Middle Bronze Age Cremation Burials at Horstead Water Tower, Norfolk

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Prepared by:	Graeme Clarke (Post-Excavation Project Officer)
Checked by:	Louise Moan (Senior Project Manager)
Edited by:	Lawrence Billington (Post-Excavation Project Officer)
Approved for Issue by:	Elizabeth Popescu (Head of Post-Excavation & Publications)
Signature:	

OA South
Janus House
Osney Mead
Oxford
OX2 0ES

t. +44 (0)1865 263 800

OA East
15 Trafalgar Way
Bar Hill
Cambridge
CB23 8SQ

t. +44 (0)1223 850 500

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

e. info@oxfordarch.co.uk
w. oxfordarchaeology.com
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Middle Bronze Age Cremation Burials at Horstead Water Tower, Norfolk

Archaeological Monitoring Report

Written by Graeme Clarke BSc PCIfA

With contributions from Carole Fletcher HND BA ACIfA, Anthony Haskins BSc MSc ACIfA and Martha Craven BA PCIfA and illustrations by David W Brown BA

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Summary

Between 6th and 23rd July 2020, Oxford Archaeology East was commissioned by Anglian Water to conduct archaeological monitoring at Anglian Water Scheme WAT-07156. This work took the form of a Strip, Map and Sample excavation at the site of a proposed permanent compound at Horstead Water Tower, Norfolk. These works revealed a group of three urned and three unurned cremation burials pits of Middle Bronze Age date in the western part of the excavated area. This funerary site is a significant addition to the growing corpus of Early Bronze Age cremation sites coming to light in Norfolk as a result of development work.

Acknowledgements

Oxford Archaeology East (OA East) would like to thank Jo Everitt of Anglian Water Services for commissioning this project. OA East is grateful to Steve Hickling (Planning Archaeologist) who monitored the work on behalf of Norfolk County Council, and provided advice and guidance.

The project was managed for OA East by Louise Moan. The fieldwork was carried out by Lindsey Kemp, with survey by Tom Houghton. Thanks are extended to the teams of OA East staff that cleaned and packaged the finds under the management of Natasha Dodwell, processed the environmental remains under the supervision of Rachel Fosberry, and prepared the archive under the supervision of Katherine Hamilton. Thanks are also extended to the various specialists for their contributions.

1 INTRODUCTION

1.1 Scope of work

1.1.1 Between 6th and 23rd July 2020 Oxford Archaeology East (OA East) was commissioned by Anglian Water to monitor the construction of a permanent compound as part of the Horstead Water Tower Scheme (WAT-07156), Horstead, Norfolk (NGR TG 26115 18680; Fig. 1). This work took the form of a Strip, Map and Sample excavation which investigated and recorded any features or deposits encountered during the ground works on the 0.65ha site.

1.1.2 This excavation was undertaken in accordance with an approved Written Scheme of Investigation (WSI) prepared by OA East (Moan 2020), the preparation of which was informed by a Brief issued by Steve Hickling of Norfolk County Council Historic Environment Service (NCC/HES; Hickling 2020).

1.1.3 The site archive is currently held by OA East and will be deposited with Norwich Castle Museum under the Site Code NWHCM2021.3 in due course. The proposed dissemination of the results of the excavation is described in Section 5.1 below.

1.2 Location, topography and geology

1.2.1 The parish of Horstead with Stanninghall is located approximately 6km north-east of Norwich. The site itself is situated around 400m south-west of the village on the eastern edge of an arable field. At a height of 20m OD, the site lies on the rising south facing slope of a hill, with Horstead water tower located close to its summit, to the north of the site (Plates 1 and 2). To the west, the site is bounded by an arable field and to the south and east by farm storage areas.

1.2.2 The site is situated on a bedrock geology of Wroxham Crag Formation sand and gravel, with overlying superficial deposits of Briton's Lane Sand and Gravel Member to the north and Happisburgh Glacigenic Formation Sand and Gravel Member to the south (http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html, accessed 29th August 2020). The UK Soil Observatory records freely draining slightly acid loamy soils (UKSO).

1.3 Archaeological and historical background

1.3.1 A full search of the Norfolk Historic Environment Record (NHER) of a 1km radius centred on the excavation site was commissioned from NCC/HES. The following is a summary based on the results of the NHER search, along with the results of previous archaeological investigations in the vicinity, with pertinent records shown on Fig. 2.

Prehistoric

1.3.2 The site of a probable Bronze Age round barrow (NHER 50775), visible as a cropmark on aerial photographs, is located 850m to the north-west of the site.

1.3.3 Two possible hengiform monuments or ring ditches (NHERs 50782 and 24977), potentially of late Neolithic or Bronze Age date, are visible as a cropmarks on aerial photographs 350m and 630m to the west of the site respectively. However, the

archaeological significance of the cropmarks is doubtful, the background geology of the area being conducive to the formation of curvilinear cropmarks.

1.3.4 A socketed bronze axe head (NHER 25762) was found during metal detecting of fields *c*.750m to the north-east of the site. A Neolithic polished flint axe head and flint chisel were also found on ploughsoil close to the River Bure, c.850m to the east of the site (NHER 8060 and 8062). Scatters of Neolithic flints including cores, trimming flakes from an early stage of preparation, waste flakes, scrapers and one bladelet were found on fields *c*.1km to the east of the site (NHER 13420 and 13428).

Romano-British

1.3.5 A Roman camp (Scheduled Monument 1003928; NHER 4379) is located at the crest of a ridge overlooking the village and the River Bure, 600m to the north of the site. It contains the cropmarks of a D-shaped enclosure (NHER 50776) and trackway (NHER 50777) which may be of earlier (Iron Age) origin, along with further groups of linear ditches (NHER 50778) in the near vicinity.

1.3.6 Within the village of Horstead itself and across the River Bure in the neighbouring village of Coltishall, coins of Postumus (NHER 8032, minted between AD258-267), Constantine I (NHER 8034, minted between AD307-337) have been found along with some other 3rd/early 4th century coins (NHER 8047) and pottery (NHER 28976).

1.3.7 In 1953 parts of a flint and mortar wall and associated Roman pottery (NHER 8033) were disturbed by ploughing in a field close to the River Bure, 750m to the north-east of the site. A wider finds scatter of Roman sherds and a coin of Victorinus has also been found in this field (NHER 8035 and 8038 (not illustrated)). A metal detecting survey over these fields (NHER 25762) also found further metalwork items including coins and a 2nd century AD plate brooch, a harness fitting and pottery along with undated copper-alloy metalworking debris and iron slag. Immediately to the east of this group of finds, the remains of an undated possible iron furnace (NHER 8042) were found and may also be attributed to this period, although they were destroyed in the 1950s.

Anglo-Saxon

1.3.8 Late Saxon pottery sherds (NHER 8035) and metalwork including parts of Early Saxon brooches, a Middle Saxon brooch, a comb and box (NHER 25762) have been found in a field close to the River Bure, *c*.750m to the north-east of the site.

Medieval

1.3.9 The remains of medieval fields and possible settlement enclosures were uncovered during excavations *c*.500m to the south of the site at Trafford Estate (NHER 39859); possibly associated with the deserted settlement of Stanninghall (NHER 8059, not illustrated).

1.3.10 Medieval metalwork including a decorated belt, scabbard, furniture fittings, dress components, harness, coins and other items were metal detected on fields *c*.750m to the north-east of the site (NHER 25762). Metal detecting of fields further south recovered a 13th century bronze buckle plate depicting a lion or a similar animal and

a 14th century buckle or ring brooch pin with a possible stylised animal head terminal (NHER 28123, not illustrated). A further metal detecting event in this area also found a medieval coin (NHER 58438, not illustrated). Medieval pottery (NHER 8035) has been found in this block of fields.

Post-medieval

1.3.11 On land *c*.150m to the west of the site a rectilinear arrangement of ditches has been recorded from aerial photography (NHER 50779), which probably represent post-medieval field boundaries.

1.3.12 Horstead house (NHER 8070), located 1km to the north-east, originates from the 17th century. Three further houses (NHER 20137, 22857 and 23056) in the villages of Horstead and Coltishall are of post-medieval origin, as is the site of a lime kiln (NHER 19268).

1.3.13 The 18th century Horstead Watermill (NHER 8067) is located 850m to the north-east of the site on the River Bure. This stands on the site of an Elizabethan or earlier mill. A canal (NHER 28753) was built in 1775 to avoid the mill.

Modern

1.3.14 Located 300m to the east of the site, Horstead Lodge (NHER 43095) dates from the 18th century. Horstead Water Tower itself (NHER 40219) was built in the 1960s or 1970s, and its shape is said to have been inspired by a snowflake.

1.3.15 Land within the northern portion of the site and extending westward is recorded as being the location of a probable World War II military site (NHER 50773), possibly related to Coltishall Airfield (NHER 7697), situated around 3km to the north. The area encompassed by this military site is fairly extensive, with earthworks, structures, patches of disturbance, and areas of unploughed land being recorded on aerial photographs. Land immediately north of the water tower is recorded as containing a group of large, irregular pits and other earthworks could represent the former site of emplacements for anti-aircraft guns or searchlights. Further to this an extant building (NHER 35402) belonging to the Coltishall Royal Observer Corp is located just to the north of the site.

1.3.16 A World War II Pillbox (NHER 19211) is also located in the centre of the village, 880m to the north of the site.

2 EXCAVATION AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The project aims and objectives detailed in the WSI (Moan 2020) were as follows:

i. To investigate and record archaeological features or deposits encountered during ground works; and
ii. To determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence.

2.2 National Research Aims

2.2.1 This watching brief took place within, and will contribute to the goals of Regional Research Frameworks relevant to this area:

Research and Archaeology: A Framework for the Eastern counties: 1. Resource Assessment (Glazebrook 1997, East Anglian Archaeology Occasional Papers 3);

Research and Archaeology: A Framework for the Eastern counties: 2. Research Agenda and Strategy (Brown & Glazebrook 2000, East Anglian Archaeology Occasional Papers 8); and

Research and Archaeology Revisited: A Revised Framework for the East of England (Medlycott 2011, East Anglian Archaeology Occasional Papers 24).

2.3 Fieldwork Methodology

2.3.1 The methodology used followed that detailed in the WSI, which required continuous monitoring of machine stripping of the topsoil overburden across the 0.65ha works compound area. The site was stripped to the level of natural geology or the archaeological horizon.

2.3.2 Machine excavation was carried out by a tracked 360^{o} type excavator using a 2m wide flat bladed ditching bucket under constant supervision of a suitably qualified and experienced archaeologist.

2.3.3 The site survey was carried out using a Leica GPS GS08 with SmartNET.

2.3.4 Spoil, exposed surfaces and features were scanned with a metal detector. All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.

2.3.5 Sufficient excavation was carried out in line with the proportions of each feature class to be excavated outlined in the WSI.

2.3.6 All archaeological features and deposits were recorded using OA East's pro-forma sheets. Trench locations and plans were recorded at appropriate scales and digital photographs were taken of all relevant features and deposits.

2.3.7 A total of 15 bulk samples were taken from each of the excavated cremation pits uncovered on the site and a from further pit with a charcoal rich fill. These each totalled between 10-40 litres and were processed by flotation at OA East's environmental processing facility at Bourn.

