Phoenix Consulting Archaeology Limited

Waterlands

Prehistoric Life at Bar Pasture, Pode Hole Quarry, Peterborough

Andy Richmond, Karen Francis and Gary Coates

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with specialist contributions by

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Archaeopress Archaeology

Phoenix Consulting Archaeology Limited

Archaeopress Publishing Ltd
Summertown Pavilion
18-24 Middle Way
Summertown
Oxford OX2 7LG

www.archaeopress.com

ISBN 978-1-80327-152-1
ISBN 978-1-80327-153-8 (e-Pdf)

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... let me tell you

about the Fens

G. Swift, Waterland 1983

The problem of the Fens has always been the problem of drainage.

They ceased to be water people and became land people;

They ceased to fish and fowl and became plumbers of the land.

They joined the destiny of the Fens, which was to strive not for, but against water.

Acknowledgements

Phoenix Consulting Archaeology Ltd would like to thank Aggregate Industries (UK) Ltd for commissioning the project and for their support throughout the excavations. Special thanks are due to Pode Hole Quarry Managers Fred Dooris, Darren Griffiths, James Ward and Estate Managers Tim Claxton, Kirsten Hannaford-Hill and John Penny. Our thanks are also extended to all the quarry staff and plant operators, who facilitated site work.

Phoenix Consulting would also like to thank Dr Ben Robinson (former Historic Environment Manager at Peterborough City Council), and Dr Rebecca Casa-Hatton, Peterborough City Council Archaeologist, for their sound advice and assistance throughout.

Over 70 archaeologists have worked on the site since 2007, too many to mention here, and we are grateful for all their contributions. Most notable amongst the supervisory staff were Kate Bain, Gary Crawford-Coupe, Claire Hallybone, Geoff Marshall and Tony Walsh. Digital surveys were carried out by Mercedes Planas. The project was under the management of Gary Coates and Andy Richmond.

Kathren Henry and Dr Barbara McNee produced the pottery, briquetage and clay artefact illustrations. Marion O'Neil drew the flints. The figures were produced by Karen Francis and Gary Coates.

Summary

Between 2006 and 2017, staged archaeological investigations were undertaken on land at Bar Pasture Farm, Pode Hole Quarry, Thorney, Peterborough. The work was conducted on behalf of Aggregate Industries (UK) Ltd in fulfilment of an archaeological Planning Condition relating to the permitted 'Bar Pasture Extension' of the existing sand and gravel quarry. During this time, ten consecutive excavation phases (1-10), were conducted in advance of their respective quarry phases in accordance with an approved scheme of archaeological works (Richmond 2006). The investigations consisted of so-called 'strip, map and sample' excavations across the 55 hectare quarry.

The earliest record for a human presence on the Site is of Mesolithic date, merely represented by a handful of residual flint tools. These artefacts bear witness to the brief, transient activity of hunter-gatherers visiting the fen-edge landscape up to 9000 years ago. The earliest dated feature on the Site is a substantial and extensive waterhole complex that was established during the Early Neolithic period. The general location of this feature, being a 'watery place', appears to have remained in sporadic use during the subsequent Late Neolithic, Beaker and Early Bronze Age periods and may have been used for the votive deposition of pottery vessels. A short distance from the waterhole complex were identified a number of pits containing Grooved Ware and Beaker pottery. Several groups of pits elsewhere on the Site appeared to be associated with the scant remains of suggested Beaker buildings.

During the Early Bronze Age proper, a number of large circular burial mounds were constructed within a dedicated 'Barrow Field'. These formed part of the much more extensive monumental landscape of barrows that is known to have extended all along the fen edge at this time. One barrow contained a crouched infant with accompanying grave goods. Significantly, the body had been carefully placed on a square piece of birch bark, which may have once been a wrapping or container. Traces of early 'precursor' boundary ditches dating to this period provide tantalising evidence for an avenue, a walkway and a central entrance into the sacred burial area, all reminiscent of a processional way. Three small, unelaborate huts in this area may have provided shelter for the barrow-builders.

The Middle Bronze Age saw the re-organisation of the whole landscape by the creation of an extensive, rectilinear field system of over 80 field plots of various sizes, served by multiple droveways and associated with a classic enclosed farmstead. Despite these significant landscape modifications, it appears that the earlier Barrow Field was still considered to be of importance in the landscape, and was revered. The field system evolved throughout the Middle Bronze Age, becoming more established and formalised toward the end of this period. It encompassed the whole of the Bar Pasture landscape and beyond, only petering out (or perhaps subsequently eroded), to the south and SE, where the no doubt brackish waters of the fen proper encroached repeatedly during numerous Bronze Age marine incursions.

The field system, probably reinforced by raised banks and hedgerows, was supplemented by numerous large sump pits and waterholes. These enabled the fields to be drained but also provided water for livestock. The well-defined droveways connected different parts of the field system and facilitated the seasonal movement of herds to and from the lush grazing land of the fen edge.

The enclosed farmstead with its two large round-houses was the most substantial evidence of sedentary settlement activity during this period of fen-edge exploitation. In addition to the settlement enclosure were at least seven further unenclosed round-houses scattered across the Site, most containing hearths, domestic pottery and evidence for crop processing activities.

During the later Middle Bronze Age, the careful placement of cremation burials within the remains of earlier burial monuments bears witness to the intimate connection of this small community to their ancestors' sacred landscape. Contemporary secular activity is evident in the form of domestic pits containing pottery, clay weights and briquetage, the latter suggesting salt importation from nearby salterns.

By the Late Bronze Age, farming activity and settlement had 'condensed' into marginally higher parts of the landscape. This was almost certainly due to the final marine incursion of the early first millennium BC, which inundated the land to the east of Willow Hall Lane with brackish waters, rendering it unsuitable for settlement. Lower-lying fields were reduced to marginalised wetland and saltmarsh at this time, suitable only for hunting, fishing and fowling.

By the 4th century BC, settlement was all but abandoned, most likely due to the ever-encroaching waters. On the western side of the Site, however, two discrete pockets of Early La Tène Iron Age activity were identified. The first - slightly earlier, relates to pit-digging activity and the construction of a timber shelter on the Site's NW boundary. The second area of activity was far more significant, being represented by a small ditched enclosure containing a circular 'smithy hut', positioned close to the SW tip of the former field system. Here iron smithing and copper-alloy working were carried out over a considerable time. The metalworking complex represents the latest activity that was identified on the Site. Bar Pasture's archaeological chapter is closed by the discovery of a single abraded Roman pottery sherd; an outlier of the recently identified Roman activity on the more elevated land to the west of Willow Hall Lane. As the fen marsh took hold, the ancestral lands of Bar Pasture were abandoned to the elements, not to be reclaimed until the drainage schemes of the post-Medieval period were enacted two thousand years later.

Chapter 1

Introduction

Background to the Project

This monograph presents the results of archaeological investigations carried out at *Aggregate Industries (UK) Ltd's* Bar Pasture Extension to their Pode Hole Quarry, Peterborough, between the years 2006 and 2017 (Figure 1). The quarry extension was granted planning permission in 2005, and incorporated ten phases of working (centred on NGR TF 258 028). The extension works followed on from archaeological investigations across the original quarry during the years 1996-1997 (Cuttler and Ellis 2001) and 1999-2005 (Daniel 2009).

Prior to investigations, the Bar Pasture Extension comprised eight intensively farmed arable fields, bounded by drainage ditches and dykes, with sporadic belts of trees and copses in the vicinity. Barlees Fen, Chicell's Hurst Fen, Gores Fen and Guy's Fen all lie either to the south or east, and a minor C-class road known as Willow Hall Lane forms the western boundary. The A47, connecting the settlements of Eye and Thorney, lies 0.5km to the north. The only residential property close to the Site is Bar Pasture Farm, at the extreme SW corner. The Bar Pasture landscape is flat, rarely rising much above sea level and is situated in the part of the Cambridgeshire Fens known as the 'North Level'.

The archaeological potential of the Bar Pasture Extension was initially investigated by a detailed programme of field evaluation, including two desk-based assessments (Albone 2002; Gibson 1996), an aerial photographic survey (Palmer 2002), an archaeo-geophysical assessment (Taylor 2002), a fieldwalking exercise (Malone 2003) and a trial trench investigation (*ibid.*). These earlier works allowed for a good understanding of the archaeological character of the Site and its surrounds.

Project Aims

The quarry extension expanded intermittently over the space of eleven years, via a number of 'extraction areas' or quarry phases (Figure 2). The archaeological investigation of each of these took place immediately prior to its quarrying.

Plate 1 The Bar Pasture Extension, looking SE towards the fen edge (Phases 1-5 being worked) (courtesy of Aggregate Industries (UK) Ltd).

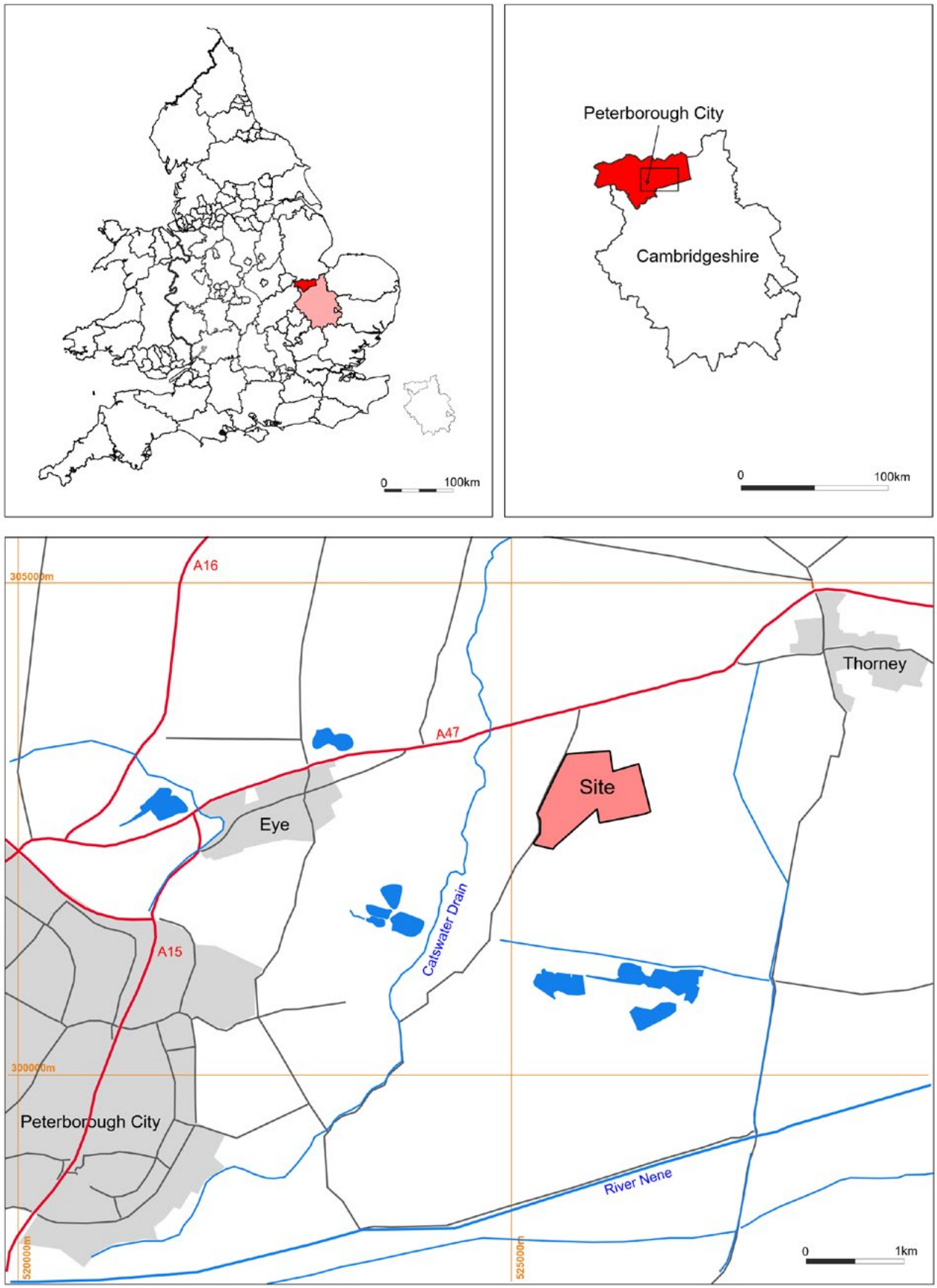

Figure 1 The Bar Pasture Extension, Pode Hole Quarry. Site Location.

A number of key aims were identified at the start of the project and these remained pertinent throughout the progression of the project; although were reviewed throughout the works. These principal research themes are summarised below:

1. Expand the current knowledge of patterns of fen-edge exploitation and settlement at different periods;
2. Explore the transition from the Late Neolithic and Early Bronze Age monument-dominated landscape to the Middle Bronze Age field landscape;
3. Determine the main orientation and spatial pattern of the field system;
4. Elucidate the relationship between the Bar Pasture Extension field system and the field systems previously identified at Pode Hole Farm and the nearby Tower's Fen;
5. Investigate the relationship between the field system and its antecedents.

Methodology

Excavation and recording

Mitigation work in the form of 'Strip, Map and Record' excavations was conducted in advance of the ten quarry phases. Topsoil removal within each phase was carried out under permanent and direct archaeological supervision, with topsoils and often subsoils removed using suitable tracked excavators fitted with wide bladed buckets (Plate 2). Before detailed investigations commenced, each Extraction Area was hand cleaned and digitally planned using Leica GPS. The excavation areas and all spoil were checked and scanned for finds using a metal detector. Targeted features and deposits were then excavated in accordance with the approved *Specification for Archaeological Investigation* (WSI) and the project's developing research aims (Richmond 2006). All archaeological features were investigated by hand unless otherwise agreed with the County Archaeological Advisor. For example, excavation of some of the Site's enormous and deep waterholes was facilitated by the judicial use of machine.

The excavation sampling strategy required a moderately low level of investigation of the long lengths of field ditch (between 2% and 5% by volume), but higher levels on discrete features of importance (up to 100% by volume). All physical relationships between intersecting features were also examined. Most pits containing burning or significant waterlogged remains were fully excavated by hand, whilst the Site's ubiquitous field ditches were largely sampled at terminals, intersections and various mid-points along their length. Apparent interruptions in field system ditches also formed a focus for investigation, in order to ascertain whether these were deliberate (as in the case of entrances), or the result of truncation by ploughing.

Plate 2 Machine removal of topsoils across the Site.

All ring-ditches were excavated, with a minimum of 50% of the circumference removed by hand. Potential archaeological features within the circuit and exterior radius of each ring-ditch were 100% investigated in order to check for associated burials or other associated funerary features. All potential waterhole pits were at least 25% hand-dug, although if well preserved organics or finds assemblages were recovered, excavation of these features was expanded to a minimum of 50%, and in most cases 100% of their fills. All anaerobic lower fills were 100% hand dug, with samples taken for palaeoenvironmental analysis.

Environmental sampling strategy

Environmental sampling was particularly focused on the deeper anaerobic fills of waterholes and quarry pits, where soil conditions were most conducive to organic preservation (Plate 3). Extensive sampling also took place on any features containing visible charcoal-rich deposits. In addition, pit and ditch fills found to contain rich artefactual or bone assemblages were all sampled, as were any potential cremation features. The aim was to retrieve a site-wide sequence of samples with the potential to elucidate the nature of, and changes in, the local environment and the human exploitation of that environment. By complementing the samples taken from stratified, artefact-bearing deposits with radiocarbon dates, the aim was to place this information within an absolute chronological framework. All sampling was carried out in accordance with guidance received from the project's environmental specialists.

The detailed excavation results from the ten quarry phases, including specialist methodologies and reports, have previously been presented in four successive interim reports that were produced during the lengthy investigations at three-yearly intervals:

Plate 3 Environmental sampling of a Bronze Age waterhole.

- Quarry Phase 1: 13.5 ha. centred on NGR TF 2580 0310 (Richmond *et al.* 2010);
- Quarry Phases 2-5: 13 ha. centred on NGR TF 2545 0270 (Richmond *et al.* 2013);
- Quarry Phases 6-8a: 11 ha. centred on NGR TF 2580 0310 (Francis *et al.* 2016);
- Quarry Phases 8b-10: 17 ha. centred on NGR TF 2640 0309 (Francis *et al.* 2019).

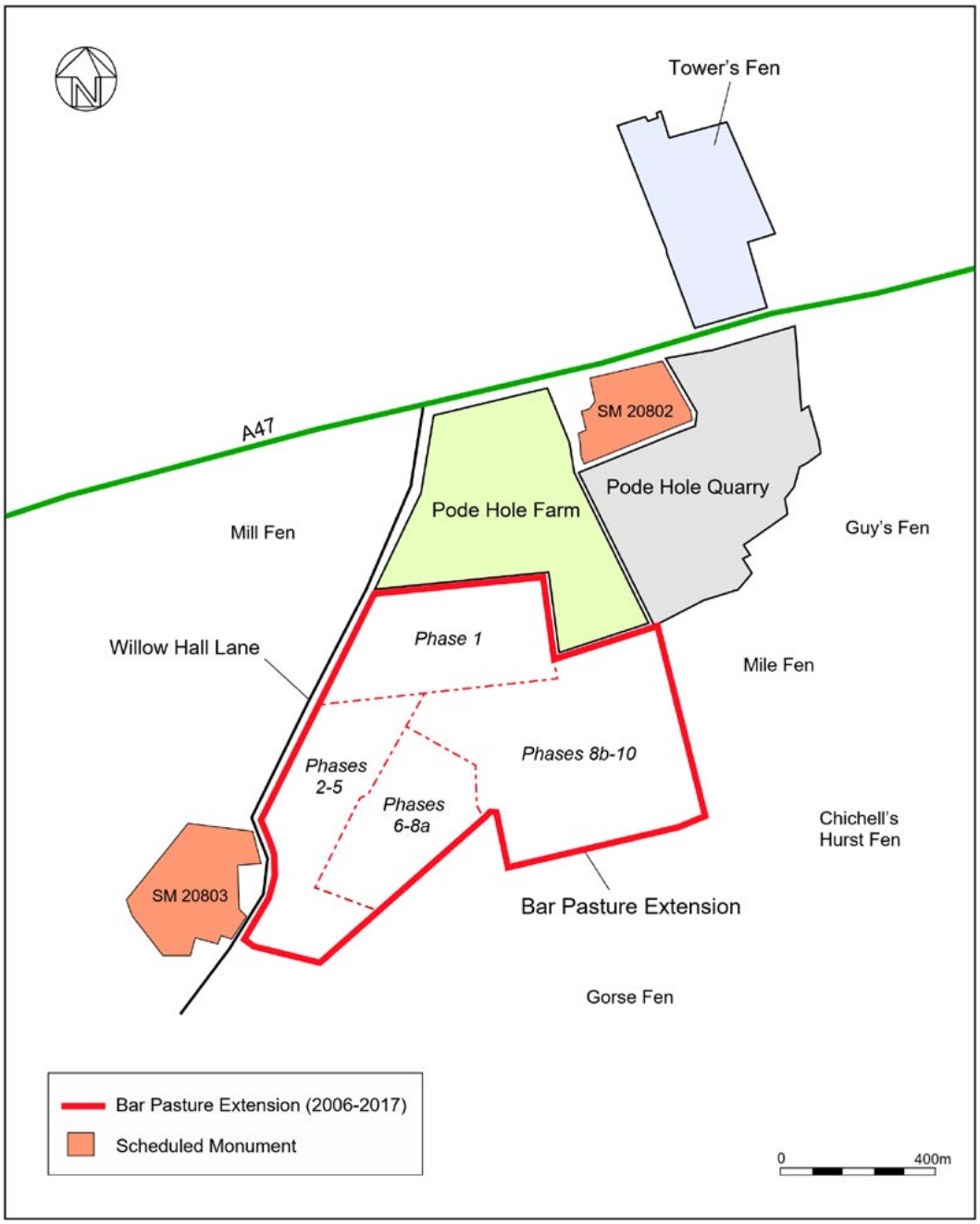

Figure 2 The quarry extension area detailing quarry phases.

Report Structure

This monograph presents the most significant findings of the 10-year Bar Pasture Extension excavations. The Site's archaeological remains from all ten quarry phases have been considered collectively and are reported on chronologically. This volume makes minimal references to the individual extraction areas or quarry phases (Figure 2). These can largely be discerned by the prefix of their respective context numbers – for example, [5000] relates to a feature excavated in Quarry Phase 5; [8000] to a Quarry Phase 8 feature, etc. To avoid any confusion, all archaeology is described in terms of chronological *Periods*.

The most significant fieldwork results are presented chronologically under Chapter 3. Chapters 4, 5 and 6 present specialist descriptions and analyses of the artefactual evidence and environmental and human remains. Chapter 7 draws all of this evidence together and considers the use and development of the Site throughout successive periods, as demonstrated by its archaeological features, material culture and environmental deposits. The results are considered within their wider archaeological, geographical and environmental contexts.

Chapter 2

The Project Area

The Landscape Context

The Bar Pasture landscape is flat, rarely rising much above sea level. It is situated in the part of the Cambridgeshire Fens known as the 'North Level', within the watershed of the River Nene. The surrounding landscape is largely flat and low-lying, with arable agriculture being the dominant land use. Prior to the commencement of large-scale drainage in the 17th century, the fens were a boggy reed-swamp, whose margins shifted over time, and provided an uncertain interface between land and water. Permanent occupation was only possible on a series of low sand and gravel 'islands', with the shifting and winding creeks between them providing the easiest transport routes.

The low-lying fenland basin was particularly susceptible to changes in sea level, with marine incursions leading to sedimentation and consequent peat growth. On the landward side of the fens, this caused freshwater flooding and alluvial aggradation followed by further peat growth, as rivers debouched into peat swamps where previously there had been sea. These complex geophysical processes made for a particularly transient landscape and an intricate geo-archaeological record (French and Pryor 1993).

Two major marine incursions are associated with the Bronze Age. The first, of the earlier second millennium BC (Early Bronze Age), was responsible for the deposition of the 'Fen Clay' Barroway Drove Beds. An embayment relating to this event has been mapped approximately 300m east of the Site, indicating that Bar Pasture occupied a fen-edge location at this time, with salt marsh not far to the east (Hall 1987: fig. 30).

The initiation of peat growth by the mid-second millennium BC (Middle Bronze Age), caused by this marine disruption, is evident in the low-lying Borough Fen and Flag Fen basins. At Bar Pasture, peat was commonly observed in the upper fills of cut features (Plate 4) where it had survived, in a somewhat desiccated state, slumped into subsiding archaeological features below the level of modern ploughing.

There is ample evidence for the abandonment of Middle and Late Bronze Age fen-edge fields in the lower valleys of all the major regional rivers - Maxey and Welland Bank in the Welland, Fengate in the Nene, and Barleycroft Farm and Over in the Great Ouse. The pattern is the same at Bar Pasture, where the evidence shows that occupation and associated farming activities became very localised towards the close of the second

Plate 4 Typical view across the site, with darker archaeology (often represented by later peat in the subsided fills of earlier features) showing up against the orange gravel substrate.

millennium BC (Late Bronze Age), with only a few discrete parts of the field system still being used and reinforced.

The fens around Thorney were subject to another major marine incursion that occurred around this time, between the end of the second millennium and the start of first millennium BC. This resulted in the deposition of the 'Upper Barroway' Drove Beds under salt marsh conditions. As a result, it seems likely that only `islands' over 2.5m OD would have been dry enough for settlement by this time (French 2003: 150). The Bronze Age landscape appears to have quickly gone out of use, as existing field systems periodically flooded and silted over, resulting in enforced abandonment. The Site's inhabitants appear to have first 'condensed' to the few areas of slightly higher ground, ultimately moving to drier lands further west. Following their retreat from the land, these lower-lying areas slowly became engulfed in peat.

The land at Bar Pasture Farm was particularly susceptible to these changes, due to its low elevation and location on a fen-edge embayment to the SW of Thorney Island. During the later prehistoric period, open fenland and a complex system of roddons lay to the south and SE of the Site (Hall 1987: Fig. 30). From a maximum height of 1.5m above OD, the land dipped gradually to the east and SE to meet the fen at just below the 1m contour. The slight elevation of the Site, which ultimately linked it to the 'high ground' of the Eye Peninsula to the SW, was crucial in that it enabled at least seasonal occupation. It is all too easy to underestimate the importance of the slightest topographical variation within the fens: 'Highlands' and 'Hill Farm,' marked on the modern OS map, once part of Thorney 'Island', lie at just 6m above OD.

The Site thus occupies what was once 'skirtland', a term used for slightly elevated land on the western margin of the fen that was occasionally influenced by peat growth and/or flooding (French and Pryor 1993). Skirtland has been characterised as open flood-meadow, fringed by Carr woodland and punctured by embayments of reed-swamp (French 2003: 100, 148). Prior to modern drainage schemes, the western fen edge was delineated by the Catswater Drain, which lies 700m due west of the Site.

The Geological Context

The underlying solid geology of the Site and surrounding area is Oxford Clay Formation (Mudstone), a Sedimentary Bedrock formed approximately 157 to 166 million years ago in the Jurassic Period. This is overlain by gravels of the March Series and patches of Boulder Clay. These were laid down during the last interglacial, about 120,000 years ago.

Above the gravels is a thin (*c.* 0.5-1m) deposit of silty clay that has been interpreted as either a pre-Flandrian alluvium, or as a soil resulting from the weathering of an ancient ground surface (French and Pryor 1993: 6; Hall 1987: 48). This semi-permeable horizon makes the ground somewhat slow draining, despite the thick layers of gravel that underlie it. The majority of archaeology recorded on and around the Site directly overlays, or cuts into this clay horizon.

Prior to the installation of modern drainage, permanently wet conditions encouraged the development of peat across the Site, although subsequently most of this has been lost through drying and erosion. Soils across the southern part of the Site are fine, deep loams of the Shabbington Association. Towards the NE, these merge into coarser loam soils of the Ireton Association.

Implications for Archaeological Survival

Many of the nearby fen-edge sites, particularly those located to the east, benefited from protection in the form of blanketing layers of river or marine sediments. Earlier excavations at Pode Hole Quarry showed that this was not the case for that site, nor indeed for the Bar Pasture landscape, which are both elevated beyond the limits of such deposits as the Upper Barroway Drove Beds and the Later Terrington Beds (Daniel 2009: 6). At the bordering Pode Hole site, prehistoric archaeological features overlay, or were cut into, the predominantly grey pre-Flandrian gravels and silts which lay directly beneath the shallow modern ploughsoils. Consequently, the archaeology was vulnerable to both truncation by modern plough action and erosion.

The large-scale drainage schemes of the post-Medieval period have also had a significant impact on the archaeology of the Bar Pasture Extension. Remnants of peat found in isolated pockets beneath the ploughsoil bear witness to the once extensive organic deposits that covered the fen edge, prior to shrinkage and wind erosion. Such deposits would have formed during episodes of seasonal waterlogging and perhaps, longer episodes of inundation. Ground surface truncation and dewatering have therefore both had significant detrimental effects on the Site's archaeological resource.

The Archaeological Context

The Cambridgeshire Fens have been the focus of much previous work, and many sites in the vicinity have been intensively examined, not least in and around the Flag Fen Basin (Bamforth 2010; Pryor 1978a, 2001, 2005). Due to the expansion of Peterborough, and the presence of an active aggregate quarrying industry, large areas of the surrounding landscape have been investigated, providing an extensive view of the archaeological

resource (Daniel 2009; Mudd and Pears 2008). Several syntheses of the changing archaeology and landscape of the area have also been produced, under the aegis of the Fenland Survey (Hall 1987, 1992; and Coles 1994; Healy 1996); and in relation to the Fengate excavations to the SW (Evans *et al.* 2009). These works, and others (Coles and Hall 1998; French 1991; French and Pryor 1993; Gater 1991; Lane and Morris 2001; Pickstone and Mortimer 2011; Waller 1994), have allowed the results from Bar Pasture Farm to be presented in the context of an already detailed narrative of human activity within the changing archaeological landscape of the fens (Figure 3).

The evidence found to date shows that the resource-rich fen edge was a favoured location for both settlement and farming, and was exploited in varying degrees throughout successive periods from the Mesolithic period onwards. The following section provides a summary of the archaeological evidence for prehistoric activity and land-use in the vicinity of the Bar Pasture Extension.

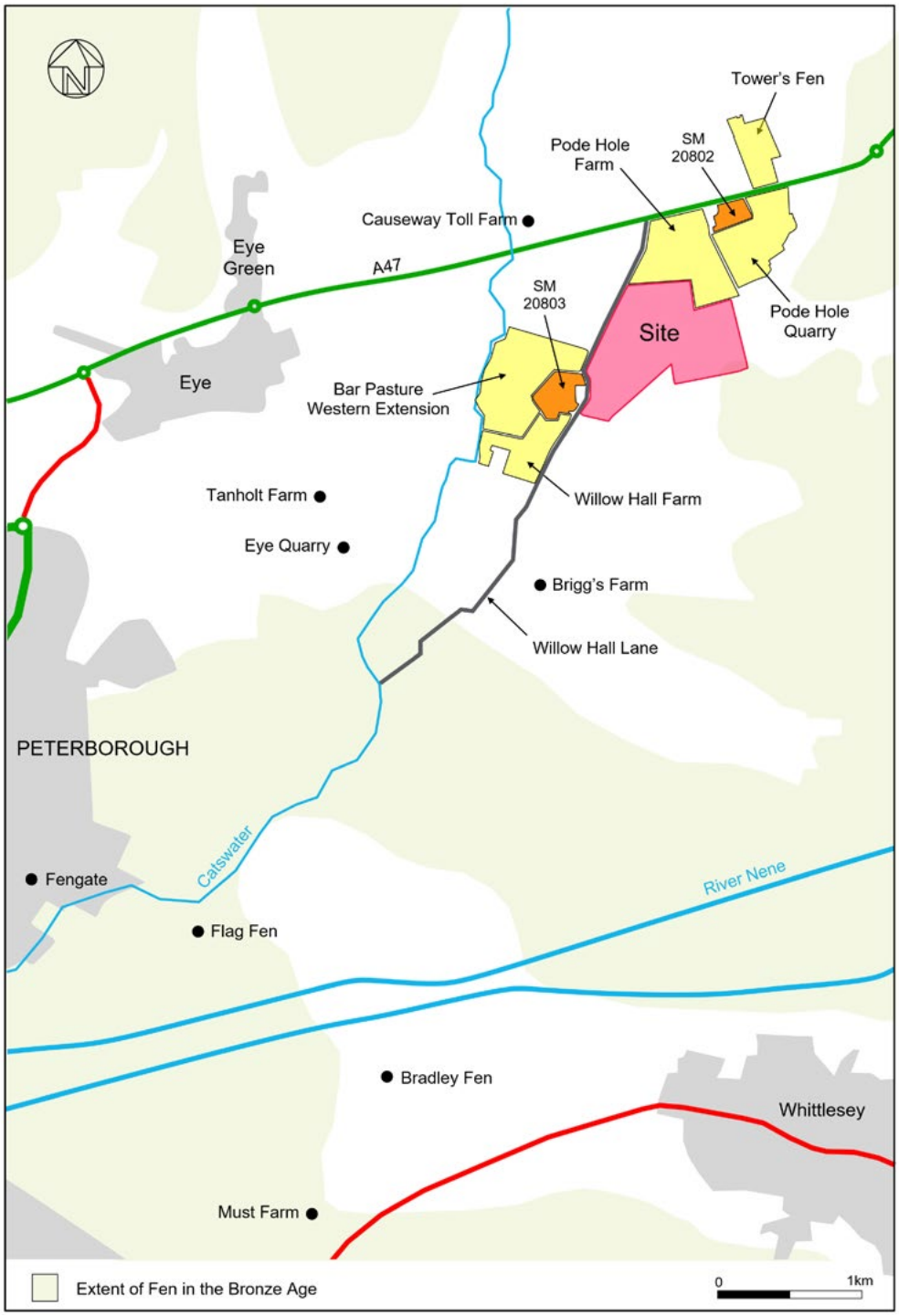

Figure 3 Bar Pasture Extension in relation to other fenland sites discussed in text.

Palaeolithic and Mesolithic (c. 40000-3500 BC)

The fossil remains of Pleistocene fauna have been recovered from the gravels at Pode Hole Quarry to the north. Mesolithic evidence in the locality is confined to the discovery of occasional lithic scatters and residual flint blades (Daniel 2009: 7), and a microlith assemblage recovered from Thorney Parish (Malone 2003: 2). The scarcity of Mesolithic material is probably due to the presence of later fen deposits, including alluvium and marine silts, that cover much of the Site and surrounding area and thicken markedly in the east (Gibson 1996: 2).

Neolithic (c. 3500 - 2200 BC)

During the Neolithic period, the Site occupied dry land, close to the edge of extensive marshland to the east (Malone 2003: 2). In 1983, the Fenland Archaeological Trust recorded part of an oak timber trackway on Guy's Fen to the NE of the Site. The trackway, which was sealed beneath the clays of the Barroway Drove Beds, was dated to the Late Neolithic or Early Bronze Age period.

Close to the Site, evidence for this period is limited to a handful of lithic findspots, with dated Neolithic features absent from both the nearby sites of Pode Hole Quarry (Daniel 2009) and Tower's Fen (Mudd and Pears 2008). At Brigg's Farm on Prior's Fen, 2.5km south of the Site, slight Neolithic occupational evidence was present in the form of flint scatters, small pits and finds within tree-throws; a small number of Beaker pits were also present (Pickstone and Mortimer 2011). Further afield, to the NW, a 'ritual landscape' of monuments is recorded at Maxey (Pryor 1998). The internationally important Neolithic/Bronze Age site of Flag Fen lies 6km to the SW (Pryor 2005).

Bronze Age (c. 2200 - 800 BC)

It is somewhat misleading to distinguish between the Neolithic and the Bronze Age when considering the archaeology of the fen edge, as a period of continuity between the Late Neolithic and the Early Bronze Age is well-represented in the local archaeological record.

The earliest features at Tower's Fen and Pode Hole Quarry were of Early Bronze Age date. At the latter site, excavations recorded three barrows, one of which was cut by Middle Bronze Age pits (Cuttler and Ellis 2001; Daniel 2009). No central burials were discovered however, suggesting that the monuments had suffered from the detrimental effects of 20th century ploughing. The barrows were aligned with the fen edge, marking the northern side of the embayment. Bronze Age burial sites such as these are found more commonly along the fen edge than are domestic settlement sites, with several barrow groups recorded between Thorney and Eye. South of the Site at Brigg's Farm, extensive Early Bronze Age remains included Collared Urn pits and a barrow with three associated cremations and one inhumation (Pickstone and Mortimer 2009). Three further isolated cremation burials, including one placed in a large urn were also discovered.

Earlier work at Pode Hole Quarry and Tower's Fen found that an Early Bronze Age funerary landscape dominated by barrows was replaced in the Middle Bronze Age by an extensive managed field system with associated waterholes (Daniel 2009; Mudd and Pears 2008). No dated contemporary settlement structures were found at these two nearby sites, but pit concentrations, a possible round-house and the presence of artefacts, charred seeds and hearth material leave little doubt that settlement occurred there.

The extensive Middle Bronze Age field system identified at these sites has been shown to continue across the whole Bar Pasture Extension (Plate 5). The landscape appears to have been established primarily for the management of livestock, although evidence shows that arable cultivation was also practiced to some degree. The field system consisted of regular and semi-regular blocks of sub-divided land with staggered entrances for the controlling of animals and smaller openings for people to access. Groups of large pits were identified in the corners of several of the field plots, suggesting temporary activity zones. Their function is not certain, but they are most likely to have been excavated to access and store fresh water. Of great importance were a network of droveways, which functioned to both divide and access different parts of the field system; possibly in association with different family groups or tribes living in close proximity.

Continuing south along the fen edge, comparable Bronze Age field systems have been identified at Eyebury (McFadyen 1999), Fengate (Beadsmoore 2005 and 2006; Evans *et al.* 2009; Pryor 2001), Briggs Farm (Pickstone and Mortimer 2009), Bradley Fen (Knight and Gibson 2006), and Must Farm (Evans *et al.* 2005). The latter two sites, part of Whittlesey 'Island' located *c.* 10km SSW of Pode Hole, provide exciting evidence regarding the nature of domestic settlement during this period. Large-scale Bronze Age land enclosure also extended north around the fen edge into Lincolnshire at Welland Bank (Archaeological Project Services 1996) and Rectory Farm, West Deeping (Savage 2008), Stowe Farm (Kibberd 1996), Langtoft Quarry (Hutton and Dickens 2010) and Billingborough (Chowne *et al.* 2001). Only at the northern limit of the fens does this pattern of enclosure and settlement diminish (Yates 2007: 84).

Several sites in the wider landscape show evidence of an increase in intensity of occupation and land division

Plate 5 Bronze Age field plots and pitting showing up clearly following the soil strip. The straight ditches are post-Medieval marl trenches. Plough scaring is also clearly visible.

during the early part of the Late Bronze Age. However, by the Late Bronze Age proper, climatic deterioration and rising water-levels rendered low-lying parts of the fen edge subject to periodic flooding and increasingly hostile to permanent occupation, with many areas suitable only for hunting, fishing and foraging. It is against this backdrop that the celebrated platform at Flag Fen, with its rich assemblage of votive objects, came to be built (Pryor 2001).

A mid-second millennium BC initiation of peat growth caused by the marine influx and disruption to the drainage system has been recorded in the low-lying Borough Fen and Flag Fen basins to the south and east. There is ample evidence for Late Bronze Age fen-edge fields being abandoned in the lower valleys of all the major rivers – Maxey and Welland Bank in the Welland, Fengate in the Nene, and Barleycroft Farm and Over in the Great Ouse. This pattern has proved to be much the same at Pode Hole Quarry, where the phenomenon has been archaeologically recorded. By the early first millennium BC (Final Bronze Age/ Early Iron Age), the fens around Thorney were subject to a final major marine incursion resulting in the deposition of the Upper Barroway Drove Beds under saltmarsh conditions. As a result, it is probable that only 'islands' of land over *c.* 2.5m OD would have been dry enough to sustain settlement at this time (French 2003: 150).

Iron Age (800 BC - AD 43)

Despite the extensive flooding that occurred during this period, evidence from Bar Pasture and the surrounding landscape shows that settlement did persist, albeit in small pockets focused on the slightly elevated land above the expanse of fenland. To the immediate west of the Bar Pasture Extension are the Scheduled remains of an Iron Age and Romano-British Settlement located on a slight gravel terrace (SM No. 20803), (Figure 2). Iron Age activity has also been recorded at Eyebury Quarry, 2km to the SW (Gibson and White 1998), and at Fengate, where up to 55 round-houses and huts were excavated at the Catswater site (Pryor 2005: 166).

Roman (AD 43-410)

Up until 2018 (when a large Roman *Villa Rustica* within a pentagonal enclosure and associated field system was excavated to the west of Bar Pasture Farm - Mustchin and Richmond 2020), little Roman archaeology had been recorded in the immediate surrounding landscape. Indeed, the only Roman artefacts identified were a fired clay roof tile fragment from the neighbouring Pode Hole Quarry excavations and a single abraded pottery sherd from a field plot within the Bar Pasture Extension. The remains of a Romano-British villa with an associated field system were identified at Eyebury Quarry, 1.5km west (McFadyen 1999; Patten 2004). Scatters of Roman pottery near Willow Hall Farm and elsewhere in Eye Parish also attest to probable Roman farmsteads on areas of slightly elevated land.

Under the auspices of Roman occupation, infrastructure projects were installed in the wider landscape. These may have included the canalisation of the Catswater drainage dyke to the west, which Hall (1987) attributes to the Saxon period, and the Fen causeway road which was built across Flag Fen to the south.

Anglo-Saxon / Early Medieval (AD 410-1066)

There is no evidence of archaeological activity in the area of Anglo-Saxon or 'early Medieval' date (AD 410-1066). Much of the area had become a shallow fen and uninhabitable during this period. Only the gravel island of Thorney was dry. It is probably a testament to the

remote and inhospitable nature of the surrounding landscape during this period that Thorney attracted a small Late Saxon anchorite hermitage. This foundation was sacked by Danish raiders in the 9th century AD, and the island reverted to the uninhabited wasteland hinted at by its place-name evidence - 'Thorney' meaning 'thorn island'. However, the location presumably retained some spiritual importance, as in AD 972 St Aethelwold established a monastery here.

Medieval (AD 1066 – 1600)

Thorney Abbey flourished during this period, and became one of the great 'Fen Five' monasteries (along with Crowland, Ely, Peterborough and Ramsey). The Bar Pasture project area lay within the extent of Thorney's monastic estate, and the occupants probably carried out drainage works during this period.

Thorney Abbey was surrendered in 1539 during the Dissolution. Excavations there have uncovered a vivid scene of the physical dismantling of the abbey, with fragments of decorative masonry being used as hearth bases for the smelting of lead 'robbed' from stained glass windows (Thomas 2006). Following the Dissolution, Thorney and the abbey estates passed into the ownership of John Russell, the first Earl of Bedford.

Post-Medieval (AD 1600s -present)

No archaeological evidence for post-Medieval occupation has been recorded on, or bordering the Site, suggesting that it lay virtually abandoned and uninhabited during the early part of that period. Manorial records from the 16th and 17th centuries document 16,000 acres of fen around Thorney that were seasonally flooded, with sedge, flag and reed beds, and willow and alder woods (Bedfordshire Records Office, Russell Collection, cited in Thomas, op. cit.). Similar damp conditions probably prevailed on the Site at this time.

Such conditions were not to last however. Much of the land around Thorney was systematically drained in the 17th century via an entrepreneurial partnership between the Duke of Bedford and Sir Cornelius Vermuyden. Ordnance Survey maps from the late 19th century show Bar Pasture and Pode Hole farms with their drainage dykes and field boundaries, much as they appeared at the commencement of quarrying at the end of the 20th century, with former wetland reclaimed and replaced by intensively farmed arable land. Modern agricultural practices in the region are so intensive that they are eroding buried archaeological remains at an alarming rate. It has been suggested that cropmarks are so well defined in the area because their features are so close to the ground surface, partially within the ploughsoil.

Chapter 3

The Excavations

Summary

The Site's earliest record of human activity is of Mesolithic date, but this is merely represented by a small number of residual flint tools left by hunter-fisher-gatherers. It was during the Early Neolithic period that the first potential sedentary activity occurred at Bar Pasture. Evidence of this is provided by an extensive waterhole complex that appears to have been used for the ritual deposition of pottery vessels during this, and subsequent periods.

Final Neolithic to Early Bronze Age Beaker Culture is apparent from 'Beaker' pottery sherds found in association with discrete pit groups, dispersed pits and possible Beaker structures, including at least four buildings. Three of these appeared as small post-built structures, but one was a larger, rectangular building associated with pit groups containing what are described as 'intentional deposits'.

The Early Bronze Age proper saw the creation of a number of substantial burial mounds that formed part of an extensive fenland monumental landscape. The Bar Pasture monuments appear to have been constructed within part of a dedicated 'Barrow Field' delineated by avenues or walkways into a designated sacred area.

Plate 6 Early Bronze Age barrow within the Barrow Field.

During the Middle Bronze Age, the Bar Pasture landscape was extensively organised and divided into an all-encompassing, rectilinear field system associated with a classic enclosed farmstead. Despite the significant landscape modifications made during this period, the earlier Barrow Field appears to have been respected, and was not closely encroached upon; either by field ditches, or habitation structures. The field system, composed of over 80 discrete fields, evolved throughout this period, and evidence for supplementary ditch digging and concerted recutting is evident within specific parts of the field system towards the latter part of this period.

The field system was furnished with large numbers of sump pits and waterholes, with one large and unique example (potentially having originated as a natural waterhole or pond) having suggested Neolithic antecedents. Such features enabled drainage of the land and also allowed for the collection and storage of water for livestock.

Towards the end of the Middle Bronze Age, a central part of the field system saw the creation of a reinforced enclosure with contemporary domestic dwellings containing hearths, rubbish pits and evidence for crop-processing activities. At the time this very localised activity area was in use, two small cremation cemeteries were established within the remains of two Early Bronze Age burial monuments, revealing that these small communities were intimately connected to the landscape of their ancestors.

Towards the close of the Bronze Age, farming activity and settlement had condensed further into the central-eastern part of the Bar Pasture landscape. During this period, two earlier fields, both situated on marginally higher ground, were reinforced by the digging of new ditches to form double-ditched enclosures, possibly in an attempt to fend off the rising waters. Such activities may have lasted no more than a generation, before abandonment.

Following this, it was not until the early 6th century BC that settlement and associated activities resumed on specific parts of the Site. This was evident from two discrete areas of Early La Tène Iron Age activity – one located on the Site's western boundary; the other, an enclosed smithy complex, being established further to the south. The Middle to Late Iron Age smithy represents the latest prehistoric activity on the Site.

PERIOD 0: MESOLITHIC (c. 9000 to 3500 BC)

The earliest human presence on the Site is of Mesolithic date, being represented by 19 unstratified flint tools found within later features. The comparatively large

Figure 4 All excavated features and identified field plots.

PERIOD	DATE	ASSOCIATED CERAMIC PHASE (CP)
Period 0. Mesolithic	***c.* 9000 to 3800 BC**	N/A
Period 1. Early to Late Neolithic	***c.* 3800 to 2000 BC** (1A: 3636-3382 cal BC) (1B: *c.* 3400-2500 BC) (1C: 3000-2000 BC)	**CP1A:** Plain Bowl **CP1B:** Impressed/Peterborough Ware **CP1C:** Grooved Ware (not by itself in this assemblage)
Principal Features – Waterholes, pits		
Period 2. Final Neolithic to Early Bronze Age	***c.* 2400 to 1600 BC** (2A: 2282-1918 cal BC) (2B: 1916-1640 cal BC)	**CP2A:** Grooved Ware; Beaker (Final Neolithic/Early Bronze Age) **CP2B:** Food Vessel; Collared Urn; Biconical Urn (grog-tempered fabrics), (Early Bronze Age)
Principal Features - Beaker pits, pit groups, ring-ditches / barrows, potential domestic structures		
Period 3. Middle Bronze Age	***c.* 1600-1100 BC** (3A: 1623-1463 cal BC) (3B: 1400-1130 cal BC)	**CP3A:** Grog-tempered Deverel Rimbury vessels (Early Middle Bronze Age) **CP3B:** Shell-gritted Deverel Rimbury cremation urns (Late Middle Bronze Age)
Principal Features - Field plots, farmstead enclosure, stock pens, waterholes and sumps, domestic structures and cremations		
Period 4. Late Bronze Age to Early Iron Age	***c.* 1100-500 BC** (4A: *c.* 1150-800 BC) (4B: *c.* 800-500 BC)	**CP4A:** Post-Deverel Rimbury Plainware Late Bronze Age: shouldered jars, ovoid jars, long-necked jars **CP4B:** Late Bronze/Early Iron Age: shouldered bowl, medium-short necked bowl, long-necked bowl; red-slip shouldered jar, jars with small bases
Principal Features – Pits, waterholes, Structure 14, ring-ditch, reinforcement of ditches		
Period 5. Middle to Late Iron Age	***c.* 500-50 BC** (5A: 511-207 cal BC) (5B: 350-53 cal BC)	**CP5A:** Early La Tène Iron Age 1: round-bodied necked jar decorated with finger-tip impressions on upper girth, short-necked jars, small finger-wiped jar with pinched base; small round-shouldered bowl/cup; necked bowl **CP5B:** Early La Tène Iron Age 2: Scored Ware jars including barrel, ovoid, globular, slack and straight-sided, and round-bodied examples (very large to small in size); globular bowls
Principal Features - smithy enclosure, pits; ditches, waterholes, cremation cemeteries		

Table 1. Bar Pasture - Site chronology and pottery correlation

size of many of the blades, mostly recovered from the NW part of the Site, indicates an Early Mesolithic date (see *Struck Lithics*). The flints bear witness to the brief, transient activity of Mesolithic hunter-gatherers visiting the landscape over *c.* 8000 years ago.

PERIOD 1: EARLY TO LATE NEOLITHIC (C. 3800 TO 2000 BC)

The earliest evidence of sedentary activity at Bar Pasture relates (in part) to an extensive waterhole cluster on the eastern edge of the Site (Figures 5). This complex appears to have been a specific and purposeful focus for activity that appears to have commenced in the Early Neolithic. The location is seen as a favoured spot with evidence that visits to the 'watery' locale also occurred in the Late Neolithic, Beaker and even Early Bronze Age periods. The suggestion is that this was originally a natural wet spot; perhaps a pond or boggy hollow that became an area of some significance. Excavation showed the large feature to have been repeatedly recut and re-utilised. From one of the earliest fills was recovered a part of an Early Neolithic cookpot with burnt residue adhering to its inner surface. Fortuitously, the residue was able to provide the Site's earliest scientific date. Higher in the feature's sequence were stratified sherds from two types of Late Neolithic Peterborough Ware bowls and later, Beaker pottery. The evidence may suggest the deliberate, symbolic deposition of successive and possibly curated, pottery sherds into the watery hollow over time; signifying the area as being 'special'.

In order to geographically locate early features, they are detailed (in parentheses), in relation to the later established (Middle Bronze Age) fields in which they are positioned.

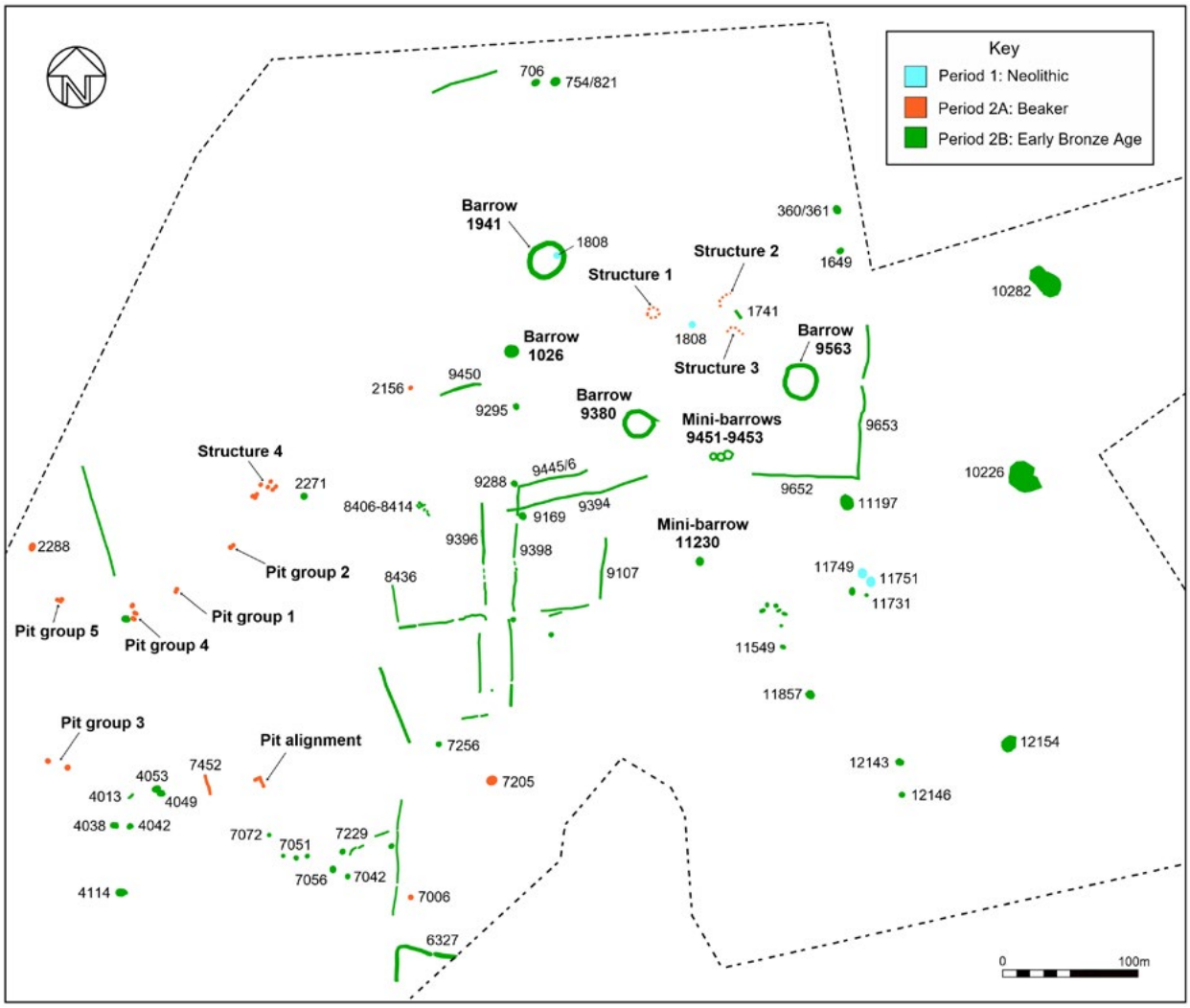

Figure 5 Phase 1 & 2 (Early Neolithic to Early Bronze Age) features.

Waterhole cluster 11749; 11751, 11748, 11750 (Field 74)

This rather unique, early feature appears to have been a large, natural pond or boggy hollow that evolved into a waterhole cluster measuring *c.* 20m by 8m (Figure 6). It incorporated numerous intercutting pits and recuts, showing that this part of the Site had longevity as a source of water that was (no doubt intermittently over time) maintained and revisited (Plate 7). Although the intercutting sequence was not always clear, it appears that two pits [11751] and [11749], both forming part of the complex but not directly related, were the earliest, stratigraphically.

Pit [11751] measured 2m in diameter and contained two fills of which brown clay upper fill (11782) contained 30 Ceramic Phase (CP) 1A pottery sherds (89g) derived

Plate 7 Waterhole cluster in later Field 74, containing pit [11749].

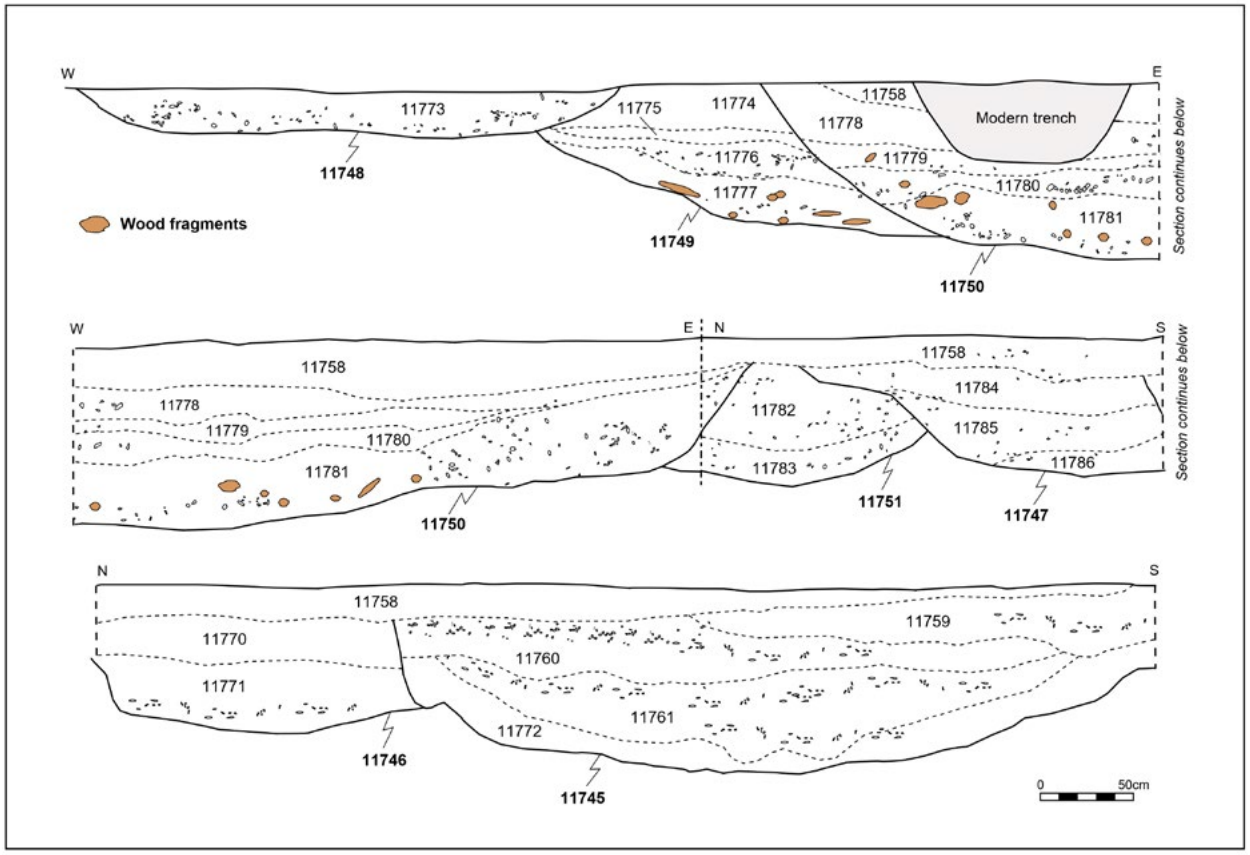

Figure 6 Section through waterhole [11749] and related pits.

from a plain Bowl-style vessel made from coarse shell-gritted fabric, S2 (see *Prehistoric Pottery Cat. No.* 1). Enough of the vessel survived to determine that its rim circumference had measured 220mm in diameter. The cookpot had significant amounts of burnt residue on its interior surface, which was radiocarbon dated to 3636-3382 cal BC at 95.4% probability (SUERC-89320). This places the pot's use within the Early Neolithic, making it the earliest dated feature on the Site - and also within the surrounding fenland (see *Prehistoric Pottery*). Also recovered from this upper pit fill were two red deer antler tips and an iron-stained Neolithic flint flake.

Although we cannot be certain, it is probable (given the pottery evidence) that pit [11751] was created prior to sub-circular pit [11749], located a few metres distant. This second feature, 1.6m wide and 0.7m deep, contained four grey clay fills (11774-11777), three of which contained pottery sherds derived from three vessels: primary fill (11777) contained three joining sherds from a CP1B Middle Neolithic, Impressed/Peterborough Ware bowl of Ebbsfleet substyle (see *Prehistoric Pottery Cat. No.* 2). The secondary fill was devoid of finds, but tertiary fill (11775) contained 11 elaborately decorated CP1B sherds from an Impressed/Peterborough Ware Mortlake substyle bowl, also of Middle Neolithic date (see *Prehistoric Pottery Cat. No.* 3). The use of three different types of impressing methods (whipped cord tool; fine incising device and small fingernail) on this one vessel is possibly unique. The upper pit fill (11774) unusually produced a complete CP2A Beaker base (38g) with incised geometric decoration (see *Prehistoric Pottery Cat.* 7). According to Morris (see *Prehistoric Pottery*), the Ebbsfleet and Mortlake bowls belong to a local tradition of Peterborough Ware vessels made from shell-gritted fabrics. It appears that the pottery sherds within this pit were specially selected to create a structured deposit of fragmented objects. This must have been a significant action at the time.

All four fills of pit [11749] contained animal bone, including a few fragments of cattle, red deer (dog-gnawed), and part of a large aurochs recovered from the upper pit fill in association with the Beaker sherd (see *Animal Bone*). Sandy silt primary fill (11777), which contained wood, charcoal and frequent gravel, was bulk sampled and washed down to produce a flot with poor organic preservation of the waterlogged component, although a large quantity of mineralised wood fragments were preserved, as well as a moderate amount of charcoal fragments and seeds. The pit's pollen sample indicated areas of woodland containing oak, hazel and lime (see *Pollen*).

At an unknown (pre-Iron Age) date, this cluster of pits was expanded by the cutting of [11750], which

partly truncated the earlier features; followed by a succession of additional pits that contained gravelly clay fills with charcoal, animal bone and natural wood inclusions.

PERIOD 2: FINAL NEOLITHIC TO EARLY BRONZE AGE (c. 2400 to 1600 BC)

The first few centuries of the Early Bronze Age are associated with the so-called Beaker culture. At Bar Pasture, this period (2A), is represented by a small number of features containing sherds of fine, grog-tempered Beaker pottery and by a single radiocarbon date. The identified 'Beaker' features include at least four buildings, being represented by three small post-built structures and one larger, rectangular building associated with pit groups containing possible 'intentional deposits'. Also identified was a discrete pit alignment, a large waterhole and numerous smaller pits containing fragments of Beaker pottery and flint (Figure 5).

From *c.* 1900 BC (Period 2B), a barrow cemetery was established on an area of slightly higher ground within the central-northern part of the Site. This 'Barrow Field' formed part of a wider monumental landscape of similar burial mounds that were constructed all along the fen edge. Within the Barrow Field were four discrete burial mounds, accompanied by a number of likely contemporary burials. Only one was shown to be a central burial, with the others being so-called 'satellite' burials; being placed away from the middle. Further south were three small, intercutting 'mini-barrows', with the vestigial traces of another similar feature identified some distance away.

A network of ditches created during this period appears to have delineated some of the boundaries of the 'Barrow Field' and also to have 'set-out' the preliminary alignment of some of the Site's later droveways. These earliest linears, termed 'precursor' ditches, were stratigraphically earlier than the many of the Middle Bronze Age field- and droveway ditches that were to follow in Period 3.

Although the surrounding landscape had yet to be divided into its discrete field units, various small and moderately sized pits and a few large waterholes were excavated across the surrounding landscape at this time. One such waterhole cluster, identified beneath a later field boundary, turned out to be one of the largest such features identified on the entire Site.

Pottery assigned to CP2B, which was found in abundance within the barrow ditches, includes vessels made from both coarse and fine, grog-tempered fabrics, including Food Vessels, Collared Urns and Biconical Urns (see *Prehistoric Pottery).*

PERIOD 2A: BEAKER (c. 2400-1900 BC)

Features pre-dating Barrow G1941

Pits 1804 & 1808 (Field 2 & Field 4)

Sherds from two different Grooved Ware vessels were found directly in association with one or more sherds from different Beakers in pits [1804] and [1808]. Pit [1804] was isolated in the landscape, whilst pit [1808] was stratified beneath Barrow G1941. Grooved Ware had an extended period of use from *c.* 3000-2000 BC; it starts in the Later Neolithic (3000-2400 BC) and is also found in association with Beaker pottery in the Later Neolithic/Early Bronze Age (Chalcolithic), around *c.* 2400-2000 BC (Morris, *pers. comm*.). The presence of Grooved Ware within these pits suggests low-level, Late Neolithic (Chalcolithic) activity at the northern end of the Site.

Buried soil horizon (1642)/ (1638) beneath the ever-so-slight burial mound of Barrow G1941 was a thin, very leached deposit containing three sherds of Final Neolithic / Early Bronze Age pottery, one of which was from a Beaker decorated with parallel rows of small fingernail impressions (see *Prehistoric Pottery Cat. No.* 9). This type of personal signature is a recognised motif on Beakers from all over the country and examples have been found at nearby Fengate (Gibson 1980). Associated (upper) buried soil (1641) contained two sherds of Final Neolithic/ Early Bronze Age Beaker pottery, with another sherd of the same G2 fabric coming from post-hole [1669], also sealed beneath the barrow. This horizon contained notable charcoal inclusions, believed to be the result of localised land clearance in preparation for the construction of the barrow. An environmental sample retained from the deposit yielded a single unidentifiable cereal grain, a small concentration of comminuted charcoal, a number of shells of the blind burrowing snail *Cecilioides acicula* and several uncharred seeds of black bindweed, although the latter two may be intrusive.

An associated scatter of flintwork was recovered from the two buried soil horizons and provides further indication of activity, prior to the construction of the monument. The assemblage included a fragment of backed knife with a broken distal end that had possibly been snapped by an intentional blow.

Beaker structures

To the immediate south of (later) Droveway 1, were three small structures, all of which were post-built (Figure 5). Two had post-holes that contained sherds of Beaker pottery; the third is dated stratigraphically. The three structures, probably small shelters on the fen edge, are considered to pre-date the three large, nearby barrows G1941, G9563 and G9380.

Structure 1 (Field 2)
Six post-holes and four stake-holes formed a small (just over 10m across) circular structure, 60m to the SE of Barrow G1941. Four of the post-holes [1681], [1684], [1701] and [1704] were of similar dimensions, with the two others, [1712] and [1720], being elongated, and forming a possible SE-facing entrance.

Most of the post-holes contained only one fill, however, two contained two fills and provided evidence of post-pipes. All the post-hole fills contained remnants of charcoal. Retained samples from each contained a variety of charred plant remains, including dock, goosefoot, prunus fruit stones, charred wheat, and hazelnut shell fragments (see *Carbonised Plant Macrofossils*). A Beaker sherd was recovered from the sampling of post-hole [1701]. Several sheep teeth were recovered from elongated P-shaped 'entrance' post-hole [1720].

This collection of features represents a small circular post-built structure with a SE-facing entrance, which utilised a combination of posts and stakes in its construction. There was no associated drip-gully, suggesting that the structure was not roofed.

Structure 2 (Field 2)
Some 50m to the east of Structure 1 was a group of features that formed the remnants of another 10m structure. This was composed of five post-holes and two stake-holes forming a partial circuit. No entranceway was identified, although it did appear to contain an associated hearth pit or possible oven [1877]. This was lined with charcoal and contained a large quantity of fired clay (see *fired clay*), but was not central to the structure (Plate 8). A small, shallow curvilinear gully [1771] found in association could represent the remains of a former eaves-drip gully. The structure was bisected latitudinally by NS-aligned Middle Bronze Age field boundary [1795] separating (later) fields 1 and 2.

Plate 8 Hearth feature [1877] during excavation.

Structure 2's post-holes were typically oval or circular in plan, the largest [1686] measuring 0.50m in diameter, but only 0.1m in depth. The rest [1761], [1733], [1773] and [1777] measured 0.25m wide, 0.25m long and 0.20m deep. Each contained a single fill with large flecks of charcoal but no finds. The presence of charred cereals, nutshell and fruit stone fragments, however, suggests that domestic residues, perhaps sweepings, had filtered into the post-settings. The associated stake-holes were circular in plan with steep, near vertical sides and tapering bases.

The presence of a hearth here suggests that this arrangement of post-holes, stake-holes and a gully could represent a sheltered activity area. The hearth contained a charcoal-rich primary fill (1878) with fired-cracked pebbles and a bright orange-red upper fill (1879) indicative of burning. No finds were recovered from either fill, although analysis of the retained samples recovered charred fragments of spent-fuel representing blackthorn/hawthorn thorn fragments and hazelnut.

Structure 3 (Field 2)
Approximately 20m to the south of Structure 2 was a group of five post-holes forming another possible 10m+ structure. Four of its post-holes [1739], [1752], [1754] and [1756], were shallow, but [1746] was much deeper and contained abundant charcoal fragments, perhaps representing a former burnt stake. All contained just one fill, but significantly from them was recovered a Beaker sherd, a part of the base from an Early Bronze Age pot and an intrusive Late Bronze Age/Early Iron Age sherd. Between structures 1 and 3, isolated post-hole [1784] contained fragments of fired clay and may relate to the same period of activity. In common with Structure 2, Structure 3 was bisected by Middle Bronze Age ditch [1749].

Structure 4 (Field 19)
A group of six post-holes [2405-2410] located on the central-western part of the Site tentatively represents the partial remains of another structural arrangement. The relatively small post-holes, all circular with concave bases, were undated. Two additional post-holes located to the immediate NE appeared to form part of the same complex. This isolated activity area was also associated with two Beaker pits.

The first, and most significant pit [2385] was positioned at the structure's southern corner. It was sub-circular and steep-sided, measuring 0.7m in diameter and 0.4m deep. Its single fill (2386) was an ashy silt, with occasional broken 'heat-affected' stones and moderate amounts of charcoal (Plate 9). Importantly, it contained a notable assemblage of 54 sherds (417g), of pottery, which derived from a minimum of seven Beaker vessels made from four different fabrics (see *Prehistoric Pottery*

Cat. Nos 16, 17, 18, 19, 20, 21 and 22). The base, body and rim sherds were variously decorated, with randomly applied fingernail rustication, cross-hatched design and regular and deep incisions. The fill also contained five fragments (207g) of undiagnostic salt-making briquetage and fired clay fragments, together with fragments of animal bone and eight worked flints, including two thumbnail scrapers, a backed knife and a plano-convex knife (see *Struck Lithics Cat. Nos* 11, 16, 17 and 18). The flints are typical of the Late Neolithic/ Early Bronze Age and are commonly associated with Beaker ceramics (see *Struck Lithics*).

Plate 9 Beaker pit [2385], associated with possible structure.

The residue from the charcoal-rich sample of the pit's single fill contained fragments of pottery, flint and fire-cracked pebbles, together with fired earth and burnt bone. Further analysis identified charred barley (*Hordeum* sp. – including hulled grains), wheat (*Triticum* sp.) and hazelnut (*Corylus avellana*) in varying small amounts (Rackham and Giorgi 2015). Charred seeds from leguminous plants were also recovered. A calibrated radiocarbon date of 2282-2249 cal BC (6.1%); 2232-2029 cal BC (89.3%) was obtained from a charred hazelnut shell (SUERC-47171).

The second, shallower pit [2403] lay 1.5m to the NW. Its single fill (2404) contained a flint end-scraper (SF4), and a Chalcolithic (Beaker) flint thumbnail scraper with pressure flaked retouch (see *Struck Lithics).* Its retained sample was also charcoal-rich, and contained 11 small flint chips and a small (1g) Beaker sherd. Most charred seeds were unidentifiable, although similarly, charred hazelnut fragments and animal bone were noted. The pit's characteristics and proximity to [2385] suggests that it formed part of the same Beaker complex.

Beaker pit groups

On the western edge of the Site, a number of Beaker pit concentrations were recorded within a fairly small area that was later organised as Field 19 and Drove 3 (Figure 5). Each of the pit groups, datable to this period by pottery sherds, comprised between two and four individual features. The presence of Beaker ceramics (frequently decorated), domestic hearth material, flint tools and fragmented animal bone initially suggested that the pits were used for rubbish disposal, although it is now accepted that such features could in fact represent 'intentional deposits' chosen for purposeful deposition. Whether their scattered distribution was deliberate is not known, but their characteristics and dispersed nature suggests that they were relatively short lived.

Pit group 1 (Field 19), (Figure 7)

A pair of small pits in this area were dated to the earliest Bronze Age. Pit [2085] was circular in plan and measured 0.6m in diameter and 0.12m deep. It had a single fill (2084), which contained 12 sherds (19g), of fresh Beaker pottery including 'tooth-combed' sherds (see *Prehistoric Pottery Cat. No.* 13), as well as a retouched flint flake and 16 fragments of fired clay (179g). The latter had been used to make a hearth-like structure that was subsequently dismantled and added to the pit fill. All of the pieces appear to have been ash-bleached from wood (or peat) firing (see *Fired Clay).* To its immediate NE was pit [2087], of similar size and shape, which contained a single flint flake of Bronze Age type. Nearby post-hole [2054] may have been associated with this activity area. Its charcoal-rich fill contained flint and fire-cracked pebbles, charred seed fragments and hazelnuts. Identified grain included barley (*Hordeum* sp.), with hulled and lateral grains being noted. Several fragments of burnt animal bone were also recovered.

Pit group 2 (Field 19) (Figure 7)

Approximately 20m NE of pit group 1 were two further small, sub-circular pits [2435] and [2040]. Pit [2040] was 0.75m in diameter and survived to just 0.1m deep, with shallow concave sides and a flat base. Its sole fill (2041) was a dark grey sandy clay with frequent charcoal inclusions, burnt flint and burnt stone. It contained 20 sherds (12g) of Beaker pottery, seven *fragments* of undiagnostic fired clay and animal bone. Detailed analysis of the fill produced fire-cracked stone, cinder fragments, and burnt animal bone, whilst the flot produced charcoal and a charred wheat grain (*Triticum* sp.). Pit [2435] lay just to its east and was of similar dimensions. Its fill (2436), a pale grey sandy silt, contained no dating material. Given their similarities in form and fill and their proximity they are considered contemporary.

Pit group 3 (Field 27) (Figure 7).

Two large sub-circular pits [3130] and [3139], were found within a 10m area. Both had near vertical sides and concave bases and measured a similar 2.5m across and 1.25m deep (Plate 10). The former contained four silty fills with the basal fill being partially waterlogged.

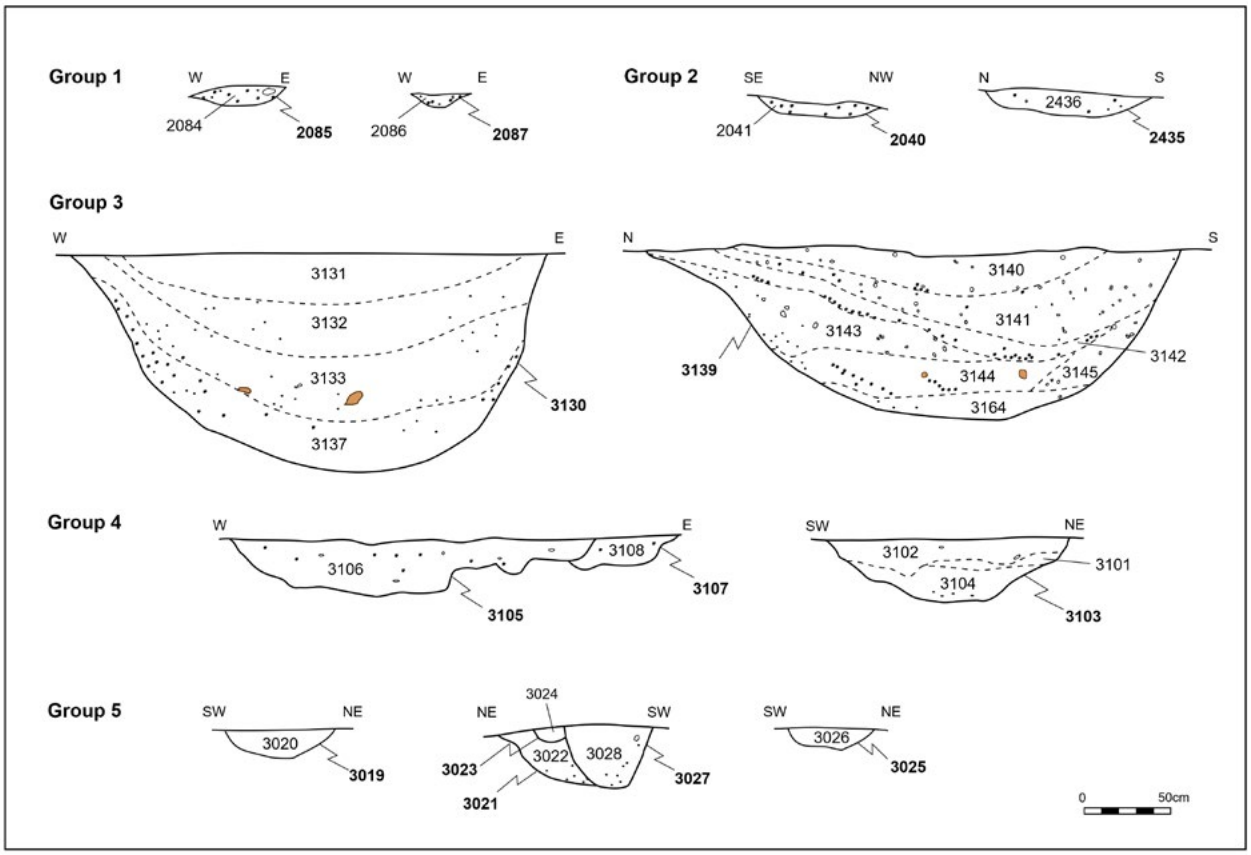

Figure 7 Beaker pit groups: Nos 1-5 – sections.

A large undecorated base sherd of Beaker pottery (40g) (see *Prehistoric Pottery Cat. No.* 34), was recovered from secondary fill (3133), together with a small amount (7g) of fired clay and a sheep jawbone. The latter pit had similar fills, but with no finds. It is, however, considered contemporary.

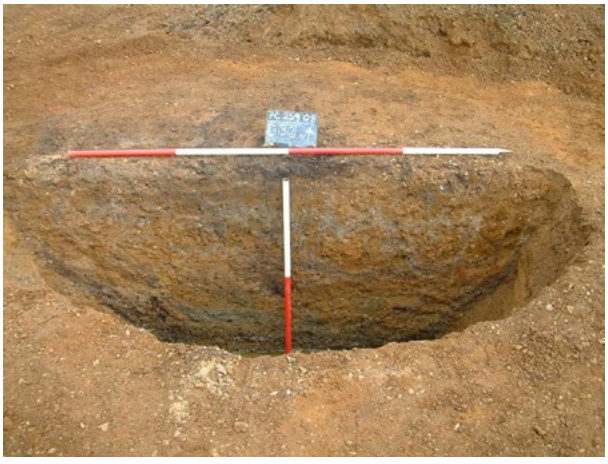

Plate 10 Substantial Beaker Pit [3130] following excavation.

Pit group 4 (Field 19) (Figure 7)

Three pits [3103], [3105] and [3107] were identified in the same area, of which the latter two intercut. Pit [3103], sub-rectangular with straight-sides, measured 1.5m long by 0.8m wide and was 0.35m deep. Primary fill (3104) contained a single sherd (1g) of Beaker pottery and a single flint flake. Secondary fill (3101), contained four (13g) Beaker sherds decorated with fingertip impression (see *Prehistoric Pottery Cat. No.* 29), and a large fragment (114g) of fired clay. The upper fill (3102) contained 78 sherds (226g) of fresh grog-tempered, intricately decorated and incised Beaker pottery (see *Prehistoric Pottery Cat. Nos* 30, 31, 32, 33). Also recovered were three sherds (24g) of undiagnostic fired clay and two flint flakes.

A minimum of six Beaker vessels are represented by this impressive assemblage, with at least two sherds joining between contexts. Other sherds displayed fingertip impressions, incised lines and cross-hatched lozenges, with one fragment having a lop-sided strap handle that had been applied after the body of the vessel had been decorated. The single sherd from the primary deposit was made in the same fabric type as the majority of those found in the upper fill, which suggests that the feature may have been filled relatively rapidly. Animal bone was also recovered from upper fills (3101) and (3102). From the three soil samples were additional small pottery sherds fragments, worked flint, fire-cracked pebbles and burnt bone. Botanical finds included charred barley (*Hordeum* sp.), wheat (*Triticum* sp.) and hazelnut (*Corylus avellana*) in varying small amounts (Rackham

and Giorgi 2015). A calibrated radiocarbon date of 2139-1918 cal BC with 95.4% probability was obtained from a hazelnut shell in fill (3102), (SUERC-47175).

Not far to the south of pit [3103] were two intercutting pits; being [3105], which partly truncated undated circular pit [3107]. The former was sub-oval with concave sides and an irregular concave base, measuring 2.15m along its axis, 1.15m wide and 0.3m deep. It contained a single sandy-clay fill (3106), with occasional charcoal flecking and burnt stones. Excavation recovered three sherds (8g) of Beaker pottery and a single fragment (2g) of undiagnostic fired clay. Its associated soil sample produced charcoal, a charred seed and a burnt hazelnut fragment (*Corylus avellana*).

Pit group 5 (Drove 3) (Figure 7)

This group comprised of three small pits, [3019], [3021], and [3025] located within the later droveway alignment that crossed this part of the Site. Pit [3019] was circular in plan, 0.6m in diameter and 0.2m deep. Its single silt fill (3020), had charcoal concentrated towards the base, and contained 27 sherds (234g), of Beaker pottery including a base with a 100mm diameter. The sherds displayed fingertip impressions in irregular, horizontal, parallel rows around the body of the vessel, and in vertical panels separated by fingernail impressed columns (see *Prehistoric Pottery Cat. No.* 25). This fill also contained 11 fragments of fired clay (124g), a retouched flint scraper and several fragments of animal bone. Its soil sample contained pot and flint fragments together with a quantity of charcoal. The residue contained charred hazelnut (*Corylus avellana*) and unidentifiable charred animal bone.

Pit [3021=3023] was to the east of [3019], and was similar in size and contained two fills. A fingertip-decorated Beaker sherd (see *Prehistoric Pottery Cat. No.* 26) was found in upper fill (3024), whilst two undiagnostic fired clay fragments were recovered from primary fill (3022). The pit was truncated on its west side by Middle Bronze Age droveway ditch [3027]. Finally, pit [3025] of the group lay to the east of [3021]. It was slightly smaller and shallower than the other two features, and contained a single fill (3026) with 12 fragments of fired clay. Its associated soil sample contained fragments of fired earth and charred hazelnut (*Corylus avellana*); and more importantly two sherds of Beaker pottery: a plain sherd, and a body sherd with finely incised cross-hatching (see *Prehistoric Pottery Cat. No.* 27).

Beaker pit alignment (Field 52)

A discrete NW/SE alignment of pits in this area included two features containing Beaker pottery and a small assemblage of worked flint. The alignment comprised a 6m-long row of seven, closely spaced features (Figure 8). All pits were sub-circular in plan and of similar size, ranging from *c.* 0.5 - 0.6m in diameter and <0.25m deep. All contained single grey silt fills with charcoal flecks. The western-most pit [7394] contained a single Beaker

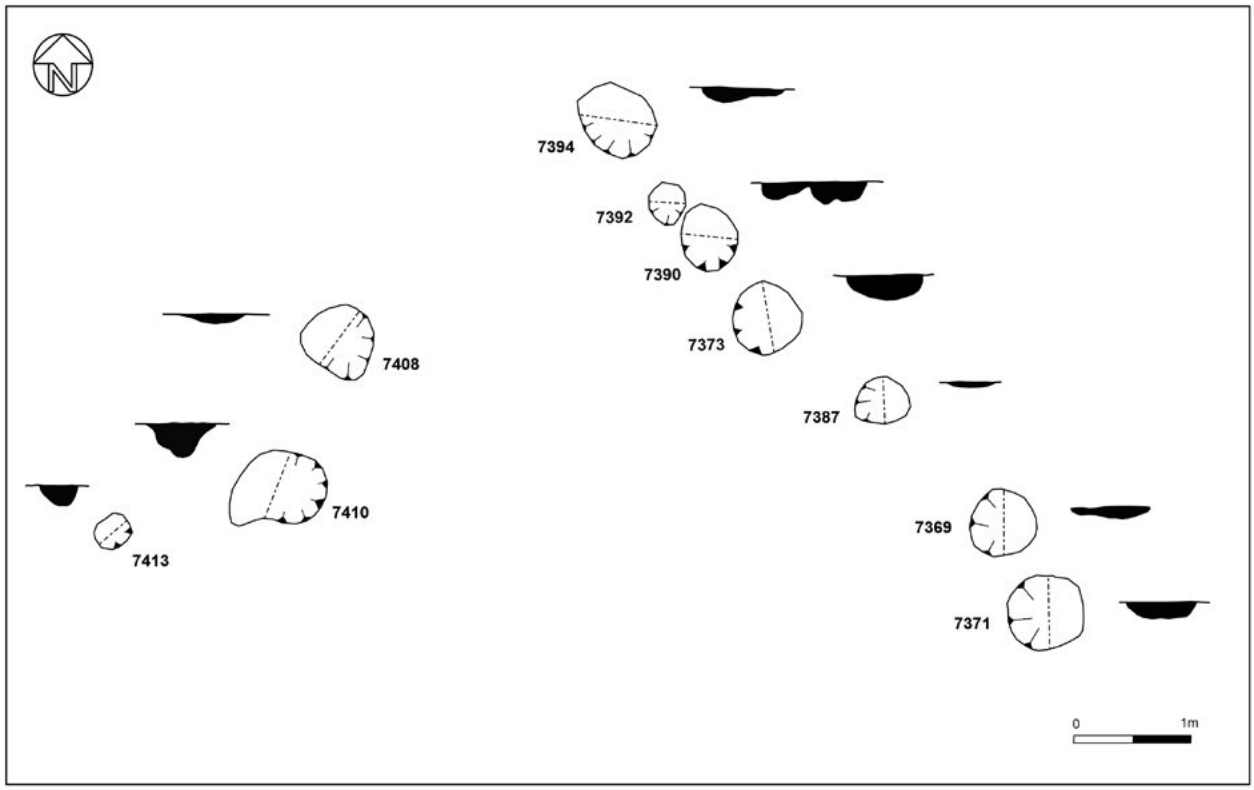

Figure 8 Beaker pit alignment: plan and profiles.

sherd, whilst central pit [7373], contained a single crumb (1g) of Beaker pottery and a flint flake. A soil sample retained from this fill contained a small flint chip, charcoal fragments, a few charred barley grains, seeds, insects and cattle bone (Rackham and Giorgi 2016).

Dispersed Beaker features

A number of more isolated pits and a ditch segment are also assigned to this period by CP2A Beaker pottery found in their fills. These pits were largely dispersed and not found in association with any contemporary, dated features.

Waterhole 1649 (Drove 1)

This was a large semi-oval waterhole pit [1649] measuring 6.5m in length, 5m wide and 0.65m deep. It contained six silty gravel fills, of which middle fill (1652) contained a single unabraded Beaker sherd (3g) that had fingertip or fingernail decoration (see *Prehistoric Pottery Cat. No.* 10). Animal bone (1575g) and burnt stone (140g) were also recovered. The feature was truncated by latter Middle Bronze Age pit [1730] (Figure 45 below).

Pit 2288 (Field 26)

Pit [2288] was sub-circular, with near vertical sides and a flat base (Plate 11). Measuring an impressive 5m in diameter by 1.5m deep, it contained three principal fills with many discernible silt lenses (Figure 9). Secondary fill (2303) contained seven sherds (104g) from a Beaker vessel with a small girth, together with a flint flake and a single platform flake core. Also recovered were 22 fragments (155g) of fired clay, which included a large piece of daub (40g) that displayed a wattle impression 23mm across (see *Fired Clay*). Two sherds of plain Beaker pottery were also recovered from upper fill (2302), (see *Prehistoric Pottery Cat. No.* 14). A soil sample taken from the pit's primary fill (2304), produced a further 15 flint chips, fragments of degraded wood and charcoal, and an assemblage of organics. The latter included uncharred hazel (*Corylus avellana*), net-veined leaf fragments, moss and, significantly, a small number of flax seeds (*Linum* cf. *usitatissimum*). Insect remains were also recorded, including fragmented chitinous material (Rackham and Giorgi 2015).

Plate 11 Pit [2288] which contained Beaker pottery.

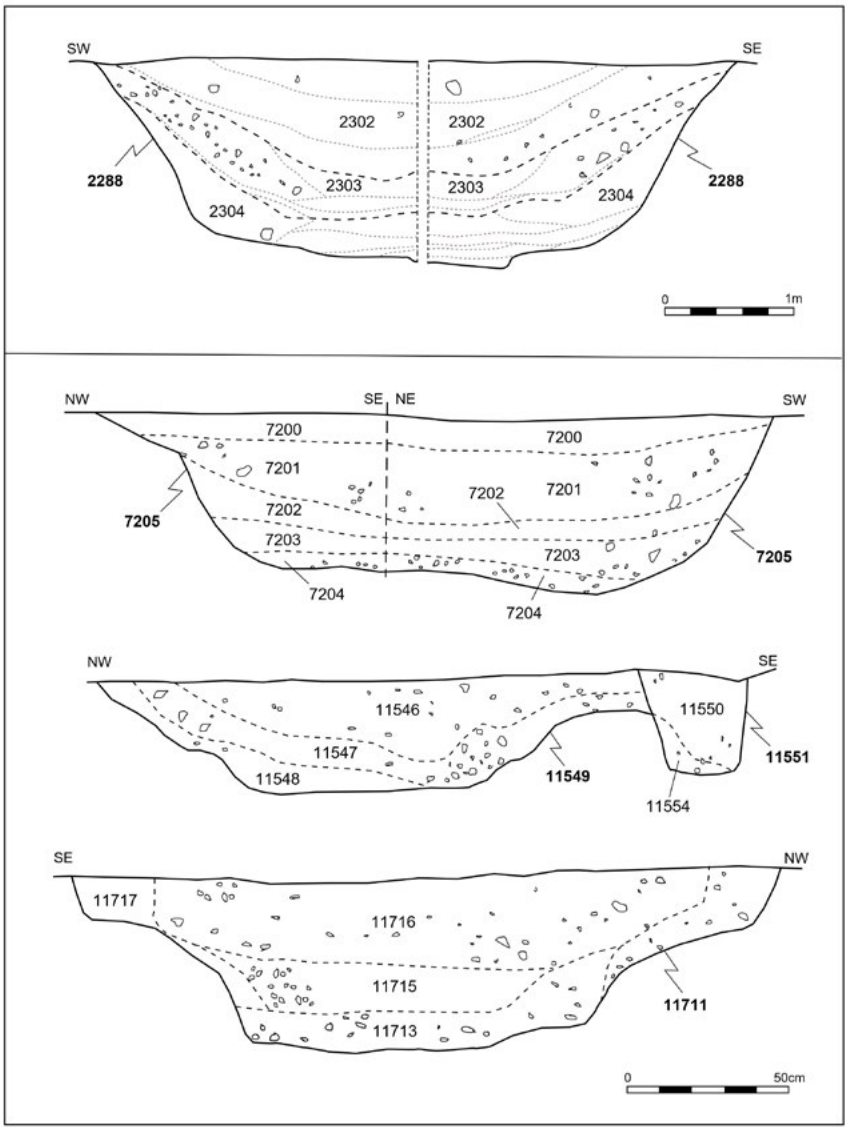

Figure 9 Beaker pits and waterholes: sections.

Pit 7205 (Field 60)

Oval pit [7205], possibly the remains of a quarry pit, was 5m long, 1.10m deep and contained five successive fills (7204-7200), the latest four being deliberately back-filled deposits of sand, silt, and fine gravel, containing charcoal flecks and animal bones (Figure 9). Four sherds (10g) of Beaker pottery, one of which was decorated with fingernail impressions (see *Prehistoric Pottery Cat. No.* 35), were contained within penultimate fill (7201).

Pits 11857 & 11549 (Field 71)

Elongated pit [11857] was largely obscured by the later cutting of a Middle Bronze Age boundary ditch (G11891). It measured 0.7m wide and 0.5m deep, and contained a single grey silt fill (11863) that yielded a softly fired, undecorated pottery sherd (13g) made from a grog-tempered fabric with shell inclusions. The sherd is believed to be derived from the body of an Early Bronze Age vessel (see *Prehistoric Pottery).*

Nearby oval pit [11549] measured 1.7m in diameter, 0.5m deep, and contained three charcoal-rich clay fills (Figure 9). Middle fill (11547), a 'plastic' mid-grey clay, contained three tiny pieces from a fine Beaker. The wall thickness from 5- <7mm, the fabric (G2) and the oxidised firing effect on the exterior of the vessel together indicate that they derive from the same vessel. The pit had an associated post-hole [11551], possibly a structural support at one end, for what may have been a hearth pit.

Pits 11711 & 11731 (Field 74)

These two moderate-sized pits both contained Beaker pottery, fire-cracked pebbles, fired earth and high charcoal concentrations. They were identified in the locality of Early Neolithic waterhole [11751]. Both clearly contained hearth debris but few clues as to what these hearths might have been used for, other than heating stones- possibly for cooking or heating water in ceramic vessels.

Pit [11711] was a distinctively sub-rectangular, convex-sided feature, that measured 2.2m long, 1.4m wide and 0.6m deep (Figure 9). It had six fills, two of which were stony yellow slump deposits. Other fills had a dark appearance due to the presence of charcoal and burnt stone (Plate 12). A bulk sample from middle (tertiary) fill (11715), produced fire-cracked pebbles (3635g), and five lumps of fired clay. Residue analysis identified the presence of a cereal straw fragment, a single indeterminate cereal grain and two free-threshing type wheat rachis internodes – the latter probably being intrusive (see *Carbonised Plant Macrofossils*). Also recovered from fill (11715) was an unabraded flat Beaker base fragment decorated with several small fingertip impressions.

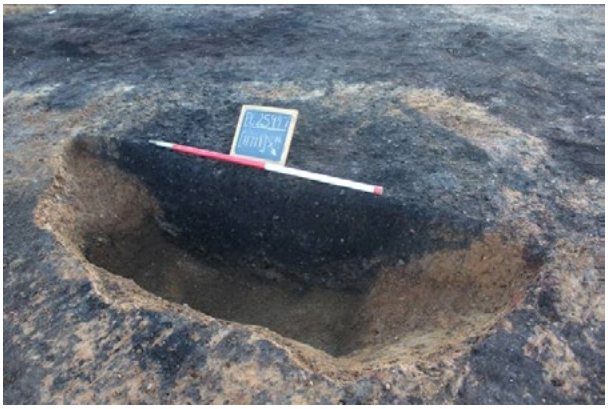

Plate 12 Half-section through domestic Beaker pit [11711].

Plate 13 Dated domestic Beaker pit [11731] with fired clay lumps visible.

A further 26 sherds of the same grog-tempered sandy fabric vessel were recovered from upper fill (11716), together with four flint flakes and a bladelet. The Beaker Pottery had been rather roughly made, resulting in a rustic rather than smoothed and refined appearance. It had fingernail and fingertip impressions made by a young or slight-built potter with relatively small hands (see *Prehistoric Pottery Cat. No.* 37). Fingernail and fingertip decoration is common on Beakers found in the fens and is particularly common in the Pode Hole and Bar Pasture landscape (see *Prehistoric Pottery* below).

Sub-circular pit [11731], 1m long and 0.5m deep, had an uneven base and contained three fills. Two that were sampled for environmental remains, contained evidence of what could be construed as domestic waste: a sample from primary fill (11730) produced 43 (360g) lumps of undiagnostic, oxidised fired clay, all manufactured in fabric Q1 (Plate 13). This is the same fine to medium sandy-clay fabric used to produce a complete flat Beaker base found in waterhole cluster pit [11749]. A large quantity of charcoal and charred hazelnut was recorded in the flot. One of the hazelnut shell fragments was dated by radiocarbon to the Beaker Period (2A) with 95.4% probability (2192-2180 cal BC (1.7%); 2143-1973 cal BC (93.7%)), (SUERC-89321). With the addition of burnt stone, very similar residues were recovered from black silt middle fill (11729). Some 75

(798g) lumps of fired clay sieved from a bulk sample included one large piece with a unique grass impression (see *Fired Clay*).

PERIOD 2B: EARLY BRONZE AGE (1916-1640 CAL BC)

A funerary landscape - burial mounds and cremations

The remains of three large Early Bronze Age burial monuments (G1941, G9380 and G9563), were identified within the Barrow Field, together with small ring-ditch G1026 associated with an unurned 'satellite' cremation (Figure 5). To the south of the three larger monuments were also the remains of three, intercutting 'mini-barrows' G9451, 9452 and 9453. These monuments, which survived in the form of small ring-ditches, each measuring *c.* 7m in diameter, appear to have been constructed within a semi-open area that was bounded by linear 'precursor' ditches to the east and a possible east/west-aligned avenue to the south.

Barrow 1941 (Drove 1 / Field 4)

This impressive barrow was known to exist prior to the investigations, as it had been recorded by Gibson in the 1980's as a low mound and was targeted during the trench evaluation, with a ditch-circuit and skeleton of a neonate being encountered (Gibson 1996: 6; Malone 2003: 13). It may have been a more significant landscape feature in historic times for it was noted that the 19th-century claying trenches that crossed all over this part of the Site respected the ditch circuit, stopping just short of it, prior to continuing on its other side.

The barrow was substantial, measuring 27.60m in external diameter (Figure 10, Plate 14). It comprised a single ring-ditch with a maximum width of 5.30m. The ditch had cut through two earlier soil horizons - a buried topsoil (1641) and, below this, a leached buried subsoil horizon (1642/1638). These surfaces represented the original ground surface prior to the construction of the barrow. Sixteen segments excavated around the ditch's circumference revealed it to be up to 0.90m deep, typically with two silty fills (Figure 11). A quantity of animal bone was recovered, together with three worked flints and three pottery sherds. These comprised of two fragments of Early Bronze Age date from western ditch segment [1722] and NE segment [1745], a cord-decorated Beaker sherd from NE segment [1783] (see *Prehistoric Pottery Cat. No.* 11) and part of the rim of an intrusive Late Bronze Age ovoid jar (see *Prehistoric Pottery Cat. No.* 68) from the fill (1769) of the same segment.

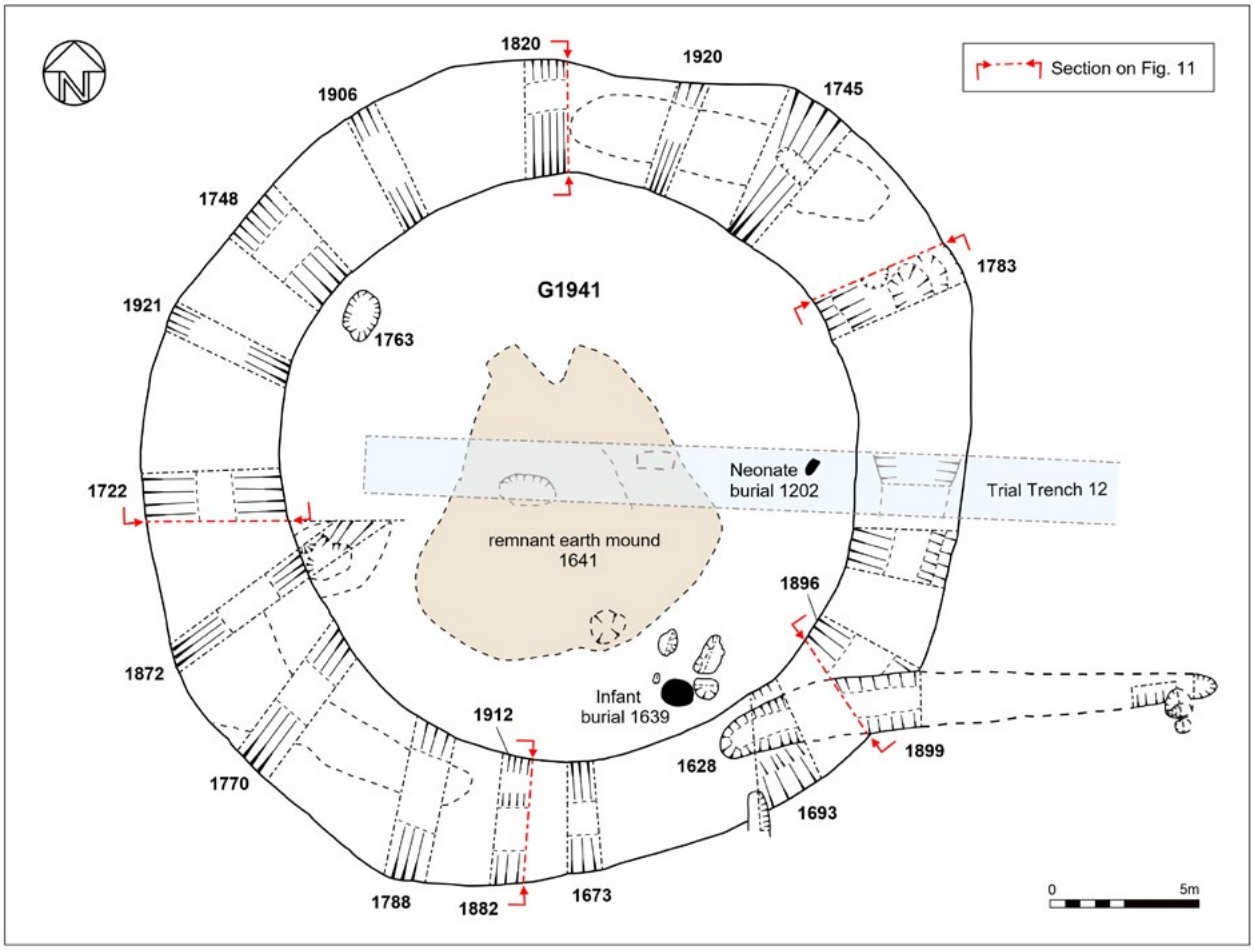

Figure 10 Barrow 1941, detailing locations of associated features and sections.

Plate 14 Aerial photo of Barrow [1941] under excavation.

The neonate (1204) discovered during the 2003 evaluation of the barrow was located just inside the eastern ditch circuit, within a small, sub-rectangular grave cut [1202] (Malone 2003: 9). Some 104 chalky, degraded and iron-panned bone fragments were found (59g), many of which were skull fragments (Cope-Faulkner 2003).

Plate 15 Infant inhumation on birch bark mat within Barrow [1941].

Although no central burial was identified during the full barrow excavation, another inhumation (accompanying the one identified during trial trenching) was identified 8m south, within the barrow's SE quadrant. The small grave cut [1639] aligned EW, was oval in plan, with steep sides and a flat base and measured 1.18m in length by 0.9m wide. Excavation showed it to contain the remains of a moderately well-preserved crouched infant with accompanying grave goods. The baby (HB101 – SK1644), was orientated west (head) to east and lay on its right-hand side, facing south (Plate 15). The age at death has been given as between one and six months, but the sex of the infant could not be ascertained (see *Human Bone*). Significantly, the body had been carefully placed on a square piece of birch bark (1643), which may have once been a wrapping or container (see *Waterlogged Wood*). A small, expediently made pottery Food Vessel (SF8) had been placed near the infant's face (Plate 16) (see *Prehistoric Pottery*). Beneath the infant's left elbow was a perforated marine shell (SF7), recorded as a Peppery Furrow Shell, which could have derived from The Wash (Hutton, *pers. comm.*).

Plate 16 Close up photograph showing infant inhumation SK1644 with pottery vessel and perforated shell grave goods.

The use of coffins within Bronze Age burial contexts is rare, but within the general region has been recorded at Deeping St Nicholas and slightly further afield at

Stroxton. The presence of a *bark* coffin or matting, as uncovered here, remains unique (French 1994; Taylor *pers. comm.*).

Five environmental samples were taken from the burial, being from the grave backfill; from the soil immediately around the skeleton; from soil surrounding the bark matting; from the fill of the intact food vessel; and from surrounding soil lifted with the vessel. Very little charcoal was recovered from any of the samples, and only a trace of hazelnut from the backfill. A small amount of very comminuted, mineralised wood

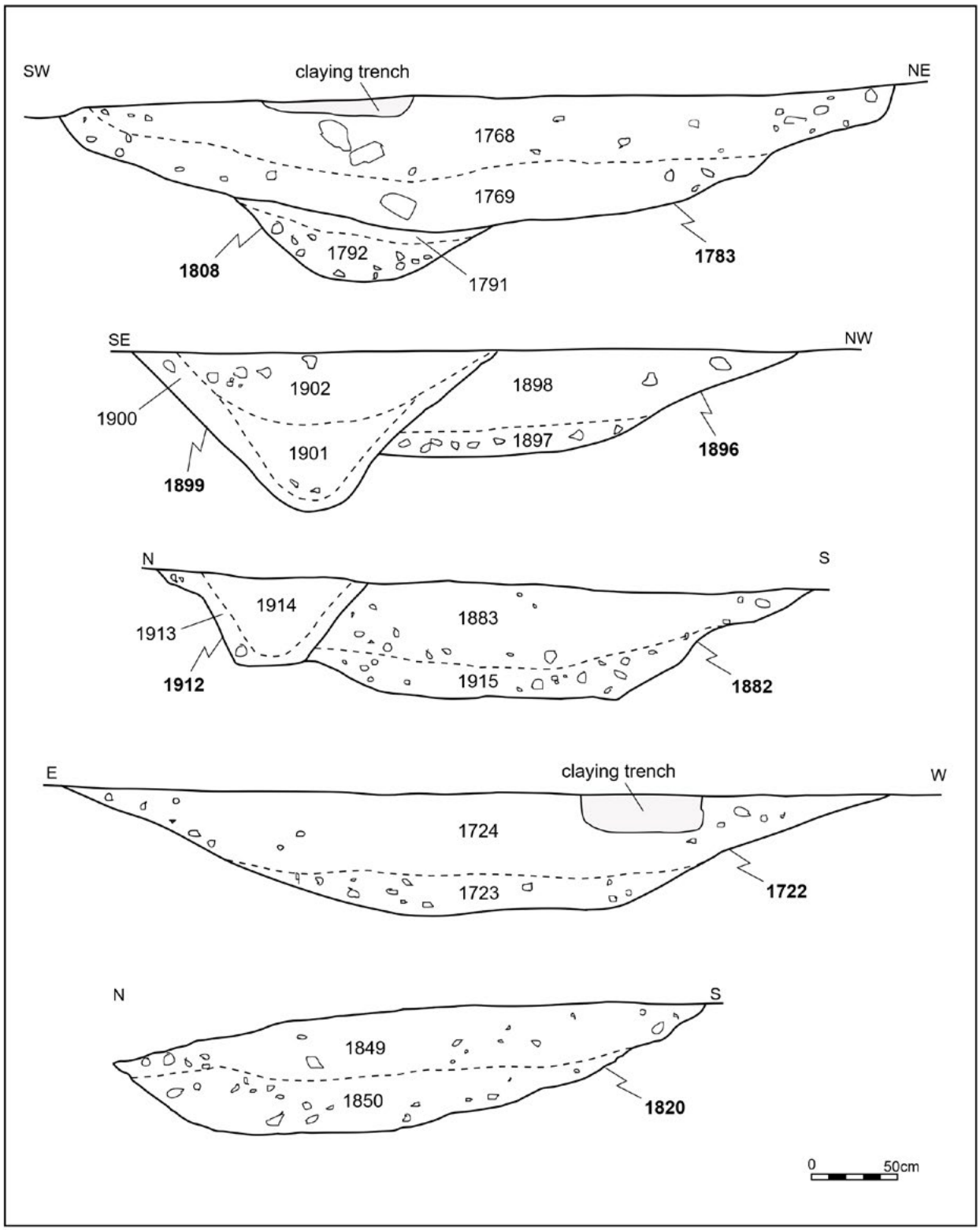

Figure 11 Selected sections through ditch of Barrow 1941.

recovered from the latter sample could constitute remnants from the bark coffin. The three main grave fills contained the blind burrowing snail *Cecilioides acicula*, and the samples from the backfill and from around the skeleton also yielded moderate amounts of uncharred black bindweed seeds, which together suggest some disturbance.

A further possible grave [1763] was located in the NW quadrant of Barrow G1941. Only fragments of human femur were recovered from its fill (1764), suggesting that either the grave had been disturbed (no cut was visible) or that it was a natural hollow that had incorporated fragments of human bone. A soil sample was taken for analysis, but no botanical remains were identified.

Barrow G1026 (Field 4)

Barrow G1026 comprised a small, sub-circular ring-ditch, 10m in external diameter at its widest point. The feature was located at the intersection of subsequent Drove 1 and Field 4, where it had been 'preserved' and respected during the construction of these later ditches (Figure 12). The ditch measured <1.10m wide and 0.5m deep, typically containing a single fill (1062=1025) with occasional slumping and in-washing apparent in some sections (Figure 13). There is evidence to suggest that the monument was created towards the end of this period: notably, the fills from western barrow ditch segments [1026.02] and [1026.03], contained 53 sherds of Early Middle Bronze Age (CP3A) pottery weighing just over 400g. These may, however, be derived from activity associated with the creation of the adjacent field- and droveway ditches. One base sherd was derived from a thick-walled, urn-type jar (see *Prehistoric Pottery Cat. No.* 50). Three environmental samples proved to be rich in archaeological and charred botanical remains: traces of hazelnut, leguminous seeds and cereal grains, including possible barley, were recorded, primarily from fill (1062). A sample from northern ditch segment [1026.01] contained a residual and abraded Beaker body sherd decorated with incised lines and small fingernail impressions (*see Prehistoric Pottery Cat. No.* 8).

The presence of the significant quantity of CP3A pottery from this ring-ditch suggests that the monument was created towards the end of the Early Bronze Age and infilled during the early part of the Middle Bronze Age. Given that the pottery was all recovered from the western ring-ditch, combined with the notable western deviation of the Middle Bronze Age Drove 5 ditch 'around' this feature, suggests that it may have been

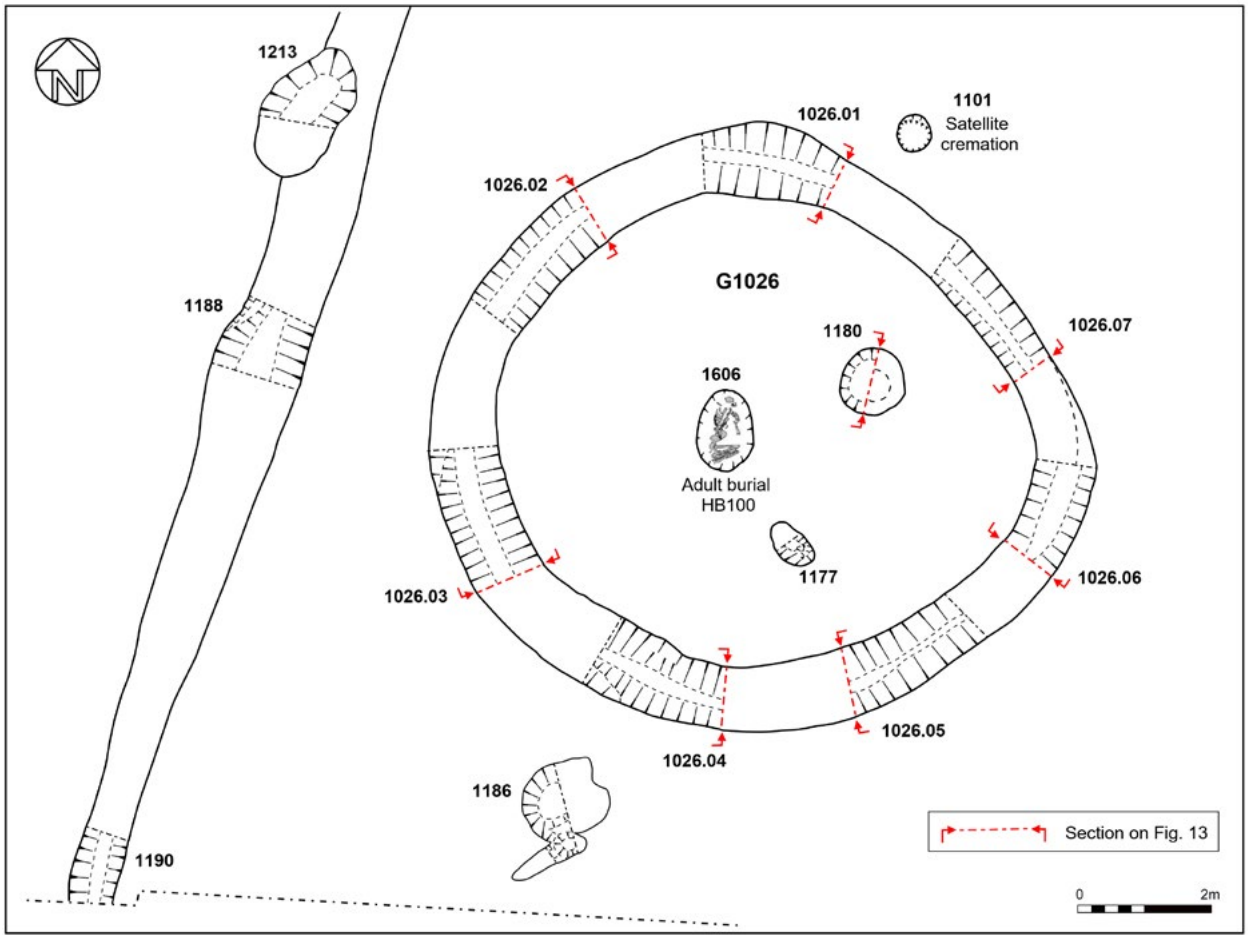

Figure 12 Barrow G1026 detailing central inhumation and satellite cremation.

constructed during the Early Bronze Age but that the ditch became infilled sometime later, probably during the major episode of droveway creation.

Within the centre of the ring-ditch circuit were the rather degraded remains of an adult crouched inhumation (HB100 – SK1607), (Plate 17). The sub-circular grave cut [1606], measured 1.20m long by 0.60m wide. The crouched adult skeleton, possibly male, was estimated to be between 20 and 25 years old. The individual was orientated north (head) to south and was buried on its left-hand side, facing east (see *Human Bone*). No grave goods were associated with the burial and, consequently, no exact date could be assigned. Two samples were analysed from the grave; one from grave fill (1608) and one from the stomach area. Some tiny fragments of charcoal were recovered, but no botanical remains. Also, within the ditch circuit were a small shallow pit [1177] and a deeper circular pit [1180], both devoid of finds and environmental residues.

Plate 17 Crouched adult inhumation SK1607 within Barrow [1026].

Satellite cremation 1101 (Drove 1 / Field 4)

A satellite cremation [1101] was associated with Barrow G1026, being located to its immediate north. The

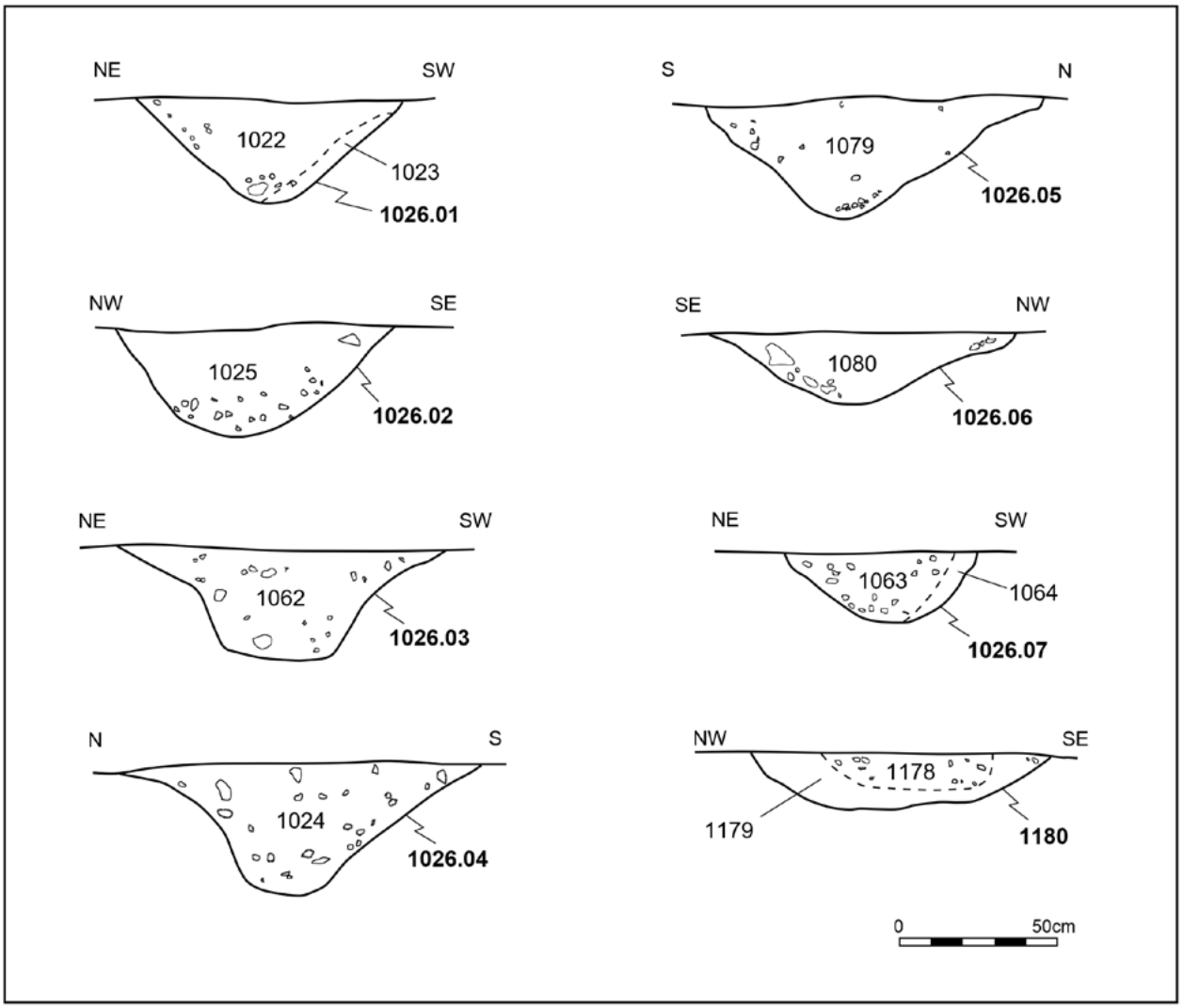

Figure 13 Sections through ditch of Barrow G1026.

cremation cut was sub-circular in plan, 0.6m across and 0.5m deep. It contained human bone fragments, probably from an adult female aged between 21 and 35 years (Jacklin 2008). The bones had been burnt at a very high temperature and were fully calcified and cracked. Rib fragments and pieces of skull were identifiable along with long bones. Of interest was the presence of a number of hand bones, which are usually under-represented in cremated material. No pottery was recovered from the fill, although some fire-cracked stone was recovered. A further, sub-circular pit [1186] was located nearby, but its single fill (1185) contained no finds.

The environmental samples from the cremation pit produced very little; just a few possible cereal fragments, some hazelnut shell and several seeds of cleavers, dock and a single small indeterminate grass caryopsis. These came entirely from the upper portion of the feature, which interestingly also contained a small collection of worked flint (mainly flakes, but also a bladelet) and a small concentration of fired-cracked pebble fragments (see *Struck Lithics*). The cremation pit's lower horizons contained little or no charred plant or archaeological remains, but incorporated the majority of the bone. Unfortunately, the paucity of botanical remains prevented any investigation into the selection of plant and/or tree species for cremation purposes.

Cremation 7256 (Drove 5)

An isolated cremation burial [7256] was located in the area of later Drove 5. The shallow sub-oval pit, appeared to have been lined with a pale grey clay (7257). The main fill (7255) consisted of dark grey-black silty organic material containing visible fragments of charcoal and calcined bone. Both fills were environmentally sampled. That from the clay lining contained charcoal, together with fire-cracked flint- and sandstone pebbles, indeterminate burnt bone, roots and occasional insects. The upper fill sample contained a similarly rich charcoal assemblage that confirmed the feature as the remains of human cremation burial, with 628.5g of cremated bone retrieved, as well as a few un-charred (probably intrusive) seeds. Analysis showed the burial to be that of an adult male, aged between 16 and 45 years (Petersone-Gordina and Holst 2019; see *Human Bone*).

This burial is tentatively assigned to this period on the basis that it would have been out of place (and subject to disturbance by animals) within the assumed later working Middle Bronze Age drove.

Barrow G9380, the Barrow Field

A substantial ring-ditch G9380, was discovered within the 'Barrow Field' *c.* 115m SSE of large barrow [1941]. It was identified from aerial photographs in the 1980's, and first investigated during trial trenching of the Site in 2003 (Malone 2003: 10).

The current excavations found no traces of a mound, but the barrow was defined by a 2.2-2.9m-wide ditch, that had an external diameter of 20.5m NS and 22.5m EW (Figure 14, Plate 18). Seven segments excavated around the ditch's circumference showed it to be an average of 1m deep with a moderately steep-sided profile and narrow base (Figure 15). They revealed between five and as many as ten fills, which tended towards dark brown sandy primary fills rich in gravel, succeeded by

Plate 18 Barrow G9380, looking east.

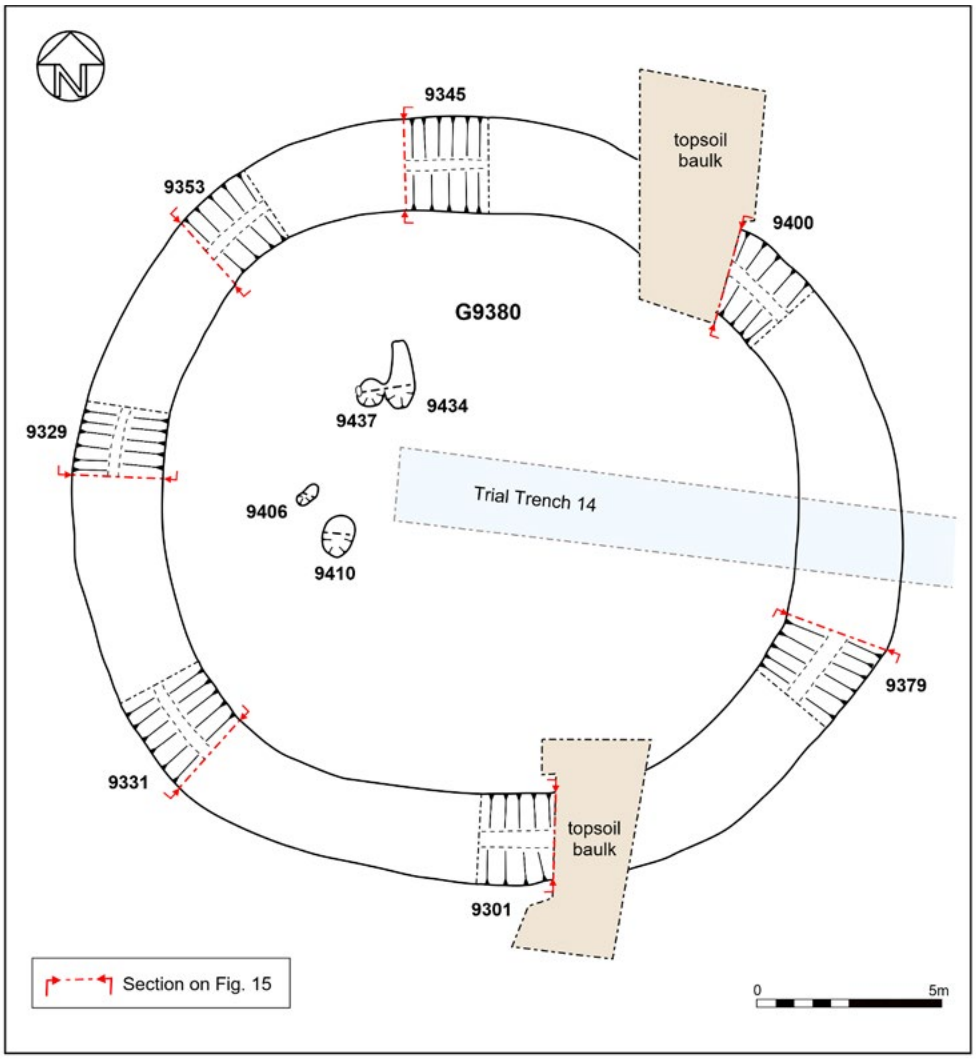

Figure 14 Plan of Barrow G9380.

slump deposits of orange-brown sand. Upper fills were predominantly yellow-grey silts. Segments [9400] and [9329], to the NE and west respectively, contained signs of ditch recutting that were not detected in the other ditch segments.

A small, potentially intrusive grog-tempered pottery sherd was recovered from the penultimate fill (9325) of western ditch segment [9329]. This was a plain body sherd from an Early Middle Bronze Age (CP3A) vessel. The sherd was very small and highly abraded, but enough survived to show that it derived from a very softly fired, moderately thick-walled vessel (see *Prehistoric Pottery*).

A Late Neolithic or Bronze Age flint flake core was recovered from NW ditch segment [9353] (see *Struck Lithics*). Four of the other excavated ditch segments contained residual Mesolithic flints, including a blade core and a piece of waste. Interestingly, the latter conjoined with another piece from the middle fill of a large Early Bronze Age pit [9169], located 130m to the SW (see below).

A large animal bone assemblage of over 150 (assembled) fragments was recovered from the ring-ditch, with some bone present in every excavated segment. Species were varied, but included predominantly cattle, sheep/goat and pig, with a few elements of red deer and a cervical vertebra positively identified as aurochs (see *Animal Bone*). The assemblage potentially points towards evidence of ritual feasting and/or offerings associated with the monument during its use.

Two environmental samples were obtained from the barrow ditch: one from western ditch segment [9329] produced fire-cracked pebbles, flint chips, charred cereal grain and the presumably naturally introduced bones of field vole (possible water vole), newt and frog or toad.

Barrow G9563, the Barrow Field

Barrow ditch group 9563 was also located within the 'Barrow Field', approximately 100m due east of Barrow G9380 (Plate 19). Its western side was first encountered within evaluation Trench 15 (Malone 2003: 10). Upon full exposure, the circular feature measured 27m in external diameter, being larger than its western

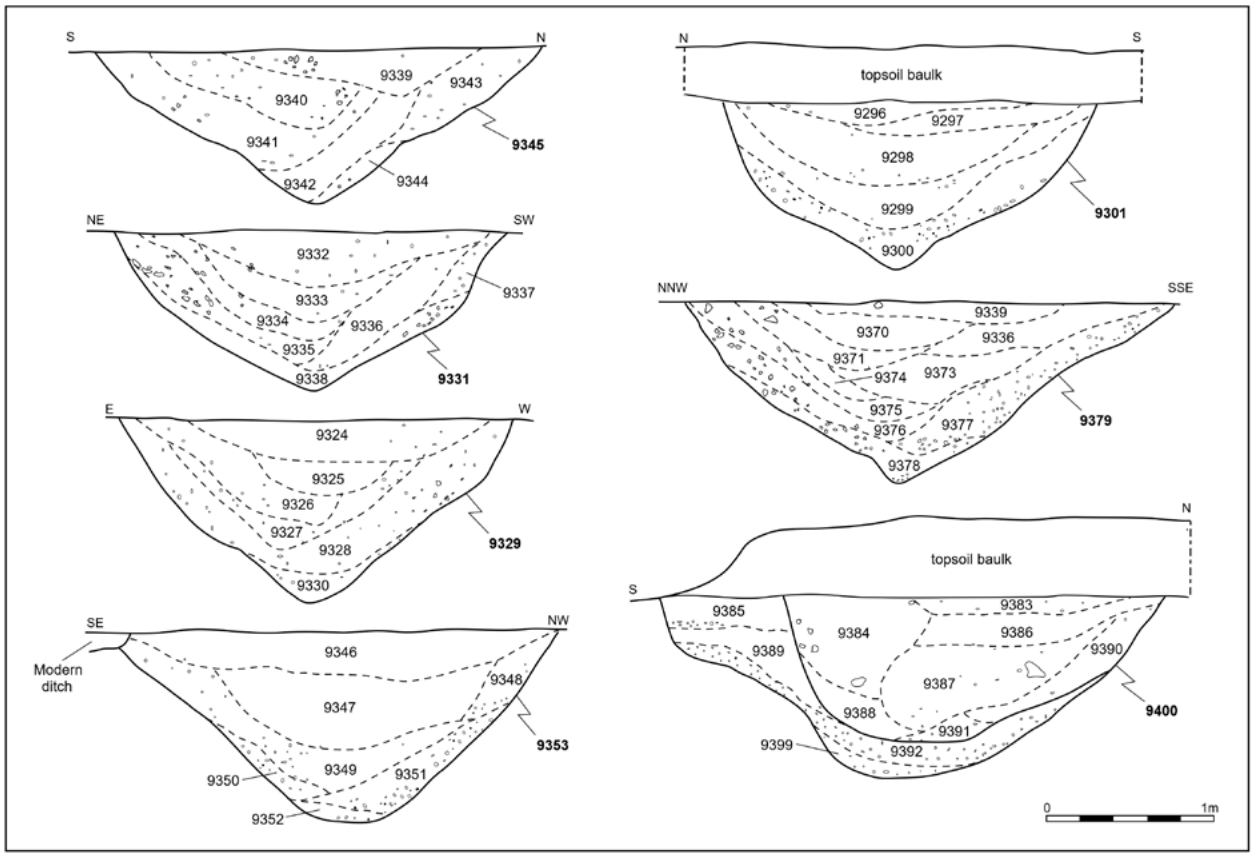

Figure 15 Sections through ditch of Barrow G9380.

counterpart, G9380 (Figure 16). The outer ditch was somewhat irregular in terms of dimensions, measuring between 1.7m and 3m wide, and 0.5m to 1.2m deep (Figure 17). Some of the observed depth variation may have been due to truncation: the monument had been traversed longitudinally by numerous post-Medieval claying trenches.

Plate 19 Aerial view of the Barrow Field, with ring-ditches G9380 & G9563, looking east.

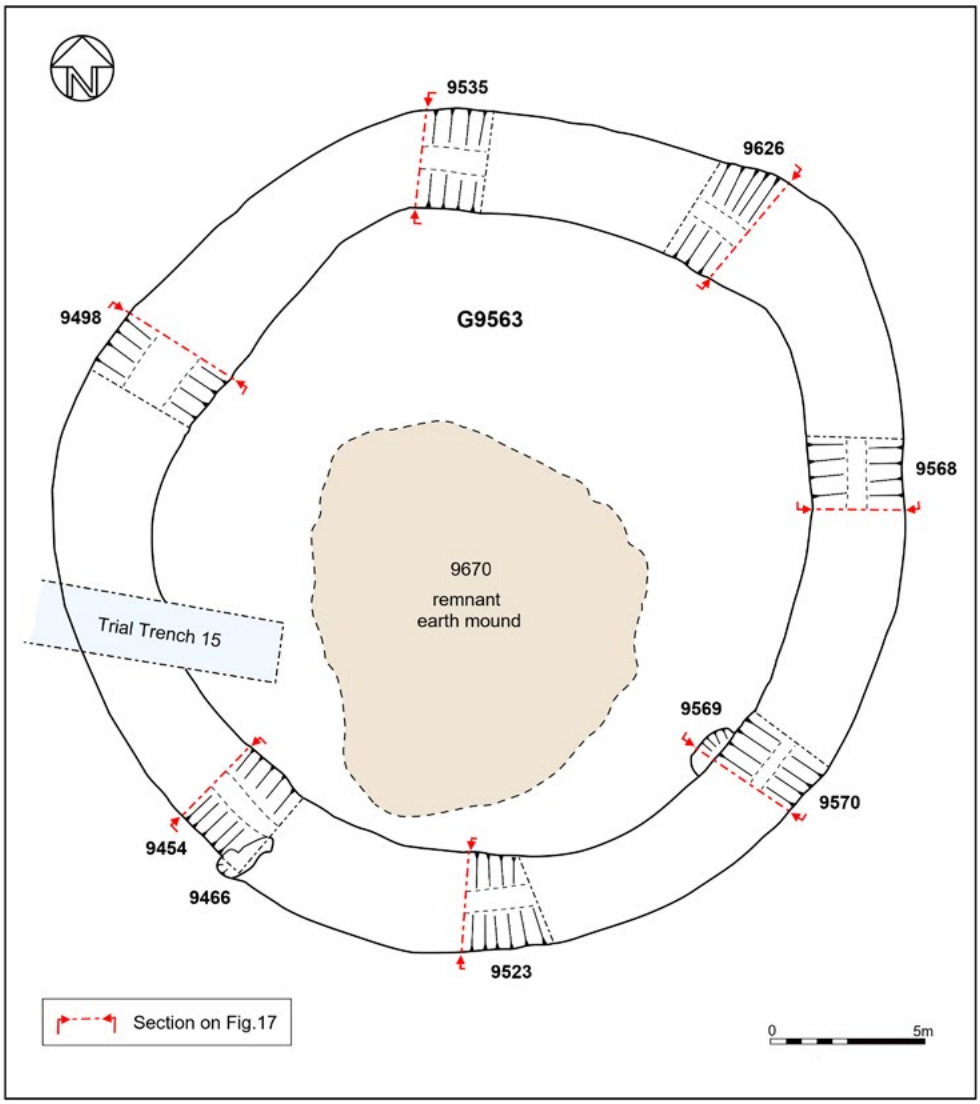

Figure 16 Plan of Barrow G9563.

Seven 2m-wide segments excavated around the ditch's circumference showed the feature to have a sharp break of slope and moderately steep sides. The base was predominantly wide and convex, but SW segment [9454] exhibited a narrow, flat base and convex north side. The excavated segments contained between four and seven fills. The primary fills, interpreted as weathered slump deposits, were succeeded by grey sands and silts. The upper fills were predominantly brown-grey clays and silts. In common with ring-ditch G9380, this barrow contained a varied animal bone assemblage (>100 fragments), including predominantly cattle, as well as sheep/goat and pig, red deer and possible small aurochs (Rackham *et al.* 2019). Similarly, the animal bone perhaps points towards evidence of feasting and/or burial offerings.

Finds from the ditch fills were limited. The penultimate fill (9543) of northern segment [9535] contained the lower wall (18g) of a modest-sized, Early Middle Bronze Age-type (CP3A), urn-type vessel (*see Prehistoric Pottery Cat. No.* 53). Carbonised residue on the pot-sherd's inner surface showed that the vessel had been used as a cooking pot. Radiocarbon dating of the residue was dated with 95.4% probability to 1623-1497 cal BC (94.0%); 1473-1463 cal BC (1.4%); (SUERC 89319), consistent with the Early Middle Bronze Age, showing that the monument's ring-ditch had been infilled by this time.

A shallow (0.2m deep), remnant of the original mound deposit (9670) survived within the ring-ditch circuit. Another remnant mound deposit (9521), composed of red-brown silty sand, was found slumped against the inside edge of southern ditch segment [9523]. This washed down to produce only *Chenopodium* seed and a single charred cereal grain.

Mini-barrow complex G9451, G9453 & G9452, the Barrow Field

Located almost central to aforementioned barrows G9380 and G9563, and less than 20m to the south of them, three small, intercutting ring-gullies were

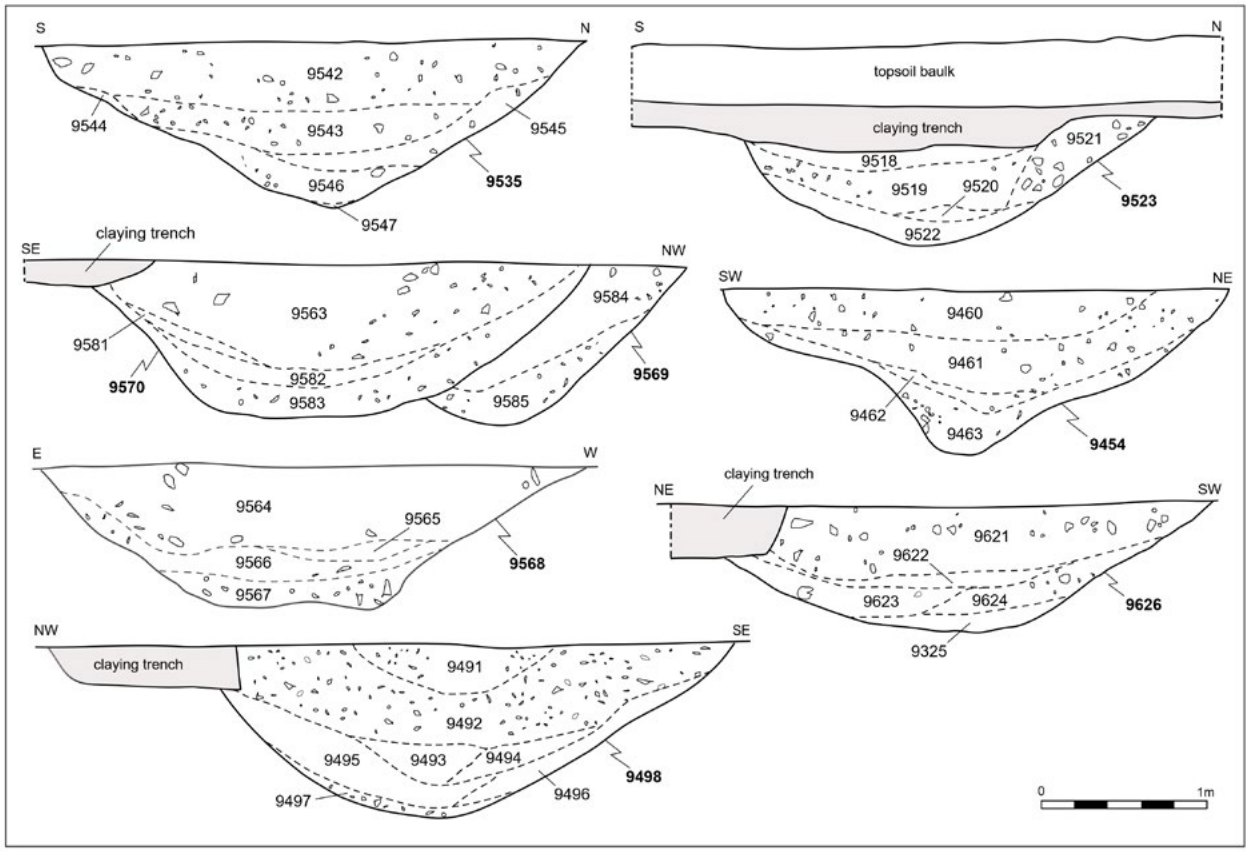

Figure 17 Sections through ditch of Barrow G9563.

identified (Figure 18). The northern edge of all three features had been truncated by Middle Bronze Age ditch G9650 (Plates 20 & 21).

The earliest ring-gully, stratigraphically, was G9451, the eastern-most, which measured 6m externally and had a 1.2m-wide gully with a convex profile. Three segments (9534, 9541 and 9562) excavated on the south side of its

Plate 20 Aerial view of three mini-barrows, looking east. The later field ditch truncates these features.

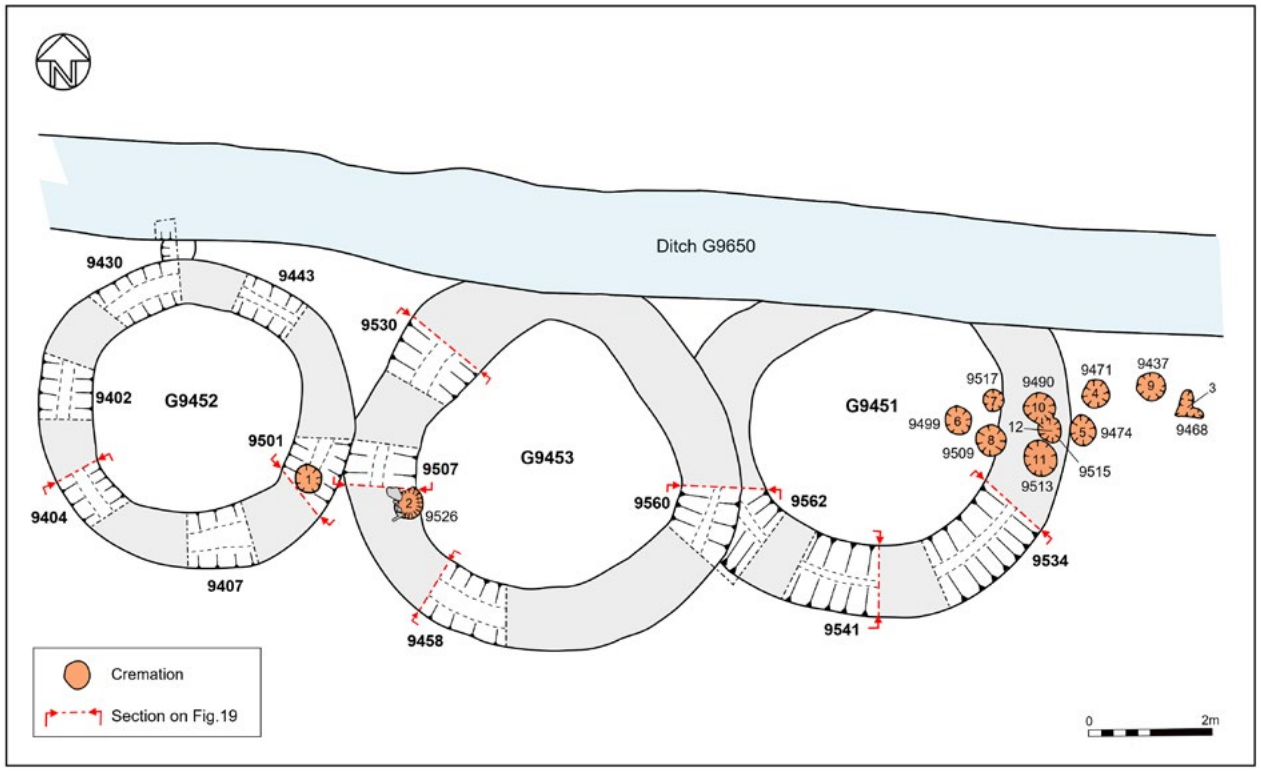

Figure 18 Mini-barrows G9451, G9452 & G9453.

gully circuit (the remainder was truncated), revealed a 0.6m deep feature containing between three and five silty fills (Figure 19). The secondary fill of segment [9541], an orange-brown silty sand (9539) contained a cattle femur. Its flot produced a moderate number of snails of various species. This ring-gully was truncated on its western side by central ring-gully G9453, showing that the former's ditch had fully silted up, prior to the creation of the similar-sized 'mini' barrow next to it.

Plate 21 Westernmost mini-barrow following excavation.

This central 'mini' barrow (G9453), approximately 6m in diameter externally, had a 1.2m-wide gully that was investigated by means of three segments, revealing a variable profile. Of these, segment [9458] was distinctly triangular with a pointed base (Figure 19). Its friable secondary fill (9456) was bulk sampled, and produced a variety of environmental remains, including a single charred grain, charred chaff, seeds and varied snail species, one or two indicating damp and aquatic conditions.

The third and latest ring-gully, represented by western-most 'mini' Barrow G9452, measured 5m externally and had a ditch 0.8m to 1m wide. Six excavated segments revealed a convex profile <0.35m deep, each containing two fills. The secondary fill (9478) of segment [9407] contained fire-cracked pebbles and minute traces of indeterminate slag within the magnetic residue of the associated soil sample. Charred and uncharred plant seeds were also recorded in the flot. The northern ditch segment [9430] truncated part of an earlier, circular pit [9428].

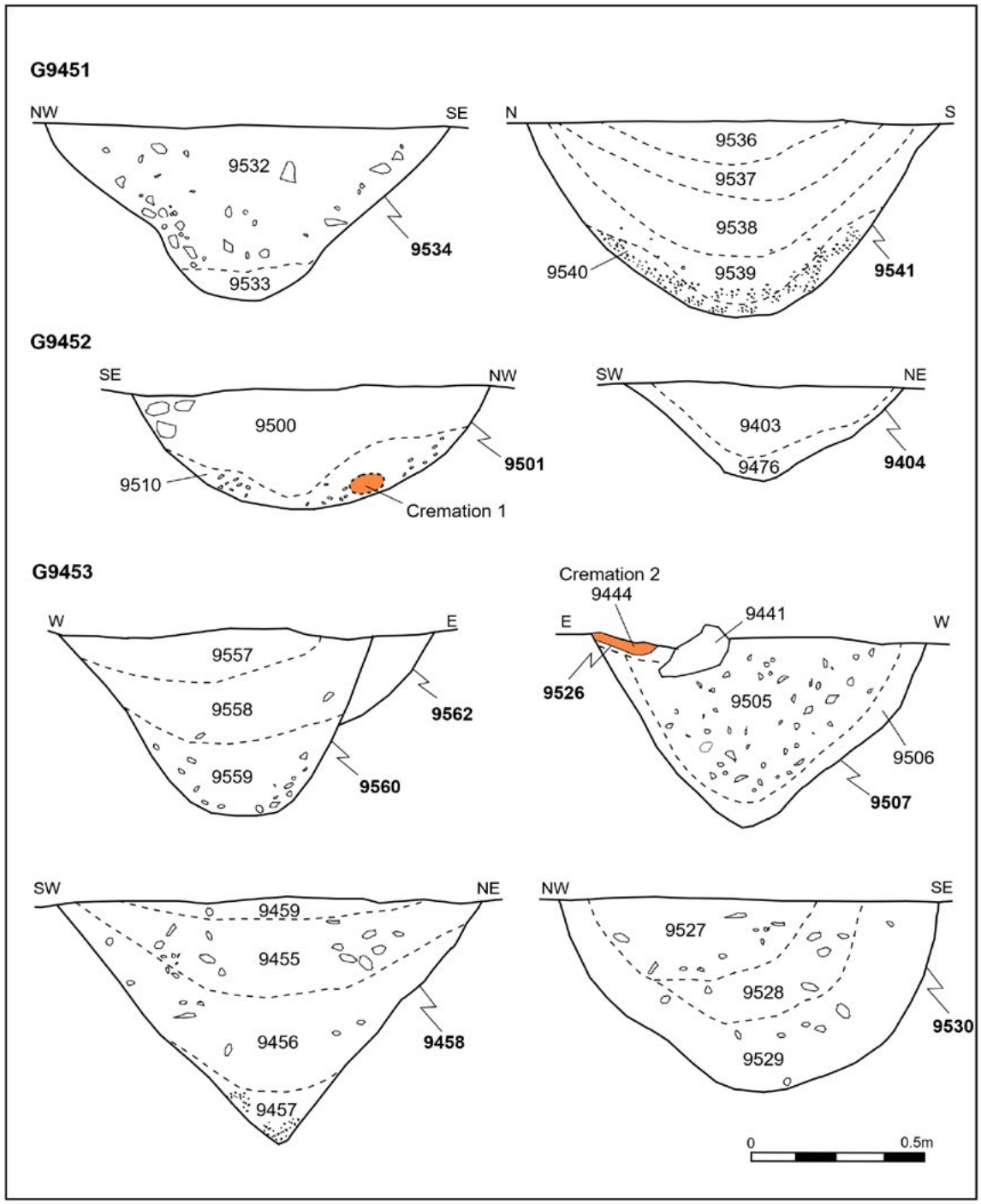

Figure 19 Mini-barrows G9451, G9452 & G9453: sections.

None of the three ring-gullies contained any dateable artefacts, evidence of internal burials or other contemporary features. However, a cluster of 12 Late Middle Bronze Age cremations (both urned and unurned and dated by radiocarbon), were found cut into the presumably levelled remains of the three former 'mini' barrows, the majority within the upper fill of eastern ring-gully G9451 (see Period 3, below). This perhaps suggests the continued reuse of an area that was considered 'special' in some way, with the later cremations perhaps being placed in order to venerate an ancestral site.

Mini-barrow G11230 (Field 67)

The vestigial traces of another small ring-gully, assumed to also have been a barrow, were identified 75m south of the three 'mini' barrows (Figures 5 and 51). This feature took the form of a *c.* 4m length of a curvilinear gully. Although only the southern portion remained (due to later truncation), the inner diameter is estimated to have been in the region of 3-4m (6m externally). The SE terminal [11230] measured 0.25m deep and contained only grey silty clay (11229).

The ring-gully may be significant in that it was surrounded (and partly truncated by), a second cremation group (numbers 13, 14 and 17-19, see below). At an even later date (in the Late Bronze Age) a more substantial ring-ditch G11083 was also placed in this area (Figures 50 and 51). The juxtaposition of these funerary features over time is clearly reminiscent of the three Early Bronze Age 'mini' barrows and their associated Late Middle Bronze Age cremations located to the north.

Precursor Ditches

Across the central-northern part of the Site, a series of Early Bronze Age ditches pre-dated the principal field system and associated droveways that came to dominate this landscape in the Middle Bronze Age (Figure 5). The earliest of these so-called 'precursor' ditches (glimpses of the start of the organisation of the landscape) appeared to define a narrow 'avenue' associated with the Barrow Field. Following the conception of this EW pathway, the first Drove 5 ditches were laid out. These were at a slightly different orientation to the principal thoroughfare ditches of the Middle Bronze Age, suggesting that later, this original routeway was slightly realigned for some reason.

Avenue ditch (N) G9445/G9446

There is stratigraphic evidence to show the early presence of a *c.* 15m-wide droveway or 'avenue' located to the immediate south of barrows G9380 and G9563. This landscape feature, aligned broadly EW, was formed by northern linear G9445/9446; and southern linears G9394 and G9652.

These ditches, which in construction terms even pre-date the eastern precursor of Droveway 5, appear to delineate the southern boundary of the Barrow Field, in which the contemporary barrows (G1941, G1026, G9380 and G9563) were located. It may be that they defined a kind of 'processional way' leading towards the burial monuments. An 80m gap or entranceway in the southern component, between ditches G9394 and G9652 (and incorporating mini-barrows G9451-G9453), was later occupied by Middle Bronze Age field plot 67.

Northern avenue ditch G9445 ranged from 1.2m to 1.7m wide and 0.8m deep and had a moderately steep-sided profile (Figure 20). Up to four fills were identified throughout: all were the ubiquitous grey silty clays found across this Site, but more unusually, with flint pebble inclusions. The terminal and central segment [9138] both showed evidence of a shallow recut [G9446], running along the same alignment. A slightly offset ditch segment at the eastern end [9219] had the same characteristics as terminal [9195] and may be a continuation of it.

Avenue ditch (S) G9394 & G9652

The SW counterpart of this EW avenue, G9394, was traced for just over 100m. The ditch averaged 0.8m wide and 0.4m deep (Figure 20). The western terminus contained animal bone and burnt chert. Intersection [9149] (cut by N/S droveway precursor G9398), contained a sequence of three sand deposits, with the primary fill (9146) containing gravel.

Some 80m further east, the SE avenue element G9652 aligned with G9394. There is no evidence to suggest that the southern ditch had continued across this open area. Indeed, part of it was occupied (a little further north), by the three 'mini' barrows discussed above. G9652 was traced for approximately 75m. Two truncated terminals [9602] and [9635], and a central segment [9586] were investigated, but were uninformative. A northern counterpart to this avenue ditch was not identified, although it could have been subsumed by Middle Bronze Age ditch G9579.

