster 1996	3	0.33%	70	0.54%	15
5	Bowl	Unclassified	6	0.67%	84	0.65%	0
5A.1	Bowl	Necked/s-shaped, beaded, rolled, everted	7	0.78%	256	1.97%	42
5A.2	Bowl	Necked/s-shaped, beaded, rolled, everted	2	0.22%	67	0.52%	12
5B	Bowl	Everted, curved body	1	0.11%	31	0.24%	6
5L	Bowl	Hemispherical or segmental with flange	10	1.11%	163	1.26%	21
5O	Bowl	Segmental/shallow as samian 18/31	4	0.44%	17	0.13%	2
6	Bowl/Dish	Unclassified	8	0.89%	190	1.47%	27
4A	Bowl/Jar	Everted/recurved	7	0.78%	49	0.38%	11
4B	Bowl/Jar	Necked/beaded, rolled, everted	1	0.11%	16	0.12%	11
4B.2	Bowl/Jar	Necked/beaded, rolled, everted	1	0.11%	42	0.32%	9
31	Dish	Samian form – see Webster 1996	2	0.22%	41	0.32%	0
6A.1	Dish	Plain rimmed	3	0.33%	35	0.27%	10
6D.1	Dish	Stubby/flanged rim	9	1.00%	111	0.86%	27
6F.1	Dish	Bead-and-flange rimmed with squared flange	15	1.66%	525	4.05%	79
6F.3	Dish	Bead-and-flange rimmed with grooved flange	5	0.55%	63	0.49%	32
6F.4	Dish	Bead-and flange-rimmed with rounded flange	1	0.11%	93	0.72%	11
D	Dish	Unclassified form	1	0.11%	29	0.22%	0
2A	Flask	Everted rims, not folded	3	0.33%	16	0.12%	22
2A.2	Jar	Narrow necked, everted	5	0.55%	139	1.07%	6
3	Jar	Unclassified	57	6.32%	1595	12.30%	34
3D	Jar	Ledge rim	2	0.22%	13	0.10%	14
3D.1	Jar	Ledge rim	9	1.00%	58	0.45%	12
3E	Jar	Ledge/everted rim	1	0.11%	43	0.33%	13
3E.1	Jar	Ledge/everted rim	2	0.22%	34	0.26%	8
3H.1	Jar	Curved/cavetto	2	0.22%	46	0.35%	44
3H.2	Jar	Curved/cavetto	17	1.88%	219	1.69%	77
3M	Jar	Necked, bead/rolled/everted tips	4	0.44%	293	2.26%	29
3M.1	Jar	Necked, bead/rolled/everted tips	14	1.55%	65	0.50%	17
3M.2	Jar	Necked, bead/rolled/everted tips	10	1.11%	282	2.17%	79
J	Jar	Unclassified form	2	0.22%	11	0.08%	0
JCUR	Jar	Curved	1	0.11%	6	0.05%	3

Form	*Form type*	*Form description*	*Sherd*	*Sherd %*	*Weight (g)*	*Weight %*	*Total RE %*
JDBY	Jar	Derbyshire lid-seated – broadly as Gillam type 152	2	0.22%	51	0.39%	4
JDBY1	Jar	Derbyshire lid-seated – as Gillam type 152 with grooved rim	4	0.44%	98	0.76%	40
JDBY2	Jar	Derbyshire lid-seated – as Birss 1985 fig. 42.80 with un-grooved rim	8	0.89%	186	1.43%	14
JIR	Jar	In-turned rim	10	1.11%	97	0.75%	7
4	Jar/bowl	Unclassified	14	1.55%	272	2.10%	60
M	Mortaria	Unclassified form	13	1.44%	311	2.40%	2
MFL	Mortaria	Flange-rimmed as Gillam 246	4	0.44%	232	1.79%	25
MHH	Mortaria	Hammerheads as Gillam 279–84	8	0.89%	447	3.45%	48
MHK	Mortaria	Hook-rimmed as Gillam 237–45	1	0.11%	167	1.29%	17
MWS	Mortaria	Wall sided as Gillam 287–9	2	0.22%	138	1.06%	18
MTRB	Mortarium	With triple ribbed rim	2	0.22%	93	0.72%	14
7C.1	Platter	Flaring or flanged rim	3	0.33%	25	0.19%	0
-	Unknown	Form uncertain	564	62.53%	5791	44.66%	10

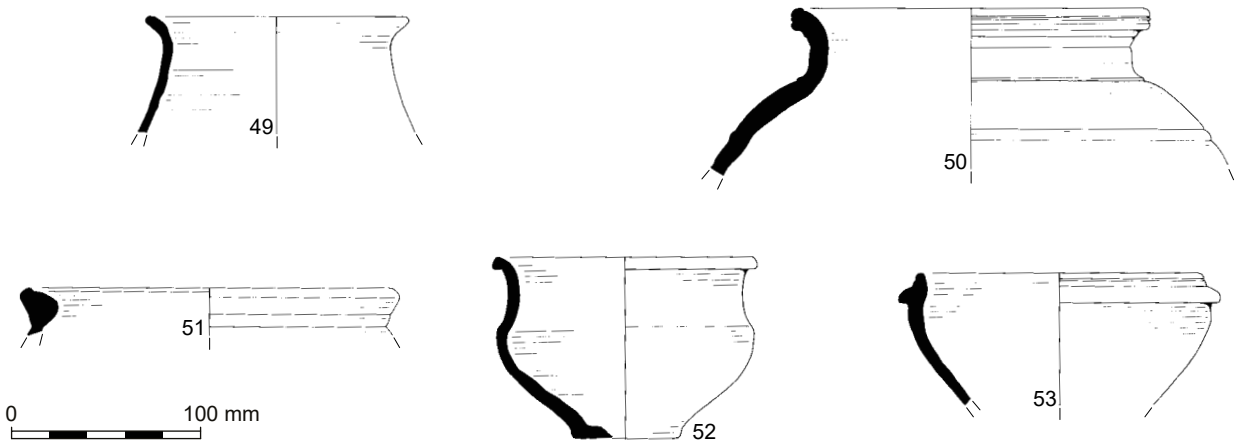

Figure 4.9 Romano-British pottery from Seven Geaves

colour-coated beakers, a Black Burnished ware 1 jar, shell-gritted ware, a Mancetter-Hartshill mortarium and a grey ware straight-sided bead-and-flanged bowl. A radiocarbon date of cal. AD 240–410 (1736±32 BP: Romano-British to early Saxon) was obtained from an animal bone recovered from cut 70508 within this feature.

The largest group of pottery from Seven Geaves (239 sherds) was retrieved from pit group 70631. The material from this feature was relatively fresh and all seven of the contexts contained pottery dating to at least the 3rd century AD, with the majority of the pottery from the group dating to the later 3rd to 4th century AD. This assemblage contained colour-coated wares, including a straight-sided bead-and-flanged bowl and a copy of a samian form 38 bowl. Samian, Derbyshire ware, Black Burnished ware 1 and a Mancetter-Hartshill mortarium with a hammer-head rim were also present. Grey wares included typical late Romano-British straight-sided bead-and-flanged bowls and a plain-rimmed dish; a bowl with an in-turned bead-and-flanged rim (Fig. 4.9.53) may have been an early Romano-British or perhaps a 4th-century AD type.

Two small discrete features produced good assemblages of Romano-British pottery. Posthole 70585 could be dated to AD 150+ on the basis of sherds from a Mancetter-Hartshill mortarium with fired clay trituration grits. Pit 70350 contained a medium-sized group of pottery dating to the mid-3rd century AD or later, including colour-coated sherds, Mancetter-Hartshill mortaria, Derbyshire ware and a jar with a cavetto rim.

Illustrated vessels

Fig. 4.9

49. OW2, Oxidised ware necked vessel. Ditch 70604, cut 70047, fill 70048, D26
50. GW6, Large grey ware necked jar. Similar vessels are known from Mancetter-Hartshill and (Hartley and WAAS 2020, C42.1–3). Ditch 70604, cut 70084, fill 70086, D24

51. CG1A, Shell-gritted channel-rimmed jar. A common type in the East Midlands; this example probably dates to the early Romano-British period (Friendship-Taylor 1999). Ditch 70604, cut 70047, fill 70048, D25

52. GW6, Small necked grey ware vessel, a ubiquitous type in the East Midlands. Similar vessels are known from Leicester and Mancetter-Hartshill (eg, Marsden 2004, illus. 30.4; Hartley and WAAS 2020, C54.1). Ditch 70615, cut 70589, fill 70590, D27

53. GW6, Grey ware bowl. Although examples of broadly similar bowls, but with a more pronounced in-turned rim, are known from kilns operating in the 4th century AD at sites such as Swanpool, Lincoln (Webster and Booth 1947), an early Roman date similar to an example illustrated by Kenyon (1948, fig. 22.5) from Leicester would appear more likely. Pit group 70631, pit 70520, fill 70521, D28

Discussion

Iron Age pottery

The range of pottery from this project fitted with other assemblages from the local area and the wider region (Johnson 2011; Cooper 2006; Knight 2002). Small groups were retrieved from pit alignments, ring gullies, pits and ditches. The organic residue analysis undertaken (see Dunne et al. below) suggests that the inhabitants of the sites used their handmade jars for processing both carcass and dairy products from cattle and sheep/goat ruminants. Carbonised residues from cooking were recorded on a number of vessels both on the outside shoulders and internally. Some success was achieved with radiocarbon dating the carbonised residues (eg, Horsecroft) which, if more commonly used in the future, has the potential to refine site chronology, in particular the final date that a vessel was used for cooking.

Earlier 1st millennium BC

Evidence for pottery dating to the first half of the 1st millennium BC was limited, with perhaps the best examples from the King St Plantation site, and a small number of featureless fragments from a few of the other sites. This is unsurprising as known sites of this period are generally rare in Leicestershire and the broader East Midlands area. This is in part due to the relatively low levels of pottery that appear to have been in use during this period (Knight and Howard 2004, 86–7); the fragility of such vessels resulting in their poor representation amongst fieldwalked assemblages (eg, Clay 2002, 114–5); the tendency for settlement sites of this period to be unenclosed and thus having fewer negative features to preserve pottery assemblages (and also less visible to archaeological prospection techniques); depositional practices such as middening and deposition in pits, resulting in fewer datable features (Brudenell 2008); and the difficulty in recognising vessels of this period in contrast to later Middle Iron Age types (see discussion above). Some exceptional riverine sites from Lincolnshire have well-preserved groups of this period because of the nature of their deposition (Allen 2009; Elsdon and Knight 2003).

Many key examples of sites of this period have been found during large-scale excavation in advance of mineral extraction. An example from Leicestershire is the published site from Hamilton (Cooper, in Beamish and Shore 2008), where small quantities of pottery of this period were found in association with a settlement and 'crowding-alley', perhaps similar to the King St Plantation site. Cooper (2006) has highlighted other sites including Swarkestone Lowes, Castle Donnington and Ratcliffe-on-Soar in the vicinity of East Midlands Gateway, and sites further afield such as Catholme, Billingborough and Gonalston (see Knight and Howard 2004, 86–7 and Knight 2002 for references). However, without extensive radiocarbon dating, drawing out earlier Iron Age assemblages with certainty from amongst featureless groups of small body sherds remains challenging. The absence of any Early Iron Age radiocarbon dates from amongst the nearly 30 submissions from the current project may suggest that there was not much activity of this date within the development area to be 'stumbled upon' in this way (Daniel pers. comm.).

Earlier La Tène

This ceramic phase is represented by Scored ware on a number of the sites (Mill Close, Great Dampits, Field Farm, Horsecroft and Longfield). Three vessels were dated from their carbonised residues; two were found to be Middle Iron Age and one Scored ware vessel from the Horsecroft site was dated to 150 cal. BC–cal. AD 60 (2038±24 BP: Middle Iron Age to Roman). The majority of the scientific dates associated with Scored ware are Middle Iron Age, but Knight (2002, 134; 2010, 265–6) has highlighted examples that may have been use in the Late Iron Age. It is possible that the continued use of Scored ware surface treatment on handmade jars into the Late Iron Age was a sub-regional phenomenon in the East Midlands and not applicable, for example, in parts of Lincolnshire that moved to more developed styles of pottery. The earlier part of the date range of the Horsecroft vessel may still fit a Middle Iron Age date, but raises the possibility of the vessel in question being in use in the later Iron Age, perhaps into the 1st century AD.

The type of carbonised material selected for radiocarbon dating has the potential to confuse this discussion where intrusive or residual carbonised material (not adhering to the vessels themselves) may substantially differ from the date anticipated for known styles of pottery. This has been exacerbated

in some cases by the error ranges associated with the various scientific techniques (Knight 2002, 131–4; Knight 2010, 265). The direct dating of vessels from the East Midlands Gateway project marks a valuable addition to the growing number of scientific dates from the region, and with further dating of carbonised residues from Scored ware vessels it may be possible to better understand the last time the vessel was used for cooking, rather than the date of other material that it was found stratified with, which may or may not be contemporary with the use of the vessel. This approach might help to provide greater clarity on the date of Scored ware vessels themselves, helping to address the local research priorities (Knight 2002; Willis 2006; Knight et al. 2012, Research Objective 4B). As a considerable volume of Scored ware sherds with carbonised residues are available in museums in the region, a project to subject these vessels to a broader study might serve to address questions about the absolute date of pottery traditions and perhaps also change perceptions of settlement histories more broadly (Hamilton 2010; Hamilton et al. 2015).

Late La Tène

Very little diagnostic Late La Tène III type pottery was recorded from the project. While a number of 'mixed-gritted' transitional ware sherds, probably from the later 1st century AD, were present, it would appear that there were few groups of the diagnostic wares as were seen at sites such as Leicester (eg, Kenyon 1948; Jarvis 1986). Vessels recorded that were likely to be of this date included a large necked storage jar with combed decoration from Longfield and perhaps fragmentary burnished vessels from Horsecroft (ditch 38345 and pen 38346).

In the area of modern-day Lincolnshire, the thin-walled developed vessels of Late La Tène II/III style appear at major settlement foci such as Sleaford, Ancaster and Dragonby (summarised in Knight 2002; Elsdon 1996b; 1997) and also at more basic rural settlements where a range of necked jars and bowls can be found (Rowlandson 2017). Modern Northamptonshire appears to also have a greater number of sites with finds of these finely potted Late Iron Age type vessels (discussed in Knight 2002; 1984). However, sites with these types of wares are rarely recorded to the north-west of the River Trent and were not well represented in the current project. Although a few vessels from this project may fit into this stylistic period, there was little diagnostic material to suggest activity in the first half of the 1st century AD. It may be that the more conservative rural inhabitants of this part of the East Midlands had little access or need for pottery vessels in these new developed styles. It may also be that late Iron Age vessels amongst the assemblage remained relatively undiagnostic and unremarkable. Possibly, the change to a more consistent use of a suite of specialist ceramic vessels occurred only in the Roman period. The scientific dating of material, discussed above, produced little evidence of activity that could be dated to the 1st century BC or earlier 1st century AD, and many of the channel-rimmed jar type forms were retrieved in association with Roman pottery.

Pottery fabrics

The pottery recorded during the project appeared to exhibit a range of inclusions, from quartz sand-gritted wares (Q1), coarse quartz/quartzite-gritted wares (Q4) to grog/mudstone-gritted wares (G2), which would all appear likely to have been produced locally. Local potters could have utilised sand and gravel deposits; areas of Triassic sandstone, siltstone and mudstones all outcrop in the area and may have provided the tempering material. As with the work at Warren Farm, Lockington (Thomas 2013; Johnson 2011), there did not appear to be a correlation between the fabrics used and the specific forms or surface treatments employed.

The rock-gritted wares, including granitic/igneous rocks (R1 and R2), seem likely to have used rock fragments derived from the Charnwood Forest (Knight et al. 2003; Knight 1992). It has been considered likely that much of the pottery in this fabric group was produced near to the Charnwood area, and Johnson (2011, 71–4), in a study of the relative proportions of fabric types from sites from Leicestershire and Nottinghamshire, has shown the correlation between proximity to the Charnwood Forest outcrops of granitic rocks and the relative proportion of vessels with such inclusions. She does, however, raise the possibility that igneous rocks are also found amongst the local outcrops of the Bunter Pebble Beds in this part of northern Leicestershire (Johnson 2011; Fox-Strangways 1905, 30–6), so without more detailed analysis following the methodology used by Knight et al. (2003), it remains possible that some of the pottery with igneous inclusions may have been made locally using fire-cracked pebbles.

Shell-gritted and shell-and-grog/mudstone-gritted wares may have been transported to the site from areas further afield featuring Jurassic or perhaps Permian deposits (Knight 1998). Fossiliferous deposits outcrop across the River Soar near East Leake, so such wares need not have travelled far to reach the sites investigated for this project, although Lincolnshire would also appear to be a likely source for at least some of these wares (Vince 2011; Knight 1992). In the absence of more detailed studies it is not possible to establish the source of the shell-gritted wares from the project.

Roman pottery

Groups of early Roman pottery were recovered from Mill Close, where there may have been some element

of continuity from a Middle to Late Iron Age site with Scored ware. Further early Roman activity was recorded from the Seven Geaves site, continuing on into the 4th century AD. Activity on the Daleacre site also appears to have occurred in the early Roman period, with some late Roman activity. The majority of the Roman pottery was recovered from Over Field, where large groups were retrieved from a hollow. It was noticeable that Derbyshire ware was particularly well represented at this site.

The range of pottery was broadly what might be anticipated from a site in the area (Cooper 2004; Johnson 2011). Amphorae, mortaria, samian and other fine wares were all present, but in the small quantities expected in fairly basic rural assemblages. As Cooper (2004) has observed for other sites from the region, the assemblages were dominated by grey wares, particularly jars, suggesting that these vessels were utilised for day-to-day cooking and storage needs, and that the inhabitants had little access to, or perhaps need for, finer table wares. The early Roman period showed a range of shell-, sand- and mixed-gritted wares, alongside grey ware, oxidised wares and very small quantities of samian. There appeared to be a higher proportion of Derbyshire ware than is typically seen on sites in Leicestershire, and it would appear likely that the inhabitants of this area looked towards Derbyshire, and possibly Derby itself, for the provision of a considerable proportion of the coarse wares used on site in the 2nd century AD or later. There were some similarities in composition between this assemblage and a group studied by the authors from near Derby (Rowlandson and Fiske 2021).

Organic residue analysis showed traces of dairy and ruminant carcass lipids within the fabric of many of the jars, with a slightly higher proportion of dairy fats from the smaller bowls and dishes (Dunne et al. below). Although Derbyshire ware jars may have been used for a variety of different functions, the vessels studied for this project, before the end of their functional life, appear to have been utilised for processing dairy or ruminant carcass products. Carbonised residues from cooking were also recorded on a number of these durable vessels, and it is possible that they were utilised for cooking in the same fashion as a number of Dales ware jars studied from other sites in the East Midlands (Dunne and Evershed 2018a and b; Dunne et al. 2021). The mortaria studied also appeared to fit with the pattern of carcass fat and oily plant processing seen elsewhere (Dunne et al. below). Only one vessel showed traces of pork fat and it may be, if indeed they were widely consumed during the Roman period, that pigs were cooked in a different fashion to some of the ruminant carcass material. The range of vessels from the sites suggests a variety of food preparation methods, and that jars were mostly used in a similar fashion to their Iron Age predecessors. Small quantities of specialist ceramic fine wares suggested the possibility of dining at tables, although the restricted range of pottery indicates that grey ware forms may have also been utilised for this function.

Samian

by J M Mills

Samian from three sites (Over Field, Daleacre and Seven Geaves) was submitted for detailed recording (Table 4.23). In each case the samian forms a small proportion of the overall ceramic assemblage, generally about 1% of the pottery from each site.

Sherds of vessels from the major production centres in South, Central and East Gaul were identified, spanning the Flavian period until the mid-3rd century AD. A full record for each sherd (or group of sherds where joining sherds were found within the same context) may be found in the site archive. Each entry includes fabric code (production area), vessel form, quantity (number, weight and rim EVE), presence of stamps, decoration, graffiti and other post-firing changes or alterations (burning, repairs, etc). Fabrics were identified from a small fresh break on each sherd under a x20 binocular microscope. Catalogue descriptions of the two describable decorated vessel sherds and a single potter's stamp accompany this report.

The majority of the samian is in a poor condition, most having some level of slip loss due to soil conditions. The most extreme examples have no slip and are very reduced and tumbled looking. A few sherds remain in a good condition, but are the exception. Some sherds

Table 4.23 Summary of samian from each excavation site by count (no), weight (g) and rim EVE

	SAMSG			*SAMCG*			*SAMRZ*			*SAMTR*			*SAMEG*		
	No	*Wt (g)*	*Rim EVE*	*No*	*Wt (g)*	*Rim EVE*	*No*	*Wt (g)*	*Rim EVE*	*No*	*Wt (g)*	*Rim EVE*	*No*	*Wt (g)*	*Rim EVE*
Seven Geaves	2	31		8	114	0.2	1	3		1	2				
Overfield	1	1		38	348	0.53	4	55	0.05	6	41	0.08	5	58	0.21
Daleacre				12	109	0.12	3	27	0.1						

were so badly affected that the fabric identifications are tentative, especially for some of the products of East Gaul (recorded as ?SAMRZ or SAMEG).

The quantities retrieved from Seven Geaves (12 sherds weighing 150 g) and Daleacre (15 sherds weighing 136 g) represent little more than a background scatter of samian. Almost half of the largest collection, from Over Field (58 sherds weighing 503 g), was recovered from hollow 90058=90342; the samian from this feature is the same in character as that from the rest of the area, that is, broadly mid-2nd to mid-3rd-century in date. The stamped vessel, a late 2nd–early 3rd-century Dr 31 stamped by Severinus iii of Rheinzabern (90341), was recovered from this site. Only Seven Geaves exhibits a late 1st-century/early 2nd-century element, in the form of a repaired South Gaulish dish base, probably form Dr 36 (context 70248, ditch 70604), a second small Dr 36 sherd from South Gaul (7590), both Flavian or Flavian/Trajanic in date, and two sherds from a Hadrianic–early Antonine Dr 37 (Cat 1, 70317, ditch 70602). The tiny South Gaulish scrap from Over Field (hollow 90058=90342) is very much a residual sherd.

The entire samian assemblage comprises a very limited range of forms, dominated by dish/bowl forms Dr 31 and 31R, with occasional decorated bowls (Dr 29 or 37 and Dr 37), barbotine-rimmed dishes (Dr 36) and a couple of conical cups (Dr 33) (Table 4.24). The majority (around 70% by count and weight) are from Lezoux in Central Gaul (SAMCG), about 25% from East Gaul (SAMRZ, SAMTR, SAMEG), with just three sherds (4%) from South Gaul (SAMSG). This relatively large proportion of East Gaulish samian, along with the presence of several Dr 31R, and lack of earlier forms such as cup Dr 27, suggests the samian, with the exception of the early vessels already highlighted from Seven Geaves, broadly dates from the second half of the 2nd to the first half of the 3rd century AD.

Although the collection is small, and not a statistically viable quantity, this limited range of forms would sit well in Willis's 'rural site' category, where characteristically about 50% of vessel forms are plain dishes or bowls (Willis 2004, 8.2.5). Clearly the number of cup forms here is low; this could in part be a function of the apparent late date of the group, although the sample size is probably the greater factor.

Repair and re-use

A rural assemblage may exhibit a high rate of repair or evidence for prolonged use of vessels, a sign that samian was in short supply. Unfortunately, the slip loss due to abrasion and eroding soil conditions makes identification of heavy use very difficult. Just two vessels, both from Seven Geaves, have been drilled in preparation for leaded repairs (SAMSG dish – 70248; SAMCG Dr 37 – 70317). The stamped dish (SAMRZ, 90341) may have been cut down after breakage to make a lid or small vessel to be used inverted; however, there is no wear to the slip on the underside of the sherd to suggest that this type of use had occurred, and although the wall edges appear neat and smooth as if shaped deliberately, it could be that the soil conditions have caused this apparent smoothness, so the case for re-use is not clear.

Samian potter's stamp

Severinus iii, 2b, Rheinzabern (SAMRZ) Dr 31.
[*S*]EVERI*N*V*S*FE.
The base looks as if it has been cut down with only a shallow stub of the wall remaining, although the smoothed edge to the break could be as a result of the soil condition rather than deliberate smoothing.

Table 4.24 Summary of the samian by vessel function, form and production area (fabric)

Vessel function	*Vessel form*	*Fabric (production area)*				
		SAMSG	*SAMCG*	*SAMRZ*	*SAMTR*	*?SAMEG*
Cup	33		2			
	31		7	3		
Dish	31R		5	1	3	2
	31 or 31R		1			
	36	1	1	1		
Decorated bowl	29 or 37	1				
	37		1	2		
Sherd count	3	58	10	7	5	
Weight (g)	32g	571g	85g	43g	58g	
Rim EVE	0	0.85	0.15	0.08	0.21	

There are no wear patterns under the base to indicate re-use of the up-turned vessel. A potter who specialised in form 32, however, and the rising base of this example, suggest Dr 31. AD 160–260 is the range given for this potter (Hartley and Dickinson, 2011, 248–9); the finish and fabric suggest AD 160–220 for this vessel (Over Field, 90341, SF360).

Decorated samian

Lezoux (SAMCG), DR37. Two sherds, probably from the same bowl, but the sherds do not join; however, the ovolo and the style suggest they belong together. The slip is eroded on both sherds, especially over the high points of the decoration, somewhat blurring the design. Large rim sherd (broken across a drilled repair hole?) with ovolo Rogers B7/B24 and a panelled design comprising a large saltire panel with narrow panels either side containing Pan, probably O.709A. The upper quadrant of the saltire contains trifid leaf Rogers G76 with long spiral twists either side. A fourth panel has a trace of a vertical twist at the edge. The small body sherd has the same ovolo, and a standing bird O.2298 in a plain festoon. The design has links to the Sacer/Attianus group and Drusus ii who is also linked to these potters. The ovolo is on bowls signed by Attianus ii; Drusus ii used saltire panels containing Rogers G76; one signed fragment from Wildespool also has the flanking spirals (ser. no. 0013064). The Pan figure is not listed by Rogers for any of these potters, but Pan, standing on a column rather than on a mask as shown in Oswald (1936–7), features on a bowl with a Sacer ii mould stamp (Stanfield and Simpson 1990, pl.172, 3). The standing bird is known to have been used by all three potters. *c.* AD 125–150 (Seven Geaves, 70317).

Rheinzabern (SAMRZ), DR37. An abraded body sherd with some slip loss. The only figure is part of a running deer (O.1785?). Late 2nd century (Seven Geaves, 702047)

Abbreviations

O.	Figure types in Oswald 1936–7
Rogers	Motifs in Rogers 1974
ser. no.	Serial Numbers for the ovolo vessel are taken from Samian Research (nd). http://www1.rgzm.de/samian/home/frames.htm.

The Use of Pots: Organic Residue Analysis

by Julie Dunne, Toby Gillard and Richard P Evershed

Introduction

Lipids, the organic solvent soluble components of living organisms, ie, the fats, waxes and resins of the natural world, are the most frequently recovered compounds from archaeological contexts. They are resistant to decay and are likely to endure at their site of deposition, often for thousands of years, because of their inherent hydrophobicity, making them excellent candidates for use as biomarkers in archaeological research (Evershed 1993).

Pottery has become one of the most extensively studied materials for organic residue analysis (Mukherjee et al. 2005) as ceramics, once made, are virtually indestructible and thus are one of the most, if not the most, common artefacts recovered from archaeological sites from the Neolithic period onwards (Tite 2008). Survival of these residues occurs in three ways; rarely, actual contents are preserved *in situ* (eg, Charrié-Duhaut et al. 2007) or, more commonly, as surface residues (Evershed 2008b). The last, most frequent occurrence is that of absorbed residues preserved within the vessel wall, which have been found to survive in >80% of domestic cooking pottery assemblages worldwide (Evershed 2008b).

The application of modern analytical techniques enables the identification and characterisation of these sometimes highly degraded remnants of natural commodities used in antiquity (Evershed 2008b). Often, data obtained from the organic residue analysis of pottery or other organic material provides the only evidence for the processing of animal commodities, aquatic products or plant oils and waxes, particularly at sites exhibiting a paucity of environmental evidence. To date, the use of chemical analyses in the reconstruction of vessel use at sites worldwide has enabled the identification of terrestrial animal fats (Evershed et al. 1997a; Mottram et al. 1999), marine animal fats (Copley et al. 2004; Craig et al. 2007), plant waxes (Evershed et al. 1991), beeswax (Evershed et al. 1997b) and birch bark tar (Charters et al. 1993a; Urem-Kotsou et al. 2002). This has increased our understanding of ancient diet and foodways and has provided insights into herding strategies and early agricultural practices. Organic residue analysis has also considerably enhanced our understanding of the technologies involved in the production, repair and use of ancient ceramics.

Preserved animal fats are by far the most commonly observed constituents of lipid residues recovered from archaeological ceramics. This demonstrates their considerable significance to past cultures, not just for their nutritional value but also for diverse uses such as binding media, illuminants, sealers, lubricants, varnish, adhesives, and ritual, medical and cosmetic purposes (Mills and White 1977; Evershed et al. 1997a).

Today, the high sensitivities of instrumental methods such as gas chromatography and mass spectrometry allow very small amounts of compounds to be detected and identified. Furthermore, higher sensitivity can be achieved using selected ion monitoring (SIM) methods for the detection of specific marine biomarkers (Evershed et

al. 2008; Cramp and Evershed 2013). The advent of gas chromatography-combustion-isotope ratio mass spectrometry (GC-C-IRMS) in the 1990s introduced the possibility of accessing stable isotope information from individual biomarker structures, opening a range of new avenues for the application of organic residue analysis in archaeology (Evershed et al. 1994; 1997a).

This stable carbon isotope approach, using GC-C-IRMS, is employed to determine the $\delta^{13}C$ values of the principal fatty acids (C_{16} and C_{18}), ubiquitous in archaeological ceramics. Differences occur in the $\delta^{13}C$ values of these major fatty acids due to the differential routing of dietary carbon and fatty acids during the synthesis of adipose and dairy fats in ruminant animals, thus allowing ruminant milk fatty acids to be distinguished from carcass fats by calculating $\Delta^{13}C$ values ($\delta^{13}C_{18:0} - \delta^{13}C_{16:0}$) and plotting that against the $\delta^{13}C$ value of the $C_{16:0}$ fatty acid. Previous research has shown that by plotting $\Delta^{13}C$ values, variations in C_3 versus C_4 plant consumption are removed, thereby emphasising biosynthetic and metabolic characteristics of the fat source (Dudd and Evershed 1998; Copley et al. 2003).

Aims and objectives

The objective of this investigation was to determine whether organic residues were preserved in Iron Age and Romano-British potsherds found at the East Midlands Gateway (EMG) project, in order to determine whether there were any changes in diet and subsistence across the two periods and also examine vessel use and function in the pottery assemblages.

Materials and analytical methods

Twenty Romano-British sherds, from varying vessel types, were selected for organic residue analysis, along with 10 sherds from different Iron Age contexts. Where possible, vessels with external sooting and/or carbonised deposits were selected as these were likely to have been used for cooking.

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (Dudd and Evershed 1998; Correa-Ascencio and Evershed 2014). Briefly, ~2 g of potsherd were sampled and surfaces cleaned with a modelling drill to remove exogenous lipids. The cleaned sherd powder was crushed in a solvent-washed mortar and pestle and weighed into a furnaced culture tube (I). An internal standard was added (20 µg *n*-tetratriacontane; Sigma Aldrich Company Ltd) together with 5 mL of H_2SO_4/MeOH 2–4% ($\delta^{13}C$ measured) and the culture tubes were placed on a heating block for 1 hour at 70 °C, mixing every 10 minutes. Once cooled, the methanolic acid was transferred to test tubes and centrifuged at 2500 rpm for 10 minutes. The supernatant was then decanted into another furnaced culture tube (II) and 2 mL of DCM extracted double distilled water was added. In order to recover any lipids not fully solubilised by the methanol solution, 2 x 3 mL of *n*-hexane was added to the extracted potsherds contained in the original culture tubes, mixed well and transferred to culture tube II. The extraction was transferred to a clean, furnaced 3.5 mL vial and blown down to dryness. Following this, 2 x 2 mL *n*-hexane was added directly to the H_2SO_4/MeOH solution in culture tube II and whirlimixed to extract the remaining residues, then transferred to the 3.5 mL vials and blown down until a full vial of hexane remained. Aliquots of the TLE's were derivatised using 20 µl BSTFA, excess BSTFA was removed under nitrogen and the derivatised TLE was dissolved in hexane prior to GC, GC-MS and GC-C-IRMS. Firstly, the samples underwent high-temperature gas chromatography using a gas chromatograph (GC) fitted with a high-temperature non-polar column (DB1-HT; 100% dimethylpolysiloxane, 15 m x 0·32 mm i.d., 0.1 µm film thickness). The carrier gas was helium and the temperature programme comprised a 50 °C isothermal followed by an increase to 350 °C at a rate of 10 °C min^{-1} followed by a 10 min isothermal. A procedural blank (no sample) was prepared and analysed alongside every batch of samples. Further compound identification was accomplished using gas chromatography-mass spectrometry (GC-MS). FAMEs were then introduced by autosampler onto a GC-MS fitted with a non-polar column (100% dimethyl polysiloxane stationary phase; 60 m x 0.25 mm i.d., 0·1 µm film thickness). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0·6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50 °C for 2 minutes, ramping to 300 °C at 10 °C min^{-1}, followed by an isothermal hold at 300 °C (15 minutes). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0·6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50 °C for 2 minutes, ramping to 300 °C at 10 °C min^{-1}, followed by an isothermal hold at 300 °C (15 minutes). Data acquisition and processing were carried out using the HP Chemstation software (Rev. C.01.07 (27), Agilent Technologies) and Xcalibur software (version 3.0). Peaks were identified on the basis of their mass spectra and gas chromatography (GC) retention times, by comparison with the NIST mass spectral library (version 2.0).

Carbon isotope analyses by GC-C-IRMS were also carried out using a GC Agilent Technologies 7890A coupled to an Isoprime 100 (EI, 70eV, three Faraday cup collectors *m/z* 44, 45 and 46) via an IsoprimeGC5 combustion interface with a CuO and silver wool reactor maintained at 850 °C. Instrument accuracy was determined using an external FAME

standard mixture (C_{11}, C_{13}, C_{16}, C_{21} and C_{23}) of known isotopic composition. Samples were run in duplicate and an average taken. The $\delta^{13}C$ values are the ratios $^{13}C/^{12}C$ and expressed relative to the Vienna Pee Dee Belemnite, calibrated against a CO_2 reference gas of known isotopic composition. Instrument error was ±0.3‰. Data processing was carried out using Ion Vantage software (version 1.6.1.0, IsoPrime).

Results

The lipid recovery rate for the East Midlands Gateway sherds was good at 77% with 23 vessels yielding interpretable lipid profiles. The mean lipid concentration from the sherds (Table 4.25) was 3.0 mg g^{-1}, with a maximum lipid concentration of 16.5 mg g^{-1} (EMG10). A further eight potsherds contained high concentrations of lipids (eg, EMG09, 6.2 mg g^{-1}, EMG11 4.7 mg g^{-1}, EMG12, 8.7 mg g^{-1}, EMG19, 8.7 mg g^{-1}, EMG20, 3.4 mg g^{-1}, EMG25, 2.9 mg g^{-1}, EMG29, 2.5 mg g^{-1} and EMG30, 15.6 mg g^{-1}; Table 4.25), demonstrating excellent preservation. This likely indicates that these vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The lipid extracts comprised lipid profiles dominated by free fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (Fig. 4.10a and b; Evershed et al. 1997a; Berstan et al. 2008).

Extracts from six sherds (EMG09, EMG10, EMG16, EMG20, EMG25 and EMG26) include a series of long-chain fatty acids (in low abundance), containing C_{20} to C_{26} carbon atoms (Fig. 4.10b). It is thought these LCFAs likely originate directly from animal fats, incorporated via routing from the ruminant animal's plant diet (Halmemies-Beauchet-Filleau et al. 2013; 2014).

GC-C-IRMS analyses were carried out on the sherds (*n*=23; Table 4.25) to determine the $\delta^{13}C$ values of the major fatty acids, $C_{16:0}$ and $C_{18:0}$, and ascertain the source of the lipids extracted, through the use of the $\Delta^{13}C$ proxy. The $\delta^{13}C$ values of the $C_{16:0}$ and $C_{18:0}$ fatty acids from the lipid profiles are plotted onto a scatter plot along with the reference animal fat ellipses (Fig. 4.11a). It has been established that when an extract from a vessel plots directly within an ellipse – for example, ruminant dairy, ruminant adipose or non-ruminant adipose – then it can attributed to that particular source. If it plots just outside the ellipse then it can be described as predominantly of that particular origin. However, it should be noted that extracts commonly plot between reference animal fat ellipses and along the theoretical mixing curves, suggesting either the mixing of animal fats contemporaneously or during the lifetime of use of the vessel (Mukherjee 2004; Mukherjee et al. 2005).

In this instance, six of the lipid residues (EMG04, EMG10, EMG16, EMG25, EMG26 and EMG29) plot within the dairy reference ellipse (Fig. 4.11a and c), suggesting these vessels were solely used to process dairy products, with a further two plotting quite close to the ellipse (EMG11 and EMG23). Three vessels plot within or just on the border of the ruminant carcass products ellipse (EMG17, EMG24 and EMG30; Fig. 4.11a and c), suggesting they were specialised for processing ruminant products (from cattle, sheep or goat). Interestingly, one vessel, EMG19, plots close to the non-ruminant (pig) product ellipse (Fig. 4.11c), with the remaining vessels (EMG02, EMG03, EMG05, EMG06, EMG07, EMG08, EMG09, EMG12, EMG18, EMG20 and EMG28) plotting between the ruminant dairy and carcass ellipses (Fig. 4.11a and c), suggesting some mixing of these animal fats contemporaneously or during the lifetime of use of the vessel.

Ruminant dairy fats are differentiated from ruminant adipose fats when they display $\Delta^{13}C$ values of ≥ -3.1 ‰, known as the universal proxy (Dunne et al. 2012; Salque 2012). Significantly, lipid residues from nine of the 23 (39%) lipid-yielding vessels (EMG04, EMG10, EMG11, EMG16, EMG23, EMG25, EMG26, EMG28 and EMG29) plot within the ruminant dairy region (Fig. 4.11b and d) with $\Delta^{13}C$ values of -4.7, -4.6, -3.6, -4.6, -3.9, -4.5, -4.9, -3.5 and -5.0 ‰, respectively, confirming that these vessels were used to process mainly secondary products, such as milk, butter and cheese.

Vessels EMG02, EMG03, EMG05, EMG08, EMG12, EMG17, EMG20, EMG24 and EMG30 with $\Delta^{13}C$ values of -2.5, -2.4, -2.6, -2.5, -2.0, -2.1, -2.6, -2.5 and -2.3 ‰, respectively, plot within the ruminant adipose region (Fig. 4.11b and d). A further four vessels, EMG06, EMG07, EMG09 and EMG18, with $\Delta^{13}C$ values of -2.8, -3.0, -3.0 and -3.0 ‰, respectively, plot between the ruminant carcass and dairy ranges, suggesting they were mainly used for processing dairy products with some mixing of ruminant carcass fats. Vessel EMG19 plots between the ruminant and non-ruminant regions (Fig. 4.11d), with a $\Delta^{13}C$ value of -0.3 ‰, confirming it was used to process mixtures of animal products from cattle, sheep, goat and pigs.