3 RESULTS

3.1 Introduction and presentation of results

3.1.1 A 0.65ha topsoil strip was monitored across the new works compound area (Plate 3). Very little complex stratigraphy was present on the site although some inter-cutting discrete and linear features were observed. The chronological phasing presented below is largely based on spatial associations and, to a certain extent, similarity of features. Where possible this has been combined with dating evidence provided by stratified artefacts and radiocarbon dating.

3.1.2 Summary descriptions of the features identified and artefacts recovered are given in this section, supplemented by a full context inventory presented in Appendix A. A phased excavation plan is presented as Fig. 3, with a detailed plan of the Period 1 cremation burials provided in Fig. 4. Section drawings are included as Figure 5. Photographs of a selection of features are provided in Plates 4-12.

3.1.3 Two main periods of activity have been identified:

Period 1: Middle Bronze Age cremation burial ground (*c.*1300-1150 BC)

Period 2: Modern features (*c.*AD 1700-present)

3.2 General soil and ground conditions

3.2.1 The natural deposits underlying the site were found to comprise light yellowish-brown sand (context 2), consistent with the superficial geology indicated by the BGS Survey (see Section 1.2.2). There was no evidence for subsoil in any part of the site, strongly suggesting the archaeological horizon had been subject to truncation by the plough from as far back as at least the medieval period. The overlying topsoil (context 1) was typically *c.*0.3m in depth and produced three sherds (16g) of medieval pottery and a clay tobacco pipe fragment (3g). Ground conditions throughout the excavation were good and the excavation areas remained dry. Archaeological features, where present, were easy to identify against the underlying natural geology.

3.3 Period 1: Middle Bronze Age cremation burial ground (*c.*1300-1150BC)

3.3.1 A closely set group of 10 small sub-circular pits were revealed within a 10m diameter area of the excavation (Figs 3 and 4; Plate 4). Fragments of burnt bone were observed on the surface of many of these pits, immediately indicating this to have been a small prehistoric burial ground for cremated human remains. Although the pits did not form any clearly definable alignment or circuit none of these pits were observed to intercut one another. Two sub-groupings could be identified in this group, with the cremated remains in the three westernmost pits interred within upright placed pottery urns and those to the east interred directly into the pits with no evidence for any vessels. The opportunity was taken to analyse the charcoal content of two of the urned cremation deposits (from pits **64** and **65**) and from one of the unurned burials (from pit **58**) which proved to be entirely of oak. The notably charcoal rich fill of one of the pits, **61**, proved to contain cremated animal bone with no evidence for human remains - perhaps suggesting this represents a deposit of pyre material. Only the lower part of each of the three urns had survived, demonstrating that all of the cremation pits within this

group were heavily truncated. This strongly suggests the burial ground's original extent may have been greater, with the surviving examples representing only the deepest cut features. Indeed, the two shallowest pits (**59** and **60**) proved not to contain any cremated bone. Sections of each cremation pit are given on Fig. 5.

Urned cremations

3.3.2 The westernmost urned cremation (**65**) measured between 0.4-0.5m in diameter and 0.2m deep (Fig. 5, Section 32; Plate 5). A bucket shaped Deverel-Rimbury type urn (SF 3, 1535g) was placed on the base of the cut and contained a mid grey sand fill (83) which produced a small quantity (31g) of cremated human bone from an older subadult/adult. This pit was backfilled with dark grey sand (82) with occasional gravel inclusions.

3.3.3 The second urned cremation (**64**) lay immediately to the east of pit **65** and measured 0.4m in diameter and 0.1m deep (Fig. 5, Section 31; Plate 6). A bucket shaped Deverel-Rimbury type urn (SF 2, 905g) was placed on the base of the cut and held the cremated remains of an older subadult/adult (304g) within a mid-grey sand matrix (80). A sample of this bone was radiocarbon dated to 1380-1128 cal BC (95.4% confidence; BRAMS-4065; 3008 ± 25 BP). A narrower date range of 1310-1190 cal BC was determined at 75.7% confidence. The pit's dark grey sand backfill (79) also contained some cremated bone fragments, probably as a result of plough damage.

3.3.4 The remaining urned cremation (**63**) lay immediately to the south of pit **64**. It measured 0.4m in diameter and 0.09m deep (Fig. 5, Section 29; Plate 7). Placed on the base of the cut lay the heavily truncated and plough/animal burrow damaged base of a Deverel-Rimbury type urn (SF 1, 199g), filled by a deposit (75) containing a small quantity of cremated human remains (28g) belonging to an older subadult/adult. The pit was backfilled witha dark grey sand (74).

Unurned cremations

3.3.5 To the east of the urned cremation burials lay an arc of five sub-circular pits (**58** (Plate 8), **59**, **60**, **61** and **62**) containing burnt fills, with a further pit (**66**) close-by to the north. These small pits measured between 0.18-0.55m in diameter and 0.04-0.28m deep with U-shaped profiles (Fig. 5, Sections 25, 26, 28 and 33). Each pit similarly contained mid to dark grey sand fills (68, 69, 70, 71/72, 73 and 81 respectively) with occasional gravel inclusions. Three pits (**58**, **62** and **66**) contained fragments (between 3-143g) of cremated human bone with an absence of bone from the two most heavily truncated examples (**59** and **60**). The remaining pit (**61**) produced only cremated animal bone amongst a notably high percentage of charcoal. The human bone from these features represented the cremated remains of older subadult/adult individuals. A sample of bone from cremation burial **58** was radiocarbon dated to 1260-1055 cal BC (95.4% confidence; BRAMS-4064; 2956 ± 25 BP). A narrower date range of 1260-1110 cal BC was determined with 88.9% confidence.

Pit

3.3.6 The southernmost pit (**19**) within the burial ground was set slightly apart from the main group (Fig. 3). Both its larger size, shallow profile and lack of any cremated bone from the backfill may be due to truncation, however, it is possible this feature served an associated but unknown function within this funerary context. It measured between 1.3-1.4m in diameter and 0.1m deep with a shallow U-shaped profile (Fig. 5, Section 6; Plate 9). Its single fill (20) consisted of dark grey medium sand with occasional gravel inclusions which produced three sherds (21g) of pottery which belongs to a vessel in different fabric to that of the bucket urns in the three pits to the north. Although the fabric and form of this pottery is more common for Post-Deverel-Rimbury ceramics of the Late Bronze Age, it is possible this vessel is also of Middle Bronze Age date. Considering the context of this pit and the lack of any further Late Bronze Age features, this pit has therefore also been placed in Period 1.

3.4 Period 2: Modern features (c.AD1700-present)

3.4.1 Adjacent to the northern site boundary, Ditch 3 (comprising cuts **3**, **5** and **49**) entered the excavation from the west and continued for 20m before terminating adjacent to post hole **7** (Fig. 3). It measured between 0.6-1.5m wide and 0.2-0.25m deep with a U-shaped profile (Fig. 5, Sections 1, 2 and 21; Plate 10). Its single fill (4, 6 and 50) consisted of mid reddish/greyish brown sand with occasional gravel inclusions.

3.4.2 Immediately to the south of the terminus of Ditch 3 lay a circular post hole (**7**) which presumably acted as a marker associated with this boundary. It measured 0.8m in diameter and 0.38m deep with an irregular profile (Fig. 5, Section 3; Plate 11). Stone packing material (51) was observed at the base of the post hole which was overlain by a disuse fill (8) of mid grey sand with occasional gravel inclusions. The disuse fill produced a sherd (1g) of 18th-20th century pottery and a fragment (21g) of ceramic building material (CBM).

3.4.3 Approximately 50m to the south of post **7** lay a further isolated and heavily truncated post hole (**23**) which measured 0.6m in diameter by 0.06m deep. Its fill (24) consisting of dark grey sand with occasional gravel inclusions yielded a residual flint axe thinning flake.

3.4.4 Approximately 35m to the south-west of post **23** lay a further isolated post hole (**45**) which may have been a further marker for a recent boundary ditch beyond the excavation limit. This circular feature measured 0.32m in diameter and 0.25m deep with a U-shaped profile (Fig. 5, Section 19; Plate 12). A fragment (2g) of clay tobacco pipe was recovered from its mid greyish brown sand fill (46).

3.4.5 Two patches of wheel ruts caused by agricultural machinery were observed cut into the natural geology in the northern (**15**) and southern (**35** and **39**) parts of the excavation area. Their fills (16 and 36) produced three sherds (4g) of 18th-20th century pottery and a fragment (1g) of clay tobacco pipe.

3.5 Finds and environmental summary

Introduction

3.5.1 Finds recovered from the strip and map excavation area consisted of residual Neolithic flintwork and Middle Bronze Age pottery found along with quantities of cremated human bone and charcoal. Ceramics from later features included sherds of medieval to modern pottery and fragments of ceramic building material (CBM) and tobacco-pipes.

Flint

3.5.2 An assemblage of 17 lithics (0.206kg struck flint and 0.42kg hammerstone) was recovered from the site. This small assemblage seems to be largely residual material of probable Neolithic date, and although is very small has similar character to other assemblages found within the region.

Bronze Age pottery

3.5.3 The excavation yielded 234 sherds (2660g) of prehistoric pottery. The pottery was recovered from four contexts: three cremation deposits and a pit. The remains of three Middle Bronze Age Deverel-Rimbury bucket-shaped vessels were recovered, all of which had been used as urns for cremation burials (SFs 1, 2 and 3). Middle Bronze Age pottery is still quite uncommon in Norfolk but the vessels in this assemblage have parallels in the large collection of material recovered from Grimes Graves (Longworth *et al*. 1988) and Hall Farm, Horsford (Percival 2018). The vessel from pit **19** is of particular interest, as it may represent later activity, or a continuation of activity on the site into the Late Bronze Age. If the vessel from pit **19** is Middle Bronze Age, it is of an unusual form for deposition with cremated human remains.

Medieval and later pottery

3.5.4 An assemblage of seven sherds was recovered, weighing 0.031kg, representing a minimum of five vessels, of which two are medieval and the remainder are 18th century onwards. The medieval pottery was recovered from the topsoil, whilst the later pottery was recovered from Period 2 features.

Clay tobacco pipe

3.5.5 Three fragments of white ball clay tobacco pipe, weighing 0.006kg, were recovered from the topsoil and Period 2 features.

Ceramic building material (CBM)

3.5.6 A single fragment of CBM, weighing 0.021kg, was recovered from post hole **7**.

Cremated human bone

3.5.7 Seven deposits of cremated human bone, deriving from both urned and unurned burials were identified during the excavation. Pottery in the urned cremation burials date the features to the Middle Bronze Age. This is confirmed by two radiocarbon

dates. Only pit **61** contained bone which was identifiable as animal bone. There was no clearly identifiable human bone within this pit, and it is possible that this represents pyre material as there was a particularly high percentage of charcoal. Although pit **61** contained a particularly high percentage of charcoal all of the deposits were charcoal rich suggesting that bone was scooped straight from the pyre rather than carefully sifted. The urned burial in pit **64** contained a significantly higher proportion of cremated bone and it can be tentatively suggested that this represented the primary burial.

Environmental bulk samples

3.5.8 Fifteen bulk samples were taken from the fills of features within the excavated area at the site. The samples were taken from Bronze Age pits and both urned and unurned cremation deposits. Several of the samples contain occasional charred cereal grains and weed seeds. One of the cereal grains is too poorly preserved to be identified however the other grain has morphological characteristics consistent with wheat (*Triticum* sp.).