Barrow Field eastern ditch 9596

To the east of Barrow G9563, two NS-aligned ditches, possibly the northern return of avenue ditch G9652, appear to have demarcated the eastern extent of the Barrow Field (Plate 22). The southern-most ditch, 37m long had a 1m wide terminus [9596], 0.35m deep, containing the usual clay fills associated with these early linears (Figure 20). An opposing terminal in the northern ditch created a 10m central entrance into the Barrow Field, directly opposite (and *c.* 35m distant from), Barrow G9563. The northern terminal [9655] had similar dimensions and fills to [9596].

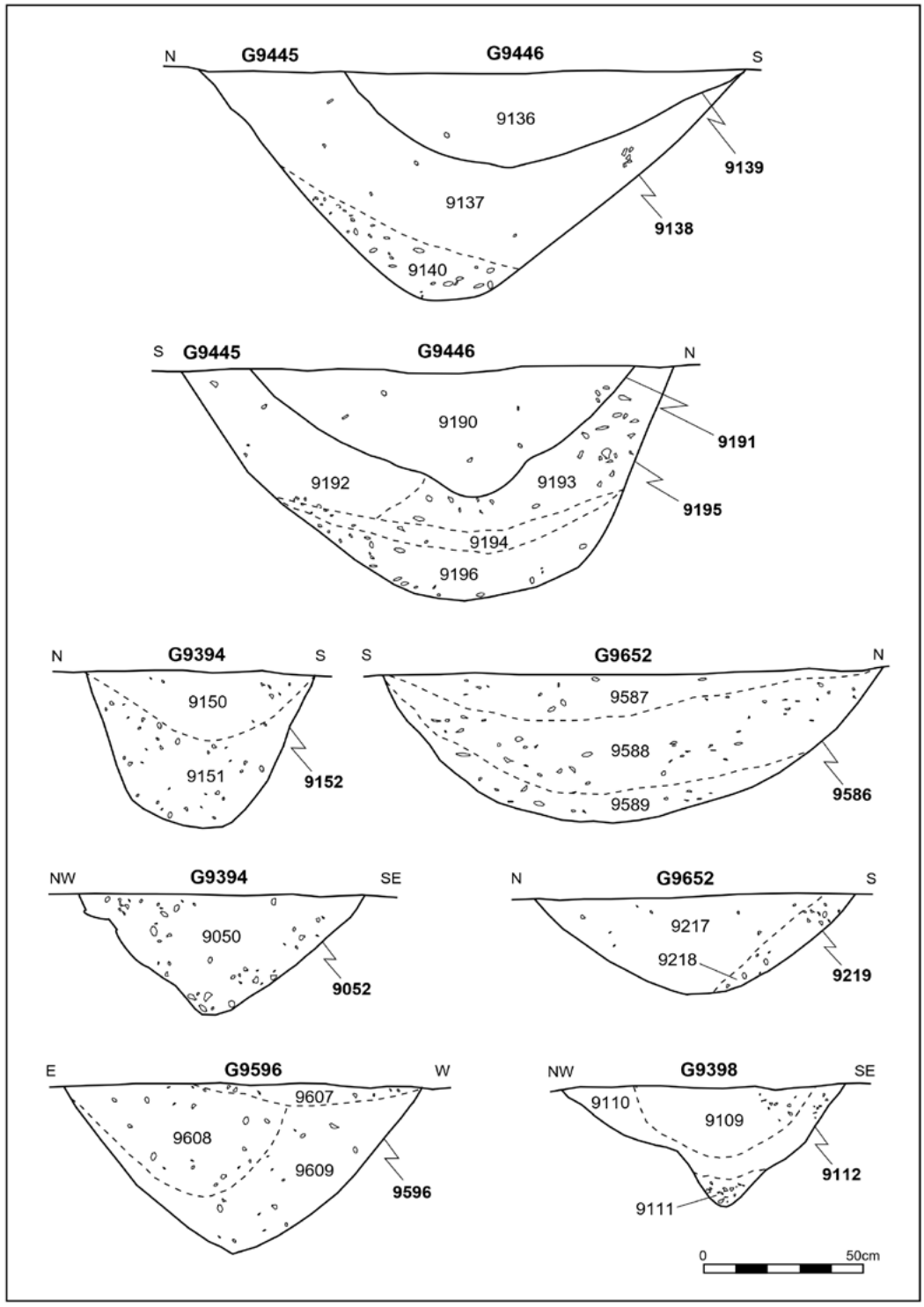

Figure 20 Field boundary precursor ditches: sections.

Early evidence for Drove 5

A number of ditches representing the original alignment of Drove 5 were identified during the excavations. The majority of these were slightly offset to the (later) principal Middle Bronze Age ditches defining Drove 5 and all were confirmed to be stratigraphically earlier. At the northerly extent of Drove 5 (which extended north beyond the limit of excavation), two early parallel ditches [8211] and G8444 were identified slightly east of the droveway's principal ditches. These linears represent the initial NNE/SSW alignment for this part of the drove, prior to its true NS siting.

South of the droveway intersection with droves 6 and 7, traces of a substantial ditch (G8389) defining the eastern side of Drove 5 again pre-dated the principal Middle Bronze Age alignment. The earlier feature [8166], measured 1.75m wide and 1m deep and

Plate 22 Entrance terminal [9596] of the eastern 'Barrow Field' ditch.

contained six fills producing only a single animal bone and a flint flake (Figure 21). The ditch incorporated a 4m-wide entranceway east, into what later became Field 59. A single cattle tibia was retrieved from one of the entrance termini. This entrance was later narrowed during the recutting of Drove 5.

At the southern end of Drove 5, three aligned linear segments orientated NNE/SSW were identified. On plan they are located 'beneath' Field 51. The most substantial of these was a slightly meandering, shallow ditch (G7218), *c.* 35m long and 0.6m wide (Figure 21). A single well -stratified Early Bronze Age pottery sherd (12g) was retrieved from southern terminus [7037]. Two undated linears commencing at short intervals to the north and south of this ditch (G7219 and G7217 respectively) are related by their alignment and deemed contemporary. Considered as a single feature with multiple, narrow entrances, this linear provides further evidence of the droveway's early conception and use.

Some 20m to the SE, the remains of a substantial right-angled ditch (G6327) were identified at the southern entrance to Drove 5 (Figure 21). This southern ditch also pre-dated the Middle Bronze Age alignment of Drove 5. A soil sample obtained from the ditch corner [6251] provided no further clues as to its function (Rackham and Giorgi 2016).

It is deemed significant that the NS-aligned arm of ditch G6327 aligns with droveway precursor ditches G7217 – 7219 to the north; collectively, these features represent glimpses of an earlier thoroughfare, created on a very slightly different, oblique alignment to the one established during the Middle Bronze Age - perhaps being associated with a more sacred or ritual function.

Early evidence for the field system

Away from the principal alignment of Drove 5, evidence from ditch recutting also attests to the early establishment of some of the (later established) field system elements. One such feature was the NS-aligned ditch (G8436) dividing later fields 45 and 46. This was demonstrably earlier than the principal field system ditches and had in fact extended north for a further 15m, into the southern part of what later became Field 42. This ditch was one of the handful of 'precursor' elements identified across the main field system.

A number of aligned ditch segments were identified in the centre of what later became Field 51. One was a short, undated ditch segment [7113] oriented EW. This aligned (and appeared to be associated with) with another, slightly curved segment (G7229), located some 25m further west. Four sherds of Beaker and/or Early Bronze Age pottery were recovered from its southern terminus.

An early NS-aligned ditch [9107]/[8104], extended for just over 50m along the eastern edge of what later became Field 58. The length of this feature suggests that it formed an important marker during this earlier period (Plate 23).

Plate 23 North-facing section through precursor ditch terminal [9107].

Early Bronze Age Pits

Across the Site, a large number of Early Bronze Age pits were identified. These ranged from small scoops - so-called 'one-metre' pits; to features measuring between *c.* 1.5 and 4 metres in diameter; and finally, to large waterholes and sumps greater than 4m. The majority of larger pits assigned to this period averaged 5-6m in diameter, although one or two examples were significantly larger. Some pits were isolated, others were found in clusters, identifying favoured locations for pit creation and usage. These features have been grouped by size and ordered geographically: i.e. they are easily located on plan by reference to the (later) fields in which they were located (Figures 4 and 5).

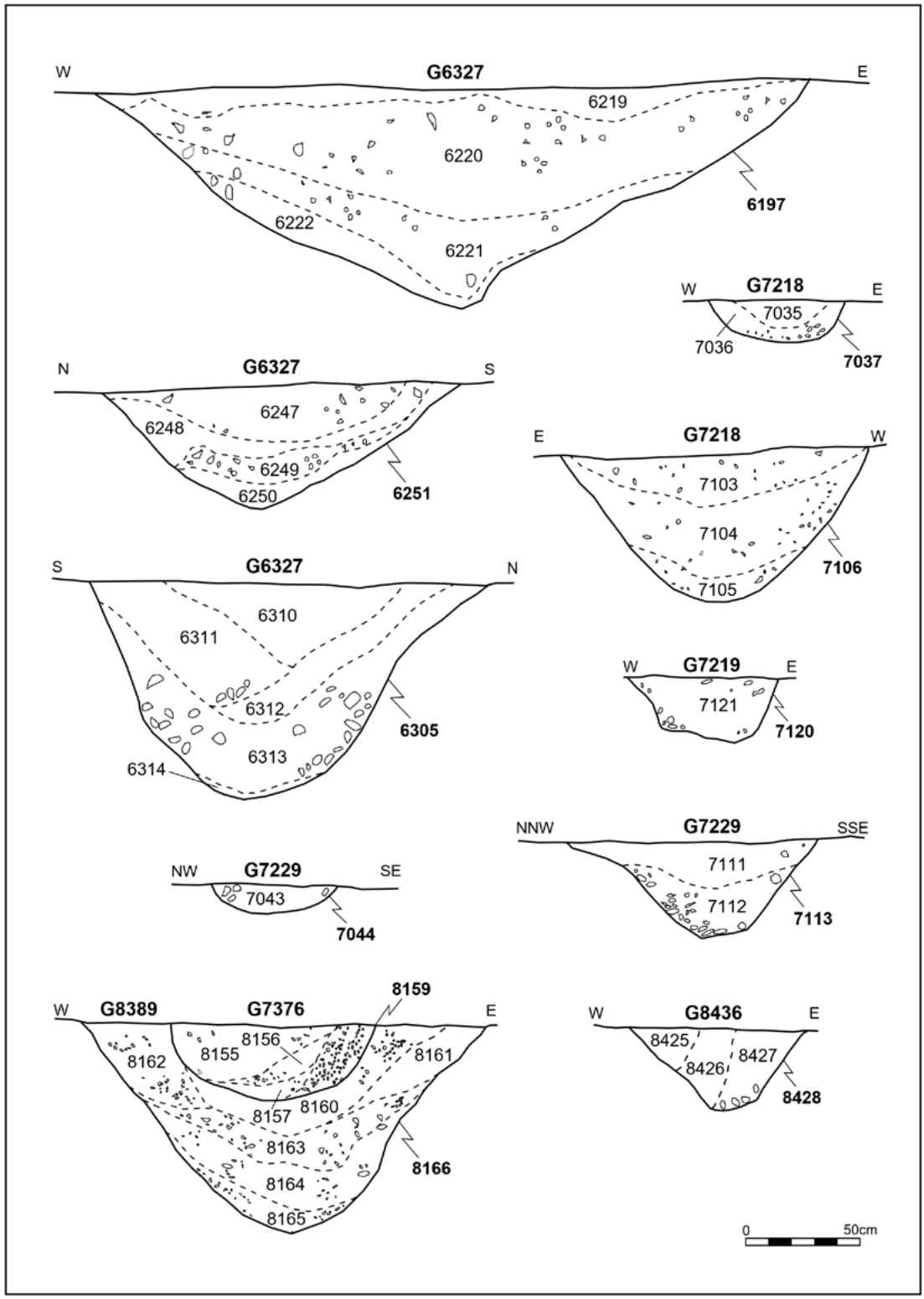

Figure 21 Drove 5 precursor ditches: sections.

One-metre pits

A number of a distinctive type of shallow pit feature measuring <1m diameter were found across the Site (Figure 22). They represent a separate class of feature from both the moderately sized pits and larger waterholes and sumps that were also identified (see below). Those of interest are discussed below.

Pit 4013 (Drove 3)

Shallow pit measuring 1m in diameter, was an elongated flat-bottomed pit surviving to 0.25m deep. It contained two sandy silt fills with numerous fire-cracked pebbles suggestive of a pit for the heating of water by the submersion of hot stones.

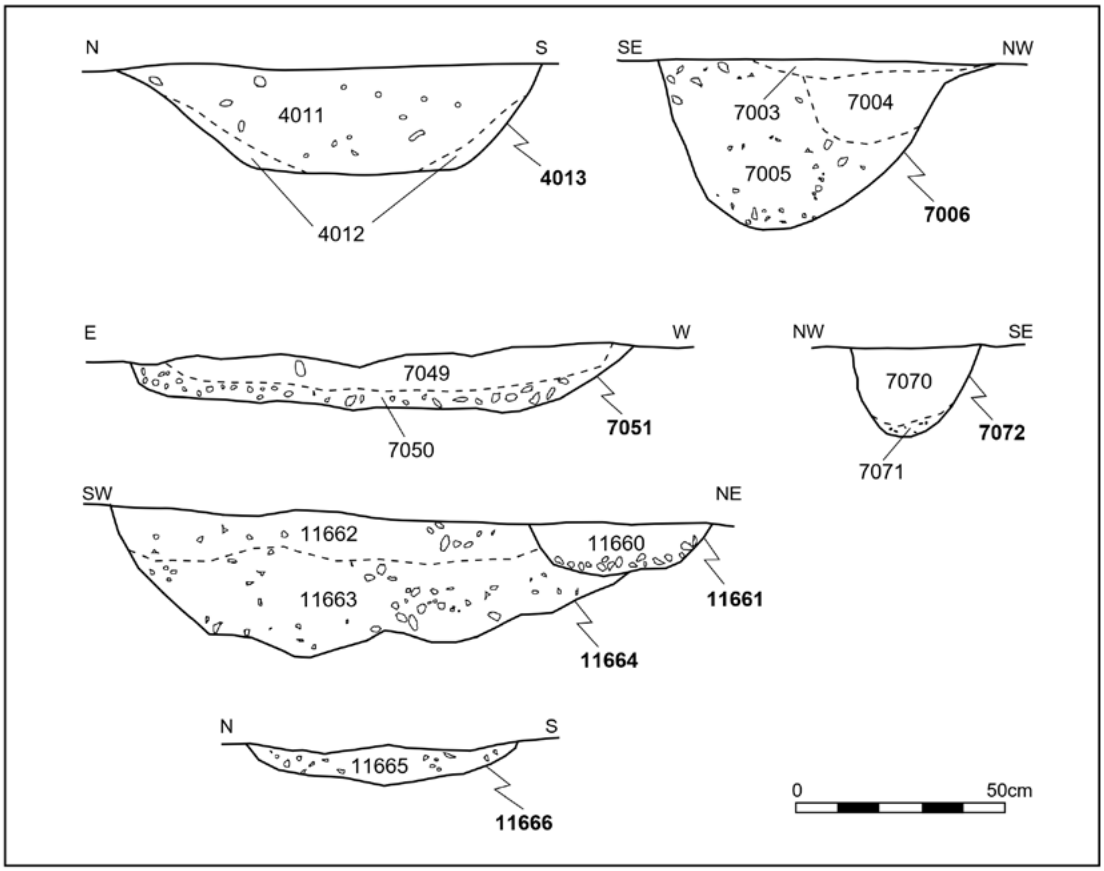

Figure 22 Early Bronze Age one-metre pits: sections.

Pit 7006 (Drove 5)
A small, sub-circular pit containing two abraded residual sherds (17g) of Beaker pottery (Figure 22). The uppermost fill (7003), was dark grey clay containing charcoal flecks, infrequent stones and two sherds (17g) of Early Bronze Age (CP2B), pottery.

Pit 2156 (Field 15)
Small circular pit with an Early Bronze Age (CP2B) pottery rim sherd recovered from its single fill (2155). The rim is from a Food Vessel bowl or vase, decorated with incised lines forming a herringbone pattern (*see Prehistoric Pottery Cat. No.* 42). Similar examples have been found nearby at Tower's Fen, but using a different decorative technique of twisted cord impressions (see *Prehistoric Pottery*). A sample from the feature contained three small fragments of flint and a little charcoal. Analysis identified several indeterminate charred seeds and the snail *Trichia hispida*, a species common to shady and woodland environments.

Pits 1225, 2154, 2437 & 2444 (Field 19)
Circular pit [1225] had three fills, of which the primary fill (1248) had a high incidence of heat-affected stones and charcoal flecks. The stones appeared to represent purposeful deposition from a domestic area. Pits [2154], [2437] and [2444] dominantly consisted of a primary orange-brown sandy silt with darker grey-brown clay silt secondary deposit. The upper fill of pit [2154] contained a number of flints including a flake, a side scraper and two nodules from which test-flakes had been struck (see *Struck Lithics*).

Pit group 8406-8414 (fields 42/43)
This was a concentration of ten discrete, circular and sub-circular pits, all of similar size. Four were singular features, the remainder were grouped in adjacent pairs. They all contained single silt fills with charcoal flecks. Eight were sampled and in each case were shown to contain fire-cracked stone and pebbles, with pit [8255] containing the largest quantity (1964g). The environmental evidence indicated that they are associated with a domestic setting (Rackham and Giorgi 2016). Clear intercutting of them shows maintenance over time.

Although relatively closely spaced, the distribution of these features was not uniform, and no definite structure or other composite feature could be discerned. At best, the northern half of a sub-oval feature measuring in the region of 8m by 3m can be traced by 'joining' seven of the features on plan; but this is tenuous.

Hearth pit 7051 (Field 52)
An oval hearth pit, 1.2m wide and 0.15m deep (Figure 22). Its upper fill (7049), a dark grey-brown silt with

visible charcoal, contained a Beaker sherd and an Early Bronze Age sherd. Its associated soil sample produced a further three potsherds, one of which was part of an undecorated Biconical-type jar with carbonised residue adhering to the interior (see *Prehistoric Pottery Cat. No.* 44). This sherd returned a measured C14 Age of 3440+/-30 BP (Beta-452958), which relates to the Early Bronze Age at 95.4% probability: 1776-1635 cal BC (88.6%); 1871-1845 cal BC (5.6%); 1812–1803 cal BC (1.2%). The environmental remains were indicative of domestic activity and included a particularly good charcoal assemblage, fire-cracked pebble fragments, fired earth, a few poorly preserved charred grains (including barley), charred fragments of hazelnut shell and burnt animal bone. Unassociated with any structures, the remains likely suggest an open focal hearth, where people processed and cooked foodstuffs.

Rubbish pit 7072 (Field 52)
An isolated pit [7072] with a rounded profile, 0.3m wide and 0.2m deep (Figure 22). The primary shallow silt layer (7071) was succeeded by a distinctive charcoal-rich fill (7070) containing cattle bone fragments and an overfired, re-burnt pottery sherd of probable Early Bronze Age date. Its soil sample washed down to produce virtually all charcoal, as well as flint-working debitage, poorly preserved grains and an ungulate tooth. A *Prunus Sp.* charcoal fragment was radiocarbon dated to 1916-1751 cal BC at 95.4% probability (SUERC-89323), which places it within the Early Bronze Age Period (2b). A chevron-patterned sherd from a Biconical-type jar, dated to the Early Bronze Age was also found amongst the residue (see *Prehistoric Pottery Cat. No.* 45).

Intermediate pits (1.5m - 4m)
Pits in this category range from 1.5m to 4m in diameter. Visibly more substantial than the aforementioned shallow one-metre pits, these features generally contained between three and five fills. Occasionally thin silt lenses were identified signifying wind-blown infill. Dating of them was sporadic, with few finds being made. Assigning them to this period was often based on stratigraphy, placement in the landscape and specific characteristics.

Pits 4038 & 4042 (Drove 3)
Two pits located within the alignment of this later droveway each measured in the region of 3m in diameter. Their locations, which would have impeded use of the thoroughfare, suggest that they were created during this earlier period. Pit [4038], sited centrally within the later droveway, was a large sub-circular feature of nearly 4m across and 1.5m deep (Figure 23). It contained five fills, being variations on the usual compact orange-brown sandy gravels, although thin blue-grey silts were also recorded, signifying more anaerobic conditions. A degraded wooden plank (a possible step) came from one of these lenses (4036), whilst undiagnostic fired clay came from fill (4035), and fragments of burnt/ fired clay/ briquetage, identified as possible domestic hearth material, were recovered from (4033). The feature has been interpreted as a waterhole, used for rubbish disposal following its disuse. The slumped upper levels of the pit were later covered by peat (Plate 24).

Plate 24 Early Bronze Age pit [4038] with preserved wood visible in base.

Sub-circular pit [4042] was 2.5m diameter and 1.2m deep. It had fairly steep sides and an uneven base and was interpreted as a quarry excavated for gravel extraction. It was no doubt fully backfilled by the time the drove was laid out. The upper fill appeared to be the result of deliberate backfilling, with no evidence of silt lenses.

Pit 430 (Field 7)
A single, isolated Early Bronze Age pit [430] identified in this area was dated by pottery sherds. Whilst wide, it was very shallow (0.2m) and had steep sides. It had two fills, of which the upper fill (432), contained 38 tiny fragments (364g) of Early Bronze Age pottery, many heavily ionised.

Waterholes 360 & 361 (ditched enclosure)
This part of the Site, which appears to have been a focus for pit digging and waterholes throughout the Bronze Age, contains a palimpsest of variously dated features. In the SE corner, immediately north of Drove 1, were a number of intermediate pits dated to the Early Bronze Age by pottery recovered from their fills. Oval pit, [360] measured 3.80m long, 0.50m wide and 0.4m deep. It contained two fills, of which primary fill (373), contained a single sherd (21g) from an Early Bronze Age Collared Urn-type (see *Prehistoric Pottery Cat. No.* 38). No other finds were recovered. Pit [361] located immediately to the south, measured 2m in diameter and 0.7m deep. It contained four fills, of which fill (376) contained three sherds (39g) of CP2B Early Bronze Age pottery derived from at least two different vessels.

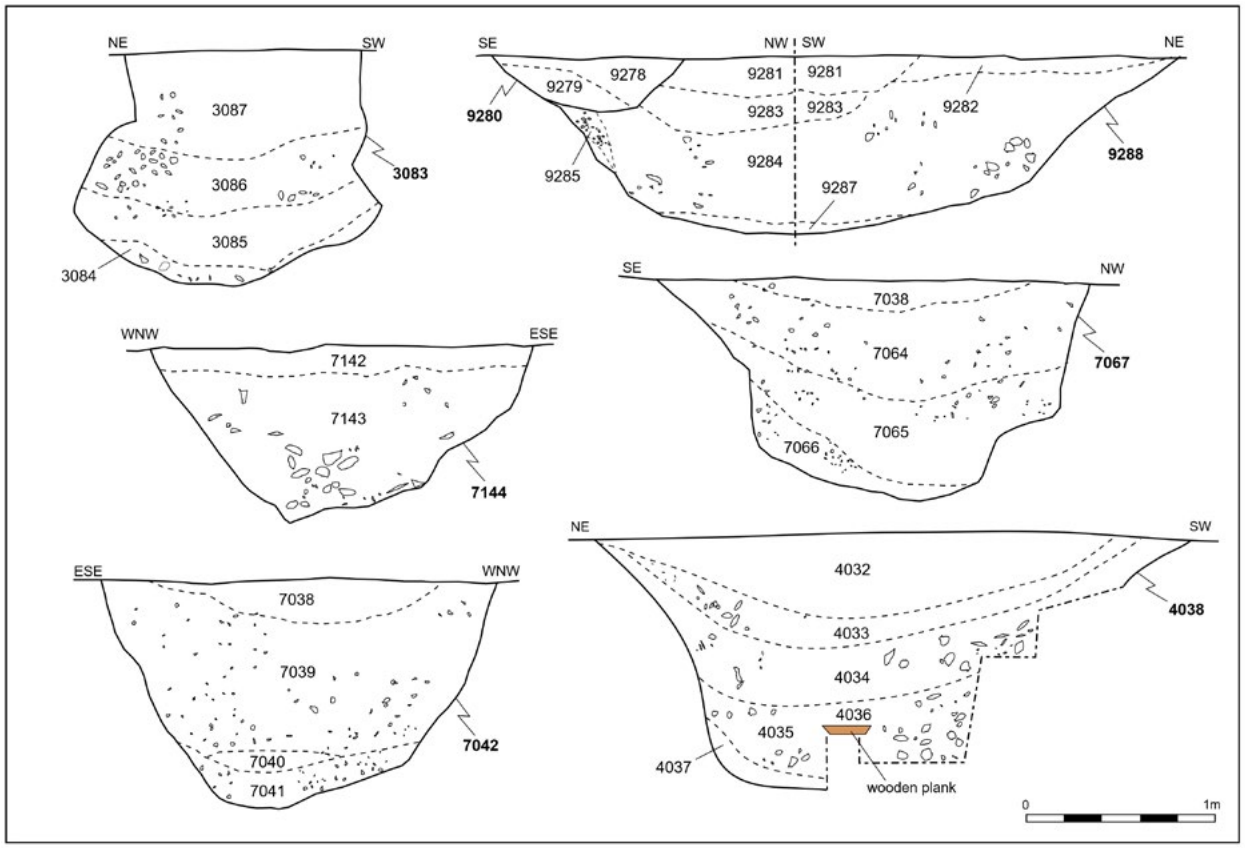

Figure 23 Early Bronze Age intermediate pits: sections.

A much larger waterhole [631] located in this area is also likely to be of Bronze Age date. The waterhole is described in the context of larger pits below.

Pits 754, 821 & 706 (Field 8)

Waterhole pit [754] measured 3m across and 1m deep (Plate 25). It contained four main fills and various lenses and slumping horizons. These commenced with

Plate 25 Pit [754] during final excavation to recover wood and samples.

a clay basal deposit, followed by sand lenses overlain by dark organic-rich fills. Above these were gravel-rich deposits, some with iron-pan horizons that were particularly concreted. Whilst no dateable finds were recovered from the pit's excavation, its upper fills were truncated by Middle Bronze Age ditch [769] separating fields 7 and 8.

Tertiary pit fill (755) was particularly rich in organic remains, including wood, which occurred as twigs, roundwood, wood-chips and worked timbers. A small quarter-split timber in the base of the pit was probably a stake, perhaps alluding to the former presence of revetting or lining. This fill also produced a piece of oak roundwood that might have been a young tree felled in the conventional manner. A piece of radially split timber from the same context also appeared to have remnants of a felled end (see *Waterlogged Wood*).

The organic composition of an environmental sample from fill (755) suggests that the pit was open and receiving detritus from local vegetation characteristic of rough ground and scrubland, with some evidence for the pit containing standing water. The environmental remains demonstrate that the local vegetation included valuable food resources that were evidently utilised. Species identified included (amongst others), nettle, alder 'cones', hazelnut, bramble, *Prunus* fruit stones, hawthorn fruits and nightshade (Martin and Rackham 2010).

Pit [754]'s upper fills were truncated by pit [821]. Whilst stratigraphically later, it is considered to be a broadly contemporary feature. It contained a number of similar gravel-rich and silty fills, some of which contained fragments of heat-cracked stone. Nearby was waterhole pit [706], another substantial feature considered to be of Early Bronze Age date and forming part of the same group. It measured over 3m across and 1.5m in depth. Unlike pit [754] it did not contain rich organic lower fills, but rather, had a sequence of compact gravel-rich fills interspersed with clay-silt lenses.

Pit 3083 (Field 26)
This pit, approximately 1.3m in diameter and 1.2m deep, had an unusual undercut profile (Figure 23). It contained four fills: the thick organic basal fill (3084) contained degraded wood, and fragments of twig and leaf. A retained sample produced uncharred plant seeds suggestive of damp and disturbed ground.

Pits (Field 51)
A concentration of at least five intermediate pits, three containing Early Bronze Age pottery, were found relatively close together in the locality of later Field 51. Three were of similar diameter (*c.* 2.5m) and are probably water-related features. Two other dated features have domestic associations. A number of other similar-sized pits in the locality were undated but may have formed part of the same general activity:

Waterhole 7056
This oval pit measured 2.5m across and 0.4m deep, and appears to have had a water-related function. Its western edge sloped very gradually down into a rounded base; the eastern edge was moderately steep. The pit contained three silty sand and gravel fills, all of which appeared to have formed naturally by silting and weathering. Upper fill (7057) contained a small (2g) decorated sherd from a Collared Urn-type vessel (see *Prehistoric Pottery Cat. No.* 40). The sloping profile and natural fills of this feature are suggestive of a waterhole.

Reservoir 7067
Sub-circular pit [7067], measured 2.5m in diameter and 1.2m deep, with steep, stepped sides and a rounded base (Figure 23). A lower ledge cut into the natural substrate suggested that a wooden or wattle lining had once revetted the base of the pit. Primary fill (7066) was a gravel deposit derived from slumping of the sides. This was succeeded by three compacted layers of orange and grey-brown silt. The penultimate fill (7064), contained stones, charcoal flecks, part of a cow mandible, a broken flint flake and a single CP2B pottery sherd. The nature of this pit and its fills suggest that it may have functioned as a reservoir.

Waterholes 7042 & 7144
To the south and east of reservoir pit [7067] were two large pits [7042] and [7144] that although undated, exhibited similar dimensions and characteristics. Pit [7042], a possible waterhole, was also 2.5m in diameter and 1.2m deep (Figure 23). Its fills suggested that following initial slumping of the sides, it had filled with water and had later been deliberately backfilled. The pit was devoid of finds, although decayed wood fragments were found in the bottom of it. Pit [7144] was located close to precursor ditch (G7218). It was identical in size to [7042] and also contained silty fills indicative of water-lain sediment.

Pits 9169 & 9288 (Field 66)
Pit [9169], partly truncated by a Middle Bronze Age stock pen [9184], measured 4m in diameter and 1.6m deep. The upper half contained a straight sequence of 13 shallow, grey silt and orange-brown sand deposits. Cattle bone fragments, including part of a skull and upper vertebrae were recovered from three of the pit's uppermost fills. Due to the depth of the feature, primary fill (9302) was machine-excavated. It was shown to be a pure silt deposit, whose sample produced a small quantity of snails and some degraded organics. Oddly, middle fill (9162) contained a piece of irregular waste flint (or unworked thermal shatter), that refitted with another piece from the southern fill of barrow ditch G9380, located some 130m to the NE.

Pit [9288] was partly obscured by the later cutting of L-shaped corner ditch G9448. The pit was circular in plan, measuring 3.5m in diameter and 1m deep (Figure 23). It contained a sequence of five fills. The middle, predominant fill (9284), 0.7m deep, was a concretion of orange-grey sand. Primary fill (9287) was similar, but had abundant gravel inclusions. No finds were recovered from the feature. The lack of finds suggests that it is a former quarry pit.

Pit 12143 (fields 75b/79)
Sub-rounded pit [12143] was truncated on one side by Middle Bronze Age linear [12145] that later separated these two fields. The pit had steep sides and a flat base, and measured 1.5m in length and 1m deep (Plate 26). It contained a sequence of four sandy-silt fills, of which primary fill (12142) produced a flint thumbnail scraper and a broken flint flake, which are typologically assigned to the Early Bronze Age. The partial skeleton of a small dog was also recovered from this fill (see *Animal Bone*). Brownish-grey secondary fill (12141) contained a crude bifacial flint tool resembling a barbed and tanged arrowhead, also of Early Bronze Age date (see *Struck Lithics*). Sampling of the fill produced another flint chip, fire-cracked pebbles, bone and cereal grain, all suggestive of domestic activity. Also recovered were the bones of field vole and polecat.

Plate 26 Segment excavated through flint-rich pit [12143].

Pit 12146 (Field 79)
This well-defined oval pit measuring 1.8m in diameter and 0.7m deep contained a sequence of five, clay-silt deposits. Secondary fill (12151) contained cattle bone and a residual Mesolithic flint blade with dorsal blade scars (see *Struck Lithics*); upper fill (12148) contained a flint flake. The 'clean' nature of the feature may suggest a former quarry pit.

Pit 1741 (Field 1)
A shallow linear pit [1741], was identified close to the western boundary of Field 1. It measured 2.50m long, 0.5m wide and 0.1m deep. The substantial portion (71g) of a Collared Urn-type vessel rim was retrieved from the pit's single fill (1742), (see *Prehistoric Pottery Cat. No.* 39). The rim had been decorated with the more typical twisted cord technique of sets of parallel lines which converged into a chevron on the collar (see *Prehistoric Pottery*). A further decorated sherd, probably from the same vessel, was also recovered, together with a worked flint fragment. An environmental sample from the pit's fill contained a concentration of charcoal and a number of shells of the blind burrowing snail *Cecilioides acicula.*

Pits and Waterholes larger than four metres
Associated with the Early Bronze Age landscape were a number of notably large pits that ranged in size from *c.* 5m in diameter to *c.* 10m, but with one unique example - perhaps best described as a pond - measuring in excess of 20m across. These features are interpreted as waterholes or wells, created to store and access fresh water.

Waterhole 631 (ditched enclosure)
A substantial waterhole [631] measuring 7m across and 1.5m deep, was located close to three similar, but smaller features of likely contemporary date (and described above). It contained dark clay basal deposits overlain by grey/brown sand and silt deposits, these representing the natural silting-up of the feature. Some of the intermediate fills were gravel-rich, suggesting that the pit may have been partially backfilled with its own upcast, or the upcast generated by the digging of other pits surrounding it. No artefacts were recovered.

Pit 2271 (Field 19/22)
Circular pit [2271] was steep-sided, with a slight step on the west side connecting with a markedly flat base (Figure 24). It measured 5m in diameter, 1.3m deep and contained four fills, of which the basal fill (2292) showed clear evidence of iron panning. A single sherd (4g) of unabraded Early Bronze Age pottery was recovered from this primary deposit. The upper fill (2290) was truncated by the later creation of boundary ditch [2293] separating later fields 19 and 22.

Pit 3246 (Drove 3/Field 19)
Pit [3246] measured 6.5m across and 1.5m deep (Figure 24). It was sub-circular in plan, with an asymmetrical profile, having gradually sloping sides to the SW and steeper northern edges, with a near flat base. It contained three main gravel-rich fills together with the usual silt lenses and slumping horizons, with only a few fragments of animal bone. Like pit [2271], this feature was truncated by the Period 3 field ditch [3264] separating later Drove 3 and Field 19.

Pit 4053 & 4049 (Drove 3/Field 53)
Further south, two intercutting pits also pre-dated the eastern ditch of Drove 3. The earliest was pit [4053], which was truncated by a larger feature [4049]. The latter was 5m in diameter and 1.5m deep (Figure 24). It contained four fills - all silty gravels, with the lower fills

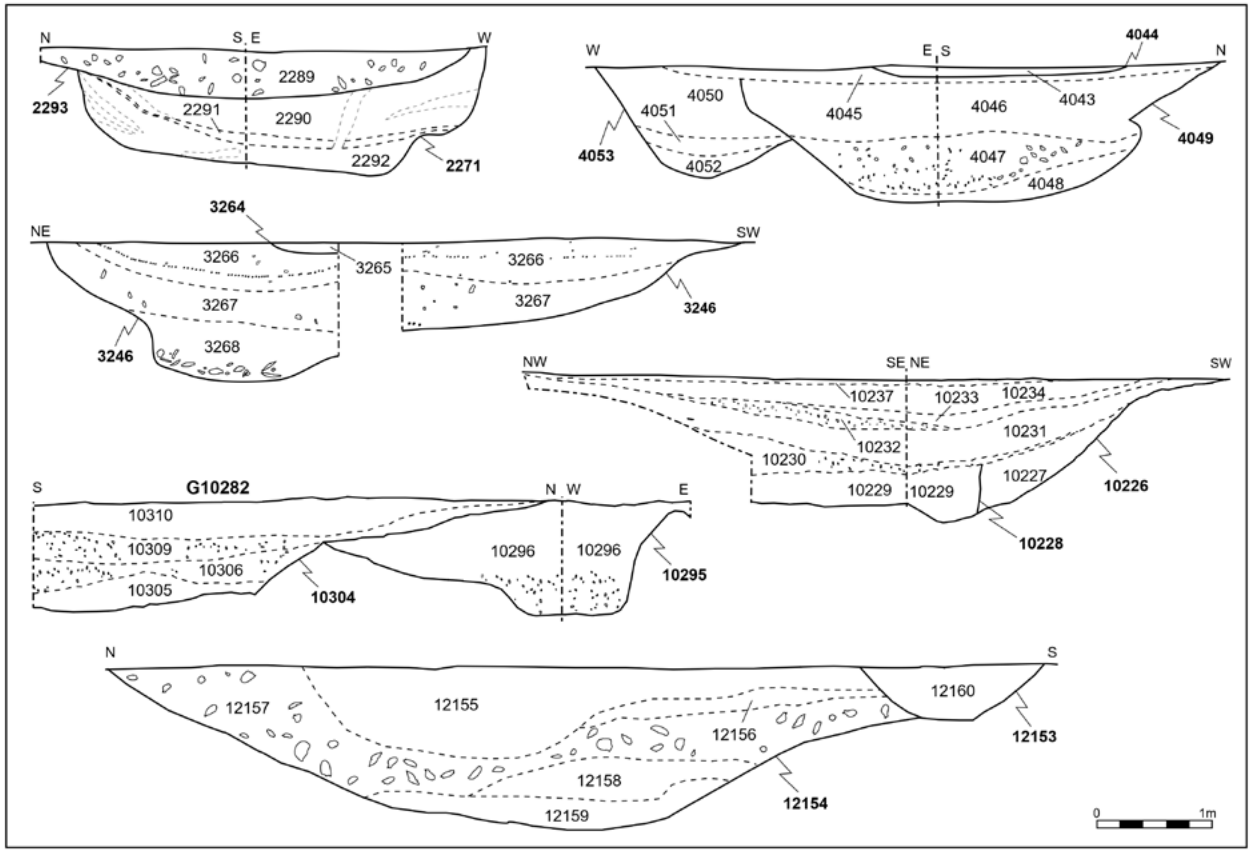

Figure 24 Early Bronze Age waterhole pits and reservoirs larger than 4m: sections.

displaying rich organic lensing. Its upper fill (4045) was truncated by the terminus of droveway 3 ditch [4044].

Samples obtained from the organic secondary fills of each pit revealed good waterlogged assemblages. Each contained degraded wood fragments and small roundwood pieces. The well-preserved floral assemblages of both pits provided evidence for nearby hedgerows, disturbed waste-ground and wetland (see *Waterlogged Plant Macrofossils*). In addition, small fragments of burnt animal bone were recorded. The features have been interpreted as typical Early Bronze Age waterholes, both subsequently enlarged.

Waterhole 4114 (Drove 3 / Field 29)
A large circular pit, with steep sides and a 'stepped' west side pre-dated the western boundary ditch of Drove 3. The pit, 5.5m across and 1.2m deep, contained nine fills, being the usual sands, gravels and silts (Figure 25). On the west side were multiple, steeply-sloping fills, the result of side erosion and trample, indicating a likely access point down into the feature. Lower fill (4108) was a thin black deposit of compressed, decayed organic material. This was probably derived from a build-up of windblown and overhanging leaves. Soil samples revealed a good waterlogged assemblage, including degraded wood fragments and leaves, and well-preserved evidence for nearby hedgerows, grassland, disturbed waste-ground and wetland (Rackham and Giorgi 2015). In addition, moderate numbers of beetle fragments and abundant water flea were identified. The upper levels of this substantial pit were truncated by Middle Bronze Age droveway ditch [4100].

Waterhole 11197 (Field 70)
On the eastern half of the Site, a large, shallow waterhole [11197] was identified on the same alignment as Barrow Field eastern linear G9596. Although devoid of dateable finds, this long-lived feature is believed to date to this period (Plate 27). The sub-circular feature measured 11m in length and survived to 1m deep. A cross-section revealed very gradually sloping sides – possibly to facilitate access for animals. It contained a sequence of six fills, all naturally-deposited silts of fairly even depth. Primary fill (11196) was a firm grey-brown deposit containing small pieces of wood. Similar organics were found in the two successive fills. Tertiary fill (11194), a brownish-white sandy silt, was bulk sampled. The resulting wet flot showed excellent preservation and contained lots of herbaceous matter, large wood fragments and twigs, as well as abundant uncharred plant remains and a good beetle assemblage. The remains indicated standing water within the feature. A pollen sample produced high numbers of *Alnus* (alder) and *Salix* (willow) pollen, probably representing the establishment of these trees in the

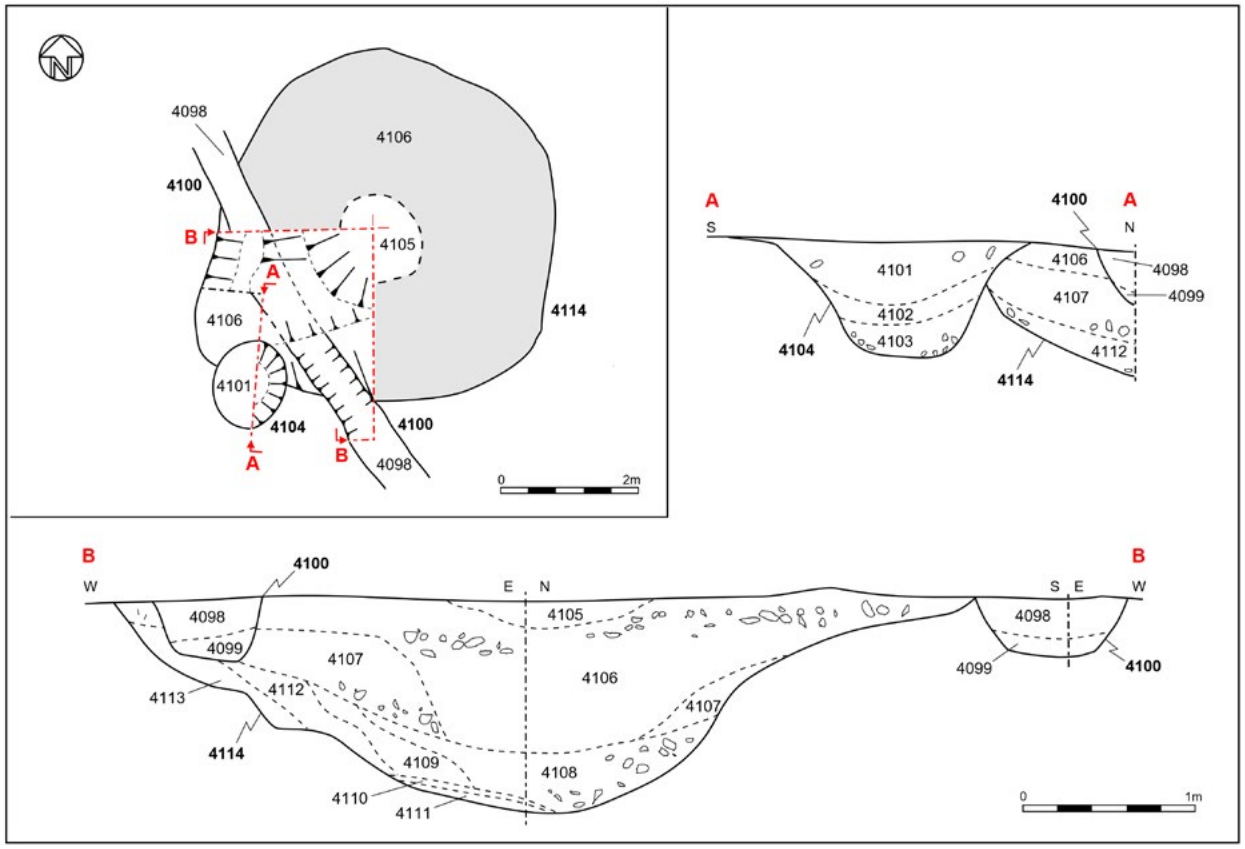

Figure 25 Pit [4114]: plan and sections.

damp hollows offered by the abandonment of this pit and others (see *Pollen*).

Waterhole cluster G10282 (Field 72/76)

Another large, shallow waterhole cluster or pond G10282 is stratigraphically assigned to this period: its upper levels were clearly truncated by Middle Bronze Age boundary ditch G10311 (Plate 28). The earliest pit cut, one of the largest identified on the whole Site, was excavated as [10202] and [10295]. It had very gradually sloping sides and measured 20m in length, 8m wide and up to 0.7m deep (Figure 24). The fills were all sterile,

Plate 27 Machine-dug section through massive waterhole or pond [11197], looking SE.

Plate 28 Waterhole cluster G10282 beneath later field boundary G10311.

Plate 29 Radially half split oak heartwood (structural) timber 10317 from pit [10301].

homogenous grey clay-silts. This large feature appears to have been successively recut or cleared out, prior to the creation of the field boundary: later pit cuts [10304], [10307], followed by [10292], [10297] and [10301] were all discernible. All of the later pits contained sterile silts; the latest [10301] contained a large piece of half-split oak timber (10317). The timber (Plate 29) was deemed of a suitable size and form to have potentially formed part of a structure (see *Waterlogged Wood*). During excavation, the possible decayed remains of a stake-revetted horizontal step or steps, leading down into the pond were surmised.

The grey silt primary fill (10293) of recut [10292] contained a moderate number of cattle and sheep bones, as well as the distal end of a large goat horn core that was possibly worn through from some sort of use (Rackham *et al.* 2019). A retained sample produced a well-preserved wet flot containing a moderate amount of charcoal, degraded wood fragments and various plant remains, including abundant uncharred elder, nettle and *Rubus* (Blackberry/ Raspberry) seeds. The complete waterhole complex, including this cut, was sealed by a naturally formed, sterile silt deposit (10309) and a layer of grey-black peat (10310).

Waterhole cluster 10226/10228 (Field 77)

Large intercutting pit complex [10226/10228] measuring 6m wide and 1.5m deep, represents the remains of another typical waterhole, with evidence of a substantial recut (Figure 24). An environmental sample obtained from dark grey peaty-loam primary fill (10229) produced a wet flot containing degraded organics with small wood fragments and water flea, both confirming the pit's water-related function. A pollen sample obtained from the wet flot contained an

unusual number of *Pinus* pollen, as well as significant numbers of diagnostic *Tilia* (lime). Four fragments of red deer antler and a burnt flint flake were recovered from grey clay middle fill (10231).

Pit 12154 (Field 79/80)
This large pit, measuring nearly 8m in diameter and 1.5m deep was truncated on its eastern edge by [12153], part of Middle Bronze Age ditch, G12111 (Figure 24). The pit contained a sequence of five sandy fills of varying hues. A sample from pale blue-grey primary fill (12159) produced abundant uncharred seeds and wood, as well as ostracods and *Daphnia* sp. (waterflea) – these latter indicating inundation or a water-related pit function. Also recovered from the residue was a plain, grog-tempered pottery sherd from a thick-walled cooking pot of Early Bronze Age date.

PERIOD 3: MIDDLE BRONZE AGE (c. 1600-1100 BC)

The extensive organisation and sub-division of the Bar Pasture landscape into a pattern of semi-regular fields occurred during the Middle Bronze Age (Figure 26). Although artefactual dating evidence from the hundreds of field ditches is rare, key stratigraphic relationships from the field system show that its creation was partly based on a smaller existing system of Early Bronze Age droveways or routeways. Eight principal droveways were identified across the Site, several of which interconnected to represent a principal thoroughfare (Drove 2/5), that extended NS across the landscape. Evidence from ditch recutting shows that this major axial route was constructed above the infilled ditches of an already long-established routeway that was possibly conceived with a more symbolic purpose (discussed above). Other early so-called 'precursor' ditches that had defined adjacent fields and the limits of the sacred burial area or 'Barrow Field', also formed a template for the Middle Bronze Age field system, but to a somewhat lesser extent. The droveways formed the principal means of access into and around the field system and out onto the fen edge.

Despite these significant landscape modifications, there is evidence to suggest that the earlier Barrow Field continued to be revered, as it does not appear to have been encroached upon, either by new field ditches, habitation structures, waterholes or other secular features. In fact, there appear to have been deliberate efforts to incorporate existing monuments into the new field layout, by using them as axis points.

The rectilinear field system established during this period comprised over 80 fields. These extended across the whole of the Bar Pasture landscape and beyond, only petering out (or perhaps subsequently eroding), to the south and SE, where the brackish waters of the fen encroached repeatedly during the numerous Bronze Age marine incursions. The identified fields were varied in both form and size, but are generally represented by straight or slightly sinuous boundary ditches, often supplemented by raised banks and possibly hedgerows. Narrow entrances identified between fields suggest that human transit around the field system was perhaps more important than the large-scale movement of livestock, which may have been more focused on the various droveways. Wider access points into some fields and the existence of two well-defined droveways leading east, suggest that animals were moved to and from the lush grazing of the fen edge proper, perhaps seasonally. The discovery of at least four stock pens within the field system attest to the presence of herds and the need to secure them.

A classic enclosed farmstead containing two large round-houses was the most substantial evidence of sedentary settlement activity during this period of fen-edge exploitation. It was constructed on the south side of Field 19, and consisted of a neat rectangular enclosure marked by an external ditch, a possible hedged bank and an intermittent internal ditch. The two identically-sized circular buildings contained within (structures 5 and 6), survived as penannular ring-gullies, supplemented by post-holes and pits.

As many as 13 circular timber structures were identified elsewhere across the Site. Although the majority are poorly dated in terms of artefacts, it is estimated that over half may have been constructed and in use during this period. On the western side of Drove 5 were the remains of two of these circular post-built structures, with a larger one located on the very western edge of the former Barrow Field.

The semi-rectangular pattern of fields was frequently punctuated by individual pits and pit scatters. Although the range of pit profiles and sizes was highly variable, it was possible to discern three principal types (based upon the same metrics as for the aforementioned Early Bronze Age pits). The smallest are referred to as 'one-metre' pits, which appear to have been variously used as rubbish pits, cooking pits and possible quarries. Also identified were 'intermediate' pits measuring *c.* 1.5m to 4 metres in diameter. These were noticeably smaller than the great organic- and finds-rich waterholes (>4m in diameter), which represent the third type. The majority of waterholes assigned to this period were in the region of 4-5m in diameter, although a handful of very large examples measuring between 8m and 15m in diameter were also identified.

In the Late Middle Bronze Age (Period 3B), a large quadrilinear enclosure with a double-ditched NW corner was superimposed onto part of the Bar Pasture field system. This enclosure, constructed around Field 52, formed a focus for settlement and agricultural

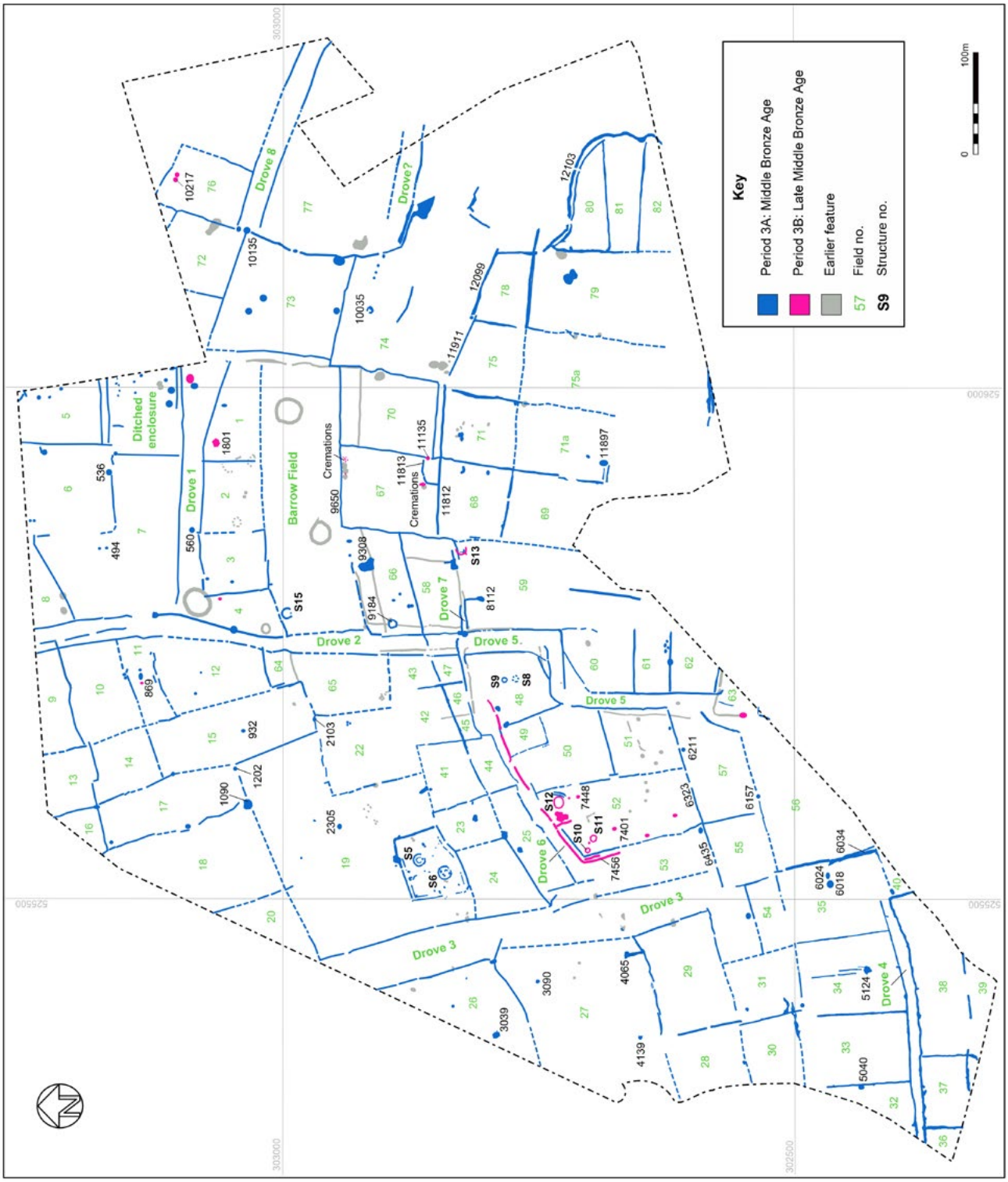

Figure 26 Plan of Middle Bronze Age (3A); & Late Middle Bronze Age (Period 3B) features.

processing activity that extended, in some minor (pit-related) form, into the early years of the Late Bronze Age. Three likely round-house structures found in close proximity within this 'reinforced' field are probably related to its later protective modification. As confirmed by radiocarbon dating, two small cremation cemeteries were established during Period 3B, one within the curtilage of the previously discussed 'mini-barrow' cemetery and one further south of this. This suggests both the continued visibility of, and ancestral association with, earlier burial monuments.

PERIOD 3A: EARLY MIDDLE BRONZE AGE (1623-1463 CAL BC)

The Droveways

Each of the interconnecting droveways that formed the skeletal framework of the field system were extensive; collectively dividing and encompassing large areas of the landscape. These 'arteries' were crucial in facilitating human and livestock movement around the fertile fen edge Plate 30). Eight principal droveways (numbers 1-8) were identified (Figure 26). Numbered consecutively as they were uncovered during the excavations, these thoroughfares are described in detail below. The first two droves (numbers 1 and 2), were identified at the northern end of the Site.

Drove 1

Drove 1, aligned broadly EW, was created on the east side of a major NS-aligned droveway (Drove 2). The western end of Drove 1 terminated (or commenced), to the immediate east of Early Bronze Age Barrow G1941, thereby respecting it, and incorporating it into the developing field system. Fields 1-4 were aligned with the south side of this drove; Field 7, and the later ditched enclosure, aligned with its north side. The droveway ditch contained only one dateable find, being a highly abraded body sherd from a final Neolithic-Early Bronze Age Beaker.

Drove 2

This NS-aligned drove formed the principal axis through the Site. Averaging 20m-wide, the thoroughfare extended southwards for 300m from the northern limit of excavation. At its southern extent, it formed part of a 'crossroads' with droves 5, 6 and 7. Drove 5 (see below) was effectively the southern continuation of Drove 2 beyond this junction.

At its northern extent, Drove 2 comprised parallel, segmented ditch alignments. These formed the eastern and western limits of fields 9-12 and 4, 7 and 8 respectively. This part of the droveway clearly deviated west, in order to circumvent Early Bronze Age burial mound G1941, which must have still been very pronounced in the landscape. The droveway ditches at this end of the thoroughfare were generally shallow,

Plate 30 Sinuous droveway ditch stretching across the landscape.

with V-shaped profiles, up to 1m wide and 0.5m deep. Typically, they contained multiple sandy fills devoid of artefacts. The northern end of Drove 2 incorporated a centrally placed, segmented ditch, which likely functioned as some form of stock control function.

Alongside Field 4, the eastern droveway ditch contained visibly slumped fills, suggesting that a bank had existed here (with further evidence for a bank along its south side). An environmental sample from the lower ditch fill (724) identified charred cereal/ grass; crowfoot, goosefoot, dock, rootlets, *Daphnia* ephippia and wood mouse - but little indication of nearby domestic occupation. Two entrances (one <2m and one very large (*c.* 20m)), in the eastern alignment allowed for human and animal access into Field 7. It is likely that the larger opening was furnished with some form of temporary fencing arrangement such as a post line, for which no evidence survived.

Plate 31 A section of droveway ditch showing one of the termini.

An apparent 75m-wide opening in the western ditch, alongside Field 12 was most likely the result of modern truncation. This is supported by the surviving ditch lengths, which were very shallow and eroded. Apart from a 0.6m-deep terminus, no section exceeded 0.25m in depth, suggesting heavy erosion across this part of the site.

At some point following its creation, the droveway was intersected by a WSW/ENE-aligned ditch that extended across the landscape for almost 400m. The ditch, which defined the northern limit of numerous fields, largely closed off or narrowed Drove 2 alongside fields 47 and 58.

Drove 3

Drove 3 was a substantial feature, orientated NNW to SSE. It was traced for almost 400m along the western edge of the Site (Plate 31). Its northern section comprised two parallel ditches spaced *c.* 45m wide. To the south, the drove terminated in the vicinity of fields 31 and 55. In the vicinity of Field 27, a ditch spur created a constriction to the drove, effectively forming a 'funnel'. This arrangement would have allowed for the control of livestock at this point.

Drove 3's western ditch was about 1m across and on average 0.5m deep (Figure 27). In contrast, the east ditch was generally broad and shallow, being rarely more than 0.1m deep. Fills were the usual grey silty-clays over orange sandy-silts. A single residual sherd of highly abraded Late Neolithic/Early Bronze Age pottery and a flint flake were recovered from the latter ditch. At the southern end of Drove 3, livestock could have been directed westwards into a small holding area associated with Field 31. To the east, an entrance into fields 53 and 25 probably served to direct livestock via a complex ditch arrangement towards a settlement area north of Field 52 (Figure 28).

Along the course of the droveway, narrow interruptions (< 2m) in the defining ditches no doubt allowed for human access into adjacent fields (for example into fields 19 and 26). Elsewhere, breaks in the ditches were often much larger, allowing livestock to pass into selected plots, including fields 24, 27, 53 and 55. It is likely that some of these large openings were furnished with temporary or moveable boundaries, that have not survived in the archaeological record.

Drove 4

Drove 4, identified at the SW limit of the Site, was a neat, narrow EW route defined by two continuous, parallel ditches spaced *c.* 8-12m apart. This drove was clearly traceable for almost 300m across the landscape. The two ditches had similar U-shaped profiles, although the southern ditch was the most substantial, measuring up to 1.4m wide and 0.75m deep (Figure 27). Up to four fills were recorded throughout, being the familiar grey-brown and orange silty sands. As noticed elsewhere, the lower fills contained a larger gravel component,

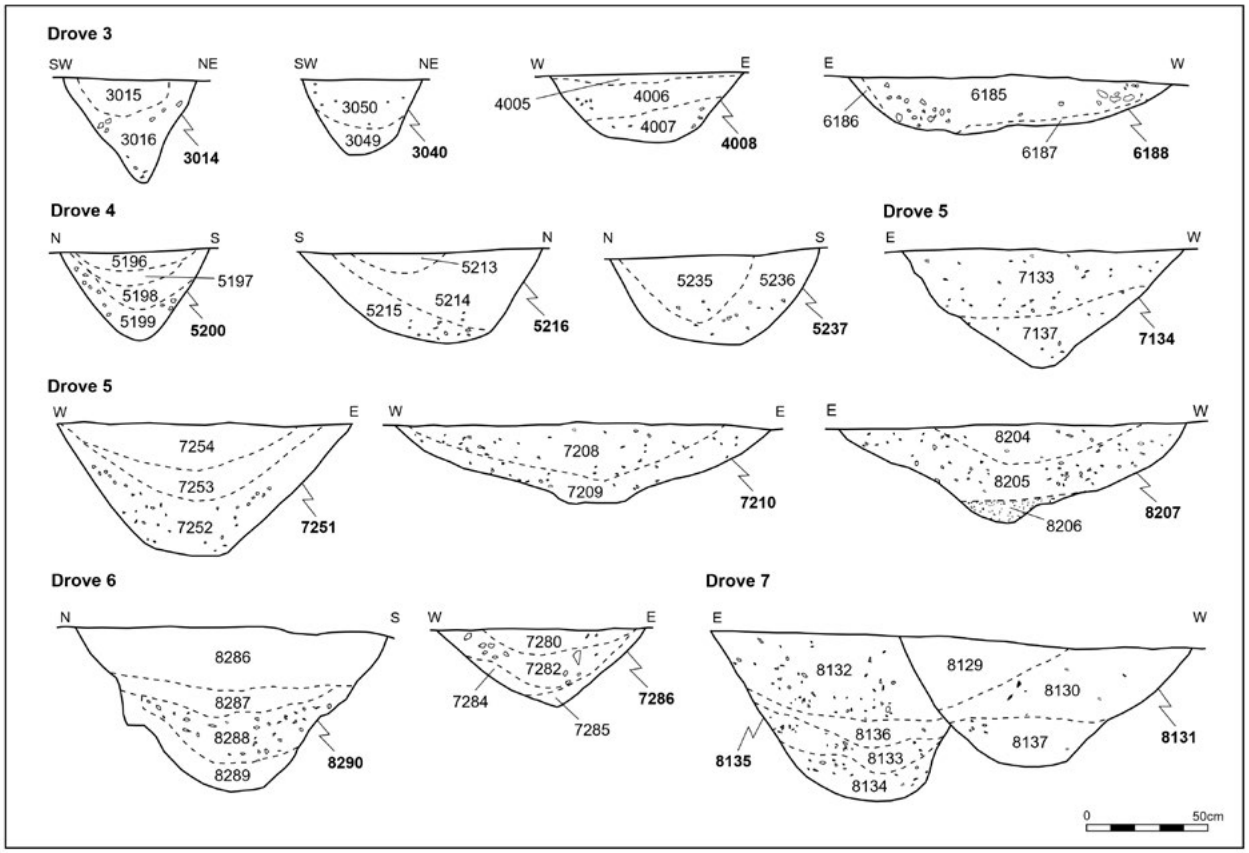

Figure 27 Representative sample of droveway ditch sections.

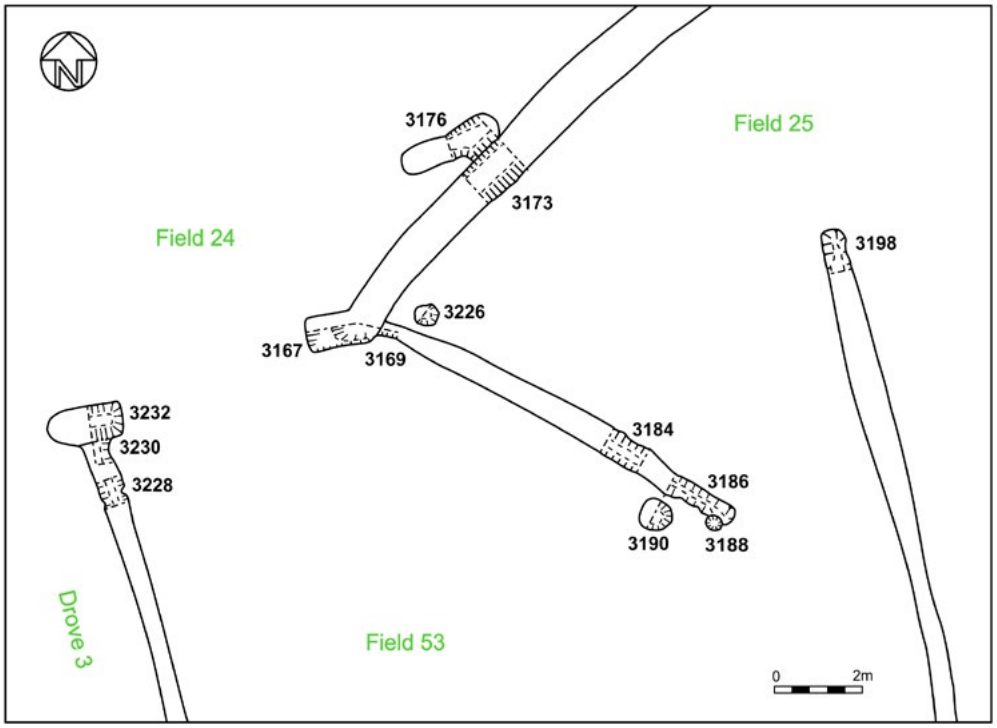

Figure 28 Complex ditch junction between fields 24, 25, 53 and Drove 3.

probably derived from slumping or bank collapse. The discovery of a single entrance leading into Field 34 suggests that this drove was a dedicated thoroughfare. The entrance was marked by a slight return at one of the ditch terminals, although no evidence of a gate was identified. The presence of a slumped gravel ditch fill was suggestive of a former external bank in this locality.

Fields located on the north side of Drove 4 incorporated small gaps allowing passage between the adjacent fields. Shallow hollows identified at these passage points probably represent areas of concentrated wear.

The relationship between the southern drove ditch and its adjacent fields was unclear, although one certain entrance was identified at the NE corner of Field 37. At its eastern extent, the ditch curved southwards to form the eastern limit of Field 38.

Drove 5

This 20m wide droveway, effectively being the southern continuation of Drove 2 (south of the crossroad junction with droves 6 and 7), traversed the entire southern half of the Site. The western ditch was similar throughout, measuring 1m wide and 0.4m deep. The eastern ditch was slightly more substantial, measuring up to 1.5m across (Figure 27). Each of the numerous sections recorded typical silty-clay fills, with primary fills being notable for their gravel concretions. Numerous small (*c.* 1m-wide) access points identified in both ditches probably served to allow passage west and east into adjacent fields.

At the intersection of the four droves (Plate 32), it was evident that Drove 5's western ditch had gradually silted in but was later re-excavated, in order for it to continue functioning as an effective livestock barrier and field boundary. The recut extended further south than its predecessor had. Where it terminated, adjacent to Field 48, Drove 5 shifted position west along its NS axis by 50m, before continuing south. The reason for this 'dogleg' is unclear, but it may have been related to land ownership, topographic factors or perhaps the need to encompass existing features in the landscape – possibly fields 60-62, which appear to have already been in existence. Both droveway ditches here showed clear evidence of later recutting or re-definition. The western ditch, in particular, was complex and contained two clear entranceways leading north and west into fields 48 and 50. On the eastern side, a 4m-wide entrance formed by two opposing termini led eastwards into Field 59. The entrance re-established an earlier, wider entrance in the same location.

South of the 'dogleg', an unusual triangular ditch formation at the NW corner of Field 60 may have functioned as a kind of corral, perhaps used to separate individual animals from the rest of the herd. The complexity of this part of Drove 5 clearly illustrates the amount of control and organisation that the Middle Bronze Age farmers held over their animals and the landscape. From the bend in Drove 5 it would have been possible to access at least three large fields and to re-direct large numbers of animals or separate off individual livestock into those fields, whilst moving the remainder of the herds NS, by-passing areas of human settlement.

The southern extremity of the drove was fairly complex, with a corral-type arrangement similar to that recorded further north. The most significant element was a 55m-long narrow, curving ditch forming a twin-lane element, perhaps to facilitate the separation of livestock into fields 57 and 63.

Plate 32 View of the Drove 5 intersection, looking west from Field 59.

Drove 6

Drove 6 was a narrowing 'passageway' located to the west of Drove 5. Stratigraphic and dating evidence shows that whilst it was established at this time, it was more fully defined towards the end of this phase. The widest part was traced at the northern end of Field 53, from where it curved approximately WSW to ENE across the landscape in a rather staggered fashion. It was bounded to the north by fields 25, and 45-47, and to the south by fields 52-48 (west to east). Its deep northern ditch contained distinctive, soft green-grey silty clays that possibly represent past waterlogging and restricted

drainage (Figure 27). Formed of irregular and wavering ditch segments, this thoroughfare appeared to have been poorly conceived, although the misaligned fields located on either side of it do suggest that it may have existed as a pathway through the landscape prior to their formation.

Drove 7

Drove 7, aligned EW, was a staggered narrow routeway *c.* 10m wide, that extended just a short distance from its intersection with Drove 5. Its ditch sequence suggests that it was created prior to the construction of the Drove 5 intersection, and that its western end (adjoining Drove 6) was effectively closed off. There was also evidence to show that the northern droveway ditch was 'shortened' at a later date, perhaps to open up access northwards into Field 58 (Figure 27). The droveway's northern ditch fill (8134) was unique in containing the only hulled six-row barley grain (*Hordeum vulgare* var. *vulgare*) from the Bronze Age samples (see *Waterlogged Plant Macrofossils*). The sample also produced charcoal fragments, seeds, insects and small vertebrate bones. The same ditch also contained the *only* Middle Bronze Age pottery sherd recovered from a field ditch across the whole Site. The sherd was of Early Middle Bronze Age type (CP3A).

Drove 7 was traced eastwards for a distance of 100m, reaching the western edge of Field 68. It is possible that the droveway dog-legged here and traced the northern edges of fields 68 and 71, although the former field was largely obscured by later ditch digging. In contrast, the southern droveway ditch was short, extending eastwards for only *c.* 30m before turning south into Field 59. A steep-sided pit [8112/8379], cut into the southern drove terminus most likely functioned as a sump.

Aligned with the eastern end of Drove 7 was a composite circular building (Structure 13) of broadly similar date. The structure, which had an entrance to the WNW, probably functioned as an outlying field shelter contemporary with the field system. It is described further below.

Drove 8

This well-defined, wide droveway was incorporated into the Middle Bronze Age field system, between fields 76 and 77. Aligned WNW/ESE (in keeping with this part of the field system), the droveway was approximately 25m wide and extended eastwards for 200m into what later became Barlees Fen. The western end aligned with the entrances to fields 72 and 73, the former being wider and more accessible, perhaps to allow livestock to pass into the drove and out onto the fen edge. This routeway shows that passage towards the wet fen edge was important at this time. It is likely this drove was associated with animal transhumance. Such routes out into the wet fen could also have been associated with the transportation of brackish water used in the manufacture of salt, and as evidenced by the Site's impressive briquetage assemblage.

Finally, it is interesting to note the alignment of droves 1 and 8. Whilst there was no evidence that these were ever interconnected to form a single thoroughfare leading from Bronze Age Barrow G1941 to the fen edge, they may well have had an association.

The Field System

The following section describes the vast Middle Bronze Age field system that extended across the whole of the excavated area and beyond (Figure 26). Although dateable finds from the individual ditches are rare, enough stratigraphic evidence (and parallel field systems in the locality) exist to place the principal creation of these fields within the Middle Bronze Age period. In short, many of the fields and droveway ditches were cut into the silted remains of Early Bronze Age 'precursor' ditches. There were also numerous fields that were subsequently 'reinforced' by later Middle- and Late Bronze Age modifications, the latter particularly well dated by pottery sherds and briquetage fragments.

It is not the intention here to document in detail the thousands of sections excavated over 11 years through the boundary ditches of over 80 identified fields. The hundreds of ditches, their fills, finds and samples have already been described extensively in the four existing interim reports (cf. Francis and Richmond 2016, 2019; Richmond *et al.* 2010; Richmond and Walsh 2013). Rather, the field system is considered collectively here, across the whole Bar Pasture landscape, with reference to particular observations in terms of alignments and trends, interesting ditch- and entrance arrangements and notable artefactual and environmental findings. The field system is considered numerically, from west to east, with the associated droveways providing convenient land blocks for descriptive purposes. The following therefore represents a summary of the various fields, grouped geographically, together with details of any significant findings.

Retention of the Barrow Field

There is evidence to suggest that the *c.* 6ha Early Bronze Age Barrow Field (extending for at least 300m EW and 200m NS, but potentially much more extensive to the north), had continued to be respected and revered during the Middle Bronze Age. This is indicated by the notable absence of intrusive field boundaries across this part of the landscape, and by the insertion of Late Middle Bronze Age cremation burials within the prevailing sacred area.

The only major or secular intrusions to this funerary complex were Structure 15, constructed on its western edge, and an extensive ditch G9650/ G9579 that truncated the northern extremity of the three so-called 'mini-barrows'.

Fields to the east of Drove 2 - north of the Barrow Field (numbers 1-8)

The first four fields identified and numbered during the excavations (numbers 1-4), were identified to the east of Drove 2 and south of Drove 1 (Figure 26). These fields stratigraphically post-dated Barrow G1941, as well as structures 1, 2 and 3 that existed in the same area. Investigation showed that at least one, but probably all of the fields were constructed after the droveways had been laid out, a theory supported by the presence of droveway 'precursor' ditches further south. This is also apparent from the visibly differing (N/S versus NNW/ SSE) alignment of fields identified to the east and west of droves 2/5 respectively, which provides indisputable evidence of the early establishment of these routeways.

The NS-aligned ditch [1797] forming the axis between fields 1 and 2 clearly post-dated the southern boundary ditch of Drove 1. The field ditch was nearly 0.5m in depth and contained a single leached grey-brown fill (1798) from which a fragment of fired clay was recovered. It bisected Period 2A post-built structures 2 and 3.

Field 2 was approximately 70m wide. The shallow, NS-aligned ditch [1886] separating it from Field 3 contained a single, leached grey fill (1887). The ditch petered out before it reached the intersection with Drove 1, although a small, side entranceway that could have accommodated some form of gateway was identified.

The adjacent axis between fields 3 and 4 comprised a fairly truncated, interrupted ditch. A crucial stratigraphic relationship was recorded here, whereby the ditch's northern end truncated the upper ditch fill (1695) of Barrow G1941, showing that the ditch had been created following the complete silting-in of the barrow ditch. Unfortunately, no finds were recovered from the field ditch, which contained only a single sandy fill.

The EW-aligned ditch forming the southern boundary of field plots 3 and 4 comprised three adjoining sections. The westernmost length of ditch had a clear recut (Plate 33). The upper ditch fill (1605) contained three worked flints, including a blade and a retouched flake. Fragments from a clay weight were retrieved from the shallower, central ditch section. Evidence for a slumped bank or revetment that would have followed the boundary's northern edge (i.e., inside the two fields), was observed within the ditch fills.

Plate 33 Ditch terminus [1603] with visible recut forming part of southern boundary of Field 4.

Two interruptions in this boundary formed clear access points between plots 3 and 4. One narrow entrance would have only been suitable for people; the other was wider and could have accommodated animal movement. Three post-holes or small pits (1630, 1622 and 1884), located close to the larger entrance may have formed part of a more complex herding arrangement. To the south of plots 1 and 2, the ditch was largely absent; its boundary with the Barrow Field is largely inferred.

To the north of Drove 1 were four fields (numbers 5-8) and a square double-ditched enclosure that was laid out in the subsequent Late Bronze Age (see below).

Fields 5, 6 and 8 were of undetermined size, their additional boundaries lying beyond the Site's northern limit. The western edge of Field 5 was formed by a single, 100m long ditch. Its cut was fairly substantial, being 1m across and 0.75m in depth. On average there were three fills that were gravel-rich. Several sections had silt-rich slumping deposits on their eastern edges, suggesting that a bank had eroded into the open ditch. The only finds recovered were two worked flints. Environmental samples from ditch fill (345) identified a paucity of remains, including very small quantities of comminuted wood and uncharred seeds (goosefoot family - *Chenopodiaceae*) and elder (*Sambucus* sp.). If these remains are ancient rather than intrusive, they demonstrate a significant loss of material, with only the robust elements of these species surviving (see *Waterlogged Plant Macrofossils*).

The southern boundary of Field 6 incorporated significant openings, far greater than could have been utilised for stock containment, suggesting that the boundary had once been supplemented, perhaps by hedging or fencing. Conspicuous evidence for slumping along the northern edge of the ditch also suggested the former presence of a bank.

Fields 6 and 7 were separated by two adjoining, sinuous ditch lengths, which appeared to have been recut on one occasion. One of the upper ditch fills (504) / ditch [493], contained part of the neck of a Late Bronze Age thin-walled, shouldered jar (see *Prehistoric Pottery Cat. No.* 65). This single fragment was the only dateable find from the entire ditch arrangement surrounding Field 6.

Field 7 was a substantial L-shaped field that shared boundaries with Drove 1 and fields 6 and 8. Its eastern extent was later reinforced as the 'ditched enclosure' by the creation of additional parallel linears. This reinforcement most likely occurred during the Late Bronze Age or Early Iron Age. Before the eastern extent of the field was adapted (to create the ditched enclosure), the field consisted of several ditch lengths; often sinuous and interrupted. At the SE corner of the plot was a 50m length that contained in its single fill a partial human skeleton, including the humerus, ulna, radius and ribs. Its location, in relatively close proximity to several former barrows, suggest that this was not the burial's primary context.

Field 7's western edge was formed by a segmented ditch arrangement that extended for over 250m in total and formed the eastern-most ditch of major NS-aligned Drove 2. It was generally 0.5m in depth and contained three fills, all silty-gravels. An environmental sample from one of the lower fills identified charred cereal/ grass; uncharred crowfoot, goosefoot/orache, dock, rootlets, water flea and wood mouse (see *Carbonised Plant Macrofossils*). A rare sherd of CP3B (Late Middle Bronze Age) pottery; was recovered from ditch segment [413].

Field 7's northern ditch was 1.2m wide and 0.5m deep and had evidence for the in-slumping of former bank material at the eastern end (Plate 34). A sample from upper ditch fill (426) contained charred barley, as well as fragments of hazelnut shell and plum/bullace/ cherry stone (Prunus sp.). The presence of such species indicates that they were available locally and were in all likelihood exploited by the Bronze Age farmers.

Within the field's SE corner was an extensive spread of amorphous silty-clay interpreted as trampled ground. Phosphate analysis of the ditch fills surrounding this buried spread indicate that livestock-related activities took place here.

The large size, and unusual shape of Field 7 allows for the tentative suggestion that it may have once been divided into smaller units. Several fragments of pottery recovered from the upper fills of the field's NE and SE boundaries provide evidence of Late Bronze Age activity in the vicinity, as well as ditch reinforcement, as has been seen elsewhere on the Site (see below).

Plate 34 Typical ditch terminus of northern edge of Field 7 with slumped gravel on one side suggestive of a former bank.

Fields to the west of Drove 2/5 and east of Drove 3 (numbers 9-25; 41-57; 64-65)

The following discusses the characteristics of those fields identified within the swathe of land located between droves 2/5 and 3 (Figure 26).

At the northern end were a series of predominantly rectangular fields, slightly offset to the droveway. The northernmost fields (9, 13 and 16), extended beyond the excavation area, and were only partially revealed.

Field 9 had an unusual, sinuous southern boundary shared with Field 10. It clearly pre-dated the bordering droveway ditch, suggesting that it may represent the rare remains of an Early Bronze Age precursor ditch on the west side of Drove 2. This suggests that fields 9 and 10 may have functioned as a single unit during this period. The latter field's eastern ditch was shared with that of the droveway.

Field 11 was a long thin plot of *c.* 0.25ha., and shared boundaries with Field 10 and the adjacent droveway. Its western boundary incorporated a 1.5m-wide entrance into Field 15. Another entrance identified in the southern boundary appears to have been a slightly later creation that separated fields 11 and 12 (see Period

3B, below). Field 11 contained several intercutting waterholes, a large post-hole and two features with evidence of burning (see below). The latter might represent the charred remains of a timber gateway for the control of livestock.

The large field to the south, Field 12, extended to just over 0.6ha., and may have had some internal divisions that did not survive in the archaeological record. Its eastern edge was defined by the westward-curving alignment of Drove 2, although due to truncation much of this boundary had to be inferred. The field's southern boundary comprised a single short ditch length affording access into Field 64 to the south. This southern ditch was typical of many of the Middle Bronze Age boundaries across the Site, being a shallow cut, with sterile, grey sandy-silt fills devoid of finds.

Field 64 was a small, square plot. Its southern boundary [9450] was filled with dark grey-brown clay, that pre-dated the adjacent SE corner ditch of Field 15, suggesting that it may be a remnant 'precursor' ditch. An opening in Field 64's NE corner allowed access into Drove 2. Neighbouring Field 65 was poorly delineated, due mainly to the intrusion of modern field boundaries.

To the west of fields 9 to 12 were plots of varying sizes, all following the same NNW/SSE alignment. Many ditches here had been heavily truncated and lost to modern ploughing, making it difficult to estimate field size with any certainty. Some of the plots may have originally been bounded by fence lines or hedging, the traces of which had not survived in the archaeological record.

Field 13's southern boundary incorporated two terminals forming opposing entranceways, which would have allowed livestock access into fields 9, 10 and 14. The western boundary of the latter field also gave entry into adjacent Field 17. The extensive rectangular Field 15 may have once been sub-divided into smaller areas. At 60m wide by 170m in length, it covered an area of just over a hectare. At the field's SE corner, a wide entrance was identified in the form of an L-shaped ditch with associated post settings.

The southern ditch of Field 16 was unusual in that it turned northward at its western end to form the field's western side. Such continuation between two sides of a field was a rare occurrence, as usually a terminus with a gap or an intersection of two discrete ditches was observed.

Field 17 was comparable in size to Field 15. All four boundaries were present to some degree, although the western boundary was an interrupted and snaking affair comprising six shallow lengths interspersed with gaps ranging from 1m to 30m (Plate 35). The sinuous,

Plate 35 Ditch terminus [980] forming part of the western side to Field 17.

interrupted character of this ditch was rather unusual. The various spaces were likely to be for human and animal access, but the wavering nature of the feature perhaps suggests that the original ditch diggers needed to avoid surface obstacles, such as dense patches of scrub or trees. A substantial contemporary waterhole [1090] occupying the SW corner of this field is discussed in more detail below.

Field 18 extended across an area exceeding 1.5ha., but could well have been sub-divided into smaller units. The field's segmented western boundary comprised of four ditch lengths with five access points ranging from *c.* 5m to 30m wide. The ditches rarely exceeded 0.5m in depth, having on average three grey silt fills, with, as was commonplace, no finds. Some of the upper ditch fills had a peaty content, suggesting later infilling during a period of inundation.

Field 19 was the largest plot identified on the Site and significantly encompassed the classic double-ditched farmstead enclosure described below. The sheer size of Field 19 (*c.* 2.6ha.) suggests that it may have functioned differently to the smaller fields. Within a small gap along the line of the field's northern boundary was an elongated and shallow pit [1202] which contained the articulated remains of a cow. This appears to represent a purposeful deposit.

The full extent of fields 20 and 21 are not known. These plots are only notable in terms of their associated finds. The ditch separating the two fields [1252] contained in its upper horizons four sherds of Late Bronze Age pottery and a fragment of burnt flint. A bulk sample from upper fill (1265) identified charred cereal fragments, pottery crumbs and unidentifiable bone. Also were recovered fragments of a clay weight, typologically of Middle Bronze Age date (see *Clay Weights*). The presence of these items indicates that low levels of domestic waste were being deposited into the top of the ditch for some time. The pottery may suggest Late Bronze Age activity just beyond the Site's western edge.

Field 22 had an unusually wide (1m) eastern boundary ditch [9244]. The alignment of this field was somewhat offset from the surrounding fields, suggesting perhaps, that it was a later insertion into Field 19. At its NW corner, a wide break with a central post-hole and elongated 'ditch-stub' defined a double gateway arrangement.

To the south of Field 19 were three, similar-sized rectangular fields, numbers 23, 24, and 41. The northern boundaries to plots 23 and 24 coincided with the southern edge of the enclosed farmstead (see below) with perhaps a narrow walkway between them being identified. The boundary separating fields 23 and 41 was discontinuous, being made up of various sinuous and staggered lengths. This characteristic was common to the smaller fields in this part of the landscape. Field 24 had a wide entrance leading west into Drove 3 and another leading north into Field 19. Evidence was found for continued modification of these fields.

Field 41's northern boundary was unique in that it was represented by a line of post-holes, rather than ditch segments, suggesting a timber fence. A series of large, intercutting pits identified along the fence-line are interpreted as gravel-quarrying pits that had been backfilled with rubbish, including quantities of animal bone. The field's southern boundary incorporated a wide entrance formed by two opposing termini, leading south into Field 44.

Moving further south in this inter-droveway zone, Field 25 and its adjacent fields to the east (44-47) were delineated by a distinctive, almost continuous, curving northern ditch that extended across the landscape for almost 400m. Field 25 incorporated an interesting arrangement of ditches at its western end, which combined to create a kind of 'funnelling' or 'holding' arrangement, most likely used for the control of herds into Drove 3 (Figure 28). Similar corralling ditch systems were identified in and around several of the other droves.

Fields 44-47 all bordered Droveway 6, and variously had entrance arrangements on to it. Some appeared as small gaps to allow for human access, others were more substantial openings allowing for herd movements. The easternmost of these fields (no. 47) also had access to Drove 2 from its NE extent. The southern boundary to these four fields, whilst shared, appears to have been created by different people working to a very basic plan. In places its sinuous length was very shallow (0.2m depth), whilst elsewhere it was much deeper (Figure 29).

Fields 48 to 52 all lay to the south of Drove 6. Following their Middle Bronze Age creation, they appear to have been partly enclosed by an episode of later Middle Bronze Age (Phase 3B) ditch cutting (Figure 26), resulting in a double-ditched enclosure arrangement that became a focus for subsequent settlement (see below).

Field 48, which covered an area of 0.6ha., shared its eastern and southern boundaries with Drove 5; at the point that the routeway 'dog-legged' around Field 60. The ditches here showed numerous episodes of recutting and clearing out, suggestive of repeated maintenance by the Bronze Age farmers. The SE corner of Field 48 contained a narrow entranceway into Drove 5 through what could have been a gated arrangement. The field's NW corner contained supplementary ditches indicative of a rectangular stock pen. This had a ditched and gated arrangement that allowed access back on to Drove 6; and also movement of stock into the small and neat Field 49. This field effectively lay within larger Field 50. Along their shared boundary were four aligned post-holes all spaced equidistant from the ditch and each other. The purpose of this is unknown, but they could have formed some kind of tethering arrangement. Additional gateways afforded access to fields to both the south and west.

Square Field 51 enclosed an area of 0.45ha. Its remarkable straight southern boundary (that continued westwards for a distance of *c.* 200m) perpendicularly truncated Drove 5's precursor ditch (discussed earlier). Signs of a former bank on the ditch's south side were evident from slumped gravel fills along its length. Its eastern terminus showed signs of repeated recutting, perhaps undertaken to maintain an entrance at that corner.

Between droves 3, 5 and 6, Field 52 appeared to represent a significant plot of land. It was large (*c.* 1.2ha) and was accessible from all sides. It was here, during the subsequent Late Middle Bronze Age, that settlement structures were constructed within the plot, and some of its surrounding ditches were re-defined and supplemented by additional ditch digging (see below). Being ever-so slightly more elevated than many of the surrounding fields, this part of the landscape

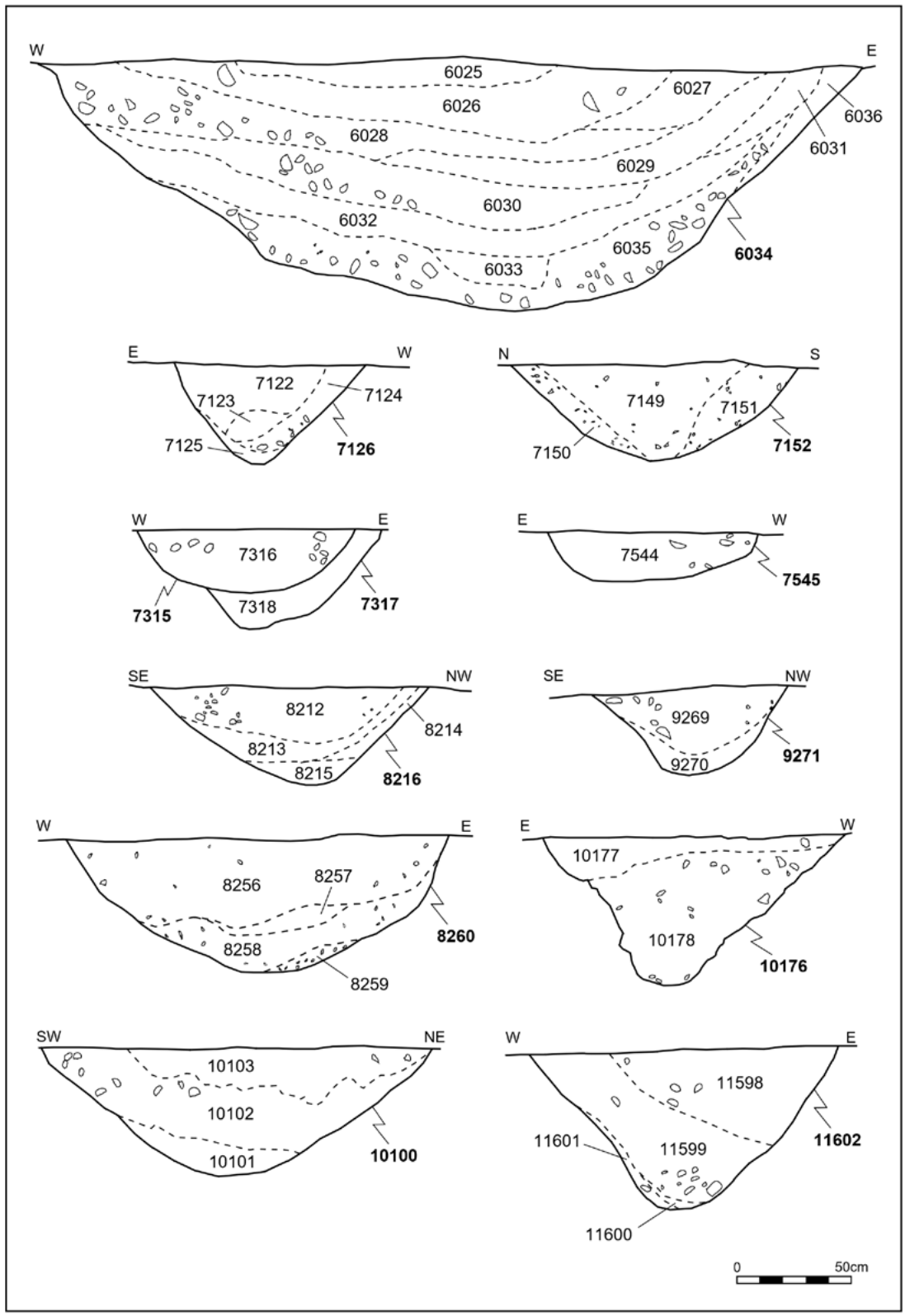

Figure 29 Period 3A field-boundary ditches: representative sections.

appears to have retained its importance, when other parts of the Bar Pasture field system became victim to the encroaching waters from the east.

Nearby Field 53 was a long, rectangular field abutting both droves 3 and 6. It had various entranceways on to both droves, including a gated funnel arrangement at its northern extent. The remaining fields in this grouping (numbers 54-57), lay to the south of principal boundary axis G6323/G6435. The most clearly defined of these was Field 55, whose eastern ditch had an interior bank represented by slumped gravel fills. Fields 55 and 57 were inter-linked by a narrow southern entrance.

The substantial western ditch of Field 56 [6034]/ [5281], was unique, being the most substantial prehistoric boundary ditch encountered on the Site (Plate 36). It was an impressive 4m wide and 1.2m deep, and contained 11 fills that were characterised by silts and gravel slumps indicative of abandonment and collapse of the ditch's sides and banks (Figure 29). Higher in the sequence, fills were gleyed silty clays with a plastic consistency suggestive of having been water-lain. The uppermost fills had signs of stagnation and ponding.

Plate 36 Section through substantial boundary ditch [6034], dividing fields 35 & 55.

Finds from this large ditch were minimal, but two fragments of Bronze Age cylindrical clay weight were recovered from lower fill (5278) (see *Clay Weights*), together with some fragments of worked and burnt timber debris. In addition, was a little animal bone as well as an abraded sherd of Roman Grey Ware pottery, being the only Roman sherd from the entire Site. A retained soil sample contained a snail assemblage typical of a shaded and waterlogged environment.

Field 57 was a large, open rectangular area of at least 1.5 ha., located at the southern end of Drove 5. This field may have functioned as a collecting area for livestock, from where animals could have been driven northwards. The field's eastern boundary incorporated a twin-lane, corral-type arrangement formed by a curving ditch segment, which may have facilitated the separation or selection of animals.

Fields to the west of Drove 3 (numbers 26-35)

To the west of Drove 3 and north of Drove 4 were at least ten fields (Figure 26). To the north, this arrangement was represented by two very large fields, 26 and 27, both bordering the western boundary of Drove 3. Further south were at least eight smaller, and more regular fields (28-35). Large fields 26 and 27 were separated from each other by an unusual curving ditch that continued east to form the constriction or 'funnelling' within Drove 3 (as discussed above). Access into the drove from Field 26 was likely to have been through a 3m wide 'opening' at the SE corner. Field 27's eastern boundary was thought to have been a fence line, as few ditch segments were recorded, but a number of slight post-holes were. A more temporary boundary here would have allowed the field to be used as a livestock holding area attached to Drove 3. Indeed, the large size of both fields 26 and 27 suggests that they were perhaps used differently from the smaller, more regular fields to the south and SE.

Fields 28-35 effectively comprised three horizontal rows of rectangular plots. Many of the boundaries defining these fields were composed of interrupted lengths of shallow ditch filled with the usual grey clay-silts. Where ditches were absent there were often linear arrangements of silt-filled hollows, which suggests that some boundaries were partly composed of hedge lines. Where identified, entrance termini were very well defined. An offset boundary between plots 30 and 31 afforded staggered access between four of the fields.

Immediately north of Drove 4, fields 32-35 were of all of similar size. Their shared southern boundary was the virtually complete northern ditch of the droveway. Their respective NS-aligned dividing boundaries were (unusually) formed by continuous straight ditches. In most cases these stopped short of their northern and southern ends to allow access between fields. Ditches were generally well-defined, measuring 1m across and 0.6m deep with V-shaped profiles and rounded terminals (Plate 37). The regularity of these particular fields perhaps suggests a different group or 'construction team' operating to more stringent field-laying guidelines.

Field 34 was unique in that it contained two or three central, parallel ditches, located 3m apart that led to a large, central water pit [5124] (see detail below). The area between the ditches perhaps served to direct access to the waterhole. It appeared too narrow for cattle, so perhaps was limited to sheep or human use.

Plate 37 Terminus of field ditch between fields 33 and 34.

Fields to the south of Drove 4 (numbers 36-40)

Five fields were (partially) identified to the south of Drove 4 (Figure 26). The most fully revealed were fields 37 and 38, which encompassed areas of 0.4ha and 0.9ha respectively. The southern ditch of Drove 4 formed the northern boundary to fields 36 through to 38 and possibly also Field 40. This boundary was largely continuous, although visibly sinuous. Though not always clear, it appeared that the NS-aligned field ditches on either side of the drove were created later than the droveway.

The field ditches across this part of the Site were all relatively wide. Some excavated sections identified a slump of orange brown sand, appearing to represent the remnants of a washed-in former bank; always on the east side. Access points between most fields were identified. Fields 38 and 39 were separated by a substantial and purposefully segmented ditch, 1m across and 0.5m deep. Its significance is uncertain.

Fields to the east of Drove 2/5, south and east of the Barrow Field (numbers 58-63; 66-82)

South of the Barrow Field, seven fields (numbers 58-63 and 66), adjoined the staggered eastern boundary of Drove 5 (Figure 26). Rectangular Field 58 was located to the north of small Drove 7. Its northern field boundary was unusually wide measuring 2.5m across. Interestingly, its eastern wavering ditch contained a moderate assemblage of animal bone, with its upper fill having fragments of human femur and humerus shafts that had perhaps been disturbed from a nearby barrow.

To the south was Field 59, a very large field exceeding 1 hectare. Drove 7 appears to have allowed access into this field. In its NE corner was a small circular structure (no.13), which is described further below (see Period 3B). The eastern and southern boundaries of this field coincided with various quarry phase limits and were not clearly traced.

Fields 60-63 comprised a ladder-like formation of rectangular fields. The ditch sequences here showed, unusually, that the bordering Drove 5 truncated all of their western ends. The fact that they are meaningless without their western boundary, however, suggests the existence of a 'hidden' precursor droveway ditch here.

At the southern end of Drove 5, the connecting area between fields 57, 62 and 63 was very complex, with another 'funnelling' gateway system being identified. Here livestock could have been directed into various field plots and holding areas.

During this period, the southern edge of the former Barrow Field was delineated by an EW-aligned ditch. This boundary formed the northern limit of fields, 66, 67 and 70. Field 66, which shared its western boundary with Drove 5, contained a number of features assigned stratigraphically or otherwise to this period, including a stock pen and a number of substantial pits (see below for details).

Fields 67 and 70 were well defined, square fields, each enclosing 0.8ha of land. As postulated above, Field 67 appears to have once 'occupied' the main central passageway or entrance into the sacred Barrow Field. In terms of construction, the northern ditch enclosing both fields was composed of a single, continuous linear which truncated the northern extremity of Early Bronze Age 'mini-barrows', G9451 and G9453. These two fields were interconnected by a southern gateway in their dividing ditch. Just to the south of this entrance was a substantial assumed stock pen (see below). The presence of animal bone here, combined with a lack of domestic refuse suggests it was animal, rather than settlement related. A double-ditched avenue arrangement at the southern extent of Field 70 may have led into this holding pen.

The western boundary to Field 70 was an extensive, wavering linear, over 100m long. Its multiple sandy ditch fills contained small pieces of degraded wood and a few fragments of animal bone. Redeposited fragments of human bone were also recovered from the ditch's

upper fill, perhaps having been disturbed from one of the nearby barrows. The field's eastern boundary was formed of three principal ditch lengths. Where the two northern-most linears conjoined was a large waterhole or pond [11197], which, although undated in terms of artefacts, is assumed to be earlier, as it caused the boundary to deviate around it. At the field's SE corner, the eastern ditch turned 90 degrees west to form the southern boundary. The same was recorded at the NE corner, where the western ditch extended slightly, before turning 90 degrees east to form the northern boundary of Field 74, giving some insight into how these fields were conceived and created.

The ditch sequence in this general area shows that Field 68 originally existed as a single-ditched enclosure that was reinforced internally during the Late Bronze Age. Its 2m-wide eastern ditch, which in construction terms pre-dated the digging of the northern ditch, contained part of a human fibula. Its southern boundary incorporated a narrow, slightly off-centre entrance into Field 69. Soil samples from a charcoal-rich upper ditch fill (11350) revealed evidence of crop processing in the form of charred barley and emmer chaff. The additional presence of a CP4A Late Bronze Age pottery sherd suggests that these residues were later; having been deposited in the top of the already infilled ditch. Field 69 was poorly defined, although its eastern boundary was traced intermittently for almost 100m.

Field 71's northern boundary was wide (2.5m) and deep (1.2m). A sample from its primary fill produced a large quantity of uncharred elder seeds and *Prunus* (sloe) fruit stones that had been gnawed by rodents. Significantly, the partial skeleton of a golden or white-tailed eagle and a granite quern stone, both recovered from eastern terminal [11591], may be evidence of a votive deposit at this location (see *Animal Bone* and *Querns*).

The southern terminal to the field's eastern boundary contained a large, cylindrical clay weight decorated with six vertical lines of fine comb impressions. The perforated weight was 95% complete and is typologically of Middle to Late Bronze Age date (see *Clay Weights*). This extensive ditch may represent a significant 'arterial boundary' or major axis within the field system: it notably aligned with the eastern extent of the former Barrow Field. Beyond this line to the east, a distinct change in field orientation from EW to WNW/ESE was discernible. As such, the adjacent fields (72-79), were all on a slightly different alignment to those west of the ditch (Figure 26).

No conclusive evidence was found for a southern boundary to Field 71 (or adjacent Field 75), although a number of post-holes identified on the projected alignment suggest the former existence of a fence. To the south of this assumed fence line was what was termed Field 71a. Its SW corner was defined by two short, parallel ditches, punctuated by a large multi-period waterhole or sump pit [11897], described below.

Fields 72, 73 and 76 all interconnected via a complex gated arrangement, and had access on to Drove 8, leading out into the fens. Ditch fills here were frequently compact orange-brown gritty silts with signs of iron panning (Plate 38). Field 72's remarkably straight southern ditch was traced for over 100m. Its eastern terminal incorporated a large contemporary sump pit [10135] at the junction with Drove 8.

Plate 38 North-facing section through mid-segment [10176], ditch G10311, dividing fields 72 & 76.

Field 73 was the largest of these plots. Its western ditch presumably formed a 'replacement' boundary for the earlier ditch defining the edge of the earlier Barrow Field. Its curving eastern boundary was heavily segmented and incorporated a 10m-wide entrance into Field 77, defined by two opposing terminals and a centrally-placed pit. The 3m-wide ditch separating fields 73 and 74 was created at a later date. These two fields may therefore have functioned initially as one massive curving field leading out into the wet fen.

Field 74's principal southern boundary G11911 incorporated a wide entrance at the western end, allowing access into fields 71 and 75. Traced for over 80m, this wide ditch contained unusually dark, charcoal-rich stony silt fills suggesting activities associated with burning took place nearby.

At the NE corner of Field 75 was a complex ditch sequence forming an entrance arrangement into plots 74 and 78. It involved ditch stubs and large post-settings with evidence for re-modification and maintenance suggestive of an important gated passing point. A bulk sample from one of the early terminals [11975] produced charred weed seeds and stickleback bones, the latter suggesting inundation with fresh water. Despite later truncation by the extensive post-Medieval 'Pode Hole Drain', it was possible to determine that Field 75's

northern and western boundaries were subsequently reinforced or re-established by ditch cutting through into the Late Bronze Age.

The intersection between fields 70, 71, 74 and 75 was another complex system of closely aligned ditch terminals, ditch stubs, and post-hole arrangements that clearly functioned as a main point of controlled access between these fields.

The majority of the Site's eastern-most fields (76-82), were incomplete in terms of their boundaries. They all bordered the fen edge, and showed signed of repeated inundation. Field 76's northern boundary was substantial, and had a charcoal-rich tertiary fill (10182) that appeared to represent a tip of burnt material (including heat-affected stones), that had been introduced into the ditch from the south side. The origin of these burnt deposits may be explained by the presence of numerous later Middle Bronze Age pits identified in close proximity, one of which [10217], contained a rich assemblage of salt-making briquetage (see below and Morris, *Briquetage*).

Although not fully revealed, Field 77 was calculated as being of in excess of 1.5ha. At its southern end was the suggestion of parallel linears indicative of yet another droveway leading out onto the fen edge (Figure 26).

Between fields 77 and 78 was a very large, ill-defined area that may have connected with Field 74. In its centre was a 'tangle' of amorphous linears, many of which were probably natural stream-beds or roddons. Topographically, this area fell away to the east as it encroached onto the fen proper. This probably explains its irregular character and poor archaeological survival.

Although only truly defined by its northern and eastern boundaries, Field 79 appears to have been extensive, in common with the two adjacent fields to the west (71a and 75a). The majority of the western ditch was composed of pits and linear segments with signs of repeated maintenance. The field appeared to 'fade out' as it progressed southwards towards the fen, due no doubt to repeated inundation and continuing erosion.

The three eastern-most, and final fields identified, 80-82, appear to have been created as a single NS-aligned unit defined by a pre-existing, wavering eastern boundary, G12103. The latter incorporated a narrow interior track. The irregular course of outer ditch G12103 resembled a former stream-bed, and this was reflected in the environmental analyses. Retained samples produced a large number of insect remains with abundant beetles and 'concentrated' dung beetles, weevils and mites. This sinuous boundary (part natural and part man-made) appears to represent the eastern-most extent of human activity on the Site.

Principal Features Associated with the Middle Bronze Age Field System

The Enclosed Farmstead *(Figure 30)*

A classic farmstead built within the confines of Field 19 consisted of a neat rectangular enclosure marked by an external ditch, a possible hedged bank and an intermittent internal ditch. The enclosure arrangement contained two identically-sized circular buildings (structures 5 and 6), which survived as penannular ring-gullies, supplemented by post-holes and pits.

The Enclosure

The enclosure measured 60-67m east to west by 42-55m north to south, enclosing an area of 0.3ha within the southern half of Field 19. Its slightly curving southern side formed the southern boundary to that field plot, and delineated the northern boundaries of fields 23 and 24 beyond. The two ring gullies encompassed by the enclosure circuit were evenly spaced within its curtilage, and both had SSE-facing entrances. The character of the enclosure, being composed of various lengths of 'interrupted' ditch afforded a number of access points. The clearest of these were present on the southern and northern sides (detailed below).

The Outer Ditch:

The outer ditch was largely continuous on the north, east and south sides. On the west side, it was present at the northern half and SW corner, these lengths being separated by a wide space that probably represented the main entrance. Smaller entrances suitable for foot traffic were located at the NW and SE corners and on the north and south sides. A total of 21 segments were excavated through the outer ditch, including ten termini and breaks in the circuit (Figure 31).

The surviving size and shape of the ditch varied around its circuit. Generally, it had a rounded profile with sloping sides and a concave base, but had a flat base at the NE corner [2046]. The western ditch was noticeably narrower and shallower, being *c.* 1m wide and up to 0.5m deep. On the eastern and northern sides, it was more substantial, measuring up to 1.7m wide and 0.7m deep (Plate 40). The ditch was widest and deepest on the south side, measuring up to 2.4m across and up to 1m deep. Whether these dimensions are due to differential preservation or due to other reasons, is not clear.

The ditch contained up to five fills, although more typically it had three or four. Evidence for a possible internal bank between the inner and outer enclosure ditches was found in five, possibly six excavated segments; indicated by gravelly ditch fills present in segments [2100], [2118] and [2326] on the north side, [2360] on the south side, and [2439] and possibly [2077] on the east. The presence of banks between narrow

Plate 39 Ring gully and posthole arrangement of Structure 5, within Middle Bronze Age farmstead enclosure.

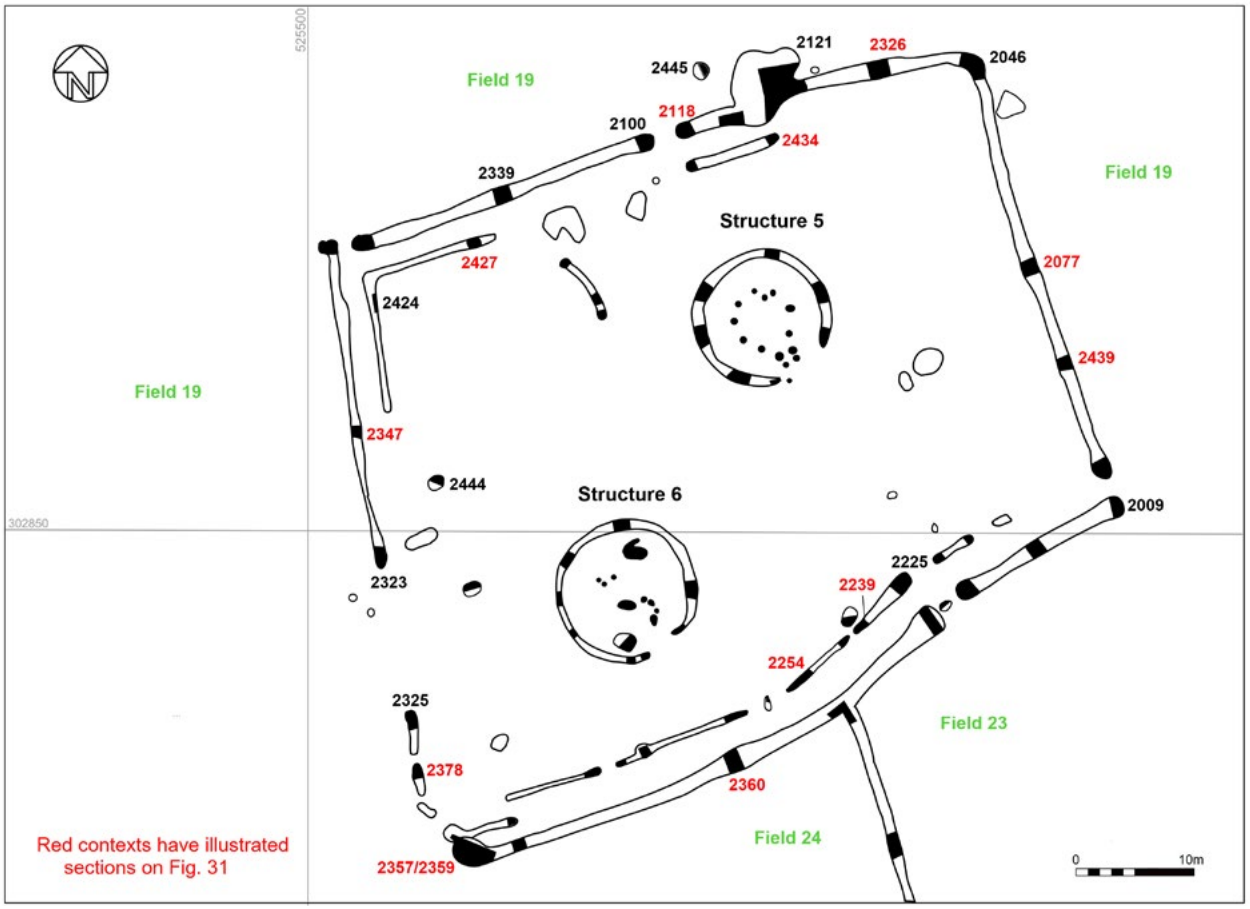

Figure 30 Plan of the Middle Bronze Age Farmstead.

Plate 40 Substantial eastern (outer) ditch of the farmstead enclosure.

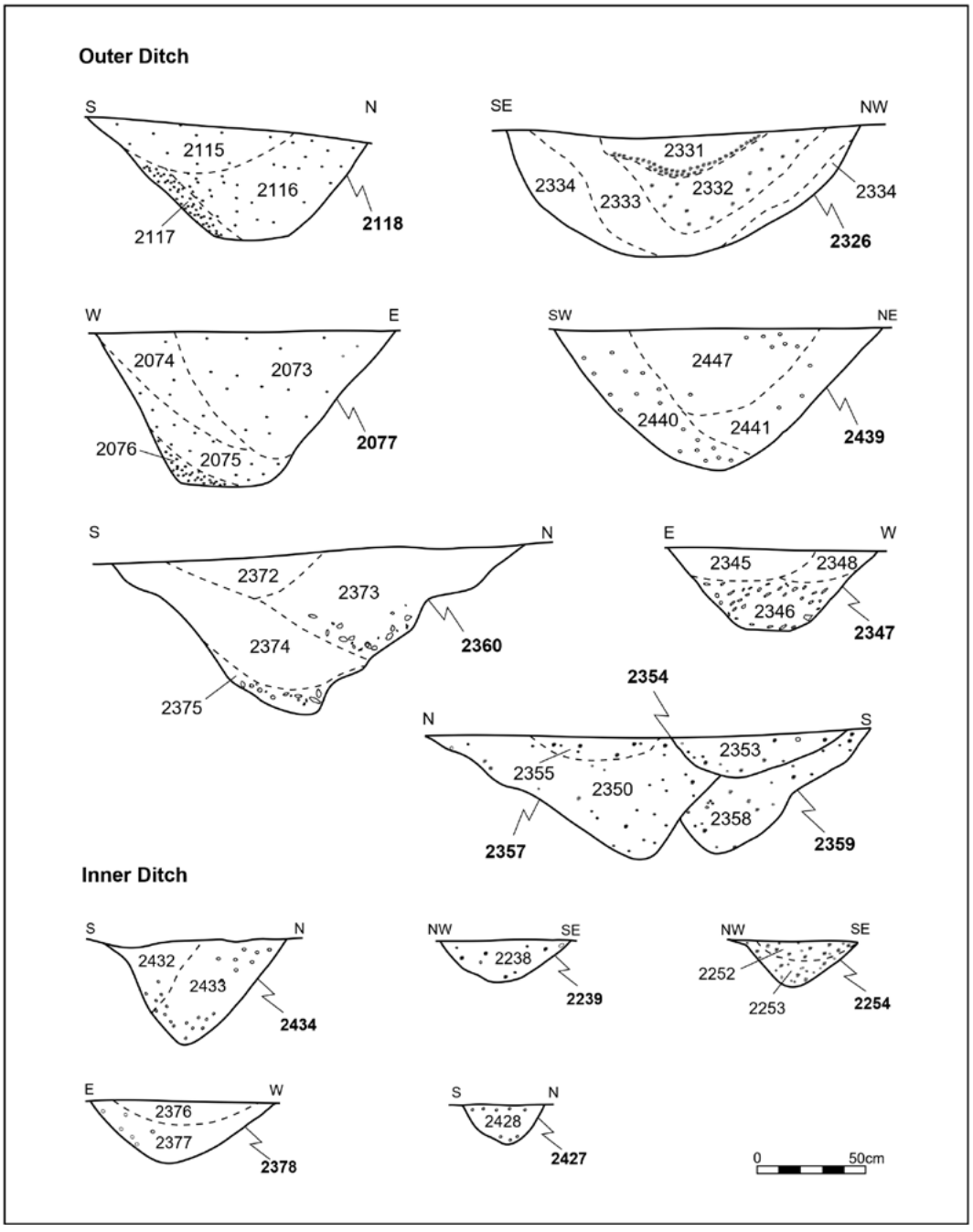

Figure 31 Farmstead: outer and inner enclosure ditch sections.

paired ditches has been noted by Evans at Fengate (2009: 44), who has suggested that they were potentially 'hedge-capped' to create a level of protection from the wind.

A very small amount of pottery (all considered residual) was recovered from just three excavated segments: a single sherd (1g) of final Neolithic/Early Bronze Age Beaker pottery from the lower fill of western ditch [2347] (see *Prehistoric Pottery Cat. No.* 15), one sherd (1g) of Early Bronze Age pottery from the upper fill of [2077]; and two flakes (1g) of likely Beaker pottery from the lower fill of [2009]. The tiny sherds of Beaker pottery clearly represent residual fragments associated with the many earlier pits recorded in this general area (see above). A sample from the ditch fill was rather poor, containing just a few charred, indeterminate seeds and some burnt animal bone.

Remodelling at the SW corner:
At the SW corner of the enclosure a sequence of three ditches was present, which suggests that the occupants were required to reinforce and subsequently maintain that corner. The earliest ditch in this sequence [2359] was recut twice, showing repeated redefinition. The presence of numerous interrupted ditch lengths in this part of the enclosure points to where access and egress may have taken place. A zone of heavy foot traffic could account for the identified re-establishment, repair and reinforcement that apparently took place.

The Inner Boundary
An inner boundary was present on the north and south sides, and at the NW corner of the enclosure, being marked by intermittent short runs of ditch. To the north and NW, the spacing between the inner and outer ditch was 2m; on the south side it was slightly wider, being between 2.5-3.5m (Figure 31). The inter-ditch space was similar to that identified between several double-ditches at the bordering Pode Hole Quarry, which were too narrow to have functioned as any form of drove (Daniel 2009: 150). The gap, however, is also too narrow to have functioned successfully as a path or track for human use, and was more likely occupied by a hedged bank (see above).

Individual lengths of the inner ditch varied between 7m and 9m, except at the NE corner, where two such lengths, [2424] and [2427], merged at right angles. A total of 12 segments excavated through the various ditch lengths confirmed that the feature had been constructed as a discontinuous linear. The ditch was generally wider on its east and north sides, measuring up to 1m across. On the south side it averaged 0.5m. As with other ditches, its depth varied from between 0.1m and 0.5m, although no trend could be discerned. The ditch profile was also very varied: to the north it was generally well defined with steep sides and a rounded base. On the east side it was steep-sided, with a flat base; to the south it was shallowest with a concave base. This suggests that the feature was constructed fairly rapidly by several people who were not working to a particularly stringent development plan.

The excavated segments on the north and east sides generally contained two sterile fills consisting of silty clay over a sandy gravel primary fill. However, on the east side, the lower fill (2377) of segment [2378] contained hard iron panning. Where the features were shallowest, to the north and east, only a single fill was identified. On the south side, generally only a single fill was recorded, although gravel lenses suggesting slumping of bank material were noted.

Dating evidence from the inner boundary was recovered from two neighbouring, southern ditch lengths. This included pottery, hearth material and briquetage, suggesting that the area was used for small-scale domestic rubbish disposal. Two residual body sherds (4g) from a heavily ironised Beaker came from terminal [2254] fill (2252), with another four abraded (probable Beaker) sherds (7g) recovered from fill (2253). Fill (2238) contained four sherds (23g) of type S1 pottery, which is generally considered a later Middle Bronze Age fabric. Lastly, flakes of a shell-gritted Middle Bronze Age briquetage container were recovered from SE ditch terminal [2225]. As stated earlier, the abraded sherds of Beaker pottery represent residual fragments associated with the earlier 'Beaker pits' recorded across this general area.

Soil samples were retained from several lengths of the inner boundary ditch, although they frequently proved to be sterile. That from ditch fill (2252) contained charcoal and charred wheat seeds (*Triticum* sp.), whilst that from associated fill (2253), contained charcoal, with charred seeds of barley (*Hordeum* sp.) and wild oat (*Avena*).

Entranceways and gates:
The enclosure's principal entrance, 13m wide, was located on the west side; formed by termini to the north [2323] and south [2325]. This width possibly suggests an entrance for livestock that could have been closed off by some form of temporary fencing, the remnants which have not survived in the archaeological record. Evidence for trampling in this zone gives some support to this theory. Close to the northern terminus were two post-holes, which may indicate the position of an external gate arrangement.

Smaller entrances, *c.* 2m wide, were present in the north and south sides of the enclosure, allowing access through both the inner and outer ditches, effectively creating bridging points. The size and form of these apertures suggests access for the occupants of the

settlement. Small entrances were also identified at the NW and SE corners. Supports for small internal or external gates were found near all the entrances, represented by slight post-holes. The presence of gates, bridging points and livestock entrances shows some level of organisation for the functioning and access of the enclosure.

Internal spaces:
Aside from the two round-houses (see below), there was no surviving evidence for internal divisions within the enclosure, such as fence lines, paths, or enclosed spaces around the buildings. There were no defining working areas from the immediate domestic space and no indications of any smaller ancillary buildings for storage or industry.

Sump pit 2121
The northern enclosure ditch was 'interrupted' by a large, sub-oval sump pit [2121] (Plate 41). The pit may have been dug whilst the complex was still in operation, perhaps as a means of draining the enclosure ditch. The main pit shaft was *c.* 5m in diameter and 1.8m deep, with the upper edge extending 2m further to the NE (Figure 32). A trampled deposit identified here suggested the presence of an activity zone frequented by the enclosure's occupants. The pit contained four main fills, together with much evidence of slumping. The primary fill (2122) was a thin, gritty silt derived from general edge collapse. This contrasted with tertiary fill (2124), a dark green-grey clay silt containing decayed organic material made up of plant matter, such as reeds and rushes. No pottery was recovered from the pit, although several fills contained animal bone, with fill (2124) producing an antler pick (SF1), (Plate 42).

A bulk sample taken from waterlogged fill (2124) produced a residue of stone with some flint and a burnt sandstone fragment. The wet flot was very rich, with charcoal, wood pieces, waterlogged seeds and plant fragments. The charred element included barley (*Hordeum* sp. – including hulled grains), whilst the uncharred element contained a rich and varied assemblage with frequent herbaceous stem fragments, rootlets, moss, buds, roundwood/twigs and comminuted wood fragments.

Analysis identified hazel (*Corylus avellana*) with whole nuts (some gnawed), gnawed cherry stones (*Prunus* sp.), celery-leaved buttercup (*Ranunculus sceleratus*), nettle (*Urtica* sp.), goosefoot (*Amaranthaceae*), stitchwort (*Stellaria* sp), blackberry/bramble (*Rubus* sp.), hawthorn (*Crataegus* sp.), gypsywort (*Lycopus europaeus*), elder (*Sambucus nigra*) and daisy family (Asteraceae), including thistle (*Carduus/Cirsium* sp.). The presence of elder and bramble seeds suggests that these species

Plate 41 Sump pit [2121] during quadrant excavation.

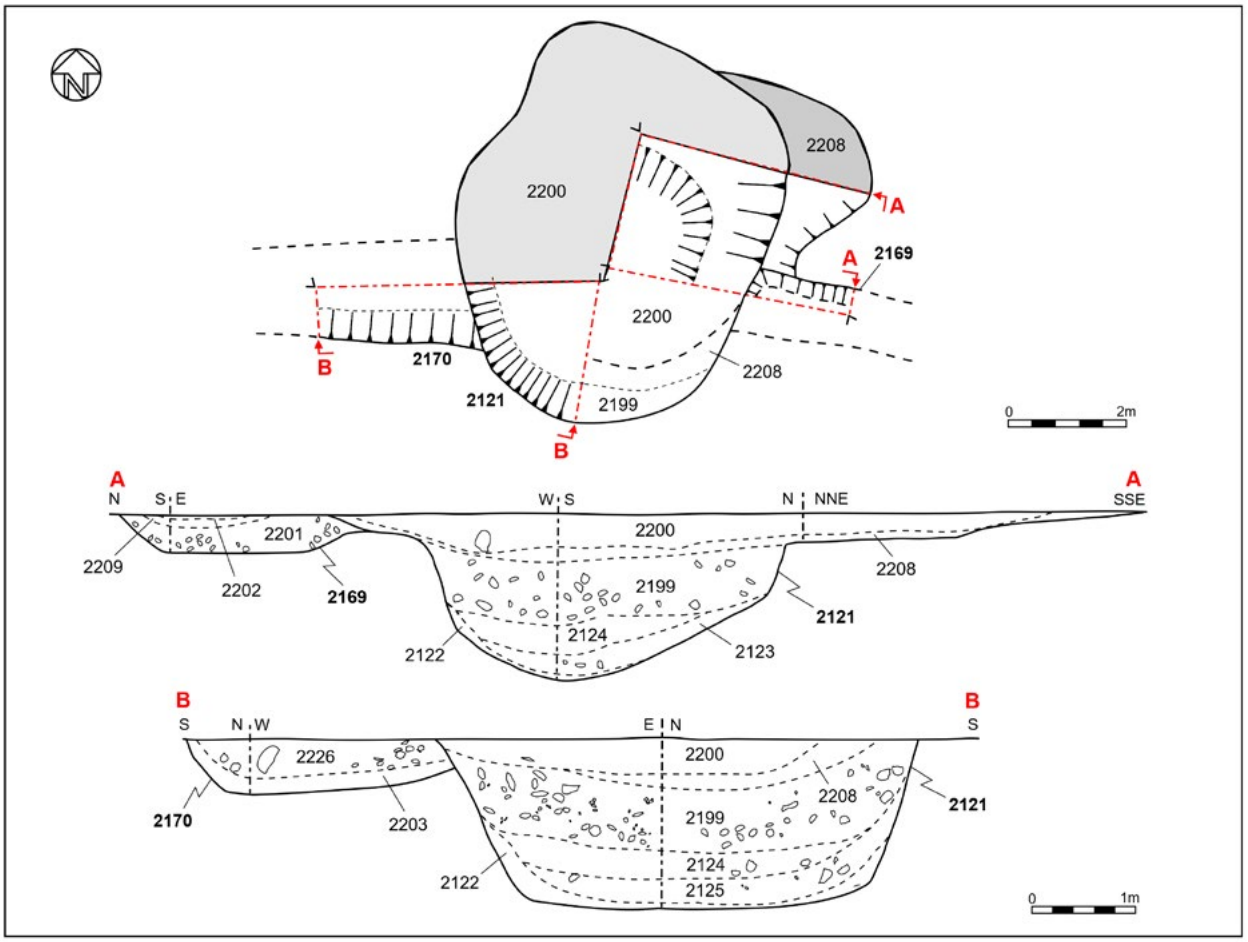

Figure 32 Pit [2121]: plan and section.

Plate 42 Antler pick recovered from fill (2124) of waterhole [2121].

were growing in the locality, or perhaps that these fruits were consumed by the occupants of the enclosure and are derived from faecal matter.

Insects were also identified, including occasional *Daphnia* ephippia (the resting stage of the water flea suggesting standing water) and fragments of elytra (the leathery or chitinous forewings of a beetle or a related insect). Traces of vivianite/copper alloy corrosion residue were present, resulting in partially stained (blue) *Rubus* seeds. This is likely to represent the degradation of a fragment of copper alloy. Also recovered were charred bone fragments and a wide variety of snails dominated by species indicative of shaded and woodland environments (Rackham and Giorgi 2015). This suggests that the northern enclosure boundary (and potentially all the others), had contained a dense hedgerow and that perhaps woodland, from which the enclosure was carved out, survived in the vicinity.

The position of waterhole [2121] is itself interesting: being located close to the northern entrance, it probably interrupted the bank that likely occupied the area between the inner and outer ditches. The pit would therefore have allowed access to water from both the inside and outside of the enclosure. The identified shallow sloping and hollow 'lipping' on the north side would have also made access for animals easier.

To the NW of this waterhole was a small pit [2445], which was undated. It is not clear whether this feature is contemporary, although investigations at the nearby Pode Hole Quarry found that smaller pits were often found in association with large waterholes, possibly for accessing water for human consumption (Daniel 2009). In this case, it could have supplied people working in the field with relatively clean water without negotiating through an area of animal trample.

Buildings within the Enclosure

Within the double-ditched enclosure were two classic Middle Bronze Age buildings marked by eaves-drip ring-gullies. The buildings were spaced 15m apart, and appear to have been carefully sited. The tidy arrangement of the buildings within the surrounding enclosure suggests that all are part of a single original layout.

Structure 5 (Figure 33)

Structure 5's ring-gully measured 11m in diameter and incorporated a SE-facing entrance. Seven excavated segments showed the surviving gully to be 0.7m to 0.9m wide and 0.2m to 0.4m deep. A recut visible in section on the gully's SW side showed it to be of two phases (Plate 43). The earlier gully was V-shaped, with the later recut being much wider and shallower. Two flint flakes were recovered from its fill. The asymmetrical profiles of the two ring-gully segments, with their bases orientated towards the inner edges, combined with the presence of two fills on the east side, suggests that the recut was made around the whole of the gully.

At its southern entrance terminus, the ring-gully was truncated by a post-hole [2141] and stake-hole [2287]. A similar arrangement was also found in Structure 6, and may indicate the position of short screens or windbreaks. Alternatively, the arrangement may relate to a 'turning post' for an outer gate or door.

The opposing terminus of the ring-gully had a single fill (2144) that contained a small residual sherd (1g) of Final Neolithic/Early Bronze Age pottery. The fill also contained a small amount (39g) of ash-bleached hearth material and animal bone. A soil sample taken from the gully fill was largely composed of fire-cracked pebbles, together with charred animal bone fragments and six flint flakes. The retained flot produced a number of charcoal fragments and a few charred grains of barley (*Hordeum* sp.) and wheat (*Triticum* sp.).

Post Layout

Centrally placed within Structure 5's ring-gully was an arrangement of 12 post-holes representing the complete structural arrangement of a building (Plate 44). Eight posts defined a circle of 5m diameter, whilst four posts, forming a rectangle opposite the entrance to the ring-gully, suggested the position of a porch. The post-holes were evenly sized, generally 0.4m in diameter, with the two inner posts of the porch being larger, each measuring 0.55m across. All features were truncated, with the deepest post-hole surviving to just 0.25m in depth.

Plate 43 Section through gully of Structure 5, showing clear recut.

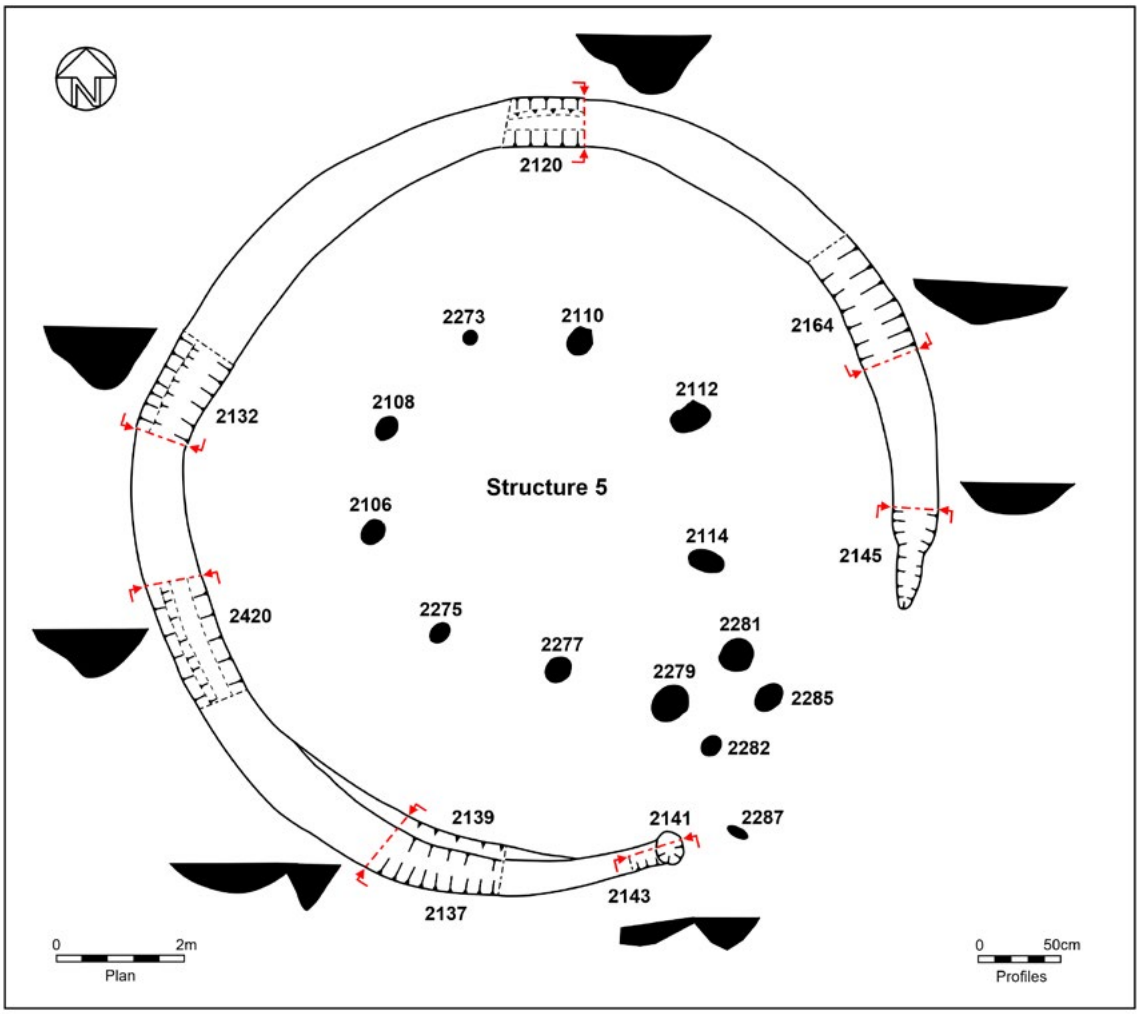

Figure 33 Structure 5: plan and sections.

Plate 44 Classic post-hole arrangement of Structure 5, with front porch.

Four of Structure 5's post-holes were angled to the NE, possibly as a result of distortion, due to the final collapse of the building towards the east. Most of the post-holes contained single fills; two had the remains of post-packing. Soil samples taken from post-holes [2112] and [2114] both washed down to a residue of gravel and fire-cracked pebble with fragments of charcoal.

No internal features, hearths or occupation deposits were found within the post-hole circuit. The lack of these makes the interpretation of the structure's use difficult. Nevertheless, it clearly represents the remains of a circular post-built feature with a SE-facing entrance, that utilised a combination of posts and stakes in its construction. The presence of the eaves-drip gully indicates that the structure was roofed. The recutting of the ring-gully on at least one occasion indicates that the building was maintained in good repair.

There were no signs of any partial repairs to the post structure, often indicated by doubled or intercutting posts. This suggests that the building was occupied for just a few years, perhaps only seasonally.

Structure 6

As with Structure 5, the eaves-drip ring-gully of Structure 6 measured 11m in diameter, with a SE-facing entrance (Figure 34). The gully survived to between 0.4m to 1m wide and 0.1m to 0.4m deep, and contained a single silt-clay fill. It was wider on its north and east sides and shallowest to the west. It was generally U-shaped, with a rounded base, apart from the deeper north side, where it was V-shaped. On the east side was the suggestion of a recut, with the earlier, broader gully [2028] being replaced by a relatively narrow one [2026] of the same depth.

Fill (2025) of eastern gully segment [2026] contained five (11g) residual Beaker body sherds. A briquetage container rim sherd of probable Middle Bronze Age date was recovered from the gully's north segment [2064]; and a small amount (4g) of undiagnostic fired clay was recovered from NW segment [2060]. A sample retained from the ring-gully fill contained charcoal, and several charred barley seeds. A calibrated Middle Bronze Age date of 1488-1484 cal BC (0.5%); 1454-1288 cal BC (93.2%); was obtained from one of the barley (*Hordeum* sp.) grains in fill (2025), (SUERC-47169).

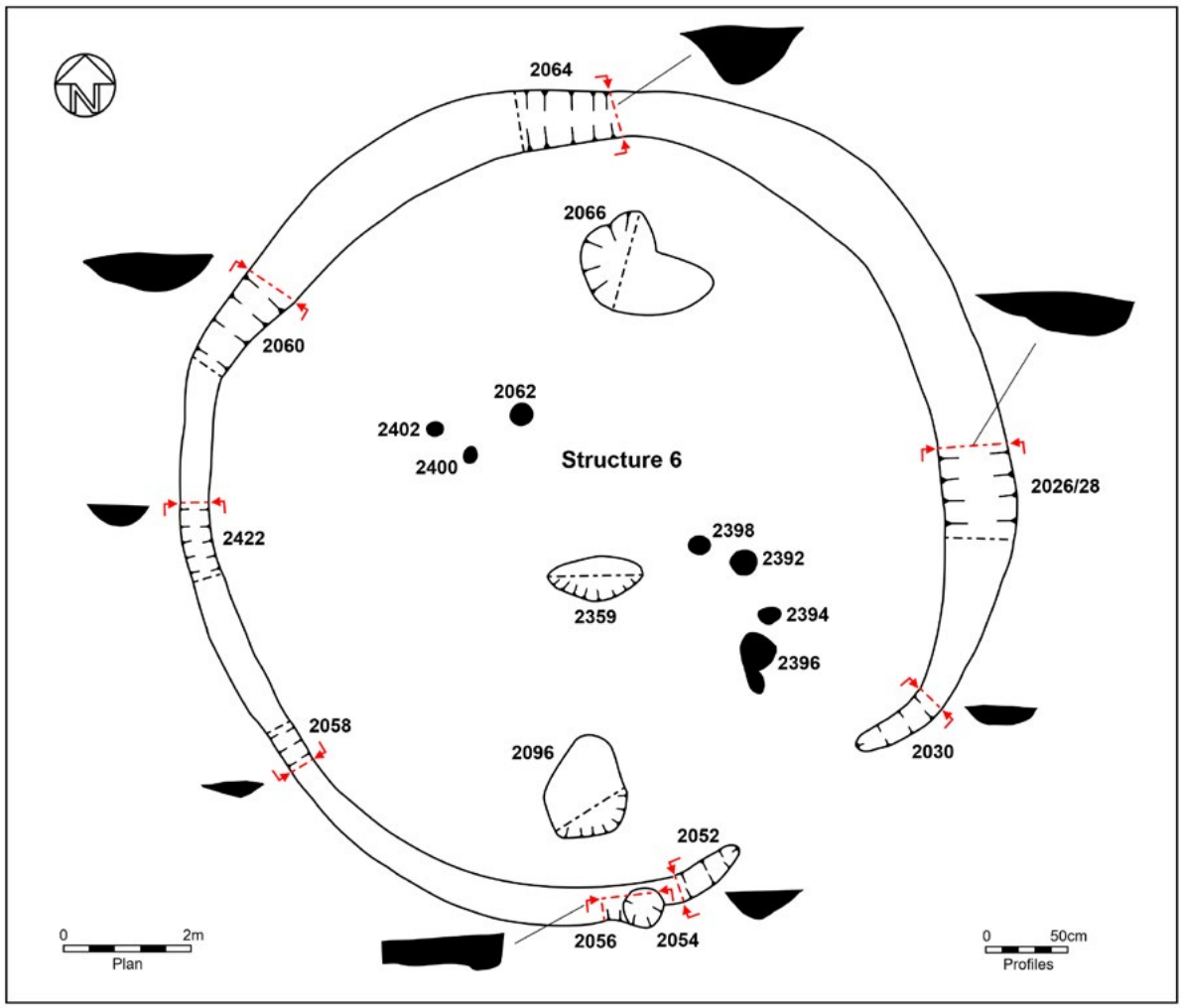

Figure 34 Structure 6: plan and sections.

Pits and post-holes:

Within the circuit of the Structure 6 ring-gully were three pits and seven post-holes, although these did not define a clear building plan, as with Structure 5. The pits bisected the interior space from north to south, with one, pit [2389], being placed approximately central; the most common position for a hearth.

The three pits were oval and sub-circular with shallow sides to concave and flat bases; none were deeper than 0.25m. Pits [2096] and [2389] each contained two fills, the upper deposits containing burnt material, including small fragments of wood. Fill (2387) from pit [2389], contained the only pottery from within the building's circuit, being a single body sherd of decorated Beaker (13g) with deep fingernail impressions (see *Prehistoric Pottery Cat. No.* 23). A soil sample from the upper fill (2094) of pit [2096] washed down to a fairly sterile residue, although coal-like material was identified, together with several unidentifiable charred seeds. The third pit [2066] contained a single sandy clay fill with charcoal flecking, but no finds.

The seven post-holes identified within the ring-ditch circuit were confined to the NW and SE quadrants of the enclosed space. They appeared to form two groups, of three and four posts respectively. The group of four were to the north of the entrance, and appeared to form a line of posts with a return to the SW, probably to support an internal division such as a wattle screen. The three post-holes to the NW, furthest from the entrance, were relatively small and shallow, with nothing to suggest what they may have been for. It is likely that such round-houses would have had fixed furniture, screens, drying frames and looms, all of which would have necessitated fixed posts.

Most of the post-holes contained single undifferentiated silt fills, with small stones and gravel. The exception was post-hole [2392], which contained a dark grey central 'post-pipe' indicating the position of a decayed upright post. There did not appear to be any supportive stone packing, which suggests that the posts were relatively lightweight and not significantly load bearing. To the south, ring-gully segment [2056] was cut by a post-hole [2054]. This was in a similar position to Structure 5 post-hole [2141], and may represent a gatepost, utilised in closing the SE-facing entrance.

Ancillary features within the enclosure

Within the double-ditched farmstead enclosure, in the vicinity of the two buildings, were a number of other associated features. Whilst the evidence is slight, these may be interpreted as small rubbish pits and/or pits dug for gravel or latrines. In a very general sense (and if we include rubbish disposal into the boundary ditches), it appears that pit digging, and the dumping of rubbish occurred to the NW and east of the buildings.

At 7m NW of Structure 6, and close to the enclosure boundary, was a 1.4m diameter circular pit [2444] with an upper fill (2453) of dark grey sandy silt. The fill contained two fragments (40g) of waste hearth material, suggesting that the pit was used for rubbish disposal. Nearby was a small oval pit [2442] of asymmetric profile whose grey sandy fill (2443) contained charcoal, animal bone, heat-cracked pebbles and a retouched flint flake. The edge of the feature appeared to be scorched, suggesting that the pit had contained a fire, or that the remains of hot debris had been disposed into it. A soil sample taken for further analysis contained fragments of burnt animal bone, charcoal and charred seeds of barley (*Hordeum* sp. – including hulled grains), hazelnut (*Corylus avellana*) and fruit stone fragments with charred flesh still attached.

In this general area there were also several other small, shallow and often intercutting pits. Each contained a single silty-clay fill with charcoal flecks, animal bone fragments and fire-cracked pebbles, but no other finds. They suggest domestic activity in the vicinity of Structure 6. Around Structure 5 there appears to have been less pitting activity, suggesting that parts of the enclosure were kept clear, perhaps for livestock.

The enclosed settlement is the first of its kind found in the wider Bar Pasture landscape. Review of the literature shows it to be a classic form; of the type that dates from 1600 BC onwards, when there was a significant change in landuse, with more permanent settlement forms, field systems and linear earthworks. This was a time that saw the cessation in the building and use of monuments such as barrows, and the emergence of new types of site; notably enclosed settlements based on farming. Whilst the majority of the small assemblage of pottery recovered from the farmstead was represented by Beaker fragments, this is perhaps not surprising, as this part of the Site recorded at least four Beaker pit groups as well as a possible Beaker structure. Such sherds were clearly residual. The radiocarbon date from one of the round-houses, as well as Middle Bronze Age pottery from the outer enclosure ditch and many briquetage fragments of Middle Bronze Age type from the inner enclosure ditch show that this important settlement area was broadly contemporary with the period of field system development.

Other Settlement Structures

Additional evidence for occupation on the Site during the Middle Bronze Age included a number of post-built round-houses, some with surviving eaves-drip gullies. Of the 13 structures identified, seven (numbers 8-13; and 15) are considered to be of general Middle Bronze

Age date. Of these seven buildings, three appeared to be of earlier Middle Bronze Age date (Period 3A), whilst the remainder were considered to be from the later Middle Bronze Age (Period 3B).

Structure 8, Field 48

Structure 8 was composed of a semi-circular arrangement of five uniform post-holes with square profiles, all 0.6m in diameter and 0.4m deep. All contained identical grey silt fills with occasional small stones; the suggestion of a post-pipe was visible in one. Two features located just to the north of this structure - shallow pit [7326] and post-hole [7335] may be associated. Considered collectively, these features appear to represent the slight remains of a semi-circular or circular timber building, that would have been 7m in diameter, possibly with an attached porch or exterior working area.

Structure 9, Field 48

A similar-sized, sub-circular building, Structure 9, was identified a just few metres north of Structure 8 (Figure 35). This feature was represented by several posts, and a ring-gully [8030], 6m in diameter, with a NW entrance formed by terminus [8013], with a post-hole on each side. A similar causeway entrance arrangement (but without the post-holes) was identified on the opposite, NE side. Evidence of gully widening or clearing out was recorded in several places. As with Structure 8, no dateable finds were recovered, but in the absence of evidence to the contrary, it seems logical to associate these two buildings with the principal field system.

Two shallow pits, [8042] and [8044], located to the immediate east of the building may be associated. One contained animal bone fragments. A nearby sub-circular pit [8026] contained fragmented wood, charcoal, grain and seeds, including one of only a handful of flax seeds recovered from the Site (Rackham and Giorgi 2016).

Structure 15, Barrow Field

This building, with a wide, gated southern entrance, was constructed on the very western edge of the Barrow Field. It contained traces of human habitation, including evidence for crop processing and the remains of small fires or hearths.

The building was defined by a moderately steep-sided ring-gully G9273 that measured 10m diameter internally, and averaged just 0.2m deep (Plate 45) (Figure 36). The single gully fills were gravel-rich with a little burnt chert. Retained samples contained moderate quantities of fire-cracked pebbles, charred grain, hazelnut shell and other plant material. The presence of grain in all samples tends to confirm a 'domestic' association for the structure.

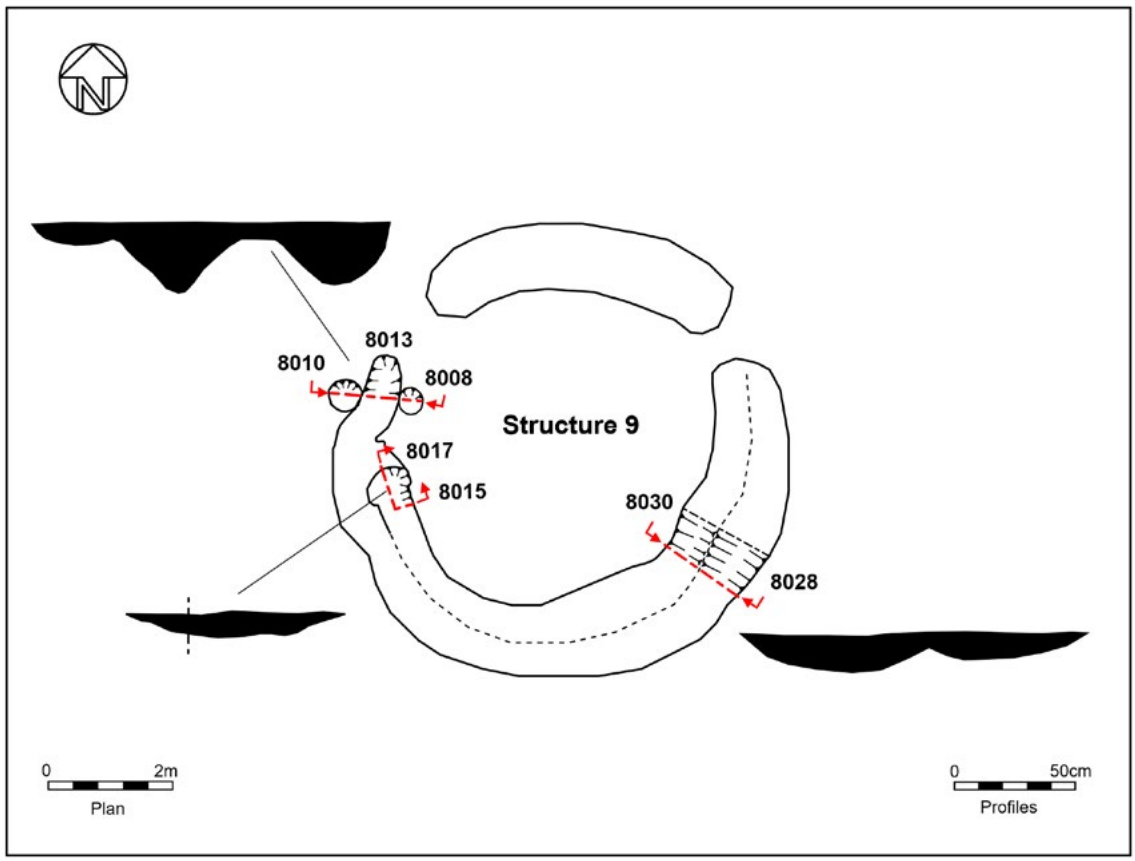

Figure 35 Structure 9: plan and sections.

Plate 45 Structure 15, looking north from outside of the southern entrance.