Mortaria

Two mortaria were analysed, one a Mancetter-Hartshill mortarium (EMG01) and the other of Midlands mortarium (EMG02) type. The Mancetter-Hartshill mortarium did not yield an interpretable lipid profile, but the Midlands type, with a lipid concentration of 0.16 mg g^{-1} (Table 4.25), yielded an interpretable lipid profile. Lipid concentrations of mortaria are generally expected to be lower in comparison to those from Iron Age and Roman cooking vessels recovered from the same site (Cramp et al. 2011). According to Roman sources, mortaria were used to grind and mix together meat with herbs, spices, oils and plant leaves to produce culinary dishes as described in the

Table 4.25 Lipids analysis results

Sample and laboratory number	*Area*	*Context number*	*Vessel date*	*Fabric*	*Fabric type*	*Form*	*Form type*	*Lipid concentration (μg g^{-1})*	*Total lipid in extract (μg)*	$\delta^{13}C_{16:0}$	$\delta^{13}C_{18:0}$	$\Delta^{13}C$	*Attribution*
EMG02	Over Field	90058	AD150-200	MO19	Midlands Mortarium	M	Mortarium	160.5	294.5	-27.6	-30.1	-2.5	Ruminant adipose
EMG03	Over Field	90058	L2-M4	DBY	Derbyshire ware	JCUR	Jar – curved rim	814.5	1474.8	-27.0	-29.5	-2.4	Ruminant adipose
EMG04	Over Field	90058	L2-M4	DBY	Derbyshire ware	JDBY2	Jar – lid-seated	1292.6	2540.8	-27.8	-32.5	-4.7	Ruminant dairy
EMG05	Over Field	90058	L2-M4	DBY	Derbyshire ware	JDBY3	Jar – lid-seated	978.6	3264.1	-27.6	-30.1	-2.6	Ruminant adipose
EMG06	Over Field	90058	L2-M4	DBY	Derbyshire ware	JCUR	Jar – curved rim	279.7	812.3	-28.2	-31.1	-2.8	Ruminant adipose/dairy
EMG07	Over Field	90058	L2-M4	DBY	Derbyshire ware	JCUR	Jar – curved rim	46.1	118.8	-27.6	-30.6	-3.0	Ruminant adipose/dairy
EMG08	Over Field	90058	L2-M4	DBY	Derbyshire ware	JCUR	Jar – curved rim	1049.1	2934.2	-27.3	-29.7	-2.5	Ruminant adipose
EMG09	Over Field	90058	L3-4	GW1	Black Burnished ware 1 type	6F.1	Bowl small – flanged	6189.4	14472.8	-28.0	-31.1	-3.0	Ruminant adipose/dairy
EMG10	Over Field	90058	AD120-400	GW1	Black Burnished ware 1 type	BD	Bowl – small	16521.8	34462.8	-29.1	-33.7	-4.6	Ruminant dairy
EMG11	Over Field	90058	L3-4	GW1	Black Burnished ware 1 type	6A.1	Dish – plain rim	4716.1	7948.1	-28.5	-32.0	-3.6	Ruminant dairy
EMG12	Over Field	90058	L3-4	GW1	Black Burnished ware 1 type	3H.3	Jar – cavetto	8711.2	17837.1	-27.8	-29.8	-2.0	Ruminant adipose
EMG16	Over Field	90058	2C	GW5	Grey ware – finer as Little Chester?	5A	Bowl large – necked	194.6	463.0	-29.1	-33.7	-4.6	Ruminant dairy
EMG17	Over Field	90058	2-4C	GW6	Grey ware sandy	3H.1	Jar–– curved rim	269.2	540.9	-28.4	-30.5	-2.1	Ruminant adipose
EMG18	Over Field	90058	L3-4	GW6	Grey ware sandy	6F.1	Bowl small – flanged	116.6	266.1	-28.3	-31.3	-3.0	Ruminant adipose/dairy
EMG19	Over Field	90058	3C	GW6	Grey ware sandy	6E.2	Dish – grooved flange	8684.5	18671.6	-26.7	-27.0	-0.3	Ruminant/Non-ruminant adipose
EMG20	Over Field	90058	2-4C	GW6	Grey ware sandy	3M	Jar – necked	3408.9	6973.0	-27.5	-30.1	-2.6	Ruminant adipose
EMG23	Longfield	41410	IA	Q1	Handmade, quartz-gritted	J	Jar	204.8	564.1	-28.3	-32.1	-3.9	Ruminant dairy
EMG24	Gt Dampits	60112	MLIA	Q4	Handmade, coarse quartz	J	Jar – Scored	109.1	230.0	-29.8	-32.3	-2.5	Ruminant adipose
EMG25	Gt Dampits	60226	MLIA	Q1	Handmade, quartz-gritted	J	Jar	2888.7	8563.7	-28.4	-32.9	-4.5	Ruminant dairy
EMG26	Longfield	41307	IA	Q1	Handmade, quartz-gritted	J	Jar	766.9	1912.4	-29.1	-34.1	-4.9	Ruminant dairy
EMG28	Mill Cl	50184	MLIA	Q4	Handmade, coarse quartz	J	Jar – Scored	1056.3	2757.8	-28.2	-31.6	-3.5	Ruminant dairy
EMG29	Mill Cl	50051	MLIA	Q1	Handmade, quartz-gritted	JIR	Jar	2532.3	4598.9	-28.5	-33.6	-5.0	Ruminant dairy
EMG30	Daleacre	80352	L1-2	G1A	Transitional, shell gritted	3E.1	Jar	15576.7	29391.8	-29.0	-31.3	-2.3	Ruminant adipose

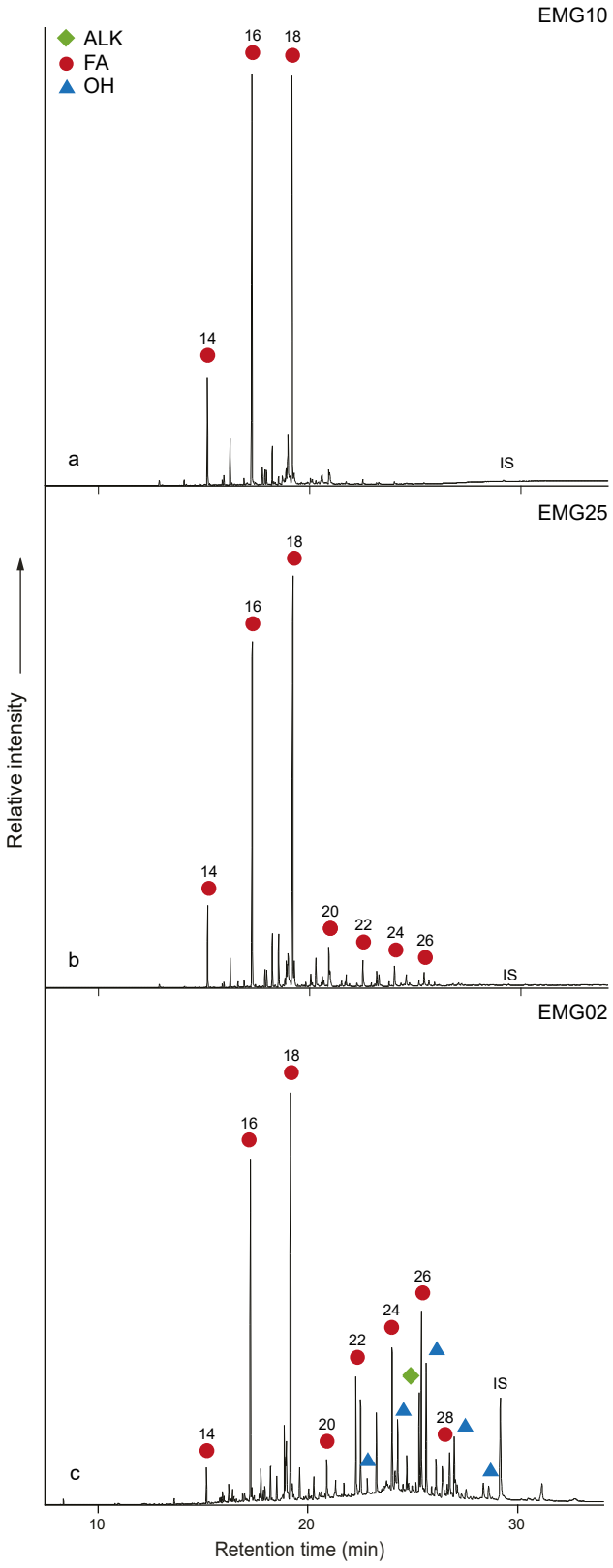

Figure 4.10 Lipids. Partial gas chromatogram of acid-extracted FAMEs from the East Midlands Gateway pottery extracts of a. EMG10, Romano-British Black Burnished ware bowl, b. EMG25, Iron Age handmade jar, and c. EMG02, Midlands mortarium, red circles, n-alkanoic acids (fatty acids, FA); green rhombus, n-alkanes (ALK); blue triangle, n-alkanols (OH); IS, internal standard, C_{34} n-tetratriacontane. Numbers denote carbon chain length

recipes of Apicius (Flower and Rosenbaum 1958). Consequently, mortaria, used for 'cold-processing' of foodstuffs (as opposed to heating/cooking), are less likely to absorb similar quantities of lipid to cooking pots, since heat is known to mobilise, and hence facilitate, the absorption of lipid components into the vessel fabric (Charters et al. 1993b; Evershed 2008a; Cramp et al. 2011).

The Midlands mortaria comprised a lipid profile (Fig. 4.10c) dominated by fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (eg, Evershed et al. 1997a; Berstan et al. 2008). This vessel plotted in the ruminant adipose region (Fig. 4.11d), suggesting the processing of carcass fats. Also present were a series of even-numbered long-chain fatty acids (Fig. 4.10c, red circles), containing C_{20} to C_{28} acyl carbon atoms, dominated by the C_{24}, a series of even-numbered long-chain *n*-alkanols (Fig. 4.10c, blue triangles), from C_{22} to C_{30}, and the C_{29} *n*-alkane (Fig. 4.10c, green rhombus). The presence of these long-chain odd-carbon number *n*-alkanes, even-carbon number *n*-alkanols, together with long-chain fatty acids, suggests the processing of plant epicuticular (leaf) waxes (Eglinton and Hamilton 1967; Kolattukudy et al. 1976; Bianchi 1995; Kunst and Samuels 2003) or, possibly, the presence of beeswax/honey in the vessels (Heron et al. 1994; Regert et al. 2001). However, as Cramp et al. (2011) note, the high frequency of plant waxes in mortaria is clearly distinctive, especially in comparison to other Roman domestic 'cooking' vessels.

Discussion and conclusion

The objective of this investigation was to determine whether there were any changes in subsistence across the Iron Age and Romano-British periods at the site, to provide evidence of the nature of the animal husbandry regimes in this part of the Trent valley during the periods in question, and to examine vessel use and function.

Lipid recovery from the site was excellent at 77% with 23 vessels yielding interpretable lipid profiles, and with many vessels containing extremely high concentrations of lipids, suggesting they were subjected to sustained use in the processing of high lipid-yielding commodities. The results, determined from GC, GC-MS and GC-C-IRMS analyses, demonstrate that nine vessels (39%) were used to process solely dairy products but the majority were used primarily to process ruminant carcass products. A number of vessels were used to process mixtures of both ruminant dairy and carcass products, but only one vessel displayed evidence for pig processing.

Continuity or change across the Iron Age and Romano-British period

Of the 30 vessels analysed, 20 came from Romano-British contexts (EMG01–20, Over Field, context 90058) and 10 from Iron Age contexts (EMG21–30, Mill Close (50147, 50184, 50051), Great Dampits

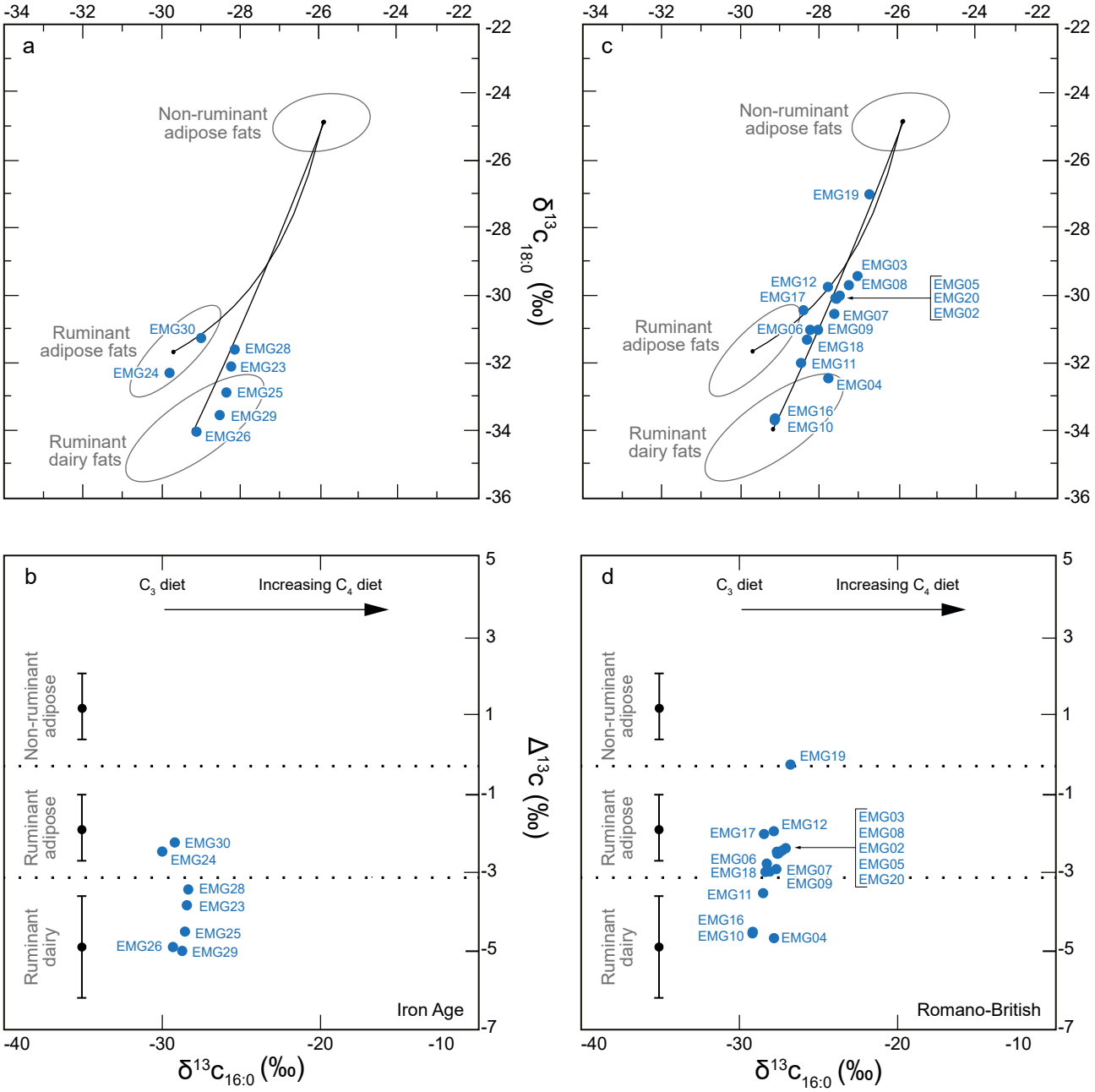

Figure 4.11 Lipids. Graphs showing: a and c. $\delta^{13}C$ values for the $C_{16:0}$ and $C_{18:0}$ fatty acids for archaeological fats extracted from Iron Age and Romano-British ceramics from the EMG site. The three fields correspond to the P = 0.684 confidence ellipses for animals raised on a strict C_3 diet in Britain (Copley et al. 2003). Each data point represents an individual vessel. Figures b and d show the $\Delta^{13}C$ ($\delta^{13}C_{18:0} - \delta^{13}C_{16:0}$) values from the same potsherds. The ranges shown here represent the mean ± 1 s.d. of the $\Delta^{13}C$ values for a global database comprising modern reference animal fats from Africa (Dunne et al. 2012), UK (animals raised on a pure C_3 diet) (Dudd and Evershed, 1998), Kazakhstan (Outram et al. 2009), Switzerland (Spangenberg et al. 2006) and the Near East (Gregg et al. 2009), published elsewhere

(60112, 60226), Daleacre (context 80352), and Longfield (contexts 41036, 41307, 41387, 41410) (see Table 4.25). Of these, lipid recovery rates were similar, with seven of the Iron Age vessels (70%) and sixteen of the Romano-British vessels (80%) yielding interpretable lipid profiles. Interestingly, five of the Iron Age vessels were used to process dairy products (71%) whereas four of the Romano-British vessels were used for dairy processing (25%), suggesting dairying was of greater importance at this site in the Iron Age, reducing in the Romano-British period. The two remaining Iron Age vessels (29% of vessels) were used to process ruminant carcass products, suggesting their use was more specialised, whilst the Romano-British vessels appear to have been used for more varied purposes, with seven (44%) being used for ruminant carcass processing, four (25%) for processing mixed dairy and carcass products, and

one vessel (6%) for processing ruminant and non-ruminant (pig) products.

The importance of dairy products (71%) at East Midlands Gateway during the Iron Age is slightly higher than that found at the Iron Age sites of Maiden Castle, Danebury, Yarnton Cresswell Field and Stanwick, where up to 56% of the extracts (237 vessels, equivalent to 22% of all of the sherds), contained dairy products (Copley et al. 2005). The results from the current project correlate well with the results from these four sites and suggests that not only was the milking of ruminant animals practised during the Iron Age at these sites, but that it was an extremely important commodity during this period. Faunal assemblages from these four sites, where available, confirmed that sheep, goats and cattle were present in significantly higher abundances than pigs, and at Danebury and Maiden Castle the faunal evidence is suggestive of a husbandry regime that was orientated to a mixed milk, meat/fat and traction output. However, it should be noted that the 10 East Midlands Gateway sherds analysed represent a small dataset.

The lipid results from Romano-British vessels from East Midlands Gateway suggest that the processing of animal carcass fats was more important than dairying, somewhat in contrast to the analysis of cooking pots from the site of Stanwick, where dairying seems to have been an important component of the Romano-British economy (at 40% of vessels, compared to 25% at East Midlands Gateway), at a level consistent with the preceding Iron Age population, although ruminant carcass product processing dominates at Faverdale (Copley et al. 2005; Cramp et al. 2011; 2012). These findings lend some support to the idea of a stronger preference for dairy products by native Britons, as observed by Caesar (Book 5.14). However, it should be noted that dairy products may have been processed in different types of vessels (eg, wooden bowls, animal skins).

In comparison, lipid results from recent analysis of Romano-British potsherds from the site of Highfields Farm, some 32 km away from the current site (Dunne et al. 2021), found that 56% of vessels were used to process dairy products, in contrast to the 25% of vessels at East Midlands Gateway, although dairying was more important during the Iron Age (at 71%). This may suggest that there was call for dairy products from inhabitants of the fort and civic centre (Strutts Park and Little Chester, Derby) located some 5 km from the Highfields Farm site, and they may have been produced for market. The current project area is not as close to an urban centre so agricultural production may not have been geared towards as much milk production. This is supported by the faunal assemblage, analysis of which (see Higbee, below) suggests that beef production was of primary importance, especially during the Romano-British period.

The results from East Midlands Gateway contrast with those from the analysis of cooking vessels at the Iron Age/Romano-British rural site of Immingham, Lincolnshire, where the majority of cooking vessels (90%), across all phases, vessel and fabric types, were used to process ruminant carcass products, with little evidence for dairying (Dunne, unpublished data). Interestingly, virtually all the potsherds from Immingham contained very high concentrations of lipids, likely indicating that these vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The presence of significant amounts of domesticated animal bones at Immingham, dominated by cattle, sheep and goat, together with possible animal pens/enclosures, may suggest some form of specialised activity at the site. The presence of strainer vessels might indicate that this activity was related to rendering fat, possibly to use in cooking, as an illuminant or to soften animal skins. Residue analysis of vessels at another Iron Age/Romano-British rural site in North Lincolnshire (Goxhill) found that 21% were used to process solely dairy products, but the majority were used primarily to process ruminant carcass products, with a number of vessels being used to process mixtures of both (Dunne, unpublished data). However, recent work on pottery from southern rural Romano-British sites found processing of both dairy and ruminant carcass products (Greenwood, Hodos, Guest and Cramp in prep.).

This inter-site (and inter-regional) comparison is interesting, indicating that, although dairying was clearly important in rural Romano-British economies in the Midlands, its importance varied across different sites, suggesting specialised animal husbandry practices (see also Dunne et al. 2021 and forthcoming).

Vessel use and specialisation

Cooking vessels

The six vessels specialised for dairy product processing comprise a Derbyshire ware lid-seated jar, a Black Burnished ware (BBW) type 1 small bowl, a grey ware large necked bowl and three handmade jars (EMG04, EMG10, EMG16, EMG25, EMG26 and EMG29 respectively). Interestingly, the small BBW bowl (EMG10) contains the highest lipid concentration of the assemblage, at 16.5 mg g^{-1}. A further three vessels used to process primarily dairy products (EMG11, EMG23 and EMG28) comprised a Black Burnished ware dish, a handmade jar and a handmade Scored ware jar, respectively. As noted, five of these vessels (all jars) are Iron Age in date whereas four vessels are of Romano-British origin and comprise a jar, small bowl, large bowl and a dish. The processing

of dairy products in jars during the Iron Age implies the heating of milk, possibly to make cheese, whereas the use of more specialised vessels in the Romano-British period suggests milk/dairy products were being used or processed differently.

Three vessels, EMG09 (used to process ruminant dairy/adipose, but primarily dairy), EMG10 (ruminant dairy) and EMG11 (ruminant dairy) are Black Burnished ware (BBW) bowls/dishes, with EMG09 being flanged. BBW flanged bowls were argued by Gillam (1976) to be a development from the flat-rimmed bowl, and thought to have been used as a lid as well as a dish. Flat-rimmed dishes were known to be placed on top of flat-rimmed bowls and used as 'casseroles' for placing within the fire or ovens. The addition of a flange to the dish-shaped vessel (to make a lid, Fig. 4.12) means that the lid would fit better and be less likely to fall or be pushed off. These work equally well inverted.

However, it has also been suggested that these bowls could have been used for baking bread or cakes or roasting meat or vegetables, through a process the Romans called *sub testu*, where the item to be baked is placed on the hearth, inside a bowl-shaped vessel, having a (previously heated) cover placed over it. This is then buried in hot ash, creating a miniature (portable) oven inside the fire (Hartley 1954; David 1977; Cubberley et al. 1988). The covers, known as *clibanus* and *testum*, are mentioned so frequently in the literary record that there can be little doubt that they were a fundamental element of the Roman kitchen at many levels of society (Cubberley et al. 1988). *Clibanus* or *testum* covers (bell or dome-shaped clay shapes) have been found in Britain (Williams and Evans 1991) and some of the larger bowls may have been used in this way, with the flanges useful in manipulating the hot cover at the end of cooking (Cool 2006).

High lipid recoveries from these three vessels, EMG09, EMG10 and EMG11, at 6.2 mg g^{-1}, 16.5 mg g^{-1} and 4.7 mg g^{-1}, respectively (Table 4.25), suggest these bowls could have been the bases of either casseroles or baking 'ovens'. Certainly, vessels placed directly within a fire (and subject to prolonged direct heat) provide optimal conditions for the mobilisation and transfer of animal fat lipids into the fabric of the vessel wall (Evershed 2008a). However, as vessels EMG10 and EMG11 were used to process dairy products, they were clearly not used to roast or bake meat, although could have been used to roast or bake vegetables in butter. Interestingly, Cato, in his *De Agri Cultura* ('Concerning Agriculture', written in 160 BC), includes a recipe for *libum*, a kind of cheesecake. This recipe recommends macerating 2 lb cheese in a mortar, adding 1 lb of wheat flour, then mixing in an egg and kneading together. The dough should then be patted into a loaf shape and baked slowly on a warm hearth under a crock. Regular use of dishes/bowls for this purpose could well have resulted in concentrated dairy lipid signals. Interestingly, analysis of Black Burnished ware dishes and bowls from a nearby site at Highfields Farm yielded very similar results, making a specialised use for these vessels very likely (Dunne et al. 2021). Further analysis of similar vessels from other sites would help confirm this.

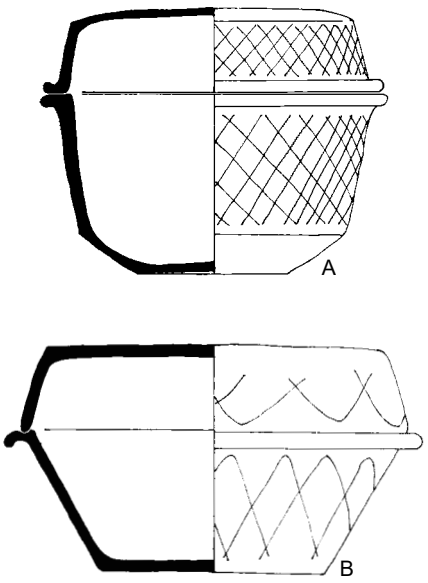

Figure 4.12 Example of a flat-rimmed bowl and a flat-rimmed dish (a) which formed a casserole and the combination of a flanged bowl with the plain-rimmed dish (b), from Gillam 1976. Not to scale

Alternatively, these vessels could have been used as dishes to store or serve butter (or other dairy products) although, without hot-processing to aid in the libation of lipids into ceramic walls, it is not clear whether this would result in such a high lipid signal. Vessel EMG09 was used to process mixtures of ruminant and dairy products, possibly as a result of using a butter-greased dish to bake or roast meat or from combined use in making *libum* and cooking meat (on different occasions). Interestingly, the only vessel (EMG19) used to process pork products (mixed with meat from cattle, sheep or goat) was also a grooved flanged dish, although of sandy grey ware, and again it had a very high lipid concentration (8.7 mg g^{-1}), implying sustained use in the cooking/roasting of these animal products. A further large necked bowl (EMG16) was used to process dairy products although the lipid concentration from this bowl was low (0.20 mg g^{-1}), and a small flanged bowl (EMG18), used to process mixed ruminant dairy and carcass products (although predominantly dairy), again displayed a low lipid concentration (0.12 mg g^{-1}). These two vessels may have been used predominantly as lids for casseroles or ovens, but occasionally as bases for cooking in, or may have been used to serve or store dairy products, such as butter or cheese.

The Romano-British jars (n=8) were primarily used to process ruminant carcass products, confirming their use as cooking pots. Certainly, Cool (2006) notes that the ubiquity of cooking jars on most Roman sites suggests that stewing would have been one of the principal cooking techniques.

As noted, there is little evidence for porcine product processing in vessels at East Midlands Gateway (apart from in one vessel, a sandy grey ware grooved flange dish – EMG19), which correlates well with the animal bone evidence from the project, which indicates pigs were of minor importance in the local economy (see Higbee, below). Low levels of absorbed pig fats have been found in pottery at the Iron Age sites of Maiden Castle, Danebury Hillfort, Yarnton Cresswell Field and Stanwick (Copley et al. 2005), which also compares well with the low abundances of pig bones found at Iron Age sites in general (Cunliffe 1991; Hambleton 1999).

The absence of pork fats is interesting as consumption of pork and bacon is known to be a distinctly Roman trait, both from literary sources and the bone assemblages of central Italy (King 1999). There, pig bones dominate over cattle, sheep and goat remains, from the late Republic and into the early/middle Empire. This appears in part due to the agricultural conditions of the period, but mainly due to cultural preference, and it is thought that pork, particularly young pork and suckling pig, was considered to be a desirable and high-status dietary element (King 1999). However, in Roman Britain, pig bones are found at military and urban sites, but less commonly in rural assemblages. For example, at Vindolanda, pork products (pork fat, young pig and ham) are mentioned in the accounts relating to the praetorium and the household of the commanding officer (Bowman and Thomas 1994), and pig neonate bones have been found in towns such as Dorchester, Lincoln and Silchester (Woodward et al. 1993; Dobney et al. 1996; Fulford et al. 1997), suggesting they were bred in towns. However, pig husbandry does not seem to have been adopted by the indigenous population of the province.

Mortaria

Two mortaria were analysed, one a Mancetter-Hartshill mortarium which did not yield an interpretable lipid profile, and the Midlands mortaria, which was used to process ruminant carcass products, likely in conjunction with waxy plant products, although the presence of beeswax cannot be ruled out. These results suggest a specialist use for mortaria, in comparison to contemporary jars, although analysis of a larger dataset would be needed to confirm this. However, the results from the EMG Midlands mortarium corresponds well with organic residue analysis carried out on over 200 Roman mortaria from five British sites, Faverdale, Fishbourne, Piercebridge, Stanwick and Wroxeter, which demonstrated that they were used intensively in Britain to process commodities of plant and animal origin (Cramp et al. 2011). The animal products were derived predominantly from the carcass although dairy products were processed extensively at one site, Stanwick. A combination of long-chain odd-carbon number *n*-alkanes, even-carbon number *n*-alkanols, mid-chain ketones, plant sterols and wax esters identified in the lipid profiles denotes the processing of waxy plant products, such as leaves, herbs or fruits, in the mortaria (Cramp et al. 2011).

Human Bone and Aspects of the Mortuary Rite

by Jacqueline I McKinley

Overview of Assemblage

Human remains were recovered from ten contexts dispersed across six excavation sites within the development area (Table 4.26). Unburnt human bone was found at four sites and comprised the remains of two inhumation burials, a possibly 'placed' deposit made in a ditch terminal and redeposited skeletal elements from ditch fills. Cremated bone was found at two sites and included the remains of two unurned burials, both accompanied by redeposited pyre debris, and a cremation-related deposit of uncertain type also inclusive of pyre debris.

The deposits all lay in isolation from one another except the cremation-related material from Seven Geaves, where one of the two surface spreads was probably displaced from its original location within the upper fill of ditch 70173, being found 2 m to the east following machine stripping of the site. The *in situ* remains in closest proximity to each other were those from the two cremation graves at Daleacre, which were situated approximately 28 m apart. The only other site featuring more than one deposit of human bone was King St Plantation, where the two were situated some 48 m apart.

The archaeological features recorded at each location mostly comprised co-axial field systems and enclosures identified as predominantly of Iron Age or Romano-British date. At Daleacre (south), a fragment of redeposited unburnt bone was recovered from the fill of ditch 22808 associated with the adjacent ?Early Iron Age enclosure. At the main Daleacre site to the north, the two cremation graves were situated within an area 'enclosed' by a Romano-British ditch (Fig. 2.18). At Field Farm, almost 1 km to the south-east, redeposited bone was found in the fill of Iron Age boundary ditch 65240 (Fig. 2.8). A potentially 'placed' deposit, inclusive of human and animal bone, was recovered from the upper fill of the south-west terminal of an Iron Age enclosure ditch at King St Plantation (Fig. 2.5). The inhumation grave found within the area described by the enclosure coincided spatially with the remnants of a possible Iron Age 'roundhouse' structure 75502. The inhumation burial at Over Field had been made in the fill of a boundary ditch believed to form part of a Romano-British field system (Figs 2.15 and 2.16). The ditch at Seven Geaves also formed part of what seems to have comprised an extensive Romano-British field system. The date and nature of the activity for which there is evidence in all parts of the development area are largely commensurate with

that known from the general vicinity as indicative of Iron Age and Romano-British agricultural activity and settlement.

No directly associated dating evidence was recovered from any of the deposits containing human bone. Probable later Iron Age or Romano-British dates were anticipated for most on the basis of their position in relation to other dated features and/or the presence of residual finds within associated ditch fills. As there is ample evidence that such assumptions can be misleading (eg, McKinley 2017a), radiocarbon analysis of bone samples from all except one of the deposits (22807 at Daleacre (south) – insufficient material) was undertaken. Three of the burial deposits proved to be Bronze Age; the inhumation burial from King St Plantation was Middle Bronze Age and the two cremation burials from Daleacre were Late Bronze Age. Largely unstratified flintwork aside, the only other evidence for Bronze Age activity within the development area comprises the Middle Bronze Age burnt mounds from Field Farm. The proposed Iron Age dates of the redeposited bone and placed deposit were refined to the middle phases of the period, and the prone burial from Over Field proved far more likely to be earlier (Middle to Late Iron Age) than the anticipated Romano-British date (Table 3.1). In the event, only the cremation-related deposit from Seven Geaves fell in the latter date range.

Methods

Cremation-related deposits are customarily subject to whole-earth recovery on site to ensure full retrieval of all the archaeological components. Unurned burial deposits and other forms of uncontained cremation-related deposit are recovered by quadranted sub-divisions and, where appropriate, horizontal spits, to facilitate analysis of formation process in post-excavation (McKinley 2000; 2013).

Recording and analysis of the cremated bone followed the writer's customary procedures (McKinley 1994a, 5–21; 2004a). Animal bone species identifications were undertaken by Lorrain Higbee. Interpretation of deposit type was undertaken with consideration of the various criteria of influence – contextual, taphonomic and osteological – outlined elsewhere by the writer (McKinley 1997; 2013).

Age (cremated and unburnt bone) was assessed using standard methods including the stage of tooth and skeletal development (Bass 1987; Beek 1983; Scheuer and Black 2000), and the patterns and degree of age-related changes to the bones and teeth (Buikstra and Ubelaker 1994). An individual's sex was assessed from the sexually dimorphic traits of the skeleton (Buikstra and Ubelaker 1994; Bass 1987; Brothwell 1972; Gejvall 1981; Wahl 1982); varying levels of questionable confidence are denoted as '?'and '??'. Where possible, a standard set of measurements was taken on the unburnt bone to facilitate the calculation of various skeletal indices (Bass 1987; Brothwell 1972, 88). Non-metric traits were recorded (Berry and Berry 1967; Brothwell and Zakrzewski 2004; Finnegan 1978). The degree of erosion to the unburnt bone was scored following McKinley (2004b, fig. 6).

A summary of the results is presented in Table 4.26; further details are held in the archive.

Results and Discussion

Taphonomy and post-mortem manipulation

The Middle Bronze Age inhumation grave (75417) at King St Plantation had survived to only 0.08 m in depth, and substantial – probably modern – horizontal truncation had removed most of the central and upper area of the skeleton and heavily fragmented the remaining elements. Although the probable Iron Age grave (90178) at Over Field had survived to a greater depth (approximately 0.17 m) the remaining bone was again heavily fragmented, partly due to pressure from above and partly to the detrimental effects of the burial environment (acidic sandy clay). There is mild–moderate surface degradation (Grade 2) to the bone from both graves; that from grave 75417 at King St Plantation shows some dark-coloured mottling, probably due to fungal activity, whilst that from grave 90178 at Over Field has a slightly eroded/leached appearance suggestive of slight waterlogging of the surrounding soil matrix. As the burial had been made directly in one of the site's boundary ditches it might be supposed the latter also acted to drain the adjacent land and was occasionally waterlogged. The two factors of truncation and poor preservation are responsible for the low levels of skeletal recovery from the graves (18–38%).

The condition of the redeposited unburnt bone is variable and in each case there are signs of human and/or animal manipulation. The single skeletal elements recovered from ditch fills at Daleacre (south) and Field Farm (Table 4.26) both have evidence of low intensity canid gnawing to the ends of the long bone shafts. The almost complete femur shaft from Field Farm is moderately eroded (Grade 4) and shows signs of surface weathering; the incomplete humerus shaft from Daleacre (south) is only slightly eroded (Grade 2) and has a faintly polished appearance in places suggestive of repeated handling. The latter was recovered together with other animal bone, including parts of an immature horse – an unusually young age for such a species from archaeological deposits (see Higbee, below) – none of which showed signs of gnawing. This suggests the human bone had at some stage been in a different location to the animal remains with

which it was finally deposited. The femur from Field Farm was found alone at the junction between two boundary ditches and the humerus from Daleacre (south) comprised one of few finds potentially associated with the enclosure. Whilst in both cases the indications are that the bodies from which these bones derived were probably subject to excarnation, involving exposure at some stage in the process, it remains open to question whether their final place of deposition is reflective of incidental inclusion or deliberate intent (see below).

The almost complete cranial vault (frontal bone missing – probably a natural parting along the unfused coronal suture) from the King St Plantation enclosure ditch terminal shows only slight surface degradation (Grade 1–2), but has numerous small cut marks and a slightly 'polished' appearance to both parietal bones (Plate 4.4). There are up to eight short, slightly curved cut marks, generally running medio-lateral across the skull. Between 5–15 mm long, in each case the anterior margin is slightly more acute than the dorsal, the cuts look to have been made to green or semi-green bone using some form of rounded implement rather than a straight blade. The frequency, shape and location of these cuts are not suggestive of violent peri-mortem trauma and they are not characteristic of a 'singular' desecration such as scalping (During and Nilsson 1991). Nor do they have the appearance of the fine, linear 'filleting' marks associated with defleshing (Binford 1981, 129–31; Mays and Steele 1996; McKinley 2008a). The marks are, however, indicative of human manipulation undertaken post-mortem but prior to the bone drying out completely; potentially some form of ritual 'mutilation' of the cranium (possibly originally the entire head/skull). As such, it would not be out of kilter with evidence for various forms of mutilation, ritual display and curation of skulls in the Iron Age period for which there is ample evidence elsewhere, the victim commonly believed to have been a vanquished foe or 'criminal' (Cunliffe and Poole 1991, 425; Craig et al. 2005; Redfern 2008; Ross 1974, 94–171; Whimster 1981, 177–89; Woodward 1992; 1993). Most deposits that include such manipulated material are of Middle to Late Iron Age date but a few earlier cases are recorded, such as the Early to Middle Iron Age examples from Maiden Castle hillfort (Sharples 1991, 63–98; Redfern 2008), and the Early Iron Age skull from Wishaw Hall Farm, Warwickshire, which appeared to have been curated and, in its final context, represented a placed deposit rather than some form of incidental inclusion within the pit (pers. obs.; Trevarthan 2008, 360–2).

The singular presence of the human cranium amongst the unusual deposit of animal bone – inclusive of a substantial proportion of the articulated body parts of a horse (see Higbee, below) – made in the enclosure ditch terminal at King St Plantation also seems more than incidental or a simplistic deposit of 'debris'. The shifting role of human remains – particularly the skull, which continues to be recognisably human throughout much of the post-mortem transformation and degradation process – within different parts (temporal and geographic) of Iron Age societies has been explored by numerous writers (eg, Armit 2010; 2017; Hill 1995). Hill has stressed that 'archaeological deposits of human remains are never simply to do with treatment of the dead' (*ibid.* 177) and has also highlighted the similarity with which some human and animal remains were treated, proposing a cultural classification of species in which humans were grouped with horses and dogs (all 'trainable' and interactive) on the 'boundary between the domestic and wild' (*ibid.* 107–8). The question remains as to what purpose such a deposit in this location – at the entrance to the enclosure – might have served. As the human skull was incomplete and not necessarily readily discernible to those entering the enclosure one might exclude it acting as a visible warning or 'example'. Might it then have been deemed to offer some 'protection' to what was being undertaken within the enclosure, acting as 'guardian' or fulfilling the 'important role of mediation between this world and the next' (Sharples 1991, 87)? One must also ask, were this to be the case, whether a former 'enemy' or criminal would be viewed as a suitable prospect for such a role; might a valued former member of the community not be considered a more fitting advocate?

The two cremation graves at Daleacre had survived to markedly different depths. Bone and fuel ash was evident at surface level in grave 80232 (0.05 m deep) and some bone will undoubtedly have been lost due to horizontal truncation. Only a small amount of bone was visible around the upper margins of the 0.20 m deep grave 80227, suggesting the burial remains and accompanying pyre debris were largely undisturbed and that backfill had 'settled' in the central area. Unfortunately, the sample from one of the upper spit quadrants (NE1) was lost prior to processing; consequently, an unknown quantity of bone is missing from the deposit. The surface spread of fuel ash within ditch 70173 at Seven Geaves had a maximum depth 0.07 m; although bone was evident at surface level, and some might have been lost in machine stripping (see above), it is unlikely that the deposit contained much bone prior to disturbance. The cremated bone from this and the two graves is in good visual condition, and both trabecular (which tends to suffer preferential loss in adverse burial environments) and compact bone were recovered from all the deposits, particularly 80228, suggesting limited loss due to poor preservation.

Table 4.26 Summary of results from scan of human remains

Context	*Cut*	*Date*	*Deposit type*	*Quantification*	*Age/Sex*	*Pathology*	*Observations*
				Unburnt bone			
Daleacre (south)							
22807	22808	?EIA	R ditch	1 frag. u.	juvenile		2; ?canid gnawing, slight polish
Field Farm							
65063	65062	MIA	R ditch	1 element l.	adult >18 yr		4; ?canid gnawing, ?surface weathering
King St Plantation							
75415	75417	MBA	inh. burial flexed R side	18 % s.u.l.	adult 35–55 yr ??male	osteophytes – MtC-P joint; mv – coronal ossicle	2-1; heavily fragmented/comminuted
75489	75484	E–MIA	R/?placed deposit ditch terminal	9% s.	adult 18–35 yr ??female	mv – occipital bunning, wormian bones, coronal ossicle	1–2; ?curated – 'polished', deliberate damage?
Over Field							
90180	90178	M–LIA	inh. burial prone, extended	38%	adult 35–50 yr ??male	amtl; calculus; caries; osteophytes – lumbar ap, right scaphoid, right finger phalanx (prox. IP); mv – cusp variations mandibular teeth	2–3, slightly eroded, heavily fragmented/comminuted
				Cremated bone			
Seven Geaves							
70505	70504	E–MRB	crd incl fuel ash	12.8 g	subadult/adult >15 yr		
70524	70523	E–MRB	R ?=70505	4.2 g	subadult/adult >15 yr		?animal (0.1 g)
Daleacre							
80228	80227	LBA	un. burial + rpd	714.1 g	subadult 15–18 yr ??female		?animal (1 g)
80233	80232	LBA	bioturbation	12.6 g	= 80234		
80234			?un. burial + rpd	136.2 g	subadult/adult 15–30 yr ??female		

KEY: inh. – inhumation; un. – unurned; crd – cremation-related deposit; R – redeposited; s.a.u.l. - skull, axial skeleton, upper limb, lower limb (skeletal areas represented where not all are present); amtl – ante mortem tooth loss; mv - morphological variation; MtC- metacarpal; IP – interphalangeal; P – phalangeal; ap - articular process facet; rpd – redeposited pyre debris

Plate 4.4 Middle Iron Age cranium from ditch terminal pit 75484, showing cut marks and polished appearance of parietal bones, and wormian bones and occipital bunning. Right anterior-lateral (a) and left dorsal (b) views

Demographic data

A minimum (MNI) of seven individuals, but a possible eight, are represented within the assemblage: one Middle Bronze Age (inhumed); two Late Bronze Age (cremated); three/?four Iron Age (inhumed and ?excarnated); and one Romano-British (cremated) (Table 4.26). Although three of the Iron Age deposits comprised single skeletal elements, with none duplicated, at least one is clearly distinguished by the individual's age, the juvenile from ditch 22808 at Daleacre (south) being the only young immature individual in the assemblage. The radiocarbon dates from the two Iron Age deposits from Field Farm and King St Plantation overlap, and the possibility of them deriving from the same individual cannot be discounted; however, the approximately 600 m distance between the sites and the apparent differential treatment of the elements might render it unlikely. Consequently, the elements are tentatively suggested to have derived from two individuals. Although the cremation-related deposit from Seven Geaves does not represent the remains of a burial, it comprises the only Romano-British evidence for the rite recovered from the development area; consequently, the remains have been included in the MNI.