Charcoal

3.5.9 Charcoal recovered from two urned and one unurned Middle Bronze Age cremation deposits were analysed to determine the nature of pyre wood selection. All three cremation deposits contained abundant identifiable fragments dominated by oak (*Quercus* sp), from mature trees. A thorough scan of the samples suggests no other taxa are present.

Radiocarbon dating

3.5.10 Two samples of cremated human bone were selected for radiocarbon dating (Table 1).

Sample type	Cxt.	Cut	Feature type	Period	Date	Certificate
Cremated human bone	80	64	Urned cremation pit	1	1380-1128 cal BC (95.4% confidence; 3008 ± 25 BP) 1310-1190 cal BC (75.7% confidence)	BRAMS-4065
Cremated human bone	68	58	Unurned cremation pit	1	1260-1055 cal BC (95.4% confidence; 2956 ± 25 BP) 1260-1110 cal BC (88.9% confidence)	BRAMS-4064

Table 1: Radiocarbon dating results

4 DISCUSSION

4.1 Middle Bronze Age burial ground

4.1.1 The cremation pits lay directly beneath the topsoil with no evidence of any protective subsoil horizon. Each of the pits had therefore suffered a degree of truncation in this heavily farmed environment. Wheel ruts were also evident across the site which appear to have been the possible cause of damage to one of the three urned examples (**63**). It is therefore entirely possible this burial ground may have originally been more extensive, with the surviving examples representing the deepest cut features. Indeed, the two most heavily truncated cremation pits (**59** and **60**) did not yield any bone. The dry acidic soils encountered on this site were not expected to produce good quality environmental remains. However, the opportunity was taken to analyse the charcoal content of two urns and one of the unurned pits which proved to be entirely of oak.

4.1.2 The burial ground extended across a *c.*10m diameter area with no evidence for any enclosing boundary ditch or fence line. The three urned cremations (**63**, **64** and **65**) were grouped together in a close arc to the west. The unurned examples (**58**, **59**, **60**, **61** and **62**) were similarly grouped in an arc to the east with a single outlying unurned cremation (**66**) lying to the north between these two groups. A larger, shallow pit (**19**) was placed centrally between the two arcs of features to the south (Fig. 4). Although only speculative, this arrangement of features is suggestive of a separation of urned and unurned burials in relation to the primary burial, which, on the basis of the relative volumes of bone recovered, is perhaps most likely to have been the urn placed in pit **64** (App. C.1.13). This assertion is supported by its earlier radiocarbon date range when compared with that from unurned pit **58**. The charcoal rich fills of this group and the presence of animal bone in one of the pits is indicative of the burning of individuals on pyres with an animal offering probably placed with at least one of the deceased. The pyre site probably lay nearby although there was no evidence for heated ground or *in situ* burning present within the excavated area. Evidently, only a portion of the burnt bone was collected for burial once the reduced ashes of the pyre had cooled. All of the deceased individuals buried on this site were determined to have been older subadults or adults.

4.1.3 These cremations were interred near to the summit of a distinctive hilltop which overlooks a rich landscape of Neolithic and Early Bronze Age funerary monuments. This part of Norfolk is dominated by the River Bure that based on the distribution of these monuments served as the focus for funerary activity along with its many tributary valleys (Fig. 6). However, it must be borne in mind that long barrows/mortuary enclosures and round barrows are highly visible to landscape surveys of surviving earthworks and cropmarks. It is notable that there is a complete absence of any further cremation burial sites listed by the online NHER record of the Bure Valley. This bias in the record is probably due to their occasional discovery only through archaeological investigations of groundworks such as the present site. An over-arching research aim of Medlycott for the region is the need for further exploration of patterns of burial practice in the landscape (2011, 20). Therefore, this site has provided a very useful contribution to understanding this less visible burial rite

prevalent across the Middle and Late Bronze Age periods in the context of the Bure Valley and its environs.

4.1.4 The presence of multiple burials at this location suggests the presence of a repeated and perhaps long-lived funerary activity at this site. This may have been associated with its elevated location upon the hillside with its broad southward aspect looking towards the notable group of earlier funerary monuments situated around the Dobb's Beck tributary (Fig. 6). The radiocarbon date ranges determined for a single example of each urned and unurned burial type range between 1380-1128 cal BC and 1260-1055 cal BC respectively at 95.4% confidence. However, the narrower ranges determined at between 76-89% confidence provide more precise determinations of between 1310-1190 cal BC and 1260-1110 cal BC respectively. These dates straddle the boundary between the latter part of the Middle Bronze Age (as conventionally defined between c.1600 to 1150BC) and the Late Bronze Age period which appears to be consistent with the recovery of the Late Bronze Age type pottery sherds from the pit alongside the cremations.

4.1.5 A parallel example of a burial ground straddling the Middle and Late Bronze Age periods was recently excavated at Wymondham, Norfolk where five unurned cremation pits lay within a c.15m diameter area along with two outlying examples. Two of these burials returned broadly similar date ranges of between 1270-1110 cal BC and 1220-1040 cal BC, with a third returning a later date of 1020-910 cal BC (Clarke 2020). Based upon these dates, it was speculated this funerary site may have been in use for upwards of 200 years (Clarke 2020, 43-44). A second cemetery recently excavated in Norfolk at Blackborough End included upwards of 27 unurned cremations (in two distinct groups) dating to between *c*.1200-900 BC (Gilmour 2017). A further unurned cremation cemetery of probably broadly contemporary date was excavated at Turner's Yard, Fordham, Cambridgeshire which comprised 21 cremations (Gilmour 2015). All of these Norfolk and Cambridgeshire examples shared a common situation whereby each burial ground was probably deliberately placed in close proximity to Early Bronze Age/Beaker ring ditch funerary monuments. Both those Norfolk and Cambridgeshire sites conform to the observation by Gilmour that only small quantities of cremated bone are to be expected from Late Bronze Age pits and are never contained within urns (2015, 33). The presence of both urned and unurned cremations within the present group is therefore a significant find.

4.1.6 The present site also differs from the above examples with their apparent lack of any association with pre-existing funerary monuments, the nearest known barrow lying c.850m to the north-west (see Section 1.3.2). Although, as stated above the relatively elevated situation of the site does overlook a landscape to the south particularly rich in earlier funerary monuments (Fig. 8). This theme was recently explored by Robinson who identified a total of only 19 Middle Bronze Age 'flat cemeteries' in the East Anglian region 'not associated with a pre-existing monument' (2007, 55). These cemeteries were often associated with non-funerary features such as boundary ditches and enclosures (*Ibid*., 71). There is no evidence for Bronze Age settlement or enclosures in the immediate vicinity of the site. It may be postulated the prominent hill at this site's location itself acted as a focus for funerary activity. However, only the opportunity of future excavation work on its slopes can explore this theme further. The wealth of

Neolithic flintwork surface finds and the bronze axe plotted c.750m to the north-east of the site by the NHER (see Section 1.3.4) suggest a nearby area of contemporary settlement may have lain alongside the River Bure. However, this is unclear as Bronze Age findspots are scarcer in the local archaeological record generally than those of Neolithic date (Fig. 8).

4.2 Significance

4.2.1 The Middle Bronze Age cremations excavated at Horstead Water Tower appear to represent the first example of a 'flat cemetery' excavated within this stretch of the Bure River Valley, a landscape rich in more visible Neolithic and Early Bronze Age funerary monuments. As such, this site is a valuable contribution to ongoing research into changing patterns of burial practice in this type of landscape across the subsequent Middle to Late Bronze Age periods.

5 PUBLICATION AND ARCHIVING

5.1 Dissemination of the results of excavation

5.1.1 A publication proposal will be submitted to the *Norfolk Archaeology* journal with the aim of publishing a short article on the Middle Bronze Age burial ground. The article to be published will be submitted by January 2022.

5.1.2 It is anticipated that the archive for the project will be deposited with Norwich Castle Museum in 2022 under Accession No. NWHCM2021.3.

APPENDIX A CONTEXT INVENTORY

Context	Cut	Category	Period	Feature Type	Function	Colour	Fine component	Coarse component	Breadth (m)	Depth (m)	Profile
1		layer			topsoil	dark brownish grey	silty sand			0.3	
2		layer			natural geology	light yellowish brown	sand				
3	3	cut	2	ditch	field boundary				0.6	0.2	U-shaped
4	3	fill	2	ditch	silting	mid reddish/greyish brown	sand	occasional gravel			
5	5	cut	2	ditch	field boundary				0.9	0.25	U-shaped
6	5	fill	2	ditch	silting	mid reddish/greyish brown	sand	occasional gravel			
7	7	cut	2	post hole	post setting				0.8	0.38	U-shaped
8	7	fill	2	post hole	backfill	mid grey	sand	occasional gravel			
15	15	cut	2	wheel rut	modern disturbance						
16	15	fill	2	wheel rut	modern disturbance						
19	19	cut	1	pit	unknown				1.4	0.1	shallow U-shape
20	19	fill	1	pit	backfill	dark grey	sand	occasional gravel			
23	23	cut	2	post hole	post setting				0.6	0.06	shallow U-shape
24	23	fill	2	post hole	backfill	dark grey	sand	occasional gravel			
35	35	cut	2	wheel rut	modern disturbance						
36	35	fill	2	wheel rut	modern disturbance						
39	39	cut	2	wheel rut	modern disturbance						
45	45	cut	2	post hole	post setting				0.32	0.25	U-shaped
46	45	fill	2	post hole	backfill	mid greyish brown	sand	occasional gravel			
49	49	cut	2	ditch	field boundary				1.5	0.25	
50	49	fill	2	ditch	silting	mid reddish/greyish brown	sand	occasional gravel			
51	7	fill	2	post hole	post packing			frequent rounded gravel			
58	58	cut	1	pit	cremation				0.55	0.28	shallow U-shape

Context	Cut	Category	Period	Feature Type	Function	Colour	Fine component	Coarse component	Breadth (m)	Depth (m)	Profile
59	59	cut	1	pit	cremation				0.18	0.04	shallow U-shape
60	60	cut	1	pit	cremation				0.36	0.1	shallow U-shape
61	61	cut	1	pit	cremation				0.4	0.1	shallow U-shape
62	62	cut	1	pit	cremation				0.3	0.1	shallow U-shape
63	63	cut	1	pit	cremation				0.4	0.09	shallow U-shape
64	64	cut	1	pit	cremation				0.4	0.1	shallow U-shape
65	65	cut	1	pit	cremation				0.5	0.2	shallow U-shape
66	66	cut	1	pit	cremation				0.55	0.12	shallow U-shape
68	58	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			
69	59	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			
70	60	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			
71	61	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			
72	61	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			
73	62	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			
74	63	fill	1	pit	backfill	dark grey	sand				
75	63	fill	1	pit	SF 1 vessel fill	mid grey	sand	cremated human bone fragments			
79	64	fill	1	pit	backfill	mid grey	sand	occasional cremated human bone fragments			
80	64	fill	1	pit	SF 2 vessel fill	mid grey	sand	cremated human bone fragments			
81	66	fill	1	pit	backfill	mid to dark grey	sand	cremated human bone and occasional gravel			

Context	Cut	Category	Period	Feature Type	Function	Colour	Fine component	Coarse component	Breadth (m)	Depth (m)	Profile
82	65	fill	1	pit	backfill	dark grey	sand	occasional gravel			
83	65	fill	1	pit	SF 3 vessel fill	mid grey	sand	cremated human bone fragments			

Table 2: Context inventory

APPENDIX B FINDS REPORTS

B.1 Flint

By Anthony Haskins

Introduction

B.1.1 An assemblage of 17 lithics (0.206kg struck flint and 0.42kg hammerstone) was submitted for analysis. This report describes the quantification and assessment of the assemblage, which had an emphasis on identifying the assemblage's technological traits and chronological indicators.