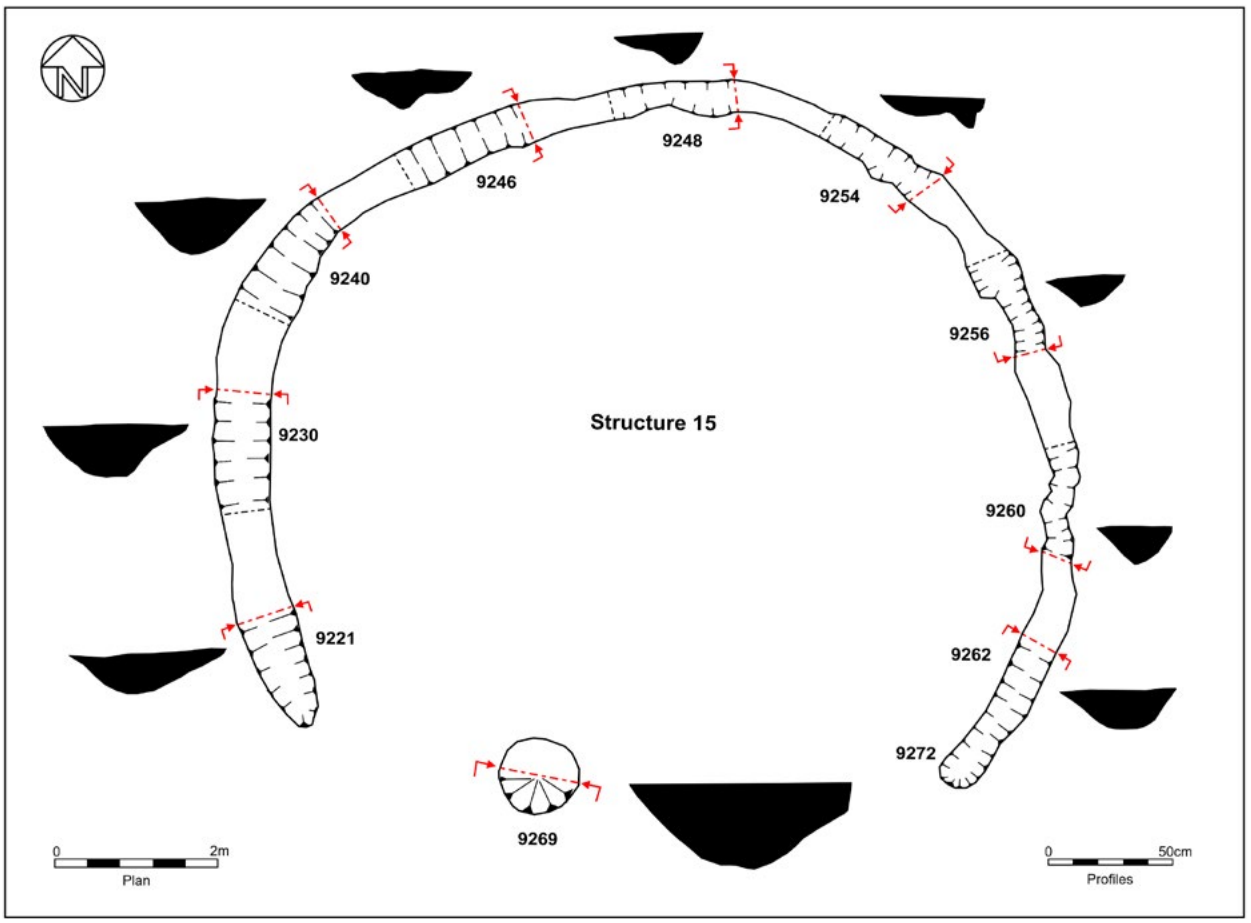

Figure 36 Structure 15: plan and sections.

The 7m-wide southern entrance was formed by two opposing gully terminals. Between these, and slightly offset to the west, was a large post-hole [9269], 0.9m wide and 0.4m deep. It appeared to be the remains of a substantial gate or entrance support. The post-hole contained a single fill with angular stone and charcoal inclusions.

Stock Pens

A number of apparent stock pens were identified across the Site, assigned stratigraphically or otherwise to this period.

Stock pen, Field 49
Whilst initially detailed as a small field plot, Field 49 can be seen to be a neat, rectangular stock pen within the NE corner of Field 50. The enclosed area was accessible at its northern end from both fields 48 and 50. The ditch forming the pen had no physical relation with the two outer ditches of Field 50, or with bordering Drove 6, but turned east at its SW corner to form the small separated area.

Stock pen G9184, Field 66
A small elliptical holding pen with a 6m internal diameter was identified on the west side of Field 66. The pen, created as an interrupted gully with separate western and eastern halves, had been placed within the space formed by an earlier field entrance. The gully ditch measured 1m-wide and averaged 0.5m deep, with steep, rounded sides and a concave base (Figure 37). Its fills were grey silty clays, with notable gravel inclusions contained in the terminal primary fills. A cattle tooth and sheep mandible were recovered.

Stock pen G11813/G11815, Field 67
An assumed livestock pen was identified in the SE corner of Field 67. The presence of animal bone, combined with a lack of domestic refuse from the ditches suggests that this was an animal-related, rather than settlement enclosure. The enclosed area appears to have been constructed contemporaneously with the wide, southern boundary ditch of Field 67. The northern curving arm of the holding area had two gated entrances, allowing for the movement of livestock from the pen to fields 67 and 70.

Holding pen G10035, Field 74
The remains of an oval gully G10035 in the northern part of this field, was recorded as a small holding pen. The poorly preserved gully measured 5m by 4m internally, and had an irregular profile between 1m and 2m wide and a maximum of 0.2m deep. A 2m-wide entrance to the NW was formed by two opposing terminals [10017] and [10009]. No finds were recovered from the heavily sampled grey silt fills.

Pits and Waterholes

A vast number of pits were created across the landscape during this period. The 11-year excavations looked at over five hundred pit features, ranging from so-called 'one-metre' pits, to 'intermediate' pits measuring between 1m and 4m in diameter; through to the enormous waterholes, some of which were up to 10m across. Some of these larger pits were found at the corners of fields, where they almost certainly acted as drainage sumps. Others may have been dug as quarries to extract the gravel substrate. The smaller pits were no doubt of various functions; including extraction hollows, waste-disposal pits, storage pits, fire pits and wells. As for earlier periods, the numerous pits were grouped by size and described in order of the broadly contemporary fields in which they were located. As so many pit features were excavated (and all have been described in detail in the four interim reports) only those that add informative detail to the site narrative are discussed here.

One-metre pits
Several examples of a distinctive type of shallow pit feature were found across the field system. These pits, probably variously used as rubbish and storage pits, cooking pits and small quarries, represent a separate class of feature from the large waterholes and the numerous intermediate sized pits of this period.

Pits 1803, Field 1; 1779 & 1786 Field 3; & 1789, Field 4
Four similar small pits were identified within fields 1, 3 and 4 to the south of Drove. All contained silt fills with fragments of heat-affected stone. From one of the pits was recovered a sherd of Middle Bronze Age pottery. They may represent pits utilised for the heating of water through the use of heated stones.

Pit 494, Field 7
This isolated and moderately deep pit contained three fills, from which were recovered four large sherds of earlier Middle Bronze Age pottery from an urn-like vessel, as well as a rim sherd from a Barrel Urn, also of Early Middle Bronze Age date. The urns are considered to have been cooking pots (see *Prehistoric Pottery Cat. No.* 46 and 47).

Hearth pit 6024, Field 35
This small pit, to the north of Drove 4, was recorded as a hearth. Prior to its excavation, it was clear that *in situ* burning had taken place here. Its principal fill (6022) contained fire-cracked pebbles, burnt, unworked flint, charcoal, burnt shell and molluscs; together with over 100 fragments (214g) of undiagnostic fired clay (see *Fired Clay*). The presence of fired clay in both this feature and adjacent large pit [6018] (see below), suggests that they are potentially related.

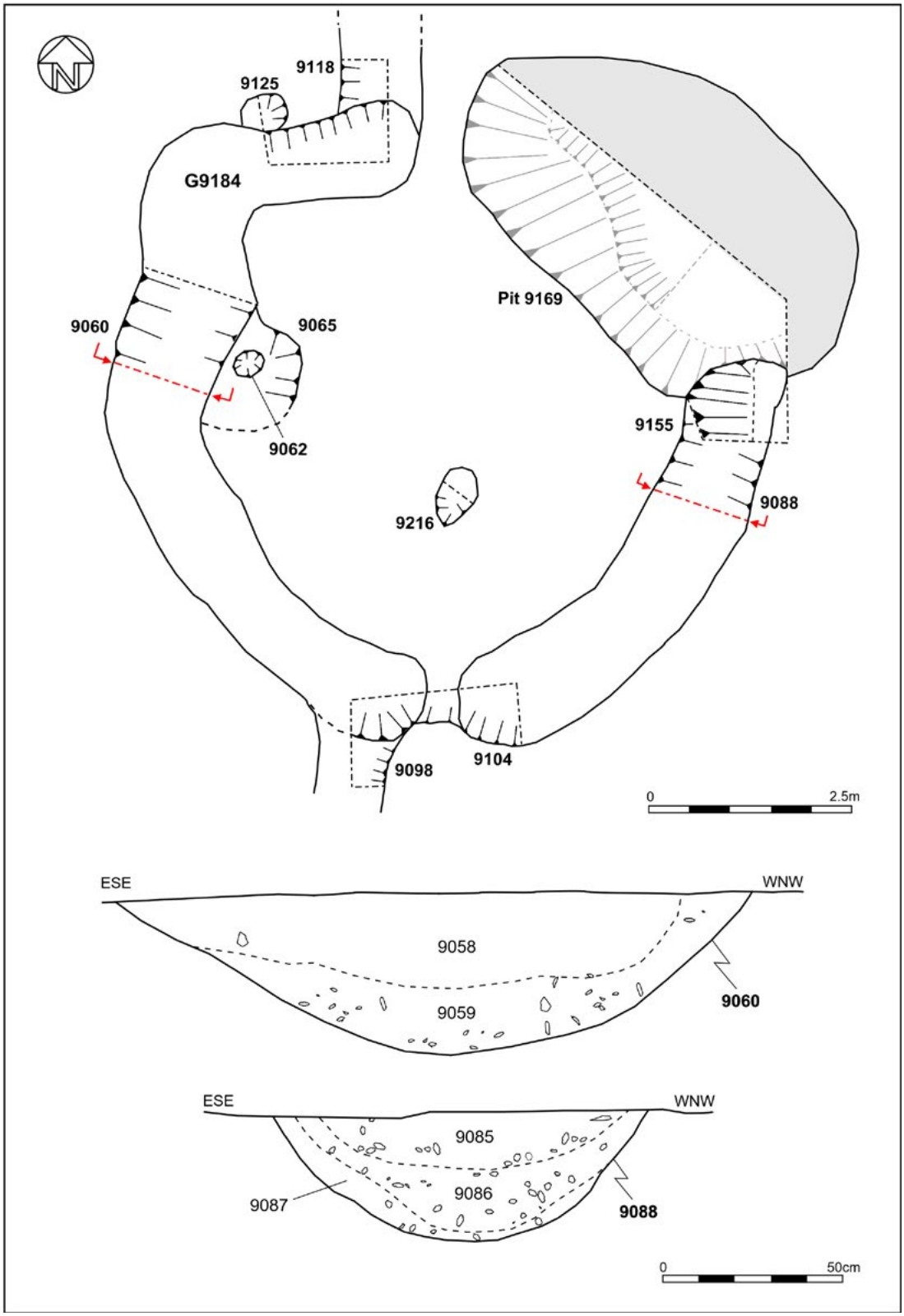

Figure 37 Stock pen G9184: plan & sections.

Cooking pits 7207, 7212, 7236, 7238, 7195, Field 61

Five small, sub-circular pits, all under 1m in diameter were located in close proximity near Field 61's southern boundary ditch. Their similar bowl profiles, cut into the natural clay, suggest some kind of containing function. One pit [7238] was filled with heat-shattered, burnt pebbles that had probably been used as 'pot-boilers' – stones heated and put into a pit for heating or cooking purposes (Plate 46). All the pits contained fills with charcoal flecks.

Plate 46 Shattered pebble fragments visible in 'satellite' pit [7195].

Hearth pit 9084, Field 66

A number of probable contemporary pits were identified in the centre of Field 66, including the remains of some kind of kiln or hearth-like feature [9084]. This elongated pit contained three distinctive charcoal-rich fills that contained fire-cracked pebbles, charcoal and fired earth. *In situ* scorching of the surrounding natural was in evidence.

Intermediate Pits (1.5m - 4m)

Numerous pits in this category were identified across the Site. Many were filled with nothing more than sterile silts and gravels, with no finds. Without finds and in the absence of stratigraphic relationships, the dating of such features is tenuous, but many must be associated with the extensive field system that developed throughout the Middle Bronze Age. Many such features may have been excavated as waterhole pits for animal and human use, or small gravel quarries that were left open after extraction and silted up naturally.

Waterhole 560, Drove 1

Within the confines of Drove 1 was a 4m wide, 1.5m deep, circular pit [560] containing numerous silt horizons. The steep-sided feature had a concave base and appears to have functioned as a small waterhole positioned close to one of the droveway's side entrances. Its primary fill contained a sturdy piece of roundwood that had been trimmed at one end from all directions. The profile imprint of an axe was preserved on this point (see *Waterlogged Wood*).

Pit 467, the northern ditched enclosure

This 1.5m diameter and 1.5m deep pit was within the ditched enclosure that bordered Drove 1. It contained seven fills (and one possible recut), of which the lower deposits contained wet, organic material including leaf litter and twigs. A sample from the pit's lowest organic fill (490) was retained for analysis and returned a measured and conventional C14 date of 3130+/- 40 BP (at 95.4% probability: 1465-1291 cal BC - Beta-217904), (see *Appendix E*). The radiocarbon date confirms that the pit's primary fills were forming in the Middle Bronze Age. The pit occupied an area where a number of animal waterholes were located.

Sump 2103, Field 22

Pit [2103] was situated on this field's northern boundary ditch. The two features appeared contemporary, with the pit acting as a drainage sump for the ditch length. It was a large feature, 2.5m across and 1.4m deep (Figure 38). It had well defined sloping sides to a concave base and contained eight principal fills, together with the usual silt lenses and slumping horizons. The lower fills were organic rich, indicating anaerobic conditions. Retained samples contained a range of plant and insect remains, including root- and stem fragments, leaves and rose thorns. Many fragments of animal bone were also recovered, including cow skull fragments. The only artefact was a residual flint blade of potential Mesolithic date from upper fill (2101) (see *Struck Lithics*).

Sump 3172, Fields 23-25

At the intersection of fields 23, 24 and 25 were two moderately sized, intercutting pits, [3172] and [3138]. The latter, due to its vast size, is discussed in the context of waterholes below. Positioned as they were, at the intersection of three fields, it is reasonable to suggest that both had a water-related function. The earliest and smaller of the two pits [3172], was 2.5m in diameter and 0.5m deep (Figure 38). Its north and west edges were near-vertical; whilst the eastern side stepped down to a gradual sloping base. It contained five main fills, including evidence of slumped edge deposits and basal organic-rich sediments (Plate 47). Retained samples from the lower fills contained rich plant assemblages, including uncharred seeds of hawthorn, buttercup, water crowfoot, nettle, dock, bramble, thistle and wild iris. In addition, were recovered roundwood branches and twig fragments, comminuted wood, moss, net-veined leaf fragments, rose thorns, alder catkins and herbaceous stem and root fragments. Insect remains including *Daphnia* ephippia, caddis fly larval case fragments and chitinous fragments were also recovered. This suggests an area of open, stagnant water.

Sumps 4054 & 4065, Field 27

Within this field were two intercutting pits, [4054] and [4065], that lay at the end of a ditch stub off the southern boundary. The earliest and larger of the two [4054] was circular in plan, 3.2m in diameter and 1m deep. It had stepped sides to a flat base and contained four silty-sand fills. It appeared contemporary with substantial N/S-aligned ditch stub [4057/4080], that terminated at its juncture. It was therefore considered to represent a drainage sump for the collection of water. The NW edge of both the pit and the ditch were truncated by sizeable

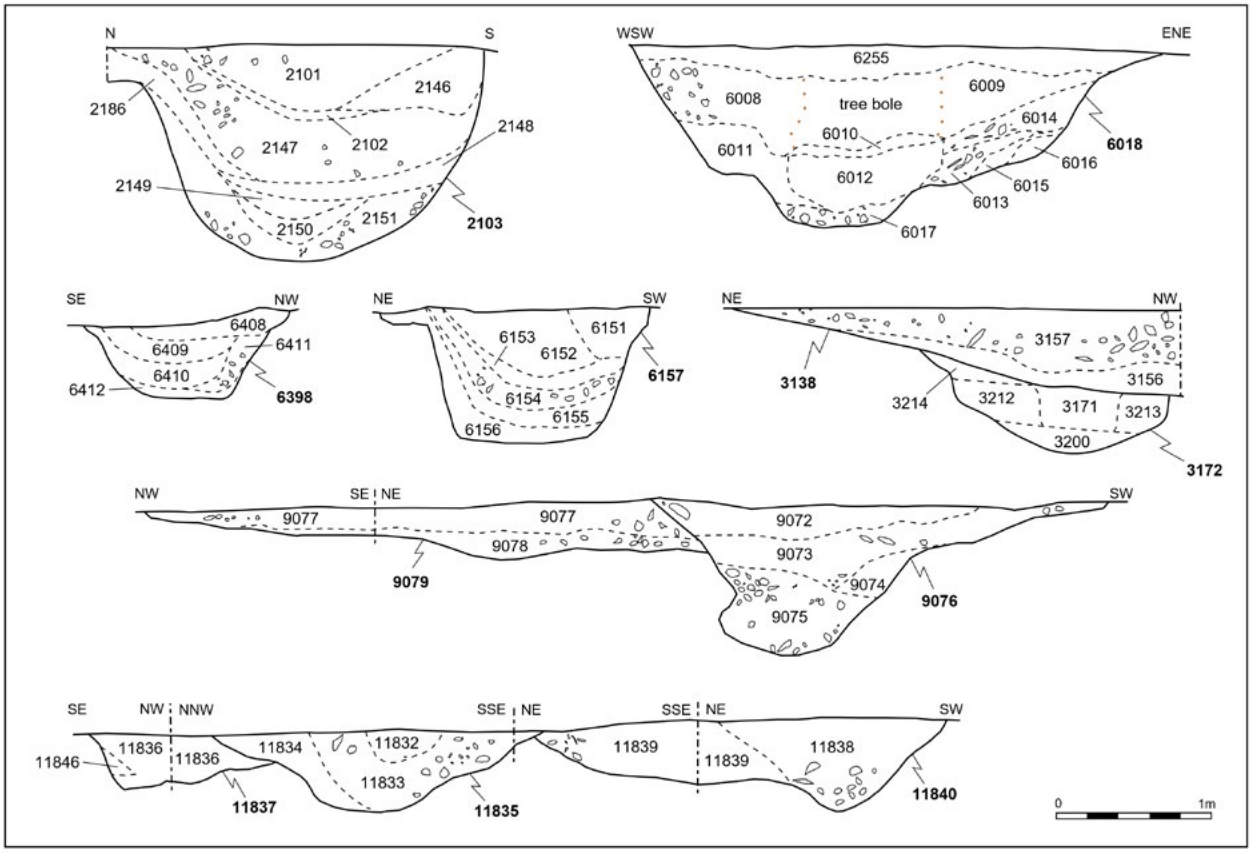

Figure 38 Selected sample of Middle Bronze Age intermediate pits and sumps: sections.

Plate 47 Pit [3172] during excavation showing layer of decayed wood.

pit [4065] that was probably nothing more than a recut, dug to clean out the original sump, so that it continued to function effectively.

Pit 6398, Field 31
Close to the eastern field boundary was steep-sided, sub-circular pit [6398], measuring 2.8m in diameter and 1.2m deep (Figure 38). It contained five deposits, with the two primary fills (6412) and (6411), both containing highly degraded fragments of wood. Its penultimate deposit (6409) appeared to represent a deliberate backfilling episode, in that it contained a quantity of charcoal and charred animal bone, and more interestingly a worked fragment of red deer antler coronet that may have been utilised as a 'soft' hammer for flint knapping. The pit's upper fill (6408) also contained a flint scraper.

Pit 6018, Field 35
Immediately adjacent to hearth [6024], described above, was a large, waterlogged pit [6018], 3.5m across and 1.2m deep, containing 11 fills (Figure 38). One of the lower slump fills (6014) contained a sheep or goat mandible. A soil sample from subsequent fill (6012), produced pieces of roundwood and charcoal, fire-cracked pebbles, burnt flint; burnt bone, seeds, beetle remains and mouse bones. The latter suggest that small mammals fell into the open water-filled pit before it was fully abandoned. The waterlogged plant assemblage was indicative of disturbed or waste ground (Rackham and Giorgi 2016). A quantity of undiagnostic fired clay fragments was recovered from two upper fills, suggestive of rubbish disposal following disuse. One fragment was derived from a cylindrical clay weight.

Quarry pit 7322, Field 48
This was a 2.5m wide, sub-circular pit located close to the 'dog-leg' in Drove 5. It had an uneven base with a narrow central hollow that extended to a maximum depth of 0.85m. It contained three fills, with the lower deposit being indicative of waterlogging. Upper fill (7319) contained a cow mandible and teeth and a redeposited Neolithic flint flake. This feature may have originally been dug to extract gravel; perhaps to furnish the banks of the adjacent complex entrance into Drove 5.

Waterhole 8365, Field 48
A moderately large pit [8365], almost certainly the remains of a waterhole, was located beside the pen leading from Drove 6. The sub-oval pit was 3.2m across and 0.6m deep. It had a shallow NW side forming a ledge, perhaps to allow animal access. This appears to have had negative consequences: numerous cattle- and sheep-sized bones were found in the pit, as well as the partial skeleton of a dog.

Pit 6157, Field 57
This large quarry pit measured 2m wide, 1m deep and contained six successive fills (Figure 38). The primary and secondary fills (6156) and (6155) were rather unique in that they contained a very high percentage of charcoal (45% and 70% respectively). The humerus and tibia of a large, crane-sized bird were also recovered from these lower fills as well as other fragments of animal bone; some burnt. A retained soil sample contained predominantly charcoal, as well as fire-cracked flint and sandstone pebbles, and a little charred animal bone. The evidence suggests that the pit, dug into sands and gravels, may have been created for gravel extraction and subsequently used as a rubbish pit taking refuse from domestic fires, before being abandoned.

Sump 8112, Field 59
This sump pit was similar to that identified in Field 27, in that it existed at the end of a short ditch stub, coming off a main field boundary. It was no doubt dug for the collection of water from a main field ditch, with the associated ditch stub channelling water to a specific part of the field-scape. That the pit once contained water was evident by the undercut and slumped sides.

Pit complex 11837/11840/11835, Field 71
Three intercutting pits covering an area of 9m^2 were located in Field 71. Adjacent pits [11837] and [11840], were both truncated by a 2m-diameter pit [11835] (Figure 38). This later feature contained two primary sterile clay fills, above which was a discrete dump of burnt waste (11832) comprised of charcoal fragments and many pieces of fired clay. Like several other such pits, this appears to have functioned as either a waterhole or extraction hollow, before being used as a convenient receptacle for domestic waste.

Waterholes, sumps and reservoirs larger than four metres
Also associated with the newly-established fields were a large number of substantial pits, primarily interpreted as waterholes or sumps, created to collect, access and store fresh water (Figure 39). The majority of these larger pits were between 5m and 8m in diameter, although a handful were extremely large, measuring between 10m and 15m across. The largest were likely ponds in the Bronze Age; originally of natural origin, though maintained as a water source through clearing out, and enlarging; many of the large pits showed signs of intercutting and recutting, and are best described as pit complexes. Many were located at the corner of fields, where they will have performed the dual role of drainage. As so many of these large features were identified across the Bar Pasture landscape (in excess of 60), only a selection of the more interesting ones are discussed here.

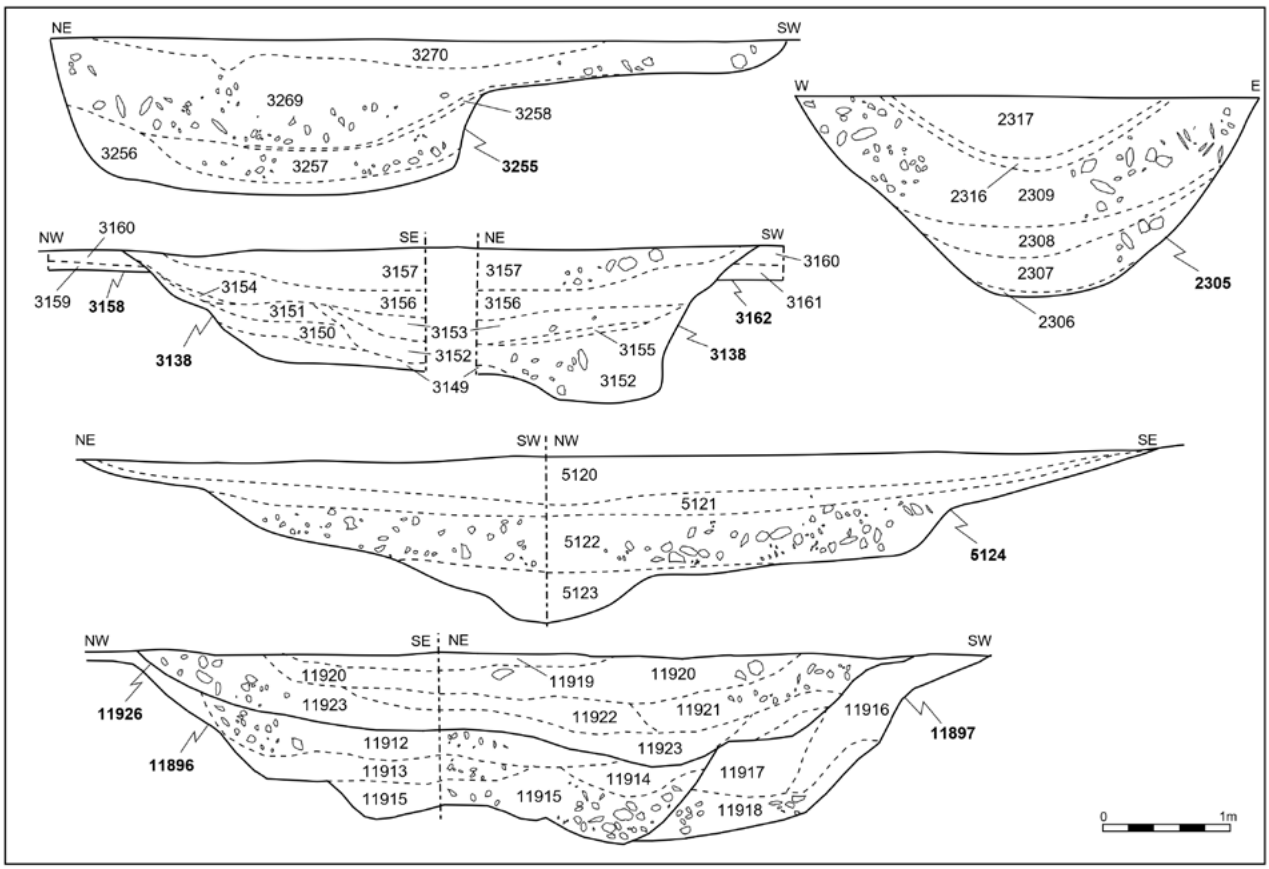

Figure 39 Selected sample of Middle Bronze Age waterhole pits larger than 4m: sections.

Waterhole 536, Field 6/7

Pit [536] was located between two ditch termini. It was a substantial feature, measuring over 5m in diameter by 3.5m in depth. Excavation identified a sequence of 11 main fills, as well as numerous slumping and erosion lenses, often representing the shear planes of later collapse. Although sited close to ditch termini (though not interacting with them) this pit does not appear to have acted as a drainage sump, but is more likely a purpose-dug waterhole to access water for livestock.

The pit's lower fills were waterlogged, with a visible organic content, including well-preserved twigs and leaves. At 1.5m depth, dark blue clay-silts with frequent organics were encountered. The well-preserved, though partial remains of a Bronze Age wooden log ladder were recovered from lower fill (546). It had a flattened end and one step surviving; the step indicated that it was made to be used at an angle of 45° (see *Waterlogged Wood*). Such ladders are known from other Bronze Age waterholes in the region (e.g. Daniel 2009: 117), and are seen as a convenient way to access these deep pits to retrieve the water contained within.

Fill (539) was a slumped, infilling horizon. It contained a fragment of clay weight, typologically of Middle Bronze Age date. Four sherds of Early Middle Bronze Age pottery, including base and rim sherds from thick-walled, urn-type vessels were recovered from lower fill (543) (see *Prehistoric Pottery Cat. No.* 48 and 49).

Waterholes 975; 1349 & 869, Field 11

Central to this small field was a substantial feature complex of three intercutting pits [975], [1349], [869], a large post-hole [977], and a small pit [1020]. Evidence from the post-hole suggests that this complex may have been in use until the end of this period.

Pits [975] and [1349], each approximately 4m in diameter, were created first. Both contained gravel-rich fills. On the western side of pit [975] was a fairly large post-hole [977]. Its single fill (976) had the clear staining of a former timber post and also contained 16 Late Middle Bronze Age pottery sherds. The positioning of a large post on the edge of a waterhole pit is something that has been recorded at both Tower's Fen and Pode Hole Quarry (Daniel 2009: 28; Mudd and Pears 2008: 15). These features may have supported large posts that signalled the presence or ownership of waterhole pits, or they may have had a functional role in the extraction of water.

Truncating both earlier pits was a massive waterhole [869] just over 6m in diameter. It appears that the earlier pits were enlarged significantly sometime after initial excavation, hence [869] could be interpreted as a recut. It was nearly 1.5m in depth and had the remains of at

least three wooden stakes at its base. These aligned with the pit's southern edge, but no doubt once extended around the base's perimeter providing a revetment. Revetting is likely to have been placed in a waterhole pit to shore up its sides whilst it was in use. Whilst traces of such structures are routinely encountered, more complete examples are only rarely found, suggesting that they could have been dismantled to be re-used elsewhere when a pit fell out of use.

Revetments, either plank or wattle, for waterholes and ponds are reasonably common from the Bronze Age onward, particularly in those cut into gravel sub-strata. Most structures of this kind seem to be completely *ad hoc*. Stakes are driven into the bottom of the waterhole to keep the structure secure. After this, planks may be wedged or pegged into place to act as a revetment, or roundwood rods may be woven in and out of the stakes to make wattle revetting. There may also be steps set into the side of a pit, or above the water, to aid access.

A soil sample taken from secondary fill (972) contained the remains of mouse, vole and frog/toad, whilst the upper-most fill (867) yielded another Late Middle Bronze Age pottery sherd.

Pit 932, Field 15

Pit [932] was another vast waterhole, circular in plan with a diameter of 5.5m and a depth of 1.5m. It contained a familiar backfill sequence, with a gravel-rich basal fill (963) representing an early episode of side slumping, overlain by a dark, damp clay deposit with visible organics (960). Above this were a number of silty-sand deposits that became progressively greyer towards the surface. Interestingly, the southern edge of the pit had a well-defined, stepped profile, suggesting the purposeful creation of an access point.

Whilst no pottery, or other dateable artefacts were recovered, a large wooden timber (no. 6) was found, which appears to have been driven in from secondary fill (960). This substantial piece of wood (575 x 215 x 95mm) may belong to a class of timbers that were used for monumental purposes, possibly as important boundary markers (see *Waterlogged Wood*). It had extensive wet rot along its whole length, suggesting that it was originally set vertically underground, with its full height unknown. It was trimmed square by a fairly straight blade; the blunt end was designed to be set in a pre-excavated hole. This suggests that the precise positioning of the timber was important, and most likely some kind of permanent marker. A similar 'monumental' timber was recorded at Pode Hole Quarry (Daniel 2009: 120) and another is recorded in the later phases of a post alignment at Flag Fen (Pryor 2001).

A palaeoenvironmental sample retained from secondary pit fill (960) contained a range of plant species including flax, meadow buttercup, nettle, dock, bramble and thistle. In addition, pieces of roundwood and branch wood (some possibly worked), twigs, bark and moss were identified. Of particular note is the presence of flax, although no evidence for retting (a process in the production of fibre from flax stems), was identified. The residues suggest that the local environment surrounding the pit was chiefly that of disturbed ground and scrubland, as indicated by the plant remains, including nightshade-type. In addition, various indicators of damp or semi-aquatic/aquatic environments were present in the botanical assemblage with crowfoot and celery-leaved buttercup recorded.

Waterhole 1090 / 1091, Field 17

At the SW corner of this field was a very large pit (9m across and 1.5m deep) with at least two recuts (Plate 48). It was unfortunate that the pit did not intersect with plot 17's boundary ditches, which both terminated prior to reaching the pit's edges. A stratigraphic relationship between the two classes of features could not therefore be ascertained. Also, no datable artefacts

Plate 48 Pit [1090] during excavation.

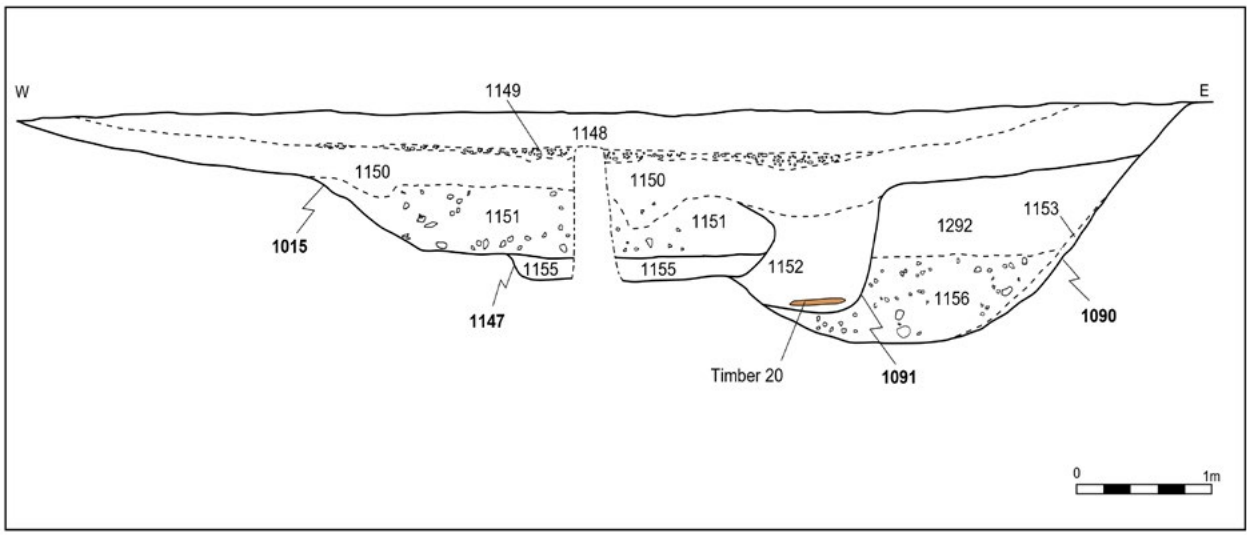

Figure 40 Section through waterhole pit [1090].

were recovered despite the detailed hand-excavation of several tonnes of fill.

The pit's primary cut [1090] contained three main fills, which progressed from primary slumped sands and gravels through to dark clay-rich organic deposits, succeeded by light grey silts with thin iron pan lenses (Figure 40). The lower gravel and sand fill suggest that the pit was partially backfilled with its own upcast, or the upcast generated by the digging of the pit that succeeded it.

The first recut [1091] penetrated almost to the depth of the original pit. Its lower fills were organic rich and contained frequent fragments of wood and one very degraded timber (Timber 20), that may have been a plank (used as staging/duckboard to facilitate the collection of water) or timber boarding to prevent the sides of the waterhole eroding and slumping in. A soil sample from this recut's primary fill identified a range of plant species dominated by pond-side and aquatic species, including crowfoot (*Ranunculus* subg. *Batrachium*) and celery-leaved buttercup (*Ranunculus sceleratus*). A large number of water flea (*Daphnia* sp.) ephippia also reflect the wet conditions (see *Waterlogged Plant Macrofossils*).

Sometime later, the waterhole was re-emptied for a third time, as evidenced by recut [1147]. The subsequent fills were all leached orange and brown silty sands. The pit complex does not appear to have acted as a drainage sump, as the nearby field-boundary ditches all terminated prior, and could not therefore have drained into it. It is best interpreted as a well-maintained pit for storing water for livestock use. The pit's very gradual western edge suggests that it was accessed from this side.

Waterhole 2305, Field 19

This was a substantial pit (4.5m diameter by 1.7m depth) central to Field 19. It had a regular concave profile, with steep sides and a step on the west side (Figure 39). Of its six fills and numerous silt lenses, the lower ones displayed organic preservation by way of green-grey silts with visible organic remains. The organic flot from tertiary fill (2308) produced comminuted charcoal, uncharred hazel, a gnawed plum stone, nettle, goosefoot, stitchwort, blackberry/bramble and gypsywort, together with fragments of plant stems, twigs, thorns, leaves, rootlets and insect remains. Bones of field vole were also identified. The assemblage suggests that when the pit was filling up, it lay within an environment of damp and disturbed ground, with hedgerows in the vicinity. As with most large pits, finds were sparse. The only recovered finds were a retouched flint flake and some animal bone.

Waterhole 3138, fields 23-25

Large ovoid waterhole pit [3138] formed part of a sump arrangement (Plate 49) at the juncture of these fields, and measured 7.5m across and 1.3m deep (Figure 39). It had well defined sloping sides and was stepped on its west side, indicating a possible entry point. It contained 11 fills, with the primary contexts being sandy gravel lenses and thin silts that probably formed when the pit was open and in use. Sealing these were thick, damp silty clays beneath silty-gravel, indicating increasingly wet conditions and the gradual silting up and infilling of the feature. A soil sample from secondary fill (3152) contained preserved seeds and fragments of hawthorn, dock, bramble, black elder, thistle, sedge, dead nettle and stitchwort, together with the remains of moss, catkins, frog, field vole and stickleback.

Waterhole 3039, Field 26

This large sub-circular waterhole had steep, rounded sides and a concave base, and again measured an impressive 7m across by 1.5m deep It contained seven fills, of which the primary deposit (3047) was a blue/

Plate 49 Massive sump pits at corner of fields 23-25.

green silt clay with small fragments of decayed organic matter. Above this were many interleaved lenses of sandy gravels, clay silts and silty clays, the formation of which appeared be the product of short episodes of side slumping and silting. The main fill of the pit (3052), was a compacted sandy gravel, nearly 1m deep, which appeared to indicate deliberate backfilling. A large assemblage of animal bone was recovered from this particular fill (Rackham and Giorgi 2015).

Cut into the eastern edge of the assumed waterhole were two small post-holes [3059] and [3056]. They may represent the remains of some form of timber arrangement that was used to facilitate in the recovery of water from the deep pit.

Pits 3090 & 4139, Field 27

Large circular pit [3090] measured 4.5m diameter by 1m deep and contained three principal fills, along with the usual silt horizons and slumping deposits. There was noticeable erosion and suggested trampling along the NE edge, suggestive of an access point. The basal fill (3136) contained several pieces of degraded and very soft wood. Two retained samples contained twigs, leaves, moss, buds, alder catkins and herbaceous stems.

Pit [4139], located at the southern end of the same field, was a similar sized feature. It had a flat base and near vertical sides, undercut at the top. Six main fills were identified, together with many silt lenses and slumping horizons. Most fills were the usual coarse sands and gravels, with iron panning in evidence. Several of the fine silt lenses suggested the deposition of wind-blown silts. On one side of the feature, clear tipping lines were in evidence. Finds were once again sparse, with only animal bone being recovered. The vertical sides of the feature, together with the undercut edges, indicate that it once contained standing water. It is likely to have had a plank arrangement over the top in order to facilitate water collection without disturbing the fragile sides.

Sump 5040, fields 32/33

On the boundary between these two fields was a sub-circular drainage sump [5040] measuring 4.5m in diameter and 1m deep. It had near vertical sides, a flat base and contained three main fills, together with various silt lenses (Plate 50). The two lower fills were brown and grey clay-silts, containing animal bone, including fragments of jaw and vertebrae. The upper fill (5037) was a dark grey clay-silt with charcoal flecking, also containing animal bone, as well as antler and a retouched flint flake. This feature probably represents a drainage sump part-way along the boundary between two fields.

Plate 50 Sump [5040] following quadrant excavation.

Waterhole 5124, Field 34

This large waterhole, measuring 8.25m diameter and 2.5m depth, was located in the centre of Field 34. It appears to have been accessed by a central trackway, defined by two, and possibly three, parallel ditches spaced 3m apart (Figure 39). It contained at least four main fills, together with numerous silting lenses and slumping horizons. The basal deposit (5123) was a soft blue-grey silt clay which unusually, contained flake and spheroidal hammerscale (see *Metalworking Residues*). This deposit was sealed by a firm orange-brown silt, from which a single flint flake and fragments of antler were recovered. Above were various soft and friable sandy silts representing gradual infilling. A sample from the primary fill was rich in preserved organic remains, including many fragments of decayed wood. The presence of hawthorn, hazel, dogwood, blackberry and elder suggest the presence of nearby hedgerows and disturbed ground, as well as elements of wetland.

The irregular nature of waterhole [5124] suggests that it was the product of more than one period of digging. The feature appeared to have been heavily used, with all sides showing signs of erosion and spread. At the SW edge of the pit were two post-holes, perhaps indicating a short length of fence or two tethering posts. If a fence, it would have served to protect the edge of the pit on that side (the field side) and perhaps facilitate controlled access to the waterhole from the north.

Waterhole 5189, Field 40

This wide, but shallow pit occupied an unusual location, being close to where Drove 4's southern ditch turned south to form Field 40's western boundary. The feature, probably a natural hollow utilised as a waterhole, measured 6m by 4m and was 1m deep. Its edges were eroded, suggestive of trampling by livestock. Unlike many of the other waterholes, with their steep sides, animals could have directly accessed water held by this feature. It contained three fills containing some animal bone.

Waterhole 6211, Field 57

On the northern edge of this field was a large, sub-circular, waterlogged pit. Although largely truncated by three later pits, it was possible to discern that the original feature had been at least 4.5m in diameter and 1.5m deep (Plate 51). It contained a total of 13 fills that, minus equivalents, represent at least seven separate depositional episodes. These were characterised by alternate deposits of dark blue-grey silty clay and gravel, interspersed with compacted orange-brown sandy-silts. A piece of timber and one of roundwood were recovered from basal fill (6291). The timber, probably a vertical post or pile that was discarded, was worked from all directions to form a point. The piece of roundwood was a Y-shaped crux of field maple with one shaped end. It had no obvious function but could perhaps have been used to direct a bucket and rope down into the feature (see *Waterlogged Wood*).

Plate 51 Waterhole [6211] containing preserved timber 6291 and adjacent hearth pits.

A waterlogged soil sample from primary fill (6291) contained flint-working debitage, fire-cracked sandstone pebbles and a varied environmental sample, including a rich seed assemblage suggestive of disturbed ground and scrub or hedgerow. Also evident were wetland plants.

The position of pit [6211] is interesting, as it is located close to the entrance into Field 51 and must have interrupted the bank that extended along the south side of this ditch. Two small pits [6210] and [6287] located on opposite edges of the feature undoubtedly form part of the same complex. A sample obtained from the shallow fill (6209) of the smaller pit [6210] washed down to produce similar inclusions as those found in the waterhole: fire-cracked pebbles, burnt flint and charcoal, and part of a cattle skull.

Earlier investigations at the bordering Pode Hole Quarry have identified similar 'satellite' pits in relation to these large waterholes (Daniel 2009). In this case, the presence of fire-cracked pebbles and charcoal most likely suggest the presence of temporary hearths, used to heat water or food using pot-boilers, with the large pit perhaps providing a convenient water supply.

Quarry pit complex 9308; 9312; 9323; 9027; 9036 & 9032, Field 66
In the NE corner of this field was a massive (15m x 10m), intercutting pit complex - probably the remains of a gravel quarry. This was the second largest Bronze Age pit complex encountered on the Site. It was stratigraphically assigned to this period, as it partially truncated Period 2B precursor ditch segment G9394.

At its southern end, the earliest cut [9308] was 0.8m deep and contained four silty fills containing domestic (butchered) animal bone. This was truncated by two later, slightly deeper features [9312] and [9323] with similar fill sequences. At the southern end of the complex, two large pits with concave bases [9027] and [9036] were later truncated by sub-circular pit [9032], which measured an impressive 4m in diameter. Its compacted fills contained oak heartwood timber debris, likely to represent an off-cut (see *Waterlogged Wood*). Upper fill (9028) contained cattle and pig bone shafts with chewed ends.

Sump pit complex 11897; 11896; 11926, Field 71a
This large pit complex, of over 8m across, lay on the southern boundary of extended Field 71a (Figure 39). Excavation revealed three surviving fills relating to the earliest cut [11897]. Primary fill (11918) was dark grey peaty clay containing a single flint flake and cattle / sheep-sized animal bone. A soil sample from this fill produced a wet flot with fair organic preservation containing a wood assemblage of mainly twigs and small roundwood, and a large quantity of uncharred seeds and plant remains. A pollen sample obtained from the flot contained abundant *Hedera helix* (ivy), which implies either that it was growing along the edges of the pit, or was present as dumped animal feed; or perhaps in animal faeces (see *Pollen*). The additional presence of cereal pollen demonstrates arable activity in the vicinity. The sample also contained probable hop, a native of wetland habitats.

The subsequent pit cut [11896] survived to a depth of 1.5m. Its ironstone-rich primary fill contained animal bone and part of a preserved willow or poplar-wood stake that had been trimmed to form a point (see *Waterlogged Wood*). Another worked piece of willow or poplar timber was recovered from a secondary fill; and further cattle bone fragments were recovered from higher up in the sequence. The latest pit [11926], survived to 0.4m depth and contained flint fragments (some worked) and animal bone (cattle and sheep/ goat).

PERIOD 3B: LATER MIDDLE BRONZE AGE (1400-1130 CAL BC)

Settlement focus within the Field System

Evidence from the field boundary ditch sequence shows that in the later years of the Middle Bronze Age, a large quadrilinear enclosure with a double-ditched NW corner was superimposed onto part of the pre-existing field system (Figure 26). This enclosure formed a focus for settlement and agricultural processing specifically across fields 50 and 52. The evidence includes three likely contemporary round-house structures and a number of pits and post-hole groups. Some similar features were observed further east in fields 48 and 49, although the true focus of this period of activity undoubtedly lay within the protective double-ditch that encompassed the NW corner of Field 52. Could it be that the aforementioned Middle Bronze Age farmstead enclosure, just 100m to the north, was becoming unsuitable for habitation (perhaps due to ground

water conditions), forcing untimely abandonment and relocation to this area?

These significant changes introduced to the Bar Pasture landscape are evident in the form of linear ditches that were created, realigned and recut or re-established. Analysis of complex stratigraphic relations, supplemented by a handful of crucial pottery dates, revealed a clear re-use and modification of the existing Middle Bronze Age field system. When mapped, these later ditches and ditch segments undoubtedly represent part of a large enclosure 'superimposed' onto the regular plan of the pre-existing rectilinear fields; effectively encompassing some fields and reinforcing others. At its northern end, the creation of this later enclosure formed a new narrow passageway that stretched between fields 48 and 53; bordering existing Drove 6.

The NW corner of the enclosure was a 'new' creation, delineated and reinforced by the double ditch. There is also evidence to suggest that the assumed south side, north of fields 55 and 57, consisted of a ditch and external bank, thereby providing an opposing, reinforced side to the double-ditched settlement area. In the absence of any earlier (or later) dating evidence to the contrary, all significant features identified within the confines of Field 52 are also discussed below.

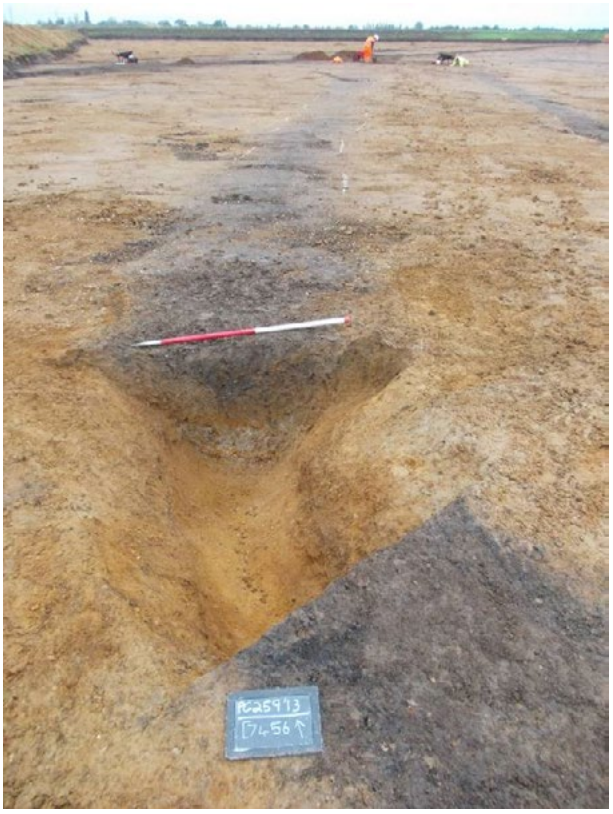

Plate 52 Section through the enclosure's outer ditch corner [7456].

Double-ditched Enclosure, Field 52

The Enclosure

Although its main focus was the NW corner of Field 52, the enclosure may also have encompassed fields 48-51. If this was the case, then its eastern extent would have been delineated by Drove 5.

The fact that the enclosure was created on the same axis as the Middle Bronze Age fields that it enveloped, suggests that the field ditches were still visible and operational at the time it was conceived. The siting of the enclosed area appears to have utilised Drove 5 to maximum potential, whilst at the same time, more fully defining Drove 6.

The Outer Ditch

The new outer ditch [7456] was created at the NW corner of Field 52 (Plate 52). A fairly substantial feature, the ditch extended for 40m NNW, before turning obtusely NE for a further 45m. The southern terminus [7426] of this length was 1.25m wide and 0.5m deep, whilst the northern one [7466] was more substantial, measuring 1.8m wide and nearly 1m deep (Figure 41). This feature was an obvious recut of an earlier terminus [7470] of the same size, aligned just off to the east. This is significant when one considers the role of the northern, outer terminus as part of a complex entranceway feature. The narrow 2m entrance, leading from Drove 6 into the enclosure, was formed by an opposing terminus. Once inside, a perpendicularly aligned ditch segment [7491] appears to have directed entrants and livestock into the enclosure and away from a large, adjacent quarry-pit complex [7768], described below. This entrance feature had a substantial, steep-sided profile (Figure 41). The arrangement would have required constant maintenance to keep the ditches silt-free, in order to maintain its effectiveness and prevent livestock going astray. The terminus recut is evidence of this.

This outer ditch contained three fills: compacted grey silt (7475), above which was a pebbly silt (7457), possibly derived from the slumping of an outer bank. The upper fill (7458) was distinctively charcoal-rich and contained amorphous lumps of fired clay affected by saltwater and significant heat (see *Fired Clay*). Three sherds (56g) of pottery in this fill, derived from a large Barrel Urn-type vessel, were assigned to the Late Middle Bronze Age (see *Prehistoric Pottery Cat. No.* 57). Also found was a significant quantity of cattle bone, two worked flints and briquetage container sherds. These finds suggest that once partially silted up, the ditch became used for small-scale domestic rubbish disposal. The presence of briquetage, although minimal in quantity, suggests that salt production was taking place somewhere nearby (see *Briquetage*).

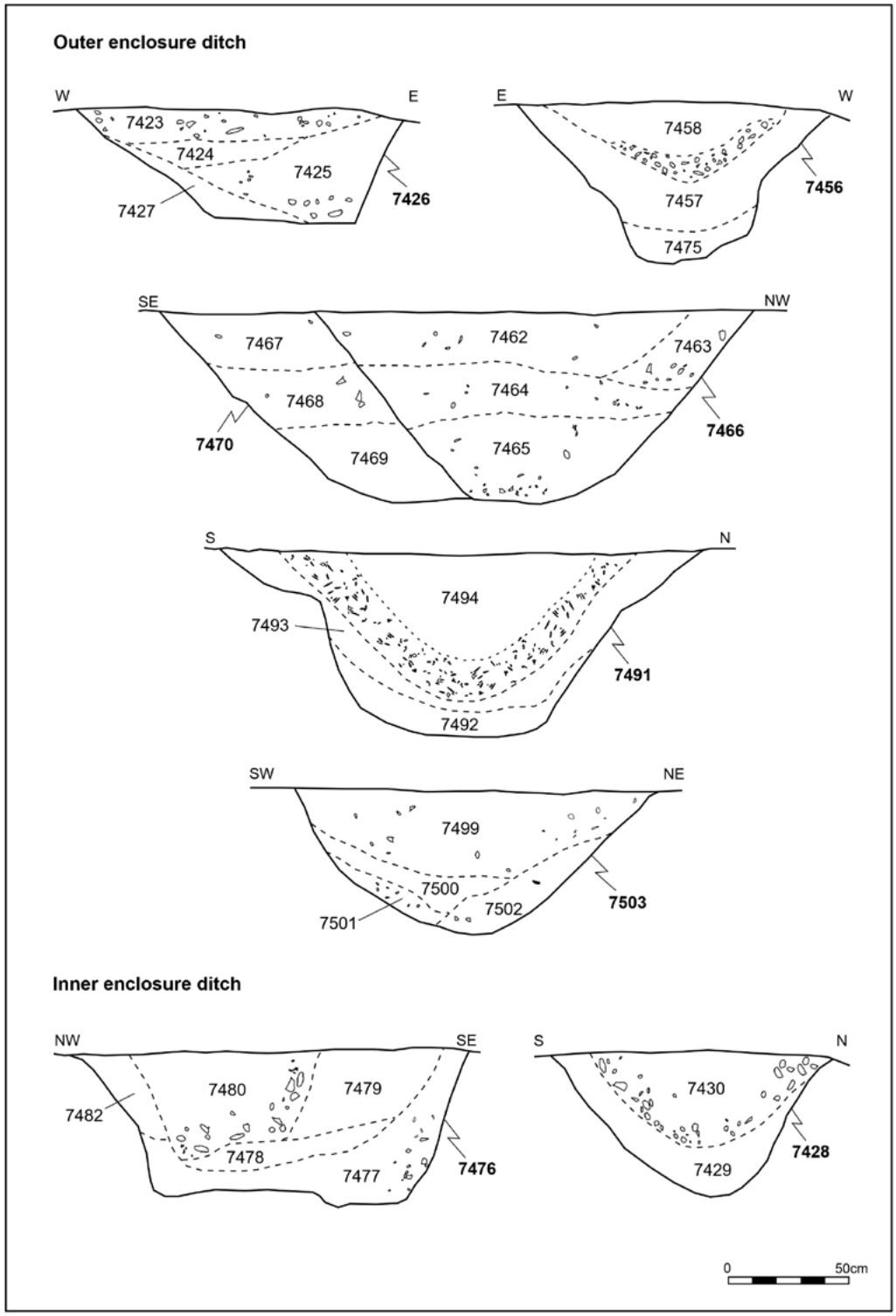

Figure 41 Sections through Late Middle Bronze Age (Period 3B) enclosure ditches.

The outer enclosure ditch continued eastwards in segmented form to create the intermittent southern boundary ditch of pre-existing Drove 6. The presence of recuts and re-alignment shows that the ditch segments G7803 and [7559] to the north of fields 49 and 50 were Late Middle Bronze Age additions.

The Inner Ditch

An inner boundary ditch mirrored the outer enclosure along much of its discerned length. Maintained at a distance of *c.* 4m, the ditch extended the full length of its counterpart. The resultant inter-ditch space was deemed too narrow to have functioned as an animal drove, but may have functioned as a path or track for

human use. The inner ditch corner was formed by two opposing termini, creating an access point. A fill (7479) from one terminus contained animal bones and a sherd of CP3B, Late Middle Bronze Age pottery from a large Urn-type vessel (see *Prehistoric Pottery Cat. No.* 58).

Entrances and gates

The principal entrance, 2m wide, was sited at the NW corner, where a perpendicularly aligned ditch segment guided access into the enclosure from Drove 6. Further to the NE, the enclosure was again accessible from Drove 6 in at least three places. One entrance located to the north of fields 50 and 52, was composed of two short ditch segments that were perpendicularly aligned. A second, formed by terminus [7570] was located at the NE corner of Field 50. Additional access must also have been possible at the northern end of Field 48, where Drove 6 clearly merged. There also appear to have been three entrances leading into the enclosure from Drove 5: two were narrow openings a few metres wide located at the drove's 'dogleg' corner. The size and form of these apertures suggests access for the occupants of the settlement contained within (see below). The other was a much wider entrance leading into the SE corner of Field 51. On the south side, a wide, central entrance was located in the bank and ditch between fields 57 and 52. Any western entrances are impossible to determine, due to the poor survival of the western boundary.

Internal spaces

Aside from existing field boundaries already mentioned, there was no surviving evidence for internal divisions within the enclosure, although a number of fence lines or paths indicated by post-holes were found in association with the circular buildings identified in Field 52 (structures 10, 11 and 12: see below).

Ancillary Features within the Enclosure

A large number of apparent settlement features were associated with the enclosure. Whilst the dating and environmental evidence was slight, these may be variously interpreted as small rubbish pits, quarry pits, storage pits and hearths or cooking pits. The majority of the waterholes, sumps and reservoirs have been considered as part of the earlier field system, although at least one example is securely dated to this period. The main concentration of domestic features was situated in the northern half of Field 52.

Structure 10, Field 52

A discrete post-hole concentration (G7495), was identified within the inner corner of the double enclosure ditch. Covering an area of *c.* 50m^2 it comprised of rounded and oval post-holes, collectively representing a sub-circular post-built structure, 3.4m in diameter (Figure 42). The circumference was formed by seven post-holes, spaced 1-1.4m apart. Three to the east probably represented a small porch with a front apex. Fills were all charcoal-rich, attesting to an episode of burning. Post-hole [7531] contained an *in-situ* burnt timber post. A sample from this post-hole produced mainly charcoal, with fire-cracked pebble fragments, charred grain, chaff, seeds and insect fragments. If not the remains of a dwelling, this structure must have lain close to the focus of contemporary habitation.

On the structure's eastern side were two parallel lines of post-holes, aligned broadly NS. These may represent the remains of an associated pathway delineated by a fence arrangement. They appeared to curve around the south side of the structure.

Structure 11, Field 52

To the SE of Structure 10 were the remains of another, much larger, circular post-built structure (G7573). This building was 5.8m in diameter, being represented by at least 13 post-holes, seven of which formed the circuit (Figure 42). Excavation of these did not find evidence of burning. Two post-holes off to the eastern side may represent the remains of a porch. A large post-hole [7590] located in the centre of the building will have likely supported a central support. Although no drip gully was identified, the central post suggests that the structure was roofed. A sample from circuit post-hole [7574] produced occasional charred grains including hulled barley.

On each side of the structure was a pit alignment. Each consisted of four circular pits that appeared to respect the building. Whilst most contained nothing of interest, pit [7610] had a charcoal-rich fill containing charred and un-charred seeds, insect fragments, sheep-sized bone fragments, some of which were burnt, and a quantity of fire-cracked pebbles. These finds suggest that the pit may have functioned as an exterior hearth.

Structure 12, Field 52

The remains of a third structure were identified a relatively short distance to the NE of structures 10 and 11 (Plate 53). Its western side was preserved in the form of a shallow curvilinear gully [7615], measuring 7m in length (Figure 43). In the centre of the curve was a clear entrance, just under 1m wide, formed by two opposing termini. This suggests that the feature represents a wall trench, rather than part of an eaves-drip ring-gully. The northern terminus was truncated by pit [7629] that containing burnt residue and sheep/goat bones. Although a corresponding eastern wall trench was not identified, a number of post-holes were recorded. These traced the remaining outline of what would have been an oval structure measuring 10m by 7m.

Circumference post-hole [7634] contained a fill with charred seeds and small fragments of burnt flint suggesting an association with heat (Rackham and

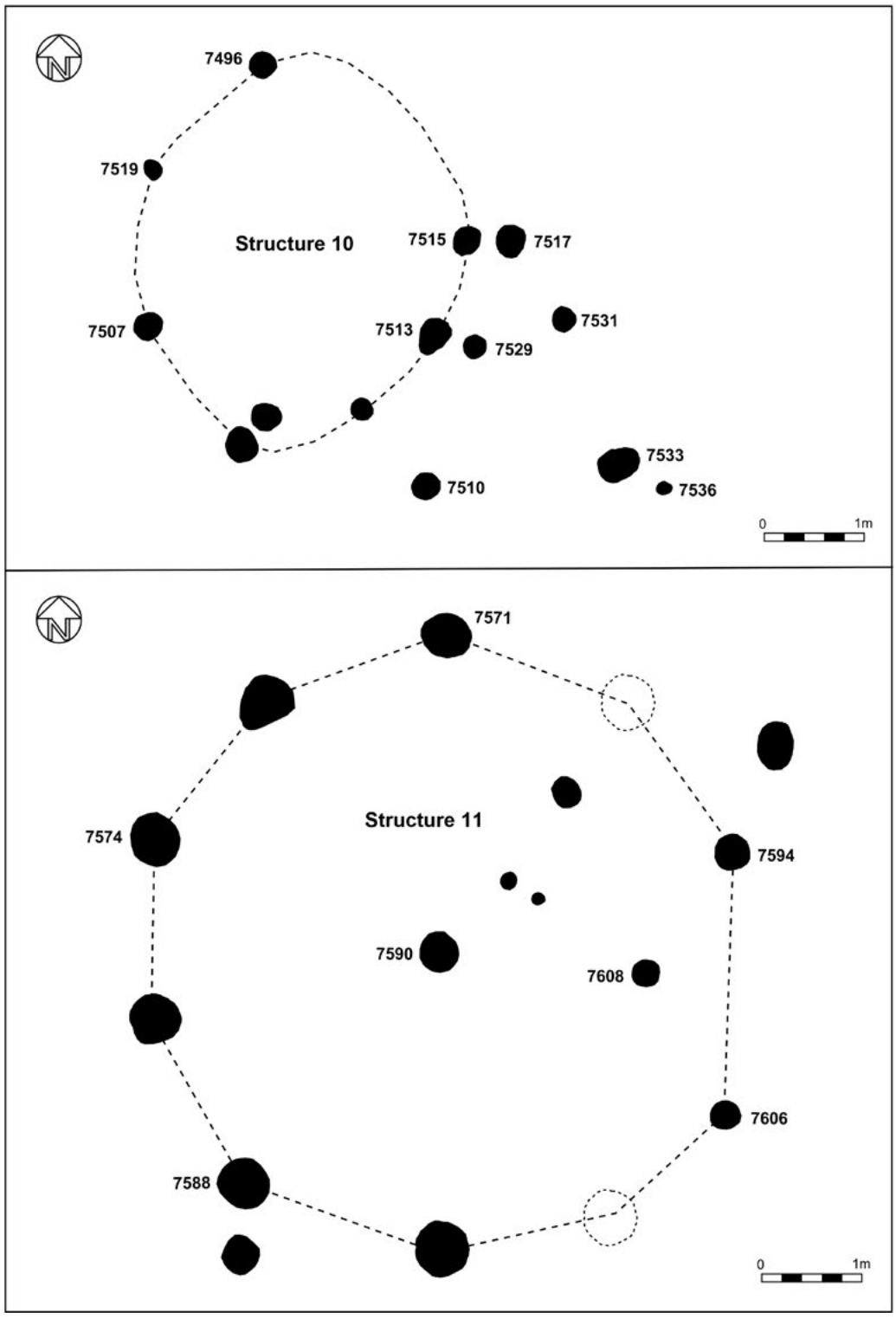

Figure 42 Plan of Structures 10 and 11 in Field 52.

Giorgi 2016). The majority of the remaining post-holes had evidence that wooden timbers were once present, and had rotted *in situ.* Two post-holes were intercutting, showing maintenance of the building over time. A number of internal post-holes appeared to form a rectangular feature of unknown purpose, possibly relating to an interior structure or furnishing.

Pit complex 7768, 7763 & 7767, Field 52

A waterlogged complex of three intercutting pits was located immediately west of Structure 12. The earliest [7768] was largely obscured by later digging but had been at least 2.5m wide and 0.7m deep. The only finds from it were two animal bones. After it had silted in, it was truncated by [7763]; a vast pit - 6.5m wide and

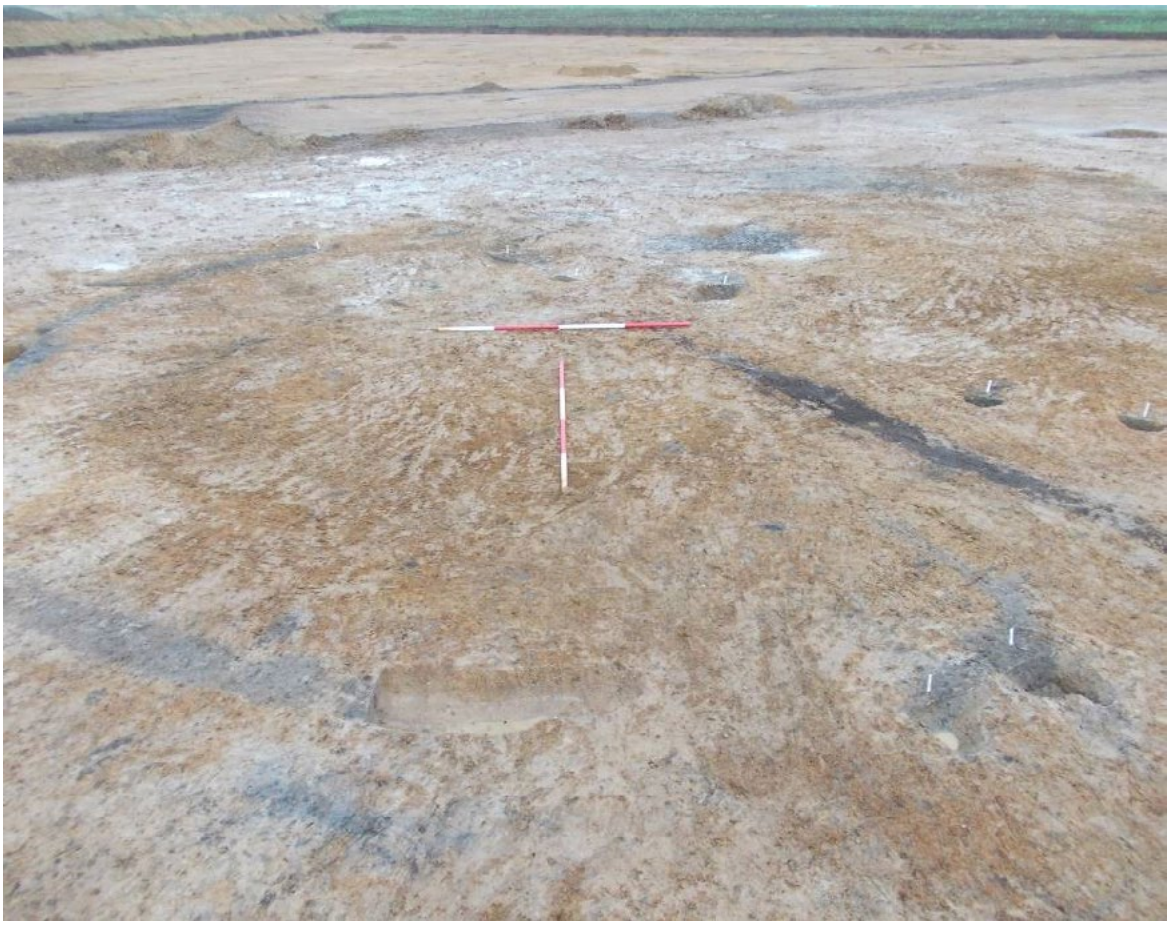

Plate 53 Structure 12, looking NE.

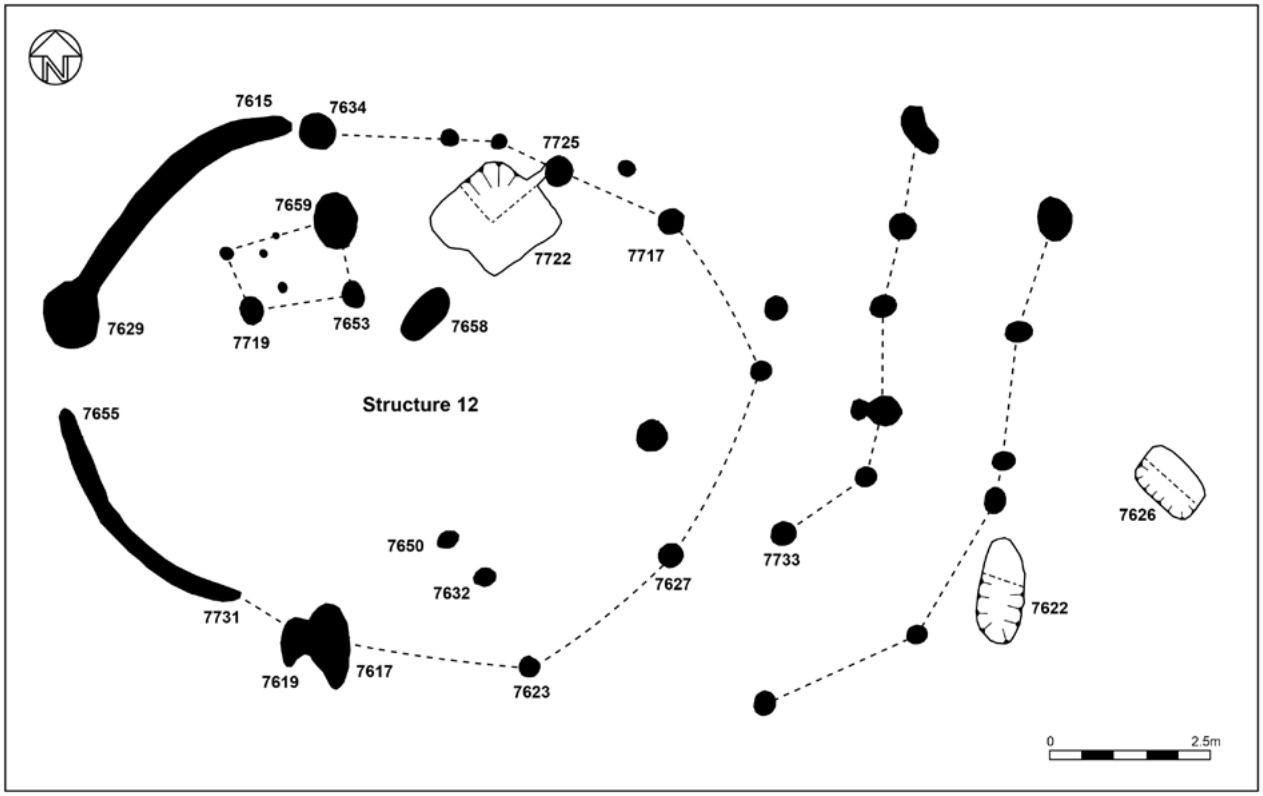

Figure 43 Plan of Structure 12 in Field 52.

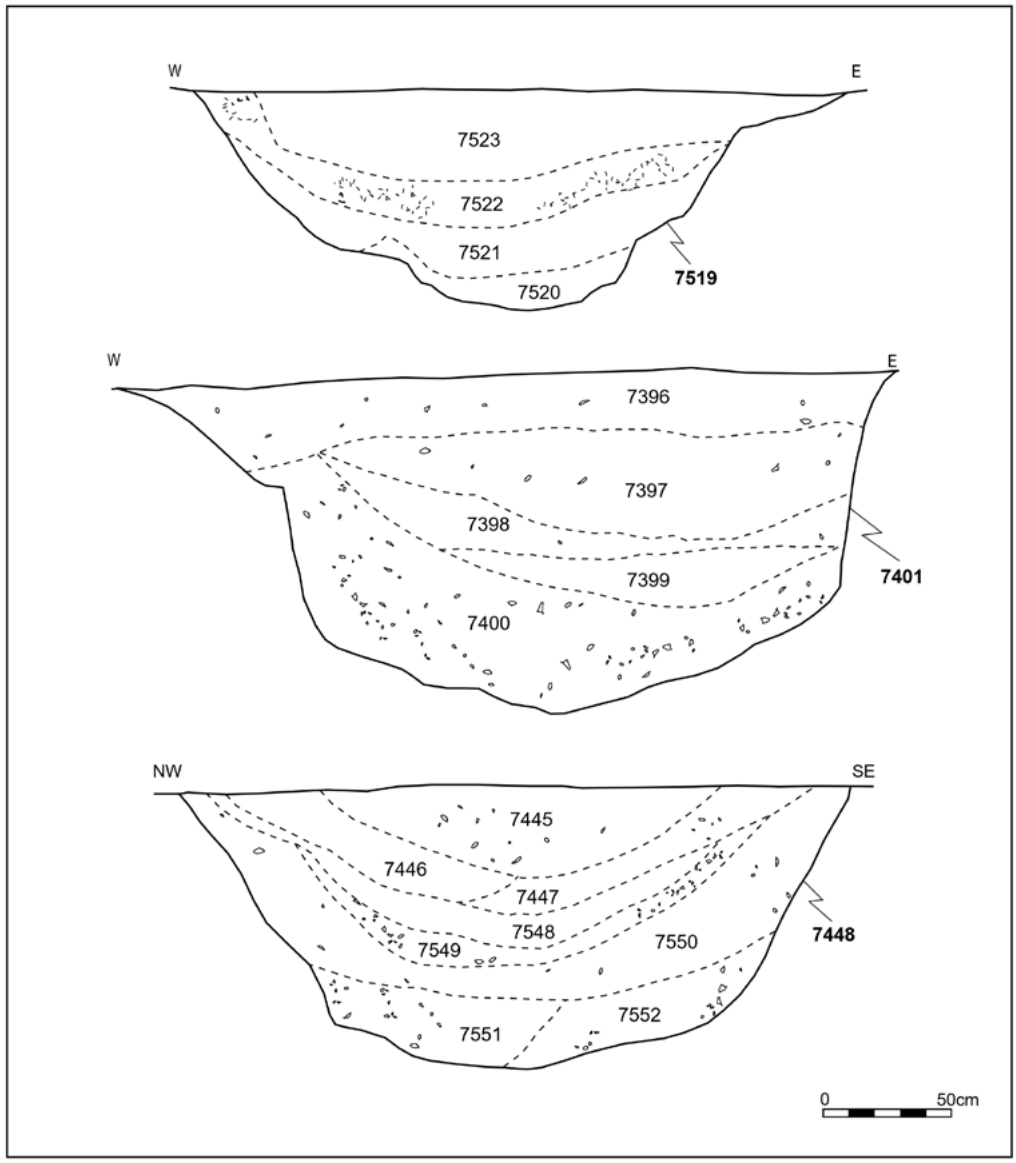

Figure 44 Pits in Field 52: selected sections.

1m deep that contained many waterlogged fills. A sample obtained from primary fill (7774) produced a flot containing an assemblage of well-preserved insect and plant macrofossils. The rich seed assemblage was indicative of disturbed/waste ground, scrub/hedgerow and wetland plants. Also recovered were pieces of charcoal, roundwood and various sheep-sized animal bones. Cattle and red deer bones were recovered from most of the pit's upper fills. Here were also dumped layers of rather distinctive red-orange sands – possibly indicating periods when the open, water-filled pit was partially backfilled to cover stagnating water or rotting remains. The third, and latest pit [7767] measured 4m across by 1.2m deep. Its fills were unremarkable, and contained no finds.

The siting of this pit complex next to the enclosure entrance suggests that it may initially have served to provide sands and gravels required for the enclosure, possibly for maintaining the ditch-side banks. Following this, the hollows were used as waterholes, eventually falling out of use, and silting in.

Another, moderately large pit [7519], 2.5m in diameter and 1m deep, was identified to the immediate NW of the triple pit complex (Figure 44). This pit was undated but exhibited a similar range of fills, with upper fill (7523) containing cattle bone and charcoal, indicative of human activity within the enclosure.

Waterhole 7401, Field 52

A large sub-circular pit was identified a little way to the south of the settlement features in Field 52. It was 3m across and 1.5m deep with near-vertical sides (Figure 44). The majority of its five grey and orange clay-silt fills contained sizable quantities of cattle- and sheep-

sized animal bone. Its rather isolated nature suggests that it was dug as a waterhole that was subsequently used for the disposal of animal carcasses.

Quarry pit 7448 Field 52

This circular pit was located to the south of Structure 12. It was 2.6m in diameter and 1.5m deep (Figure 44). It contained eight fills; primarily silty sands, with the upper fills distinctively greyer, possibly as a result of alluvial activity. Charcoal flecks and burnt clay were observed intermittently throughout the fills. A discarded saddle quern fragment was recovered from basal fill (7552), (see *Querns*); and a large, mixed animal bone assemblage, including cattle, pig and sheep/goat was recovered from the lower and middle fills. The evidence suggests that the feature may be a quarry prospection pit that was subsequently used for rubbish disposal.

Pit 6158, Field 52

This sub-circular pit was located close to Field 52's western boundary. It had a noticeable stepped SE edge, perhaps created to facilitate access. Primary fill (6160) contained the partial skeleton of a sheep or goat. Tertiary fill (6162) contained fired clay fragments affected by saltwater and significant heat (see *Fired Clay*).

Dispersed later Middle Bronze Age features

Late Field Boundary additions

Apart from the creation of the reinforced enclosure around Field 52, evidence was found across the field system for the later Middle Bronze Age modification of some fields. These included the extension of the northern ditch defining Drove 6, the reconfiguration of the southern boundary of Field 11, and the creation of substantial ditch [8230] dividing fields 42/43 and 46/47.

Drove 6 was extended during this period, by the western extension of its southern ditch [7579]. The continuation is represented by two lengths of intercutting ditch and a broadly contemporary pit [7583]. The extended feature was dated to the Late Middle Bronze Age by two sherds of unabraded CP3B pottery.

The complex entrance system identified in the southern boundary of Field 11 appears to have been created after the field had been laid out. The feature comprised four separate ditch segments forming a gateway arrangement. This was composed of two longer ditches interspersed with two staggered, shorter lengths, resulting in gaps of between 2m and 5m. The upper fill, of one of the shorter ditch segments contained a rare fragment of CP3B (Late Middle Bronze Age) pottery, and another ten sherds of the same shell-tempered fabric pottery (S1), were recovered from the upper fill of adjacent long ditch segment [814]. These sherds are evidence of the late, localised alteration and apparent division of this field. Environmental samples contained charred wheat, fruit stones, fragments of burnt cattle bone and fire-cracked stone, suggesting low-level domestic activity in the vicinity during this period.

The recutting of the NS-aligned ditch [8230] dividing fields 42/43 and 46/47, is dated by the recovery of two large sherds of Late Middle Bronze Age pottery retrieved from the upper and lower fills of the recut ditch terminus, including part of a Bucket Urn rim (see *Prehistoric Pottery Cat. No.* 59). The sherd recovered from primary fill (8229) was a decorated example with finger-tip impressions on the flat top of the rim. A sample from this fill contained part of the fragmented cranial vault of a human skull amongst a small collection of animal bone. This could represent either a disturbed burial, or possibly a cranial bowl or cup - although no working was observed on the bone fragments (Rackham and Giorgi 2016).

Waterhole 1730, Drove 1

Within the confines of Drove 1 was a substantial waterhole complex. The various large pits evidently point to a part of the landscape that was favoured for the creation of waterholes over a long period. The earliest waterhole in the locale was of Beaker date (see [1649] above), dug prior to the establishment of the droveway. Centuries later, new waterholes were excavated in the same general area (Figure 45). At least four were created in the later Middle Bronze Age, including pit [1730], that displayed numerous clear recuts showing a feature regularly cleaned out and maintained. From the pit's numerous fills were recovered animal bone, worked flint, degraded fragments of wood, and significantly, a rare transitional Early/ Late Middle Bronze Age (CP3A/3B) pottery sherd – one of only two recorded from the Site. This was derived from a decorated Urn-type vessel made from grog-tempered, shell-gritted fabric SG1 (see *Prehistoric Pottery Cat. No.* 55).

Environmental samples from the damp lower fills recovered evidence for buttercup, crowfoot, nettle, hazelnut, stitchwort, dock, bramble, Prunus fruit stones, hawthorn fruits, cleavers, hemp-nettle, elder and sedges. In addition, small roundwood, twigs, buds, moss, net-veined leaf fragments and hawthorn/ blackthorn thorns were recovered. The assemblage suggests that the local environment was predominantly disturbed ground and scrub.

Waterhole 1801, Field 1

This was a substantial feature close to Drove 1. It measured 7.5m in diameter and an impressive 3.5m deep. It appears to have been a large waterhole that was re-worked on at least two occasions, as evidenced by several recuts (Figure 46).

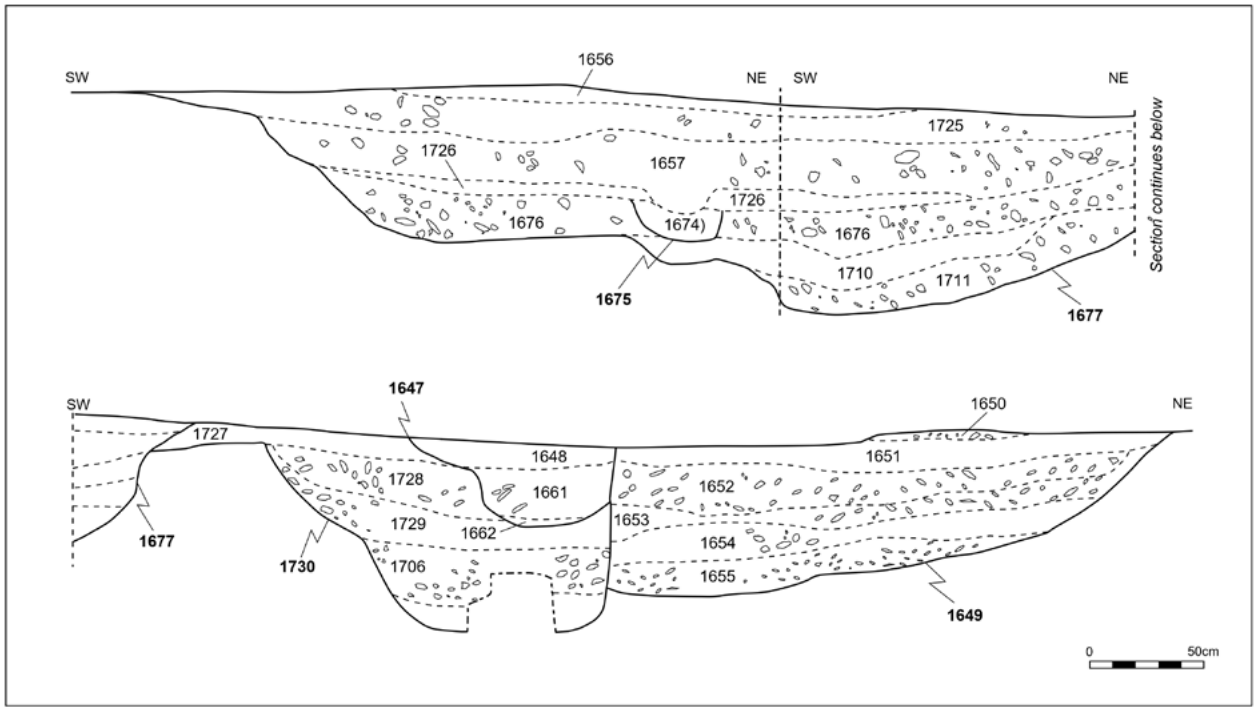

Figure 45 Section through waterhole [1730].

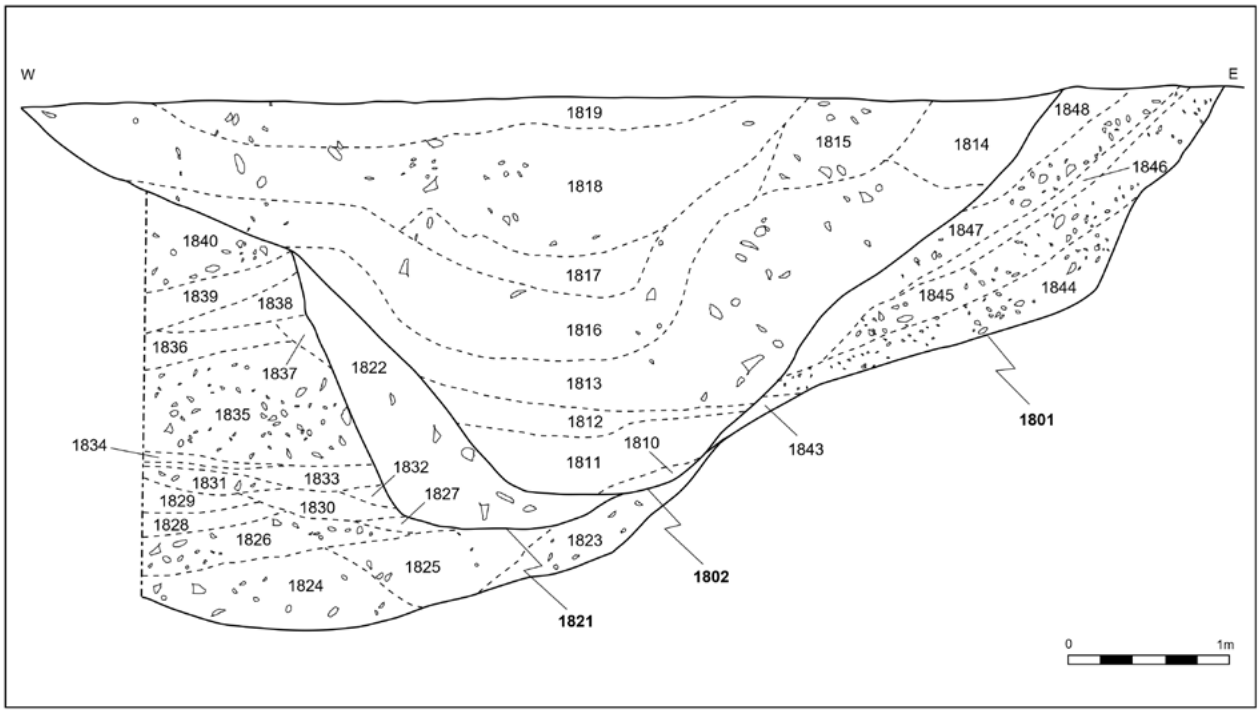

Figure 46 South-facing section through pit complex [1801].

It was unusual that this very deep feature contained no organic horizons. Most fills were gravel-rich, perhaps suggesting backfilling quickly, and not the slow, gradual build-up of 'watery' fills associated with slow abandonment. Upper fill (1840) contained a large pottery rim sherd which had burnt residue on its interior surface. It was made from a coarse shelly fabric and had a typical Bucket Urn profile - the classic Late Middle Bronze Age combination (see *Prehistoric Pottery Cat. No.* 56). One unusual characteristic of this sherd, however, was that it had a lug. Lugs are quite a rare occurrence in the Deverel-Rimbury repertoire, and are an appendage which may have been used for working safely with a large vessel when cooking or steadying a large vessel when pouring out its contents. The lug attachment on this vessel is not paralleled amongst

any of the numerous Deverel-Rimbury Middle Bronze Age urns made from grog-tempered fabrics found on the Middle Bronze Age sites in the area referenced previously. Morris believes this could have either been a local potter's invention to solve the problem of how to use such a large pot full of cooked food, or that the lug may actually have been applied as decoration.

Also recovered from this upper fill were bones from aurochsen. As yet the latest dated examples of aurochs come from Stansted, Essex and Willington, Bedfordshire, both dating to 1661-1509 cal BC (Evans 2015: table 1). The Bar Pasture specimen, being associated with CP3B pottery dated by association to 1400-1130 cal BC, could therefore push the extinction date for aurochs in Britain back by one hundred years or more, although the possibility that it was redeposited in the pit cannot be discounted.

Sampling of the pit's lower fills recovered an almost complete cattle skull, pieces of ash slag and small fish bones.

Structure 13, Field 59

The remains of a circular building were found in the NE corner of Field 59 (Plate 54). The structure comprised one exposed half of a ring-gully G8064 (the other side was lost to a modern service trench), a series of post-holes G8073, and an associated rubbish pit (Figure 47). The building was sited at the eastern end of Drove 7, which may have served it during this period. The eaves-drip gully had traces of two corresponding, inner curves formed by post-holes – an inner arc of large, structural post-holes supporting the main roof structure and a second arc of smaller posts. The interior diameter of the building was estimated as 8.5m, with a 1.4m-wide entrance to the WNW. The visible (western) half of the gully was 0.5m-wide but only survived to between 0.05m and 0.1m deep. Segment [8052] excavated through the southern curve contained animal bone in its upper fill. A retained soil sample produced identifiable charcoal and a small assemblage of charred grain (including barley), insect fragments, chaff and sheep or goat bones (Rackham and Giorgi 2016).

The three shallow post-holes identified around the inner circumference included post-hole [8060], located next to the southern entrance terminus. It may have facilitated a 'turning post' for a door or gate.

The lack of surviving internal features such as occupation surfaces or a central hearth makes interpretation of the structure's use difficult. However, it clearly represents the remains of a circular post-built dwelling with a NW-facing entrance. The presence of the eaves-drip gully indicates that it was covered with an overhanging roof.

Plate 54 Partially exposed ring-gully G8064, under excavation.

Pit 8082, Field 59

This large, circular pit was located immediately adjacent to Structure 13 on its SW side. Its primary fill contained a large, mixed assemblage of domestic animal bone, a sherd of Late Middle Bronze Age (CP3B) pottery from a big pot, and part of a cylindrical clay weight (see *Prehistoric Pottery* and *Clay Weights* below). The upper pit fill contained another large animal bone assemblage that included cattle and sheep/goat.

A soil sample from the primary fill produced two further pot sherds from the same vessel, as well as seven flint retouch chips, possibly derived from the manufacture of a scraper or other retouched flake tool (see *Struck Lithics*). The environmental assemblage from this deposit was highly informative. Residues included a significant amount of identifiable charcoal fragments, waterlogged plant remains and occasional weed seeds; a rich insect assemblage and mammal bones (sheep/goat, cattle). The sample was especially rich in carbonised cereal remains, including hulled barley (*Hordeum* sp.) and glume wheat – the latter indicating crop processing activities, and potentially the handling of larger volumes of cereal crops at this time. The presence of both emmer-type and spelt-type chaff could indicate the cultivation of a dual crop (see *Carbonised Plant Macrofossils*). The nature of the pit fills and residues, combined with the feature's close proximity to Structure 13, suggest that it represents an associated domestic rubbish pit.

Sump pit 11135, Field 70

This unremarkable small pit was cut into the southern terminal of a Middle Bronze Age boundary ditch associated with Field 70. It contained a single fill with a finds assemblage including sheep bones and pottery sherds typical of Late Middle Bronze Age bucket and barrel-type vessels.

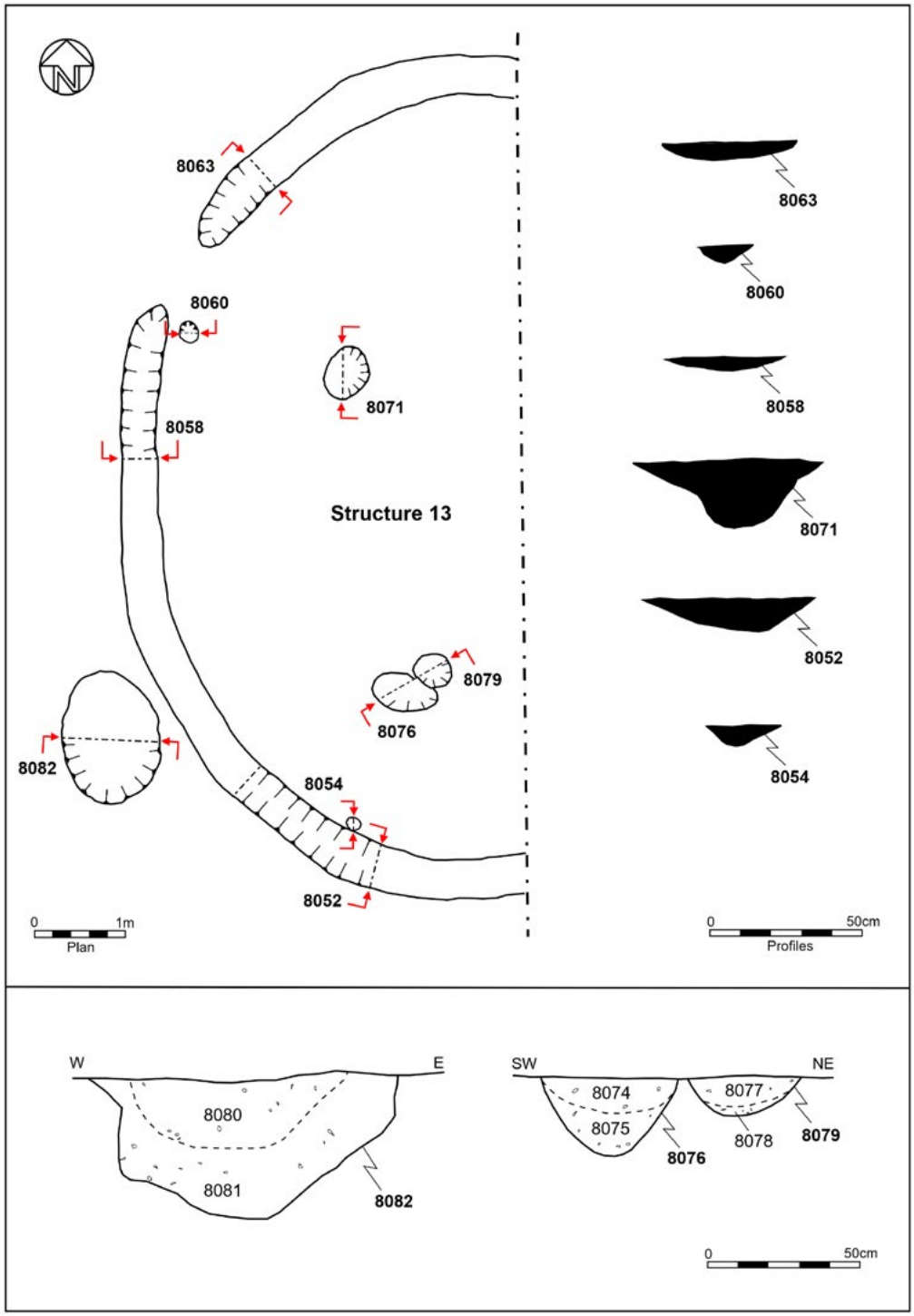

Figure 47 Structure 13 in Field 59: plan and sections.

Pits 10217 & 10214, Field 76

Two small pits found in close association in Field 76 contained Late Middle Bronze Age (CP3B) pottery, together with almost identical rich environmental assemblages indicative of nearby domestic and agricultural activity.

Whist just a small feature, circular pit [10217] (Plate 55) contained cattle bone fragments, a flint bladelet, a pottery rim sherd and a rich deposit of briquetage pedestal fragments. The rim sherd derived from an upright, walled jar made from a shell-gritted fabric. The original vessel appears to have been decorated, as the sherd displays one extant fingernail impression on the exterior of its flattened rim lip (see *Prehistoric Pottery Cat. No.* 63). It is most likely part of a Late Middle Bronze Age (CP3B) shell-gritted fabric, bucket-type vessel such as found elsewhere on the Site. At Pode Hole Farm,

Woodward identified similar sherds from a single shell-gritted bucket-shaped vessel (2001: fig. 11, 6-8). These were recovered from a pit with a sizeable quantity of charcoal that was radiocarbon dated to 1395-1010 cal BC at 95% probability (Hood 2001: 23). This date is transitional Middle to Late Bronze Age.

Plate 55 Late Middle Bronze Age 'briquetage pit' [10217], prior to 100% excavation.

The briquetage assemblage comprised 63 pieces (1231g) derived from numerous handmade pedestals. Morris (see *Briquetage*), found that these were derived from at least three, and probably more, handmade pedestals used to support ceramic trough-shaped containers above open hearth fires, in order to evaporate water from brine and produce salt crystals. The fabric type is typical of briquetage supports recovered from fenland later prehistoric salterns, including at Pode Hole Quarry (Morris 2001a: 36-7; 2009c: 75).

A bulk sample from the lower of the pit's two fills identified red deer and rodent bone, fired earth, and fire-cracked pebbles, the latter two probably representing the waste from cooking fires.

Bordering pit [10214] was similar in size. It contained almost identical inclusions but lacked any ceramic material. Its upper fill contained two flint flakes, one of which was burnt. It seems likely that the two features are related and contemporary; and certainly indicators of nearby domestic activity.

Continued Burial Practices

A number of burials were assigned to the later Middle Bronze Age by artefactual evidence, scientific dating and stratigraphy:

Cremation burials

Two discrete burial concentrations associated with both urned and unurned cremations were identified at the northern and southern extremities of Field 67. At the northern end, 12 closely aligned, urned and unurned cremations (two dated to the latter part of the Middle Bronze Age by radiocarbon dating of charcoal in the burials), were cut into the still discernible remains of the three (earlier) mini-barrows (Figure 18). A similar sequence was recorded at the southern end of the same field, where the heavily truncated remains of a small ring-gully [11230] formed the focus for another concentration of later unurned cremations and associated pits. Both burial groups represent small cemeteries placed purposefully 'over' Early Bronze Age 'mini-barrows'. Continuing the theme of 'continuity of place', a large ring-ditch G11083 was placed in the area of the southern grouping in the Late Bronze Age (see below).

Northern cremation burials 1-12

At the northern end of Field 67 was a small cremation cemetery located within an undefined area of 5m by 5m. The cemetery was comprised of a total of six urned and six unurned cremations, two of which (numbers 6 and 10) have been assigned to this period by scientific dating. In addition, the six pottery urns (numbers 5, 6, 8, 10, 11 and 12) all correspond with Ceramic Phase 3B, on the basis of their form and fabrics.

A number of the burial cuts had been excavated into the reduced remains of the three adjacent Early Bronze Age mini-barrows (G9451-9453), perhaps signifying the reuse of an important (ancestral) funerary area (see Plates 20 and 21). All of the urned cremations, as well as unurned cremations 4 and 7, consisted of pits cut into the upper ditch fill and remnant mound material of the earliest, eastern Barrow G9451. Unurned cremations 3 and 9 were located a short distance to the east. Cremations 1 and 2 were located within the western and central barrows G9542 and G9543 respectively. All of the urns had originally been placed upright.

All of the cremations were heavily truncated, and only the lower portions of the urns were recovered. Burials 1, 2, 6 and 9 contained the remains of adults (of indeterminate sex), the remainder were infants and juveniles, and a perinate, with burials 11 and 12 both containing more than one individual (see *Human Bone*). A number of the cremation samples (from cremations 8, 10, 11 and 12), contained roundwood indicative of small branches and twigs, which may indicate the use of small wood in the pyre, or the remains of kindling (see *Charcoal*). The individual cremations are described in detail below:

Cremation 1

This was a collection of cremated bone (9511) that appears to have been moved from its original place of deposition. It was spread within the fill of one of the earlier 'mini-barrow' gullies G9452, perhaps having been disturbed by later animal burrowing. Despite very little cremated material being present, the individual was seen to be a young adult, of age 16+.

Cremation 2
A stone-lined cut [9526], possibly the remains of a cist, was placed within the sandy upper fills of the ditch circuit of central 'mini-barrow' G9453 (Plate 56). It contained an unurned cremation (9444), representing the excellently preserved remains of an adult individual, with the majority of identifiable fragments being from the upper limbs (see *Human Bone*). Although there was no associated urn, two small CP3B, Late Middle Bronze Age pottery fragments were recovered from the cremation fill. These possibly represent redeposited sherds from one of the nearby urns, with five of the six found having been made from the same shelly (S2) fabric type (see *Prehistoric Pottery*). Some fragments of shell were also recovered from the burial fill.

Plate 56 Section through adjacent mini-barrows G9452 & G9453, showing cremation 2's stone-lined cut [9526].

Cremation 3
Unurned Cremation 3 (9467), that of a young juvenile, was contained within an irregular, shallow pit, 2m east of ring-gully G9451. Its fill was a dark grey clay with frequent burnt bone fragments. Diffuse porous wood obtained from the sampled fill had the appearance of hazel (see *Carbonised Plant Macrofossils*).

Cremation 4
Unurned Cremation 4 (9470), that of an adolescent, was recovered from a steep-sided, shallow pit [9471], cut into the remnant mound material of 'mini-barrow' G9451. Carbonised wood residue recovered from the fill was tentatively identified as willow/poplar sp.

Cremation 5
Also located to the east of 'mini-barrow' G9451, and similarly cut into its remnant mound material, was circular pit [9474] containing urned Cremation 5 (9472). Within the urn was a good quantity of well-preserved calcined bone, representing the remains of a neonate (Plate 57). The fill of the burial also contained ash (Fraxinus) charcoal (see *Charcoal*). The urn, assigned to CP3B, consisted of a complete, well-preserved base with upright walls. The interior was pitted, probably through previous contact with acidic liquids (see *Prehistoric Pottery Cat. No.* 60).

Plate 57 Urned cremation 5 during excavation.

Cremation 6
Urned Cremation 6, that of an adult burial, was contained within pit [9499], dug into the surviving mound of 'mini-barrow' G9451. The remains of the urn, comprising a complete base with upright walls, was remarkably similar to the vessel associated with Cremation 5 (*Pottery Cat.* 61). Morris (below), believes that the two urns might represent a pair of coil-built, bucket-shaped vessels made by the same potter. They had both been utilised as cooking pots, prior to their use as burial containers.

AMS dating of associated alder charcoal returned a date 1392-1130 cal BC with 94% probability (SUERC 74886), being the Late Middle Bronze Age (*c.* 1350-1150 BC). The recovered bone was in an excellent state of preservation (see *Human Bone*). Fragments of mollusc shell and a fossil (possibly used as a bead), were also recovered.

Cremation 7
Unurned Cremation 7 contained an infant burial identified by a developing second molar. The cremation deposit (9716) was contained by a very shallow, circular cut, located on the inner edge of ring-gully G9451. The majority of the bone fragments were well preserved.

Cremation 8
Urned Cremation 8 (9483), also located on the inner edge of ring-gully G9451, was contained within a

shallow circular pit. The CP3B coil-built cremation urn was thick-walled, but had less than 5% of its base diameter present (see *Prehistoric Pottery Cat. No.*, PRN 4562). The cremated remains, those of a young juvenile, were covered with a layer of dark brown gravelly clay.

Cremation 9

Unurned Cremation 9, that of a young middle adult aged *c.* 26 to 35 years, had been dug into the natural substrate to the east of Barrow G9451. Its burial pit was of a similar diameter to the others in this group (0.5m); although this particular one survived to a depth of 0.5m and contained three fills, one appearing as a lining, suggesting that the cremation may have originally been placed into some kind of organic container.

Analysis of the cremation fill (9486), showed it to be made up of dark grey ash, burnt bone, and shell fragments. A few small pieces of pottery were also recovered, but not enough to suggest that the burial was urned. The charcoal included a wide range of cereal grains and a flax seed, most likely representing scattered debris from domestic or agricultural activity in the vicinity. A wide range of plant seeds were also recorded, suggesting that the funeral pyre for this cremation was constructed on wet, marginal ground, possibly on the fenland marsh or by a running stream (see *Waterlogged Plant Macrofossils*).

Cremations 12 & 10

Cremation 12, the earlier of these two intercutting burials, comprised a large urn placed within a circular pit. Although highly fragmented (113 sherds, 1212g), the complete base survived together with part of the wall, which had burnt residue surviving on its interior surface (see *Prehistoric Pottery Cat. No.*, PRN 4565). This is likely to have derived from its previous use as a domestic cooking pot. The cremated bone contained within was excellently preserved, and represented the burial of an infant and an older juvenile. Fragments of shell were also recovered.

Urned Cremation 10 (9488) contained the remains on an older juvenile, and was cut into the upper fill of Cremation 12. The thin-walled urn appears to have been made by a different potter to that proposed for Cremations 5 and 6 (see *Prehistoric Pottery*). Burnt residue on its interior surface indicates that it had functioned as a cooking pot, prior to its use as a burial container (see *Prehistoric Pottery Cat. No.* 62). AMS dating of alder charcoal from the burial dates it to 1400-1132 cal BC with 94% probability (SUERC 74887), making the range contemporary with that for Cremation 6, and assigning it to the Late Middle Bronze Age. This date also provides a *terminus post quem* for Cremation 12.

Plate 58 Cremation urn 10 in situ within the fill of mini-barrow ring-ditch G9451.

Plate 59 Cremation urns under excavation.

Cremation 11
Urned Cremation 11 (9512), which contained two juveniles, was contained within an oval pit cut into the fill of 'mini-barrow' ditch G9451. The burial urn (see *Prehistoric Pottery Cat. No.*, PRN 4564), was found leaning against the northern side of the pit, with a dark grey sandy cremation deposit visible around the exterior base. During excavation, this was deemed to be part of the same dispersed cremation, rather than the truncated remains of an earlier burial, although the presence of two individuals (see *Human Bone*), could suggest otherwise. The interior of the surviving urn was abraded and had traces of burnt residue.

Southern cremation burials
A second concentration of what appeared to be seven small, unurned cremations (recorded as numbers 13-19), was focused on the vestigial remains of Early Bronze Age ring-gully [11230] at the southern end of Field 67 (Figures 26 and 51). At a later date (in the Late Bronze Age) a larger ring-ditch G11083 was also placed in this location. The juxtaposition of the cremation burials, the small, earlier ring-gully and the later ring-ditch is reminiscent of the association between Cremations 1-12 and the 'mini-barrows' discussed above; clearly representing the continued usage of a sacred and venerated place over time.

These seven suspected cremations were all extremely poorly preserved. They each contained charcoal flecking and occasional unidentifiable burnt bone fragments (a probable human tooth was identified). They were considered to represent human burials due to their contextual similarities to the aforementioned cremation group. Despite detailed analysis very little could be said about this possible burial grouping. Four evenly-spaced post-holes defined a curving boundary to the east of the features, and are possibly contemporary.

PERIOD 4: LATE BRONZE AGE TO EARLY IRON AGE (c. 1100 - 500 BC)

The Late Bronze Age is synonymous with the large-scale abandonment of the Bar Pasture landscape as the result of a second major marine incursion; with the resulting retreat of settlement to drier land at marginally higher altitudes to the west. Two such areas of apparent 'climatic retreat' (the ditched enclosure to the east of Field 7 and Field 68 to the south of this), appear to have been reinforced by the addition of secondary ditches around their perimeters (Figure 48). These double-ditched enclosures subsequently formed a focus for low-level settlement activities. The slightly lower-lying fields surrounding these enclosed zones would no doubt have been subject to repeated flooding and silting at this time, rendering settlement activities there impossible.

The Ceramic Phase 4 pottery evidence presented in Chapter 4 identifies a distinction in terms of fabric and form characteristics of sherds associated with this period. The observations heralded two definably different ceramic sub-phases (CP4A and CP4B). The latter placed a number of vessels (23) and their features, firmly within the Late Bronze Age/Early Iron Age period, as opposed to the Late Bronze Age proper (see *Prehistoric Pottery*). The late sherds are largely derived from pits, but they also include a building. These later features are described and assessed separately under Period 4B below.

PERIOD 4A: LATE BRONZE AGE (c. 1100 - 800 BC)

Ditch 'reinforcement' within the Field System

Two areas of 'climatic retreat', both occupying marginally higher ground, were reinforced by ditch digging at the beginning of the Late Bronze Age. These additionally protected enclosures then formed the focus for Late Bronze Age and Early Iron Age settlement activity.

Ditched Enclosure north of Drove 1
The multi-ditched enclosure to the east of Field 7 represented a major feature within the Bar Pasture landscape. Although fields existed here during the preceding period, the addition of secondary perimeter ditches was the result of Late Bronze Age or Early Iron Age reinforcement.

The southern and western sides to this ditched enclosure comprised of a continuous V-shaped ditch, 3m wide and 1m deep. Up to six sandy fills were identified, with evidence of a shallow recut within the southern arm. Finds were sparse but included CP4A, Late Bronze Age pottery from southern upper ditch fill (417). Similar sherds were recovered from several upper ditch fills of the western arm. Of more interest was the apparently purposeful placement of a complete bovine skull within the western ditch's southern terminal.

The northern ditch reinforcement was represented by a rather sinuous linear, just 1m wide. The only pottery from this arm was a single rim sherd from a Late Bronze Age (Post-Deverel Rimbury) Plainware jar (see *Prehistoric Pottery Cat. No.* 64), found in association with a calf ulna and three worked flints, including an end-scraper. A retained soil sample contained charred barley. The ditch's lowest fill was a slumped deposit, representing an eroded bank on the inside edge. At its western end, was a large, contemporary pit [408], probably dug to act as a drainage sump. An additional outer ditch was placed parallel to the north at this time. This created an unusual triple-ditched arrangement along this side.

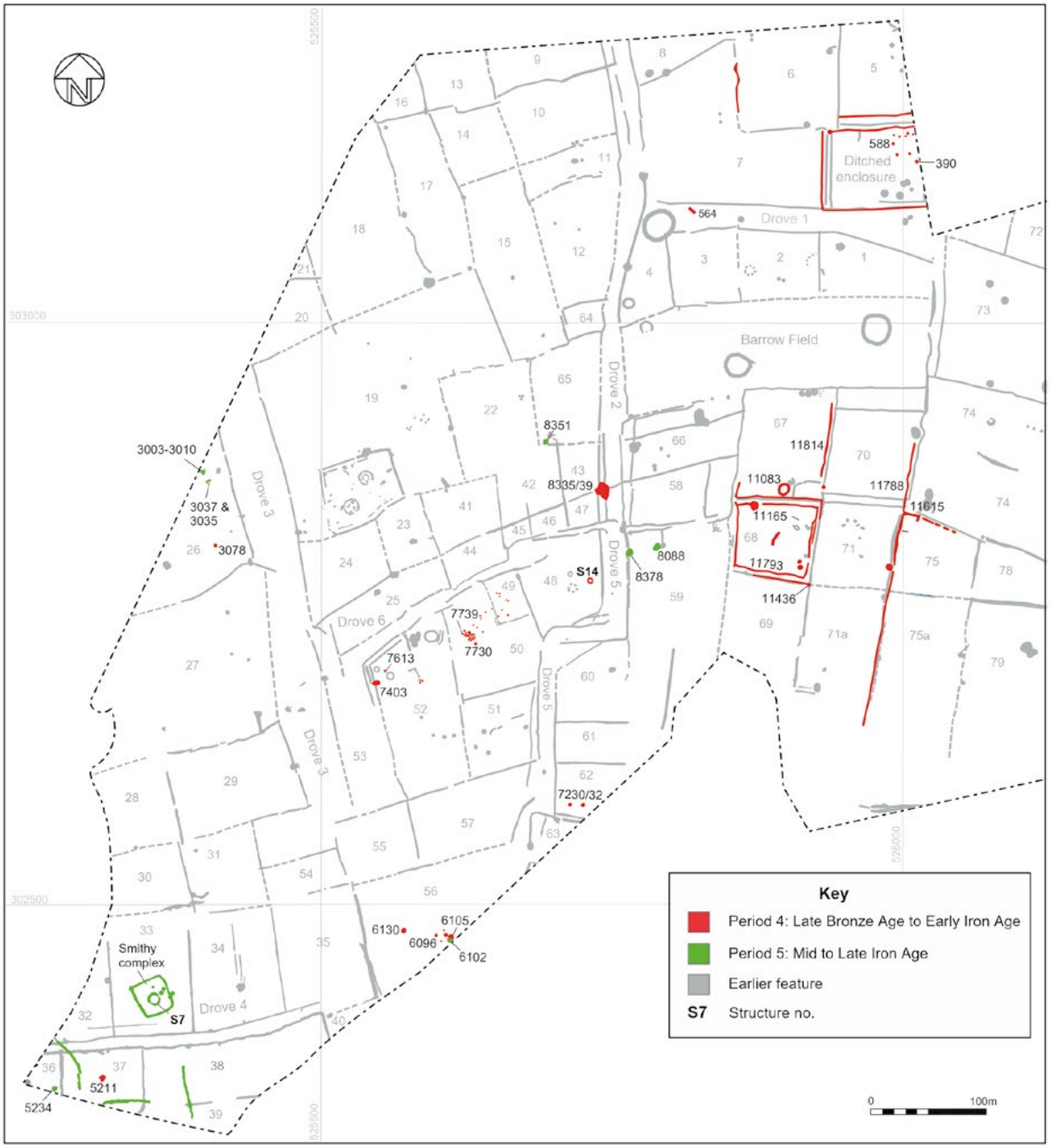

Figure 48 Plan of Late Bronze Age - Earliest Iron Age (Phase 4); and mid – Late Iron Age (Phase 5) features.

A short distance to the NW of this enclosure, fragments of a Late Bronze Age thin-walled jar (see *Prehistoric Pottery Cat. No.* 65) were recovered from ditch [493], providing further evidence of Late Bronze Age activity in this particular area.

Features within the multi-ditched enclosure

In the enclosure's NE corner was a discrete concentration of ten post-holes and two pits [390] and [588]. The majority of the post-holes were eroded, to the extent that several appeared as little more than naturally-silted hollows with no meaningful arrangement. They may, however, represent the remains of a former structure. Pit [390] was shallow, but was packed with cattle bone fragments and neonate pig bones (see *Animal Bone*). It appeared to be a deposit of domestic waste from cooking activities. Pit [588] was also shallow and contained a flint-tempered pottery fragment of Late Bronze Age date.

Double-ditched enclosure, Field 68

During this period, pre-existing Field 68 was supplemented by an inner ditch circuit. In common with the aforementioned ditched enclosure, this

mirrored the field's original boundaries (Plate 60), and created a 3m, walkway similar to those recorded between several double-ditched features at Pode Hole Quarry (Daniel 2009: 150). These were deemed too narrow to have functioned as animal droves, but may have provided circuits or tracks for human use.

Plate 60 Aerial view of Field 68, with the double ditch circuit clearly visible under the modern, straight marling trenches.

Excavation of the inner ditch, in particular the corners and intersections, allowed the identification of a sequence of Late Bronze Age ditch cutting, commencing with the eastern and western sides, and then cutting of the northern and southern arms (Figure 48).

Finds from the entire ditch circuit were minimal, but a few small sherds of Post Deverel-Rimbury Late Bronze Age (CP4A) pottery were recovered from the northern arm. The western element also contained fragments of animal bone, including a pair of mandibles from a 6-12 month-old lamb (see *Animal Bone*).

A soil sample from the peaty secondary fill of the northern arm produced one of the few wet flots obtained from the Site. This contained a large number of uncharred plant seeds, including blackberry/ raspberry, abundant degraded wood and bark, and part of a juvenile sheep or goat skull and mandible.

The southern and eastern boundaries of the adjacent field to the north (67), also appear to have been reinforced during this period, and appear to be related to this phase of enclosure construction (Plate 61). The eastern ditch here contained two Post-Deverel-Rimbury pottery sherds from a Late Bronze Age long-necked jar (see *Prehistoric Pottery Cat. No.* 71). Part of a similar jar was recovered from the fill of a nearby modern claying trench (see *Prehistoric Pottery Cat. No.* 67).

Plate 61 West-facing section through Field 67's southern ditch segment [11250] showing burnt clay fill (11255).

'Arterial' boundary ditch G11788

Additional ditch building at this time took place along the eastern boundaries of bordering fields 70, 71 and 71a. This appeared as a single ditch that extended for over 250m (Figure 49). Part of a Late Bronze Age Post-Deverel-Rimbury long-necked jar was recovered from central ditch segment [11859] (see *Prehistoric Pottery Cat. No.* 72). This apparently significant boundary appears to be the southern continuation of an axis first identified at Pode Hole Farm to the north (Cuttler and Ellis 2001).

Continued Burial Practices

Burial Barrow ditch G11083, Field 67

A ring-ditch G11083, suspected to be the remains of a rare Late Bronze Age burial monument, was identified at the southern end of former Field 67, just 'outside' the newly created double-ditched enclosure associated with Field 68 (Plate 62) (Figure 50). The assumed barrow truncated the edge of Early Bronze Age ring-gully [11230], and appeared to impact upon the cluster of

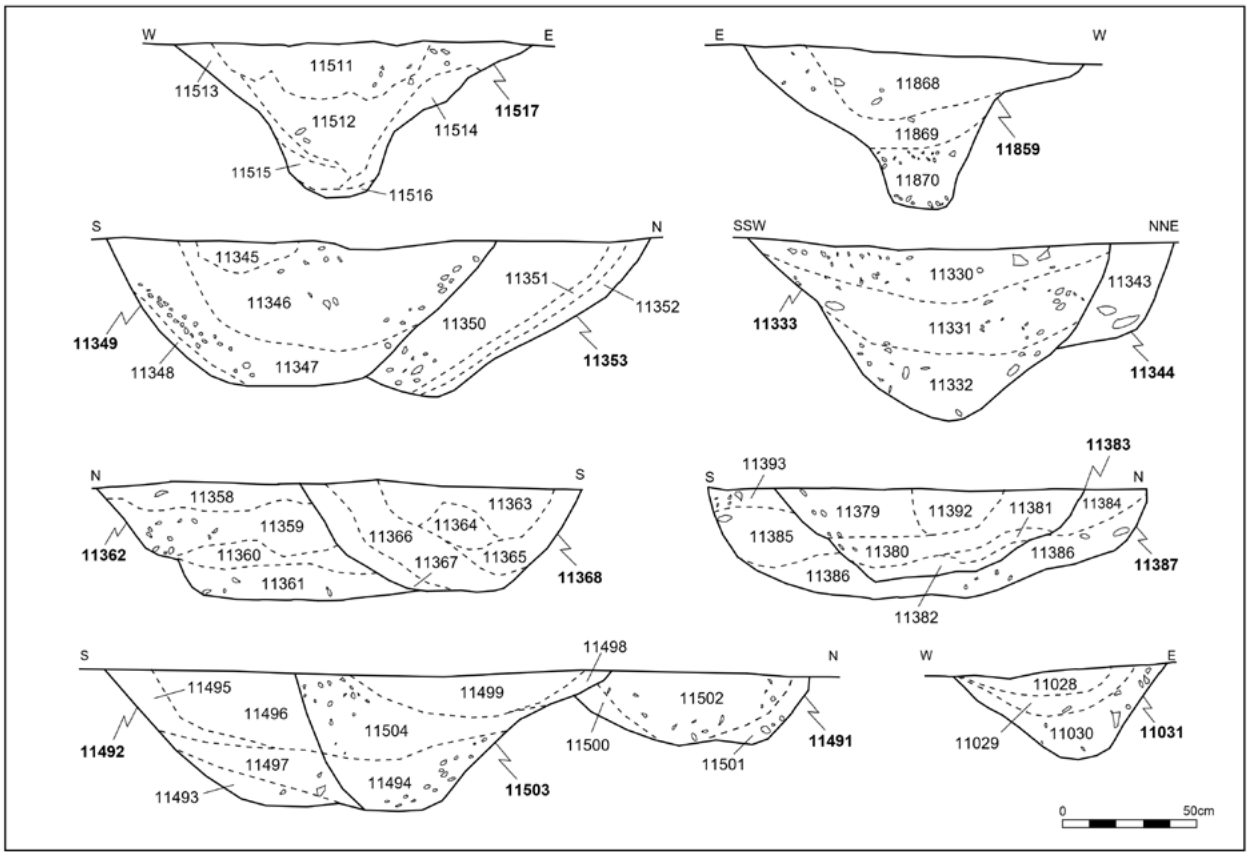

Figure 49 Representative ditch sections.

suspected Middle Bronze Age cremations (numbers 13-19) in the same locale (Figure 51). This was evidently an area of funerary significance over a long period. One can envisage here the veneration of an ancestral burial site over time.

The ditch was 2m wide, with the circuit being 12m in external diameter. Three of the five excavated segments yielded large pottery sherds (134g) derived from two different ovoid jars typical of the Post-Deverel-Rimbury Late Bronze Age ceramic period (4A) in eastern England and elsewhere (see *Prehistoric Pottery* and *Cat.* 69 and 70).

Plate 62 Aerial view of barrow ditch G11083; trial trench 19 is visible to the east.

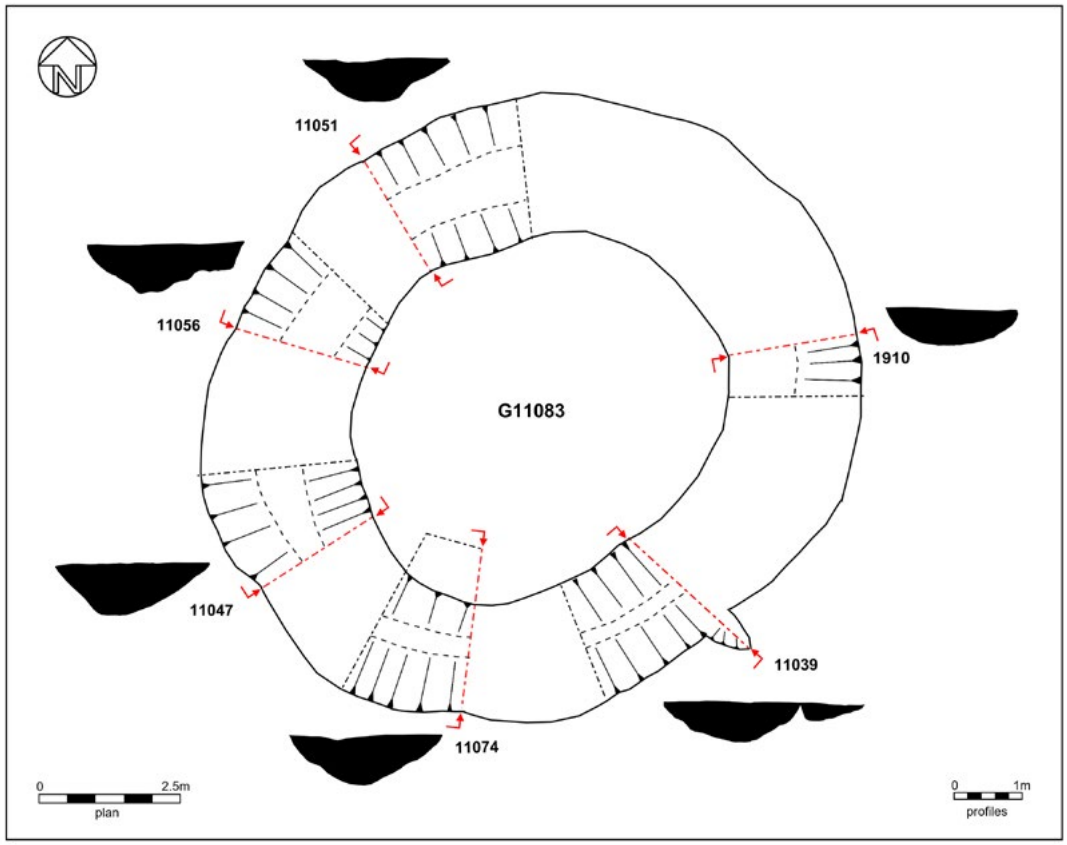

Figure 50 Barrow G11083: plan and profiles.

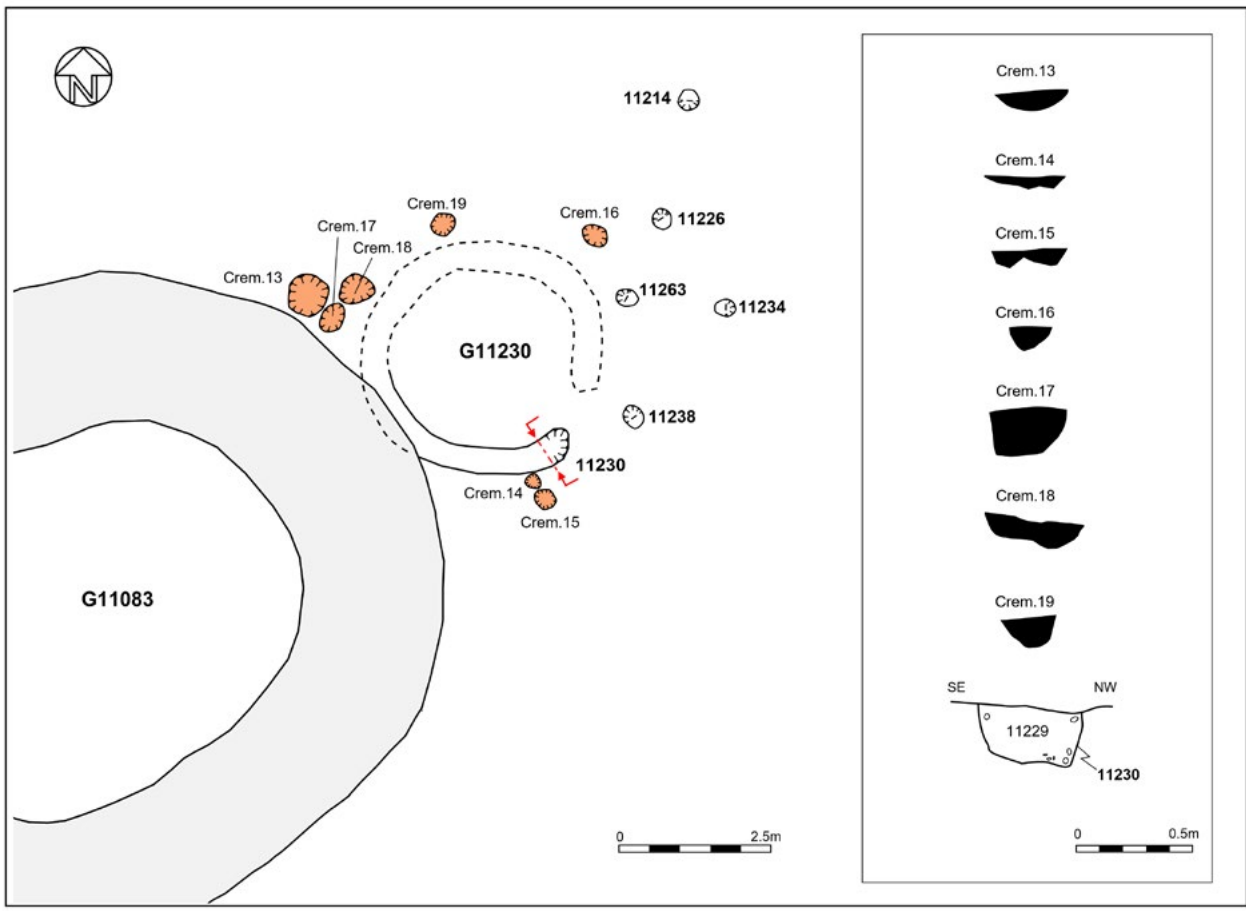

Figure 51 Late Bronze Age Barrow G11083, and its location in relation to earlier burials.

These common types of PDR Late Bronze Age vessel have been found previously at Pode Hole Quarry. Interestingly, a join was detected between pottery from SE ring-ditch segment [11039] and that from interior gully segment [11372], excavated 30m to the south in contemporary 'reinforced' Field 68. Domestic animal bone fragments were recovered from all five ring-ditch segments; of particular note were two partial neonate and foetal lamb skeletons from the secondary and middle fills (see *Animal Bone*), possibly of ritual significance. Cattle and pig bones were also recovered from a section of the ring-ditch when it was originally identified in the trial trenching of the Site (Malone 2003: 8).

Plate 63 Section through intercutting pits [8335] and [8339].

Two of the ring-ditch primary fills were bulk sampled and produced uncharred seeds of *Chenopodium* (Goosefoot), a sheep/goat tooth and charred grain.

Pits and Waterholes

Various pit-type features (ranging from so-called 'one-metre' pits all the way through to a couple of massive waterholes) are assigned to Period 4A. The small pits appear to represent sumps (to drain water away from areas of habitation), rubbish pits and cooking pits, the majority identified towards the southern end of the Site. As they are somewhat limited in number, these features are described in order of the already established fields in which they were located.

Pit 564, Drove 1

This was a shallow, sub-circular pit, 1m diameter and 0.2m deep. It was sited within the confines of Drove 1. Its single fill contained six sherds from a Late Bronze Age shouldered jar made from a flint-tempered fabric (see *Prehistoric Pottery Cat. No.* 66). An additional fragment of the same fabric was recovered from a retained soil sample. Although small, the location of this late pit within Drove 1 suggest that the thoroughfare was perhaps no longer in major use.

Waterholes 8335 & 8339, Drove 2

A number of stratified features dating to this period include two immense, intercutting pits truncating (and severely interrupting) the western side of Drove 2. The positioning of the pits suggests that this thoroughfare had, by now, gone out of use.

The earlier of the two pits [8339] was 4m wide and 1m deep (Plate 63). Its primary fill produced a rich organic sample, including species associated with scrub, hedgerows, waste ground and wetland. Also recovered were moss fragments and wood (including roundwood and twigs), beetles and vertebrate (newt). An antler tine, probably the remains of a prehistoric pick, was retrieved from middle pit fill (8337). A bone point or awl made from part of a cattle-sized long bone was also recovered (Rackham and Giorgi 2016).

Once pit [8339] had silted in, its eastern side was partially truncated by the digging of much larger pit [8335], which measured an impressive 10.5m across and 1.2m deep. It contained several rather compact sandy gravel fills, of which fill (8332) containing part of a saddle quern (see *Querns*). Similar instances of quern fragments being deposited in waterholes have been recorded at other sites (Brück 2001: 152-153; Pryor 2001: 237), including Pode Hole Quarry (Daniel 2009: 34-35).

Pit 3078, Field 26

This was a small, shallow and isolated pit containing a complete saddle quern that had been deliberately inverted in the pit, completely filling it (Plate 64). Saddle querns such as this had a long-life span, and are often found in Late Bronze Age contexts. They were replaced by more efficient rotary querns in the Iron Age (see *Querns*).

Waterhole 7403, Field 52

Although undated, this large pit truncated a fully silted-up Middle Bronze Age boundary ditch, suggesting it could be of later Bronze Age origin (Figure 52). It appears to have functioned as a waterhole or reservoir that was later used for the disposal of domestic material, possibly derived from a hearth. Primary fills were silts derived from slumping and in-wash. From these, and the pit's intermediate fills, were recovered cattle bones, two preserved timbers, and various fragments of roundwood, some charred. One larger piece of

Plate 64 Saddle Quern from within small pit [3078].

roundwood was an unconverted oak trunk, with a Y-shaped crux (Plate 65). This piece could conceivably have been used as 'Y'-frame, perhaps to direct a bucket and rope down into the centre of the 1.5m deep pit. A half-split oak timber appeared to represent the remains of an *in-situ* step in the base of the feature (see *Waterlogged Wood*).

A soil sample from middle fill (7441), a silt layer with 'ashy' lenses, contained snails, indicative of an open grass environment, charred bone, fire-cracked flint and sandstone pebbles. The upper pit fills all contained charcoal and heat-affected clays suggestive of domestic refuse. A single human bone (part of a humerus shaft), was found in uppermost fill (7439).

PERIOD 4B: LATE BRONZE AGE / EARLY IRON AGE (c. 800-500 BC)

Settlement Structure

Structure 14, Field 48

A small ring-gully (G8050), considered to be the remains of a temporary shelter or hayrick, was identified in the central-eastern part of Field 48 (Plate 66). It was fairly close to two other structures (numbers 8 and 9) that were of Middle Bronze Age date, but this feature contained well-stratified pottery of Late Bronze Age/ Early Iron Age (CP4B) date, indicating that it was functional at this time. It differed from the other structures in that it was sub-oval in plan, and of smaller dimensions; being just 4m across externally (Figure 53). Several retained soil samples produced very little, apart from a small quantity of charcoal. No post-holes were identified in association with the feature and no evidence was found for an entrance. A similar feature (7566), of almost identical dimensions was recorded at Pode Hole Quarry and was tentatively interpreted as the remains of a Bronze Age saltern (Daniel 2009: 36, 52-53). In that instance, the feature had evidence of burning and finds of briquetage. Other similar, small ring-shaped gullies of Bronze Age date found on the fen edge have, however, been interpreted as hayricks.

Pits

Waterhole 5211, Field 37

In the centre of Field 37 was a large pit [5211] measuring 4.5m across by 1m deep. It was sub-oval in plan, with

Plate 65 Excavated waterhole [7403], with preserved timber visible.

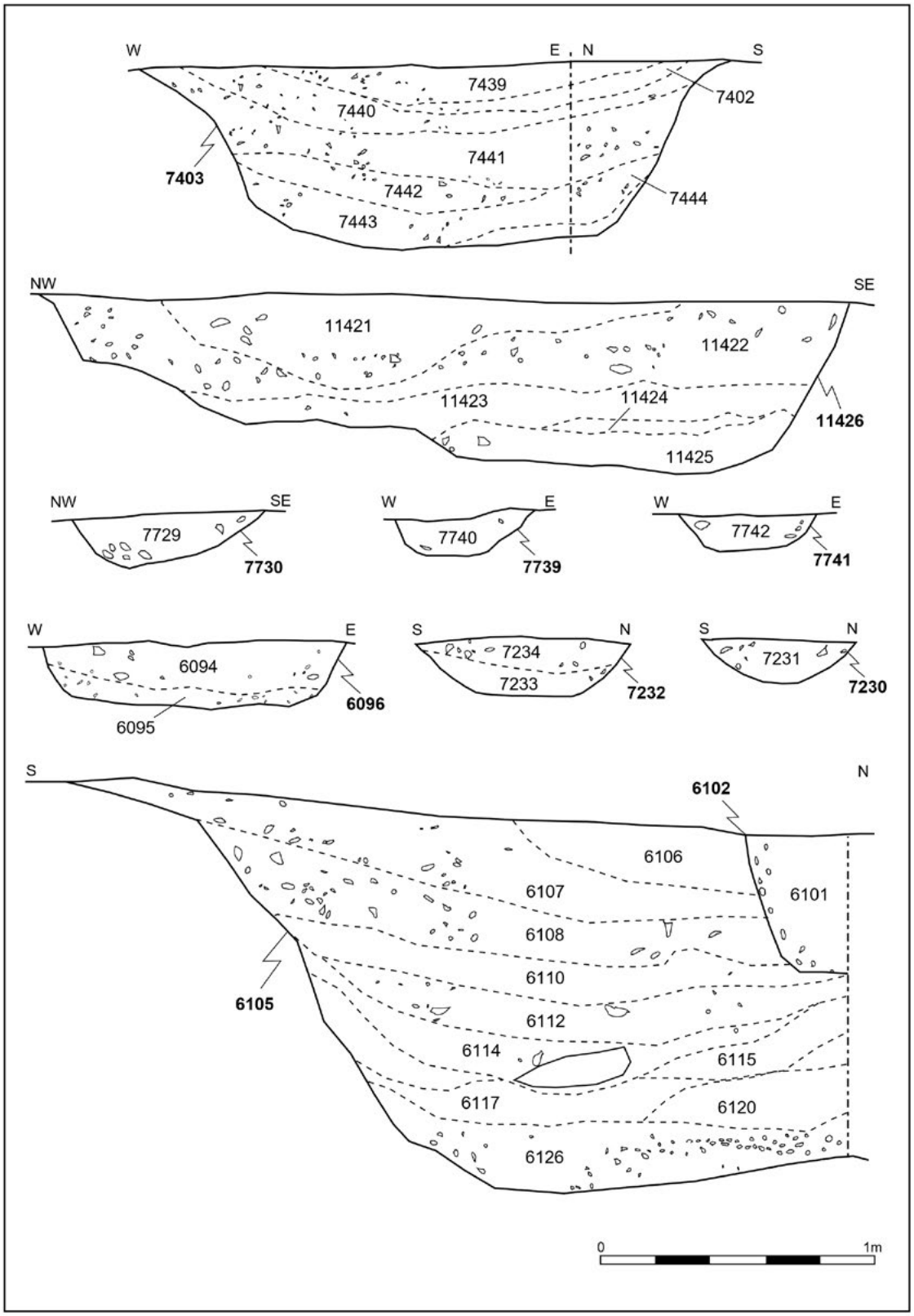

Figure 52 Representative pit and waterhole sections.

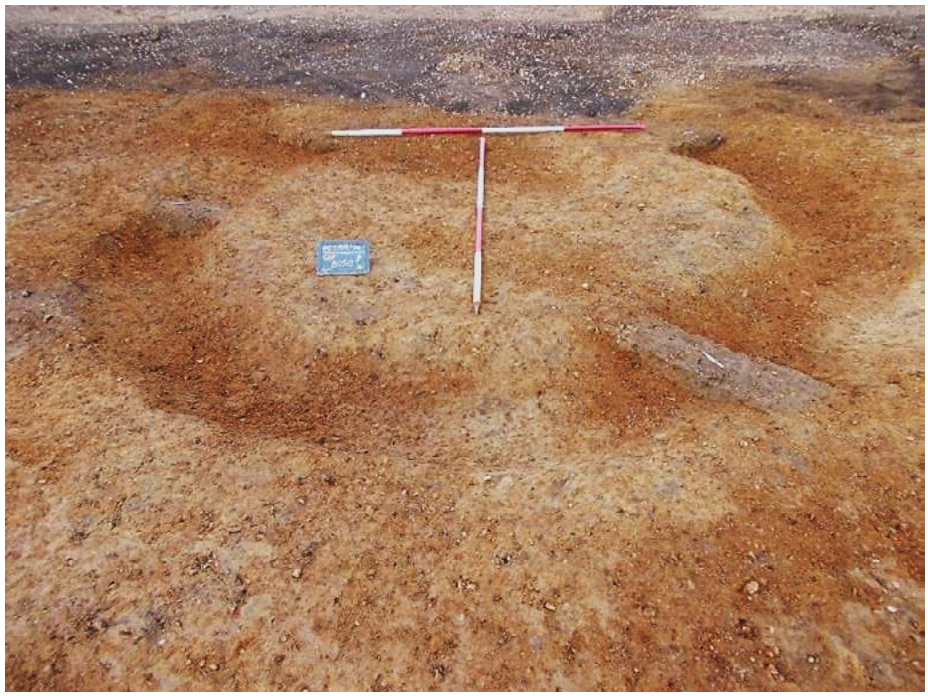

Plate 66 Structure 14 (hayrick) ring-gully G8050, following excavation.

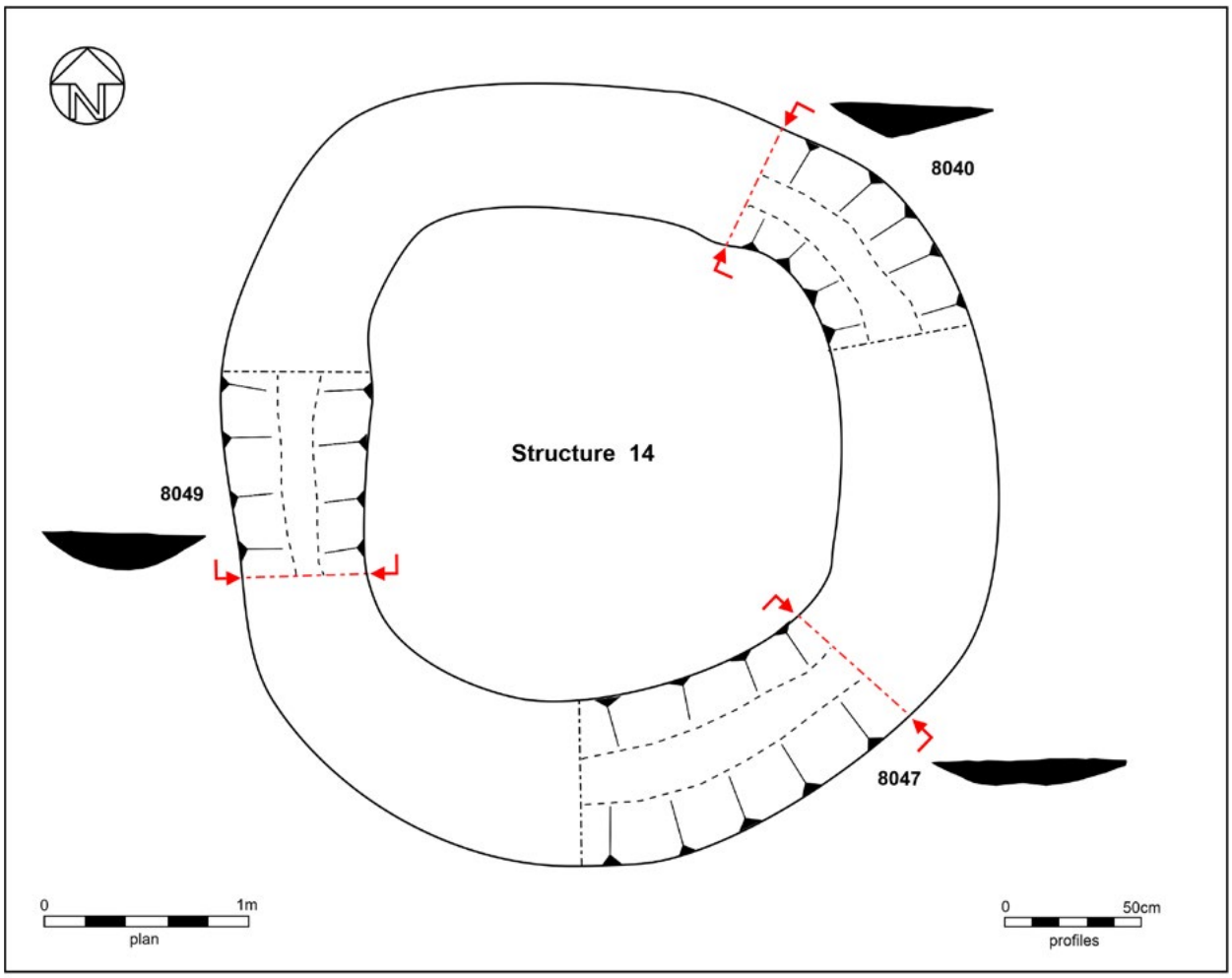

Figure 53 Structure 14 in Field 48: plan and profiles.

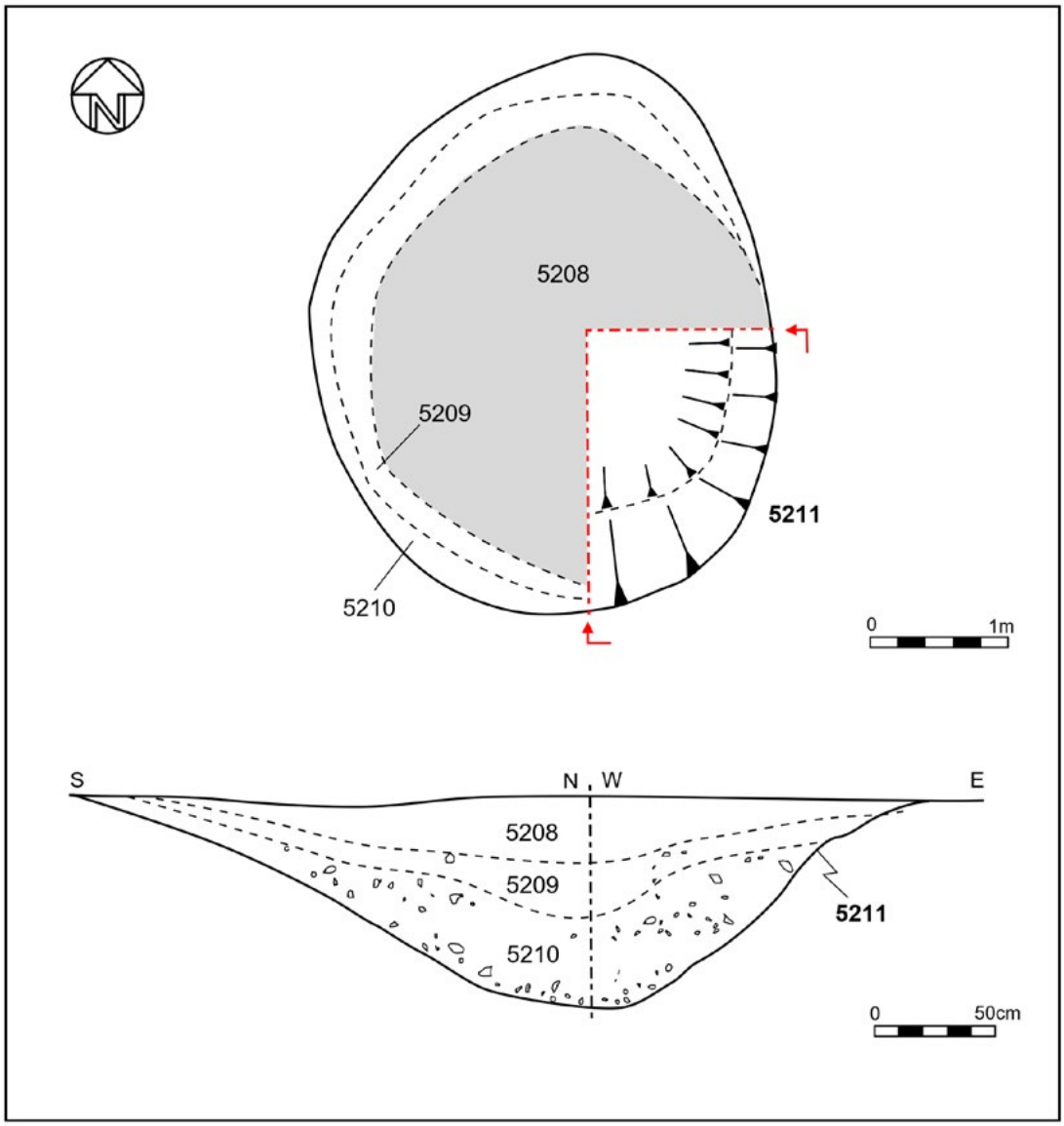

Figure 54 Pit [5211] - a rare example of a Late Bronze Age, substantial waterhole.

sloping sides to a concave base (Figure 54). A more gradual slope was identified on the feature's south side, which could have afforded access to livestock. Three fills were identified, together with the usual silt lenses and slumped gravel horizons.

The primary silt fill which appeared to represent gradual silting contained no finds, but the remaining fills contained 18 undecorated sherds of Late Bronze Age / Early Iron Age (CP4B) pottery, including the rim of a large jar and part of a shouldered bowl (see *Prehistoric Pottery Cat. No.* 73 and 74). The sherds comprised fragments of seven pots made from five different fabrics. Additional finds included two 'late prehistoric' briquetage container fragments, and several pieces of fired clay, probably derived from a domestic hearth. Animal bone and two redeposited Beaker sherds were also present. The location of this pit, with its fragments of Late Bronze Age to Early Iron Age pottery, in an area significant for Middle Iron Age activity is curious.

Hearth pit 7730, Field 50

Close to a pit concentration of Middle Bronze Age date was small oval pit [7730] (Figure 52). Its single fill contained a flint flake, a fragment of clay weight and a Late Bronze Age / Early Iron Age (CP4B) pottery sherd, with another joining sherd recovered from the processed soil sample. A small quantity of fired earth was also found (Rackham and Giorgi 2016). As no industrial residues were present, it is suggested this feature represents a hearth.

Pit group, Field 50

A concentration of shallow, circular pits was identified across the area of former fields 49 and 50 (Figure 52). Although the majority were undated, they included one

pit [7739] containing three sherds of CP4B Late Bronze Age/Early Iron Age pottery. Other finds from the pit included burnt fragments of sheep-sized bone, a flint side-scraper, flint chips and charred seeds; finds typical of occupation. Several adjacent pits contained charcoal, charred grain, shell and worked flints, including a core. The pits formed no obvious structural element, but appear to represent a former 'activity area'.

Rubbish pit 7613, Field 52

In the NW corner of the field was a small, elongated pit, just 1m across and 0.25m deep (Plate 67). Whilst rather unremarkable in itself, it contained a wealth of artefacts and environmental remains. Its dark, silty single fill (7612) contained a mixed assemblage of pottery dominated by unabraded fragments (12) of Late Bronze Age/ Early Iron Age (CP4B) date. The sherds included a large fragment from a storage jar with pitting on the interior surface derived from holding acidic food such as milk. Other finds in this artefact-rich pit included five well-preserved cylindrical fired-clay weights. The weights are of a type made and used during the Middle and Late Bronze Age periods (see *Clay Weights*). The quantity and condition of the weights suggests that they were buried deliberately, either for discard or concealment.

Plate 67 Section through rubbish pit [7613].

One other find from the pit deserves mention. It was a Late Middle Bronze Age (CP3B) sherd from a cooking pot with carbonised residue adhering to its interior. Although the residue was dated to 1396-1216 cal BC (at 95.4% probability), (measured 14C Age: 3040+/- 30 BP), (Beta-452956), which places it comfortably within the Late Middle Bronze Age (see *Appendix E*), the sherd must be residual, having been redeposited in the later feature.

A retained soil sample generated mainly fire-cracked pebbles, burnt flint, charred barley grain, charred seeds, fired clay and burnt animal bone, including a number of burnt cattle-sized rib bones suggestive of food-related activities in the vicinity.

Pits 6130, 6105 & 6096, Field 56

Three pits found in close proximity within former Field 56 identify an area of concentrated activity during this period. Sub-circular pit [6130] was 3.5m across and over 1m deep. It contained numerous slumping and silting horizons, followed by what appeared to be a rapid episode of backfilling. From this backfill was recovered a sherd of CP4B pottery from a small, long-necked bowl (see *Prehistoric Pottery Cat. No.* 78). The vessel is similar in form to Late Bronze Age / Early Iron Age examples from Fengate. A large quantity of animal bone (predominantly horse, and including a horse's skull) was also found (Rackham and Giorgi 2016). Following abandonment, the pit appears to have been re-utilised as a refuse pit for animal carcasses.

Close by was an even larger pit [6105], measuring an impressive 5m in diameter and 1.5m deep (Figure 52). Its eastern side was distinctly stepped, perhaps to facilitate human access. The pit contained one of the most complex pit-fill sequences found during the works, represented by 21 successive 'tip' deposits, appearing to represent deliberate infilling over a short period of time. A number of these deposits contained the visible, but highly degraded remains of what appeared to have been rounded wooden poles and posts, but these were too badly decayed to be recovered. One of the lower tips (6115) contained pottery dated to the Late Bronze Age / Early Iron Age (CP4B). Higher up in the sequence, fill (6110) contained part of a small pottery vessel with a burnished exterior and pitted interior (see *Prehistoric Pottery Cat. No.* 76); and three CP4B sherds slightly affected by brine (see *Prehistoric Pottery*). These included fragments from two small, flat-based jars, produced in two different fabrics.

