



Northamptonshire Archaeology

Excavation of a middle Bronze Age round barrow
and associated features, Watton, Norfolk:
Assessment report and updated project design



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Report 11/70

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QUALITY CONTROL

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OASIS REPORT FORM

PROJECT DETAILS		
Project name	Excavation of a middle Bronze Age round barrow and associated features at Watton, Norfolk	
Short description	Northamptonshire Archaeology carried out an open area excavation on the site of the former RAF Radar Station at Watton, Norfolk. A middle Bronze Age round barrow was investigated together with five satellite cremation deposits and a single inhumation of probable Roman date. A number of pits and postholes were also recorded. This report assesses the potential of these findings in the context of the original aims and objectives of the project, suggests further avenues of research based upon the scope of the findings and presents an updated project design for subsequent post-excavation work.	
Project type	Excavation	
Site status	None	
Previous work	Trial trenching (Oxford Archaeology 2006)	
Current Land use	Waste ground	
Future work	Watching brief	
Monument type/ period	Bronze Age	
Significant finds	Bronze Age cremations, Roman skeletal remains, pottery, flint	
PROJECT LOCATION		
County	Norfolk	
Site address	Former RAF Radar Station, Norwich Road, Watton	
Study area	c 4.6ha	
OS Easting & Northing	TF 926 007	
Height OD	c 56-61mOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology	
Project brief originator	Senior Archaeologist (Planning), Norfolk County Council	
Project Design originator	CgMs Consulting	
Director/Supervisor	Paul Mason	
Project Manager	Adam Yates/Mark Holmes (NA) Paul Gajos (CgMs)	
Sponsor or funding body	Bennett Homes	
PROJECT DATE		
Start date	29 November 2010	
End date	10 December 2010	
ARCHIVES	Location	Content
Physical	NA Offices	Pottery, flint, skeletal remains, flots, residue
Paper	NA Offices	Record sheets, maps
Digital	NA Offices	Digital mapping, illustrations
BIBLIOGRAPHY		
Title	Excavation of a middle Bronze Age round barrow and associated features at Watton, Norfolk: Assessment report and updated project design	
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Author(s)	Paul Mason	
Date	28 March 2011	

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**EXCAVATION OF A MIDDLE BRONZE AGE ROUND BARROW
AND ASSOCIATED FEATURES AT WATTON, NORFOLK
NOVEMBER – DECEMBER 2010
ASSESSMENT REPORT AND UPDATED PROJECT DESIGN**

Abstract

Northamptonshire Archaeology carried out an open area excavation on the site of the former RAF Radar Station at Watton, Norfolk. A middle Bronze Age round barrow was investigated together with five satellite cremation deposits and a single inhumation of probable Roman date. A number of pits and postholes were also recorded.

This report assesses the potential of these findings in the context of the original aims and objectives of the project, suggests further avenues of research based upon the scope of the findings and presents an updated project design for subsequent post-excavation work.

1 INTRODUCTION

Northamptonshire Archaeology were commissioned by CgMs Consulting, on behalf of their client Bennett Homes, to undertake an archaeological investigation on the site of the former RAF radar station, Watton, Norfolk (Fig 1; NGR TF 926 007). Previous trial trench excavation of the site by Oxford Archaeology had revealed evidence for a middle Bronze Age round barrow and other associated features including a possible grave in the southern part of the site and a ditch, also dated to the Bronze Age, in the north (OA 2006).

The first phase of fieldwork, comprising the open area excavation of two 30m sq areas, began on Monday 29 November 2010 and continued until 10 December 2010. This will be supplemented by the results of a watching brief, to be undertaken at a future date (as yet unknown) once the groundworks associated with the development begin.

Upon completion of the client report, the archive will be deposited with Norfolk Museums (Norfolk Historic Environment No ENF125509).