The paucity of skeletal elements and heavy fragmentation amongst the unburnt remains mean it was possible to only tentatively suggest the sex of three individuals – both most likely males falling in the mature–older adult range and the possible female in the younger adult range. The cremated Late Bronze Age individuals were tentatively sexed as female.

The small size and dispersed – temporal and geographic – nature of the assemblage limit detailed demographic comment. The Bronze Age graves all appear to lie in isolation within their contemporaneous landscapes, and what might have influenced their locations is unclear. The area might have functioned as a 'mortuary zone', perhaps not densely 'populated', but isolated graves are notoriously difficult to detect archaeologically, their presence rarely being demonstrable via non-intrusive archaeological investigations (eg, geophysics or fieldwalking) and readily missed by evaluation trenches. Observations on the scarcity of evidence for Middle to Late Bronze Age cemeteries in the Trent–Soar confluence zone, to the north of the development area, have been made elsewhere (Cooper 2006), and the focus of attention seems to have lain around the potential secondary use of Early Bronze Age monuments such as the barrow complex at Lockington – where even in the main phase of activity the mounds were not all necessarily linked to burial rites per se (Hughes 2000, 102). Although burial remains featuring both cremation and inhumation of the unburnt corpse are recorded for the Middle Bronze Age, with some burial groups featuring both rites, cremation appears to have predominated. Several cremation cemeteries of moderate–large size have been excavated within the county and from its neighbours, eg, Eye Kettleby, some 40 km to the south-east of the development area (MNI 76: Chapman 2011), Coneygre Farm, Nottinghamshire (MNI 44: Allen et al. 1987) and Whitemoor Haye, Staffordshire (MNI 21: McKinley 2017b). However, in general, most burials of this

period seem to have been made in small groups or as singletons, such as that from King St Plantation. Other examples from the county include the Early–Middle Bronze Age urned burial remains from Dishley Grange some 7 km to the south-east (Jones 2011), and the Middle Bronze Age urned burial remains from Willow Farm, Castle Donington, 2.5 km to the north-west, which were associated with a small ring ditch (Ripper et al. 2017). The implied variability in the mortuary landscape demonstrates either different mechanisms affecting the choice of burial place, including longevity of use and collective cultural memory attached to specific places, which might have acted as foci for several communities/households, or possibly the existence of some larger centres within what were probably otherwise relatively sparse and dispersed rural populations.

Cremation is also believed to have comprised the predominant mortuary rite in the Late Bronze Age, with Brück's (1995) review recording only nine sites in mainland Britain where the possible remains of Late Bronze Age inhumation burials had been found. The latter have increased in number and proportion over the intervening decades (McKinley 2017a), and disarticulated, redeposited remains are – as in the following Iron Age phases – often recovered from non-grave contexts (Bradley 1990, 11; Brück 1995, 249 and fig. 1). Whilst, as seen at Daleacre, cremation might remain the currently most archaeologically visible mode of disposal of the dead, there is increasing evidence for greater diversity both in terms of the variety and complexity of the mortuary rites being undertaken and the location of the associated deposits (eg, Armit and Büster 2020, 261; McKinley et al. 2014; McKinley 2017a).

That the 'majority of Iron Age [indeed most prehistoric] populations were disposed of in archaeologically untraceable ways' (Hill 1995, 106) is a widely accepted premise. Excarnation, in its various forms, has long been considered to represent one of the most common, if not the predominant mortuary rite undertaken in the Iron Age, supported by the relatively common recovery of disarticulated redeposited skeletal elements or parts thereof from what are deemed non-mortuary contexts (Hill 1995, 13–18). It is, however, also recognised that 'interpretations, such as the likely ubiquity of excarnation' is 'more based on the absence than the presence of evidence' (Armit and Büster 2020, 261). What might be described as 'hidden' and previously unanticipated liminal locations for mortuary-related activity in the Late Bronze Age (see above) and Early–Middle Iron Age are increasingly coming to light, particularly with the now routine application of radiocarbon dating, illustrating a great diversity in the mortuary rites being undertaken (see above). Excarnation undoubtably remains a major likely mechanism for disposal of the dead in these phases, as does the probability that at least some, potentially many, of those who were cremated were not afforded the secondary rite of formal burial of their remains.

Three of the Iron Age individuals – one possibly Early, the other two Middle – amongst the MNI from the development area were represented by redeposited skeletal elements recovered from ostensibly 'non-mortuary' contexts indicative of a similar date range to those provided by the radiocarbon dates from the bone samples. Although the remains of two individuals might be deemed to have been located at strategic points within the ditch systems (junction; entrance), the situation of the third had no obvious distinguishing features. As is commonly the case in archaeological investigations, none of the ditches were excavated in full, with strategically placed segments being dug through some 10–20% of the length of each. Consequently, the potential presence of human bone in the uninvestigated sections of the ditches cannot be discounted, though the quantities are not likely to be very great.

Beamish (1998) listed relatively few examples of Iron Age burials from Leicestershire and Rutland, and most comprised the *in situ* or disturbed remains of inhumation burials found singly or in pairs. The former include a Middle to Late Iron Age pit burial (re-used pit, not originally excavated as a grave) from Rushey Mead, Leicester (Pollard 2001), and the disturbed remains of a burial and redeposited bone from beneath a shallow bank at Breedon-on-the-Hill (Wacher 1978). Remains recovered from enclosure ditch fills include disarticulated bones from Mountsorrel (Beamish 1995) and part of an infant skeleton from Tixover (Beamish 1992; Monckton 2006). Evidence for cremation was also present, with Middle and Late Iron Age cremation graves being found at Wanlip (Beamish 1998) and Enderby (Ripper and Beamish 1997, 113).

Burial remains occurring as dispersed singletons within what comprised rural agricultural settings – often made at/towards field boundaries that probably related to individual farmsteads – are common features within many prehistoric and Romano-British landscapes (eg, Burgess 2015). Whilst remaining liminal in location, they also illustrate the holistic nature of those landscapes and a sustained link between the living and the dead, with a continued role of the latter in the living community. In the event, the apparent paucity of mortuary deposits of Late Iron Age–Romano-British date from East Midlands Gateway could be viewed as unexpected. It might be that the location of the farmsteads/settlements to which these field systems relate was such that none of the investigated areas were deemed 'suitable' for burial – not lying at boundaries between families/communities or falling outside the viewscape of the home/settlement. Equally, it might be that more burials were made within the unexcavated

ditch sections (see above) – grave 90178 made in the ditch fill at Over Field represented a fortuitous discovery that could easily have been missed (indeed, the remains were only found when the section of the intervention dug immediately to its north was being straightened prior to recording). Similarly, as discussed above, isolated graves – so difficult to detect archaeologically – might well lie scattered across the intervening landscape between the excavated sites. The prone burial position of the individual in grave 90178 could in part be responsible for its apparently lone, liminal location; Romano-British burials featuring this body orientation have often been found in marginal settings leading to the suggestion that the pronated dead were criminals or some other form of social outcast (Philpott 1991, 71–5; Smith 2017). Whilst this might have been the case here, such burials have also been found well within the confines of cemeteries and with grave goods, distinguished from their neighbours only by their burial position, and pronation of the body probably had more complex and varied connotations including the intention of confusing the dead in an attempt to ensure their ghost did not return amongst the living (Harman et al. 1981; Taylor 2008).

Indices, pathology and morphological variations

Poor skeletal recovery and heavy fragmentation of the unburnt bone meant it was not possible to take many measurements or calculate more than one of the standard skeletal indices. The redeposited Middle Iron Age femur shaft comprised the only element sufficiently complete for such recording, the platymeric index (demonstrating the degree of anterior-posterior flattening of the proximal femur) of 93.0 falling in the median eurymeric range. Although observations were limited, both the adult males appeared to have been relatively large and robust, and the Iron Age male (grave 90178) had strongly marked pronator muscle attachments in at least the right arm (left incomplete) indicating powerful use of the forearms.

Minor pathological lesions were observed in both of the inhumed mature/older adult males (Table 4.26). Dental lesions in the Iron Age male dentition include ante mortem loss of an anterior mandibular tooth (rate 1:10) with excessive wear to the root apices of two adjacent anterior teeth and at least one of the occluding maxillary teeth (four of seven teeth). The location of the affected teeth and relative lack of wear to those on the left side and to the distal teeth, suggests either trauma to the right side of the face – breaking several teeth leading to accelerated wear to the surviving tooth roots – or that the teeth on this side were repetitively used as a tool to grip something that damaged them and caused excess wear. The single carious lesion seen, again somewhat unusually, in a right mandibular incisor, could also have resulted from damage/excess wear to the tooth exposing the pulp cavity to infection. Dental calculus (calcified plaque) deposits were moderate, suggesting the man enjoyed a diet not heavily dependent on carbohydrates.

The only other lesions (osteophytes), observed in several of the hand joints of both adult males (Table 4.26), are most likely reflective of age-related wear-and-tear (note, few other joint surfaces other than those of the hand and feet of the Iron Age individual survived).

Non-symptomatic variations in skeletal morphology were recorded in the remains of three individuals. Some such variations might be indicative of broad genetic links within populations, but the aetiology is often poorly understood and the frequency with which some occur can be very high; consequently, judgments on the basis of lone variants are problematic and unreliable. Wormian bones, extra ossicles in the lambdoid suture, such as those seen in the skull from ditch terminal pit 75484 at King St Plantation, are a common variant. However, in this case the number of ossicles is exceptionally high, extending the length of the lambdoid suture on both sides (Plate 4.4). There is a recognised link between a high number of wormian bones and occipital bunning (bathrocephaly; Mann et al. 2016, 184) – also apparent in this skull – the excessive growth of the lambdoid suture caused by the former resulting in the latter feature. Other suggested aetiologies for bunning include a breech position in utero (*ibid.*). The presence of ossicles in the coronal suture is markedly less common (*ibid.* 141) and it is, therefore, interesting to observe that both the skulls from King St Plantation – although of different date – had this feature (note, the dorsal portion of the Middle Bronze Age skull was not recovered).

Pyre technology and cremation ritual

The cremated bone from grave 80232 is uniformly white, indicative of full oxidation of the bone (Holden *et al.* 1995a and b). Minor deviations from this norm, comprising faint grey or blue hues indicative of slightly less extensive levels of oxidisation, were observed in a few bone fragments (never an entire bone) from all skeletal areas amongst the remains from grave 80227. Elements of upper limb were primarily affected – mostly the medullary cavities of forearm long bones and various hand bones – together with a few fragments of endocranial skull vault and diploe. Such slight variations are relatively common and suggest a minor shortfall in one or more of the factors required to effect full oxidation of the bone, which include a sustained temperature and oxygen supply available to different parts of the corpse across a sufficient length of time (see McKinley 1994a, 76–8; 2004c, 293–5; 2008b). In this case, the involvement of the hands and forearms

might indicate that the arms were folded across the chest, possibly even bound in position, resulting in the body insulating these elements from the fire until late in the cremation process (insufficient heat and oxygen). Alternatively, a dense wrapping of insulating material, such as leather/fur gauntlets, could have produced the same effect. A similar effect on the cranium (the exocranial surface of which would be exposed to the heat/oxygen before the diploe or the endocranial surface) might result from the head being laid on a pillow or encased in a leather cap, or due to it lying in a peripheral (cooler) position on the pyre. The one black (charred) distal finger phalanx from amongst the universally white remains from the Romano-British cremation-related deposit (70524) suggest the hands might also have been in a peripheral position on the pyre, and that they may have fallen away from the structure during the physical breakdown of the body in cremation.

An unknown quantity of bone is known to be missing from both of the Late Bronze Age burial deposits, as a result of different mechanisms (see above). Consequently, the broad disparity between the two burials could be misleading to a degree but is unlikely to have been substantially less. The total weight shown for burial 80227 is known to be a slight under-representation for a further reason; a relatively substantial quantity of bone was observed in the small fraction residue (>4 mm), and whilst these fractions are routinely not subject to full extraction of the bone (ie, weights presented in analysis are compatible), in the few cases where it has been possible to measure the quantities in similar fractions, an additional 5–10% by weight of the total has been recorded (pers obs). On the available evidence, however, the quantity of bone from grave 80232 falls in the lower range recorded for Bronze Age burials, and that from grave 80227 in the median–upper range (McKinley 1997, 142). The quantity of bone available for examination from the latter represents approximately 45% of the average weight expected from an adult cremation (McKinley 1993), and this individual had not yet reached adulthood. Incomplete recovery of the bone from the pyre site for burial appears to have been a characteristic of the rite across the temporal range and no consistent evidence to account for the variability in the quantities of bone included in the formal burial has yet come to light (McKinley 1997; 2006; 2013). What is clear is that cremation – the 'magical' transformation process – formed the main focus within the rite, the burial of the remains being a secondary act and of secondary – or certainly different – significance, and possibly not afforded to all.

A variety of intrinsic and extrinsic factors can affect the size of cremated bone fragments, many of which are exclusive of any deliberate human action other than that of cremation itself (McKinley 1994b; 2004b), and the figures recovered in analysis can generally provide only a guide to the levels of fragmentation to the bone at the time of deposition. The vast majority of the bone from the burial remains at Daleacre was recovered from the 5 mm sieve fraction (75–76% by weight), and the maximum fragment sizes are relatively low at 29–37 mm. Overall, the fragment sizes are uniformly smaller than is commonly observed (majority most frequently in 10 mm fraction). Given that there was no apparent disturbance to grave 80227, and that the condition of the bone suggests limited taphonomic destruction (see above), the level of fragmentation recorded indicates there might have been greater incidental breakage as a result of more handing/movement/manipulation of the remains between the pyre and the grave than is usually indicated. The latter could, of course, have involved curation above ground prior to final deposition in the grave – there is evidence to indicate that the bone from grave 80227 at least was contained in a bag (see below) – but the presence of fuel ash/pyre debris in the grave fill implies the burial followed closely after cremation, with debris from the nearby pyre being included as a secondary deposit. The possibility of some degree of deliberate fragmentation to the bone cannot be fully dismissed, but there is very limited evidence for such a practice within any period of the rite's use in the British Isles, and the purpose of such an action is debatable – the 'magic' of transformation, rendering the remains inert, divisible and portable, having been fulfilled by cremation.

At 34–35% by weight, the proportion of the remains from the two burials identified to skeletal element (a named bone within one of the four skeletal areas) falls towards the lower end of the median range (30–50%, pers obs). As is routinely observed, both graves contained an assortment of elements from all skeletal areas, and both featured the classic under-representation of axial elements which predominantly comprise the more fragile trabecular bone (see taphonomy above). The remains from grave 80232 did not display the frequently encountered over-representation of the readily identifiable skull elements – which comprised a relatively proportionate 21% of the identified skeletal elements (by weight; see McKinley 1994a, 6) – but grave 80227 did. Over half the identified bone (55%) from the latter derived from the skull; the proportions in the lower half of the grave (which included only 25% of the total weight of bone) were markedly over-representative at 85–96% of the identifiable elements within the various quadrants. The upper half of the grave fill had a more even distribution of skeletal elements, particularly within the south-west quadrant, which contained over half the total weight of bone from the grave. As observed above and illustrated here, the distribution of the bone within the grave suggests the burial container

comprised a flexible textile/skin bag, the upper levels of which were set to the south-west where the greatest proportion of the bone lay. Although the distribution of the skeletal elements might suggest an ordered deposition of remains within the bag, commencing at the head end of the pyre, closer scrutiny of the specific elements identified in each spit/quadrant shows a mix throughout, with joins between skull fragments from the upper and lower half of the grave.

The small bones of the hands and feet are routinely recovered from cremation burials. It has been suggested that the frequent recovery of these elements might indicate that the bone was collected after cremation by raking the remains off the pyre site, with subsequent winnowing to clear away any fuel ash (easing the recovery of the smaller skeletal elements), as opposed to individual hand-recovery of fragments (McKinley 2004b, 299–301). A relatively large number of such elements (34) were identified amongst the remains from grave 80227, with a substantially smaller number (six) from grave 80232. The data suggest that different modes of recovery were employed for different individuals, but on what basis is unclear. As with other aspects of the rite, idiosyncratic local influences – such as the preference of those undertaking the task at any one time – are likely to have played their part.

A few fragments of cremated animal bone were recovered from grave 80227 and amongst the Romano-British material from spread 70524 (Table 4.26). The fragments are too small/eroded to enable species identification. The inclusion of all or parts of an animal on the pyre is a common feature of the rite across the temporal range, with variations in both the species encountered (and their nature/significance) and the frequency with which they occur (eg, McKinley 2006, table 5.1). Although, as here, it is not always possible to identify the small amounts of bone found to species, sheep features amongst the remains of Late Bronze Age cremations elsewhere.

Animal Remains

by Lorrain Higbee

Overview of Assemblage

The large and informative assemblage of animal bones (7669 fragments or 59.526 kg) includes hand-recovered and sieved material. Once refits and associated bone groups (hereafter ABGs) are accounted for the total count falls to 3968 fragments, of which 1108 are identifiable to species (Table 4.27). Bone was recovered from all 10 excavation areas (Table 4.28), the majority from contexts of Middle to Late Iron Age and Romano-British date, with smaller amounts from contexts of Bronze Age, medieval/post-medieval and modern date.

Methods

The following information was recorded where applicable: species, element, anatomical zone (after Serjeantson 1996, 195–200; Cohen and Serjeantson 1996, 110–12), anatomical position, fusion state (after O'Connor 1989; Silver 1969), tooth eruption/wear (after Grant 1982; Halstead 1985; Hambleton 1999; Payne 1973), butchery marks (after Lauwerier 1988; Sykes 2007), metrical data (after von den Driesch 1976; Payne and Bull 1988), gnawing, burning, surface condition, pathology (after Vann and Thomas 2006) and non-metric traits. This information was directly recorded into a relational database (in MS Access) and cross-referenced with relevant contextual information.

The assemblage has been quantified in terms of the number of identified specimens present (NISP). The minimum number of individuals (MNI), minimum number of elements (MNE) and meat weight estimates (MWE; following Boessneck et al. 1971; Bourdillon and Coy 1980; O'Connor 1991; Dobney et al. 2007) are also presented for the main periods. The live weights used to estimate MNE are 275 kg for cattle, 37.5 kg for sheep and 85 kg for pig.

Caprines (sheep and goat) were differentiated based on the morphological criteria of Boessneck (1969), Payne (1985) and Halstead et al. (2002). No goat bones were positively identified, so all undifferentiated caprine bones are assumed to belong to sheep and this term will be used throughout the report.

Preservation and fragmentation

Bone preservation varies from good to fair across the sites. The preservation condition of fragments from most contexts is generally consistent, however; the bones from some ditch fills include poorly preserved fragments that have been reworked from earlier deposits. Gnaw marks are apparent on less than 7% of post-cranial bones, and the majority came from the King St Plantation site. This is a very low occurrence and indicates that the assemblage has not been significantly biased by the bone chewing habit of scavenging carnivores. The assemblage is highly fragmented and only 29% can be identified to species; the percentage varies between site areas and generally corresponds to localised poor preservation conditions.

Middle to Late Iron Age

The Middle to Late Iron Age assemblage comprises 3111 fragments of animal bone, 26% (or 799) of which are identifiable to species (Table 4.27). The majority came from the King St Plantation, Mill

Table 4.27 Animal bone: number of identified specimens present (or NISP) by period

Species	*Bronze Age*	*Middle to Late Iron Age*	*Romano-British*	*Medieval to modern & unstratified*	*Total*
cattle	1	425	172	32	630
sheep/goat	1	236	38	7	282
pig	-	76	14	3	93
horse	-	48	26	7	81
dog	-	12	6	-	18
cat	-	2	-	-	2
domestic fowl	-	-	1	-	1
rabbit	-	-	-	1	1
Total identified	2	799	257	50	1108

Iron Age includes 23 bones from sheep ABG in 75432 and 18 bones from horse ABG in 75484, and Romano-British includes 3 bones from cattle ABG in 90056

Table 4.28 Provenance of animal bones by site

Area	*N*	*%*	*Period*
Daleacre (south)	89	2	Middle to Late Iron Age
King St Plantation	1026	26	Middle to Late Iron Age, modern
Great Dampits	180	4.5	Middle to Late Iron Age
Field Farm	605	15	Bronze Age, Middle to Late Iron Age
Mill Close	758	19	Middle to Late Iron Age
Horsecroft	382	10	Middle to Late Iron Age
Longfield	112	3	Middle to Late Iron Age
Over Field	302	7.5	Romano-British, modern
Daleacre	165	4	Romano-British, medieval
Seven Geaves	349	9	Middle to Late Iron Age, Romano-British, late medieval to post-medieval
Total	3968	100	

Table 4.29 Relative importance of livestock species by NISP, MNE, MNI and MWE

	Middle to Late Iron Age			*Romano-British*		
	cattle	*sheep*	*pig*	*cattle*	*sheep*	*pig*
NISP	425	236	76	172	38	14
% NISP	*57.7*	*32*	*10.3*	*76.8*	*16.9*	*6.3*
MNE	340	264	65	125	44	12
% MNE	*50.8*	*39.5*	*9.7*	*69*	*24.4*	*6.6*
MNI	16	22	5	9	4	1
% MNI	*37.2*	*51.2*	*11.6*	*64.3*	*28.6*	*7.1*
MWE	4400	825	425	2475	150	85
% MWE	*77.9*	*14.6*	*7.5*	*91.4*	*5.5*	*3.1*

Note that the calculation of MNE includes teeth retained in mandibles as well as loose teeth, so the total might be higher than the NISP count

Close, Field Farm and Horsecroft sites (Table 4.28). Cattle bones dominate, followed by sheep and then pig, with rarer inclusions of horse, dog and cat bones.

Livestock economy

In terms of the relative importance of livestock, cattle bones account for 58% NISP, followed by sheep at 32% and pig at 10% (Table 4.29). The MNE result shows a similar basic pattern with cattle dominating (51%) relative to sheep (39%) and pig (10%). A different pattern is suggested by the MNI result, which indicates more sheep (51%) than other livestock. Discrepancies between quantification methods are inevitable and reflect different rates of fragmentation based on carcass size and the differential survival of distinct elements.

These discrepancies aside, cattle, by virtue of their greater size, provided most (78%) of the meat consumed here during the Iron Age. The beef available from the estimated 16 cattle carcasses that make up the assemblage is 4400 kg, compared to 825 kg of mutton from 22 sheep carcasses, and 425 kg of pork from five pig carcasses.

Livestock body part representation

Body part data for cattle and sheep is presented in Figures 4.13 and 4.14. Most parts of the beef and mutton carcass are present; some elements are better represented than others, but these are generally more robust elements that survive well and are easily identified in a fragmented state. Some of the small bones and teeth are under-represented despite an extensive programme of sampling and sieving. The most common cattle bones are mandibles, followed by radii and metapodials. Sheep tibiae are common, followed closely by mandibles and loose teeth. For pig, common elements include the scapula, humerus and mandible. The overall occurrence of elements suggests the presence of whole carcasses and is consistent with a self-sufficient subsistence economy in which meat was sourced from locally reared livestock that were slaughtered and butchered close to areas of domestic occupation. Most bone-rich deposits include mixed waste from different stages in the carcass reduction sequence, and there are no obvious concentrations of elements in any of the excavation areas to indicate different zones of activity.

Livestock mortality patterns

The Middle to Late Iron Age assemblage includes 32 cattle mandibles retaining teeth with recordable wear, and the majority (64%) are from the Field Farm and King St Plantation sites. The mandibles are from a range of different ages (Fig. 4.15). Over half of cattle were slaughtered before the age of three years and most of the rest were well past their prime (mandible wear stages (or MWS) D, E, G and I). The mortality pattern established from the epiphyseal fusion state of post-cranial bones is less accurate but suggests a less intensive slaughter rate amongst juvenile and subadult animals (Table 4.30).

The overall pattern is indicative of a mixed husbandry strategy primarily geared towards beef production, particularly from animals in their prime (MWS D and E); however, the other peaks in mortality (MWS G and I) suggest that the wider husbandry strategy required some older animals to be maintained beyond prime meat age to provide milk and for use as draught animals. Further evidence that dairying played a part in the husbandry strategy is suggested by the presence of a few calves aged between 1 and 18 months (MWS B and C). Animal husbandry strategies in Iron Age Britain are thought to have been closely linked with arable cultivation (Hambleton 1999, 78), and the presence of older cattle is in keeping with this. Supporting evidence that dairying was an important part of this strategy comes from organic residue analysis on pottery sherds from Mill Close, Great Dampits and Longfield (see Dunne et al. above).

The sheep mortality profile is based on 26 mandibles (Fig. 4.16). This overwhelmingly shows that most (73%) sheep were culled between the ages of 1 and 2 years (MWS D). This pattern is consistent with an intensive system of meat production (Hambleton 1999, 74). A few mandibles from younger and older sheep are also present (MWS C and E–G). Age information from epiphyseal fusion is extremely limited (Table 4.30), but confirms the basic pattern outlined above.

Only eight pig mandibles were recovered, all from young animals aged between 7 and 27 months (MWS C–E). Most pig post-cranial bones have unfused epiphyses and are also from immature animals.

Butchery evidence

Chop and/or cut marks are present on 120 elements, mostly (78%) cattle bones, but also a few sheep, pig and horse bones. Chop marks account for 81% of the butchery evidence (Table 4.31), and were present on a range of cattle bones, but particularly the mandible, humerus, radius, tibia and metapodials. Most of the evidence relates to disarticulation and secondary reduction into smaller joints, but there is also some evidence that post-cranial bones had been processed for marrow. Knife cuts were noted on only a small number (19%) of bones and most relate to skinning and filleting, with some marks on cattle mandibles resulting from removal of the tongue.

Size and shape of livestock

There is limited biometric data available for detailed analysis. Measurements taken on several intact post-cranial bones provide withers (or shoulder) height estimates for cattle of between 1.09 m and 1.12 m (mean 1.10 m), while sheep were 0.61 m at the withers.

Table 4.30 Epiphyseal fusion of post-cranial elements

		Middle to Late Iron Age			*Romano-British*		
Species	*Fusion category*	*F*	*UF*	*%F*	*F*	*UF*	*%F*
cattle	early – 12–18 months	56	2	96.5	20	-	100
	intermediate – 2–2½ years	22	2	91.7	12	-	100
	late – 3½–4 years	14	5	73.7	8	2	80
	final – 5 years+	5	2	71.4	10	3	76.9
Species	*Fusion category*	*F*	*UF*	*%F*	*F*	*UF*	*%F*
sheep	early – 10 months	7		100	2	-	100
	intermediate I – 13–16 months	4	6	40	1	1	50
	intermediate II – 1½–2 years	8	3	72.7	-	-	-
	late – 3 years	2	6	25	1	-	100
	final – 4 years+	-	5	0	-	-	-

Fusion categories after O'Connor (1989). Fused and fusing epiphyses are amalgamated. Only unfused diaphyses, not epiphyses, are counted

Table 4.31 Summary of butchery evidence by implement type and technique

	Middle to Late Iron Age		*Romano-British*	
Butchery implement	*N*	*%*	*N*	*%*
cleaver	97	80.8	19	82.6
knife	23	19.2	3	13
saw	-	-	1	4.4
Total	120	100	23	100
Butchery type	*N*	*%*	*N*	*%*
disarticulation	77	64.2	18	78.3
filleting	9	7.5	2	8.7
skinning	4	3.3	-	-
marrow	30	25	2	8.7
working	-	-	1	4.3
Total	120	100	23	100

Other species

The assemblage also includes a small number of horse and dog bones, and a couple of foot bones from a juvenile cat. Most of the horse bones came from the Field Farm and King St Plantation sites, and a range of different elements was recovered including the skull of a juvenile animal from enclosure ditch 65243. Butchery marks were noted on a few bones, but the consumption of horse meat is likely to have been infrequent given their status as prestige animals in Iron Age Britain (Allen 2017, 126). Measurements taken on a few complete bones indicate that these were pony-sized animals of between 11.3 and 13.3 hands (mean 12.2 hands).

Dog bones came from several areas, but the majority are from ditches and pits at the King St Plantation site. An ulna from four-post structure 75290 is from a juvenile, but the rest are from adult animals. A complete femur from the King St Plantation site provided an estimated shoulder height of 0.53 m. Two cat metapodials came from roundhouse structure 50188 at Mill Close. Bones from these animals are rarely recovered from Iron Age sites in Britain, and there is some dispute as to whether they are from fully domestic or semi-wild animals (Kitchener and O'Connor 2010, 92–3).

Romano-British

A total of 760 fragments of animal bone came from Romano-British contexts at three sites. Approximately 34% (or 257) of fragments are identifiable to species

(Table 4.27), most of which came from the Seven Geaves and Over Field sites, with smaller amounts from Daleacre (Table 4.28). Cattle bones dominate, followed by sheep and then pig, with rarer inclusions of horse, dog and domestic fowl.

Livestock economy
All four methods of quantification (Table 4.29) indicate that cattle were of prime importance to the Romano-British livestock economy and accounted for between 64% and 77% of livestock (based on NISP, MNE and MNI), and provided 91% of the meat consumed. Sheep were of secondary importance (17%–29%) but only provided 6% of the meat consumed, and pig were of minor importance (6% to 10% NISP, MNE and MNI) and provided just 3% of the meat. The evidence indicates that the local tradition of cattle farming, established in the Middle to Late Iron Age, persisted throughout the Romano-British period. This situation is common across much of Britain (Allen and Lodwick 2017, 177) and no doubt reflects the suitability of local conditions for certain types of farming.

Livestock body part representation
Most parts of the beef carcass are present; cranial fragments are common compared to bones from the appendicular skeleton, and this suggests that the cattle bone assemblage includes more butchery waste than domestic food refuse. Most of the meat from locally reared cattle must, therefore, have been widely distributed away from areas where these animals were slaughtered and butchered, possibly to other, more densely populated settlements. The evidence is limited, but suggests some involvement in the wider economy, at least in terms of the supply of beef. Common meat-bearing bones are all from the forequarter, suggesting a preference for shoulder joints, or the wider distribution of select cuts. The butchery evidence suggests some of these joints were cured for longer-term storage. Few sheep and pig bones were found but the range of skeletal elements is consistent with whole carcasses having been present.

Livestock mortality patterns
The Romano-British assemblage includes 13 cattle mandibles retaining teeth with recordable wear. Most of the mandibles are from subadults aged between 30 and 36 months and adult animals (MWS E and G; Fig. 4.17), but a few younger and older animals (MWS D and H) are also present. The mortality pattern is like that for Middle to Late Iron Age cattle and suggests the husbandry strategy was closely linked to arable agriculture, particularly the requirement for draught animals, but without compromising the demand for prime meat. The mortality pattern established from the epiphyseal fusion state of post-cranial bones confirms this basic pattern (Table 4.30).

Only five complete sheep mandibles were found, and these are from animals aged between 1 and 4 years (MWS D–F). The epiphyseal fusion information for sheep is shown in Table 4.30. A pig mandible from the Seven Geaves site is from an immature animal (MWS B).

Butchery evidence
Chop and/or cut marks are present on 21 elements, mostly (86%) cattle bones, but also a few sheep and horse bones. Chop marks account for 83% of the butchery evidence and are present on a range of cattle bones but mostly result from disarticulation (Table 4.31). Some evidence for filleting and marrow processing were also noted. Scapulae from the Seven Geaves and Over Field sites show evidence of a processing technique associated with the curing of shoulder joints (see for example Dobney et al. 1996, 24–8; Dobney 2001, 39–41). The evidence includes trimming of the spine and nick marks along the caudal margin of the blade.

Other species
The Romano-British assemblage includes a small number of horse and dog bones, and a single domestic fowl bone. Most of the horse bones came from ditches at the Over Field and Daleacre sites and are disarticulated remains from adult animals. The dog bones are mostly from ditches and include mandibles, femurs and an ulna. The domestic fowl bone, a femur, came from the Seven Geaves site.

Medieval to post-medieval, modern and unstratified
A small number of bones came from contexts of medieval to modern date or are unstratified. Most of the identified bones are from cattle, a few from sheep, pig and horse, and one is from a rabbit.

Brief Summary by Site

The quantity of animal bones from each site is summarised in Table 4.28. The largest groups came from the King St Plantation and Field Farm sites. A consistent pattern emerges of the livestock economy, dominated by cattle and sheep, with few pigs. The assemblage also includes several other elements: horse and dog bones came from most of the sites, a few cat bones from Mill Close, and a domestic fowl bone from Seven Geaves.

Daleacre (south)
A total of 89 fragments (2% of the total) came from Iron Age contexts, including a small enclosure defined by ditches 86120 and 86121, and several

pits. The identified bones (50 fragments or 56%) are mostly from cattle and sheep, but also include single bones from a pig and horse.

King St Plantation

A relatively large amount of animal bone (1026 fragments or 26% of the total) came from Middle to Late Iron Age contexts at this location. Most (49%) fragments are from ditches, particularly 75503 and 75501, some from pits, and the rest from structures 75502 and 75290. The identified bones (312 fragments or 30%) are mostly from cattle and sheep, some are from pig, and a few from horse and dog. The evidence indicates that cattle were butchered in a systematic way using cleavers. The presence of a few calf bones suggests that dairying may have played some part in the husbandry strategy. Two deposits of animal bones merit further mention and provide information related to activities outside the normal sphere of everyday events.

Pit 75432 contained the semi-articulated, partial remains of a young sheep aged between 1 and 2 years. Most of the bones are complete and from the appendicular part of the carcass, but there are also some ribs, vertebrae and the right mandible. Cut marks on one of the ankle bones indicates the point at which the feet were detached, but otherwise there is little evidence for further butchery of the carcass. A sample of bone provided a radiocarbon date of *390–210 cal. BC* (SUERC-92154, 2253±30 BP). The pit was located inside structure 75502, a short distance to the SSW of Middle Bronze Age inhumation burial 75417.

The other unusual deposit came from the upper fill of pit 75484, in the entranceway to the ditched enclosure defined by 75500 and 75503. The deposit contained 18 horse bones, mostly left-sided elements including a complete forequarter from the scapula down to the third phalanx, and part of a hindquarter (femur and tibia). The bones are well-preserved and from a large pony-sized animal with an estimated withers height of 13.3 hands. Skinning or filleting marks were noted on the proximal shaft of the humerus, and the distal shaft of the tibia had been chopped through to disarticulate the foot from the upper limb. A sample of bone from the radius provided a radiocarbon date of 480–220 cal. BC (SUERC-92155, 2320±32 BP). The deposit also contained several disarticulated cattle, sheep and pig bones, and a large piece of human skull. Radiocarbon dating indicates that the human skull fragment is broadly contemporary with the horse bones.

Great Dampits

A total of 180 fragments (4.5% of the total) came from contexts of Middle to Late Iron Age date. The largest group is from P-shaped ditched enclosure 60250 and associated gully 60251, with smaller amounts from seven pits in alignment 60171. The bones are poorly preserved and fragmented, consequently only 37 fragments (21%) are identifiable to species. The identified bones include a few cattle and sheep bones, two dog bones and a horse bone. A sample of dog bone from pit 60220 in alignment 60171 provided a radiocarbon date of 380–170 cal. BC (SUERC-92148, 2210±32 BP). Organic residue analysis on pottery sherds from this area provides evidence that dairying played some part in the livestock husbandry strategy.

Field Farm

Overall, 605 fragments (15% of the total) came from contexts in this location, including several unidentified pieces from paleochannel 65199 and single cattle and sheep/goat teeth from Bronze Age waterhole 65206, part of pit group 65248. The rest of the bone came from Middle to Late Iron Age contexts, and there are 142 identified fragments (approximately 23%). The largest groups are from ditches 65244 and 65241, and ditched enclosure 65243, with smaller amounts from ditch 65240 and ditched enclosure 65242. Most of the identified bones are from cattle and sheep, but there are also several horse bones and a single dog bone.

Mill Close

A total of 758 fragments (19% of the total) came from contexts of Middle to Late Iron Age date. The largest groups are from ditched enclosure 50187 and ring gully 50188, with smaller amounts from pit circle 50189 and ditches 50190 and 50191. The identified fragments (182 or 24%) are dominated by cattle and sheep bones, but also include a few pig and horse bones, two cat bones and a single dog bone. Organic residue analysis on pottery sherds from this area provides evidence that dairying played some part in the livestock husbandry strategy.

Horsecroft

The 382 fragments (10% of the total) came from Middle to Late Iron Age contexts. A large proportion (72%) of this material is from ditches and gullies, particularly 38343 which formed a small enclosure or animal pen. Bone also came from roundhouse structure 38223 and several associated features (38339, 38346, 38347 and 38348), with small amounts from pits, a posthole and waterhole. The material is highly fragmented, consequently only 70 fragments (or 18%) could be identified. The identified remains are mostly from cattle and sheep, but also include a few pig and horse bones.

Longfield

A small quantity of animal bone (112 fragments or 3% of the total) came from contexts of Middle to Late Iron Age date. Approximately half of the assemblage is from ditches forming a complex series

of small enclosures, and the remainder from pit 41372. The identified bones (27 fragments or 24%) are mostly from cattle, but also include sheep and horse bones, and single bones from a pig and dog. The range of elements is limited to more robust parts such as teeth, which can withstand poor preservation conditions. Organic residue analysis on pottery sherds from this area provide evidence that dairying played some part in the livestock husbandry strategy.

Over Field

A moderate quantity (302 fragments, approximately 7% of the total) came from Romano-British contexts and a few post-medieval or modern contexts. Most of the bone came from ditches and gullies, with small amounts from hollow 90340 and pit 90343. The identified bones (81 fragments or 27%) are mostly from cattle and sheep, but some pig and horse were also identified, and a single dog bone. The pattern of butchery marks recorded on some cattle scapulae is consistent with the specialist processing techniques used to cure shoulders of beef (see Dobney et al. 1996, 26–7; Dobney 2001, 40–1). Several cattle bones from hollow 90056 were found in articulation.

Daleacre

A small quantity (165 fragments, 4% of the total) of animal bone came from Romano-British contexts and a few Iron Age and medieval contexts at this location. The vast majority (96%) was recovered from ditches, particularly 80361, with smaller amounts from pit 80073, posthole 80282 and waterhole 80350. The identified bones (44 fragments or 27%) are mostly from cattle, with a few sheep and horse, and a single dog bone. Distinctive grooving on a horncore from one of the ditches indicates that some of the cattle are likely to have been castrates (ie, oxen) used for traction.

Seven Geaves

A total of 349 fragments (9% of the total) came from this location, most from Romano-British contexts, but a few from Iron Age and late medieval to post-medieval contexts. The majority of the bones (66%) came from ditches and gullies forming a complex of field systems, and the rest from pits and a few postholes. The Iron Age material includes a few cattle bones, mostly from the forequarter, and a sheep mandible. The Romano-British assemblage is dominated by cattle bones, but also includes some sheep, and a few pig, horse and dog bones, and a single domestic fowl bone. One of the cattle foot bones from this area had splayed distal condyles, an abnormality that generally develops on the feet of traction animals (Jewell 1963; Bartosiewicz et al. 1993). A few cattle, sheep and horse bones came from later contexts.