These particular vessels provide a unique insight into their use and the people that made them. Analysis of the two fabrics found that one of them was produced using grog derived from crushed sherds of the other's type, which suggests that the two vessels are separated chronologically by a generation of vessel-making, possibly by a family of potters (see *Prehistoric Pottery*). Four sherds of briquetage from two different containers were also recovered from the fill containing the oldest jar (6110), indicating the local movement of salt containers (with or without their contents) to the Site for use, rather than actual production (see *Briquetage*). Other finds included a mixed assemblage of animal bone, including cattle, horse and pig.

Between the two aforementioned larger pits was a small sub-circular pit [6096] with fairly steep sides (Figure 52). Although it only contained two fills, these were rather

Plate 68 Quarter section through Field 68's sump pit [11165/11166].

distinctive. The primary fill (6095) was a fine-grained silt, dark grey in colour. It contained frequent flecks of charcoal and burnt clay fragments, animal bone and a single pottery sherd from a short-neck bowl assigned to CP4B (see *Prehistoric Pottery Cat. No.* 75). The upper fill was of similar composition, with more frequent charcoal. As the sides of the pit were not scorched, it appears that the feature functioned as a simple domestic rubbish pit.

Cooking pits 7230 & 7232, Field 62

In Field 62 were two shallow oval pits [7230] and [7232] with bowl-like profiles. Both contained charcoal-rich silty grey fills, interspersed with angular and cracked flint and pebbles (Figure 52). The fill of the first pit contained a burnt bone, four redeposited sherds of very abraded Beaker pottery and an interesting fragment from a Late Bronze Age/Early Iron Age red-slipped shouldered vessel that was most likely imported (see *Prehistoric Pottery Cat. No.* 79). These pits, with their broken pot-boiler pebbles, appear to represent *ad hoc* cooking pits.

Sump pit 11165, Field 68

This was a 7m-wide 'sump pit' or waterhole that, although undated in terms of finds, truncated Late Bronze Age ditch terminus G11798, and therefore probably relates to Period 4B (Plate 68). A retained sample from secondary fill (11175) produced a well-preserved waterlogged flot containing charred grain, chaff and grass; abundant wood and plant remains including hazelnut and a high number of uncharred elder and blackberry/raspberry seeds. Significantly, this flot revealed rare evidence for crop processing (rather than domestic waste), with over ten times as many fragments of chaff than grain recovered from the processed sample. The very abundant charcoal fragments and fire-cracked pebbles are attributed to domestic fire activity (Rackham *et al.* 2019). Pollen recovered from one of the samples contained high numbers of *Alnus* (alder) and *Salix* (willow), (see *Pollen*).

PERIOD 5: MIDDLE TO LATE IRON AGE (EARLY LA TÈNE)

Following the Late Bronze Age / Early Iron Age (*c.* 800-500 BC) retreat onto higher ground, settlement and industrial activity depositing material-culture debris continued (predominantly) on the Site's western fringes, towards the end of the 6th century BC (Figure 48). Radiocarbon dating and pottery analysis have enabled the chronological division of dated features into Early La Tène Iron Age 1 (CP5A: 511-207 cal BC) and Early La Tène Iron Age 2 (CP5B: 350-53 cal BC). This distinction of two sub-phases is also geographical in terms of feature location, showing the movement of associated activity zones over time.

It appears that initially (in Period 5A) numerous pits and a possible temporary timber shelter were created on the western edge of the Site, almost certainly extending beyond this to the west. Three of these features produced pottery representative of the end of the Early Iron Age into the Middle Iron Age period (Ceramic Phase 5A). Based on this, and slightly overlapping radiocarbon dates, these features appear to slightly pre-date a metalsmithing complex located 500m further south.

The Period 5B 'smithy' was a rather unique, square ditched enclosure containing a single round-house marked by an eaves-drip ring-gully. Whilst no features were identified inside the building, a large pit just outside the entrance contained a wealth of artefactual and environmental information. In and around the complex was a significant quantity of metalworking debris, showing that this was the site of a metalworking smithy. Radiocarbon dating, combined with pottery recovered from the enclosure ditch and twin-phase ring-gully dated this activity to between the mid-4th and mid-1st centuries BC,

consistent with the Middle to Late Iron Age. In close proximity to the smithy were two cremation burials and a number of ditches, all of which are deemed to be contemporary.

PERIOD 5A: EARLY LA TÈNE IRON AGE 1 (511-207 CAL BC)

Pits

Pits 3005, 3008, 3035 & 3037, Field 26

In the NE corner of former Field 26 were these four small circular pits, associated with several undated post-holes [3003], [3010] and [3012] (Figure 55). All the pits were of similar dimensions, being 1m across and just 0.25m deep. The quantity of pottery from three of the pits suggests some form of domestic activity in the immediate vicinity. Collectively, they may represent a small structure (although no built form could be discerned), associated with cooking and possibly small-scale metalworking activities (Plate 69). Whilst the bulk of the pottery was typologically of the Early La Tène Iron Age 1 period, carbonised residue on the interior of one vessel fragment produced a radiocarbon date ranging from the end of the Early Iron Age through to the Middle Iron Age (see below).

Pit [3005] contained charred animal bone and pottery from seven different vessels, four of which are illustrated (Figure 65, nos 80-83). They include a round-bodied jar decorated with fingertip impressions and a small jar with significant 'finger-wiping' on the exterior. The sherd from the fingertip-decorated vessel, which had been used as a cooking pot (see *Prehistoric Pottery Cat. No.* 80), was associated with a carbonised cereal grain (*Hordeum*) from primary pit fill (3006) which returned a radiocarbon date of 511-211 cal BC (SUERC-47170), which brackets this period (see *Appendix E*). A soil sample from the primary fill produced CP5A pottery fragments and burnt animal bone from rodent, sheep and pig. Charred barley and wheat grains, and fragments of charred hazelnut were also recovered. A further sample from secondary fill (3007), contained similar pottery sherds as well as fragments of slag/prill, the latter suggesting small scale metalworking. Charred barley and wheat grains (including one of emmer), barley chaff, hazel, wild oat and burnt and butchered animal bone were also found (see *Animal Bone*; *Carbonised Plant Macrofossils*).

Nearby pit [3008] contained sherds from seven CP5A pottery vessels. These included two different, highly burnished bowls, one of which was made from a distinctive shell and grog-tempered fabric (see *Prehistoric Pottery Cat. No.* 84); a sandy fabric cooking pot, and a very fine shell-gritted vessel. A burned hazelnut shell from the single fill (3009) of this pit was radiocarbon dated to 406-234 cal BC (SUERC-89318), which places it securely within the Early La Tène period, indicating that this pit was used as a rubbish receptacle between the end of the 5th and the late 3rd centuries BC (see *Appendix E*).

Plate 69 Collection of pits (3005, 3008) and post holes (3003, 3010, 3012) believed to be part of a structure of Early Iron Age date.

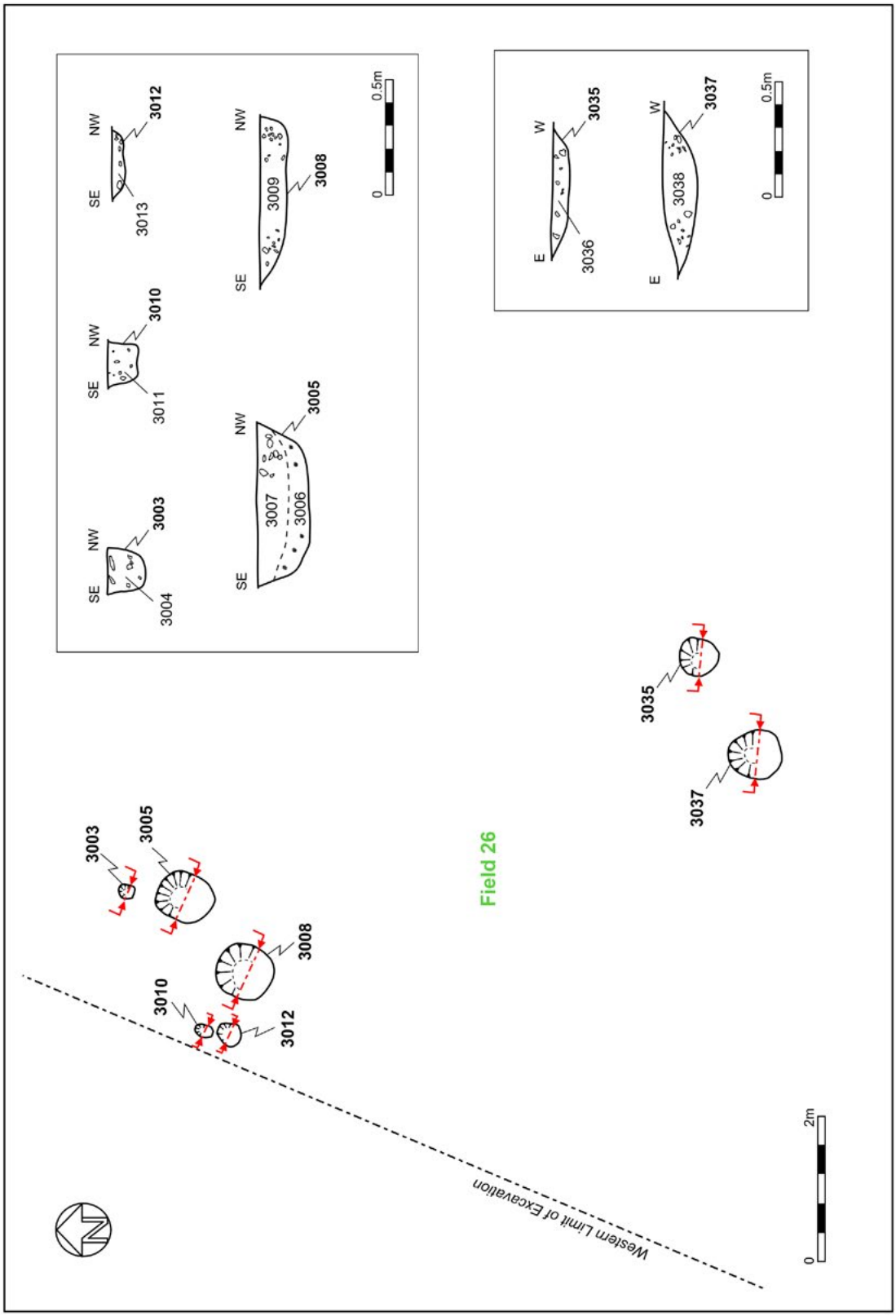

Figure 55 Early La Tène (Period 5A) Iron Age pit and post-holes.

A retained sample from pit fill (3009) contained 21 pottery sherds, including six abraded fragments from a redeposited Beaker (see *Prehistoric Pottery Cat. No.* 24), together with the burnt bones of pig, sheep, water vole and wood mouse (Rackham and Giorgi 2015). In addition, small fragments of slag/ prill were identified, as well as 'fuel ash'. The charcoal was dominated by oak (*Quercus* sp.), with a single fragment of elder (*Sambucus* sp.) - the only fragment of this species from the Site.

Nearby pit [3037] contained a single silt fill with visible charcoal flecking. Thirteen redeposited sherds (27g) from four Beakers (see *Prehistoric Pottery Cat*. 28), suggests that when the pit was dug, it disturbed an earlier Beaker feature. Less abraded sherds from an Early La Tène Iron Age 1 (CP5A) short-necked jar decorated with finger-nail impressions (see *Prehistoric Pottery Cat. No.* 85) were also found. Like the aforementioned pits, this feature also contained charcoal, charred wheat and barley grains, and burnt hazelnuts.

This rather isolated Early La Tène 1 pit group displays clear evidence for crop processing activities, as demonstrated by its elevated abundance of cereal grain, the presence of cereal chaff and the increased diversity of species in the accompanying charred weed seed assemblages.

Pit group 6081, 6085, 6100 & 6102, Field 56

Four small pits on the southern edge of Field 56 were undated but are assigned to this general period by association with one feature [6102], which cut Late Bronze Age/ Early Iron Age quarry pit [6105]. The pits are grouped due to their proximity and similar fills, some of which were notable. The single fill of shallow scoop [6081] was composed of 30% charcoal and dark blue-grey clay, suggesting *in situ* burning within a scoop that later became waterlogged. Similar fills indicative of silting and waterlogging recorded in nearby larger pits [6085], [6100] and [6102] place these features as a group.

PERIOD 5B: EARLY LA TÈNE IRON AGE 2 (350-53 CAL BC)

Pits and Waterholes

Large pit 5234, Field 36

This large, isolated pit is assigned to this sub-period by the presence of Early La Tène Iron Age 2 pottery sherds (CP5B) within its fills. Measuring an impressive 7m across and 1.5m deep, the pit had steeply sloping sides, a flat base and seven sandy fills (Figure 56).

Four fills produced 16 large, unabraded pottery sherds totalling 1814g, with one sherd alone weighing 751g. These represented six vessels made of shell-rich fabrics. Two different fills shared two joining sherds from a very large barrel-shaped jar (see *Prehistoric Pottery Cat. No.* 102). This vessel was decorated with both criss-cross incised scoring and finger-nail slashes across the exterior rim. There was no visible evidence of use on either surface. This, along with its impressive size, suggests that the vessel had been used as a storage jar of non-acidic foodstuffs (see *Prehistoric Pottery*).

Animal bone was recovered from most fills, including numerous remains of cattle and horse (see Animal Bone). Other finds included a square loomweight of 'Bronze Age style' that had been reused as a pedestal in salt production. The fragment was very worn and abraded, having been broken, abandoned and ultimately re-deposited into the Iron Age feature.

Retained soil samples suggested disturbed ground close to wetland. Also recovered were fragments of flake hammerscale indicative of metalsmithing and fragments of fired clay/wattle and daub. It is very likely that the (rapid) infilling of this large pit with domestic refuse was more or less contemporary with the activities taking place at the nearby 'smithy' (see below).

Waterholes 8088, Field 59

This large waterhole was identified in the northern part of Field 59. It contained a slumped edge fill and a uniform grey silt deposit, suggesting that it had probably silted in naturally. The shallow upper fill (8095) contained an unusual pottery assemblage that included a small proto-saucepan pot (see *Prehistoric Pottery Cat. No.* 103), assigned to CP5B, the Early La Tène Iron Age 2. A single fragment of briquetage pedestal was also recovered (see *Briquetage*). The pit also contained a few fragments of animal bone, fire-cracked pebbles and three flint flakes suggestive of an activity area.

Waterhole 8351, Field 65

This large, outlying water-related feature was located in the very SW corner of Field 65, west of Drove 5. Its three fills had been heavily waterlogged, providing a valuable insight into environmental conditions at the time. Primary fill (8352) was a distinctive, dark brown organic deposit containing pieces of wood. An associated soil sample produced a high frequency and wide species diversity of botanical remains indicative of a variety of local environments. These included scrub/hedgerow species (dogwood, hawthorn, elder); disturbed or waste ground species (nettle, chickweed, poppy); and wet/grassland species (sedge, grasses). The sample also contained moss, large amounts of wood (including large fragments of roundwood/ twigs), occasional charcoal, snails and insect remains (Rackham and Giorgi 2016). A single crucial CP5B pottery sherd was also recovered, allowing the pit to be dated to this latest sub-period. One of the intermediate fills contained a good assemblage of sheep/goat bones. It seems likely that this feature was dug as a deep

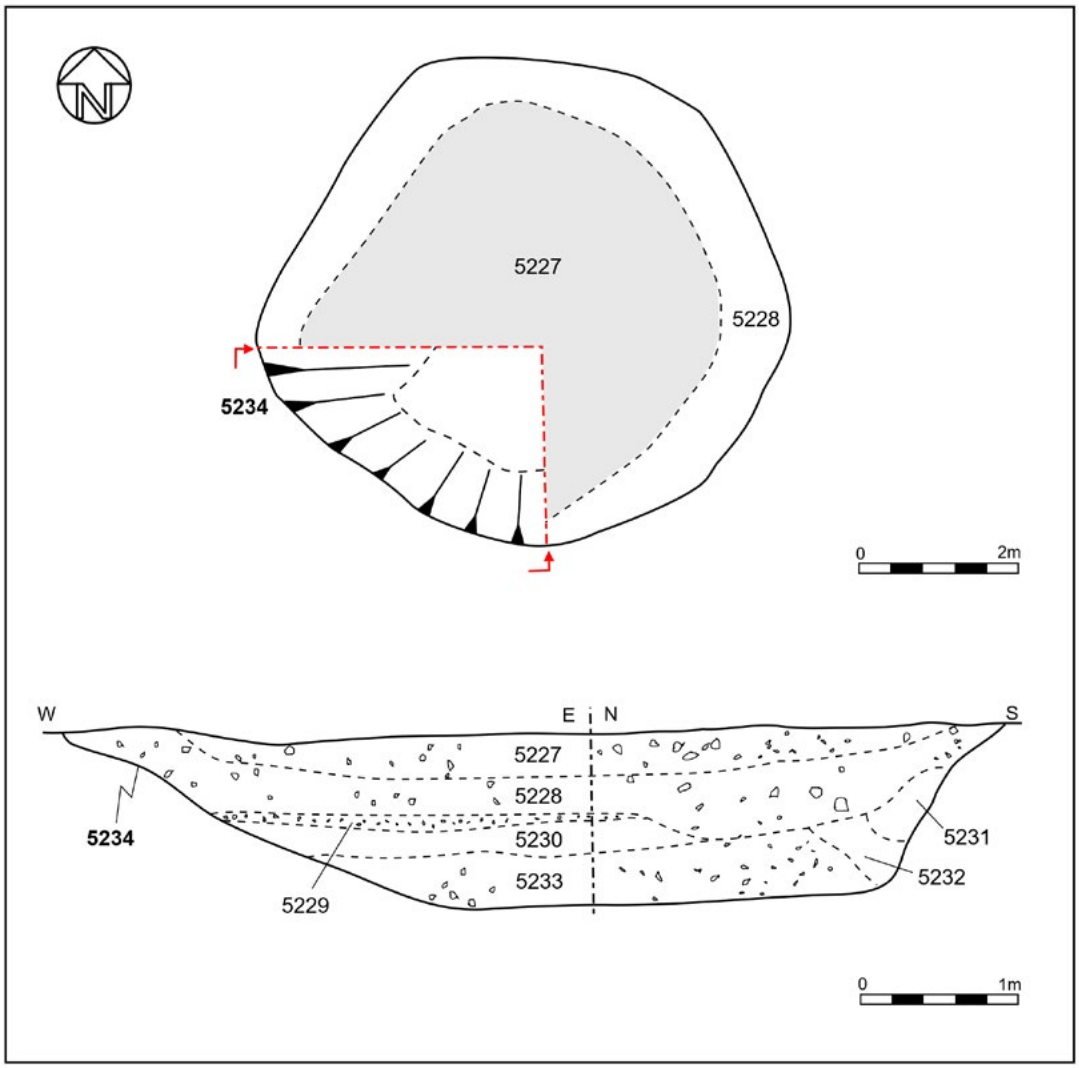

Figure 56 Pit [5234]: plan and section.

waterhole for collecting and storing water, after which it was used as a convenient receptacle for waste.

The Smithy Complex, Field 33

A small, isolated enclosure defined by a square ditch circuit was discovered within former Field 33, to the north of Drove 4. The square enclosure contained a single circular building with an eaves-drip gully, which suggests that it was roofed. This small enclosed activity area may have been established as an outlier to the Iron Age settlement that is believed to have occupied an area to the SW, around the present Bar Pasture Farm (Scheduled Monument 20803).

The square enclosure measured 30m x 30m, and was orientated NW/ SE (Figure 57). Its defining ditch was continuous, with no identified breaks and no obvious entrance. The ditch varied along its length, being more substantial along the southern edge (1.4m wide by 0.5m deep) and slighter along the northern and western sides (0.7m wide by 0.3m deep). The number of identified fills in the circuit varied between one and four.

Unabraded shell-gritted pottery assigned to CP5B was recovered from several excavated ditch segments and one of the retained soil samples. NW corner cut [5088] (fill 5087) contained three large, joining sherds from the lower half of a burnished globular bowl, whilst fill (5094) of SE corner cut [5097] contained decorated and undecorated fragments. Large quantities of smithing slag were also recovered from most of the excavated ditch fills.

Bulk soil samples were retained from two of the enclosure ditch sections. That from NW corner fill (5087), contained a small amount of cremated human bone representing what is likely to be a disturbed burial (see *Human Bone*). Another from SE corner fill (5096), contained charcoal fragments including gorse (*Ulex europaeus*); fragments of burnt bone, crucible sherds (12g) and small amounts of hammerscale.

Plate 70 Massive Iron Age pit [5234] during excavation.

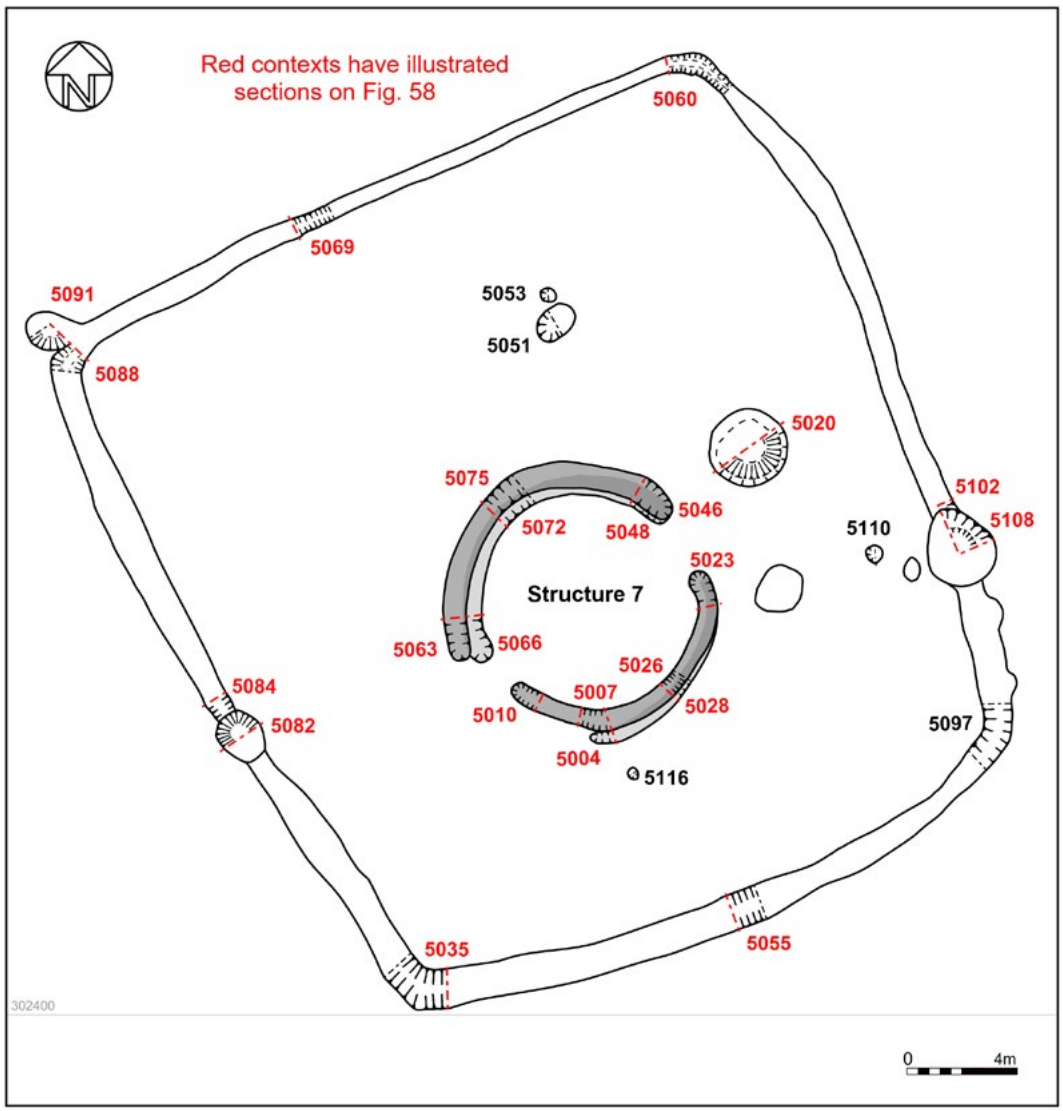

Figure 57 The Early La Tène Iron Age Smithy.

Enclosure drainage sump pits 5082, 5091 & 5108, Field 33
The smithy enclosure ditch was interrupted by the insertion of three pits: [5082] midway along the west side, [5091] in the NW corner and [5108] cut into the southern half of the east side. Early La Tène Iron Age 2 pottery was recovered from each of these pits, showing them to be broadly contemporary with the enclosure ditch that they truncated. It is likely that they represent drainage sumps with the aim of keeping the curtilage of the enclosure dry.

Pit [5082] was sub-circular with very steep sides and a conical base. It measured 2m in diameter and 1m deep. It contained six fills being a variety of compacted silty sands and gravels, and grey silts. One of the intermediate fills (5079) contained three sherds of shell-gritted CP5B pottery from a barrel-shaped jar (see *Prehistoric Pottery Cat. No.* 100).

Corner pit [5091] was 2m across and 0.5m deep with the usual silty clay fills and gravel lenses. The primary fill (5090) contained two relatively large sherds of 'Scored Ware' pottery assigned to CP5B. It was interesting to note that one of the sherds from an undecorated globular-profile bowl (see *Prehistoric Pottery Cat. No.* 101), co-joined a sherd (see *Prehistoric Pottery Cat. No.* 92), recovered from pit [5020] within the enclosure, suggesting that the two features had functioned at the same time.

Sump-pit [5108] was oval, with steep sides and a slight step to a flat base. It appeared to have been cleaned out on several occasions, with the final cut clearly truncating the fills of the enclosure ditch. It contained five fills being the usual mid-brown clay silts and sands with various gravel lenses. The latest fill (5103), contained a single sherd of CP5B pottery and animal bone. The general lack of domestic rubbish from these pits suggests that they silted up over time, away from areas of settlement.

Structure 7: The Smithy Hut
Almost centrally placed within the enclosure were the remains of a building defined by two arcs of an eaves-drip gully (Plate 71). The gullies formed a discontinuous ring *c.* 10m in diameter, with opposed entrances to the SW and NE (Figure 57). Both gullies had been recut on at least one occasion, with the southern arc extended further westwards to narrow the SE entrance.

The earlier ring-gully
The original arrangement consisted of a northern and southern gully of dissimilar length. The northern gully occupied almost half of the circumference, whereas

Plate 71 The Iron Age 'smithy' during excavation.

the southern gully was far shorter. The opposing arcs created two entrances; that at the SW measured 4.75m across, whilst that to the NE was just 2m.

These early gullies contained two fills, with the lower being a compacted grey silty sand and the upper a grey-brown sandy-silt with conspicuous charcoal flecking. Both measured 0.5m wide and 0.4m deep (Figure 58). Pottery of Early La Tène Iron Age 2 type was recovered from both termini of the northern gully, comprising an impressive (purposeful?) 77 sherds (848g) from the east butt-end [5048] but only a single sherd (62g) from the west butt-end [5066]. A fragment of flat-based, decorated pottery vessel from fill (5047) had held an acidic liquid at some time in its history and had been scrubbed clean (see *Prehistoric Pottery Cat. No.* 97). The only potsherd from ring-gully fill (5064) was the complete disc of a small (80mm) diameter flat-based cook-pot covered with carbonised encrustation (see *Prehistoric Pottery Cat. No.* PRN 4242). A radiocarbon date obtained from the residue was dated to 486-207 cal BC at 95.4% probability (SUERC-47176), (see *Appendix E*).

Morris (see *Prehistoric Pottery*), has observed that curiously, the mudstone fabric of this vessel base is one typical of Ceramic Phase 4B pottery, even though the C14 result is virtually identical to two other C14 dates that were associated directly on, or indirectly with, pottery that is assigned to the Early Iron Age period. Thus, there are three 'end of the Early Iron Age through Middle Iron Age' dates which together span 511-207 cal BC and are associated with Early Iron Age type pottery; and one Middle to Late Iron Age date which covers 350-53 cal BC and is associated with Early La Tène Iron Age 2 pottery. There is nothing between the pottery vessels which might suggest that the infilling of the earlier phase of the central building was anything but contemporary with the infilling of the surrounding enclosure ditch.

The later ring-gully

The position of the two entrances was largely retained during recutting of the opposing gullies, although they were made more equal in size by lengthening the southern gully to the SW. Generally, the recut gully was larger than the one it replaced, measuring on average 1m wide and 0.5m deep (Figure 58).

The gullies contained two fills; the lower being a firm mid-grey clay-sand containing small stones and much charcoal flecking and the upper fill being a darker grey-brown sandy silt containing many heat-affected stones and large fragments of charcoal.

Pottery assigned to Ceramic Period 5B was recovered from all four recut terminals, as well as from intermediate gully sections. The great majority of the pottery recovered (801g) came from the upper fills.

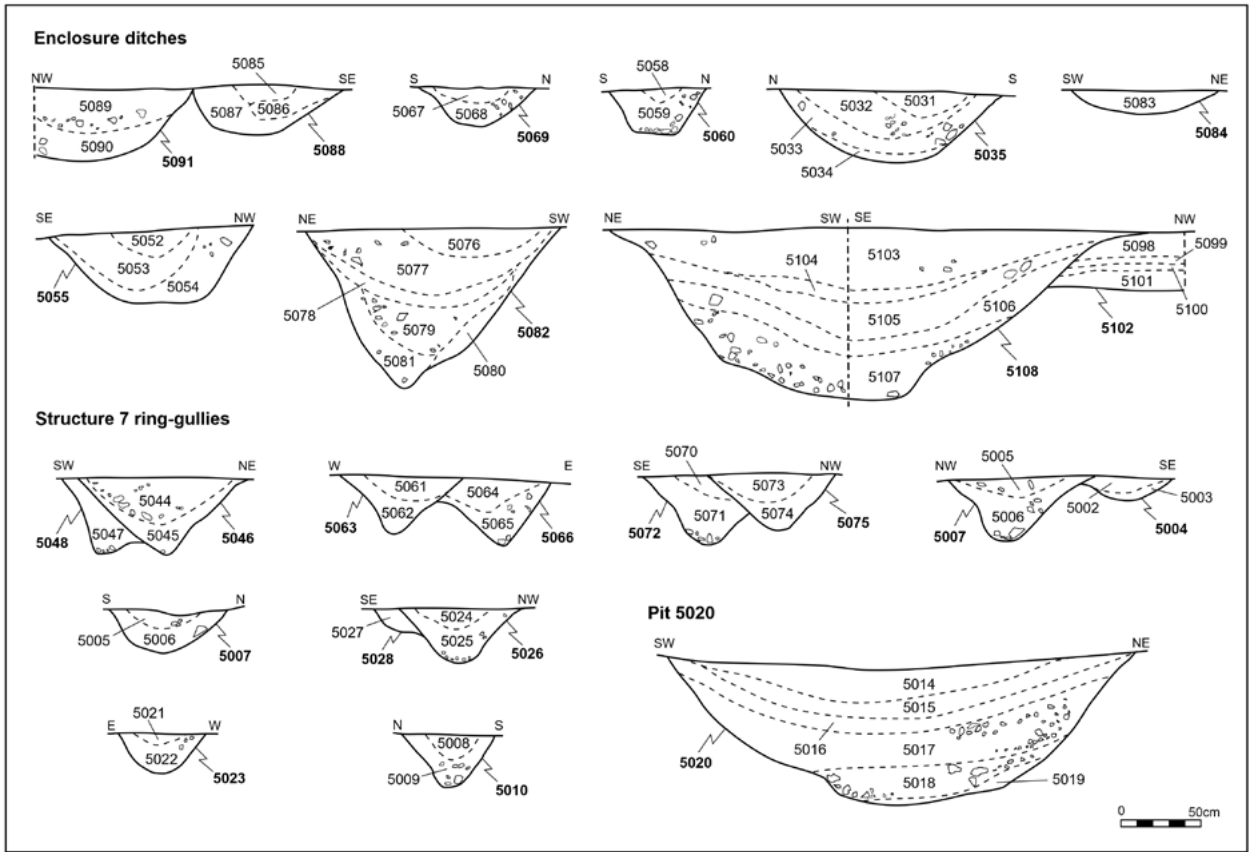

Figure 58 Sections through the Iron Age industrial enclosure, its associated smithy and artefact-rich pit [5020].

Plate 72 The later ring gully of Structure 7, showing metalworking debris in upper fill.

Just a single sherd (4g) was recovered from the lower fill (5022). Cumulatively, the southern arc contained pottery from five vessels, including a perforated Scored Ware sherd (see *Prehistoric Pottery Cat. No.* 95 and 96); whilst the northern arc contained sherds from at least 13 vessels (see *Prehistoric Pottery Cat. No.* 98 and 99). The pottery types from the two different gully phases are remarkably similar in nature, but the number of individual vessels represented differs, with the later assemblage being nine times greater.

The upper fills of the gully termini also contained a range of metalworking debris. Hammerscale (flake and spheroidal) and smithing slag was present in all excavated sections, with fragments of hearth lining and furnace wall being present in three segments. A fragment of crucible spout (18g) and 'tuyere plate' was recovered from NE terminal fill (5044), together with a small metal rod or shaft. XRF analysis of the crucible spout showed that alloys containing copper, tin and lead were melted in the crucibles (see *Metalworking Residues and Appendix B*).

Additional crucible fragments and a further 'tuyere plate' came from fill (5021) and a proto-hearth bottom and more crucible fragments were recovered from SE terminal fill (5061). The evidence clearly identifies the site of an Iron Age smithy. The plotted distribution argues for a metalworking 'shop' within the ring-gully arrangement, which operated for a significant period.

Bulk soil samples were taken from the eastern opposing termini of the later gully recuts. Both were rich in charcoal (including gorse), with one sample containing pottery fragments from a CP5B barrel-shaped jar (see *Prehistoric Pottery Cat. No.* 95). Also recovered were crucible fragments and waste furnace material, heated sandstone, abundant flake hammerscale and smithing slag. The material represents the fuel waste from metalsmithing. A radiocarbon date obtained from a fragment of *Quercus sp*. roundwood charcoal was dated to 350-53 cal BC at 95.4% probability (SUERC-89322), which corresponds with the Late Iron Age (see *Appendix E* and *Table 1*).

No internal features, such as post-holes or post-pits, were identified that might suggest the presence of any internal structures; neither was there any evidence for a compacted working surface, which is sometimes found on smithing sites (Tylecote 1986). The lack of internal features no doubt reflects the level of recent plough truncation. Two post-holes were located just outside of the structure, but they were slight and uninformative. They may mark the site of a light fence or panel which could have protected the south side from prevailing winds; alternatively, the recovery of tuyere plate fragments from the two eastern gully terminals might suggest the location of fixed bellows.

Features within the Smithy Complex

Pit 5020, Field 33

Within the enclosure, and just outside the eastern entrance to the smithy hut, was a large circular pit measuring 3m across and 1m deep (Figures 57 and 58). It contained six fills, ranging from primary light grey silts, through intermediate concreted sandy-gravels to firm upper brown silt-clays with frequent charcoal inclusions (Plate 73). It was a finds-rich pit, containing a large assemblage of Iron Age pottery, smithing slag, hearth lining, a proto-hearth base, fragments of tuyere plate, decorated animal bone with ring and dot carving (Plate 74), an assemblage of horse bone and the moderately well preserved rough-outs of two carved birch-wood bowls (Plates 79 and 80), one with faint traces of toolmarks (see *Waterlogged Wood*). Similar rough-outs that have been partially prepared for turning or carving have been recovered from several sites from the Late Iron Age onwards, making this a possibly early example (Earwood 1993). The infilling of the pit was contemporary with that of the central ring-gully of the smithy.

The upper three pit fills all contained Early La Tène Iron Age 2 (CP5B) pottery totalling 753g. A total of 36 sherds from 20 vessels were identified, of which three

Plate 73 Early La Tène pit [5020] associated with the smithy

Plate 74 Decorated animal bone from Iron Age pit [5020], with close up of detail.

vessels were undecorated (see *Prehistoric Pottery Cat. No.* 89, 92 and 94). Scored Ware examples include both large and small jars as well as a small diameter jar/bowl and two other vessels suggestive of similar sizes. Upper fill (5014) contained sherds from a large barrel-shaped, decorated jar; and slack-shaped and necked jars (see *Prehistoric Pottery Cat. No.* 86-92). The fabric, form, wall thickness, surface treatment and firing condition of the globular bowl rim sherds in this pit, including a small jar from penultimate fill (5015), (see *Prehistoric Pottery Cat. No.* 93) are very similar, if not identical to the conjoining base and body sherds of another globular bowl recovered from enclosure sump [5091] (see *Prehistoric Pottery Cat. No.* 101). While it is not possible to demonstrate that they derive from the same vessel, Morris believes it is worth considering that they were made by the same potter.

Bulk soil samples were taken from two of the pit's richer fills. That from pit [5020]'s upper fill (5014) contained CP5B pottery fragments from a small, slack-shaped jar (see *Prehistoric Pottery Cat. No.* 91); pieces of furnace or crucible (126g), very abundant flake hammerscale and numerous slag fragments. Traces of charred grain (spelt wheat) and

pieces of burnt animal bone were also recovered, together with the fragment of an Iron Age 'ribbed' brooch. That from middle pit fill (5016) was charcoal-rich and produced large amounts of hammerscale and slag, indicating waste fuel from a forge (see *Metalworking Residues*). The pit clearly related to the functioning of the smithy, and may have been dug to store water needed in the iron-smithing process. Following disuse of the smithy, the feature (along with the complex's other features) was filled with the waste material associated with the former metalworking activities.

The distribution of metalworking material within the pit is of interest. Upper fill (5014) contained several large fragments of smithing slag, together with a partially-formed hearth base weighing more than a kilogram. In addition, both flake and spheroidal hammerscale was present in quite significant quantities, as well as a single crucible fragment. Analysis of this fragment identified zinc at a minor level, which is not expected for the Iron Age, however, the zinc may be occurring at trace-level within the lead (see *Metalworking Residues*). Intermediate fill (5016) also contained hammerscale, but the quantity was far less than that identified for fill (5014). Tertiary fill (5017) contained evidence of a hearth-lining. This comprised one large fragment and seven smaller fragments of a 'tuyere' plate, the sacrificial clay-pad through which the air is blown into the hearth. The largest fragment, which formed approximately one quarter of the pad, had surviving sides approximately 7cm long. This would mean the whole pad was about 14cm across, indicative of a reasonably sized hearth. The blow-hole did not survive in the fragment. This fill also contained many additional fragments of fired clay. Some of these pieces could be mould material, although no diagnostic mould fragments were identified.

Cremation burials, Field 33

Located 7m south of the smithy enclosure were two small pits, each of which contained small fragments of cremated human bone (see *Human Bone*). The proximity of the features to the enclosure may indicate that they are also of Iron Age date, although this is not certain. No pottery was recovered from either feature. It is likely that the pits were intended for the purpose of containing the cremations. Iron Age cremations are relatively rare in most parts of England other than the SE, after the 6th century BC (Cunliffe 1991: 511; and see *Human Bone*).

Cremation 5287

This was a circular pit with steep sides and flat base measuring 0.6m in diameter and just 0.2m deep. The basal fill (5286) was firm dark grey silty-sand with a high proportion of ash and visible bone fragments. A retained soil sample recovered 134g of burnt human bone. Botanical remains were represented by tuber fragments from onion couch grass, which is often thought to have been used as tinder.

The quantity of human bone recovered from the feature was very small, accounting for a little over 8.2% of the expected mean quantity for a cremation. Wahl (1982: 25) found that archaeologically recovered remains of cremated adults tend to weigh less than the expected mean quantity (between 250g and 2500g) as a result of the commonly practised custom of selecting only some of the cremated bone from the pyre for inclusion in the burial, thereby representing a symbolic, or token, interment. It is possible that these deposits represent token burials. Enough calcined bone was recovered from this feature to determine a minimum age for the individual, but not sex. A fused distal metacarpal (hand bone) indicated that the individual was at least fourteen years of age when they died.

Cremation 5284

Similar sized pit [5284] contained a second cremation deposit (5283). This feature was sub-circular with irregular sides and base, and contained two fills. The lower, basal fill was again a dark grey ashy silty-sand from which a calcined and fragmented possible human bone was recovered (see *Animal Bone*). A soil sample yielded another 10.5g of human burnt bone and a single uncharred seed. The very low level of bone represented, could again indicate a token burial. The age or sex of the cremated individual could not be determined from the small quantity of material recovered.

Field Boundaries, fields 37-39

To the south of the Iron Age smithy, in the vicinity of former fields 37-39 were three field boundaries that all post-dated the Bronze Age field system. This factor, together with their orientation and proximity to the smithy complex, suggested that they could be of Iron Age date, although no finds were recovered from the numerous excavated sections.

Archaeological evidence of Iron Age date was largely restricted to the SW corner of the quarry, just to the east of the present-day Bar Pasture Farm. Here the land is at a slightly higher elevation to the expanse of fenland to the east. It is believed that in the vicinity of Bar Pasture Farm, a Middle and Later Iron Age settlement (with associated 'outlying' activities) developed along the fen-edge margin. The archaeology identified represents the eastern-most 'frontier' of Iron Age activity within the wider Pode Hole landscape.

Chapter 4

Material Culture

Introduction

Archaeological features at Bar Pasture tended to be artefact-poor. This is particularly true for field ditches of all periods, which contained very low quantities of finds. Ultimately, however, because of the large scale of the excavation area, significant numbers of artefacts were recovered, with the pottery assemblage (dating from the Early Neolithic period to the Mid-Late Iron Age) being particularly extensive and informative. This contrasted with the lesser amounts of other ceramic materials recovered, which included a moderate quantity of fired clay fragments, the majority derived from Beaker and Early Bronze Age contexts; and a small number of clay weights - the majority of cylindrical form. Also recovered from a handful of features were a modest number of briquetage fragments derived from salt-making, although no direct evidence of salt production was found.

A modest assemblage of struck flint was also recovered from the Site. Individual flint artefacts dated from the Mesolithic period onwards, with the majority assigned to the Beaker period and Early Bronze Age. A large number of the struck flints were unstratified, residual, or redeposited in later features. Worked stone is represented by five querns found in features assigned from the Middle Bronze Age to the Late Bronze Age. The final artefact category (aside from animal bone that is discussed in the next chapter) relates to material classified as 'slag', which was only recovered from the SW extent of the Site in association with the Iron Age smithy complex. Unusually, very few 'small finds' were recovered across the *c*. 55 ha Site. Indeed, the only recorded small-finds related to several pieces of worked animal bone. Aside from the slag, no metalwork was found during the entire excavations. The detailed analyses of the various artefact groups are presented below.

PREHISTORIC POTTERY

Elaine L Morris

A total of 1668 sherds of prehistoric pottery (weighing 17,781 grammes) was recovered from the Site. This assemblage includes sherds from Neolithic Developed Bowl, Peterborough Wares, and Grooved Wares to Beakers, Collared Urn-type, Food Vessel, and Biconical vessels, and Deverel-Rimbury Barrel and Bucket-type pots, Post-Deverel-Rimbury Late Bronze Age jars, Late Bronze Age-Early Iron Age jars and bowls and a range of Early La Tène Iron Age vessels. Together this material represents funerary, settlement and casual activity within the Bar Pasture landscape for a period of over 3500 years, potentially spanning the late fourth millennium to near the end of the first millennium BC.

Introduction

A significant assemblage of prehistoric pottery, including sherds from 271 vessels dating from the Neolithic, Bronze Age and Iron Age, was examined in detail (Table 2). A great variety of grog-tempered, flint-tempered, quartz sand-bearing and shell-gritted wares were identified, and nearly all are likely to have been local products. The condition of the pottery is highly varied with four very large sherds from two Iron Age vessels, weighing between 296g and 751g each, as well as flakes (with only one surface present) weighing no more than 1g each from vessels of nearly every ceramic period. Partial profiles of some vessels were able to be reconstructed. Several sherds had been affected by the deposition of iron concretions on the surfaces and broken edges which often attracted quartz sand grains, while sherds from the Site's SW extremity were often ironised throughout; both conditions making examination and classification of the fabrics challenging. In addition, some of the Late Neolithic-Early Bronze Age Beaker vessels had been altered from more traditional orange-coloured fired clays to an ashy-white appearance. This may have been as a result of proximity to a domestic hearth. All of the pottery had been sensitively processed after initial excavation, demonstrated by the presence of carbonised residues adhering to the interior of several sherds.

The assemblage has been analysed and recorded according to the Prehistoric Ceramics Research Group guidelines (PCRG 2010). Data recorded includes: number of sherds, weight of sherds in grammes, fabric group based on the dominant inclusions (alpha code) and type based on variation of that inclusion (numerical code), rim/base/part of profile/appendage form, diameter and percentage of rim or base if present, decoration method (alpha) and position on vessel (numeric), wall thickness code and evidence of use within each context and assigned a Pottery Record Number (PRN) in the

Ceramic Phase / sub-phase	Count	Weight	Number of vessels	Number of fabric types*	Ratio - fabrics to vessels
1A	30	81	1	1	1.0
1B	14	251	2	2	1.0
2A	431	1543	71	16	4.4
2B	286	1348	31	7	4.4
3A	70	971	13	3	4.3
3A/3B	2	25	2	1	2.0
3B	442	7812	26	4	6.5
4A	47	578	21	3	7.0
4B	51	470	23	11	2.1
5A	48	258	15	8	1.9
5B	247	4444	66	5	13.2
Total	***1668***	***17781***	***271***		

Table 2. Pottery from the Site by Ceramic Phase

database. All sherds with diagnostic rim, decoration or profile angle features have been sketched for archival record and illustration reference at 1:1. The details are available in the project archive, which will be deposited at Peterborough City Museum, with an electronic version available online via the Archaeology Data Service.

Fabrics

Early Neolithic

Pottery representative of the Early Neolithic period is characterised in the Bar Pasture assemblage by shell-rich fabrics (fabric types S1 and S2) (see Table 3, *Appendix A*). The single Early Neolithic Developed Bowl vessel is made from the coarser fabric S2, as is one of the Middle-Late Neolithic, Impressed/Peterborough Ware bowls made in the Ebbsfleet sub-style; the other example, a Mortlake sub-style vessel, was made from the finer fabric S1. These two fabric types are likely to have been created using local resources. The solid geology up to 15km around the Bar Pasture/ Pode Hole landscape contains Jurassic deposits of Inferior Oolite, Cornbrash and Oxford Clay bearing fossil shell in abundance and the latter is still used to make bricks (Hains and Horton 1969: 79-8 & 106, plate II). Clay is also a major component of the fen deposits (Chatwin 1961: 74-5, plate I). Shell-bearing fabrics were used during the earlier Neolithic to make both plain cooking pots, as the Developed Bowl example has demonstrated (with the presence of carbonised residue on its interior), as well as highly decorated open-form vessels suitable for use as drinking bowls or serving vessels suggested by the shapes of the Impressed Ware examples. Examples of Early Neolithic pottery were not found during the excavations at Pode Hole Quarry (Morris 2009a), but a single sherd from the decorated rim of a flint-tempered fabric Mortlake sub-style vessel was recovered from a feature at nearby Pode Hole Farm (Woodward 2001: 18-20, fig. 11, 5). This fabric also contained a significant amount of well-sorted, rounded iron ore grains and poorly-sorted, sizeable grains of quartz.

Final Neolithic/Early Bronze Age (Ceramic Phase 2A)

A type of pottery not found previously at Pode Hole Quarry or Pode Hole Farm is represented by fabric GD3, a grog-tempered fabric that contains significant amounts of both quartz sand and vacuoles naturally-occurring in the clay matrix. These vacuoles do not appear to have once held shell but rather plant matter stems and possibly even leaves. Several sherds made from this fabric are decorated with wide, incised lines and wedge-shaped impressions typical of Clacton-style Grooved Ware pottery of the Late Neolithic period (Brindley 1999: illus. 14.2, 19-21, 14.3, 13, 14.4, 3; Longworth *et al.* 1971; Piggott 1954) dated to the end of the fourth millennium through the first three quarters of the third millennium cal BC (Garwood 1999: illus. 15.5). The description of fabric GD3 is very similar to one of the Grooved Ware fabrics identified at Fengate (Pryor 1980: 95).

Sherds from a large number of Beakers (*c.* 69) (see Table 4, *Appendix A*) were found at Bar Pasture; far more than at Pode Hole Quarry (Morris 2009a: 65-6 & 68, fig. 4.1, 1-8) and Pode Hole Farm (Woodward 2001: 18-20, fig. 11, 1-4). Fourteen fabrics (DG1, DG2, G1, G2, G6, GD1, GD3, GDQ1, GQ1, GQ3, GS2, Q1, Q3 and SG1) were used to make only Late Neolithic-Early Bronze Age Beakers. Beakers were also made from four fabrics which were also used to make later Bronze Age vessels, including a finer vesicular fabric with smaller

shell-shaped vesicles (D2) which is likely to be simply vesicular S1, a grog-tempered and vesicular fabric with shell-shaped vesicles (GD2), and a finer shell-gritted fabric (S1). The cross-over in fabric similarity for these examples is likely due to the local resource availability of the shell-bearing clays used to make all of them. One fabric which is poorly-defined due to firing, extreme fragmentation or destructive post-deposition conditions such as ironisation (G99) had been used to make at least one decorated Beaker but may also represent other Early Bronze Age pottery. Thirteen of these 16 fabrics, excluding D2, used to make Beakers are grog-tempered, but the quantity and size of the grog fragments varies as does the clay matrix into which the grog was added. Some of the grog-tempered fabrics were coarseware types (DG1, G1, GD1, SG1) and others much finer (G2, G6, GD2, GDQ1, GQ1, GQ3). Several of the grog-tempered fabrics (DG1, DG2, GD1, GD3, GQD1, GS2, SG1) also contained fragments of shell (or shell-shaped vesicles), with or without quartz sand present, indicating that the fabrics derived from local resources. Two sandy fabrics, one fine to medium-grained in texture (Q1) and the other medium to coarse-grained (Q3), are also very likely to derive from local resources but for a different reason; both occurred as fired clay materials, one of which was used to make at least one wattle-and-daub structure during the Beaker phase of settlement activity (see *Fired Clay*). The use of anything but local clays, if available, to build hearths, ovens, walls or floors during the earlier prehistoric periods is unlikely. Overall, the ratio of fabric types to number of vessels is 4.4.

Early Bronze Age (Ceramic Phase 2B)

Sherds from a smaller number of vessels (31) dated to this period (see Table 4, *Appendix A*) have revealed a more limited range of fabrics as a result. All of the sherds in Ceramic Phase 2B are grog-tempered. Of the identified vessels, 21 (68%) had been made from the coarser grog-tempered fabric G1; a fabric that was not particularly common amongst the many fine vessels of the Final Neolithic to Early Bronze Age (9%). Collared, Food Vessel and Biconical-type vessels were all made from this coarseware fabric. In addition, one of the Collared Urn-type vessels had been made from a grog-tempered sandy fabric (GQ2) which had also been used to make Bar Pasture Beakers. A very thick-walled (13-14mm), flat base sherd had been made from very coarsely grog-tempered fabric G5; the choice of which may have been a practical response to the requirement of making such a robust vessel. A single sherd (13g) from a 9-10mm thick-walled vessel was made from a grog-tempered, shell-gritted fabric (GS2) which makes it likely to have been a local product. Five of the six fabrics used to make these 31 Early Bronze Age vessels had also been used during the previous period to make Beakers. The ratio of fabric types to number of vessels in Ceramic Phase 2B is identical to that from 2A at 4.4 (see Table 2). This suggests a more uniform approach to fabric recipes within pottery manufacture during this period.

Middle Bronze Age (Ceramic Phases 3A and 3B)

This period is divided into two ceramic sub-phases based on the continued use of grog-tempered fabrics (G1, GD1, GQ2) to make Deverel-Rimbury style urn-like vessels in the earlier Ceramic Phase 3A (Early Middle Bronze Age) followed by a continuation in the production of this style of vessels but using solely shell-rich fabrics (S1, S2, S4, S5) in the later Ceramic Phase 3B (Late Middle Bronze Age). Thirteen vessels have been assigned to the earlier ceramic phase and 26 to the later one. In addition, the fabric type used to manufacture two vessels (SG1) provides insight into this transformation in fabric-making and has been afforded the distinction of its own sub-phase (Transitional Middle Bronze Age). This fabric presents a composite, balanced concept using both grog-tempered and shell-bearing choices by one or more potters during the Middle Bronze Age.

The ratio of fabric types to number of vessels in Ceramic Phase 3A (4.3) is nearly the same as for Ceramic Phase 2B (4.4); for Ceramic Phase 3B, it is significantly different from either of these at 6.5 (see Table 2). This indicates that the variety of fabric types had been reduced: i.e. the variety of fabric choices to make pots was reduced during the Late Middle Bronze Age period compared to the Early Middle Bronze Age period. However, Ceramic Phase 3A has half the number of vessels of 3B which could affect the statistical reliability of any comparison between these two sub-phases. It may be more appropriate to place a minimum number of vessels for such comparative analysis at more than 20 vessels. If so, then the difference between the Early Bronze Age ratio (31 vessels) and that of the Late Middle Bronze Age (26) is intriguing; 4.4 compared to 6.5 indicating a more restricted range of acceptable fabric types in the Late Middle Bronze Age which could be interpreted as an indication of greater expectation of uniformity in ceramic output by society at that time.

Late Bronze Age (Ceramic Phase 4A)

The majority of the Post-Deverel-Rimbury Late Bronze Age pottery in this assemblage (Ceramic Phase 4A) was made using two of the shell-rich fabrics popular in the Late Middle Bronze Age (S1, S2) (see Table 6, *Appendix A*), and a likely vesicular version of the coarser shell fabric S2. This continuity in fabric choices mirrors the vessel form types produced, with ovoid jars being a preferred shape: a form not dissimilar to the bucket and barrel forms of the previous half millennium. Several examples of ovoid jars made from these shell fabrics were also found in the previous Pode Hole Quarry fieldwork (Morris 2009a:

fig. 4.2, 36-38, 40-41 & 43-45) and demonstrate that they were a preferred vessel form and fabrics choice in the Bar Pasture/Pode Hole landscape during the Late Bronze Age period. An additional new form that occurs is the shouldered jar, including a high-shouldered type and a long-necked variant. Of the 21 vessels assigned to this sub-phase, 17 were made from shell-bearing fabrics or the vesicular variant. The remaining four vessels had been made from a flint-tempered fabric (F1); one is a shouldered jar. Flint-tempered fabrics were only used to make Ceramic Phase 4A (and 4B) vessels. The ratio of fabric types to number of vessels (21) in this sub-phase is 7.0, which is similar to the ratio of the previous sub-phase 3B.

None of the Ceramic Phase 4A (or 4B) vessels appear to have been decorated. It was not possible to secure any radiocarbon dates for the Late Bronze Age vessels and, therefore, it is uncertain as to whether they were closer in date to the Middle Bronze Age than the Early Iron Age, but it was possible to separate a similar number of vessels (23), which show strong fabric and form characteristics that herald a definably different ceramic sub-phase.

Late Bronze Age-Early Iron Age (Ceramic Phase 4B)

A significant number of the Late Bronze Age-Early Iron Age vessels in this assemblage were made using a number of new fabrics not witnessed in previous periods; several with significant quantities of quartz sand present in their clay matrices. Some of these new fabrics are complex in their range of inclusions. Fortunately, a similar number of vessels were assigned to this sub-phase which makes it possible to compare, with a measure of confidence, the nature of this pottery with the previous sub-phase (Ceramic Phase 4A). There are two vessel types in this sub-phase: jars and, for the first time, bowls. As mentioned above, none of the 23 vessels in this sub-phase appear to have been decorated, but the sherds in several cases are quite small.

Amongst the 11 fabrics identified and excluding those which are vesicular versions of other types, there are the usual shell-rich fabrics (S1, S2) as found in the previous sub-phase, but in addition two shell types (S4, S7) new to the Bar Pasture range are present. These represent 65% of the 23 vessels assigned to this ceramic phase. The remaining 45%, however, had been made from a range of quartz sand-bearing fabrics including one (DQ1) previously identified in the Pode Hole Quarry assemblage (Morris 2009a: 62, table 4.1). This fabric was used to make a thin-walled (5-6mm), shouldered bowl with short neck and slightly flared rim in the Bar Pasture assemblage. A surprise fabric is one which comprises grog-temper, shell and quartz sand (GSQ1). It is the only grog-tempered fabric in the entire Ceramic Phase 4 collection but because it was used to make both a long-necked bowl and a flat-based vessel and actually has more quartz sand (15-20%) than grog (10%) in it, there is no obvious reason to suspect it was not made during this period. One angled, shoulder sherd derived from a burnished bowl had been made from another new fabric which contains a distinctive type of argillaceous matter which may be mudstones, clumped but loosely-structured, clayey fragments, in a slightly vesicular (former pieces of shell) quartz sand fabric (MDQ1). It may have been more appropriate to code this fabric as QMD1 as the quartz grains are the dominant inclusions with only sparse amounts of mudstone and shell. A more obviously quartz-dominant fabric is QF1, composed of a significant amount (25-30%) of fine to medium-grained, well-sorted quartz and a sparse amount of flint temper, while a very fine, dense fabric with only sparse quartz and rare iron oxides (QI1) derived from another shouldered vessel which had been covered on its exterior surface with a red slip. This is the only sherd made from this very fine fabric type and the only sherd in the later prehistoric pottery assemblage to have this type of surface treatment. A vessel burnished on the exterior only and therefore likely to derive from a jar had been made from fabric SQ1 which is rich with fossil shell fragments and a moderate amount of quartz.

The shell-rich fabrics are most likely to have been made from local resources, as discussed previously. However, the mudstone fabric, if identified correctly, could have been made from a so-called Keuper Marl (Mercia Mudstone) deposit. Petrological analysis of two samples from mudstone fabric carinated vessels of Late Bronze Age-Early Iron Age type and one sample from an Iron Age Scored Ware vessel recovered during the A46 Newark to Widmerpool Improvements revealed that the vesicles which once held mudstones in the latter fabric were fewer in number and much larger in size than the earlier fabric which had finer and better preserved fragments of actual mudstone (Morris 2011b). Both fabrics were interpreted as likely to be local to that area. If either of these fabrics is a suitable comparator to the MDQ1 bowl fabric, then it would not be inappropriate to suggest that this vessel had been brought to the fen-edge community either as a trade item used in exchange for another commodity, such as salt, or had come as part of the material culture belonging to a marriage partner.

Fabric MDQ1 is not dissimilar to the small amount of Late Bronze Age plainware fabric 9 (mudstone and shell or shell and mudstone) identified in the substantial Washingborough assemblage (2.8% by weight; Allen 2009: 44-5, tables 4.12-4.13) and likely to have a local source to the area around Lincoln based on the presence of the shell inclusions. Washingborough is located 60km north of the Bar Pasture/Pode Hole landscape. It is interesting to note that the A46 assemblage includes a fossiliferous shell fabric which cannot be local to

that area but could derive from somewhere along the fen edge. In southern England, small amounts of Late Bronze Age-Early Iron Age pottery have been found on sites located up to 20km from their likely sources (Morris 1994; Morris and Woodward 2003: 292), and it is interesting to now see that the same phenomenon may have taken place in eastern England at this time.

The ratio of fabric types (11) to number of vessels (23) in Ceramic Phase 4B is strikingly different from any previous era at 2.1 suitable for comparison. This indicates a considerable increase in the variety of types utilised by potters which makes the Late Bronze Age-Early Iron Age period very different from not only the previous Late Bronze Age period and before that from the perspective of pottery production choices. As mentioned previously, this could be an indication of a more relaxed social life.

Early-Middle Iron Age - Early La Tène Iron Age 1 (Ceramic Phase 5A)

Three pits from a group of four at Bar Pasture produced pottery representative of what we now know is the end of the Early Iron Age into the Middle Iron Age period (Ceramic Phase 5A). The forms present amongst the 15 vessels recovered are not quite similar to those from the previous ceramic sub-phase. There are no shouldered jars, for example, although there are necked jars. There are sherds from two burnished bowls. New forms include a round-bodied jar with two alternating rows of fingertip decoration around its upper girth surface, a modest-sized, spurred-base jar which had been vertically-wiped with the potter's fingers and a round-shouldered bowl which is so small that it might have been used as a cup; all recovered from the same pit along with a short-necked jar.

A wide range of fabrics had been used to make the Ceramic Phase 5A vessels; fine and coarse vesicular (shell) fabrics D1 and D2; grog-tempered and vesicular (shell) fabrics GD2 and GDQ2; fine and coarse shell-rich fabrics S1, S2 and S4; shell with sparse grog-tempered fabric SG2; and quartz sand dominated fabrics, QC1 and QF2. Therefore, leaving out the vesicular forms of shell fabrics S1 and S2, six fabrics were found amongst the 15 vessels recovered from just three pits: a ratio of 2.5 vessels per fabric type. This is a higher ratio to that found amongst the Ceramic Phase 4B vessels (1.9 vessels per fabric). Once again, as in the Final Neolithic/ Early Bronze Age Ceramic Phase 2A, we are seeing a development first in the Early Iron Age Ceramic Phase 4B and even more so at the very end of the Early Iron Age Ceramic Phase 5A that there was less restriction or greater freedom as to the choices of fabrics used by potters to make their vessels; the decorated, round-bodied jar which had been used as a cookpot (GDQ2), the finger-wiped jar (GD2), two short-necked jars (D2/S1) and a cooking pot (QC1), as well as two well-burnished bowls (QF2, SG2) and the round-shouldered cup-sized bowl (GDQ2).

The reason why the pottery from these particular features was assigned to Ceramic Phase 5A rather than 4B is because of two radiocarbon dates from amongst the contents of the three associated pits, which allows us to appreciate that there had been subtle changes taking place prior to the inception of Scored Ware Iron Age pottery of the Early La Tène Iron Age period (Ceramic Phase 5B). If the dates had not been available, these vessels and their features would have been assigned to Ceramic Phase 4B. The absence of shouldered jars amongst the Ceramic Phase 5A material in the pit group, however, strongly suggests that Ceramic Phase 5A can be considered as indicative of another significant, transitional phase in ceramic production. These dates and their impact on the ceramic phasing of the Bar Pasture assemblage are presented in the Ceramic Phase 5 discussion section below.

Middle-Late Iron Age - Early La Tène Iron Age 2 – (Ceramic Phase 5B)

The smithy enclosure, located in the SW part of the excavated area, and the pits found both inside and outside the enclosure, produced an array of pottery with a limited number of fabrics and only one type of inclusion in those fabrics (shell) with one exception, as well as distinctive vessel forms and dramatic decoration. A sizeable assemblage of entirely handmade pottery which belongs to the Iron Age Scored Ware tradition of the East Midlands (Elsdon 1992; Knight 2002) was recovered from these features. This Early La Tène Iron Age pottery presently dates from the very end of the 5th to 1st centuries BC (Knight 2002: 131-5, fig. 12.3, 20-26) and comprises decorated and undecorated barrel-profile, slack-profile and round-shouldered jars. The decorated examples display various types of incised or 'scored' patterns and some also have fingertip or fingernail impressions around their rim lips. In addition, there are highly burnished, globular bowls with pronounced graceful profiles which can be undecorated or decorated with La Tène-style designs. The Scored Ware vessels in the Bar Pasture assemblage were made from the finer and coarser shell-rich fabrics S1 and S2 also used to make Late Middle Bronze Age and Late Bronze Age pottery at both Bar Pasture and Pode Hole Quarry (Morris 2009a: 63, fig. 4.2, 37), as well as new shell fabric variant S6. This range of fabrics is similar to those used to make the Early La Tène Iron Age Scored Ware assemblage from Market Deeping (Lincs) (Knight 2010c).

The Bar Pasture undecorated, burnished bowls were made from either argillaceous/mudstone fabric MD1 or very fine shell-rich fabric S4 identified amongst Late Bronze Age pottery both here and in the Pode Hole

Quarry assemblage *(ibid.*: 63, fig. 4.2, 44). In addition, one fabric S1 vessel has traces of burnishing on its interior surface and is decorated with scoring on the exterior which suggests that this might be a Scored Ware bowl. The recovery of three Ceramic Phase 5B bowls made from possible mudstone fabric MD1 and two other MD1 fabric vessels used as cookpots is significant (see Table 7, *Appendix A*). This fabric type contains inclusions of mudstone which may not be available in the local area. If this is the case, then the presence of vessels made from mudstone fabric amongst the Early La Tène Iron Age pottery suggests that this pottery may have been traded to people living along the fen edge on a modest scale during the second half of the first millennium BC.

The ratio of fabric types (5) to number of vessels (66) in this sub-phase (Early La Tène Iron Age 2) is unique amongst the ceramic phases established at Bar Pasture at 13.2 (see Table 2 above). This shows that the creation of fabrics, or the selection of natural resources to make fabrics, was approaching a significant level of standardisation during the Middle to Late Iron Age period. A single radiocarbon date for this sub-phase of mid-4th to mid-1st century BC was obtained and is discussed further below.

Fabric Types

Forty-one fabric types were defined in this assemblage using a binocular microscope at x10 power microscopy. The dating or naming codes used in these descriptions are: BKR, Beaker; EBA, Early Bronze Age; EMBA, Early Middle Bronze Age; ENeo, Early Neolithic; GW, Grooved Ware; LBA, Late Bronze Age; EIA, Early Iron Age; LMBA, Late Middle Bronze Age; ELTIA1, Early-Middle Iron Age; ELTIA2, Middle-Late Iron Age; PET, Impressed/ Peterborough; and TMBA, Transitional Early to Late Middle Bronze Age. This use of these codes with these fabric types is for the dating evidence of pottery from the Bar Pasture assemblage only and may not apply to other assemblages automatically. The use of an asterix (*) at the end of a fabric name indicates that a sample of this fabric was thin-sectioned and examined using a polarizing microscope to clarify details relating to the inclusions present. The descriptive standards, terminology and coding systems used in these definitions are based on current recommendations and comparative charts (PCRG 2010: appendices). If a fabric type defined in the Bar Pasture assemblage matched one from excavations at Pode Hole Quarry (Morris 2009a: 62-3), the same code letter and number was used. This occurred for ten of the 41 fabrics: D1, G1, G2, G3, GD2, GQ1, GQ2, S1, S2 and S4. One of these fabrics (D1) is a vesicular version of fabric S2 and has irregularly-shaped holes in the fabric which are identical to the platy shapes of fossil shells identified in fabric S2 and therefore is assumed to be the same fabric which had been subjected to acidic post-deposition conditions.

D1/LBA-EIA – coarse fabric with shell-shaped vesicles
Very common to abundant (30-50%), moderately-sorted, irregularly-shaped and platy but not linear vesicles, < 7mm, in a fine, probably silty clay matrix; the shapes of the vesicles strongly suggest that the former inclusions represented by the vesicles were once shell fragments now leached out (possibly a leached version of fabric S2).

D2/BKR, ELTIA – very fine, shell-shaped vesicles fabric
Common to abundant (25-40%), well-sorted, shell-shaped vesicles or curved voids, < 2mm, in a nearly quartz-free clay matrix with only very rare (< 1%) quartz, < 0.2mm, and softly fired (possibly a leached version of fabric S1).

DG1/BKR – Very coarse, vesicular fabric with sparse grog temper
Common to very common (25-30%), shell-shaped voids or vesicles, < 4mm, and sparse (3-5%), angular, buff-coloured grog, < 4mm, in a virtually quartz sand-free, laminated fabric.

DG2/BKR – Moderately vesicular, grog-tempered fabric
Common (20%), shell-shaped vesicles, < 4mm, and moderate (10%), buff-coloured grog, < 2mm, in a slightly sandy clay matrix with sparse (5-7%), sub-rounded to rounded, fine quartz, < 0.3mm (possibly leached version of fabric SG2).

DQ1/LBA-EIA - sandy fabric with distinctively shell-shaped vesicles
Common to very common (20-30%), moderately sorted, irregularly shaped and platy vesicles, < 4mm, in a sandy clay matrix containing moderate to common (15-20%), moderately sorted, sub-angular to sub-rounded quartz, < 0.8mm, and rare (1-2%), patinated flint detritus, < 1mm.

F1/LBA – flint-tempered fabric
Common (20-30%), poorly-sorted, angular, calcined flint temper, <6mm, in a fine, silty clay matrix containing common, very well-sorted, silt-grade quartz, less than 0.1mm, rare (1%), sub-rounded-rounded, sand-grade quartz, 0.1-0.3mm, and rare iron ore fragments; clay matrix is similar to that in fabric G1.

FQS1/LBA-EIA – detrital flint gravel fabric
Moderate to common (15-20%), sub-angular to sub-rounded, very poorly sorted, detrital flint which is patinated and occasionally cortex-bearing, measuring 10mm or less across, common (20-25%), rounded to sub-rounded, well-sorted quartz, up to 1mm, and sparse (3-5%), sub-rounded, poorly sorted, shell, less than 4mm across, all of which appear to have been

naturally-occurring in the clay matrix because none of the inclusion types is angular in shape.

G1/BKR, EBA, EMBA – coarser grog-tempered fabric (*)
Moderate to very common (15-30%), angular, poorly-sorted, silty grog, < 6mm with infrequent pieces up to 10mm, in a silty to slightly sandy clay matrix which may have a laminated texture; very rarely (< 1%) detritus such as iron oxides, flint, shell and sandstone may be observed; softly fired; often, but by no means always, the grog can be buff-coloured, however, the matrix is always orange-coloured when oxidised.

G2/BKR, EBA – finer grog-tempered fabric
Common (20-25%), moderately-sorted, angular, silty or slightly sandy grog, < 4mm, in a predominantly silty but also slightly sandy clay matrix with sparse (3-7%), well-sorted, sub-rounded quartz, < 0.8mm; both grog and clay matrix orange in colour having been oxidised on the exterior surface.

G3/EBA – grog-tempered fabric with rare detritus
Common to very common (25-30%), moderately-sorted, silty, angular grog, < 3mm, in a slightly sandy clay matrix containing rare (1-2%), sub-rounded quartz grains, < 0.5mm, with rare (1-2%) shell and flint detritus, < 4mm.

G5/EMBA – very coarse grog-tempered fabric
Common to very common (25-30%), poorly-sorted, angular, silty grog, < 8mm, in a silty, clay matrix.

G6/BKR, EBA – finer to more moderately-sized, grog-tempered fabric
Very common (30%), angular, orange-firing grog, < 3mm, in a virtually quartz-free, orange-coloured clay matrix.

G99/earlier prehistoric – grog-tempered fabric
Sherds too small to determine fabric details beyond presence of grog temper and soft firing condition.

GD1/BKR – coarser grog-tempered, vesicular fabric
Common to very common (20-30%), moderately sorted, angular, platy and irregularly shaped (shell) vesicles, < 2mm, and moderate (10%), poorly sorted, angular silty grog, < 4mm, in a silty clay matrix with a distinctive hackly fracture despite being softly fired; grog and clay matrix are same buff colour.

GD2/BKR, ELTIA1 – finer, grog-tempered, vesicular fabric
Common (20-25%), moderately-sorted, angular, silty grog, up to 3mm, and sparse, angular, platy and irregularly-shaped (former shell) vesicles, up to 3mm, in a slightly sandy clay matrix containing rare to sparse (2-3%), sub-rounded to rounded quartz grains, < 1mm.

GD3/GW – grog-tempered fabric with vacuoles
Moderate (10-15%), moderately-sorted, angular, silty and slightly sandy grog, up to 4mm, with sparse (7-10%), linear and rounded to sub-rounded, probable plant matter vacuoles, up to 3mm, and sparse to moderate (7-10%), medium to coarse quartz, up to 1mm with the majority less than 0.8mm.

GDQ1/BKR –grog-tempered, vesicular, sandy fabric
Sparse to moderate (5-10%), moderately-sorted, angular grog, < 3mm, sparse to moderate (7-10%), shell-shaped vesicles, < 3mm, in a distinctively sandy clay matrix with common (20-25%), well-sorted, sub-rounded to rounded quartz, < 1mm.

GDQ2/ELTIA1 – grog-tempered, sparsely vesicular, sandy fabric
Moderate to common (15-20%), moderately-sorted, angular grog, < 4mm with the majority < 2mm, rare to sparse (2-7%), shell-shaped vesicles, < 3mm, in a distinctively sandy clay matrix containing common (20-25%), sub-rounded to rounded, well-sorted quartz < 1mm; same natural clay matrix as in fabric GDQ1.

GQ1/BKR – fine grog-tempered, sandy fabric
Common (20-25%), well-sorted, angular grog, ≤ 2mm, in a distinctively sandy clay matrix containing moderate to common (15-20%), moderately-sorted, sub-rounded medium to coarse quartz grains, < 1mm.

GQ2/EBA, EMBA – coarser grog-tempered, sandy fabric (*)
Moderate to common (15-20%), poorly-sorted, angular grog, ≤ 6mm, in a sandy clay matrix containing moderate to common (15-20%) sub-rounded, moderately-sorted quartz, ≤ 1.0mm; the grog appears to consist of fine, silty clay derived from a fired vessel due to oxidised surfaces and unoxidised core/interior of the original first pot being visible.

GQ3/BKR – fine, grog-tempered, slightly sandy fabric
Moderate (10%), well-sorted, angular grog, ≤ 2mm, in a moderately sandy clay matrix containing sparse to moderate (7-10%), sub-rounded to rounded, medium to coarse quartz grains, ≤ 1mm, with the majority of grains being silt-grade in size.

GS2/BKR, EBA – grog-tempered fabric with shell
Common (20-25%), moderately sorted, angular to sub-angular grog, < 3mm, with sparse (3-5%) shell, < 2mm, in a silty clay matrix.

GSQ1/LBA-EIA – grog-tempered (fabric SQ1), sandy fabric
Moderate (10%), sub-angular to sub-rounded, moderately sorted grog made from crushed sherds fragments of fabric SQ1 pottery, less than 4mm, and moderate (15%), sub-angular to sub-rounded, moderately sorted shell, up to 4mm with the majority less than 2mm, in a medium to coarse-grained sandy

fabric containing moderate to common (15-20%), rounded to sub-rounded, moderately to well-sorted quartz, less than 1mm; this is basically fabric SQ1 tempered with crushed fragments of grog made from SQ1 fabric pottery.

MD1/ELTIA2 – possible mudstone-rich fabric
Common to very common (25-30%), irregularly-shaped vesicles and loosely-structured argillaceous inclusions likely to be mudstones, < 2mm, in a slightly sandy clay matrix with rare to sparse (2-3%), sub-rounded to rounded quartz, < 0.5mm.

MDQ1/LBA-EIA – possible mudstone-gritted, sandy fabric
Sparse (5-7%), irregularly-shaped, loosely-structured, argillaceous matter which may be mudstones and sparse (5-7%), irregularly-shaped vesicles which are likely to have been fragments of shell, < 2mm, in a sandy clay matrix with moderate (10-15%), sub-rounded to rounded, well-sorted quartz, < 0.5mm.

Q1/BKR – medium-grained, sandy fabric
Common to very common (20-30%), moderately well-sorted, sub-rounded to sub-angular quartz, < 0.8mm with the majority less than 0.6mm, in association with rare (1%), rounded to sub-angular iron oxide fragments, up to 3mm.

Q3/BKR – coarse to medium-grained, sandy fabric
Common to very common (25-30%), sub-rounded to rounded, well-sorted quartz, < 1mm with the majority < 0.8/0.6mm, with very rare (<1 %), rounded iron oxides, < 1mm; also used to make clay structures **(see fired clay).**

QC1/ELTIA1 – medium-grained, sandy fabric with degraded calcareous matter
Common to very common (25-30%), sub-rounded, well-sorted quartz, < 0.5mm, and sparse (5%), sub-rounded degraded calcareous matter, < 2mm.

QF1/LBA-EIA –sandy fabric with some flint temper and detritus
Common to very common (25-30%), well-sorted, sub-rounded to rounded, quartz sand, up to 0.5mm, naturally-occurring in the clay matrix, with sparse (7%), angular, crushed, calcined flint temper, up to 3mm, and rare (1%), sub-rounded quartz/quartzite likely to be naturally-occurring detritus, 2-3mm.

QF2/ELTIA1 – sandy fabric with some flint grit and detritus
Common (20-20%), well-sorted, sub-rounded to rounded quartz, < 0.8mm, naturally occurring in the clay matrix with sparse to moderate (7-10%), sub-angular, moderately-sorted, unburnt flint with some patination visible, < 3mm, with infrequent, rounded, unidentified detritus, from 1 to 3mm.

QI1/LBA-EIA – fine, dense fabric with sparse quartz and rare iron oxides
Fine, dense smooth fabric with sparse (3-5%), rounded to sub-rounded quartz, less than 0.8mm with the majority less than 0.5mm, and rare (1-2%), rounded to sub-rounded iron oxides, less than 0.6mm across.

S1/PET, BKR, LMBA, LBA, LBA-EIA, ELTIA1, ELTIA2 – finer, shell-gritted fabric (*)
Very common to abundant (30-50%), moderately-sorted, fossil shell, < 4mm with the majority < 2mm, in a nearly quartz sand-free clay matrix containing very rare (< 1%) quartz, < 0.6mm.

S2/ENeo, PET, LMBA, LBA, LBA-EIA, ELTIA1, ELTIA2 – coarser, shell-gritted fabric
Very common to abundant (30-50%), very poorly-sorted, fossil shell, < 7mm, in a nearly quartz sand-free clay matrix containing very rare (< 1%) quartz, < 0.3mm.

S3/ELTIA2 – moderately coarser, shell-gritted fabric
Moderate to common (15-20%), poorly sorted, angular to sub-rounded, fossil shell and shell-rich limestone rock, < 7mm, in a clay matrix containing no visible quartz sand at x10 power microscopy.

S4/LBA-EIA, ELATIA1– very fine, shell-tempered fabric
Abundant (40-50%), very well-sorted, angular shell fragments, < 2mm with the majority < 1mm, in a clay matrix containing very rare (< 1%) quartz, < 0.5mm with the majority < 0.1mm.

S5/LMBA, ELTIA2 – very coarse, shell-tempered fabric
Common to abundant (25-50%), angular, poorly sorted, platy shell fragments from 1mm up to 14mm across with the majority from 4-8mm, in an apparently quartz-free clay matrix; somewhat similar to fabric S6 but without fossiliferous limestone rock present suggesting a slightly different source used.

S6/ELTIA2 – very coarse fossiliferous limestone rock and fossil shell-tempered fabric
Sparse (3-5%), poorly-sorted, angular fossiliferous limestone rock up to 12mm across (which appears to be mainly limestone with sparse to rare shell visible at x10 microscopy) and very common (30-40%), very poorly-sorted, angular shell, < 7mm, in a nearly quartz-free clay matrix containing very rare (< 1%), < 0.3mm; similar to fabric S2 but with larger fragments of limestone rock present suggesting a slightly different source used.

S7/LBA-EIA – moderately fossil shell-gritted fabric
Sparse to moderate (7-15%), well-sorted, angular to sub-angular, shell and shelly limestone, < 3mm, in a slightly sandy clay matrix with sparse (3-5%), sub-rounded quartz, < 0.6mm.

S99/prehistoric – shell-gritted fabric
Overfired or re-fired sherds damaged to determine fabric details beyond presence of shell.

SG1/BKR, TMBA – coarser shell-gritted and grog-tempered fabric
Moderate (10-15%), moderately-sorted, angular to sub-rounded, fossil shell, < 4mm, moderate (10-15%), angular to sub-rounded grog temper, < 7mm with the majority less than 3mm, in a sandy clay matrix containing sparse (3-5%), sub-rounded to rounded, well-sorted quartz, < 1mm with the majority < 0.6mm; may have occasional iron oxide detritus present.

SG2/ELTIA – sparsely grog-tempered, shell-gritted fabric
Moderate (15%), moderately-sorted, angular shell, < 4mm, and sparse (5-7%), angular, silty fabric grog, < 3mm, in nearly quartz-free clay matrix; may be similar to vesicular fabric DG1.

SQ1/LBA-EIA – shell-rich sandy fabric
Common (20-25%), angular to sub-angular, well-sorted, fossil shell, up to 4mm across but the majority 2mm or less, in a mainly medium-grained sandy clay matrix containing moderate (10-15%), rounded to sub-rounded quartz, up to 0.8mm across with the majority less than 0.5mm.

Forms

A total of 31 rim and five base types have been identified in the assemblage. Several were first defined for the Pode Hole Quarry assemblage (Morris 2009a: 63-5), but new forms emerged here during the analysis. All of the types in the Bar Pasture assemblage are listed here for convenience. Irregularity in the number codes indicates that other established form types of the Pode Hole series, amongst the rims in particular (i.e. R1, R6, etc.), do not occur in this assemblage. The dating of each form type, where relevant or appropriate, is located within an appropriate ceramic phase defined for the Bar Pasture collection. These are Ceramic Phase 1 (Early Neolithic), 2 (Final Neolithic/ Early Bronze Age; Early Bronze Age), 3 (Early and Late Middle Bronze Age), 4 (Late Bronze Age to Early Iron Age) and 5 (Early-Middle Iron Age; Middle-Late Iron Age).

Rim Types
- R2 T-shaped rim on Barrel Urn-type jar; Late Middle Bronze Age (Figure 62, nos 46 & 49).
- R3 convex-profile, ovoid-shaped jar with any type of rounded or bevel-edged rim; Late Bronze Age (Figures 63 and 64, nos 64 & 68-70).
- R4 upright, rounded or slightly flattened rim lip on Bucket Urn-type vessel; Transitional and Late Middle Bronze Age (Figure 63, nos 54, 59 & 63).
- R5 rounded lip on flared rim, short-necked bowl of uncertain profile; Middle Iron Age (Figure 65, no. 84).
- R7 upright rim; Beaker (Figures 60 and 61, nos 12, 14, 24, 30 & 32).
- R9 upright rim on long necked jar; Late Bronze Age (Figure 64, no. 67).
- R10 –thick upright rim on straight-profile wall on Collared Urn-type vessel; Early Bronze Age (Figure 61, no. 39).
- R11 interior bevelled rim lip on straight-walled, Bucket Urn-type vessel; Late Middle Bronze Age (Figure 63, no. 56).
- R12 inwardly curled rim; Late Neolithic Grooved Ware (Figure 59, no. 4).
- R13 slightly everted rim with rounded lip on short-necked, shouldered jar; Late Bronze Age (Figure 64, no. 66).
- R14 simple, upright rim and cavetto-necked; Food Vessel (Figure 62, no. 41).
- R15 bevelled rim; Food Vessel (Figure 62, no. 42).
- R16 slightly bevelled, upright rim; Beaker (Figure 60, no. 18).
- R17 rounded or flattened (due to impressed decoration) rim lip on short-necked jar of uncertain profile; Early-Middle Iron Age (Figure 65, nos 83 & 85).
- R18 upright, square in section, flattened rim on necked, barrel-profile jar; Middle-Late Iron Age (Figure 65, nos 87, 95).
- R19 upright to slightly inclined rim with flattened lip on slack-profile jar; Middle-Late Iron Age (Figure 65, nos 89 & 91).
- R20 upright rim with flattened lip creating an overhanding to interior of slack-profile jar; Middle-Late Iron Age (Figure 65, no. 90).
- R21 upright, rounded rim on round-bodied or globular bowl; Middle-Late Iron Age (Figure 65, no. 92).
- R22 upright, rounded rim on necked jar with globular-profile; Middle-Late Iron Age (Figure 65, no. 93).
- R23 upright rim with top edge flattened creating an overhanging lip on the exterior of a necked, slack-profile jar; Middle-Late Iron Age (Figure 66, no. 100).
- R24 short, everted rim with rounded lip on necked jar with uncertain profile; Late Bronze Age-Early Iron Age (Figure 64, no. 73).
- R25 complex rim with upper external and internal channels creating a peaked lip between the channels on slightly necked, barrel-profile jar; internal channel suitable for lid-seating; Middle-Late Iron Age (Figure 66, no. 102).
- R26 rounded-lip rim on slightly flared, short-necked, shouldered, tripartite bowl; Late Bronze Age-Early Iron Age (Figure 64, no. 75).
- R27 rounded-lip rim on upright, medium to long-necked vessel of uncertain profile; probably a

bowl; Late Bronze Age-Early Iron Age (Figure 64, no. 78).
- R28 rounded rim lip on ovoid to straight-sided profile, closed form vessel/jar; Middle-Late Iron Age; (Figure 66, no. 103).
- R29 internally bevelled rim lip on upright to slightly flared, long-necked vessel, probably shouldered jar; Late Bronze Age (Figure 64, no. 71).
- R30 bevelled to rounded rim lip on undiagnostic, closed to neutral-profile vessel; Beaker (Figure 61, no. 36).
- R31 T-shaped rim with overhanging interior and exterior lips on short-necked, round-shouldered, open form; Mortlake sub-style Impressed/ Peterborough Ware bowl (Figure 59, no. 3).
- R32 flat-ended rim lip on short, flared neck, sharply carinated-profile open form; Ebbsfleet sub-style Impressed/Peterborough Ware bowl (Figure 59, no. 2).
- R33 flattened, slightly rounded rim with overhanging lip on interior and hint of beading on exterior, due to pressing during manufacture, on straight-sided to curved wall of baggy profile vessel; Early Neolithic Developed Bowl (Figure 59, no. 1).

Base Types
- B1 flat base with base angle present (Figures 59-66, nos 7, 16-17, 34, 39, 41, 47-48, 50, 58, 60-61, 76-77, 94, 97 & 99).
- B2 curled exterior edge creating a lip at base angle of flat base; Beaker, Late Middle Bronze Age (Figures 60 and 63, nos 25 & 62).
- B3 flat base with spur-effect present at base angle; Late Bronze Age-Early Iron Age (Figure 65, no. 81).
- B4 flared, wedged base from globular-profile vessel; Middle-Late Iron Age (Figure 66, no. 101).
- B99 fragment from the central disc of a flat base but no base angle extant (not illustrated).

Other Diagnostic Forms
- A1 – obtuse-angle, round or softly shouldered, apparently bipartite vessel (Figures 62, 64 and 65, nos 44-45, 74, 79, 80 & 82).
- C1 – applied, collar-like sherd; Collared Urn-type vessel (Figure 61, nos 38 & 40).
- H1 – applied, strap handle; Beaker (Figure 61, no. 32).
- L1 – applied lug; Late Middle Bronze Age (Figure 63, no. 56).
- N1 – neck zone sherd from a necked jar or bowl (Figures 62 and 64, nos 43, 65, & 72).

Decorated Body Sherd
- D1 – decorated body sherd; undiagnostic to form type (Figures 59-63, 65 and 66, nos 6, 8-11, 13, 15, 19-23, 26-29, 31, 33, 35, 51-52, 57-58, 86, 88, 96 & 98).

Undecorated Body Sherds
- P1 – plain, undecorated body sherd (not illustrated).
- P2 – plain, undecorated, lower vessel wall at base angle body sherd (Figure 62, no. 53).

Decoration Types

Three principal methods of decoration were identified in the Bar Pasture assemblage: applied additional clay; impressed; and incised. Abbreviation codes for these are used in the tables of this volume and in the database, as follows:

Applied
Applying extra clay to create decoration on a vessel occurs as a single type in the Bar Pasture assemblage. However, this form could be widened to include the application of a piece of clay vertically to form a lug-like effect to the upper part of a vessel. This technique only occurred in the Bar Pasture assemblage during the Early and Late Middle Bronze Age periods.

AP – added a ring of clay to create an applied cordon around the body of a vessel (Figures 62 and 63, nos 51-52, 57).

Impressed
The technique of personally impressing is by inserting either a fingernail or fingertip from the potter's hand directly onto the vessel or roughing-up the surface of a vessel by using the fingers to create an irregular surface, either of which must be the most basic form of decoration in the history of pot-making. It is also a very personal marking of a vessel's surface. The technique of using the fingers alone to create a type of impressed decoration (see code explanation below) was employed during the Early Neolithic (FN), Final Neolithic-Early Bronze Age (FN, FT, RT), the Early Bronze Age (FN), the Transitional Middle Bronze Age (FT), and the Late Bronze Age and Early Iron Age (FN, FT). Other forms of impression which used manufactured tools were employed to create decoration on Early Neolithic (WC), Final Neolithic-Early Bronze Age (CB, IM, TW) and Early Bronze Age (TW) vessels in this assemblage.

CB – insertion of a multi-toothed tool repeatedly end-on-end to create lines of impressed squares or dots (Figure 60, no. 13).

FN – one or more fingernail impressions inserted somewhere on the body of a vessel (Figures 59-61, 63 and 65, nos 3, 9-10, 15, 17-20, 23, 28, 35, 37, 63 & 85), the angled shoulder (Figure 62, no. 45) or exterior edge of a rim (Figure 63, no. 63), or repeatedly along top edge of rim (Figures 65 and 66, nos 85 & 103).

FT – fingertip impressions located somewhere on the body wall of a vessel (Figures 60-63 and 65, nos 25-26, 29-30, 40, 51, 55 & 80).

IM – individually impressed triangular or square-ended tool into the wall of a vessel (Figures 59 and 60, nos 5 & 13).

RT – rustication of the exterior surface of a vessel by finger-manipulation of the clay into peaks and troughs (Figure 59, no. 10).

TW – insertions of individual wrapped cord or twisted cord complex tools (Figures 59 and 61, nos 11, 39).

WC – insertions of individual wrapped cord complex tools (Figure 59, nos 2-3).

Incised
In this assemblage, incising created by using a sharp instrument occurs on Early Neolithic (Mortlake-style Peterborough Ware; Figure 59, no. 3), Final Neolithic/ Early Bronze Age (Grooved Ware and Beaker vessels; Figures 59-61, nos 5-8, 16, 21-22, 27 & 31-33) and Early Bronze Age pottery (Food Vessels; Figure 62, nos 42-43) and while the term 'Scored Ware' has elevated this technique to a regional stylistic indicator during the Middle-Late Iron Age period in the East Midlands, which is discussed further below. During the earlier prehistoric periods, incising tools may have been made of flint, plant stems or small broken bones while in the Bronze and Iron Age periods this technique could also have been supplied by the use of metal tools.

IC – crisply incised or 'scored' incision onto the surface of a leather-hard vessel; this technique can be utilised as individual lines from a single sharp tool or as sets of incised lines made by the use of a comb-like, more complex tool; variations used in the database for later Iron Age pottery specifically (see Table 7, Appendix A) include: variation 1, single, incised or 'scored', parallel lines crossed by incised or 'scored', parallel lines creating a lattice-like pattern (Figure 65, no. 86); variation 2, incised or 'scored' lines created by using what appears to be a comb-like, multiple-toothed tool making a repeated vertical (one-direction) pattern starting from the neck area of the vessel downwards to just above the base; not particularly deep insertions (Figures 65 and 66, nos 87, 93, 95, 97-99 & 103); variation 3, incised or 'scored' lines made repeatedly from many separate strokes which are deep and irregular in nature (Figures 65 and 66, nos 88, 90 & 96); variation 0, single incised or 'scored' line visible but no discernible pattern present (Figure 65, no. 91).

Ceramic Phase 1 (Neolithic)

For the first time in the Bar Pasture/Pode Hole landscape, sherds from Early and Middle-Late Neolithic vessels were identified (44 sherds; 332g; see Table 3, *Appendix A*); none had been found previously in either the Pode Hole Farm (Woodward 2001) or Pode Hole Quarry (Morris 2009a) fieldwork. Late Neolithic pottery was also recovered but, as it was found in association with sherds of Beaker pottery, this material has been assigned to Ceramic Phase 2A (Final Neolithic/ Early Bronze Age) and is discussed in that section below. In future, if any Late Neolithic pottery is recovered in features *not* containing Beaker pottery, assigning them to the sub-division Ceramic Phase 1C (Late Neolithic) would be appropriate. The undecorated Early Neolithic pottery was identified based on the result of direct radiocarbon dating of the carbonised residue on the interior of the single vessel which had been used as a cookpot.

Ceramic Phase 1A (Early Neolithic)
Early Neolithic pottery in eastern England comprises Carinated Bowl (formerly Grimston-Lyles Hill) vessels dating from 4000 to 3500 BC and Developed Bowls (formerly Plain Bowls) which first appeared *c.* 3700 BC (Gibson 2002: 69-77; Percival 2016: 3-4). The first decorated examples of Early Neolithic pottery in this area, known as Mildenhall Ware, dates from 3600-3100 BC. All three types were made from either flint-tempered or shell-bearing fabrics.

At Bar Pasture, sherds from a small portion of a well-fragmented Developed Bowl (Figure 59, no. 1) were found in pit [11751], one of the two earliest pits in the otherwise Bronze Age multi-phase waterhole complex ([11745-11751]) located on the eastern side of the excavated area. This coarser shell-gritted fabric S2 vessel had just enough of the rim circumference remaining to its single rim sherd for an approximate determination of diameter at *c.* 220mm. The rim, which does not join any of the 29 body sherds, had been softly flattened on its top surface resulting in a slight beading on the exterior and an overhang on the interior. The wall of the rim sherd measures 7-8mm thick and the body sherds 5-6mm thick, which indicates that the latter derive from somewhat lower on the vessel wall, if not in the rounded base area. This unoxidised, baggy-profile vessel had been used as a cookpot with significant amounts of burnt residue on the interior surface of two of the largest body sherds, which produced a radiocarbon date of 3636-3382 BC at 95.4% probability, firmly in the Early Neolithic period. This vessel would fit well into the Rectory Farm, West Deeping assemblage comprising a total of 30 Early Neolithic shell or flint fabric pots including several which are pinched out internally and/or externally (Allen 2004). This site, located 17km NW of Bar Pasture, produced a variety of other earlier prehistoric pottery including sherds from 39 vessels representing all three Peterborough Ware sub-styles and 13 Grooved Ware pots including one placed over the skull of an aurochs.

Ceramic Phase 1B (Middle-Late Neolithic)

Middle-Late Neolithic pottery is characterised by three sub-styles of Impressed Ware tradition or Peterborough Ware: Ebbsfleet, Fengate and Mortlake, which date from 3600-2300 cal BC in Britain based on the results from radiocarbon dating 34 samples assessed at the end of the 20th century (Gibson and Kinnes 1997). Since then, additional dates have been obtained which confirmed the original results, with increasing numbers of radiocarbon dates revealing that two of the sub-styles in particular were broadly contemporary: Ebbsfleet – 3500-2900 BC and Mortlake – 3600-2300 BC (Gibson 2002: 80), while more recently, Impressed Ware dates in North East England have been produced which start at 3700-3610 cal BC and end at 2850-2700 cal BC (95% probability; Millson *et al.* 2011: fig. 1, table 2; Waddington *et al.* 2011: fig. 6a-b, table 10). A national survey of available radiocarbon results currently being conducted concurs with these results at 68% probability (Marshall *et al.* forthcoming). These results have revealed that there is no support for a chronological stylistic progression amongst these styles, as formerly believed, with Ebbsfleet sub-style spanning 3500-2900 BC and Mortlake in use from 3600-2300 BC. Two examples of Middle-Late Neolithic Impressed or Peterborough Ware style bowls were found in the same feature at Bar Pasture, pit [11749], in addition to part of a Final Neolithic-Early Bronze Age Beaker (Figure 59, nos 2-3 and 7). This pit is the second of the two earliest pits in the multi-phase waterhole complex which contained the Early Neolithic Developed Bowl described above. Three of the four fills in this pit contained sherds from just a single vessel each. The lower fill held three joining sherds from the upper part of an Ebbsfleet bowl, one of the two middle fills contained 11 sherds from the upper part of a Mortlake bowl, while the extant upper fill produced the complete base from a Beaker.

The sharply shouldered Ebbsfleet bowl had a rim diameter measuring 240mm. The vessel was made from the same type of coarse shell fabric (S2) as used to make the Early Neolithic Developed Bowl above and has a short, everted neck rising to a straight-flared rim with flat lip (rim type R32), decorated on the end of the lip with a finely made, whipped cord impressing tool (which cannot be seen in the illustration); the binding appears nearly threadlike (Figure 59, no. 2). The narrowness of the rim lip resulted in only half of the tool being applied to its surface, while the complete tool bearing six whipped loops is revealed in the impressions on the shoulder zone. These appear as narrow, rectangular 'maggots' and were impressed diagonally in one line around the vessel above the sharp shoulder joint with two similar lines in parallel below the shoulder. There appears to be no lower body decoration.

The use of impressed 'maggots' is a common decorative method amongst the Ebbsfleet sub-style (e.g. Beamish 2009: fig. 45, 10-11). The vessel was made from the coarser shell-gritted fabric, S2, measures 240mm in diameter from 6% of the remaining rim and had been over 80mm in height originally. The estimated proportion of the middle or shoulder part of the vessel recovered from this context is the same as for the rim at 6-7%. The fabrics of Peterborough Ware vessels found in Wales were usually made by adding large, angular fragments of crushed quartz and quartzite (Gibson 1995), while igneous and metamorphic rock was used in Shropshire (Williams 1995), quartz and quartzite with a secondary preference for either various igneous rocks or sandstone in the Central and Eastern Midlands (Ixer and Woodward 2002; Woodward 2000) with good data from Derbyshire revealing a total of 70% of vessels made from very coarse quartz fabrics; crushed and calcined flint and a secondary preference for shell dominant in Wessex (Cleal 1995: 187-90, fig. 16.2) and very large/extremely large quartzite in the Milford Basin of Northumberland (Millson *et al.* 2011: fig. 4). In the East Midlands, quartz fabrics represent the wares used in about 45.5% of Leicestershire examples while a similar amount of shell-bearing fabrics was the preference in Cambridgeshire (Woodward and Tinsley 2009: 86), where flint-tempered fabrics are also common (Percival 2016: 5). At Dowsby, Hoe Hills on the western edge of the Lincolnshire Fens, four of the five Peterborough Ware vessels were made from shell fabrics, including one nearly complete Mortlake pot (Allen 2010: 114, fig. 65, 1); the fifth from a flint-tempered fabric. Therefore, the Bar Pasture Farm Ebbsfleet bowl and the Mortlake bowl (see below) belong to a local tradition of Impressed Ware vessels being made from shell-gritted fabrics.

The Mortlake style bowl from pit [11749] had a rim diameter of 280mm. The vessel was made from the finer shell-bearing fabric (S1) and decorated more elaborately with a larger and more robust whipped cord tool of six whips in a zig-zag or chevron pattern along the surface of its bowed T-shaped rim which slopes outwards over a short, concave neck (type R31) (Figure 59, no. 3). This tool was also used again in an identical chevron pattern around the upper surface of the rounded shoulder of the vessel while the underside of the shoulder, in contrast, presents diagonally-aligned, fingernail impressions in multiple parallel rows. The chevron pairs of maggot-impressed motifs appear to be part of a larger herringbone pattern if the rim and upper shoulder are viewed in alignment, and it is this larger, overall pattern which is repeated on the interior surface of the concave neck of the vessel by using extremely finely incised lines to make each pair of chevrons to create the foursome required for a full herringbone pattern. The mental and physical skill expressed in the planning and execution of this decoration was considerable, but not uncommon (for example, cf. Brown 2001: fig. 19, 7-14; Every 2017: fig.

POT1: 5-7 and 9-13; Tabor 2015: fig. 3: 1-2). However, the use of three different types of impressing methods (whipped cord tool; fine incising device; small fingernail) on one vessel is possibly unique. This bowl was made using the finer shell-gritted fabric S1. Its rim diameter, represented by 14% of the circumference, is 280mm and the original height was greater than 130mm. The estimated proportion of the middle or shoulder part of the vessel which had been recovered is approximately 9-10% which is a similar amount to the Ebbsfleet bowl found in the same pit.

These two bowls do not appear to have been made by the same potter. The fabrics are different (coarse shell-S2 versus fine shell-S1), the rim types are significantly different (simple straight versus elaborately moulded) as are the shoulder profiles (sharply carinated versus rounded). Two different tools were crafted to make the maggot impressions, and the resulting decorative patterns are not the same (maggots alone in parallel rows with individual oblique alignment and no interior decoration versus maggots in chevrons, incised chevron lines creating herringbone pattern on the interior neck and fingernail impressions on the lower body). With the dating evidence indicating that it is not possible to separate the chronologies of these two Impressed Ware sub-styles, the two Bar Pasture vessels could have been broadly 'contemporary' at the time of their manufacture and use. Their fragmentation and deposition, however, appear to belong to a different story. The occurrence of these vessels in the same feature as the base from a decorated Beaker is most unusual. The contextual sequence of deposition for these three vessels and their relative chronologies are discussed at the end of the Ceramic Phase 2A section below, as a special deposit.

Ceramic Phase 1C (Late Neolithic)

No sherds of Grooved Ware pottery (Gibson 2002: 83-87, fig. 40), which dates from 3000-2000 cal BC in southern Britain (Garwood 1999: illus. 15.2-15.5), were recovered from features unaccompanied by Beaker pottery. Therefore, the two features which contained both Grooved Ware and Beaker material have been assigned to Ceramic Phase 2A (Final Neolithic/ Early Bronze Age) and are discussed below. Nevertheless, it is important to note that the presence of two Grooved Ware vessels (see Table 3, *Appendix A*) is not dissimilar in frequency to earlier Neolithic pottery (three vessels) and may be significant as an indication of the nature of Late Neolithic activity which took place during the first six centuries of the third millennium BC prior to the more intensive Beaker period activity in this part of the fen edge.

Ceramic Phase 2 (Final Neolithic-Early Bronze Age)

A total of 717 sherds (2858g) of pottery was assigned to Ceramic Phase 2 (see Table 4, *Appendix A*) including material from Grooved Ware, Beaker, Collared, Food Vessel and Biconical-type pots. Four radiocarbon dates spanning a period from *c.* 2300-1900 BC were obtained either from carbonised plant remains associated with sherds or from carbonised residue on the interior of sherds used as cooking pots, which have allowed this ceramic phase to be divided into two sub-phases; Ceramic Phase 2A (Final Neolithic/ Early Bronze Age) and Ceramic Phase 2B (Early Bronze Age).

The results of two radiocarbon dates were produced from carbonised material found in Beaker-associated pits. The date from a *Corylus avellana* (hazelnut) shell provided from fill (2386) of pit [2385] associated with Structure 4 is 2282-2029 cal BC at 95.4% probability, while a second nutshell from fill (3102) in pit [3100/ 3103] of Pit Group 4, located *c.*120m to the SW, was returned at 2139-1918 cal BC. All but one sherd of the Beaker pottery found in these two pits derived from grog-tempered fabrics. In addition, a third date obtained from another carbonised nutshell from fill (11730) in pit [11731], located 355m to the east of Structure 4, found in association with a large quantity of fabric Q1 fired clay interpreted as likely to have been the remains of a hearth as well as burnt animal bone and charcoal, was returned at 2192-1973 cal BC. One Beaker in the Bar Pasture assemblage also had been made from this particular fine to medium-grained, sandy fabric which is quite rare in the repertoire of Beaker fabrics and is discussed further below. Altogether, these three dates represent activity covering a 300-year period from the late 23rd century to the very end of the 20th century BC, a time that is representative of Final Neolithic/ Early Bronze Age ceramics characterised by Grooved Ware and Beaker pottery (Ceramic Phase 2A). At Pode Hole Farm, charcoal found in the same feature as sherds from three Beakers (Woodward 2001: 19, fig. 11, 1-3) returned an even earlier date of 2340-2130 cal BC at 95% probability (Hood 200: table 5). Recent research into this period has discussed whether it might be useful to refer to it as the British Chalcolithic (Allen *et al.* 2012).

The results of two other radiocarbon assays include one from carbonised residue on the interior of an undecorated, grog-tempered, Biconical-type vessel (1865-1640 cal BC at 95.4% probability) and the other from carbonised plant remains found in the same context as a decorated, grog-tempered, Biconical-type vessel (1916-1751 cal BC) found in an area of four discrete features producing sherds derived only from grog-tempered, Biconical and Collared Urn-type vessels (pits [7051], [7056] and [7067]; post-hole [7072]). Both of these dates, not associated with Beaker pottery in either feature, commence after the three Ceramic

Phase 2A dates discussed above. Therefore, it is not inappropriate for Biconical-type vessels made from grog-tempered fabrics to be assigned to a period from the end of the 20th century BC through to the middle of the 17th century BC, a 250-year period prior to the beginning of the Middle Bronze Age (Ceramic Phase 3) in the Bar Pasture-Pode Hole landscape. This ceramic sub-phase is referred to below as Ceramic Phase 2B (Early Bronze Age). Unfortunately, there is no date from the crouched inhumation of a child (infant) found in association with a complete, undecorated Early Bronze Age Food Vessel in order to determine when this grog-tempered bowl (Figure 62, no. 41) had been deposited as a grave offering into pit [1639]; a secondary burial into Barrow 1941. There is currently no understanding of the date for the production, use and deposition of Collared Urn-type and Food Vessel pottery in the Bar Pasture/ Pode Hole landscape, but recent research has suggested that Food Vessels were in use from around 2200/2100 BC until *c.* 1800 BC which would make them likely to have been contemporary with Beakers and Grooved Ware (Percival 2016: 9). But with the lack of any evidence to support that possibility from the fieldwork published in this volume, it is assumed that these could have been contemporary with Biconical-type containers and, therefore, they have been assigned to Ceramic Phase 2B (Early Bronze Age). There were no features in the Bar Pasture landscape where Beaker sherds were associated with identifiable examples of Collared Urn-type or Food Vessel pottery.

Ceramic Phase 2A (Final Neolithic/Early Bronze Age)

The Final Neolithic/ Early Bronze Age ceramic phase at Bar Pasture is characterised by the presence of both Grooved Ware and Beakers. Sherds from two different Grooved Ware vessels were found directly in association with one or more sherds from different Beakers in pits [1804] and [1808]. Pit [1804] was isolated in the landscape 110m to the SE of pit [1808], which was found stratified beneath the ditch of Barrow 1941 at NE segment [1783]. The building of Barrow 1941 directly on top of this pit could be interpreted as an act of desecration to remove or hide the past from the present or as an act of incorporation and recognition of the past as part of the present in a gesture of continuity. A decorated Beaker sherd was recovered from fill (1769) of barrow ditch segment [1783] (Figure 59, no. 11). The Grooved Ware pottery comprises two vessels represented by a total of 111 sherds (214g) found in pits [1804] and [1808]. One vessel represented by a number of decorated body sherds (Figure 59, no. 4) was identified as Grooved Ware due to the fabric (GD3) and the design comprising wide, strongly incised, parallel lines framing a zone of at least five horizontal rows of irregularly square impressions on the vessel exterior. The decoration would be classified as Clacton sub-style due to the pattern of both grooves and individually inserted deep impressions. Similarly, decorated vessels were recovered at Lion Point, Clacton (Longworth *et al.* 1971) and Creeting St Mary (Piggott 1954) in Essex and most importantly nearby at Storey's Bar Road, Fengate (Pryor 1978b: figs 39, 4-6; 41, 21; and 42, 12-13, 19, 26-27 & 31).

It is interesting that, amongst the descriptions of Grooved Ware fabrics in the Fengate catalogue, there are occasional references to a grog-tempered fabric with vacuoles which compares well to Grooved Ware fabric GD3 at Bar Pasture. The undecorated rim (Figure 59, no. 5), also made from fabric GD3, is not unique amongst Grooved Ware. This distinctively curled rim, more closed form (type R12) is similar to vessels from Yorkshire (Manby 1999: illus. 6.4, 5-6) and is likely to represent a Durrington sub-style vessel. Grooved Ware has also been found at sites in Lincolnshire displaying either Durrington or Clacton sub-style decoration (Longworth and Cleal 1999: 190; Manby 1974; 1999: 70). The sherds of Beaker pottery found in pit [1804] derived from a fine, grog-tempered vessel which has been decorated with unusual, individually-incised, closely-spaced, vertical lines which do not extend the full length of the lower vessel wall (Figure 59, no. 6). Four very small flakes (2g) of coarsely grog-tempered pottery were found in pit [1808] and, based on their extant thickness and visible firing regime, are most likely to have originated from another Beaker. Therefore, the only Grooved Ware pottery found in the Bar Pasture/ Pode Hole landscape comprised remnants of two vessels, one of which was decorated and identified as Clacton sub-style, and the pits containing these sherds also produced identifiable remains of two Beakers.

The one thing that is certain from this evidence is that Late Neolithic activity dating from *c.* 3200-2400 BC, as characterised solely by the presence of Grooved Ware sherds in features, does not occur in the Bar Pasture/ Pode Hole landscape compared to the impressive frequency of Beaker-associated activity, occasionally with Grooved Ware material but far more commonly without either Grooved Ware or any other Early Bronze Age pottery in the same features (see Table 4, *Appendix A*). This is in considerable contrast to the presence of a very significant quantity of Grooved Ware pottery found in the later phase(s) of the causewayed enclosure ditch and interior features at Etton, near Maxey located 15km to the north of Bar Pasture; sherds from 41 vessels displaying either Durrington or Woodland styles were catalogued and illustrated (Kinnes 1998: 201-4, figs 206-209, GW1-GW41). It has been suggested that there may be regional criteria of stylistic identity between the Nene and Welland river valleys at that time, with the Fengate-Storey's Bar Road assemblage decorated with Durrington and Clacton sub-styles (Pryor 1978b: 69-103) in Cambridgeshire belonging to the Nene style, along with the Bar Pasture vessels; and the Grooved Ware from both Etton and the Barholm settlement

(Simpson 1993: plate iv) in Lincolnshire to the Welland style (Pryor *et al.* 1998: 213).

Sherds from a great variety of Beakers were found all over the Bar Pasture landscape (see Table 4, *Appendix A*). Other than the sherds from the decorated example found with the Grooved Ware in pit [1804] described above, one sherd from a GQ1 fabric vessel decorated with fingernail impressions (Figure 59, no. 9) was also found beneath Barrow 1941 but this time from a layer of buried soil. These small fingernail impressions are the equivalent of a personal signature. Such impressions are a recognised motif on Beakers from all over the country and examples have been found at Fengate (Gibson 1980), usually executed as pairs of fingernails.

Sherds from other decorated vessels were found in the fills of ring-ditch segment [1026.01] of Barrow 1026 and ring-ditch segment [1783] of barrow 1941, located 75m to the north; the former has both incised parallel lines and at least one row of small fingernail impressions (Figure 59, no. 8) while the latter is the only example of twisted cord technique in the Bar Pasture Beaker assemblage (Figure 59, no. 11). The design of the Barrow 1026 ring-ditch example, which was made from fabric GD2, is very similar to one in the Wyman Abbott collection located in Peterborough Museum (Gibson 1980: fig. 121, 7), while the repeated impressing of lengths of twisted cord created a densely structured pattern of oblique and horizontal, parallel rows visible on the ring-ditch example. This vessel had been made from grog-tempered sandy fabric GQ3 and is quite thin-walled measuring 5-6mm thick. Beakers decorated with twisted cord so commonly found elsewhere, and on one occasion in a complex design of horizontal and diagonal parallel lines at Pode Hole Quarry (Morris 2009a: fig. 4.1, 6), do not appear to have been found in the Fengate area (Gibson 1980; Pryor 1980), but further research into this aspect is required. A fourth Beaker, found in pit [1649], made from fine grog-tempered fabric G2, appears to have been decorated with a different type of fingertip or fingernail decoration known as rustication due to its pinched-up effect to the wall surface (Figure 59, no. 10). A more elaborate rendition of rustication was found on a grog and sand fabric Beaker sherd from the nearby excavations at Pode Hole Farm (Woodward 2001: 19; fig. 11, 4). The simple, vertical, plain rim of a Beaker also made in fabric G2 was distinctively small with a diameter of only 60mm (Figure 60, no. 12). It had been deposited in pit/ post-hole [1861] and was the only pottery in that feature. Five other features located in the northern part of the excavated landscape contained one sherd of Beaker fabric pottery, and a layer above Barrow 1941 produced two flakes from the same Beaker.

On the SW part of the Site, in the locality of Drove 3, sherds from 22 diagnostic Beakers (Figures 60 and 61, nos 13-34) were recovered from 20 features. These include 12 examples represented by decorated sherds only, rather than distinctive vessel profiles, rims or bases. Two pits in this area produced relatively large numbers of sherds compared to elsewhere in the Bar Pasture/Pode Hole landscape as a whole. Pit [2385], located close to Structure 4, contained 54 sherds (419g) from nine Beakers, seven of which are illustrated (Figure 60, nos 16-22). The majority of fabrics used to make these vessels were grog-tempered (GD2, GQD1, DG1) with only one made from a sandy fabric (Q3). Fill (2386) which contained all of the pottery also produced a radiocarbon date from a carbonised hazelnut shell of 2282-2029 cal BC. None of the vessels could be identified as to profile shape, but one included rim type (R16), is a minor variation of this common rim type with a slight bevel to the interior edge with one rusticated example in the Bar Pasture assemblage (Figure 60, no. 18). The effect of these fingernail impressions, however, is quite different, with the nail impressions creating a repeated herringbone pattern around the upper part of the Beaker, which is reversed prior to a zone created by the same fingernail but in vertical parallel lines around the middle or girth of the vessel. Bevelled-rim Beakers are a less common type in the Wyman Abbott collection, with the simple rim type R7 (discussed below) being the most common (Gibson 1980: fig. 119). Decoration on the seven illustrated vessels in this pit was of two types, incising and fingernail impressions. The base and lower vessel walls of one Beaker (Figure 60, no. 16) presented a partial pattern comprising one lozenge infilled with criss-crossed, parallel or hatched lines in the centre of the underside of the 80mm diameter base, surrounded by at least three less well-etched two-sided shapes incompletely infilled with irregular criss-crossing and at least the lower halves of a row of vertical lozenges partially infilled with parallel criss-crossing.

The decoration of Beaker bases on their undersides is a particularly distinctive style in eastern England, especially on handled Beakers (Clarke 1970: nos 1053, 1057, 1061, 1063, and 1065), and may have served as a reminder of information such as group identity, personal status or kinship origins during drinking activities at special events ('bottoms-up'). Decorated sherds from another Beaker made from the same fabric (GD2) seem to be quite similar to this lozenge-design example but this cannot be proven and therefore has been illustrated separately (Figure 60, no. 21). A third example, again in the same fabric, is represented by a single small sherd decorated with less carefully executed, deeply incised, cross-hatched design (Figure 60, no. 22). One Beaker in this pit was decorated by using two rather than just a single repeated technique. Two body sherds display deeply incised, horizontal parallel lines above which are two sets of three lightly incised parallel lines converging to create an upright chevron motif infilled with small to larger fingernail impressions graded to fill the chevron void (Figure 60, no. 19). The repeated

insertion of fingernail impressions, usually in rows but occasionally in a randomised pattern, was a common technique employed to decorate Bar Pasture Beakers. A further three fingernail-decorated vessels were recovered from this; two made from different fabrics are coarsely covered with fingernail/tip insertions of which one is a herringbone style (GD2) and the other more randomly in rows (GQD1), while the third (also GQD1) is delicately creative using feathery, short fingernail impressions to create a linear or geometric design (Figure 60, nos 17, 18, & 20).

Pit [3100/3103], part of Beaker Pit Group 4 located 120m to the SW of Structure 4, contained 83 sherds (240g) from eight Beakers; five of which are illustrated. Two vessels, one thin-walled and made from fabric GD2 found in tertiary fill (3101) and the other very thick-walled and made from fabric G1 found in secondary fill (3102), had been decorated with apparently all-over, substantial rusticated fingertip impressions (Figure 61, nos 29-30). Rustication is a common decorative technique found on Beakers in many parts of Britain, especially in eastern England from Yorkshire to Kent. Examples of rusticated Beakers, mainly decorated with pairs of impressions known as pinching, were identified in the G. Wyman Abbott collection derived from emergency salvage work at Fengate in the early 20th century and curated in Peterborough Museum (Gibson 1980: figs 125, 14-17 & 126, 1-9). In the Early Neolithic causewayed enclosure at Etton, a Beaker pit produced a typical example of rustication (Kinnes 1998: fig. 209, B7). Further afield, numerous examples of rusticated Beakers were found between the rivers Wissey and Little Ouse in the Norfolk fen edge prior to the Fenland Project (Healy 1996: 95-156, figs 72, P3, 78, P63-P64, 79, P81, 80, P82-90, 81, P91-P92, for example). One of the rusticated vessels had been made using the common R7 rim type and this same simple form had been used to make a much finer and more elaborately decorated handled, straight-sided or tankard-shaped Beaker with a geometric design of incised, open panels containing independent lozenges infilled with cross-hatching (Figure 61, no. 32); not enough of the vessel was recovered to determine the full nature of the design.

The execution of these motifs seems to be freehand and rapid in appearance, which may have leant to the imperfect infilling of the cross-hatching compared to other examples of incised, cross-hatched infilled designs on other Bar Pasture Beakers. The handle of the vessel, applied after the body of the Beaker was decorated, was incised along its length and this, too, is not a perfect pattern of parallel lines as some were started at different places across the handle. The cross-section of the handle is lopsided and may reveal the 'handedness' of the potter who made it. Clarke's corpus of Beakers presents many examples of handled Beakers but not one of them was decorated using the technique of incising. Handled Beakers are not common but have been found all over Britain from Cornwall to Aberdeen, Breconshire to Norfolk (Clarke 1970: 245-253, cat. nos 1051-1087). They belong to the wider Southern British Beaker tradition which is important because the Northern British Beaker tradition is of Dutch descent, 'an intrusive, ready-formed Continental tradition', while the Southern 'represents the formation of a significant and peculiarly British Beaker tradition' (*ibid.* 197). Clarke has estimated that up to 10% of the finer Beakers in Final Southern domestic site assemblages can be handled, and found in burial contexts. He has hypothesized that handled Beakers, because of their Southern Beaker forms and decoration, were some of the latest Beakers to have been made (*ibid.* fig. XIV). Two vessels were decorated with deeply incised lines, one in a parallel pattern and the other in a form of obtuse-angled cross-hatching style (Figure 61, nos 31 & 33). Pit [3100] also contained two small sherds (3g) recovered from a sieved sample which originated from a fingernail impressed Beaker found in pit [2385] (see Figure 60, no. 18), based on fabric, wall thickness and firing condition of the vessel. As there are 11 sherds (164g) of that vessel in that feature, it is likely that these two were redeposited into pit [3100/3103] and suggests that there may have been a separation in time between the infilling of these two, richer pits in this Beaker landscape.

Two other pits in this same area contained sherds from at least three Beakers each. Pit [2288], located 80m to the NW of pit [3100/3103], produced nine sherds (120g) from three vessels. One is illustrated (Figure 60, no. 14), being another R7 rim type vessel, although the sherd is too small to reveal if the pot had been decorated or not. A second Beaker, a *c.* 100mm diameter base, is the only example in the assemblage to have been made from shell fabric S1, while the third Beaker made from fabric Q3 was represented by six plain body sherds from a small vessel. Pit [3037] contained 13 sherds (27g) from five Beakers redeposited in an Iron Age feature (Ceramic Phase 5A); pit [3019] contained 27 sherds (234g) from two different Beakers – both of which are different types of bases made from different fabrics. A simple flat base (type B1) made from fabric G2 was 100mm in diameter, while the second example, a type B2 vessel made from fabric SG1, had been decorated in the rustication style of paired fingertip impressions to make a robust version of a vertical and horizontal linear design (Figure 60, no. 25).

In addition, there are a number of Beakers represented solely by decorated sherds. The only example of toothed-comb impressions was found on a body sherd from pit [2085] (Figure 60, no. 13). One example of this relatively common technique had been found previously at Pode Hole Quarry (Morris 2009a: fig. 4.1, 2).

Examples of rustication occurred on two more vessels; one created by fingernail impressions and the other with fingertips (Figure 60, nos 23 and 26). In this area, rusticated Beaker sherds probably from a single vessel (Woodward 2001: fig. 11, 1-2) were found at Pode Hole Farm in association with a charcoal radiocarbon date of 2340-2130 cal BC (Hood 2001: 23, table 5), as well as one from previous Pode Hole Quarry fieldwork (Morris 2009a: fig. 4.1, 1) and one from Newark Road subsite at Fengate (Pryor 1980: 59, 30). Finally, an additional example of very finely incised cross-hatching was found in pit [3025] (Figure 60, no. 27) and one with a row of fingernail impressions above a single incised line from pit [3038] (Figure 60, no. 28). There is every possibility that this Beaker had been made by the same potter who made the previously discussed example from rich pit [2385] (Figure 60, no. 19), with the fabric code difference between these vessels (SG1 and GD2 respectively) likely to be the result of variation in post-deposition conditions. The use of fingernail impressions also seems to have been applied to infill otherwise incised designs on at least two Beakers in the Wyman Abbott collection (Gibson 1980: fig. 121, 2 & 7). It might be less judgmental, therefore, to refrain from labelling the use of *fingernail* impressions as 'rustication', and reserve the term for *fingertip* impressions alone. These fingernail and fingertip impressions may be the key to deciphering the individual potters who made Beakers (cf. Cotton with Johnson 2004).

In the middle of the Bar Pasture landscape, in the locality of Drove 5, very little Beaker pottery was recovered (see Table 4, *Appendix A*). One example of a grog-tempered, shell-gritted fabric Beaker, decorated with several vertical, fingernail impressions in at least two rows was found in large quarry pit [7205] (Figure 61, no. 35). Five other pits contained one to three sherds each, but never more than 2 grammes in total weight.

Three pits located in the SE part of the Site, in the locality of later Field 71, contained varying amounts of a single Beaker each. Three tiny pieces from a fine grog-tempered fabric (G2), thin-walled Beaker were recovered from the middle fill of pit [11549]. As the wall thickness and fabric type are identical amongst all three sherds, they derive from the same vessel which had been fired in a completely oxidising atmosphere. The primary fill of pit [11632] produced six tiny pieces from the rim and body of a Beaker with even thinner vessel walls measuring less than 5mm across (Figure 61, no. 36). Two of the rim sherds display variations of bevelled and rounded finish to the rim lip (R30) of this 14mm diameter vessel. This simple rim form had been identified previously in the Pode Hole area (Woodward 2001: fig. 11, 1). Twenty-six decorated body sherds with fingernail impressions in several roughly parallel, horizontal rows and a single sherd from a 100mm diameter flat base with several small fingertip impressions around the wall to base joint were found distributed between two fills in pit [11711]. These sherds come from the same grog-tempered sandy fabric Beaker (Figure 61, no. 37) which had been rather roughly made, resulting in a rustic, rather than smooth, refined appearance. The fingernail and fingertip impressions were probably made by a young or slight-built potter with relatively small hands.

Pit [11749], however, produced a significant special deposit. The complete flat base (measuring only 43mm in diameter) of a thin-walled, decorated Beaker made from fabric Q1 (Figure 59, no. 7 and Plate 75) was found in the upper layer of this pit, above fills containing large parts of two Middle-Late Neolithic Impressed or Peterborough Ware vessels, one in Ebbsfleet style and one in Mortlake style, described above (Figure 59, nos 2-3) (Ceramic Phase 1B). This Beaker had been made using an entirely different fabric type from the earlier shell-rich fabric Peterborough Ware vessels, having been made from fine clay with no pieces of left-in detritus, as is found in examples of clay weights made with fabric Q1. This is the same silty to medium-grained, sandy clay fabric identified for the fired clay lumps (also bearing no detritus) found in Beaker pit [11711], described above (see Table 4, *Appendix A*), and in pit [11731] (see Table 9). The Beaker is rather rustic in appearance having been roughly or rapidly manufactured. The freehand application of incised decoration seems either to have been performed by an inexperienced potter unaccustomed to making Beakers (or pottery in general) or one who may have been rather hurried in their task. The decoration is best described as 'freehand geometric' in style with one line incised horizontally around the vessel just above the base angle and another line partly in parallel above it which then rises up the wall curving upwards around the vessel. At least three parallel lines were also incised from the lower horizontal line up the wall of the vessel at 2cm vertical intervals. Therefore, this is a unique design for an incised Beaker from the Bar Pasture-Fengate-Pode Hole landscape. The contrasts in fabric, effort invested in the execution of overall manufacturing technique, pattern of decoration and part of vessel selected for deposition between this Beaker and the Peterborough Ware bowls is noticeable and may be significant.

Currently, Beakers are dated to *c.* 2500 to 1700/1600 cal BC (Needham 1996, 2005). There are direct associations of Beakers with Late Neolithic Grooved Ware, as detailed above at the beginning of this Ceramic Phase 2A section, but, 'they are rather thinly spread and interstitial within British Final Neolithic Grooved Ware culture' (Needham 2005: 209). There are also a number of occurrences of Mortlake-style sherds with Grooved Ware fragments in small pits as at Winterbourne Abbas, Dorset (Tabor 2015) and Eckington, Worcestershire (Colls 2014), for example. Although the causewayed

Plate 75 The decorated Q1 fabric Beaker base from pit [11749].

enclosure at Etton, in the Nene Valley, north of Bar Pasture, is most famous for the 419 Early Neolithic Mildenhall vessels recovered, it also produced sherds from seven Ebbsfleet vessels, 12 Peterborough Ware vessels and 41 Grooved Ware vessels (Kinnes 1998: figs 201-3, E1-E7 and PR1-PR12; 206-9, GW1-GW41), with secondary infill contexts containing weathered sherds of Beaker. The main deposit of Beaker pottery at that site was in a pit located near the enclosure ditch but away from the main area of Middle Neolithic pits (Kinnes 1998: fig. 209, B4-B5 & B7; Pryor *et al.* 1998). The association of Beaker sherds on sites with Impressed/ Peterborough Ware is known but, as in the cursus ditches at Springfield, Essex, 'it should be noted that, in no stratified contexts...are Peterborough Ware and any of the other ceramic styles [Grimston Bowl, Grooved Ware, Beaker] found together' (Brown 2001: 128).

Where does this leave us with regard to the proximity of the Beaker base in fill (11774) to that of the Mortlake bowl in fill (11775) and to the Ebbsfleet bowl in fill (11777) – all in pit [11749]. Two possibilities are apparent: the deposition of parts of these vessels took place at the very end of Impressed/Peterborough Ware pottery use and the very beginning of the making and discarding of a Beaker in the fen-edge landscape, *c.* 2500 cal BC, which seems chronologically to be rather unlikely given the dates presented above for the presence of Beakers in this fen-edge landscape - or the sherds of the Ebbsfleet bowl and the Mortlake bowl had been curated until sometime after the arrival of Beaker culture had impacted significantly upon the fen-edge world and required a symbolic demonstration of the respect towards an end of the old way of life demonstrated by the burial of the upper parts of significant fragments of cultural icons representing that way of life, with the lower part of a pot representing the beginning of a new way of life, that of the Beaker world. The positioning of these three sets of fragments in three different, stratified contexts in this one pit must have been significant at the time. This pit is the second earliest feature (after bordering pit [11751]) in the area which became the focus of an extended waterhole cluster over time. Following their creation, a series of seven further pits were dug here representing the continued use of a special 'watery' place in this fen-edge landscape. A radiocarbon date from a carbonised nutshell selected from fill (11730) in nearby pit [11731] and associated with a large quantity of fabric Q1 fired clay material (see Table 9) was returned at 2192-1973 cal BC, a typical date for Beaker activity in this area. As mentioned above, this is the same fabric as the Beaker base in pit [11749]. By inference, this is not necessarily likely to have been an unusually early type of Beaker.

Therefore, it seems that the selection and deposition of the upper parts of two stylistically different Impressed Ware bowls and their separate placements into the lower and middle fills of the pit, followed by the placement of a complete base from an incised Beaker into the upper pit fill were deliberate acts of ritual symbolism. Although the upper levels of the pits in this waterhole cluster were clearly truncated to some degree in the more recent past, the lower fills did not appear to have been affected in this way. Therefore, these significant parts from three vessels in what must be the earliest stratified deposits of this particular pit seem to have been deliberately selected fragments used as metaphors for the original vessels themselves and the people or activities those vessels were used for or part of, particularly when compared to the much smaller sherds from other Final Neolithic-Early Bronze Age vessels found in this landscape. This pit group of 15 sherds weighing 289g results in a mean weight of 19.2g compared to the remaining Ceramic Phase 2A pottery which averages 3.5g (see Table 4, *Appendix A*). Beakers from Pode Hole Quarry average 3.7g (Morris 2009a: table 4.1). Sherds from two Beakers and two Peterborough Ware vessels from Pode Hole Farm are equally instructive with the former type averaging 2g and 6.5g each and the latter 1g and 7g (Woodward 2001: fig. 11, 1-5). Therefore, the contents of this pit containing sherds from two Impressed Ware vessels and a Beaker were likely to have been specially selected to create a structured deposit of fragmented objects representing a significant reason at that time.

Ceramic Phase 2B (Early Bronze Age)

Several grog-tempered but otherwise undiagnostic body sherds have been assigned to this sub-phase based on their medium to thick walls. This phase does not include any grog-tempered sherds which are thin-walled as these have been assigned to Ceramic Phase 2A because they are far more likely to derive from Beakers, based on their soft firing condition. Three diagnostic types of vessels, Collared, Food Vessel and Biconical, are included in this sub-phase discussion.

Three Collared Urn-type vessels were identified in the prehistoric pottery assemblage. Significant parts of the rim and base from a decorated Collared Urn-type vessel as well as several body sherds were found in a shallow curvilinear pit, [1741], located 165m east of Barrow 1026. This vessel was not associated with a cremation. It had been made from fabric G1 and decorated using twisted cord impressed technique to create a repeated design comprising sets of parallel lines which converge into chevrons on the collar with the addition of a single chevron on the underside of the base (Figure 61, no. 39). Use of this particular technique and these motifs is typical of Collared vessels in the area (cf. Pryor 1980: figs 55, 29 & 31; 59, 26). The additional presence of one motif on the bottom of the flat base is reminiscent of a Beaker in the Bar Pasture assemblage discussed above (Figure 60, no. 16). The original Collared vessel was modest in size, measuring 160mm in diameter. An angled sherd (A1) found in pit [360] appears to be the cordon or angled part of a Collared Urn-type vessel (Figure 61, no. 38). A very small sherd (2g) from a G1 fabric vessel recovered from pit [7056] may be from the collar of an apparently undecorated Collared Urn-type vessel (Figure 61, no. 40).

Grog-tempered, Collared Urn-type vessels are well-known in the area with sherds from several different vessels recovered from settlement features during excavations at Fengate (Pryor 1980), as well as from funerary contexts at Coneygre Farm (Notts.) and Pasture Lodge Farm (Lincs.) (Allen *et al.* 1987: figs 10, 53-54 & 15, 24(B)) and two in fabric G1 and two in GQ2 nearby at Pode Hole Quarry (Morris 2009a: fig. 4.1, 9-12). Cordons are often the only recognisable part of fragmented vessels, as at Storey's Bar Road, subsite, Area 1 (Pryor 1978b: 97, fig. 37, 29). The use of Collared Urns currently covers a period of at least six hundred years from *c.* 2200/2100 to *c.* 1450 cal BC (Percival 2016) but more dates, particularly from domestic contexts and carbonised residues on vessels wherever possible, are required for a better understanding of the manufacture and active use of these Early Bronze Age vessels (Gibson 2002: 99). Their infrequent deposition in Early Middle Bronze Age Deverel-Rimbury cremation cemeteries, as at Coneygre and Pasture Lodge Farm, suggests that they were on their way out as the style of choice well before the end of the grog-tempered Early Bronze Age tradition.

Food Vessels are largely contemporary with Collared Urn-type pots; fragments of at least two and possibly three were identified – one from a burial and two from non-funerary features. An undecorated Food Vessel bowl (Figure 62, no. 41) was found with the body of an infant buried in grave [1639] (Plates 15, 16 and 76). This small vessel, measuring approximately 120mm in diameter at the rim, 70mm at the base and 90mm tall, was complete when placed in the grave due to the presence of the full circumference of both the rim and base. However, reconstruction of the rim sherds and the shape of the full base are now oval in plan, most likely due to post-deposition crushing of the softly-fired pot. The fabric of the vessel is difficult to define due to ironisation but appears to be fabric G1, the most common earlier Bronze Age fabric type (see Table 4, *Appendix A*). The vessel form is slightly atypical of Food Vessels with an upright rim and no bevelled, interior rim edge. The vessel walls are also very thin compared to most Food Vessels (Cowie 1978; Gibson 1978). However, the profile is typical of a Food Vessel bowl with cavetto upper half and greater diameter to height ratio. Its size is well within the smaller range for Food Vessels (Gibson 1978: fig. 1.3).

Plate 76 The Food Vessel from infant burial within Barrow [1941] (scale 10cm).

It seems that the manufacture of this small vessel was not conducted with the usual care. The fabric is not well-wedged and displays layering of the clay throughout, almost like plastering layers, which is not typical of the earlier Bronze Age pottery found in the Bar Pasture assemblage. In addition, this is the only vessel which clearly shows fire-clouding on the exterior surface as a result of the irregular rather than consistent control of atmospheric conditions during firing of the pot. However, the moulding of the cavetto profile neck and upright rim, as well as the uniformity of the vessel wall thickness, are indicative of a very competent potter

who had considerable skills in the making of vessels generally. The vessel has no decoration which is also atypical of Food Vessels, but undecorated Collared Urns are well-known (Longworth 1984: plates 223-242), as at Storey's Bar Road subsite, Area 1 (Pryor 1978b: fig. 41, 26a-b). The absence of decoration may be due to the child's status within the community or due to the speed of vessel manufacture. The overall impression is that this vessel may have been made quickly (upon the unexpected death of a child) but by an experienced potter.

One sizeable sherd (27g), representing barely 5% of a 140mm-diameter, decorated Food Vessel made from coarser grog-tempered fabric G1, was recovered from the fill of pit/ post-hole [2156], 120m NE of Beaker Structure 4. It was decorated on the rim top with diagonal, parallel, deep slashes around the circumference creating a herringbone pattern which was repeated around the extant neck zone for at least three circuits of the vessel resulting in a zig-zag pattern. This vessel and rim shape as well as the decorative pattern are typical of Food Vessels, and similar examples have been found nearby at Tower's Fen (Thorney) using a different decorative technique of twisted cord impressions and made from a different fabric of sparse to moderate crushed shell (Chapman 2008: 68-9, fig. 38, 3) and at Billingborough (Cleal 2001: fig. 20, 3-4) using the same technique. Herringbone and zig-zag patterns are not confined to Food Vessels in this region but are also found on Early Bronze Age Collared Urns and can be made by slashed or whipped cord impressions (Allen *et al.* 1987: fig. 10, 53-54), for example. These motifs nearly disappear from the decorative repertoire in the Middle Bronze Age (Cleal 2001: fig. 23, 47-48). The second example from a domestic feature is also decorated and came from the fill of small pit [11135]. This pit, which was interpreted as a sump, had been cut into the southern terminal [11133] of Middle Bronze Age field boundary ditch G11816 in Field 70. It contained one small sherd from a Late Middle Bronze Age shell fabric vessel (Ceramic Phase 3B) as well as two redeposited sherds likely to derive from the cavetto-style neck of a fabric G1, thick-walled Food Vessel (Figure 62, no. 43), one of which has the upper ends of six parallel, vertical lines which may have been produced by incising or by fingernail slashes. However, it is possible that this may have come from the cavetto-neck zone of a Primary Collared Urn (cf. Gibson 2002: fig. 46, 1-3).

One of the most significant aspects of the Bar Pasture assemblage is the recognition that two sherds provide a more positive identification of Bronze Age Biconical Urn-type vessels than previously realised for assemblages from the Pode Hole area. Both are angled shoulder sherds (A1) derived from G1 fabric vessels which are distinctively biconical in profile (Figure 62, nos 44-45). One, found in pit [7051] located 25m west of pit [7056] which contained a Collared Urn-type sherd mentioned above (Figure 61, no. 40), is from an undecorated Biconical vessel which looks as though it had been made by pressing together two separate cones; the upper being noticeably thinner walled than the lower. This pot had been used as a cookpot and carbonised residue from its interior wall surface provided a date of 1865-1640 cal BC, a result that is suitable for a later Early Bronze Age non-Beaker vessel found in this landscape. The second Biconical vessel sherd, recovered from post-hole [7072] located 135m to the NW, was found in association with *Prunus* sp. charcoal which produced a rather similar radiocarbon date, 1916-1751 cal BC. The decoration on this sherd comprises a row of carefully-executed, forward-leaning diagonally-ordered, fingernail incisions or slashes along the upper side of the angled shoulder and a mirror image of this row on the underside of the shoulder, touching at the point of the shoulder angle.

Previously, grog-tempered sherds (fabric GQ2) from bevelled rim vessels were classified as belonging to the Early Middle Bronze Age because no examples of angled shoulder sherds had been found amongst sherds from several vessels with this rim type and fingernail slash-decorated rim and wall sherds (Morris 2009a: 66, fig. 4.1, 13 & 15-19); one has an identical pattern of slashes to the Bar Pasture example but not along a shoulder. It was assumed that these vessels were a regional form of Early Middle Bronze Age funerary urn or domestic jar and may have been contemporary with grog-tempered Deverel-Rimbury vessels (see Ceramic Phase 3A below). Now, however, it is quite clear that these bevelled rims with their bipartite profile belong to the Wessex vessel type known as Biconical Urns, which are late Early Bronze Age in date (Woodward 2008: 82), and therefore belong to the Early Bronze Age period (Ceramic Phase 2B) established from the Bar Pasture fieldwork.

This is particularly relevant as the carbonised residue from the interior of one decorated straight wall sherd from Pode Hole Quarry, which had been made from coarser shell-rich fabric S2 and displays an irregular pattern of fingernail slashing, produced a date of 1620-1430 cal BC (SUERC-12866) (Daniels 2009: appendix 1; Morris 2009a: fig. 4.1, 22), which falls fully outside the date for Biconical vessels. The Pode Hole Quarry date from this irregularly decorated, shell-gritted fabric vessel indicates the end of the use of this formerly precise motif and technique at Bar Pasture/ Pode Hole; no other examples of it have been recovered in either fabric range.

Ceramic Phase 3 (Middle Bronze Age)

A total of 514 sherds (8808g) of Deverel-Rimbury-type pottery was assigned to the Middle Bronze Age (see Table 5, *Appendix A*). This ceramic phase comprises three sub-divisions based on a dramatic change in pottery

technology during the period which is supported by five radiocarbon dates.

Ceramic Phase 3A (Early Middle Bronze Age)

The earlier part of the Middle Bronze Age is characterised by the presence of grog-tempered urn-like pottery, a continuation of the Early Bronze Age potting tradition. A ceramic phase at Pode Hole Quarry had been established which included undiagnostic, thick-walled Early Bronze Age vessels and Early Middle Bronze Age Deverel-Rimbury Bucket Urn-like vessels made from grog-tempered fabrics including types G1, G3 and GQ2 (Morris 2009a: 66, fig. 4.1, 13-20). It has become apparent with the Bar Pasture assemblage that two of these fabrics (G1, GQ2) had been used to make both Biconical vessels (Early Bronze Age) and Deverel-Rimbury examples (Middle Bronze Age) as part of a long and seamless tradition of pottery manufacture using coarse grog-tempered fabrics commencing with the production of Collared Urns and Food Vessels in this area at about 2100 BC onwards (Morris 2009a: fig. 4.2, 9-12; this vol. Figures 61 and 62, nos 38-43).

A few sherds in the assemblage were found which represented grog-tempered Bucket Urn-type vessels made in the Deverel-Rimbury style. Only two examples with diagnostic rims (type R2) from grog-tempered vessels were identified, a Bucket-type vessel made from fabric G1 from pit [494] and one Barrel/Bucket-type found in waterhole [536] which had been made from fabric GQ2 and used as a cooking pot (Figure 62, nos 46 & 49). Each of these features also contained thick-walled, grog-tempered, flat bases derived from different vessels (Figure 62, nos 47-48). Part of a third base was recovered from barrow ring-gully [1026]. These three bases were typical of substantial Early-Middle Bronze Age urns, including two with diameters of 140mm and 160mm, and have been allocated to this sub-phase based on their deposition into features with other grog-tempered Deverel-Rimbury style pottery. Grog-tempered Bucket Urn-type vessels have been found in cremation cemeteries at Pasture Lodge Farm (Frieston) and Grantham (Allen *et al*., 1987: figs 14, 22, 16, 3 and 17, 8-9), as well as at the Middle Bronze Age settlement at Billingborough (Challis and Laidlaw 2001: fig. 22, 22 & 24 and fig. 23, 29) in Lincolnshire, and in several pits nearby at Pode Hole Quarry (Morris 2009a: fig. 4.1, 14 & 18-19).

Decorated body sherds from two other vessels present typical representations of an applied cordon located around the upper part of vessel which had been flattened by the addition of fingertip impressions and a second applied cordon with no further embellishment. Excavation of pit recut [1664] revealed three large sherds from a G1 fabric vessel decorated with a finger-tip impressed, applied cordon attached to the vessel wall around the girth (Figure 62, no. 51). While the fabric of this vessel might suggest that the pot was Early Bronze Age in date, the decoration indicates that the same fabric had been used to make a Middle Bronze Age, Deverel-Rimbury Urn-type vessel in this case. Another earlier Middle Bronze Age vessel made from fabric G1 displayed a plain, applied, horizontal cordon (Figure 62, no. 52) which had been constructed in such a manner that it is possible to appreciate that the decorative technique employed to make the collars had simply been adapted to make cordons on Middle Bronze Age vessels. Applied cordons are common decorative motifs on Deverel-Rimbury style vessels found in the East Midlands, as seen at cemeteries in Nottinghamshire and Lincolnshire where several examples actually have the cordons located just beneath the rims and appear similar to collars (Allen *et al*. 1987: figs 7, 10; 8, 19; 9, 25; 13, 3; 14, 14 & 20; 15, 23 & 26; and 16, 1, 3-4, 8 & 10) and the Middle Bronze Age settlement at Billingborough (Challis and Laidlaw 2001: figs 21, 823, 31 & 41).

Therefore, there are at least two continuous components during this change in the manufacture of pottery to represent Deverel-Rimbury style of vessels: the use of coarse grog-tempered fabrics to make the vessels and the application of cordons around the upper half of the vessel. But when did this change occur? Fortunately, one sizeable body sherd derived from a grog-tempered fabric (G1) vessel with a moderately thick wall, which had been used as a cooking pot, provided enough carbonised residue on its interior surface to produce a radiocarbon date of 1623-1463 cal BC at 95.4% probability (Figure 62, no. 53). This sherd came from the upper middle fill (9543) of northern segment [9535], one of seven segments excavated through barrow ditch G9563. The date for the use of this vessel spans the late 17th to mid-15th century BC. Because the date for a grog-tempered Biconical Urn-type vessel in the Bar Pasture assemblage was returned at 1865-1640 cal BC (see Ceramic Phase 2B above), there is a reasonable possibility that the G9563 sherd derived from a later, Deverel-Rimbury type vessel and this date could represent the currency of grog-tempered Deverel-Rimbury style vessel manufacture and use in the Bar Pasture area. If so, then a second sherd from a different vessel made from fabric GD1 which came from the penultimate fill (9325) of western ditch cut [9329], one of seven cuts investigating barrow ditch G9380, may also belong to Ceramic Phase 3A. The sherds from all three barrow ditch groups, ring-ditch [1026], G9563 and G9380, had been recovered from the upper fills which post-date the actual construction and use of those Early Bronze Age monuments.

Ceramic Phases 3A/3B (Transitional Early to Late Middle Bronze Age)

Two vessels hailed the prospect of a transitional phase from the Early Middle Bronze Age pottery production and use to the Late Middle Bronze Age by signalling the end of the sole use of grog-tempered fabrics G1 and

GQ2 and the commencement of employing only shell-gritted fabrics. The fabric of these vessels was made by taking shell-bearing clay and adding grog temper to it. This fabric, SG1, was then used to make a Bucket Urn-type vessel (Figure 63, no. 54) found in pit [105] and a second container of undiagnostic form, represented by a very small body sherd recovered from a sieved sample taken from pit [1730]. This vessel had been decorated with at least one fingertip impression (Figure 63, no. 55), most likely representing a continuous line around its girth. These two pits were located within the northern part of the field system. Both the vessel form and the decorative style are typical of Deverel-Rimbury style vessels but the fabric type, a mixture of two different concepts; a distinctively different type of clay with a strong visual indicator of having been made from a local source in the form of significant pieces of fossil shell and the traditional additive of grog temper derived from a previously used vessel coming together in equal parts in this fabric (10%). Therefore, the combination of using a shell-bearing clay matrix and adding grog to it may indicate that these vessels had been made at a time of transition between earlier and later Middle Bronze Age pot-making traditions; this time displaying continuity in vessel form but a change in fabric compared to the previous transition between the Early Bronze Age and the Early Middle Bronze Age when the fabrics remained the same but the vessel forms changed to Deverel-Rimbury types (Ceramic Phases 2B to 3A discussed above).

Ceramic Phase 3B (Late Middle Bronze Age)

The later Middle Bronze Age is signalled by the continued manufacture of large, thick-walled urn-type vessels, but the fabric recipe for making these pots changed dramatically. Grog-tempered fabrics were completely replaced by the use of coarse and fine shell-gritted ones (S1, S2, S4 and S5). The range of features which produced shell fabric Deverel-Rimbury style vessels included apparent settlement activity at a double-ditched enclosure with an outer ditch [7456] which produced sherds from two vessels including one with a raised cordon strip associated with Barrel-type vessels (Figure 63, no. 57) and an inner ditch with a terminus cut [7476] containing 5% of a 220mm diameter flat base (Figure 63, no. 58), as well as a rim fragment from a second Barrel Urn-type vessel found in the terminus cut of another ditch [8230] (Figure 63, no. 59), found in association with a cranial vault fragment from a human skull and a small quantity of animal bone. Lugs are quite a rare occurrence in the Deverel-Rimbury repertoire but a Bucket-type urn from waterhole [1801] had had at least one of these (Figure 63, no. 56). Lugs are usually an appendage which may have been used for working safely with a large vessel when cooking or steadying a large vessel when pouring out its contents. This vessel has a distinctive, internally-bevelled rim (type R11) but is basically a Bucket Urn-type which had been made from a very coarse, shell-gritted fabric (S5) and at least one vertically attached lug (L1) on its upper half. The unique character of this vessel is emphasized by the vertical application of at least one sizeable lug, an attachment not paralleled amongst any of the numerous Deverel-Rimbury Middle Bronze Age urns made from grog-tempered fabrics found on the Middle Bronze Age sites in the area referenced previously. This could have been a local potter's invention to solve the problem of how to use such a large pot full of cooked food, but it is strange that the lug was not applied horizontally or was wider in nature. Therefore, this lug may actually have been applied as decoration. One rim sherd was recovered from small pit [10217]. The original vessel appears to have been decorated as the sherd displays one extant fingernail impression on the exterior of its flattened rim lip (Figure 63, no. 63). It is most likely to have belonged to a Late Middle Bronze Age shell-gritted fabric Bucket Urn-type vessel such as found previously in this landscape (Morris 2009a: fig. 4.2, 34).

The bases of six cremation urns, which originally had been deposited upright into their burial contexts, had been severely damaged by ploughing, three in very poor condition. Five had been made from coarser shell-gritted fabric S2 with only one from the finer shell-gritted S1. Two different types of base resulting from slight differences in construction could be identified amongst the better-preserved examples: type B1 (simple flat base to wall angle profile) and type B2 (flared or wedged base to wall angle profile). The two examples of B1 bases found with cremations 5 and 6 (Figure 63, nos 60-61) derive from what appear to be identical vessels. Their base plates are quite thick at 15mm and the exterior edge of the base plate to first wall coil join is smoothly rounded or softly jointed and the wall continues upward smoothly. Although such little remains of these two vessels, it is worth considering whether we may be looking at a pair of bucket-shaped vessels that might have been made by the same potter or related potters. There are differences between them such as one is 20mm smaller in diameter than the other and its construction joint is more L-shaped at the base to wall angle, but their wall thickness, choice of fabric and general appearance have interesting similarities.

The urn from Cremation 10 (Figure 63, no. 62), however, is quite different in several aspects from the well-preserved bases from cremations 5 and 6. It had been made with much thinner walls at 7-9mm thick compared to 11-13 and 13-15mm respectively. It has a wedge-shaped base angle and out-flaring wall profile compared to the upright walls and rounded base angle of the urns from cremations 5 and 6. The base plates of the first two urns are also thicker than that made for the urn from Cremation 10. Therefore, it is possible that the urn from Cremation 10 was not made by the same hands, i.e. not the same potter, as that proposed

for cremations 5 and 6. Three of these cremation urns had been used as cookpots in a settlement nearby, prior to their removal from the living context to contain cremated bones in their new funerary context in the world of the dead. Two of the bases are pitted on their interior surfaces, probably through contact with slightly acidic liquids and abraded only on their interior surfaces. Therefore, five of these six containers had come full circle in their life histories, as had the people who had been buried in them - first working in the thriving community and then joining the world of the dead. The use-life histories of these shelly fabric pots demonstrate that they too had been made, used and buried on the Cambridgeshire fen edge.