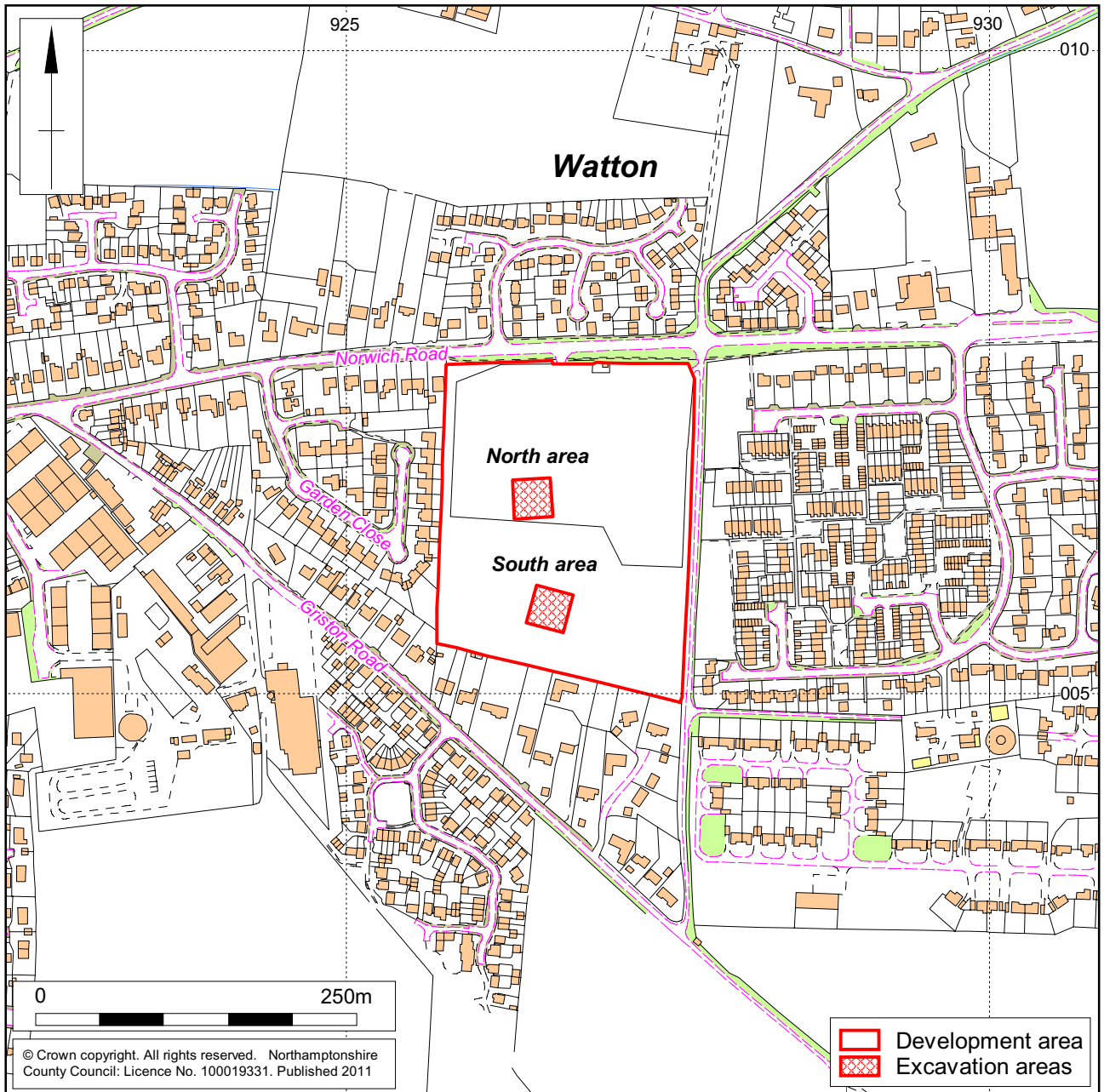
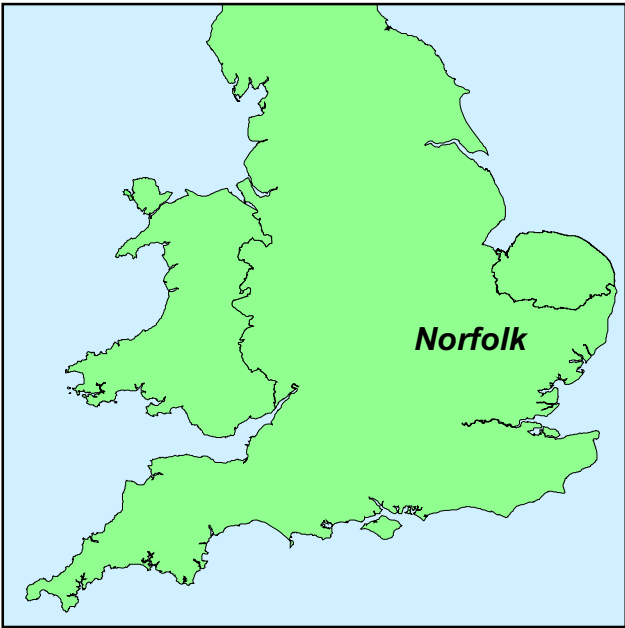
1.1 Archaeological background