Discussion

Livestock husbandry regimes in the Trent Valley are poorly understood because of a general lack of large and informative assemblages of animal bone (Knight et al. 2012). Analysis of the assemblage from East Midlands Gateway has significantly improved this situation and has provided evidence for a long tradition of cattle farming in the Trent Valley and its tributaries. This is consistent with the limited evidence from contemporary sites in the area (Chapman et al. 2007; Derrick 1998; Elsdon 1982; Krawiec 2007; Palfreyman and Ebbins 2003; Thomas 2013) and probably reflects the suitability of local conditions for certain types of livestock farming. Husbandry strategies, particularly in relation to cattle, have been closely linked with arable cultivation,

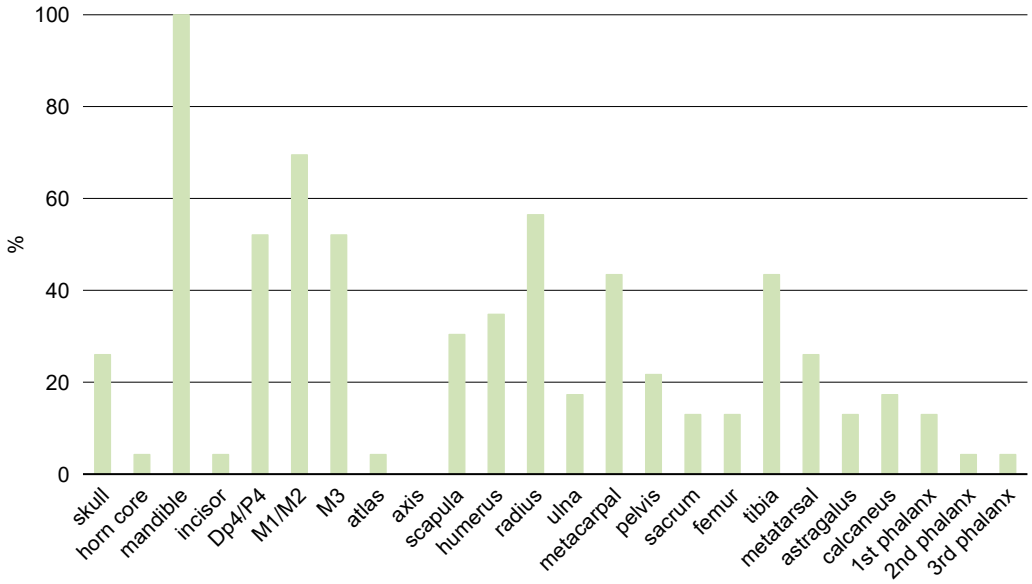

Figure 4.13 Middle to Late Iron Age cattle body part representation expressed as a percentage of MNI in relation to the most common element

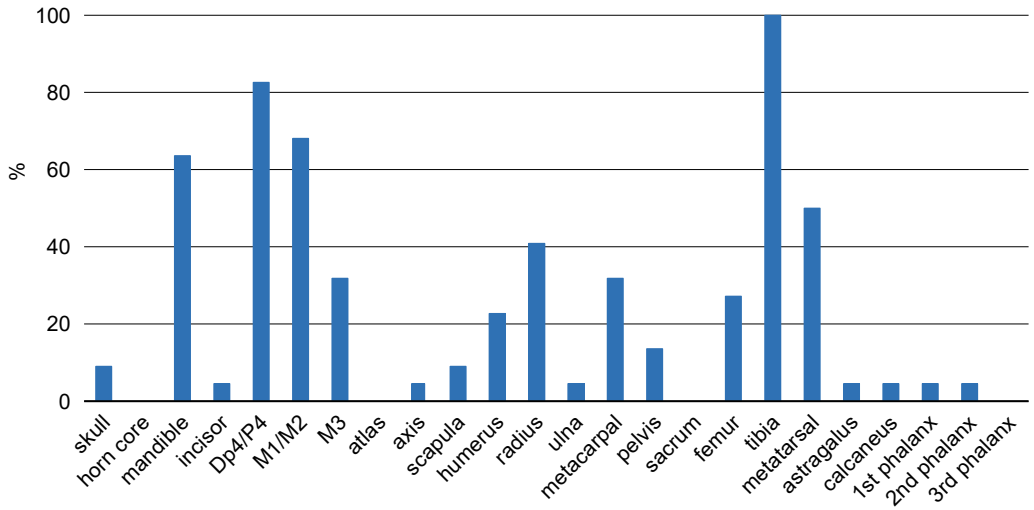

Figure 4.14 Middle to Late Iron Age sheep body part representation expressed as a percentage of MNI in relation to the most common element

Figure 4.15 Middle to Late Iron Age cattle mortality pattern based on mandibles retaining 2+ teeth with recordable wear (N = 32). Mandible wear stages (MWS) and age categories after Halstead 1985

which required adult cattle for use as draught animals and as a source of manure (Hambleton 1999, 78; Allen 2017, 112). The recorded increase in the proportion of cattle and the age at which they were slaughtered for meat between the Middle to Late Iron Age and Romano-British periods at East Midlands Gateway can be seen as part of a broad trend linked to the intensification and expansion of arable cultivation from the 2nd century onwards (van der Veen and O'Connor 1998; Albarella 2007, 396–9; Maltby 2016; Allen and Lodwick 2017, 143–7). The pattern also reflects the greater importance placed on dairying during the Middle to Late Iron Age period as suggested by organic residue analysis on pottery sherds (see Dunne et al. above). Pathological changes to the morphology of cattle foot bones, particularly the asymmetrical splaying of the distal metapodial condyles, as recorded on a metatarsal from a Romano-British context at Seven Geaves, provide direct evidence for the use of cattle as traction animals (Jewell 1963; Bartosiewicz et al. 1993; Allen 2017, 139). The appearance of larger cattle in some parts of the country (Albarella et al. 2008), including in the Derwent Valley to the west (Higbee 2021), may indicate the introduction of types bred specifically for this purpose (Van der Veen and O'Connor 1998, 132; Allen 2017, 99–104).

Sheep were of secondary importance to the livestock economy of the Middle to Late Iron Age, and there is some suggestion of a shift from intensive meat production based on the culling of yearlings (MWS D) to a more diverse husbandry strategy during the Romano-British period, although at this point the proportion of sheep is much lower

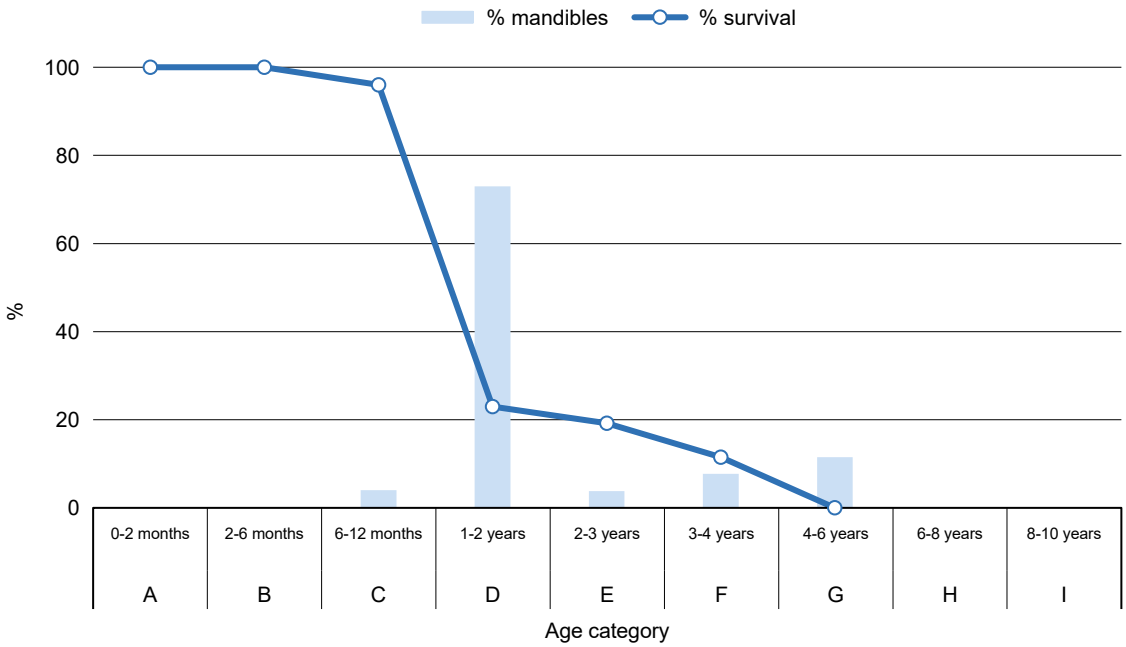

Figure 4.16 Middle to Late Iron Age sheep mortality profile based on mandibles retaining 2+ teeth with recordable wear (N = 26). Age categories after Payne 1973

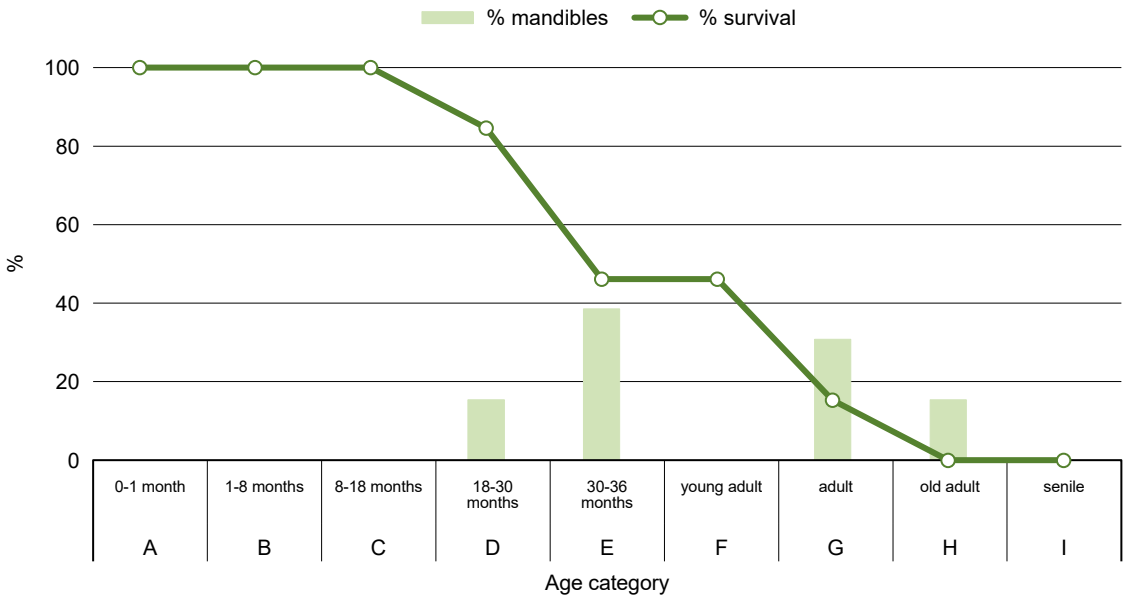

Figure 4.17 Romano-British cattle mortality pattern based on mandibles retaining 2+ teeth with recordable wear (N = 13). Mandible wear stages (MWS) and age categories after Halstead 1985

relative to an increase in cattle. Sheep flocks can also be managed to complement arable cultivation, particularly regarding overwintering strategies, the seasonal culling of lambs (at MWS C) and manuring practices (Hambleton 1999, 70). While there is clear evidence from East Midlands Gateway and other sites in the region for an established arable economy during the Iron Age, there is no evidence for the type of arable-linked sheep husbandry strategies common at Iron Age sites in southern and eastern Britain, where arable farming was both more intensive and extensive (*ibid.*, 74).

Evidence of activities outside the normal sphere of everyday events was recorded from two Middle to Late Iron Age pits at the King St Plantation site. A group of sheep bones from pit 75432 are thought to represent the remnants of a single, albeit relatively modest, consumption event. The bones are from a yearling and were deposited in a semi-articulated state, with minimal signs of butchery apart from a few cut marks on the ankle bones resulting from the feet being detached. The location of the pit within a circle of posts forming roundhouse 75502 suggests that the sheep bones were 'placed' during the foundation or

abandonment of the structure. The proximity of the pit to Middle Bronze Age inhumation burial 75417 may be incidental given the time-gap between these 'events', but it is possible that the location remained the focus for community events such as feasting, with the remnants symbolically buried to mark the occasion and perhaps even to commemorate the ancestors.

The second group of bones came from the upper fill of pit 75484, located in the entranceway to enclosure 75500/75503. Most of the bones are from a pony-sized equid, some of which show signs of butchery, and were found in articulation together with several disarticulated elements from livestock and a piece of human skull. Equids are thought to have held a special status in the British Iron Age, and being highly valued prestige animals undoubtedly meant that the consumption of horsemeat was rare and possibly confined to special events (Allen 2017, 126). The 'unusual' composition of the pit assemblage and its liminal location suggests a possible link to activities associated with 'closing' or decommissioning the enclosure.

Charred Plant Remains

by Inés López-Dóriga

Summary

The environmental evidence from the sites suggests a predominantly open landscape of both pasture and arable land as well as disturbed ground in the vicinity of the sites, with wet areas and some open wood/hedgerow vegetation. Cultivation of the local landscape in Iron Age and Romano-British times focused on cereals and possibly pulses, as well as flax. With the possible exception of fennel, there was no firm evidence of access to exotic plant products from other regions. A Late Bronze Age cremation is significant because of the presence of possible burnt offerings of edible and medicinal wild fruits.

Introduction

Bulk sediment samples were taken during the evaluation and excavation phases of the fieldwork. The samples, of on average around 25 litres, were taken from a range of features such as pits, postholes, ditches, palaeochannels, cremation-related deposits, and furrows. This report presents the results of the analysis of the most informative samples and incorporates the summarised results of the earlier assessment of the overall sample set (Wessex Archaeology 2019).

Materials and Methods

The sediment samples were processed by flotation on a Siraf-type flotation tank. The flot was retained on a 0.25 mm mesh and the residues retained on a 1 mm mesh. The residues were then fractionated into 4 mm and 1 mm fractions. The coarse fractions (>5.6/4 mm) were sorted with the naked eye. The flots of all the samples were scanned under light microscopy at magnifications of up to x40 for the assessment of environmental evidence. For the analyses, the finer residue fractions (5.6/4–1 mm) of the samples were also scanned. Based on the results and recommendations laid out in the assessment, the charred plant remains and the wood charcoal in a selection of 25 samples were analysed further and fully quantified.

For the assessment, preliminary identifications of dominant or important taxa were noted, and the abundance of remains was qualitatively quantified. The samples had a variable presence of bioturbation indicators (roots, modern seeds, mycorrhizal fungi sclerotia, earthworm eggs and insects) and environmental evidence was mostly archaeobotanical and preserved by carbonisation. Charred material was preserved in variable amounts and in varying degrees of preservation.

For the analysis, all identifiable charred plant remains were extracted and quantified from the samples or a fraction of the samples (in this case the results of the fraction being multiplied to estimate a total per sample). The data for analysis was recorded with the software ArboDat (Kreuz and Schäfer 2002) for the purpose of data sharing. Quantifications are given as MNI (minimum number of individuals) and are based on anatomy (whole items or the highest type of anatomical fragments; for example, cereal grains, based on Antolín and Buxó (2011), glume bases and legume cotyledons divided by two), or size (hazelnut pericarp fragments, based on Antolín et al. (2016)). Identifications were undertaken in consultation with a modern seed reference collection and specialised literature where appropriate (eg, Jacomet 2006) and follow the nomenclature of Stace (1997) for wild plants, and traditional nomenclature as provided by Zohary et al. (2012), for cereals.

Results

Post-excavation assessment of the environmental samples (Wessex Archaeology 2019) noted that very few charred plant remains were present within the assemblages from Long Lands and Great Dampits (see summary of the assessment information in Appendix A). However, good results were obtained from a series of deposits from Field Farm, King St Plantation, Mill Close, Horsecroft, Longfield, Over

Table 4.32 Analysis of charred plant remains from three Iron Age pits at King St Plantation

	Group number		75502		
	Feature		75432	75475	75484
	Context		75433	75483	75489 (inside human skull)
	Sample		101409_943	101409_953	101409_950
	Vol (l)		36	38	1
	Flot size (ml)		30	12	3
	Subsample		100%	100% flot, 50% <4 mm residue	100%
	Bioturbation (Roots %, etc)		40%, C, I	80%, A	50%, C
	Fragmentation index (MNI/NR)		0.5	0.4	0.5
	Density (MNI/l)		2.2	2.6	96.0
Scientific name	*Common name*	*Plant part*			
	Cereals				
Hordeum vulgare	Barley	grain	3		
Triticum spelta	Spelt	spikelet	7	5	11
Triticum sp.	Wheat	grain	13		2
Triticum sp.	Wheat	spikelet	50	86	83
Triticum sp.	Wheat	rachis segment		2	11
Triticeae	Cereal	detached embryo			2
	Wild plants				
Polygonum sp.	Knotgrass	seed	2		
Vicieae	Vetch/grass pea	seed	1		
Poa/Phleum	Meadow grass/Cat's tail	grain		2	
Avena sp.	Oat	awn fragment		3	
Bromus sp.	Brome	grain		1	
Poaceae	Grasses	grain	3		
	Other				
Indeterminata	seed	1			
NR			**169**	**231**	**204**
MNI			**79**	**98**	**96**

Key: Bioturbation proxies: Roots (%); Uncharred seeds (scale of abundance: A* = 30–99; A = >10; B = 9–5; C = <5); F = mycorrhizal fungi sclerotia; E = earthworm eggs, I = insects.

Field, Daleacre and Seven Geaves. Representative samples were analysed from these areas and more than 30,000 pieces of charred plant material, representing a minimum number of individuals (understood as grains, fruits, seeds, etc, not whole plants) of almost 15,000 were extracted and quantified. Full quantification results for the samples selected for analysis can be seen in Tables 4.32–4.39.

King St Plantation

Some of the Iron Age pits in this area were productive in terms of environmental evidence, providing an assemblage of charred plant remains typically originating in the disposal of by-products from the latter stages of crop-processing activities such as dehusking and screening for weeds (Fig. 4.18). The analysed samples from Iron Age pits (Table 4.32) contained abundant chaff and grains from spelt and barley, and a small number of wild plant seeds, mostly grasses.

A presumably deliberately placed human skull (see McKinley, above) was found within one of the pits; the sediment within the skull provided a rich assemblage dominated by spelt chaff, whilst

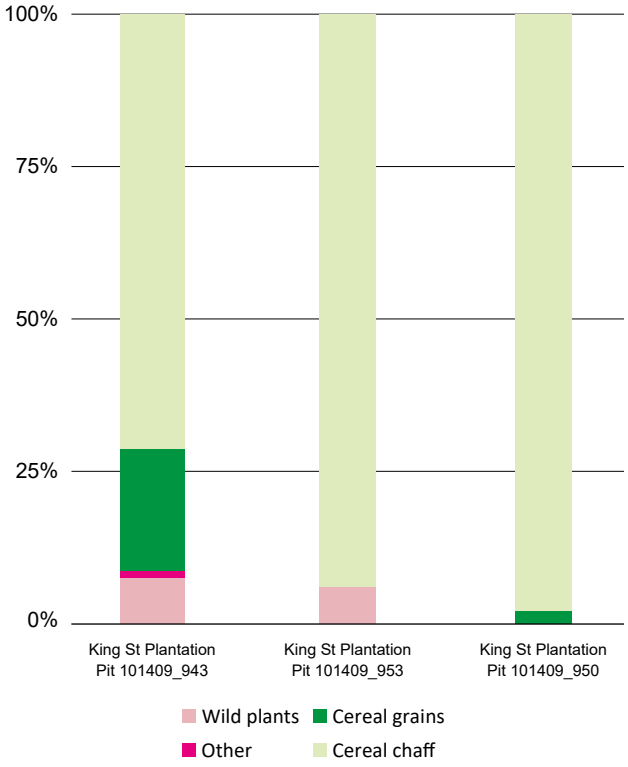

Figure 4.18 Categories of charred plant remains from King St Plantation

the sediment around the skull provided almost no charred plant remains (Appendix A). The richness of the deposit within the skull may be a result of differential preservation (ie, friable chaff remains are better preserved in a protected environment such as the inside of the skull) or may suggest chaff waste formed part of the funerary ritual. The latter possibility may have a parallel in the crouched inhumation found alongside a large deposit of processed spelt grain in a Late Iron Age pit at Rushey Mead, Leicester (Monckton 2001). Barley had a minor presence in the samples.

Field Farm

Very few charred plant remains were identified in the Iron Age samples from this site, and where present they were rather poorly preserved. One rich and well-preserved assemblage from an Iron Age enclosure ditch was dominated by the remains of hulled wheat (some grains, but mostly chaff, and identified as emmer when preservation allowed), but also contained a range of seeds of wild plants, in addition to hazel (*Corylus avellana*) nutshell fragments (Table 4.33; Fig. 4.19).

Mill Close

The two analysed Iron Age samples from pits at Mill Close are rich in crop-processing by-products such as chaff, mostly hulled wheat (*Triticum spelta* or *T. spelta/dicoccum*) glume bases and grains, and a diversity of wild plant seeds from disturbed, meadow and arable habitats (Table 4.34). One of the samples showed some vitrification and incomplete carbonisation. However, although both samples represent the disposal of by-products, their differing compositions indicate very different origins (Fig. 4.20).

One of the samples was dominated by wild plant seeds, especially stinking mayweed, an archaeophyte usually associated with heavy soils and likely considered a problematic annual arable weed. Some of the other wild plants are indicative of the possible cultivation of wet areas. Cereal grains were also abundant in this sample but almost no chaff was recovered. The high density of charred plant remains

Table 4.33 Analysis of charred plant remains from an Iron Age enclosure ditch at Field Farm

	Group number		65243
	Feature		24403
	Context		24404
	Sample		101407_101
	Vol (l)		40
	Flot size (ml)		20
	Subsample		100%
	Bioturbation (Roots %, etc)		40%, I
	Fragmentation index (MNI/NR)		0.4
	Density (MNI/l)		2.1
Scientific name	*Common name*	*Plant part*	
	Cereals		
Hordeum vulgare	Barley	rachis segment	1
Triticum dicoccum	Emmer	spikelet	3
Triticum sp.	Wheat	grain	6
Triticum sp.	Wheat	spikelet	60
Triticum sp.	Wheat	rachis segment	10
Triticeae	Cereal	detached embryo	2
	Nuts/Fruits		
Corylus avellana	Hazelnut	nut	1
	Wild plants		
Raphanus raphanistrum	Wild radish	capsule	1
Vicieae	Vetch/grass pea	seed	2
Anthemis cotula	Stinking mayweed	seed	1
Lolium/Festuca	Rye grass/Fescue	grain	1
Poa/Phleum	Meadow grass/Cat's tail	grain	3
Avena sp.	Oat	awn fragment	1
Bromus sp.	Brome	grain	3
Poaceae	Grasses	grain	3
	Other		
Indeterminata		seed	1
NR			**225**
MNI			**86**

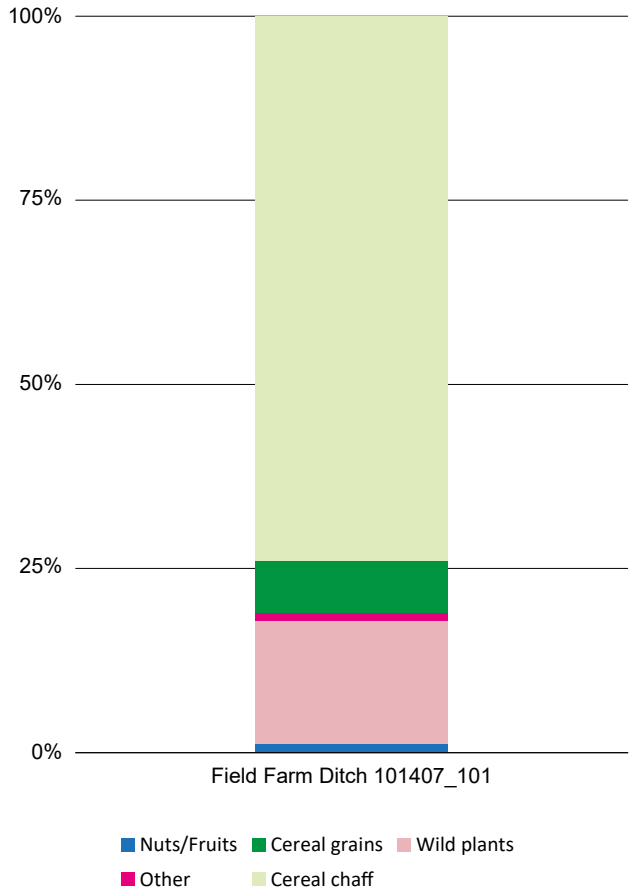

Figure 4.19 Categories of charred plant remains from Field Farm

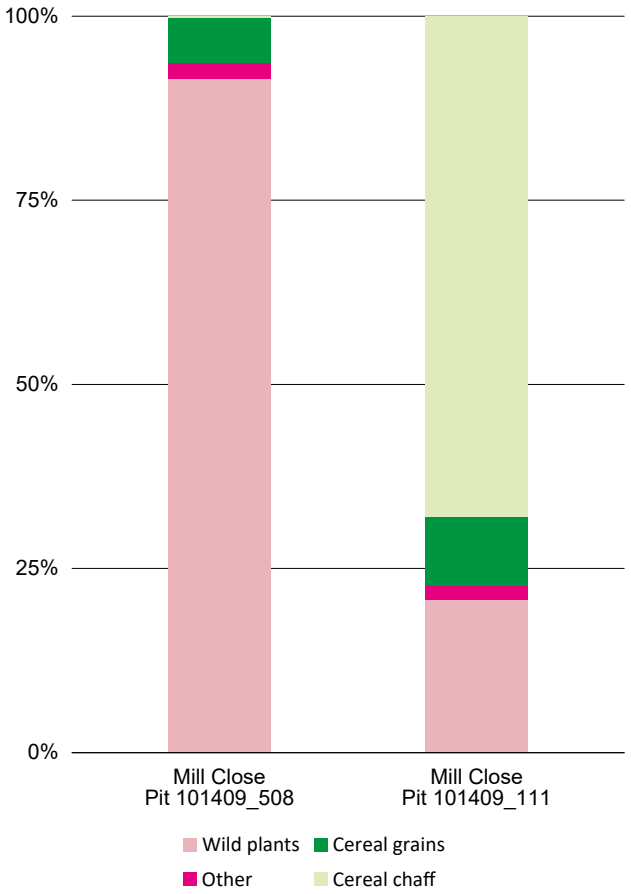

Figure 4.20 Categories of charred plant remains from Mill Close

found suggests a rapid conflagration and possibly a single depositional event. The other sample was dominated by cereal chaff and wild plants suggestive of grassland.

Overall, the cereal taxa comprised hulled wheats, occasionally identified as spelt. The absence of other crops at Mill Close, such as barley, may be due to the small number of productive samples from this site, or indicate a different use for this crop (eg, fodder), or simply that it was not cultivated locally.

Horsecroft

The Iron Age pits, ditches and gullies provided small, probably residual, amounts of charred plant remains. A large assemblage of charred plant remains related to crop-processing activities, rich in spelt chaff and a diversity of wild plant seeds, was retrieved from the analysed samples from one posthole (38138) (Table 4.35; Fig. 4.21). Another posthole (34604) provided a well-preserved assemblage composed mostly of cereal grains; the assemblage was dominated by hulled barley (*Hordeum vulgare* subsp. *vulgare*) grains with a couple of grains of flax and oat, suggesting it was a clean product ready for consumption that was accidentally burnt, rather than crop-processing waste disposed of in a fire.

Longfield

No charred plant remains of interest were retrieved from the samples from the Iron Age ditches at Longfield, although a pit within one of the enclosures contained a significant assemblage of domestic crop-processing by-products (Table 4.36; Fig. 4.22). The sample was dominated by spelt chaff, although barley was also present, and its preservation was good enough to allow for the identification of a rachis segment of the lax-eared variety (*H. vulgare* var. *distichum*). The analysed sample also contained wild plants from grassland and waste ground.

Over Field

The analysed samples from Romano-British features at Over Field (Table 4.37) have provided moderate to rich plant macroremain assemblages, which are again dominated by the remains of spelt wheat (*Triticum spelta*), although emmer (*Triticum dicoccum*), barley (*Hordeum vulgare*, identified as dense-eared variety *hexastichum* when preservation allowed) and flax (*Linum usitatissimum*) were also present.

The samples are characterised by different combinations (Fig. 4.23) of remains of cereal chaff (largely dominating in five out of the eight samples), wild plant seeds and cereal grain fragments, most

Table 4.34 Analysis of charred plant remains from two Iron Age pits at Mill Close

		Group number	50189	
		Feature	50068	19203
		Context	50069	19204
		Sample	101409_508	101407_111
		Vol (l)	28	30
		Flot size (ml)	25	60
		Subsample	100% flot, 25% <4 mm residue	100% flot, 25% <4 mm residue
		Bioturbation (Roots %, etc)	20%, A*, I	90%, A*, E, I
		Fragmentation index (MNI/NR)	0.9	0.5
		Density (MNI/l)	26.6	1.7
Scientific name	*Common name*	*Plant part*		
		Cereals		
Triticum spelta	Spelt	spikelet		4
Triticum spelta/dicoccum	Emmer/Spelt	grain	26	
Triticum sp.	Wheat	grain	29	4
Triticum sp.	Wheat	spikelet	2	31
Triticum sp.	Wheat	rachis segment	2	
Triticeae	Cereal	grain	17	1
Triticeae	Cereal	chaff		1
		Wild plants		
Ranunculus sp.	Buttercup	seed	6	
Chenopodium sp.	Goosefoot	seed		1
Chenopodiaceae	Goosefoot family	seed	1	
Caryophyllaceae	Pink family	seed	2	
Dianthus sp.	Deptford/Maiden Pink	seed	5	
Polygonum sp.	Knotgrass	seed		2
Aphanes sp.	Parsley-piert	seed	9	
Trifoliae	Trefoil/medick/clover	seed	1	
Vicieae	Vetch/grass pea	seed	2	1
Anthemis cotula	Stinking mayweed	seed	670	1
Juncus sp.	Rush	seed	1	
Poa/Phleum	Meadow grass/Cat's tail	grain		1
Avena sp.	Oat	awn fragment		1
Bromus sp.	Brome	grain		4
Danthonia decumbens	Heath grass	grain	2	
Poaceae	Grasses	grain	1	
		Other		
Indeterminata	seed	17	1	
NR			**876**	**99**
MNI			**746**	**52**

likely corresponding to cereal processing by-products, generally originating in the later stages, such as crop-drying and dehusking. Some of the spelt grains show evidence of germination, and in several of the samples the ratios of germinated grains to non-germinated grains are relatively high (0.7), suggesting storage or malting, or an accidental effect due to particularly wet weather. Possible ergot grains of small size (ie, from wild grasses) were identified in one of the samples, likely indicating damp conditions before crop collection that may account for germination in the ear in some cases. The presence of barley chaff

Table 4.35 Analysis of charred plant remains from three Iron Age postholes at Horsecroft

Feature			38138	38138	34604
Context			38329	38140	34605
Sample			102972_873	102972_860	102971_1
Vol (l)			10	40	10
Flot size (ml)			20	40	10
Subsample			100%	100% flot, 25% < 4mm residue	100% flot, 50% < 4mm residue
Bioturbation (roots %, etc)			30%, B, I	60%, B, E, I	1%
Fragmentation index (MNI/NR)			0.5	0.5	0.5
Density (MNI/l)			18.5	3.6	59.7
Scientific name	*Common name*	*Plant part*			
		Cereals			
Hordeum vulgare	Barley	grain	20	12	
Hordeum vulgare var. vulgare	Hulled barley	grain			590
Triticum spelta	Spelt	spikelet	9	19	
Triticum sp.	Wheat	grain	16	23	2
Triticum sp.	Wheat	spikelet	9	17	
Triticum sp.	Wheat	rachis segment		3	
Triticeae	Cereal	grain	21		3
Triticeae	Cereal	detached embryo	9		1
		Wild plants			
Ranunculus sp.	Buttercup	seed	2	1	
Chenopodium sp.	Goosefoot	seed	12	6	
Chenopodiaceae	Goosefoot family	seed		1	
Stellaria sp.	Stitchwort	seed	2	1	
Cerastium sp.	Mouse-ear	seed	2	4	
Persicaria lapathifolia	Pale persicaria	seed		3	
Polygonum sp.	Knotgrass	seed	7	1	
Rumex sp.	Docks/sorrel	seed	3	3	
Malva sp.	Mallow	seed		1	
Raphanus raphanistrum	Wild radish	capsule	1	1	
Vicieae	Vetch/grass pea	seed	6	4	
Trifoliae	Trefoil/medick/clover	seed	1	2	
Hyoscyamus niger	Henbane	seed		2	
Plantago sp.	Plantain	seed	1		
Anthemis cotula	Stinking mayweed	seed	27	13	
Carex sp.	Sedge	seed		2	
Lolium/Festuca	Rye grass/Fescue	grain	1		
Poa/Phleum	Meadow grass/Cat's tail	grain	5	1	
Avena sp.	Oat	grain			2
Avena sp.	Oat	awn fragment	1		
Bromus sp.	Brome	grain	25	20	
Avena/Bromus	Oats/Brome	grain	5		
Poaceae	Grasses	grain	2	5	
Poaceae	Grasses	culm fragments	4		
		Other			
Indeterminata		root	2		
Indeterminata		seed	7	4	
NR			**408**	**309**	**1202**
MNI			**185**	**142**	**597**

(rachis segments) outnumbering the grains is highly indicative that this crop may have been processed for human use, rather than grown for fodder.

A diverse group of wild plant taxa was also recovered, along with hazel (*Corylus avellana*) nutshell fragments. The weedy assemblage contains several archaeophytes (henbane, fennel, chamomiles, cornflower) and reveals several different habitats: grassland (acidic and basic), heavy and lighter arable soils, and wet areas with rush vegetation. The

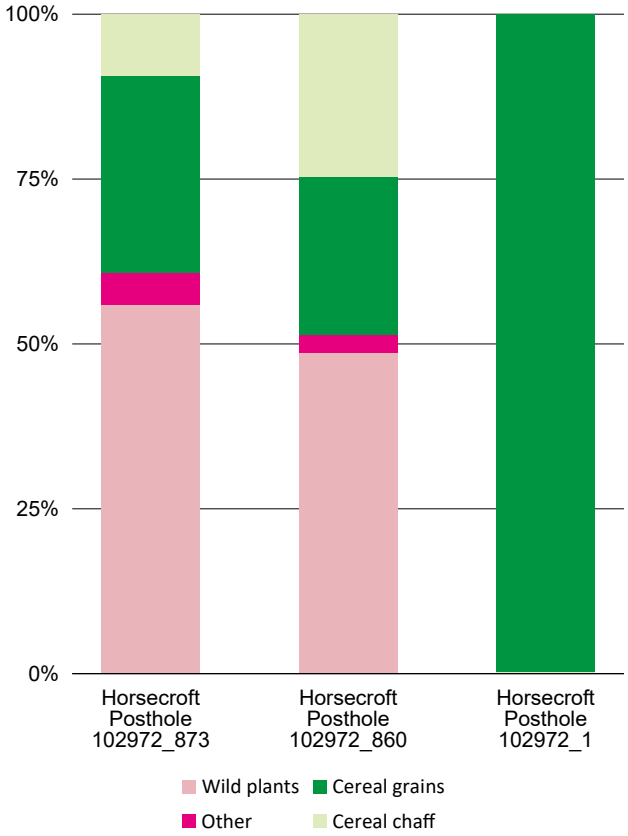

Figure 4.21 Categories of charred plant remains from Horsecroft

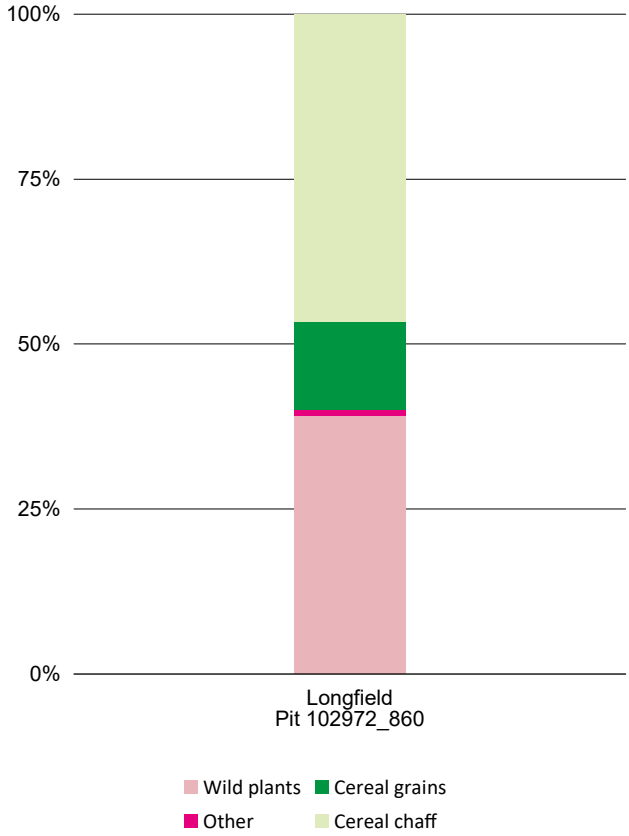

Figure 4.22 Categories of charred plant remains from Longfield

interpretation of fennel as a wild plant is the subject of discussion; this aromatic herb was introduced for culinary purposes by the Romans but soon became established in the wild (van der Veen et al. 2008). Three of the samples were rich in wild plant seeds, and one of them has a notably richer and more diverse component, with ruderal vegetation from waste ground and trampled areas.

Daleacre

The analysed sample from a Bronze Age cremation deposit was dominated by charred remains of wild plants (Fig. 4.24), mostly grass stem fragments, tubers (including roots of indeterminate taxa and onion-couch bulbs) and hawthorn fruit stones. The presence of onion-couch, and particularly in association with cremation and other funerary deposits, has often been discussed (eg, Robinson 1988; Roehrs et al. 2013). Whilst it can be argued that the stems and tubers may have been in the adjacent turf and accidentally carbonised during the cremation or deliberately used as fuel, the fruit stones may represent the remains of offerings with some role in the funerary rite. The rarity or absence of hawthorn from the charcoal record (only a few fragments of cf. Maloideae, which comprises several species such as hawthorn, rowan, apple, pear and service tree) suggests the wood from these taxa may not have been used as a main fuel (although hawthorn and rowan wood make a good fuel, apple and pear need to be well seasoned). Therefore, the edible and medicinal (see Fern 1995–2019) berries could have arrived independently, perhaps as part of ritual offerings (other edible fruit offerings, of crab apple and hazelnuts, have been proposed for Bronze Age cremations at Hengistbury Head, Dorset and Porton Down, Wiltshire (Wyles 2016); and medicinal and food offerings are proposed for ritual deposits elsewhere in continental Europe (Außerlechner 2021)).

A generally small amount of charred plant remains came from the Romano-British samples, which mostly derived from ditches. A notable exception was a sample retrieved during the evaluation stage (ditch 207 in trench 2; see Table 4.38), which contained a very large quantity of charred plant remains, in particular those of cereals (spelt and barley) and grasses (brome and others), and included germinated grains and some vivianite staining. The high density of remains per litre suggests a secondary deposit from a single episode of cereal crop-processing. An intermediate germination ratio (near 0.5) is suggestive of malting or storage residue (or an exceptionally large case of accidental grain spoilage). Interestingly, the chaff assemblage also contained abundant barley rachis segments, suggesting this

Table 4.36 Analysis of charred plant remains from a pit at Longfield

Feature			41372
Context			41375
Sample			101409_803
Vol (l)			20
Flot size (ml)			25
Subsample			100%
Bioturbation (Roots %, etc)			20%, A
Fragmentation index (MNI/NR)			0.5
Density (MNI/l)			9.4
Scientific name	*Common name*	*Plant part*	
	Cereals		
Hordeum vulgare	Barley	grain	5
Hordeum vulgare	Barley	rachis segment	3
Triticum spelta	Spelt	grain	6
Triticum spelta	Spelt	spikelet	21
Triticum sp.	Wheat	grain	2
Triticum sp.	Wheat	spikelet	63
Triticum sp.	Wheat	rachis segment	15
Triticeae	Cereal	grain	12
Triticeae	Cereal	detached embryo	4
	Wild plants		
Vicieae	Vetch/grass pea	seed	2
Caryophyllaceae	Pink family	seed	2
Persicaria lapathifolia	Pale persicaria	seed	3
Rumex sp.	Docks/sorrel	seed	13
Galium sp.	Cleavers/ bedstraw	seed	1
Lolium/Festuca	Rye grass/Fescue	grain	2
Poa/Phleum	Meadow grass/ Cat's tail	grain	8
Avena sp.	Oat	awn fragment	3
Bromus sp.	Brome	grain	16
Poaceae	Grasses	grain	23
	Other		
Claviceps purpurea	Ergot	sclerotium	1
Indeterminata		stalk	1
NR			**377**
MNI			**188**

resource was possibly processed for human use, with the chaff being used as a fuel. It is possible that barley was malted together with spelt, although perhaps it is not sufficiently abundant to demonstrate this (only 10%, rather than three barley to two spelt as stated by Carruthers and Hunter Dowse 2019).