Methodology

B.1.2 For the purposes of this report individual artefacts were scanned and then assigned to a category within a simple lithic classification system (Table 3). Edge retouched and utilised pieces were also characterised. Beyond this no detailed metrical or technological recording was undertaken.

Quantification

Type	Quantity
Flakes ≥ 50mm	4
Flakes ≥ 25mm <50mm	5
Small flakes >15mm	1
Blade	1
Core – multi-platform/platform at right angles	1
End scraper	1
Burnt	3
Hammerstone	1

Table 3: Struck flint quantification

B.1.3 The three pieces of burnt flint (0.013kg) were largely undiagnostic and have not been consider any further in this assessment.

Discussion

B.1.4 The quartzite hammerstone was recovered from topsoil. It has an area of use wear at one end consistent with use as a hammerstone for flint knapping.

B.1.5 The flint is struck from a mix of raw materials, all locally available within the glacial tills. Most notable was the pale grey porcelain material (context 24). This is consistently used for the manufacture of axes in the area surrounding Norwich, in particular at Harford park and ride (Bishop 2012) and Little Melton (Haskins *et al.* 2018).

B.1.6 The only recovered tool is a small end scraper formed from a secondary flake (context 50). The scraper has a small arc of semi-abrupt retouch at the distal end.

B.1.7 A single multiple platform flake/narrow flake core (context 20), possibly a variation on a platform at right angles core was recovered during the works. It seems to have been

abandoned after a failed removal had left at least nine incipient cones on the strike platform.

B.1.8 The struck flint includes two axe thinning flakes from contexts 24 and 50. The remainder seem to be largely undiagnostic debitage. Most of the struck lithics have small bulbs of percussion suggestive of soft hammer manufacture. These characteristics combined with the presence of narrow flakes (contexts 1, 36) would suggest a broadly Neolithic date for the assemblage.

Conclusion

B.1.9 This small assemblage seems to be largely residual material of probable Neolithic date and although is very small has similar character to other assemblages found within the region such as at Mousehold Heath (Bishop and Proctor 2011) or the Postwick pipeline (Haskins 2016).

B.2 Middle and Late Bronze Age pottery

By Nick Gilmour

Introduction

B.2.1 The excavation yielded 234 sherds (2660g) of prehistoric pottery. The pottery was recovered from four contexts: three cremation deposits and a pit (Table 4).

B.2.2 The pottery probably dates from the Middle Bronze Age and Late Bronze Age or Early Iron Age. It does include feature sherds and fabrics typically associated with ceramic traditions in the region.

B.2.3 The pottery is in moderate to good condition.

Cut	Context	No sherds	Wt (g)	Feature Type	Spot Date
64	80	98	905	Cremation	MBA
65	82	87	1,458	Cremation	MBA
65	83	13	77	Cremation	MBA
63	75	33	199	Cremation	MBA
19	20	3	21	Pit	LBA
Total		**234**	**2660**		

Table 4: Quantification of the prehistoric pottery

Methodology

B.2.4 All the pottery has been fully recorded following the recommendations laid out by the Prehistoric Ceramic Research Group (2011). After a full inspection of the assemblage, fabric groups were devised on the basis of dominant inclusion types, their density and modal size. Sherds from all contexts were counted, weighed (to the nearest whole gram) and assigned to a fabric group. Sherd type was recorded, along with evidence for surface treatment, decoration, and the presence of soot and/or residue. Rim and base forms were described using a codified system recorded in the catalogue, and

were assigned vessel numbers. Where possible, rim and base diameters were measured, and surviving percentages noted. In cases where a sherd or groups of refitting sherds retained portions of the rim, shoulder and/or other diagnostic features, the vessel was categorised by ceramic tradition (Collared Urn, Deverel-Rimbury etc.)

B.2.5 The number of sherds recorded is the total at the time of analysis (ie sherds with recent breaks were counted as multiple sherds). The quantified data is presented on an Excel data sheet held with the site archive.

Prehistoric pottery fabrics

B.2.6 Three different fabrics were identified in the assemblage. They are listed below. The majority of the pottery, by both weight and sherd count, is in fabric G1 (Table 5). However, with the likely total number of vessels represented at just four, the sherd count and weight exaggerate the proportion of the assemblage in fabric G1.

G1: moderate coarse grog (>4mm) in a slightly sandy clay matrix.

FG1: moderate coarse flint, occasional medium grog in a slightly sandy clay matrix.

F1: moderate fine flint, slightly sandy matrix.

Fabric	Spot Date	No. sherds	Weight (g)	% fabric (by wt.)	MNV
F1	LBA	3	20	0.75	1
G1	MBA	198	2441	91.75	2
FG1	MBA	33	199	7.5	1
Total		**234**	**2660**	**100**	**4**

Table 5: Quantification of prehistoric pottery by fabric (MNV = minimum number of vessels)

Middle Bronze Age pottery

B.2.7 The majority of the pottery is of Middle Bronze Age origin. This consists of the remains of three Deverel-Rimbury bucket-shaped urns. Each of these vessels contained cremated human remains, within part of a cemetery. All of these vessels had been placed upright in the ground and been truncated.

B.2.8 Cremation pit **63** contained the remains of vessel SF1. In total 33 sherds (199g) of vessel SF1 were recovered. This vessel is in fabric FG1. The majority of the surviving sherds are from the base of the vessel. There is no decoration present on any of the sherds, but with little of the walls of the vessel surviving, it is possible that decoration was present on the upper part of the vessel, which has been lost.

B.2.9 Cremation pit **64** contained the remains of vessel SF2. There are currently 98 sherds (905g) of this vessel surviving. The vessel is in fabric G1. Some body sherds have been decorated with comb impressions. These are generally vertical, but not always and it is not clear whether they were arranged in a pattern.

B.2.10 Vessel SF3 was recovered from cremation pit **65**. This vessel currently consists of 100 sherds (1,535g). It is in fabric G1. This is the most complete of the cremation vessels recovered and measurements on site indicate it had a base diameter of 120mm, with a surviving height of 210mm. The outside of the vessel body is decorated with a horizontal applied cordon, which is embellished with finger-pinched decoration. This style of decoration is characteristic of Deverel-Rimbury ceramics.

Pottery from pit 19

B.2.11 The only three sherds (21g) of pottery in fabric F1 were recovered from the site, all came from fill 20 of pit **19**. The similarity in fabric, thickness and colour of these sherds suggests they are all from the same vessel, even though they do not re-fit. Two of the sherds are from the rim of the vessel. This has a direct tapered form, with a diameter of 140mm.

B.2.12 It is possible that this vessel is of Middle Bronze Age date and it is perhaps similar in form to an example found at Grimes Graves (Longworth *et al*. 1988). However, the relatively fine flint tempered fabric and tapered rim are more common in Post-Deverel-Rimbury ceramics of the Late Bronze Age.

Discussion

B.2.13 Middle Bronze Age pottery is still quite uncommon in Norfolk. However, the vessels in this assemblage do have parallels in the large collection of material recovered from Grimes Graves. The comb impressed decoration on SF2 is paralleled on vessel 247 from Grimes Graves (Longworth et al 1988, fig 32, p88). While the decoration on SF3 is far more common among Deverel-Rimbury assemblages. Several vessels from Grimes Graves (e.g Longworth et al 1988 fig 25 and fig 26, p 81) have similar decoration, as do three vessels recovered during excavation in advance of road construction at Hall Farm, Horsford (Percival 2018).

B.2.14 More broadly, especially vessel SF3, with the finger-pinch decorated cordon, has parallels among vessels of Ardleigh style (Brown 1995). It is also of note that grog-tempered fabrics are quite common in Ardleigh style pottery.

B.2.15 The radiocarbon dates obtained from cremated remains within one of the vessels are within the expected range of Deverel-Rimbury ceramics, usually 1400 - 1000BC, although towards the end of their known use.

B.2.16 The vessel for pit **19** is of particular interest, as it may represent later activity, or a continuation of activity on the site into the Late Bronze Age. Late Bronze Age burials are still quite unusual across England (Bruck 1995), although recent finds are increasing the corpus of burials of this date, largely in East Anglia (e.g. Gilmour 2105, Gilmour 2017). If the vessel from pit **19** is Middle Bronze Age, it is an unusual form for deposition with cremated human remains. Middle Bronze Age pottery deposited in this way is almost exclusively bucket-shaped vessels (such as SF1, SF2 and SF3).

B.3 Medieval and later pottery

by Carole Fletcher with medieval pottery identified by Sue Anderson

Introduction

B.3.1 An assemblage of seven sherds was recovered, weighing 0.031kg, representing a minimum of five vessels, of which two are medieval and the remainder are 18th century onwards. The medieval pottery was recovered from the topsoil, while the later pottery was recovered from phased features across the site. The condition of the overall assemblage is abraded to moderately abraded.

Methodology

B.3.2 The Prehistoric Ceramics Research Group (PCRG), Study Group for Roman Pottery (SGRP), The Medieval Pottery Research Group (MPRG), 2016 *A Standard for Pottery Studies in Archaeology* and the MPRG *A guide to the classification of medieval ceramic forms* (MPRG 1998) act as standards.

B.3.3 The Prehistoric Ceramics Research Group (PCRG), Study Group for Roman Pottery (SGRP), The Medieval Pottery Research Group (MPRG), 2016 *A Standard for Pottery Studies in Archaeology* and the MPRG *A guide to the classification of medieval ceramic forms* (MPRG 1998) act as standards. Recording was carried out using OA East's in-house system, based on that previously used at the Museum of London. Fabric classification has been carried out for all sherds, using where possible, for all fabric types, Norfolk fabric codes (unpublished). The Museum of London Archaeology medieval and post-medieval pottery codes (MoLA 2014) are also used for 18th century and later pottery.

B.3.4 All sherds from phased contexts have been counted, classified and weighed on a context-by-context basis and the minimum number of vessels (MNV) established. The assemblage is recorded in the text of this report.

B.3.5 The pottery and archive are curated by Oxford Archaeology East until formal deposition or dispersal.

Assemblage

B.3.6 The three sherds of medieval pottery recovered from the topsoil (context 1) are two (joining) moderately abraded, sooted, body sherds (0.016kg) from a Norwich-type Local medieval unglazed ware vessel, and an abraded underfired Local medieval unglazed ware body sherd (0.010kg).

B.3.7 The remaining sherds of pottery were all recovered from modern features. In post hole **7**, a single small, yet unabraded, sherd (0.001kg) from a late 18th-20th century industrial slipware vessel was found. Although the size of the sherd makes the identification of the vessel type uncertain, the sherd is likely to have come from a mug/tankard or a bowl with decoration, produced using a multi-chambered slip cup, mostly in shades of brown and cream.

B.3.8 The remaining pottery was recovered from wheel rutting in the northern area of the site. Firstly, from rut **15**, two relatively unabraded, joining rim sherds (0.003kg) of a 18th-20th century porcelain drinking vessel or jug. The rim is upright, simple and rounded (diameter 80mm, estimated vessel equivalent 8%) and undecorated.

B.3.9 In the southern area of the site, rut **35** produced a single abraded body sherd (0.001kg) from an externally blue and white slip-decorated late 18th-19th century yellow ware vessel. A clay pipe stem fragment was also recovered from this context.