The following summary of the site's archaeological background is partially paraphrased from the evaluation report prepared by Oxford Archaeology (OA 2006).

Find spots in the vicinity of the site include that of a hoard of six Bronze Age axes, discovered close to the Norwich Road frontage. The site lies to the immediate south of this road, which follows the route of a principal Roman road leading westward from the *civitas* capital at Caistor St Edmund. Excavations to the north of the Norwich Road have revealed evidence for Iron Age and Roman activity including pits, ditches and scatters of coins and pottery.

In 2003 Northamptonshire Archaeology undertook a trial trench evaluation of land c 250m north-east of the site (Upson-Smith 2003). A number of undated linear features were observed and a single sherd of Iron Age pottery was recovered.

On the eastern side of the site lies a rare World War II pillbox.



Scale 1:5000

Site location Fig 1

In 2005 Oxford Archaeology undertook a trial trench evaluation of the site which revealed a Bronze Age barrow with a central urned cremation in the southern part of the site (OA 2006). To the north were features containing Bronze Age pottery, thought to be sections of ditch. The recent excavations were targeted on these two areas.

1.2 Topography and geology

The former RAF radar site occupies c 4.6ha of land towards the eastern periphery of the town of Watton. It is bounded to the north by the Norwich Road (B1108) and to the south, east and west by modern housing estates (Fig 1).

The site is reasonably flat, ranging between 56-61mOD and is currently occupied by waste ground overgrown with brambles and tall grass. It is divided into two on a loose east to west axis by a wire fence; the excavated areas (each 30m x 30m) lay either side of this. The denuded foundations of buildings associated with the radar station lay in the north, an area partially given over to the storage of building materials.

The geology of the site is glacial till overlying white chalk bedrock (www.bgs.ac.uk/geoindex).

1.3 Original objectives and methodology

Aims and objectives

The following aims and objectives were set out in a project specification prepared by CgMs Consulting (Gajos 2010). The primary aim was to:

- Mitigate the effect of the development on the existing archaeology, through preservation by record and publication of the results in a suitable academic journal.

Relevant areas of research highlighted in *Research and Archaeology: a framework for the Eastern Counties* (Brown and Glazebrook 2000) are as follows:

- Refinement of period sub-divisions through scientific dating techniques
- Examination of patterns of burial practice
- Examination of the relationship between settlement sites and burial, and the development and use of monuments including burial mounds as key elements in understanding the landscape
- Typological identification of later Bronze Age pottery, linked to close radiocarbon dating
- The study of the significance of hoarding and other depositional practices within a social and economic context
- Study of the development, frequency and significance of flintworking throughout the Bronze Age.

It was foreseen that these research areas could be addressed through the following site specific objectives:

- To recover the plan of the archaeological features
- To determine the phasing of the plan
- To establish the nature, duration and development of the archaeological features
- To determine the dates of the origin and abandonment of the archaeological features

- To recover information relating to the social, industrial and economic nature; status and function of the archaeological activity
- To interpret the nature of human activity at the site and place the site within its local, regional and national context as appropriate
- To recover palaeoenvironmental samples to inform reconstructions of the immediate and wider environment.

Excavation methodology

The topsoil and subsoil were removed by a 360° mechanical excavator fitted with a toothless ditching bucket to reveal archaeological features cut into the geology. Hand excavation and recording proceeded following the methodologies set out in the project specification (Gajos 2010).