The wild plants include arable weeds and archaeophytes, suggesting both heavy and lighter soils. The vivianite staining indicates the deposition of rubbish from different domestic activities, including decomposing organic matter, together with the charred material. Another sample had few charred plant remains but these comprised an interesting wild plant taxon, annual knawel, suggestive of disturbed sandy soils and not identified on any of the other sites.

Seven Geaves

The samples from this site, mostly of Romano-British date, provided some moderate to rich assemblages of charred plant remains. These were again mostly typical by-products of the late stages of crop processing (Fig. 4.25), and generally dominated by spelt wheat chaff (glume bases and spikelet forks), although some grains, and a small quantity of barley remains, were also identified.

One of the samples (732) differed because of its more equal proportions of cereal grains, chaff and wild plant seeds, as well as the presence within it of other crops, including barley, pulses such as pea and a vetch/bean (Table 4.39). The barley chaff (rachis segments) suggests this crop may have been processed for human use rather than grown for fodder. Most of the wild plant seeds were large-seeded probable arable weeds, and are typical of grassland, with some interesting combinations of mayweeds/chamomiles of both light and heavy soils, as well as heath grass indicating acidic soils. All of these suggest a mixture of by-products from different processing activities for sample 732, rather than just cereal crop waste.

Another sample showed a high density of charred plant remains, suggesting a single deposition event (eg, the cleaning out of an oven) of possible secondary nature, rather than an admixture of charred material from more than one deposition event. Some of the spelt and brome grains in the samples showed traces of germination, with relatively high ratios (between 0.7 and 1), possibly suggesting malting, poor storage, or an instance of accidental sprouting of both weed seeds and cereals due to a particularly wet season before collection.

Discussion

A significant assemblage of charred plant remains has been retrieved from the sites. The evidence is suggestive of different stages of crop-processing activities, consistent with an Iron Age and Romano-British chronology and commensurate with the agricultural landscape of the Midlands (Carruthers and Hunter Dowse 2019) as well as the local area (Allen et al. 2018; López-Dóriga 2021). The only exception to this is a deposit from a late Bronze Age cremation grave at Daleacre, which offers some information on the funerary practices.

The assemblage of charred plant remains is rather

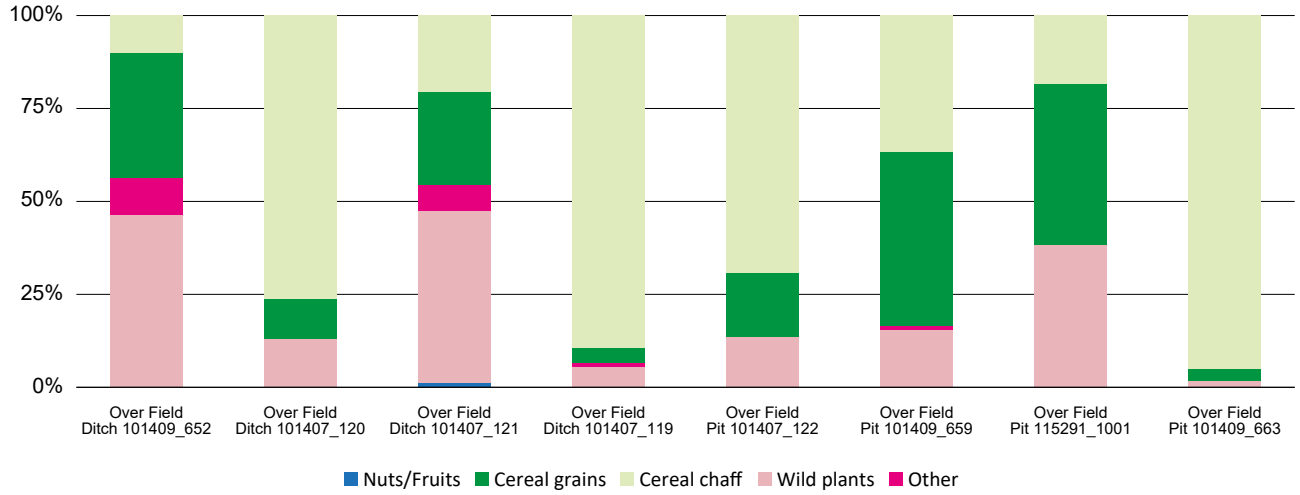

Figure 4.23 Categories of charred plant remains from Over Field

homogeneous, with very similar samples across the sites and only small differences between each. This is primarily due to the lack of variety in the chronology and general function of the sampled features. The environmental evidence appears most often related to tertiary deposition (redeposited remains from more than one episode of activity) from routine activities (*sensu* Fuller et al. 2014), rather than representing primary (*in situ* remains from a single episode of activity) or secondary deposition (redeposited remains from a single episode of activity). This aspect of the evidence, in particular, limits its interpretive potential. In addition, some types of plant resources are more likely to be preserved than others, as the differing ways in which plants were processed and consumed means that some were more likely than others to be preserved by carbonisation (van der Veen 2007; Wright 2010). Finally, of those plants that were carbonised, their capacity to survive exposure to a fire is variable.

The charred plant remains are largely representative of the latter stages of crop-processing activities of hulled wheats (Hillman 1981; Jones 1984; van der Veen 2007), dominated by chaff and wild plant seeds representing possible arable weeds. The identification of particular activities based on the types of remains present can often be difficult, depending on the degree of admixture of remains observable at the taphonomic and compositional level. The observation of the ratios of different types of remains (germinated versus non-germinated; quantity of remains/litre; chaff/grain, etc.) is useful in the interpretation of charred archaeobotanical assemblages (see van der Veen 2007).

Hulled wheats such as emmer and spelt were typical of the agricultural landscape during the Iron Age and the Romano-British periods in Britain in general, and the Midlands in particular (Carruthers and Hunter Dowse 2019), with some occasional local differences. Hulled wheats (see Hillman 1981, Jones 1984, van der Veen 2007) would be threshed close to the arable fields to break the cereal ears and then they would be taken to domestic areas to be stored in spikelets (this is the best storage medium, particularly in wet climates) for piecemeal dehusking, which would be facilitated by roasting, and then milling and/or cooking for consumption. This makes hulled wheat remains likely candidates for being preserved by carbonisation in/near domestic hearths, and the presence of high proportions of chaff in many samples, in spite of its poor survival in comparison to grains (Boardman and Jones 1990), suggests the remains are by-products of processing rather than burnt cooking/storage accidents (which would be associated with a larger proportion of grains in comparison to chaff).

Germination was detected in several of the samples across the sites, either as whole grains with a hollow for the coleoptile, as damaged grains at the embryonal part, as detached embryos or coleoptiles, or, more rarely, as whole grains with a sprouted embryo and coleoptile preserved. Germination may be indicative of a range of processing techniques and circumstances, such as crop-drying, malting, or storing, and is a relatively well-known phenomenon in Romano-British agricultural practices (eg, van der Veen 1989). The ratios of germinated to non-germinated grains in a sample may help in the interpretation of assemblages where some sprouting is detected: it might be assumed that a low ratio of germinated grain may indicate accidental grain spoilage (although this could produce high ratios in especially wet seasons) and a high ratio may be suggestive of other processes such as malting or storage (eg, van der Veen 2007). However, the ratio of sprouted grain in any given sample may be underestimated as preservation is often generally poor and damage to grains through germination or other post-depositional erosive processes hinders their identification. When high numbers of

Table 4.37 Analysis of charred plant remains from Romano-British features at Over Field

Group number			90345	90348					
Feature type			Ditch	Ditch	Ditch	Ditch	Pit	Pit	Pit	Hollow
Feature			90020	26307	26312	26305	25904	90250	103604	90340
Context			90021	26309	26313	26306	25905	90251	103605	90342
Sample			101409_652	101407_120	101407_121	101407_119	101407_122	101409_659	115291_1001	101409_663
Vol (l)			30	40	30	30	30	38	27	32
Flot size (ml)			35	500	175	500	75	40	35	50
Subsample			100% flot; no <4 mm residue	50% flot, 25% <4 mm residue	100% flot, 25% <4 mm residue	50% >0.5 mm flot; 25% <0.5 mm flot; 50% <4 mm residue	100% flot, 50% residue <4 mm	100% flot, 25% <4 mm residue	100% flot, 50% residue <4 mm	100% flot, 25% <4 mm residue
Bioturbation (Roots %, etc)			60%, C	90%, A, I	90%, A, E	90%, A, E	75%, A, E	70%, C, E	80%, B, E	90%, C, E, I
Fragmentation index (MNI/NR)			0.5	0.5	0.6	0.5	0.6	0.5	0.4	0.5
Density (MNI/l)			4.2	25.2	15.0	117.3	74.2	18.2	4.4	7.4
Scientific name	*Common name*	*Plant part*								
					Cereals					
Hordeum vulgare	Barley	grain	9	10	6	22	41	56		4
Hordeum vulgare	Barley	rachis segment	1	42	2	20	15			
Triticum spelta	Spelt	grain	5	30	53	82	271	165		3
Triticum spelta	Spelt	spikelet	3	100	27	46	351	17	2	19
Triticum spelta/dicoccum	Emmer/Spelt	grain	26							
Triticum dicoccum	Emmer	grain	5				2			
Triticum sp.	Wheat	grain		28			24	2	27	
Triticum sp.	Wheat	spikelet	10	626	70	3069	1174	239	20	195
Triticum sp.	Wheat	rachis segment		98	24	310		15		13
Triticeae	Cereal	grain	2	40	61	41	47	102	25	
Triticeae	Cereal	chaff				38		1		
Triticeae	Cereal	detached embryo	1	4	1	20	2	3		1
Triticeae	Cereal	detached germinated embryo						1		
Triticeae	Cereal	coleoptile		4		10	17			1
					Nuts/Fruits					
Corylus avellana	Hazelnut	nut (underdeveloped)			1					
Rubus sp.	Blackberry/raspberry	seed			5					
					Other crops					
Vicieae	Vetch/grass pea	seed	2	5	2	4	1	1	1	
Linum usitatissimum	Flax	capsule fragment		2			1			
					Wild plants					
Urtica urens	Small nettle	seed	1							
Atriplex sp.	Orache	seed			1					
Chenopodium sp.	Goosefoot	seed	22				5			
Chenopodiaceae	Goosefoot family	seed	12	6	3	6				
Cerastium sp.	Mouse-ear	seed	4					1		
Agrostemma githago	Corncockle	seed	1							
Caryophyllaceae	Pink family	seed	2		3			1		

Group number			90345	90348					
Feature type			Ditch	Ditch	Ditch	Ditch	Pit	Pit	Pit	Hollow
Feature			90020	26307	26312	26305	25904	90250	103604	90340
Context			90021	26309	26313	26306	25905	90251	103605	90342
Sample			101409_652	101407_120	101407_121	101407_119	101407_122	101409_659	115291_1001	101409_663
Vol (l)			30	40	30	30	30	38	27	32
Flot size (ml)			35	500	175	500	75	40	35	50
Subsample			100% flot; no <4 mm residue	50% flot, 25% <4 mm residue	100% flot, 25% <4 mm residue	50% >0.5 mm flot; 25% <0.5 mm flot; 50% <4 mm residue	100% flot, 50% residue <4 mm	100% flot, 25% <4 mm residue	100% flot, 50% residue <4 mm	100% flot, 25% <4 mm residue
Bioturbation (Roots %, etc)			60%, C	90%, A, I	90%, A, E	90%, A, E	75%, A, E	70%, C, E	80%, B, E	90%, C, E, I
Fragmentation index (MNI/NR)			0.5	0.5	0.6	0.5	0.6	0.5	0.4	0.5
Density (MNI/l)			4.2	25.2	15.0	117.3	74.2	18.2	4.4	7.4
Scientific name	*Common name*	*Plant part*								
Dianthus sp.	Deptford/Maiden Pink	seed			1					
Persicaria lapathifolia	Pale persicaria	seed	1				1			
Polygonum sp.	Knotgrass	seed						1		
Rumex sp.	Docks/sorrel	seed	2	18	10	30	1			
Polygonaceae	Dock/knotgrass family	seed					1		2	
Viola sp.	Dog violet	seed	2							
Raphanus raphanistrum	Wild radish	capsule		4		8	3	2	1	
Primulaceae	Primrose/pimpernel family	seed			2					
Aphanes sp.	Parsley-piert	seed			1					
Trifoliae	Trefoil/medick/clover	seed			4					
Pimpinella/Berula/ Apium	burnet saxifrage/water parsnip/marshwort	seed			9					
Foeniculum vulgare	Fennel	seed			1					
Hyoscyamus niger	Henbane	seed			1					
Solanum nigrum	Black nightshade	seed			1					
Galeopsis sp.	Hemp nettle	seed			1					
Lamiaceae	Mint family	seed			7					
Plantago sp.	Plantain	seed			1					
Odontites vernus	Red bartsia	seed			9	2				
Centaurea sp.	Cornflower/ Knapweed/Star-thistle	seed			8					
Anthemis arvensis	Corn chamomile	seed		16			13			4
Anthemis cotula	Stinking mayweed	seed		38	15	44	102	50	6	
Asteraceae	Daisy family	seed			53	10	16	4	1	
Juncus sp.	Rush	seed			49		1			
Carex sp.	Sedge	seed								
Lolium/Festuca	Rye grass/Fescue	grain		2		4	7		1	
Poa/Phleum	Meadow grass/ Cat's tail	grain	7	12	3		4	4	22	
Avena sp.	Oat	grain			4		5	9		
Avena sp.	Oat	awn fragment	1		2	56	55	15		
Bromus hordeaceaus/ secalinus	Soft-brome/rye brome	grain	3							

Group number			90345	90348					
Feature type			Ditch	Ditch	Ditch	Ditch	Pit	Pit	Pit	Hollow
Feature			90020	26307	26312	26305	25904	90250	103604	90340
Context			90021	26309	26313	26306	25905	90251	103605	90342
Sample			101409_652	101407_120	101407_121	101407_119	101407_122	101409_659	115291_1001	101409_663
Vol (l)			30	40	30	30	30	38	27	32
Flot size (ml)			35	500	175	500	75	40	35	50
Subsample			100% flot; no <4 mm residue	50% flot, 25% <4 mm residue	100% flot, 25% <4 mm residue	50% >0.5 mm flot; 25% <0.5 mm flot; 50% <4 mm residue	100% flot, 50% residue <4 mm	100% flot, 25% <4 mm residue	100% flot, 50% residue <4 mm	100% flot, 25% <4 mm residue
Bioturbation (Roots %, etc)			60%, C	90%, A, I	90%, A, E	90%, A, E	75%, A, E	70%, C, E	80%, B, E	90%, C, E, I
Fragmentation index (MNI/NR)			0.5	0.5	0.6	0.5	0.6	0.5	0.4	0.5
Density (MNI/l)			4.2	25.2	15.0	117.3	74.2	18.2	4.4	7.4
Scientific name	*Common name*	*Plant part*								
Bromus sp.	Brome	grain		2	18	33	22	2	10	
Avena/Bromus	Oats/Brome	grain	1		10		56	14	2	
Danthonia decumbens	Heath grass	grain	2			2				
Poaceae	Grasses	grain	2	25			7			
Poaceae	Grasses	culm fragments			1			4		
Allium sp.	Garlic/Leek/Chive/ Onion/Ramson	seed			2					
				Other						
Claviceps purpurea	Ergot	sclerotium			4					
Indeterminata		fragment			1					
Indeterminata		seed	5	2	27	32	1	3		
Indeterminata		tuber	9		1			5		
NR			**237**	**2136**	**809**	**7442**	**4024**	**1389**	**285**	**451**
MNI			**127**	**1006**	**450**	**3519**	**2226**	**693**	**120**	**238**

germinated grains are associated with high numbers of chaff, samples may be suggestive of accidental carbonisation as part of crop-drying or malting practices, which often involved the use of crop-processing by-products as fuel, to give a pleasant roasted taste to the grain. Thus, these activities are tentatively suggested for some of the samples studied from the sites (see above). The issues of detecting intentional/accidental germination in charred grains may be able to be addressed more firmly with the new techniques now being developed (eg, Cordes et al. 2021).

Barley was present as a crop on the sites, but its presence in the samples was always limited in comparison to spelt wheat. Although poor preservation prevented identification to a precise level, when this was possible it was the hulled subspecies, in both two-row and dense-row varieties, that was found to be present, which is consistent with other studies in the region (Carruthers and Hunter Dowse 2019), including nearby sites such as Highfields Farm, Derbyshire (López-Dóriga 2021). Naked barley seems to have a limited presence in the Midlands, which may be explained by climatic factors (too wet). Interestingly, although barley was considered an inferior cereal by the Romans – soldiers could be punished by being fed barley instead of wheat (Watson 1969, 126) – which may explain why it is generally present in small amounts across Midlands sites during the Romano-British period (Carruthers and Hunter Dowse 2019), it is only during that period that it becomes abundant in the regional record, being rarely recovered from Iron Age deposits. Several factors may explain the rarity of barley. First is differential preservation due to different uses and processing techniques – for example, if barley was used mostly as a fodder, it would not require dehusking and roasting, therefore having fewer chances of becoming carbonised; Carruthers and Hunter Dowse (2019) also explain

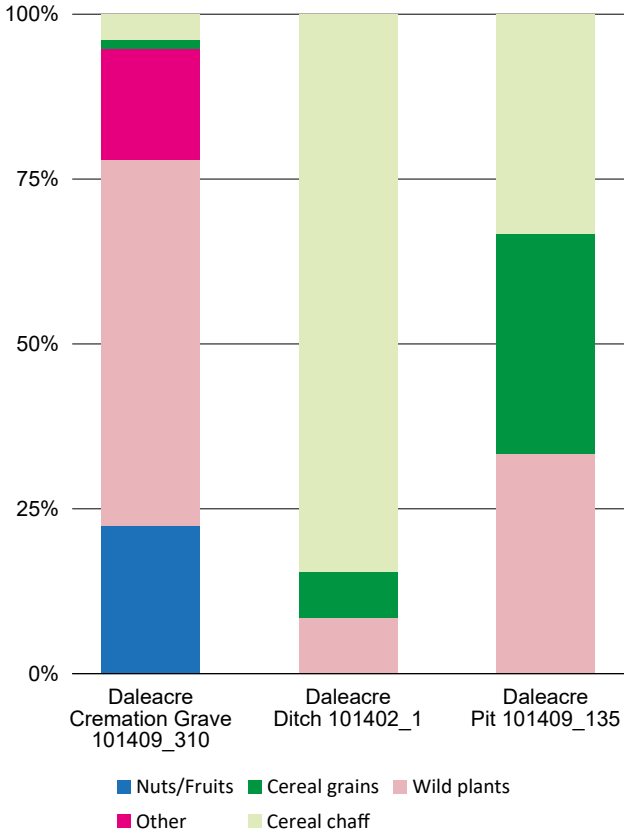

Figure 4.24 Categories of charred plant remains from Daleacre

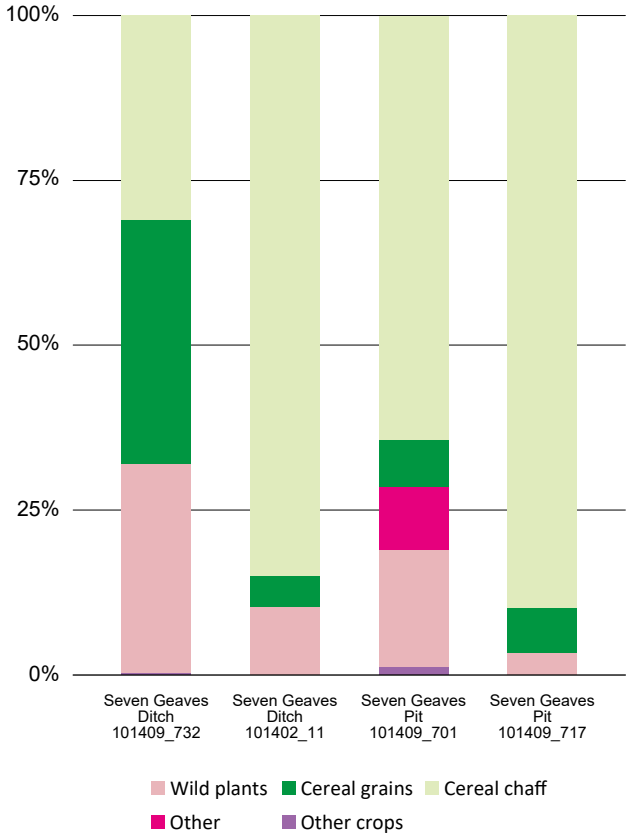

Figure 4.25 Categories of charred plant remains from Seven Geaves

the rarity of emmer in the same way. Second, wheats are better suited than barley to the heavy soils widely found in the area. Evidence for the cultivation of barley as a crop for human use (identifiable by a high chaff:grain ratio – if used for fodder it would not require dehusking) is suggested at Seven Geaves, Over Field and Daleacre.

There is no evidence from any of the sites for the cultivation of oats, and this is something also observed in other Midlands sites (Carruthers and Hunter Dowse 2019). Although oat grains were recovered in small numbers from four sites (Seven Geaves, Over Field, Daleacre and Horsecroft), there were no instances of the preservation of the oat chaff (floret bases) necessary for the identification of domestic species. This fact, and the small number of grains, may suggest this taxon was not cultivated as a crop, although again differential preservation due to type of use can affect the number of grains preserved. Other possible cereal crops from the periods in the Midlands (Carruthers and Hunter Dowse 2019) and the local area (eg, Dawson 2001; Allen et al. 2018), but not positively identified on these sites, are rye and free-threshing wheats. Although some remains of these plants were found, they were present in such small numbers that they may represent synanthropic plants rather than the results of cultivation.

Cultivated pulses (pea and possibly a vetch/bean) were only positively identified at Seven Geaves, with potentially domestic large-seeded vetches found in material from Horsecroft at the assessment stage (Appendix A). This echoes the results from nearby sites (Allen et al. 2018), such as Warren Farm (Monckton 2011) or Ratcliffe-on-Soar (Hunt 2009). Pulses, and particularly pea and broad bean, are thought to have been grown in the Midlands since the Bronze Age and may have had a higher importance in the east of the region (Carruthers and Hunter Dowse 2019). However, their minor presence in the charred record does not necessarily signify a minor role in subsistence, but simply a differential preservation bias in comparison to hulled cereals (eg, pulses do not require roasting prior to consumption).

Flax was retrieved as a small number of capsule fragments from Daleacre and Over Field. In view of the limited evidence, it is difficult to infer what the crop was used for, with the production of either fibre (from the stems) or oil (from the seeds) a possibility; both uses have been tentatively proposed for other Midlands sites (see Carruthers and Hunter Dowse 2019).

Arable weeds, particularly archaeophytes (Preston et al. 2004) and other wild plants recovered across the sites, may have specific habitat requirements and, therefore, are often the best

Table 4.38 Analysis of charred plant remains from Daleacre and Daleacre south

	Group number		80366?	
	Period	LBA	RB	IA
	Feature type	Cremation grave	Ditch	Pit (Daleacre south)
	Feature	80227	207	86025
	Context	80228	209	86027
	Sample	101409_310	101402_1	101409_135
	Vol (l)	20	10	30
	Flot size (ml)	90	100	15
	Subsample	100%	25% flot <0.5 mm; 100% flot >0.5 mm; no <4 mm residue	100%
	Bioturbation (Roots %, etc)	10%, C, I	45	80%, C, I
	Fragmentation index (MNI/NR)	0.2	0.5	0.4
	Density (MNI/l)	3.2	303.7	0.2
Scientific name	*Common name*	*Plant part*		
		Cereals		
Hordeum vulgare	Barley	grain	12	
Hordeum vulgare	Barley	rachis segment	29	
Triticum spelta	Spelt	grain	1	106	1
Triticum spelta	Spelt	spikelet	1	233	
Triticum sp.	Wheat	grain	10	1
Triticum sp.	Wheat	spikelet	2	2307	2
Triticum sp.	Wheat	rachis segment	281	
Triticeae	Cereal	grain	85	
Triticeae	Cereal	detached embryo	6	
Triticeae	Cereal	coleoptile	37	
		Nuts/Fruits		
Corylus avellana	Hazelnut	nut	7	1	
Crataegus monogyna	Hawthorn	fruit	10		
		Other crops		
Vicieae	Vetch/grass pea	seed	1	12	
Linum usitatissimum	Flax	capsule fragment	2	
		Wild plants		
Cerastium sp.	Mouse-ear	seed	4	
Scleranthus annuus	Annual knawel	capsule		1
Agrostemma githago	Corncockle	seed	2	
Rumex sp.	Docks/sorrel	seed	11	
Polygonaceae	Dock/knotgrass family	seed	1	
Raphanus raphanistrum	Wild radish	capsule	5	
Trifoliae	Trefoil/medick/clover	seed	1	
Anthemis cotula	Stinking mayweed	seed	34	
Asteraceae	Daisy family	seed	21	1
Arrhenatherum elatius var. bulbosum	False oat-grass or onion couch	bulb	4	
Avena sp.	Oat	grain	6	
Avena sp.	Oat	awn fragment	56	
Bromus sp.	Brome	grain	75	

Group number			80366?	
Period		LBA	RB	IA
Feature type		Cremation grave	Ditch	Pit (Daleacre south)
Feature		80227	207	86025
Context		80228	209	86027
Sample		101409_310	101402_1	101409_135
Vol (l)		20	10	30
Flot size (ml)		90	100	15
Subsample		100%	25% flot <0.5 mm; 100% flot >0.5 mm; no <4 mm residue	100%
Bioturbation (Roots %, etc)		10%, C, I	45	80%, C, I
Fragmentation index (MNI/NR)		0.2	0.5	0.4
Density (MNI/l)		3.2	303.7	0.2
Scientific name	*Common name*	*Plant part*		
Danthonia decumbens	Heath grass	grain	2	
Poaceae	Grasses	grain	22	
Poaceae	Grasses	culm fragments	38	
		Other		
Indeterminata		root	13	2
Indeterminata		seed	1	
Indeterminata		tuber	2	
NR			**289**	**6692**	**16**
MNI			**64**	**3037**	**6**

Table 4.39 Analysis of charred plant remains from Romano-British features at Seven Geaves

Group number			70606	70631	70631	
Feature type			Ditch	Pit	Pit	Posthole
Feature			70530	5910	70213	70585
Context			70531	5911	70214	70586
Sample			101409_732	101402_11	101409_701	101409_717
Vol (l)			38	10	34	36
Flot size (ml)			10	35	20	15
Subsample			100% flot, 50% <4mm residue	100% flot, no <4mm residue	100% flot, 50% <4mm residue	100% flot, 50% <4mm residue
Bioturbation (Roots %, etc)			30%, A, E	30	60%, A, E, I	70%, A, I
Fragmentation index (MNI/NR)			0.5	0.5	0.4	0.4
Density (MNI/l)			9.2	36.7	2.4	1.6
Scientific name	*Common name*	*Plant part*				
		Cereals				
Hordeum vulgare	Barley	grain	20	2	1	
Hordeum vulgare	Barley	rachis segment	3	8		
Triticum spelta	Spelt	grain	99	7	2	
Triticum spelta	Spelt	spikelet	65	47	6	3
Triticum sp.	Wheat	grain				3
Triticum sp.	Wheat	spikelet	40	257	48	50

	Group number		70606	70631	70631	
	Feature type		Ditch	Pit	Pit	Posthole
	Feature		70530	5910	70213	70585
	Context		70531	5911	70214	70586
	Sample		101409_732	101402_11	101409_701	101409_717
	Vol (l)		38	10	34	36
	Flot size (ml)		10	35	20	15
	Subsample		100% flot, 50% <4mm residue	100% flot, no <4mm residue	100% flot, 50% <4mm residue	100% flot, 50% <4mm residue
	Bioturbation (Roots %, etc)		30%, A, E	30	60%, A, E, I	70%, A, I
	Fragmentation index (MNI/NR)		0.5	0.5	0.4	0.4
	Density (MNI/l)		9.2	36.7	2.4	1.6
Scientific name	*Common name*	*Plant part*				
Triticum sp.	Wheat	rachis segment	4	38	14	6
Triticeae	Cereal	grain	10	8	3	1
Triticeae	Cereal	detached embryo		1		
Triticeae	Cereal	coleoptile		2		
		Other crops				
Pisum sativum	Garden pea	seed			1	
Vicia sp.	Vetch	seed	1			
Vicieae	Vetch/grass pea	seed	10	6		
		Wild plants				
Caryophyllaceae	Pink family	seed	2			
Persicaria lapathifolia	Pale persicaria	seed	1			
Rumex sp.	Docks/sorrel	seed	13	1		
Polygonaceae	Dock/knotgrass family	seed		2		
Raphanus raphanistrum	Wild radish	capsule	1	1	1	1
Aphanes sp.	Parsley-piert	seed			1	
Trifoliae	Trefoil/medick/clover	seed		1		
Anthemis arvensis	Corn chamomile	seed	21			
Anthemis cotula	Stinking mayweed	seed	5	3	3	
Asteraceae	Daisy family	seed	1			
Lolium/Festuca	Rye grass/Fescue	grain	1		2	
Poa/Phleum	Meadow grass/Cat's tail	grain	1	1	1	1
Avena sp.	Oat	grain		3		
Avena sp.	Oat	awn fragment	1	17	3	
Bromus sp.	Brome	grain	1	1		
Avena/Bromus	Oats/Brome	grain	46	1		
Danthonia decumbens	Heath grass	grain		1	2	
Poaceae	Grasses	grain	7			
Poaceae	Grasses	culm fragments			2	
		Other				
Indeterminata	root			4		
Indeterminata	seed			1		
Indeterminata	tuber			3		
NR	**642**		**727**	**157**		
MNI	**349**		**367**	**59**		

proxies for identifying agricultural practices and the nature of the landscape. In general, the weedy assemblage from the sites suggests the existence of waste ground and trampled areas, as well as the exploitation of heavy soils, with some vegetation that would require wet and acidic conditions. These are the soils that are present around the sites, but there are occasional indications of vegetation from lighter and more alkaline soils, mostly found to the north. Many of these wild plants that can be found in synanthropic habitats may have been tolerated and exploited resources, due to their medicinal and edible properties (Fern 1995–2019), although in such cases usually the leaves and other vegetative plant parts were used either raw or boiled, so that the seeds of the plants were less likely to be preserved by carbonisation. It is tempting to interpret the presence of some of these archaeophytes as the result of deliberate collection and use by the sites' inhabitants; such is the case for fennel and henbane, and perhaps other plants, including goosefoot and docks, which have good properties as greens (despite being largely dismissed nowadays). However, this is not conclusive given the recovery of seeds, which are normally produced when the plants have matured.

With the exception of a single seed of fennel at Over Field, no evidence of exotic plants has been retrieved from any other of the sites studied here, nor in the local area (see Allen et al. 2018), reflecting the predominantly rural character of the area (see van der Veen et al. 2008; Orengo and Livarda 2016).

Worked Flint

by Erica Gittins

Overall, 115 pieces of worked flint were recovered, as shown in Table 4.40.

Table 4.40 Worked flint assemblage

Flint types	*No.*	*% of assemblage*
Retouched tools:		
Scraper	2	1.78
Projectile points	2	1.78
Piercers	1	0.90
Misc. retouch	2	1.78
Debitage:		
Cores (incl. fragments)	9	8.04
Flakes (incl. broken)	90	77.68
Blades	2	1.78
Chips	1	0.90
Debitage	6	5.36
Total	115	100

Raw Material

The raw material consists entirely of grey, greyish brown and brown pebble flint of generally reasonable quality. The cortex, where present, is thin and tan brown in colour, indicating a likely source in the local sands and gravels.

Condition

The condition of the flint is generally good; most pieces are relatively sharp and fresh. There is some post-depositional damage, but this is limited to a little crushing of edges. A small number of pieces have a cream/white patina.

Technology

The assemblage derives almost entirely from a flake-based technology, struck from irregular cores with hard hammers. The constraints of the raw material (small size of available pebbles) affected the reduction strategy quite significantly: cores were worked down to a small size, with multiple platforms. There were some signs of platform preparation and maintenance, but this is not a general feature of the assemblage. The flakes are predominantly broad and squat and often quite thick. Dorsal scars do not follow any particular direction. The only exceptions to this general pattern are two blades (one from burnt mound 65246 at Field Farm and one from four-post structure 75290 at King St Plantation) and a flake with dorsal blade scars (from ditch 75494 at King St Plantation). One of the blades and the flake are markedly different in condition to the rest of the assemblage, having a cream/white patina. Tools are limited to two scrapers made on flakes (boundary 75327 and four-post structure 75290 – both King St Plantation: Figs 4.26.1 and 4.26.2), a curved piercer (ditch 41477 – Longfield: Fig. 4.26.3), two flakes with retouch (posthole 38309 and ditch 41454 – Horsecroft and Longfield respectively) and two projectile points. One of the latter (from ditch 65244 at Field Farm) is the medial segment of either a leaf-shaped or barbed and tanged arrowhead – both the tip and base are missing (Fig 4.26.4). The other (from subsoil 41001 at Longfield: Fig. 4.26.5) is unfinished, being a flake with pressure flaking thinning on one edge and other retouch elsewhere. It resembles an oblique arrowhead.

Chronology

Taken as a whole, what chronological indicators there are suggest a date for the bulk of the assemblage in the later Neolithic or Early Bronze

Age, although the small size of the assemblage and the constraints of the raw material make dating difficult. The exceptions to this general date include the blades and flake with blade scars, which could be Mesolithic or Early Neolithic, and the broken arrowhead. The broken arrowhead seems most likely to be leaf-shaped, which would date to the Early Neolithic, but this identification cannot be considered secure.

Catalogue of illustrated worked flint
Fig. 4.26

1. Scraper on a flake. Fill 75306 of slot 75305 (boundary 75327)
2. Scraper on a flake. Fill 75300 of pit 75298 (four-post structure 75290)
3. Curved piercer. Fill 41218 of slot 41217 (ditch 41477)
4. Medial segment of either a leaf-shaped or barbed and tanged arrowhead – both the tip and base are missing. Fill 65162 of slot 65160 (ditch 65244)
5. Oblique arrowhead? Unfinished. Longfield surface find (context 41001)

Worked Stone

by Ruth Shaffrey

Great Dampits

A single, complete, saddle quern (Fig. 4.27.2) was recovered from the southern terminal (60231) of ditch 60251, which may have helped define an entranceway into the P-shaped enclosure at this site. The quern is a relatively small example, formed from a boulder of quartzite and with a grinding surface that is slightly dished along its length. Its inclusion in a ditch terminal fill suggests that it is a placed deposit. Complete saddle querns are not commonly found in archaeological contexts because normal practice was to fragment before discard, either for reasons pertaining to re-use, or for other reasons unknown to us. As an essential household item, it is not likely to have been decommissioned lightly, although the value of saddle querns is likely to have been altered by the introduction of the rotary quern during the early Middle Iron Age. It is possible the quern became surplus to requirements and was, therefore, available for deposition.

Mill Close

Four items of worked stone were recovered at Mill Close, three of these from the main enclosure ditch (50187). The largest of these is a complete lower beehive rotary quernstone of Millstone Grit (Fig.

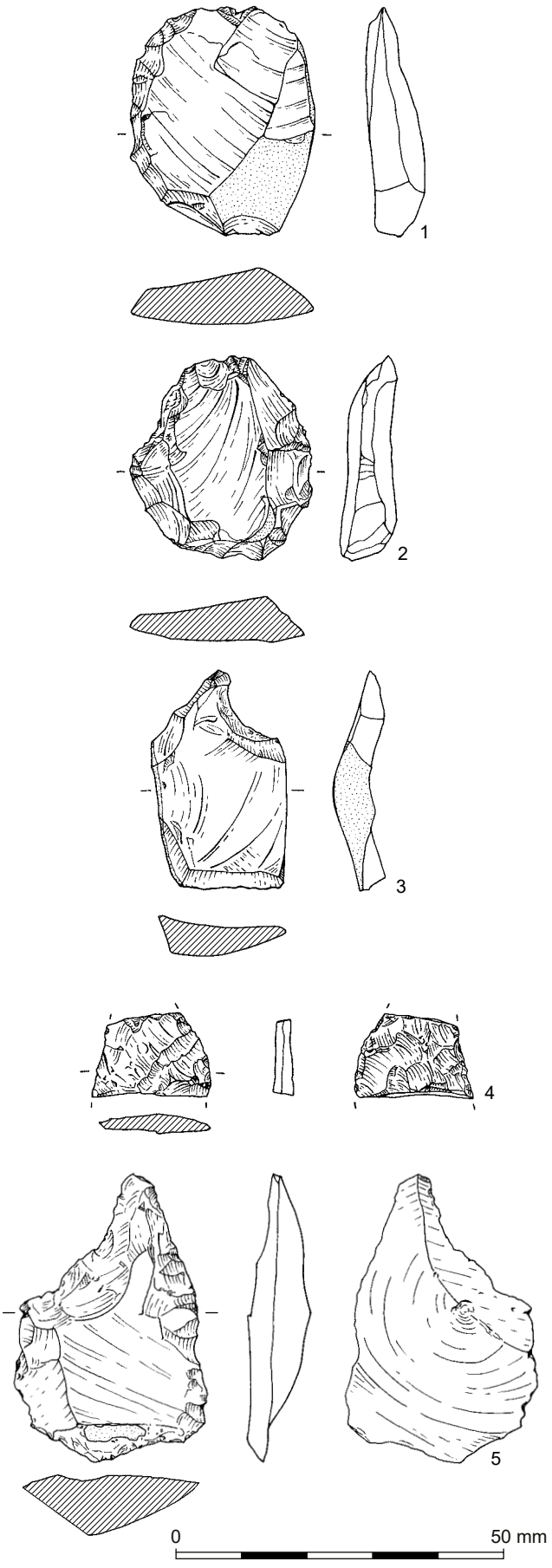

Figure 4.26 Worked flint

4.27.1), recovered from slot 50162 dug across the northern arm of the ditch. The quern has been neatly pecked all over, but the flat grinding surface has been worn smooth on the 50 mm nearest the circumference. The grinding surface has been worn down so that the spindle socket, which would originally have been several centimetres deep, is now barely visible. It is unlikely that the quern would have operated very effectively with such a shallow spindle socket, but the rotational wear at the circumference is evidence that it did. As the grinding surface wore down, normal practice would have been to drill out a deeper spindle socket, but in this case the quern was instead allowed to wear out. Additionally, the base of the quern has been removed, certainly deliberately. Whether this was in order to re-use the quern for another purpose, or as part of the oft-seen damage to querns prior to deposition, is hard to see. Either way, the inclusion of the quern in the Iron Age enclosure ditch 50187 can be seen as part of a placed deposit.

A slab of microgranite with one worn face was recovered from slot 50192, on the opposite side of the enclosure. The wear could be from use as a grinding slab, but it is also possible that it was incorporated in a surface.

The third item from the main enclosure ditch (slot 50117) is made from Millstone Grit. This is a very crudely made circular item with a vertical-sided bowl. It shows no wear inside, but could have been intended as a crude vessel, or possibly a socket stone for an upright post.

Figure 4.27 Querns (1 and 2) and millstone (3)

A small fragment of possible quern was recovered from slot 50094 of ring gully 50188. This is also made of Millstone Grit and, like the others, has a probable Derbyshire origin.

Seven Geaves

A single fragment of worked stone was recovered from late Romano-British pit 70350 at Seven Geaves. This is a segment of Millstone Grit millstone measuring approximately 620 mm in diameter that has been so well-used that the pecked grinding surface is worn into rotational grooves (Fig. 4.27.3). The millstone is decorated with a fluted pattern on the circumference and a circular groove on the upper face, positioned 35 mm from the outer edge. These appear to be contemporary with the millstone itself, rather than having been added after the stone was decommissioned as a millstone (although the latter cannot be entirely eliminated as a possibility). Decorated querns and millstones are extremely unusual in English archaeological contexts of any date, and no precise parallels for this decoration are known to the author from English material. It is quite different to anything observed in the decorated querns from Scotland, Wales or Ireland, areas for which overviews of quern decoration have been published (Griffiths 1951; McLaren and Hunter 2008). Querns are more likely to have been decorated with obvious patterns in Ireland, Scotland and Wales than in England, and decoration on English querns usually amounts to a single circular groove on the upper face (as seen here) or radiating lines. This millstone is, therefore, currently, unique.