Discussion

B.3.10 The fragmentary nature of the (very probably domestic) medieval assemblage means significance is difficult to establish, beyond indicating the use of local pottery and its deposition probably by manuring. The 18th-20th century assemblage indicates low levels of rubbish deposition and/or redeposition of material, possibly used to fill or level the rutted area and backfill the post hole.

B.3.11 This statement acts as a full record and the pottery may be deselected prior to archive deposition.

B.4 Clay tobacco pipe

By Carole Fletcher

Introduction, Methodology and Assemblage

B.4.1 During the excavation, three fragments of white ball clay tobacco pipe, weighing 0.006kg, were recovered from the topsoil (1) and modern features, wheel rut **35** and post hole **45**. Terminology used in this report is taken from Oswald's simplified general typology (Oswald 1975, 37–41), and Crummy and Hind (Crummy 1988, 47-66) and the clay tobacco pipe is described in the text of this report.

Assemblage and Discussion

B.4.2 A single fragment of undecorated clay tobacco pipe stem (0.003kg) was recovered from the topsoil. The stem fragment is 42mm long, circular, tapering slightly from 7.1-6.9mm in diameter with a central bore and the stem is blackened, possibly from being thrown in a fire to clean it.

B.4.3 An undecorated clay tobacco pipe stem (0.001kg) was recovered from rut **35**, in the southern area of the site. The stem fragment is 17mm long, oval, 5.2 x 5.2mm and has an offset bore with prominent seams. It is not closely datable, however, the pipe stem was recovered alongside a sherd of late 18th-19th century yellow ware.

B.4.4 The final fragment of undecorated clay tobacco pipe stem (0.002kg) came from post hole **45**. The stem fragment is 28mm long, oval, 6.6 x 6.3mm with an offset bore and noticeable but otherwise neatly trimmed mould seams. It is not closely datable.

B.4.5 The fragments of clay tobacco pipe recovered represent what were most likely casually discarded pipes. The pipe fragments do little, other than to indicate the consumption of tobacco on, or in the vicinity of, the site, most likely from the 18th-19th century, as

they are very likely of similar date to the pottery recovered from rut **35** and post hole **7**, which produced a sherds of late 18th-20th century pottery.

B.4.6 This statement acts as a full record and the clay tobacco pipe may be deselected prior to archive deposition.

B.5 Ceramic building material

By Carole Fletcher

Introduction and Methodology

B.5.1 A single fragment of ceramic building material (CBM), weighing 0.021kg, was recovered from post hole **7**. The assemblage was quantified by context, counted, weighed, and form recorded, where this was identifiable. Only complete dimensions were recorded, which was thickness in this case. The data is recorded in the text of this report.

B.5.2 The ACBM *Ceramic Building Material Minimum Standards for Recovery Curation Analysis and Publication* V3.3 (2002) acts as a standard and McComish (2015) forms the basis of identification post-Roman CBM types.

Assemblage and Discussion

B.5.3 The small assemblage of CBM is generally moderately abraded, the single sub-rectangular fragment (0.021kg) of flat tile (16.5mm thick) is probably roof tile. The fabric is fine quartz-tempered with occasional larger quartz, oxidised red-orange surfaces with slightly duller margins and a mid-grey core. The CBM is not closely dateable, although it is very probably post-medieval, as it was recovered with a small fragment of clay tobacco pipe stem. The CBM assemblage is fragmentary and of no significance.

B.5.4 This statement acts as a full record and the CBM may be deselected prior to archive deposition.

APPENDIX C ENVIRONMENTAL REPORTS

C.1 Human Bone

By Zoë Uí Choileáin

Introduction

C.1.1 Seven deposits of cremated human bone, representing both urned and unurned burials were identified during the excavation (Table 6). Pottery in the urned cremation burials dates the features to the Middle Bronze Age. This is confirmed by radiocarbon dates on bone from burials **58** (1260-1055 cal BC; 95.4% confidence; BRAMS-4064; 2956 ± 25 BP) and **64** (1380-1128 cal BC; 95.4% confidence; BRAMS-4065; 3008 ± 25 BP).

Provenance of the material and nature of the deposits

C.1.2 The seven burials (**58**, **61**, **62**, **63**, **64**, **65**, **66**) form a small cluster in the north-west quadrant of the site. The urned deposits were located in pits **63**, **64** and **65** on the western side of this cluster.

Methodology

C.1.3 Excavation, processing and analysis of the cremation was carried out in accordance with published guidelines (McKinley 2004; Mays *et al.* 2004). In order to comment on the degree of bone fragmentation, the residues were separated into three fractions; >10mm, 5-10mm and 2-5mm, the extraneous material was removed, and the total bone weight recorded.

Preservation of the material

C.1.4 The features were shallow, between 0.04m- 0.28m in depth, and all had been truncated to an unknown degree by ploughing. Therefore, the bone present does not represent the quantity of bone originally deposited. The fragment size is very small meaning that few fragments were identifiable to element (skull fragments, phalanges and a tooth root). Unurned burial **66** contained significantly more bone identifiable to element.

Results and discussion

C.1.5 Less than 500g of bone was discovered in any of the features. Pits **64** and **66**, at 304g and 143g was the only feature to contain over 100g of cremated bone.

C.1.6 Based on the size and robustness of the few identifiable elements each feature contains the remains of an older subadult/adult.

C.1.7 All of the bone fragments are white in colour indicative of complete oxidisation of the organic component of the bone and pyre temperatures in excess of approximately 600^0 C (McKinley 2004, 11).

C.1.8 Only pit **61** contained bone which was identifiable as animal bone. There is no clearly identifiable human bone within the pit, and it is possible that this represents pyre material as there is a particularly high percentage of charcoal.

C.1.9 All of the material is highly fragmented, with the majority of the bone being recovered from the 5-10mm fractions. The consistency of the fragmentation may suggest that the bone was crushed before burial. This has been observed at other sites such as Gunvil Hall, Wymondham (Dodwell 2020).

Cut	Fill	Sample	Deposit type	Depth	10mm	5-10mm	2-5mm	Total weight
58	68	1	Burial unurned		15	45	unsorted	80
	71	4			1	1	unsorted	
61	72	5	Pyre material		0	5	unsorted	9
62	73	6	Burial unurned		0	2	unsorted	3
	74	8			0	1	unsorted	
63	75	7	Burial urned SF 1	0.2	0	14	unsorted	28
	79				2	10	unsorted	
64	80	10	Burial urned SF 2	0.1	28	145	unsorted	304
	82	13				1	unsorted	
65	83	12	Burial urned SF 3	0.09	10	19	unsorted	31
66	81	11	Burial unurned		9	74	unsorted	143

Table 6: Cremated human bone

C.1.10 Although pit **61** contains a particularly high percentage of charcoal, all of the deposits are charcoal rich - suggesting that bone was scooped straight from the pyre rather than carefully sifted. The fragmentation size is consistent with burials in Turners Yard (Webb 2015), Gunvil Hall Farm, Wymondham (Dodwell 2020), Blackborough End (Dodwell 2017) and Fields End, Witchford (Blackbourn 2018).

Discussion

C.1.11 This small collection of pits represents a small Middle Bronze Age burial ground. Low bone weights are common in burials of this date (Robinson, 2007, 22 fig 4.3, Dodwell 2020). The presence of both urned and unurned burials is again typical of this period with the urned burials being in the minority (Robinson, 2007, 23).

C.1.12 There is a significantly lower proportion of cremated bone in the backfill of the pits containing urned burials, with the majority of the bone being contained within the vessel. The percentage of charcoal in the fill of these pits was however still significantly high. It seems likely that the pits were backfilled with pyre material suggesting that the pyre was nearby.

C.1.13 The urned burial in pit **64** contains a significantly higher percentage of cremated bone. It can be cautiously presumed that this represents the primary burial. The primary burials in a Bronze Age cremation group consistently produce high percentages of bone (Webb 2015, 136). Unfortunately, the high levels of truncation hamper a more confident assignation of primary burial to this feature.

C.1.14 The corpus of information on Bronze Age cremation burials has grown significantly and while this represents a small burial ground with badly truncated features it still adds to our greater understanding of the cremation rite within a Middle Bronze Age setting and within East Anglia.

C.2 Environmental Samples

By Martha Craven

Introduction

C.2.1 Fourteen bulk samples were taken from the fills of features within the excavated area at the site. The samples were taken from Bronze Age pits and both urned and unurned cremation deposits. The purpose of this assessment is to determine whether plant remains and environmental indicators such as molluscs are present, their mode of preservation and whether they are of interpretable value for further specialist study.

Methodology

C.2.2 Each sample was processed by tank flotation using modified Sīraf-type equipment for the recovery of preserved plant remains, dating evidence and any other artefactual evidence that might be present. The floating component (flot) of the samples was collected in a 0.3mm nylon mesh and the residue was washed through 10mm, 5mm, 2mm and a 0.5mm sieve.

C.2.3 A magnet was dragged through each residue fraction for the recovery of magnetic residues prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds.

C.2.4 The dried flots were subsequently sorted using a binocular microscope at magnifications up to x 60 and an abbreviated list of the recorded remains are presented in Table 7.

C.2.5 Identification of plant remains is with reference to the Digital Seed Atlas of the Netherlands (Cappers *et al*. 2006) and the authors' own reference collection. Nomenclature is according to Zohary and Hopf (2000) for cereals and Stace (2010) for other plants. The identification of cereals has been based on the characteristic morphology of the grains and chaff as described by Jacomet (2006).

Quantification

C.2.6 For the purpose of this assessment, items such as seeds and cereal grains have been scanned and recorded qualitatively according to the following categories:

= 1-5, ## = 6-25, ### = 26-100, #### = 100+ specimens

C.2.7 Items that cannot be easily quantified such as molluscs have been scored for abundance

+ = rare, ++ = moderate, +++ = frequent, ++++ = abundant, +++++ = super abundant

Key to table: f=fragment, U=untransformed

Results

C.2.8 The botanical material from this site is quite sparse and consists of untransformed and carbonised (charred) remains. Several of the samples contain occasional charred cereal grains and weed seeds. One of the cereal grains is too poorly preserved to be identified however the other grain has morphological characteristics consistent with wheat (*Triticum sp.*).

C.2.9 The weed seeds include: false oat-grass (*Arrhenatherum elatius* subspecies *bulbosus*) tubers, ribwort plantain (*Plantago lanceolata*), docks (*Rumex sp.*) and grey sedge (*Carex divulsa*). Other plant remains recovered from the samples include: a single charred fragment of hazelnut (*Corylus avellana*) shell and occasional untransformed elderberry (*Sambucus nigra*) and bramble (*Rubus sp.*) seeds. The elderberry and bramble seeds may be contemporary to the fills from which they were recovered as the seeds from these taxa have a tough outer coating which makes them resistant to decay.

C.2.10 The samples from this site contain quite variable quantities of charcoal. Sample 15, fill 53 of pit **52** (Area A), contains the largest quantity of charcoal; a total of 115ml.

C.2.11 The majority of the samples are either devoid of molluscs or contain only a small quantity of them.