2 ASSESSMENT OF ARCHAEOLOGICAL EVIDENCE

2.1 Summary of excavated evidence

Northern Area

A square excavation area measuring 30m by 30m (Fig 2) was sited over a Bronze Age feature exposed in Trench 16 of the Oxford Archaeology evaluation (OA 2006). The geology (3), a mottled orange-brown to yellow sand with patches of flint and chalk, lay up to 0.70m below the existing ground surface at c 57.5 - 58.5mOD. It was overlain by orange-brown sandy subsoil (2) and dark grey-brown sandy loam topsoil (1). The natural stratigraphy was truncated along the northern edge of the excavated area by modern footings.

The only archaeological feature within this area was that previously recorded in the evaluation trench and interpreted as a ditch cut by a tree hole. Its backfill was re-excavated revealing a pit [14], fully excavated during the evaluation, cut into a light grey sandy variant of the geology extending to the north and south in an irregular linear band. The pit was oval, 1.6m long on its north-south axis and 0.70m deep. It is thought that, when observed within the confines of the trial trench, the pit was mistakenly interpreted as a tree hole and the geological band as a ditch.

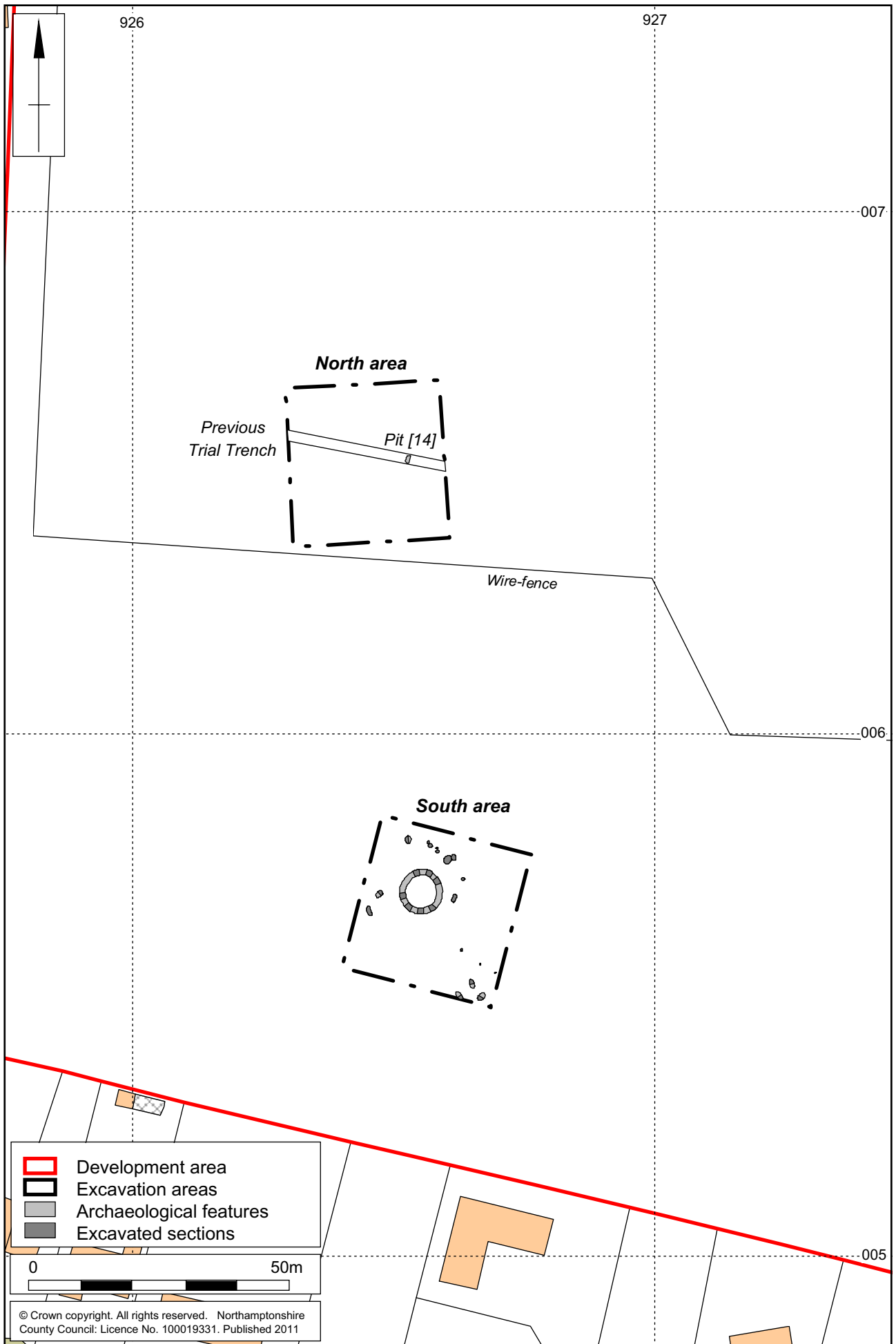
A number of other potential features exposed within the area were tested and found to be tree/plant holes and variations in the geology. Modern foundations and services relating to the former radar station were also present.