Although Cremation 2 found in stone-lined burial [9526] did not have an associated urn, two tiny pottery fragments in the form of split flakes (1 gramme) were recovered from the sieving of its fill (9444). The vessel from which they derived had been made from the coarser shell-gritted fabric S2. These pieces are likely to represent fragments from one of the cremation urns in the cemetery, with five of the six cremation urns having been made from this same S2 fabric.

In addition to these more diagnostic examples of Late Middle Bronze Age pottery, 42 undecorated body sherds (128g) from 12 features (see Table 5, *Appendix A*) were allocated to this ceramic phase based on their fabric types, radiocarbon date (see next paragraph) and wall thicknesses, where such exist. Some of these sherds could belong to Ceramic Phase 4, in particular those which are simply flakes without complete wall thickness (code X), but at present are in this phase.

Three radiocarbon dates were associated directly with carbonised residues on the interior of shell fabric vessels in this ceramic phase which had been used as cooking pots with results ranging between 1488-1130 cal BC at 95.4% probability. Two of these dates were produced from the interior flat bases of cremation urns 6 and 10 (Figure 63, nos 61 and 62), with the results of 1392-1130 cal BC and 1400-1132 cal BC respectively, which places the use of these vessels as cooking pots at a nearby settlement as close to having been contemporary as is possible within current radiocarbon dating of single, comparable results (see *Appendix E*). The dates also provide a *terminus post quem* for the removal of these domestic wares from the living community and their allocation to contain the bodies of the dead. In addition, there is a third result of a similar date, 1396-1216 cal BC, received from the residue of a plain fabric S4 body sherd found in small sub-rectangular pit [7613] that is currently assigned to Ceramic Phase 4B due to the presence of several small sherds from two D1 vessels including a shouldered example (not illustrated), which suggests that this S4 sherd may have been redeposited into this feature. These three dates concur with those from Pode Hole Quarry for shell-bearing fabric Deverel-Rimbury vessels.

Two Middle Bronze Age vessels from non-funerary contexts in the Pode Hole Quarry landscape (Morris 2009a: figs 4.1, 23 and 4.2, 28) also have evidence of their use as cookpots in the form of burnt food residue used to date this domestic activity to 1410-1200 and 1410-1210 cal BC (Daniel 2009: Appendix A, 166). At Pode Hole Farm, sherds likely to be from the same shell-gritted Middle Bronze Age bucket-shaped vessel (Woodward 2001: fig. 11, 6-8), were found in a pit with a sizeable quantity of charcoal radiocarbon dated to 1395-1010 cal BC (at 95% probability; Hood 2001: 23). Therefore, it is now well-established that shell fabric Deverel-Rimbury pottery found in the fen-edge landscape dates from the 15th to 11th centuries BC, with the majority of the dates focused on the 15th to 12th centuries BC.

Ceramic Phase 4 (Late Bronze Age to Early Iron Age)

A scatter of Late Bronze Age-type pottery was identified in the Bar Pasture assemblage (98 sherds; 1048g). This period is characterised by a range of forms which have been classified into five categories within three broad groups of jars, bowls and cups (Class I-coarseware jars, II-fineware jars, III-coarseware bowls, IV-fineware bowls, and V-cups; Barrett 1980). These new forms represent a dramatic alteration in vessel shapes which were produced from the end of the second millennium BC through to the middle of the first millennium BC. The simple, solid shapes of bucket and barrel urn-types which had dominated pottery production and use during the second half of the second millennium BC (Late Middle Bronze Age; Ceramic Phase 3B) were replaced by dramatic shouldered jars with straight or hollow necks, bipartite and tripartite bowls and simple little cups typified in the Late Bronze Age assemblages recovered at Hoe Hills, Dowsby (Knight 2010b), Stickford (Knight 2010a) and Washingborough (Allen 2009) in Lincolnshire located between 30-70km to the north of Bar Pasture; and at the extraordinarily well-preserved waterlogged platform site of Must Farm, Whittlesey (Peterborough) (Gibson *et al.* 2016; Knight *et al.* 2016) and at Fengate (Peterborough) (Hawkes and Fell 1943) nearby in Cambridgeshire. This period from 1000-500 BC is recognised to have two sub-styles, the Plainware Post-Deverel-Rimbury Late Bronze Age and the Late Bronze Age-Early Iron Age based on both changes in vessel shapes and the absence in the former and the presence during the latter of decoration (Knight 2002). The frequency of decoration, when it occurs, varies considerably and is not relevant to the modest Bar Pasture assemblage.

An attempt has been made here to classify the Bar Pasture material into either Post-Deverel-Rimbury Plainware Late Bronze Age (PDR LBA, *c.* 1000-800 BC)

or Late Bronze Age-Early Iron Age (LBA-EIA, *c*. 800-600 BC) sub-style (cf. Knight 2002), but this division is only tentative, with the exception of one sherd which can only be Early Iron Age in type due to the presence of red-slip surface treatment on its exterior surface. The primary reasons for attempting these divisions are not only based on form and fabric but also on spatial and contextual information rather than just whether the vessels had been decorated or not. None of these small to modest-sized sherds displays decoration but this could be misleading due to their sample size as representatives of formerly complete vessels. The easiest solution would have been for all but the red-slipped sherd to be assigned to the PDR LBA. However, there is a joint contextual and spatial division between the sherds from 21 vessels found in 18 features, of which 15 were types of ditches (barrow; ring; field), with only two found in the same pit across the Bar Pasture landscape to the east of Drove 2; at a deposition rate of 1.2 vessels per feature (see Table 6, *Appendix A*). The opposite is the case for the landscape to the SW (west of Drove 5), where 23 vessels were found in 11 features of which eight were pits, with one sherd found in a ring-ditch and two from post-holes; a deposition rate of 2.1 vessels per feature. A difference is also apparent with the range and frequency of fabric groups found in these areas; 17 of the vessels (81%), east of Drove 2 had been made from shell-gritted fabrics (S1, S2) typical of the Late Middle Bronze Age Ceramic Phase 3B (discussed above), with four vessels made from the same flint-tempered fabric (F1; 19%). In contrast, 15 vessels from the landscape west of Drove 5 had been made from various shell-gritted fabrics (D1, S1, S2, S4, S7; 65%), with eight made from either a wide range of quartz sand fabrics or a non-local mudstone-bearing, quartz sand fabric (DQ1, FQ1, GSQ1, MDQ1, QF1, QI1, SQ1; 35%).

Continuity in the use of both the fine and coarse, shell-gritted fabrics, S1-S2, from the Late Middle Bronze Age (Bar Pasture Ceramic Phase 3B) into the Late Bronze Age (Ceramic Phase 4A) is a strong constant in the technological history of local resource procurement and use in the fens. At Billingborough, it is possible to differentiate the earlier Middle Bronze Age grog-tempered assemblage in the lower fill of one ditch (7743) from the shell-bearing fabrics in the three upper fills (Cleal 2001: 39); and shell-bearing fabrics continued to be used during the Post-Deverel-Rimbury Late Bronze Age phase at that site. At Hoe Hills (Dowsby), located just 5km south of Billingborough, a similar range of fabrics was identified in a stratified assemblage found in an enclosure ditch (328 sherds; 1716g); three shell-gritted fabrics represent the majority with two types of quartz sand fabrics and one grog-tempered fabric together comprising a very small amount in a collection where there is 'a firm emphasis upon the coarser domestic wares' (Knight 2010b: 123, table 15, fig. 66). More recently, the Late Bronze Age assemblage of 238 vessels (1721 sherds; 25kg) recovered from excavations prior to the improvement of flood defences beside the River Witham at Washingborough, 5km east of Lincoln and 38km north of Billingborough, was also dominated by shell-bearing fabrics (69% by weight) made from local sources, with a significant amount of probably local limestone and sandstone fabrics (23%), four quartz sand fabrics (4.3%), one shell and mudstone fabric (2.8%) and one non-local flint and grog-tempered fabric (0.9%) (Allen 2009: 41, table 4.14). In contrast, at Stickford on the NE side of the fens and 35km from Washingborough, a large assemblage of Late Bronze Age pottery found in two trenches (1104 sherds; 6958g) was recovered. This assemblage is overwhelmingly dominated by two coarse flint-tempered fabrics (88% by weight), leaving only 3% of the pottery made from two quartz sand fabrics and 9% from two grog-tempered fabrics. It is assumed that the striking consistencies observed amongst the fabrics of these Late Bronze Age assemblages are (with one difference) the result of site proximity to similar geological deposits of potential pottery manufacturing resources.

In support of the spatial patterns of both deposition into different feature types and popularity of fabric groups in different areas identified from the Bar Pasture assemblage, the north and east occurrences also included the only examples of ovoid or convex-profile jars; none were recovered in the western zone. Instead, five bowls which are open vessel forms that can be identified by the presence of either both surfaces or just interior surfaces having been burnished or highly smoothed, were found in the western area but none in the north or east zones.

All of these different forms of evidence strongly suggest that there may be value in separating the Ceramic Phase 4 pottery assemblage into earlier and later sub-styles accordingly. By dividing the spatial distributions into two groups and presenting the range of fabrics and forms found in those areas, a more nuanced understanding of what might have taken place on the Bar Pasture landscape after the Middle Bronze Age and before the Early La Tène Iron Age is provided. However, no samples suitable for radiocarbon dating were associated in features with any of the Ceramic Phase 4 sherds at Bar Pasture, which may have been able to support or refute the proposed division into two sub-phases.

Ceramic Phase 4A (Post-Deverel-Rimbury Plainware Late Bronze Age (PDR LBA))

Two vessels of a later Bronze Age vessel form, the ovoid or convex-profile jar (R3), were made from the vesicular form (D1) of shell-gritted fabric S2 (Figures 63 and 64, nos 64 & 68). They were found in upper fill (384) of enclosure ditch cut [383] and fill (1769) of barrow ditch cut [1783] respectively. Three of the five

segments [11039] / [11047] / [11051] excavated through barrow ditch G11083 also contained large pieces from two different thin-walled type R3 vessels made from shell fabrics (Figure 64, nos 69-70) typical of the Post-Deverel-Rimbury Late Bronze Age ceramic period in eastern England (Knight 2002: 124-6, fig. 12.3, 8 & 10-11) and elsewhere. This common type of PDR LBA vessel had been found previously at Pode Hole Quarry (Morris 2009a: fig. 4.2, 36-38, 40-41 & 43-45). Vessels from this period are usually undecorated as are these pots. A second characteristic of this period is that both of these pots display finger-marking on their interior surfaces produced during manufacture which has not been removed by subsequent smoothing of these closed form shapes. It is not possible to establish the rim diameters for these vessels because less than 5% of each was recovered but it is possible to suggest that the vessel from [11039] (Figure 64, no. 69) may have had a diameter of between 300-400mm because of the complete lack of curvature to the circumference of the large sherd fragment recovered. It had been used as a cookpot, evident by the presence of soot on its exterior surface. This particular vessel may have been made by the same potter who made the pot represented by the single large sherd found in the terminal of isolated field ditch [11372] located a short distance to the north. Both vessels were made from fabric S2 and had been fired in unoxidising conditions. It has the same fabric, similar wall thickness, comes from a very large vessel with hardly any curvature, and is nearly completely unoxidised. If it is not from the same vessel, then there is a strong possibility that the original vessel, which had been used as a cookpot due to the presence of soot on its exterior surface, could have been made by the same potter. All four of the type R3 vessels were fired in unoxidising conditions which is not the same for shouldered jars discussed below.

Generally, type R3 vessels display a great deal of rim variation (rounded, bevelled or hooked being the most common) but the vessel shape is always that of a neckless, convex or ovoid container with slightly incurving rim. This shape is not untypical of many examples of Middle Bronze Age Deverel-Rimbury style Bucket Urns as well as Post-Deverel-Rimbury ovoid jars of Late Bronze Age date vessels (Knight 2002: fig. 12.3, 5-6 and 10-11), and it is quite clear that these jars derive from the more ovoid types of buckets. Eight examples of relatively thin-walled R3 type vessels from Pode Hole Quarry were made from shell-gritted fabrics (Morris *et al.* 2008: fig. 4.2, nos 36-38, 40-41, & 43-45), just like the Bar Pasture examples. Therefore, while some R3 type vessels can be thick-walled and grog-tempered, many can also be thin-walled and shell-gritted jars of PDR LBA style and Late Bronze Age in date, such as examples from Billingborough and Stickford (Knight 2002: fig. 12.3, 10-11) and Newark Road, Fengate (Pryor 1980: fig. 53, 8 & 12). The Fengate examples were recovered from a system of field boundaries which were dated to the second millennium BC, similar to the field boundaries excavated at Pode Hole Quarry. An example of type R3 vessel from Pode Hole Quarry (Morris 2009a: fig. 4.1, 27), made from shell fabric S1, was associated with a pair of nearly identical radiocarbon dates of 1412-1210 cal BC (SUERC-12096) and 1410-1200 cal BC (SUERC-12097) derived from burnt residues on sherds found in two different contexts (7382, 7654) of cut [7218] within Pit Cluster 3 (Daniel 2009: appendix A.1, 166). These samples had been selected for radiocarbon dating to explore the date range for shell-bearing fabrics of Deverel-Rimbury-type barrel, bucket and ovoid vessels found in both this pit cluster and Pit Cluster 4 (Morris 2009a: fig. 4.1, 23-29). A third sample derived from a vesicular (shell) and quartz sand fabric (DQ1) R3 vessel found in field boundary group 8026 at Pode Hole Quarry (Morris 2009a: fig. 4.2, 36a-b) gave a result of 1270-1000 cal BC (SUERC-12862). Therefore, shell fabric variations of this simple form type had been in production for at least four hundred years from the Middle Bronze Age into the Post-Deverel-Rimbury Late Bronze Age period in this area of the Lincolnshire-Cambridgeshire fens. The earlier of these two dates was also directly contemporary with the shell-gritted, T-shaped Barrel Urn-type vessel form R2 described above (section Ceramic Phase 3B) which demonstrates that this fabric recipe tradition can also be understood as truly transitional from the Middle to Late Bronze Age periods.

The Ceramic Phase 4A sub-phase is also represented by five different hollow-necked and/or shouldered jars in contrasting fabrics. Hollow-neck sherds (N1), particularly examples from thin-walled vessels, invariably derive from shouldered jars or bowls. This profile shape is one of the major changes which characterise the difference between assemblages from the Middle Bronze Age and the Post-Deverel-Rimbury Late Bronze Age in Southern England (Barrett 1980). The neck zone from an S1 fabric vessel was recovered from ditch [493] (Figure 64, no. 65) and a small sherd from an everted rim, necked jar (R13) made from flint-tempered fabric F1 was found in pit [564] (Figure 64, no. 66). A specifically Late Bronze Age example, recovered from a modern claying trench, derives from the rim of a long-necked, probably shouldered jar made from the coarsely shell-gritted S2 fabric (R9; Figure 64, no. 67). Variants of shouldered jars are one of the commonest types from this period with frequent examples found on sites such as Billingborough (Cleal 2001: fig. 25, 62 and 70), Stickford (Knight 2010a: figs 37, 11 and 38, 17, 19 & 25) and Washingborough (Allen 2009: figs 4.3, 40, 46, 51, 60, 72 & 75; 4.4, 81-83, 89, 96-99 & 101-102; fig. 4.5, 103-106; and 4.7, 112-113), as well as nearby at Pode Hole Quarry (Morris 2009a: fig. 4.2, 42 and catalogue nos 46 & 48-49, *labelled incorrectly as numbers 47 & 49-50*). This particular one from Bar Pasture is burnished on the

exterior and wiped on the interior of the upper neck suggesting a finer type of jar (Class II, Barrett 1980), but one that had been used as a cookpot at least once in its history, based on the presence of a small amount of carbonised residue on its interior surface.

The rim and a body sherd from a long-necked jar with a bevelled rim (R29) (Figure 64, no. 71) was recovered from the lowest fill (11101) of ditch [11102]. The lip shape of this rim is probably a different potter's variant of type R9, or just a different day's work for the same potter. Both vessels were made using the same coarse shell fabric, S2, one with and one without burnishing. There is not enough of either vessel's rim circumference to determine a diameter, but it is most likely that this long-necked rim form derived from a shouldered jar similar to the S2 fabric neck sherd from ditch [11859] which appears to have broken at the junction of the neck and shoulder of a large, thick-walled jar (Figure 64, no. 72).

It is suggested here that due to the presence of four shell fabric, ovoid jars, which developed in form from similar shell fabric Late Middle Bronze Age Deverel-Rimbury ovoid vessels, that this sub-phase (CP4A) is likely to have represented only occasional visits into the fen edge resulting in the deposition of potsherds into earlier features constructed in the previous Early and Middle Bronze Age periods for potentially three hundred years, from the end of the Late Middle Bronze Age through the Post-Deverel-Rimbury Late Bronze Age, *c.* 1100-800/700 BC. The lack of any associations of both ovoid jars and shouldered jars in the same features makes it impossible to suggest whether these vessel types were contemporary or not; it is only the consistency of their fabric types which suggests that they may have been.

Ceramic Phase 4B (Late Bronze Age / Early Iron Age)

Shouldered jars and bowls are typical of the Late Bronze Age/ Early Iron Age (LBA/EIA) in the East Midlands (Knight 2002: fig. 12.3, 13-19). In the Bar Pasture assemblage, bowls are only found in the SW part of the landscape. Two definite examples of shouldered bowls were recovered; one made from a sandy fabric with sparse vesicles and argillaceous matter reminiscent of mudstones (MDQ1) found in pit [5211] (Figure 64, no. 74) and the other made from a sandy fabric (DQ1) with vesicles of former coarse shell found in pit [6096] (Figure 64, no. 75). In addition to these diagnostic examples of shouldered bowls, four other bowls are represented by base and body sherds alone, including two different vessels made from the unusual shell fabric S7 also found in pit [5211], the upright rim of a necked example made from a grog-tempered and shell-gritted, sandy fabric (GSQ1) (Figure 64, no. 78) which had been highly smoothed on both surfaces that was found in large pit [6130], and one very large body sherd (with another very small sherd from sample <202>) from another D1 fabric vessel with burnished interior found in hearth pit [7730]. Therefore, not only are sherds from six bowls found in the SW zone, but three of these vessels had been made from different quartz sand-bearing fabrics; quartz sand fabrics with discernible grain size creating a sandy feel to the clay did occur in Ceramic Phase 4A pottery. These, along with shell fabric S7, are all new fabrics.

But these were not the only new fabrics. A most unusual, small sherd in the Ceramic Phase 4B collection came from pit [7230]. It derives from a shouldered vessel, either a jar or a bowl, made from another, new, quartz sand fabric; this time one with distinctive iron oxide inclusions present (QI1). The vessel had been covered on the exterior with what appears to be red-slip (Figure 65, no. 79). It is not likely that this vessel had been made locally, based on a combination of both its fabric and the use of haematite-rich clay to make a slip for creating a bright red surface treatment on vessels, which is not a local later prehistoric technique either. The method was used by Late Bronze Age/ earlier Iron Age potters in both Kent and Wessex (Cunliffe 2005; Middleton 1987, 1995) which suggests that the small vessel had been traded into the area or may have been the personal possession of a visitor/trader to the fen edge during this period.

The long-necked bowl (Figure 64, no. 78) found in large pit [6130] located on the western side of Field 56 was made from fabric GSQ1. Sherds from nearly the same amount (20%, 25%) of two flat-based jars of the same size (100mm diameter), one made from GSQ1 fabric and the other from SQ1 fabric (Figure 64, nos 76 & 77) were recovered from large quarry pit [6105] located close to the SW boundary of Field 57. The use of GSQ1 fabric to make both the long-necked bowl and one of these two jars indicates reasonable contemporaneity of ceramic phase for their manufacture, while the recovery of the two jars in the same feature links all of these vessels. There is another special link between the two flat-based vessels: one is made from fabric SQ1 and the other from fabric GSQ1; the latter comprising grog temper derived from the crushing of an SQ1 vessel to make the grog, which was then added to SQ1 fabric to create this GSQ1 fabric. This suggests that the GSQ1 vessel may have been one generation of vessel-making younger than the SQ1 vessel from context (6110); an older pot (SQ1 fabric) crushed to provide grog to make a new, younger pot (GSQ1 fabric). It is possible that both fabrics and these vessels had been made by the same potter or possibly by a family of potters such as a mother and daughter.

The bowls and jars in Ceramic Phase 4B are typical examples which find parallels within and outside the region. The bipartite bowl with short neck and upright rim (Figure 64, no. 75) is similar to two examples found at

Washingborough (Allen 2009: figs 4.7-4.8, 116 & 120), one of which (no. 116) is nearly identical to a wooden bowl recovered from that site (Taylor 2009a: fig. 4.17). Bowls of this type are well-known on Late Bronze Age sites such as at Stickford (Knight 2010a: fig. 37, 12 and 38, 19), Gretton in Northamptonshire (Jackson and Knight 1985: fig. 9, 75), and Runnymede Bridge in Surrey (Longley 1991: figs 76-82, P1, P3, P20, P28, P44, P48 & P73). The small, long-necked bowl of likely shouldered profile (Figure 64, no. 78) is similar in form to Late Bronze to earlier Iron Age examples from Fengate (Hawkes and Fell 1943: figs 5.L1 and 7.R6), for example.

It is important to emphasize one special aspect of this Ceramic Phase 4B collection. At most, there were never more than two vessels represented in a feature assigned to Ceramic Phase 4A as detailed above; nearly all features assigned to that ceramic phase had sherds from just one vessel. The exceptions were pit [564] and the multiple segments excavated through ring-ditch G11083, but even there it was just one vessel per intervention and the sherd from one of these may belong to the same pot as found in another. Pit [5211] contained sherds from vessels which had been made from five different fabrics and these were found in two fills. Fill (5208) contained sherds from four different pots; a large coarseware jar made from fabric S2 (Figure 64, no. 73), a shouldered bowl made from the mudstone, shell and quartz sand fabric MDQ1 (Figure 64, no. 74), a fine fabric S4 jar represented by an 80mm diameter flat base and body sherds (*not illustrated*), one body sherd from an S1 jar, and one body sherd from coarser shell fabric jar (S2). Sherds from a second bowl represented by another 80mm diameter, flat base and body sherds but made from fabric S7 and burnished on the interior only were found in fills (5208) and (5209). Fill (5209) also had a fabric S1 sherd which had been fired differently than the S1 sherd recovered from fill (5208). Quarry pit [6105] had sherds from four vessels made from four very different fabrics in it: a 100mm diameter base jar made from shell-bearing quartz sand fabric SQ1 and burnished on its exterior (Figure 64, no. 76), a flint-tempered quartz sand fabric (FQ1) vessel which had been affected by close contact with the heating of brine, three small sherds from an S1 fabric vessel and a second jar base also measuring 100mm in diameter made from grog-tempered, shell-bearing quartz sand fabric GSQ1 (Figure 64, no. 77).

Sub-rectangular pit [7613] is another feature in this SW part of the landscape that produced sherds from three vessels. In this case, one derives from a thin-walled, shouldered vessel made from the vesicular fabric D1, a single fabric S4 body sherd from a storage jar with pitted interior due to contact with acidic liquid, and eight very small sherds (found in sample <198>) from a second D1 vessel with thicker walls that had been fired differently from the first D1 vessel described.

Therefore, the behaviour which created or caused the deposition of all of these distinctive pottery sherds during the Late Bronze Age / Early Iron Age was definitely different in character than that for the Post-Deverel-Rimbury Late Bronze Age in the Bar Pasture landscape.

Ceramic Phase 5 (Early La Tène Iron Age)

The results from four radiocarbon dated samples transformed our understanding of the end of Ceramic Phase 4B (Late Bronze Age/ Early Iron Age) and the nature of Ceramic Phase 5 (Early La Tène Iron Age) collections within the Bar Pasture project.

A total of 308 sherds (5002g) of Iron Age pottery was recovered; all from features located in the southern area of the Site. Three pits on the SW side contained what appeared to be Late Bronze Age-Early Iron Age pottery. However, carbonised residue on the interior of a vessel which had been used as a cooking pot produced one result of 511-211 cal BC at 95.4% probability. A second date from a different pit was provided from a carbonised *Corylus avellana* nutshell which produced a result of 406-234 cal BC at 95.4% probability. While the first covers the end of the 6th century which is indicative of the end of the Early Iron Age, the second date commences at the end of the 5th century, one hundred years later; both dates span the 4th to 3rd centuries, which is referred to as the core of the Early La Tène Iron Age in the eastern Midlands from the Humber to the Nene river valleys (Knight 2002: 126-135, fig. 12.3); the Middle Iron Age elsewhere in southern Britain.

Therefore, it was necessary to understand how this delayed continuation in the use and deposition of Early Iron Age pottery might have occurred in the fen-edge area with regard to the dramatic ceramic changes which took place at Bar Pasture in the later 4th to mid-1st centuries BC. A third date provided from carbonised *Quercus* sp. roundwood produced a result of 350-53 cal BC at 95.4% probability: a perfect Middle Iron Age date. This sample was recovered from segment [5023] excavated through the south arc of the Structure 7 ring-gully, part of the iron-smithy complex located in the SW part of the Site. The pottery associated with this smithy is diagnostically East Midlands Iron Age in character with at least 38% of vessels displaying variations of Scored Ware decoration (see Table 7, *Appendix A*); the remaining were either highly burnished bowls, undecorated simple jars, bases, or small sherds and sherd flakes recovered from sieved samples – with one exception. Curiously, a fourth date of 486-207 cal BC at 95.4% probability was produced from carbonised encrustation found on the base of a vessel in cut [5066] through the north arc of the smithy ring-gully. However, as will be detailed below, the fabric of the vessel which provided the sample for this

fourth date is one typical of Ceramic Phase 4B pottery. This result is virtually identical to the first two dates presented above that were associated directly on, or indirectly with, pottery that is assigned to the Early Iron Age period below. Thus, there are three end of the Early Iron Age through Middle Iron Age dates which together span 511-207 cal BC and are associated with Early Iron Age type pottery with one Middle Iron Age date which covers 350-53 cal BC and is associated with Early La Tène Iron Age pottery.

One way in which these pottery groups and their dates can be understood is by realising that what we may have here is the tangible end of one way of life and the commencement of another in terms of the activities which took place for possibly half a millennium on this landscape, the material culture debris which was left behind in these features, and who the people might have been who provided it all. This ceramic phase has, therefore, been divided into two sub-phases to accommodate the discovery of this unexpected and intriguing phenomenon. It is a rare opportunity to see such a development unfolding and it is only with the aid of absolute dating that this has been possible. There is only one disappointment, the lack of anything suitable from the 31 features assigned to Ceramic Phase 4, which could have been used to date the pottery of that period.

Ceramic Phase 5A (Early La Tène Iron Age 1)

The pottery from three pits has been assigned to this first division of Ceramic Phase 5. Sherds from seven different vessels, four of which are illustrated (Figure 65, nos 80-83), were found in pit [3005] within a cluster of five pits ([3003], [3005], [3008], [3010] and [3012]). These vessels include a necked, round-bodied jar decorated with fingertip impressions (fabric GDQ2), a small jar with significant vertical finger-wiping on the exterior (GD2), a shouldered jar (GDQ2), and a necked jar with upright rim (S1). The sherd from the fingertip-decorated vessel, which had been used as a cooking pot, was associated with a carbonised cereal grain (*Hordeum*) radiocarbon dated to 511-211 cal BC. The vessel itself is typical of the Late Bronze Age-Early Iron Age period in the East Midlands, as discovered at Gretton (Northants) (Jackson and Knight 1985: fig. 17.1) and Market Deeping (Lincs) (Knight 2010c: fig. 136, 3) and more specifically to the Early Iron Age, as at Lingwood Wells and Wandlebury ringwork (Cambs) (Hill 1999: fig. 18, 6-7; Webley 2005: figs 2, 11 & 3, 12). The assemblage from Lingwood Wells, located 42km to the south of Bar Pasture, was composed of a great variety of both jar and bowl types, nearly all of which had been made from fossil shell fabrics (98% of sherds) and assigned to the 6th century BC (Hill 1999: 23), while only 9% of sherds at Wandlebury ringwork had shell fabrics, the majority being flint-tempered. The Wandlebury assemblage, comprised of 1821 sherds (15,173g) from decorated and undecorated jars and bowls, had been made from 20 fabrics including chalk, flint, grog-tempered, quartz, quartz-and-flint, shell and vesicular (organic matter) varieties and assigned to the Early Iron Age period, *c.* 500-400/300 BC (Webley 2005: 39-40, table 1); a date range that fits well with the radiocarbon dates from Bar Pasture.

Necked and shouldered jars have been described in the previous section as commonly found at that time. In addition, body sherds from a coarse shell-gritted fabric (S2) vessel were also recovered which demonstrate that together, vessels made from four or five different Late Bronze Age fabrics were represented; this was the same for Ceramic Phase 4B described above which indicates the stylistic similarity of pottery between Ceramic Phases 4B and 5A. Similarly nearby pit [3008] had sherds from seven vessels; one sherd each from two different, highly burnished, unoxidised (reduced firing) bowls, one of which was made from the distinctive shell and grog-tempered fabric SG2 (Figure 65, no. 84) and the other from a quartz sand fabric (QF1); 12 sherds (62g) from a cooking pot made from a sandy fabric with calcareous inclusions (QC1); five small sherds from a vessel made from the very fine shell-gritted Late Bronze Age fabric S4; and tiny flakes of shell-bearing fine and coarse fabrics S1 and S2. Thus, we have a second pit with material from several vessels that are made from both shell fabrics and quartz sand fabrics. A burnt hazelnut shell from this pit was radiocarbon dated to 406-234 cal BC indicating that these sherds were deposited into this feature at around this time, the end of the 5th to early 3rd century BC. The third, pit [3037], was located SE of the five-pit cluster and contained a rim sherd, decorated with fingernail impressions along its top edge, from a short-necked jar, again typical of the Late Bronze/ Early Iron Age, made from the vesicular variant (D2) of finer shell-gritted fabric S1 (Figure 65, no. 85).

Therefore, here are pits with sherds from shouldered jars, shiny black bowls, fingertip and fingernail decorated vessels and a jar with significant finger-wiping on its exterior made from a wide variety of both shell-bearing and quartz sand fabrics which would normally indicate that the material belongs to the Late Bronze Age/ Early Iron Age (*c.* 800-500 BC; Ceramic Phase 4B). But these three dates suggest that the use and deposition of these vessels occurred at the end of the Early Iron Age period onwards for approximately two more centuries. It is possible to see this as an area of country which may not have been at the forefront of ceramic style developments occurring elsewhere in Britain from the 5th to 3rd centuries BC. Knight commented upon this issue when dealing with understanding the Phase 1 pottery found at Market Deeping where 12 sherds displayed vessel form or decorative characteristics similar to Post-Deverel-Rimbury Plainware and Late Bronze Age/ Early Iron Age pottery (2010c: 264-5, figs 136 nos 3, 7 & 9 and 137 nos 24, 26 & 29); all of that

material, however, had been made from shell-gritted fabrics. This area may have been a backwater, steeped in traditional ways of doing things; change appears to have come slowly to generations of people living along the fen edge. If these two results are presented at 68.2% probability, the dates are 410-262 cal BC and 401-365 cal BC, the end of the 5th century to the middle of the 3rd century BC, well into the Middle Iron Age period. This is why the sub-division Ceramic Phase 5A has been created to accommodate this evidence which appears to have been actively in place during the arrival and implantation of the Scored Ware phase of East Midlands Iron Age activity along the fen edge.

Ceramic Phase 5B (Early La Tène Iron Age 2)

The pottery of the Early La Tène Iron Age 2 sub-phase at Bar Pasture is very different from the previous ceramic era. The vessels comprise several barrel-shaped or slack-profile jars of many different sizes with a variety of rims made only from shell-bearing fabrics (S1, S2, S6 and S8) which contrasts significantly with the previous ceramic phase, and several very graceful, globular bowls made from fabric S4. The jars are usually decorated with extremely distinctive, incised patterns commonly known as 'scoring' due to the deepness of the effect into the vessel walls and referred to as belonging to the 'Breedon-Ancaster' Scored Ware style zone. The variety of actual scoring includes not only deeply incised execution but also wide, shallow formats and moderate depth of tooled insertion as well. The patterns can be irregularly freehand in execution as well as regimental linear, lattice designs; all types appear to have been encouraged or at least accommodated. Examples have been found in a large region across the East Midlands and into East Anglia (Cunliffe 2005: 109-111, figs 5.8 & A24; Elsdon 1992; Knight 2002: fig. 14.2). The burnished bowls discovered in association with Scored Ware sherds in the same features are well-polished on both their interior and exterior surfaces but otherwise remain undecorated. They belong to the 'Hunsbury-Draughton' style zone of both plain and highly decorated, globular and ellipsoid-profile bowls which first occurred as undecorated but well-made vessels in the 4th-3rd centuries BC in Northamptonshire (Cunliffe 2005: 113, figs 5.9 & A:26; Knight 2002: fig. 12.3, 22-24). It is thought that the decoration of this type of distinctive bowl became common in the 2nd and 1st centuries BC, but absolute dating of these vessels still needs to be acquired.

Ceramic Phase 5B pottery comprising Scored Ware examples and burnished bowls found at Bar Pasture was concentrated in an area of features including a ditched enclosure, a ring-gully structure composed of north and south arcs, a pit within the enclosure [5020] and three pits which cut the enclosure ([5082]; [5091]; [5108]) identified as a metal-smithing complex, as well as massive pit [5234] rich with pottery located 90m to the SW of the smithy enclosure (see Table 7, *Appendix A*). Rim forms of the Scored Ware jars include a square-sectioned example (Figure 65, no. 87), a flat-topped one (Figure 65, no. 90), and a lid-seated, channelled rim (Figure 66, no. 102). The latter is a very large vessel measuring 420mm in diameter, while the others are 300mm (large) and 120mm (small) respectively. These rim forms and vessel shapes are typical of Scored Ware jars of the East Midlands and in particular find parallels in the very large assemblage recovered from the Iron Age site at Market Deeping located about 15km to the NW (Knight 2010b: figs 136-145). All Scored Ware bases are flat (B1) whether large or small in diameter (Figures 65 and 66, nos 94, 97 & 99). In addition, there is one scored vessel which may be called a bowl because its rim diameter at 160mm (small) is greater than its expected height (Figure 65, no. 93). This vessel is identical in size and form to the globular-profile, Hunsbury-Draughton type bowls in this assemblage. The globular bowl form has an upright rim and very well-rounded body profile with a slightly wedged base to help balance this pronounced shape, with two separate examples in this assemblage (Figures 65 and 66, nos 92 & 102). It may be important that no examples of this bowl type were recovered at Market Deeping. The sample of oak roundwood which produced the result of 350-53 cal BC at 95.4% probability derived from a deposit of carbonised material found in fill (5021) in the south ring-gully cut [5023] within the enclosure was associated with sherds from nine vessels, all made from shell-gritted fabrics including S1 (Figure 65, no. 95), S2, S4, and S6 (Figure 66, no. 96), six of which were decorated with scoring, including one wall sherd which had been perforated after firing in order to repair a crack.

The decorative range referred to as 'scoring' found on most of the Early La Tène Iron Age vessels is dramatic and varied. It was made by incising the exterior surface of vessels at the leather-hard stage of drying using different sharp tools based on the evidence from the Bar Pasture SW assemblage. Tools may be single-bladed such as that which created a lattice-pattern (Catalogue type IC1; Figure 65, no. 86) or repeatedly applied in an irregular pattern all over the body of the vessel (type IC3; Figures 65 and 66, nos 88, 90 & 96). The more common method, however, was incising with a comb-like, multiple-toothed device and in a single, vertical pattern down the vessel wall and around the vessel body (type IC2; Figures 65 and 66, nos 87, 93, 98-99 & 103). The very large, Early La Tène Iron Age barrel-shaped jar found in large pit [5234] was decorated not only with type IC2 scoring on the body of this impressive vessel but also with fingernail impressions around the exterior ridge of the complex, lid-seated rim (Figure 66, no. 102). Fingernail decoration on the top or lip of a rim was a method which had been employed on one of the rims of Late Bronze/ Early Iron Age date (Figure 65, no. 85) and it is interesting to see this rather personal of

tools being employed again during what is essentially the Middle Iron Age period. Pots of this capacity and pronounced barrel-shape appear to have been used mainly as storage containers from the end of the Middle Iron Age through the latest pre-Roman Iron Age period at Stanwick, Northants., where lipid residue analysis consistently demonstrated that no meals of cooked meat and/or vegetables (brassicas) had been processed in vessels of this size (Morris: in preparation). All of these variations of scoring were found to have been deployed on the jars found at the Market Deeping site and in particular that assemblage had a variety of rim decoration types in addition to body scoring (Knight 2010c: figs 137, 35; 138, 40-41, 43 & 47; 139, 60-61; 140, 69; 144, 136-137; and 145, 141).

Sherds from at least three and possibly four bowls were also found in the smithy enclosure. Two of these, which may be from the same S4 fabric vessel, are globular-bodied, pedestalled base, but plain examples of the Hunsbury-Draughton style described above; the rim half found in pit [5020] and the pedestalled base half in pit [5091] which had been dug into the NW enclosure ditch corner at cut location [5088] (Figures 65 and 66, nos 92 & 102). If these halves are from the same vessel, and this does seem quite likely, then it is possible to link these two pits as part of phase 2 of the smithy enclosure activity which comprises recutting of both ring-gullies, and the insertion of what appear to be drainage pits into the enclosure ditch at several locations. The base part of this bowl, which was burnished on both surfaces, was pitted on its interior surface suggesting that it had been used as an acidic liquid container. The other examples of bowls, discussed in relation to their fabric type below, were not diagnostic to vessel profile; one burnished on the interior from south ring-gully cut [5010] and the other on both surfaces from north ring-gully cut [5063]. A fifth bowl, represented by a single S1 fabric body sherd (9g) in the big pit [5234], had been burnished on the interior as well. Therefore, sherds from a total of five bowls were identified in association with Scored Ware-style pottery in the southern part of the project landscape; in the general vicinity of the Iron Age smithy.

A fourth radiocarbon date was produced from the carbonised encrustation of organic material found on the interior surface of a fabric MD1 complete *c*. 80mm diameter baseplate disc (not illustrated). This was the only pottery found in the first phase construction of the north ring-gully of Structure 7 within the smithy enclosure. This Iron Age fabric, gritted with mudstones and vesicular with the loss of former fragments of shell, is only found in the north and south ring-gullies of this building. It was used to make five vessels; one thin-walled vessel, two burnished bowls, one of which is also thin-walled, and two jars – both of which had been used as cooking pots including this particular base. The date is remarkably similar those associated with pottery assigned to Ceramic Phase 5A having been returned at 486-207 cal BC at 95.4% probability (406-260 cal BC at 68.2% probability), from the end of the 5th to middle of the 3rd centuries BC. An interpretation of the occurrence of this entire base disc in the earliest construction phase of the ring-gully structure with a date that includes both Ceramic Phases 5A and at least much of Ceramic Phase 5B may be that it was a foundation deposit of pottery associated with the influx of newcomers to this area with their bowls and jars made of mudstone and shell fabric from a location to the north or NW of Bar Pasture, where mudstone and shell fabric pottery has been identified.

This distinctive type of pottery fabric was found in the Washingborough assemblage as an infrequent one (2.8% by weight) amongst 12 fabrics dominated by shell-rich examples (68%) which has been identified as probably local in origin (Allen 2009: 43-45, table 4.14). The smith and his family may have moved from that area to Bar Pasture in the Middle Iron Age to set up their industry on a limited part of the landscape that was dry enough to be used for this purpose, despite the occasional need to provide additional drainage to make this possible. The quantity and variety of vessels, including a really large storage pot for grain and two other vessels for acidic liquids such as beer or milk, as well as several smaller ones for cooking food suggest that this was more than just a short spell of seasonal work, as does the recutting of the ring-gully arcs. Radiocarbon dating of *Quercus* sp. roundwood charcoal from within the south ring-gully [5023] of the smithy indicates that this activity may have begun during the second half of the 4th century BC (at 9.5% probability), but with an emphasis from the very end of the 3rd century to the mid-1st century BC (209-53 cal BC at 85.9% probability).

As often happens, there will be an isolated feature which presents a challenge. A small, undecorated type R28 vessel (Figure 66, no. 103) made from fabric S8, a very coarse fossil shell and shelly limestone-bearing example, was recovered from waterhole [8088]. This vessel appears to be a rather thick-walled, proto-saucepan pot or ovoid, neckless jar in shape. Assigning it to this ceramic period is based primarily on the fabric type but examples of such simple, convex-profile vessels are infrequent occurrences in the region, as at Dowsby (Hoe Hills) (Knight 2010b: fig. 70, 28) and Outgang Road in Market Deeping (Lincolnshire) where similar fabrics with coarse fossil shell and shelly limestone dominate the assemblage and a decorated example of this general type was found (Knight 2010c: 247, fig. 136, 1). Knight discusses the challenge with regard to differentiating whether individual vessels in Iron Age assemblages belong to the earlier part of this ceramic phase from the 5th/4th century BC or to the later part of the period from the 3rd to 1st century BC. The sherds from this

vessel were recovered in the same context as a similarly large sherd from a thinner-walled S6 vessel, along with a small sherd from an S5 fabric pot and even smaller sherds from a DQ1 fabric vessel which were likely to have been redeposited in this feature. At present, this small jar has been assigned to the Early La Tène Iron Age based on its distinctively coarse fabric, simple form and association with redeposited fragments of fabric DQ1 sherds that are normally dated to Ceramic Phase 4B and which suggest a *terminus post quem* for the vessel. Waterhole [8351], located 100m to the NW of waterhole [8088], contained a tiny S6 fabric sherd (1g) from a sieved sample suggesting that this type of feature was again being constructed during the Early La Tène Iron Age period.

A final word on the nature of Ceramic Phase 5 and its two sub-phases 5A and 5B must include reference to the fascinating palaeochannel site excavated at Outgang Road, Market Deeping. As mentioned above, the basal fills of this massive feature (Phase 1) produced a collection of pottery which is a mixture of both Ceramic Phase 5A and 5B types of pottery, including two vessels with fingernail impressions on their short-neck, upright rims, one with fingertip impressions on its round-bodied girth, a thin-walled vessel with high, everted neck, a round-shouldered jar/bowl vessel and seven sherds decorated with scoring amongst 31 vessels (Knight 2010c: figs 136-137, 1-31). A similar but slightly smaller assemblage of mixed Late Bronze Age-Early Iron Age and Early La Tène Iron Age pottery was found in the eastern enclosure ditch complex at Dowsby, Hoe Hills (Knight 2010c: 126-7, fig. 69, 1-16). The Bar Pasture Extension project was fortunate to have had access to radiocarbon dates for its Ceramic Phase 5 pottery which has made it possible to appreciate that there is now the scope to separate this range of pottery into two finer chronological divisions in future.

Catalogue of Illustrated Prehistoric Pottery
(*, fabric thin-sectioned)

(PRN: Pottery Record Number)

Ceramic Phase 1A (Early Neolithic)

1. Plain Bowl-style vessel, undecorated; fabric S2; form type R33, 5% of 220mm diameter; carbonised residue on interior surface, radiocarbon dated 3636-3382 cal BC; fill (11782), pit [11751]; PRN 4586.

Ceramic Phase 1B (Middle Neolithic)

2. Impressed/Peterborough Ware bowl, Ebbsfleet sub-style; S2; R32, 7% of 220mm diameter present; diagonal whipped cord maggot impressions along rim lip flat surface, one row of diagonal, whipped cord maggot impressions around upper shoulder and two rows under shoulder; fill (11777), pit [11749]; PRN 4585.

3. Impressed/Peterborough Ware bowl, Mortlake sub-style; fabric S1; R31, 16% of 250mm diameter; interior rim incised with two rows of chevrons creating herringbone pattern, single row of whipped cord maggot impressions around broad rim lip, single row of same impressions on upper rounded shoulder, at least six or seven rows of diagonal, fingernail impressions around lower vessel body; fill (11775), pit [11749]; PRN 4584.

Ceramic Phase 2A (Final Neolithic/Early Bronze Age)

4. Grooved Ware, undecorated; GD3, R12, less than 5% of diameter; fill (1791), pit [1808]; PRN 2065.

5. Grooved Ware, decorated; GD3; D1; multiple, wide, incised, parallel lines above broad zone of at least five rows of impressed squares on vessel body; sample <91>, fill (1805), small pit [1804]; PRNs 2067-2069 and 2083-2085.

6. Beaker, decorated; G2; D1; individual, incised, parallel, vertical lines unlikely to be a toothed comb due to irregularities; sample <91>, fill (1805), pit [1804]; PRN 2082.

7. Beaker, decorated; Q1; B1, 100% of 43mm diameter; incised geometric pattern of incised line above base edge with incised line parallel above it and rising up vessel wall, at least three parallel, vertical incised lines down vessel wall ending at incised base line; radiocarbon dated to 2192-1973 cal BC by fabric Q1 association; fill (11774), pit [11749]; PRN 4583.

8. Beaker, decorated; GD2; D1; decorated with two, widely spaced, horizontal, incised lines with one row of small fingernail impressions immediately below (or above) one of the incised lines; sample <74>, fill (1022), barrow ditch segment [1026.1], Barrow 1026; PRN 2029.

9. Beaker, decorated; GQ1; D1; decorated with parallel rows of small fingernail impressions; fill (1642), buried soil horizon beneath Barrow 1941; PRN 2053.

10. Beaker, decorated; G2; D1; decorated with one impression of a fingernail or pinched up fabric effect similar to rustication; fill (1652), waterhole [1649]; PRN 2054.

11. Beaker, decorated; GQ3; D1; two sets of multiple, parallel lines of twisted cord impressions in an oblique pattern; fill (1769), ditch segment [1783], Barrow 1941; PRN 2064.

12. Beaker, undecorated; G2; R7, 10% of 60mm diameter; fill (1862), post-hole [1861]; PRN 2072.

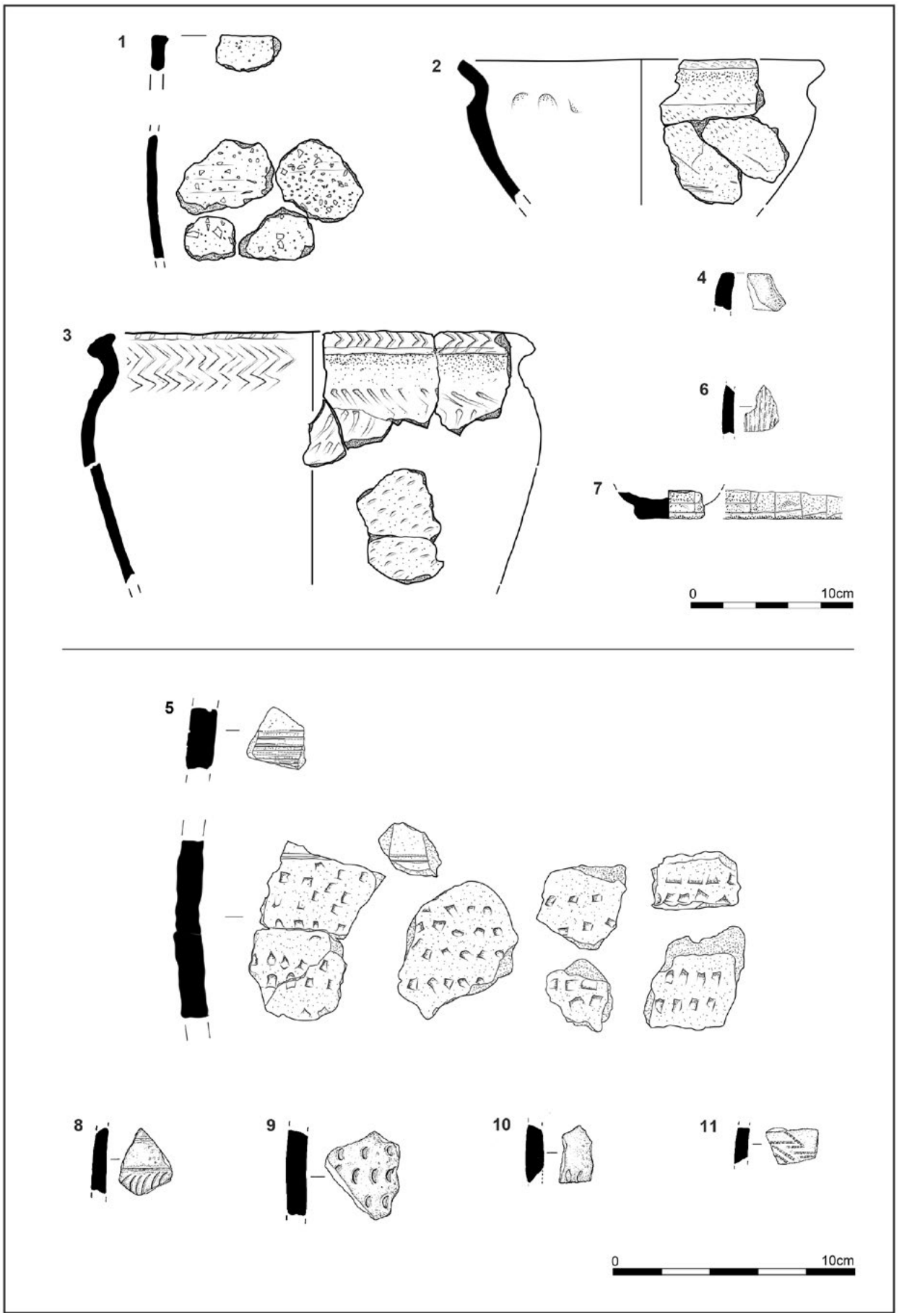

Figure 59 Pottery from the excavations: Catalogue Nos 1-11.

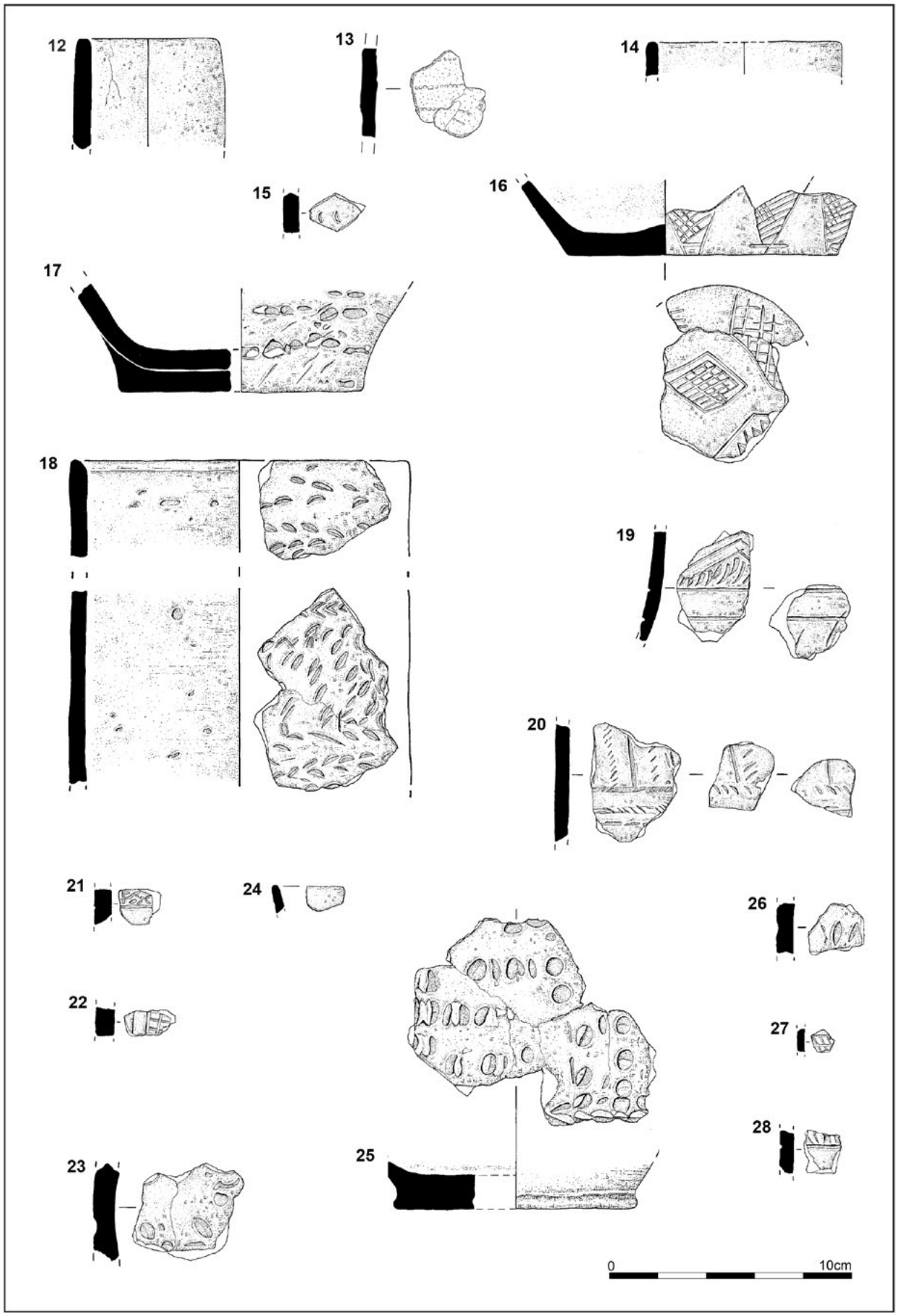

Figure 60 Pottery from the excavations: Catalogue Nos 12-28.

13. Beaker, decorated; DG1; D1; three parallel lines of toothed-comb impressions around the vessel; fill (2084), pit [2085]; PRN 4011.

14. Beaker; undecorated; GD2; R7; less than 5% of diameter but approximately 80-100mm in diameter; fill (2302), pit [2288]; PRN 4019.

15. Beaker, decorated; fabric G2; D1; two parallel, vertical, small, fingernail impressions visible; fill (2346), farmstead ditch [2347]; PRN 4024.

16. Beaker, decorated; GD2; B1, 50% of 80mm diameter; finely incised, truncated triangles or lozenges infilled with fine, cross-hatching around lower wall zone and additionally framing single complete lozenge in centre of underside of base; condition of vessel uncertain but possibly salt-affected or ash-affected creating variable pale grey colour; radiocarbon dated to 2282-2029 cal BC by association; fill (2386), pit [2385]; PRN 4025.

17. Beaker, decorated; GQD1; B1/D1, 55% of 100mm base diameter; deep fingernail impressions horizontally placed around vessel, uncertain if random or patterned; condition uncertain but possibly salt-affected or ash-affected creating variable pale grey colour; radiocarbon dated to 2282-2029 cal BC by association; fill (2386), pit [2385]; PRNs 4026-4027.

18. Beaker, decorated; GD2; R16, 10% of 140mm diameter; fingernail impressions creating two horizontal, parallel rows of herringbone pattern pointing to the right above at least two similar rows pointing to the left which frame a zone of multiple, vertical parallel lines around the middle of vessel body created by further fingernail impressions; radiocarbon dated to 2282-2029 cal BC by association; fill (2386), pit [2385]; PRN 4030.

19. Beaker, decorated; GD2; D1; two deeply incised, horizontal parallel lines above which two sets of three lightly incised parallel lines converge into an apex creating an upright chevron design infilled with parallel small fingernail impressions that separate the deeply incised from the lightly incised areas of the design; radiocarbon dated to 2282-2029 cal BC by association; fill (2386), pit [2385]; PRN 4031.

20. Beaker, decorated; GQD1; D1; feathery-light and short-length, fingernail impressions used to create an incised-effect design of parallel, vertical panels above horizontal parallel lines and at least one diagonally placed short fingernail impression in a vertical stack; possibly salt-affected from wood ash throughout vessel wall; radiocarbon dated to 2282-2029 cal BC by association; fill (2386), pit [2385]; PRN 4032.

21. Beaker, decorated; GD2; D1; carefully executed, incised cross-hatched design; may be part of Cat. no. 16 but cannot be certain; radiocarbon dated to 2282-2029 cal BC by association; sample <162>, fill (2386), pit [2385]; PRN 4034.

22. Beaker, decorated; GD2; D1; less carefully executed, deeply incised, cross-hatched design; possibly salt-affected; radiocarbon dated to 2282-2029 cal BC by association; sample <162>, fill (2386), pit [2385]; PRN 4037.

23. Beaker, decorated; GD2; D1; deep fingernail impressions randomly applied; fill (2387), Structure 6 pit [2389]; PRN 4038.

24. Beaker, undecorated; GQ1; R7, less than 5% of diameter; sample <10>, fill (3009), pit [3008]; PRN 4066.

25. Beaker, decorated; SG1; B2/D1, 30% of 100mm diameter; fingertip impressions in irregular, horizontal, parallel rows around body of vessel and in vertical panels as single columns separated by fingernail impressed columns with at least one horizontal row of fingernail impressions beneath the columns; sample <31>, fill (3020), pit [3019]; PRNs 4069-4071.

26. Beaker, decorated; GQ1; D1; fingertip impressed; fill (3024), pit [3021=3023]; PRN 4072.

27. Beaker, decorated; S1; D1; finely incised parallel lines as cross-hatching; sample <35>, fill (3026), pit [3025]; PRN 4074.

28. Beaker, decorated; SG1; D1; row of fingernail impressions above single incised line; sample <19>, fill (3038), pit [3037]; PRN 4076.

29. Beaker, decorated; GD2; D1; two parallel rows of fingertip impressions; tertiary fill (3101), pit [3100=3103]; PRN 4085.

30. Beaker, decorated; G1; R7, less than 5% of diameter; numerous parallel rows of very deep, substantial fingertip impressions around rim, neck and body; radiocarbon dated to 2139-1918 cal BC by association; secondary fill (3102), pit [3100=3103]; PRN 4086.

31. Beaker, decorated; G99; D1; two vertical, parallel, deeply incised lines; radiocarbon dated to 2139-1918 cal BC by association; secondary fill (3102), pit [3100=3103]; PRN 4089.

32. Beaker, decorated; GQD1; R7 with handle type H1, 17% of 140mm diameter; decorated with incised lines creating single and double-framed panels around vessel with incised, cross-hatched lozenges or open triangles within the panels with one partial lozenge outside a panel; lop-sided cross-section; strap handle applied after body of vessel decorated, also decorated with irregularly incised, parallel lines; radiocarbon dated to 2139-1918 cal BC by association; secondary fill (3102), pit [3100=3103]; PRN 4090.

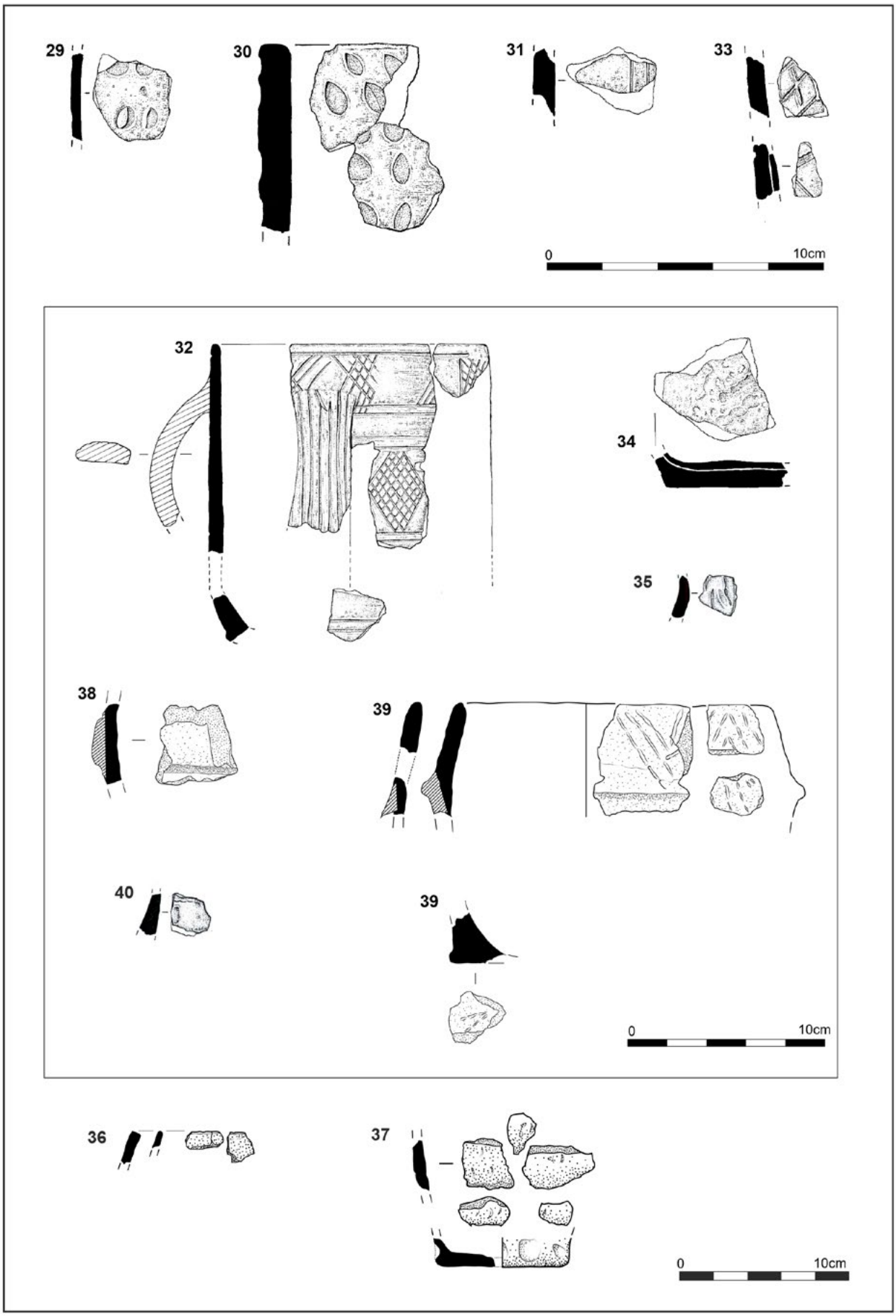

Figure 61 Pottery from the excavations: Catalogue Nos 29-40.

33. Beaker, decorated; GQD1; D1; deeply incised, obtuse-angle, cross-hatching; radiocarbon dated to 2139-1918 cal BC by association; sample <54>, secondary fill (3102), pit [3100=3103]; PRN 4095.

34. Beaker, undecorated; SG1; B1, less than 5% of diameter; abraded on interior base surface; fill (3133), pit [3130]; PRN 4099.

35. Beaker, decorated; GS2; D1; vertically inserted, fingernail impressions in rows; fill (7201), large quarry pit [7205]; PRN 4523.

36. Beaker, undecorated; G2; R30, 5% of 140mm diameter; fill (11631), pit [11632]; PRN 4579.

37. Beaker, decorated; GQ1; B1, 12% of 100mm diameter; fingernail impressions on body of vessel, fingernail and tip impressions around lower wall to base junction; fills (11715-11716), pit [11711]; PRNs 4580-4582.

Ceramic Phase 2B (Early Bronze Age)

38. Collared Urn-type vessel, undecorated; GQ2; C1; fill (373), pit [360]; PRN 2001.

39. Collared Urn-type vessel, decorated; G1*; R10, B1; 7% of 160mm rim diameter, less than 5% base diameter; twisted cord impressions in groups of three parallel lines, each converging to create a chevron along the collar and a single chevron on the underside of the base; sample <103>, fill (1742), linear pit cut [1741]; PRNs 2061 & 2077-2078.

40. Collared Urn-type vessel, decorated; G1; C1; single, apparently isolated, fingertip impression on collar; fill (7057), waterhole [7056]; PRN 4519.

41. Food Vessel bowl, undecorated; G1, R14, B1; 100% of 120mm diameter rim and 100% of 70mm diameter base, height approximately 90mm; special find (SF) 8, sample <83>, fill (1646), child's inhumation grave [1639]; PRN 2087.

42. Food Vessel bowl or vase, decorated; G1; R15, less than 5% of diameter; incised, short impressions in herringbone style along top of rim and in zig-zag style on exterior side of rim; fill (2155), pit [2156]; PRN 4014.

43. Possible Food Vessel, decorated; G1; N1; decorated with repeated, fingernail or incised, vertical lines around lower neck; fill (11136), sump pit [11135]; PRN 4571.

44. Biconical-type jar, undecorated; G1; A1; carbonised residue on interior, radiocarbon dated 1865-1640 cal BC; sample <187>, fill (7049), oval, domestic hearth pit [7051]; PRN 4516.

45. Biconical-type jar, decorated; G1; A1; two rows of diagonally inserted, fingernail impressions creating chevron pattern along shoulder; radiocarbon dated to 1916-1751 cal BC by association; sample <189>, fill (7070), pit [7072]; PRN 4522.

Ceramic Phase 3A (Early Middle Bronze Age)

46. Barrel Urn-type vessel, undecorated; G1; R2; less than 5% of diameter; fill (510), pit [494]; PRN 2010.

47. Urn-type, thick-walled vessel, undecorated; G1; B1, 25% of 140mm diameter; fill (510), pit [494]; PRN 2011.

48. Urn-type, thick-walled vessel, undecorated; G1*; B1; less than 5% of base present; fill (543), waterhole [536]; PRN 2014.

49. Barrel Urn-type vessel, undecorated; GQ2*; R2; 12% of 260mm diameter; carbonised residue on interior surface; fill (543), waterhole [536]; PRN 2015.

50. Urn-type thick-walled vessel, undecorated; G1; B1, 10% of 160mm diameter; fill (1025), barrow ditch segment [1026.02]; PRN 2023.

51. Deverel-Rimbury Urn-type vessel, decorated; G1*; D1, straight-wall body sherds; horizontal cordon applied around vessel girth, flattened by finger-tip impressions; carbonised residue on interior surface; fill (1663), pit [1664]; PRN 2055.

52. Urn-type vessel, decorated; G1; D1; plain, horizontal cordon applied around vessel; fill (1727), pit [1730]; PRN 2058.

53. Urn-type vessel, undecorated; G1; P2, lower vessel wall to base angle body sherd; carbonised residue on interior surface, radiocarbon dated 1623-1463 cal BC; middle fill (9543), barrow ditch segment [9535] (G9563); PRN 4557.

Ceramic Phases 3A/3B (Transitional Early Middle Bronze Age/Late Middle Bronze Age)

54. Bucket Urn-type vessel, undecorated; SG1; R4, less than 5% of diameter; fill (109), pit [105]; PRN 2000.

55. Urn-type vessel, decorated; SG1; D1; single fingertip impression; sample <88>, fill (1706), waterhole [1730]; PRN 2075.

Ceramic Phase 3B (Late Middle Bronze Age)

56. Bucket Urn-type vessel, undecorated; S5; R11/L1, 10% of 360mm diameter; carbonised residue on interior surface; fill (1840), waterhole [1801]; PRN 2070.

57. Barrel Urn-type vessel, decorated; S2; D1; applied thick strip around girth of vessel; fill (7458), ditch corner [7456]; PRN 4532.

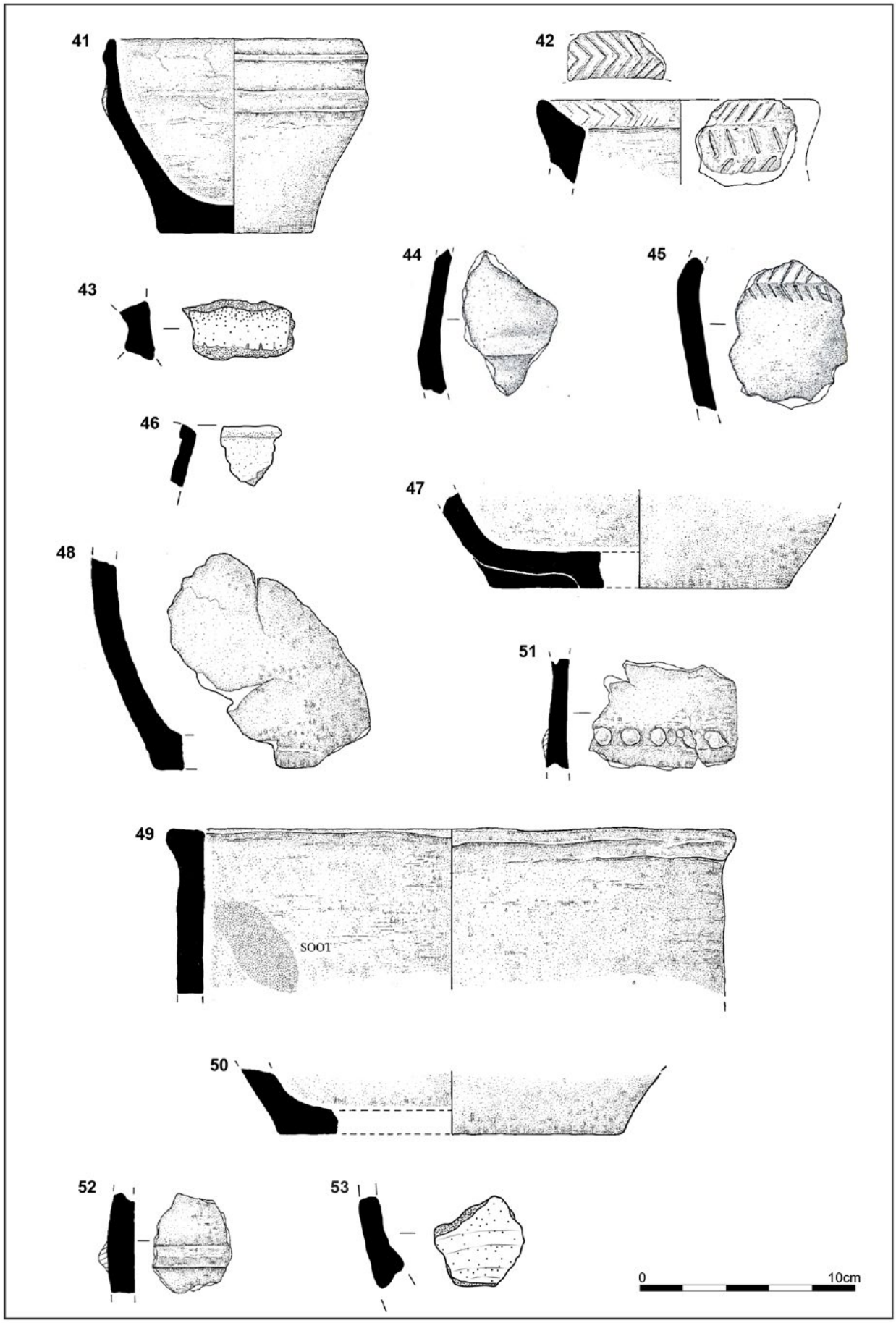

Figure 62 Pottery from the excavations: Catalogue Nos 41-53.

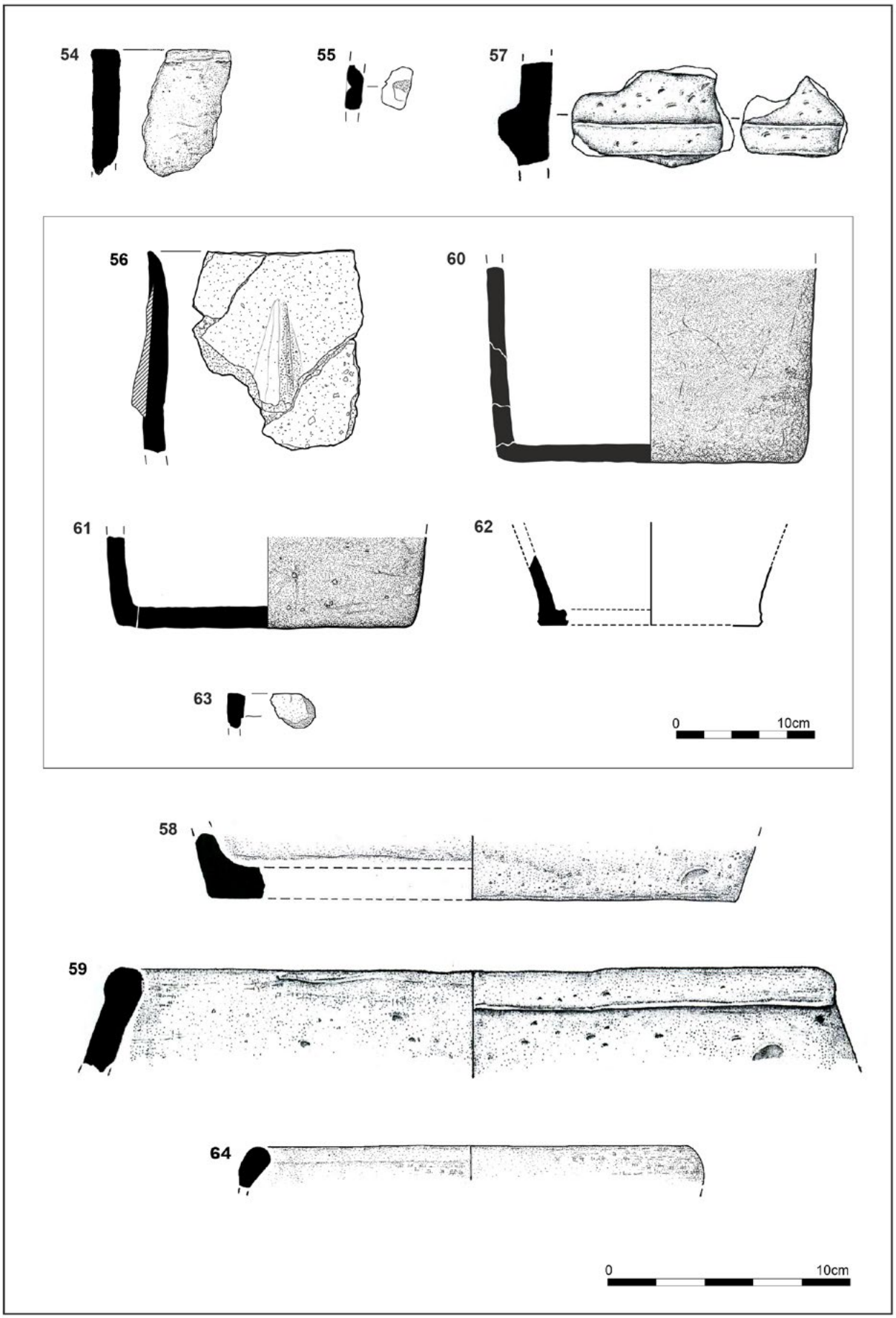

Figure 63 Pottery from the excavations: Catalogue Nos 54-64.

58. Urn-type vessel, undecorated; S1; B1, 5% of 220mm diameter; fill (7479), ditch terminus [7476]; PRN 4534.

59. Bucket Urn-type vessel, undecorated; S2; R4, 5% of 300mm diameter; fill (8228), ditch terminus [8230]; PRN 4551.

60. Cremation urn 5, undecorated; S2; B1, 100% of 210mm diameter; extant vessel height greater than 140mm; carbonised residue and pitting on interior of many sherds; fill (9472), cremation pit [9474]; PRN 4560.

61. Cremation urn 6, undecorated; S2; B1, 100% of 180mm diameter; carbonised residue and pitted on interior surface of many sherds; radiocarbon dated 1392-1130 cal BC; fill (9481), cremation pit [9499]; PRN 4561.

(Not illustrated) Cremation urn 8, undecorated; S2; B1, less than 5% of diameter; poor condition; fill (9483), cremation pit [9509]; PRN 4562.

62. Cremation urn 10, undecorated; S2; B2, 20% of 160mm diameter; carbonised residue and pitting on interior of many sherds; radiocarbon dated 1400-1132 cal BC; fill (9488), cremation pit [9490]; PRN 4563.

(Not illustrated) Cremation urn 11, undecorated; S2; B1, 40% of 200mm diameter; abraded on interior surface and slight carbonised residue traces on interior; very fragile and disintegrating condition; fill (9512), pit [9513]; PRN 4564.

(Not illustrated) Cremation urn 12, undecorated; S1; B1, 100% of 230mm diameter; greater than 140mm tall; carbonised residue on interior surface; very fragile and disintegrating condition; fill (9514), pit [9515]; PRN 4565.

63. Bucket Urn-type vessel, decorated; S2; R4, less than 5% of diameter; decorated with at least one fingernail impression on rim exterior; fill (10219), small pit [10217]; PRN 4558.

Ceramic Phase 4A (Post-Deverel-Rimbury Plainware Late Bronze Age)

64. Ovoid jar, undecorated; D1; R3, 5% of 180mm diameter; fill (384), ditch [383]; PRN 2004.

65. Shouldered, thin-walled jar, undecorated; S1; N1; fill (504), ditch [493]; PRN 2009.

66. High-shouldered jar, undecorated; F1*; R13, 20% of 200mm diameter; fill (563), pit [564]; PRN 2016.

67. Long-necked jar, undecorated; S2, R9, less than 5% of diameter; burnished on exterior, wiped on interior; carbonised residue on interior; fill (1520), modern claying trench [1519]; PRN 2051.

68. Ovoid jar, undecorated; D1; R3, less than 5% of diameter; fill (1769), barrow ditch segment [1783]; PRN 2063.

69. Ovoid jar, undecorated; S2; R3, less than 5% of diameter; strong fingering grooves from manufacture on interior below rim lip; fill (11038), ring-ditch cut [11039] (G11083); PRN 4566.

70. Ovoid jar, undecorated; S1; R3, less than 5% of diameter; manufacturing fingering on interior; fill (11046), ring-ditch cut [11047] (G11083); PRN 4567.

71. Long-necked jar, undecorated; S2; R29, less than 5% of diameter; fill (11101), ditch [11102] (G11814); PRN 4569.

72. Long-necked jar, undecorated; S2; N1; fill (11869), ditch [11859] (G11788); PRN 4588.

Ceramic Phase 4B (Late Bronze Age/Early Iron Age)

73. Large jar, undecorated; S2; R24, less than 4% of diameter approximately 300-320mm estimated; fill (5208), waterhole [5211]; PRN 4251.

74. Shouldered bowl, undecorated; MDQ1; A1; burnished on interior surface; fill (5208), waterhole [5211]; PRN 4252.

75. Medium-short-neck bowl, undecorated; DQ1; R26, less than 5% of diameter; fill (6095), pit [6096]; PRN 4501.

76. Small, flat-based vessel, undecorated; SQ1; B1, 20% of 100mm diameter; burnished exterior; pitted interior; fill (6110), quarry pit [6105]; PRN 4502.

77. Small, flat-based vessel, undecorated; GSQ1; B1, 25% of 100mm diameter; fill (6115), quarry pit [6105]; PRN 4507.

78. Small, long-necked bowl, undecorated; GSQ1; R27, 10% of 160mm diameter; well-smoothed on both surfaces; fill (6142), pit [6130]; PRN 4509.

79. Small, shouldered vessel, undecorated; fabric QI1; A1; red-slip surface treatment on exterior surface; fill (7231), pit [7230]; PRN 4525.

Ceramic Phase 5A (Early La Tène Iron Age 1)

80. Necked, round-bodied, jar, decorated; GDQ2; D1; two alternating rows of fingertip impressions around vessel upper girth; carbonised residue on interior surface; radiocarbon dated 511-211 cal BC by association; fill (3006), pit [3005]; PRN 4040.

81. Small jar, undecorated; GD2; B3, less than 5% of diameter; wiped vertically using fingers on exterior surface creating shallow channels; radiocarbon dated

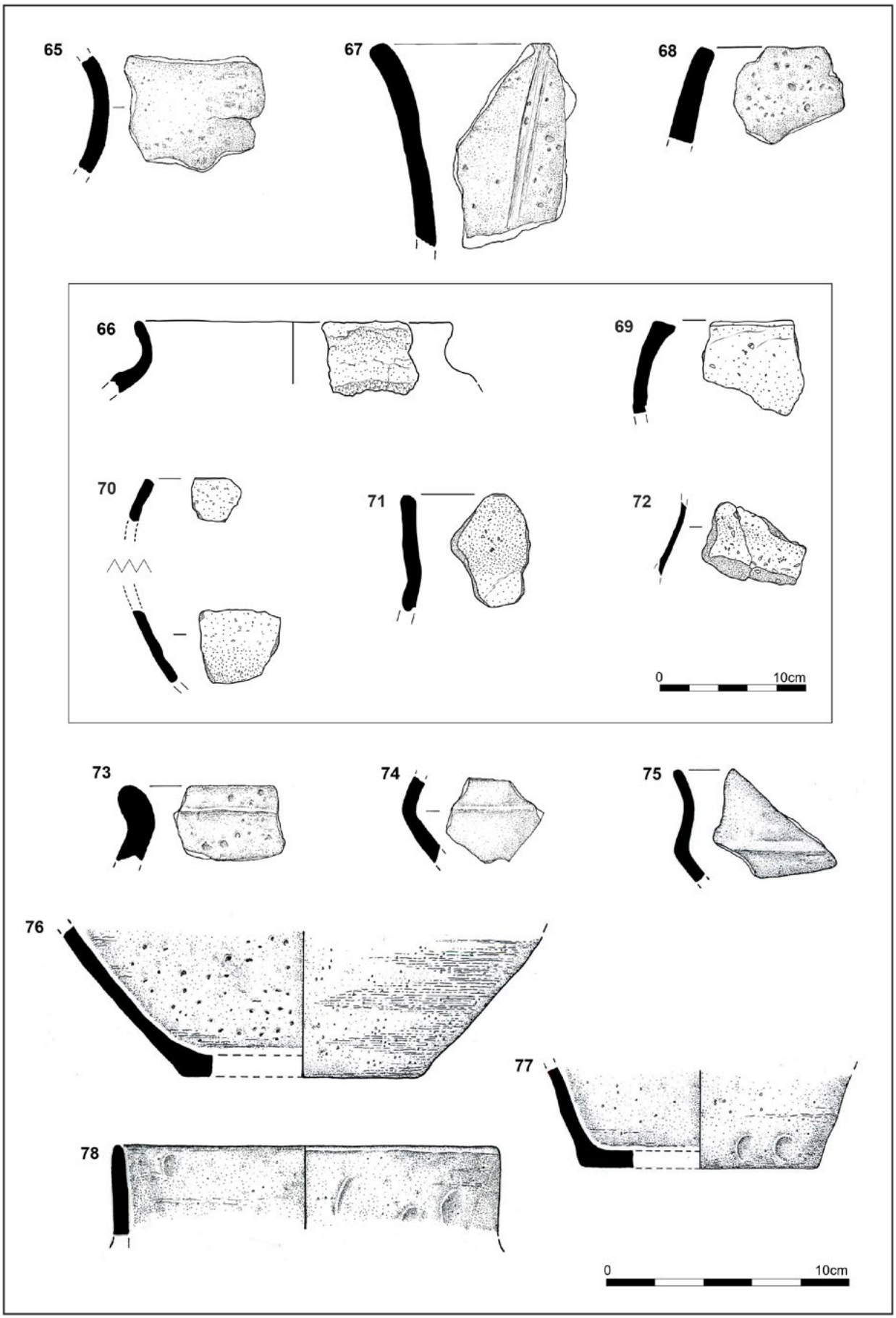

Figure 64 Pottery from the excavations: Catalogue Nos 65-78.

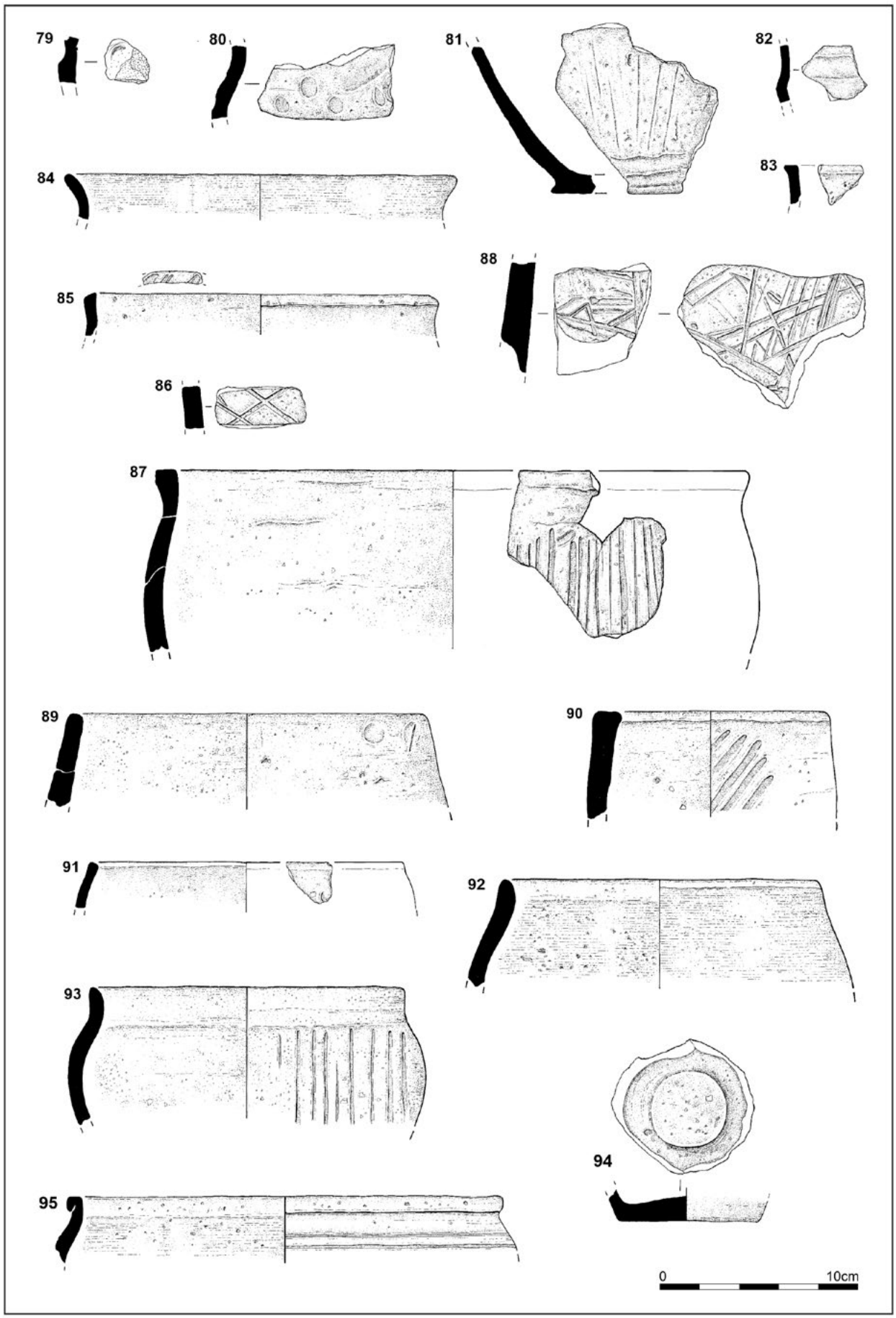

Figure 65 Pottery from the excavations: Catalogue Nos 79-95.

511-211 cal BC by association; fill (3006), pit [3005]; PRN 4043.

82. Round-shouldered bowl/cup, undecorated; GDQ2; A2, less than 5% of *c.*80mm diameter at shoulder/ girth; radiocarbon dated 511-211 cal BC by association; sample <6>, fill (3006), pit [3005]; PRN 4044.

83. Short-necked jar, undecorated; S1; R17, less than 5% of diameter; radiocarbon dated 511-211 cal BC by association; sample <8>, fill (3007), pit [3005]; PRN 4050.

84. Medium-sized, necked bowl, undecorated; SG2; R5, 5% of 200mm diameter; highly burnished on both surfaces; radiocarbon dated 406-234 cal BC by association; fill (3009), pit [3008]; PRN 4056.

85. Small, short-necked jar, decorated; D2; R17, 5% of 180mm diameter; fingernail impressions along top edge of rim, damaged and affected by ironisation; fill (3038), pit [3037]; PRN 4082.

Ceramic Phase 5B (Early La Tène Iron Age 2)

86. Uncertain vessel, decorated; S1; D1; regular, obtuse-angle, incised, lattice grid; fill (5014), pit [5020] in smithy enclosure; PRN 4205.

87. Large round barrel-shaped, necked jar, decorated; S1; R18, 4% of 300mm diameter; regularly incised, parallel, vertical lines on vessel body; fill (5014), pit [5020] in smithy enclosure; PRN 4206.

88. Large jar, decorated; S2; D1; irregularly incised random criss-cross pattern; probable limescale on interior surface; one sherd re-fired after breakage; fill (5014), pit [5020] in smithy enclosure; PRNs 4209/4210.

89. Small, slack-profile jar, undecorated; S2; R19, 5% of 180mm diameter; fill (5014), pit [5020] in smithy enclosure; PRN 4211.

90. Small, straight-sided, necked jar, decorated; S2; R20, 11% of 120mm diameter; zone of wide, diagonal, incised lines around vessel body; fill (5014), pit [5020] in smithy enclosure; PRN 4212.

91. Small, slack-shaped jar, decorated; S2; R19, 5% of 160mm diameter; trace of incised scoring of uncertain pattern; sample <176>, fill (5014), pit [5020] in smithy enclosure; PRN4270.

92. Small, globular-profile bowl, undecorated; S4; R21, 11% of 160mm diameter; burnished on both surfaces; pitted on interior surface; fill (5014), pit [5020] in smithy enclosure; PRN 4215 [may be same vessel as Cat. no. 102].

93. Small, globular-profile jar, decorated; S1; R22, *c.* 4% of 160mm diameter; uniform, vertical, parallel incised lines; fill (5015), pit [5020] in smithy enclosure; PRN 4221.

94. Small, flat-based vessel, undecorated; S1; B1, 90% of 70mm diameter; finger marks from manufacture on interior; fill (5016), pit [5020] in smithy enclosure; PRN 4223.

95. Medium, barrel-shaped jar, decorated; S1; R18, 5% of 220mm diameter; horizontal, parallel, incised lines around vessel neck; radiocarbon dated 350-53 cal BC by association; sample <169>, fill (5021), south arc ring-gully terminal cut [5023] Structure 7; PRN4277.

96. Large jar, decorated; S6; D1; irregular pattern of incised lines on vessel wall; post-firing perforation for repairing; radiocarbon dated 350-53 cal BC by association; fill (5021), south arc ring-gully terminal cut [5023] Structure 7; PRN 4226.

97. Medium, flat-based vessel, decorated; S2; B1, 20% of 180mm diameter; vertical, parallel, regularly incised, individual lines around lower vessel wall above base angle; pitted on interior; fill (5047), north arc ring-gully cut [5048] Structure 7; PRN 4233.

98. Large vessel, decorated; S2; D1; wide, regular, individually incised, nearly parallel lines on vessel wall; fill (5061), north arc ring-gully cut [5063] Structure 7; PRN 4235.

99. Small, flat-based vessel, decorated; S2; B1, 40% of 90mm diameter; repeated clusters of at least six and up to ten, vertical, parallel, incised lines around lower vessel wall above base angle; fill (5061), north arc ring-gully cut [5063] Structure 7; PRN 4241.

(Not illustrated) Small, flat-based cookpot, undecorated; MD1; B99, 100% of *c.* 80mm diameter; carbonised residue on interior surface; radiocarbon dated to 486-207 cal BC by association; fill (5064), north arc ring-gully cut [5066] Structure 7; PRN 4242.

100 Barrel-shaped jar, undecorated; S1; R23, less than 5% of rim diameter; fill (5079), pit [5082]; PRN 4244.

101 Globular-profile bowl, undecorated; S4; B4, 48% of 80mm diameter; burnished on both surfaces; pitted and abraded on interior; fills (5087/5090), pit [5091]; PRNs 4245/4246 [may be same vessel as Cat. no. 92].

102 Very large, barrel-shaped jar, decorated; S1; R25, 25% of 420mm diameter; fingernail impressions around rim lip and parallel, diagonal and vertical zones of incised lines around vessel body; fills (5230/5232), pit [5234]; PRNs 4266/4269.

103 Small, ovoid jar/proto-saucepan pot, undecorated; S8; R28, 10% of 140mm diameter; fill (8095), waterhole [8088]; PRN 4546.

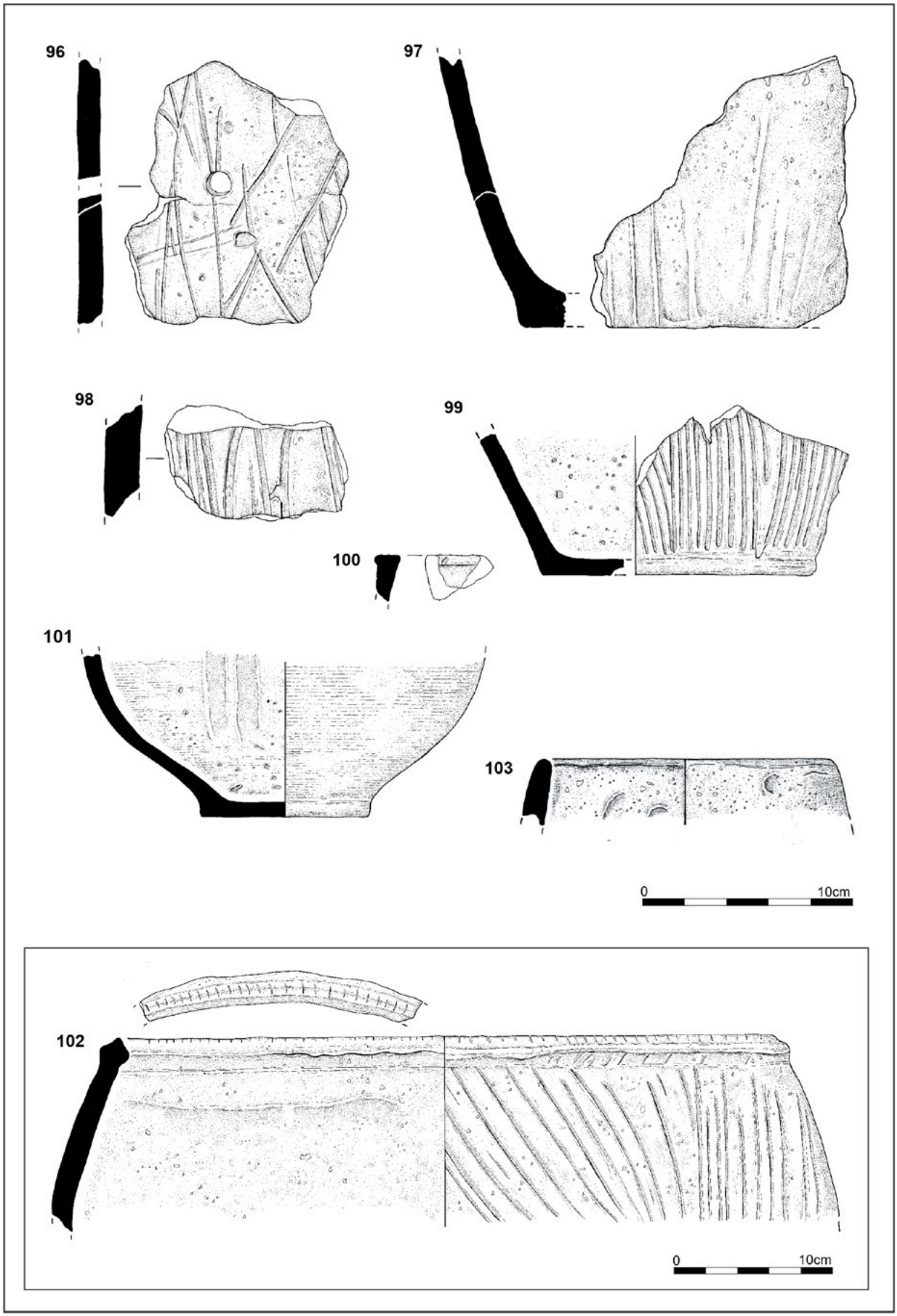

Figure 66 Pottery from the excavations: Catalogue Nos 96-103.

CLAY WEIGHTS

Elaine L Morris

A total of 13 diagnostic clay weights and two other possible weights represented by fragments was recovered from 11 features (Table 8). Two types of weights were identified: cylindrical and square; no examples of pyramidal or triangular weights were found. Amongst the diagnostic weights, 12 are cylindrical and one is square in shape; the possible examples could be a second square weight and an additional cylindrical example. Eleven cylindrical weights are illustrated (Figure 67). All of the diagnostic examples and the possible cylindrical weight are made from the same fabric Q1, a medium-coarse quartz sand bearing clay with rare flint detritus of variable size, used to make the collection of cylindrical and square weights recovered at Pode Hole Quarry (Morris 2009b: fig. 4.3). The possible square weight, however, was made from fabric Q2, a slightly finer version of fabric Q1. These fabric types are described below in the *Fired Clay* section.

Cylindrical

The circular footprint, vertical walls, flat opposing ends and centrally positioned, axial perforation of an otherwise solid clay object are the principal identifiers of a cylindrical weight (Morris 2009b: 71-3). It is possible to hang a cylindrical weight either horizontally with a freely running rope through the perforation or vertically with a single knotted end at the base. The examples in this collection display softened edges, as is the case for those from nearby Pode Hole Quarry.

The sizes of the cylindrical weights vary considerably. The three smallest weights have diameters ranging from 60mm to 70mm, while the three largest have diameters measuring 88mm, 92mm and 88-95mm. The heights of complete examples, however, appear to be more restricted from 83-99.5mm, including two quite lopsided examples (Figure 67, nos 5 & 11). Perforations range from 14mm to 20mm, with five smaller examples between 14-15mm and five between 17-20mm. The five most complete weights displaying full lengths, measurable diameters and perforation diameters are: 89-93 x 79-83 x 14mm; 88 x 88 x 19mm; 86-94 x 88-95 x 18-19mm; 92 x 81-89 x 17-20mm; and 83-99.5 x 91-93 x 14mm. The smallest examples (Figure 67, nos 2 & 3) are significantly smaller at 60mm and 70mm in diameter than the smallest examples found at Pode Hole Quarry (Morris 2009b: fig. 4.3, 6), which produced approximately 25% of the biggest cylindrical weight in the local area, measuring 100mm tall and 100mm in diameter (*ibid.*: fig. 4.3, 3).

The greatest weight for any single example in the Bar Pasture collection is 1096g from the best-preserved object represented by 99.9% of the original (Figure 67, no. 5); the next heaviest represented by 95% is 1012g (Figure 67, no. 11). These two examples indicate that the apparent difference in overall weights between Berkshire cylindrical weights and Lincolnshire weights discussed in a previous publication (Morris 2009b: 73) is no longer supportable.

Ten features, including ditches, pits and a tree-throw produced one cylindrical weight each, while one contained five weights from single context, fill (7612) in small rubbish pit [7613] (Table 8). Four of the weights are nearly complete displaying very slight damage (99.9% present) or a modest amount of missing bulk area (c. 82-93% present); the fifth weight was shattered into 23 fragments and has been partially reconstructed. Three of the four nearly complete weights from pit [7613]

Feature	Context	CLAY WEIGHT TYPES				Total Count	Total Weight	Dimensions (mm)			Site Period by Association	Illustrated Catalogue Number
		Cylindrical		Square								
		Ct.	*Wt.*	*Ct.*	*Wt.*			*Ht.*	*Diam.*	*Perf.*		
waterhole [536]	539	1	113	-	-	1	113	*>50*	*.c 60*	-	P3/MBA	2
tree-throw [588]	598	28	355	-	-	28	355	*>50*	*.c 80*	*c.18-20*	?P3/MBA	1
ditch [1252]	1254	1	50	-	-	1	50	*>35*	*70*	*c.15*	P4/LBA	3
ditch section [1613]	1615	-	-	2	74	2	74	-	-	-	P3/MBA	(+)
pit [5234]	5227	-	-	1	44	1	44	-	-	*>14*	P5/IA	+
linear ditch [5281]	5278	2	214	-	-	2	214	*>65*	*86*	*19*	P3/MBA	4
large pit [6018]	6010	18	197	-	-	18	197	-	-	-	P3/MBA	(+)
small rubbish pit [7613]	7612	1	1096	-	-	1	1096	*83-99.5*	*91-93*	*14*	P4/LBA	5
small rubbish pit [7613]	7612	1	776	-	-	1	776	*89-93*	*79-83*	*14*	P4/LBA	6
small rubbish pit [7613]	7612	1	586	-	-	1	586	*92*	*81-89*	*17-20*	P4/LBA	7
small rubbish pit [7613]	7612	1	677	-	-	1	677	*88*	*88*	*19*	P4/LBA	8
small rubbish pit [7613]	7612	1	753	-	-	1	753	*>84*	*c. 92*	*14*	P4/LBA	9
shallow hearth pit [7730]	7729	13	234	-	-	13	234	*>40*	*>81*	-	P4/LBA	+
pit [8082]	8081	1	174	-	-	1	174	*>70*	*67*	*14*	P3/MBA	10
ditch terminal [11858]	11865	1	1012	-	-	1	1012	*86-94*	*88-95*	*18-19*	P3/MBA	11
	Total	***70***	***6237***	***3***	***118***	***73***	***6355***					

Table 8. Clay weight types

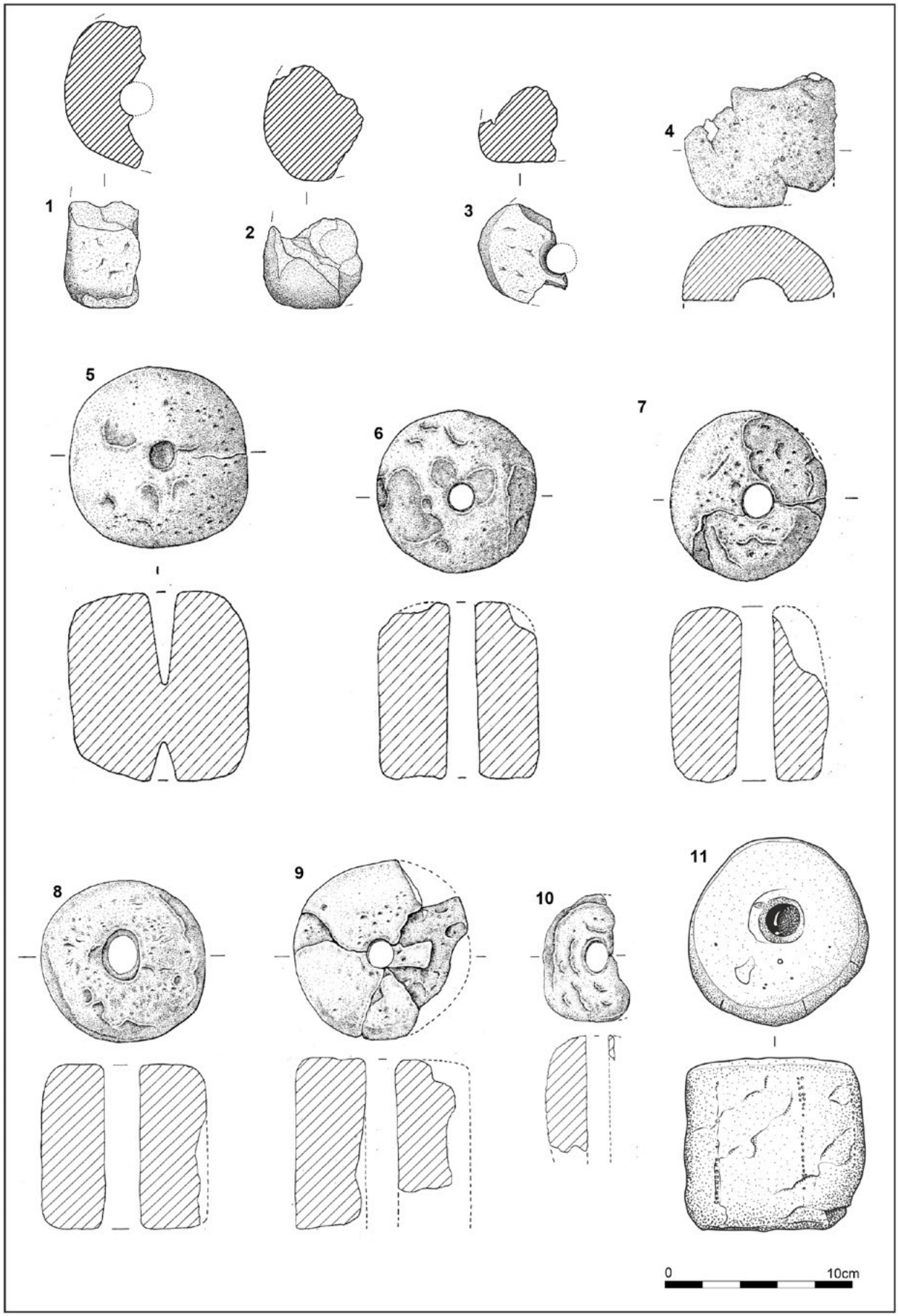

Figure 67 The Clay Weights: Catalogue Nos 1-11.

(Figure 67, nos 2-4) display remarkably consistent full height/length measurements of 88mm, 92mm and 89-93mm, with the lopsided fourth weight at 83-99.5mm. The fragmented fifth weight does not have a complete length, but it would have been more than 84mm. Overall diameters of these cylinders measure 79-83mm, 81-89mm, 88mm and 91-93mm. Three weights had identical perforation diameters of 14mm suggesting that the same tool had been used to make them, while the other two had diameters of 19mm and 17-20mm respectively. Their weights (with percentage of weight indicated) are 586 grammes (82%), 677 grammes (88%), 753 grammes (75%), 776 grammes (93%) and 1096 grammes (99.9%). If the weights are adjusted upwards to represent complete weights, these would range between 715-1097 grammes. The lower figure is not dissimilar to that extrapolated from data for the small and more complete examples of cylindrical weights from previous excavations (Morris 2009b: 71), while the upper range is indicative of a slightly larger type of weight.

There are differences between this group of five cylindrical weights from pit [7613] and the partial weight from hearth pit [7730] compared to the single weight from pit [8082], for example. The former six have well-wedged clay matrices and very large but infrequent flint detritus inclusions from 10mm up to 28mm across that are well-rounded in shape and bear cortex-covered surfaces, a normal distinction of this Q1 fabric type. In contrast the single weight from pit [8082] is poorly wedged displaying swirls of subtly different coloured clays but no pieces of large flint detritus. In addition, the exterior surfaces of the pit [7613] examples are well-finished while that from pit [8082] is irregular and lumpy on its extant surface. This correlation between better wedging and better finishing versus unwedged clay and rough object finishing suggests that we are seeing the hands of different weight makers at work: selecting clay from different deposits or lenses in the same deposit and processing their clays differently.

Approximately 90% of one cylindrical weight found in linear ditch [5281] (Figure 67, no. 4) is oxidised throughout but there is an unoxidised zone of firing at the remaining end of the weight. Four of the five weights from pit [7613] have a similar blackened zone or unoxidised patch on the side of their exterior surfaces. This effect, which may cover the full length of the weight as in two cases or just part of the weight, is due to firing these objects directly in a hearth or bonfire on their sides or ends respectively which prevented complete exterior surface oxidisation, which is known as 'fire-clouding'.

A single, large, decorated clay weight (Figure 67, no. 11, Plate 77) was recovered from the penultimate fill (11865) of ditch terminal [11858] (G11891). The object is in good condition with approximately 95% remaining after surface flaking and a small amount of sub-surface fracture along the clay folds created during manufacture. The decoration comprises six vertical lines of three or four repeated impressions made using a multiple-toothed, comb-like instrument bearing very small teeth. Surface abrasion has removed some of the decorative lines making it difficult to be certain about the number of teeth in the instrument and, therefore, the frequency of these sequential impressions. It is suggested that there are at least five teeth in the tool. The overall impression of these comb-impressed lines, which are equally spaced around the clay object, is that the weight is the skeuomorph of a leather drum with the lines of impressions representing the stitching required to hold pieces of leather sewn together and turned inside-out over a wooden, barrel-like frame. Decorative cylindrical weights are quite rare in the region; two with incised decoration were found near Grimsby in the Lincolnshire Wolds (Leahy 1990: 48).

Plate 77 Decorated clay weight from ditch terminal [11858], displaying vertical lines of impressions using a comb-like instrument.

The possible cylindrical weight was recognised by the presence of a curved surface on one of 18 fragments of fired clay material (197g) from fill (6010) of large pit [6018].

Square

The principal identifiers of square weights are a square footprint, vertical walls displaying right angled corners and vertical/axial perforation (Morris 2009b: 73). The diagnostic square weight identified in this assemblage (not illustrated) is represented by a single, abraded fragment which displays one flat surface and a partial perforation. The perforation measures more than 14mm in diameter and runs parallel to the surface (i.e. axially). The condition of the weight is overfired to a slightly brittle effect which has resulted in a variety of clay colours from pale grey to pink and orange. This suggests that the weight had been found, reused as a salt production pedestal (see *Briquetage*), then discarded and eventually redeposited in a highly degraded state into Iron Age pit [5234].

The possible square weight is composed of two pieces made from fabric Q2 which had been partially oxidised during firing. Each piece displays two flat surfaces at an angle to each other which create an edge effect suggestive of an object such as a square clay weight, but this cannot be proven and there is no indication of a perforation in either fragment. They were recovered from fill (1615) of central section ditch [1613].

Dating and Discussion

The majority of clay weights from the Bar Pasture Extension are dated by association to the Middle Bronze Age (Period 3) and two to the Late Bronze Age (Period 4), which is typical of cylindrical and square weights found in eastern England (Morris 2009b).

One cylindrical weight was recovered from the very large pit [536] interpreted as a waterhole more than 3.5m in depth and 5m in diameter. This weight was found in intermediate fill (539), whilst four sizeable grog-tempered sherds including a rim and base from different Bronze Age vessels were recovered from lower fill (543) (Figure 62, nos 48 & 49). A wooden log ladder was also recovered from the pit; in lowest fill (546). The profile of the pot base does not suggest a specific vessel type, but that of the flattened rim, with its slightly expanded profile, may have been a Deverel-Rimbury Barrel Urn-type of jar which had been used as a cooking vessel. Stratigraphically, fill (539) was located much higher in the sequence, and therefore the cylindrical weight is more likely to have been later in date than these large fragments of grog-tempered Middle Bronze Age pottery (Period 3A).

The group of five cylindrical weights from pit [7613] was directly associated in fill (7612) with 12 sherds of pottery (38 grammes). Ten sherds (9 grammes) derived from a possible single vesicular fabric (D1) Late Bronze Age shouldered vessel (Period 4; not illustrated). The other two sherds (29 grammes) were made of the same shelly fabric (S4) but from two different vessels, one a cookpot and the other an acidic liquid storage vessel. The residue was radiocarbon dated and registered a typical Late Middle Bronze Age (Period 3B) result of 1396-1216 cal BC for shell-gritted fabrics.

The cylindrical weight from pit [8082] was found in fill (8081) with three pottery sherds of the same shell fabric (S2), and thought to derive from the same vessel. It was an apparently large storage jar with thick walls, that had a pitted interior from leaching of the shell. The sherds have been assigned to the later Middle Bronze Age ceramic phase, based on fabric and wall thickness, and thus to Site Period 3B. The many differences between this single weight and the group of five from pit [7613] suggest that different people had been involved in their manufacture. This is supported by differences in date of associated pottery and, therefore, the manufacture, use and discard of these objects.

The decorated cylindrical weight was found in tertiary fill (11865) of ditch terminal [11858]. This ditch was partly truncated by Late Bronze Age linear G11788 (Period 4) which suggests that the weight is most likely to have been a Middle Bronze Age (Period 3) artefact.

Nearby at Pode Hole Quarry, a total of 20 cylindrical, pyramidal and square weights were recovered from a single pit (Morris 2009b: table 4.2), as mentioned above. This pit ([8091]) contained an interesting group of both Early/ Middle Bronze Age grog-tempered sherds (periods 2B/3A) including one from a decorated Early Bronze Age Collared Urn (Morris 2009a: fig. 4.1, 12; fill 8092) and a decorated later Middle Bronze Age shell-gritted rim sherd from a Deverel-Rimbury Barrel Urn/ jar (Period 3B) (Morris 2009a: fig. 4.2, 34; fill 8351). This resonates with the recovery of four distinctive grog-tempered vessels in waterhole [536] at Bar Pasture.

Cylindrical clay weights were made and used primarily during the Middle Bronze Age. They continued to be made and used in some areas into the beginning of the Late Bronze Age, representing activity throughout the second millennium BC. The purpose of clay weights such as cylindrical and square examples is uncertain. Their manufacture for use in textile production as loomweights is one possibility; another could be as part of a set of hay-drying cover weights. Their ubiquity on so many sites and, in the case across this fenland landscape, indicates that they form a constant component of Bronze Age material culture similar to pottery.

Catalogue of Illustrated Clay Weights (Figure 67)

(CWRN: Clay Weight Record Number)

1. Cylindrical; fabric Q1; *c.* 40% present, 355g extant; *c.* 80mm diameter, *c.* 18-20mm diameter perforation; fill (598), tree-throw [588]; CWRN 1500.

2. Cylindrical; fabric Q1; fragment present, 113g; fill (539), large pit [536]; CWRN 1502.

3. Cylindrical; fabric Q1; fragment present, 49g; *c.* 70mm diameter, *c.* 15mm diameter perforation; fill (1254), ditch [1252]; CWRN 1503.

4. Cylindrical clay weight; fabric Q1; *c.* 20% present, 214g; height, >65mm; diameter, 86mm; perforation diameter *c.* 19mm; oxidised throughout with unoxidised flat end zone; fill (5278), linear [5281]; CWRN 5001.

5. Cylindrical weight; fabric Q1; 99.9% present, 1096g; height, 83-99.5mm; diameter, 91-93mm; perforation diameter, 14mm; majority oxidised on exterior with unoxidised or blackened effect on full length of one side of weight, unoxidised core; fill (7612), small rubbish pit [7613]; CWRN 1026.

6. Cylindrical weight; fabric Q1; *c.* 93% present, 776g; height, 89-93mm; diameter, 79-83mm; perforation diameter, 14mm; majority oxidised on exterior surfaces with *c.* 20% unoxidised zone, unoxidised core; fill (7612), small rubbish pit [7613]; CWRN 1027.

7. Cylindrical weight; fabric Q1; *c.* 82% present, 586g; height, 92mm; diameter, 81-89mm; perforation diameter, 17-20mm; majority oxidised on exterior surfaces with blackened, unoxidised effect on full length of one side of weight, unoxidised core; fill (7612), small rubbish pit [7613]; CWRN 1028.

8. Cylindrical weight; fabric Q1; *c.* 88% present, 677g; height, 88mm; diameter, 88mm; perforation diameter, 19mm; oxidised on exterior surfaces, unoxidised core; fill (7612), small rubbish pit [7613]; CWRN 1029.

9. Cylindrical weight; fabric Q1; less than 50% present, 753g; height, greater than 84mm; diameter, *c.* 92mm; perforation diameter, 14mm; majority oxidised on exterior surfaces with blackened, unoxidised effect on lower part of one side of weight, unoxidised core; fill (7612), small rubbish pit [7613]; CWRN 1030.

10. Cylindrical weight; fabric Q1; less than 50% present, 174g; height, greater than 70mm; diameter, 67mm; perforation diameter, 14mm; completely oxidized throughout; fill (8081), pit [8082]; CWRN 1031.

11. Cylindrical weight; fabric Q1; 95% present, 1012g; height, 86-94mm; diameter, 88-95mm; perforation diameter, 18-19mm; decorated with six vertical lines of fine, comb impressions around the wall circumference; mainly oxidised on exterior with patches of fire-clouding creating an irregularly-fired surface, unoxidised core; fill (11865), ditch terminal [11858]; CWRN 1033.

FIRED CLAY

Elaine L Morris

A total of 473 pieces of fired clay material (3237g) was recovered from excavated and sieved contexts. The majority of this material cannot be assigned to any particular function or object type and is referred to as undiagnostic, but those examples with surfaces or shapes suggestive of domestic hearth structures, and not representative of salt production (see *Briquetage*), are described and interpreted where possible. Fired clay material was recovered from four of the five site periods, with by far the majority derived from Beaker and Early Bronze Age contexts.

Nine variations of naturally-occurring clays found in this fenland landscape had been selected from the area to become the quartz-bearing, silty and sandy fabrics identified amongst these pieces. One fabric, QD1, could be a deliberately tempered example having 10-15% irregular and linear vesicles which may have been organic matter originally. Two fabrics had been defined previously, fabrics Q1 and Q2 (Morris 2009a: 63, 2009c: 75); all are presented below. The three most common types, based on weight, are fabrics Q1 (1991g), Q5 (410g) and Q6 (256g) (Table 9). Details about the associated pyrotechnical conditions of these pieces, such as oxidised and irregularly fired observations, were recorded and are available in the archive. Fired clay fabrics Q2, Q4, Q5, Q6, QD1, QD2 and QI1 are unique to the fired clay assemblage, while fabric Q1 was also used to make a Period 2A Beaker vessel (Figure 59, no. 7). Fabrics Q1, Q3, Q5, Q6 and QD2 were used to make hearth features in the Bar Pasture landscape, most likely for domestic use.

Recovery and Interpretation

Material from 11 hearths indicated by substantial fragments with a single smoothed flat surface, occasionally displaying evidence of wood ash-bleaching or overfiring, has been identified amongst the fired clay material. Eight or nine of these had been recovered from features associated with Final Neolithic/ Early Bronze Age Beaker sherds and two or three from Middle Bronze Age features. One example of daub with a wattle impression was recovered from a Beaker pit. The remaining fragments tend to be undiagnostic as to form or function and recovered from most site periods.

Final Neolithic/Early Bronze Age and Early Bronze Age (Period 2)

Fabric Q3 was used to daub the wattles of a Late Neolithic-Early Bronze Age structure, one remnant of which was

found in fill (2303) of pit [2288]. The daub fragment was associated with sherds from two Beakers, including one coarser undecorated vessel represented solely by body sherds also made from Q3 fabric and the other a finer, decorated vessel made from grog-tempered fabric GD2. This large piece of fired clay daub (40g), which was greater than 30mm long, displayed a wattle impression 23mm across. The use of similar natural resources to make both pottery and houses has been revealed as a complex sharing of common resources available in the local environment as well as a transfer of 'know-how' situated within social networks between people in Bronze Age Hungary (Sofaer 2006). The evidence that fabric Q3 was similarly multi-purposed supports this concept of shared resource activity during the Late Neolithic-Early Bronze Age in Britain.

Several medium to coarse-grained sandy fabric Q5 fragments also found in Beaker pit [2288] had originated from a possible hearth located in the vicinity of the wattle-and-daub structure. One large piece (40g), measuring more than 40mm long, has a single flat surface indicating that more than one source of clay had been accessed by this group of Beaker folk. This particular fabric was also used to make hearth-like structures subsequently dismantled and added to the fills of Beaker pit [2085] and Early Bronze Age ring-ditch [2145]. These included one piece more than 40mm thick which had a single flat surface and one corner or edge piece with two flat surfaces abutting at 90˚. All of these Q5 pieces appear to have been ash-bleached from wood (or peat) firing.

Additional hearth-like material has been identified in fill (3026) of pit [3025] which also had sherds of Beaker vessels recovered from it. Two different fabrics, QI1 and QD2, were used in this case with lumps from both types affected by possible ash-bleaching from the fires of two hearths. Several other Beaker period (2A) pits, [3100], [3105] and [3130], contained amorphous lumps of fired clays made from fabrics Q1 or Q5 with no diagnostic characteristics to suggest their functional derivation.

A very large amount of undiagnostic Q1 material was found in radiocarbon dated Beaker pit [11731]. With the dating support, this deposit of Q1 fired clay gains significance, and makes it appropriate for this result to be applied as a relative date to the decorated Beaker base made from fabric Q1 recovered from upper fill (11774) of pit [11749]. This Beaker base had been placed stratigraphically above significant quantities from two Impressed Ware bowls, one Ebbsfleet and one Mortlake sub-style (Figure 59, nos 2, 3 & 7) and interpreted as a form of ritual offering during the establishment of a new waterhole complex. The dated presence of this type of clay, used in a pyrotechnical situation, resonates an association with this Beaker made from the same fabric.

A very small fragment (fabric Q1) from pit [1804] (fill 1805) has a single flat surface which suggests that it could have originated from a structure such as a hearth and this is significant because there were small fragments of Beaker sherds in this feature suggesting this fragment may have been Beaker period in origin.

The sieving of soil samples from the primary and secondary fills of Beaker hearth [1877] revealed nearly half a kilogramme of fired clay material. These abraded pieces are all fabric type Q1. Six fragments display a single flat surface each, and these are interpreted as the floor of the hearth due to the presence of an ashy grey to white colour on the surface compared to the fully oxidised appearance of the rest of the fragments. On another two pieces, the flat surface is actually curved in profile which suggests that they may represent the edge of the hearth. The clay used to make these flat surface pieces was either not well-wedged prior to use because naturally-occurring bedding planes are visible in hand specimen or the clay had been applied by plastering method because layering is still visible in the fragments. Two other pieces display evidence of the clay having been used as daub around wattles, one of which was 9mm in diameter, and the clay utilised had been fully wedged prior to application. These two remnants of 'wattle-and-daub' suggest that the fragments derive from a slight structure. Therefore, this hearth feature may have had a flat floor, curved edges and even a possible framework structure – not dissimilar to an oven.

Middle Bronze Age (Period 3)

Two Middle Bronze Age pits located near each other, [6018] and [6024], contained quantities of undiagnostic fired clay lumps made from the same fabric, Q6. Both features contained fire-cracked pebbles, burnt and unworked flint and charcoal. The former was large (3.5m long), deep (1.2m), waterlogged and held bone and burnt bone, seeds and other debris, while the latter was only 1.10m in diameter, quite shallow (0.15m), and interpreted as a hearth.

Fired Clay Fabrics

Q1 - sandy fabric with various infrequent, natural detritus
Rare to sparse (1-7%), rounded to sub-angular, patinated and cortex-bearing flint, < 20mm, and rare (1-2%), rounded to angular iron oxide fragments, < 3mm in a clay matrix containing common to very common (20-30%), moderately well-sorted, sub-rounded to sub-angular, quartz sand, < 0.8mm; laminated texture due to the unwedged nature of this fabric revealed in fresh fracture; this is an un-cleaned clay with no added temper.

Q2 - medium-grained sandy fabric with rare detritus
Common to very common (20-30%), moderately-sorted, sub-rounded quartz, < 1mm with the majority < 0.4mm, and with other rare (1%) rounded inclusions such as possible flint and ironstone or iron ore visible macroscopically, < 3mm, and one piece of limestone, 2mm, with a single foraminifera preserved in it which was only visible microscopically; has only sub-rounded quartz grains compared to Q1.

Sample	Context	Feature	Count	Weight (g)	Fabric	Site Period
-	1785	post-hole [1784]	1	5	Q1	2A
-	1798	ditch [1797]	1	4	Q2	3
-	1805	pit [1804]	1	2	Q1	2A
-	1878/ 1879	secondary & primary fills, hearth pit [1877]	92	489	Q1	2A
200	2041	pit [2040]	7	7	Q4	2A
-	2059	ring-ditch [2060] (Structure 6)	4	4	Q4	3A
-	2084	pit [2085]	16	179	Q5	2A
-	2144	ring-ditch [2145]	1	39	Q5	3A
-	2252	ditch terminal [2254]	2	4	Q2	3A
-	2253	ditch terminal [2254]	10	100	Q4	3A
-	2303	secondary fill [2288]	1	40	Q3	2A
-	2303	secondary fill [2288]	22	159	Q5	2A
227	2386	pit [2385]	2	136	Q1	2A
-	2386	pit [2385]	1	70	QI1	2A
227	2386	pit [2385]	2	1	Q99	2A
-	2453	upper fill pit [2444]	2	40	QD1	2B
-	3020	pit [3019]	1	13	Q4	2A
13	3020	pit [3019]	9	10	Q5	2A
-	3020	pit [3019]	1	1	QI1	2A
	3022	pit [3021]	2	2	Q5	2A
	3026	pit [3025]	10	92	QI1	2A
	3026	pit [3025]	2	6	QD2	2A
	3038	pit [3037]	1	1	QI1	5A
	3101	pit [3100]	3	119	Q1	2A
	3102	pit [3100]	2	19	Q5	2A
	3106	pit [3105]	1	2	Q5	2A
	3133	pit [3130]	3	7	Q1	2A
	4033	pit [4038]	3	8	Q2	2B
	4035	pit [4038]	11	159	Q2	2B
	5014	pit [5020]	1	4	Q2	5B
	5021	south ring-gully [5023]	1	2	Q2	5B
	5044	north ring-gully [5046]	3	24	Q2	5B
	5208	pit [5211]	14	68	Q1	4B
601	6012	pit [6018]	7	42	Q6	3
602	6022	hearth [6024]	108	214	Q6	3
	7054	pit [7056]	1	1	Q1	2B
	7108	post-hole [7107]	1	1	Q1	3
	7612	sub-rectangular pit [7613]	1	1	Q1	4B
117	11413	primary fill ditch cut [11414]	1	1	Q1	4A
122	11715	middle fill pit [11711]	3	3	Q1	2A
124	11730	lower fill pit [11731]]	43	360	Q1	2A
125	11729	middle fill pit [11731]	75	798	Q1	2A
		Total	**473**	**3237**		

Table 9. Quantification of fired clay material
(Site periods: 1A, Early Neolithic; 1B, Middle to Late Neolithic; 2A, Beaker; 2B, Early Bronze Age; 3A, Middle Bronze Age; 3B, Late Middle Bronze Age; 4A, Late Bronze Age; 4B, Late Bronze Age / Early Iron Age; 5A, Early La Tène Iron Age 1; 5B, Early La Tène Iron Age 2)

Q3 – medium to coarse-grained, sandy fabric
Common to very common (25-30%), sub-rounded to rounded, well-sorted quartz, < 1mm with the majority < 0.8/0.6mm, with very rare (< 1%), rounded iron oxides, < 1mm.

Q4 – nearly ungritted clay fabric
Rare to sparse (1-5%), sub-rounded to rounded quartz, < 0.5mm, in an extremely fine, dense clay matrix with possible fine silt or mica also present; usually laminated in appearance due to unwedged use of this raw material.

Q5 – medium to coarse-grained, sandy fabric with rare detritus
Abundant (40%), sub-rounded to rounded, moderately well-sorted, quartz, < 1.2mm with the majority < 0.8mm, in a homogenous clay matrix with rare (1%), rounded either flint, quartzite or iron oxide detritus or angular, unpatinated flint, < 20mm; probably same resource location as for fabric Q1 but different layer of sedimentary deposit due to quartz grain size range and roundness of shape.

Q6 – fine, silty fabric
A very fine, silty fabric which cannot be defined in detail using normal x10 power microscopy; may be similar to fabric Q4 if examined petrographically.

QD1 – medium to coarse-grained, sandy fabric with plant-shaped vesicles and flint detritus
Common (20-25%) vesicles which appear to represent various parts of organic matter or plant-life in both irregular and linear shapes, < 10mm, in a sandy clay matrix containing moderate to common (15-20%), moderately well-sorted, rounded quartz, < 1mm with the majority < 0.5mm, and very rare (< 1%), flint detritus, < 10mm; the quantity of apparent organic matter strongly suggests that this material may have been added as temper could be changed to fabric V1 or VQ1.

QD2 – medium-grained, sandy fabric with sparse plant vesicles or vacuoles
Common (20-25%), well-sorted, rounded quartz, < 0.6mm, in the clay matrix with sparse (3%), vacuoles and flat vesicles of probable organic matter, < 3mm; the small quantity of possible organic matter suggests that this material is not likely to be added temper.

QI1- medium-grained, sandy fabric with significant iron oxides
Moderate (10%), rounded, iron oxides, up to 8mm with majority < 3mm, in a sandy clay matrix containing common (25%), rounded quartz, < 1mm with the majority < 0.4mm.

BRIQUETAGE

Elaine L Morris

A modest amount of briquetage (111 pieces; 1701g), ceramic material associated with salt production, was identified amongst the prehistoric pottery assemblage and other fired clay materials. This includes fragments representative of the four classes of briquetage identified in the fenland region (Morris 2001a: 41-54; 2009c, 76-8): brine evaporation *containers*, various *supports* for holding containers in position over hearths, saltern *structural* evidence from either a hearth or oven where the brine in the containers held in place by different types of supports was heated, and *miscellaneous* salt-affected fired clay which is undiagnostic to any specific functional form.

The Bar Pasture briquetage was recovered from eleven features (*Table 10*). The collection has an overall mean piece weight of only 15.2g and includes very little evidence of structural material which together strongly suggest that this area was undoubtedly in the vicinity of ancient salt production but that no salterns were actually located within it.

The fragments of containers, supports and structural material have been assigned to previously defined fabric and form types where possible and are referenced accordingly; any new types are described below.

Containers

Four different types of rims and numerous body sherds from trough-shaped containers were identified, but no bases were recovered. The vessels had been made from a variety of fabrics.

A single cut rim sherd (type Briq R1; Figure 68, no. 1) and tiny fragments from the same container made from vesicular fabric D1 were found in eaves-drip ring-gully [2064] of Structure 6, being one of two buildings within the Middle Bronze Age enclosed farmstead complex. The Bar Pasture examples were made from the vesicular variant D1 of the coarser shell-gritted fabric S2 that is usually typical of later Bronze Age salt production ceramics found in the Pode Hole Quarry area further to the NE (Morris 2009c: 75) and first identified at Padholme Road, Fengate (Pryor 1980: fig. 13, 1). Very small, split sherds or flakes from another container made from the finer shell-gritted fabric S1 were found in fill (2222) of the ditch terminal [2225] in this same Middle Bronze Age farmstead enclosure.

A second cut rim and one body sherd from the same container (Figure 68, no. 2) were recovered from pit [5211]. This vessel had been made from a completely different type of fabric (QV1) comprising a medium-

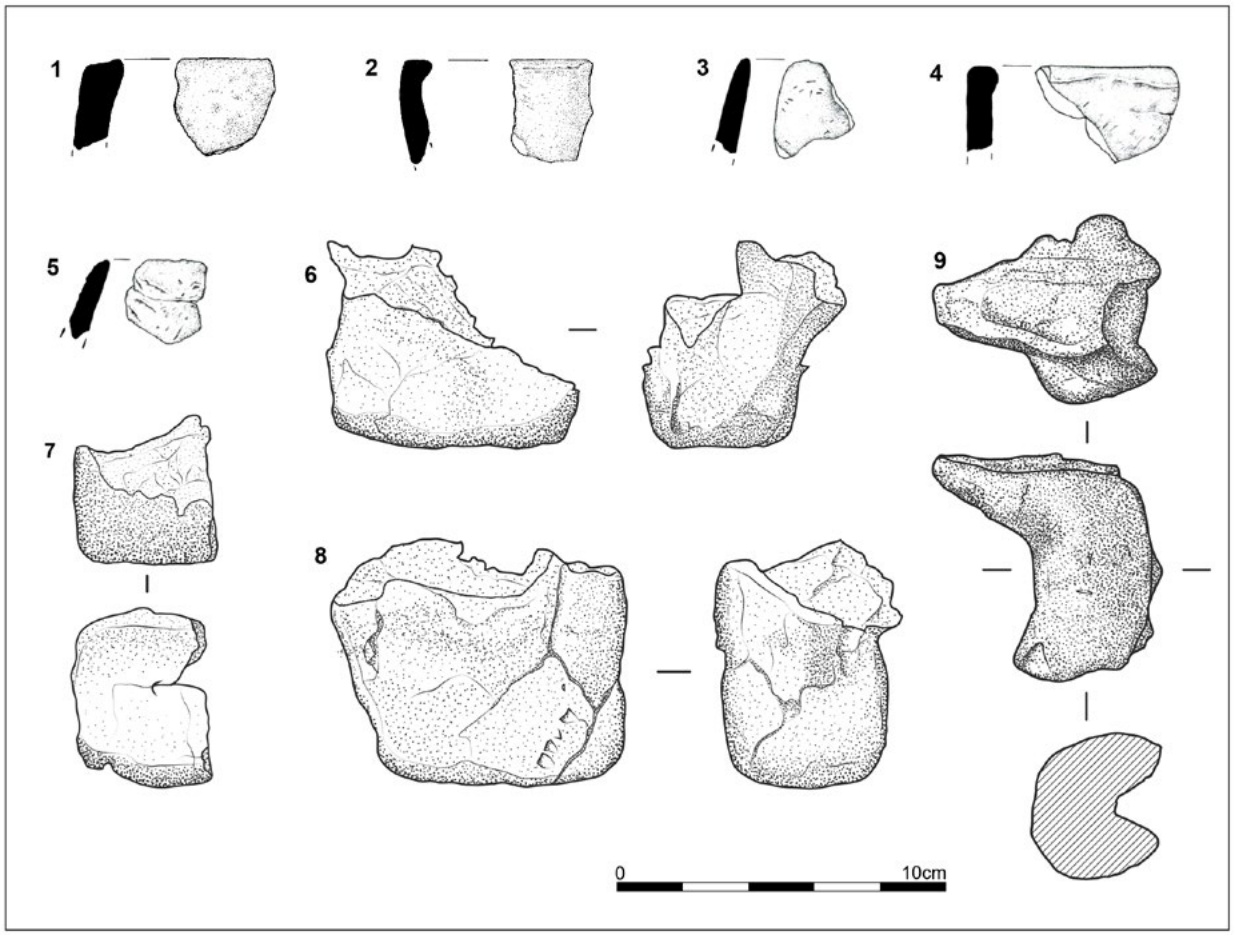

Figure 68 Selected Briquetage: Catalogue Nos 1-9.

Feature	Context	Containers		Supports		Structural		Misc.		Total Count	Total Weight	Site Period	Catalogue Number
		Ct.	*Wt.*	*Ct.*	*Wt.*	*Ct.*	*Wt.*	*Ct.*	*Wt.*				
ring-gully [2064]	2063	9	23	-	-	-	-	-	-	9	23	3A	1
ditch terminal [2225]	2222	17	4	-	-	-	-	-	-	17	4	3A	-
inner enclosure ditch cut [2239]	2238	-	-	-	-	1	89	-	-	1	89	3A	-
inner enclosure ditch cut [2254]	2252	-	-	-	-	1	5	-	-	1	5	3A	-
large pit [5211]	5208	3	13	-	-	-	-	-	-	3	13	4B	2
large quarry pit [6105]	6110	4	41	-	-	-	-	-	-	4	41	4B	-
pit [6158]	6162	-	-	-	-	-	-	1	15	1	15	3B	-
outer enclosure ditch [7456]	7458	7	46	-	-	-	-	4	105	11	151	3B	3 - 5
waterhole [8095]	8095	-	-	1	10	-	-	-	-	1	10	5B	-
small pit [10217]	10219	-	-	63	1231	-	-	-	-	63	1231	3B	6 - 8
field ditch cut [11453] (G11818)	11461	-	-	1	119	-	-	-	-	1	119	4A	9
	Total	***40***	***127***	***65***	***1360***	***2***	***94***	***5***	***120***	***112***	***1701***		

Table 10. Briquetage classes

coarse sandy clay with variable but infrequent organic matter which had burnt out leaving linear vesicles. One body sherd of the same fabric, but most likely from a different container, was also identified from the same context in this pit. Cut rims derive from trough-shaped vessels and are quite unique to salt production (Morris 2001a: 42, fig. 17, 1 & 7, 2001b: fig. 88, 1-2 & 5-7, 2001c: fig. 93, 1-3 & 6-7, 2009c, fig. 4.5, 1) and in the nature of their manufacture (Morris 2001c: 271, fig. 92).

Single examples of a rounded rim (Briq R5), a flattened rather than cut rim (Briq R8) and a pointed rim (Briq R9) (Figure 68, nos 3-5) were found in fill (7458) of enclosure ditch corner [7456] in association with shell

fabric sherds from Late Middle Bronze Age pottery (Period 3B). Examples of these particular container rim types were also recovered from Middle Bronze Age contexts in the Pode Hole Quarry area and at present are unique to that period (Morris 2009c: 76, fig. 4.5, 2-5).

Supports

Three different types of handmade pedestals (PD) used to support ceramic trough-shaped containers above open hearth fires in order to evaporate water from brine and produce salt crystals were identified in two features; period 3B pit [10217] and period 4A ditch cut [11453], located in fields 76 and 68, respectively.

The briquetage recovered from the secondary fill (10219) of small pit [10217] derived from at least three, and probably more, handmade pedestals (see Morris 2009c: 77). Bases from two different types of pedestal were identified in the group; one example of form type PD17 which is a brick-like pedestal, square in cross-section with either horns or a broad groove to its top edge (Figure 68, no. 6), and two examples of form type PD18 a sub-rectangular pedestal with rounded edges tapering up to a pair of horns edge (Figure 68, nos 7-8). Both the shape of the objects and the presence of salt-bleached effect throughout the fabric of the fragments typify ceramic materials associated with salt production during this period of later prehistory. However, no sherds from salt evaporation trough, pan-shaped containers or structural fragments suggestive of a hearth were found in this feature.

One decorated, flattened rim sherd from a shell fabric, Late Middle Bronze Age bucket-shaped vessel (Figure 63, no. 63) was recovered from amongst the fragments of briquetage pedestals in this same context. This is not the first time that these distinctive forms of pedestal supports have been found in Period 3B deposits; identical examples were recovered from a pit cluster in association with Late Middle Bronze Age pottery at Pode Hole Quarry (Morris 2009a: 68; 2009c, 76-7, figs 4.1, 23-24 and 4.5, 11-17 and 22).

The fabric of these pedestal fragments (type Q1) is not only uniformly consistent but also typical of briquetage supports recovered from fenland later prehistoric salterns (Morris 2001a: 36-7, 2009c: 75), a dense quartz sand-bearing clay matrix with very rare to rare examples of large naturally-occurring flint detritus present. The fragmentation of the objects reveals that the manufacture of these pedestals was more expedient than that of typical later Bronze Age pottery due to the obvious layering structure readily visible to the clay which suggests that little if any wedging was performed prior to shaping. It may be that this layering is actually geological layering of the clay beds, i.e. natural bedding planes, which had not been homogenised during the making of these rather rustic supports.

Normally the fenland silty clay used to make pedestals fires to various shades of orange-red but once saltwater is associated with the objects during use to heat brine, bleaching of the iron in the clay occurs, first appearing as a white skin and subsequently into the dense but porous ceramic material. The illustrated pedestals show the roughly manufactured nature of these supports. There are dips, tucks and folds to their lumpy shapes and often it is possible to identify finger impressions on the surfaces, in particular on the PD18 examples, while the PD17 fragment is more smoothed on its surfaces. It seems that the PD18 examples may have been relatively soft or at least in a less leather-hard state than that of the PD17 example when the first brine container trough or pan had been placed on top of them prior to their first use at the hearth which may explain their slightly bent over or buckled profiles.

Approximately half of a single type PD23 supporting pedestal (Figure 68, no. 9) was found in the upper fill (11461) of Field 68 ditch cut [11453]. It was made from a silty fabric richly tempered with an array of variably shaped, short and long pieces of now burnt-out organic matter measuring up to 10mm. This new fabric type variant, V1f, displays only very fine quartz grains which cannot be measured with regular x10 power microscopy which indicates that they are likely to be silt-grade in size. This variant is distinctive due to its abundance of former organic matter which sets it apart from the Late Iron Age and early Romano-British types V1a-V1e (Crosby 2001: 107-110; Morris 2001a: 36-7). The fabric contrasts strongly with fabric Q1 used to make the Middle Bronze Age pedestals recovered from small pit [10217].

The form of this pedestal was first identified at Brigg's Farm, Prior's Fen, Thorney (Morris 2011a: fig. 36, no. 13). It is a short, stocky type of hand-squeezed object with a sub-rectangular shape overall including a flat to curved top platform, stem and curved base as the latter had been pressed onto the surface of a hearth prior to firing and use. The extant remains of the Bar Pasture example when reconstructed measures approximately 100mm across the top, 45mm at its mid-stem zone, 80-85mm along its base and 80mm tall. The single example recovered from Brigg's Farm had been made from the more common fabric type Q1, and is larger overall. The sub-rectangular form of PD23 examples is not dissimilar to PD18 examples found at Pode Hole Quarry (Morris 2009c: fig. 4.5, nos 16, 17 and 22) and the earliest stemmed type PD19 also found in this landscape (*ibid.*: fig. 4.5, 18-21) and Brigg's Farm (Morris 2011a). The latter example was recovered in a ditch context with a Deverel-Rimbury pot sherd burnt interior surface residue radiocarbon dated to 1530-1400 cal BC (GU-

25573; 95% probability). Therefore, while the V1f fabric is currently unique, the pedestal form belongs to a combination of known types of briquetage supports used during the second half of the second millennium BC in the fens (Late Middle Bronze Age). This pedestal was incompletely oxidised during its firing and shows no evidence of repeated use, two aspects in contrast to the small pit examples.

In addition, a small fragment of pedestal which could not be identified to type (PD99; fabric Q1) was found in fill (8095) of waterhole [8088] in association with potsherds from three vessels made with shell-rich pottery fabrics (S5, S8), one of which (Figure 66, no. 103) most likely belongs to the Early La Tène Iron Age period (Period 5); and four redeposited plain body sherds (9g) from a Late Bronze Age (Period 4) fabric DQ1 vessel. It is more likely that the pedestal fragment was contemporary with the residual Late Bronze Age sherds and was also redeposited.

Structural Material

Two fired clay fragments of hearth structure material were found in different cuts through the inner enclosure ditch of the Middle Bronze Age farmstead complex discussed above. Fill (2238) of cut [2239] produced the largest hearth fragment in association with four body sherds of shell-bearing (S1) fabric Middle to Late Bronze Age pottery (periods 3B-4). The much smaller piece was recovered from fill (2252) of cut [2254] in association with two heavily ironised, small body sherds (4g) measuring 7-8mm thick of vesicular fabric pottery (D1) which could have belonged to either a Beaker (Period 2A) or Late Bronze Age (Period 4) vessel. The briquetage was made from fabric Q1 with one piece having a curved, flat surface and the other just a flat surface; both display pink 'salt colours' typical of ceramic material which has undergone variable degrees of bleaching due to being associated with salt production (Morris 2001a: 41, 2007, 2009c: 76). The surfaces and curved shape, along with the laminated texture of one piece and the distinct firing colour of both strongly suggest they originated from a saltern hearth located somewhere near this ditch.

Miscellaneous

Miscellaneous fired clay material, affected by saltwater and heat which has bleached the surfaces of these pieces, was found in a pit [6158] and the corner of enclosure ditch [7456]. Both of these features are assigned to the Late Middle Bronze Age (Period 3B).

Fabrics

A significant aspect of the briquetage in this diverse collection is the identification of new fabric types used to make briquetage containers. Fabric QV1 is a coarse to medium-grained, sandy fabric similar to fabric Q1 with rare flint detritus (Morris 2009c: 75) but distinguished by the natural presence of rare (1%) pieces of fine sandstone measuring up to 3mm and the deliberate addition of a sparse to moderate amount (3-10%) of angular, linear pieces of broken organic matter which had been burned out during the firing of the vessels leaving linear vesicles in the clay matrix. The amount of organic matter in this very sandy and quite harsh fabric is much less than that identified in fabric V1 that had been used to make a possible saltern hearth structure (*ibid.*).

It is difficult to be certain whether the amount of organic matter was deliberately added as temper to the naturally sandy clay to make fabric QV1 but the variability in quantity between the sherds from the two container examples in the collection suggests that the salt-maker or salt-makers may have added these inclusions. The infrequent smaller, rounded examples of sandstone/ironstone and flint present in the fabric suggest that any larger pieces, well-known in the much coarser fabric Q1 used to make both clay weights and briquetage pedestals (Morris 2009b: 71, 2009c: 75), may have been removed or were never present naturally. Fabric Q1 was used to make fired-clay structures such as wattle-and-daub and domestic hearths (see *Fired Clay*). This suggests that the source for the original QV1 clay is likely to be immediately local.

The second new container fabric is identical to the Late Bronze Age/ Early Iron Age (Period 4B) pottery fabric QC1 (see *Pottery Fabrics* above, where this is defined) and used to make two containers represented solely by body sherds found in large quarry pit [6105]. The degradation of the infrequent shell in this fabric is characterised by the halo-effect caused when saltwater comes in heated contact with calcareous matter, gradually disintegrating and leaching out the calcium carbonate from the core to the periphery of each inclusion.

Two other, much more commonly known briquetage fabrics, Q1 and Q2 (Morris 2009a: 63' 2009c: 75), were used to make respectively four of the five pedestal supports and miscellaneous fired clay material associated with salt production. Q2 is another example of a fabric used to make pottery, in this case Late Middle Bronze Age vessels (Period 4B). Both QC1 and Q2 appear to be naturally-occurring clays with common to very common amounts (20-25%) of medium-grained or finer quartz with sparse (5%) degraded calcareous matter in the former and occasional detrital flint, iron oxide/ ironstone, limestone or shell in the latter.

The third new fabric, V1f, was used to make a single pedestal found in a Period 3B Late Middle Bronze Age context. The silty clay matrix of this significantly

organic-tempered fabric is also likely to have derived from a local fenland silty clay deposit.

Therefore, a wide variety of sandy and silty clays, all of which may have been locally sourced, were adopted and often adapted (by the removal of large pieces of detritus or the addition of organic matter to increase porosity) for use in making the ceramic materials employed in the salt production activities just outside the Bar Pasture area.

QV1: Coarse to medium-grained sandy fabric with variably-shaped vesicles (organic matter)
Common to very common (20-30%), moderately to well-sorted, sub-rounded quartz and possible quartzite, < 1mm with the majority < 0.8mm, very rare (< 1%), rounded, flint and/or fine sandstone/ ironstone-like detritus, < 3mm in a clay matrix also containing sparse-moderate (3-10%), narrow, linear & curvilinear voids of former organic matter, < 4mm; similar to pottery fabrics Q1 and Q3 with added organic temper.

V1f: Richly organic-tempered, silty fabric
Very common to abundant (30-40%), linear voids of former organic matter, up to 20mm long, in a fine, silty clay matrix with quartz, less than 0.1mm across.

Dating

Table 10 presents the site period and date assigned to the briquetage material recovered by feature and context. Briquetage cannot be dated directly as it does not have carbonised matter attached to it. Therefore, all of the dating references are by association.

The most significant example of this dating method was found with the briquetage container sherds and flakes and the structural material fragments recovered from three features associated with the Middle Bronze Age (Period 3A) farmstead enclosure complex including ring-gully [2064] and the inner enclosure ditch cuts [2225], [2239] and [2254]. The quantity of briquetage does not indicate a saltern in the area. The types of container sherds, for example, are typical of the Late Middle Bronze Age and Late Bronze Age salt production repertoire of evaporation troughs in the fens. Two very small sherds (4g) of heavily ironised, Bronze Age-type pottery, which could have derived from a Beaker or later vessel, came from fill (2252) and four equally small sherds (7g) of grog-tempered Early Bronze Age pottery were recovered from fill (2253), the upper and lower fills of ditch cut [2254]. However, (2238) which is the single fill of inner enclosure ditch cut [2239] contained four body sherds (23g) of fabric S1 pottery, which is generally considered a Late Middle Bronze Age to Late Bronze Age fabric (periods 3B-4), in association with the larger of two pieces of structural briquetage material (89g). Therefore, different dateable pottery was recovered from different, quite shallow sections along the inner enclosure specifically, and interpreted as indicating that various forms of activity, such as dumping refuse in this general area, is likely to have taken place throughout the Middle and later Bronze Age. This is perhaps not surprising considering the proximity of the Late Bronze Age settlement features just 100m to the south.

Several sherds of Late Bronze Age/ Early Iron Age pottery (Ceramic Phase 4B) were found in pit [5211] in association with the only cut rim container sherd made of fabric QV1. The pottery comprises the rim of a large jar and the obtuse-angled shoulder of a bowl burnished on its interior which had been made from a mudstone-gritted fabric that may not have been locally produced (Figure 64, nos 73-74). This correlation of briquetage and CP4B pottery also occurred in quarry pit [6105] including a significant portion (25%; three joining sherds, 65g) from the base of a small, thin-walled (5-6mm thick) jar made with an unusual fabric containing grog temper and pieces of shell in a quartz sand clay matrix (GSQ1) (Figure 64, no. 77) and three, small sherds from a flint-tempered fabric with a sandy clay matrix (FQ1; 14g) vessel with walls measuring 6-8mm thick which had been slightly affected by brine. In addition, three small sherds (9g) of shell fabric Late Middle Bronze Age type (S1; Ceramic Phase 3B) are likely to have been redeposited into this feature.

The container and miscellaneous fragments from the corner of enclosure ditch [7456] were found in association with large sherds of coarse shell fabric pottery of Late Middle Bronze Age type including decorated body sherds from a typical Barrel Urn (Figure 63, no. 57). There might be enough material in ditch corner [7456] to suggest that there had been actual salt production taking place somewhere nearby during the Late Middle Bronze Age (Period 3B). However, the four sherds from two different briquetage containers in large quarry pit [6105] are more likely to indicate the local movement of salt to this Bar Pasture landscape location for use of the mineral rather than being representative of any actual production in the area during the Late Bronze-Early Iron Age (Period 4B).