The presence of a millstone from Seven Geaves is indicative of the centralisation of the flour production process. It is unlikely it relates to activity on the site itself as there is scant evidence for cereal processing, but it is probable that a mill was in operation nearby during the mid- or late Roman period. No other millstones are known from Roman contexts in the immediate vicinity, but some of the millstones from the Norman mill at Castle Donington, some 3 km north of the site, could be of Roman date, as there were certainly querns of Iron Age date there (Clay 1990). With the River Soar and River Trent within only 3 km of the site, a Roman watermill nearby seems extremely likely.

Catalogue of worked stone

Fig. 4.27

1. Lower rotary quern (Fig. 4.27.1). Complete beehive quern. Pecked all over with rough pecking. The grinding surface is flat and pecked, with smoothing from wear around the outermost 50 mm near the circumference. The traces of a spindle socket are present in the centre of the stone, suggesting it has been worn down to this level and been reworked. The base has been removed. Measures 330–345 mm diameter x 115–163 mm thick. Weighs 19.0 kg. Millstone Grit. Medium-coarse grained feldspathic sandstone with frequent pink feldspar. Well-sorted but cross-bedded with bands of finer and coarser grains and occasional quartz pebbles up to 10 mm. Fill 50163 of slot 50162 (enclosure ditch 50187).
2. Probable quern. Fragment, burnt and blackened and with one flat worked face. Of quern material and almost certainly from a quern. Weighs 135 g. Millstone Grit. Medium-grained well-sorted, sandstone with some feldspar, rounded grains and little cement. Fill 50095 of slot 50094 (ring gully 50188).
3. Grinding slab? Slab of stone, worn smooth on one face. Possibly just flooring. Measures >85 x >90 x 25 mm thick. Weighs 365 g. Pink and green microgranite. Fill 50193 of slot 50192 (enclosure ditch 50187).
4. Vessel. Crudely chipped into circular shape creating a flat-bottomed, vertical-sided vessel with thick walls, flat on top (although having possibly sustained damage). Original diameter approximately 260 mm x 85 mm high. Bowl is 50 mm deep x 90 mm diameter. Weighs 2.3 kg. Millstone Grit. Fill 50120 of slot 50117 (enclosure ditch 50187).
5. Saddle quern (Fig. 4.27.2). Complete saddle quern. Flat across the width but slightly concave along the length. Very smooth along one side and end – about 40 mm inside the edges. These edges are more curved than the other two. The base and sides are unworked and it has been made from a boulder. Measures 265 x 225 x 60–95 mm thick. Weighs 8.2 kg. Quartzite. Fill 60241 of slot 60231 (ditch 60251).
6. Upper millstone (Fig. 4.27.3). Segment of slightly angled disc type. The grinding surface is very slightly concave and pecked but worn into rotational grooves. The upper face is neatly dressed with spaced pecking. Decorated with a groove positioned 35 mm from the circumference. The edges are straight and vertical but are fluted with rounded flutes 45 mm apart. U-shaped channels. Large circular eye of 180 mm diameter. The circumference is not perfectly circular and if lined up with the diameter chart it suggests a diameter of 800 mm but this does not accord with the position of the central eye. The eye is more evenly circular and suggests the diameter given. Measures approximately 620 mm diameter x 62 mm thick. ON 72. Weighs 5.7 kg. Millstone Grit. Coarse grained, poorly sorted feldspathic sandstone with frequent pink feldspar. Fill 70351 of pit 70350.

Metalwork

by Katie Marsden, with Richard Henry (coins)

A total of 47 items of metalwork were recovered. The group comprises 11 items of copper alloy, 31 of iron, three of lead alloy and one of silver. It is characterised by a high level of fragmentation and a relatively

large number of undatable items; where datable, the majority are post-medieval. Discussed below are those dated to the Romano-British period and other items of interest, none of which are pre-Roman.

Amongst the copper alloy items are two post-medieval buttons and a sheet fragment of unknown date and function. Similarly, the two lead objects are undiagnostic and undatable. Half of the iron objects (16 items) are nails, with six recovered from one grave deposit. Other objects include two rings (ditch 90035 and pit 90250, Over Field), part of hook or loop (enclosure ditch 90350, Over Field) and a hollow cylindrical bar (ditch 70613, Seven Geaves). The latter object is from a presumed modern feature, the others from Romano-British features, but all are of uncertain function. There is also a modern heel iron.

Items of Personal Adornment

Items of personal adornment comprise two brooches, a hair pin and a fragmentary item, all in copper alloy. Object number (ON) 363, from field boundary 90349 (Over Field), is a Colchester-derivative brooch, typical of the late 1st century AD (Fig. 4.28.1). ON 74, from enclosure ditch 70604 (slot 70047) (Seven Geaves), does not neatly fit into the standard brooch categories. The hinged (iron) pin is held in place within tubular wings formed by the head being rolled up and over the iron axis bar (Fig. 4.28.2). This head design is suggestive of a variant of a Hod Hill type, with the 'fan-tail' foot and central boss more reminiscent of 'keyhole' Rosette types. Mackreth (2011, 141, no. 9385) illustrates these 'hybrid' types, which are thought to date to the early 1st century AD.

A fragment from a copper alloy annular or penannular object (ON 350) was found in hollow 90056 (Over Field). The cross-section is circular and the proposed diameter when complete would be around 40 mm. It is difficult to assign an exact purpose without diagnostic elements, but an armlet or penannular brooch are the most likely possibilities. The proposed diameter would suggest an armlet for a child, based on grave data from Colchester (Crummy 1995, 36), and such items have a 3rd to 4th-century AD date. Penannular brooches were in use throughout the Roman period.

The copper alloy hairpin (ON 10) is complete and was recovered from pit 25904/90250 at Over Field. It is of Cool's (1990) Group 3B (curved units between cordons, head diameter larger than the shank), thought to date from the 1st to 3rd centuries AD.

Grave Deposits

A total of six iron nail fragments were recovered from grave 90178 (Over Field). The nails are small in size (estimated at less than 30 mm in length) and are possibly the remains of a small box interred alongside the body, perhaps as a grave good.

The Coins

Two Roman coins and a fragment of a post-medieval copper alloy Nuremberg jetton were recovered. The quantity of Roman coins is too low for statistical analysis.

The Roman coins consist of ON 220, a 1st-century silver denarius of Nero (CONCORDIA AVGVSTA reverse type dating to AD 64–68, RIC no. 49 (Sutherland and Carson 2018)), and a 4th-century copper alloy nummus of the House of Constantine minted in Trier (VRBS ROMA reverse type dating to AD 330–331, RIC no. 529). Both coins were found during metal detecting over the surface of ditch 80358 at the Daleacre site.

The denarius of Nero is a coin of note and was produced after his coinage reform in AD 64; it was minted in Rome. Denarii of Nero are unusual as site finds – for example, of the 577 coins of Nero recorded on the Portable Antiquities Scheme database, only 165 denarii have been recorded, of which 10 have the same reverse type as this example.

The denarius shows some evidence of wear, but it is not excessive. With coinage of the Augustan

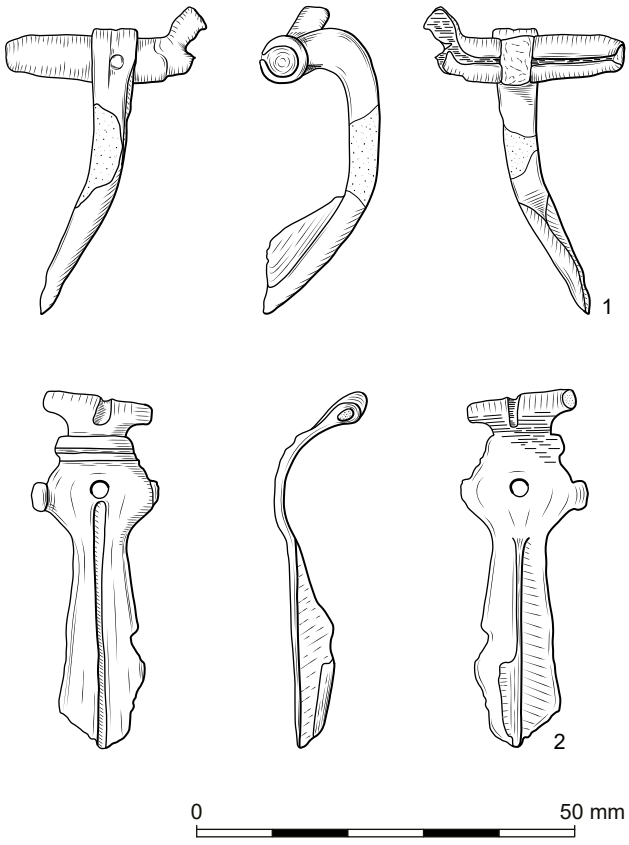

Figure 4.28 Brooches

system, which remained in use until *c*. AD 260, the date that the coin was struck does not necessarily indicate when the coins would fall out of circulation. Evidence from coin hoards offers some indication of how long Neronian denarii remained in circulation in Britain. Creighton (2014) has shown that between AD 55 and AD 70 denarii of Claudius and Nero formed approximately 10% of the average denarii hoard. From AD 120 they formed less than 2% of the average hoard. This suggests that at most this denarius remained in circulation for fewer than 50 years and potentially was removed from circulation within a couple of decades of being struck.

The post-medieval copper alloy Nuremburg jetton fragment is an anonymous stock issue struck *c*. 1500–50 with fictitious legends on both the obverse and reverse. It was a surface find over ring gully 50188 at Mill Close. Jettons facilitated calculations from the medieval period until the mid-17th century, with the widespread adoption of Arabic numerals (Mernick and Algar 2001, 213).

Other Finds

by Lorraine Mepham

Ceramic Building Material (CBM)

The total quantity of ceramic building material (CBM) recovered during the project was 423 fragments (29,476 g). The overwhelming majority of this comprised medieval or later material (roof tile, brick, drainpipe), much of it from fieldwalking, which will not be discussed further here. Thirty-six fragments are Romano-British. These are in relatively poor condition; levels of surface and edge abrasion are high, even amongst conjoining fragments. Few pieces could be assigned to specific brick/tile types. There is one identifiable *tegula* (Daleacre, field boundary ditch 80359), although fragments from ditch 70609 (Seven Geaves) may also belong to at least one other, and two *imbrices* (one from Horsecroft, pit 2007; one from fieldwalking south of Long Lands, 11339). Five conjoining fragments from hollow 90056 (Over Field), and one from field boundary ditch 80359 at Daleacre, have been classified as 'brick' on grounds of thickness (35 mm or greater), while other fragments could only be broadly classified as 'flat fragments' (two surfaces, thickness 30 mm or less, probably from roof or flue tiles) or undiagnostic.

Fired Clay

The small amount of fired clay recovered (75 fragments; 2698 g) includes six fragments which make up a single object, a roughly cylindrical loomweight. This came from pit 80073 (Daleacre). Three fragments from pit 75397 (in possible roundhouse 75502, King St Plantation) could also belong to an object, although of unknown form; part of a curved edge and flat surfaces survive. Other fragments are small and undiagnostic, and could either represent unrecognisable pieces of further objects, or structural material.

Glass

Sixteen fragments of glass were recovered, of which 12 are post-medieval/modern and are not discussed further. The remaining four are Iron Age or Romano-British, comprising one object and three vessel fragments.

The object (pit 75475, King St Plantation) is an annular blue glass bead, a common type in use from the Iron Age through the Romano-British period and persisting into the post-Roman period (Guido 1978, 66–8). In this instance, an Iron Age date is suggested by the associated pottery, and there is in fact no evidence of activity in the Romano-British period on this site.

The most diagnostic vessel fragment (from gully 70612, Seven Geaves) is a concave base in blue/green glass, probably from a cylindrical bottle, dating to the later 1st or early 2nd century AD (Price and Cottam 1998, 191–4). The other two are undiagnostic body fragments in pale blue glass (cultivation furrow 90004, pit 90250, both Over Field).

Slag

The excavations produced, overall, only a small quantity (5.98 kg) of metalworking and other residues. Most of this material came from Field Farm, Seven Geaves and Over Field, with minimal quantities from other areas.

Iron smelting slag accounts for 2185 g of the total (mostly from Over Field and largely from Romano-British features, with a little from Iron Age deposits). The material is very fragmentary and comprises small but relatively dense pieces, some with a surface flow structure visible that is characteristic of tap slag (ditch 86122 at Daleacre (south), and hollow 90056, enclosure ditch 90350, pit 90250, ditch 90270, ditch 90185 at Over Field). The largest piece, weighing 1082 g (Romano-British pit 70458, Seven Geaves), is a rather abraded, featureless 'lump', perhaps a fragment of furnace bottom.

In addition to this there are several small fragments of fuel ash slag, vesicular, sometimes glassy debris, a few pieces with hearth or furnace lining attached, which are also likely to have been associated with the ironworking (a total of 312 g,

from Iron Age four-post structure 75290, Iron Age pit 75432 and Iron Age enclosure ditch 75503 at King St Plantation, Romano-British field boundary ditch 80361 at Daleacre and Romano-British hollow 90056 at Over Field).

Finally, there is 3483 g of grey vesicular material, similarly classified as fuel ash slag (and sometimes known as 'Midland grey'), which has been formed in high temperatures but is not indicative of metalworking. The largest quantity (744 g) is from Iron Age enclosure ditch 65243 (Field Farm), the remainder coming from a further 15 separate contexts (from Mill Close, Field Farm, Longfield and Horsecroft) as well as nine evaluation trenches.

Chapter 5
Discussion

East Midlands Gateway: on the Core's Edge

Many of the excavated sites occupied knolls, ridges and slopes within an area of undulating but gently rising ground overlooking the floor of the Middle Trent valley. The investigated areas typically lay around 30–40 m higher than the river channel and were situated around 3 km from its current course, although the Trent would have been less well-defined and more braided when our sites were in use (Knight and Howard 2004, 80–1), meaning they originally lay a little closer to the wetter parts of the valley floor. As described in Chapter 1, this stretch of the Trent is an area of considerable archaeological and palaeoenvironmental importance and contains a range of ceremonial and settlement sites which are a little regionally atypical by virtue of their extent and richness (Fig. 5.1; Cooper 2006). This may be accounted for at least partly by the transportation and communications opportunities afforded by this confluence zone (Posnansky 1955, 24; Thomas 2013, 88). Directly to the north of the development area, the Trent is joined by the Derwent, which would have afforded access to the Peak District in the past, and the confluence with the Trent–Soar lies 3 km downstream, affording an equivalent route to the south (Fig. 1.1). The presumption that rivers were important travel corridors in antiquity is, in the case of the Trent, confirmed by the discovery of log boats along its course nearby (Knight and Howard 2004, 81–2), with an example from Aston-upon-Trent (some 4 km north-west of the project area) radiocarbon dated to the Middle Bronze Age (*ibid.*, 58–9). The boat had sunk whilst carrying blocks of quarried sandstone, underlining the use of the river as a logistics corridor. The presence of ritual monuments in proximity to the river, such as a barrow cemetery (Hughes 2000) and cursus complex (Loveday 2004; Knight and Howard 2004, 64–5) also indicates that the river was of ceremonial significance to those living nearby, with the monumentalising of the river reflecting its role in social, economic and spiritual sustenance.

Occupying higher ground overlooking this important area, the land covered by the East Midlands Gateway project therefore offered people in the past multiple opportunities and resources: grazing, arable land, the tumps, knolls and other eminences often favoured for occupation, neighbours for company and assistance, and equal access to the various resources of the clayland plateau to the south and the river and water margin to the north. Importantly, it also offered a sense of connection to an area to which it was ultimately a little peripheral.

Remarks on Preservation and Prospection Bias

The development area encompasses good agricultural land that has long been utilised: a 17th-century account of Kegworth recorded 'The soyle is exceeding fruitfull eyther for corn or grasse and affordeth much pleasure and delight' (Burton 1622). Many of the excavation sites were raked by furrows, testament to cultivation since the medieval period. This land use has been to the detriment of the preservation of the archaeological horizon, unfortunately, and the great majority of the sites were plough-truncated. With shallower features and any layers or upstanding features erased or substantially damaged, and deeper features diminished, it is important to recognise that the archaeological resource surviving to be recorded was only a subset of that originally in place.

It is interesting to note that the one site where a level of colluviation had protected archaeological strata from the plough, the slope-base site of Field Farm, was the one location where substantial Bronze Age remains were recorded. This correlation may not be entirely coincidental and raises questions of the prospection methodology generally. The local geology responded well to geophysical survey (Wessex Archaeology 2014a; 2016c), the results of which formed the targets for more intrusive works, culminating in the open area excavation of the 12 sites described above. However, it is possible that colluviation and other soil build-up processes, especially along the slope bases and stream valleys, may have led to some features, especially those less detectable by magnetometry than burnt mounds, eluding the survey. This risk was mitigated to a certain extent by the excavation of evaluation trenches within ostensibly blank areas. But the possibility that the project area contained further archaeological remains, either comprised of soils not detectable by magnetometer survey or in deeply buried locations, is a real one. This caveat and the distortion to the resource brought about by perhaps two millennia of ploughing should be borne in mind when reading the discussion that follows.

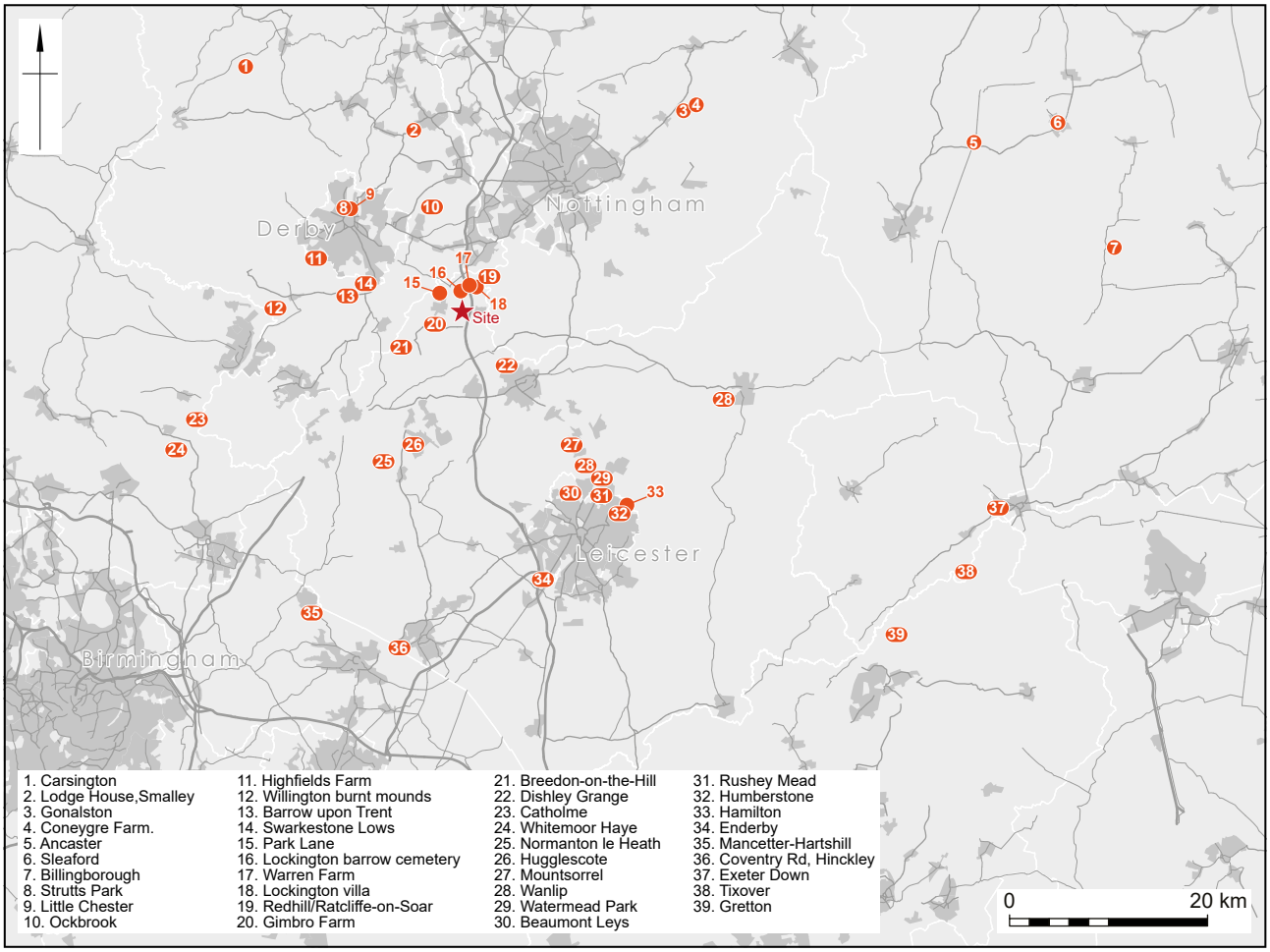

Figure 5.1 East Midlands sites mentioned in the text

The Earlier Prehistoric Landscape

Despite a concerted programme of fieldwalking and test pit excavation, the number of flints recovered within the development area was very low, amounting to just 7.1 flints per hectare fieldwalked, rising a little with the addition of the lithics assemblage from the test pitting to 9.5 flints per hectare. This contrasts with records of 26.2, 54.7 and 75.8 flints per hectare from fieldwalking exercises alone (no test pitting) at Medbourne, Oakham and the Swift Valley respectively (Clay 2002, 105). Many variables affect the results of fieldwalking, including ground cover and weather conditions. However, with ground visibility for the East Midlands Gateway fieldwalking described as 'generally excellent' (Wessex Archaeology 2016a, iii), this does not appear to have been a factor in this instance, with the results instead seeming to indicate low levels of flint use and discard hereabouts in the past. An even lower level of flint recovery was recorded at the nearby Warren Farm site, where just 56 flints were recorded from the 18.5 hectares of land investigated (Thomas 2013, 85, 90), although those works did not include a fieldwalking element.

This picture of only subdued levels of activity in earlier prehistory within the development area is supported by the excavated evidence, where no Neolithic or earlier features were recorded and the only signs of Bronze Age activity were the burnt mounds and a scatter of funerary remains. This is a little out of kilter with the regional picture, which displays a high density of Neolithic and Bronze Age activity, particularly close to the Trent (Knight and Howard 2004, 47; Cooper 2006, 6–10). Locally, Early–Middle Neolithic pits have been found 3.3 km to the west of the development area at Park Lane, Castle Donington (Score and Kipling 2015), Late Neolithic–Early Bronze Age features 3 km to the south-west at Gimbro Farm (Derrick 1998), and Early Bronze Age pit groups the same distance to the north-west at Willow Farm (Ripper et al. 2017).

Waterhole 65206 at Field Farm is perhaps the earliest excavated feature, with its basal fill radiocarbon dated to *2290–2130 cal. BC*. This feature lay within an area where, more than five centuries later, burnt mounds accumulated, and seems to represent the first example of certain locations within the development area witnessing significant activities separated by long intervals of time. The basal fill was overlain by deposits like those forming the burnt mounds, although it is not clear if this represents an early occurrence of the stone-heating activity or a

recutting of the pit when the mounds proper were in use; on balance, the former is considered more likely.

Pollen samples from the basal deposit of waterhole 65206 suggests an open environment including pastoral and disturbed ground (see Brown, Chapter 2). Arable land is additionally indicated by the very small quantities of cereal-type pollen. Arable cultivation may have been more widespread than indicated here, but the damp landscape setting favoured for burnt mounds, close to a river or stream, would not have suited such crops (Ripper and Beamish 2011, 191). Pollen of grasses, ribwort plantain and lettuces suggest areas of meadow, pasture and disturbed ground (pathways, waste ground, fallow land). If the feature then or later was associated with burnt mound activity, then the pollen could have derived from plant remains deposited (both plant fibres and perhaps food/food waste) in addition to the general pollen rain. The pollen results bear comparison with those from the nearby site of Willow Farm, where environmental remains associated with an Early to Middle Bronze Age palaeochannel of the Trent suggested the surrounding vegetation comprised grassland used as pasture (Ripper et al. 2017, 4–5). Although the pollen data from Willow Farm also shows the presence of oak-dominated woodland, the environmental evidence seems to indicate an opening up of the landscape for both grazing and cultivation in the latter part of the 3rd millennium BC, in keeping with general trends (Knight and Howard 2004, 51; Monckton 2006, 266–7).

No chronological distinction between the two dated East Midlands Gateway burnt mounds can be discerned; the combined micromorphological and radiocarbon evidence suggests complex formation processes occurring in intermittently wet and dry conditions over a lengthy period from the end of the Early Bronze Age into the Middle Bronze Age. The features are of middling chronology when compared with nearby excavated examples. They are somewhat earlier than their closest dated neighbour, which was found at Willow Farm near Castle Donington and radiocarbon dated to the Middle to Late Bronze Age (Ripper et al. 2017, 21). They appear contemporary with other recently excavated examples – Hugglescote, 14 km south-west of the development area (Simmonds and Gorniak 2019) – but later than another regional comparator at Watermead Country Park (22 km south-east), which was dated to the Early Bronze Age (Ripper and Beamish 2011). A further two burnt mounds were radiocarbon dated at Willington (19 km to the west); one was earlier than our examples and one was later, dating to the Early Bronze Age and Middle to Late Bronze Age respectively (Beamish 2009). Burnt mounds in the East Midlands tend to date 'from the mid-third millennium cal. BC to the second quarter of the first millennium cal. BC' (Ripper et al. 2017, 37; Beamish 2009), so the East Midlands Gateway examples can be seen to belong to the later part of the range.

All of these comparators were located in stream- or riverside locations, with the East Midlands Gateway examples seeming to extend the topographic range of these features towards the clayland plateau, albeit in a poorly drained, slope-bottom location with evidence of silted palaeochannels close by. The presence of a spring depicted a short distance to the north on the 25-inch Ordnance Survey map of 1921 (Fig. 5.2) may be further evidence of the association between burnt mounds and the water needed for their operation. As to the exact purpose of their operation, this was a question the fieldwork was unable to resolve, an outcome by no means unusual where such features are investigated. At the assessment stage, the natural ground cut into by waterhole 65206 was tested for lipid concentrations in order to establish whether the feature had been used for cooking (eg, roasting or boiling carcasses) or other processing of animal products (eg, tanning hides), although the results were inconclusive (Dunne and Evershed 2019).

The features seem to have remained in use over a period of several centuries, their function clearly unimpeded by the lack of the well-defined troughs sometimes recorded beneath burnt mounds elsewhere. Instead, the features were accompanied by pits/waterholes, some of which were substantial (although at least one – 65206 – appears to pre-date the burnt mounds). This may imply that these particular burnt mounds were used in a different way, or had a different function altogether, to those that contain sub-mound troughs. Although there was a characteristic lack of evidence, such as food debris or accompanying structural remains, to cast light on what their function might have been, the investigation of these features did lead to other insights. Two column samples encompassing the burnt mound and the underlying soil (one column sample each for mounds 65245 and 65246) were subjected to micromorphological analysis (see Banerjea, Chapter 2), which confirmed that no buried A-horizon existed below either, with this thought to have been removed by either deturfing or perhaps flooding. Instead, the mounds rested on a compressed subsoil. Both burnt mounds were seemingly occasionally flooded, as they showed evidence of saturation and fluctuations in the local water table, with this most evident in the southern mound, 65245. The mounds each contained charcoal in differing abundance and size/fragmentation, suggesting that the two mounds formed at different times and/or by slightly different processes, and so echoed the radiocarbon evidence for gradual or episodic accumulation. This confirms the general impression that the accumulation of burnt mounds seems to represent use 'on multiple occasions' (Ripper et al. 2017, 37).

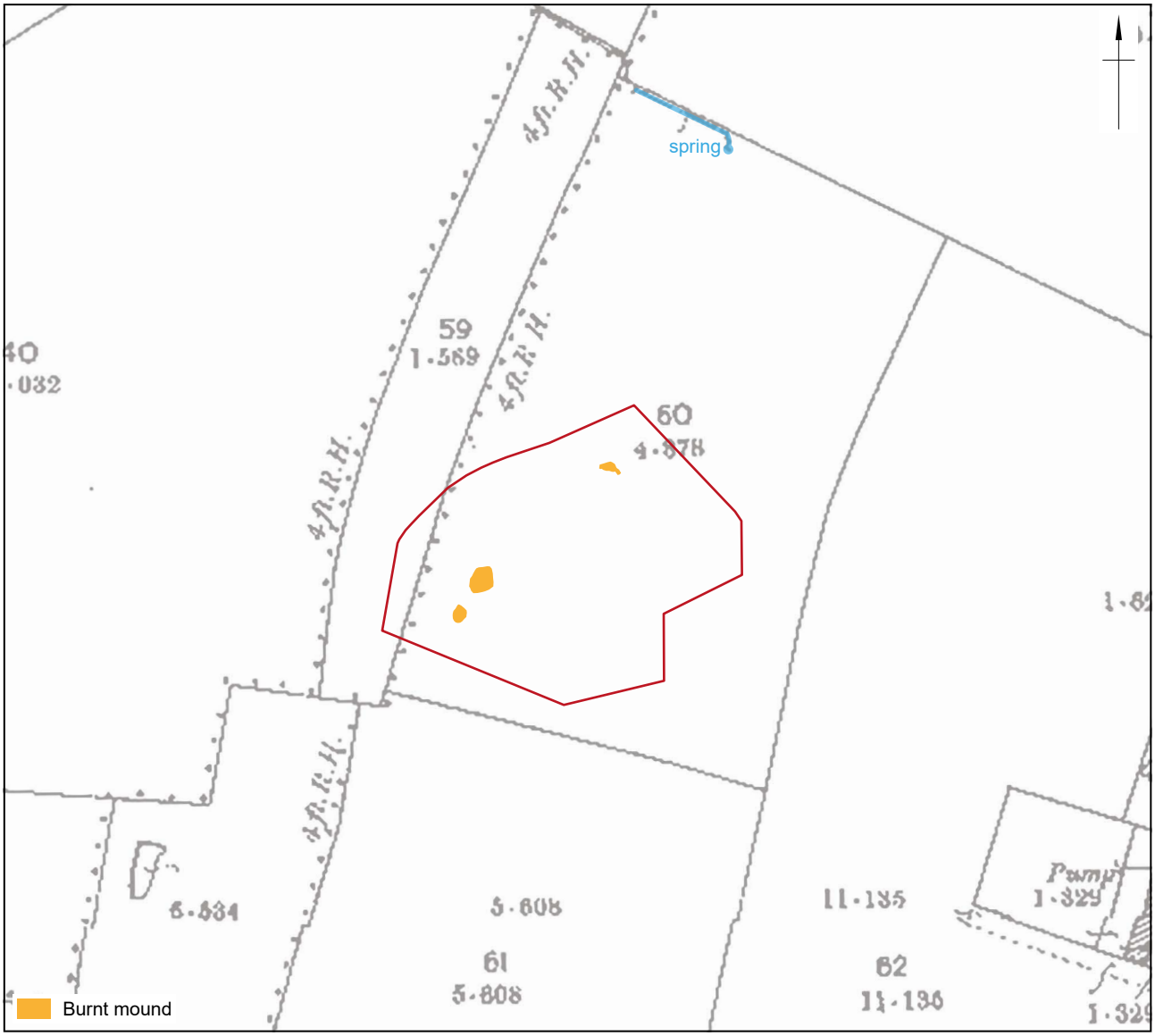

Figure 5.2 Burnt mounds in relation to spring shown on 1921 Ordnance Survey map

Perhaps a couple of centuries after the heyday of the burnt mounds, an adult, probably a male, was buried some 400 m to the north-east, at the King St Plantation site, on the back of a low, broad ridge of land that descended to the valley floor. As McKinley notes above in Chapter 4, this grave appeared somewhat isolated but may have formed part of a broader dispersed Bronze Age 'mortuary zone', with the Lockington barrow cemetery (1.9 km further north again; Posnansky 1955; Hughes 2000) forming its most conspicuous elements. The fact that the celebrated Lockington gold hoard appears to represent a 'body-less object deposit' (Cooper et al. 2020, 148) rather than a typical funerary deposit should be borne in mind, however. Some grave marker serving the King St Plantation burial appears likely, given the fact that almost 1000 years later, in the Middle Iron Age, an enclosure was set out so that the grave lay at its centre and pits were dug close to the burial, perhaps even with a roundhouse constructed upon the remains. A funerary ring ditch is feasible here, although no traces of such could be seen, perhaps due to the evident heavy truncation in this area.

By the Late Bronze Age, land in the region was substantially cleared of woodland. This now open space was marked by few, large artificial boundaries and contained a scatter of unenclosed settlements along the Trent engaged in stock-rearing and arable cultivation, probably with some element of transhumance (Knight and Howard 2004, 86–7; Thomas 2011a, 135; Ripper et al. 2017, 38). The correspondingly faint archaeological signature may account for the absence of results from the development area, with the two cremation graves at Daleacre being the sum of the evidence from the period. The lack of signs of activity in the Late Bronze Age, and into the Early Iron Age, appears to be an accurate reflection of the wider picture, with evidence for occupation in the region during the

earlier 1st millennium BC being sparse (Clay 2001, 2; Thomas 2011a, 144). The optimism of Clay in his 2002 regional summary that 'the apparent dearth of Later Bronze Age–Earlier Iron Age evidence from the region appears to be more due to visibility than to an absence of activity' (Clay 2002, 115) unfortunately finds little support from the results of the investigations at East Midlands Gateway, where the open area excavations alone covered, in total, almost 12 hectares. With so little convincing evidence from the period in question encountered, it can only be concluded that archaeologically recognisable activity within the excavated portions of the development area did not occur during the period in question. There are caveats to this, however. That the development area contained any Late Bronze Age evidence at all was a discovery solely attributable to radiocarbon dating: it may be the case that other contemporary features were encountered, but we remain ignorant of their date. The Late Bronze Age roundhouses recorded 3 km away at Willow Farm confirm the local landscape was not bereft of occupation during this time, and it would not be unreasonable to expect some similar activity within the development area, especially in light of the cremated remains at Daleacre. It may be the case that, lacking the enclosure ditches and other large cut features of later periods, or a profusion of other remains visible to current survey techniques, the archaeological signature of sites of the period is too ephemeral to trigger intervention (Beamish and Shore 2008, 64; Thomas 2011a, 144).

Iron Age Remains

> *A fairly wide-spread, but crude and unprogressive culture, which may have lasted until the Roman conquest* (Kenyon 1950, 67)

Pit Alignments

No boundary features of confirmed Bronze Age date were evident (although the presence of the Late Bronze Age cremations at Daleacre within a boundary zone potentially marked over several millennia is discussed below). Instead, it is during the 1st millennium BC that a greater emphasis came to be placed on the definition of boundaries, both on a landscape scale and by the enclosure of individual settlements, developments that were accompanied by a trend towards more substantial domestic architecture (Knight and Howard 2004; Thomas 2011a, 154). The construction of pit alignments appears to be a precursor or earlier manifestation of some of these changes and has been interpreted as marking the threshold between relatively 'open' landscapes and the increasing enclosure of the 1st millennium BC (Knight and Howard 2004, 105; Thomas 2008, 154).

Three pit alignments were recorded within the development area, at Long Lands, King St Plantation and Great Dampits (the notion that the field name Great Dampits may reflect the presence of the pit alignment is, unfortunately, unlikely to be correct: Dampit is a surname, and the field name Little Dampits appears on tithe maps closer to Lockington).

Pit alignments are 'notoriously difficult to date' (Thomas 2008, 144) as they generally contain very low levels of finds, and chronologically distinctive material is rarer still. Some pit alignments date back to the Bronze Age/Iron Age transition (Bradley 2007, 244) but their date within the Midlands requires clarification. Thomas (2008, 144) records that the 'vast majority of alignments in the main midlands concentration can probably be assigned to the later Bronze Age and early Iron Age' and they are 'widely accepted as some of the earliest landscape features of the first millennium BC'. However, within the Trent Valley, Knight and Howard (2004, 103) observe that such boundaries are thought to have a later Iron Age origin. Three of the pits within the Long Lands alignment contained pottery of broad Iron Age date, a finding that, whilst welcome, does little to resolve the matter. More instructive is the articulated dog sacrum radiocarbon dated to 380–170 cal. BC (SUERC-92148; 2210±32 BP) that was recovered from pit 60220 at Great Dampits, indicating a relatively late chronology (ie, Middle Iron Age), for this particular feature at least. Similarly undiagnostic Iron Age pottery was also found within some of the constituent pits of the wider alignment. The King St Plantation pit alignment is undated, although it was found amidst features of confirmed Middle Iron Age date and may represent a southward continuation of the Dampits alignment. The closest off-site pit alignment, that excavated at Warren Farm (3 km north-east of King St Plantation) dates to the Early to Middle Iron Age, with at least some of the features were being recut in the early Roman period (Thomas 2013, 90).

The exact function of pit alignments is a matter of some debate, their lack of finds and overall character suggesting a boundary-marking function in areas outlying the main areas of intense finds deposition – ie, settlement (Pl. 5.1). The course of pit alignments is often intimately related to the local topography, although how this manifests on the ground is diverse (Thomas 2008, 151–2). They can run parallel or perpendicular to rivers, cut off a meander, follow ridgelines or strike across contours at 90 degrees (*ibid.*). The East Midlands Gateway examples are typical in this regard: both the Long Lands and Great Dampits/King St Plantation pit alignments appear to follow the crests of 'fingers' of land that descend from the clayland plateau towards the valley floor of

the Trent. At Great Dampits, the alignment turns through 90 degrees to run down the flank of the ridge to follow a course that would have led to the Longfield site. Such topographic preoccupation betrays how the land loomed large in the minds and lives of the people that constructed these alignments. Landscape features that had hitherto been acknowledged but unmarked boundaries between social groups may have been emphasised by the construction of such formal (if intermittent) boundaries (Thomas 2008, 151). The use of pits to create a boundary that was both fixed and yet permeable may have been a deliberate, seemingly ironic, gesture in response to the fact that the land, something which all people may once have had in common, was now being used as a means of separation.

Pit alignments can avoid or respect earlier monuments (Thomas 2008, 147), but there was only very slight evidence of this in the development area. The Great Dampits/King St Plantation alignment ran within 16.5 m of the Middle Bronze Age inhumation at King St Plantation. However, this may be coincidental and there was no evidence of the boundary being marked by pits along the stretch that lay closest to the grave, which was hereabouts marked only by an Iron Age enclosure ditch. A little more convincing was the fact that the Long Lands pit alignment had been dug into the same 'finger' of land as the Late Bronze Age cremation graves at Daleacre, and the north-eastward extension of the 'alignment' between the two graves broadly corresponds with the course of the pit alignment itself (Fig. 5.6; the presence within this part of the landscape of a Romano-British settlement boundary and parish boundary, with features of all eras following a broadly common course, is discussed further below).

Of equivalent interest is how later monuments interacted with the pit alignments, and the places marked by lines of pits often continued to be seen as important after their construction. There was a variable record of this at East Midlands Gateway, with no obviously later features at Long Lands but clearer indications of subsequent interactions with the pit alignment at Great Dampits. At this site, a right-angled pit alignment was overlain by a ditch to which two enclosures had been appended. The pit alignment therefore dictated the location of the enclosure, but also appears to have influenced its extent. As detailed above, the eastern edge of the P-shaped enclosure broadly correlated with a change between the depth of the pits within the alignment: those overlain by the enclosure were relatively deep and those beyond it to the east were somewhat shallower. This was the surest indication of a pit alignment influencing later land-use choices. Moreover, whatever lay behind the difference in the depth of the pits hereabouts was perhaps being acknowledged and re-emphasised by the positioning of the enclosure. Despite a hardening of boundaries, a certain continuity was retained, a further indication of the significance of pit alignments in helping to mark and preserve notions of social or symbolic importance within their contemporary landscapes (Thomas 2008, 150). The situation was less clear at King St Plantation, where the pit alignment appears to form a continuation of ditch 75076, rather than

Plate 5.1 Pit 35014 from the Long Lands pit alignment, south-facing section

the ditch succeeding the pits. However, the available stratigraphic evidence did not allow the sequence to be established.

Habitation and Community in the Middle–Late Iron Age

The development area contained plentiful evidence of activity in the Iron Age; indeed, this may be considered the defining result of the fieldwork. However, there is little sense of much activity in the earlier part of the period. Most sites produced Scored ware, indicating activity from at least the 4th or even 5th century BC onwards (Elsdon 1992; Knight 2002) and the project's Iron Age radiocarbon results appear focused on the 3rd to 4th centuries BC (Fig. 5.3). Daleacre (south) is perhaps the likeliest candidate for an Early Iron Age site, because of its lack of Scored ware. However, very little Scored ware was evident in the King St Plantation assemblage yet the four Iron Age radiocarbon dates from that site all belonged to the middle part of that period, meaning the absence of Scored ware within an Iron Age assemblage may not be a reliable proxy for an early date.