Southern Area

A square excavation area measuring 30m by 30m (Fig 3) was sited over a Bronze Age barrow located by Trench 7 of the Oxford Archaeology evaluation (OA 2006). The geology (3), a mottled orange-brown-yellow sand with localised areas of fine yellow sand and patches of flint and chalk, lay up to 0.70m below the existing ground surface at c 57.9 - 58.15mOD. It was overlain by an orange-brown sandy subsoil (2) and a dark grey-brown sandy loam topsoil (1). This stratification appeared to be truncated along the northern edge of the excavated area where the subsoil horizon was noticeably thinner.

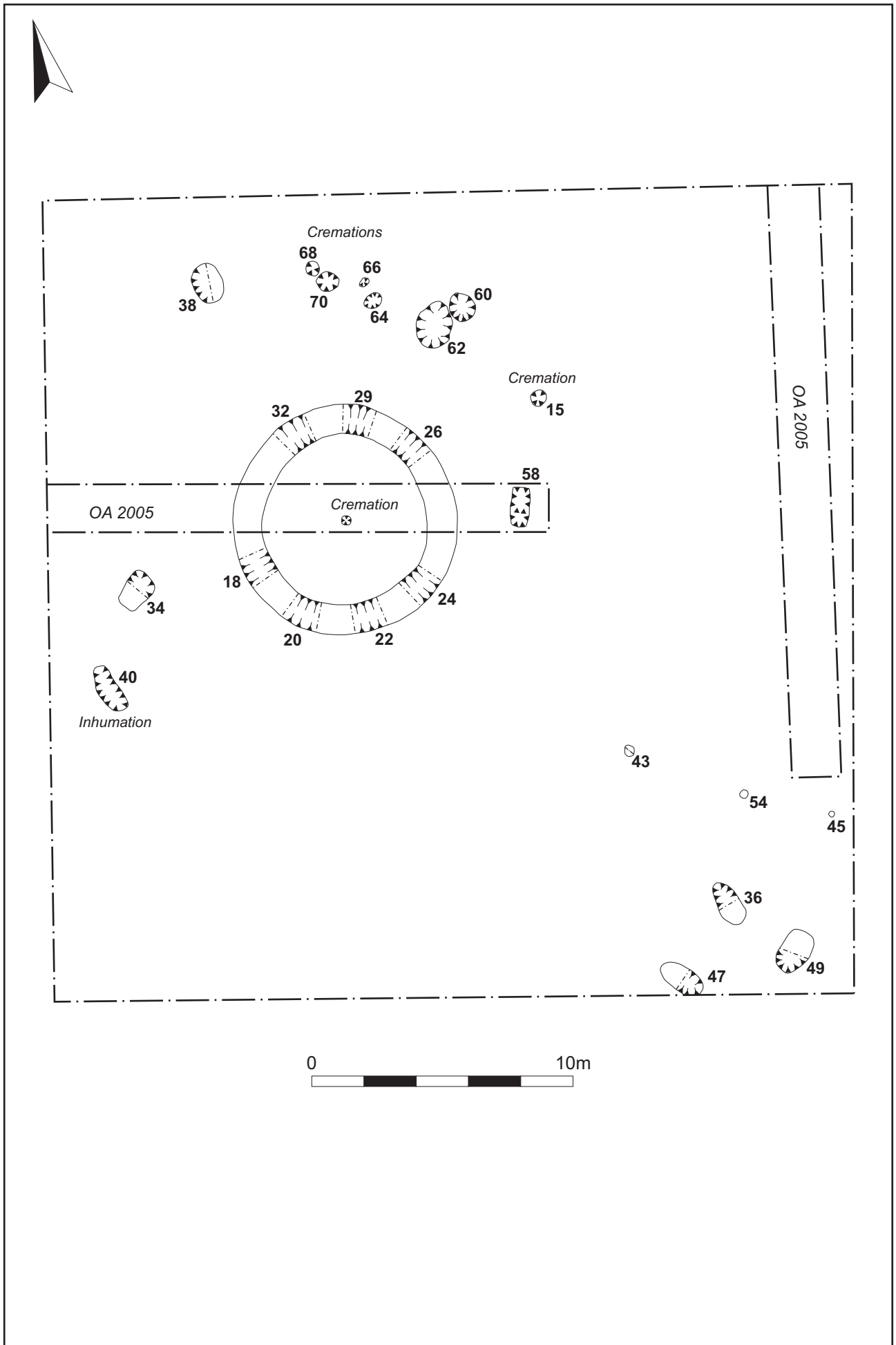
The barrow

Located slightly north-west of centre was a small round barrow with an internal diameter of 6.5m (Figs 3 and 4). The ditch's profile, seen in seven 1m-wide sections, was fairly uniform, with edges cut at 45° angles and a narrow, concave base. It varied



Scale 1:1000

Excavation areas Fig 2



Scale 1:200

Plan of Bronze Age barrow and associated features, Fig 3
Southern excavation area



View of the barrow and associated features, looking south

Fig 4

between 1.0-1.3m wide and was typically 0.45m deep. Two sections had previously been cut across it during the evaluation.

On the northern perimeter a primary fill of lighter brown sand may have slipped in soon after cutting, but in general the fill was mid greyish-brown sand with occasional fragments of flint. There was no evidence for any eroded mound material.

The cremation at the centre of the barrow had been lifted during the evaluation and comprised the remains of a single adult interred within a middle Bronze Age bucket urn, dating to 1500-1150 BC. A small quantity of pottery and flint retrieved from the fill of the barrow ditch corroborated this date.

Cremation burials