The undiagnostic pedestal fragment found in waterhole [8088] was associated with potsherds from three vessels made with shell-rich fabrics (S5 and S8), including a proto-saucepan pot or ovoid, neckless jar (Figure 66, no. 103), that are most likely to belong to the Early La Tène Iron Age period (Period 5) based on similarity to examples of simple, convex-profile vessels at Outgang Road, Market Deeping (Lincs). Coarse fossil shell and shelly limestone fabric dominates that assemblage and an actual decorated example of the form type was recovered (Knight 2010c: 247, fig. 136, 1), in addition to four very small redeposited sherds (9g) from a

Late Bronze Age fabric DQ1 vessel (Period 4). The Iron Age date for waterhole [8088] is not supported with radiocarbon dating, but it is highly likely that the 10 gramme pedestal fragment or chipped-off flake (not illustrated) was contemporary with the Late Bronze Age sherds and was also redeposited.

The upper fill (10219) of small pit [10217] contained not only three diagnostic pedestals but also a single small rim sherd (6g) from a shell fabric pottery vessel decorated with at least one fingernail impression on the exterior edge (Figure 63, no. 63). This sherd most likely derives from a Late Middle Bronze Age bucket-type vessel and is similar to an example from a pit at Pode Hole Farm which produced a radiocarbon date of 1395 - 1010 cal BC (Beta-131193; Hood 2001: table 5). The sizes of the three pedestals compared to that of the potsherd suggest that the sherd may have been redeposited, and therefore more likely to pre-date the manufacture, use and deposition of the pedestal fragments.

The distinctive pedestal found in fill (11461) of Field 68 ditch cut [11453] - G11818, relies for dating on its similarity to an example found at Briggs Farm, Prior's Fen, Thorney recovered from a ditch in association with a Deverel-Rimbury urn-type body sherd that had been used as a cookpot and produced a radiocarbon date of 1530 – 1400 cal BC (Morris 2011a: fig. 36, no 13).

Discussion

What does this modest collection of briquetage tell us about later Middle Bronze Age and Late Bronze Age salt production just outside the Bar Pasture area? One important aspect is that the quantity of salt production was not large compared to Iron Age salt production in the fens. Hardly any material was recovered during the decade of fieldwork at Bar Pasture and therefore this part of the landscape was not the scene of salt production during the Bronze Age. A second point is that the production of salt during the later Bronze Age was not uniform where it did occur. A relative measure of the use of containers and pedestals can be interpreted by the intensity of fabric bleaching observed on sherds and supports. The presence of a thin white 'skin' on the exterior surface of a sherd or pedestal fragment indicates less use than the presence of veins of bleaching throughout the piece. If the briquetage presents a completely white to off-white colouration, then these otherwise pale orange to reddish-orange ceramics were used many times in an intensive nature. Some of the Bar Pasture pieces of briquetage were used slightly and others more repeatedly in the winning of salt during the later Bronze Age. No examples were completely white, or off-white compared to pedestal supports recovered from Pode Hole Quarry, which indicated highly variable degrees of intensification of production (Morris 2009c: 80-82, fig. 4.5).

There is no evidence for the actual production of salt within the Bar Pasture landscape. Instead, the presence of the few container sherds may represent the movement of salt in the specialised ceramic containers originally used to dry brine a short distance from one or more production locations on the fen edge, east of the Site, first during the Late Middle Bronze Age (P3B) and then again during the Late Bronze/ Early Iron Age period (P4B). It is also possible that the fragments of pedestals might have been used as salt-saturated lumps for animals to lick, which is not inconceivable in this landscape structured by field systems and droveways for livestock management. The actual salterns, however, must have been located just outside the Bar Pasture remit.

The variety of fabric types amongst the briquetage container sherds in particular is distinctive. At this stage in our understanding of the history of early salt production and briquetage manufacture, it is not possible to understand clearly what is motivating the changes in fabric technology during the second half of the second millennium BC amongst the organic-tempered, calcareous and sandy fabrics. In particular, there appears to be no obvious chronological development to explain the variability. We could simply be observing expedient choices made by occasional salt makers at this time. Subsequently, during the fenland Iron Age, sandy and silty fabrics prevailed and eventually container fabrics become dominated by the presence of a silty fabric well-tempered with organic matter (Lane and Morris 2001; Morris 2001b).

Catalogue of Briquetage

(BRN: Briquetage Record Number)

1. Cut rim, Briq R1; vesicular fabric D1; traces of salt-bleaching on exterior; firing conditions in upper vessel area and rim zone fully oxidised, lower vessel zone oxidised on exterior and core only; fill (2063), ring-ditch [2064]; BRN 4000.

2. Cut rim, Briq R1; coarse sandy fabric QV1; salt-bleaching on exterior and top edge of rim; fully oxidised firing condition; fill (5208), pit [5211]; BRN 4201.

3. Rim type Briq R5; QV1; fill (7458), ditch corner [7456]; BRN 4208.

4. Rim type Briq R8; QV1; fill (7458), ditch corner [7456]; BRN 4204.

5. Rim type Briq R9; QV1; fill (7458), ditch corner [7456]; BRN 4214.

6. Lower zone of sub-rectangular pedestal, type PD18; fabric Q1; fingering evidence on two sides; exterior

skin-depth salt bleaching effect visible; fill (10219), small pit [10217]; BRN 4217.

7. Lower zone of sub-rectangular pedestal, type PD18; fabric Q1; roughly made and highly irregular in form with frequent finger impressions; exterior skin-depth salt-bleaching effect visible; fill (10219), small pit [10217]; BRN 4218.

8. Part of base of brick-shaped pedestal, type PD17; fabric Q1; salt-bleaching effect marbled throughout; fill (10219), small pit [10217]; BRN 4219.

9. Part of the full profile of a hand-squeezed pedestal, type PD23; fabric V1f; roughly made; irregularly fired on the exterior, unoxidised core; no evidence of salt bleaching; fill (11461), field ditch [11453] (G11818); BRN 4220.

ROMAN POTTERY

Ruth Leary

Despite over a decade of archaeological excavations at Bar Pasture, only a single Grey Ware body sherd (9g) from a jar with a single external horizontal groove was recovered from the upper fill (5275) of a large ditch [5281] forming the eastern boundary of Middle Bronze Age Field 35. The sherd is in Horningsea reduced ware (Evans 1991; Tomber and Dore 1998: 116) and is the common Grey Ware in Cambridgeshire. The dating is problematic with such an undiagnostic piece. The Horningsea industry was long lived but this medium-sized jar, probably originally burnished, is most likely to belong to the 2nd century AD on the basis of its form and fabric. More recent excavations *c*. 400m to the west of Bar Pasture have recovered a considerable quantity of Roman pottery associated with a *Villa Rustica* (Mustchin and Richmond 2020). Evidently during the period of Roman occupation, the present low-lying Bar Pasture landscape was likely inaccessible due to complete inundation.

STRUCK LITHICS

Hugo Anderson-Whymark

Introduction and quantification

The extensive excavations at Bar Pasture recovered only a modest lithic assemblage of just 327 struck flints (Table 11). A sizeable quantity of burnt unworked flint (that is not discussed in detail here) was also recovered. The greater part of the assemblage dates from the Chalcolithic (Beaker) and Early Bronze Age, with a significant proportion recovered from contemporary features, including ring-ditches and 30 pits. A small number of Mesolithic and Neolithic artefacts reflect earlier activity in the landscape. The Mesolithic artefacts were unstratified and widely distributed, while the Neolithic assemblage comprises only a few flakes from two pits. The typological and technological affinities of the assemblage are outlined below.

Methodology

The artefacts were catalogued according to broad artefact/debitage type, general condition noted and dating attempted where possible. Retouched pieces were classified according to standard morphological descriptions (Bamford 1985: 72-77; Bradley 1999: 211-227; Butler 2005; Healy 1988: 48-49). Chips are classified as flakes with a maximum dimension less than 10mm. Percentages exclude chips as these tend to be recovered through sieving, resulting in significant variation between contexts and sites depending on sampling strategy. Additional information was recorded on condition (degree of edge-damage and degree of cortication), and the state of the artefact (burnt, broken, or visibly utilised). The assemblage was catalogued directly onto a Microsoft Access database and data manipulated in Microsoft Excel.

Raw materials

Flint was the sole raw material used for the manufacture of struck lithics. The flint was typically mid to dark brown, that latter almost black, but shades of light brown, yellowish brown and grey were also present. Small areas of the original cortical surface of the raw material were present on a good proportion the artefacts. The cortex was generally buff coloured, 1-2 mm thick, with an abraded surface; the cortex on a couple of flints had been entirely abraded and the surface was lightly pitted. The surface condition of the cortex indicates the raw material was procured from a secondary context, such as river or glacial gravels, rather than directly from the chalk. A small number of unworked flint pebbles recovered during excavations at Pode Hole Quarry indicate that the raw material used on Site may be available in the local landscape, although it is relatively scarce and pieces are likely to have been imported from more distant sources (Wilson 2009: 82).

Condition

The majority of the assemblage was in fresh condition and free from surface cortication, but slight edge-damage was present on some artefacts, particularly pieces from topsoil. A light bluish-white cortication was present on a small number of artefacts, including the majority of blades in the assemblage. A few flints also exhibited a yellowish-brown to orange iron staining. Only nine struck flints were burnt (4% of the assemblage excluding chips), and 35 were broken (15.5%).

Primary reduction technology

The artefacts in the assemblage are the product of two distinct reduction strategies; one is orientated to the production of small flakes, while the other produced parallel-sided blades. Unspecialised flake-orientated reduction strategies produced the greater part of the assemblage and the debitage is dominated by small flakes of relatively broad proportions. These flakes typically exhibit plain platforms and the platform edges show no evidence of preparation. Cores are dominated by multi-platform forms that result from an *ad hoc* working strategy, whereby the core is rotated when a platform is exhausted and an appropriate surface, such as the former core face, is used as the platform for further removals. Both hard and soft hammers were employed in reduction. Flake orientated platform reduction strategies became the norm in Later Neolithic Britain and persist through the Chalcolithic and Early Bronze Age.

In total, 19 artefacts are products of a blade-orientated reduction strategy. This total is dominated by parallel-sided prismatic blades, *c.* 50-60mm in length, that exhibit regular abrasion of the platform edge (e.g. Figure 69, no. 1). The platforms are typically narrow, linear, types, but one on a serrated blade is faceted. The scars on the dorsal faces of these blades indicate most were struck from single platform blade cores, but some were removed from cores with opposed platforms. Five serrated blades and an edge-retouched blade, described below, are manufactured on blade blanks consistent with the characteristics described above and a bladelet and two blade-like flakes also share attributes (e.g. dorsal blade scars), that indicate they derive from a blade-orientated industry. A core-face rejuvenation flake indicates the maintenance of cores during reduction. The only core assigned to this technology is a heavily rolled single-platform bladelet core with a cortical back, which demonstrates the considered removal of regular parallel-sided bladelets from an acutely angled platform (Figure 69, no. 2). Carefully controlled blade-orientated reduction strategies are characteristic of the Mesolithic and the comparatively large size of many blades may indicate an Early Mesolithic date for these artefacts.

Secondary technology – the retouched artefacts

Sixty retouched artefacts were recovered, accounting for 26.6% of the assemblage, excluding chips. These artefacts are described by class, below.

Scrapers
Scrapers account for half of the retouched tools recovered. They were manufactured on flake blanks, except for two manufactured on non-flake blanks of naturally fractured flint (e.g. Figure 70, no. 15). In general, scrapers exhibit a single working edge and have been classified by the position of the retouch into end or side forms. End and side scrapers typically have a principal working edge at the distal end, but exhibit additional lateral retouch refining their form. Eleven 'thumbnail' scrapers are present in the assemblage (Figures 69 and 70, nos 9-12 & 16). These scrapers are diminutive in size, compared to the majority of forms and all are below 30mm, with the smallest measuring just 19mm x 18mm. These scrapers are frequently finely manufactured, exhibiting fine pressure-flaked retouch; some have relatively low angle working edges. Notably larger scrapers are found in association with thumbnail forms (e.g. Figure 70, nos 13 & 14), indicating that the size of thumbnail scraper is by design and does not simple reflect the size of available raw materials. Thumbnail scrapers are commonly found in association with Beaker pottery and therefore date to the Chalcolithic and Early Bronze Age. One unusual scraper is a disc form, recovered as an unstratified find close to Structure 5 ring-gully [2104], which exhibits retouch around its entire perimeter onto the ventral surface. The latter form and another end and side scraper exhibit a notch in one edge, while a thumbnail scraper exhibits a spur on the corner of the scraping edge. The presence of notches and spurs on scrapers is quite commonly observed in Neolithic and Bronze Age assemblages.

Knives
Knives are poorly represented in the assemblage with just three backed knives and two plano-convex forms present. The three backed knives each exhibit straight semi-abrupt retouch along one side of an otherwise modified flake. It is presumed that this retouch blunts one edge to facilitate use of the opposite unretouched edge. One of these knives was recovered from Structure 4 Beaker pit [2385] (Figure 70, no. 17), while the others were unstratified. The plano-convex knife forms comprise one broken example, possibly of foliate form, which exhibits semi-invasive retouch, and a fine triangular pointed form with fully invasive retouch (Figure 70, no. 18). The form of the latter is reminiscent of miniature halberds and could plausibly have been hafted in this fashion. This example was also recovered from Beaker pit [2385].

Serrated blades
Five serrated blades were recovered and, as noted above, the blanks used were the product of a blade-orientated reduction strategy, indicating that they probably date from the Mesolithic. This artefact type has a broad chronology, with examples recovered from Mesolithic to Early Bronze Age assemblages, although they are most common in the Early Neolithic. The examples in the assemblage are typical of the form with between 10 and 14 fine teeth per 10mm along one or more edges. On most examples, silica gloss is present as a *c.* 1mm

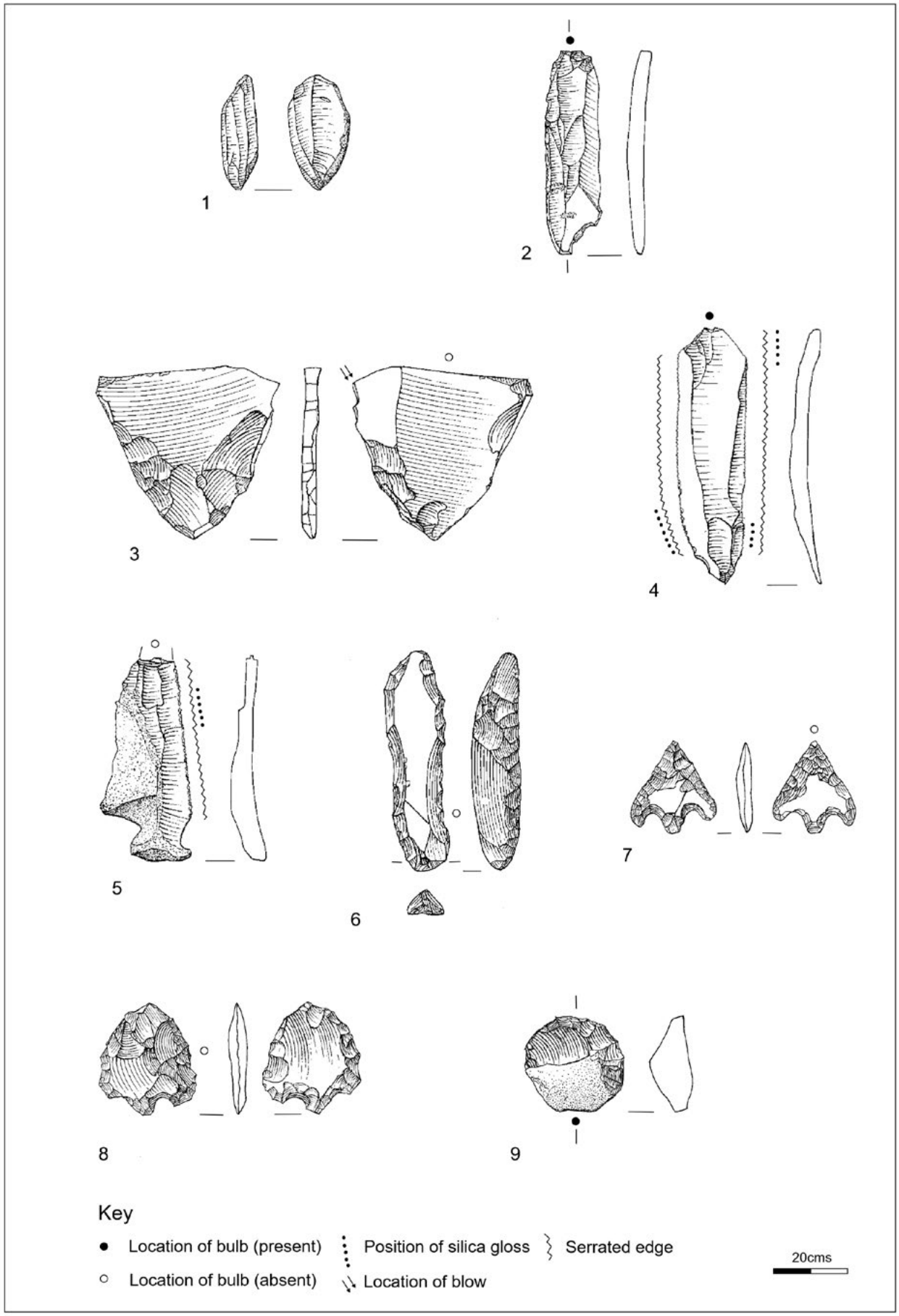

Figure 69 The Struck Lithics: Catalogue Nos 1-9.

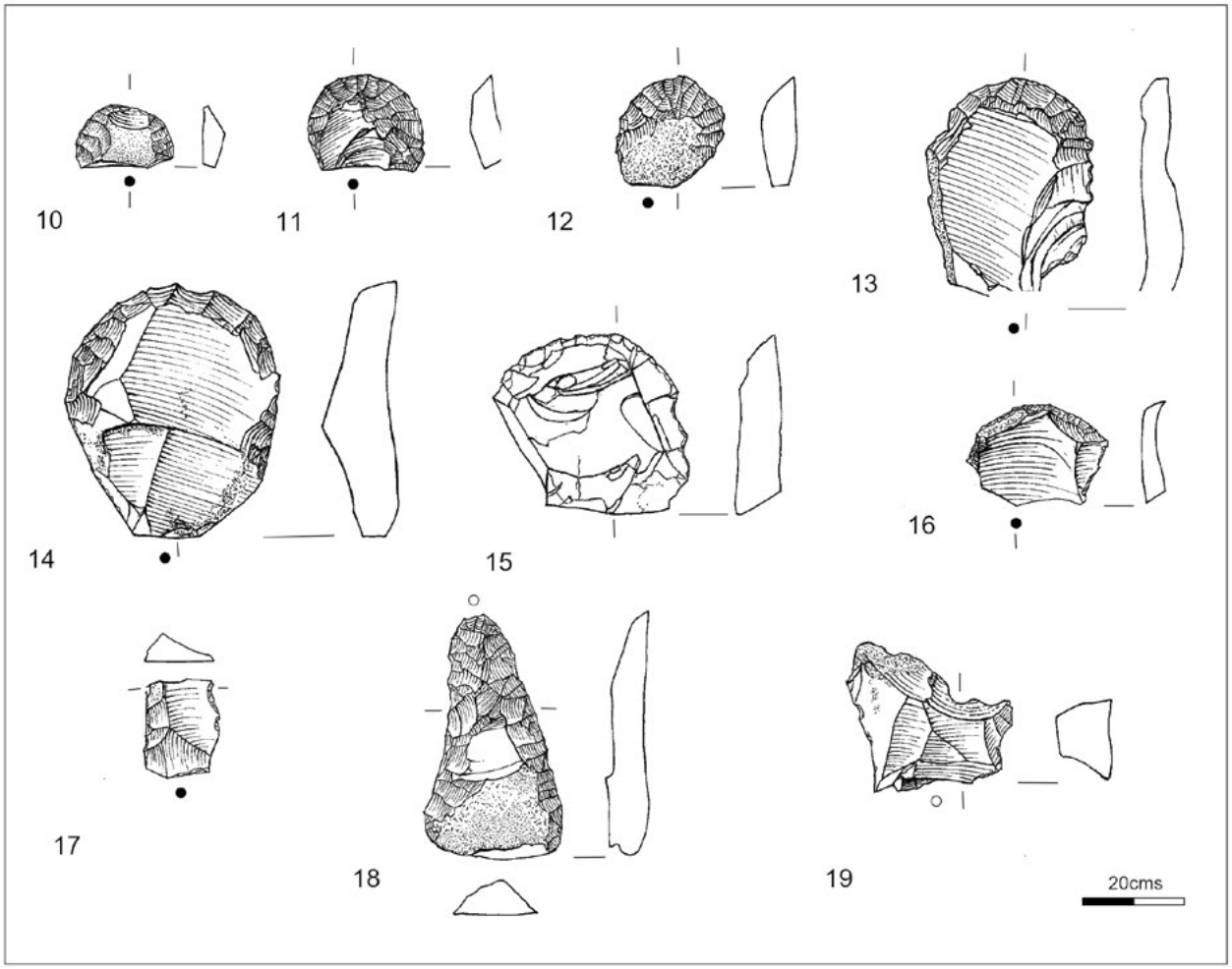

Figure 70 The Struck Lithics: Catalogue Nos 10-19.

bright band on the reverse of the teeth (Figure 69, nos 4 & 5). This gloss results from processing silica-rich plants into fibres, using a transverse movement (Juel Jensen 1994: ch. 2). On one example (Figure 69, no. 4) four distinct zones of use can be identified, with serrations present on the dorsal surface at the left proximal and right distal sides and on the ventral surface at the left distal and right proximal sides. The position of the teeth suggests this blade was used as an unhafted hand-held tool, probably gripped between the forefinger and palm, with the thumb used to hold materials against the toothed edge; following the use of one edge the tool was rotated to use each of the four areas of retouch.

Barbed and tanged arrowheads

Two arrowheads were recovered during the excavations. An unstratified barbed and tanged arrowhead that exhibits relatively basic, semi-invasive retouch can be classified as a Sutton type B(h) (Green 1980: 122; Figure 69, no. 7). The second example, from an Early Bronze Age pit [12143], is a crude, unfinished or roughout arrowhead, which exhibits two small notches that create a basic barb and tanged arrowhead outline (Figure 69, no. 8). It is possible that this is the work of an inexperienced knapper or juvenile.

Edge-retouched flakes

Ten flakes and one probable Mesolithic blade exhibit areas of slight-abrupt retouch along one or more edges. This retouch is confined to the edge of the flake and does not modify the form of the flake or blade blank to any significant degree. This retouch may serve different purposes, from backing for prehension to the creation of a more durable cutting edge.

Other tools and unclassified retouch

The assemblage includes two strike-a-lights (formerly classified as fabricators), and single examples of an awl and notched flake. The strike-a-lights include one rod form that exhibits heavy use-abrasion at both ends (Figure 69, no. 6), and an example on a partly cortical blade that exhibits limited lateral retouch, but clear rounded use-wear to one end. Both were unstratified finds. The awl is a comparatively crude example and was recovered from an Early Bronze Age ditch [12110]. The notched flake exhibits two simple notches, removing the bulb and distal end, but shows little sign of use indicating these notches may have been formed in an attempt to rework a larger flake as a core (Figure 70, no. 19).

Two artefacts are challenging to classify. The first, from a large Middle Bronze Age sump pit [10135], was probably once a scraper, but the artefact was reworked by further retouch into an unclassifiable miscellaneous retouched form. The second piece, recovered as an unstratified find, is a fragment of a large flake with limited invasive bifacial removals on the distal end. This indicates the artefact was an unfinished bifacial tool, probably of Neolithic to Early Bronze Age date, but unusually burin-type removals have been made from the break along one edge (Figure 69, no. 3). Burins are uncommon in post-Mesolithic assemblages, but in this case, it is not clear if the burin removals were intentional or reflect an attempt to remove flakes from the edge for other reasons.

Provenance and distribution

The 327 struck flint artefacts were widely distributed across the excavation area, with no significant concentrations of artefacts. In total, 143 contexts contained in 125 features yielded struck lithics and further artefacts were recovered as unstratified finds. Half of these features contained a single struck flint and only eleven contexts contained more than five artefacts; the largest assemblage from a single feature was 17 artefacts (from pit [1804]), of which 15 were small undiagnostic chips. Due to the low density of artefacts, it is necessary to consider the assemblage by date and phase, with reference to individual features where pertinent (Table 12).

Mesolithic
The small Mesolithic assemblage, represented by 19 artefacts produced by blade-orientated reduction strategies, was recovered as unstratified and residual artefacts. These artefacts were widely distributed across the excavation area, but numbers were higher to the SE of the Site, where eight of these artefacts were found.

Neolithic (Period 1)
Neolithic lithics were exceptionally sparse and no diagnostic artefacts were identified. The only definitive material recovered was a small number of flakes in pits [11749] and [11751], which were dated by ceramic associations (Table 12).

Chalcolithic (Beaker) - Early Bronze Age (Periods 2A/2B)
Approximately half of the lithics from the excavation were recovered from features phased to the Chalcolithic and Early Bronze Age. These include small collections from the fills of ring-ditches and 30 pits, distributed across the excavation area (Tables 12 and 13). The numbers of flints contained in these pits varies from 1 to 17 artefacts, but the average is 2.8 flints per feature. Eleven flints, including a retouched flake, an end scraper and a fragmentary back knife were recovered the palaeosol (1641/1642) preserved beneath Barrow G1941. It is unclear if these flints derive from activity immediately prior to construction of the mound or earlier activity in the landscape, but the small number of artefacts does not appear to indicate intensive activity in the area. Five small chips of flint were recovered from the sieved residue of the infant's grave [1639]; fill (1640), but these are not diagnostic and may be residual finds rather than grave goods, considering the presence of a scatter in the surrounding topsoil.

Middle Bronze Age and later (Period 3 onwards)
Approximately one third of the lithics assemblage was recovered from archaeological contexts, predominately field system ditches, dated to the Middle Bronze Age (Period 3), and further material was recovered from Late Bronze Age (Period 4) and post-Medieval (Period 6) features (Table 11). These contexts yielded many clearly residual Mesolithic and Chalcolithic to Early Bronze Age artefacts; the remaining debitage is technologically comparable to that of the Chalcolithic to Early Bronze Age. In the absence of distinct clusters of fresh debitage or indications of differing reduction strategies, it is considered that these artefacts are all residual.

Discussion

The lithic assemblage indicates that the Bar Pasture landscape first witnessed human activity in the Mesolithic. The small collection of artefacts assigned to this period provides little indication of the activities undertaken by these hunter-fisher-gatherer communities, but the absence of microliths and presence of several serrated blades may indicate an emphasis on plant working over hunting. Mesolithic lithics were not identified at Pode Hole Quarry, but an illustrated single platform blade core may be of this date (Wilson 2009: 88, fig. 5).

The lithic assemblage provides scant evidence for activity in the Neolithic, but activity significantly increased through the Chalcolithic and Early Bronze Age, with the deposition of flints in pits and the creation of surface scatters that became incorporated in the fills of contemporary ring-ditches and later field systems. Neolithic to Early Bronze Age pit deposits frequently contain structured deposits, but commonly use material drawn from midden-like accumulations formed by episodes of occupation (Anderson-Whymark and Thomas 2011; Garrow 2006; Lamdin-Whymark 2008; Thomas 1999). The large number of Chalcolithic and Early Bronze Age pits excavated at Bar Pasture contain consistently small assemblages of artefacts, with an average of just 2.8 per feature. This total is exceptionally low in comparison with regions where flint is a readily available resource, but comparisons can be drawn with regions away from plentiful flint supplies, such as Cotswold Community in Upper

Thames Valley that yielded an average of 4.7 flints per isolated pit (Anderson-Whymark 2011).

The low numbers of flints per feature combined with the overall high percentage of retouched artefacts (26.6%) reflect the frugal use of flint in the local landscape, perhaps indicating limited availability or access to raw materials. Such low numbers of artefacts make it difficult to infer activities associated with a particular feature, but consideration of the overall site assemblage provides a generic picture of activities undertaken. The high proportion of scrapers indicates that hide preparation was a significant activity, whilst the low number of knives and utilised flakes indicate that cutting activities were less prevalent. The reasonable numbers of chips and exhausted cores recovered indicate that flint knapping was also undertaken close to the pits, but in the absence of significant clusters of knapping debitage, it is likely that these chips result from the removal of an occasional flake or production of a retouched tool when needed, rather than the wholesale reduction of cores.

The extensive Chalcolithic and Early Bronze Age activity identified in the Bar Pasture landscape and its small-scale, retouched tool-rich lithic assemblages can be paralleled in the local landscape. The adjacent Pode Hole Quarry excavations yielded an assemblage of near identical size and composition, while parallels may also be drawn with Fengate and Flag Fen (Wilson 2009). In combination, these sites represent a prime example of the use and deposition of flint in a region removed from rich flint resources.

Catalogue of illustrated flint

1. Single-platform blade core in rolled condition. Mesolithic. Residual in Period 2B (EBA) barrow ditch group 9380, cut [9301], fill (9297).

2. Blade struck from a single-platform blade core, with moderate edge-damage. Mesolithic. Residual in Period 4 (LBA/EIA) ring-gully, cut [8050], fill (8349).

3. Broken flake with bifacial flaking and burin type removals on the break. Probably Neolithic or Early Bronze Age? Unstratified find.

4. Serrated blade with silica gloss; blank of high quality dark brown flint has a facetted platform. Mesolithic? Unstratified find.

5. Serrated blade with silica gloss. Mesolithic? Topsoil (2000).

6. Rod-shaped strike-a-light (fabricator), with extensive use-wear on both ends. Probably Chalcolithic-Early Bronze Age. Unstratified find.

7. Barbed and tanged arrowhead of mottled mid to dark grey flint. Chalcolithic-Early Bronze Age. Unstratified find.

8. Flake with crude semi-invasive bifacial retouch creating form comparable to a barbed and tanged arrowhead. Probably an unfinished form or blank. Early Bronze Age (Period 2B). Pit [12143], fill (12141).

9. Thumbnail scraper, with pressure-flaked retouch. Chalcolithic (Beaker), Period 2A. Pit [2403], fill (2404).

10. Thumbnail scraper, with pressure-flaked retouch. Early Bronze Age, Period 2B. Pit [12143], fill (12141).

11. Thumbnail scraper, with fine pressure-flaked retouch. Early Bronze Age, Period 2B. Pit [2385], fill (2386). SF 3.

12. Thumbnail scraper, with pressure-flaked retouch. Lightly burnt. Early Bronze Age. Topsoil.

13. End and side scraper. Early Bronze Age, Period 2B. Post-hole [11894], fill (11895).

14. Horseshoe-shaped end and side scraper. Early Bronze Age, Period 2B. Barrow ditch [1941], intervention [1722], third fill (1724).

15. Scraper on a non-flake blank. Chalcolithic (Beaker), Period 2A. Pit [3019], fill (3020).

16. Thumbnail scraper. Early Bronze Age, Period 2B. Pit [2385], fill (2386).

17. Fragmentary backed knife. Early Bronze Age, Period 2B. Pit [2385], fill (2386).

18. Plano-convex knife. Early Bronze Age, Period 2B. Pit [2385], fill (2386).

19. Notched flake. Middle Bronze Age, Period 3, ditch group [7376].

Artefact type	Un-phased	1: Neo	1/2: LN/EBA	2A: Beaker	2B: EBA	2A/B: BKR/EBA	3: MBA	4A: LBA	4B: LBA/EIA	6: PMed	Grand Total
Flake	12	5	9	11	30		35	2	8	6	118
Blade	2		1		3		5		2		13
Bladelet					2		4	1		1	8
Blade-like	2						3		1		6
Irregular waste					2		1				3
Chip					6						6
Sieved chips 10-4mm			15	1	41		30	1	7		95
Rejuvenation flake core face/edge						1					1
Core single platform blade core					1						1
Tested nodule/bashed lump					2		2				4
Single platform flake core				1							1
Multiplatform flake core	2				5		1	1	1		10
Core on a flake			1								1
Barbed and tanged arrowhead	1				1						2
Unfinished bifacial tool	1										1
End scraper	2		1		1					1	5
Side scraper	1				1				2		4
End and side scraper	1				2		2	1		1	7
Disc scraper	1										1
Thumbnail scraper				1	3		4		1	2	11
Scraper on a non-flake blank	1			1							2
Awl					1						1
Serrated blade	1					2				2	5
Notch							1				1
Backed knife			1		1					1	3
Plano-convex knife					1					1	2
Retouched flake	1		1	1	1		7			1	12
Strike-a-light (fabricator)	1									1	2
Misc. retouch							1				1
Grand Total	**29**	**5**	**29**	**16**	**104**	**3**	**96**	**6**	**22**	**17**	**327**

Table 11. The lithic assemblage by period
LN = Late Neolithic; EBA = Early Bronze Age; MBA = Middle Bronze Age; LBA = Late Bronze Age; PMed = post-Medieval

	1: Neo		1/2: LNeo/EBA		2A: Beaker							Grand Total
Row Labels	11749	11751	1804	1806	2085	2087	2288	2403	3019	3103	7373	
Flake	4	1	2	1		1	2			3	1	15
Sieved Chips 10-4mm			15								1	16
Single platform flake core							1					1
Thumbnail scraper								1				1
Scraper on a non-flake blank									1			1
Retouched flake					1							1
Grand Total	**4**	**1**	**17**	**1**	**1**	**1**	**3**	**1**	**1**	**3**	**2**	**35**

Table 12. The lithic assemblage from Neolithic and Beaker pits and post-holes by feature

	2B: EBA																		Grand Total
Type	1081	1779	1857	1861	2136	2154	2385	2442	7067	7072	8253	9169	9295	11711	11745	11894	12143	12146	2274	
Flake			1	1		1	3		1	2	1			4			1	1	1	17
Blade															1			1		2
Bladelet														1						1
Irregular waste												1								1
Chip										6										6
Sieved Chips 10-4mm	2	4															1			7
Tested nodule/bashed lump						2														2
Multiplatform flake core					1		1						1							3
Barbed & tanged arrowhead																	1			1
Side scraper						1														1
End and side scraper																1				1
Thumbnail scraper							2										1			3
Backed knife							1													1
Plano-convex knife							1													1
Retouched flake								1												1
Grand Total	**2**	**4**	**1**	**1**	**1**	**4**	**8**	**1**	**1**	**8**	**1**	**1**	**1**	**5**	**1**	**1**	**4**	**2**	**1**	**48**

Table 13. The lithic assemblage from Early Bronze Age pits and post-holes by phase and feature

QUERNS

Karen Francis

Introduction

Five saddle querns were recovered from the Site (Table 14). One was unstratified; the remainder were recovered from pits and a ditch terminal. Their associated features are of Middle Bronze Age to Late Bronze Age date. Classification is based on the six types of saddle quern recognised by Peacock (2013: 14-16).

Period 3A

Saddle quern, sump pit [11591]

A large, sub-circular, pink granite or gritstone quern, measuring 35cm (*l*) x 27cm (*w*) x 12.5cm (*d*). The upper, working surface is flat and heavily smoothed, which corresponds with the predominant Type 1, 'flat slab' saddle quern. The underside has been roughly worked or 'rough dressed' to form a narrow flat base; the item is unstable and when used was probably secured in a pit for use. The quern was found inverted within the penultimate fill (11588) of a ditch terminal [11591], part of field ditch G11812 (Field 71's northern boundary), in association with the skeleton of an eagle (see *Animal Bone*).

Period 3B

Saddle quern, pit [7448]

A large rectangular Type 1 saddle quern of striated grey quartzite or limestone. The quern was recovered from the primary fill (7552) of large, isolated circular pit [7448]; it measures 35cm (*l*) x 16.5cm (*w*) x 13.5cm (*d*). The flat, upper surface has discernible polish forming a smoothed edge, *c.* 1cm wide, all around the perimeter; the underside is rough dressed or flaked. The presence of this artefact in the primary fill of a large, Late Middle Bronze Age pit suggests that it represents a deliberate deposit.

Context	Cut No.	Feature Type	Period	Saddle Quern Type
11588	11591	sump pit	3A (MBA)	1- flat slab
7552	7448	pit	3B (LMBA)	1- flat slab
3079	3078	pit	4A (LBA)	3- concave slab
8332	8335	sump pit	4A (LBA)	1- flat slab
unstrat.	unstrat.	n/a	undated	3- concave slab

Table 14. Quern types

Period 4A

Saddle quern, pit [3078]
A complete saddle quern (*c.* 25cm (*l*) x 16cm (*w*) x 10cm (*d*)), with a concave upper surface conforming to Peacock's Type 3 'concave slab' saddle quern (2013: 16). The quern (3079), was found inverted within a marginally larger, isolated pit [3078] - (within fill (3080)), which may have originally secured it (Plate 64).

Saddle quern, sump pit [8335]
Part of a large, sub-circular river boulder or glacial erratic, measuring 30cm (*l*) x 26cm (*w*) x 15cm (*d*) (Plate 78). The flat, smooth upper surface is consistent with a Type 1, 'flat slab' saddle quern. The underside of the quern has an irregular, naturally domed profile, suggesting that it would have been placed in a pit for stability during use.

Plate 78 Flat-slab saddle quern from sump pit [8335].

The quern was recovered from (8332), the brown clay upper fill of a large, Late Bronze Age sump pit [8335]. The placement of the quern into this feature may have been a deliberate action of discard, or perhaps a votive offering into the water-filled pit.

Undated

Saddle quern, unstratified
Measuring 19cm (*l*) x 18cm (*w*) x 18cm (*d*), this quern is one half of a large split river cobble or erratic, broken latitudinally. It may have originally measured *c.* 35cm (*l*). Found on the eastern edge of the Site. Orange-yellow micaceous stone with minute fossil limestone inclusions; slightly scorched pink on one face. The underside is relatively flat and is unmodified, retaining an orange cortex. The upper grinding surface is heavily worn and deeply concave in profile, typical of a Type 3 concave slab saddle quern.

Discussion

Five saddle querns (three of Type 1 flat slab and two of Type 3 concave slab) were recovered from the Site. Their presence attests to the processing of grain and other plant materials, and to a part-arable economy during the Middle and Late Bronze Age periods.

Saddle querns are so named due to the characteristic concave shape of the single grinding surface on which grain was crushed and ground using a hand-held upper stone called a rubber or muller (Peacock 2013: 3; Watts 2012). The flat quern, such as Type 1, could be used in any direction, with or without a pounding action and is likely to represent a domestic quern in a domestic setting. Such querns range in date from the Palaeolithic through to the present day; Type 3 date from the Neolithic onwards (Peacock 2013: 15-16). Neolithic examples varied considerably in size and shape, dependent upon the form and workability of available stone. According to Peacock (2013: 28), Early and Middle Bronze Age querns are hard to find, except for a small number found in British funerary contexts. By the Late Bronze Age, querns begin to appear more frequently in the European archaeological record, culminating in the introduction of the rotary quern in the Middle Iron Age (Watts 2012: 50). This technological development marked a change to rotary motion that was to underpin the subsequent development of milling with stones (*ibid.*: 223).

Saddle querns were made from a variety of rock types including sandstone, gritstone, vesicular lava and limestone. Type 1 querns were almost always made from local stone; Type 3 querns slightly lesser so (Peacock 2013: 14). The presence of a pink granite or gritstone quern within the terminus of a 'new' Middle Bronze Age field boundary (in an area previously containing Early Bronze Age pits), may represent the deliberate deposition of an important utilitarian item to mark the creation of the field system. Saddle querns and rubbers similarly used as 'closure deposits' have been found throughout the Bronze Age and Iron Age, the latter including within round-house ring-gullies (Cooper 2016b; Ixer and Macey-Bracken 2006: 90). A decrease in their deposition in the Late Iron Age coincides with the introduction and gradually increasing use of the rotary quern (Watts 2012: 218).

Three of the Bar Pasture querns were deposited in pits, two of which were certainly water-related. The pits are variously dated to the Middle and Late Bronze Age. Similar instances of Bronze Age saddle querns being deposited in pits and waterholes have been recorded at other sites, including Cadeby Quarry in Leicestershire (Speed 2011: 91-92). Closer to the Site, four complete Type 3 saddle querns found beneath a timber platform

at Flag Fen were dated by dendrochronology to 1350 BC, the later Middle Bronze Age (Buckley 1993; Buckley and Ingle 2001).

METALWORKING RESIDUES

Gerry McDonnell

Introduction

This section describes the material classified as 'slag', which was all recovered from the SW extent of the Site during excavation of the Iron Age smithy complex (see Figure 57). A brief overview of the material is provided, followed by a detailed description and quantification. The significance of the material is discussed.

Slag Classification

The slags were visually examined, and the classification is based solely on morphology. In general, they are divided into two broad groups. First are the diagnostic ferrous and non-ferrous waste materials which can be attributed to a particular industrial process; for iron working these comprise ores and the ironworking slags, i.e. smelting and smithing slags, and for copper-alloy working, crucibles and moulds. The second group, are the non-diagnostic slags, which could have been generated by a number of different processes but show no diagnostic characteristic that can identify the process. In many cases the non-diagnostic residues, e.g. hearth or furnace lining, may be ascribed to a particular process through archaeological association. The residue classifications are defined below. The count and weight of each slag type present in each context was recorded.

Diagnostic Ferrous Slags and Residues

Smithing Slag:
Randomly shaped pieces of iron silicate slag generated by the smithing process. In general slag is described as smithing slag unless there is good evidence to indicate that it derived from the smelting process.

Hearth Bottom
A plano-convex accumulation of iron silicate slag formed in the smithing hearth.

Slagged Lining
Hearth lining impregnated with slag.

Hammerscale
There are two forms of hammerscale: flake and spheroidal generated during the smithing process. The presence of hammerscale is therefore a strong indicator that smithing (primary or secondary) was carried out on the site. Their small size precludes their hand recovery, and they are usually recovered during soil sample sieving.

Iron Metal
Fragment of metallic iron indicated by its morphology and response to a magnet.

Diagnostic Non-Ferrous Slags and Residues

Crucible
Clay vessel for melting non-ferrous alloys. XRF analysis can determine the range of alloys melted in the crucible.

Non-Diagnostic Slags and Residues

Hearth or Furnace Lining
The clay lining of an industrial hearth, furnace or kiln that has a vitrified or slag-attacked face. It is not possible to distinguish between furnace and hearth lining.

Fired Clay
Fired clay lacks the vitrified surface of hearth or furnace lining.

Cinder
High silica-content slag that can either be formed as described above or by high temperature reaction between silica and ferruginous material. It can be considered either a non-diagnostic slag or a diagnostic slag depending on its iron content and morphology.

Results

The slag recovered from the Site includes iron-smithing slag, crucible fragments and hearth lining.

Description

Table 15 lists the slag types, count and weight present on the Site. Although the total quantity of material is small (4.4kg) it includes the full range of iron-smithing debris, as well as evidence of copper-alloy working. The assemblage included two hearth bottoms (details given in Table 16) and several larger pieces of smithing slag. Those in contexts (5014) and (5061) are proto-hearth bottoms, i.e. small partially formed hearth bottoms. The smithing slag and hearth bottoms (total weight 2.2kg) were recovered from nine contexts, with one (5014) containing more than one kilogram of slag.

The dust residue in the bags containing the smithing slag was tested with a magnet. Although the 'dust' was highly magnetic, no hammerscale was observed. Both flake and spheroidal hammerscale was present, however, in two contexts derived from the environmental sieving programme, (5014) and (5044), with significant quantities in (5014). Flake hammerscale

Context	SSL Count	SSL Weight	HB Weight	HL Count	HL Weight	Slagged Lining Count	Slagged Lining weight	Cinder Count	Cinder Weight	Fired Clay Count	Fired Clay Weight	Crucible Count	Crucible Weight	Fe Metal	Magnetic Fraction	Hammerscale	Flake	Spheroid
5008	2	146													n	n		
5014	0	811	332	44	674	1	308	17	100	30	105	1	5		y	y	y	y
5016															y	y	y	
5017	3	43		8	329					6	238				n	n		
5021		307		6	33					20	28	5	11		y	y	y	n
5022	4	79													n	n		
5023															n	n		
5044	50+	145		14	149					20	48	2	26	2	y	y	y	y
5058	1	5													n	n		
5061	4	197		5	47							2	21		n	n		
5093	1	123													n	n		
5096												10	7		y	y	y	
5112										1	40				n	n		
5123															y	y	y	
5230															y	n		
5283															y	n		
5286															y	n		
Totals		**1856**	**332**	**77**	**1232**	**1**	**308**	**17**	**100**	**77**	**459**	**20**	**70**	**2**				

Table 15. Types of slag present
(SSL: smithing slag; HL: hearth lining; weight in grammes)

was present in four other contexts (5014, 5016, 5021 and 5096). Three other contexts (5230, 5283 and 5286) contained a magnetic fraction derived from the sieving programme, but no hammerscale was present in them. One small metal fragment was identified, a small rod or shaft (context 5044).

Crucible fragments were present in five contexts (5014, 5021, 5044, 5061 and 5096), with the fragment in (5044) being a spout. XRF analyses (see *Appendix B* for details of the technique) show that alloys containing copper, tin and lead were melted in the crucibles (Table 16). In one case (5014) zinc was detected at a minor level which is not expected in the Iron Age; however, the zinc may be occurring as at trace levels within the lead. No fragments of clay mould were recognised.

One piece of 'slagged' lining was recovered from (5014), which had a distinct curve on the surface indicating a reasonably large sized hearth. A total of 1.2kg of hearth lining was recovered from only five contexts, all of which contained slag and four of which contained crucible fragments. This argues strongly that the hearth lining derived from the Smith's hearth. The hearth lining in (5017) comprised one large fragment and seven smaller fragments of a 'tuyere' plate, a sacrificial clay pad through which the air is blown into the hearth. The largest fragment which formed approximately one quarter of the pad had surviving sides approximately 7cms long. This would mean the whole pad was about 14cms across, indicative of a reasonably sized hearth. The blow hole did not survive in the fragment.

A total of 0.5kg of fired clay was identified, which could have derived from the hearth or from building daub. It was found in five contexts, four of which contained diagnostic metalworking waste, the other context (5112) contained one small fragment. The largest amounts occurred in pit fills (5017) (0.2kg) and (5014) (0.1kg). The fragments from (5014) were re-examined to assess whether some or all of them could be mould material. There were no diagnostic mould fragments but some of the pieces could have been degraded mould.

XRF Log No.	Context	XRF Sample	Description	Cu	Zn	Sn	Sb	Pb
517	5014	1	hearth lining	n.d.	n.d.	n.d.	n.d.	n.d.
518	5014	2	hearth lining	n.d.	n.d.	n.d.	n.d.	n.d.
	5014	3*	crucible	yes	Minor/trace	major	n.d.	major
	5021	1*	crucible	n.d.	n.d.	n.d.	n.d.	n.d.
519	5061	1	crucible? Clay side, exterior?	Trace	Trace	Trace	n.d.	Trace
520	5061	1	crucible? Vitrified surface interior?	Trace	n.d.	Trace	n.d.	n.d.
521	5061	2	crucible clay side, exterior	Trace	Trace	Trace	n.d.	Trace
522	5061	2	crucible interior	Yes	Trace	Yes	n.d.	Yes
523	5044	1	crucible clay side, exterior	Yes	Trace	Yes	Trace	Yes
524	5044	1	crucible interior	Yes	n.d.	Yes	Trace	Yes
	5044	2*	crucible	Yes	n.d.	Very high	n.d.	Yes

Table 16. Summary of the XRF analyses
(* recovered from metalwork sub-samples)

Distribution

The distribution of the slag (smithing slag and hearth bottoms), hammerscale, crucibles and hearth lining shows a level of patterning. It is clear that the majority of residues were recovered from specific contexts within the outer square ditch enclosure, in the fill of the upper ring-gully and the fill of bordering pit [5020], which suggest that the collective features across this part of the Site represent a metalworking smithy. There was one outlier; context (5123) which was a layer in a Middle Bronze Age pit [5124], from which flake and spheroidal hammerscale was recovered. This pit lay in the field next door to the metalworking smithy.

As the various features were sample sectioned and not fully (100%) excavated, it is probable that significantly greater quantities of slag were deposited at this Site. It was clear, however, that the sections mid-way along the southern and northern arcs of the central ring-gully arrangement produced no hand-recovered slags or other residues. Much of the material, including smithing slags, hearth lining and hammerscale came from the eastern side of the ring-gully arrangement and the bordering pit [5020]. Indeed, the greatest quantity of material derived from this pit, the majority of which occurred in the uppermost layer (5014), although slag was recovered from a lower fill (5017) and hammerscale was present in an intermediate deposit (5016) (Table

Context	Context type	SSL Weight	HL Weight	Slagged lining Weight	Cinder Weight	Fired Clay Weight	Crucible Weight	Magnetic Fraction	Hammerscale?	Flake?	Spheroidal?
5014	Layer	1143	674	308	100	105	5	y	y	y	y
5015	Layer							n			
5016	Layer							y	y	y	
5017	Layer	43	329			238		n	n		
5018	Layer							n			
5019	Layer							n			

Table 17. Metalworking debris recovered from pit [5020] in stratigraphic order
(weight in g)

17). It should be noted that the hammerscale was recovered via the environmental sampling strategy and not all deposits could be sampled.

Most Iron Age settlement sites produce some evidence for iron smithing. For example, at Beckford, Worcestershire, excavations of Middle Iron Age horizons recovered 4.2kg of smithing slag and hearth bottoms and 1.7kg of hearth lining (Britnell 1975; Britnell *et al.* forthcoming; McDonnell 1986). The site of Roxby, North Yorkshire (Inman *et al.* 1985) revealed a round-house with associated slag, interpreted by the author as smithing debris (McDonnell 1985). The excavations at Elms Farm, Humberstone, Leicestershire produced nine smithing hearth bottoms, but very little smithing slag lumps or hearth lining. The lack of hammerscale suggested that the material was 'selected' for dumping, and did not represent a smithy dump (Keys 2000).

Various authors have suggested that slag has 'ritual significance'. Indeed, Giles (2007) has gone so far as to state: 'the metaphorical qualities of both the tools and products of smithing may have been used to mediate the transformation of the dead; using their association with regeneration to help forge the deceased into new members of the ancestry'. Some authors have placed significance that metalworking slags are deposited at the terminals of ditches, but despite much material coming from the ring-gully terminals, this Site cannot be used to support this argument. Indeed, the general mixed assemblage of metalworking debris and domestic waste argues against such deposition.

The distribution rather argues for a metalworking 'shop' or smithy within the ring-gully arrangement. This appears to have operated for a significant period, with metalworking continuing as features in and around the smithy enclosure slowly silted up.

Significance

The assemblage is a very significant Iron Age 'smithy' assemblage, representing both iron smithing and copper-alloy working. The smithy was almost certainly located within the central ring-gully arrangement, within the wider square enclosure. The evidence from the hammerscale, which included flake and spheroidal scale, clearly indicates that the full range of iron-smithing techniques were being practised, including forging (shaping) and fire welding. The copper-alloy compositions indicated by the XRF analysis - (i.e. leaded tin bronzes) are typical of Iron Age alloys.

Chapter 5

Environmental Archaeology

THE PALAEOENVIRONMENTAL REMAINS

Introduction

John Summers

Excavation and sampling at Bar Pasture extended over a large area and incorporated a wide range of archaeological features, including ring-ditches, enclosure ditches, post-holes, pits, waterholes, hearths and cremations. The following analyses add to the data already published from previous investigations at the bordering Pode Hole Quarry (Daniel 2009) and the nearby Tower's Fen (Mudd and Pears 2008), and contribute to wider regional understanding of occupation on the prehistoric fen edge. Most of the material comes from bulk samples taken for the recovery of carbonised plant macrofossils and charcoal. These were for the purpose of investigating the Site's palaeo-economy, including arable husbandry and the utilisation of fuel resources. Palaeoenvironmental aspects of the Site were investigated through the collection of bulk samples for waterlogged plant macrofossils, and pollen spot samples from waterlogged pit and ditch features.

Over the decade-long project, the majority of the environmental assessments were completed by the Environmental Archaeology Consultancy (Martin and Rackham 2010, 2013; Rackham and Giorgi 2016; Rackham *et al.* 2019), and it was the work of James Rackham and his colleagues that provided the basis and the material for the following palynological analyses. Sample numbering used here is based on a 'master list' created during the post-Site analysis stage. This list supersedes the individual phase lists created at the time of the excavations and a concordance and note to this effect have been placed in the archive.

POLLEN

Rob Scaife and Catherine Langdon

Introduction

Earlier pollen work carried out at the adjacent Pode Hole Quarry by Langdon and Scaife (2009) established that sub-fossil pollen and spores were present in a number of contexts which included Bronze Age pits and waterhole or well features. These studies provided a background to the Bronze Age vegetation and environment of Bar Pasture and its local environs. Further pollen analysis (Scaife and Langdon 2019) has been carried out on spot sediment samples taken from a number of possible Late Neolithic/ Early Bronze Age and Bronze Age archaeological pit and ditch contexts. The principal aims of this more recent evaluation analysis were to provide additional data on the vegetation environment and if possible, to establish the use of these features. Although in some cases absolute pollen numbers were small, pollen was extracted, and counts obtained from all of the samples examined. The results and interpretation are discussed.

The pollen data; vegetation and environment

Samples examined for pollen come from a range of archaeological pit contexts and include the primary, secondary and tertiary fills of these features. These are numbered 1-7 and detailed in Table 18 below.

Standard techniques were used for the extraction and concentration of the sub-fossil pollen and spores (Moore *et al.* 1991). Pollen count/sums obtained range from 158 to 428 grains depending on preservation and absolute pollen frequencies (APF) present.

Pollen sample	Context & sample number	Feature number	Character	Period
1	(11194) <120>	[11197]	Tertiary pit fill	2B: Early Bronze Age
2	(11321) <123>	[11313]	Secondary ditch fill	4A: Late Bronze Age
3	(11777) <134>	[11749]	Primary pit fill	1: Early Neolithic
4	(10229) <7>	[10228]	Primary pit fill	2B: Early Bronze Age
5	(11918) <136>	[11897]	Primary pit fill	3A: Middle Bronze Age
6	(11175) <122>	[11166]	Secondary pit fill	4B: Late Bronze Age/ Early Iron Age
7	(12066) <139>	[12067]	Single ditch fill	3A: Middle Bronze Age

Table 18. Contexts from which pollen samples have been examined.
The date is assigned to the feature not necessarily the studied fill

Pollen was recovered from all of the samples but in varying quantities and quality of preservation. Pollen and spore count data are given in Table 19. Only pollen samples 1 (11194 - <120>) and 7 (12066 - <139>) contained high absolute numbers of pollen. The former being a tertiary fill and thus of unknown age, the latter is a single fill and, therefore, probably more or less contemporaneous with the ditch feature.

Because these analyses are from ditches and pits, the taphonomy of the recovered pollen is likely to be complex. The pollen catchment will have been predominantly from the very local area largely representing the vegetation which was growing on and within metres of the sample site. Furthermore, there is the possibility of secondary pollen contained in earlier soil filling the ditch and from purely anthropogenic sources such as waste domestic refuse.

Late Neolithic/Early Bronze Age; pollen sample 3 ((11777) <134>)

This sample, from a primary pit fill, is of suggested Late Neolithic/ Early Bronze Age date compared with other samples. The pollen assemblage reflects this with higher quantities of *Quercus* (oak; 20% of total pollen) and *Corylus* (hazel; 13% of total pollen) along with small but nevertheless, diagnostic numbers of *Tilia* (lime). The latter is notably under-represented in pollen spectra due to entomophily (Andersen 1970, 1973). These pollen number/percentages are also under-represented numerically here because of high (within sum) values of *Alnus* (alder; 42% of total pollen) and *Salix* (willow) which are wetland/ fen taxon and were probably growing in close proximity. The former (alder) is largely over-represented in pollen spectra whereas willow is heavily under-represented and was clearly of great importance and probably overhanging or growing within this feature.

As noted, *Tilia* is diagnostic since this was the dominant woodland taxon of well-drained soils over much of southern and eastern England during the Middle Holocene/Late Mesolithic, the Neolithic and until generally, the Middle Bronze Age. Here, pollen numbers are not as high as may be expected. However, pollen sample 4 (10229 - <7>) has significantly greater numbers of *Tilia* and is probably also of Late Neolithic or Early Bronze Age date. Quantities of degraded *Tilia* pollen in this sample are due to the resilience and longer residence time of this pollen and its probable derivation from earlier soil filling the feature.

Sample 4 (10229 - <7>) also contains an unusual number of *Pinus* pollen. Throughout most of southern Britain, pine had died out/migrated northwards as deciduous forest expanded during the Early Holocene. Godwin (1975), however, found evidence of pine forest remaining into the later Holocene on the sandy soils of the East Anglian Breckland. It is possible that this sample is related to this late extension of pine in East Anglia although, in this case, the pine pollen may have derived from more regional sources.

As might be expected, there are smaller numbers of herb pollen than in the subsequent, Bronze Age contexts. Neither of these possible Neolithic samples show evidence of cereal cultivation but Poaceae (grasses) and *Plantago lanceolata* (ribwort plantain) suggest woodland clearance and grassland, possibly pasture.

Summary

The environment was one of open woodland dominated by oak and hazel with other taxa including lime. Nearby, willow and alder were important and grassland, possibly pasture, filled clearances within the woodland.

The Bronze Age features (Table 18; pollen samples 1-2, 5-7)

The primary fills of the features assigned to the Bronze Age provide a view of the vegetation and environment at, and shortly after, their construction. The dating of the secondary and tertiary fills of these features may be less sound, although the tertiary fill of Late Neolithic/ Early Bronze Age pit fill (11194) (pollen sample 1) is likely to be Bronze Age.

Primary/single fills come from the pit [11897] (fill 11918) <136> and the ditch [12067] (fill 12066) <139>. These samples show remaining woodland but with, as might be expected, larger numbers of herb pollen.

Woodland

Quercus (oak) and *Corylus* (hazel) are the most important arboreal elements and probably represent local and more regional woodland remaining after widespread clearance for agriculture. *Alnus* noted in the Late Neolithic/Early Bronze Age pollen sample 4 (see above) is generally not so prevalent and would represent only occasional local growth or greater importance at distance. The latter possibility is, perhaps, indicated by the somewhat anomalous high value in pollen sample 2 of suggested Late Bronze Age date. Similarly, the Pode Hole study of waterholes/wells (Langdon and Scaife 2008) do not show such importance again suggesting ephemeral and localised growth. *Hedera helix* (ivy) is present in pollen sample 5 (11918 - <136>) with high values. Ivy is markedly under-represented in pollen spectra and this implies that it was either growing along the edges of this pit or was from secondary sources. It has been argued that ivy may have been used as an animal food, especially during winter and as such may here be dumped animal feed (Troels-Smith 1960; Simmons and Dimbleby 1974; Hejcman and Stejskalova 2014) or pollen derived from animal faeces disposed of into this feature.

Period	**LNeo/EBA**	**LNeo/EBA**	**EBA**	**MBA**	**MBA**	**LBA**	**LBA**
Pollen sample	**1**	**3**	**4**	**5**	**7**	**2**	**6**
Bulk sample no.	**<120>**	**<134>**	**<7>**	**<136>**	**<139>**	**<123>**	**<122>**
Context	**11194**	**11777**	**10229**	**11918**	**12066**	**11321**	**11175**
Trees/Shrubs							
Betula	2	7	4	5	1	0	1
Pinus	0	0	13	0	1	0	0
Quercus	18	57	21	22	39	11	3
Ulmus	0	1	0	0	0	0	0
Tilia	0	3	17	0	0	0	0
Tilia (degraded)	0	1	28	0	0	1	0
Fagus sylvatica	0	0	0	0	2	0	0
Juglans regia	0	0	0	1	0	0	0
Alnus glutinosa	150	123	22	9	22	153	3
cf. *Rubus* type	0	0	0	0	9	0	0
Sorbus type	0	0	0	0	0	1	0
Prunus/Malus type	0	0	0	1	1	0	0
Corylus avellana type	14	37	11	21	41	13	3
Salix	150	21	1	6	3	8	57
Hedera helix	0	1	0	27	0	0	0
Herbs							
Ranunculus type	8	0	1	6	0	1	0
Brassicaceae undiff.	3	0	0	0	0	0	0
Sinapis type	0	0	1	0	10	1	0
Hornungia type	0	0	0	0	1	2	0
Caryophyllaceae undiff.	0	0	0	0	0	0	1
Dianthus type	0	0	0	1	0	0	2
Cerastium type	0	0	0	0	0	1	0
cf. *Spergula* type	0	1	0	0	0	0	0
Chenopodiaceae	1	0	1	0	11	20	30
Fabaceae undiff.	0	0	0	0	1	1	0
Rosaceae undiff.	0	0	0	0	1	0	0
Filipendula	0	0	0	1	0	0	0
Potentilla type	1	0	0	0	0	0	0
Apiaceae undiff.	2	0	0	0	0	1	1
Oenanthe type	0	0	0	0	1	1	0
Myosotis	0	0	0	0	0	1	0
Polygonum aviculare type	0	0	0	0	0	0	2
Rumex	3	0	2	5	0	0	0
Urtica type	0	1	0	1	1	0	0
Humulus/Cannabis type	0	0	0	6	0	0	0
Scrophulariaceae undiff.	0	0	0	0	1	1	0
Scrophularia type	0	0	1	0	0	0	78
Plantago lanceolata	17	11	19	31	5	29	8
Rubiaceae	0	0	1	0	0	0	0
Succisa	0	0	1	0	1	0	0
Bidens type	0	0	0	0	1	5	0
Senecio type	0	0	0	0	1	0	0
Anthemis type	0	0	0	1	0	0	1
Artemisia	0	0	0	3	1	1	5
Cirsium type	0	0	0	0	1	0	0
Lactucoideae	0	0	0	10	1	2	4

Table 19. Pollen results

Pollen sample 7 (12066 - <139>) contains a range of shrubs including *Prunus/Malus* type (blackthorn and apple) and *Rubus* type (bramble) which may indicate areas of scrub and/or hedgerows. This possibility was also noted in studies of Pode Hole features (Langdon and Scaife 2008)

Agriculture
The primary fills of these features are dominated by pollen from herbs of pastoral affinity with Poaceae (grasses) and *Plantago lanceolata* (ribwort plantain) being the most important. There are only occasional cereal pollen grains in pollen sample 5 (11918 - <136>). This suggests that the habitat, at least local to the Site, was pasture. The presence of cereal pollen also demonstrates arable activity but the possibility of cereal and arable pollen taxa coming from secondary sources such as pollen liberated during crop processing or from waste material disposed of in the pit should be considered.

Cannabis sativa type pollen is also present in pollen sample 5 (11918 - <136>). This pollen taxon comprises both *Humulus lupulus* (hop) and *Cannabis sativa* (hemp) which are not separable in sub-fossil form having the same morphology. In this case, it seems probable that the pollen comes from hop which is a native of wetland habitats. If hemp, this would represent early and possible important evidence for use of hemp fibre during the Bronze Age. With respect to this, hemp requires retting in wet pits, such as here, to break down the plant stems prior to processing for fibre. Such pollen was also, along with *Linum* (flax), noted in the Pode Hole pollen study by Langdon and Scaife (2008).

Summary
Reduced woodland and expansion of open grassland (pasture) with some evidence of arable activity. The possibility of Bronze Age use of *Cannabis* (hemp) is enigmatic as this pollen taxon may derive from hop (*Humulus lupulus*).

The secondary and tertiary fills
As noted, the pollen analysis of secondary and tertiary fills of pit and ditch features often presents the problem of dating and placing the palynological results obtained within a secure temporal framework. This may be the case here.

The higher fills include pollen samples 1, 2 and 6 and two of these are in features assigned to the Late Bronze Age (see Table 19). All contain pollen assemblages of similar character to the primary fills, the exception being the high numbers of *Alnus* (alder) and *Salix* (willow); the latter especially in pollen samples 1 (<120>) and 6 (<122>). These high values of alder and willow probably represent the establishment of these trees in the suitable damp habitat afforded by the abandonment and infilling of the pits. These localised damp features/depressions also supported a range of fen herb taxa including *Cyperaceae* (sedges), *Typha angustifolia/ Sparganium* (reed mace/bur reed) and *Menyanthes trifoliata* (bog bean).

Other than the autochthonous pollen components, the dry-land flora shows remaining *Quercus* and *Corylus* woodland, probably regionally. The local habitat was grassland/pasture with some evidence of cereal utilisation, the pollen derived directly from cultivation or secondary sources as noted.

Discussion and conclusions
A preliminary study of sediments at neighbouring Pode Hole Quarry (Scaife 2003) established that sub-fossil pollen and spores were preserved in a variety of Bronze Age contexts and as such, there was potential for establishing the character of the past vegetation and environment. This study hinted at the presence of typical late prehistoric lime (*Tilia*) woodland which was followed by a change to more open grassland/ pasture. Subsequent study of three wells or waterhole features at that site; (8022), (8090) and (8172), enabled pollen diagrams to be drawn and a clearer picture of the vegetation and environment and change to be gained (Langdon and Scaife 2008). As noted in the adjacent study, the last vestiges of lime (*Tilia*) and oak (*Quercus*) woodland is evident in the earlier, Middle Bronze Age (8022) but with subsequent importance of open grassland, likely pasture with some occasional ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*) and holly (*Ilex aquifolium*). Some evidence of arable crops thus suggested a mixed agricultural economy. These pollen profiles provide a useful basis for comparison with more recently examined contexts at Bar Pasture (Scaife and Langdon 2019).

In this study, pollen and spores have been recovered from a series of samples taken from five pits and two ditches. The primary fills, comprising two earlier (Late Neolithic/Early Bronze Age) sequences, show greater woodland cover and diversity of tree types. These comprise oak (*Quercus*), hazel (*Corylus avellana*) and lime (probably small leaved lime; *Tilia cordata*) growing on drier ground and alder (*Alnus glutinosa*) and willow (*Salix*) typically in adjacent wetland habitats. At this time, however, there were also areas of grassland and small numbers of cereal pollen suggesting a mixed agricultural economy.

The fills of the Middle and later Bronze Age features show a more open and largely pastoral landscape in proximity to the Site but with some evidence of cereal cultivation. Numbers of oak and hazel pollen are reduced and are probably from more regional sources or from occasional local growth. Reductions in alder and willow indicate interference with the wetland

habitat. Tentative suggestions as to the Bronze Age use of hemp (*Cannabis sativa*) and thus, manufacture of fibre have been made. There is, however, also the possibility that the pollen derives from native hop (*Humulus lupulus*) which is diagnostic of lowland fen (alder fen carr) habitats; the pollen is not differentiable in the sub-fossil state. Dating of the secondary and tertiary fills of pit and ditch features is problematic, however, the pollen from these upper contexts/levels shows a continued pastoral and probably arable agricultural environment. As these pit and ditch features fell out of use, these damp depressions were colonised by alder and willow and typical fen wet ground herbs.

The analysis has produced useful information on the changing Late Neolithic, Bronze Age and later vegetation and environment at the local, site level. These data are comparable with, and build on the earlier studies of Bronze Age waterholes at Pode Hole Quarry (Langdon and Scaife 2009) which show a late prehistoric woodland environment which represented the last vestiges of natural/dominant woodland from the Middle Holocene and Early-Middle Neolithic period. The local wetland habitat was initially a wetland fringed by alder and willow which became a more open fen due to natural or anthropogenic disturbance.

CARBONISED PLANT MACROFOSSILS

John Summers

Introduction

During the decade-long excavations at Bar Pasture, a large number of samples were collected, processed and assessed by the Environmental Archaeology Consultancy (Martin and Rackham 2010, 2013; Rackham and Giorgi 2016; Rackham *et al.* 2019); and Summers (2017). The assessments highlighted the general paucity of carbonised plant macrofossils within the deposits and due to this only a small number of samples were selected for full identification and quantification. Much of the data that follows is drawn from the earlier assessment work by Rackham *et al.* to identify general trends and patterns. A number of richer samples were fully sorted and recorded by the present author.

Methods

The samples were washed in a 'Siraf' tank (Williams 1973) using a flotation sieve with a 0.5mm mesh and an internal wet sieve of 1mm mesh for the residue. Both the residues and light fractions were dried and the residues subsequently re-floated to ensure the efficient recovery of charred material. For the assessments, the light fraction of each sample was studied using x10 magnification, the presence of environmental finds (i.e. snails, charcoal, carbonised seeds, bones etc) was noted and their abundance and species diversity recorded.

Those taken to full analysis were sorted and recorded by the present author using a stereomicroscope (x10-x30 magnification). Carbonised macrofossil remains were extracted and identified using reference literature (Cappers *et al.* 2006; Jacomet 2006) and a reference collection of modern seeds. Nomenclature follows Stace (2010) for wild plants.

Results

Period 1 - Early – Late Neolithic

The four samples from Period 1 deposits produced only trace amounts of indeterminate carbonised cereal grain and hazelnut shell (*Corylus avellana*), which could represent scattered debris from Neolithic activity. However, in such low concentrations they could equally be intrusive. Neolithic pits at O'Connell Ridge, Over, had equally poor recovery (Ballantyne 2016: 274-275). Hulled six-row barley and small quantities of emmer wheat, accompanied by flax, hazelnut shell and apple pips represented the economic evidence from the Haddenham causewayed enclosure (Jones 2006a), demonstrating regional arable activity.

Period 2A, Beaker

Fourteen samples were taken from Period 2A deposits, with sparse carbonised remains identified. Cereal remains were present in four samples, with primarily wheat (*Triticum* sp.) recorded, but with a single occurrence of barley (*Hordeum* sp.) (Chart 1). Most prevalent was hazelnut shell (*Corylus avellana*) in seven samples, which may be present as the by-product of consumption, although they could also have been introduced with fuel wood. Of interest was the presence of two free-threshing type wheat (*Triticum aestivum/ turgidum* type) rachis internodes in pit fill (11715)/ [11711]. The rachis internodes were accompanied by a cereal culm node (straw fragment) and a single indeterminate cereal grain. Such an occurrence is early for this type of crop (e.g. Campbell and Straker 2003: 23) and given the lack of other associated remains in the sample, the possibility that the rachis segments are intrusive is quite high.

A small range of non-cereal taxa were present across the Period 2A samples including medium Fabaceae (vetch/ tare type), cabbage/ mustard (*Brassica/ Sinapis* sp.), oraches (*Atriplex* sp.), cleavers (*Galium aparine*) and wild grasses (Poaceae). These most likely represent arable weeds. The presence of barley, wheat and hazelnut shell is in keeping with other Early Bronze Age sites in the region (e.g. Ballantyne 2016; Martin and Murphy 1988), although the low concentration of remains can contribute little to regional discussions.

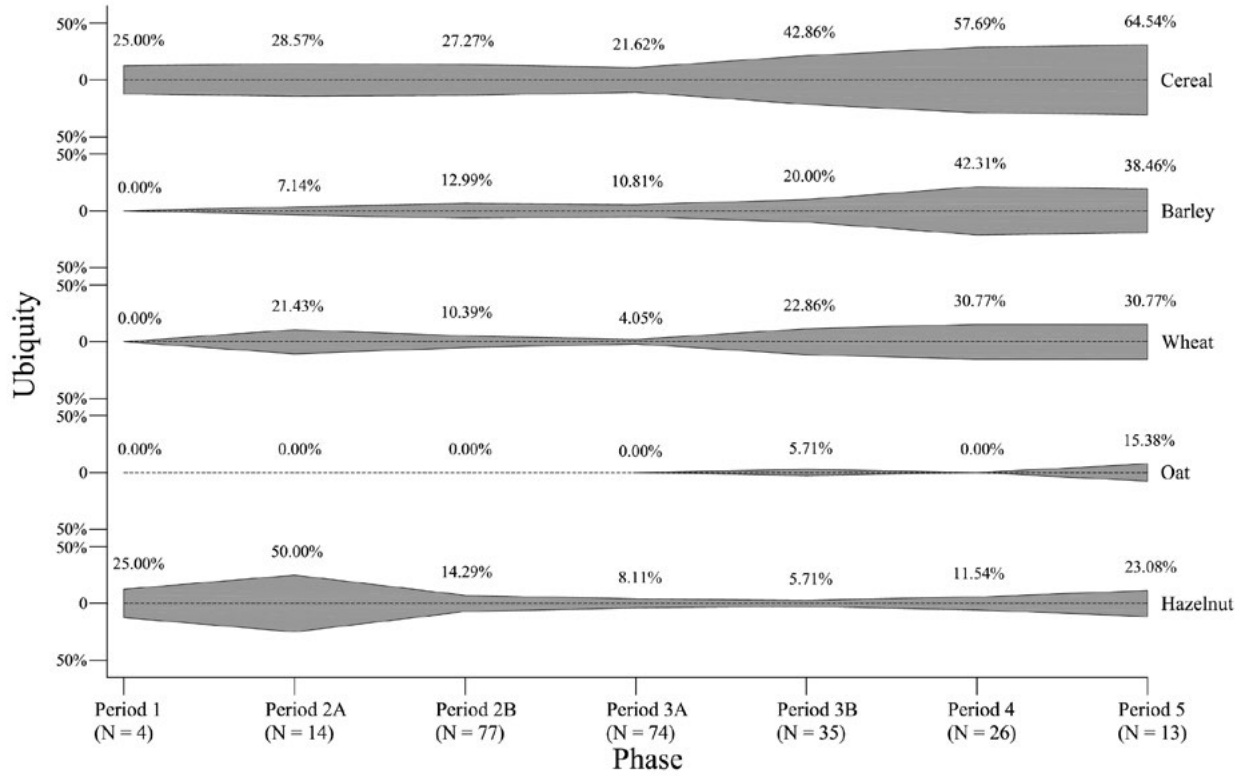

Chart 1. Ubiquity of the main economic plant taxa

Period 2B, Early Bronze Age

Seventy-seven samples were taken from Period 2B deposits. Much like the preceding period, carbonised macrofossil remains were relatively sparse and cereal remains were recorded in less than a third of the samples (Chart 1), with both wheat (*Triticum* sp.) and barley (*Hordeum* sp.) quite evenly represented. Where identifiable, hulled barley was recorded and wheat was either emmer/ spelt (*T. dicoccum/ spelta*) or emmer type (*T. dicoccum*), which is typical for the period. Oat (*Avena* sp.) was recorded in a single sample but in this period, oat was most likely present as a minor weed of other cereal crops (e.g. Campbell and Straker 2003: 15). Hazelnut shell fragments were less common than in Period 2A (11 samples/ 14.29%), which may suggest lower consumption of hazelnuts at this time.

Non-cereal taxa were again quite limited, including small Fabaceae (clover/medick type), black bindweed (*Fallopia convolvulus*), dock (*Rumex* sp.), nightshade family (Solanaceae) and wild grasses (Poaceae). These may have been introduced as part of an arable weed community.

Period 3A, Early Middle/Middle Bronze Age

Seventy-five samples were investigated from Period 3A. These were largely low-density samples and only 21.62% contained cereal remains (Chart 1). Barley (*Hordeum* sp.), including hulled grains, was recorded in ten samples. A single asymmetric grain characteristic of hulled, six-row barley (*Hordeum vulgare* var. *vulgare*) was present in ditch fill (8134)/ [8131], although this was the only evidence for six-row barley from the Bronze Age samples. Wheat (*Triticum* sp.) remains were present in five samples. Where identifiable, wheat remains were recorded as glume wheat (*T. dicoccum/ spelta*). A single flax seed (*Linum usitatissimum*) was identified in pit fill (8025)/ [8026], representing one of only two charred specimens from the Site, the other being from a Period 3B cremation (see below). A small number of waterlogged flax seeds were also noted in a few samples during the assessment (see *Waterlogged Macrofossils*).

Non-cereal taxa included legumes (Fabaceae), dock (*Rumex* sp.), field madder (*Sherardia arvensis*), dead-nettle (*Lamium* sp.) and nightshade family (Solanaceae). Occasional identifications of whitebeam (*Sorbus* sp.), cherry (*Prunus* sp.) and hawthorn (*Crataegus* sp.) are likely to represent remains incorporated with fuel supplies. Occasional charred tubers are likely to indicate the burning of peaty turves or uprooted vegetation. Records of hazelnut shell fragments (*Corylus avellana*) were reduced from Period 2 to 8.11% in Period 3A.

Period 3B, Late Middle Bronze Age

Thirty-four samples were taken from Period 3B deposits, with a significant number from cremation burials. There was a higher ubiquity of cereal remains

in the Period 3B samples (42.86%; Chart 1), although most of the samples were still low density.

A single free-threshing type wheat grain (*T. aestivum/ turgidum* type) was identified in pit fill (1648)/ [1647]. The presence of a single grain is insufficient to draw a significant conclusion and reliance on grain morphology alone is not a completely reliable means of identification (e.g. Campbell and Straker 2003: 23).

Aside from some of the cremation samples, two other samples produced appreciable quantities of carbonised plant macrofossils. Sample <219> of pit fill (8081)/ [8082] was rich in carbonised cereal remains (Table 20). The sample contained hulled barley (*Hordeum* sp.) and glume wheat (*T. dicoccum/ spelta*) grains, along with a possible oat (cf. *Avena* sp.) grain. The latter could be part of the weed community and could potentially be another large-seeded grass, since preservation was poor. Also present were spelt wheat (*T. spelta*) and emmer wheat (*T. dicoccum*) glume bases and spikelet forks, with emmer being slightly more numerous. The majority of the glume bases and spikelet bases were only identifiable as 'glume wheat'. Corrected totals of glume wheat grains and glume bases produced a ratio of grains to glume bases of 0.56:1. This is indicative of the presence of wheat processing by-products, namely the de-husking of glume wheats. The presence of both emmer-type and spelt-type chaff could indicate that they could have been cultivated as a dual crop. This represents quite an early record for spelt wheat but the evidence for Middle Bronze Age spelt wheat in England is increasing and it was also recorded during excavations at neighbouring Pode Hole Quarry (Martin *et al.* 2009) and in Bronze Age deposits at Colne Fen (Roberts 2013: 109).

Seeds of non-cereal taxa constituted 8% of the sample. Taxa present included medium Fabaceae (vetch/ tare type), small Fabaceae (clover/ medick type), knotweed (*Persicaria* sp.), black bindweed (*Fallopia convolvulus*), dock (*Rumex* sp.), goosefoot (*Chenopodium* sp.), sedge (*Carex* sp.), annual meadow-grass (*Poa annua*) and brome grass (*Bromus* sp.). Most of these are likely to have grown as arable weeds, with sedge potentially indicating wetter, more marginal areas of cultivated land.

Sample number	219	3	8	10	178
Context number	8081	10219	3007	3009	5230
Feature number	8082	10217	3005	3008	5234
Description	Pit	Pit	Pit	Pit	Pit
Phase	3B	3B	5	5	5
Volume (litres)	19.5	15	27	27	19
Cereal grains:					
Cereal NFI	79	3	15	21	2
Hordeum sp. - Barley	17	-	4	10	1
(*Hordeum* sp. - tail grain)	-	-	(1)	-	-
Hordeum sp. - Hulled barley	9	2	7	14	-
(*Hordeum vulgare* - twisted grain)	(1)	-	(1)	(5)	-
(*Hordeum vulgare* - germinated grain)	-	-	(1)	-	-
Triticum sp. - Wheat	23	1	20	13	-
Triticum dicoccum/spelta - Emmer/spelt wheat	12	2	8	19	-
(*Triticum dicoccum/spelta* - tail grain)	(1)	-	-	(1)	-
(*Triticum dicoccum/spelta* - germinated grain)	-	-	(1)	(1)	-
Avena sp. - Oat	-	1	2	2	-
cf. *Avena* sp. - Oat	1	-	1	-	-
Cereal chaff:					
Hordeum vulgare - 6-row barley rachis	-	-	1	-	-
Hordeum sp. - Barley rachis	1	-	-	-	1
Triticum spelta - Spelt wheat glume base	9	-	1	4	4
Triticum dicoccum - Emmer wheat glume base	11	1	1	-	-
Triticum dicoccum - Emmer wheat spikelet fork	3	-	-	-	-
Triticum dicoccum/spelta - Emmer/spelt wheat glume base	61	-	6	6	-
Triticum dicoccum/spelta - Emmer/spelt wheat spikelet fork	27	-	1	-	-
Triticum sp. - Indet. wheat rachis	3	-	-	-	-
Cereal indet. culm	-	1	-	-	1

Other cultivars:					
Fabaceae indet. (large) - Pea/ bean	-	-	-	1	-
Wild taxa:					
Ranunculus acris/ bulbosus L. - Meadow/ bulbous buttercup	-	1	3	-	-
Ranunculus sp. L. - Buttercup	-	3	-	1	-
Vicia/Lathyrus sp. L. - Vetch/wild pea	-	-	6	1	-
Medicago sp. type L. - Medick type	-	-	2	-	-
Fabaceae indet. - Pea family (medium)	3	1	8	6	-
Fabaceae indet. - Pea family (small)	1	3	2	-	-
Rubus sp. L. - Bramble	-	-	1	1	-
Agrimonia eupatoria L. - Agrimony	-	1	-	-	-
Rosa sp. L. - Rose	-	-	1	-	-
Urtica dioica L. - Common nettle	-	-	-	1	-
Malva sp. L. - Mallow	-	-	-	1	-
Brassica/ Sinapis sp. L. Cabbage/ mustard	-	-	-	1	-
Persicaria sp. Mill. - Knotweed	2	-	2	-	14
Polygonum aviculare L. - Knotgrass	-	-	1	2	-
Fallopia convolvulus (L.) A.Love - Black-bindweed	2	-	-	-	-
Rumex sp. L. - Dock	1	-	1	-	-
Polygonaceae indet. - Knotweed family	-	2	-	1	-
Stellaria media L. - Common chickweed	-	-	2	-	1
Caryophyllaceae indet. - Pink family	-	2	-	-	-
Chenopodium sp. L. - Goosefoot	2	-	2	4	-
Amaranthaceae - Goosefoot family	2	-	-	3	-
Galium aparine L. - Cleavers	-	-	1	2	3
Galium sp. L. - Bedstraw	-	-	4	2	2
Solanum dulcamara L. - Bittersweet	-	1	1	-	-
Prunella vulgaris L. - Selfheal	-	1	-	-	-
cf. *Mentha aquatica* L. - Water mint	-	-	-	1	-
Rhinanthus minor L. - Yellow-rattle	-	1	-	-	-
Tripleurospermum inodorum (L.) Sch. Bip. - Scentless mayweed	-	-	2	1	-
Eleocharis palustris (L.) Roem. & Schult. - Common spike-rush	-	-	4	2	-
Carex sp. L. - Sedge	1	2	1	3	-
Cyperaceae indet. - Sedge family	2	-	-	1	-
Festuca sp. L. - Fescues	-	-	-	2	-
Poa annua L. - Annual meadow-grass	4	-	-	-	-
Bromus secalinus type L. - Rye brome/ chess	-	-	-	2	1
Bromus sp. L. - Brome grass	2	-	2	2	1
Poaceae indet. - Grass (large)	-	-	4	2	-
Poaceae indet. - Grass (medium)	-	-	-	-	1
Poaceae indet. - Grass (small)	1	10	1	-	-
Charcoal:					
Charcoal >2mm	XXX	XX	XXX	XXX	XX
Other carbonised:					
Corylus avellana - Hazelnut shell fragments	2	-	9	15	-
Thorn (blackthorn/ hawthorn)	-	-	-	1	-
Indet. carbonised organic	X	X	X	-	-
Other:					
Bone	X	-	X	-	-
Small mammal bone	X	XX	X	-	-
Amphibian bone	X	-	-	-	-
Fuel ash slag	-	-	X	-	-

Table 20. Carbonised plant macrofossil remains from selected contexts

Sample <3> of pit fill (10219)/ [10217] was the richest sample from Period 3B, although it still only had a density of 2.6 items per litre (Table 20). This sample contained hulled barley (*Hordeum* sp.) and glume wheat (*T. dicoccum/ spelta*) grains, along with a single oat (*Avena* sp.) grain. Chaff remains were in the form of a single glume base and a culm node. Non-cereal taxa included meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*), medium Fabaceae (vetch/ tare type), small Fabaceae (clover/ medick type), agrimony (*Agrimonia eupatoria*), bittersweet (*Solanum dulcamara*), selfheal (*Prunella vulgaris*), yellow rattle (*Rhinanthus minor*) and sedge (*Carex* sp.). It is likely that a proportion of these came from grassland/ meadow habitats, such as meadow/ bulbous buttercup, agrimony, selfheal and yellow rattle. Sedges could also have grown in rough grassland habitats, as could various clover/ medick species.

Period 3B Cremations

Carbonised plant macrofossils of various types were identified in the majority of sampled cremations (Summers 2017). Remains of plant stems, roots, tubers and bulbs were most common and are likely to represent vegetation surrounding and underlying the pyres at the time they were burned (Table 21). Identifiable remains of this type included the swollen lower culm internodes of false oat-grass (*Arrhenatherum elatius* var. *bulbosum*), which is a common grass of rough grassland and waste ground, and probable pignut tubers (cf. *Conopodium majus*), which is common to a range of habitats (Stace 2010: 812, 1018). Both taxa are common finds within prehistoric cremations and there is ongoing debate regarding their likely source (e.g. Moffett 1991; Roehrs *et al.* 2013), which is likely to vary in different situations. *Arrhenatherum elatius* was also common in Bronze Age cremations at Colne Fen (de Vareilles 2013) and at Over (de Vareilles 2016). Most of the other vegetative remains remain unidentifiable beyond the level of monocotyledonous and dicotyledonous stems and roots. This collection of remains would seem most likely to represent burnt topsoil from beneath the cremation pyre.

Cremation	Crem 2	Crem 3	Crem 5	Crem 8	Crem 9	Crem 11	Crem 12
Context number	9444	9467	9472	9483	9485	9512	9514
Phase	3B	3B	3B	3B	3B	3B	3B
Volume (litres)	18	6	6	6.5	30	18	13.5
Cereal grains:							
Cereal NFI	-	-	1	-	2	1	-
Hordeum sp. - Barley	-	-	-	1	1	-	-
Triticum sp. - Wheat	-	-	-	-	2	-	-
Triticum dicoccum/spelta - Emmer/spelt wheat	-	-	-	-	3	-	-
Cereal chaff:							
Triticum dicoccum/spelta - Emmer/spelt wheat glume base	-	-	-	-	2	-	-
Triticum dicoccum/spelta - Emmer/spelt wheat spikelet fork	1	-	-	-	2	-	-
Cereal indet. culm	-	1	-	-	-	-	-
Other cultivars:							
Linum usitatissimum L. - Flax	-	-	-	-	1	-	-
Wild taxa:							
Fumaria officinalis L. - Common fumitory	1	-	-	-	1	-	-
Ranunculus acris/ bulbosus L. - Meadow/ bulbous buttercup	-	-	10	3	1	27	8
Ranunculus sp. L. - Buttercup	-	-	8	2	1	11	-
Vicia/Lathyrus sp. L. - Vetch/wild pea	-	-	-	-	2	-	-
Medicago sp. type L. - Medick type	-	-	1	-	-	-	14
Trifolium sp. type L. - Clover type	-	-	-	-	-	-	1
Fabaceae indet. - Pea family (medium/ large)	2	-	-	-	-	-	-
Fabaceae indet. - Pea family (medium)	5	-	-	-	3	-	-
Fabaceae indet. - Pea family (small)	-	-	-	-	-	-	9
Crataegus monogyna Jacq. - Hawthorn	-	-	-	-	1	-	-
Rubus sp. L. - Bramble	-	-	-	-	-	2	1
Agrimonia eupatoria L. - Agrimony	-	1	-	-	1	-	-
Polygonum aviculare L. - Knotgrass	5	-	-	-	-	-	-
Polygonum aviculare L. - Knotgrass (germinated)	1	-	-	-	-	-	-
Fallopia convolvulus (L.) A.Love - Black-bindweed	-	-	-	-	3	-	-

Caryophyllaceae indet. - Pink family	-	-	-	-	2	-	-
Chenopodium sp. L. - Goosefoot	-	-	1	-	10	3	-
Atriplex sp. L. - Oraches	-	2	-	-	1	-	-
Amaranthaceae - Goosefoot family	-	-	-	-	-	1	-
Galium aparine L. - Cleavers	-	-	-	-	1	-	-
Galium sp. L. - Bedstraw	-	1	-	1	3	-	-
Plantago lanceolata L. - Riwort plantain	-	1	6	-	7	1	12
Plantago sp. L. - Plantain	-	-	-	-	4	-	3
Tripleurospermum inodorum (L.) Sch. Bip. - Scentless mayweed	1	-	-	-	-	-	-
Asteraceae indet. - Daisy family	-	-	-	1	-	2	-
Sambucus nigra L. - Elder	1	1	-	-	-	2	1
Sparganium erectum L. - Branched bur-reed	-	-	-	-	4	-	-
Sparganium cf. *natans* L. - Least bur-reed	-	-	-	-	15	-	-
Sparganium sp. L. - Bur-reed	-	1	1	-	5	1	-
Carex sp. L. - Sedge (2-sided)	-	2	5	35	11	-	2
Carex sp. L. - Sedge (3-sided)	-	-	-	-	5	-	3
Cyperaceae indet. - Sedge family	-	1	-	-	3	-	-
Festuca sp. L. - Fescues	-	-	-	1	-	-	-
Arrhenatherum elatius (L.) P. Beauv. Ex J. & C. Presl - False oat-grass	-	-	-	-	6	-	-
Anisantha sterilis (L.) Nevski type - Barren brome	1	-	-	-	-	-	-
Poaceae indet. - Grass (medium)	-	2	-	6	14	-	2
Charcoal:							
Charcoal >2mm	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Other carbonised:							
Monocot. culm	X	XX	XX	-	XX	XX	XX
Monocot. Culm base	-	X	X	-	X	X	X
Arrhenatherum elatius var. *bulbosum* - Onion couch tuber	-	XX	X	-	X	XX	X
Dicot. Stem/ root	XX	XX	XX	-	XX	XX	X
cf. *Conopodium majus* - Pignut tuber?	-	-	-	-	-	X	-
Root/ tuber	XX	XX	XX	X	XXX	XX	X
Other:							
Bone (burnt)	X	X	X	X	X	X	X
Amphibian bone	X	-	-	-	-	-	-

Table 21. Carbonised plant macrofossil remains from selected Period 3B cremations

Cremation 9 was the only deposit to contain a reasonable concentration of cereal remains, in the form of barley (*Hordeum* sp.) and glume wheat (*Triticum dicoccum/ spelta*) grains, and emmer/ spelt glume bases (*T. dicoccum/ spelta*), along with a single flax seed (*Linum usitatissimum*). This most likely represents scattered debris from domestic or agricultural activity in the vicinity, or the use of cereal chaff or straw as kindling, rather than a deliberate offering of crops in the pyre. Bronze Age flax was also identified in a cremation during investigations at Pode Hole Quarry (Martin *et al.* 2009: 94), where it accounted for 70% of the non-cereal component. Economic plants were scarce in cremations at Over (de Vareilles 2016) and Colne Fen (de Vareilles 2013).

The sample also contained a wide range of seeds of non-cereal taxa, a number of which represent grassland and waste ground habitats. However, most numerous were seeds of sedge (*Carex* sp.), branched bur-reed (*Sparganium erectum*) and probable least bur-reed (*Sparganium* cf., *natans*). All of these tend to grow in wet places, with *S. erectum* common to the margins of ponds, lakes and slow rivers, as well as marshy fields and ditches, while *S. natans* generally grows fully submerged.

Also of interest in this deposit were numerous substantial, multi-branched roots. These were not recorded in the other deposits and, based on comparison with criteria published by Hather (1993: 130), they appear to be of *Sparganium erectum*. Together, the evidence of *Carex*, and *Sparganium* seeds and roots suggests the pyre was built on wet, marginal ground. This may have been on a stream, river or lake margin, or on marshy ground within a fenland environment. There were also numerous seeds from grasses, including *Arrhenatherum elatius*, and ribwort plantain (*Plantago lanceolata*) which indicate that this may have been a wet, marginal grassland habitat. False oat-grass spreads in ungrazed grassland, often on derelict land no

longer used for cultivation (de Vareilles 2013: 126). The recurrence of sedge and bur-reed in other cremations from the Site, although in lower concentrations, suggests that a marginal setting for the pyres may have been commonplace.

Chart 2 shows the distribution of taxa by ecological grouping from the cremation deposits. This is a relatively coarse approach but is useful in characterising the different deposits. Wetland/ wet ground habitats were dominant in cremations 8 and 9. In Cremation 8, this was influenced by a significant number of sedge seeds, which could also have occurred in marginal or rough grassland habitats. Grassland habitats were strongly represented in cremations 5, 11 and 12, and were also significant in cremations 8 and 9.

Archaeophytes (arable weeds) were restricted to cremations 2 and 9, although a number of plants of waste ground habitats are also common arable weeds. These may be associated with the cereal remains in a number of the samples, which included chaff elements in cremations 2, 3 and 9. As noted above, there is insufficient evidence to suggest deliberate offerings of crops in the pyres. Some waste ground taxa, such as knotgrass (*Polygonum aviculare*), goosefoot (*Chenopodium* sp.) and bedstraw (*Galium* sp.) could also have grown in rough, open habitats used as the location of cremation pyres. Plants of scrub habitats, such as hawthorn (*Crataegus monogyna*), bramble (*Rubus* sp.) and elder (*Sambucus nigra*) were relatively rare.

The predominance of grassland habitats within the macrofossil assemblages from the cremations indicates predominantly rough grassland as the location for the pyres. There is also a consistent signature for wet ground taxa, such as sedges and bur-reed, indicating the use of wetter, more marginal ground. The clearest example of this is Cremation 9, which appears to have been situated on marshy ground or at the edge of a body of water. The presence of roots/ tubers, including *Arrhenatherum elatius* var. *bulbosum* basal culms, is a likely demonstration of the inclusion of botanical remains from the contemporary topsoil and vegetation surrounding the pyre.

A cremation from investigations at Pode Hole Quarry contained a significant number of flax seeds, accompanied by plants associated with disturbed ground and grassy habitats (Martin *et al.* 2009: 95). Bronze Age cremations at Colne Fen were also found to contain plants of predominantly open scrub and waste ground (de Vareilles 2013). Pyre remains from Barrow 12 at Over also contained plant remains indicative of open, rough ground which may have been previously cultivated and produced large numbers of blinks seeds suggestive of the barrow being constructed on very damp ground (de Vareilles 2016: 394-396).

Period 4 - Late Bronze Age – Early Iron Age

Twenty-six samples were investigated from Period 4. Carbonised plant macrofossils were again sparse, although cereal remains were present in 57.69% of samples (Chart 1), which is higher than the ubiquity for periods 2 or 3. Hulled barley (*Hordeum* sp.) and glume wheat (*Triticum dicoccum/ spelta*), including emmer wheat (*T. dicoccum*) chaff in two samples, were the only two cereals represented.

Non-cereal taxa included vetch/ tare (*Vicia/ Lathyrus* sp.), small Fabaceae (clover/ medick type), common chickweed (*Stellaria media*), black bindweed (*Fallopia convolvulus*), dock (*Rumex* sp.), cleavers (*Galium aparine*) and wild grasses (Poaceae). Hazelnut shell was present in 11.54% of Period 4 samples.

Period 5 - Early La Tène Iron Age

Thirteen samples were examined from Period 5, a number of which were associated with smithy Structure 7 and its enclosure. Overall, cereal remains

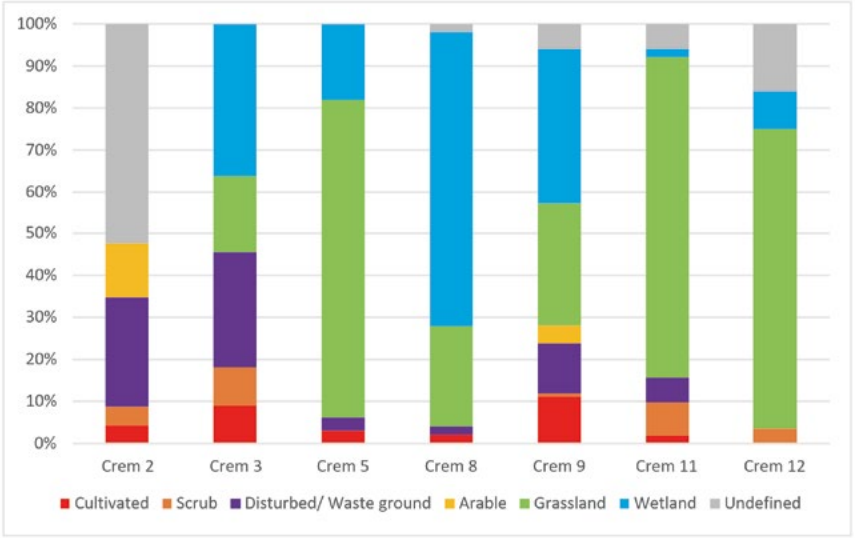

Chart 2. Distribution of taxa in cremation deposits by ecological grouping

were present in 61.54% of the Period 5 samples (Chart 1), which is comparable to the Period 4 ubiquity. Barley (*Hordeum* sp.), including hulled grains had a slightly higher percentage presence than wheat (*Triticum* sp.). All of the identifiable wheat remains were glume wheat (*T. dicoccum/ spelta*). Where chaff remains were identifiable, they were mostly spelt wheat (*T. spelta*), although a single emmer wheat (*T. dicoccum*) glume base was present in pit fill (3007)/ [3005]. Oat (*Avena* sp.) remains were present in two samples (15.38%). Hazelnut shell (*Corylus avellana*) had a relatively high ubiquity in Period 5 deposits (23.08%) and could represent food debris, although introduction with fuel wood is also possible. This range of crops is comparable to Iron Age deposits at Haddenham (Jones 2006b) and is typical for the English Iron Age.

Three samples merited full identification and quantification (Table 20). Sample <178> of pit fill (5230)/ [5234] was the least rich. This sample contained a single barley grain, accompanied by barley rachis and spelt wheat glume bases. Also present were a range of non-cereal taxa, which included knotweed (*Persicaria* sp.), common chickweed (*Stellaria media*), cleavers (*Galium aparine*) and chess (*Bromus secalinus* type). Knotweed is a nitrophilous plant that may represent fertile cultivated soils, although it was also common in the waterlogged samples of natural vegetation from a number of samples (see *Waterlogged Macrofossils*). Cleavers is often considered a weed of autumn-sown cereals and could have been associated with the wheat chaff.

The samples from pit fills (3007)/ [3005] and (3009)/ [3008] were richer, containing 56 and 79 items per litre respectively. Wheat grains, including glume wheat (*T.dicoccum/ spelta*) were the dominant cereal remains, accompanied by hulled barley (*Hordeum* sp.) and a small amount of oat (*Avena* sp.). A single asymmetric barley grain indicates the presence of hulled, six-row barley (*H. vulgare* var. *vulgare*). Chaff remains were also present in both samples, including barley rachis, spelt wheat (*T. spelta*) glume bases and a single emmer wheat (*T. dicoccum*) glume base pit fill (3007)/ [3005]. Although the chaff remains may indicate a crop processing component, ratios of wheat grains to glume bases were 3.82:1 and 4.36:1 respectively, suggesting predominantly clean grain. It is also possible that whole ears or spikelets are represented, with the likely differential preservation of grain and chaff resulting in a higher proportion of grain (Boardman and Jones 1990). Such a scenario was envisaged for an Iron Age ditch deposit at Haddenham (Jones 2006b: 253). However, it is difficult to be certain.

A single pea/ bean seed cotyledon was present in pit fill (3009)/ [3008], suggesting the cultivation of pulse crops, although the evidence of a single seed is not necessarily reliable. Non-cereal taxa across the two samples included meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*), vetch/ tare (*Vicia/ Lathyrus* sp.), medick-type (*Medicago* sp. type), mallow (*Malva* sp.), cabbage/ mustard (*Brassica/ Sinapis* sp.), knotweed (*Persicaria* sp.), knotgrass (*Polygonum aviculare*), dock (*Rumex* sp.), common chickweed (*Stellaria media*), goosefoot (*Chenopodium* sp.), cleavers (*Galium aparine*), bittersweet (*Solanum dulcamara*), possible water mint (cf. *Mentha aquatica*), scentless mayweed (*Tripleurospermum inodorum*), common spike-rush (*Eleocharis palustris*), sedge (*Carex* sp.), fescue (*Festuca* sp.) and chess (*Bromus secalinus* type). Many of these are likely to be present as arable weeds, related to the presence of cereal chaff in the deposits. However, sedge, common spike-rush and possible water mint could have originated from natural wet ground habitats. Bramble (*Rubus* sp.) in both deposits and rose (*Rosa* sp.) in (3009) would not have been arable weeds. They could represent food debris or natural waste ground/ hedgerow habitats.

These two samples are likely to represent mixed carbonised debris, including routine crop processing by-products and culinary waste.

Summary

The Neolithic (Period 1) samples indicate very limited activity at this time, with potentially small amounts of scattered carbonised debris, predominantly in the form of hazelnut shell fragments, being deposited. There were no suitable remains to investigate Neolithic agriculture in detail.

The evidence for the Early Bronze Age period (Period 2) was also quite limited but indicates the sparse, low-level deposition of carbonised plant remains, including barley and wheat. This is likely to represent low-intensity occupation during this time. Low densities of carbonised cereals are not unusual for early archaeobotanical assemblages.

The Middle Bronze Age (Period 3) largely continues the evidence for low-intensity activity from the Early Bronze Age. However, the evidence of glume wheat processing from pit fill (8081)/ [8082] indicates crop processing activities at the Site in the Middle Bronze Age, and potentially the handling of larger volumes of cereal crops at this time. Work at neighbouring Pode Hole Quarry (Martin *et al.* 2008, 2009) found that the majority of deposits were similarly low in concentrations of carbonised macrofossil remains. Hulled, six-row barley and glume wheat (emmer and spelt) predominated, with barley being more numerous. There were also occasional identifications of oat and free-threshing type wheat. Oat seems likely to represent a minor component representing weeds of other cereals, while the finds of free-threshing type wheat grains may simply represent morphological

variability in the wheat population. There was limited evidence of late stage cereal processing which, together with the evidence from (8081) indicates the local processing of cereals, which are likely to have been cultivated by the local population. Flax, which was present as single carbonised seeds in two samples, one of which was a cremation, may also have been cultivated at this time. There was also some evidence for Bronze Age flax cultivation from Pode Hole Quarry (Martin *et al.* 2009).

The evidence from the Period 3B cremations is of interest, in particular the identification of seeds from habitats close to the pyres. These indicate the use of predominantly rough grassland areas for the cremation pyres. Evidence for wet ground was also common, suggesting relatively marginal locations for this activity. In particular, Cremation 9 may have been carried out in a rather wet area, perhaps on the margins of a stream, river or lake. The use of rough open ground, including wet marginal habitats, is consistent with other cremation deposits in the region (e.g. de Vareilles 2013, 2016; Martin *et al.* 2009), although the signature for rough grassland over waste ground was more pronounced at the present site.

Plant remains from Late Bronze Age/ Early Iron Age (Period 4) deposits were limited in concentration but it appears from the ubiquity scores that cereals were in common usage at the Site, despite relatively limited evidence for occupation. Cereal crops are likely to have included hulled barley and emmer wheat.

The Iron Age (Period 5) economy was dominated by hulled, probably six-row barley and spelt wheat. Pulse crops may also have been cultivated but the evidence was limited. The sampled deposits indicate a mixture of routine crop processing by-products and culinary waste. The presence of crop processing debris or even of whole ears/ spikelets of wheat is a strong indication of locally cultivated cereal crops.

WATERLOGGED PLANT MACROFOSSILS

John Summers

Introduction

A large number of samples were collected, processed and assessed by the Environmental Archaeology Consultancy (Martin and Rackham 2010, 2013; Rackham and Giorgi 2016; Rackham *et al.* 2019). This data was used as the basis to select a range of samples for detailed analysis and quantification. The aim was to better understand the source of waterlogged plant macrofossils and the local ecological habitats that they represented.

Methods

Many of the light fractions were large and had to be sub-sampled. A sub-sample size of 50g of wet flot was used, which provided sufficient specimens for quantification. The material was sorted under a stereomicroscope (x10-x30 magnification) and all identifiable specimens were extracted, identified and quantified. Identifications were made using reference literature (Cappers *et al.* 2006) and a reference collection of modern seeds; nomenclature follows Stace (2010). Two samples were represented by dried flots, which were sorted in their entirety for both waterlogged and carbonised macrofossils using a stereomicroscope.

Results

The majority of the rich organic light fractions were from Middle Bronze Age deposits (see Table 22, *Appendix C*). The Site phasing allows these to be broken down into two Middle Bronze Age sub-periods, as presented below.

Period 2B, Early Bronze Age

The sample from pit fill (11194)/ [11197] was dominated by plants of pond sides and aquatic habitats. These were largely in the form of crowfoot (*Ranunculus* subg. *Batrachium*), which inhabits wet mud and standing water, and celery-leaved buttercup (*Ranunculus sceleratus*), which grows on pond margins, shallow pools and wet meadows. Together, these indicate standing water within the feature. A single pondweed (*Potamogeton* sp.) seed was also identified in (11194). A small number of scrub and waste ground taxa were also present, most likely representing vegetation around the edges of the feature. Pollen from (11194) included significant amounts of alder and willow, which may have been growing on the margins of the feature, while the herb pollen was largely indicative of grassland habitats (see *Pollen*). A single alder seed was identified in the sample, confirming that alder was growing close to the feature.

Period 3A, Early Middle/ Middle Bronze Age

The sample from pit fill (1152)/ [1091] was also dominated by plants of pond sides and aquatic habitats, including crowfoot (*Ranunculus* subg. *Batrachium*) and celery-leaved buttercup (*Ranunculus sceleratus*). A large number of water flea (*Daphnia* sp.) ephippia in (1152) also reflect the wet conditions. Small numbers of scrub and waste ground taxa were also present, most likely representing vegetation around the edges of the feature. Cherry (*Prunus* sp.), bramble (*Rubus* sp.) and hazel (*Corylus avellana*) could all have grown amongst scrub habitats on the feature margin.

Dominant in pit fill (2308)/ [2305] was bramble (*Rubus* sp.), followed by common chickweed (*Stellaria media*).

These are characteristic of waste ground and scrub habitats. Other taxa within this ecological group include common nettle (*Urtica dioica*), knotgrass (*Polygonum aviculare*), dock (*Rumex* sp.), goosefoot (*Chenopodium* sp.), black nightshade (*Solanum nigrum*) and dead-nettle (*Lamium* sp.). Blackthorn (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*) could have originated in hedgerow type habitats in the vicinity or scrubby vegetation. Seeds of wetland taxa were limited to a small number of crowfoot (*Ranunculus* subg. *Batrachium*) and sedge (*Carex* sp.) seeds.

Pit fill (3110)/ [3109] was less rich and contained seeds from plants of predominantly waste ground habitats. Also present were seeds of black alder (*Alnus glutinosa*), which probably represents trees growing in the vicinity in hedgerow/ scrub habitats or on the margin of the feature (*see Pollen*). A small number of wetland taxa (*Ranunculus* subg. *Batrachium* and *Carex* sp.) were present, but in a minority, along with common water flea (*Daphnia* sp.) ephippia.

Pit fill (3171)/ [3172] also contained seeds of black alder (*Alnus glutinosa*), which probably represent trees growing in the vicinity in hedgerow/ scrub habitats or on the margin of the feature (see *Pollen*). Other trees, such as blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*), along with bramble (*Rubus* sp.) and rose (*Rosa* sp.) would also appear to be indicative of scrub or hedgerow habitats. Waste ground habitats were represented by common nettle (*Urtica dioica*), goosefoot (*Chenopodium* sp.), which are likely to have grown in the vicinity of the feature. Wetland taxa (*Ranunculus* subg. *Batrachium*, *Lycopus europaeus* and Cyperaceae) were present but not in relatively low concentrations.

Pit fill (5123)/ [5124] was dominated by seeds of waste ground and scrub taxa (e.g. *Crataegus monogyna*, *Rubus* sp., *Urtica dioica*, *Persicaria* cf. *lapathifolia*, *Polygonum aviculare*, *Rumex* sp., *Stellaria media*, *Chenopodium* sp., *Galium* sp., *Solanum nigrum*, *Lamium* sp. and *Lapsana communis*). Bird cherry (*Prunus avium*), represented by a single fruit stone could have grown in nearby hedgerow-type communities. In addition, a significant number of meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*) seeds were identified, which, along with selfheal (*Prunella vulgaris*) and possibly thistle (*Carduus/ Cirsium* sp.) indicate a grassland component in the vicinity of the feature. A single seed of narrow-fruited cornsalad (*Valerianella dentata*), which is an archaeophyte/ arable weed may have originated from local cultivation or crop processing activities. There was also a significant wetland component (*Ranunculus* subg. *Batrachium*, *Lycopus europaeus*, *Luzula sylvatica* and *Carex* sp.) in the feature, which accounted for *c.* 35% of the identified specimens and may indicate standing water in a waterhole feature.

Pit fill (11918)/ [11897] was dominated by large numbers of waste ground and scrub taxa. Particularly prevalent were bramble (*Rubus* sp.) and common nettle (*Urtica dioica*). It appears that these dominated on the margins of the feature, along with common/ long-headed poppy (*Papaver rhoeas/ dubium*), dock (*Rumex* sp.), common chickweed (*Stellaria media*), goosefoot (*Chenopodium* sp.), black nightshade (*Solanum nigrum*), nipplewort (*Lapsana communis*) and prickly sowthistle (*Sonchus asper*). A single blackthorn stone (*Prunus spinosa*), numerous hawthorn (*Crataegus monogyna*) seeds and elder (*Sambucus nigra*) seeds are also likely to reflect adjacent scrub. This feature also contained numerous thorns from bramble/ rose, most likely accompanying the abundant bramble seeds in the sample. Some plants likely to represent open ground/ grassland included meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*), selfheal (*Prunella vulgaris*) and thistles (*Carduus/ Cirsium* sp.). Pollen from this deposit also included a significant proportion of grassland types (see *Pollen*). There were no wetland plants represented but water flea (*Daphnia* sp.) ephippia were common, indicating standing water at some point during the time it was open.

Period 3B, Late Middle Bronze Age

Pit fill (1661)/ [1647] was represented by a dried flot which contained abundant uncharred seeds. Dominant were waste ground and scrub taxa, including bramble (*Rubus* sp.), common nettle (*Urtica dioica*), knotweed (*Persicaria* sp.), dock (*Rumex* sp.), common chickweed (*Stellaria media*), goosefoot (*Chenopodium* sp.), henbane (*Hyoscyamus niger*), black nightshade (*Solanum nigrum*), dead-nettle (*Lamium* sp.) and elder (*Sambucus nigra*). Wet conditions were represented by a small number of crowfoot (*Ranunculus* subg. *Batrachium*) and blinks (*Montia fontana*) seeds. Wet ground could also be indicated by sedge (Carex sp.), although sedges have a wide ecological niche. Grassland habitats were indicated by a small number of meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*) and selfheal (*Prunella vulgaris*) seeds.

Fill (1662), also in Pit [1647], was broadly comparable to fill (1661), with a dominant signature for waste ground/ scrub and a small number of wet ground indicators, including blinks (*Montia fontana*) and rush (*Juncus* sp.). Meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*) was present in greater concentration but was the only obvious grassland indicator in the sample. Seeds of beet (*Beta vulgaris*) recorded in the deposit are likely to be intrusive from modern agriculture.

Pit fill (1706)/ [1730] was a lower density sample. Waste ground/ scrub habitats were represented by bramble (*Rubus* sp.), common nettle (*Urtica dioica*), knotweed (*Persicaria* sp.), common chickweed (*Stellaria media*), goosefoot (*Chenopodium* sp.) and elder (*Sambucus nigra*). Wetland plants were common, including crowfoot

(*Ranunculus* subg. *Batrachium*), gypsywort (*Lycopus europaeus*), water plantain (*Alisma* sp.), rush (*Juncus* sp.) and sedge (*Carex* sp.), and water flea (*Daphnia* sp.) ephippia were also present. These indicate contemporary wet conditions within the pit. A small number of meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*) may also indicate grassland habitats nearby.

Waterhole fill (1824)/ [1801] contained a significant number of seeds from waste ground taxa, in particular common nettle (*Urtica dioica*), dock (*Rumex* sp.), common chickweed (*Stellaria* media), goosefoot (*Chenopodium* sp.) and sow-thistle (*Sonchus oleraceus* and *Sonchus asper*), accompanied by a range of other waste ground/ scrub taxa. Wetland plants included celery-leaved buttercup (*Ranunculus sceleratus*), crowfoot (*Ranunculus* subg. *Batrachium*), blinks (*Montia fontana*) and sedge (*Carex* sp.). Ephippia of water fleas (*Daphnia* sp.) were also common. Small numbers of meadow/ bulbous buttercup (*Ranunculus acris/ bulbosus*) may indicate nearby grassland habitats, although the proportion of the overall sample was minimal.

During the assessment, a small number of Middle Bronze Age features were noted as containing flax seeds (*Linum usitatissimum*), but none were recorded in the further analysis.

Period 5 - Early La Tène Iron Age

A single sample rich in uncharred seeds was recorded from Period 5 pit fill (5230)/ [5234]. This was dominated by a large number of common nettle (*Urtica dioica*) seeds, most likely from vegetation growing on the margin of the feature. Other waste ground taxa included bramble (*Rubus* sp.), knotgrass (*Polygonum aviculare*), black bindweed (*Fallopia convolvulus*), common chickweed (*Stellaria media*), goosefoot (*Chenopodium* sp.), elder (*Sambucus nigra*) and fool's parsley (*Aethusa cynapium*). There was also a strong signature for standing water, with large numbers of crowfoot (*Ranunculus* subg. *Batrachium*) and water-plantain (*Alisma* sp.). Other wetland/ wet ground taxa which grow out of water included blinks (*Montia fontana*), gypsywort (*Lycopus europaeus*) and sedge (*Carex* sp.). Together these plants reflect standing water in the base of the pit with wet and waste ground plants growing on its margins.

Discussion

The samples from Bronze Age pits all indicate an assemblage derived from natural vegetation, with three main habitats represented. Chart 3 shows the broad ecological groupings represented in the recorded samples. This is a crude but useful way of understanding the dominant habitats represented. However, proportions can be skewed by plants that produce large numbers of seeds and more robust seeds, such as nettle, bramble, common chickweed, dock goosefoot and elder.

- Aquatic habitats were represented in 11 of the samples, although in some by only a small number of specimens. In general, these are likely to represent wet conditions or standing water within open features, in particular crowfoot, gypsywort, rare pondweed and water plantain. Common water flea (*Daphnia* sp.) ephippia also reflect standing water within features. Plants of damp ground, such as sedge, rush and blinks, were recorded in ten of the samples and probably grew on the margins of features.
- Waste ground and scrub habitats were significant in the majority of samples. These plants are likely to have occupied the margins of open and water filled hollows. Some taxa may suggest nearby hedgerow habitats, such as bird cherry, blackthorn, hawthorn, hazel and alder, although

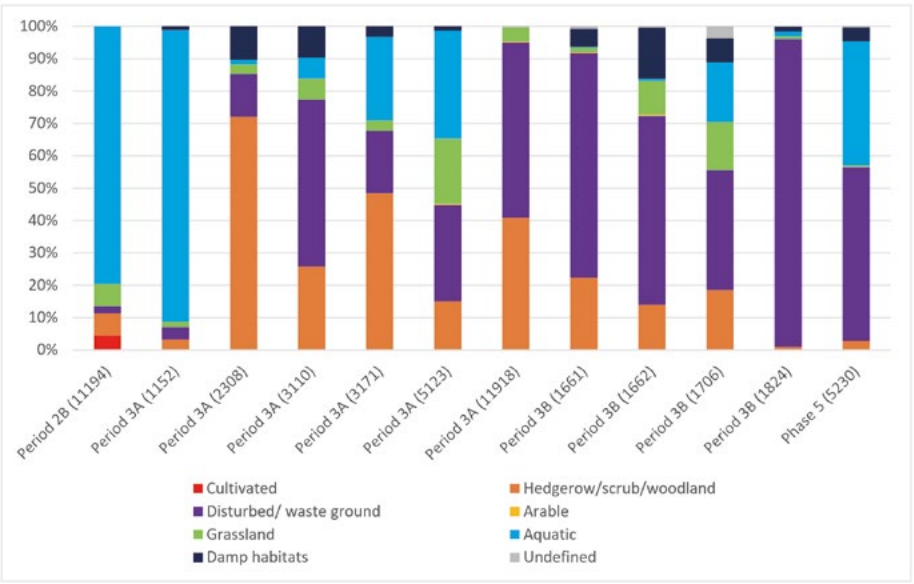

Chart 3. Ecological groupings of taxa identified in samples of waterlogged plant remains

natural vegetation on the edge of these features can also explain their presence. Gnawed stones/ seeds of sloe and hawthorn in deposits (2308) and (5123) respectively are a further indication of these taxa growing locally to the sampled features. Pollen analysis indicates that alder and willow growing on the margins of the features made a significant contribution to assemblages in a number of features (see *Pollen*; Langdon and Scaife 2009).

- Plants considered indicative of grassland habitats were represented in all of the samples by a small range of taxa, most notably meadow/ bulbous buttercup and selfheal. However, these rarely formed a large proportion of the samples. Pollen analysis of similar deposits from investigations at the adjacent Pode Hole Quarry (Langdon and Scaife 2009) found that the remains were dominated by herbaceous pollen from damp, probably long pasture grassland. Grassland communities were also represented in pollen samples from the present site (see *Pollen*, above). However, it is likely that abundant seeds from waste ground and scrub habitats on the margins of the features and wetland plants masked this signature in many of the macrofossil samples.

This pattern is in keeping with previous results from waterlogged features at neighbouring Pode Hole Quarry (Martin *et al.* 2009), with the presence of aquatic species, as well as waste ground and scrub plants, most likely occupying the margins of the features. Pollen and plant macrofossil evidence from the nearby Tower's Fen was similar in identifying damp ground, tall grassland and waste ground communities around the sampled pond, pit and ditch features, with open woodland/ scrub on the margins (Branch and Silva 2008; Vaughan-Williams 2008).

The sample from Period 5 pit fill (5230)/ [5234] was a similar division of waste ground and wetland taxa originating from vegetation in the pit itself and taller vegetation on its margins.

CHARCOAL

John Summers

Introduction

Samples for detailed analysis were selected from specific features to understand fuel wood selection and the availability of woodland resources in the local environment during the main periods of activity. The main focus of the investigation were contexts such as Bronze Age cremations, hearths and features associated with the Period 5 smithy (Structure 7). In addition, some pit features were investigated that were noted as containing abundant charcoal during the assessment (Martin and Rackham 2010, 2013; Rackham and Giorgi 2016; Rackham *et al.* 2019).

Methodology

Charcoal fragments were selected randomly from a >5mm sieved fraction from each sample up to a maximum of 100 (where available). Identifications were made by examining transverse sections at x10-x30 magnification using a stereomicroscope, and tangential and radial sections at x400 magnification using a metallurgical microscope. Reference literature (Gale and Cutler 2000; Schoch *et al.* 2004; Schweingruber 1978) was used for identification of the microscopic characteristics. Fragments were recorded by count and by weight, except for unidentified items, which were recorded by weight only.

Results

Period 2A, Beaker

Charcoal was investigated from Period 2A pit fill (11715)/ [11711]. Dominant in the sample was alder (*Alnus* sp.), likely black alder (*Alnus glutinosa*), as identified from waterlogged seeds in a number of deposits (see *Waterlogged Plant Macrofossils*). Also identified were oak (*Quercus* sp.), hazel (*Corylus* sp.), ash (*Fraxinus* sp.), cherry (*Prunus* sp.) and Maloideae (sub-family containing apple, pear, whitebeam, hawthorn etc.) - (see Table 23, *Appendix D*).

It is likely that the dominance of alder reflects the exploitation of a readily available local resource, such as damp alder-dominated woodland or alder carr.

Period 2B, Early Bronze Age

Cremation [7256] was dominated by alder (*Alnus* sp.; 82%), accompanied by oak (*Quercus* sp.; 18%) (see Table 23, *Appendix D*). The prevalence of alder is unusual for a cremation and was repeated in a number of the Period 3B cremations (see below).

Fill (7049) of pit/hearth [7051] was also dominated by alder (48%), with significant proportions of *Prunus* sp. (21%) and Maloideae (28%). Small amounts of oak (*Quercus* sp.), hazel (*Corylus* sp.), willow/ poplar (*Salix/ Populus* sp.) and buckthorn (*Rhamnus cathartica*) were also present. The predominance of alder suggests that this was a readily available fuel resource from local alder carr habitats. Alder was strongly represented in a number of pollen samples from the Site (see *Pollen*) and is thought to have grown on the margins of some features or within damp hollows left by partially infilled pits. There could also have been areas of wet alder-dominated woodland in relatively close proximity. *Prunus* sp. and Maloideae wood could have come from local scrub and hedgerow habitats.

Period 3A, Early Middle/ Middle Bronze Age
Pit/ hearth fill (6022)/ [6024] contained only a small number of fragments of oak (*Quercus* sp.), hazel (*Corylus* sp.) and alder (*Alnus* sp.). The low density of charcoal in this feature would suggest that it was cleaned out after the final burning event.

Period 3B, Late Middle Bronze Age
Pit fill (8081)/ [8082] associated with Structure 13 produced a greater volume of charcoal. This deposit was dominated by Maloideae charcoal, with smaller quantities of *Quercus* sp., *Prunus* sp. and *Corylus* sp. Alder made up only 1% of the identified fragments, indicating that wet woodland habitats contributed little to the fuel resource in this instance. Some elements of the Maloideae sub-family, such as hawthorn are common in hedgerows but others, such as apple or whitebeam can occur in woodland margins or secondary woodland.

The remaining deposits examined from Period 3B were from cremation burials. Those analysed represent a sub-sample of the cremations excavated. The results show a high proportion of alder (*Alnus* sp.) wood making up the fuel for a number of the cremations, with cremations 4, 9 and 17 being entirely composed of alder (Chart 4).

Alder makes a poor fuel but can be used to make a good quality charcoal (Gale and Cutler 2000: 34). Cremations require a high temperature and sustained burning to consume the body and the poor fuel characteristics of alder may indicate that it was used in the absence of higher quality fuel woods. This may indicate inadequate local fuel supplies at this time (cf. Gale 2000: 347-348). Only cremations 5 and 12 varied from this pattern, the former being dominated by ash (*Fraxinus* sp.) and the latter containing 59% oak (*Quercus* sp.) over 41% alder. For these cremations, it is apparent that a supply of harder, more calorific wood fuels was available, which corresponds with the findings of Scaife and Langdon (see *Pollen*) that there are likely to have been local remnants of woodland. However, it would appear that these were not as commonly exploited as alder-dominated woodland habitats. The assessment data from the remaining cremations (Summers 2017) shows that the majority were also dominated by charcoal with diffuse porous vessel patterns, which, based on the present study, are also likely to be predominantly alder. The dominance of alder is comparable to results from Period 2B Cremation [7256] (see above).

Also of interest is the high incidence of insect damage, in the form of 'woodworm' holes, in the alder charcoal fragments examined from the Period 3B cremations. The proportions range from 28% to 70% (Chart 5) and in some fragments there were extensive networks of holes. The value of 100% in Cremation 5 is anomalous, being based on only two fragments of alder charcoal. Woodworm is generally most prevalent in dead wood in damp habitats. This may indicate that there was an abundance of fallen dead wood in the local environment that was easy to gather for use in a cremation. It may even have been selected as it would have burnt more efficiently than green timber. It might also suggest that there was little management of the alder woodland at this time, which is unlikely to result in significant amounts of dead wood left unused. There was a lower incidence of woodworm attack in the alder charcoal in Period 2B cremation [7256], which may be an indication of different fuel procurement activities at this time, although insect damage in alder wood from Period 2A pit fill (11715) was also relatively high (37.5%), which indicates this was not a uniquely Late Middle Bronze Age phenomenon.

Period 5 - Early La Tène Iron Age
The majority of the charcoal examined from Period 5 was from the Iron Age smithy Structure 7 and its associated enclosure. The intention of the charcoal analysis was to understand fuel wood selection for Iron Age metalworking activities on the Site. Oak (*Quercus* sp.) was dominant at between 73% and 92% of the fragment count (Chart 6). Oak is a high-quality fuel that is frequently associated with industrial processes.

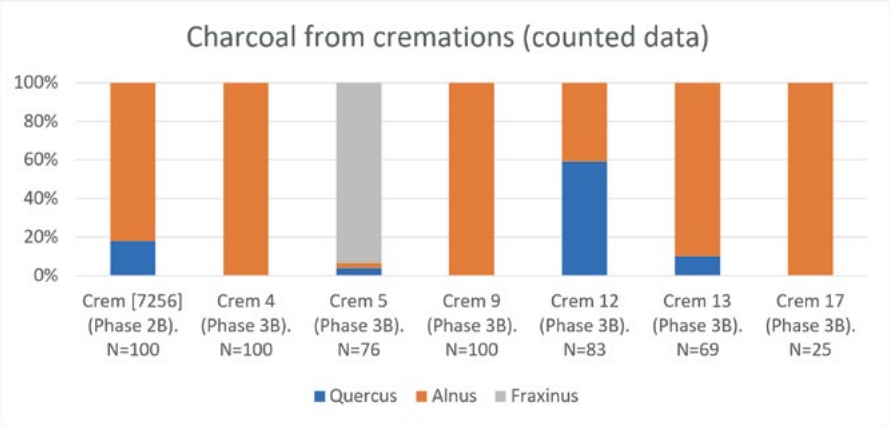

Chart 4. Proportion of wood taxa from cremations, based on counted charcoal data

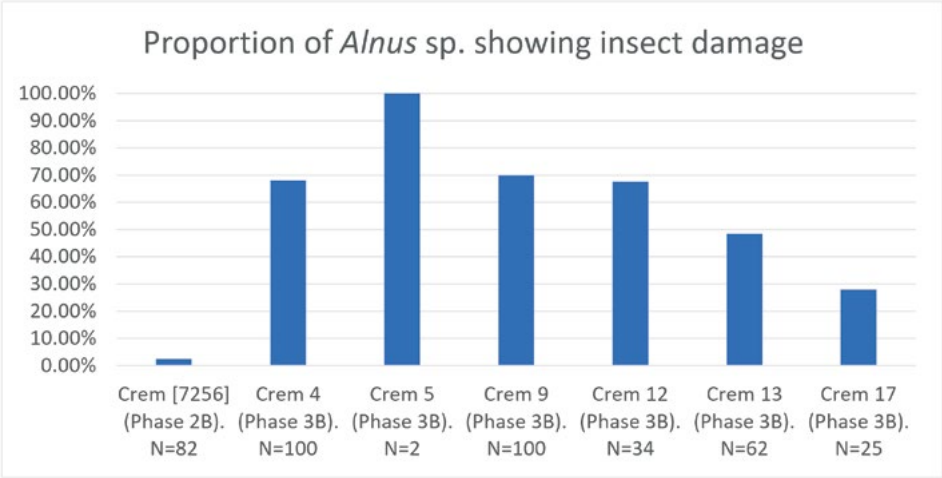

Chart 5. Proportion of Alnus sp. fragments with evidence of insect damage

Its use in metalworking processes may indicate that it was brought to the Site as charcoal from managed woodlands. Such transport could have been from outside the immediate location, although there are no local Iron Age pollen records to indicate contemporary woodland conditions.

A wide range of other taxa were recorded, although only in very low concentrations. Hazel (*Corylus* sp.), cherry (*Prunus* sp.) and Maloideae could all have been gathered from woodland sources with the dominant oak timber. The relatively small numbers of alder (*Alnus* sp.) and willow/ poplar (*Salix/ Populus* sp.) are likely to represent small amounts of wood from local wet woodland or other open damp habitats. Gorse (*Ulex europaeus*) was recorded in (5021) and (5096), and would have been available from areas of heath. Gorse burns with high intensity and would have been an efficient kindling material.

Sample <10> of pit fill (3009)/ [3008] was not particularly rich but was also dominated by oak (*Quercus* sp.), with lesser numbers of alder (*Alnus* sp.) and Maloideae. A single fragment of elder (*Sambucus* sp.) is likely to have come from local waste ground/ scrub habitats. This was the only fragment of elder from the Site and it is unlikely to have been used as a fuel on a regular basis.

Discussion

Throughout the Bronze Age, alder (*Alnus* sp.) was dominant in 66.67% of the samples, including both cremations and non-funerary contexts (Chart 7). Oak was dominant in 16.67%, while Maloideae and ash (*Fraxinus*

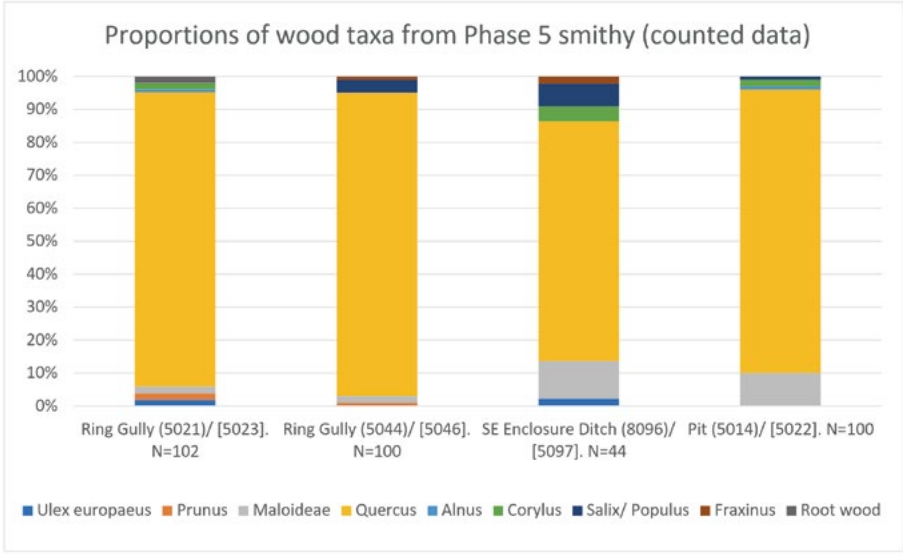

Chart 6. Proportion of wood taxa from contexts associated with Period 5 smithy, based on counted charcoal data

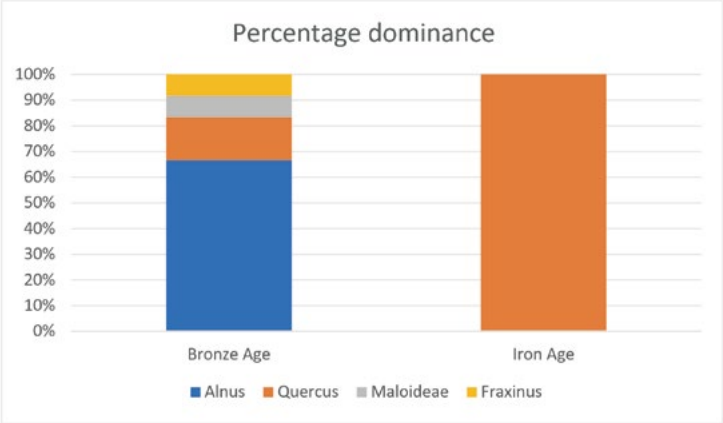

Chart 7. Percentage dominance of wood taxa in Bronze Age and Iron Age samples

sp.) were each dominant in a single sample (8.33%). This suggests that there was a reliance upon locally available fuel wood from wet woodland habitats, even for specialised activities, such as cremation pyres. However, there is an indication that other woodland and hedgerow habitats were available for exploitation. During the Iron Age, oak was dominant in all five samples, although this is likely to be skewed by a number of the samples coming from deposits associated with industrial activities, for which oak is likely to have been preferentially selected and potentially imported from further afield.

In general, the majority of the charcoal was from wood of unknown diameter and likely to be stem material. This was common throughout, with only occasional roundwood fragments (only ten fragments from a total of 1260 identified fragments). The prevalence of insect damage in alder, particularly from Period 3B cremations but also in Period 2A pit fill (11715) is likely to indicate the exploitation of dead wood rather than the careful management of woodland, such as through coppicing. Insect damage was also noted in other taxa (Maloideae, *Prunus* sp., *Quercus* sp. and *Fraxinus* sp.) in Bronze Age samples. Examples of this were in considerably lower frequency than for alder, although it is known that alder can be particularly susceptible to woodworm attack, and may indicate the gathering of dead wood for fuel from a range of species.

Chart 8 shows the species diversity by context. The cremations from Period 3B show low species diversity, which is quite typical for this kind of context. It can be seen that the samples from Period 2A pit fill (11715) and Period 2B pit/ hearth fill (7049) had a more diverse range of taxa, as did Period 3B pit fill (8081).

The results of the charcoal analysis indicate a heavy Bronze Age utilisation of alder wood for fuel in both 'domestic' and funerary contexts. Regional woodland flora from palynological investigations is relatively poorly understood due to the swamping effect of vegetation growing around the sampled pit deposits (Langdon and Scaife 2009: 112). However, it seems likely that locally available, wet alder-dominated woodland was exploited most frequently. Waterlogged wood and charcoal from investigations at Pode Hole Quarry (Wheeler 2009), indicated a predominance of willow (*Salix* sp.), which was scarce in the charcoal from the present investigation. Based on the pollen analysis (Langdon and Scaife 2009), it is likely that willow grew on the margins of the sampled pit, waterhole and pond features. Alder was also well represented and both taxa were considered to represent fen vegetation, nearby hedging or scrubby vegetation growing around the excavated features. Oak and hazel were also considered likely to represent local hedgerows with occasional oak standards (Wheeler 2009).

As noted above, Maloideae in the charcoal assemblage could have been gathered from hedgerow habitats, and other taxa such as hazel, oak and cherry (*Prunus* sp.), could also have come from such sources, rather than mature woodland. Charcoal identifications from nearby Tower's Fen (Poole 2008) showed less dominance of alder and a range of different taxa dominating various samples, including ash, oak and willow/ poplar. This might indicate less reliance on wet woodland and greater availability of other woodland resources. Although remnants of oak/ hazel woodland may have been locally available during the Bronze Age (see *Pollen*), it appears that they did not generally make a significant contribution to the fuel resource around the Bar Pasture area.

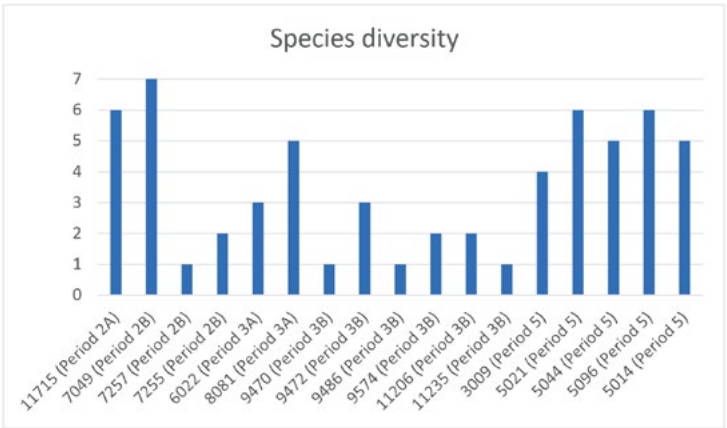

Chart 8. Species diversity identified from charcoal

PALAEOENVIRONMENTAL SUMMARY

John Summers

The palaeoenvironmental and palaeoeconomic investigations presented in this volume complement those undertaken during previous work at Pode Hole Quarry to the NE, and the detailed discussion of the Bronze Age environment and economy presented by Rackham (2009b).

Evidence from the earliest recorded occupation at Bar Pasture, during the Neolithic, was limited but some useful information can be extracted. The pollen sample from Neolithic pit [11749] indicates areas of woodland containing oak, hazel and lime. Evidence of alder and willow indicate locally wet conditions, while there was also evidence of open grassland interpreted as pasture. It is likely that this reflects a landscape subject to clearance and human occupation/ exploitation, although there was no convincing evidence from the pollen or macrofossil record for cereal cultivation. Neolithic clearance and agriculture in the region have been recorded in the pollen sequence from the Ouse channel at Haddenham, accompanied by occupation of gravel terraces (e.g. Waller 1994: 105).

Evidence for woodland incorporating oak, hazel and lime persists in the pollen sample from Early Bronze Age pit [10228] and likely represents surviving areas of woodland continuing into this period. Evidence for alder and willow representing locally wet conditions was encountered, particularly in pit [11197]. Waterlogged plant macrofossils from the same pit indicated scrub and waste ground habitats around this water-filled feature. Charcoal evidence from pit [11711] indicated the likely exploitation of wet alder woodland in the vicinity, with a diverse range of other taxa likely to have come from local scrub or hedgerow habitats.

Cereal pollen was recorded in the Early Bronze Age samples and cereal remains were also recorded in the carbonised macrofossil assemblage, if relatively infrequently and in low densities. Recovery of only sparse carbonised remains from the Neolithic and Early Bronze Age archaeobotanical assemblages is quite typical (e.g. Jones and Rowley-Conwy 2007). Such remains reflect cultivation within the local landscape, most likely as part of a mixed agricultural system incorporating significant areas of pasture/ grazing. Emmer wheat and barley were the only crops recorded for this period.

The last vestiges of former woodland were seen in the Middle Bronze Age pollen record in previous investigations at Pode Hole Quarry (Rackham 2009b: 161) prior to the Late Bronze Age disappearance of lime (*Tilia* sp.) in the fenland (Waller 1994: 106). From this point largely open conditions are interpreted, with frequent herb pollen indicating grassland, most likely within a predominantly pastoral landscape (see *Pollen*; Rackham 2009b). Meadow taxa, including selfheal and meadow/ bulbous buttercup were also represented in the waterlogged macrofossils from this period, although waterlogged deposits were dominated by wet ground and aquatic taxa, along with waste ground and scrub associated directly with the pits' immediate margins and interiors.

In general, the regional woodland flora was difficult to investigate from the pollen remains due to the swamping effect of vegetation on the margins of the sampled features. Willow and alder were particularly dominant in the pollen samples and are likely to have grown on the margins of the wet pits and ditches that were sampled. Alder seeds were also recovered from waterlogged deposits, but evidence of willow was poor. Willow made notably little contribution to the charcoal assemblage, although it was more common in the waterlogged wood assemblage of the previous investigation (Wheeler 2009). Other trees recorded across the different studies included Maloideae, with frequent seeds of hawthorn (*Crataegus monogyna*) in waterlogged deposits and occasional carbonised specimens; *Prunus* sp., including stones from both blackthorn/ sloe and bird cherry; hazel, as both charcoal and nutshell (carbonised and waterlogged); oak; and ash.

Many of these could have grown as hedgerow trees and shrubs, including hawthorn, blackthorn, hazel and alder, and are also likely to have grown in scrub vegetation on the margins of features, with blackthorn, bird cherry, hawthorn and hazel all recovered from waterlogged deposits. Evidence of rodent gnawing on some of the remains implies they came from close by. Larger trees, such as cherry, oak and ash could have grown as standards, including in hedgerows, and do not necessarily represent nearby woodland resources. This is in keeping with the pollen evidence for an open pastoral landscape containing frequent boundary features.

Cereal pollen continued to be recovered in small numbers from Middle Bronze Age deposits, namely pit [11897] (see *Pollen*), in keeping with Middle Bronze Age sequences from Pode Hole Quarry (Langdon and Scaife 2009). In addition, the carbonised macrofossil record was more extensive, showing evidence for the cultivation of hulled, six-row barley, emmer and possibly spelt wheat. There was good evidence from pit [8082] for crop processing activities, which are likely to be indicative of locally grown cereal crops.

There was also evidence for flax during this period, represented by two carbonised seeds, one from a

cremation, and records of waterlogged seeds from the environmental archaeological assessments. Carbonised and waterlogged macrofossils, along with pollen evidence from Pode Hole also point towards Bronze Age flax cultivation (Rackham 200b). A fen-edge landscape such as this, likely to have been dotted with water-filled hollows that would have presented multiple good locations for flax retting, would have been suitable for flax cultivation and processing, although no definitive evidence for flax retting was forthcoming. *Cannabis*-type pollen was also identified in both investigations (Langdon and Scaife 2009; see *Pollen*), which could indicate hemp cultivation. However, no macrofossil remains were identified and wild hop could equally be represented.

The Middle Bronze Age cremation deposits provided an interesting case study of woodland resource use and the positioning of cremation pyres. Fuel selection appears to have focused on readily available wood in the local environment. In particular alder, despite poor qualities as a fuel, was prevalent and is likely to have come from local areas of wet alder woodland. Significant woodworm damage also indicated that dead wood was used, rather than freshly cut timber. Oak and ash were each dominant in a single cremation and could have grown as standards in local hedgerows. Woodworm activity was noted in more than just the alder wood, although to a lesser extent, indicating the more general use of dead wood. This could simply have been for expedience or because dead wood might be naturally 'seasoned' and burn more efficiently.

Macrofossil evidence from a number of cremations contained rhizomes and tubers of various plants, including basal culms of false oat grass (*Arrhenatherum elatius* var. *bulbosum*), most likely from burnt topsoil beneath the cremation pyres. Other plants that are likely to have been growing at the pyre locations, such as meadow/ bulbous buttercup, medick and clover also indicated grassland habitats, with wet ground taxa, including bur-reed and sedge also represented. In general, the evidence was for cremations being carried out in damp, rough grassland habitats, although with Cremation 9 providing evidence for quite a wet location, perhaps at the edge of a body of water.

Evidence from the Late Bronze Age/ Early Iron Age was less extensive but included pollen samples from a secondary ditch fill and a secondary pit fill. These show a continuation in grassland/ pasture habitats with some evidence of cereal cultivation, and possible evidence of remaining oak/ hazel woodland. The carbonised macrofossil assemblage from the Late Bronze Age/ Early Iron Age indicated the continued low-level deposition of carbonised cereal remains, including hulled barley and emmer wheat. This demonstrates the continuation of the mixed agricultural landscape, most likely dominated by pasture, and is consistent with previous work at neighbouring Pode Hole (Rackham 2009b).

Evidence from the Iron Age is predominantly economic, coming from bulk samples of carbonised remains. Evidence for the cultivation and use of cereals was quite pronounced, and indicated the cultivation of predominantly hulled barley and spelt wheat, with some evidence for the possible continued cultivation of emmer wheat and possibly oat, although either of these could also have grown as part of the arable weed community. There was some indication of cultivated pulses (pea/ bean) but the evidence was limited. Cereal processing is likely to have been practiced, indicating local cultivation, however, the absence of pollen data makes it impossible to determine the extent to which arable cultivation or pasture were dominant in the area and whether cultivation had taken on a greater role during this period. The charred cereal remains were quite comparable to those from a Period 1 deposit at Haddenham V, which were taken to represent unthreshed sheaves of emmer and barley from local cultivation (Jones 2006b) in an environment apparently dominated by grassland/ pasture and marsh, with limited evidence of cereal pollen (Simms 2006).

The waterlogged macrofossils -from a single waterlogged fill in pit [5234] provided evidence predominantly of aquatic and waste ground habitats directly associated with the feature. The abundant nettle seeds may indicate nitrogen-rich conditions, perhaps resulting from the dung of grazing animals, although this is also a plant that produces large numbers of durable seeds that can be over-represented in waterlogged deposits.

Charcoal associated with the Structure 7 smithy and enclosure indicated the use of oak fuel in metalworking activities. It is possible that this was used in the form of charcoal and, given the evidence for open grassland habitats in previous periods and lack of local woodland, seems likely to have been imported from elsewhere. The source is unknown but may not have been from too great a distance; for example, Iron Age pollen samples from Tower's Fen indicate open woodland of birch, ash, oak, lime and possibly pine in dryland areas (Branch and Silva 2008).

WATERLOGGED WOOD

Michael Bamforth and Maisie Taylor

Introduction

A total of 26 discrete items of wood assigned to four periods (Early, Middle and Late Bronze Age and the Early La Tène Iron Age) were recovered from the excavations (Table 24).

In keeping with other similar fen edge, prehistoric assemblages, the majority of the wood was recovered from deeper cut features including pits, waterholes and a ditch (Table 24), the fills of which were waterlogged, creating the anaerobic conditions necessary for organic preservation. The exception to this was a sheet of bark recovered from infant inhumation (1639) under Early Bronze Age Barrow G1941 which was not fully waterlogged, leading to very poor preservation of the bark.

Feature Period	Wood No.	Feature	Context	Category	Species	Worked?	Notes	Dimensions (mm)
2-EBA	15	Pit [754]	755	Roundwood	oak	trimmed at 1 end from 2 directions	young tree with side branch, discarded?	L.2340, D.70/75mm
2-EBA	16	Pit [754]	755	Roundwood	diffuse porous	trimmed 1 end from 1 direction	discarded?	L.1000+, D.90/130mm
2-EBA	17	Pit [754]	755	Timber	diffuse porous	radial ¼ split, modified square, trimmed at 1 end from 1 direction	possible stake / discarded?	L.130+ x 150 x 80mm
2-EBA	18	Pit [754]	755	Timber	diffuse porous	radial split, possible felled end	discarded?	L.800+ x 330 x 130mm
2-EBA	10	Pit [754]	773	Roundwood	oak	no	too decayed for detailed analysis	L.625, D.50mm
2-EBA	N/A	Grave [1639]	1643	Artefact	birch	no faceting present but has been cut from tree	square sheet of bark	L:780 x 280 x 2-4mm thick
2-EBA	N/A	Pit [10301]	10317	Timber	oak	radial 1/2 split	possibly structural	L.1550 x 295 x 70mm
3-MBA	1	Pit [536]	546	Artefact	diffuse porous	unconverted, base trimmed flat	log ladder	L.660+, D.135/160mm
3-MBA	2	Pit [560]	559	Roundwood	diffuse porous	trimmed at 1 end from all directions	tool mark	L.610+, D.145/150
3-MBA	6	Pit [932]	960	Timber	oak	tangentially split with rectangular cross section	monumental timber or marker. Extensive wet rot	L.575 x 215 x 95
3-MBA	N/A	Pit [5040]	5039	Bark		no	naturally accumulated debris	L.40 x 25 x 10
3-MBA	N/A	Pit [5040]	5039	Bark		no	naturally accumulated debris	L.35 x 27 x 8
3-MBA	N/A	Ditch [5281]	5278	Timber debris	ash	tangential split with rectangular cross section, one end trimmed one direction	off-cut, charred, discard?	L.360 x 70 x 45mm
3-MBA	6319	Waterhole [6211]	6291	Roundwood	blackthorn	One end trimmed all directions to point	vertical post or pile? discard?	L.1300, D.85/95mm
3-MBA	6320	Waterhole [6211]	6291	Roundwood	field maple	one end trimmed two directions	discard?	L.1500, D.70, Side branches D.35 and 50mm
3-MBA	N/A	Pit [9032]	9030	Timber debris	oak	radial 1/4 split	off-cut / discard?	L.320 x 95 x 55mm
3-MBA	N/A	Pit [9076]	9075	Roundwood	diffuse porous	one end trimmed	stake?	L.280, D.90mm
3-MBA	11974	Pit [11896]	11914	Timber	willow / poplar	radially split	discarded?	L.350 x 300 x 50mm
3-MBA	11995	Pit [11896]	11915	Roundwood	willow / poplar	one end trimmed	stake?	L.240, D.110mm
4- LBA/EIA	7778	Waterhole [7403]	7443	Roundwood	alder	proximal end possibly trimmed from 1 direction	discard? Proximal end charred	L.825, D.58/76mm

4- LBA/EIA	7779	Waterhole [7403]	7443	Roundwood	alder	no	naturally accumulated debris	L.1025, D.34/39mm
4- LBA/EIA	7776	Waterhole [7403]	7443	Timber	oak	radial 1/2 split	possible step, wet rot on upper surfaces	L.1955 x 185 x 110mm
4- LBA/EIA	7777	Waterhole [7403]	7443	Roundwood	oak	proximal end trimmed from two directions	discard?	L.1650, D.110mm
4- LBA/EIA	N/A	Ditch [11250]	11254	Roundwood	diffuse porous	no	naturally accumulated debris	L.>70, D.35mm
5-ELT IA	W01	Pit [5020]	5019	Artefact	birch	carved	bowl / cup rough-out	124 x 119 x 66mm
5-ELT IA	W02	Pit [5020]	5019	Artefact	birch	carved	bowl / cup rough-out?	198 x 182 x 124mm

Table 24. Wood assemblage

Wood Category	Frequency EBA	Frequency MBA	Frequency LBA/EIA	Frequency ELT IA	Totals
Artefact	1	1	-	2	**4**
Bark	-	2	-	-	**2**
Debris	-	-	-	-	**0**
Roundwood	3	5	4	-	**12**
Timber	3	2	1	-	**6**
Timber debris	-	2	-	-	**2**
Totals	**7**	**12**	**5**	**2**	**26**

Table 25. Categories of material by period

Although relatively small, the assemblage can be considered fairly typical of other material recovered from similar fen-edge sites in the region with a moderate range of material types present (Table 25). Four items are classed as artefacts – a sheet of bark recovered from beneath an infant inhumation, a log ladder and two possible roughouts for small cups/ bowls. As would be expected roundwood (material less than *c.* 150mm in diameter representing understory growth, small trees and side branches of larger trees) is the most frequent category, forming nearly half the assemblage (N=12). There are six items classed as timber – material derived from logs over *c.* 150mm in diameter, generally representing the trunks of medium and larger trees. There are two pieces of timber debris, which are derived from shaping up larger timbers and two pieces of unworked bark. There is a notable lack of primary woodworking debris, such as woodchips, which describe woodworking being carried out in the immediate vicinity.