Whatever the chronology of these two sites, it is undeniable that the Middle Iron Age witnessed a marked increase in archaeologically visible activity within the development area, demonstrating that it was caught up by the same trends increasingly evident across the region (Clay 2002; Knight and Howard 2004). However, because of the use of perishable materials such as earth and wood for buildings in antiquity (stone being generally harder to source in the region), and the widespread plough-truncation of the region's archaeological strata over a period of millennium and a half, this chapter of the history of the landscape has been hidden from view and, therefore, unappreciated until relatively recently. As Clay records (2002, 1) the influential landscape historian W G Hoskins, writing fewer than 40 years before the 1990 advent of PPG 16, stated that 'The human history of Leicestershire only really begins in the second half of the fifth century (AD) with the penetration, by the first waves of Anglian settlers…' (Hoskins 1957, 2). Few Iron Age settlements had been excavated in the Middle Trent Valley at the beginning of the era of commercial archaeological fieldwork (Knight 1992, 85), whereas the Leicestershire and Rutland HER now has records of over 300 Iron Age settlements (either excavated or detected by geophysical survey) from the region as a whole (Helen Wells pers. comm. December 2021). A generation of archaeologists working since PPG16 has revealed the extent of rural enclosure and settlement during the Iron Age, and this is a major contribution to the understanding of the history of the British landscape.

From his study of areas subject to intensive surface survey, Clay (2001, 6) proposed a density of one later Iron Age site per 1.8–2 sq. km for the East Midlands claylands. The East Midlands Gateway development area records a density of later Iron Age sites (both excavated and unexcavated) ranging from six to eight per 1.8–2 sq. km, depending on how tightly a 'site' is defined. This total is obviously

Plate 5.2 Dora Olah and Michael Keech excavating at Horsecroft

very much higher than Clay's figure, but probably at least partly reflects enhanced survey techniques, principally the widespread application of geophysical survey across the development area. It remains open to question how applicable this density is to the region as a whole; the concentration of activity around the Trent/Soar/Derwent confluence zone has already been mentioned above, and no doubt there were tracts of the East Midlands that were once less intensively exploited. Still, the results of the fieldwork do suggest the density of later Iron Age settlements is probably underestimated (this topic being a stated research goal: Knight et al. 2012, 58), and the picture overall is of a landscape that was very much being put to work in the later Iron Age.

All of the excavated Iron Age sites were relatively small and appear, when the geophysical, evaluation and excavation evidence is considered together, spatially well-defined (although the northern and southern extents of the Horsecroft site were not established because of the linear form of that part of the development area). In this they contrast markedly with the contemporary 'aggregated settlements' recorded elsewhere in the region (Thomas 2011a, 145), and the similar but more trackway-focused sites of Warren Farm (Thomas 2013) and Cromwell (Whimster 1989), as well as the evidence for dense occupation revealed by geophysical survey at Breedon-on-the-Hill (Whittaker 2019). At East Midlands Gateway, Mill Close formed the largest

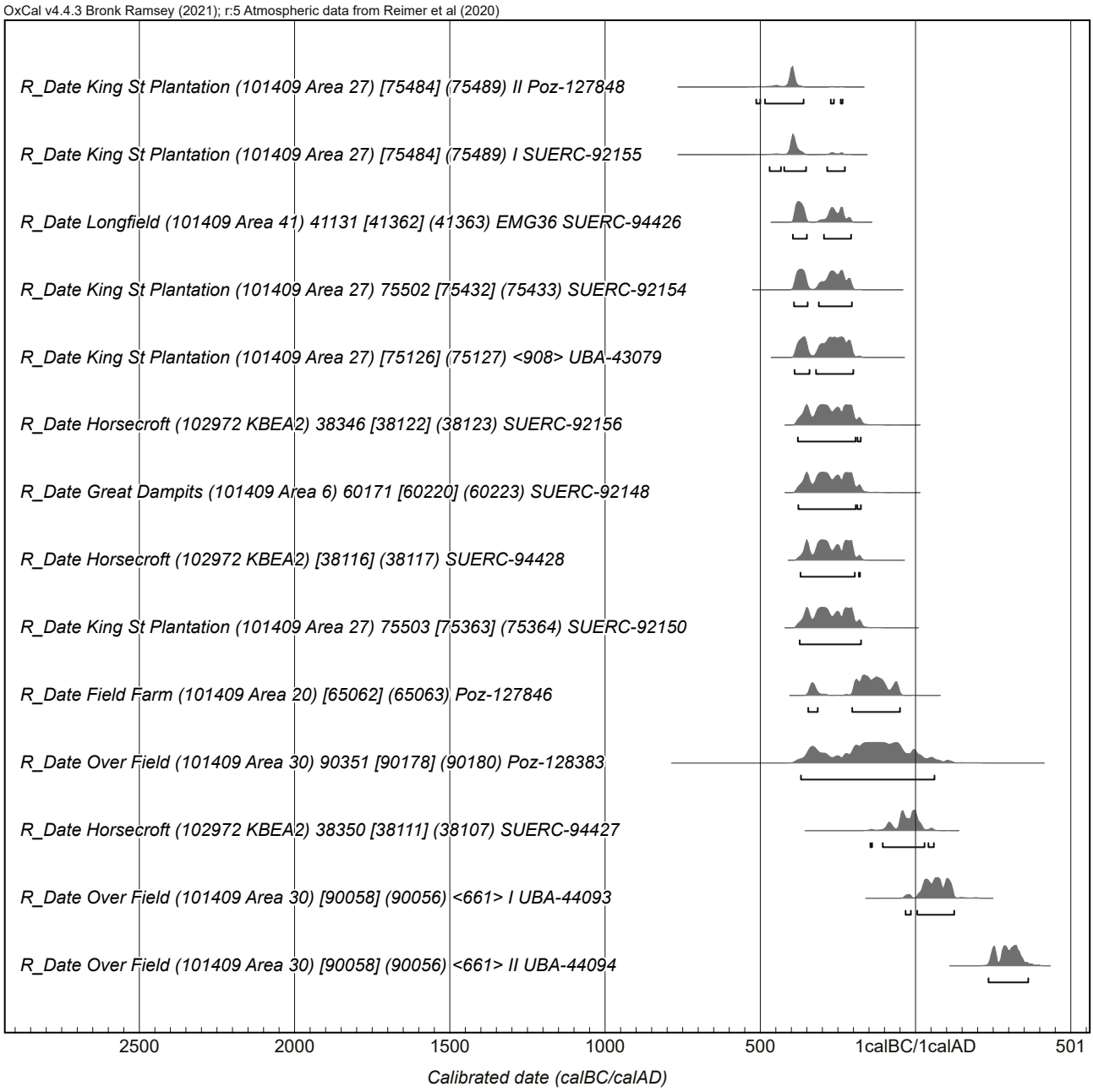

Figure 5.3 Iron Age radiocarbon results in date order

enclosure/area of activity, where it occupied an area of 0.8 hectares. By contrast, the aggregated settlement at Humberstone occupies some 13 hectares (Thomas 2011a, 145). Although the occupants of Mill Close would obviously not have restricted their activity to the footprint of the enclosure, and its use would have involved outlying fields and tracks, with presumably a degree of communication with neighbouring sites, the compact nature of the excavated sites is nevertheless striking and serves to demonstrate the variety within the settlement record. Whether or not this represents a hierarchy is open to question. The lack of 'prestige' artefacts within the finds assemblages might, when considered alongside the small sizes of the sites, suggest humble subsistence farmers, although as Thomas (2011a, 163–4) remarks, the types of features Iron Age settlements in the region contain (circular buildings, four-post structures, clusters of pits) is fairly uniform. It can at least be suggested that variety in settlement form does not signal stark differences in agricultural strategies, for the evidence of farming preserved on the East Midlands Gateway sites does not appear markedly different from that at the aggregated and other large settlements listed above (Thomas 2011a 156–8; Thomas 2013; and see below).

One difference between our sites and that at Warren Farm is that trackways and stock control systems are much more evident at the latter, and it is possible that that site functioned as a centralised processing or gathering facility within a pastoral system fed by smaller outlying concerns located closer to where the animals grazed for most of the year. At least some of the East Midlands Gateway sites could have had such a 'supplier' role. Such an arrangement may have been well-established in the region: a large-scale stock management facility serving different communities was the interpretation for trackways and associated remains excavated at Hamilton, Leicester, where activity dated to around 700–500 BC (Beamish and Shore 2008). The most prominent trackway at East Midlands Gateway was revealed in the geophysical survey data on low-lying ground immediately adjacent to Lockington, where it appeared associated with enclosures containing Romano-British pottery (Fig. 5.4). It is possible this was a similar class of site to that at Warren Farm and Hamilton, although it was not excavated, being preserved *in situ* instead.

It may be that the differing forms of settlement in the Iron Age are expressions of diverse social identities (Chapman 2004, 79; Thomas 2011a, 164). This may be at play within another difference in settlement architecture between the smaller sites and the 'aggregated' settlements: the latter often developed alongside major landscape boundaries (Thomas 2011a, 145) of a type not evident at East Midlands Gateway. Certainly, the everyday experience of habitation at one of the 'busy' larger settlements would have differed markedly from the life within the isolated enclosures at East Midlands Gateway. Although, as discussed below, it is not certain how many of the East Midlands Gateway sites would have been viewed as homes in the past, some degree of occupation is likely. The now-nameless people who used our sites would have had neighbours, but seemingly preferred to keep a greater distance from them in comparison to the more densely occupied 'aggregated' sites.

Our more isolated sites were clearly defined on the ground, but how (or if) their wider landholdings were demarcated is open to question. Given the footprint of the investigations, it should have been possible to identify such boundaries had they been present and archaeologically visible. The pit alignments may have served this function, although two of the three examples at East Midlands Gateway appeared focused on the sites rather than separating them. Another likely candidate is the unexcavated site to the north-west of Over Field, where a length of Middle to Late Iron Age ditch with no obvious signs of occupation nearby was revealed through geophysical survey and evaluation trenching, but this is a rare example (Fig. 1.2). Had landholdings been defined by ditches, it is possible that, distant from any occupation activity and infilling with upcast natural substrate, they eluded the geophysical survey. Alternatively, different landholdings may have been defined by more archaeologically inconspicuous features, such as hedges or belts of woodland. Finally, it may be fruitless to search for landholdings at all, with the tracts of land between the sites possibly being viewed as a common resource, perhaps as the outfield pasturing areas suggested at Enderby (Meek et al. 2004, 29), or forming a single estate, in the past.

Roundhouses

Roundhouses were recorded at Mill Close, Horsecroft and possibly King St Plantation (Fig. 5.5). Pottery, animal bone and other finds, including evidence of domestic crop processing, suggest associated settlement at these locations, but the duration and permanence of habitation is not certain. The remaining Iron Age sites, Long Lands aside, recorded ditches and enclosures with similar finds profiles, but no evidence of roundhouses. It is less certain, therefore, whether these were inhabited or not. Roundhouses may once have been present, but since lost to the plough. Alternatively the sites may have contained different sorts of buildings, with a less distinctive and more ephemeral footprint. At least some of the non-roundhouse sites may have functioned as agricultural facilities, such as yards and compounds for specific tasks, and never contained buildings. Within this scenario, the finds evidence may reflect the food remains left during

Figure 5.4 Unexcavated site with trackway near Lockington, showing geophysical survey results and evaluation trenches

visits and occasional overnight stays by farmers, rather than the permanent presence of families. Such agriculturalists may have had their homes nearby, perhaps at lower levels on more nucleated settlement sites such as that excavated at Warren Farm, where five Late Iron Age roundhouses have been found, with others nearby (Thomas 2013). Interestingly, there were no definite traces of domestic structures from the three Romano-British sites excavated: Over Field, Daleacre and Seven Geaves.

Nevertheless, in light of the sum of the evidence for domestic activity, it seems reasonable to suggest that some people made their homes within the development area in the past. The site at Horsecroft represents perhaps the likeliest location of a permanent settlement, on account of the number of structures: including the watching brief area, at least four roundhouses once stood on that site. The rebuilding and expansion of one of the roundhouses, that defined by features 38346–8, reinforces the impression of duration of occupation at this location. If a 50-year lifespan for a roundhouse is presumed (Meek et al. 2004, 17), then several generations of the same family may have been raised at this spot. House rebuilding on the same site is atypical but not unheard of, with examples recorded at Enderby 28 km south-east of the site (Clay 1992, 9) and Warren Farm (Thomas 2013, 97). The example at Horsecroft was finally overwritten by a very substantial penannular ditch, 38346. Although an animal pen is the favoured interpretation due to its size (up to 2.6 m wide with an average depth of 0.7 m, and a larger footprint than the area it enclosed), it may represent a final *reductio ad absurdum* of the trend towards enclosure and the more substantial definition of roundhouses seen during the Iron Age (Thomas 2011a, 164), and therefore be more a product of social concerns about defining space rather than having a mundane agricultural function. No regional comparators for the Horsecroft 'pens' have been identified in the preparation of this report, although examples of individual houses being surrounded by penannular features 'of a size far in excess of what is necessary for the function of drainage, requiring considerable work input' are known in the Thames valley (Davies 2018, 164–9). However, at Horsecroft there was no indication of the special deposits, including human remains, occasionally recovered from the southern examples.

A 13 m-diameter post-built roundhouse is proposed for Mill Close, where it would have occupied the exact centre of the enclosed area. A second structure, ring gully 50188, lay approximately 10 m to the south-east. This feature, by contrast, was defined by a continuous gully, with an external diameter of 16 m. This may also represent a house site, although roundhouses in the region are generally marked by penannular ditches, with openings typically to the east or south-east (Thomas 2011a, 153). A seemingly circular

ditch of similar proportions, and containing Iron Age pottery, was encountered at Normanton le Heath, 17 km south-west of the current site, although the circularity of that feature is drawn from a combination of evaluation and aerial photographic evidence, and has not been confirmed by open area excavation (Thorpe and Sharman 1994, 4 and illus. 4).

It is uncertain whether the post circle and ring gully at Mill Close were contemporary. A change in building techniques saw posthole construction generally being replaced by wall trenches during the Iron Age (Clay 1992, 21), implying the post circle may be earlier. On the other hand, the presence of paired buildings has been noted on a number of sites (discussed in Meek et al. 2004, 28), and both structures at Mill Close may have been built in the later Iron Age and subsequently outlasted it: the post circle contained a Scored ware assemblage and a few small sherds of grey ware, hinting at a Romano-British date. A transitional Iron Age/Romano-British fabric was recorded in the assemblage from ring gully 50188, again alongside a larger Scored ware component.

Roundhouses in the East Midlands are rarely substantial or elaborate, and are most often defined by ring gullies interpreted as either drainage features or wall foundations. Structural posts and ancillary features, like porches, are commonly recorded elsewhere but rare in the region (Thomas 2011a, 153–5; Thomas 2013, 119). This may suggest that many were only temporary or seasonally occupied (Thomas 2011a, 164). The archaeological footprint of these buildings might be misleading as to their original solidity, however. Earthen architecture may have been used, such as turf or cob walling (Thomas 2011a, 153), a resource not in short supply on the claylands. It is estimated that 30% of the world's current population live in a home built of unbaked earth (Houben and Guillard 1994, 60), yet the material is rarely recorded in archaeological contexts, probably because of subtle appearance and poor preservation (Riley Snyder, pers. comm.).

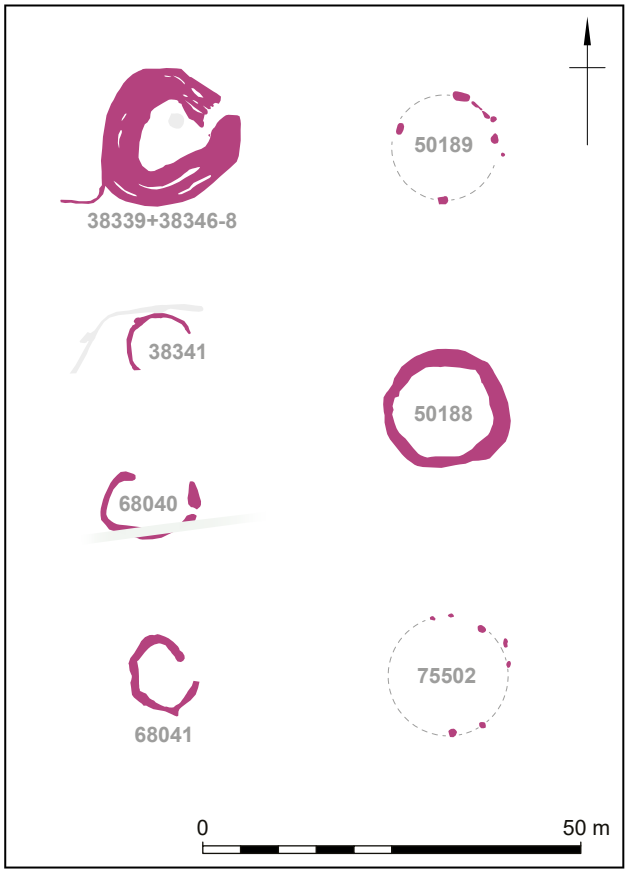

Figure 5.5 Structures from the development area

Enclosed settlements

Within the East Midlands, as nationally, the appearance of more substantial domestic buildings in the archaeological record of the Middle and Late Iron Age was accompanied by an increased trend towards settlements being enclosed by ditches (Knight and Howard 2004, 90–9; Speed 2010, 44). Such expansion of enclosure in the later Iron Age is often explained in economic and demographic terms: greater agricultural success led to population growth, with the resultant competition for resources responsible for concerns over controlling and portioning the landscape, hence the construction of boundaries and enclosures. Regionally, most settlement enclosures tend to be rectangular or D-shaped, with unenclosed settlements becoming less common over time (Thomas 2011a, 6). The sites within the development area align broadly with this trend, if a little untidily. Of the three sites where roundhouses or possible roundhouses were recorded (Mill Close, Horsecroft and King St Plantation), two were enclosed but Horsecroft was not. Horsecroft contained the greatest number of roundhouses and was the only site where they were present in the typical penannular ditch form. The bulk of the pottery evidence from Horsecroft points to a Middle to Late Iron date for its occupation, although some sherds that may have dated towards the end of the Iron Age were present, with a relatively late radiocarbon date also suggesting activity on the site around the same time (2038±24; SUERC-94427; 150 cal. BC–cal. AD 60). Horsecroft, therefore, appears to diverge from the trend towards the increased enclosure of settlement sites as the Iron Age wore on. Similarly askew to the trend, the potentially earliest Iron Age site, Daleacre (south), comprises an enclosure and practically nothing else. Enclosures were also present at some of the other Iron Age sites (eg, Field Farm, Longfield and Great Dampits) that lacked roundhouses – and the possibility that they might be better understood as agricultural facilities has been mooted above.

The construction of enclosures is typically interpreted as being linked to a growing population, greater settlement density and a concomitant need

to define and control land, and possibly, the growth in the notion of land as 'property'. It is possible to detect a sense of 'uncertainty and external pressures' (Clay 2002, 33) within the record, although the construction of enclosures may also have had a more positive aspect: 'the satisfaction of communal labour… the opportunity for gossip, story telling, singing, and flirtations' (Chadwick 1999, 163). Construction or maintenance of ditches may therefore have had a role in creating or affirming social relationships, possibly undertaken to mark 'the passage of the seasons, births or deaths' (*ibid.*). The clearest indication of enclosures having more than an everyday functional, defensive or drainage role, and also playing a part in the less tangible aspects of the lives of those who built them, was recorded at King St Plantation. The enclosure there had a 3.5 m-wide south-facing entrance, defined by ditch terminals containing large, north–south aligned, lozenge-shaped pits. A large fragment of human skull (deriving from a ??female aged 18–35), and possibly buried packed with spelt chaff, was recovered from the westernmost pit, along with articulated body parts from a horse. A modelled radiocarbon date for the deposition of this material is *420–370 cal. BC* (see López-Dóriga, Chapter 3 above), ie, in the early part of the Middle Iron Age. With its interment in a threshold feature, the presence of human remains and horse – especially so as articulated, with horses having a role in 'demonstrating power and political identity in the Iron Age' (Allen 2018, 118) – is thought to represent a structured deposit. This enclosure may, therefore, have formed the setting to some ancient ceremony deriving power from its performance in a place of transition and the meaning ascribed to the objects involved. McKinley suggests above that this deposit might have been intended to afford a degree of protection over activities within the enclosure, with the person whose remains were found being a valued former member of the community, rather than the social miscreant often envisaged as meriting such discrepant treatment.

Settlement enclosures may also have been drawn into behaviours concerning status and display. One possible example of how this played out in the development area was noted at Mill Close. That enclosure lay next to an existing bridleway running south from Lockington. The bridleway is marked on the 6-inch Ordnance Survey map of 1883, and in places, particularly where it runs through a small patch of woodland known as 'The Dumps', exists on the ground as a hollow-way and has the look of a route of some antiquity. The Mill Close enclosure ditch was well defined and imposing on its eastern side, reaching 4.5 m wide and 1.2 m deep. By contrast, the opposite and southern sides the enclosure were much less substantial and were defined by up to three parallel, occasionally slightly overlapping, ditches, 1–1.5 m wide and just 0.3–0.6 m deep on average. It is suggested that the arrangement may reflect a desire to impress visitors or passing travellers using an Iron Age precursor to The Dumps bridleway rather than the need to construct an impregnable circuit. This interpretation is based on similar observations that have been made about hillforts, which often have substantial earthworks facing their approaches, but negligible rear defences (Driver 2018; Oswald and McOmish 2002). The relatively large size of the Mill Close enclosure has been remarked on above, and such a scale may also reflect similar motivations. That a 21st-century right-of-way should have prehistoric origins should not be seen as too fanciful, especially when considered alongside the other evidence for the long history of boundaries within the development area (see below).

The Romano-British Sites

Following the Roman Conquest, there was little evidence for continuity of activity on the sites that seem to have thrived during the Middle to Late Iron Age. Most returned very few or no Romano-British finds to suggest their continuation after the occupation. Similarly, those three sites that were foci of activity in the Romano-British landscape, Over Field, Daleacre and Seven Geaves, generally contained only very sparse evidence of activity in the Iron Age. A change in the utilisation of the landscape around this time is apparent, with the places of importance in the Iron Age being overlooked, or perhaps actively avoided, following the Conquest, and other locales coming into favour instead. It is open to question how much this change was a consequence of the establishment of imperial administration. There are hints that at least some of the Iron Age sites became abandoned during the Iron Age, and therefore for reasons unrelated to the arrival of the Romans. Firstly, the radiocarbon dates from the project tend to focus on the 3rd to 4th centuries BC, with only two of the eleven Iron Age radiocarbon date ranges extending into the 1st century AD. Secondly, there were very few markers in the pottery assemblage to suggest activity in the first half of the 1st century AD. Admittedly, it may be that the absence of such material was due to social or economic factors (eg, the area's inhabitants actively eschewed such wares, or found them difficult to obtain) as opposed to being related to site chronology (Rowlandson and Fiske, Chapter 4 above; Elsdon 1992, 90). However, the presence of such Late Iron Age/Early Roman pottery at the neighbouring site of Gimbro Farm (Derrick 1998) might suggest otherwise. Overall, the sum of the evidence does seem to point to a slackening in the pace of activity within the development area shortly before the Roman Conquest. The East Midlands

Gateway sites are somewhat unusual in this regard, especially when considered as a whole, as evidence of continuity following the Conquest has been recorded in the vicinity, for example at the aforementioned Gimbro Farm, and Warren Farm (Derrick 1998; Thomas 2013). This would indicate that the factors responsible for the chronology of settlement within the development area were localised and particular, rather than having swept across the entire region.

Chiefly comprising co-axial field boundaries and enclosure ditches, the archaeological character of the Romano-British sites did not differ significantly from their Iron Age predecessors. This aligns with the picture from the animal bone and charred plant remains, with combined evidence indicating that the agricultural strategies employed either side of the Conquest were broadly similar: mixed arable and cattle husbandry, some dairying, and with sheep being of lesser importance. The agricultural basis of the sites is discussed further below, but at this point two allied themes will be explored: evidence for occupation during the Romano-British period and indications of agricultural intensification.

No definite building traces were recorded on the Romano-British sites, perhaps suggesting, as with several of the Iron Age sites, that these may have functioned more as farming facilities rather than as homesteads. However, as with the Iron Age discussed above, it is possible that such buildings existed but are archaeologically invisible, and the quantities of finds again suggest a degree of permanency to occupation. During the evaluation, a probable well was recorded at Daleacre (Pl. 5.3). It lay in that part of the site that was preserved *in situ* and so was not investigated further. The well collar, 205, had an external diameter of 1.2 defining a shaft 0.8 m across (Wessex Archaeology 2015a, 9). Limited investigation during the evaluation exposed at least four courses of unfaced mudstone rubble forming the collar and recovered Romano-British pottery from the uppermost fill of the feature, the presence of which might also indicate prolonged occupation on this site.

Other potential structural evidence of occupation was recorded at Seven Geaves: ditches 70627, 70629, 70630 and 70562 were found to have concentrations of fist-sized lumps of mudstone rubble laid along their base (Pl. 2.25). During fieldwork these features were interpreted as the remains of robbed-out walls, although this notion is hard to sustain. There are three chief reasons for this. Firstly, it is not possible to pick out the footprint of a building from the surviving 'walls', which were found up to 33 m apart. Secondly, many of the features that the stones were found within were much wider than the stone-lines themselves. For example, ditch 70630/slot 70508 was 1.8 m wide but the stones along its base occupied an area just 0.6 m wide. Therefore, they do not resemble typical footings

Plate 5.3 The well at Daleacre

trenches, within which one would expect the stones to be much more tightly packed. Thirdly, no other structural debris, such as nails or quantities of CBM that might be expected to accompany rectangular Romano-British buildings, was recovered. On the other hand, these features supplied relatively large amounts of pottery (over 10% of the site assemblage by weight; the material is largely of the 3rd and 4th centuries AD) so some sort of focus of activity in this part of the site appears likely. Evidently, the interpretation of these features at Seven Geaves is unclear. Other than that they were often rather wider than average (up to 3.2 m) and occasionally contained stones along their bases, they did not differ from features for which a drainage/boundary function could be offered with confidence. No comparable features have been recorded during other excavations nearby, at least within those reports consulted during the preparation of the current volume.

The Iron Age sites had relatively simple ground plans, with little evidence of wholescale shifts in the organisation of land units or the 'grain' along which the land was worked whilst they were in use. Such 'spatial consistency' has been remarked upon for other Iron Age enclosures in the region (Beamish 1998, 25). By contrast, the Romano-British sites resemble more the traditional archaeological palimpsest, with recutting and reorganisation of the boundaries. This is particularly evident at Daleacre, where newer boundaries that followed the same course as their predecessors were dug in parallel, creating, in places, sprawling, braided lines of ditches. It may be that this increased tempo of interventions to the landscape, and sense of greater restlessness to the organisation of space on each of the Romano-British sites, was a response to the stimulation of the agricultural market that followed its connection to the economy of the wider Roman province. Such a process might account for the presence of large Romano-British middens at the Seven Geaves (pit group 70631) and Over Field (hollow 90056/90340) sites, as an intensification of the agricultural effort is often seen as a consequence

of Roman rule, with native farmers caught up in the effort to provision the army and townsfolk and to meet demands for tax/tribute (eg, van der Veen and O'Connor 1998; Allen et al. 2017). That the process was a two-way one is evident by the appearance of Romanised pottery within the development area. Within studies of Roman Britain, the introduction of crop-drying kilns and mechanically driven millstones is commonly read as an indication of increased production undertaken for the same reasons. However, no evidence of the former was recorded, and although a millstone was recovered from Seven Geaves, it is thought more likely this was initially used for its intended purpose at a watermill adjacent to a nearby river, before being imported to the site for reasons unknown (see Shaffrey, Chapter 4 above). It may therefore be the case that, because of its peripheral position to the core area around the Derwent/Trent/Soar confluence, the farmers of the development area were unable to fully capitalise on their new economic reality. As such, the area stands in contrast to developments at Warren Farm, closer to the confluence zone, where an Iron Age site 'flourishes into the Romano-British period' and 'generated sufficient economic success, wealth and status to transform the settlement into a villa estate' (Thomas 2013, 127 and 130). It is not possible to identify an equivalent 'success story' within the East Midlands Gateway development area although, as outlined above, it is possible that our Romano-British sites formed facilities within that estate and so had their part to play in its success.

There was very little evidence of religious practice from the Romano-British sites, although spiritual preoccupations were probably all-pervasive in the Roman province (Smith 2018, 120, 201). At Seven Geaves, a rare find of metalwork was made, namely a brooch, which was recovered alongside a small group of pot sherds including fragments of a fine oxidised necked jar or bowl and a channel-rimmed jar (Figs 4.9.49 and 4.9.51). The pottery is of 1st- to 2nd-century AD date, with the brooch thought to be of the early 1st century AD (see Marsden, Chapter 4 above), potentially revealing it to be a curated item. These were found in slot 70047 dug into the south side of the main enclosure ditch (ditch 70604). A cow skull with articulated vertebrae was found in another slot, 70251, dug into the same feature, 9 m to the west. Chadwick (2010, 407) has identified ditches marking the southern sides of enclosures as being one of the locations favoured for placed deposits of pottery in the Romano-British period within a study area to the north of the Trent, and similar behaviours may be at play with this group of finds. Around 120 m to the north, cremated human bone had been placed into the north-east corner of the same enclosure. Although less overtly ritual than the human skull and horse bones found at the King St Plantation enclosure entrance, this group of unusual material from Seven Geaves might be a local expression of beliefs that involved a focus on human remains and the caching of unusual items (Chadwick 2010, 396–7; Smith et al. 2018), ceremonial practices that were traditional in outlook and continued after the Conquest. In terms of the places chosen for such practices, it appears special structures were still not necessary, with everyday locations utilised instead, with an enduring focus on enclosure boundaries. Insofar as its expression can be discerned within the development area, religious or ceremonial practice appears rooted in native traditions and appears to form part of a spectrum of continuity from the Iron Age into the Romano-British period.

Few remains dated to the later part of the Roman period, with the sites apparently receiving little pottery during the 4th century. This matches the evidence from Warren Farm, where the majority of trackways and associated enclosures seemed to fall out of use by the later Roman period (Thomas 2013, 108, 126). This common dwindling might illustrate how both areas were inter-reliant and affected by changes affecting the wider province.

Food Production

Efforts to understand how local communities sustained themselves prior to the Middle Iron Age are hampered by an absence of evidence. The lack of remains might point to mobile strategies, although the presence of charred barley grains at the Field Farm burnt mounds (two of the grains provided Early/Middle Bronze Age radiocarbon dates) suggests some arable cultivation, which would imply a degree of sedentary life within the local agricultural effort.

The situation from the 3rd and 4th centuries BC, in the Middle Iron Age, can be outlined with more confidence. Within the animal bone assemblage, cattle bones dominate, followed by sheep and then pig. The economy was primarily geared towards beef production; that dairying also played a part in the husbandry strategy is evident in both the animal bone assemblage and the results of the organic residue analysis. Sheep were primarily reared for meat at this time also. The overall impression is of a self-sufficient subsistence economy in which meat was sourced from locally reared livestock that were slaughtered and butchered at or close to the excavated sites. Arable agriculture was also undertaken, with hulled wheats, namely emmer and spelt, forming the principal crops. Barley was also grown but had a secondary role to wheat. Quern fragments from Mill Close and Great Dampits would have had a role in the processing of cereal grains and probably other plants also. The four-post structures from King

St Plantation and Horsecroft may have been used to store cereal products – such an interpretation is commonly amongst those offered for such remains (eg, Clay 2001, 10; Thomas 2011a, 155). There were no plant remains, however, in the soil samples from the East Midlands Gateway examples to support such a function here. As set out above, Longfield was situated over gravel geology on the valley floor. There does not seem to be any obvious difference between its charred plant record and those of the other higher sites on the mudstone. The most striking difference is the relative lack of animal bone from Longfield (representing just 3% of the total assemblage) in comparison to the other Iron Age sites, but this appears to be due to hostile soil conditions rather than revealing that different geologies were farmed in different ways. A similar erosion of the animal bone assemblage had occurred at Warren Farm, where Thomas has nevertheless suggested the inhabitants were engaged in animal husbandry during the Iron Age (2013, 129–30). That the development area could reasonably be characterised as 'cattle country' during the Iron Age supports Thomas' theory; the suggestion that Warren Farm and some of the East Midlands Gateway sites together formed part of a broader a pastoral system has been outlined above.

As set out earlier, the evidence from the Romano-British sites suggests no major changes in the subsistence strategy following the Conquest. The dominance of cattle within the animal bone assemblage increases slightly over the Iron Age evidence, with sheep and then pig having correspondingly smaller roles. The increase in the proportion of cattle and the age at which they were slaughtered for meat between the Middle to Late Iron Age and Romano-British sites at East Midlands Gateway is linked by Higbee (Chapter 4 above) to the intensification and expansion of arable cultivation from the 2nd century AD onwards. In addition (although the evidence is limited), in a further indication of engagement with the wider economy of the Roman province, there was an increased emphasis on export of beef from the sites in the Romano-British period. Even so, the husbandry strategy remained closely linked to arable agriculture. Evidence from the lipids analysis suggests dairying became less important on the site in the Romano-British period (see Dunne et al. Chapter 4 above). An increase in beef production at the expense of dairy would sit well with the notion that off-site consumption became more important in the Romano-British period, with more distant consumers requiring less perishable fare. The loomweight from Daleacre may indicate that sheep wool was processed and used on the site, although this is the only example from the development area, echoing the relatively small numbers of sheep bones from the sites. The same sorts of cereals were grown and processed on the sites during the Romano-British period as in earlier centuries, although there is some slight evidence of diversification on the Romano-British sites, with cultivated pulses (pea and possibly a vetch/bean) seen at Seven Geaves and flax at Daleacre and Over Field. These were only present in very small amounts suggesting a secondary role, although as López-Dóriga outlines above, there are many taphonomic factors that can distort the picture presented by the charred plant remains.

Overall, the evidence of food production across the development area in the centuries either side of the BC/AD transition resonates very well with the results from nearby sites and the broader region (eg, Clay 2002, 115; Thomas 2011a, 133; Monckton 2006, 270–6; Lodwick 2017, 31). Mixed farming is envisaged for the region as a whole, albeit with a typical emphasis towards pastoralism. Within the excavated sites there is evidence of both cultivation and stock-rearing, a pragmatic response to the opportunities the landscape offered and the consequences of failure when operating at or near the subsistence level. Also in common with other similar sites, there was little evidence of the exploitation of wild species (Monckton 2006, 270; Thomas 2011a, 157), although as López-Dóriga points out above with regard to plants, the manner of their use (boiled or eaten raw) means that they would be less likely to be preserved.

Beyond the Romano-British period, a lack of evidence again hobbles attempts to understand how the land was farmed. That none of the Romano-British sites show continuation of activity into the early medieval period highlights the degree to which their exploitation was reliant on the wider social and economic frameworks of the Roman occupation. To judge by the presence of ridge and furrow across most of the sites, the land was given over to cultivation from the medieval period onwards. This was presumably organised out of the local villages of Castle Donington, Hemington, Lockington and Kegworth, when the ancient sites exposed within the development area would have lain within the open fields surrounding those settlements.

The Enclosure Act for Kegworth was passed in 1778, with Hemington following 11 years later (Hunt 1955). That for Kegworth probably initiated the construction of the farmstead known as Kegworth Field, which was built during the interval between 1779 and 1815 (Wessex Archaeology 2017d, 4), and subsequently renamed Field Farm. At the time of excavation, the development area was mostly under arable, with many of the operations undertaken from Field Farm, although that was previously more of a dairy concern (Wessex Archaeology 2017d, 6). Field Farm and its outbuildings were demolished during the course of the East Midlands Gateway development, which saw the removal from agricultural productivity of this part of the local

landscape, a use to which it had been put, it can now be appreciated, since the Middle Iron Age, and probably earlier.

Craft, Trade and Exchange

The people living and working within the project area in antiquity were linked to wider networks of trade and exchange. The surviving evidence suggests this principally involved the export of agricultural surplus from the sites, but the products of crafting and other small-scale activities may also have formed an element of the sites' economy. However, evidence of such was very scarce, with scant traces of textile production at Over Field, with the same site also providing very limited evidence of iron smelting – as did Field Farm and Seven Geaves, but in lower quantities, the slag probably residual here, with no *in situ* remains at any of the sites. Slight evidence of ironworking was also recorded at Daleacre, Over Field and King St Plantation. The poor signs for such specialised activities suggest infrequent and domestic-level production, contrasting with the 'aggregated' settlements at Beaumont Leys and Humberstone, which contained evidence for both iron and copper working, textile production, hide processing and antler- and shale-working (Thomas 2011a, 158). Thomas's interpretation saw such activities as being facilitated by the size of the 'aggregated' settlements, which offered easier access to a range of resources and the opportunity to benefit the group as a whole (*ibid.* 161). The relative lack of evidence for craft activities from the sites at East Midlands Gateway, which were much smaller than the 'aggregated' settlements, would be in keeping with this interpretation.

It may be unwise to be too dismissive of the role of such craft activities at East Midlands Gateway, however. The technical proficiency and awareness of materials displayed in the Middle Iron Age wooden shield recently recovered from Enderby (Kipling 2016; ULAS n.d.) displays the abilities of ancient makers; the rarity of its survival also illuminates how much has been lost from typical archaeological deposits. It is therefore easy to imagine, if difficult to prove, the crafting of objects in such perishable materials on the excavated sites, with these produced for, or coming to have a role in, economic transactions. With only two ancient coins from the development area, it would seem this involved no great level of economic complexity, with barter of goods and services probably being the basis for most exchange. Many of the goods found on the sites at East Midlands Gateway, but produced elsewhere, are likely to represent a reciprocal flow, payment for the materials and objects it exported.

There is a limited range of material to illustrate local or long-distance contacts during the Iron Age,

Plate 5.4 Romano-British pottery: colour-coated beaker with barbotine decoration from Seven Geaves

despite the proximity of the Derwent/Trent/Soar confluence zone. The querns and other pieces of worked stone from Great Dampits and Mill Close illustrate links (albeit with an unknown number of intermediaries) to the north (Derbyshire: Millstone Grit) and south (Charnwood Forest: Granite). Links to the latter area are also highlighted by the pottery tempered with granitic/igneous rocks recovered from the sites, with the shell-gritted wares either drawn from around the River Soar or further downstream along the Trent (see Rowlandson and Fiske, Chapter 4 above). Interestingly, briquetage was not recovered from the excavated sites, despite their closer proximity to the source of such material (Cheshire) than some of the Leicestershire sites where it has been found – eg, Huncote, Humberstone and Hinckley (Meek et al. 2004, 13; Thomas 2011a, 158; Chapman 2004, 64–6).

Connection to Romano-British trade networks saw material more obviously from further afield being introduced to the site, the best example being samian pottery from Gaul, with the two coins representing other Continental imports, one coming from Trier in modern-day Germany. During this period pottery also came to the site from various regional and local sources including the Mancetter-Hartshill kilns and Derby. The eminent suitability of Millstone Grit for its eponymous function saw that area remaining in favour, with the Peak District also being the most likely source of the lead found in the project area. The iron ore used for smelting in either period could have derived from any number

of sources relatively nearby, including, possibly, the Trent gravels (P Andrews, pers. comm.). Exposure to regional trading networks is also indicated by the items of personal adornment (brooches, armlet and hair pin) and fragments of glass vessels. Such exposure becomes easier to see in the Romano-British period, although goods were also transported over considerable distances in prehistory. The finds recovered from the excavated sites are, nevertheless, essentially utilitarian in nature, seemingly in keeping with the workaday status of this part of the landscape.

This section has necessarily focused on the physical evidence of trade and exchange, the tangible goods that entered the sites. But these were transported by people, and therefore as material from near and far came to the project area, so too would news, gossip and jokes, and with this a chance to form, rekindle or mend relationships with friends, relatives, lovers and rivals. It is easy to overlook such intangible elements, which would nevertheless have been crucial in sustaining the social life of those living and working within the development area in the past.

The Post-Roman Landscape

> *We cannot wipe the whole East Midland slate clean at the end of the Roman occupation, and start afresh with a new set of colonists moving into England from the late fifth century and occupying virgin territory* (Thirsk 1973, 276)

Other than cultivation furrows, very little evidence post-dating the Romano-British period was recorded, with no direct sign of its occupation between that time and the construction of Kegworth Field, later renamed Field Farm, some 1400 years later. During the centuries following the end of direct Roman control a shift in the organisation of the local landscape is clear, with the nearby villages of Kegworth, Hemington, Lockington and Castle Donington forming the settlement centres from where farming was undertaken. It is open to question whether this represents a retraction of activity to pre-existing settlements or the establishment of new ones, as none of their origins have been archaeologically resolved. For Castle Donington at least, a lack of finds from the area around the village has been interpreted as 'consistent with, but not necessarily evidence for, the formation of a nucleated village (where there has been little archaeological investigation) shortly after the 7th century' (Fisher and Lee 2016, 17). Castle Donington and Kegworth are both listed in the *Domesday* survey, implying at least late Saxon origins. Lockington does not appear in *Domesday* but may be mentioned in 10th-century documents, with a more certain reference in a 12th-century source, when Hemington also enters the record (Ekwall 1960). Interestingly, where evidence of Anglo-Saxon settlement has been excavated around Castle Donington, this did not coincide with evidence for Roman occupation: four buildings and associated features were excavated at Willow Farm (1.3 km north of the modern centre) and dated to the 5th–7th century AD but 'no evidence of Late Iron Age or Roman occupation was found' (Ripper et al. 2017, 38).