Sample No.	Context No.	Cut no.	Area no.	Feature type	Volume processed (L)	Flot Volume (ml)	Cereals	Chaff	Weed Seeds	Wetland/aquatic plants	Tree/Shrub macrofossils	Snails from flot	Small Bones	Charcoal volume (ml)	Pottery	Human skeletal remains
1	68	58	A	Cremation	35	50	#	0	#	0	0	+	0	60	0	##
2	69	59	A	Cremation	2	1	0	0	0	0	0	0	0	<1	0	#
3	70	60	A	Possible cremation	2	<1	0	0	0	0	0	0	0	0	0	0
4	71	61	A	Cremation	10	10	0	0	#	0	0	0	0	2	0	##
5	72	61	A	Cremation	2	5	0	0	0	0	0	0	0	3	0	##
6	73	62	A	Cremation	8	5	0	0	0	0	0	0	0	<1	0	##
7	75	63	A	Cremation	4	5	0	0	0	0	0	0	0	<1	##	##
8	74	63	A	Cremation	8	2	0	0	0	0	#U	+	0	<1	0	#
9	79	64	A	Cremation pit	14	10	0	0	0	0	0	0	+	9	0	0
10	80	64	A	Cremation	8	1	0	0	0		0	+	0	<1	###	###
11	81	66	A	Cremation pit	34	50	0	0	0	0	0	0	0	5	0	##
12	83	65	A	Cremation	2	5	0	0	0	0	0	0	0	3	##	###

Sample No.	Context No.	Cut no.	Area no.	Feature type	Volume processed (L)	Flot Volume (ml)	Cereals	Chaff	Weed Seeds	Wetland/aquatic plants	Tree/Shrub macrofossils	Snails from flot	Small Bones	Charcoal volume (ml)	Pottery	Human skeletal remains
13	82	65	A	Cremation pit	20	50	0	#	#	#	0	0	0	35	0	#
15	53	52	A	Pit	8	115	0	0	0	0	#	0	0	115	0	0

Table 7: Environmental bulk samples

Discussion

C.2.12 The small quantities of charred plant remains recovered from these samples are likely to represent material from scattered refuse, that has been accidentally incorporated into the features.

C.2.13 The presence of hazelnut shell could indicate that foraging was taking place however the recovery of only a single fragment makes this unlikely.

C.2.14 The presence of false-oat grass tubers in the cremation deposits is quite typical of the Bronze Age. Robinson (1988) proposed that the prevalence of false-oat grass in conjunction with Bronze Age cremations was due to the grass being used as tinder for the funeral pyre. Alternatively, the presence of false-oat grass tubers could indicate that the funeral pyre was constructed quite close to the ground (De Vareilles 2014, 91).

C.3 The charcoal

By Denise Druce

Quantification

C.3.1 The charcoal recovered from three Bronze Age cremation deposits was analysed to determine the nature of pyre wood selection. The three deposits comprise the fill (68) of a single unurned cremation pit (**58**) and the backfills (79 and 82) from two urned cremation pits (**64** and **65**).

Methodology

C.3.2 The bulk samples were processed using a modified Siraf-type flotation machine. The resulting flots were collected onto a 250µm mesh and air-dried. The residues, collected on 500 µm, 2mm, and 4mm meshes, were also air-dried and checked for any organic material (including charcoal) and finds.

C.3.3 The charcoal, from both the flots and residues, was examined using a Leica MZ6 binocular microscope whereby a representative number of fragments was identified based on the features visible in transverse section. Given the nature of the charcoal, no further fracturing/examination was required. Characteristics, such as possession of tyloses (which tend to develop in hardwood trees over 25 years in age), growth rate, insect damage, or radial cracking were also noted as an aid to wood maturity, and

condition prior to charring. Identification was aided by comparison with modern reference collections, and with Hather (2000).

Results

C.3.4 The results of the analyses are presented in Table 8. All three cremation deposits contained abundant identifiable fragments dominated by oak (Quercus sp), from mature trees. A thorough scan of the samples suggests no other taxa are present.

Sample no	Context no	Cut no	Feature type	Flot size (ml)	Charcoal comments
1	68	58	Unurned cremation pit	50	Dominated by mature oak charcoal
9	79	64	Urned cremation pit	10	Dominated by mature oak charcoal
13	82	65	Urned cremation pit	50	Dominated by mature oak charcoal

Table 8: Charcoal from three cremation pits

C.3.5 Although a paucity of charcoal studies from other Bronze Age funerary sites in eastern England limits regional comparisons, the data is consistent with sites in Essex (Gale 2007) and other areas of southern England, which suggests that a single taxon, usually oak or ash, was the favoured wood for funerary activities during the Bronze Age period (Thompson 1999, Gale 2004, Challinor 2009, Pelling 2010, Druce 2011).

C.3.6 Variations do exist however, evident by the charcoal assemblages from two Bronze Age cremations excavated in advance of Heathrow Terminal 5, one of which being dominated by oak, the other comprising a mixed assemblage of oak, alder/hazel, hawthorn-type (Maloideae) and field maple (*Acer campestre*; Challinor 2006).

C.3.7 Where osteological evidence also survives, there is a suggestion that wood selection may have had a ritual significance, possibly based on an individual's age or gender. At Lodge Farm, St Osyth, Essex, for example, alder is associated with a juvenile, whereas oak is associated with adults, including an adult male (Gale 2007). Murphy (2001) takes this further and suggests that the selection of certain taxa may also reflect the status of the individual. For example, the selection of mature oak from what is thought to be an open landscape may hold some significance in terms of the effort required for sourcing and acquiring the wood.

C.4 Radiocarbon dating certificates

University of BRISTOL

brams

Monday, 30 November 2020

Report on Radiocarbon Age Determination for BRAMS-4064

43 Woodland Road,
BRISTOL, BS8 1UU,
UK

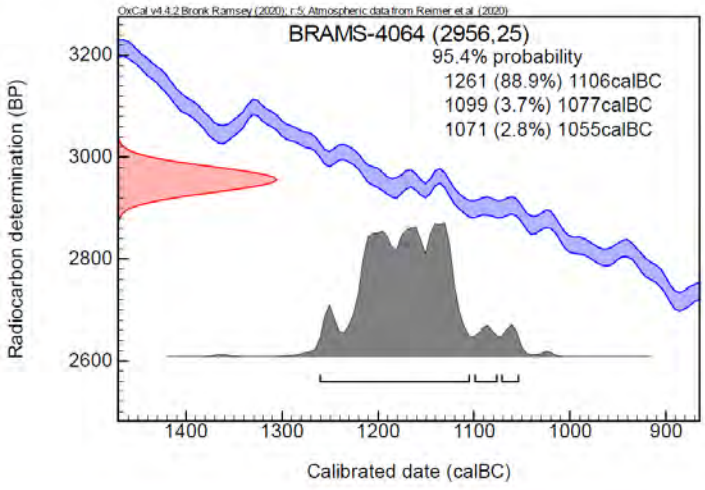
Submitter:	Rachel Fosberry
Submitter's Code:	<1> (68) (cremated bone)
Project:	ENF149031
Sample material:	Cremated bone
Pretreatment Code:	AHO

$F^{14}C$	**0.6921± 0.0021**
Result	**2956 ± 25 BP**
Indicative $\delta^{13}C$	**-19.6 ‰**

The result is given in uncalibrated radiocarbon years Before Present (BP). Data given are corrected for isotopic fractionation using the $^{13}C/^{12}C$ ratio measured on the AMS. The $\delta^{13}C$ value was measured on the AMS and may have been subject to additional isotopic fractionation. The error associated with this value is typically ±1‰.

Calibration Plot

Calibration was performed using OxCal software v4.4 and the IntCal20 atmospheric calibration curve



Dr. Timothy Knowles
BRAMS Manager

University of BRISTOL

brams
Bristol Radiocarbon Accelerator Mass Spectrometer

43 Woodland Road,
BRISTOL, BS8 1UU,
UK

Monday, 30 November 2020

Report on Radiocarbon Age Determination for BRAMS-4065

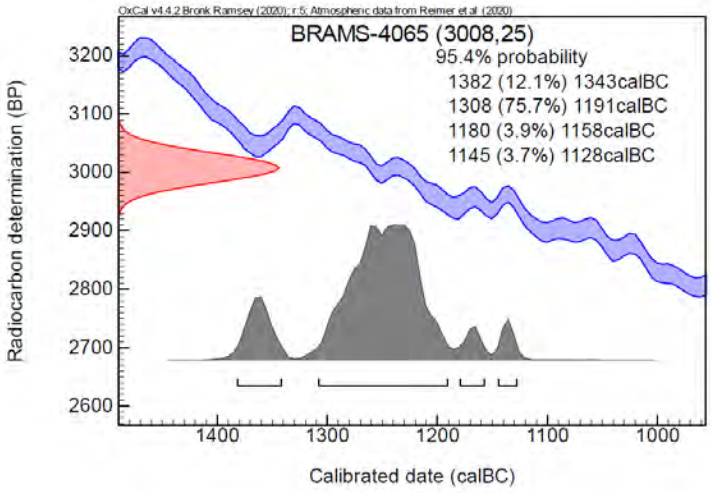
Submitter:	Rachel Fosberry
Submitter's Code:	<10> (80) (cremated bone)
Project:	ENF149031
Sample material:	Cremated bone
Pretreatment Code:	AHO

$F^{14}C$	**0.6877± 0.0021**
Result	**3008 ± 25 BP**
Indicative $\delta^{13}C$	**-18.6 ‰**

The result is given in uncalibrated radiocarbon years Before Present (BP). Data given are corrected for isotopic fractionation using the $^{13}C/^{12}C$ ratio measured on the AMS. The $\delta^{13}C$ value was measured on the AMS and may have been subject to additional isotopic fractionation. The error associated with this value is typically ±1‰.

Calibration Plot

Calibration was performed using OxCal software v4.4 and the IntCal20 atmospheric calibration curve



Dr. Timothy Knowles
BRAMS Manager

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APPENDIX E OASIS REPORT FORM

Project Details

OASIS Number	Oxfordar3-396268
Project Name	Middle Bronze Age Cremation Burials at Horstead Water Tower, Norfolk

Start of Fieldwork	06/07/2020	End of Fieldwork	23/07/2020
Previous Work	No	Future Work	No

Project Reference Codes

Site Code	XNFHWT20	Planning App. No.	na
HER Number	ENF149031	Related Numbers	

Prompt	Water Act 1989 and subsequent code of practice
Development Type	Anglian Water permanent compound
Place in Planning Process	Not known/Not recorded

Techniques used (tick all that apply)

☐ Field Observation (periodic visits)	☐ Part Excavation	☐ Salvage Record
☐ Full excavation (100%)	☐ Part Survey	☐ Systematic Field Walking
☐ Full Survey	☐ Recorded Observation	☐ Systematic Metal Detector Survey
☐ Geophysical Survey	☐ Remote Operated Vehicle Survey	☐ Test Pit Survey
☐ Open-Area Excavation	☐ Salvage Excavation	☒ Watching Brief

Monument	Period
Cremation pit	Middle Bronze Age (- 1600 to - 1000)
Pit	Middle Bronze Age (- 1600 to - 1000)
Ditch	Modern (1901 to present)
Post hole	Modern (1901 to present)
	Choose an item.
	Choose an item.

Object	Period
Pottery	Middle Bronze Age (- 1600 to - 1000)
Human cremated bone	Middle Bronze Age (- 1600 to - 1000)
Flintwork	Neolithic (- 4000 to - 2200)
Pottery	Post Medieval (1540 to 1901)
Pottery	Modern (1901 to present)
clay pipe (smoking)	Post Medieval (1540 to 1901)

Insert more lines as appropriate.