Most of the assemblage shows evidence for working (80%) with the five unworked items consisting of two pieces of bark and three pieces of roundwood that are likely to represent naturally accumulated detritus. The assemblage is in very poor to moderate condition with radial drying cracks and vertical compression of varying degrees of severity seen throughout.

Methodology

The system of categorisation and interrogation developed by Taylor (1998; 2001) has been adopted. Timbers were measured with a hand-tape and growth ring estimates were carried out by counting rings visible to the naked eye. Wood identifiable by macroscopic characteristics was noted (oak - *Quercus* sp., ash – *Fraxinus excelsior* and diffuse porous) with the remainder of the identifications carried out microscopically.

The condition scale developed by the Humber Wetlands Project (Van de Noort *et al.* 1995: table 15.1) is used throughout this report (Table 26). The condition scale is based primarily on the clarity of surface data. Material is allocated a score dependent on the types of analysis that can be carried out, given the state of preservation. The condition score reflects the possibility of a given type of analysis but does not consider the suitability of the item for a given process.

Condition score		Museum conservation	Technology analysis	Woodland management	Dendro-chronology	Species identification
5	excellent	yes	yes	yes	yes	*yes*
4	good	no	yes	yes	yes	*yes*
3	moderate	no	yes / no	yes	yes	*yes*
2	poor	no	yes / no	yes / no	yes / no	*yes*
1	very poor	no	no	no	no	*yes / no*
0	non-viable	no	no	no	no	*no*

Table 26. Condition scoring system (after Van de Noort et al. 1995: Table 15.1)

The Wood

Period 2B, Early Bronze Age

Burial 1639, Barrow G1941
An infant inhumation (1639) was encountered within the confines of Barrow G1941. The skeleton was found lying on its side, on a curved sheet of bark, within a cut feature. Although the bark was badly deteriorated, soil staining clearly described a rectangle of material beneath the skeleton measuring 780 x 280mm. Within this was a surviving section of bark measuring 580 x 150 x 2-4mm thick. The sheet of bark was curved across the short axis, reminiscent of the shape of a log, with the skeleton laid on what had been the inner surface of the bark. Soil staining suggests that the bark originally covered the infant.

The deposit was not truly waterlogged, merely damp, and the survival of the bark is extraordinary. It is unclear if the bark represents part of a small log coffin, the wood of which has completely degraded away, a sheet of bark folded over the burial or perhaps even two separate sheets of bark - one above and one beneath the body.

Fills 755 & 773, Pit 754
Tertiary pit fill (755) produced two pieces of roundwood and two pieces of timber. T15 was a piece of oak roundwood, trimmed at one end from two directions, suggesting that it might be a young tree felled in the conventional manner from two sides. It also has a side branch. Roundwood W16 was trimmed at one end from one direction. A small quarter split timber T17 may have been a stake in the base of the waterhole. A larger piece of radially split timber T18 from the same context also appeared to have remnants of a felled end. A piece of decayed oak roundwood from penultimate fill (773) was too decayed and exfoliated for detailed analysis. With the possible exception of T17 that may have been a stake, none of the material seems to have a function within the pit and it seems likely that it represents waste dumped in the feature.

Fill 10317, Pit 10301
A single piece of good quality, straight grained, oak heartwood classed as timber was recovered from this context. The item was in poor condition being somewhat dried, degraded and fragmented. The timber was radially half split from a parent log with an original diameter of *c.* 295mm. Although the original function of this timber is unclear, it is of a suitable size and form to have potentially originally formed part of a structure. Whatever the original function, it seems likely that the timber was dumped in the pit as waste.

Period 3 - Middle Bronze Age

Secondary fill 546, pit 536
The remains of a log ladder fashioned from unconverted timber and classed as an artefact was encountered leaning against the side of the pit at 45 degrees. The lower end had been trimmed flat and was held in place by organic material around the base. The top of the ladder had degraded away where it passed through the preservation horizon for waterlogged wood. A single step survived which had been cut with an axe, with a tool mark present measuring 46mm wide and 3mm deep (46:3). The angle of the step's tread suggests that the ladder was designed to be used at an angle of 45 degrees. The ladder was originally longer and is likely to have had multiple steps.

Primary fill 559, Pit 560
A sturdy piece of roundwood (D.145/150mm) trimmed to a point at one end from all directions was recovered from this context. A recordable tool mark present on the trimmed end describes an axe blade 56mm wide and 3mm deep (56:3).

T6, fill 960, Pit 932
Tangentially split oak timber T6 may belong to a class of timbers which were used for monumental purposes or as important markers. These timbers were first noted in the later phases of the post alignment at Flag Fen (e.g. Pryor 2001: Timber B63 in figs. 6.30, 6.38; Timber B379 in fig.33). Timber B379 from Flag Fen is fairly close in size to Timber 6 here, which is discussed in detail below.

Primary fill 5039, Sump pit 5040
Two small pieces of bark, in moderate condition, were recovered from this context. No woodworking evidence was recorded from these items. Although it is worth noting that there is evidence from the Late Bronze Age for bark being used to line wet features (Guilbert and Garton 2006), it is more likely that these unworked fragments represent naturally accumulated detritus.

Upper fill 5278, Ditch 5281
A single piece of ash, timber debris, in moderate condition was recovered from this context. Consisting of bark, sapwood and heartwood it has been split in a tangential orientation to have a rectangular cross section and one end has been trimmed from one direction. The item is moderately charred to a depth of *c.* 10mm over its entire surface. This item is likely to represent an off-cut; a by-product of the working of larger timbers, which has subsequently been partially burnt and then discarded in the ditch.

T6319 & 6320, basal fill 6291, Waterhole 6211
Two pieces of medium diameter roundwood were recovered from waterhole [6211]:

Roundwood 6319 is in moderate condition. Formed of unconverted blackthorn (*Prunus spinosa*) with bark, sapwood and heartwood present. One end has been worked from all directions to a point, and the other end has degraded away. The pointed lower end and degraded top suggest this is a vertical post or pile which has been extracted from its original setting and discarded in the waterhole, a situation which somewhat echoes the extraction and reuse of monumental timber 6.

Roundwood 6320 is in moderate condition. It is unconverted field maple (*Acer campestre*) with bark, sapwood and heartwood present, and is a Y-shaped crux. The proximal end and one of the distal ends have degraded away. One distal end has been trimmed from two directions.

Although both items are worked, they have no obvious function and are likely to be waste discarded in the waterhole.

Middle fill 9030, Pit 9032
A single piece of oak heartwood classed as timber debris was recovered from this feature. The item is in poor condition and both ends have degraded away. This modified radial quarter split has been reduced down from a parent timber with a diameter in excess of diameter 170mm and is likely to represent an off-cut from shaping up a larger timber that has subsequently been discarded in the pit.

Primary fill 9075, Pit 9076,
Medium diameter, diffuse porous roundwood with bark present, in poor condition with extreme radial drying cracks causing delamination. One end has been trimmed, probably from one direction. This item is of suitable size and form to be a stake.

T.11974, primary fill 11914, Pit 11896
The thin, radially faced willow/poplar timber recovered from this context was in poor condition and broke into 11 unreconstructible fragments on lifting. The wood sheet records the measurements as 350 x 300 x 50mm, suggesting this item is derived from a parent log with an original diameter of 300mm. Although clearly worked, the fragmented nature and poor condition of the item precludes any meaningful interpretation of original function. It seems likely that it had been dumped in the pit.

T.11995 11915, Pit 11896
A single piece of willow/poplar roundwood with bark present was recovered from this context. The item was in poor condition and was dried, degraded and fragmented. One end had been trimmed from two directions to a point. This item is a suitable size and form to have been a stake.

Period 4 - Late Bronze Age / Early Iron Age

T7776 - T7779, Waterhole 7403
Three pieces of roundwood (7777, 7778 and 7779) and one timber (7776) were recovered from the base of waterhole [7403], all within context (7443):

Timber 7776 is in moderate condition. It is radially half-split oak, lying inner-face down, in the waterhole. Heartwood is present but the sapwood has degraded away, as have both ends. Longitudinal troughs probably caused by wet rot (Eaton and Hale 1993) are present on the upper/ outer surface. The timber displays a moderate growth rate with approximately 35 rings present. The item is straight grained with three small side branches (diameter 30-40mm) present. The presence of wet rot on the upper surface suggests this item was encountered *in-situ*, possibly representing a step in the base of the waterhole. The timber was split down from a parent log with a dimeter of *c.* 185mm.

Roundwood 7777 is in moderate condition. It is an unconverted oak trunk with a Y-shaped crux. Sapwood is present, but no bark was noted. The proximal end shows tool faceting that describes the tree being trimmed from two directions. Both distal ends have degraded away. One distal end may be half split, although due to the poor condition of this part of the item it is not possible to be certain. This item has a moderate growth rate, with approximately 25 rings present.

Alder roundwood 7778 is in moderate condition with sapwood and heartwood present. The proximal end has possibly been trimmed from one direction, as have two small side branches (diameter *c.* 20mm). The proximal/ worked end is also lightly charred whilst the distal end has degraded away.

Alder Roundwood 7779 is in moderate condition with bark, sapwood and heartwood present. Both ends have degraded away, radial drying cracks are present and there is no evidence of woodworking. The item has a straight, even stem devoid of side branches, and a central pith – morphological traits that may be indicative of woodland management in the form of coppicing (Rackham 1977).

With the exception of the step, the worked material has no obvious function and is likely to be waste discarded in the waterhole. The unworked material may well represent naturally accumulated detritus.

Upper fill 11254, Ditch 11250 (G11811)
A single piece of unconverted, unworked, diffuse porous roundwood with no bark present was recovered. This item is in poor condition and has broken into 12 fragments. Measuring >70 mm long with a diameter

of 35mm, this item is likely to represent naturally accumulated detritus.

Period 5 - Early La Tène Iron Age

Fill 5019 Pit [5020]
Two potential artefacts were recovered from smithy pit [5020]:

Bowl/ cup roughout W01: This sub-semi-hemispherical birch (*Betula* sp.) item is in moderate condition with moderate radial cracks and deformation caused by drying (Plate 79). Part of the item has the swirled grain pattern of burr wood. The flat, sub-circular face is orientated towards the centre of the tree and measures 124 x 119mm. It is broadly flat and follows the grain, with a surface suggestive of splitting. Part of the edge of the flat inner face has a very faint chamfer. Although in poor condition, the curved outer surface appears to have light faceting, indicative of hewing or trimming. The item is 66mm thick at its maximum depth. One edge of the curved surface has a rectangular protrusion, suitable to form a handle, measuring 60 x 40 x 23mm. A faint chop mark is visible where the rectangular protrusion meets the flat inner face. Both the size and the form of the item are strongly suggestive of a small bowl or cup. The item's orientation in terms of grain (it would be described as face–turned) and the presence of burr wood are also suggestive of a vessel rough-out. Although in moderate condition, there seem to be faint traces of toolmarks on the outer, curved surface, as would be expected of a bowl in preparation. It is unclear if the bowl was being prepared for carving or turning. The reciprocal pole lathes thought to have been used in the Iron Age can accommodate items with handles (Earwood 1990).

Possible bowl/ cup roughout W02: This sub-semi-hemispherical birch item is in moderate condition, with moderate radial cracks and deformation caused by drying (Plate 80). The flat, round face is orientated towards the inside of the tree and measures 198 x 182mm. The maximum depth of the semi-hemisphere measures 124mm. Due to its poor condition, it is unclear if this surface has been split or trimmed. A side branch passes from the flat surface to the outside of the semi-hemisphere. The outer surface of the semi-hemisphere seems to have been both split and hewn, although the poor condition makes this a tentative interpretation. Although of a suitable size, morphology and orientation (in terms of grain), the presence of a large side branch makes it likely that this item would be unsuitable to be either turned or carved into a bowl. The awkward grain caused by the side branch would make working extremely difficult and would also make any finished item liable to cracking open along the grain.

Plate 79 Birch cup/bowl rough out (scale 100mm).

Discussion

The large assemblage of Bronze Age waterlogged wood (663 records) recovered from the neighbouring Pode Hole Quarry excavations (Taylor 2009), and the wood from the nearby excavations at Tower's Fen (Taylor 2008) form an important assemblage. The wood from

Plate 80 Possible cup/bowl rough out (scale 100mm).

those investigations includes material from waterholes, ponds, field boundary ditches and tree-throws. The material from the Bar Pasture Extension adds a barrow to this list and reinforces some of the material already excavated locally.

Taylor (2009) noted during the course of the Pode Hole Quarry excavations that desiccation, presumed to be caused by dewatering associated with the adjacent quarry, was causing a drop in the condition of the wood. Much of the material recovered during the later phases of excavation had desiccated to an extent that it was not suitable for analysis.

The assemblage considered herein scores a 1 / very poor to 3 / moderate for condition, whilst the Pode Hole material generally scored a 3 / moderate to 4 / good. The condition boundary between a score of 3 or 4 represents the point at which woodworking evidence, such as tool marks, loses definition whilst the 2 to 3 boundary represents the condition threshold for meaningful technological analysis. As such, the reduction in condition score represents a marked reduction in both recordable woodworking evidence and analytical potential.

Differential preservation may also account for the complete lack of small diameter roundwood and woodworking waste, such as woodchips, recovered during the excavations. These categories of material were present in significant quantities in the Pode Hole assemblage (Taylor 2009). Much of the material recovered from the Bar Pasture Extension is at the larger, more robust end of the wood spectrum that will have been more resistant to post-depositional degradation. It seems likely that much of the archaeological wood assemblage at this Site, particularly smaller, less robust material, may have degraded away in the ground relatively recently.

The Artefacts

Bark mat / log coffin

It is not uncommon to find archaeological evidence for the connection between trees and burial, as evidenced by the relatively large corpus of Early Bronze Age log coffin burials recovered from barrows, including a cluster in the Welland and lower Nene valleys of Leicestershire and East Anglia (Parker Pearson *et al.* 2013).

A particularly dramatic example of a tree-related burial in the fens is represented by the Neolithic long barrow at Haddenham near Cambridge, where the interior of the barrow was a huge reassembled tree and the dead interred inside the trunk (Evans and Hodder 2006a: 135-140). The Early Bronze Age Holme Timber Circle ('Seahenge', Norfolk) provides evidence of an iconic mortuary structure using split timbers to enclose a space 'within' a tree, the centre of which was dominated by an inverted oak tree, inviting interpretations of the journey from living to dead, from the world above to the world below (Brennand and Taylor 2003). Our burial here is not in the same league as the great oak tree at Haddenham or the structure at Holme, but there are echoes of the same symbolism in the wrapping of an infant in bark or within a log coffin before burial, a reminder of the potential social and ritual significance of trees, wood and timber.

As discussed above it is unclear if the bark, which soil staining suggests was present both above and below the infant skeleton, originated as a sheet of bark or is in fact the remains of a small, lidded log coffin (also referred to as tree-trunk or monoxylous coffins) the wood of which has degraded away. It is not unusual for log coffins to appear as soil stains and there are occasional examples of log coffins as small as the bark sheet considered herein, with examples less than 1.3m in length generally associated with cremated remains, or inhumations of children (Parker Pearson *et al.* 2013). Prehistoric examples of log coffins are thought to date exclusively to the Early Bronze Age, are often lidded and are all recovered in association with a barrow or cairn (Parker Pearson *et al.* 2013).

If it is indeed a bark mat associated with the infant burial, it appears to be almost unique (Plate 81). If the bark was harvested, this would not necessarily kill the tree as long as the removal did not completely girdle the trunk. If the bark of the upper and lower parts of the tree are connected by a strip of bark which has not been removed, most trees will eventually recover. The bark is tentatively interpreted as birch based on macroscopic features (microscopic identification of bark is not possible). If it is birch, then there would only be a small window of opportunity for the removal of the bark which is much easier to harvest in the spring (Turner 1998; Turner *et al.* 1990).

There is a close parallel some 80km north, encountered during investigations ahead of the Lincoln Eastern Bypass. Here, a rectangular sheet of bark and soil staining, with a 'U' shaped cross section measured 1460 x 340 x 2-12mm thick. Although found in a cut within the centre of a barrow, no human remains were present (Diana Fernandes *pers. comm.*).

A lidded bark coffin from Sigwell Barrow at Horethorne in Somerset is reported as being constructed of two sheets of bark and measuring 2.13 x 0.91m and between 6-20mm thick (Gerloff 1975 in Parker Pearson *et al.* 2013: appendix 4.1: no. 57; Greenwell and Rolleston 1877; Rolleston and Fox 1878). There is another case where a soil stain of a similar size (*c.* 1.0 x 0.4m, and with a U-shaped profile) is reported as a probable degraded log coffin (being secondary burial under barrow; child aged 7-9) at West Heslerton, North Yorkshire (Powlesland *et al.* 1986: 110). This could perhaps be a bark coffin/ wrapping, similar to that seen at the Lincoln Bypass and considered herein.

Plate 81 Infant lying on bark mat with associated grave goods.

There is a single known case of an inhumation placed on a sheet of bark, within a log coffin at Milton Lilbourne, Wiltshire (Ashbee 1986: 45-6).

Although bark was an important material for prehistoric communities, both in its raw form and to produce lime bast fibres for cordage and textiles (Hurcombe 2014: 29), the relative fragility of the material means it is unusual to find bark in the archaeological record, except as detritus in waterlogged conditions. Where appropriate preservation conditions occur, there are occasional glimpses into the many uses of bark in prehistory that show it is a more common raw material and commodity than the archaeological record might suggest.

There is evidence for the use of bark mats for flooring (Late Mesolithic, Williamson's Moss, Cumbria, Bonsall *et al.* 1989), and work areas (Early Mesolithic, Star Carr, Yorkshire, Fletcher *et al.* 2018) from the Mesolithic onwards.

In the ditch of the Neolithic causewayed enclosure at Etton, there were two bark artefacts (Taylor 1998: 156-7). One is a birch bark mat under a pot, whilst the other is a large (1460 x 550 x 3-7mm) sheet of bark. Birch bark, and bentwood boxes have been found occasionally and seem to have been made from the Neolithic onwards in Britain (Earwood 1993). The earliest boxes were usually sewn with bast fibres or sometimes very thin split wood. The Neolithic boxes from Lower Horton, especially Vessel 2, were made this way (Cartwright 1993). The Lower Horton vessels were fine, made of thin birch bark with lime bast stitching. There is nothing to suggest that the bark from the Bar Pasture burial is part of a box, but then preservation was not good. The bark may originally have been folded, or even tied up so that it enveloped the child, it is only 2-4mm thick which means that it could have been very flexible.

Bronze Age evidence for the use of bark includes the lining of water pits/ wells (Late Bronze Age, Girton Grange, Nottinghamshire, Guilbert and Garton 2006) and the manufacture of stitched bark containers variously recovered from waterholes (Bronze Age, Heathrow Terminal 5, Leivers 2010), from within Late Bronze Age round-houses at the nearby site of Must Farm (Bamforth and Robinson Zeki 2018) and an Early Bronze Age example recovered as grave goods from an inhumation/ tree trunk coffin burial in a barrow at Gristhorpe, Yorkshire (Melton *et al.* 2010).

Log ladder

One find of real interest is the base of a log ladder from waterhole [536] (plate 82). Log ladders were comparatively rare finds until recently. Probably the first one to be recorded was found in Fengate, servicing a gravel pit (Pryor 1978: fig.27 and plate 12). Pryor could only offer ethnographic parallels as there were no similar artefacts known from Britain at the time. Recently, however, a number of these ladders have been found, particularly in the fens (Middle Bronze Age, Striplands Farm, West Longstanton, Cambridgeshire, Taylor 2011) and the Thames Valley (Heathrow Terminal 5, Middle to Late Bronze Age, Leivers 2010). They seem to be a standard way of accessing the deep features, particularly where they have been cut into fairly loose sand/gravel, and it is not unusual to find them still in position, leaning against the sides of the features they were used to access.

Plate 82 Base of a log ladder from Middle Bronze Age waterhole [536]. A single step can be seen.

Log Ladders are known from the Early Bronze Age onwards, most commonly occur in the Middle Bronze Age and persist in use occasionally through the Iron Age. They are commonly constructed from unconverted oak or alder logs although other species are occasionally used, and split examples are known. The largest known example was recovered from a Middle Bronze Age waterhole at the nearby site of Briggs Farm, Thorney (Bamforth 2010) and measured almost 2m long with six surviving steps. A forked log ladder was recovered from a Bronze Age pit cluster at the adjacent Pode Hole Quarry (Taylor 2009) and a two stepped, oak example recovered from a large pit/ waterhole during recent excavations at the Bar Pasture Western Extension, has been tree-ring dated to the summer of 1316 BC (Bamforth 2019; Mustchin and Richmond 2020; Tyers 2019).

Bowl/ cup roughouts

There is a strong case for W01 (see Plate 79) to be a roughout for a small birch cup or bowl with a vertical handle on the shoulder. It is unclear if this item would ultimately have been turned or carved. It is also unclear why this item was discarded part way through the production process. Although W02 (see Plate 80) is a suitable species, size and orientation for bowl production, the presence of a large side branch makes it unlikely that this item would have been suitable for conversion into a vessel.

Carved bowls are present in the archaeological record in the UK from the Neolithic onwards. Neolithic and Bronze Age examples tend to be small in size, be of simple, round bottomed design and occasionally make use of natural growth formations, such as burrs (Earwood 1993). During the Iron Age, both carved and turned bowls are well represented, with turning becoming more prevalent in the Later Iron Age (Earwood 1990, 1993). Face-turning predominates during this period (with the grain running across the mouth of the object), with the bowl rims generally orientated towards the centre of the tree (Earwood 1990). Species utilised include alder, ash, birch, poplar and willow (Bermingham *et al.* 2012; Crone 1993; Earwood 1993; Maxwell 1951). Rough-outs of bowls that have been partially prepared for turning or carving have been recovered from the UK from the Late Iron Age onwards (Earwood 1990).

A similarly sized turned bowl with a vertical pierced handle on the shoulder is recorded from Loch Laggan, Scotland (Maxwell 1951). The presence of a protrusion on the shoulder is reminiscent of a group of Late Iron Age bowls from Ireland and Scotland, with a vertical handle on the shoulder, that mimic the form of contemporary bronze bowls (Earwood 1990).

The Monumental timber

Although not classed as an artefact, Timber 6 from Middle Bronze Age pit [932] may be what is becoming known as a 'monumental timber' (Evans and Hodder 2006a: 135-6; Taylor 2010). There are several factors which help define these 'monumental' timbers and distinguish them from other pieces. They are always quite large, probably over 200mm wide, but also very thick for their width. Timber 6, for example, is 215mm wide and 95mm thick, far too heavy to be classed as a plank or board. They are nearly always oak, and in particular, very high-quality wood with no knots or blemishes and a very fine, straight grain; what would now be called 'veneer quality'. They are always taken out of very large trees, although it is not always possible to calculate the diameter of the original trunk. Timber B63 from Flag Fen, for example, measured more than 2500 x 457 x 61mm, making it one of the biggest monumental timbers found anywhere in Britain (Pryor 2001: 103 and fig 6.30; Taylor 2010). The exact diameter of the original tree cannot be calculated because of the nature of the tangential reduction, but it has to be more than 1.5 metres. There is not a single knot or blemish in the grain of the entire board.

The distinction between what might be called 'domestic' and 'monumental' timbers probably begins with the tree (Taylor 2010). Smaller trees (up to approximately 400mm) can be split radially to produce beams, posts and lightweight, feather-edge planks. If larger trees are split radially, large, angular baulks of timber are produced which are unsuitable for domestic building (e.g. Brennand and Taylor 2003: fig.4, Timbers 11 and 13). These larger trees can also be split tangentially, generating large, thick board-like timbers which again are not suitable for domestic buildings (Taylor 2001: 6.30). Both these types are found in monumental contexts. These large, straight-grained trees would most likely have been forest grown, in what Rackham (1990) describes as the 'wildwood'.

Another monumental timber found at Pode Hole Quarry (Taylor 2009: 120), was very large: 1800 x 400 x 80mm (reduced from a parent log with a diameter in excess of 400mm) and had been reused as a step in the base of a waterhole, yet one end was heavily scarred by wet rot. This indicates that at one time the bottom of the timber was set in wet ground long enough for the rot to become established. The 700mm of the timber that was above ground survived undamaged. The pattern of rot suggests that the timber was set deep, presumably to make it immoveable, and was most likely some kind of permanent marker. Timber 6 at Bar Pasture also had extensive wet rot but here it extends over its whole length. This suggests that it may have been set with the whole identified length underground. As only 575mm of the timber has survived, it is not possible to suggest how tall it might have been when it was originally set.

The timber from the earlier Pode Hole excavations was not sharpened at the lower end, but still retained traces of the original felled end. Timber 6 was trimmed square by a fairly straight blade, but the toolmarks are not well enough preserved for accurate measurements. These blunt ends are not designed to be driven in, but to be set in pre-excavated holes. This suggests that the precise positioning of the timbers was important.

Dendrochronological samples of both Timber 6 and the monumental timber recovered from Pode Hole Quarry were both submitted for analysis, but did not cross match with any other chronology (Ian Tyers *pers. comm.* in Taylor 2010: 96). This is particularly intriguing given the proximity of Flag Fen with its extensive tree-ring chronology.

Woodworking

With the exception of the bowl/ cup blanks, the woodworking represented in the assemblage is all relatively basic with no complex carpentry, such as jointing, or specialised woodworking practices represented. The working is limited to felling, trimming-up, basic cleaving/ splitting and sharpening items for insertion into the ground. The production of wooden vessels is something of a more specialised task that takes skill and practice, particularly with an Iron Age woodworking tool kit. It is not apparent if the

probable bowl/ cup blanks were destined to be carved or turned into shape.

With the exception of alder roundwood 7779 from waterhole [7403], there is no further morphological evidence for coppicing in this assemblage, and the size of the roundwood is generally too large for wattle or hurdles, where the optimum diameter is less than 50mm (Forestry Commission 1956).

Toolmarks

Partly because of the quality of preservation, only two toolmarks survive (on roundwood from pit [560] and the log ladder with flattened end from pit [536]). Toolmarks can only be recorded where the blade has bitten into the wood, leaving a profile. 'Toolmarks' are not to be confused with 'tool facets' which are the scoops and ripples where the axe blade has passed over the wood. The tool facets are not reliable indicators of tool types, varying according to the angle of use and other factors.

It is difficult to comment on the significance of the small number of tool marks. With scores of 2.3 and 3.4 the curvature indices of these blades are well within the range for the socketed axes at Flag Fen (Taylor 2001: Table 7.29), but two marks do not make a valid sample.

Species

Oak (*Quercus* sp.) was the most prevalent species identified amongst the Bar Pasture assemblage. Oak, alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), birch (*Betula* sp.) and willow/ poplar (*Salix* sp./*Populus* sp.) are common species recovered from this site and other worked wood assemblages from the region (Taylor 2001, 2009). Field maple (*Acer campestre*) and blackthorn (*Prunus spinosa*), whilst less commonly encountered, are not unknown (Gale and Cutler 2000).

Alder generally grows in damp areas, often close to running water (*ibid.*). Willow and poplar are generally not distinguishable, even at a microscopic level and are therefore often identified as *Salix/ Populus* (Schoch *et al.* 2004). Poplar tends to grow on rich alluvial soils, particularly wetter/ open areas such as flood plains and meadowland (Gale and Cutler 2000). Willow grows in a broad range of conditions but is particularly common on damper ground (*ibid.*). As such, these species are likely to have been growing in the vicinity of the Site, possibly on the wetter fen margins.

The remainder are woodland species, generally growing on drier soils (although oak will grow on fairly damp soils), perhaps sourced from further inland, away from the wetter fen margins. They are generally well-represented in waterlogged fenland assemblages and are likely to have been growing in the vicinity of the Site. Oak occurs ubiquitously throughout the prehistoric and historic periods as an excellent hard-wearing structural timber that has incredibly wide-ranging uses, including wet uses such as well linings and revetments. It is an easily worked timber that can be split readily in both planes (*ibid.*; Wilson and White 1986). Ash can tolerate damp soils and is often found growing amongst oak. Field Maple will grow in both open and woodland environments, whilst blackthorn is generally found growing on the edges of woodland as a small, spiny shrub (Gale and Cutler 2000). Birch is a short-lived tree that prefers light, non-calcareous soils (*ibid.*). It is a suitable material to carve into a bowl and its pliable bark has a wide range of uses (*ibid.*; Usher 1974).

Discussion of the wood assemblage

Period 2B, Early Bronze Age

With the exception of the bark mat/ log coffin recovered from beneath the infant inhumation, the remainder of the wood assemblage, although worked, appears to be rubbish discarded in pits [754] and [10301], presumably after their primary use had ceased.

Although the authors are not aware of any exact parallels for the sheet of bark beneath the infant burial, there are other possible bark coffins from the Early Bronze Age and a relatively large assemblage of log coffins. Wood and timber are frequently used in burials and mortuary structures throughout later prehistory and wood as a material may well be intrinsically linked to social and ritual constructs associated with death and burial. A potential parallel, some 80km north, was encountered during recent investigations ahead of the Lincoln Eastern Bypass. Here, a rectangular sheet of bark and soil staining, was found in a cut within the centre of a barrow, but no human remains were present (Diana Fernandes *pers. comm.*).

Period 3 - Middle Bronze Age

There are several interesting items from this period. The log ladder encountered in pit [536] is in keeping with the growing corpus of this type of artefact many of which, as is the case with this item, are recovered in their original use positions, leaning against the side of the features they aided in accessing. Monumental/ marker Timber 6 is of interest and parallels a similar find from the 2003-2005 excavations at the bordering Pode Hole. There are also two potential stakes and a blackthorn timber (6319), that appears to be a stake or pile that has been extracted from its original setting and discarded in waterhole [6211], somewhat echoing the removal and re-use of monumental Timber 6. The remainder of the material assigned to this period is either worked wood that that appears to have been dumped or naturally accumulated unworked bark.

Period 4 - Late Bronze Age / Early Iron Age
The wet-rot on the upper surface of half split oak Timber 7776 suggests that the timber is in-situ and was used as a step in the base of the waterhole [7403]. The remainder of the worked material from this period has no obvious function and seems likely to be discarded waste, whilst the unworked material is thought to be naturally accumulated detritus.

Period 5 - Early La Tène Iron Age
At least one, and perhaps both, of the artefacts recovered from smithy pit [5020] seem to be partially completed rough-outs for a small bowl or cup. The size, form, use of birch and the presence of a probable handle on artefact W01 are all in keeping with other known examples of the period.

General

The importance of this assemblage partly lies in the fact that it adds to the overall picture of this landscape in prehistory. Some of the finds here bear out what has been found already in adjacent excavations, such as the exploitation of small local trees, with occasional access to larger, forest-grown oaks. The monumental timber adds to the growing number from this area. If they are boundary markers, which seems at the moment to be the best theory, then this site may lay at the edge of a territory or district. The 'separateness' of the timbers, as indicated by the lack of a match with the Flag Fen dendrochronologies, may be seen to bear this out.

The species represented (alder, ash, birch, blackthorn, field maple, oak and willow / poplar) are all likely to have been growing in the vicinity of the Site, either in mixed deciduous woodland or in the wetter fringes of the fen and all are species that would be expected to form part of later prehistoric assemblages in the region. The limited woodworking evidence present, in the form of basic splits and trimmed ends, is typical of later prehistoric material. The production of wooden vessels, a more skilled task, hints at the presence of specialist woodworkers.

What this assemblage once again reminds us is that some trees, and particularly the largest oak trees present in the landscape, often had symbolic value to later prehistoric communities and that timbers derived from these trees, at this site and others, were often used in symbolic settings and structures associated with death and burial (Brennand and Taylor 2003; Evans and Hodder 2006; Taylor 2010). The use of the birch bark mat beneath the infant burial shows that other wood products were woven into the symbolic life of prehistoric communities.

ANIMAL BONE

Julia E M Cussans and James Rackham

Introduction

A good-sized animal bone assemblage was recovered from the Bar Pasture excavations and while there were some preservation issues, a reasonable quantity of data were available for analysis. Bone from all periods was available for discussion but the majority of material derived from periods 2 and 3 (Early and Middle Bronze Age). The analysed data are described, and comparisons made between this assemblage and material previously excavated from the adjacent Pode Hole Quarry (Daniel 2009), and with the wider Bronze Age economy.

Methods

Recording
The animal bone was identified and catalogued by James Rackham following the standard protocol of the Environmental Archaeology Consultancy (see key accompanying the archive catalogue). Individual bone fragments were identified where possible, and recently broken bones were reconstructed where possible prior to recording. Fragments were assigned to taxa, element, body side and element zone where appropriate. Data on the eruption and wear of the teeth was recorded following Grant (1982) and stages of long bone epiphyseal fusion were recorded where present. Bone measurements were collected where possible following von den Driesch (1976) with additional measurements included to assist in the identification of juvenile and immature animals and wild examples of the domestic species. Bone preservation was recorded on a scale of 1-5 (Table 27) for each bone record and an M was used to indicate that the bone was mineralised. Partial skeletons were recorded as a single spreadsheet entry, so as not to inflate bone counts; further details were recorded in the notes. The presence of butchered (cut, chopped or worked), burnt (charred or calcined), gnawed (dog, cat or rodent) and pathological bones was also noted; any further points of interest and description of butchered and pathological elements were recorded in the notes. All of the data were entered into an Excel spreadsheet along with context and feature descriptions and phasing to aid data processing and interpretation.

Data processing
Data were sorted by period and taxa for processing; sub-periods were not taken account of as the resulting assemblages were too small for meaningful analysis. Two methods of bone quantification were carried out; a basic count of the recorded fragments for each taxa or number of identified specimens (NISP) for all taxa present (hand collected and sieved samples were counted separately)

Code	Description
1	enamel only surviving
2	bone very severely pitted and thinned, tending to break up; teeth with surface erosion and loss of cementum and dentine
3	surface pitting and erosion of bone, some loss of cementum and dentine on teeth
4	surface of bone intact, loss of organic component, material chalky, calcined or burnt
5	bone in good condition, probably with some organic component

Table 27. Bone preservation codes and descriptions

and a calculation of the minimum number of individuals (MNI) for the principal domestic taxa, based on the most frequently recorded non-repeatable elements taking into account element, zone and body side. Tooth wear data were converted into age stages following Halstead (1985) for cattle, Payne (1973) for sheep/goat and Hambleton (1999) for pig. Bone fusion data were grouped into fusion groups (Early, Intermediate, Late, Final) following O'Connor (1984). Butchery marks were quantified by taxa and period to examine any possible changes over time and difference between taxa.

Results

Taphonomy

Most of the animal bone was generally partially or heavily mineralised and was extremely brittle with some heavy bone surface erosion. Despite this, there was a relatively low level of fragmentation, with many bones being recovered partially or totally complete. Some fresh breakages were noted indicating the friable nature of the bone and in a number of cases the fragmented bones were reconstruction using a glue (HMG) in order to permit identification to specific taxa. Several specimens remained concreted within an iron cemented sand and gravel matrix, which limited the specific identification of the bones, taking measurements and weighing the material. Where possible the concretion was removed to enable measurements of intact bones and to record dental eruption and wear.

As well as the mineralisation of bones, a number of the bones revealed evidence for mild and severe corrosion in the soil, resulting in bone surface pitting and flaking that affected the ability to identify some of the bone fragments.

Bone preservation ratings are displayed in Tables 28 and 29 and Charts 9 and 10 for hand collected material and in Table 30 and Chart 11 for sieved samples. Overall, the majority of bone fragments were rated as either 3 or 4 preservation level with large quantities being recorded as mineralised. Very few were rated at the lowest level of preservation (1) and none were recorded as being in good condition (5). There appears to be some variation in the level of preservation depending on both Period and feature type. Period 1 appears to have the best bone preservation with the highest incidence of level 4 preservation followed by Period 4. Period 5 shows the poorest preservation with the lowest quantity of level 4 preservation and the highest of level 2 preservation. Preservation for periods 2 and 3 is fairly comparable, just with varying levels of mineralisation. In terms of feature type, barrow ditches and ditches seem to have the highest occurrence of level 4 preservation whereas ditch termini and gullies have a much lower occurrence of level 4 preservation and a higher incidence of level 2 preservation; pit deposits appear somewhere in between. Preservation of sieved samples is largely rated at level 3 with varying levels of mineralisation.

Preservation	1	2	3	4	5	6	Undated	Total
1		1	1					2
2		4	32	14	40	7	6	103
2M	1	57	30		18	1	5	112
2/3		3	19	8				30
2/3M		43	4		21			68
3		116	404	95	131	1	70	817
3M	15	682	574	134	179		88	1672
3/4		2	3	1		1		7
4	19	99	140	46	54		28	386
4M	21	157	65	147	3		17	410
Total	**56**	**1164**	**1272**	**445**	**446**	**10**	**214**	**3607**

Table 28. Bone preservation ratings for hand collected bones by period, M-mineralised

Feature Type	1	2	2M	2/3	2/3M	3	3M	3/4	4	4M	Total
Barrow Ditch		1	12	1	37	35	199	2	30	163	480
Ditch	1	16	19	7	2	74	98		58	84	359
Ditch terminus		14	1	14		31	83	2	14	4	163
Gully		8	12		2	58	47		3	4	134
Pit	1	55	66	8	24	495	910	3	251	150	1963
Waterhole		1			3	54	329		27	2	416
Total	**2**	**95**	**110**	**30**	**68**	**747**	**1666**	**7**	**383**	**407**	**3515**

Table 29. Bone preservation ratings for hand collected bones by feature type, M-mineralised

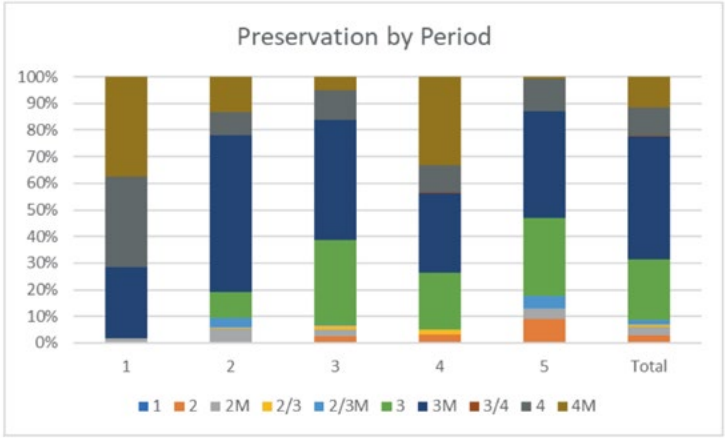

Chart 9. Percentage representation of bone preservation by period

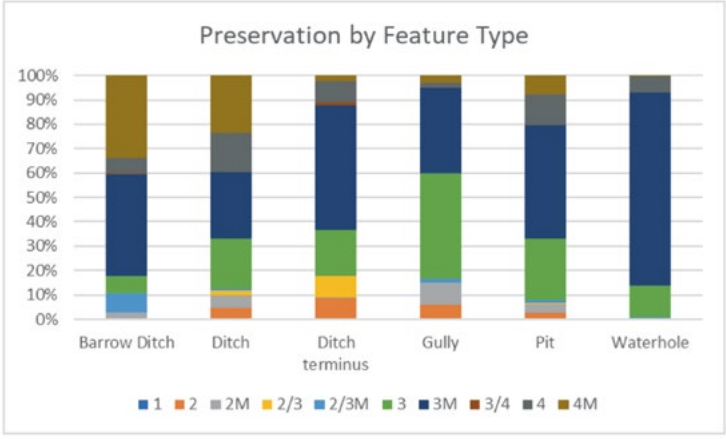

Chart 10. Percentage representation of bone preservation by feature type

Preservation	2	3	5	Total
2M	8			8
3	93	15	174	282
3M	52	301	39	392
4	14	32	17	63
4M	1			1
Total	**168**	**348**	**230**	**746**

Table 30. Bone preservation ratings for bones from sieved samples by period, M-mineralised

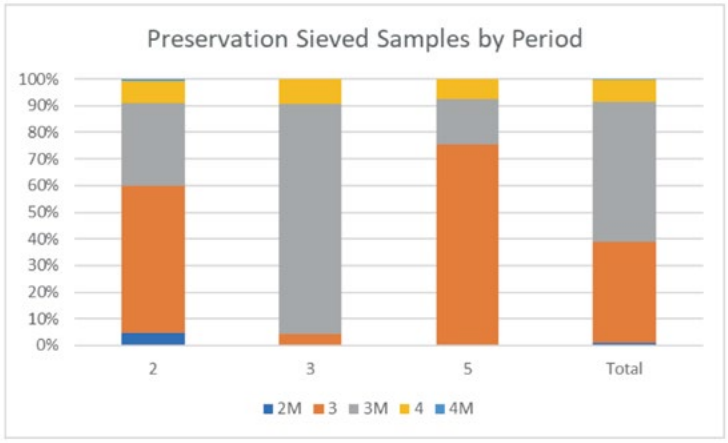

Chart 11. Percentage representation of bone preservation of sieved samples by period

A very small quantity of burned bone was recorded as present. Two possibly charred bones were recorded; a cattle rib from Period 4 pit fill (7612), pit [7613] and a large, unidentified, cattle-sized piece of worked bone thought to possibly be a red-deer antler flint hammer from fill (6409) of Period 3 pit [6398]. A larger number of calcined fragments were present and came from a variety of contexts from periods 2, 3, 4 and 5. Largely only individual fragments were found within any one deposit but Period 3 pit fill (11136), sump pit [11135] contained three fragments including a sheep/ goat radio-ulna, a sheep-sized long bone shaft fragment and a sheep-sized indeterminate fragment; no other bone fragments were recorded from this context. Two contexts with hand-collected bone were recorded as cremations or possible cremations. One fragment of bone was recorded from each of these in the animal bone catalogue, these were a sheep-sized long bone fragment from Period 4 pit [7739] and a fragmented possible human bone from Period 5 cremation deposit (5283), this appears to be in addition to the small amount of human bone recorded as part of the human bone analysis (see *Human Bone*). A larger number of calcined and possibly calcined fragments were recovered from the sieved samples and these predominantly derived from Period 2 features, largely pit fills; but also from Period 3 ring-gully terminus [2145], fill (2144) of Structure 5.

Very low levels of dog-gnawing were observed on the bones and no cat or rodent gnawing was observed. The occurrence of gnawing by period and feature type is displayed in Charts 12 and 13. Dog-gnawed bone accounts for around 2% of the assemblage for the majority of periods with an increase to 5% in Period 5. Ditches and pits have the highest incidence of gnawing with other feature types showing lower proportions of gnawed remains.

Quantification

Bone quantifications by NISP are displayed in Table 31 for hand collected bones and Table 32 for bones from sieved samples. The hand-collected assemblage is dominated by fragments that could only be recorded as cattle- or sheep-sized elements, these were largely long bone shaft, rib and vertebrae fragments that are difficult to confidently assign to specific taxa. In the identifiable portion of the assemblage cattle were by far the most numerous taxa followed by sheep/ goat and then pig. Equid and dog were fairly minimally represented. Cattle and sheep/ goat were present throughout the periods and both sheep and goat were positively identified, with sheep being slightly more numerous than goat. The latter were only identified in periods 2, 3 and 5 whereas sheep were identified from periods 1 to 5. No pig bones were recorded from Period 1, however the assemblage size for this period is small

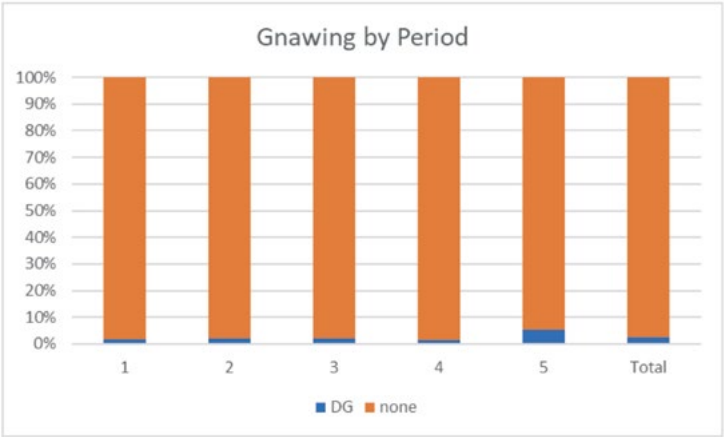

Chart 12. Percentage representation of gnawed bones by period

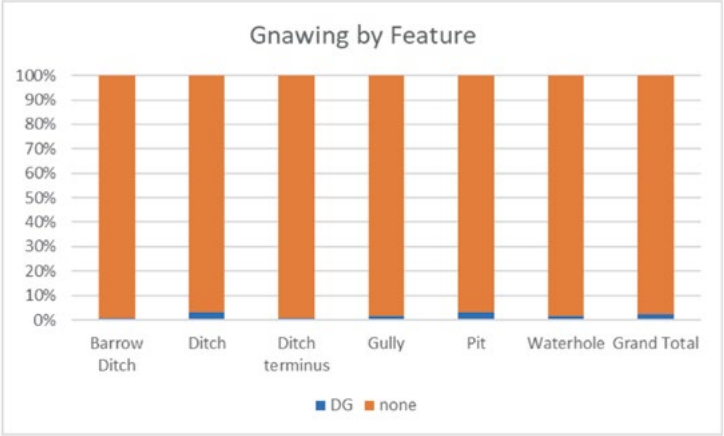

Chart 13. Percentage representation of gnawed bones by feature type

and is likely not fully representative of the animals present on the Site at this time. Equids and dogs are also absent from the Period 1 bone record and again this may not necessarily mean that they were absent from the Site at this time. The presence of dogs at least is indicated by the occurrence of a single dog-gnawed red deer tibia in Period 1 pit fill (11774), in Early Neolithic waterhole [11749].

Taxa	1	2	3	4	5	6	Undated	Total
Cattle	12	296	310	102	87	1	60	868
Sheep/goat	8	22	59	32	31	1	13	166
Sheep	1	3	2	2	1		1	10
Goat		1	1		1			3
Pig		39	44	5	10		3	101
Equid		3	8	6	12			29
Dog		4	8				5	17
Aurochs		2	1					3
?Aurochs	1		2					3
Wild boar							1	1
Red deer	4	15	12				3	34
?red deer			1					1
Roe deer		1	1					2
Pine marten				1				1
Field vole			1					1
Cattle sized	7	499	469	170	153	2	78	1378
Sheep sized	8	40	96	37	36			217
Pig sized		1	1					2
Ungulate indet.		1					1	2
Small mammal		4		2				6
human			6	2				8
Eagle			1					1
Large bird			2					2
Unid.	15	234	248	43	115	6	39	700
Total	**56**	**1165**	**1273**	**402**	**446**	**10**	**204**	**3556**

Table 31. Animal bone quantification by NISP for hand collected bone by period

Row Labels	2	3	5	Total
Cattle		1	1	2
Sheep/goat	4		1	5
Pig			4	4
Cattle sized	6	294	3	303
Sheep sized	16		38	54
Wood mouse			1	1
Water vole			1	1
Field vole		7		7
Mouse indet.		1		1
Vole indet.			1	1
Small mammal	39	2	66	107
Frog/toad		1		1
Stickleback		30		30
Unid.	103	12	114	229
Total	**168**	**348**	**230**	**746**

Table 32. Animal bone quantification by NISP for sieved samples by period

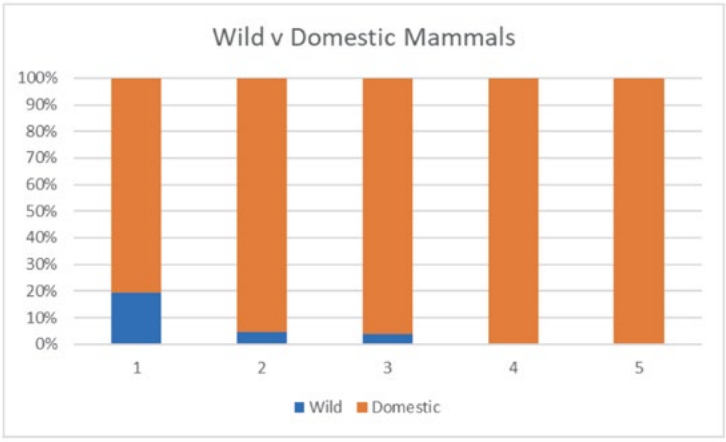

Chart 14. Percentage representation of wild versus domestic mammal bones, by period, based on NISP

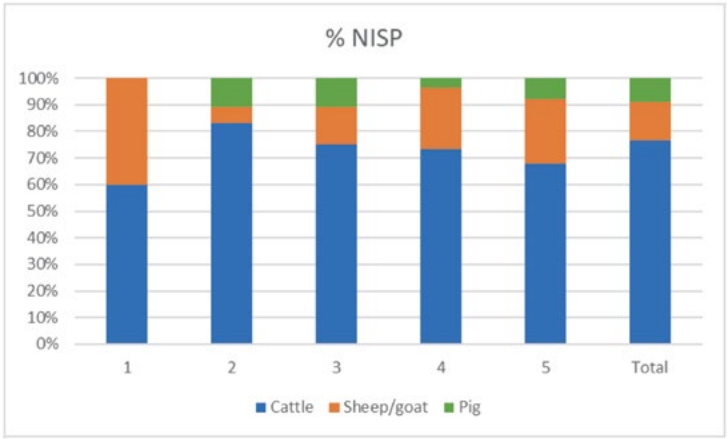

Chart 15. Percentage representation of principal domestic mammal bones, by period, based on hand collected NISP

A number of wild mammal taxa are present, the most numerous of which are red deer. Aurochsen, roe deer and wild boar are also present; no wild mammal taxa appear to be present after Period 3. The only wild boar element identified came from an undated context. Changes in the proportional representation of wild and domestic ungulate taxa are shown in Chart 14. This points towards a much higher reliance on wild food taxa in the Neolithic period (Period 1) than in the Early to Middle Bronze Age and then a complete decline in the exploitation of wild ungulates from the Late Bronze Age onwards. Other wild mammals identified in the hand collected assemblage were pine marten and field vole. A small quantity of bird remains were also present and recorded as eagle and large bird.

The sieved samples (Table 32) again included a high proportion of cattle- and sheep-sized indeterminate fragments and also included a small number of sheep/ goat, pig and cattle remains. The remains of small taxa were, not surprisingly, much better represented in the sieved samples than the hand-collected samples. These included a fairly large number of bones that could only be identified as small mammal; identified taxa included wood mouse, water vole, field vole, frog/ toad and stickleback.

The relative proportions of the three principal domestic taxa are shown in Chart 15. This indicates the vast dominance of cattle over the other main domestic taxa, with the exception of Period 1 where sheep/ goat is much better represented. Sheep/ goat are then fairly poorly represented in Period 2 (Early Bronze Age) where they are the least well represented of the three main domesticates making up only *c.* 5% of the cattle, sheep/goat, pig assemblage and become gradually better represented throughout the periods until they make up approximately 25% of the cattle, sheep/goat, pig assemblage in the Late Bronze Age and Middle to Late Iron Age (periods 4 and 5). Both pig and cattle show a reduction in representation between Period 2 and Period 5 at due to the increase of sheep/ goat representation.

MNI figures are shown in Table 33 and Chart 16 and these show a similar pattern to that seen in the NISP figures with cattle dominant, although slightly less so than show by the NISP and an increase in sheep/ goat representation over time. As for NISP the proportional representation of pig declines over time, cattle however do not appear to decline in representation.

Taxa	1	2	3	4	5
Cattle	2	13	11	5	6
Sheep/goat	1	2	4	2	2
Pig	0	6	3	1	1
Equid	0	1	2	1	2
Dog	0	1	2	0	0

Table 33. Animal bone quantification by MNI for hand collected bone by period

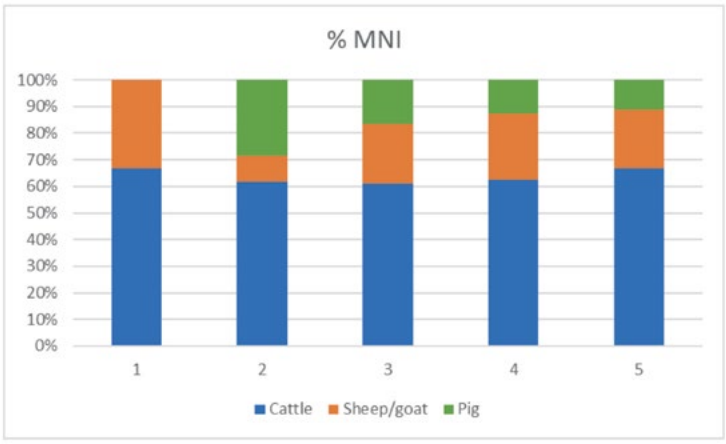

Chart 16. Percentage representation of principal domestic mammal bones, by period, based on hand collected MNI

Cattle

Cattle make up the largest part of the identifiable assemblage for all of the periods and was clearly the most important of the food providing taxa although its importance varied slightly over time. Where it could be recorded, horn-core type was recorded as Celtic Shorthorn, these were noted as present in periods 2 and 3 and from an undated context. Some size variation was noted in the cattle bones and this is examined a little in Charts 17 and 18. These graphs examine cattle tibia size and, while biometrical data were gathered from a number of different elements, those from the tibia were among the most numerous. All other biometrical data are available in the archive, but are fairly sparsely spread between the elements. The scatter plot of tibia distal breadth (Bd) versus distal depth (Dd) (Chart 17) indicates that the Period 2 cattle may have been somewhat larger than those present in the later periods, in some cases approaching the size of aurochsen. The smallest breadth of the diaphysis (SD) measurements (Chart 18) show no distinct change between the periods, however some of the observed variation in size may be due to some of the measurements coming from bones that were not fully grown, as the majority were missing their later fusing proximal end and therefore it could not be certain that these were fully developed.

Tooth eruption and wear data were very sparse for periods 1, 4 and 5 but a reasonable quantity was available for periods 2 and 3 and these are displayed in Chart 19. The age data do not indicate any particular peak in slaughter but rather a gradual kill off with animals of a variety of ages being slaughtered. There also does not appear to be any appreciable difference between the slaughter patterns seen in periods 2 and 3. This gradual kill off of animals would tend to indicate a mixed utility for cattle with milk, meat, traction and breeding likely all being of some importance to the Site inhabitants. The majority of cattle long bone epiphyses were fused (Tables 34 and 35) with a small number of exceptions. These largely derived from later fusing elements such as the proximal humerus, distal radius and the proximal and distal femur. Some younger animals were however represented by the presence of unfused early fusing elements such as distal humerus and intermediate fusing elements such as distal metacarpal. In addition, a small quantity of calf bones was noted including a femur from Period 3 ditch [6034], fill (6035), a radius and ulna from the Period 4 fill (384) of ditch segment [383] and an undated, possibly neonate tibia from gully fill (102).

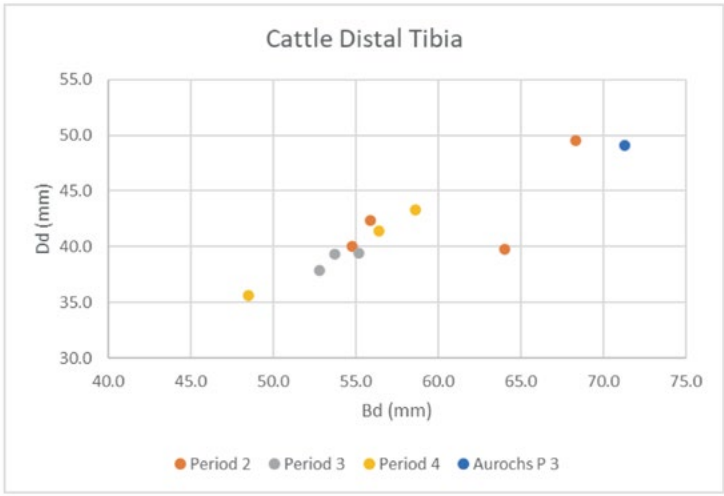

Chart 17. Cattle tibia distal breadth v distal depth

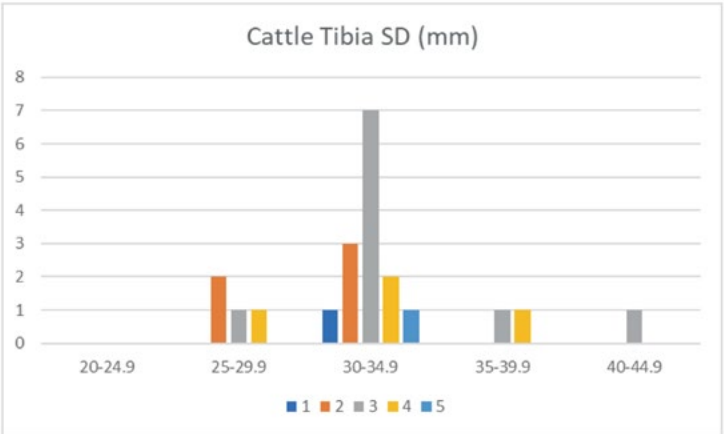

Chart 18. Cattle tibia smallest breadth of the diaphysis

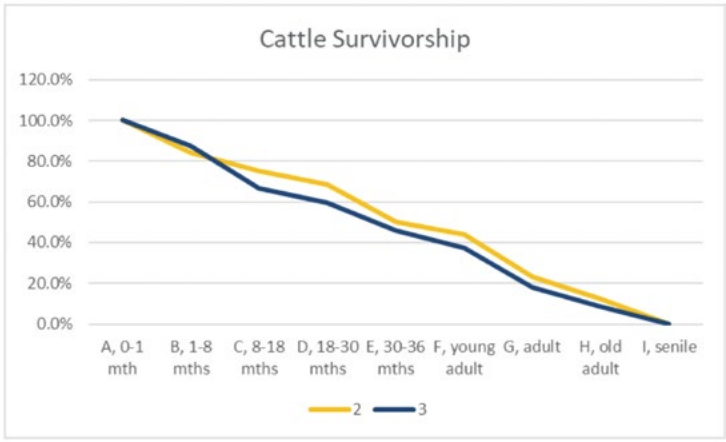

Chart 19. Cattle survivorship based on tooth wear for periods 2 and 3

	Proximal		Distal		Period 2
Element	**Fused**	**Unfused**	**Fused**	**Unfused**	**Total**
HUM	2	2	9	1	14
RAD	12		2	2	16
ULN	1				1
FEM	6	2	4	2	14
TIB	2		11		13
CAL	1				1
MTC	3		3		6
MTT	1		1		2
PH1	3				3
Total	**31**	**4**	**30**	**5**	**70**

Table 34. Cattle bone fusion Period 2. Dark shading-late fusing bones, light shading – intermediate fusing bones, no shading – early fusing bones

	Proximal		Distal		Period 3
Element	**Fused**	**Unfused**	**Fused**	**Unfused**	**Total**
HUM			2		2
RAD	7		1		8
RUL	2				2
FEM	3	2	4	3	12
TIB	1		10		11
MTC	2		3	4	9
MTT	1		2		3
PH1	2				2
PH2	2				2
Total	**20**	**2**	**22**	**7**	**51**

Table 35. Cattle bone fusion Period 3. Dark shading-late fusing bones, light shading – intermediate fusing bones, no shading – early fusing bones

Body part representation (Table 36) indicates that whole carcasses or animals were present at the Site with all major body areas represented. Only a small number of butchered bones were recorded for cattle and these are summarised in Table 37. The largest group of the butchered bones derived from a single Period 5 pit [5234], with bones deriving from two fills (5228) and (5230). Small quantities of butchered bones were also present from periods 2, 3 and 4.

Body Area	Element	1	2	3	4	5	Undated	Total
Head	HC		4	5	2	1	1	13
	S+H			1				1
	SKL	1	5	16	6	4	2	34
	MAN	2	29	47	6	11	20	115
	MAX		3	4	1	1	1	10
	DLPM4			1				1
	LM3		2	3				5
Neck	ATL			2	1			3
	AXI		4	3			1	8
Fore limb	SCP		22	27	4	10	2	65
	HUM	3	34	17	6	10	5	75
	RAD		32	18	5	3	5	63
	RUL			2	1			3
	ULN		5	7	4	1		17
Hind limb	INN	2	13	15	10	5	2	47
	FEM		27	26	7	8	1	69
	PAT			1				1
	TIB	1	34	30	12	14	3	94
Feet	CPR		1	1				2
	CQ			1				1
	AST		4	3	2	1		10
	CAL	1	1	1	2	3		8
	TAR		1					1
	MTC		16	15	4	4	4	43
	MTT	2	17	16	3	2	2	42
	MTP			1	1			2
	PH1		3	2	1	2		8
	PH2			2	1	1		4
	Total	**12**	**257**	**267**	**79**	**81**	**49**	**745**

Table 36. Cattle body part representation fragment count

Period	Context	Feature	Description	Bone	Zone	Butchery	Comment
3	2098	2100	enclosure ditch north	RAD	123	KN	3 cut marks on proximal end
3	2226	2225	enclosure ditch -S terminus	MAN	5	KN	knife marks on lateral side below condyle
2	9159	9169	Pit	SKEL		CH	skull and first five vertebrae, horn core chopped off?
4	11614	11613	Ditch	HUM	67890	CH	distal half-distal medial shaft chopped
5	5008	5010	Structure 7 S ring-gully terminus	CAL		KN	disjointing cut marks (x6), only a quarter present
5	5228	5234	pit	INN	35	KN	cut marks on posterior ilium on dorsal and anterior ischium (x3)
5	5228	5234	pit	MAN	56	KN	porous texture, cut marks on medial side (x4). Possible cheek meat removal?
5	5230	5234	pit	HUM	68	KN	cut marks (x8) on posterior distal end
5	5230	5234	pit	SKL		KN	zygomatic process, 3 large cuts on inside of skull
Undated	578	579	Ditch	HUM	690	CH	distal and midshaft, chopped axially in zone 6

Table 37. Summary of cattle butchery evidence

Sheep/goat

Sheep/goat were the second most numerous of the domestic taxa overall and this was true for the majority of periods with the exception of Period 2 where they were outnumbered by pig. Sheep were positively identified in every prehistoric period whereas goats were identified less frequently (Table 31). A small quantity of sheep/ goat tooth wear data was available, and these are displayed in Chart 20. This indicates that animals were slaughtered at a variety of ages, but that no particularly old animals were represented in the assemblage. Long bone fusion data for sheep/ goat was fairly sparse with the largest sample coming from Period 3 (Table 38). This indicates animals of a mix of ages, with early fusing bones all being fused and intermediate and late fusing bones showing a mix of fused and unfused elements. It should also be noted that some of the later fusing elements are absent from Table 38, possibly indicating that they were subject to density mediated attrition (Symmons 2005), these particular elements being less dense and hence more easily degraded in the burial environment; this is especially true in younger animals when these elements are unfused.

A number of lamb bones were also noted; these largely came from Period 4 deposits. Two groups of lamb bones came from Period 4 barrow ditch [11039] (G11083); a group of hind limb elements came from fill (11035) including femur, tibia and two metatarsals and a foetal metatarsal and radius came from fill (11037). A pair of mandibles from a lamb at Payne's (1973) Age Stage C, with an indicative age of 6-12 months (Chart 20) came from Period 4 ditch fill (11321) of ditch [11313] (G11796). A final lamb radius came from Period 3 fill (1657) of recut waterhole [1677].

Body part representation (Table 39) indicates that whole animals were likely present at the Site with all of the major body areas being represented. Radius and tibia appear particularly well represented in Period 3 compared to the other elements which may indicate that some of the meatier upper limb elements were being traded away from the Site, but if this were the case one may expect other lower meat value elements (head and foot elements) to also be relatively well represented, which does not appear to be the case here. Examination of the detail of the bone record shows that these two elements were largely represented by shaft fragments. Both of these elements have fairly robust shafts and are also readily recognisable even when the ends of the bones are missing, whereas fragments of humerus or femur shaft are less robust and less recognisable when fragmented and hence less likely to be identified to specific taxa. A small quantity of butchery marks was recorded on sheep/ goat bones and these are summarised in Table 40. A mix of chop

	Proximal		Distal		Period 3
Element	**Fused**	**Unfused**	**Fused**	**Unfused**	**Total**
HUM			1		1
RAD	2		1	1	4
FEM		2		1	3
TIB			1		1
MTC	1				1
PH1	2				2
Total	**5**	**2**	**3**	**2**	**12**

Table 38. Sheep/goat bone fusion Period 3. Dark shading-late fusing bones, light shading – intermediate fusing bones, no shading – early fusing bones

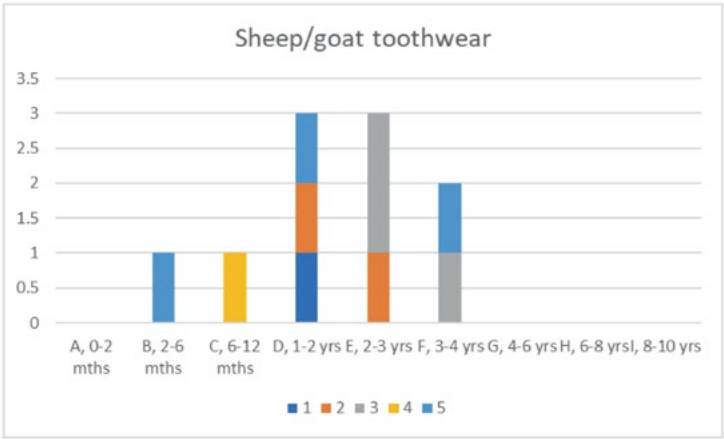

Chart 20. Sheep/goat age at death based on tooth wear by period

Body Area	Element	1	2	3	4	5	Undated	Total
Head	HC		1			1		2
	SKL			2				2
	MAN		6	5	5	4	1	21
	MAND			1				1
	MAX				2			2
	LM3	2		2		1		5
Neck	ATL			1	1			2
Fore limb	SCP		2	1	1	1		5
	HUM	1	1	4	4	3		13
	RAD	1	2	10	2	5	2	22
	ULN	1		1		2		4
Hind Limb	INN	1		2	3			6
	FEM			2	1	1	2	6
	TIB	1	4	11	5	4	1	26
Feet	CAL					1		1
	MTC		3	2		3	2	10
	MTT		1	1	2	4	3	11
	PH1			3				3
	Total	**7**	**20**	**48**	**26**	**30**	**11**	**142**

Table 39. Sheep/goat body part representation fragment count

Period	Context	Feature	Description	Bone	Zone	Butchery	Comment
3	9188	9185	Pit	INN	23	CH	Ilium shaft and scar - chop mark on shaft-very large-robust
4	5208	5211	pit	INN	578	KN CH	Cut marks on ischial tuberosity and acetabulum and chop marks on acetabulum
4	5208	5211	pit	SCP	12345	KN	Cut marks on supraglenoid tubercle
5	3007	3005	pit	RIB		CH	Proximal and midshaft-distal chopped-11cm

Table 40. Summary of sheep/goat butchery evidence

and cut marks were present and appeared to be concentrated on the girdle bones, although the sample is very small.

Pig

Pig was the third most abundant of the identified taxa and was present from Period 2 onwards. In Period 2, pigs were considerably more abundant than sheep/goat, but then declined in abundance in the later periods. A small quantity of tooth wear data was available (Chart 21) and this shows that slaughter age was clustered around Age Stage E (21-27 months); one older animal was also present in the tooth wear data. A small quantity of bone fusion data was available, the majority

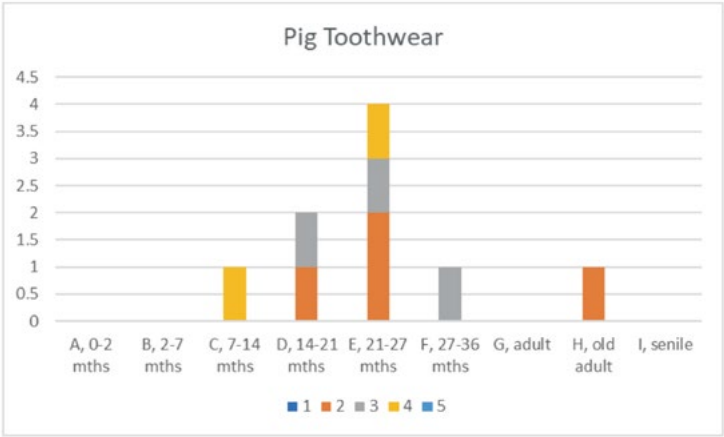

Chart 21. Pig age at death based on tooth wear by period

	Proximal		Distal		Period 2
Element	Fused	Unfused	Fused	Unfused	Total
HUM			2		2
RAD			1		1
ULN				1	1
INN	1				1
FEM					0
TIB			1		1
CAL		1			1
Total	**1**	**1**	**4**	**1**	**7**

Table 41. Pig bone fusion Period 2. Dark shading-late fusing bones, light shading – intermediate fusing bones, no shading – early fusing bones

	Proximal		Distal		Period 3
Row Labels	Fused	Unfused	Fused	Unfused	Total
HUM					0
RAD	2		1		3
FEM		1			1
TIB			2	1	3
MC3			1		1
MT4				1	1
Total	**2**	**1**	**4**	**2**	**9**

Table 42. Pig bone fusion Period 3. Dark shading-late fusing bones, light shading – intermediate fusing bones, no shading – early fusing bones

coming from periods 2 and 3 (Tables 41 and 42). These indicate animals of a range of ages present with both the intermediate and late fusion groups showing a mix of fused and unfused elements; all early fusing bones were fused. As for sheep/ goat there does appear to be a low representation of some of the later fusing elements, possibly indicating an under representation of these, particularly less dense unfused examples. One incidence of neonate bones was recorded – a femur from Period 4 fill (391) of pit [390]. A small quantity of canine teeth was present and indicated the presence of both male and female animals.

Pig body part fragment counts (Table 43) indicate that for periods 2 and 3 all major body areas were represented indicating the presence of complete animals; samples for Period 4 and 5 were extremely small. A single butchered pig bone (Period 5) was recorded – a thoracic vertebrae centrum and arch which had been chopped down the left-hand side.

Equid

Equids are represented by a small number of bones spread across periods 2-5. Body part fragment counts are shown in Table 44 and show varying distributions of body parts between the periods, however given the small sample size it is likely that this is not fully representative of the occurrence of equids at the Site. No estimates of animal age based on tooth wear/ height were attempted but some teeth were noted as particularly heavily worn indicating the presence of animals of fairly advanced age. The majority of long bone epiphyses were noted as fused with the exception of a proximal calcaneus (intermediate fusing) from Period 4 fill (6106) of pit [6105] and a distal tibia (intermediate fusing) noted as belonging to a juvenile, from Period 5 fill (5017) of smithy pit [5020].

Two instances of butchery of equid bones were noted, both from Period 5. One was a metatarsal with three cuts around the proximal end, likely the result of carcass dismemberment and the second was a near complete femur with cuts on both the proximal and distal ends, again likely the result of dismemberment. A single pathological element was recorded, this was a metacarpal that was noted as likely belonging to a particularly old individual and had up to four of the carpals fused onto its proximal end.

Dog

Dogs were represented by a small number of records in the bone spreadsheet, but three of these came from partially complete skeletons/ burials (animal bone groups - ABGs); these are summarised in Table 45. All of the dog remains derived from periods 2 and 3 or were from undated contexts. Aside from the ABGs a small quantity of other dog remains were present all of which derived from the head, either being pieces

Body Area	Element	2	3	4	5	Undated	Total
Head	SKL	3					3
	MAN	10	4	2	2		18
	UC	1					1
	LC	1			1		2
Fore limb	SCP	2	3	1	1	1	8
	HUM	4	6				10
	RAD	3	4				7
	ULN	3					3
Hind limb	INN	4					4
	FEM	1	2	1	1		5
	TIB	4	9			1	14
Feet	AST	1					1
	CAL	1					1
	MC3		1				1
	MT2					1	1
	MT4		1				1
	Total	**38**	**30**	**4**	**5**	**3**	**80**

Table 43. Pig body part representation fragment count

	Element	2	3	4	5	Total
Head	SKL			1		1
	MAN		2	1		3
	MAX	2				2
Fore limb	SCP		1			1
	RAD			1	1	2
Hind limb	INN		2	1		3
	FEM				3	3
	TIB				2	2
Feet	CAL			1		1
	MTC	1	2		2	5
	MTT		1	1	1	3
	Total	**3**	**8**	**6**	**9**	**26**

Table 44. Equid body part representation fragment count

Period	Context	Feature	Description	Species	Total Frags	Description
2	12142	12143	pit	CAN	54	Near complete skeleton including humerus, radius, ulna, pelvis, femur, tibia, metapodials, phalanges, atlas and canines
3	8362	8365	waterhole	CAN	18	Partial skeleton including fragments of skull, canines, first molar, ribs, scapula, pelvis, tibia and metapodials
Undated	3192	3190	pit	CAN	25	Partial skeleton - fore and hind limb elements including humerus, radius, ulna, femur and fibula

Table 45. Summary of dog ABGs

of skull, mandibles or loose teeth. No butchery marks were noted on any of the dog bones and no pathological elements were noted.

Wild Mammals

A number of wild mammal taxa were present in the assemblage and as seen above, although they were relatively scarce compared to the domestic taxa, they were more abundant in the earlier periods than later ones. The most abundant of the wild mammals was red deer, which was largely represented by antler and antler tine fragments (Table 46), however post-cranial remains were also present. A number of the antler pieces found from Period 3 deposits were noted as shed antlers indicating targeted collection of antlers and not just opportunistic use of those from hunted carcasses. Some of the antler pieces/ fragments from periods 1, 2 and 3 yielded chop and cut marks indicating some likely working of antler. No butchery marks were observed on any of the other red deer bones. Roe deer was represented by two pieces of antler, one each from periods 2 and 3. The Period 2 example had a fragment of skull still attached and hence was definitely not shed. No butchery marks were observed on either of these antlers.

Body Area	Element	1	2	3	Undated	Total
Head	ANT		7	6	1	14
	ATT	3	1			4
	UM2		1			1
	UM3		1			1
	UPM3		1			1
Fore limb	SCP		1			1
	RAD		1	2		3
Hind limb	INN				1	1
	FEM		1			1
	TIB	1	1	2		4
Feet	MTC			2		2
	MTT				1	1
	Total	**4**	**15**	**12**	**3**	**34**

Table 46. Red deer body part representation fragment count

A small quantity of aurochs and possible aurochs bones were recorded, these derived from periods 1, 2 and 3 (see Table 31). Positively identified aurochs remains were a cervical vertebra (Period 2 fill (9384) of barrow ditch segment [9400] (G9380)); a radius (Period 2 fill (374) of pit [360]) and a tibia (Period 3 fill (1840) of waterhole [[1801]). Further, more tentatively identified, possible aurochs remains included a metatarsal from Period 1 and a radius and fragment of cervical vertebra from Period 2, the latter of which bore cut marks. Wild boar was represented by a very large, degraded, upper canine from undated fill (320) of pit [319]. A single bone of a pine marten, a pelvis, was found in fill (11330) of Period 4 ditch [11333] (G11790).

Birds

Within the bone record spreadsheet there are three records for bird, all of which come from Period 3 (Table 31). Two large bird bones derived from fills (6155) and (6156) of pit [6157]. A fragment of tibio-tarsus came from (6155) and while it could not be absolutely positively identified it fitted well with crane (*Grus grus*) and a number of other large bird taxa could be ruled out (swan, goose, great bustard, white-tailed eagle, stork and pelican). A fragment of humerus from (6156) was not distinct enough to be identified to a particular species but was of similar size and robusticity to crane (*Grus grus*) and white-tailed eagle (*Haliaeetus albicilla*). The final record of bird remains relates to a partial skeleton (ABG) of an eagle (golden or white tailed - indeterminate) recovered from fill (11587) of ditch terminus [11591] (G11812). Eleven fragments were thought likely to belong to this individual with identified elements including radius, ulna, tibio-tarsus, sternum and phalanges. None of these bird bones were noted as having been butchered, burned or gnawed and none had any pathological lesions. None of the bird bones were complete enough to be measured.

Microfauna

A very small quantity of micro-fauna bones was recovered through hand collection (Table 31), but unsurprisingly, a considerable quantity was recovered from the sieved samples (Table 32). Small rodent taxa include wood mouse, water vole and field vole and some bones that could only be determined as mouse or vole. All of these are common mammals across Britain with the wood mouse and field vole having fairly broad habitat preferences, although the wood mouse prefers generally dryer environments than the field vole. The water vole however is more restricted in its habitat to the banks of slow-flowing water courses and lakes. Further indicators of the presence of water are the occurrence of a single frog or toad humerus and a number of stickleback (Gasterosteidae) bones all of which derived from two samples (21 and 30) from intercutting pits [3172] and [3138] which given their waterlogged nature and the presence of a number of other wet-habitat indicators were thought likely to have contained standing water for some time.

Summary and Discussion

There were some taphonomic issues with the bones, which were not particularly well preserved and, in many cases, extremely friable and prone to breakage. Affected bones were reconstructed where possible to minimise the effect of fragmentation on bone quantification. Surface concretions also had a negative effect on the identification of some of the bones and

also on the recognition of bone surface modifications such as butchery and pathology. The assemblage was dominated by domestic taxa but wild mammals and birds were also exploited or at least present. The presence of wild taxa in the assemblage declines over time. Microfauna present indicate the presence of both wet and dry habitats in the locale.

The domestic mammal assemblage was dominated by cattle, with sheep/ goat and pig also being important; equid and dog have a smaller presence. The percentage presence of sheep/ goat increases over time, with a corresponding decrease in both cattle and pig. Both sheep and goat were positively identified with sheep being slightly more numerous.

The economic utility of the cattle appears to have been a mixed or subsistence strategy, with no specific peak in slaughter age indicating that milk, meat, traction and breeding may all have been exploited. This is very similar to the pattern seen from earlier investigations at Pode Hole Quarry (Rackham 2009a) where milk, meat, hides and traction were thought likely to have been exploited. The presence of calf bones indicates that cattle were being bred on Site. There is some evidence for a decrease in cattle size over time, however the data set is relatively small and there may be other reasons for the presence of cattle of varying sizes. At Pode Hole, Rackham (2009a: 137) noted that two types of domestic cattle appeared to be present, the Celtic Shorthorn type noted here and another type with larger horn cores which were more circular in cross-section than the short horn type. Rackham (*ibid.*) speculated that while these may represent two different types or 'breeds' of cattle they may also be indicative of the presence of males and females; however no biometrical evidence was presented/ available to either confirm or refute this.

While cattle horn cores are known to be distinctly sexually dimorphic (Sykes and Symmons 2007) much less work has been done to examine tibiae. Bartosiewicz (1985) documents that tibia length in cows is absolutely smaller than tibia length in bulls and Davis's (2000) measurements of Shetland sheep showed that tibia length is on average 12% larger in rams than ewes and SD (smallest breadth of the diaphysis) is up to 15% larger in fully fused specimens; however the Bd (distal breadth) measurement was much less sexually dimorphic (only 5-6% larger on average in rams). A similar pattern was seen in ibex with the Bd (and Bp) measurement showing much less marked sexual dimorphism than other tibia dimensions (Fernández and Monchot 2007). Therefore, it appears that the size differences seen in cattle distal tibia here are not likely due to differences in the sexual make-up of the population but more likely to a real change in size. Whether this is human or environmentally influenced it is difficult to say. The less clear difference in size seen in the SD measurements may well be due to the added influence of sexual dimorphism on this bone dimension.

Sheep/goat are present throughout the assemblage with both sheep and goat represented but with sheep being more numerous, although the extent of this is difficult to assess. Rackham (2009a: 140) noted for the bordering Pode Hole assemblage only one tentative goat identification and several positively identified sheep elements, concluding that the majority of the sheep/ goat remains would belong to sheep; for the current assemblage however, goats are certainly present. In terms of age at slaughter sheep/ goats appear to largely cluster either side of the point at which the lower third molar (LM3) comes into wear with a few younger animals present and very few older animals. This is somewhat different to the age data present for the excavations at Pode Hole (Rackham 2009a) where the majority of the sheep/ goats were found to have their LM3 in wear, some of which were extensively worn indicating the presence of particularly old animals.

No particularly old animals were noted from the current assemblage and it seems that the primary economic utility of these animals was for meat; some wool may have been available from animals of one or two years at slaughter. Given the lack of older animals it seems that milk production was unlikely from the sheep/ goats present here. Given the difference in the age structure between the animals examined and those from the adjacent excavated site (Daniel 2009) it is possible that animals of different utility were disposed of in different areas of the Site. Rackham (2009) proposed that a yearly cull was carried out and that milk, meat, wool and skins were likely all utilised. The presence of a number of lambs was detected in the current assemblage, some of which were found as small ABGs. While some of these may be the disposal of carcasses from natural deaths, the association of two groups of lamb bones with barrow ditch G11083 may indicate a ritual significance.

Given the presence of neonate specimens, all major body parts and male and female animals it would appear the pigs were bred at least some of the time. Pig relative abundance gradually decreases over time with the expansion of the sheep/ goat population. Meat is the primary economic product of pigs and it appears that the majority of pigs were slaughtered at around one or two years old; dung and hides may also have been utilised.

The generally adult age of the equids present would indicate that they were most likely kept as work animals, however the presence of some butchery marks would indicate that they were also occasionally eaten. A small number of equid bones were recovered from the excavations at Pode Hole, including an immature mandible (Rackham 2009a: 135).

The small quantity of dog remains present appear to have been treated very differently to the other domestic taxa, largely being found as near complete or partial skeletons. It seems likely that dogs were kept as working and companion animals. Only a single fragment of dog bone was recovered from the earlier Pode Hole excavations (Rackham 2009a).

There is a low level of exploitation of wild taxa that decreases over time and appears absent from Period 4 onwards. Red deer were likely exploited for both meat and antlers and some shed antlers were collected specifically for working. Roe deer also appear to have been occasionally hunted and were presumably used to supplement the meat diet. Wild boar may also have been hunted for meat, but the evidence is sparse and undated. Aurochs and possible aurochs were present in the periods 1-3. As yet the latest dated examples of aurochs come from Stansted, Essex and Willington, Bedfordshire, both dating to 1661-1509 cal BC (Evans 2015a: Table 1). The Period 3 example here comes from the top of a pit; fill (1840), [1801] containing CP3B pottery, dated by association to 1400-1130 cal BC, indicating that this specimen could push the extinction date for aurochs in Britain back by one hundred years or more, although the possibility that it was redeposited in the pit cannot be discounted . Either way these are likely to be some of the last aurochs in Britain, where current evidence indicates them to have gone extinct during the Bronze Age. The aurochsen were possibly hunted for meat but also as a means of protecting the domestic livestock from interbreeding with their considerably larger wild counterparts.

The Bar Pasture assemblage shows some similarities as well as some differences with the assemblage recovered from the adjacent Pode Hole excavations. The major domestic taxa present are the same and cattle is dominant for both assemblages with sheep/ goat and pig being present in smaller numbers. There was less temporal resolution available for the slightly smaller assemblage from the earlier excavations so changes over time were less apparent. Goats were better represented in the current assemblage and the age distribution of the sheep/ goats present varied between the two assemblages. An almost identical suite of wild taxa was present including red deer, roe deer and aurochs.

Comparison of the Bar Pasture and Pode Hole assemblages with the wider Bronze Age economy indicates that, in comparison with large parts of southern Britain, the Bar Pasture and Pode Hole assemblages appear unusual for their dominance by cattle (Rackham 2009a: 142). In Hambleton's (2008) review of Middle Bronze Age to Iron Age sites for Southern England she indicates that for the majority of sites in Southern England sheep were the dominant taxa, with pig generally being the lowest represented of the three major domesticates and that the dominance of sheep increased over time towards the Iron Age. However, when looking at the patterns for individual counties Hambleton (*ibid.*) noted that the dominance of sheep was particularly prominent in the central southern region, especially the counties of Wessex, whereas in the north-eastern part of the region (that closest to Bedfordshire) cattle were dominant in the majority of assemblages. Hambleton (*ibid.*: 44) postulates that such variations in economic focus may be the result of cultural or tribal groupings.

Conclusions

The animal bone assemblage is dominated by domestic livestock taxa with cattle being dominant throughout the assemblage, sheep/ goat increase in abundance over the course of the Bronze Age, a pattern which is repeated across southern Britain. The dominance of cattle, while unusual compared to some sites is not unusual for the region. Wild taxa are present in the earliest periods but only make up a small portion of the assemblage. Cattle and sheep/ goat appear to have been utilised for a variety of economic benefits in a mixed or subsistence economy, pigs were principally exploited for meat. Horse and dog were likely used for work animals and dogs also likely filled a companion role, being treated significantly differently in death compared to the livestock taxa and horses.

Chapter 6

Human Bone

Introduction

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Osteological analysis was carried out on 17 assemblages of cremated human bone and two inhumations recovered during the excavations (Jacklin 2008; Keefe and Holst 2013, 2017a; Petersone-Gordina and Holst 2019).

The two inhumations were found within the ring-ditch circuits of Early Bronze Age barrows G1026 and G1941 (Table 47). Burial 100, located in the centre of Barrow G1026, lay within a sub-circular grave cut [1606], measuring 1.2m long by 0.6m wide. Burial 101 was located within the SE quadrant of Barrow G1941's ditch circuit, within grave cut [1639] measuring 1.18m long by 0.9m wide. Both burials were buried in crouched positions and were lying on their sides. Skeleton 101 was lying on, or wrapped in, a rectangular sheet of birch bark. An Early Bronze Age food vessel was placed by its head and a perforated marine shell was found under one elbow.

Cremation Burial [1101] was found in association with Barrow G1026, being located to the immediate north of the Early Bronze Age ring-ditch (Jacklin 2008). The burial contained hazelnut shell, flint flakes, and blades as well as fire-cracked stones.

Approximately 300m south of the inhumations, an isolated cremation burial [7256], dating to the Early Bronze Age was found in a pit within the 'precursor' alignment of Droveway 5 (Petersone-Gordina and Holst 2019). The pit had been lined with grey clay, and also contained charcoal and fire-cracked flint and sandstone pebbles. The pit contained 628.5g of cremated bone (Table 48).

A small cemetery located within an area of *c*. 5m by 5m in Field 67 was comprised of 12 cremation burials (nos 1-12). Charcoal associated with burials 6 and 10 was radiocarbon dated to the Late Middle Bronze Age, to 1069 BC and 1078 BC ±33 respectively. The burials were clustered around the presumably reduced remains of the three Early Bronze Age mini-barrows (G9451-9453). Each of the cremation burials had been placed in a discrete pit. Six of the 12 cremated bone assemblages were urned (see Table 48), albeit heavily truncated, and placed in the ground in upright positions (Keefe and Holst 2017a). A so-called southern group of suggested unurned cremations were found at the southern end of the same field, close to the heavily truncated remains of a small ring-gully [11230]. Whilst appearing as cremations, and with charcoal present, no identifiable cremated bone was recovered.

A further three cremation burials possibly dating to the Middle to Late Iron Age were discovered on the SW edge of the Site, close to the Iron Age smithy. The burials contained between 0.4g to 133.4g of bone (see Table 48). All three were unurned; two were found in the basal fill of small pits 7m south of the smithy and are undated, while burial (5087) was recovered from the bottom fill of a ditch (Keefe and Holst 2013) from NW enclosure corner [5088] and likely represents a disturbed burial.

Aims and Objectives

The aim of the skeletal and cremated bone analysis was to determine the age, sex and stature of the

Skeleton No	Age	Sex	Orientation (head first)	Position	Arm Position	Burial type	Finds	Date
100	21-35	M?	N-S	Crouched on left side	Flexed and drawn up under chin	Associated with Bronze Age barrow	-	Early Bronze Age
101	0-6m	-	W-E	Crouched on right side	Flexed and drawn up under chin	In SE quadrant of Bronze Age barrow	Lying on or wrapped in birch bark matting, perforated shell, Early Bronze Age food vessel	Early Bronze Age

Table 47. Summary of inhumations

Cremation No	Feature Type	Period	Artefacts and Inclusions	Bone Colour	Preservation	Age	Sex	Weight (g)	Percentage of Expected Quantity of Bone
1101	Pit	Early Bronze Age	Hazel nutshell, flint flakes and bladelet; fire-cracked stone	White	Not recorded	Young to young middle adult 21-35	Female	1141	70.2%
7256	Pit	Early Bronze Age	-	White/light to dark grey	Moderate	Adult 16+	Male?	628.5	38.6%
1	Pit	Late Middle Bronze Age	-	White, some black internal surfaces	Moderate	Adult 16+	-	29.1	1.8%
2	Pit	Late Middle Bronze Age	Shell	White, some grey patches	Excellent	Adult 16+	-	1310.2	80.6%
3	Pit	Late Middle Bronze Age	-	White to grey black	Excellent	Young juvenile 1-6 years	-	9.7	*
4	Pit	Late Middle Bronze Age	-	(9469) black grey and white (9470) white to grey	Excellent	Adolescent 13-17 years	-	758.7	*
5	Pit	Late Middle Bronze Age	Urned	White to grey black	Good	Neonate 0-1 month	-	1.95	*
6	Pit	Late Middle Bronze Age	Urned, shell, fossil/bead	White to grey	Excellent	Adult 16+	-	437.8	26.9%
7	Pit	Late Middle Bronze Age	-	White to grey	Good	Infant 0-1 year	-	1.15	*
8	Pit	Late Middle Bronze Age	Urned	White to black	Good	Young juvenile 1-6 years	-	72.1	*
9	Pit	Late Middle Bronze Age	Shell	White, some black internal surfaces	Excellent	Young middle adult 26-35	-	2066.7	127.1%
10	Pit	Late Middle Bronze Age	Urned	White to bluey grey	Moderate	Older juvenile 7-12 years	-	185.0	*
11	Pit	Late Middle Bronze Age	Urned, shell	White to black	Good	2 juveniles, 1-2 and 6-8 years	-	431.2	*
12	Pit	Late Middle Bronze Age	Urned, shell	White to black	Excellent	Infant 6-9 months and juvenile 1-2 years	-	23.3	*
5087	Ditch	Iron Age	Unurned	White	Moderate	-	-	0.4	0.03%
5283	Pit	Iron Age	Unurned	White	Moderate	-	-	10.5	0.5%
5286	Pit	Iron Age	Unurned	White	Moderate	Adult or adolescent 14+	-	133.4	8.2%

Table 48. Summary of cremated bone assemblages
* it is not possible to calculate percentage of mean weight for non-adults or multiple burials

skeletons, as well as to record and diagnose any skeletal manifestations of disease and trauma.

Methodology

The inhumed skeletons were analysed in order to record preservation and completeness, calculating the minimum number of individuals present as well as determining the age, sex and stature of the individuals. All pathological lesions were recorded and described.

The cremated bone was analysed according to the guidelines specified by McKinley (2004b). The bone was passed through a nest of sieves with mesh sizes

Plate 83 10mm+ Cranial Fragments from Cremation Burial 1101.

of 10mm, 5mm and 2mm (Plate 83). The maximum fragment size was measured, bone colour was noted, and any identifiable fragments were recorded. An attempt was made to determine age and sex, and any pathological lesions present were described.

Osteological Analysis

Osteological analysis is concerned with the determination of the identity of a skeleton, by estimating its age, sex and stature. Robusticity and non-metric traits can provide further information on the appearance and familial affinities of the individual studied. This information is essential in order to determine the prevalence of disease types and age-related changes. It is crucial for identifying sex dimorphism in occupation, lifestyle and diet, as well as the role of different age groups in society. A summary of the cremated bone is provided in Table 48. A summary of the osteological and palaeopathological data of the inhumations is given in Table 49, with a detailed catalogue of skeletons provided in Table 50.

Preservation

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition (Garland and Janaway 1989; Henderson 1987; Janaway 1996; Spriggs 1989). Preservation of human skeletal remains is assessed subjectively, depending upon the severity of bone surface erosion and post-mortem breaks, but disregarding completeness. Preservation is important, as it can have a large impact on the quantity and quality of information that it is possible to obtain from the skeletal remains.

Inhumation Preservation

Surface preservation, concerning the condition of the bone cortex, was assessed using the seven-category grading system defined by McKinley (2004a), ranging from 0 (excellent) to 5+ (extremely poor). Excellent preservation implied no bone surface erosion and a clear surface morphology, whereas extremely poor preservation indicated heavy and penetrating erosion of the bone surface resulting in complete loss of surface morphology and modification of the bone profile. The degree of fragmentation was recorded, using categories ranging from 'minimal' (little or no fragmentation of bones) to 'extreme' (extensive fragmentation with bones in multiple small fragments). Finally, the completeness of the skeletons was assessed and expressed as a percentage: the higher the percentage, the more complete the skeleton.

The bone surface of the two Early Bronze Age inhumations ranged from moderate (grade 3; Burial 100) to poor (grade 5; Burial 101) (see Table 49). The fragmentation of the skeletons was severe. The skeletons were both 75% complete.

Cremation Burial Preservation

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone erosion and very few or no post-depositional breaks, whereas very poor preservation indicated complete or

Skeleton No	Context No	SP	F	%	Age	Age Group	Sex	Stature	Dental Pathology	Skeletal Pathology
100	1607	3	Sev	75	21-35	YA/YMA	M?	-	Calculus, DEH	-
101	1644	5	Sev	75	1-6m	Infant	-	-	-	-

Table 49. Summary of osteological and palaeopathological results of the inhumations

Key: SP = Surface preservation: grades 0 (excellent), 1 (very good), 2 (good), 3 (moderate), 4 (poor), 5 (very poor), 5+ (extremely poor) after McKinley (2004a); C = Completeness; F = Fragmentation: min (minimal), sli (slight), mod (moderate), sev (severe), ext (extreme)
Age categories: i (infant, 1-12 months); ya (young adult, 18-25 years), yma (young middle adult, 26-35 years)
Dental pathology: DEH (dental enamel hypoplasia)

Skeleton Number	100
Preservation	3 (moderate)
Fragmentation	Severe
Completeness	75%
Age	21-35 years (Young to Young Middle Adult)
Sex	Male?
Stature	-
Non-Metric Traits	-
Pathology	-
Dental Health	24 teeth, DEH, calculus

Skeleton Number	101
Preservation	5 (poor)
Fragmentation	Severe
Completeness	75%
Age	1-6 months, infant
Sex	-
Stature	-
Non-Metric Traits	-
Pathology	-
Dental Health	16 teeth

Table 50. Osteological and palaeopathological catalogue – articulated skeletons

Plate 84 Adult skeleton 1607

Plate 85 Infant skeleton 1644.

almost complete loss of the bone surface due to erosion and severe fragmentation.

All the burials appear to have been truncated by later activity to varying degrees. The majority of cremated bone assemblages survived in excellent condition (6/16; 37.5%) with sharp edges to the breaks and retention of surface details, or in moderate condition (6/16; 37.5%), with a crumbly/powdery surface, and rolled, smooth edges to the surfaces of breaks. Four assemblages (25%) were well preserved, with the retention of surface detail, but slightly powdery surface textures, and slightly softened margins to the bone fragments. The preservation of the Early Bronze Age cremated bone assemblage [1101] analysed by Jacklin (2008) was not recorded, and hence is not included in the preservation statistics detailed here. The Iron Age cremated remains were all moderately well preserved.

It seems, in the Late Middle Bronze Age burials, as though burial in an urn did not have an effect on the preservation of the bones. However, the post-burning processes, such as raking of the pyre while the bone was still hot, had an effect on bone preservation and fragmentation at Bar Pasture. The fragment size of cremated bone is frequently attributed to post-cremation processes. This is because skeletal elements retrieved from modern crematoria tend to be comparatively large before being ground down for scattering or deposition in the urn. Bone is also prone to fragmentation if it is moved while still hot (McKinley 1994: 340).

Moderate warping and bone cracking, which occurs commonly during the cremation process, was evident in all the Bronze Age cremated bone assemblages. However, in the three Iron Age assemblages, warping and cracking was not evident, which may relate to the small fragment size in these burials.

According to McKinley (1989), the body requires a minimum temperature of 500° Celsius over seven to eight hours to achieve complete calcination of the bone. Only one (Burial [1101]) of the 14 Bronze Age cremated bone assemblages was very well burnt or completely calcined, whereas the three Iron Age cremated bone assemblages displayed complete calcination of the bone. The Bronze Age burials contained bone fragments which exhibited different degrees of burning, with fragments which appeared to be white, blueish grey or black suggesting that the bone had either not reached sufficient temperatures, or been allowed to burn for long enough. Alternatively, the pyre may not have been well constructed, preventing adequate air flow for optimal burning, or, may suggest that the pyre was not constantly attended to whilst alight.

Bone fragment size appeared to vary greatly between the burials. The majority of the burials (13/17, 76.4%) contained at least some bone fragments that were 10mm in size or larger (Table 51). However, in nine of the burials (including the three Iron Age burials), the majority of bone recovered derived from the 5mm sieve (9/17, 52.9%) and in five of the burials the majority of bone was recovered from the 2mm sieve (5/17, 29.4%). This supports the view that the bone from these burials was subject to disturbance while they were still hot.

The cremated bone assemblages ranged in weight from 0.4g to 2066.7g, with an average weight of 389.8g (see Table 48). The average bone weight produced by modern crematoria tends to range from 1000.5g to 2422.5g with a mean of 1625.9g (McKinley 1993). These calculations relate to adult remains, cremated individually. It is not

Cremation No.	10mm (g)	10mm (%)	5mm (g)	5mm (%)	2mm (g)	2mm (%)	Residue	Weight (g)
1101	684	59.9	341	29..9	99	8.7	17	1141
7256	122.9	19.5	213.0	33.9	197.6	31.4	95.0	15.1
1	1.3	4.5	12.3	42.3	14.9	51.2	0.6	29.1
2	376.2	28.7	370.8	28.3	533.8	40.7	29.4	1310.2
3	0	0	3.0	30.9	6.3	64.9	0.4	9.7
4	161.9	21.3	314.4	41.4	254.0	33.5	28.4	758.7
5	1.95	100.0	0	0	0	0	0	1.95
6	129.5	29.6	173.8	39.7	125.1	28.6	9.4	437.8
7	0	0	0.3	26.1	0.8	69.6	0.05	1.15
8	13.7	19.0	29.9	41.5	25.8	35.8	2.7	72.1
9	891.8	42.7	728.4	34.9	414.0	19.8	52.5	2066.7
10	15.0	8.1	86.65	46.8	81.4	44.0	1.95	185.0
11	51.7	12.0	194.1	45.0	177.3	41.1	8.1	431.2
12	1.9	8.2	3.7	15.9	15.4	66.1	2.3	23.3
5087	0.0	0.0	0.2	50.0	0.2	50.0	0.0	0.4
5283	0.0	0.0	9.0	85.7	1.5	14.3	0.0	10.5
5286	25.5	19.1	103.9	77.9	4.0	3.0	0.0	133.4

Table 51. Summary of cremated bone fragment size

possible to calculate expected quantities of bone for non-adults or burials containing multiple individuals. As a result, it was only possible to calculate the expected quantity of bone as a percentage for half (52.9%) of the cremation burials from the Site (see Table 48). Burial 9 weighed 2066.7g, which is heavier than the average, but falls within the top end of the range of weights observed by McKinley (1993). The only other burials to contain near the expected quantity of bone was Burial 2, which amounted to 80.6% of the expected bone weight produced by modern crematoria and Burial [1101] which contained 70.2% of the expected quantity of bone.

When analysing the assemblages by period, it was found that the average weight of the Iron Age cremated bone assemblages was considerably lower, at 48.1g compared with that of the Bronze Age assemblages, with an average weight of 463.1g.

Wahl (1982: 25) found that archaeologically recovered remains of cremated adults tend to weigh less (between 250g and 2500g) as a result of the commonly practised custom of selecting only some of the cremated bone from the pyre for inclusion in the burial, thereby representing a symbolic, or token, interment. All but two of the burials for which the expected quantity of bone could be calculated weighed less than the average observed from modern cremations, however, it is also likely that later truncation was responsible for the loss of bone rather than selective retrieval or selective burial of the cremated remains.

It was possible to identify between 25.2% and 100% of the cremated bone (Table 52). The weight of bone by identifiable element was not recorded by Jacklin (2008) for Cremation Burial [1101], except for the 10mm and larger fragments, so it could not be included here. In six (37.5%) of the burials the majority of identifiable fragments were skull fragments and included recognisable tooth crowns and roots, fragments of the cranio-facial region, and generic vault fragments; some skull fragments were represented in all burials. It is, however, surprising that skull fragments were only the most abundant skeletal element recognised in a third of the cremated bone assemblages, since the cranial vault is very distinctive and easily recognisable, even when severely fragmented; it often forms a large proportion of identified bone fragments in cremated remains (McKinley 1994). In Cremation Burial [1101], the majority of identifiable bone elements in the 10mm and larger fragments were also derived from the cranium (140g; Jacklin 2008).

In Burial 9, the majority of identifiable bone consisted of lower limb fragments, while in Burial 2 the majority of identifiable fragments were from the upper limbs or skull. The majority of burials (56.3%), however, contained largely long bone shaft fragments, which could not be identified to a specific region and in the Iron Age burials, unidentified long bone fragments made up by far the largest portions of the assemblages.

In Late Middle Bronze Age burials 3, 5, 7, 10, 12 and Iron Age burials (5087), (5283), (5286) fragments of either upper or lower limb bone appeared to be entirely absent (see Table 52). It is possible in these cases, that fragments of lower or upper limb were included within the unidentified long bone total, but due to the heavy fragmentation of these burials, could not be identified to a specific region.

Specific deposition techniques were not apparent when the bone from different spits within the vessels was analysed.

Burial No	Skull (g)	Skull (%)	Axial (g)	Axial (%)	UL (g)	UL (%)	LL (g)	LL (%)	UIL (g)	UIL (%)	Total ID (g)	Total ID (%)	Total UID (g)	Total UID (%)
7256	62.6	39.6	20.3	12.8	9.5	6.0	29.6	18.7	36.2	22.9	158.2	25.2	470.3	74.8
1	0.8	2.7	0.4	1.4	1.5	5.2	4.2	14.4	9.6	33.0	16.5	56.7	12.6	43.3
2	192.3	14.7	22.6	1.7	192.5	14.7	117.1	8.9	103.4	7.9	627.9	47.9	682.3	52.1
3	2.1	21.6	0.4	4.1	0	0	0	0	1.6	16.5	4.1	42.3	5.6	57.7
4	122.0	16.1	35.8	4.7	85.2	11.2	78.0	10.3	137.5	18.1	458.5	60.4	300.2	39.6
5	0.7	35.9	0.2	10.3	0	0	0	0	0.9	46.2	1.8	92.3	0.15	7.7
6	63.5	14.5	12.6	2.9	60.7	13.9	57.1	13.0	74.7	17.1	268.6	61.4	169.2	38.6
7	0.4	34.8	0.2	17.4	0	0	0	0	0.1	8.7	0.7	60.9	0.45	39.1
8	35.0	48.5	3.0	4.2	0	0	2.0	2.8	10.7	14.8	50.7	70.3	21.4	29.7
9	250.1	12.0	213.7	10.2	305.4	14.6	352.7	16.9	321.3	15.4	1443.2	69.2	643.5	30.8
10	57.1	30.9	7.2	3.9	6.3	3.4	0	0	58.5	31.6	129.1	69.8	55.9	30.2
11	47.4	11.0	26.5	6.1	14.0	3.2	12.1	2.8	154.6	35.9	254.6	59.0	176.6	41.0
12	7.6	32.6	2.6	11.2	0	0	0	0	5.6	24.0	15.8	67.8	7.5	32.2
5087	0.1	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.25	62.5	0.35	87.5	0.05	12.5
5283	0.1	1.0	0.1	1.0	3.1	29.5	0.0	0.0	7.2	68.5	10.5	100.0	0	0.0
5286	24.7	15.5	0.2	0.15	41.0	30.7	0.0	0.0	64.1	48.1	130.0	97.5	3.4	2.5

Table 52. Summary of identifiable elements in the cremation burials

Minimum Number of Individuals

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure during osteological assessments of inhumations, in order to establish how many individuals were represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements, such as the hip joints and cranial elements. The MNI of the Early Bronze Age inhumations was two, one adult and one infant.

It is not possible to calculate the MNI for cremation burials, because only a token selection of bone from the pyre tends to be buried. Double burials can be identified only if skeletal elements are duplicated, or if skeletons of different ages are represented in one burial.

Burials 11 and 12 both contained more than one individual. Burial 11 contained the remains of a young juvenile, aged between one and two years and an older juvenile, aged between six to eight years. Burial 12 also contained the remains of two non-adults. One of these was an infant, aged six to nine months, and the second individual was a young juvenile aged between one and two years.

Assessment of Age

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a, 2000b) and Cox (2000). Age estimation relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual. Age is split into a number of categories, from foetus (up to 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately as over the age of 17).

Early Bronze Age inhumation burial 100 was thought to be an adult based on fused epiphyseal fusion, dental development and wear (Jacklin 2008). Inhumation burial 101 was originally aged based on dental eruption (*ibid*.) to late term foetus or neonate, but later re-aged by the authors of this report based on dental development to a one to six-month old infant.

The two Early Bronze Age burials contained an adolescent or adult (Burial 7256) and a young to young middle adult (Burial 1101).

In the Late Middle Bronze Age cremated bone assemblage, non-adult individuals dominated, with 66% of all burials containing non-adults. Only Late Middle Bronze Age burials 1, 2, 6 and 9 contained the remains of adolescents or adults. A fragment of auricular surface (the joint between the pelvis and sacrum) identified in Burial 9 exhibited striae, suggesting that the individual was a young middle adult, aged 26 to 35 years (Lovejoy *et al.* 1985; Meindl and Lovejoy 1989). Because none of the criteria normally used for age determination were represented in burials 1, 2 or 6, age determination was based on less reliable criteria. The bone robusticity and dental development suggested that the remaining individuals were at least 16 years old, but may have been considerably older.

As mentioned above, Late Middle Bronze Age burials 11 and 12 contained the remains of non-adults. Burial 11 contained a young juvenile (based on the presence of a developing permanent mandibular first molar crown) and an older juvenile (based on the presence of a developing permanent mandibular third molar crown). Burial 12 also contained the remains of two non-adults. The first was an infant (based on the presence of a developing permanent central incisor crown), and the second individual was a young juvenile (based on the presence of a developing permanent first molar crown). Burials 3 and 8 both contained the remains of young juveniles (based on the presence of the developing crowns of permanent first mandibular molars). Burial 7 consisted of the remains of an infant (based on a developing deciduous, mandibular second molar). The presence of developing deciduous, maxillary first molar crowns revealed that Burial 5 contained the remains of a neonate. Burial 10 contained an unfused distal radius, numerus unfused hand phalanges and a developing permanent second molar, which probably all belonged to an older juvenile. The final non-adult, Burial 4, contained numerus unfused metaphyseal fragments (unfused bone shaft fragments), including proximal femur, distal humerus, metatarsal and metacarpal shafts, which, based on size and morphology were believed to belong to an adolescent.

Of the Iron Age burials, only burial (5286) contained any skeletal elements used for determining a minimum age; a fused distal metacarpal (hand bone), which indicated that the individual was at least 14 years of age when they died, but was probably older (Table 48).

Sex Determination

Sex determination is usually carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood.

The Early Bronze Age adult skeleton (7256) was thought to be a possible male, based assessment of the cranium and pelvis and measurements of the left femoral head (Jacklin 2008).

In the cremated bone assemblages, skull fragments found in Early Bronze Age Burial [7256], including both orbits and the occipital crest, suggest that the individual was probably a male. The second Early Bronze Age Cremation Burial [1101] contained a female skeleton, based on cranial morphology, robusticity and size of elements (Jacklin 2008). None of the other burials containing adult remains included any diagnostic skeletal elements in order to assess sex.

Metric Analysis

It was not possible to undertake metric analysis of the inhumed skeletons.

Cremated bone shrinks at an inconsistent rate (up to 15%) during the cremation process and it was therefore not possible to measure any of the bones from these burials.

Non-Metric Traits

Non-metric traits are additional sutures, facets, bony processes, canals and foramina, which occur in a minority of skeletons and are believed to suggest hereditary affiliation between skeletons (Saunders 1989). The origins of non-metric traits have been extensively discussed in the osteological literature and it is now thought that while most non-metric traits have genetic origins, some can be produced by factors such as mechanical stress (Kennedy 1989) or environment (Trinkhaus 1978).

Non-metric traits were not reported by Jacklin (2008) for the Early Bronze Age inhumed skeletons.

In the cremation burials, bridging of supra-orbital notch was observed in the left orbit of Early Bronze Age Burial [7256]. The young middle adult identified in Late Middle Bronze Age Cremation Burial 9 had ossicles in their cranial sutures (although it was not possible to determine the exact location where the ossicles occurred). The presence of ossicles in the lambdoid sutures has been related to deformation in the shape of the cranium, being found in studies of crania deliberately modified as a cultural practice and those deformed through premature fusion of a suture (O'Loughlin 2004; Sanchez-Lara *et al.* 2007). In theory, increased tension placed on the opposite side to the fused suture spreads the suture apart, encouraging the formation of ossicles within the suture to bridge the gap (Sanchez-Lara *et al.* 2007). However, Bennett (1965) has suggested that the formation of ossicles in this suture may be related to stresses placed on the growing cranium during foetal life and early infancy.

Pathological Analysis

The analysis of skeletal and dental manifestations of disease can provide a vital insight into the health and diet of past populations, as well as their living conditions and occupations. Manifestations of disease were not, however, observed amongst any of the inhumed skeletons or cremated remains.

Dental Health

Analysis of the teeth from archaeological populations provides vital clues about health, diet and oral hygiene, as well as information about environmental and congenital conditions (Roberts and Manchester 2005). According to Jacklin's (2008) report, 24 permanent teeth were recovered with Early Bronze Age inhumed Skeleton 100 and a total of 16 deciduous teeth were found with Skeleton 101. Skeleton 101 did not show evidence for dental disease.

While a number of tooth root fragments were present in Early Bronze Age burial [1101] and the Late Middle Bronze Age cremated remains, none showed evidence for any signs of dental pathology.

Calculus
If plaque is not removed from the teeth effectively (or on a regular basis) then it can mineralise and form concretions of calculus on the tooth crowns or roots (if these are exposed), along the line of the gums (Hillson 1996: 255-257). Mineralisation of plaque can also be common when the diet is high in protein (Roberts and Manchester 2005: 71). Calculus is commonly observed in archaeological populations of all periods, although poor preservation or damage caused during cleaning can result in the loss of these deposits from the teeth (Roberts and Manchester 2005: 64).

According to Jacklin's (2008) report, the mandibular teeth of Early Bronze Age Skeleton 100 showed evidence for slight calculus deposits.

Dental Enamel Hypoplasia
Dental enamel hypoplasia (DEH) is the presence of lines, grooves or pits on the surface of the tooth crown, and occurs as a result of defective formation of tooth enamel during growth (Hillson 1996). Essentially, they represent a period when the crown formation is halted, and they are caused by periods of severe stress, such as episodes of malnutrition or disease, during the first seven years of childhood. Involvement of the deciduous (milk) teeth can indicate pre-natal stress (Lewis 2007). Trauma can also cause DEH formation, usually in single teeth.

According to Jacklin (2008), dental enamel hypoplasia was present in two of the 24 teeth of Early Bronze Age Skeleton 100. The maxillary right and left canines were affected.

Funerary Ritual

Early Bronze Age Burials
Cremation Burial [1101] was found in association with Barrow G1026, immediately to the north of the Early Bronze Age ring-ditch (Jacklin 2008). The burial contained and 1141g of cremated bone of a female young or young middle adult, which represents 70% of the expected quantity of bone. Hazelnut shell, flint flakes and blades, as well as fire-cracked stones were also recovered from the burial.

A second, isolated Early Bronze Age cremation burial (excavated from a pit in Droveway 5) was unurned and contained less than the quantity of bone normally recovered from a modern cremation. The burial included the remains of a possible male adult.

The two Early Bronze Age inhumed skeletons (burials 100 and 101) found in association with Barrows G1026 and G1941 were represented by a younger adult possible male (Plate 84) and an infant (Plate 85). The adult was interred in a crouched position on his left side in a north to south orientation, while the infant was buried in a crouched position on the right side in a west to east orientation. The arms of both individuals were flexed with the hands under the chin. Notably, Skeleton 101 was lying on, or wrapped in, the inner surface of a sheet of birch bark, or possibly within a log coffin (see *Waterlogged Wood*). An Early Bronze Age food vessel (see *Prehistoric Pottery Cat*. 41), and a perforated shell were associated with the skeleton.

According to Melton *et al*. (2010: 798), there are 75 examples of log coffin burials that date to the Early Bronze Age; from 2300 BC to 1700 BC. They occur across Britain, with particular clusters in Yorkshire, Wessex and East Anglia/the East Midlands. The majority of these were made of oak, though elm was also used in at least one coffin (*ibid.*: 799). In Perthshire, at Forteviot, a coffin made from birch bark survived in an Early Bronze Age burial chamber due to unusually good organic preservation at the site (University of Glasgow 2009).

At Trumpington Meadows, Cambridgeshire, the tightly crouched skeletons of a male and female young adult dating to the Early Bronze Age were buried together with Beakers in a rectangular grave. Comparable to those recovered from Bar Pasture, four cremation burials dating to the same period were also found at Trumpington Meadows, three of which were unurned (Evans *et al.* 2018).

Late Middle Bronze Age Cremation Burials
While there are considerably fewer Middle Bronze Age burials in Britain compared to those dating to the Early Bronze Age, it is clear that by far the most dominant funerary rite in the Middle Bronze Age is cremation and subsequent burial, and very few inhumations from this date have been found (Caswell and Roberts 2018: 340, 343).

Middle Bronze Age cremation cemeteries are commonly associated with barrows, ring-ditches or are simple flat cemeteries and are found throughout Britain, in particular in southern England and barrows are considerably smaller and simpler compared to those dating to the Early Bronze Age (*ibid.*: 334, 341). At Bar Pasture, a small Late Middle Bronze Age cremation cemetery containing 12 burials had been placed within the remains of three earlier mini barrows. AMS dating of alder charcoal from two of the burials (Burial 6 and 10) date this cemetery to the Late Middle Bronze Age, to 1069 BC and 1078 BC ±33. The burials were located within a 20m by 20m area, although the majority were clustered around the eastern edge of the eastern-most barrow and spanned an area of only 5m by 5m. According to Caswell and Roberts (2018), most Middle Bronze Age cremations are either single burials or small groups of no more than five burials. A similar small cemetery area was recorded at the southern end of the same field (termed the 'southern group'), where the heavily truncated remains of a small ring-gully [11230] formed the focus for another concentration of later Middle Bronze Age unurned cremations. Here the remains were so truncated and eroded, that no positive identification of bone parts could be made.

Analysis of the six urns recovered from the 'northern' cemetery suggests that four of the vessels had been used domestically before being used as cremation urns (burials 5, 6, 10, and 12: see *Prehistoric Pottery*). The urns were heavily truncated, with very little other than the bases, surviving. However, it was possible to determine that all six urns had been placed in the ground in upright positions. According to Caswell and Roberts (*ibid.*: 335), 66% of the 3133 Middle Bronze Age cremation burials they analysed were buried within a container, most of which were pottery vessels, which could be inverted or upright. However, Robinson (2007: 23-24) found that urns were represented at just under a quarter of cemeteries of this date in East Anglia and in most cemeteries, both urned and unurned burials were found.

Artefacts are common inclusions and have been found in a third of cremation burials of this date (*ibid.*: 336), but are less common in East Anglia, with only eight burials from 60 cemeteries analysed by Robinson (2007: 25) containing artefacts. At Bar Pasture, the only inclusions observed were shell in five burials and a fossil/ bead in Cremation Burial 6.

Analysis of the Bar Pasture Middle Bronze Age cremated remains revealed that non-adult burials outnumbered adult burials at a ratio of 2:1. Age could be estimated in a larger number of burials in Caswell and Roberts' study (2018: 338), and adults or middle adults were by far the most common age group in these cemeteries (*ibid.*), while at Bar Pasture, three quarters of the burials contained non-adults, in particular younger children, aged six years or less (50%).

There were no discernible differences between the burials of the adults and non-adults, both were contained within and without urns. However, spatially, some differences were apparent. Burials 1 and 2 both contained adults and were not part of the main cluster of burials; these two burials were slightly offset to the west of the main group, focusing around the westerly and central two barrows. The main focus of burials, which contained all of the non-adult burials and the remaining two adult burials was to the eastern edge of the most easterly of the three barrows.

It was not possible to estimate sex in any of the Middle Bronze Age cremation burials at Bar Pasture. Sex estimation is difficult in cremated remains as the relevant skeletal elements are often missing or too fragmentary to be reliably used and this was also reflected in Caswell and Roberts' (2018) study, where sex could only be assessed in 154 assemblages, with females slightly outweighing males.

At Bar Pasture, 16.7% of Middle Bronze Age burials contained two individuals (burials 11 and 12), while double burials only occur in 3% of burials from this date (*ibid.*: 332). However, Robinson (2007: 21) found that 10.3% of burials of this date in East Anglia contain more than one individual, suggesting the practice of multiple burial is more common in this region than elsewhere in Britain.

The average weight of the Bar Pasture cremated bone assemblages was 443.9g, which is considerably higher than the average for the period, calculated by Caswell and Roberts (2018: 339), of 374.6g. However, the weight varied considerably between burials, ranging from 1.15g to 2066.7g, with the latter being quite rare as more than 2000g of bone are only found in 2% of Middle Bronze Age cremation burials (*ibid.*). The wide range of weights also observed at other cemeteries from this date, due to varying levels of original bone selection, perhaps because not the whole cremated individual was deemed essential for burial (*ibid.*; Robinson 2007: 21), the different ages of individuals buried (neonate to adult), the different numbers of individuals buried in one grave and inconsistent levels of truncation. Notably, Caswell and Roberts (*ibid.*: 339) found that within cemeteries burial weight was relatively consistent, which was not the case at Bar Pasture.

According to McKinley (1997: 137) widely varying quantities of human bone have been recovered from cremation burials dating to the Bronze Age. In the 4000 cremation burials of undisturbed adults analysed by McKinley, the amount of bone varied between 57g and 2200g (*ibid.*). No associations as to the quantity of bone and the age and sex of the individual buried were ascertained. 'To date, however, only one apparent pattern in the weight of bone in a burial has been evident and that is with relation to "primary" Bronze Age barrow burials. Of the 18 such burials so far examined by the writer [McKinley], all *consistently* produced weights of bone of between 902.3g and 2747g with an average of 1525.7g.' (*ibid.*: 142).

Some Middle Bronze Age cemeteries in East Anglia are considerably larger than the Bar Pasture examples. At nearby Stanground South, Peterborough, a multi-period cemetery was excavated, dating from the Early Bronze Age to the Roman period. The earliest phase of burial comprised six unurned cremation burials associated with an Early Bronze Age burnt mound (Caffell and Holst 2012). Seventy-eight cremation burials (including three previously excavated) dating to the Middle Bronze Age were buried in an urnfield to the west of the burnt mound. A relatively low proportion of the burials were provided with an urn, one was in a cist, and the remainder were unurned. There was no correlation between age and the provision of urns. Ten burials contained more than one individual, mostly adults/adolescents with young children or babies (*ibid.*). A parallel could be drawn with the occurrence of paired burials at this site, where adults/adolescents were buried next to children/babies. Only one burial contained a worked bone artefact and two contained small quantities of animal bone (all non-adults). A high proportion (44.4%) of the individuals buried in the urnfield comprised of children, predominantly under the age of six years and including foetuses or neonates. The adults included individuals of both sexes. Bone was generally well burnt and the quantities of bone present per burial were comparable with similar cemeteries (ranging from 0.2g to 2781.2g; mean 404.0g; *ibid.*).

Excavations of a Middle Bronze Age cremation cemetery in Broom, Bedford (Dodwell 1997a) identified 42 features containing cremated human bone. The assemblages consisted of 14 urned and 28 unurned burials. Analysis of the human remains revealed that the burials contained the remains of a least 44 individuals. Just over half of the individuals identified at Broom were adults (24 adults) and between 15 to 18 of the individuals were less than 12 years of age when they died (with at least six of the non-adults aged five years or under). Four of the adults could be tentatively sexed, three of whom were believed to be male and one female (*ibid.*). At Broom there were no apparent differences between burial rite for the different age

groups - both adults and non-adults were buried within and without urns.

At Papworth Everard, Cambridgeshire, 33 burial features dating to the Middle Bronze Age were excavated, containing a minimum of 38 individuals. The cemetery was arranged in a linear fashion, covering an area of 6m by 12m, with burials arranged in clusters. A total of 42% of burials contained urns, but no grave goods were recovered, other than three fragments of animal bone (Gilmour *et al.* 2010). Around a fifth of individuals were younger than 12 years old, while 73% of individuals were adults, six of whom were possibly female and three were male. Eight double burials were identified at the site (*ibid.*: 18).

During phased excavations at Barleycroft, Cambridgeshire (Dodwell 1996, 1997b) a total of 42 Bronze Age cremation burials were identified. Between 15 and 16 of the individuals were adults, while the majority of burials contained the remains of non-adults (under 12 years of age, 15 of whom were less than seven years old). Amongst the adults from Barleycroft, four were thought to be male and three were believed to be female. Three of the burials contained multiple individuals, in each case non-adult remains were identified with adult remains. Again, no apparent differences between burial rite for the different age groups were identified amongst the burials at Barleycroft (both adults and non-adults were buried within and without urns). Interestingly, the sides of two of the cremation burials revealed signs of burning in-situ, and may have been pyre deposits.

Whilst at a considerable distance from the Site, recent excavations at Jack Hill, Allithwaite, Cumbria (Elsworth 2015) uncovered an unenclosed Bronze Age cremation cemetery that is similar to the Bar Pasture cemetery, in that it contained 13 burials (one of which contained no human bone; Keefe and Holst 2017b), which spanned an area no larger than 5m by 5m. Previous excavations in the vicinity revealed that the site was located 0.5km to the south of an existing Bronze Age cremation cemetery (Wild 2003: 23), and only 200m east of a further Bronze Age cremation discovered in the mid-1800s.

The evidence suggests that the Middle Bronze Age cemetery from Bar Pasture is relatively typical for East Anglia, with a moderate number of urned and unurned burials that are lacking in artefacts, however, containing an unusually large number of non-adult individuals.

Late Iron Age Cremation Burials

Two of the three burials thought to the date to the Late Iron Age (burial pits [5284] and [5287]) have been dated on the basis of their proximity to an Iron Age smithy, while the cremated bone from ditch fill (5087) was recovered from the smithy enclosure ditch and is likely to represent a disturbed burial. All three burials were unurned and appear to have been unaccompanied by grave goods. One of the burials was thought to contain an adolescent or adult, while the age of the two very small assemblages could not be assessed.

Iron Age cremations are relatively rare in most parts of England other than the SE after the 6th century BC (Cunliffe 1991: 511; Fitzpatrick 2007: 125), though this is likely due to a lack of AMS dating and frequent mis-interpretation of unurned cremation burials as dating to the Bronze Age. South-eastern Late Iron Age cremation burials are usually thought to be Aylesford-type and tend to be concentrated on Kent, Essex, Hertfordshire, Bedfordshire, Buckinghamshire and Cambridgeshire. They are represented by relatively small groups of 10 to 15 burials, which tend to be urned and contain few pyre goods, but some grave goods (Fitzpatrick 2007; Hill *et al.* 1999: 264), neither of which was the case here. Hill *et al.* (1999: 264) suggest that 17 Late Iron Age cremation cemeteries were recorded in Essex and Cambridgeshire at the time of publication.

A Late Iron Age cremation cemetery with eight burials was excavated at Hinxton, Cambridgeshire. Five of the burials were surrounded by ditches (Hill *et al.* 1999). The burials largely contained adults, though two burials contained an adult and a non-adult and one contained only a juvenile. The sex of one adult could be estimated and was a probable female (*ibid.*: 249). The burials contained up to nine pottery vessels and three interments also contained metal artefacts and it has been argued that this cemetery may belong to the northern Aylesford-type.

Discussion and Summary

Two Early Bronze Age skeletons in crouched positions were associated with Bronze Age barrows in the northern part of the Site. The skeletons represent an infant aged one to six months and a possible young male or young middle adult. The infant appears to have been wrapped in bark, possibly from a birch tree and was associated with a food vessel and perforated shell. The adult had probably experienced childhood stress, which manifested in the form of lines on the teeth. Slight dental plaque concretions were noted on the teeth from the lower jaw.

Two Early Bronze Age cremation burials were unurned and contained adults. One of the burials was located in the central southern area of the Site, associated with a droveway, and contained a male, with slightly less than half the amount of bone expected from a modern cremation. The second cremation burial was associated with a barrow and contained 70% of the expected quantity of bone of a female young or young middle adult.

The 12 cremated bone assemblages associated with three Early Bronze Age mini-barrows appear to have formed a small, unenclosed, Late Middle Bronze Age cremation cemetery. The largest quantity of bone from any of the burials was recovered from Cremation 9 and weighed slightly more than the average expected for a single cremated individual from modern crematoria. Nevertheless, none of the identifiable skeletal elements present appeared to have been duplicated, suggesting that a single individual was present. Variability in the weights of the cremated bone assemblages appear to have been caused by bone selection, post-depositional activities, as well as the number of individuals included in the burial and age of the interred individual.

The degree of fragmentation of the bones in the majority of burials may, however, have been caused by the manipulation of the cremated remains, for example raking the bones on the pyre while still hot. Pyre technology does not appear to have been entirely understood at Bar Pasture, with insufficient temperatures reached or time allowed, for the complete calcination of the human remains in all of the burials.

Osteological analysis of the remains revealed that the 12 cremation burials included four adults, one of whom was possibly a young middle adult. The remaining eight burials contained the remains of ten non-adults, which included four young juveniles, two older juveniles, two infants, one perinate and one adolescent. Both adults and non-adults were buried both in cremation urns and without cremation urns. The predominance of non-adult remains at Bar Pasture appears to be unusual compared to other cemeteries, where adults were more prevalent. However, overall, the character of the Middle Bronze Age cemetery follows the trends observed at comparative sites throughout Britain.

The osteological analysis of the Middle to Late Iron Age cremated bone assemblages has revealed that all three of the cremated bone assemblages were very well burnt, suggesting the cremation process had been proficiently completed. Each cremated bone assemblage appeared to contain the remains of a single individual. Due to heavy fragmentation and the incomplete nature of the assemblages only burial (5286) could be aged broadly, and appeared to be 14 years old or older when they died.

All three Iron Age burials contained considerably less than the quantity of bone expected from modern cremations, suggesting that only a portion of the individual's remains were necessary for interment, or that later disturbances resulted in the truncation of at least burials (5283) and (5286). Iron Age cremation burials are relatively rare in Britain, with the exception of the Aylesford-type burials of south-eastern England and it is possible that these burials form part of this funerary custom.

Chapter 7

Discussion and Synthesis

INTRODUCTION

The extensive, decade-long excavations yielded evidence dating from the Early Mesolithic (finds only) through to the Early La Tène Iron Age, representing human activity at this location over a period of *c.* 9000 years. Aside from the odd residual pot sherd, no evidence was found for Roman, Saxon or Medieval activities. The picture of landscape utilisation and occupation at Bar Pasture is supported by the extensive excavations across Pode Hole Quarry to the north (Daniel 2009), Tower's Fen to the NE (Mudd and Pears 2008) and Willow Hall Farm Quarry to the SW (Ingham 2017, 2018).

THE EARLIEST EVIDENCE

The small number of unstratified and widely distributed Mesolithic artefacts from the Site reflect the earliest human activity in the Bar Pasture landscape, with the comparatively large size of many blades indicating an Early Mesolithic date for much of the assemblage. Little indication is provided of the activities undertaken by these hunter-fisher-gatherer peoples, but the absence of microliths and presence of several serrated blades may indicate an emphasis on plant-working over hunting. Mesolithic lithics were not identified at nearby Pode Hole Quarry or Tower's Fen.

EARLY TO LATE NEOLITHIC

It was during the Early Neolithic that the first sedentary activity occurred at Bar Pasture. Archaeologically, this period is represented by several pits that formed part of a larger waterhole cluster. The suggestion is that this particular part of the Site was originally a natural wet spot; perhaps a pond or boggy hollow that became an area of some significance to the early fenlanders. Excavation showed the large, almost pond-like feature to have been repeatedly recut, cleaned out and re-utilised; perhaps at times abandoned, but then revisited at later dates. Archaeology of this date is extremely rare for this particular fen-edge landscape. No features or finds from the Neolithic were recovered from the extensive excavations of nearby Pode Hole Quarry or Tower's Fen (*ibid.*). Significant finds of Neolithic date have, however, been recovered from excavations further afield, such as at Flag Fen (Pryor 2001), Sutton Gault, Mepal (Tabor *et al.* 2016), Must Farm, Whittlesey (Tabor 2010), and off the fen edge at both Maxey (Pryor 1998) and Etton (French and Pryor 2005; Pryor 1998).

Although the intercutting sequence at Bar Pasture was not always clear, it appears that two pits [11751] and [11749], both forming part of the complex but not directly related, were the earliest, stratigraphically. From one of the basal fills of [11751] was recovered a part of an Early Neolithic cookpot with burnt residue adhering to its inner surface. Fortuitously, this produced a radiocarbon date of 3636-3382 BC at 95.4% probability (SUERC-89320), placing it at the end of the Early Neolithic period, and making it the earliest dated feature on the Site - and also within the surrounding fenland. Also recovered from this pit fill were two red deer antler tines and a Neolithic flint flake. Antler tines make perfect digging tools, and have been recovered from a number of Neolithic flint mines (Barber *et al.* 1999). In the 1960s, nine antler 'picks' were found close to a Neolithic barrow cemetery near Langwood Fen, Chatteris (Mason 2015).

Bordering pit [11749] appears to have been dug in this 'watery locale' sometime later. From its fills were recovered joining sherds from a Peterborough Ware bowl of Ebbsfleet sub-style as well as 11 elaborately decorated sherds from a Peterborough Ware Mortlake sub-style bowl; all of Middle Neolithic date. The use of three different types of impressing methods (whipped cord tool; fine incising device and small fingernail) on the Mortlake bowl is possibly unique. According to Morris, the Ebbsfleet and Mortlake bowls belong to a local tradition of Peterborough Ware vessels made from shell-gritted fabrics. The pit's upper fill unusually produced a complete and unabraded Beaker base with incised geometric decoration. Although the association of Beaker sherds on sites with Peterborough Ware is known, none have been found stratified in a single feature such as this, making the association of these sherds also unique. Morris believes there are two possible explanations for this, the first being that the deposition of parts of these vessels took place at the very end of Impressed/Peterborough Ware pottery use and the very beginning of the making and discarding of a Beaker in the fen-edge landscape, *c.* 2500 cal BC, which seems chronologically to be rather unlikely. Alternatively, that the Ebbsfleet and Mortlake bowl sherds were curated until sometime after the arrival of Beaker culture had impacted significantly upon the fen-edge world, resulting in a symbolic demonstration of the end of the old way of life and the offering of a pot representing the beginning of a new way of life, that of the Beaker world. In sum, it appears that the selection and deposition of the upper parts of two stylistically

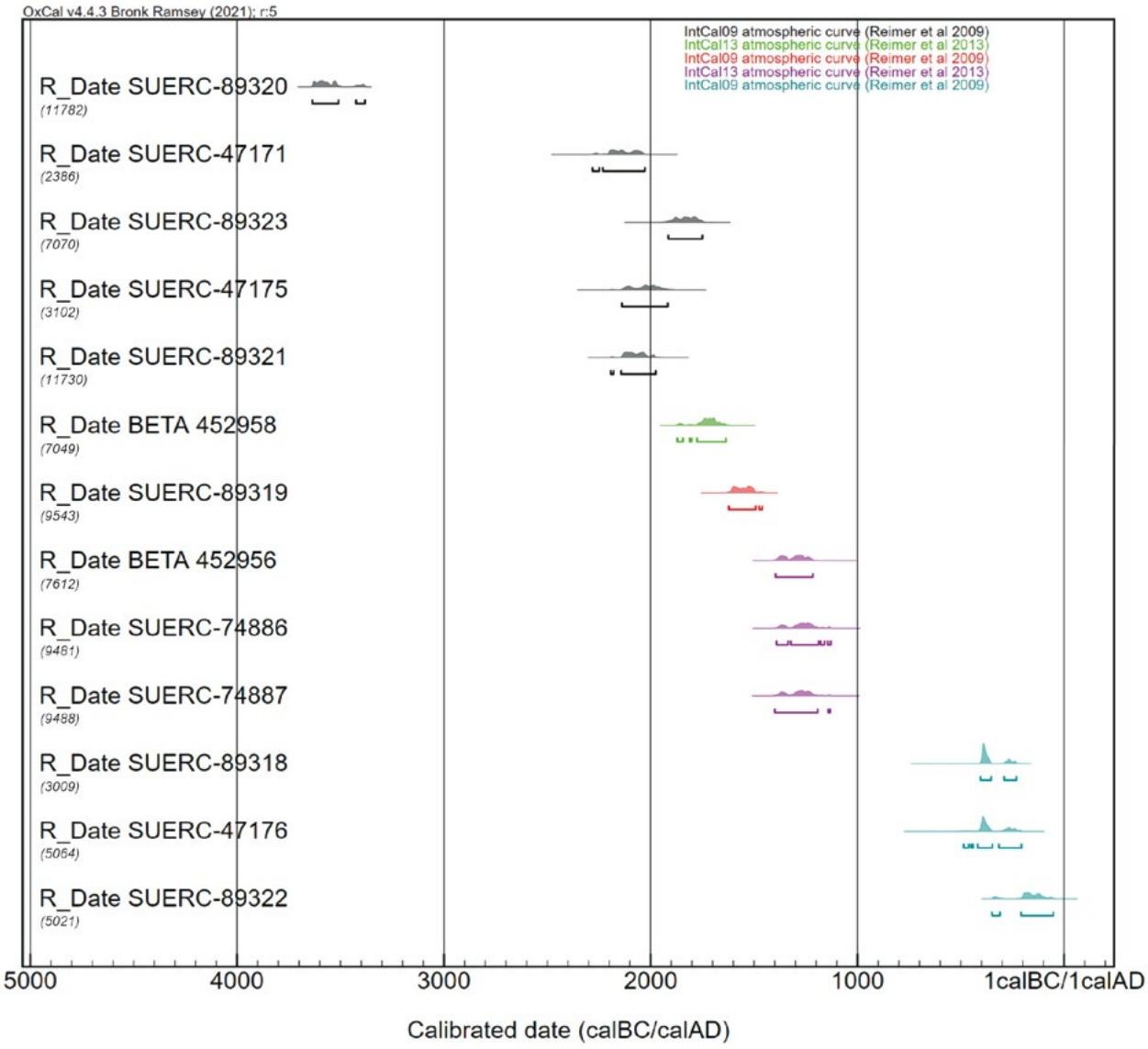

Chart 22. Probability distribution of selected radiocarbon dates from the excavations

different Impressed Ware bowls and their separate placements into the lower and middle fills of this pit, followed by the placement of a complete incised Beaker base into the upper fill were deliberate acts of ritual symbolism. It certainly appears that the pottery sherds within this particular pit were specially selected to create a structured deposit of fragmented objects. This must have been a significant action at the time, undertaken at a significant place.

The 'watery locale' that these pits had been dug into, clearly had some longevity as a special place in the fenland landscape, perhaps having some kind of symbolic or votive purpose on the edge of the marsh. The deliberate selection and structured deposition of ceramic material, such as appears to have occurred here, is a pattern commonly suggested for Neolithic pits (see Pollard 2001; Richmond 2005; Thomas 1991). The similar infilling of Neolithic pits with selected pottery vessels, including Peterborough Wares, has been recorded at a few other fenland sites, including Barleycroft Site H (Evans and Knight 1997), Fengate Co-op site (Gibson 1998) and Padholme Road, Fengate (Pryor 1974). Other pits specifically with Peterborough Wares in the wider East Anglia region are documented by Garrow (2006, 2007) and include Brancaster (Hinchcliffe and Sparey-Green 1985), Middle Harling (Rogerson 1995), Redgate Hill (Healy *et al.* 1993) and Hinxton Quarry (Mortimer and Evans 1996). It has been said these specific pits may have had some ritual significance for the local population, perhaps marking their association with a particular area. This can perhaps be viewed as a means of using artefacts from the 'material world' to create a specific meaning for a location - or even to transform the way in which a place was perceived (Thomas 1999: 87, 224). Even the act of digging the pit may have had some significance, perhaps reflecting the growing sense of the ability of a community to transform their

natural environment. This may indeed be the case with Bar Pasture's Peterborough Ware pit, with the feature representing a symbolic marker at the edge of the 'untamed' fen.

The pollen evidence from the watery area that these pits had been dug into, shows the presence of alder and willow, indicating locally wet conditions during the Neolithic, with willow overhanging or growing within it. The wider area had some open grassland, which likely reflects a landscape subject to the beginnings of clearance and human occupation or exploitation, but with no convincing evidence from the pollen or macrofossil record for any form of cultivation. Areas of woodland containing oak, hazel and lime are also evident in the locality. Carbonised macrofossils were few, but did identify indeterminate carbonised cereal grain and hazelnut shell, which could represent scattered debris from Neolithic activity.

As might be expected, the animal bone assemblage from this period reveals a much higher reliance on wild food taxa than in later periods. The range of wild mammals found includes a predominance of red deer, with aurochsen, roe deer and wild boar also being present. Red deer were likely exploited for both meat and antlers and some shed antlers were almost certainly collected specifically for working. Roe deer also appear to have been occasionally hunted and were presumably used to supplement the meat diet. Wild boar may also have been hunted for meat, but the evidence is sparse.

BEAKER

A number of features on Site contained sherds of Beaker pottery, attesting to small-scale, localised settlement activities during this period. The identified 'Beaker' features include at least four suggested buildings, being represented by three small post-built structures and one larger, possible rectangular building associated with pit groups containing what were seen as 'intentional deposits'. Also identified was a discrete pit alignment, a large waterhole and numerous smaller pits and pit groups containing fragments of Beaker pottery and flint. Several sites in the area have been found to contain Beaker occupation, usually represented by small pits containing lithics and pottery characteristic of the period. Similar evidence was recovered from Pode Hole Quarry (Daniel 2009:19).

The three small post- and stake-built structures (interpreted as huts) were built in the middle of what was soon to become the Period 2B 'Barrow Field'. Two of the small huts contained sherds of Beaker pottery, whist the third was dated stratigraphically. It is tempting to suggest that these structures represent small shelters used by the barrow-builders. A fourth post-built structure located some distance away on the western side of the Site probably represents the remains of a rectangular Beaker building. One of its associated pits contained a notable assemblage of Beaker ceramics from at least seven and probably nine vessels. Eight worked flints were also recovered, including thumbnail scrapers, a backed knife and a plano-convex knife. Such flints are typical of the Late Neolithic/ Early Bronze Age and are commonly associated with Beaker ceramics. A calibrated radiocarbon date of 2282-2029 cal BC (95.4%) was obtained from a charred hazelnut shell from this pit.

Early researchers (e.g. Clark *et al*. 1960; Holgate 1988), indicated that permanent, village-like settlements were either completely archaeologically invisible around this time, or had been hidden as a result of post-depositional factors. Others viewed the absence of obvious houses as positive evidence for mobile occupation practices (Thomas 1991: 28). Over many years, little consideration was given to the issue of settlement, with discussions being dominated by monuments (e.g. Richards 1993). Edmonds (1997: 104) placed more consideration of settlement however, and emphasised that a number of different scales of occupation may have existed, with 'short term camps for a handful of people; settlements occupied by an extended family; and places where families gathered, perhaps for a season, perhaps for a generation or more'.

Five Beaker pit groups were found in the same area as the identified rectangular structure. One of the pits (in Beaker Pit Group 4) contained unabraded sherds from eight different Beakers, including one with a handle. Handled Beakers are not common, but have been found all over Britain from Cornwall to Aberdeen, Breconshire to Norfolk (Clarke 1970). They belong to the wider Southern British Beaker tradition, which is important because the Northern British Beaker tradition is of Dutch descent, 'an intrusive, ready-formed Continental tradition', while the Southern 'represents the formation of a significant and peculiarly British Beaker tradition' (*ibid.*: 197).

The identified Beaker pit alignment; comprising of seven pits, may have functioned as an important ownership boundary or other kind of marker within the fen-edge landscape. It may be significant that the alignment was created in an area that later became occupied by settlement structures of Middle Bronze Age date.

Two of the Site's pits were seen to contain both Grooved Ware ceramics as well as Beaker pottery. Grooved Ware had an extended period of use from *c.* 3000-2000 BC; it starts in the Later Neolithic (3000-2400 BC) but is also found in association with Beaker pottery in the Later Neolithic/ Early Bronze Age (Chalcolithic), around *c.* 2400-2000 BC (Morris, *pers. comm.*). The presence

of Grooved Ware suggests low-level, Late Neolithic (Chalcolithic) activity at the northern end of the Site. Whilst one of these features was isolated in the landscape, the other lay buried beneath Period 2B Barrow G1941, and provides evidence of Beaker Period activity prior to the construction of the monument, thereby providing a *terminus anti quem* for the digging of the barrow ditch and raising of the soil mound. The building of the barrow directly on top of the Grooved Ware/ Beaker pit can perhaps be interpreted as either an act of desecration to remove or hide the past from the present, or as an act of incorporation and recognition of the past as part of the present in a gesture of continuity.

Other Beaker features included a large waterhole and a number of smaller pits and pit-groups, all containing Beaker pottery, as well as worked flint, charcoal, heat-affected pebbles and fragmented animal bone; many fragments displaying charring. One pit contained a large piece of daub that displayed a wattle impression; several others contained what was clearly 'hearth debris'. A radiocarbon date from a charred hazelnut from one Beaker pit returned a date of 2143-1973 cal BC (93.7%), (SUERC-89321).

The majority of the identified Beaker pits were found to contain consistently small assemblages of flint artefacts. The high proportion of scrapers perhaps indicates that hide preparation was a significant activity, whilst the low number of knives and utilised flakes may indicate that cutting activities were less prevalent. The recovery of charred plant macrofossils of barley, wheat and hazelnut shell from many of the Beaker features is in keeping with other sites in the region, although the concentrations were small and are likely to represent nothing more than low-intensity and transient occupation. The dominance of alder charcoal from most contexts likely reflects the exploitation of a readily available local resource, such as damp alder-dominated woodland or alder carr. The evidence together suggests semi-sedentary activities during this period focused on specific parts of the Site.

EARLY BRONZE AGE

Early Bronze Age burials

During the Early Bronze Age, a barrow cemetery was established on an area of slightly higher ground within the Site. The creation of five barrows, all closely sited, heralded the commencement of Bar Pasture's 'monumental landscape'. The barrows form part of a wider burial setting, that continues for some distance along the fen edge, to both the north and south (Figure 71; Hall and Coles 1994: 76, fig. 48). To the immediate north, four ring-ditches and a barrow mound without ditch, all representing former burials have previously been identified at Pode Hole Quarry (Cuttler and Ellis 2001; Daniel 2009: 147); another lies to the east of Thorney and one has been excavated *c.* 2km south of Bar Pasture at Brigg's Farm. Five additional barrows, all Scheduled as Ancient Monuments, are located close to Gores Farm, less than 1km to the SE (Daniel 2009: 14; Pickstone and Mortimer 2009). Sited on the liminal fen margin, between wet and dry ground, was likely a purposeful action, 'where passage from the world of the living to the world of the dead was perhaps envisaged' (Daniel 2009: 147). As Daniel alludes, the alignment of burial monuments likely 'accentuates a natural boundary, rather than creating an artificial one'.

The Bar Pasture barrows were predominantly contained within part of a clearly defined 'Barrow Field' represented by a number of early boundary ditches that appear to have purposefully delineated the eastern and southern sides of a sacred area that incorporated the monuments (Figure 72). The presence of an associated EW-aligned avenue (later followed by the laying out of Droveway 5), suggests the inclusion of some kind of 'processional way', directing people to and from the burial ground.

Four discrete burial ring-ditches were identified within the sacred area, with another (G11230) lying just outside of it to the south. These singular monuments ranged in size from just 6m in diameter (G11230); to one being 10m across (G1026) and then three of comparable size (G1941, G9380 and G9563), measuring 27.6m, 22.5m and 27m in external diameter, respectively.

Only two of the ring-ditches surrounded human burials. Within the centre of Barrow G1026 were the rather degraded remains of an adult crouched inhumation, possibly male, and estimated to have died between 20 and 25 years old. No grave goods were associated with the burial. A satellite cremation bordered this barrow to the north, and contained human bone fragments from an adult female aged between 21 and 35 years. The re-use or continuing use of burial monuments that had remained visible within the landscape, is a widely recognised practice during the Early Bronze Age (Jackson 2015: 142).

The human remains circled by nearby Barrow G1941 were of considerable interest. Back in 2003 a trench across this large barrow encountered the skeleton of a neonate that was found just inside the eastern ditch circuit. Most of the recovered bone was represented by skull fragments, and the burial lay in a small rectangular grave cut. During the fuller investigations of the barrow, a further grave cut was identified inside the southern ditch circuit, being just 1.2m long. Excavation showed it to contain the remains of a well-preserved crouched infant with accompanying grave goods. The baby lay on its right-hand side, facing south, with age at death given as between one and six months. The sex of the infant could not be ascertained. Significantly, the body

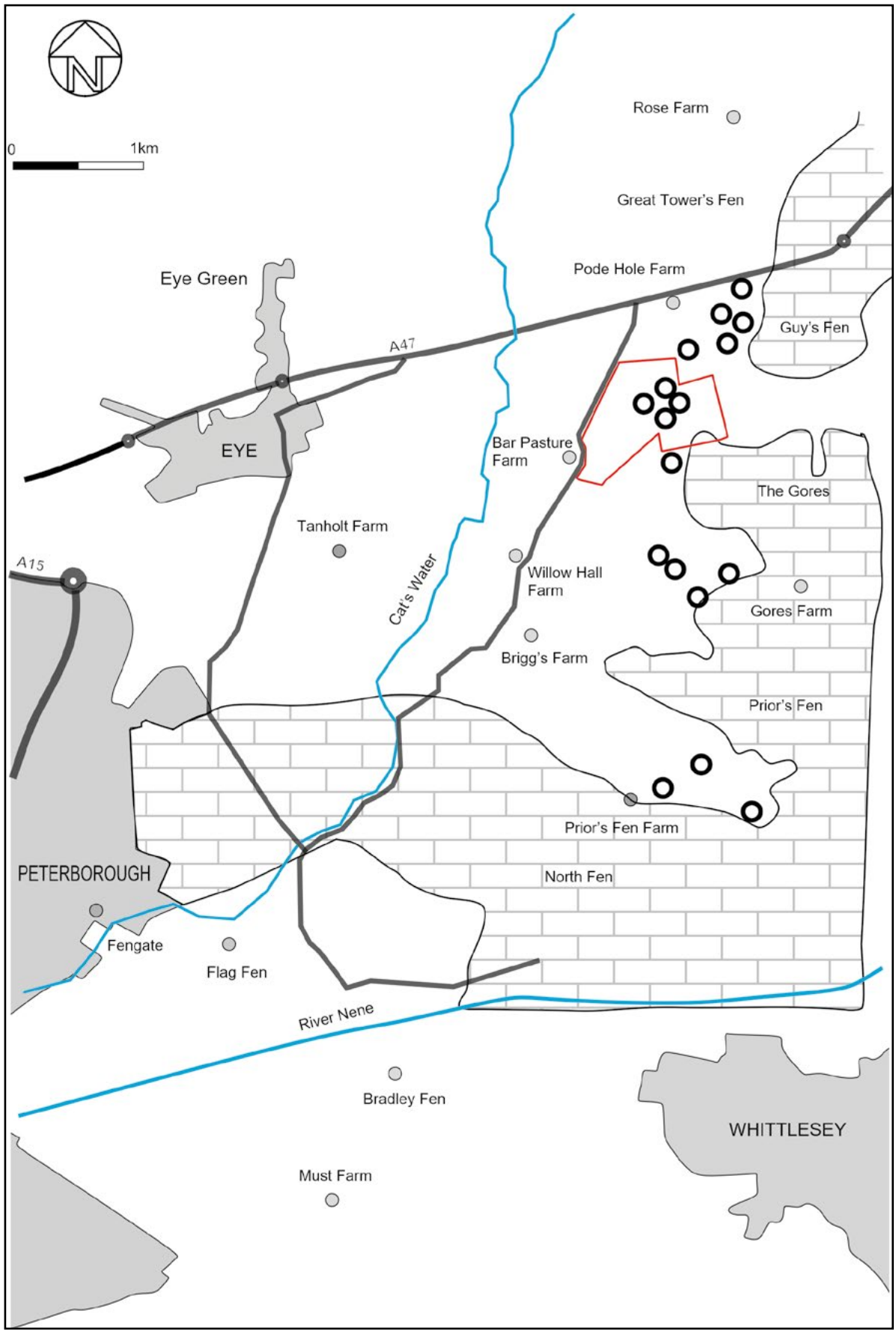

Figure 71 Distribution of barrows along the fen edge.