Continuity

The precise degree of population replacement by Anglo-Saxon settlers following the Roman period is unknown, and any causal links between such a change and the obvious reorganisation of the landscape are unmapped. It is, however, possible to offer some evidence that hints at, but does not prove, a degree of continuity amidst the very apparent changes. This consists of placename evidence from the vicinity of the development area and indications of boundary continuity from within it.

Breedon-on-the Hill (7.5 km south-west of the development area) represents a survival of a Celtic placename element, and the Anglo-Saxon name Isley Walton (4.8 km south-west of the development area) means the 'tun of the Britons or British serfs' (Thirsk 1973, 276–7). Both elements suggest, at least, 'a degree of cultural contrasts in the early Middle Ages' (Fisher and Lee 2016, 15) within the local area.

There were several possible and probable examples of ancient boundaries recorded on the excavated sites surviving into the post-Roman period, with the clearer cases of such continuity perhaps adding some weight to the interpretation of the more speculative ones.

Daleacre/Long Lands

At this site the earliest features, Late Bronze Age cremation graves 80227 and 80232, lay on a north-east to south-west alignment, the course of which, when extended to the north-east, broadly corresponds with the course and orientation of the Long Lands pit alignment (Fig. 5.6). Moreover, Romano-British enclosure ditch 80360, which defined the eastern limit of activity at Daleacre, follows the same alignment (it was assumed, up until the radiocarbon dates were received, that the cremation graves were Romano-British and had been dug to respect the position of ditch 80360, which lay less than 10 m to their south-east). An existing hedge line lay 12 m south-east again of ditch 80360, and follows the same north-east to south-west alignment. This hedge line formed part of the boundary between the parishes of Hemington and Lockington, prior to their combination sometime in the mid-20th century.

King St Plantation

Boundary 75327, comprising two intercutting parallel ditches, ran across the north-west corner of this site and formed a 'T'-junction with boundary 75501, which contained Iron Age pottery. Boundary 75327 appears to continue the line of a curvilinear earthwork (visible within LiDAR data) running through the King St Plantation woodland to the immediate north (Fig. 5.7). This earthwork accompanies a field boundary marked on mapping from the 1880s onwards, and which formed the boundary between the parishes of Kegworth and Lockington, and still marks the division between Kegworth and the combined Lockington-Hemington civil parish. It is suggested that the presence of the woodland has preserved an Iron Age earthwork from plough truncation, with boundary 75327 representing the plough-denuded southward remnants of that boundary. If correct, this would be another example of a boundary within the modern landscape having very early antecedents.

Longfield

The principal boundary at Longfield crossed the full width of the excavated area on a north-west to south-east alignment, and so follows the same course as a field division that was marked on the 1884 25-inch Ordnance Survey map just 10 m to the east of that site (Fig. 5.8). The two boundaries therefore appear to mark the same line, although the 19th-century division stopped at a perpendicular boundary and so did not cross the site. As discussed above, the course of the principal boundary at Longfield may reflect a change within the substrata, and the influence this would have had on the land above. The 19th-century divisions were not evident on the ground when the excavation of Longfield was underway, with cartographic evidence indicating they were grubbed out in the 1980s.

Over Field

Ditch 90348 ran the entire length of the site on a north–south alignment; pottery dates indicate the feature was open from the late 2nd to 3rd century AD until at least the later 3rd century AD. To its east, the cultivation furrows recorded on the site ran on an east–west alignment, and to its west they followed a north–south course (Fig. 5.9). Although one furrow appears to cross the boundary, the relationship was not established and the arrangement, overall, would imply that the furrows were set out respecting a boundary that dated back to at least the Romano-British period. With the ditch infilled, a bank and hedge 'descended from' the Romano-British boundary may have separated the medieval/post-medieval plough teams.

Seven Geaves

Ditch 70620 was the latest feature at Seven Geaves; it contained modern finds and tallies with a field boundary depicted on Ordnance Survey maps from the 1880s until the 1960s. To the south of the excavation area, its course was visible as a ditch separating existing fields. Ditch 70620 crossed the excavated area on a course seemingly oblivious to the earlier boundaries, but where it intersected ditch 70600, belonging to phase 1 (Late Iron Age/early Romano-British) of that site, it then swerved to track that feature's course to the north-east and the two exited the northern limit of excavation in superimposition (see Fig. 2.19).

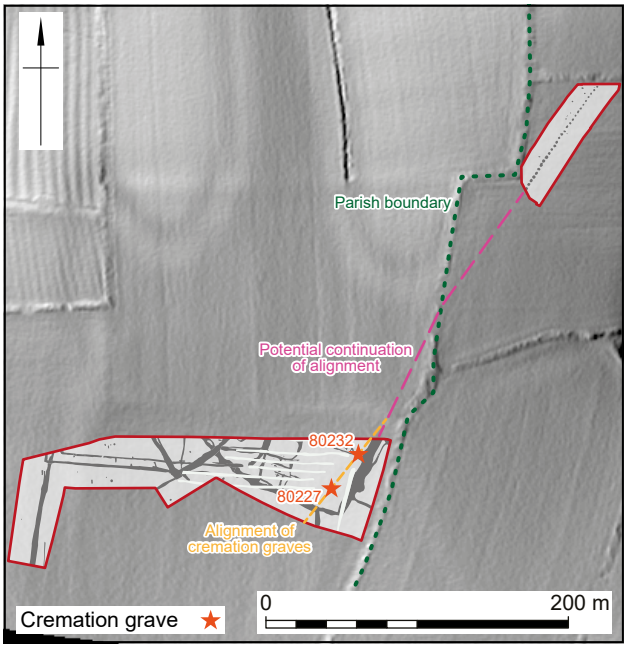

Figure 5.6 Boundary continuity at Daleacre/Longlands

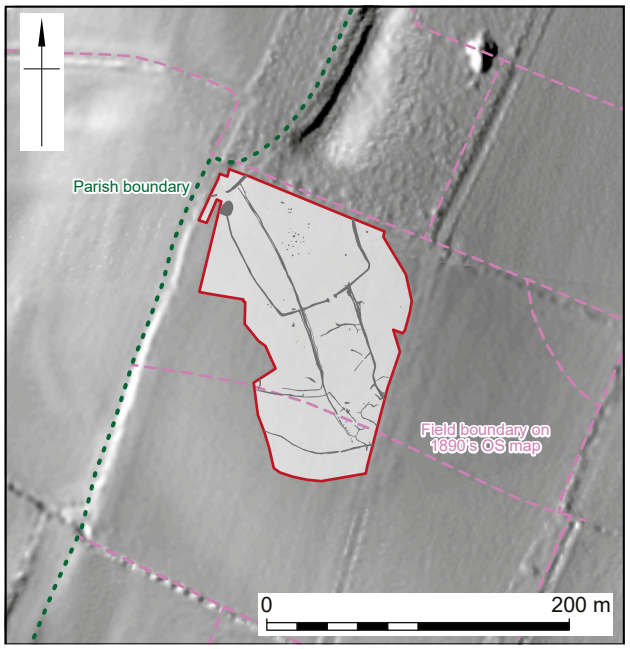

Figure 5.7 Boundary continuity at King St Plantation

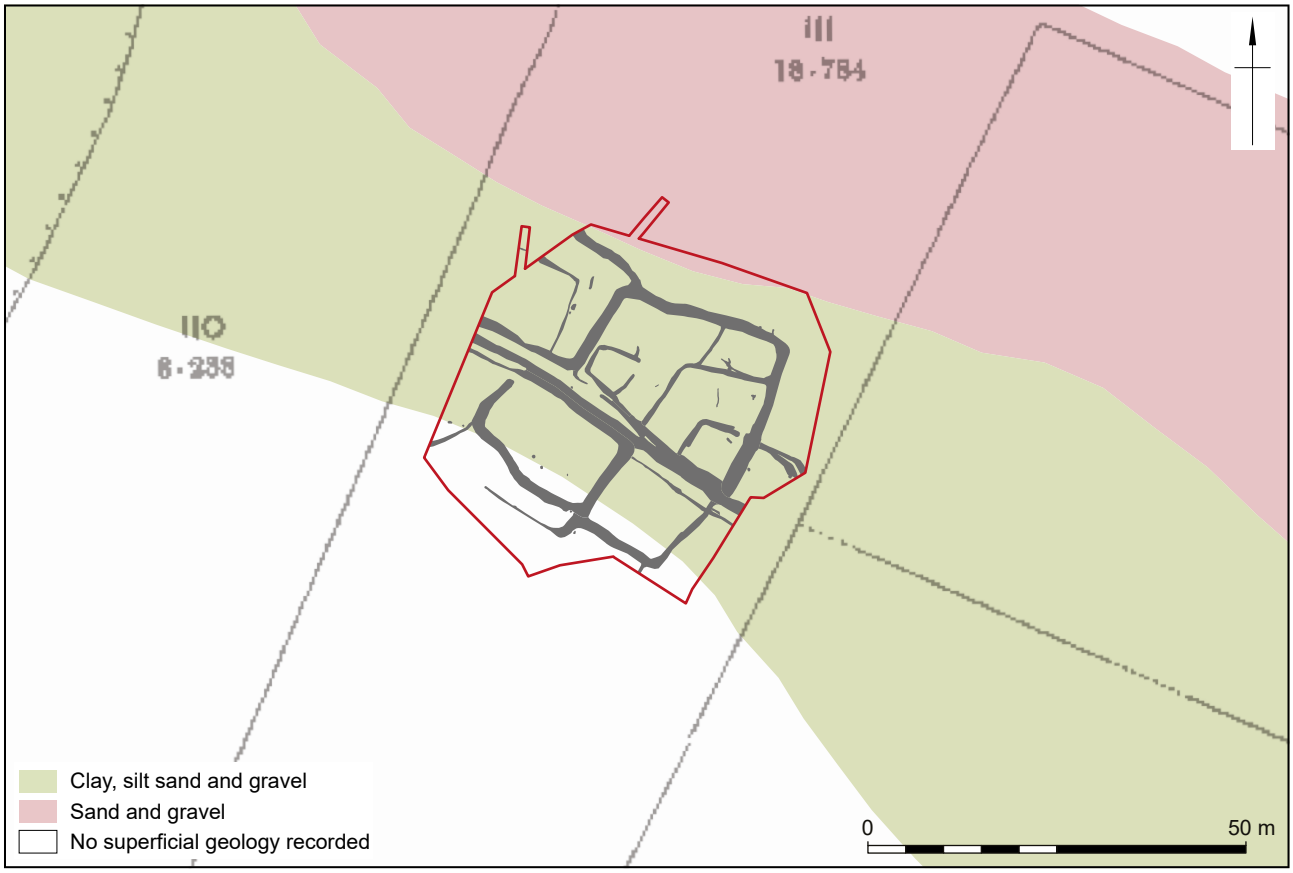

Figure 5.8 Boundary continuity at Longfield

Discussion

There are two principal objections that can be raised against these proposed examples of boundaries laid down in antiquity influencing modern land divisions. Firstly, the examples are based on partial glimpses of much more extensive features as they crossed the excavated areas, and such harmonisations of course could be revealed to be temporary and coincidental had their full course been exposed. Secondly, although it might be accepted that the shared alignments and continuations are genuine, this might be explicable by different populations responding to ongoing dictates of topography and drainage, with those who marked the later boundaries being ignorant of the existence of the earlier works. This may particularly be the case at Daleacre/Longlands, where all of the proposed boundary elements follow the same vague promontory descending from the mudstone to the valley floor.

Moreover, even if it were accepted that the shared alignments and continuations are genuine, and the existence of ancient boundaries *did* influence subsequent landscape divisions, this is not in itself evidence of persistence of any particular ethnic group in the post-Romano-British period. Rearranging landscape boundaries such as ditches, hedges and banks represents a substantial input of labour, and so would not have been an endeavour undertaken unless necessary, no matter where one's ancestors grew up. Any incoming settlers may have 'adapted a pre-existing and in large measure surviving territorial organisation' (Jones 1965, 71) with 'husbandmen reoccupying an abandoned landscape [reusing]… existing boundaries they could see on the ground' (Oosthuizen 2013, 59).

All these arguments are valid in principle, and all are persuasive to a greater or lesser degree when applied to the examples outlined above. But it remains necessary to point out these potential examples of post-Roman boundary continuity so that a fuller understanding of the possible development of the historic landscape can be gained. It should not even be particularly controversial to suggest a certain degree of boundary continuity. Research in southern England has suggested that some sections of the township and parish boundary network 'may have a time depth of almost two thousand years' (Winchester 1990, 33), and Oosthuizen, in her 2013 survey of evidence for the contribution of prehistoric and Romano-British traditions to the organisation of the Anglo-Saxon agricultural landscape, lists numerous examples in 'southern and central England where prehistoric and Roman field layouts continued to be occupied throughout the Anglo-Saxon period' (Oosthuizen 2013, 59–60). Within the East Midlands claylands in particular, the relationship between cropmark evidence and existing hedges, tracks and roads 'can suggest present-day features have early, and in some cases pre-Roman, origins' (Clay 2002, 6).

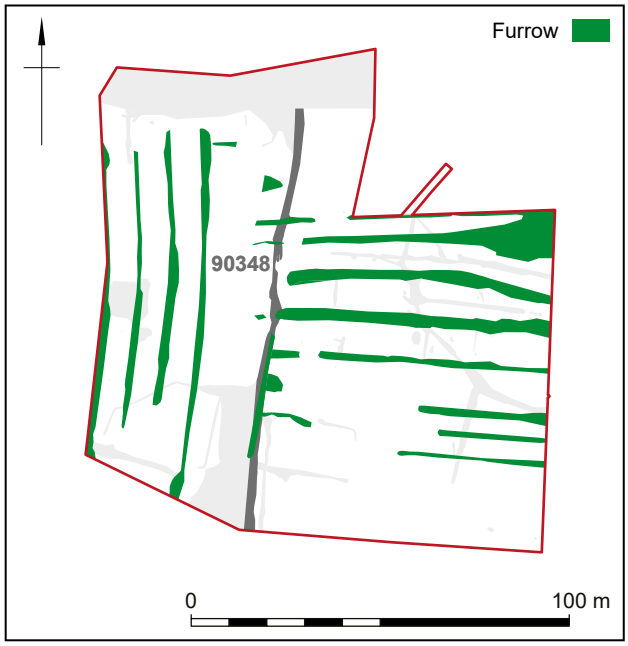

Figure 5.9 Boundary continuity at Over Field

A long-term preoccupation with certain places is often observed in the archaeological record, with some locations bearing evidence of intermittent interventions separated by spans of several centuries (eg, Bradley 2002; Chadwick and Gibson 2013a). This is often focused on funerary or ritual monuments, although the notion of 'the past in the past' merits attention with regard to 'other more prosaic landscape features... and quotidian activities' (Chadwick and Gibson 2013b, 1). At East Midlands Gateway, within the prehistoric evidence, there is evidence of long-term survival of a sense of place, principally within the Early to Middle Bronze Age span of burnt mound activity recorded at Field Farm, the Iron Age features focused on the Middle Bronze Age inhumation at King St Plantation, and the reworking of the pit alignments at Great Dampits. Early Bronze Age pits, dated by Collared Urns, were found at the Middle to Late Iron Age settlement at Hallam Fields, Birstall (Speed 2010), and these provide another regional example of occupation in the period occurring at locations marked as of importance in preceding centuries. There does not seem any obvious reason to presume the capacity was lost following the collapse of the Roman administration.

Why does the persistence of such boundaries and other landscape features matter? Firstly, 'communities depend on individuals having a shared sense of the past' (Chadwick 2013, 293), and the remains left by earlier inhabitants of the landscape, some of which may have been viewed as ancestors, are likely to have been an important means by which people in the past constructed their sense of self. Perhaps the recutting of parallel boundaries, evident at Mill Close, King St Plantation and Daleacre, is another manifestation of the way in which earlier landscape elements could be referenced in order to bolster group identity and a sense of place (Thomas 2011a, 163). Secondly, it demonstrates a strong capacity for folk memory on the part of prehistoric populations. As they are presumed to be illiterate it emphasises the capacity of oral traditions in transmitting knowledge, an aspect of life in the past that is largely invisible within excavated remains, and as such a salutary reminder of the partiality of the record with which archaeologists work. A figure of around 600–800 years has been suggested as an 'upper estimate for the persistence of some knowledge [through oral traditions], although by no means in an unchanged form' (Chadwick and Gibson 2013b, 18).

It is also likely that many of the archaeological features that were revisited over a long time period were marked in some way not often apparent when subject to archaeological investigation. It may have been a coincidence that those who constructed the enclosure at King St Plantation set it out so that a Middle Bronze Age inhumation lay at its centre, but it seems more likely that it remained visible to them by some means, with the overall arrangement therefore being a deliberate one, with the earlier monument perhaps being used to bolster notions of ancestry and belonging amongst the enclosure-builders. The physical markers by which features remained conspicuous require further elaboration generally. For example, at the Bronze Age barrow recently excavated at Bucklow Hill in Cheshire, the fact that none of the numerous cremation graves intercut, despite being dug over a period of perhaps 500 years, is explained by the suggestion that they were marked by cairns of cobbles that were later deliberately slighted (Daniel 2022, 65). More intangibly, for some classes of remains, such as field systems, it allows questions regarding the persistence of their management and that of the institutions, regimes and populations responsible for their creation and use (Oosthuizen 2013).

The final point to address why the persistence of boundaries and other landscape features matters echoes the first; it is a personal response but one which is widely held (eg, Graham et al. 2009): a life lived in a landscape of great time depth feels richer, and an awareness of the ongoing role of traces of the past in influencing the landscape of the present provides a source of psychological nourishment for individuals and communities.

Conclusion

The construction of the SEGRO East Midlands Gateway Logistics Park led to the archaeological survey of some 290 hectares of land that at the time represented a blank on the regional archaeological map. Data from the project has served to characterise the local archaeological resource and is available for further study and reinterpretation. Many of

the findings, especially those from the 12 sites selected for open area excavation, contribute directly to published research goals, principally those concerning the density and spatial extent of Iron Age and Romano-British settlements and their social and economic roles, the progress of settlement enclosure, the nature of structured deposits in the region, the chronology and use of prehistoric pottery, variations in diet and land use over time, the impact of the Roman Conquest on rural life, the post-Roman survival of linear earthworks, and the chronology of the progression from dispersed to nucleated settlements in that period (Knight et al. 2012). The fact that all 12 of the excavated sites have been investigated and reported upon to a common methodology and lie in close proximity to each other means that the results represent a coherent 'package', increasing the usefulness of the exercise.

A surprisingly high density of sites has been revealed, with the evidence chiefly relating to how the land was put to work in the centuries either side of the BC/AD transition. The results from the excavations confirm, if confirmation were needed, Clay's statement that 'the traditional model of minimal clayland settlement and land use might be an over-simplification' (Clay 2002, 2). It is hoped that, despite the necessary focus above on the excavated sites, it has been possible to suggest how the development area might have fitted into the wider landscape and the economic and social networks that it sustained. The sites lay on the periphery of a core area but – by supplying agricultural produce and, probably, other crafted items – would have contributed to its functioning, with imported goods, and one would presume, people and ideas moving in return. That these remains were excavated during the development of a modern logistics park therefore seems fitting.

It has become apparent that people and animals moved across the landscape constantly in antiquity. Archaeologists are left only with static remnants of the past to study, and as a result it is easy to underestimate just how much this would have been a landscape of movement. This scatter of small, isolated sites across a tract of land positioned between the Derwent/Trent/Soar confluence zone to the north and the clayland plateau to the south could only have been sustained by numerous journeys, with stock and crops being tended, gathered in and taken to market. Paths and trackways would have been *life*lines. The tempo of these movements may have increased in the Romano-British period, with slight evidence for an intensification of the agricultural effort and increases in exports at that time. It is likely that the tasks of the farming calendar would also have had a social element, with households both giving and receiving assistance from their neighbours and relations in a network of mutual obligation (Beamish and Shore 2008, 39; Chadwick 2010, 206). Such systems would also have been sustained by journeys for various purposes, ranging from simple social calls, to feasts and other community gatherings, perhaps like that involving the structured deposition at King St Plantation. Although it has not been possible to prove the exact lifespan of all of the excavated sites, activity on some was clearly contemporary, revealing this to be a neighbourly landscape, albeit one occupied by people less inclined to the overt communality displayed at contemporary aggregated settlements (Thomas 2011a, 163–4). This consideration of ancient journeys raises tantalising possibilities about the antiquity of the modern ways across this landscape – is it only a coincidence that sees a public footpath running directly between the Mill Close site and its neighbour at King St Plantation, or the position of the former site coinciding with the intersection of that path and the Dumps Lane hollow-way?

The reasons for the abandonment of the Iron Age sites before or at the end of that period were not evident, with soil exhaustion (Clay 2002, 4), disease, or broader social shifts all being possibilities. Neither were the details as to why, when the agricultural effort picked up again in the Romano-British period, it occurred from different bases to the Iron Age arrangement, despite having a similar basis. Although the disuse of these later sites might be linked to the collapse of the wider trade networks of the province and empire that they existed within, this is not proven, and a certain amount of subsistence farming would have remained necessary to sustain the population. Evidence for at least a degree of post-Roman continuity is suggested by the survival of some of the ancient landscape divisions into the medieval and later periods. That even the closest comparator sites have different characters and trajectories reveals the heterogeneity of the archaeological resource (*cf.* Meek et al. 2004, 29) and the capacity for further work to add detail to the picture. The paradoxical effect of the recovery of often contradictory data on our ability to construct robust interpretive models is acknowledged. Some broader conclusions can be suggested, however, with the scattered distribution and varying form of the excavated sites revealing small, individualistic groups with little sense of social stratification functioning within larger trade and social networks, and so displaying a degree of economic co-operation suggesting a level of organisation beyond the merely local.

The archaeologists who worked at East Midlands Gateway have brought to light details of the chronology and character of the occupation and exploitation of a hitherto-overlooked and slightly peripheral corner of the East Midlands. The evidence they recorded reflects how wider social changes and economic developments were made manifest at the site-specific level; moreover, all who have contributed to this project have helped to people a landscape.

Appendix A
Summary of the assessment of the charred plant remains

Sample code	*Vol. (l. unprocessed, ml. flot)*	*Bioturbation proxies*	*Cereal grain*	*Chaff*	*Charred other*	*Taxa*
				Long Lands		
[33006] (33004) <101407_118>	20, 30	90%, A, E, I	-	C	-	*Triticum aestivum/turgidum* rachis segment
				Mill Close		
[5407] (5408) <101402_6>	15, 15	30%	-	C	C	*Triticum* sp. glume bases, *Chenopodium*, stems
[19608] (19607) <101407_114>	20, 10	90%, A, I	-	-	C	Poaceae (*Avena* sp. awns, *Poa/Phleum*)
[50162] (50163) <101409_516>	28, 10	70%, C	-	C	-	*Triticum* sp. glume base
[50066] (50067) <101409_504>	24, 10	80%, A**, I	C	C	-	*Triticum* sp. grain and glume bases
[50148] (50149) <101409_517>	10, 15	70%, B, E, I	C	-	C	*Triticum* cf. *spelta*, Vicieae
[5505] (5504) <101402_5>	18, 15	65%	-	B	-	*Triticum* sp. glume bases
[19406] (19404) <101407_110>	20, 30	90%, A, I	C	-	C	*Triticum* sp. grain fragment, Indet seed
				Great Dampits		
[16015] (16010) <101407_107>	20, 20	80%, C, E, I	-	C	-	*Triticum* sp. glume base
[5706] (5707) <101402_9>	20, 60	50%	-	C	C	*Triticum* sp. (incl *dicoccum*) glume bases, *Avena/Bromus*, *Lolium/Festuca*
[5706] (5707) <101402_12>	10, 5	50%	C	C	-	Triticeae grain, *Triticum* sp. (incl *dicoccum*) glume base
[60091] (60092) <101409_615>	26, 15	80%, A, F	-	C	-	*Triticum* sp. glume base
				Field Farm		
(65214) <101409_210>	10, 10	<1%, B, I	-	-	C	Poaceae
(65214) <101409_211>	10, 15	<1%	C	-	-	*Triticum/Secale*, Triticeae
(65214) <101409_212>	10, 5	<1%	-	-	C	Indet
[65195] (65196) <101409_204>	10, 5	5%, A	-	-	C	Indet
[65195] (65196) <101409_205>	10, 5	<1%, B, I	C	-	-	*Hordeum vulgare*?
[65195] (65196) <101409_206>	10, 10	<1%, B, I	C	-	-	cf. *Hordeum vulgare*

Sample code	*Vol. (l. unprocessed, ml. flot)*	*Bioturbation proxies*	*Cereal grain*	*Chaff*	*Charred other*	*Taxa*
[65195] (65196) <101409_207>	10, 10	5%, C, I, E	C	-	-	*Hordeum vulgare*, Triticeae
[24509] (24511) <101407_105>	20, 5	20%, C, I	-	C	-	*Triticum* sp. glume bases
[24408] (24409) <101407_103>	20, 10	50%, C, E, I	C	C	-	*Triticum* sp. glume base, Triticeae grain fragments
[24410] (24411) <101407_104>	20, 10	50%, A, E	C	C	C	*Triticum* sp. (incl *spelta*) glume bases, Triticeae grains, *Avena*/*Bromus*
[24405] (24406) <101407_102>	20, 20	40%, I	C	C	-	*Triticum* sp. glume base, Triticeae grain fragments
(65015) <101409_215>	35, 15	60%, A, E, I	C	C	C	*Triticum* sp. grain and glume base, *Lolium*/*Festuca*
				Seven Geaves		
[70175] (70176) <101409_718>	31, 10	80%, C, E, I	C	C	C	*Triticum* sp. (incl *spelta*) grains and glume bases, *Raphanus raphanistrum*
[70314] (70315) <101409_730>	28, 4	80%, B, F	-	C	-	*Triticum spelta* glume base
[70316] (70318) <101409_729>	31, 8	70%, A, E, I	B	A	C	*Triticum* sp. (incl *spelta*) grains (one sprouted) and glume bases, cf. *Hordeum vulgare* grain, *Rumex* sp., Asteraceae
[70190] (70191) <101409_731>	34, 4.5	80%, A, I	C	B	C	*Triticum* sp. grains and glume bases, Poaceae, Asteraceae
[5811] (5810) <101402_10>	19, 25	40%	C	A	B	*Triticum* sp. (incl *spelta*) grains and glume bases, *Avena*/*Bromus*
[70578] (70579) <101409_715>	31, 3	70%, A	C	C	-	*Hordeum vulgare* grain, *Triticum* sp. glume bases
[70419] (70420) <101409_738>	36, 4	80%, A, I	C	-	-	Triticeae
[70504] (70505) <101409_705>	7.5, 10	80%, A, E, F	C	B	C	*Triticum* sp. (incl *spelta*) grains and glume bases, Poaceae
[70578] (70580) <101409_716>	8, 15	2%, A	C	-	B	*Triticum* sp., Triticeae, Cyperaceae, Vicieae, roots/tubers
				King St Plantation		
[75034] (75035) <101409_901>	40, 8	80%, A	C	C	-	*Triticum* sp. glume bases, Triticeae grain fragments
[14104] (14105) <101407_100>	20, 10	80%	C	-	C	Triticeae grain fragments, *Corylus avellana* shell fragment
[75275] (75273) <101409_926>	40, 20	70%, A*, I	B	A	-	*Triticum* sp. (incl *spelta*) grains and glume bases, *Hordeum vulgare* grains
[75419] (75418) <101409_942>	30, 25	40%, B, I	C	-	C	Triticeae, Vicieae
[75484] (75489) <101409_955>	35	80%, C, I	C	-	-	*Triticum* sp., Triticeae
[75484] (75486) <101409_954>	13, 10	30%, C	-	A	-	*Triticum* sp. glume bases
[75060] (75059) <101409_903>	36, 10	70%, C	-	C	-	*Triticum* sp. spikelet fork
[75126] (75127) <101409_908>	32, 13	50%, A, I	-	A	C	*Triticum* sp. glume bases, Poaceae (*Lolium*/*Festuca*, *Bromus* sp.)

Sample code	*Vol. (l. unprocessed, ml. flot)*	*Bioturbation proxies*	*Cereal grain*	*Chaff*	*Charred other*	*Taxa*
[75171] (75172) <101409_911>	34, 20	20%, C, I	-	-	C	Poaceae
[75152] (75151) <101409_909>	40, 4	70%, C	-	C	-	*Triticum* sp. glume bases
[75458] (75459) <101409_941>	23, 10	15%, B, I	C	-	C	Triticeae, *Corylus avellana*
Over Field						
[26404] (26405) <101407_124>	30, 5	10%, C, F	C	B	C	Triticeae grain fragment and rachis fragment, *Triticum* sp. chaff (glume bases and spikelet forks, incl *spelta*), *Linum usitatissimum* capsule fragment, *Avena* sp. awn
[26204] (26205) <101407_123>	40, 35	90%, A*, E, I, F	-	A	C	*Triticum* sp. glume bases, Poaceae (cf. *Avena* sp., *Poa*/*Phleum*), Cyperaceae, Asteraceae
[26605] (26606) <101407_126>	40, 35	90%, A*, E, F	-	-	C	*Avena* sp. awn
[26608] (26610) <101407_127>	40, 150	90%, A*, E, I	C	B	C	*Triticum* sp. grain and chaff (glume bases and spikelet fork fragments), *Avena* sp. awn
[90063] (90065) <101409_653>	22, 100	90%, C	-	B	C	*Triticum* sp. glume bases, Asteraceae
[90265] (90266) <101409_662>	40, 15	80%, C, E, I	C	B	C	Triticeae grain, *Triticum* sp. glume bases, *Malva* sp., Asteraceae
[90343] (90344) <101409_664>	40, 10	70%, A	B	A	B	*Triticum* sp. grain and glume bases, Poaceae, Asteraceae, *Raphanus raphanistrum*, *Arrhenatherum elatius* ssp. *bulbosum* and indet tubers
[90056] (90057) <101409_660>	40, 30	80%, C, E	-	B	B	*Triticum* sp. (incl *spelta*) glume bases, Asteraceae
[90056] (90058) <101409_661>	32, 15	80%, C, E	-	A*	-	*Triticum* sp. glume bases
[26504] (26505) <101407_129>	10, 25	90%,A, F, I	C	-	-	Triticeae grain fragment
				Daleacre		
[80227] (80234) <101409_315>	12.5, 50	10%, C	C	C	B	*Triticum* sp. grain and glume base, Poaceae culms
[80015] (80016) <101409_321>	40, 3	80%, B, I	C	-	-	*Triticum* sp., Triticeae
[80021] (80022) <101409_322>	40, 10	75%, C, I	-	C	-	*Triticum* sp. spikelet fork
(80296) <101409_336>	32, 3.5	75%, C, I	C	-	-	*Triticum* sp.
[80095] (80096) <101409_328>	35, 10	80%, A, E, I	C	C	B	*Triticum* sp. grain and glume base, *Hordeum vulgare* grain, Asteraceae, Poaceae, Vicieae, *Plantago lanceolata*, indet tuber
[80275] (80277) <101409_337>	36, 10	80%, C	C	-	C	*Triticum* sp. (cf. *aestivum*/*turgidum*), Vicieae
[80254] (80256) <101409_330>	35, 25	30%, B, E, I	B	-	A	*Triticum* sp. (incl *spelta*), *Hordeum vulgare*, Asteraceae, Cyperaceae, Poaceae (*Poa*/*Phleum*, *Lolium*/*Festuca*), Polygonaceae
[80083] (80086) <101409_324>	38, 10	70%, B, I	C	-		*Triticum* sp., Cyperaceae, Poaceae, indet tuber
[80098] (80099) <101409_327>	38, 15	60%, A, I	-	-	C	Indet. tubers

Sample code	*Vol. (l. unprocessed, ml. flot)*	*Bioturbation proxies*	*Cereal grain*	*Chaff*	*Charred other*	*Taxa*
[80031] (80032) <101409_323>	36, 10	75%, C, E, I	C	C	C	*Triticum* sp. grains and glume bases, Poaceae, *Rumex* sp., Vicieae
[518] (523) <101402_3>	16, 10	40	C	B	C	*Triticum* sp. and *Hordeum vulgare* grains, *Triticum* sp. (incl *spelta* and *dicoccum*) chaff (glume bases and spikelet forks), *Avena*/*Bromus*, *Rumex* sp., *Vicia*/*Lathryus*, stems
[704] (705) <101402_4>	18, 80	70	C	A	-	Triticeae grain, *Triticum* sp. (incl *spelta* and *dicoccum*) glume bases, stems
[80158] (80159) <101409_333>	37, 10	80%, B	C	B	C	Triticeae grain, *Triticum* sp. (incl *spelta*) glume bases, *Poa*/*Phleum*, *Rumex* sp.
[80220] (80222) <101409_325>	36, 12	80%, A, E, I	C	C	C	*Hordeum vulgare* grain, *Triticum* sp. grain and glume bases, Vicieae, *Poa*/*Phleum*
(80103) <101409_301>	18, 35	75%, A, I	-	-	C	*Corylus avellana*
[80224] (80225) <101409_331>	36, 10	80%, C, I	C	C	C	*Triticum* sp. grain frags and glume bases, Poaceae (incl *Avena* sp.), indet tissue
[86109] (86106) <101409_136>	8, 2.5	50%, B, I	C	-	C	cf. *Hordeum vulgare*, Poaceae
				Longfield		
[41040] (41041) <101409_807>	35, 2	60%, C	-	-	C	*Lolium*/*Festuca*
[41247] (41248) <101409_812>	34, 4	80%, B, I	C	-	C	*Triticum* sp., Triticeae, Cyperaceae
[7104] (7105) <101402_8>	16, 10	10	C	A	C	Triticeae grain, *Triticum* sp. glume bases, *Avena*/*Bromus*
[41311] (41316) <101409_808>	34, 4	80%, A, I	C	-	C	*Hordeum vulgare*, *Lolium*/*Festuca*
[41077] (41078) <101409_806>	34, 15	80%, A, I	C	-	C	Triticeae, *Raphanus raphanistrum*
[41097] (41098) <101409_815>	36, 5	80%, B, I	C	-	C	Triticeae, *Arrhenatherum elatius* subsp. *bulbosum*
[41161] (41162) <101409_810>	27, 20	60%, C, I	C	-	C	Triticeae, cf. *Hordeum vulgare*, Cyperaceae
[41359] (41361) <101409_801>	18, 4	80%, C	C	-	C	*Hordeum vulgare*, Poaceae
[12104] (12106) <101407_106>	20, 20	80%, C	-	C	-	*Triticum* sp. glume base
				Horsecroft		
[38072] (38073) <102972_855>	32, 20	70%, A, E, I	C	C	C	*Hordeum vulgare* and *Triticum* sp. grains, *Triticum* sp. glume base, Poaceae, Vicieae
[38049] (38050) <102972_852>	36, 15	80%, A, E, I	C	-	C	Triticeae, Poaceae
[38198] (38053) <102972_854>	26, 4	80%, B, I	C	-	C	*Triticum* sp., Poaceae (*Lolium*/*Festuca*)
[38118] (38119) <102972_858>	38, 4	80%, B, E, I	C	-	C	Triticeae, Vicieae (large seeded)
[38130] (38131) <102972_859>	38, 20	60%, A, E, I	-	C	C	*Triticum* sp. glume bases, *Crataegus monogyna*, Vicieae, Cyperaceae
[38134] (38135) <102972_867>	40, 25	70%, A, E, I	B	-	-	*Triticum* sp. (incl *aestivum*/*turgidum*), Triticeae

Sample code	*Vol. (l. unprocessed, ml. flot)*	*Bioturbation proxies*	*Cereal grain*	*Chaff*	*Charred other*	*Taxa*
[38170] (38169) <102972_863>	36, 15	70%, A, E	C	C	-	*Triticum* sp. grain and *aestivum/turgidum* rachis internode
[38111] (38107) <102972_856>	31, 25	80%, B, E, I	C	-	C	*Triticum* sp., Poaceae, Vicieae
[34908] (34909) <102971_6>	31, 10	90%, C	-	C	C	*Triticum aestivum/turgidum* chaff, Vicieae, indet.
[38023] (38024) <102972_865>	36, 5	40%, C, I	C	-	C	*Triticum* sp., Cyperaceae
[34706] (34707) <102971_4>	20, 10	90%, A (wheat chaff), E, I	C	C	C	*Triticum* sp. grains, *Triticum* sp. glume base, Poaceae grain
[34706] (34708) <102971_3>	40, 20	90%, A, E, I	C	-	C	*Triticum* sp. grain, Chenopodiaceae
[68028] (68029) <102972_173>	42, 15	80%, B	-	-	C	Asteraceae
[68034] (68035) <102972_175>	14, 4.5	80%, C	-	C	-	*Triticum* sp. glume base
[68005] (68007) <102972_170>	30, 20	80%, C, E, I	-	A	C	*Triticum* sp. glume bases, Vicieae
[34606] (34607) <102971_2>	2, 5	50%, A	-	-	C	Indet tissue
Ungrouped samples from evaluation stage						
[6704] (6705) <101402_16>	20, 40	20%	B	C	B	*Triticum* sp. (incl *spelta*) grains and glume bases, *Vicia/Lathyrus*, *Avena/Bromus*, *Rumex* sp., *Poa/Phleum*, stems
[6804] (6803) <101402_17>	20, 50	70%	C	B	C	Triticeae grain, *Triticum* sp. glume bases, *Vicia/Lathyrus*, *Rumex* sp., stems
[7609] (7608) <101402_14>	20, 40	40%	A	A*	B	*Triticum* sp. and *Hordeum vulgare* grains, *Triticum* sp. (incl *spelta* and *dicoccum*) chaff (glume bases and spikelet forks), *Avena/Bromus*, *Rumex* sp., stems
[7906] (7908) <101402_13>	19, 15	20%	-	A	C	*Triticum* sp. (incl *spelta* and *dicoccum*) glume bases, *Avena/Bromus*
[7906] (7909) <101402_15>	10, 5	20%	C	A	B	Triticeae grain, *Triticum* sp. (incl *spelta*) glume bases, *Vicia/Lathyrus*, *Medicago/Trifolium*, *Poa/Phleum*
[21605] (21606) <101407_108>	20, 5	10%, C	C	A	C	*Triticum* sp. grains and glume bases, Triticeae grains, *Avena/Bromus*
[21607] (21609) <101407_109>	20, 10	10%, C, E, I	A	A*	A	*Triticum* sp., *Hordeum vulgare* and Triticeae grains, *Triticum* sp. chaff (glume bases and spikelet forks, incl *spelta*), *Hordeum vulgare* rachis, Poaceae culm and grains (*Avena/Bromus*, *Poa/Phleum*, *Lolium/Festuca*), *Avena* sp. awn, Vicieae, *Rumex* sp., *Linum ussitatissimum* capsule fragment, Cyperaceae, Caryophyllaceae

Note: Only samples with charred plant remains are listed here. The full list of samples is deposited with the site archive. Key: A* = 30–99, A = >10, B = 9–5, C = <5; Bioturbation proxies: Roots (%), Uncharred seeds (scale of abundance), F = mycorrhizal fungi sclerotia, E = earthworm eggs, I = insects.

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The agricultural communities that occupied the margins of the Trent/Derwent/Soar confluence zone in North West Leicestershire during the prehistoric and Romano-British periods form the focus of this volume. Little evidence from earlier prehistory was encountered, although dispersed human remains and a cluster of three burnt mounds have been radiocarbon dated to the Bronze Age. The land was put to work from the Middle Iron Age onwards, with a sudden proliferation of pit alignments, roundhouses, field boundaries and enclosures. None of the Iron Age sites prospered into the Romano-British period, although land use remained broadly the same following the Roman Conquest: mixed cattle and arable farming, with workaday material culture focussed on small enclosures. Despite the evident collapse of the established pattern towards the end of the Romano-British period, several intriguing examples of ancient boundaries persisting into modern field patterns suggest long memories in the landscape.

The development of the SEGRO East Midlands Gateway Logistics Park has led to the archaeological study of some 290 hectares of a previously slightly overlooked corner of the East Midlands. Accounts of the twelve excavated sites are informed and supplemented by specialist analysis of the artefacts and environmental remains they were found to contain. This volume will appeal to all those with an interest in the lives once lived in this ever-changing landscape.

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