Project Location

County	Norfolk
District	Broadland
Parish	Horstead with Stanninghall
HER office	Norfolk
Size of Study Area	0.65ha
National Grid Ref	TG 26115 18680

Address (including Postcode)

Horstead Water Tower
Norwich Road
Horstead With Stanninghall
NR12 7EH

Project Originators

Organisation	OA East
Project Brief Originator	Steve Hickling (NCC/HES)
Project Design Originator	Louise Moan (OA East)
Project Manager	Louise Moan (OA East)
Project Supervisor	Lindsey Kemp (OA East)

Project Archives

	Location	ID
Physical Archive (Finds)	Norwich Castle Museum	NWHCM2021.3
Digital Archive	Norwich Castle Museum	NWHCM2021.3
Paper Archive	Norwich Castle Museum	NWHCM2021.3

Physical Contents	Present?	Digital files associated with Finds	Paperwork associated with Finds
Animal Bones	☐	☐	☐
Ceramics	☒	☒	☒
Environmental	☒	☒	☒
Glass	☐	☐	☐
Human Remains	☒	☒	☒
Industrial	☐	☐	☐
Leather	☐	☐	☐
Metal	☐	☐	☐
Stratigraphic		☐	☐
Survey		☐	☐
Textiles	☐	☐	☐
Wood	☐	☐	☐
Worked Bone	☐	☐	☐
Worked Stone/Lithic	☒	☒	☒
None	☐	☐	☐
Other	☐	☐	☐

Digital Media		Paper Media	
Database	☒	Aerial Photos	☐
GIS	☐	Context Sheets	☒
Geophysics	☐	Correspondence	☐
Images (Digital photos)	☒	Diary	☐
Illustrations (Figures/Plates)	☒	Drawing	☐
Moving Image	☐	Manuscript	☐
Spreadsheets	☐	Map	☐
Survey	☒	Matrices	☐
Text	☒	Microfiche	☐
Virtual Reality	☐	Miscellaneous	☐
		Research/Notes	☒
		Photos (negatives/prints/slides)	☐
		Plans	☒

Report	☒
Sections	☒
Survey	☒

Further Comments

Accession number to be acquired.

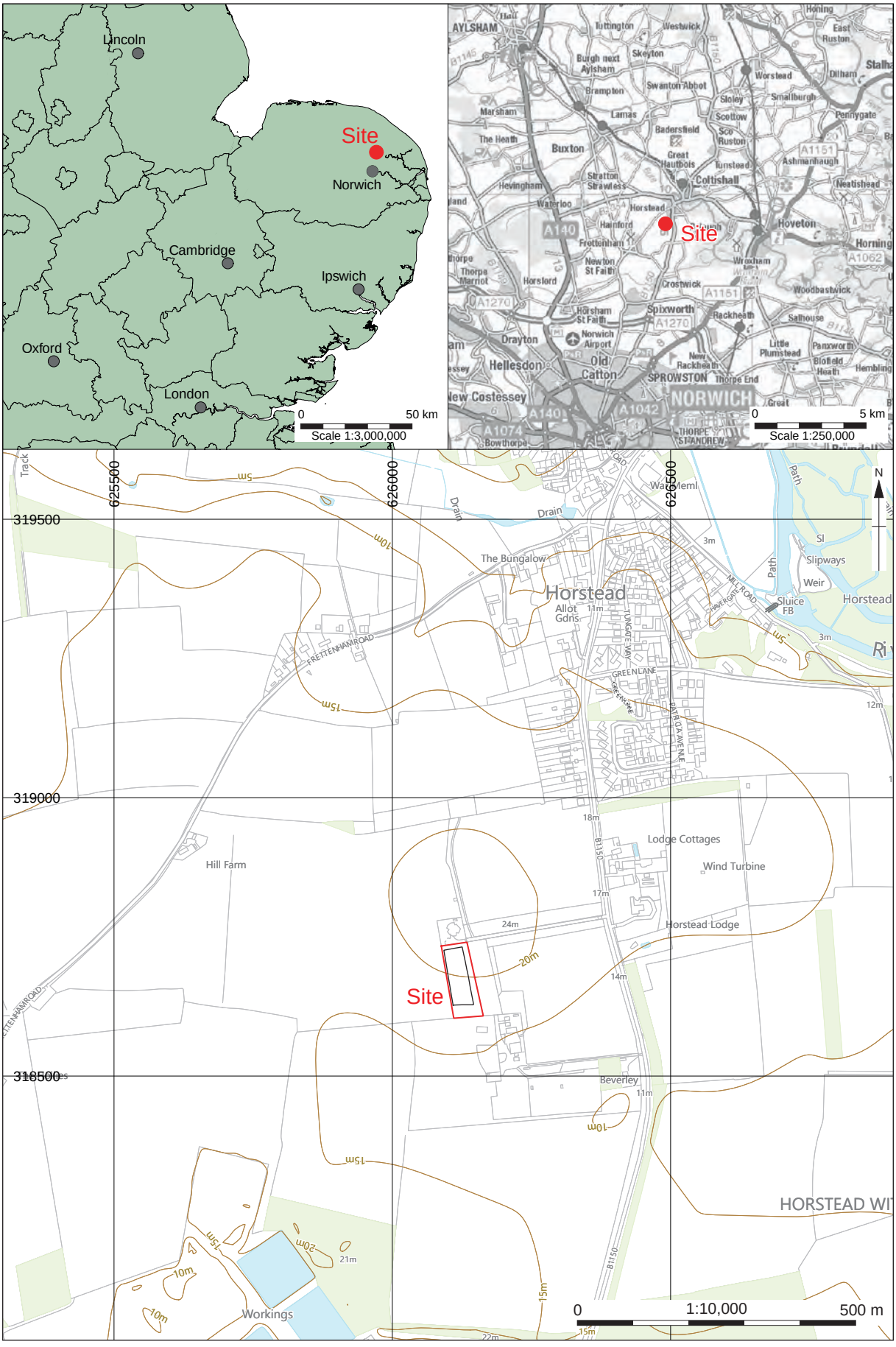


Figure 1: Site location showing overall development (red) and excavation area (black)

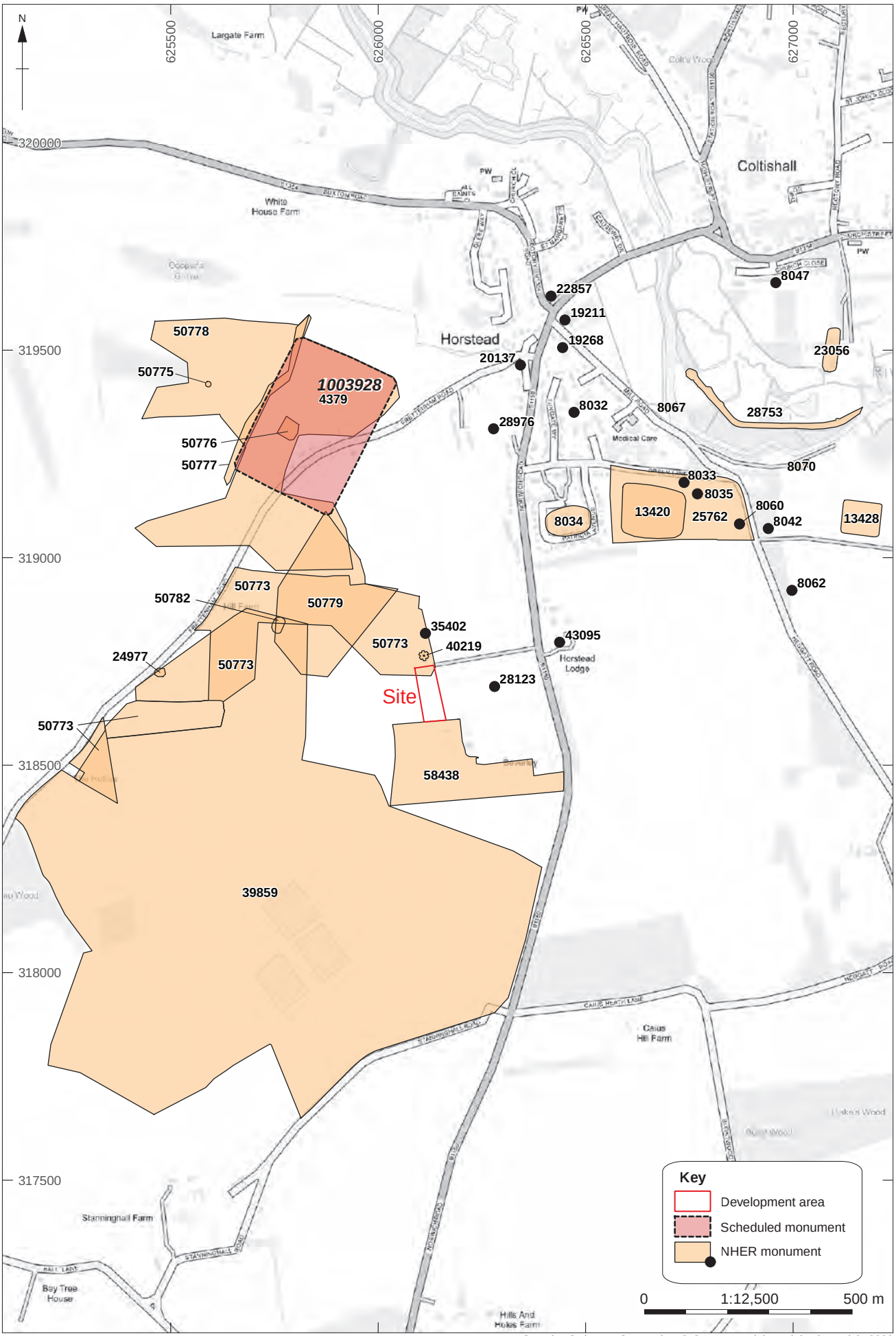


Figure 2: Map showing location of NHER monuments

626100
626120
626140
N
318720
318700
318680
318660
S.1
3
S.2
S.21
49
5
7
S.3
15
See Fig.4
66
S.33
58
S.25
59
60
S.26
65
S.32
64
S.31
61
62
S.29
63
S.28
19
S.6
23
39
35
45
S.19
Key
Development area
Limit of excavation
S.1 Illustrated section
100 Cut number
Period 1: Bronze Age (c.2500 - 800 BC)
Period 2: Post-medieval (c.1540 - 1750)
Wheel ruts
0
1:250
10 m