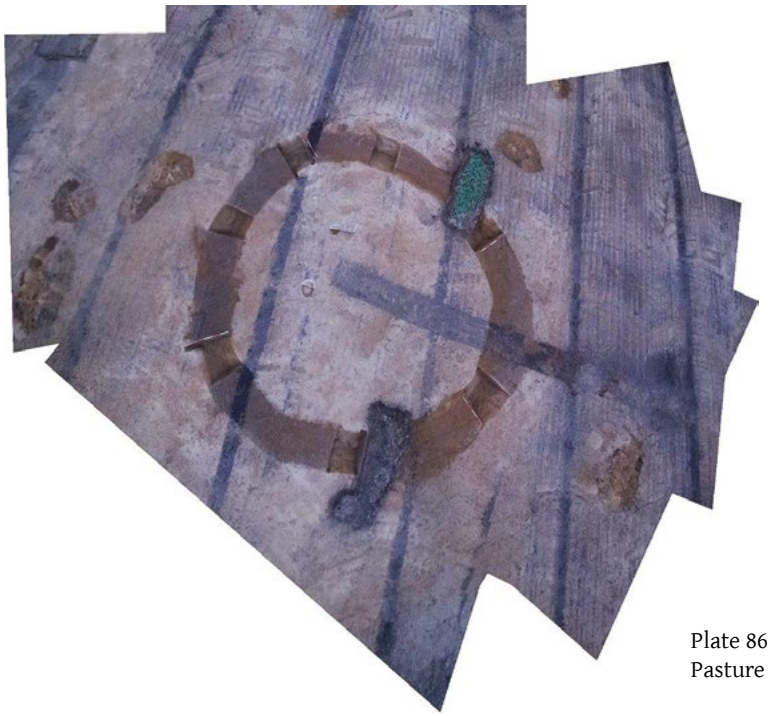

Plate 86 Barrow G9380 within the Bar Pasture 'Barrow Field'.

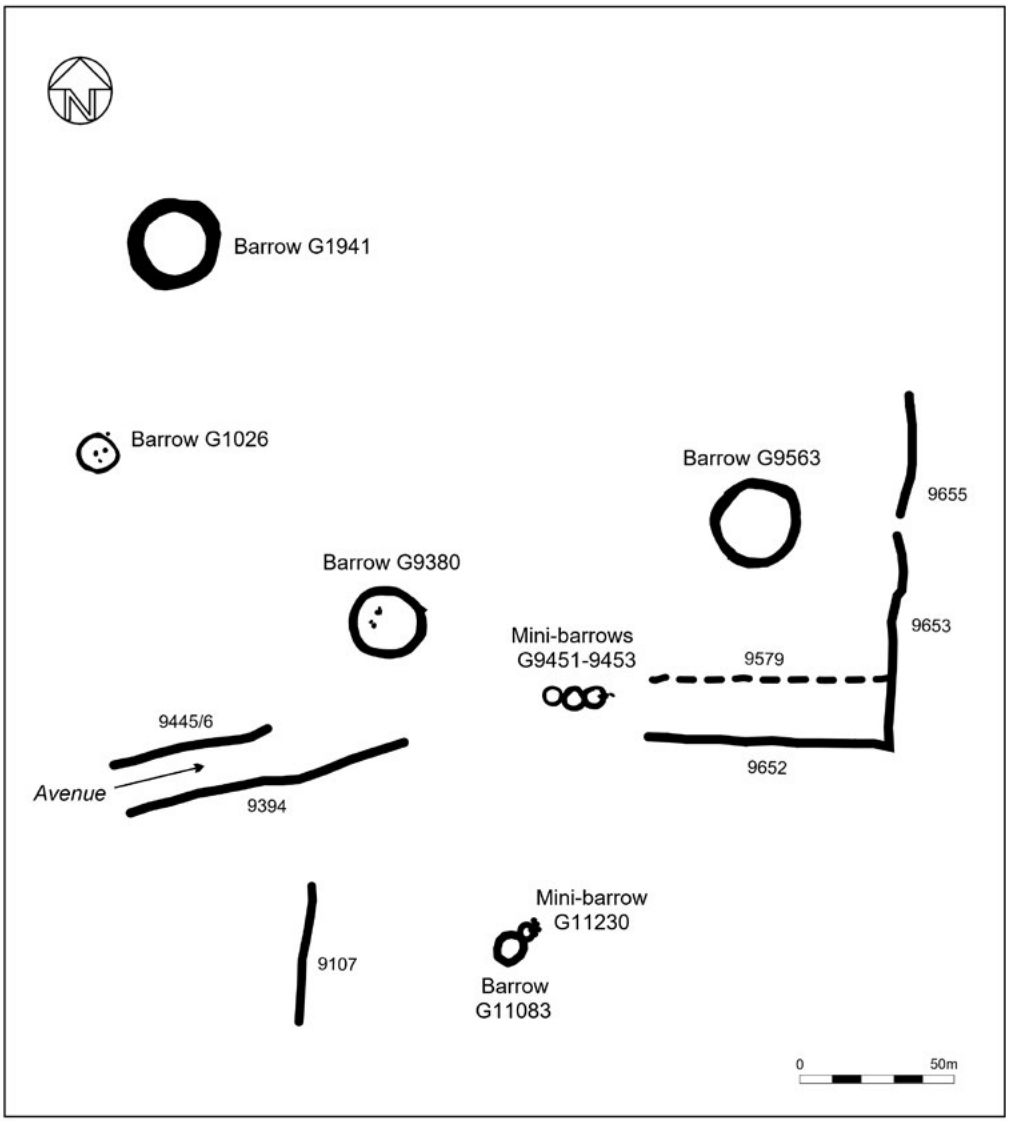

Figure 72 The Barrow Field.

Plate 87 Perforated shell wrist ornament found with infant burial.

had been carefully placed on a square and curved piece of birch bark, which may have once been a wrapping or container representing a form of coffin. The sheet of bark was slightly curved across the short axis, reminiscent of the shape of a log. Near the infant's face was a small, expediently made undecorated pottery Food Vessel that had been deposited as a grave offering (Plate 76). The absence of decoration on the pot may be due to the child's status within the community or to the speed of vessel manufacture. The overall impression is that it was made quickly (upon the unexpected death of a child), but by an experienced potter. Beneath the infant's left elbow was a perforated marine shell, recorded as a *Peppery Furrow Shell*, which could have derived from The Wash (Plate 87). Its position suggests it could have been worn as a wrist ornament.

Interestingly, seven perforated cockleshells, together with a 'holed' whelk, representing a probable necklace, were recovered from a Bronze Age ditch at nearby Tower's Fen (Plate 88, Mudd 2008: 71) and a similar find represented by three perforated cockleshells was discovered during excavations at Baston Quarry, Langtoft (Hutton 2008a, 2008b). Bar Pasture, Tower's Fen and Langtoft Quarry are today located more than 35km inland from the coast. As Evans (2015b) points out, however, these 'seashell' necklace settings are not entirely unexpected, as during the Bronze Age both sites were on the edge of saltmarshes, crossed by a myriad of tidal creeks fringing the region's former embayment of the North Sea. Evans (*ibid.*:1114) has stated that such items of personal adornment 'can only rank as modest personal- or group-category expressions when compared with the period's more flamboyant metalwork ornaments'. No such metalwork ornamentation has been found at either Bar Pasture, Pode Hole Quarry or Tower's Fen.

The discovery of the curved sheet of bark underneath the infant is of great significance. It is not uncommon to find archaeological evidence for the connection between trees and burial, as evidenced by the relatively large corpus of Early Bronze Age log coffin burials recovered from barrows, including a cluster in the Welland and lower Nene valleys of Leicestershire and East Anglia (Melton *et al.* 2010: 798; Parker Pearson *et al.* 2013), although if a *bark* mat is indeed associated with this infant's burial, it appears to be extremely rare. Indeed, only a few other known cases of Bronze Age inhumations 'being placed on a sheet of bark' are recorded at the time of writing, these being a possible coffin made from birch bark in an Early Bronze Age burial chamber at Forteviot, Perthshire, (University of Glasgow 2009; Taylor *pers. comm.*); a lidded bark coffin being constructed of two sheets of bark from Sigwell Barrow at Horethorne in Somerset (Gerloff 1975; Greenwell and Rolleston 1877); and the single known case of an inhumation being placed on a sheet of bark, within a log coffin at Milton Lilbourne, Wiltshire (Ashbee 1986: 45-6).

A potential parallel, some 80km north, was encountered during recent investigations ahead of the Lincoln Eastern Bypass. Here, a rectangular sheet of bark and soil staining, was found in a cut within the centre of a barrow, but no human remains were present (Diana Fernandes *pers. comm.*). Similarly, at West Heslerton, North Yorkshire, a rectangular soil stain with a U-shaped profile is reported as a probable degraded bark coffin of a child (Powlesland *et al.* 1986: 110).

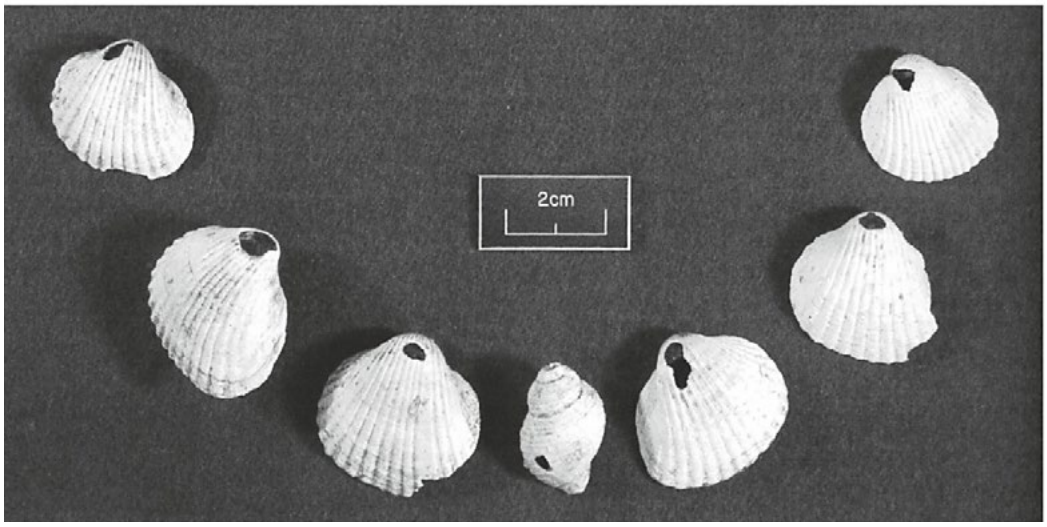

Plate 88 Shell necklace from bordering Tower's Fen (after Mudd 2008).

The wrapping of the infant in bark or within a log coffin before burial, provides a potent reminder of the possible social and ritual significance of trees, wood and timber during prehistory (see Bamforth and Taylor, above). A poignant insight into the Bar Pasture burial is provided by the suggestion that the bark is from a birch tree, which would have only allowed a small window of opportunity for its removal during the spring (Turner 1998).

Pottery found in association with the Bar Pasture barrows was by-and-large minimal. Indeed, despite a high level of excavation of the ring-ditches and all their internal features, the only pottery in addition to the Food Vessel associated with the infant burial in Barrow G1941, comprised of very small quantities of residual Beaker fragments and a number of predominantly abraded, grog-tempered vessel sherds. Fortuitously, a coil-built sherd found in the upper fill of barrow ditch G9563 contained burnt residue dated by C14 to the Early Middle Bronze Age, showing that the monument's ditch had almost completely silted in by this date. The presence of a moderate assemblage of similar pottery from Barrow G1026's ring-ditch is puzzling, and initially led the excavators to suggest a later monument. However, the location of the pottery in the western ring-ditch, combined with the western deviation of Middle Bronze Age Drove 5 'around' this feature, suggests that it was constructed during the Early Bronze Age, but finally infilled and levelled when the droveway was created.

Analysis of the numerous environmental samples taken from the barrow ditches recorded the presence of fire-cracked pebbles, charcoal, charred chaff and cereal grain, including possible barley. Traces of hazelnut were common, as well as leguminous seeds and a variety of snail species were recorded; one or two indicating damp and semi-aquatic conditions. Apart from the aforementioned pottery, the only other artefacts recovered from the ring-ditch fills were a few worked flints, including some cores. The presence of notable quantities of animal bone in several of the ring-ditches - predominantly cattle, but also including sheep/ goat, pig, red deer and aurochs, perhaps provides evidence of feasting and/ or offerings associated with the burial rites.

Central to the 'Barrow Field' were three small, intercutting ring-ditches interpreted as 'mini-barrows'. These features, created sequentially from east to west, measured between 3.5m and 6m in diameter externally. Their ditch fills produced fire-cracked pebbles and cattle bones, with the environmental samples producing plant seeds, grain and chaff - all charred, as well as varied snail assemblages indicating damp and/ or semi-aquatic conditions. None of these ring-ditches contained any evidence of contemporary burials. Interestingly, however, twelve cremations (dated by radiocarbon), were placed within their presumably levelled but still visible circuits in the Late Middle Bronze Age. This suggests the continued reuse of an area that was considered 'special' in some way, with the later cremations perhaps being placed in order to venerate an ancestral site.

The vestigial traces of another small ring-gully *c.* 75m south of the 'mini-barrows' is estimated to have been in the region of 4-5m external diameter. Although rather insignificant in itself, it formed the focus for a similar, later cremation group of seven un-urned burials. At an even later date (in the Late Bronze Age) a more substantial ring-ditch was also placed in this area. The juxtaposition of these funerary features over time is unlikely to be coincidental.

Early Bronze Age ditches

Although sporadic, the few so-called 'precursor' ditches created during this period show some initial pre-planning and conception of the extensive field system and extended droveways that were to follow. These features were primarily observed in the form of vestigial ditch segments. At least one ditch laid out during this phase was subsequently incorporated into the main field system by means of an 'adopt and enlarge' principle, whereas elsewhere a large field was created around a precursor, perhaps utilising it as a dividing ditch.

Additional droveway precursor ditches were identified 'beneath' Drove 5. These meandering, early ditches provide a tantalising glimpse of thoroughfares across Bar Pasture before the formalisation of a farming landscape in the Middle Bronze Age. They suggest that Droveway 5, in particular, was conceived much earlier than the extensive field system through which it later passed.

Early evidence was also found for a former wide 'avenue' to the south of barrows G9380 and G9563. This significant landscape feature, aligned broadly EW, appeared to delineate the southern boundary of the aforementioned Barrow Field; a similar early boundary delineated the eastern extent of the same sacred area. These early boundaries only became more formalised in the Middle Bronze Age, when numerous more field plots were created. The Barrow Field, however, continued to be respected (see below).

In the early 1980s, the Fenland Archaeological Trust recorded part of an oak timber trackway on Guy's Fen, just *c.* 600m to the NE of the Site. The trackway, which was sealed beneath the clays of the Barroway Drove Beds, was believed to be of Early Bronze Age date, being contemporary to the period of barrow building. It appeared to represent a preserved footpath across the shallow marsh from the dryer lands to the west (French and Pryor 1993: 90).

Early Bronze Age pits and waterholes

Away from the designated Barrow Field, a significant number of isolated pits, ponds and waterhole clusters are dated to this period, either by pottery found in their fills or where they were seen to be stratigraphically earlier than the Middle Bronze Age field system which later came to dominate this landscape. Features included over 20 so-called 'one-metre pits', a similar number of 'intermediate' pits measuring *c.* 1.5m - 4m in diameter and about ten large ponds and waterholes ranging in size from *c.* 5m in diameter to *c.* 12m across. One unique example - best described as a pond – measured 20m across. Most of the larger features are interpreted as waterholes or wells, created to store and access fresh water. Some pits were isolated, whilst others were found in clusters within favoured locations.

The 20-odd small pits represent a separate class of feature from the larger pits identified. A number of them contained residual and abraded Beaker sherds found in association with Early Bronze Age sherds. Many also contained fragments of burnt stone and heat-affected pebbles, charcoal and charred seeds. The presence of these deposits, combined with their elongated forms suggests that a number functioned as small temporary hearths or perhaps charcoal clamps. One pit [7051] contained part of an undecorated Biconical-type jar with carbonised residue adhering to the interior. It returned an Early Bronze Age date of 1776-1635 cal BC (Beta-452958). Several small pits in the locality of later fields 74 and 75, in particular, contained fills highly suggestive of nearby domestic activity, with finds that included abundant worked flints and animal bone – one contained the partial skeleton of a small dog.

Intermediate pits assigned to the Early Bronze Age were well represented in terms of numbers. Dated by pottery sherds within their fills and, in one case, stratigraphy, this category of pit appears to have had a varied function. They include probable former quarry pits and rubbish pits; reservoirs, sumps, wells and waterholes. Finds from the pits included worked flints, pottery, animal bone, fire-cracked pebbles, worked and unworked wood and fired clay. One waterlogged pit was particularly rich in organic remains, including the remains of a wooden stake and several split timbers that hinted at the former presence of revetting or a lining. The pit's environmental remains included locally sourced food resources including a variety of edible plants, nuts and fruits. Similar prehistoric pits, some containing wattle linings and revetments, are been recorded all across the fen edge, including at bordering Pode Hole Quarry and Fengate.

A concentration of intermediate pits in the locality of later Field 51 comprised both water-related and domestic features, all hinting at the location of another Early Bronze Age activity area. A hearth identified nearby was dated to this period by pottery and C14. Its environmental remains were indicative of a domestic open hearth, where people processed and cooked foodstuffs.

The small number of substantial waterhole pits assigned to this period were again dated stratigraphically and by pottery from their fills. They were scattered across the contemporary landscape, although several appeared to cluster in the general area of later Field 19. Due to their size (and corresponding depth) a number had good waterlogged remains containing degraded wood fragments, floral assemblages and leaves. Evidence suggested nearby hedgerows, grassland, disturbed waste-ground and wetland. A pollen sample recovered from one pit produced abundant alder and willow pollen, representing the establishment of these trees

in the suitably damp habitat. Many of the features appeared to have some longevity, with numerous recuts and enlargements being in evidence.

One waterhole identified 'beneath' a later field boundary was one of the largest such features identified on the Site. Covering an area of *c.* 20m x 8m, it contained a large piece of half-split oak timber - possibly the remains of a stake-revetted step leading down into the hollow. These substantial features; some almost representing ponds, were likely for the collection of water for both human and livestock use.

MIDDLE BRONZE AGE

It was during the Middle Bronze Age that the whole Bar Pasture landscape (and beyond), was changed irrevocably by the creation of a semi-regular system of large and small fields organised around a series of connecting droveways and associated with a classic enclosed farmstead (Figure 73). Despite the near absence of pottery associated with the field ditches, key stratigraphic observations suggest that this activity commenced and developed during the Middle Bronze Age, perhaps culminating towards the end of this period. The associated droveways formed the principal means of access into and around the field system and out onto the fen edge. These findings correspond with those from the Pode Hole Quarry (Daniel 2009) and Tower's Fen excavations (Mudd and Pears 2008).

This kind of sub-division of the land into fields, fenced paddocks and enclosures is commonly found in the fen-edge region from the Middle Bronze Age onwards. The 'classic' site is Fengate (Beadsmoore 2005, 2006; Evans *et al.* 2009; Pryor 2001), although numerous other sites have since been investigated, including Eye Quarry (Patten 2004, 2009), Bradley Fen (Knight and Gibson 2006), Borough Fen (Hall 1987; Malim and McKenna 1993), Barleycroft Farm/ Over (Needingworth) (Evans *et al.* 2016), Colne Fen (Earith) (Evans *et al.* 2013), and nearby Tower's Fen (Mudd and Pears 2008) and Pode Hole Quarry (Daniel 2009). Some 2.5km south of the Site at Briggs Farm, an extensive Middle Bronze Age field system formed of ditches and banks incorporated both topographical factors and earlier monuments, as seen at Bar Pasture (Pickstone and Mortimer 2009).

Large-scale Bronze Age land enclosure also extended north around the fen edge into Lincolnshire, at Welland Bank and Rectory Farm, West Deeping (Allen 2004), Stowe Farm (Kibberd 1996), Langtoft Quarry (Hutton and Dickens 2010) and Billingborough (Chowne *et al.* 2001). Only at the northern limit of the fens does this pattern of enclosure and settlement diminish (Yates 2007: 84).

It has been argued that the land divisions in this landscape were used to apportion grazing in a system which saw the fen itself used for summer pasture and the drier fen edge for overwintering and stock management (Pryor 1998). There is, however, no need to seek a unitary explanation for all fen-edge land divisions. Analysis even at a superficial level shows a variety of forms, and even where originally intended to control livestock, fields may have had different uses over time. What is clear, however, is that the rectilinear system of fields that developed, enabled greater agricultural productivity, by allowing diversification and specialist management of defined parcels of land (Fleming 1989). As Yates has stated, they were part of a contemporary package of agricultural innovations at this time, that included metalled trackways, artificial waterholes and areas of salt production (Yates 2007: 120).

The scale of the works required to build the fieldscape cannot be underestimated. Yates has stated that these peoples had a 'confidence in the future' and 'were there to stay' (2007: 134). The reforming of the fen-edge landscape into what was effectively expansive farmland was the work of people who could 'think big' and manage their environment confidently (Fleming 1989: 153). To achieve this, communities are likely to have worked together; with one common goal (Pryor 2005: 97).

The classic (though rare for this landscape) enclosed farmstead containing two large round-houses was the most substantial evidence of sedentary settlement activity during this period of fen-edge exploitation. It was constructed on the south side of Field 19, and consisted of a neat rectangular enclosure marked by an external ditch, a possible hedged bank and an intermittent internal ditch. The two identically-sized circular buildings contained within, survived as penannular ring-gullies, supplemented by post-holes and pits. As many as 13 circular timber structures were identified elsewhere across the Site. Although the majority are poorly dated in terms of artefacts, it is estimated that over half may have been constructed and in use during this period. On the western side of Drove 5 were the remains of two of these circular post-built structures, with a larger one located on the very western edge of the former Barrow Field.

During the earlier years of the Middle Bronze Age, the last vestiges of lime and oak woodland are evident at Bar Pasture, but with subsequent importance of open grassland: likely pasture with some occasional ash, beech and holly. Evidence of arable crops perhaps suggests the development of a mixed agricultural economy during this period. Scaife (2001: 366) is certainly of the opinion that mixed agriculture was practiced throughout the Bronze Age in the fens. Of

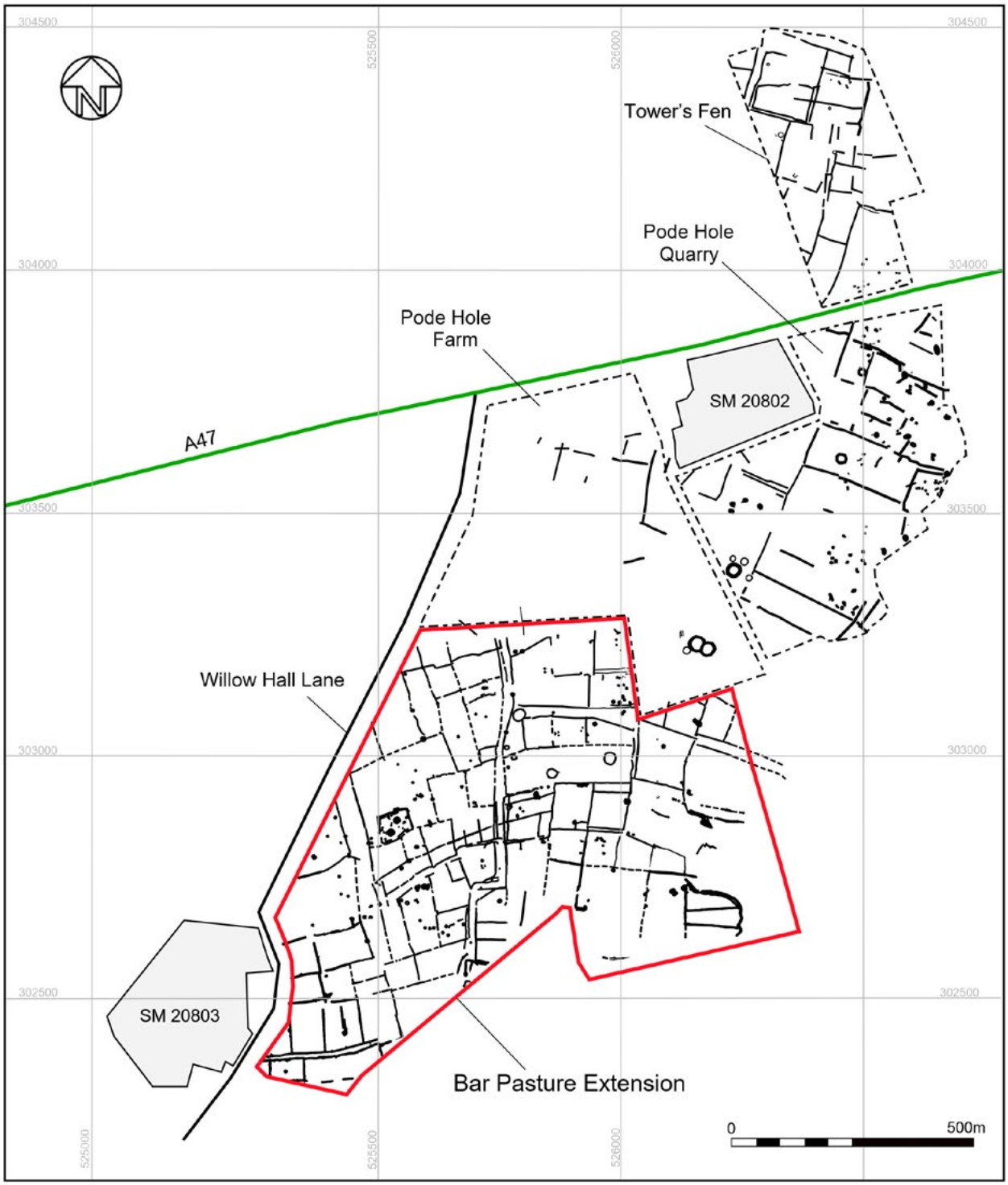

Figure 73 The Bronze Age field system across the Bar Pasture, Pode Hole and Tower's Fen landscape.

interest was the discovery from Droveway 7's northern ditch of a hulled six-row barley grain (*Hordeum vulgare* var. *vulgare*); being the only such grain positively identified from all of the Bronze Age samples. From the same ditch was recovered an unabraded Middle Bronze Age (Ceramic Phase 3A) pottery sherd, suggesting that the grain could potentially be of this early date. If so, it would appear to be earlier than the scientifically dated incidence at The Parks, Godmanchester, which was radiocarbon dated to 1380-840 cal BC at 95% confidence (HAR-1931) (Malim 2001: 13). This is evidence for the wider cultivation of hulled six-row barley during the Middle Bronze Age in the region.

Analysis of the fills of the later Middle and Late Bronze Age features certainly show a more open and largely

Plate 89 A Bronze Age reconstructed house at Flag Fen.

pastoral landscape, again with some evidence of cereal cultivation but with a reduction in oak and hazel, probably representative of local and more regional woodland remaining after widespread clearance for agriculture. Similar reductions in alder and willow (that both colonised the damp depressions of disused pit and ditch features) indicate interference with the wetland habitat.

The carbonised plant macrofossils from this period suggest the continuation of low-intensity occupation from the Early Bronze Age, although the presence of glume-wheat processing indicates crop-processing activities at the Site in the later Middle Bronze Age, and potentially the handling of larger volumes of cereal crops. Spelt wheat chaff was recovered from one Late Middle Bronze Age pit, suggesting cultivation of the crop. This represents quite an early record but the evidence for Middle Bronze Age spelt wheat in England is increasing and it was also recorded during excavations at Pode Hole Quarry and in Bronze Age deposits at Colne Fen (Roberts 2013: 109). Five saddle querns from the Site attest to the processing of grain and other plant materials, and to a part-arable economy from the Middle Bronze Age onwards. The presence of one quern within the terminus of a Middle Bronze Age field boundary (in an area previously containing Early Bronze Age pits), may represent the deliberate deposition of a valued utilitarian item to mark the creation of the 'new' field system. The symbolic use and votive deposition of querns (representing fertility and the growth of crops), in pits, ditches and wells is well documented in the archaeological literature (Francis *et al.* 2020; Peacock 2013; Thomas 1999).

Retention of the Barrow Field

The *c.* 6ha Barrow Field (extending for at least 300m EW and 200m NS, but potentially much more extensive to the north), was first defined and utilised during the Early Bronze Age. Examination of the succeeding field system leaves no doubt that this earlier sacred zone and its monuments continued to be respected and revered during this period. This is indicated by the notable absence of intrusive field boundaries across the central Barrow Field. Also, where earlier barrows survived on the edge of the Barrow Field, they were 'incorporated' into the new field layout. This is seen in the case of droveways 1 and 2, which intersected at Barrow 1941; the latter drove clearly deviated westwards, in order to circumnavigate the mound, which must have still been very pronounced in the landscape. Malim (2001: 15) has talked about earlier monuments being used as 'nodal

points' for the layout out of subsequent Bronze Age fenland field systems.

There is certainly increasing evidence that existing round barrows were a consideration in the formulation of Middle Bronze Age field systems. In Cooper's (2016a) study of later Bronze Age practices at earlier Bronze Age barrows, a number of examples are detailed where evolving fieldscapes take note of pre-existing monuments. Evans and Knight (2000: 92) suggest that in the Barleycroft/ Over landscape newly created fields were arranged 'around' a pair of existing ring-ditches. At Pode Hole Quarry, Daniel (2009: 22) details that the 'cardinal boundary' of the emerging field system 'shares the path and alignment of the barrow cemetery, and possibly utilised the barrows so that they formed an avenue for it'. Cooper cites further instances at Briggs Farm, Peterborough (Pickstone and Mortimer 2011) and Stanwick (Healy and Harding 2007). Cooper (2016a: 304) concludes that 'the evidence ... suggests that existing round barrows mattered enough to later Bronze Age people that they had to be dealt with actively when field systems were developed in their vicinity'. The newly emerging farmers 'took care to build these [earlier barrows] into their lives ... due to the lasting funerary attachments they held' (*ibid.*: 309 – my emphasis).

Knowledge of the earlier burial areas at Bar Pasture appears to have continued for some centuries, as it was during the latter part of this period that a number of cremation burials were carefully placed 'into' the remains of the earlier 'mini-barrows' suggesting the continued use of another area that was considered 'special' in some way. As discussed earlier, this was likely carried out in order to venerate an ancestral site.

Barrett writing in the mid-1990's suggested that social identities were created through the construction of specific genealogical lines (1994b). He suggested that in the preceding Early Bronze Age, the prevalence of barrows demonstrates an increasing concern with inheritance. As Brück (2000: 276) has identified, 'out of this concern to define rights of inheritance, developed a need to control both agricultural production and human reproduction'. This initiated a new form of society, represented by the field systems and enclosed settlements of the Middle Bronze Age. Ancestors were not forgotten at this time. As demonstrated at Bar Pasture, communities respected earlier sacred zones as the new fieldscape evolved.

The Droveways

The evolving droveways represented a series of extensive, interconnecting thoroughfares across the fen-edge landscape; several following the long-established pattern and direction of the disused (potentially processional) routeways of the Early Bronze Age communities. It is likely the earlier routeways were still visible features in the form of well-trodden or eroded tracks, together with surviving earth banks and hedgerows. These developed into the

Plate 90 This area of three Early Bronze Age mini barrows was reused in the Middle Bronze Age for the placement of 12 urned and unurned cremations.

principal means of access through, into and around the vast evolving field system, both connecting and sub-dividing the various zones and enclosures. On a wider scale, the thoroughfares may have served to divide and connect neighbouring fenland communities (Malim 2001: 11).

Eight principal droveways were identified. Interconnected Drove 2/5 became an 'arterial' NS-orientated thoroughfare, with many other droves becoming established elsewhere across the fen edge. Most droves were clearly intended for the driving of livestock between different parts of the fen-edge landscape, although the less-well defined Drove 7 was so narrow that it was more likely intended for human passage within and between fields. The wide, EW-aligned Drove 8 appeared to run far into the wet fenlands to the east, no doubt affording access to rich fen-edge resources at particular times of the year. The wonderful and varied resources that the marshy fens offered almost certainly outweighed the inconvenience of living in a wetland landscape (Huisman 2017: 6). The wildlife and wild resources of the fens were probably richer and offered more economically at this time than other drier areas where agriculture was in its infancy.

Field system evolution

Although largely undated in terms of artefacts, many of the principal boundary ditches defining the vast field system stratigraphically post-dated the Barrow Field and identified 'precursor' ditches already described, and are considered to be of Middle Bronze Age date. In short, many of the fields, paddocks and droveway ditches of this period were cut into the silted remains of the few identified Early Bronze Age ditches. There were also numerous fields that were subsequently 'reinforced' by later Middle- and Late Bronze Age modifications, the latter particularly well dated by pottery sherds and briquetage fragments.

Although stratigraphic relationships between the field ditches and various droveways were limited, it appears that the majority of fields were constructed after the droveways had been laid out. The individual fields, which were almost exclusively single-ditched, appear to have been conceived in blocks, and their ditches excavated as such. In many cases, it appears that large fields initially formed were later reduced, even halved, in size, by the later addition of dividing ditches. This was certainly apparent in the layouts and stratigraphic sequences of fields across the SE part of the Site; closer to the fen edge.

Field characteristics

The field system represents the significant component of a much larger enclosed and managed landscape that stretched all along the fen edge. Over 80 primarily rectangular fields or paddocks were identified at Bar Pasture, with those on the eastern side of the Site being incomplete in terms of their boundaries; no doubt having been eroded away on the wet fen margin through repeated episode of brackish inundation. It was clear during the excavations that some field divisions will have been established through the creation of hedged banks and fence-lines, and not ditches. The evidence for such did not always survive in the archaeological record, and so it is likely that more fields once existed than were recognised.

While the field pattern can be described as co-axial, orientated on roughly perpendicular axis, the fields are not standardised and the rectangular pattern is sometimes open-ended or incomplete, with many of the peripheral fields extending beyond the confines of the excavation area. The plots varied greatly in size, ranging from 0.05ha. (nos. 45-47); to the largest at 2.6ha. (Field 19), although the vast majority measured between *c.* 0.5ha. and 1ha. As mentioned previously, there was stratigraphic evidence to suggest some fields initially comprised larger units that were later divided. Conversely, in some cases, the occasional field was enlarged by the infilling of a dividing ditch.

The majority of the fields had four clear boundaries, each of which was shared with its neighbouring field or droveway. There were exceptions to this (such as large fields 19, 27, 52, 59 and 74) which were extensive but appeared to be missing some boundary elements. In these (and other cases) the 'ghost' boundaries had to be inferred. In some cases, shallow ditch cuts had no doubt also been lost to erosion and truncation by modern ploughing. As such, the visible remains may only hint at the complexity and diversity of the field system and its ecology. One of the larger plots was Field 56, located at the southern end of Drove 5. It could quite conceivably have functioned as a large open area of grazing, from where herds could have been channelled northwards via the droveway and its twin-lane entrance arrangement.

Ditch lengths measured anything from only 3m (being part of interrupted sections) to in excess of 100m. Some boundaries were discontinuous, being made up of slightly misaligned, sinuous segments, whilst others were remarkably straight. Most ditches across the Site were between 0.5-1.5m wide, although one unique example – the dividing boundary of fields 35 and 56 - was almost 4m across. Depths varied markedly, between 0.1m (where truncation was likely) to the deepest ditch at 1.2m depth. The deeper ditches perhaps facilitated the run-off of water from waterlogged fields, down into the free-draining gravels below. The significant variation in ditch dimensions, combined with the sinuous nature of many ditch features suggests that they were by-and-large created

by groups of different people working only to a very generalised plan.

Entrances

Many of the boundary ditches contained deliberately positioned gaps formed by opposing ditch terminals. In places these formed narrow entranceways that were probably designed for human passage, whereas elsewhere there were wider and often complex entrance arrangements to facilitate livestock movement between both fields and droveways.

Examples of complex access points between fields were relatively common. Between fields 2 and 3 was identified a double entranceway between the plots; one likely for human use, the other for livestock. An associated post-hole arrangement located close to the larger entrance appeared to have formed part of a more complex herding arrangement. Elsewhere, an entrance between fields 11 and 12 was associated with post-holes that contained burnt wood; possibly representing the charred remains of a timber gateway for the control of livestock. At the NE corner of Field 75 was a complex ditch sequence forming an entrance arrangement into plots 74 and 78. It involved ditch stubs and large post-settings with evidence for re-modification and maintenance suggestive of an important gated passing point. The intersection between fields 70, 71, 74 and 75 was another complex system of closely aligned ditch terminals, ditch stubs, and post-hole arrangements that clearly functioned as a main point of controlled access between these fields. Field 53 was a long, rectangular field abutting both droves 3 and 6. It had various entranceways on to both droves, including an unusual gated funnel arrangement at its northern extent. A similar arrangement was identified nearby, between Drove 3 and Field 27, where a large ditch spur created a constriction to the drove, effectively forming a 'funnel' for the control of livestock at this point.

Hedges and banks

Often consisting of short, interrupted lengths of ditch, it would seem that many of the field boundaries were not intended to act as a drainage system, whereby each ditch would lead to a larger conduit designed to channel water away from the fields and out to the open fen. Instead, it is thought that the ditches, whilst taking some drainage, principally served as quarries for linear banked boundaries that supported hedges and other vegetation. This would account for their segmented and meandering characteristics. Certainly, many of the identified inter-ditch spaces were too narrow to have functioned as any form of drove or track for human use, and were more likely occupied by hedged banks. The presence of banks between similarly narrow-paired ditches was noted by Evans (2009: 44) at Fengate, who suggested that they were potentially 'hedge-capped' to create a level of protection from the wind.

It has been possible to determine the locations of some of the Site's former hedged banks by examining the presence of distinctive slump deposits within the ditch sections. Evidence of former banks were thus identified between fields 35/56, 52/57 and 55/57, but such features may have been widespread, existing alongside most boundaries originally. Many of the boundary-ditch fills consisted of initial layers of silting and slumping, followed by grey sandy silts and clays derived from natural processes. In some cases, depending on the location of slump deposits within the section, it was possible to determine on which side of a ditch a former bank had been located. One example of this is the northern arm of Field 7's 'ditched enclosure' to the north of Drove 1. This rather sinuous ditch had a slumped primary fill that had entered from the south side, likely representing the collapse or erosion of a former hedge-bank along this edge. Fragments of plum/bullace/cherry stone (*Prunus* sp.) recovered from the sampled ditch fills attest to the bank's associated vegetation. Plant macrofossil assemblages and roundwood from other ditch fills revealed the presence of common hedgerow species such as bramble, blackthorn, hawthorn and hazel (Rackham 2010). These remains show that wild foods were both locally present and exploited across the fieldscape.

Well-managed hedges provide a ready supply of fuel, wood, fruit, nuts, bird's eggs and useful herbs, as well as animal fodder for winter feed (Williamson 2002: 36-39); as Bar Pasture's Bronze Age inhabitants were no doubt well aware. The hundreds of field boundaries would therefore have had a valued role in the subsistence economy of the area, beyond just the penning in of livestock and the definition of land parcels.

On a more functional level, the division of the land by ditches, banks and hedges would have been important in controlling grazing and the movements of livestock, but perhaps could have been more important in a mixed farming regime than in a purely pastoral one, because of the need to keep livestock away from growing crops. The dominance of non-arboreal pollen within the environmental samples, including grasses, herbaceous vegetation and cereals, give a clear indication of both dry grassland and cultivated fields (Branch and Silva 2008: 60*ff*).

Collectively, the sinuous and staggered lengths of field ditch created a distinct, integrated and 'bounded landscape'. The droveways, ditches, fence-lines and banks created a regimented system to enable the controlled movement of animals, and the separation and protection of arable fields from areas of pasture. This formalisation of space may have started by the placement of gully segments, pits and posts, but as time

progressed, ditch lengths with banks and hedges were created, in order to consolidate valuable space.

Dating of the field system

Finds were virtually absent throughout the numerous field ditches; a picture also recorded at nearby Pode Hole Quarry, Tower's Fen and Eye Quarry (Daniel 2009; Mudd 2007; Mudd and Pears 2008; Patten 2009). Despite hundreds of sections being excavated, the only finds consisted of the odd pottery sherd (often being residual), sparse, worked flints, fragments of animal bone and the occasional piece of fired clay. Although predominantly undated in terms of artefacts, the principal ditches defining the fields have been shown to stratigraphically post-date the Early Bronze Age barrow field and droveway 'precursor' ditches already described. Many ditch lengths were also truncated by dated Late Bronze Age features. The vast field system was clearly not constructed *prior* to the Middle Bronze Age, and did not continue to be dug after the Late Bronze Age, signifying a specific window of landscape control and stock management. It was laid out during the Middle Bronze Age proper, prior to the insertion (in certain specific locales) of a few later Middle Bronze Age and Late Bronze Age 'reinforcement' ditches.

The generally shallow profile of most ditches meant that they did not penetrate the water table of the Site, and so anaerobic soil conditions did not develop within them. This adversely affected the survival of any organic artefacts that may have been present within, probably distorting the finds evidence detrimentally. This in turn, has no doubt created a false contrast between the sterility of the field ditches and the apparent organic richness of the deeper, anaerobic waterhole and sump pits.

Field system alignment

The Bar Pasture field system was predominantly the result of a process of 'field accretion', rather than one of field reduction by the subdivision of larger units. As identified at Tower's Fen and the Pode Hole field systems to the north (which can be seen to extend on the same broad alignment - Figure 73), this process must have taken place within 'a wider landscape framework of ordered space, which acted to maintain boundary alignments' (Mudd 2008: 78). Distinct variations are, however, discernible within the Bar Pasture field system, the most significant being the differing (*c.* NE/SW *versus* NW/SE) longitudinal alignment of fields identified to the east and west of Drove 2/5 respectively. This provides evidence of the early establishment of this major axis, with the fields later created at odds on each side of this thoroughfare. This variance may have been the result of either a lack of due regard of the opposing zone, or perhaps due to differential timing of construction, different construction teams or even different land ownership. Local topographic conditions may have also played a factor. It certainly appears that the watery fen edge altered its course somewhere immediately to the east of the Site, with the field system perhaps having to accommodate the change accordingly.

To the far SE of Drove 2/5, the field pattern increasingly altered its alignment, effectively curving back to be broadly comparable with that recognised across the Pode Hole and Tower's Fen landscapes to the north. Here, a well-defined NS axis was identified that was in line with the eastern extent of the former Barrow Field. This axis can be traced in the Pode Hole Farm excavations to the north (Cuttler and Ellis 2001), although there it was to the west (rather than east) of a burial mound (Figure 73). This boundary is perhaps comparable to, though not the same as, the important arterial boundary identified at Pode Hole Quarry to the north; which was termed the 'cardinal' boundary (Daniel 2009: 21-3). That major ditch also acted to demarcate the limit of a barrow cemetery.

At Tower's Fen, there seemed to have been a progression of ditch cutting from east to west, and possibly also from north to south, but this was not clear at Bar Pasture. At the northern extent of the Site; to the north of Drove 1, there was evidence that tended to support the laying out of the EW ditches first, followed by infilling with the NS sections, but the evidence was tenuous.

As already intimated, the alignment of Bar Pasture's major droveways and their intersections, particularly that of Drove 2/5, may reflect some form of land ownership boundaries or tribal divisions. In other words, fields located between droves 3 and 2/5 for example, could reasonably relate to one group or family of farmers, whilst other fields located to the east of Drove 2/5 and north of Drove 1 (and continuing northwards, beyond the Site limits), might belong to a neighbouring group, with each sharing 'free passage' through the communally-owned pathways through the landscape. It is interesting, in this respect, to observe the 'shared' location of earlier Barrow G1941 at the intersection of droves 1 and 2. It may be the case that the new land divisions reasserted territorial claims 'previously signposted by monumental constructions like round barrows' (Yates 1999: 158).

Ritualisation of the fieldscape

Daniel (2009: 153) talked of the 'ritualisation' of the fieldscape, with ditches purposefully terminating at their juncture with earlier monuments (see also earlier discussion on retention of the Barrow Field). He said, however, that at Pode Hole Quarry there was almost no surviving evidence of special deposition in the field boundary ditches or their termini at these (or other) points. At nearby Tower's Fen, a ditch terminus forming an entrance, contained the rare find of a perforated

shell necklace (Mudd 2008: 71). It was detailed that this special find had been placed deliberately, rather than casually lost. During the Bar Pasture excavations, the partial skeleton of a golden or white-tailed eagle associated with a pink granite quern stone were recovered from the eastern terminal of Field 71s 'new' northern boundary, and may be evidence of a votive deposit at this location. The quern could represent the deliberate deposition of an important utilitarian item to mark the creation of the field system on this part of the fen edge. The southern terminal of the same field's eastern boundary contained an unabraded large, cylindrical clay weight decorated with six vertical lines of fine comb impressions (Plate 77). Decorated weights are very rare for the region. These 'placed' finds appear to be part of a purposeful rite associated with field ditch termini. At the northern extent of the Site, a later terminus of a ditched enclosure had the apparently purposeful placement of a complete bovine skull.

There is, therefore, the suggestion that the Bar Pasture field system was, in specific locations, suitable for specific activities of a ceremonial nature. Brück (2000: 273) showed that earlier researchers saw Middle Bronze Age peoples as having concerns primarily with agrarian, practical and technological matters. This was a 'functional period, with emphasis on the basics of food production' (Fowler 1983: 40). Barrett (1991: 143) even states that the term ritual all but drops out of use in discussions of the archaeology of this period. It is clear, however, that the division between ritual and practical is not always so clear cut for the Middle Bronze Age.

Features associated with the field system

The Enclosed Farmstead

Within the Middle Bronze Age landscape, a small farmstead was established, consisting of a rectangular enclosure marked by a largely continuous external ditch, a possible hedged bank and an intermittent internal ditch (Figure 74). The enclosure contained two circular buildings (structures 5 and 6), which survived as penannular 'eaves-drip' ring-gullies, associated with structural post-holes and pits. The discovery represents the most conspicuous aspect of secular Middle Bronze Age activity identified within the wider Bar Pasture landscape.

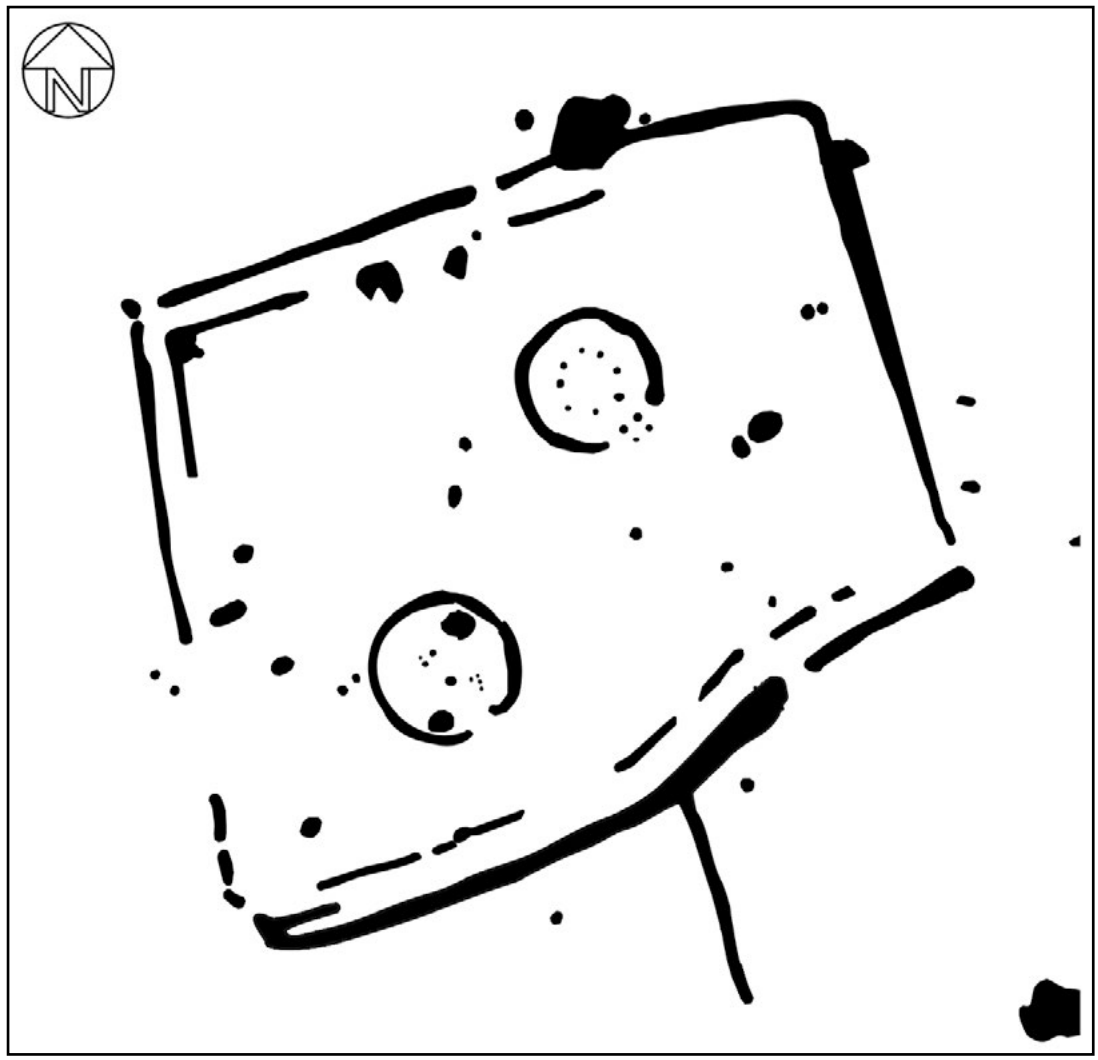

Figure 74 The classic Middle Bronze Age enclosed farmstead.

Whilst rare for the fens, review of the literature shows the enclosed farmstead to be of a classic form; of the type that dates from 1600 BC onwards, when there was a significant change in landuse, with more permanent settlement forms, field systems and linear earthworks (Brück 2000: 273). This was a time that saw the cessation in the building and use of monuments such as barrows, and the emergence of new types of site, notably enclosed settlements based on farming. The radiocarbon date from one of the round-houses, as well as Middle Bronze Age pottery from the outer enclosure ditch and many briquetage fragments of Middle Bronze Age type from the inner enclosure ditch, show that this important settlement area was broadly contemporary with the period of field system development.

Several post-holes identified within Structure 6's ditch circuit appeared to form an internal division such as a wattle screen. Other internal post-holes formed small groups, perhaps representing the former positions of fixed furniture, screens, drying frames and looms, all of which would have necessitated fixed posts. Another post-hole appeared to relate to a turning arrangement for an outer gate or door. Further post-holes were angled to the NE, possibly as a result of distortion, due to the final collapse of the building towards the east. Four of Structure 5's posts formed a clear rectangle opposite the entrance to the ring-gully, indicating the position of a porch. An almost identical post-hole arrangement (Figure 75) is recorded for Structure A, Down Farm, Dorset (Barrett *et al.* 1991: fig. 5.29). There were no signs of any repairs to the post-built structures, often indicated by doubled or intercutting posts. This suggests that the buildings were occupied for just a few years, perhaps only seasonally.

A contemporary sump created on the northern enclosure ditch contained an extremely informative environmental assemblage. The snail species, in particular, were dominated by those indicative of shaded and woodland environments, which suggests that the farmstead's boundaries consisted of dense hedgerows – possibly close to nearby copse or wooded area. The pit also contained the rare discovery of an antler pick. Another pit within the enclosure had scorched sides, suggesting that it had contained a fire, or that the remains of hot debris had been disposed into it.

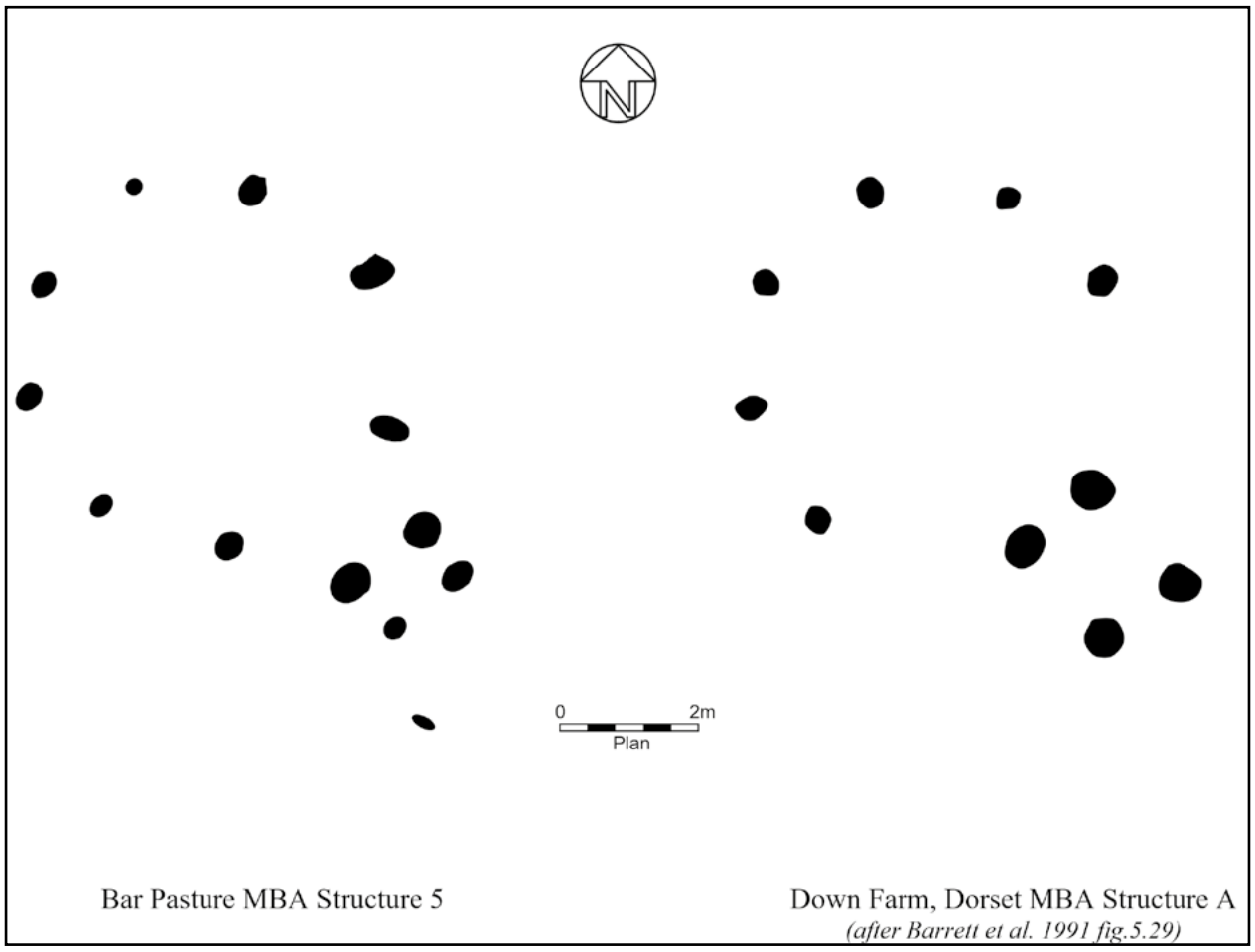

Figure 75 Post-arrangement with porch of farmstead Structure 5, and its similarity to Middle Bronze Age Structure A at Down Farm, Dorset (with kind permission of Dr J Barrett, University of Sheffield).

At the SW corner of the enclosure a sequence of three ditches was present, which suggests that the occupants were required to reinforce and subsequently maintain that corner. The additional presence of several interrupted ditch lengths in this part of the enclosure points to where repeated access and egress may have taken place. A zone of heavy foot traffic could account for the identified re-establishment, repair and reinforcement that apparently occurred here.

Several other entrances were present around the enclosure, allowing access through both the inner and outer ditches, effectively creating bridging points. Supports for small internal or external gates were also found near nearly all the entrances, represented by slight post-holes. The presence of gates, bridging points and livestock entrances reveals a level of organisation for the functioning and access of the enclosure.

Aside from the two round-houses there was no surviving evidence for internal divisions within the wider enclosure, such as fence lines, paths, or enclosed spaces around the buildings. There were no defining working areas from the immediate domestic space and no indications of any smaller ancillary buildings for storage or industry.

Pottery from the settlement complex was minimal, with the majority comprising residual Beaker sherds, which is unsurprising, given the previous Beaker activity in this area. The inner enclosure did, however, contain later Middle Bronze Age pottery, as well as part of a shell-gritted briquetage container of Middle Bronze Age type. Significantly, a sample from one of the ring-gully fills contained charred barley seeds, one of which returned a calibrated Middle Bronze Age date of 1454-1288 cal BC (93.2%) (SUERC-47169). Other finds from the settlement area included fired clay, flint, animal bone (some burnt), ash-bleached hearth material, burnt sandstone fragments and heat-affected pebbles.

Cereal pollen was recorded in several of the retained samples and cereal remains were also recorded in the carbonised macrofossil assemblage. The remains likely reflect cultivation within the local landscape, most likely as part of a mixed agricultural system incorporating significant areas of pasture/ grazing.

Additional settlement structures

Aside from the impressive double-ditched enclosed settlement, evidence for occupation during the Middle Bronze Age included a number of additional post-built round-houses, some with surviving eaves-drip gullies. Of the 15 structures identified during the excavations, seven are considered to be of general Middle Bronze Age date.

The identified buildings were constructed using posts secured in purposefully-cut post-holes, some with evidence for post-packing. Some structures had internal post-holes suggestive of interior divisions or perhaps even furnishings. Outside of the post arrangements was frequently found an eaves-drip gully. Like one of the round-houses in the enclosure, some buildings had evidence of an external porch, whilst one had a wide gated entrance arrangement, facing south. Several had evidence of hearths or small fire-pits. Finds associated with the structures often included pottery, charred animal bone, fire-cracked stone and charcoal, the latter frequently suggestive of crop-processing activities.

Stock pens

A number of small stock pens were identified across the Middle Bronze Age field system, frequently being identified in the corner of fields. One example was located in the SW corner of Field 67. Animal bone and a lack of domestic residue from its ditches suggests it was an animal-related, rather than settlement enclosure. The pen, which had two gated entrances for the movement of livestock, would have provided much-needed shelter and protection on the exposed fen edge.

A small elliptical stock pen on the west side of Field 66, had been created within the space left by an earlier field entrance, perhaps in an attempt to occupy an area of 'uncompromised' ground. Other small holding pens were identified in the corners of fields 49 and 74.

There is little doubt that the field system was primarily created for the rearing and keeping of domestic livestock, and small holding pens for their control and shelter will have been required. The animal bone assemblage suggests that cattle formed the primary stock during this period, as part of a mixed or subsistence strategy. The gradual kill-off of animals, with a variety of ages being slaughtered, indicates a mixed utility, with milk, meat, traction and breeding likely all being of some importance (Rackham 2009a). The presence of calf bones indicates that cattle were being bred on the Site. In terms of breed, Celtic Shorthorn were certainly present. In comparison with large parts of southern Britain, the Bar Pasture (and adjacent Pode Hole) animal bone assemblages appear unusual for their dominance by cattle (Rackham 2009a: 142). Hambleton (2008) indicates that for the majority of Middle Bronze Age sites in Southern England, sheep were the dominant taxa.

The animal bone assemblage shows that sheep/ goat was the second most numerous of the domestic taxa overall (for meat, wool and skins), and this was true for the majority of periods. The percentage presence of sheep/ goat increased over time, with a corresponding decrease in both cattle and pig. The discovery of clay loomweights in various Bronze Age contexts suggests

the processing of secondary products from domestic stock.

Equids were occasionally identified, with the presence of fairly old animals observed from tooth wear/height. This indicates that they were most likely kept as work animals, although butchery marks on some bones suggests that they were also occasionally eaten. Interestingly, no wild mammal taxa appear to be present on the Site after the Middle Bronze Age.

Middle Bronze Age pits and waterholes

Across the landscape, the semi-rectangular pattern of fields was frequently punctuated by individual pits and pit clusters. The 11-year excavations looked at several hundred pit features, ranging from so-called 'one-metre' pits, to 'intermediate' pits measuring between 1m and 4m in diameter; through to the enormous waterholes, some of which were in excess of 10m across. Some of these larger pits were found at the corners of fields, where they almost certainly acted as drainage sumps for the collection and storage of water. Others may have been dug as quarries to extract the gravel substrate. The smaller pits were no doubt of various functions; including extraction hollows, waste-disposal pits, storage pits, fire pits and wells. Whilst specific alignments of waterhole pits have been recorded at Pode Hole (Daniel 2009: 156), Eye Quarry (Patten 2003: 18) and Langtoft (Hutton 2008a: 17), no such arrangements were recorded at Bar Pasture.

Finds from the smaller category of pit (which were scattered across the Site) often included remains that hinted at nearby domestic occupation, such as pottery (including cooking vessels), fired clay, heat-affected stones, burnt stone and flint, charred and gnawed animal bone and charred grain. Others were remarkably sterile, and were clearly not associated with settlement or related activities. Many of the smaller pits contained 'quench-cracked' pebbles, suggesting that they had been utilised for the heating of water through the use of heated stones. Several other pits were full of charcoal and had scorched edges, indicating that they had been fire pits.

The majority of the intermediate sized pits (that were numerous across the Site) contained sterile fills with no finds. Without finds, and often in the absence of stratigraphic relationships, the dating of such features is tenuous, but many must be associated with the extensive field system that developed throughout the Middle Bronze Age. One pit [467] contained a basal fill of organic material including leaf litter and twigs. A sample of this material returned a C14 date of 1465-1291 cal BC (Beta-217904) confirming that its primary fills were forming in the Middle Bronze Age. It is probable many such features will have been excavated as waterhole pits for animal and human use, or small gravel quarries that were left open after extraction and silted up naturally. Some of the deeper pits contained preserved wood that had evidence of working. For example, several pits contained roundwood fragments that had been trimmed by axes. Samples from a number of the intermediate pits that contained preserved organic matter, suggested that when open they frequently contained stagnant water. One interesting find from pit [6398] was a worked fragment of red deer antler coronet that may have been utilised as a 'soft' hammer for flint knapping.

A significant number of the largest pits were directly associated with field ditches (as opposed to being placed within field plots), often having been excavated at ditch termini. These pits were interpreted as drainage sumps, strategically placed to service specific fields. The majority were between 5m and 8m in diameter, although a handful were extremely large, measuring between 10m and 15m across. The largest were likely ponds in the Bronze Age; originally of natural origin, though maintained as a water source through clearing out, and enlarging. Many of the large pits showed signs of intercutting and recutting, and are best described as pit complexes.

The discovery of a moderately well-preserved Bronze Age log ladder within one of the Site's northern-most waterholes is a significant and until recently, comparatively rare find. It had been fashioned from a length of unconverted round timber with 45-degree angled steps cut into it (Plate 91). Log ladders are known from the Early Bronze Age onwards, although they most commonly occur in the Middle Bronze Age and persist in use occasionally through into the Iron Age. One of the first to be recorded was from Fengate, servicing a substantial gravel pit (Pryor 1978). A two-stepped, oak example recovered from a large waterhole during recent excavations at the adjacent Bar Pasture Western Extension excavations, has been tree-ring dated to the summer of 1316 BC (Bamforth 2019; Mustchin and Richmond 2020; Tyers 2019). Other examples are known from Pode Hole Quarry (Taylor 2009: 117), and the Ideal Shopping site in Newark Road, Peterborough (Nicholson 2007). Additional Bronze Age log ladders have been excavated at Briggs Farm, Thorney (Bamforth 2010), Striplands Farm, West Longstanton (Taylor 2011) and at Heathrow Terminal 5 (Leivers 2010). These artefacts seem to have been a standard way of accessing deep waterholes, particularly where the pits had been cut into fairly loose sand and gravel. It is not unusual to find them still in position, like the Bar Pasture example, leaning against the sides of the features they were used to access.

A 'monumental timber' of oak, recovered from substantial Middle Bronze Age pit [932] in Field 15 is unique for the Site. This substantial piece of wood may belong to a class of timbers that were used for monumental purposes, possibly as significant boundary markers. It

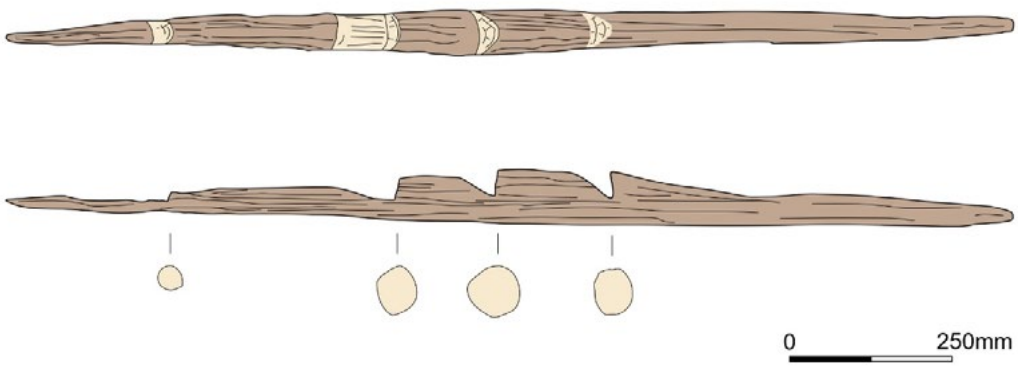

Plate 91 Reconstruction of a Middle Bronze Age log ladder.

had extensive wet rot along its whole identified length, suggesting that the piece surviving was originally set vertically underground, with its full height unknown (due to loss through rotting). It was trimmed square by a fairly straight blade, and the blunt end was designed to be set in a pre-excavated hole. This suggests that the precise positioning of the timber was important, and most likely some kind of permanent marker; perhaps relating to a territory or district. A similar 'monumental' timber was recorded at Pode Hole Quarry (Daniel 2009: 120) and another is recorded in the later phases of a post alignment at Flag Fen (Pryor 2001).

A small number of large waterholes contained evidence of timber-plank revetments (such as pit [1091]), wedged or pegged into place. Some examples had steps cut or were set with timbers against their sides, or above the water, to aid access. Such reinforcements are reasonably common from the Bronze Age onwards, particularly in features cut into gravel sub-strata. Other forms of revetting comprised of stakes driven into the bottom of waterholes to keep the feature secure (for example pit [869]), after which, roundwood rods were woven in and out of the stakes to create wattle lining. Similar examples were recorded at Pode Hole Quarry (cf. Daniel 2009: 50, plate 3.8); and nearby Tower's Fen (Mudd and Pears 2008: 51). Whilst traces of these structures are routinely encountered, more complete examples are rare, suggesting perhaps that they were dismantled and re-used elsewhere when a pit fell out of use.

Access to these massive pits and waterholes varied. Some had one sloping side (such as pits [1090] and [3090]) that will have afforded animal access, whilst others had evidence for steps for human access (such as pits [2305] and [3138]) cut into the natural substrate. One pit had evidence for a wooden step made from a part plank (Plate 92). Substantial waterhole [1091] contained what

Plate 92 Possible wooden steps within Bronze Age waterhole.

appeared to be a plank, that may have been used as staging/duckboard to facilitate the collection of water from above. The recovery of several Y-shaped timbers (such as that from waterhole [6211]) could conceivably represent Y-frame crucks, used to direct a bucket and rope down into the centre of a deep pit when standing on a staging board above. Many of the timber finds bear out what has already been found in adjacent excavations, namely the preferential exploitation of small local trees, with occasional access to larger, forest grown oaks. The species represented (alder, ash, birch, blackthorn, field maple, oak and willow/ poplar) are all likely to have been growing in the vicinity of the Site at this time, either in mixed deciduous woodland or in the wetter fringes of the fen.

The majority of the numerous pits and waterholes clearly formed an integral part of the Middle Bronze Age landscape. By augmenting the water supply to the area's inhabitants and their herds, the pits would have played an important role in enabling the intensification of production in the newly enclosed landscape. The recutting of pits and the frequent clustering of waterholes marks an investment in place carried out by what was slowly becoming a largely static population. Yates (2007: 136) has described waterhole pits as 'central to economic prosperity'. Their integration into the working landscape at Bar Pasture suggests that this is an appropriate sentiment. Indeed, it is unlikely that the extensive field system and its droveways could have functioned to capacity without drainage features in place and without water to sustain livestock.

LATE MIDDLE BRONZE AGE

Boundary modifications

During this period, a large quadrilinear enclosure with a double-ditched NW corner was superimposed onto the heart of the Bar Pasture field system (see Figure 26). This enclosure formed a focus for settlement and agricultural processing activity, that appears to have extended, in some minor form, into the Late Bronze Age and beyond. The evidence includes three likely contemporary round-house structures and a number of pits and post-hole groups. Some similar features were observed further east in fields 48 and 49, although the true focus of this period of activity undoubtedly lay within the protective double-ditch that encompassed the NW corner of Field 52. Could it be that the aforementioned Middle Bronze Age farmstead enclosure, just 100m to the north, was becoming unsuitable for habitation (perhaps due to ground water conditions), forcing untimely abandonment and relocation to this area?

These significant changes introduced to the Bar Pasture landscape are evident in the form of linear ditches that were created, realigned and recut or re-established. Analysis of complex stratigraphic relations, supplemented by a handful of crucial pottery dates, revealed a clear re-use and modification of the existing Middle Bronze Age field system. When mapped, these later ditches and ditch segments undoubtedly represent part of a large enclosure 'superimposed' onto the regular plan of the pre-existing rectilinear fields; effectively encompassing some fields and reinforcing others. At its northern end, the creation of this later enclosure formed a new narrow passageway that stretched between fields 48 and 53; bordering existing Drove 6. This avenue probably functioned to drive cattle and direct humans into and around the northern and western sides of the enclosure, away from the area of settlement.

The newly established enclosure contained by far the greatest concentration of ancillary features in the form of ring-gullies, pits and post-holes, many of which were settlement- or domestic-related. The majority were created within the inner NW corner of the enclosure plot, with others forming a secondary concentration further to the NE. The identified buildings included two circular post-built structures as well as a separate eaves-drip ring-gully. One of the post-built structures appears to have been roofed, whilst the other had an external hearth.

The intensity and complexity of pit and post-hole features identified here cannot be overstated. Whilst a few features were without finds, many others contained fragmented and charred animal bone, lumps of fired clay, fragments of briquetage, a discarded saddle quern and sherds of pottery. The features clearly represent areas of favoured domestic settlement activity at this time. The bordering enclosure ditches had evidently been used for the disposal of rubbish. Heat-affected stone, animal bone and fired clay fragments were common-place, with distinctively charcoal-rich fills being identified suggestive of the clearing out of hearths.

Away from the enclosure, several other features were shown to have been established at this time, including two small but significant pits in Field 76, close to the boundary with Pode Hole Quarry. These bordering features both contained a significant assemblage of briquetage pedestal fragments, designed to support brine troughs above open hearths in order to produce salt crystals. The fabric type is typical of briquetage supports recovered from other fenland sites, including at bordering Pode Hole Quarry (Morris 2001a: 36-7; 2009c: 75). Bar Pasture was undoubtedly in the vicinity of ancient salt production, with brackish waters perhaps not far away; although no actual salterns have been found here, or on bordering sites (Daniel 2009: 156). It is likely salt production was further to the east, perhaps on the wetter fen margins to the east

of Thorney. Whilst a good assemblage of briquetage pedestal fragments were found from a couple of pits, the overall assemblage is very small for the size of the Site (*c.* 55ha). Rackham (2009: 161) has stated that at Pode Hole, there is no evidence that marine waters ever came near, or onto the site, and that what briquetage was recovered must surely have been carried to the site from salt-making locations elsewhere. Evans (2015b: 1118) has suggested that salt was likely widely traded at this time, connecting the fen-edge settlers, who may have been involved in its manufacture, to both inland and coastal settlements.

One other pit deserves mentioning, being [1801] positioned north of Drove 1, at the northern extent of the Site. From its upper fill came bones from aurochsen, associated with CP3B pottery, dated by association to 1400-1130 cal BC. As yet the latest dated examples of aurochs come from Stansted, Essex and Willington, Bedfordshire, both dating to 1661-1509 cal. BC (Evans 2015a: Table 1). The Bar Pasture specimen could therefore push the extinction date for aurochs in Britain back by one hundred years or more, although the possibility that it was redeposited in the pit cannot be discounted. Either way these are likely to be some of the last aurochs in Britain, where current evidence indicates them to have gone extinct during the Bronze Age.

Continued use of the Barrow Field

Not only was the curtilage of the Early Bronze Age Barrow Field respected during this period, it also continued to form a focus for human burial. Two discrete burial concentrations (associated with both urned and unurned cremations) were dated to the latter part of the Middle Bronze Age by radiocarbon dating of charcoal in the burials. The so-called 'northern group' comprised of 12 closely aligned, urned and unurned cremations cut into the still discernible remains of three (earlier) mini-barrows. The predominance of non-adult remains amongst the cremations appears to be a consistent trend observed elsewhere. Analysis of the six urns recovered from this cemetery suggests that four of the vessels had been used domestically before being used in the cremation rite (Morris, *this volume*). A similar sequence was recorded at the southern end of the same field (termed the 'southern group'), where the heavily truncated remains of a small ring-gully [11230] formed the focus for another concentration of later Middle Bronze Age unurned cremations. Both burial groups represent small cemeteries placed purposefully 'over' Early Bronze Age 'mini-barrows'. Robinson's survey of Middle Bronze Age cremation practices in East Anglia suggested that a third of the known burial sites of this period were located at existing funerary monuments (2007: 74). Continuing the theme of 'continuity of place' at Bar Pasture, a large ring-ditch was placed in the area of the southern grouping in the Late Bronze Age (see below). It is clear that in this fen-edge landscape, round barrows of the Early Bronze Age were 'very much part of later Bronze Age lives' (Cooper 2016: 291).

The young middle adult buried in Cremation 9 of the northern group, was of particular interest, and contained the largest quantity of bone from any of the cremation burials. Interestingly, ossicles were found in the cranial sutures, which can be related to deformation in the shape of the cranium, sometimes found in studies of crania deliberately modified as a cultural practice (Sanchez-Lara *et al.* 2007). This cremation also contained a notable concentration of cereal remains; perhaps reflecting the use of cereal chaff or straw as kindling in the pyre. A single flax seed was also recorded. Bronze Age flax was similarly identified in a cremation during investigations at Pode Hole Quarry (Martin *et al.* 2009: 94), where it accounted for 70% of the non-cereal component. A fen-edge landscape such as this (likely to have been dotted with water-filled hollows that would have presented multiple good locations for flax retting) would have been suitable for flax cultivation and processing, although no definitive evidence for flax retting was forthcoming. Economic plants were scarce in cremations at Over (de Vareilles 2016) and Colne Fen (de Vareilles 2013).

The Middle Bronze Age cremation deposits provided an interesting case study of woodland resource use and the positioning of cremation pyres. Fuel selection appears to have focused on readily available wood in the local environment. In particular alder, despite poor qualities as a fuel, was prevalent and is likely to have come from local areas of wet alder woodland. Significant woodworm damage also indicated that dead wood was used, rather than freshly cut timber. Oak and ash were each dominant in a single cremation and could have grown as standards in local hedgerows. Macrofossil evidence from a number of cremations contained rhizomes and tubers of various plants, most likely from burnt topsoil beneath the cremation pyres. The recurrence of sedge and bur-reed in the other cremations in this Bar Pasture grouping, suggests that a marginal, wetter setting for the funeral pyres (perhaps at the edge of a body of water) may have been commonplace.

The Bar Pasture cremations are typical for East Anglia. Here we have a moderate number of urned and unurned burials containing a relatively large number of non-adult individuals. Bradley (1984) has suggested that many Middle Bronze Age household groups will have had their own special place for burying the dead. Ellison (1981) substantiates this, by stating that most such cemeteries comprise relatively small numbers of cremation deposits, usually between ten and thirty. These were cemeteries 'for a small kinship group over a short period of time' (*ibid.*: 423).

LATE BRONZE AGE

Whilst a number of pottery sherds were recovered from the Site that assign features to either the Late Bronze Age period (*c.* 1150-800 BC), or the Late Bronze Age/ Early Iron Age interface (*c.* 800-500 BC), it is clear that activity was diminishing towards the close of the second millennium BC, almost certainly due to the changing climate. The excavations clearly identified Late Bronze Age large-scale abandonment of the Bar Pasture landscape, with a retreat to localised areas of drier land at marginally higher altitudes. Two such areas of 'climatic retreat' formed within existing fields 7 and 68, where they were reinforced by supplementary protective ditches during this period. These double-ditched enclosures subsequently formed foci for continued settlement activities (see Figure 48). In the corner of one enclosure were numerous post-holes alluding to the presence of contemporary buildings.

Two major marine incursions are recorded across this landscape; one during the earlier second millennium BC, responsible for the creation of an embayment approximately 300m east of the Site, and then around the end of the second and the start of the first millennium BC. As a result of this second inundation, it seems likely that only 'islands' over *c.* 2.5 m OD would have been dry enough for occupation. Lower-lying fields would no doubt have been subject to increasingly frequent flooding and silting. Environmental factors are therefore the reason settlement and associated activities 'condensed' their extent to one or two localised pockets of higher ground.

It is clear from the important excavations at Must Farm, *c.* 6km to the south, that the Late Bronze Age population didn't always retreat from worsening environmental conditions. Here, the local population clearly adapted when the region became increasingly wet and peaty, as groundwater levels rose. They constructed a fascinating series of complex pile-dwellings located within the developing silts of a slow-flowing water-course of the fen edge (Knight *et al.* 2019; Knight and Brudenell 2020). Construction ensured that all floors were raised above the water level, with walkways between. Interestingly, Knight *et al.* (2019) believe that this unique settlement rather represents 'a routine dwelling in a rarely excavated fenland setting'.

It is probable that most of the droveways across the Bar Pasture landscape had either gone out of use by the Late Bronze Age, or were only being used intermittently when ground conditions allowed. Two immense, intercutting waterhole pits were dug within Drove 5's former thoroughfare at this time, confirming the demise of this once significant routeway. Another large waterhole was dug across a silted-up later Middle Bronze Age enclosure ditch associated with Field 52. This indicates that the ditches here, representing a former attempt to re-enclose and protect part of the Site, had not been effective and were all but abandoned once flooding of the former fieldscape got underway.

Of additional significance was the realisation that during this period burial practices continued in the areas of former funerary activity. A fairly large barrow (G11083) at the southern extent of the former Barrow Field was unusual in that it contained a good assemblage of well-stratified Late Bronze Age ceramics, including ovoid jars typical of the Post-Deverel-Rimbury ceramic period in eastern England. In addition, was the recovery of a good assemblage of lamb bones, including a group of hind limb elements suggestive of feasting activities. The barrow truncated the edge of an Early Bronze Age ring-gully, and appeared to impact upon the cluster of suspected Middle Bronze Age cremations in the same locale. This was evidently an area of funerary activities over a long period. One can envisage here the veneration of an ancestral burial site over time.

Late Bronze Age round barrows are certainly rarer than their Early Bronze Age counterparts, but several have been purported (e.g. Cooper 2016; Hunn 1992). It is certainly well-reported that earlier burial monuments were re-visited in the later Bronze Age, and this certainly appears to be happening here at Bar Pasture. But rather than the visitation to an existing barrow, we appear to have here the recreation of a new barrow at the site of an earlier one.

Cooper (2016a: 303) has stated that evidence for later Bronze Age monument building at existing round barrows is now 'relatively widespread'. She has said that it 'is clear that during this period communities did add to older barrows, made new (smaller) versions, and also created novel monuments that referenced round barrows' (*ibid.*). However, 'in most cases the work undertaken was relatively small-scale'. Here at Bar Pasture we appear to have the placement of a larger monument over the remains of something smaller. In most recorded instances, later activities usually involved little more than 'the recutting the ring-ditch of an existing round barrow or adding a new ring-ditch concentrically' (*ibid.*). Cooper has, however, said that evidence for the actual creation of new monuments at round barrows in the later Bronze Age (as appears to have taken place at Bar Pasture) is particularly unclear (*ibid.*). Burial monuments of Late Bronze Age date in the vicinity of earlier barrows have, however, been recorded at Langtoft Quarry, Lincolnshire (Hutton 2008) and Salthouse Heath, Norfolk (Wake 1942). Cooper continues that 'enduring round barrows almost certainly did attract later Bronze Age funerary and ritual activity in the east of England' (*ibid.*). It is now not possible to state that 'round barrows were no longer an effective way of communicating relationships with the dead' (Bradley 2007: 121).

LATE BRONZE AGE / EARLY IRON AGE

Towards the very close of the Bronze Age and start of the Iron Age (*c.* 800-500 BC) there is evidence for low-level activity within discrete parts of the disappearing fieldscape. One such feature was small ring-gully (G8050), that was considered to be the remains of a shelter within former Field 48. Whilst close to two other Middle Bronze Age structures, this example contained well-stratified pottery of Late Bronze Age/Early Iron Age date, indicating that it was utilised at this time. It differed from the other structures identified during the investigations in that it was sub-oval in plan, and of smaller dimensions; being just 4m across externally. Other similar, small ring-shaped gullies of Bronze Age date found on the fen edge have previously been interpreted as salterns and hayricks (Daniel 2009: 36, 52-53).

A number of contemporary pits were located in the fields to the immediate west of this structure; signifying another activity area. The evidence included a hearth and a concentrated domestic pit group. Also excavated was a 'rubbish' pit that contained fragments from a storage jar with pitting on the interior surface derived from holding acidic food such as milk. Other finds from this pit included five cylindrical fired-clay weights; the quantity and condition suggesting that they were buried deliberately, either for purposeful discard or concealment.

Close to the southern extent of the Site was another 'terminal' Bronze Age activity area. In former Field 56 were a collection of like pits, all of substantial dimensions. From one pit were recovered pottery sherds relating to two small, flat-based jars, produced in two different fabrics. Analysis of the fabrics found that one of them was produced using grog derived from crushed sherds of the other's type, which suggests that the two vessels are separated chronologically by a generation of vessel-making, possibly by a family of potters. Four sherds of briquetage from two different containers were also recovered from the pit, indicating the local movement of salt containers (with or without their contents) to the Site for use; rather than actual production.

Evidence of distant connections with the Bar Pasture landscape during this period is provided by a most unusual red-slipped jar or bowl sherd from an isolated pit in former Field 62. The method of surface treatment used to colour it with haematite-rich clay slip was used by Late Bronze Age/ Earlier Iron Age potters in both Kent and Wessex (Cunliffe 2005; Middleton 1987, 1995). This suggests that the small vessel had either been traded into the area or may have been the personal possession of a visitor/ trader to the fen edge at this time.

At the Site's extreme SW extent was another, apparently isolated pit dating to this period. It exhibited a complex fill sequence with fragments of numerous pots in at least five different fabrics. Additional finds included fragments from two briquetage containers, and fired clay, probably derived from a domestic hearth. The finds suggest contemporary domestic activity close by – possibly just beyond the Site's limits of excavation. Indeed, to the west, just beyond Willow Hall Lane, are the Scheduled remains of an 'Iron Age and Roman Settlement' located on a gentle gravel rise.

Morris has stated that the behaviour which created or caused the deposition of the distinctive Late Bronze Age/ Early Iron Age pottery sherds was definitely different in character than that for the Post-Deverel-Rimbury Late Bronze Age in the Bar Pasture landscape (Morris *pers. comm.*).

Plate 93 Collection of probable fired clay loom weights.

EARLY LA TÈNE IRON AGE 1

Following the Late Bronze Age/ Early Iron Age (*c.* 800-500 BC) retreat onto slightly more elevated ground, settlement and industrial activity depositing material-culture debris continued (predominantly) on the Site's western fringes, towards the end of the 6th century BC. Radiocarbon dating and pottery analysis have enabled the chronological division of dated features into Early La Tène Iron Age 1 (511-207 cal BC) and Early La Tène Iron Age 2 (350-53 cal BC). This distinction of two sub-phases is also geographical in terms of feature location, showing the movement of associated activity zones over time. It is a rare opportunity to see such a development unfolding and it is only with the aid of absolute dating that this has been possible.

It appears that initially, pit digging and the possible construction of a small shelter occurred on the western limits of the Site, almost certainly extending beyond this to the west. This locality, within the later Mill Fen, may have represented a slightly raised zone on the edge of a by now, largely inundated landscape. The only Iron Age sites out in the wet fen to the east were likely salterns (Hall and Coles 1994: 101). The identified archaeology represents the eastern-most 'frontier' of Early La Tène (Middle Iron Age) settlement activity within the Bar Pasture landscape. Based on the slightly overlapping radiocarbon dates, the identified activity appears to slightly predate the significant 'smithy' complex located *c.* 500m further south.

The pits on the very western edge of the identified field system included one containing pottery derived from at least seven different vessels. Carbonised residue on the interior of one was radiocarbon dated to 511-211 cal BC at 95.4% probability. A second date from a carbonised *Corylus avellana* nutshell in a bordering pit produced a result of 406-234 cal BC at 95.4% probability. While the first date covers the end of the 6th century; which is indicative of the end of the Early Iron Age, the second date commences at the end of the 5th century, one hundred years later. Both dates span the 4th to 3rd centuries BC, which is referred to as the core of the Early La Tène Iron Age in the eastern Midlands (Knight 2002: 126-135, fig. 12.3); and the Middle Iron Age elsewhere in southern Britain. Morris has stated that the identified pots, including shouldered jars, shiny black bowls, fingertip and fingernail decorated vessels and a jar with significant finger-wiping on its exterior would normally indicate that the material belongs to the Late Bronze Age/ Early Iron Age (*c.* 800-500 BC) – i.e. the preceding period. The absolute dating, however, shows this not to be the case. It is possible therefore to see this as an area of the country which may not have been at the forefront of ceramic style developments occurring elsewhere in Britain from the 5th to 3rd centuries BC. This particular part of the landscape may have been a backwater, steeped in traditional ways of doing things; change appears to have come slowly to generations of people living along the fen edge.

This rather isolated Early La Tène 1 pit group displayed clear evidence for crop-processing activities, as demonstrated by its elevated abundance of cereal grain, the presence of cereal chaff and the increased diversity of species in the accompanying charred weed seed assemblages. Indeed, the range of crops, including barley, wheat, spelt and emmer is comparable to a number of classic Iron Age sites (Jones 2006b), and is typical for the English Iron Age.

EARLY LA TÈNE IRON AGE 2

The Smithy complex

Towards the end of this period, a discrete, square enclosure was established within the remnants of Middle Bronze Age Field 33. The new enclosure, clearly offset to the earlier field alignment, was represented by a continuous ditch with a central, roofed hut. The latter survived as two eaves-drip gullies that were recut during the same period. Whilst no features were identified inside the central building, a large pit just outside the entrance contained a wealth of artefactual and environmental information, including two carved wooden bowl or cup rough-outs made of birch. Carved bowls are present in the archaeological record in the UK from the Neolithic onwards, with both carved and turned bowls well-represented during the Iron Age. A similarly sized turned bowl with a vertical pierced handle on the shoulder is recorded from Loch Laggan, Scotland (Maxwell 1951).

Significant quantities of metalworking debris recovered from the square enclosure ditch, eaves-drip gullies and the various pits, show that the complex functioned as a smithy. Material recovered included iron smithing slag, crucible fragments and a hearth lining derived from the smith's principal hearth. In addition, were fragments of 'tuyere' plate; the sacrificial clay-pad through which the air is blown into the hearth. Residues included the full range of iron smithing debris, including forging (shaping) and fire welding; as well as evidence of copper-alloy working. Recovered crucible fragments showed that alloys containing copper, tin and lead were melted in them. The general mixed assemblage clearly represents a metalworking 'shop' or smithy that appears to have operated for a prolonged period.

Though the Iron Age earned its name from the smith's mastery of this metal, sites from this period that feature *in situ* ironworking evidence, such as that identified at Bar Pasture, are extremely scarce. Many Iron Age settlement sites produce some evidence for iron smithing. For example, at Beckford, Worcestershire, excavations of Middle Iron Age horizons recovered

Plate 94 19th century romanticised reconstruction of what a prehistoric smithy may have looked like.

nearly 5kg of smithing slag and hearth bottoms and *c.* 2kg of hearth lining (Britnell 1975; Britnell *et al.* forthcoming; McDonnell 1986). The site of Roxby, North Yorkshire (Inman *et al.* 1985) revealed a round-house with associated slag, interpreted by the author as 'smithing debris' (McDonnell 1985). The excavations at Elms Farm, Humberstone, Leicestershire produced nine smithing hearth bottoms, but very little smithing slag lumps or hearth lining. The lack of hammerscale here suggested that the material was 'selected' for dumping, and did not represent a smithy dump (Keys 2000). The evidence from Bar Pasture, however, comprises of a very rare, significant and complete Iron Age 'smithy', representing both iron smithing and copper-alloy working.

Smithing is the secondary working of processed iron and is a 'domestic' skill, perhaps based on itinerant smiths working from selected locations. To produce iron ready for working into artefacts four main processes are involved. Firstly, wood needs to be converted to charcoal to fuel the furnaces. An initial heating or 'roasting' of the ore then removes impurities, followed by the high-temperature smelting in a furnace to remove remaining impurities. These impurities survive as various signature slags. The final process is the primary smithing to produce iron bars ready for use. The smithing process removes any remaining slag, resulting in useable lumps of iron.

The charcoal from Period 5 features was dominant in oak, which is a high-quality fuel frequently associated with industrial processes and was most likely brought to the Site for use in the smithy, as charcoal from managed woodlands. The plant macrofossils had a relatively high ubiquity of hazelnut shell, which could represent food debris or was perhaps introduced with the fuel wood.

An Early-Middle Iron Age radiocarbon date of 486-207 cal BC at 95.4% probability, came from carbonised organic material on a pot base - the only pottery found in the first phase of the smithy hut. The occurrence of this pottery, with a date that incorporates two Ceramic Phases (5A and 5B), is tentatively interpreted by Morris as a possible 'foundation deposit' associated with the influx of newcomers to this area (bringing their bowls and jars made of mudstone and shell fabric), from a location to the north or NW of Bar Pasture, where such pottery has been identified. The smith and his family may have moved to Bar Pasture to establish their smithy, on a part of the fen-edge landscape that was relatively dry. The recovery of mudstone fabric vessels is significant, and suggests that during the Early La Tène Iron Age this pottery may have been traded

to people living along the fen edge on a modest scale during the second half of the first millennium BC. A date obtained from carbonised *Quercus* sp. roundwood from the infilled ring-gully's recut produced a date of 350-53 cal BC (at 95.4% probability), signifying the end of smithing activities after a period of *c.* 130 years.

Just south of the smithy enclosure were two small pits, each of which contained small fragments of cremated human bone. The proximity of the features to the enclosure, may indicate that they are also of Iron Age date, although this is not certain. Iron Age cremation burials are relatively rare in Britain, with the exception of the Aylesford-type burials of south-eastern England, and it is possible that these burials form part of this funerary custom (Cunliffe 1991: 511).

The land containing the smithy complex is at a slightly higher elevation to the expanse of fenland to the east. It is believed that in the vicinity of the present-day Bar Pasture Farm, a Middle and Later Iron Age settlement (with associated 'outlying' activities) developed along the watery fen-edge margin at this time. The archaeology identified represents the eastern-most extent of Iron Age activity within the wider Pode Hole landscape. It also represents the culmination of a complex history of human occupation and life within the ever-changing fen-edge environment. Following the smithy's abandonment, the fenland marshes took hold of the ancestral lands of Bar Pasture for the following two millennia.

RE-USE OF A ONCE ABANDONED LANDSCAPE

Up until 2018 (when a large Roman *Villa Rustica* within a pentagonal enclosure and associated field system was excavated *c.* 475m to the west of Bar Pasture Farm - Mustchin and Richmond 2020), little Roman archaeology had been found in the immediate surrounding landscape. Indeed, the only Roman artefacts recorded have been a fired clay roof tile from the Pode Hole Quarry excavations and a single abraded pottery sherd from a field plot within the Bar Pasture Extension. The *Villa Rustica* was a large timber-built building, constructed within a pre-existing system of agricultural enclosures and trackways. Villas of this type are well documented around the fen edge, and would have served as administrative centres for their associated estates (Potter 1989). A further Romano-British villa with an associated field system is recorded at Eyebury Quarry, *c.* 1.5km to the SW (McFadyen 1999; Patten 2004). Scatters of Roman pottery near Willow Hall Farm and elsewhere in Eye Parish attest to probable Roman farmsteads on areas of slightly elevated land. Under the auspices of Roman occupation, infrastructure projects were installed in the wider landscape. These may have included the canalisation of the Catswater drainage dyke *c.* 650m due west of the Site (Mustchin and Richmond 2020), although Hall (1987) attributes the feature to the Saxon period.

During Saxon times, the only area of dry land available locally was limited to the present village of Thorney (*thorn island*), with all the gravel to the west (including the Bar Pasture landscape), being shallow, uninhabitable fen. As such, no Saxon finds have been made on or near the Site. It is probably a testament to the remote and inhospitable nature of the surrounding landscape during this period that Thorney attracted a small Late Saxon anchorite hermitage. The location presumably retained some spiritual importance, as in AD 972 St Aethelwold established a monastery here.

The first topographical reference to Bar Pastures dates to 1315 AD, when it was recorded as *barram*, and later as *Thorney barr* (1436). The name seems to refer to a bar or weir on the Catswater. During this period, the Site formed part of the western Thorney Fens, which although shallow, appear to have subsumed the majority of the Bar Pasture Extension area (cf. Hall 1987: fig. 35).

Despite its rather remote location, Thorney Abbey flourished during Medieval times, and became one of the great 'Fen Five' monasteries (along with Crowland, Ely, Peterborough and Ramsey). The Bar Pasture project area lay within the extent of Thorney's monastic estate, and the occupants probably carried out small-scale drainage works during this period. Most areas, however, lay virtually abandoned and largely uninhabited, being seasonally flooded, and supporting sedge, flag and reed beds, and sporadic willow and alder woodland belts.

The first documented proposal to drain Thorney fens was made in 1626, and Francis, the 4th Earl of Bedford, was active in the scheme for complete drainage of the fenland via an entrepreneurial partnership with Sir Cornelius Vermuyden. This brought 1000s of acres into agricultural (predominantly pastoral) use again. Hayward's survey of 1636 states the Thorney fens to have encompassed 16,069 acres, all belonging to the Duke of Bedford. It is not certain when Bar Pasture Farm and its surrounding area was brought into large-scale arable cultivation, but the widespread presence of so-called 'claying' or 'marl' trenches, suggests that this episode of land-use dates from the late 18th century onwards (Matthews 1993). Maps from the late 19th century show Bar Pasture with its drainage dykes and field boundaries, much as they appeared at the commencement of quarrying at the end of the 20th century.

The large-scale drainage of the marshy fens was seen as 'a noble enterprise for the greater good' (Bowley 2020: 58). However, the bringing of formerly wet land into cultivation removed the resource that had effectively

sustained small communities for millennia. Often out-of-sight, but always labouring as fenlanders, the occupiers of this marginal landscape had their livelihoods stripped away in a matter of a few generations. The richness of the fen wetlands, which had sustained life from the earliest of times, was effectively destroyed. For thousands of years, fen-edge communities with their animals and plants had adapted to natural changes in climate and environment. Only in recent times was this fragile, but important relationship between humans and nature swept away.

The Bar Pasture landscape was clearly a special place to meet, hunt, forage, farm, interact, dispose of relatives and visit ancestors for a considerable period of time. Its history, however, has always been dictated by the watery fen-edge environment in which it lies. This was a marginal landscape throughout prehistory, with complex human-wetland interactions over time. It is important, however, to view these fenland ancestors as being highly adapted to their environment. The wetland landscape in which they lived should not always be viewed as overly challenging, and a difficulty for them; but rather a way of life. The prehistoric populations may have lived and worked in marginalised locations, but they were not necessarily marginalised people. Nevertheless, whilst the fens provided rich food resources, fuel, building materials and summer grazing, sedentary activities along the fen-edge skirtland were always going to be of a temporary nature, being as they were on the shifting margins of the watery embayment.

'They have a beauty of their own, these great Fens, even now when they are dyked and drained, tilled and fenced, a beauty as of the sea, of boundless expanse and freedom.'

Kingsley 1866

Appendix A
Prehistoric Pottery, Ceramic Phases 1-5

Context	Feature; Group	Fabric	Form	Count	Weight	TH code	Dec	Comment
Ceramic Phase 1A - Early Neolithic								
11782	pit [11751]	S2	R33; P1	30	81	2	-	Figure 59, no. 1; radiocarbon dated
			Total	***30***	***81***			
Ceramic Phase 1B - Middle-Late Neolithic								
11775	pit [11749]	S1	R31; D1	11	178	2; 3	IM; IC; FN	Figure 59, no. 3; same feature as Figure 59, nos 2 & 7
11777	pit [11749]	S2	R32	3	73	2; 4	IM	Figure 59, no. 2; same feature as Figure 59, nos 3 & 7
			Total	***14***	***251***			
			Total for Ceramic Phase 1	**44**	**332**			

Table 3. Pottery: Ceramic Phase 1

Context	Feature; Group	Fabric	Form	Count	Weight	TH code	Dec	Comment
Ceramic Phase 2A (Final Neolithic-Early Bronze Age)								
512	ditch [514]	G2	P1	1	4	2	-	Beaker body sherd-softly fired, thin-walled; sample <55>
1022	barrow ring-gully [1026.01]	GD2	D1	1	3	2	IC; FN	Figure 59, no. 8; primary fill of Barrow 1026 ditch
1641	layer above Barrow 1941	G2	P1	2	7	X	-	flakes; probably from a Beaker
1642	buried soil beneath Barrow 1941	GQ1	D1	1	9	3	FN	Figure 59, no. 9; special find number 5
1652	pit [1649]	G2	D1	1	3	3	RT	Figure 59, no. 10
1670	post-hole [1669]	G2	P1	1	1	X	-	tiny flake of Beaker redeposited from beneath Barrow 1941
1703	post-hole [1701]	G1	P1	1	2	X	-	possibly Beaker sherd; from sample <107> of Structure 1
1703	post-hole [1701]	G2	P1	1	1	1	-	Beaker body sherd; from sample <107> of Structure 1
1747	post-hole [1746]	GQ1	P1	1	3	2	-	Beaker-type sherd, possibly decorated; from sample <105>
1769	ditch cut [1783] of Barrow 1941	GQ3	D1	1	3	2	TW	Figure 59, no. 11
1791	pit [1808]	GD3	R12	1	4	4	-	Figure 59, no. 4; beneath Barrow 1941
1792	pit [1808]	G1	P1	4	2	X	-	very small sherds; beneath Barrow 1941
1805	pit [1804]	GD3	D1	110	210	4; 5	IC; IM	Figure 59, no. 5; beneath Barrow 1941; sample <91>

1805	pit [1804]	G2	D1	8	10	2	IC	Figure 59, no. 6; beneath Barrow 1941; sample <91>
1862	pit/post-hole [1861]	G2	R7	1	8	3	-	Figure 60, no. 12
2008	butt end ditch cut [2009]	D2	P1	2	1	X	-	flakes; sample <157>; from fourth fill of ditch
2025	ring-ditch cut [2026]	D2	P1	5	11	2; 3	-	sample <165>; Beaker body sherds; Structure 6
2041	?cremation [2040]	D2	P1	17	10	3	-	similar to ring-ditch [2026] Beaker body sherds
2041	?cremation [2040]	Q3	P1	3	2	2	-	Beaker body sherds based on wall thickness and firing
2084	pit [2085]	DG1	D1	2	5	2	CB	Figure 60, no. 13
2084	pit [2085]	DG2	D1	10	14	3	FN	(not illustrated)
2144	ring-ditch cut [2145]	D2	D1	1	1	2	?RT	(not illustrated)
2252	butt end ditch cut [2254]	D2	P1	2	4	3	-	heavily ironised; probably Beaker body sherds
2253	butt end ditch cut [2254]	G6	P1	4	7	4		possibly Beaker body sherds
2302	pit [2288]	GD2	R7	1	3	2; 3	-	Figure 60, no. 14; third fill of pit
2302	pit [2288]	S1	P1	1	13	2; 3	-	Beaker - plain, small vessel; third fill of pit
2303	pit [2288]	S1	B99	1	61	2; 3	-	same Beaker as above, base c. 100mm diam; second fill of pit
2303	pit [2288]	Q3	P1	6	43	2; 3	-	Beaker - small girth vessel
2346	ditch [2347]	G2	D1	1	1	2	FN	Figure 60, no. 15
2386	pit [2385]; in Structure 4 area	GD2	B1; D1	3	54	2	IC	Figure 60, no. 16; includes sample <162>
2386	pit [2385]; in Structure 4 area	GQD1	B1; D1	7	135	3; 4	FN	Figure 60, no. 17; context radiocarbon dated
2386	pit [2385]; in Structure 4 area	Q3	P1	1	3	4	-	context radiocarbon dated
2386	pit [2385]; in Structure 4 area	DG1	B99	1	9	X	-	corky fabric; context radiocarbon dated
2386	pit [2385]; in Structure 4 area	GD2	R16	11	164	2	FN	Figure 60, no. 18; context radiocarbon dated
2386	pit [2385]; in Structure 4 area	GD2	D1	2	13	1; 2	IC; FN	Figure 60, no. 19; context radiocarbon dated
2386	pit [2385]; in Structure 4 area	GQD1	D1	6	28	2	FN	Figure 60, no. 20; includes sample <162>
2386	pit [2385]; in Structure 4 area	GD2	D1	4	4	2	FN	Figure 60, no. 21; possibly same as Cat. no. 16 above
2386	pit [2385]; in Structure 4 area	G99	P1	18	6	X	-	very small sherds/flake, sample <162>; radiocarbon dated
2386	pit [2385]; in Structure 4 area	GD2	D1	1	1	2	IC	Figure 60, no. 22; from sample <162>
2387	pit [2389]	GD2	D1	1	13	3	FN	Figure 60, no. 23; in centre of Structure 6
2404	pit [2403]	G99	P1	1	1	X	-	from sample <163>; flake; probably from a Beaker
3009	pit [3008]	GQ1	R7; P1	6	6	1; 2	-	Figure 60, no. 24
3020	pit [3019]	G2	B1	1	9	X	-	Beaker base, 100mm diameter
3020	pit [3019]	SG1	B2; P1	26	225	2; 3	FT	Figure 60, no. 25; includes sample <31>
3024	pit/post-hole [3023]	GQ1	D1	1	4	2	FT	Figure 60, no. 26
3026	pit [3025]	G2	P1	1	1	2	-	Beaker; from sample <35>

3026	pit [3025]	S1	D1	1	1	1	IC	Figure 60, no. 27; from sample <35>
3028	ditch cut [3027]	GQ1	P1	1	3	2	-	Beaker; same vessel as Cat. no. 26 above
3038	pit [3037]	SG1	D1	1	2	2	IC; FN	Figure 60, no. 28; sample <19>
3038	pit [3037]	S1	P1	1	1	1	-	probably from a Beaker; from sample <19>
3038	pit [3037]	Q3	P1	1	1	2	-	from sample <19>; Beaker
3038	pit [3037]	SG1	D1; P1	9	19	1; 2	FN	Beaker; not same vessel as Cat. no. 25 in pit [3019] above
3038	pit [3037]	GQ1	P1	1	4	2	-	Beaker
3101	pit [3100] - tertiary fill	GD2	D1	2	3	2	FN	(not illustrated); sample <57>; = Figure 60, no. 18
3101	pit [3100] - tertiary fill	G1	D1	1	6	4	FT	from sample <57>; = Figure 61, no. 30
3101	pit [3100] - tertiary fill	GD2	D1	1	4	1	FT	Figure 61, no. 29
3102	pit [3100] - secondary fill	G1	R7	24	64	3; 4	FT	Figure 61, no. 30; = FT2 sherd in fill (3101) above
3102	pit [3100] - secondary fill	GD2	P1	1	2	1	-	same vessel as Figure, no. 29 above
3102	pit [3100] - secondary fill	G2	B1	1	6	2	-	(not illustrated) base sherd; radiocarbon dated by assoc.
3102	pit [3100] - secondary fill	G99	D1	1	4	3	IC	Figure 61, no. 31; radiocarbon dated by assoc.
3102	pit [3100] - secondary fill	GQD1	R7; H1; D1	23	131	3	IC	Figure 61, no. 32; includes sample <54> sherd
3102	pit [3100] - secondary fill	G99	P1	23	9	X	-	tiny fragments from sample <54>; radiocarbon dated by assoc.
3102	pit [3100] - secondary fill	GQD1	P1	3	6	3	-	degraded sherds, sample <54>; radiocarbon dated by assoc.
3102	pit [3100] - secondary fill	GQD1	D1	2	4	2; 3	IC	Figure 61, no. 33; radiocarbon dated by association
3104	pit [3103]/pit [3100] - primary	GQD1	P1	1	1	2	-	primary fill; Beaker; sample <59>; not = Cat. nos. 32-33 above
3106	pit [3105]	GQD1	D1	1	3	2	FT	Beaker; may = other sherds in this fill; sample <67>
3106	pit [3105]	GQD1	D1	2	5	2	FN	(not illustrated); Beaker; may = other sherd in this fill
3133	pit [3130]	SG1	B1	1	40	3	-	Figure 61 no. 34; abraded on interior surface
5208	pit [5211]	GD2	P1	2	2	2	-	Beaker body sherds redeposited into Ceramic Phase 4B pit
7049	pit [7051]	G2	P1	1	1	X	-	probably from a Beaker
7201	large quarry pit [7205]	GS2	D1	3	9	3	FN	Figure 61, no. 35
7231	pit [7230]	G1	P1	1	1	2	-	Beaker
7231	pit [7230]	G1	P1	1	1	X	-	Beaker; flake
7374	pit [7373]	GD1	P1	1	1	3	-	Beaker; buff-coloured fabric
7395	pit/post-hole [7394]	D2	P1	1	1	3	-	Beaker
11547	pit [11549]	G2	P1	3	1	2	-	Beaker; from middle fill of feature
11631	pit [11632]	G2	R30; P1	6	3	1	-	Figure 61, no. 36; from lowest fill of feature
11715	pit [11711]	GQ1	D1	1	7	2	FN	same Beaker as Cat. no. 37 below; from middle fill of feature
11716	pit [11711]	GQ1	B1; D1	26	37	2	FN; FT	Figure 61, no. 37; from upper fill of feature

11774	pit [11749]	Q1	B1	1	38	2	IC	Figure 59, no. 7; associated with Cat. nos. 2-3 (CP1)
			Total	***431***	***1543***			
Ceramic Phase 2B (Early Bronze Age)								
373	pit [360]	GQ2	C1	1	21	3; 4	-	Figure 61, no. 38
376	ditch [361]	G1	P1	2	4	4	-	probably not same pot as below
376	ditch [361]	G1	P1	1	35	4	-	probably not same pot as above
421	ditch [422]	G1	P1	2	3	X	-	flakes; heavily ironised
432	pit [430]	GQ2	P1	38	364	5; 6	-	includes many tiny fragments; heavily ironised
1646	inhumation grave pit [1639]	G1	R14, B1	202	527	3	-	Figure 62, no. 41; special find 8; sample <83>
1724	ditch cut [1722] of Barrow 1941	G1	P1	1	1	3	-	third fill of Barrow 1941
1740	post-hole [1739]	G5	B1	1	39	6	-	(not illustrated); associated with small QF1 sherd (CP4B)
1742	curvilinear shallow gully [1741]	G1	R10; B1	10	71	2 thru 5	TW	Figure 61, no. 39; inc. body sherds & sample <103>
1767	ditch cut [1745] of Barrow 1941	G1	P1	1	6	X	-	flake
1844	very large waterhole [1801]	G1	P1	1	5	X	-	probably redeposited flake
2073	ditch [2077]	G1	P1	1	1	X	-	flake; laminated texture; possibly from Collared urn-type
2155	pit/post-hole [2156]	G1	R15	1	27	5	IM	Figure 62, no. 42
2292	pit [2271]	G1	P1	1	4	X	-	primary fill of pit; buff-coloured grog visible in fresh breaks
2318	ditch terminus cut [2344]	G3	P1	1	1	X	-	laminated or layered fabric with flint and shell detritus
7003	pit [7006]	GQ2	B1; P1	2	17	3	-	(not illustrated)
7035	terminus ditch cut [7037]	GQ1	P1	1	12	5; 6	-	interior abrasion from use; buff-coloured fabric
7043	terminus ditch cut [7044]	G1	P1	1	19	3; 4	-	buff-coloured fabric
7043	terminus ditch cut [7044]	G1	P1	3	32	6	-	thick-walled vessel
7049	oval domestic hearth pit [7051]	G1	A1	3	27	3; 4	-	Figure 62, no. 44; sample <187>; radiocarbon dated
7049	oval domestic hearth pit [7051]	G1	P1	1	8	3	-	not same pot as no. 44 above; radiocarbon dated by assoc.
7057	pit [7056]	G1	C1	1	2	1; 3	FT	Figure 61, no. 40
7064	pit [7067]	G1	P1	1	3	3; 4	-	buff-coloured fabric
7070	post-hole [7072]	(n.a.)	P1	1	3	X	-	overfired, reburnt, bloated condition; fabric type uncertain
7070	post-hole [7072]	G1	A1	1	44	3	FN	Figure 62, no. 45; sample <189>
8132	ditch cut [8135]	GQ2	P1	1	6	4	-	possibly a re-fired sherd
9325	barrow ditch cut [9329]	GD1	P1	1	3	4	-	prob. not Beaker; Barrow G9380; intermediate fill of feature
9543	barrow ditch cut [9535]	G1	P1	1	18	4	-	used as a cooking pot; Barrow G9380; middle fill of feature
11136	small pit [11135]	G1	D1 (N1)	2	27	4; 6	IC; FN	Figure 62, no. 43; includes a plain body sherd
11863	elongated pit [11857]	GS2	P1	1	13	4	-	non-vesicular version of GD2 fabric; lowest fill of feature

12159	pit [12154]	G1	P1	1	5	4; 5	-	from sample <145>; lower fill of feature; used as cookpot
			Total	***286***	***1348***			
			Total for Ceramic Phase 2	**717**	**2891**			

Table 4. Pottery: Ceramic Phase 2

Context	Feature; Group	Fabric	Form	Count	Weight	TH code	Dec	Comment
Ceramic Phase 3A (Early Middle Bronze Age)								
510	post-pit [494]	G1	R2	2	8	X	-	Figure 62, no. 46
510	post-pit [494]	G1	B1; P1	2	175	4		Figure 62, no. 47
543	waterhole [536]	G1	B1; P1	3	124	4; 6	-	Figure 62, no. 48
543	waterhole [536]	GQ2	R2	1	149	5; 6	-	Figure 62, no. 49
1025	barrow ring-gully cut [1026.02]	G1	B1; P1	31	362	5	-	Figure 62, no. 50; includes sample <75>
1025	barrow ring-gully cut [1026.02]	G1	P1	13	3	X	-	from sample <75>; probably not same pot as above
1062	barrow ring-gully cut [1026.03]	G1	P1	9	43	5	-	-
1663	pit/post-hole [1664]	G1	D1	4	48	4	AP; FT	Figure 62, no. 51; used as cooking pot
1727	subsoil layer around pit [1730]	G1	D1	1	25	4	AP	Figure 62, no. 52; possibly used as cookpot
1844	very large waterhole [1801]	G1	P1	1	5	X	-	found in same feature with Figure 63, no. 56 below
8132	ditch [8135]	GQ2	P1	1	8	4	-	possibly overfired or re-fired sherd
9325	barrow ditch cut [9329], G9563	GD1	P1	1	3	4	-	intermediate fill of feature
9543	barrow ditch cut [9535], G9563	G1	P1	1	18	4	-	Figure 62, no. 53; used as cookpot; radiocarbon dated
			Total	***70***	***971***			
Transitional Ceramic Phases 3A/3B (Early Middle Bronze Age/Late Middle Bronze Age)								
109	pit [105]	SG1	R4	1	24	4	-	Figure 63, no. 54; oxidised throughout
1706	pit [1730]	SG1	D1	1	1	3	FT	Figure 63, no. 55; sample <88>; oxidised exterior
			Total	***2***	***25***			
Ceramic Phase 3B (Late Middle Bronze Age)								
417	ditch [413]	S2	P1	1	26	4	-	-
796	ditch [797]	S1	P1	1	1	X	-	fragment
816	ditch [814]	S1	P1	10	5	X	-	flake
867	pit [869]	S1	P1	1	14	3; 4	-	small to medium-sized vessel

976	post-hole [977]	S1	P1	16	21	4	-	includes several flakes
1840	very large waterhole [1801]	S5	R11; L1	1	316	6; 7	-	Figure 63, no. 56; used as a thick-walled cooking pot
1930	pit [1789]	S1	P1	1	1	X	-	from sample <116>; flake
2238	butt end of ditch [2239]	S1	P1	4	23	5	-	thick-walled vessel
6224	quarry pit [6204]	S1	P1	1	29	4; 5	-	substantial vessel with thicker wall
7458	corner outer ditch cut [7456]	S2	D1	2	53	5	AP	Figure 63, no. 57
7458	corner outer ditch cut [7456]	S2	P1	1	3	3	-	from a large vessel based on sherd curvature; oxidised through
7479	terminus inner ditch cut [7452]	S1	B1	1	21	3	-	Figure 63, no. 58; oxidised on exterior only
7580	ditch cut [7579]	S1	P1	1	1	X	-	flake; may be same vessel as in ditch cut [7583]
7584	pit [7583]	S1	P1	1	3	X	-	flake; may be same vessel as in ditch cut [7579]
7612	sub-rectangular pit [7613]	S4	P1	1	19	4	-	carbonised residue on interior, cookpot; radiocarbon dated
8081	pit [8082]	S2	P1	3	51	3; 5	-	big pot, abraded and pitted on interior; includes sample <219>
8228	terminus of ditch cut [8230]	S2	R33	1	29	6	-	Figure 63, no. 59; unoxidised; thick-walled vessel
8229	terminus of ditch cut [8230]	S1	P1	1	62	8	-	pitted on interior; unoxidised; very thick-walled vessel
9444	stone-lined burial [9526]	S2	P1	2	1	X	-	in cremation 2, redeposited flakes associated previous pyre
9472	burial cut [9474]	S2	B1; P1	18	1667	5; 6	-	Figure 63, no. 60; cremation 5
9481	burial cut [9499]	S2	B1	1	1089	6; 7	-	Figure 63, no. 61; cremation 6
9483	burial cut [9509]	S2	B1	62	518	8	-	(not illustrated) cremation 8
9488	burial cut [9490]	S2	B2	150	1270	3; 4	-	Figure 63, no. 62; cremation 10
9512	burial cut [9513]	S2	P1	46	1366	5; 7	-	(not illustrated) cremation 11
9514	burial cut [9515]	S1	B1; P1	113	1212	6; 7	-	(not illustrated) cremation 12
10219	small pit [10217]	D1 (S2)	R4	1	6	4	FN	Figure 63, no. 63
11136	small pit [11135]	S2	P1	1	5	3	-	-
			Total	***442***	***7812***			
			Total for Ceramic Phase 3	**514**	**8808**			

Table 5. Pottery: Ceramic Phase 3

Context	Feature; Group	Fabric	Form	Count	Weight	TH code	Dec	Comment
Ceramic Phase 4A (Post-Deverel Rimbury Plainware Late Bronze Age)								
384	ditch [383]	D1	R3	1	5	3; 4	-	Figure 63, no. 64
417	ditch [413]	S2	P1	1	26	4	-	-

469	ditch [470]	F1	P1	4	11	4	-	heavily ironised small sherds
504	ditch [493]	S1	N1	2	29	2	-	Figure 64, no. 65; unoxidised firing throughout
563	pit [564]	F1	R13	6	112	3; 4	-	Figure 64, no. 66; unoxidised firing throughout
563	pit [564]	F1	P1	1	8	4	-	sample <5>; oxidised firing throughout
572	enclosure ditch [568]	D1	P1	1	5	X	-	split, flaked sherd
598	tree-throw [588]	F1	P1	1	4	4	-	fragile; unoxidised throughout
1265	ditch [1262]	D1	P1	4	5	X	-	split, flaked sherds-possibly just one sherd
1520	modern claying trench [1519]	S2	P1	4	30	3	-	carbonised residue on interior; not same pot as below
1520	modern claying trench [1519]	S2	R9	1	33	3	-	Figure 64, no. 67; unoxidised firing throughout
1769	barrow ditch [1783]	D1	R3	1	19	4	-	Figure 64, no. 68; unoxidised firing throughout
11038	ring-ditch cut [11039]; G11083	S2	R3	1	58	3	-	Figure 64, no. 69; unoxidised firing throughout
11046	ring-ditch cut [11047]; G11083	S1	R3; P1	6	45	2; 3	-	Figure 64, no. 70
11057	ring-ditch cut [11051]; G11083	S1	P1	1	31	3	-	possibly same vessel as Figure 64, no. 70
11101	ditch [11102]	S2	R29; P1	2	54	3; 4	-	Figure 64, no. 71
11267	ditch [11248]	S2	P1	4	8	2; 3	-	sherd and split flakes from thin-walled pot; unoxidised firing
11350	field ditch [11353]	S1	P1	1	3	4	-	sample <124>; 10mm thick; upper fill of ditch
11370	field ditch [11372]	S1	P1	1	39	4	-	very big vessel - no curvature on large sherd
11413	ditch [11414]	S1	P1	2	6	X	-	split, flaked sherds, >8-9mm thick; probably same pot
11539	ditch [11540]	S2	P1	1	1	2	-	thin-walled vessel; lowest fill of ditch
11869	ditch [11859]; G11788	S2	N1	1	46	4; 5	-	Figure 64, no. 72
			Total	***47***	***578***			
Ceramic Phase 4B (Late Bronze Age-Early Iron Age)								
1740	post-hole [1739]	QF1	P1	1	2	2	-	hard-fired; assoc. with EBA base (CP2B)
5208	pit [5211]	S2	R24	1	17	4	-	Figure 64, no. 73
5208	pit [5211]	MDQ1	A1	1	10	2	-	Figure 64, no. 74
5208	pit [5211]	S4	B1; P1	8	36	2		small base, 80mm diameter
5208	pit [5211]	S2	P1	1	6	3	-	slightly vesicular fabric
5208	pit [5211]	S1	P1	2	7	3	-	slightly vesicular fabric, ironised
5208	pit [5211]	S7	P1	3	7	3	-	burnished interior - from a bowl; unoxidised
5209	pit [5211]	S7	B1	2	29	2; 3	-	small base (80mm), burnished interior; bowl; oxidised exterior
6095	pit [6096]	DQ1	R26	1	10	2	-	Figure 64, no. 75
6110	large quarry pit [6105]	SQ1	B1	1	90	2	-	Figure 64, no. 76
6110	large quarry pit [6105]	FQS1	P1	3	14	2; 3	-	trace of fabric bleaching associated with heating brine

6110	large quarry pit [6105]	S1	P1	3	9	2; 3	-	-
6115	large quarry pit [6105]	GSQ1	B1	3	65	2	-	Figure 64, no. 77
6142	large pit [6130]	GSQ1	R27	1	20	3	-	Figure 64, no. 78
7231	pit [7230]	QI1	A1	1	3	2; 3	-	Figure 65, no. 79
7414	post-hole [7413]	D1	P1	1	1	X	-	split, flaked sherd; hard-fired fabric
7612	sub-rectangular pit [7613]	D1	A1	2	5	2	-	not illustrated
7612	sub-rectangular pit [7613]	S4	P1	1	19	4	-	carbonised residue on interior - cooking pot
7612	sub-rectangular pit [7613]	S4	P1	1	10	3	-	pitted on interior - acidic liquid storage vessel
7612	sub-rectangular pit [7613]	D1	P1	8	4	3	-	sample <198>; very small sherds
7729	pit or post-hole [7730]	D1	P1	2	94	3	-	burnished interior - from a bowl; sample <202> = 1g sherd
7740	?cremation pit [7739]	D1	P1	3	2	X	-	split, flaked sherds
8348	ring-gully G8050	D1	P1	1	10	4	-	hard-fired fabric
			Total	***51***	***470***			
			Total for Ceramic Phase 4	**98**	**1048**			

Table 6. Pottery: Ceramic Phase 4

Context	Feature; Group	Fabric	Form	Count	Weight	TH code	Dec	Comment
Ceramic Phase 5A (Earlier La Tène Iron Age 1)								
3006	pit [3005]	GDQ2	D1	1	27	2	FT	Figure 65, no. 80; used as cooking pot; C14
3006	pit [3005]	S2	P1	3	5	3	-	includes sample <6> S1 sherds
3006	pit [3005]	GD2	B3	6	60	3	-	Figure 65, no. 81; finger-wiped
3006	pit [3005]	GDQ2	A2	2	11	2	-	includes sample <6>; Figure 65, no. 82
3006	pit [3005]	GDQ2	P1	2	14	1; 2	-	unoxidised
3007	pit [3005]	S2	P1	3	18	3	-	= S2 fabric vessel in (3006); includes sample <8>
3007	pit [3005]	GDQ2	P1	5	11	2; 3	-	= GDQ2 fabric vessel in (3006); from sample <8>
3007	pit [3005]	S1	R17	1	3	2	-	from sample <8>; Figure 65, no. 83
3007	pit [3005]	D1	P1	1	1	X	-	from sample <8>; flake
3009	pit [3008]	SG2	R5	1	7	2	-	Figure 65, no. 84; burnished both surfaces
3009	pit [3008]	QF2	P1	1	12	3	-	from near base; burnished both surfaces - bowl
3009	pit [3008]	QC1	P1	12	65	3	-	<10>; vessel used as cooking pot; radiocarbon dated
3009	pit [3008]	S4	P1	5	13	4	-	from sample <10>

3009	pit [3008]	S1	P1	1	1	X	-	from sample <10>
3009	pit [3008]	S2	P1	1	1	X	-	from sample <10>
3009	pit [3008]	D1	P1	2	5	3	-	from sample <10>; possibly same vessel
3038	pit [3037]	D2	R17	1	4	2	FN	Figure 65, no. 85; necked jar, flared rim
			Total	***48***	***258***			
Ceramic Phase 5B (Earlier La Tène Iron Age 2)								
5014	pit in smithy enclosure [5020]	S1	P1	2	23	3; 4	-	carbonised residue on interior; cooking pot
5014	pit in smithy enclosure [5020]	S1	D1	3	34	3	IC1	Figure 65, no. 86; big jar; includes <176>
5014	pit in smithy enclosure [5020]	S1	R18	1	68	3; 4	IC2	Figure 65, no. 87; large jar
5014	pit in smithy enclosure [5020]	S2	D1; P1	3	150	5	IC3	Figure 65, no. 88; 'limescale' interior; <176>
5014	pit in smithy enclosure [5020]	S2	R19	2	19	3	-	Figure 65, no. 89
5014	pit in smithy enclosure [5020]	S2	R20	1	28	3	IC3	Figure 65, no. 90
5014	pit in smithy enclosure [5020]	S2	P1	2	10	2	-	includes flake from sample <176>
5014	pit in smithy enclosure [5020]	S2	R19	1	3	2	IC0	Figure 65, no. 91; trace of incising on body
5014	pit in smithy enclosure [5020]	S3	D1	1	14	4	IC0	-
5014	pit in smithy enclosure [5020]	S4	R21	2	38	3	-	Figure 65, no. 92; black bowl; inc. <176>
5014	pit in smithy enclosure [5020]	S4	P1	4	13	X	-	not same firing conditions as one below
5014	pit in smithy enclosure [5020]	S4	P1	3	28	X	-	not same firing conditions as one above
5014	pit in smithy enclosure [5020]	S5	P1	1	13	2	-	-
5014	pit in smithy enclosure [5020]	S99	P1	1	1	1; 2	-	overfired so cannot determine fabric type
5015	pit in smithy enclosure [5020]	S1	B99	2	54	X	-	base plate
5015	pit in smithy enclosure [5020]	S1	R22	1	41	2	IC2	Figure 65, no. 93
5015	pit in smithy enclosure [5020]	S1	D1	1	41	4	IC3	abraded from stirring on interior
5015	pit in smithy enclosure [5020]	S1	D1	1	13	3	IC0	wiped on interior
5016	pit in smithy enclosure [5020]	S1	B1	2	63	2	-	Figure 65, no. 94; finger marks on interior
5016	pit in smithy enclosure [5020]	S1	B99	1	76	X	-	approximately 40% of 100mm diameter base plate
5016	pit in smithy enclosure [5020]	S1	P1	1	23	2; 3	-	-
			Total	***36***	***753***			
5005	south ring-gully cut [5007]	D1	P1	17	11	2	-	oxidised; flakes and sherds
5008	south ring-gully cut [5010]	MD1	B1	2	5	3	-	burnished on interior; bowl
5008	south ring-gully cut [5010]	D1	P1	8	5	X	-	= D1 fabric vessel in (5005)
5021	south ring-gully cut [5023]	S1	R18	3	17	3	IC2	Figure 65, no. 95; from sample <169>
5021	south ring-gully cut [5023]	S1	D1	1	7	4	IC1	-

5021	south ring-gully cut [5023]	S1	D1	1	4	2	IC0	= S1 fabric vessel in (5022); possibly IC2 decoration
5021	south ring-gully cut [5023]	S1	P1	1	2	X	-	oxidised; possibly same as S1 vessel in (5044)
5021	south ring-gully cut [5023]	S2	D1	12	18	3	IC3	sample <169>; one with ?salt bleaching; some flakes
5021	south ring-gully cut [5023]	S4	P1	2	4	2	-	from sample <169>; possibly burnished interior
5021	south ring-gully cut [5023]	S6	D1	18	352	4; 5	IC3	Figure 66, no. 96; with repair perforation
5021	south ring-gully cut [5023]	S6	P1	3	8	4	-	= sample <169>; traces of salt bleaching present
5022	south ring-gully cut [5023]	S1	D1	1	4	2	IC0	?IC2 decoration; ?same S1 vessel as in (5044)
5044	north ring-gully cut [5046]	S1	D1	2	8	2	IC0	?IC2 decoration; ?same S1 vessel as in (5022)
5044	north ring-gully cut [5046]	S1	P1	1	3	3; 4	-	sample <170>; slightly thicker-walled vessel
5044	north ring-gully cut [5046]	S1	P1	2	3	2	-	sample <170>; thinner-walled vessel
5044	north ring-gully cut [5046]	S2	P1	1	7	3; 4	-	-
5044	north ring-gully cut [5046]	S2	P1	3	8	4	-	sample <170>
5044	north ring-gully cut [5046]	S3	P1	1	19	X	-	large sherd flake
5044	north ring-gully cut [5046]	S99	P1	9	4	X	-	sample <170>; flakes
5044	north ring-gully cut [5046]	MD1	P1	1	4	1; 2	-	near base angle; thin-walled vessel
5047	north ring-gully cut [5048]	S2	B1; P1	77	848	4	IC2	Figure 66, no. 97; pitted & abraded interior
5061	north ring-gully cut [5063]	MD1	B2; P1	5	22	4	-	100mm diameter; soot on exterior; cooking pot
5061	north ring-gully cut [5063]	MD1	P1	1	7	1	-	burnished both surfaces = thin, shiny, black bowl
5061	north ring-gully cut [5063]	S1	P1	2	7	2	-	soot on exterior, cooking pot
5061	north ring-gully cut [5063]	S2	B1; P1	3	18	3	-	(not illustrated); 60mm diameter; vesicular texture
5061	north ring-gully cut [5063]	S2	D1	1	75	6	IC2	Figure 66, no. 98; vesicular texture
5061	north ring-gully cut [5063]	S2	B1	1	125	3	IC2	Figure 66, no. 99; vesicular texture
5061	north ring-gully cut [5063]	S2	D1	4	72	5	IC3	-
5061	north ring-gully cut [5063]	S2	P1	1	35	5	-	vesicular throughout
5064	north ring-gully cut [5066]	MD1	B99	1	62	X	-	radiocarbon dated
5073	north ring-gully cut [5075]	S1	B2	1	22	X	-	-
			Total	***186***	***1786***			
5079	pit [5082] (cut enclosure ditch)	S1	R23	3	8	3	-	Figure 66, no. 100
5087; 5090	pit [5091]; enc. ditch cut [5088]	S4	B4	4	225	2; 3	-	Figure 66, no. 101; acidic liquid container
5090	pit [5091] (cut enclosure ditch)	S1	D1	1	52	5	IC0	very large acidic liquid container
5094	enclosure ditch cut [5097]	S2	D1	1	5	X	IC3	flake; oxidised firing; not same as <175> below
5094	enclosure ditch cut [5097]	S1	P1	1	4	X	-	flake; vesicular surfaces
5096	enclosure ditch cut [5097]	S2	P1	2	1	X	-	from sample <175>; flakes; unoxidised firing

5103	pit [5108] (cut enclosure ditch)	S1	P1	1	5	3	-	-
			Total	***13***	***300***			
5227	pit [5234]	S2	P1	1	12	X	-	very thick-walled flake
5227; 5228	pit [5234]	S1	P1	2	520	8	-	joining sherds of very thick-walled vessel
5228	pit [5234]	S1	D1	1	47	6	IC3	thick-walled acidic liquid container, abraded int.
5228	pit [5234]	S1	P1	1	9	4	-	wiped exterior, burnished interior; bowl
5230	pit [5234]	S1	P1	2	3	X	-	sample <178>; flakes
5230	pit [5234]	S2	B99	2	22	X	-	sample <178>; sherds join; FT mark underneath
5230; 5232	pit [5234]	S1	R25; P1	6	1195	6	FN; IC2	Figure 66, no. 102; very large storage jar
5232	pit [5234]	S1	D1	1	31	3	IC3	possibly burnished on interior surface; ?bowl
8095	waterhole [8088]	S6	R28	2	29	4; 5	-	Figure 66, no. 103; proto-saucepan pot
8095	waterhole [8088]	S6	P1	1	22	3	-	large sherd; different vessel from above
8095	waterhole [8088]	S5	P1	1	5	3	-	-
8095	waterhole [8088]	DQ1	P1	4	9	4	-	redeposited sherds
8352	waterhole [8351]	S6	P1	1	1	3	-	from sample <212>
			Total	***25***	***1905***			
			Total for Ceramic Phase 5	**308**	**5002**			

Table 7. Pottery: Ceramic Phase 5

Appendix B

XRF Methodology

The instrument used for this analysis was a Bruker S1 Turbosdr hand-held XRF instrument operating at 40kV. A beam of x-rays is generated in the instrument and focussed on the sample, the x-rays interact with the elements present in the sample resulting in the emission of secondary x-rays which are characteristic (in terms of their energy and wavelength) of the elements present in the sample. The energies of the secondary x-rays are measured and a spectrum generated showing a level of background noise with peaks of the elements present superimposed on the background noise.

Samples were analysed for 30 live seconds, the spectrum is stored and a normalised composition determined using a bespoke Bruker Fundamental

Parameters Programme (R-Alloys FP). All elements heavier than calcium (Ca, Z=20), can be detected. The calculated two-sigma error on each element is calculated and overall show values of the order of +/- 0.2%. The data is normalised and hence gives data showing relative percentage of detected elements, clearly the dominant elements in a crucible fragment are oxygen, aluminium and silicon which are not detected. The data is generated in a comma delimited file and then exported to an Excel spreadsheet, where the data is examined, and relevant tables generated. The 'interior' and 'exterior' face of each sample was analysed. This demonstrates whether non-ferrous elements are present in/on both surfaces. The technique is non-destructive.

Appendix C

Table 22. Waterlogged plant macrofossil remains from selected contexts

Sample number	120	71	154	12	21	173	136	86	87	88	95	178
Context number	11194	1152	2308	3110	3171	5123	11918	1661	1662	1706	1824	5230
Feature number	11197	1091	2305	3109	3172	5124	11897	1647	1647	1730	1801	5234
Description	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Waterhole	Pit
Phase	2B	3A	3A	3A	3A	3A	3A	3B	3B	3B	3B	5
Volume (litres)	50g wet flot	50g wet flot	50g wet flot	50g wet flot	50g wet flot	50g wet flot	50g wet flot	30 litres (total dry flot sorted)	50g wet flot	50g wet flot	50g wet flot	19 litres (total dry flot sorted)
Cereal grains:												
Cereal NFI	2	-	-	-	-	-	-	-	-	-	-	-
Wild taxa:												
Papaver rhoeas/ dubium L. - Common/ long-headed poppy	-	-	-	-	-	-	1	-	-	-	12	-
Fumaria sp. L. - Fumitory	-	-	-	-	-	-	1	1	1	-	-	-
Ranunculus acris/ bulbosus L. - Meadow/ bulbous buttercup	1	1	1	-	1	37	3	4	22	4	5	1
Ranunculus sceleratus L. - Celery-leaved buttercup	28	74	-	-	-	-	-	-	1	-	1	-
Ranunculus subg. *Batrachium* (DC.) A. Gray - Crowfoot	6	91	1	2	4	44	-	1	-	3	15	100
Fabaceae indet. - Pea family (small)	-	-	-	-	-	-	-	-	-	-	-	1
Prunus spinosa L. - Blackthorn	-	-	5	-	1	-	1	-	1	-	-	-
Prunus spinosa L. - Blackthorn (gnawed)	-	-	2	-	-	-	-	-	-	-	2	-
Prunus avium (L.) L. - Wild cherry	-	-	-	-	-	1	-	-	-	1	-	-
Prunus sp. L. - Plum/ cherry stone fragments	-	2	6	-	-	3	2	-	-	-	-	-
Crataegus monogyna Jacq. - Hawthorn	1	-	2	-	1	9	23	-	-	-	-	-
Crataegus monogyna Jacq. - Hawthorn (gnawed)	-	-	-	-	-	1	-	-	-	-	-	-
Rubus sp. L. - Bramble	-	5	40	4	8	21	117	16	14	3	5	4
Rosa sp. L. - Rose	-	-	-	-	1	-	-	-	-	-	-	-
Urtica dioica L. - Common nettle	-	5	9	3	4	12	153	2	4	2	466	285

Alnus glutinosa (L.) Gaertn. - Alder	1	-	-	4	3	-	-	-	-	-	-	-
Corylus avellana L. - Hazelnut shell fragments	-	1	-	-	-	-	-	-	-	-	2	-
Hypericum sp. L. - St John's-wort	-	-	-	-	-	-	1	-	-	-	-	-
Geranium sp. L. - Crane's-bills	-	-	-	-	-	-	-	-	15	-	-	-
Epilobium cf. *tetragonum* L. - Square-stalked willowherb	-	-	-	-	-	-	-	-	-	-	1	-
Lepidium sp. L. - Pepperwort	-	-	-	-	-	-	-	-	-	-	3	-
Persicaria cf. *lapathifolia* (L.) Delarbre - Pale persicaria	-	-	-	-	-	6	-	-	38	-	-	-
Persicaria sp. Mill. - Knotweed	-	-	-	-	-	1	-	38	3	3	-	-
Polygonum aviculare L. - Knotgrass	-	-	1	-	-	1	-	-	1	-	18	2
Fallopia convolvulus (L.) A.Love - Black-bindweed	-	-	-	-	-	-	-	-	-	-	-	1
Rumex acetosella - Sheep's sorrel	-	-	-	-	-	-	-	1	-	-	-	-
Rumex conglomeratus Murray - Clustered dock	-	-	-	-	-	-	-	-	-	-	8	-
Rumex sp. L. - Dock	-	-	1	3	-	15	4	77	18	-	173	-
Stellaria media L. - Common chickweed	-	2	21	4	-	3	10	18	3	1	85	1
Stellaria cf. *neglecta* Weihe - Greater chickweed	-	-	-	-	-	-	-	-	1	-	-	-
Stellaria sp. L. - Stitchwort	-	-	-	-	-	-	-	-	-	-	5	-
Chenopodium sp. L. - Goosefoot	-	-	8	3	2	12	10	152	66	3	151	5
Atriplex sp. L. - Oraches	1	-	1	-	-	-	-	-	5	-	1	-
Beta vulgaris L. - Beet	-	-	-	-	-	-	-	7	-	-	-	-
Montia fontana L. - Blinks	-	-	-	-	-	-	-	2	1	-	6	20
Galium aparine L. - Cleavers	-	-	-	-	-	-	-	-	-	1	-	-
Galium sp. L. - Bedstraw	-	-	-	-	-	1	-	-	-	-	-	-
Hyoscyamus niger L. - Henbane	-	-	-	-	-	-	-	1	-	-	-	-
Solanum nigrum L. - Black nightshade	-	-	1	1	-	12	13	2	-	-	6	-
Lamium sp. L. - Dead-nettle	-	-	1	1	-	1	-	5	-	-	2	-
Galeopsis sp. L. - Hemp-nettle	-	-	-	-	-	-	1	3	1	1	1	-
Prunella vulgaris L. - Selfheal	-	-	-	-	-	1	2	1	-	-	-	-
Lycopus europaeus L. - Gypsywort	-	-	-	-	4	29	-	-	1	1	-	9
Carduus/ Cirsium sp. - Thistle	1	-	-	2	-	6	8	-	1	-	-	1
Lapsana communis L. - Nipplewort	-	-	-	-	-	1	1	-	2	-	-	-
Sonchus oleraceus L. - Smooth sowthistle	-	-	-	-	-	-	-	-	-	-	5	-
Sonchus asper (L.) Hill - Prickly sowthistle	-	-	-	1	-	-	4	-	1	-	33	-
Asteraceae indet. - Daisy family	-	-	-	-	-	-	-	-	-	-	-	1

Sambucus nigra L. - Elder	1	-	-	-	1	-	7	79	4	1	-	11
Valerianella dentata (L.) Pollich - Narrow-fruited cornsalad	-	-	-	-	-	1	-	-	-	-	-	-
Aethusa cynapium L. - Fool's Parsley	-	-	-	-	-	-	-	-	-	-	-	2
Alisma sp. L - Water-plantain	-	-	-	-	-	-	-	-	-	1	-	102
Potamogeton sp. L. - Pondweed	1	-	-	-	-	-	-	-	-	-	-	-
Juncus sp. L. - Rush	-	-	-	-	-	-	-	-	1	1	-	-
Luzula sylvatica (Huds.) Gaudin - Great wood-rush	-	-	-	-	-	1	-	-	-	-	-	-
Carex sp. L. - Sedge	-	2	7	2	-	3	-	22	35	1	1	3
Cyperaceae indet. - Sedge family	-	-	-	1	1	-	-	-	-	-	-	-
Festuca sp. L. - Fescues	-	1	-	-	-	-	-	-	-	-	-	-
Poaceae indet. - Grass (large)	1	-	-	-	-	-	-	-	-	-	-	-
Poaceae indet. - Grass (medium)	-	-	-	-	-	-	-	-	1	-	1	-
Poaceae indet. - Grass (small)	-	1	1	-	-	-	2	-	1	-	2	-
Other:												
Daphnia ephippia	-	XXX	-	XX	-	-	XX	-	-	X	XX	X
Indet. cone scale	-	1	-	-	-	-	-	-	-	-	-	-
Root/ rhizome	-	3	-	-	-	-	-	-	-	-	-	-
Rubus/ Rosa sp. thorns	-	-	-	-	-	-	XX	-	-	-	-	-
Bud	-	-	-	-	-	-	2	1	-	-	-	-
Amphibian bone	-	-	-	X	-	-	-	-	-	-	-	-

Appendix D

Table 23. Quantified charcoal data from selected contexts

Sample number	Context	Feature	Volume (litres)	Phase	Fraction	Ulex europaeus		Prunus		Maloideae		Rhamnus cathartica		Quercus		Alnus		Corylus		Salix/ Populus		Fraxinus		Sambucus		Root wood		Indet./unidentified	Total count	Total weight (g)
						COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	COUNT	WEIGHT (g)	WEIGHT (g)		
130	11715	11711	13	2A	>5mm	-	-	7	0.541	15	1.415	-	-	13	1.298	48	5.112	9	0.642	-	-	8	0.522	-	-	-	-	4.426	**100**	**13.956**
187	7049	7051	20	2B	>5mm	-	-	21	3.669	28	4.173	1	0.096	1	0.061	47	5.657	1	0.325	1	0.111	-	-	-	-	-	-	18.104	**100**	**32.196**
188	7257	7256	18	2B	>5mm	-	-	-	-	-	-	-	-	-	-	8	0.367	-	-	-	-	-	-	-	-	-	-	0	**8**	**0.367**
193	7255	7256	10	2B	>5mm	-	-	-	-	-	-	-	-	18	1.185	82	5.297	-	-	-	-	-	-	-	-	-	-	3.062	**100**	**9.544**
181	6022	6024	13	3A	>5mm	-	-	-	-	-	-	-	-	8	0.344	1	0.036	3	0.194	-	-	-	-	-	-	-	-	0.164	**12**	**0.738**
219	8081	8082	19.5	3B	>5mm	-	-	10	0.972	67	6.319	-	-	15	0.758	1	0.028	7	0.721	-	-	-	-	-	-	-	-	30	**100**	**38.798**
Crem 4	9470		8	3B	>5mm	-	-	-	-	-	-	-	-	-	-	100	7.731	-	-	-	-	-	-	-	-	-	-	1.095	**100**	**8.826**
Crem 5	9472		2	3B	>5mm	-	-	-	-	-	-	-	-	3	0.143	2	0.116	-	-	-	-	71	5.137	-	-	-	-	1.294	**76**	**6.69**
Crem 9	9486		10	3B	>5mm	-	-	-	-	-	-	-	-	-	-	100	12.392	-	-	-	-	-	-	-	-	-	-	4.413	**100**	**16.805**
Crem 12	9574		1.5	3B	>5mm	-	-	-	-	-	-	-	-	49	3.98	34	2.192	-	-	-	-	-	-	-	-	-	-	1.925	**83**	**8.097**
Crem 13	11206	11207	8	3B	>5mm	-	-	-	-	-	-	-	-	7	0.362	62	7.596	-	-	-	-	-	-	-	-	3	0.791	3.271	**72**	**12.02**
Crem 17	11235	11236	12	3B	>5mm	-	-	-	-	-	-	-	-	-	-	25	2.645	-	-	-	-	-	-	-	-	-	-	0.446	**25**	**3.091**
10	3009	3008	27	5	>5mm	-	-	-	-	5	0.295	-	-	22	1.584	10	0.58	-	-	-	-	-	-	1	0.14	-	-	1.417	**38**	**4.016**
169	5021	5023	20	5	>5mm	2	0.182	2	0.182	2	0.695	-	-	91	13.678	1	0.183	2	0.184	-	-	-	-	-	-	2	1.319	15.805	**102**	**32.228**
170	5044	5046	20	5	>5mm	-	-	1	0.136	2	0.23	-	-	92	10.788	-	-	-	-	4	0.838	1	0.136	-	-	-	-	20.418	**100**	**32.546**
175	5096	5097	20	5	>5mm	1	0.027	-	-	5	0.282	-	-	32	1.947	-	-	2	0.117	3	0.227	1	0.149	-	-	-	-	0.803	**44**	**3.552**
176	5014	5020	20	5	>5mm	-	-	-	-	10	1.077	-	-	86	9.75	1	0.01	2	0.407	1	0.058	-	-	-	-	-	-	26.826	**100**	**38.128**
					Total	**3**	**0.209**	**41**	**5.5**	**134**	**14.486**	**1**	**0.096**	**437**	**45.878**	**522**	**49.942**	**26**	**2.59**	**9**	**1.234**	**81**	**5.944**	**1**	**0.14**	**5**	**2.11**	**133.469**	**1260**	**261.598**

Appendix E

Table 53. Radiocarbon results

Archaeological Period	Laboratory Ref.	Context	Feature / cut	Conventional Age	95.4% probability	Excavation Ref.
1: ENEO-LNEO	SUERC-89320	11782	Pot sherd from pit [11751]	4750 +/- 29BP	3636 - 3510 cal BC (83.0%); 3425 - 3382 cal BC (12.4%)	GU53367
1-2: LNEO/EBA	SUERC-47171	2386	Beaker pit [2385]	3736 +/- 39BP	2282 - 2249 cal BC (6.1%); 2232-2029 cal BC (89.3%)	GU30747
2: BEAKER-EBA	SUERC-89323	7070	Pit [7072]	3512 +/- 29BP	1916 - 1751 cal BC (95.4%)	GU53370
2A: EBA (Beaker)	SUERC-47175	3102	Beaker pit [3103]	3651 +/- 39BP	2139 - 1918 cal BC (95.4%)	GU30748
2A: EBA (Beaker)	SUERC-89321	11730	Pit [11731] <132>	3682 +/- 29BP	2192 - 2180 cal BC (1.7%); 2143 -1973 cal BC (93.7%)	GU53368
2B: EBA	BETA 452958	7049	Hearth pit [7051]	3420 +/- 30BP	1776 - 1635 cal BC (88.6%); 1871 - 1845 (5.6%); 1812 - 1803 cal BC (1.2%)	PC259/7049/701
3: MBA	BETA 217904	490	Pit [467]	3130 +/- 40BP	1465-1291 cal BC (88.8%); 1497 - 1471 cal BC (6.6%)	PC259/06-467 0-2CM
3A: EMBA	SUERC-89319	9543	Pot sherd from barrow ditch [9535]	3272 +/- 29BP	1623 - 1497 (94.0%); 1473 - 1463 cal BC (1.4%)	GU53366
3B: LMBA	BETA 452956	7612	Pit [7613]	3040 +/- 30BP	1396 - 1216 cal BC (95.4%)	PC259/7612
3B: LMBA	SUERC-74886	9481	Cremation 6	3019 +/- 33BP	1392 - 1337 cal BC (19.2%); 1323 - 1190 cal BC (70.9%); 1179 - 1160 cal BC (2.6%); 1145-1130 cal BC (2.7%)	GU45307
3B: LMBA	SUERC-74887	9488	Cremation 10	3028 +/- 33BP	1400 - 1193 cal BC (94%); 1143-1132 cal BC (1.4%)	GU45308
3: MBA	SUERC-47169	2025	Ring-gully [2026] structure 6	3108 +/- 39BP	1488 - 1484 cal BC (0.5%); 1454- 1288 cal BC (93.2%); 1283 - 1269 cal BC (1.8%)	GU30745
5: ELT IA	SUERC-89318	3009	Pit [3008]	2297 +/- 29BP	406 - 356 cal BC (78.6%); 287 - 234 cal BC (16.8%)	GU53365
5: ELT IA	SUERC-47176	5064	IA Smithy Ring-gully [5066]	2308 +/- 39BP	486-462 cal BC (1.7%); 450-441 cal BC (0.5%); 418-348 cal BC (65.3%); 316-207 cal BC (27.8%)	GU30749
5B: LIA	SUERC-89322	5021	Ring-gully [5023]	2130 +/- 29BP	350 - 313 cal BC (9.5%); 209 -53 cal BC (85.9%)	GU53369
5A: ELT IA	SUERC-47170	3006	Pit [3005]	2317 +/- 39BP	511-434 cal BC (8.4%); 428-353 cal BC (68.7%); 295-228 cal BC (17.4%); 221 - 211 cal BC (0.9%)	GU30746

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Waterlands: Prehistoric Life at Bar Pasture, Pode Hole Quarry, Peterborough recounts a decade-long archaeological investigation at Bar Pasture Farm, Pode Hole Quarry, Peterborough, and represents one of the most significant landscape excavations carried out in recent years. The 55-hectare archaeological dig was the scene of human activity on the fenland edge from the Mesolithic through to the Late Iron Age, although the majority of the evidence covered the period from the Early Neolithic through to the Middle Bronze Age. Throughout prehistory, the fen edge has represented a landscape at the margins of human habitation and exploitation. During the Early Neolithic, a substantial waterhole complex with signs of later visitation was established on the fen edge. Traces of several Beaker buildings provided elusive evidence of slightly later activity further inland, whilst during the Early Bronze Age proper, a number of impressive burial mounds were constructed within a dedicated 'Barrow Field'. One barrow contained the nationally significant remains of an infant burial on a birch bark mat with associated grave goods. The Middle Bronze Age saw the entire re-organisation of the surrounding landscape by the creation of an extensive, rectilinear field system, served by multiple droveways and associated with a classic enclosed farmstead. The placement of later Middle Bronze Age cremation burials within the remains of earlier burial monuments bears witness to the intimate connection of this small community to their ancestors' sacred landscape. By the 4th century BC, settlement was all but abandoned due to marine inundations, although one slightly elevated part of the landscape formed an area of refuge for an Iron Age smith and his family, who created an isolated and significant smithy.

Andy Richmond has over 30 years' experience as a professional archaeologist. He holds a doctorate in archaeology from the University of Reading, is a full Member of the Chartered Institute for Archaeologists and an elected Fellow of the Society of Antiquaries of London. He has published archaeological works in numerous national journals over the past two decades.

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ISBN 978-1-80327-152-1

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