Figure 3: Phased excavation plan

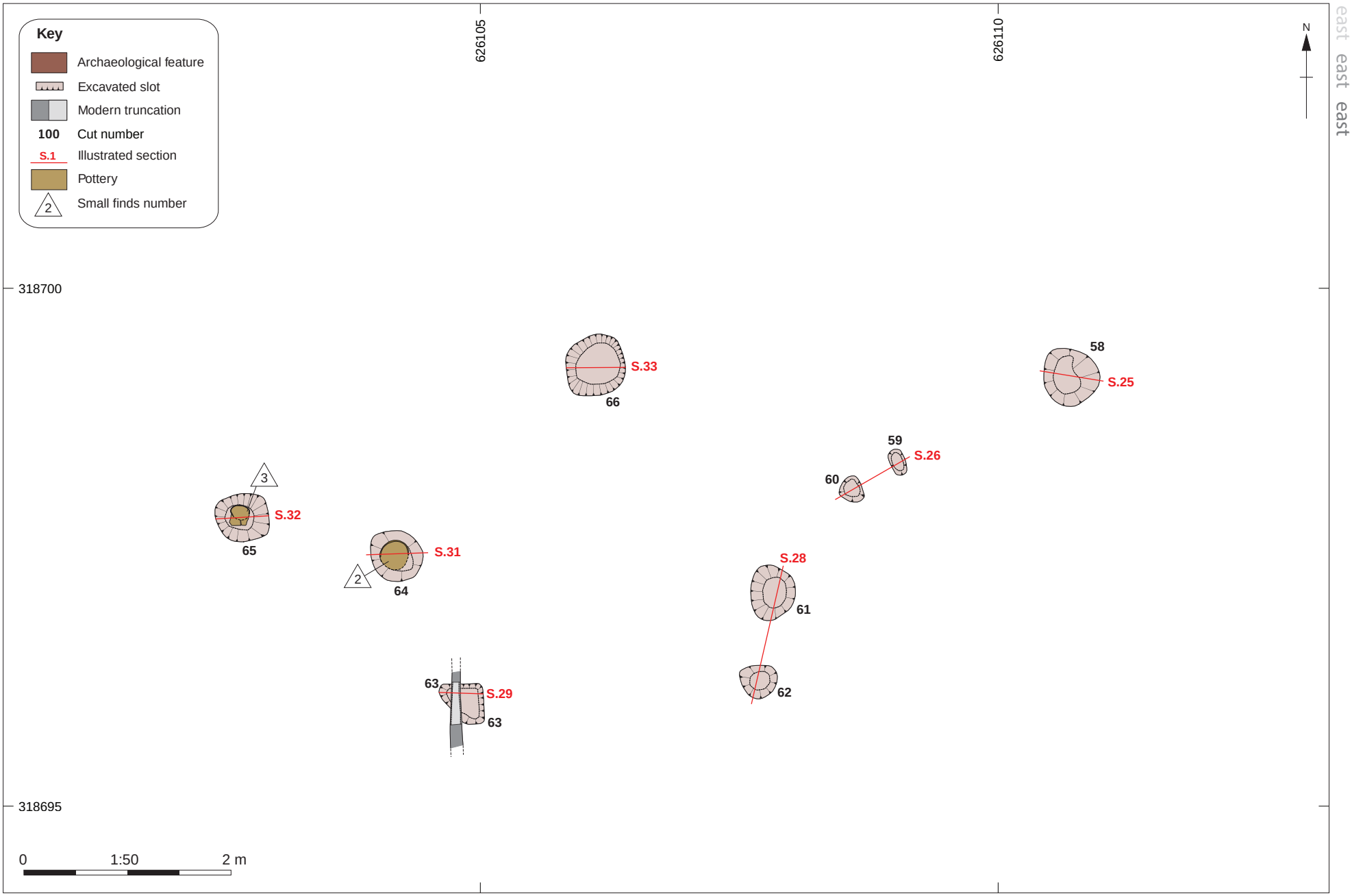
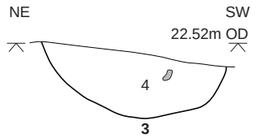


Figure 4: Detail plan of Period 1 cremation burial ground

Section 1



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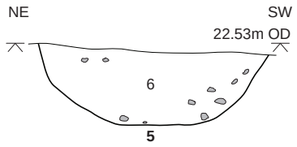

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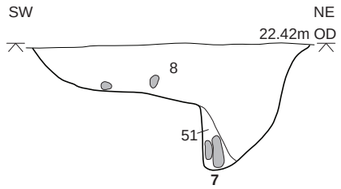
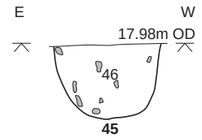
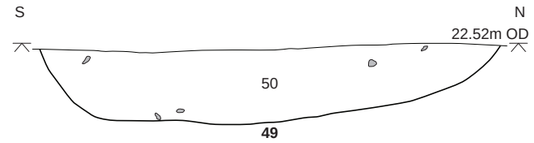


Section 19

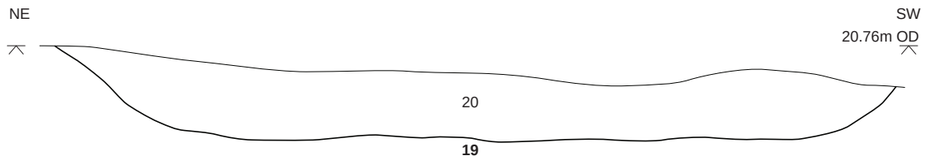


Section 21

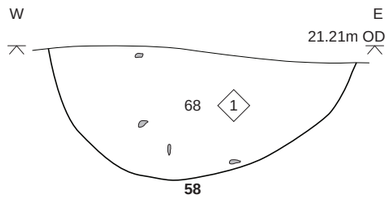


0 1:20 1 m

Section 6

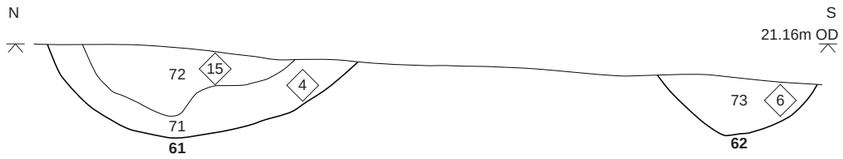


Section 25



Section 26

Section 28



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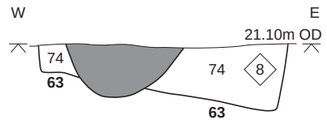
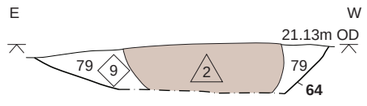


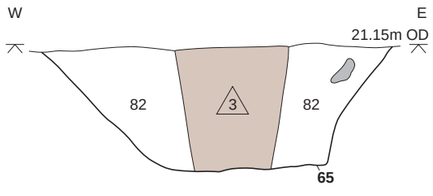
Key

- Limit of Excavation
- Top surface
- Cut
- Deposit Horizon
- 117 Cut Number
- 116 Deposit Number
- 2 Sample number
- 3 Small find number
- Modern truncation
- Charcoal
- Bone
- Pottery
- Stone/pebble
- 32.26 m OD Level

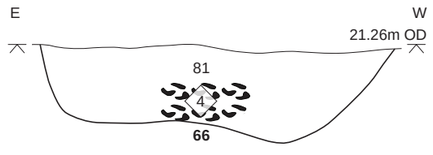
Section 31



Section 32



Section 33



0 1:10 500 mm

Figure 5: Selected sections

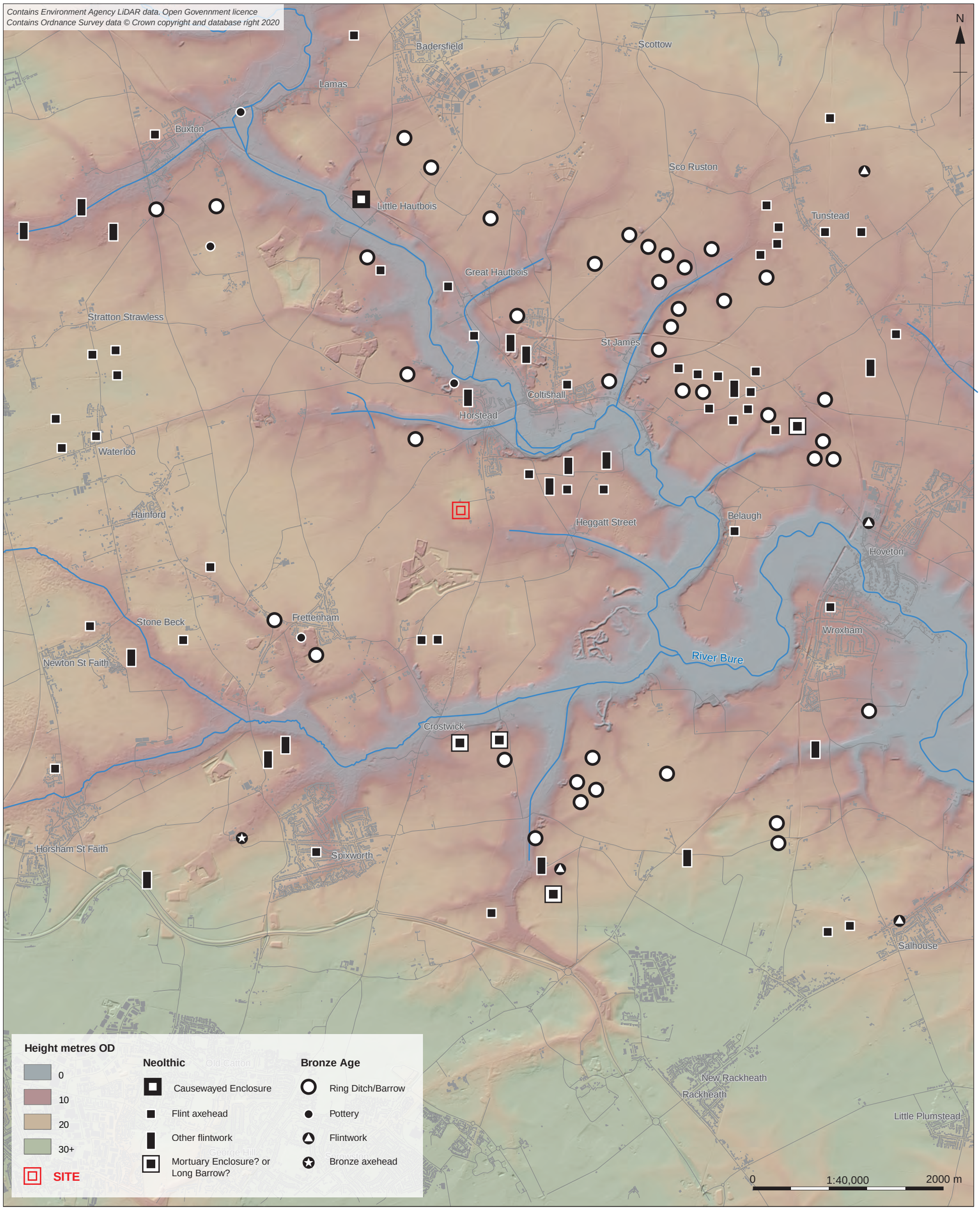


Figure 6: Site location in relation to selected Neolithic and Bronze Age remains in the Bure Valley (records taken from the Heritage Gateway website)

Plate 1: Horstead Water Tower from the site, looking north

Plate 2: The site prior to stripping, looking south

Plate 3: Site stripping work, looking south-west

Plate 4: Period 1 cremation burial ground after the strip, looking north

Plate 5: Period 1 cremation urn SF3 in pit **65**, looking south

Plate 6: Period 1 cremation urn SF2 in pit **64**, looking south

Plate 7: Period 1 plough or burrow damaged urned cremation pit **63**, looking south

Plate 8: Period 1 cremation pit **58**, looking south

Plate 9: Period 1 pit **19**, looking south

Plate 10: Period 2 ditch **3**, looking west

Plate 11: Period 2 post hole **7**, looking south

Plate 12: Period 2 post hole **45**, looking south

oxfordarchaeology

Head Office/Registered Office/ OA South

Janus House
Osney Mead
Oxford OX2 0ES

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

OA North

Mill 3
Moor Lane
Lancaster LA1 1QD

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

OA East

15 Trafalgar Way
Bar Hill
Cambridgeshire
CB23 8SQ

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