Four un-urned cremation burials in small pits, were located to the north of the barrow, grouped in two pairs [64]/[66] and [68]/[70] (Fig 5). A single sherd of early Bronze Age pottery was recovered from the fill (67) of cremation [66]. Although all were disturbed (the subsoil appeared truncated in this area), enough remained to identify three of the cremated individuals as adults [64]/(65), [68]/(69) and [70]/(71) - and both the former and latter two as possibly female.

A fifth un-urned cremation burial, [15]/(16/17) was located a short distance to the south-east of the others. Also truncated, it has not been possible to attribute age/sex to these remains.

Pits and postholes

Eight pits were located within the excavated area; five in the vicinity of the barrow and three in the south-east corner. One of these features, [58], had been previously exposed in the evaluation trench and provisionally identified as a grave (OA 2006). Upon full excavation, however, no evidence for an inhumation was found. Early Bronze Age pottery was found in the fills of three of these pits [36]/(37), [38]/(39) and [58]/(59).

A line of three undated postholes, aligned south-east to north-west, was present towards the south-east corner of the excavation area.



View of grouped cremation deposits, looking west

Fig 5

Inhumation

Approximately 7m to the south-west of the barrow was a single crouched inhumation (42) interred within a grave [40] aligned north-west to south-east (Figs 3 and 6). The skeletal remains are of an adult male (see below). The individual had been interred with its head to the south and facing east towards the barrow. Pottery of probable Roman date was present within the yellowish-brown sandy fill of the grave (41).



Inhumation (42), grave [40], looking west

Fig 6

2.2 Summary of artefactual evidence

The following comprise the principal author's summaries extracted and condensed from the specialist reports (see Appendices 1 and 2).

Flint

In total 28 pieces of worked flint were recovered from early Bronze Age and Roman contexts. The flint comprised sixteen flakes, three blades, one miscellaneous retouched flake, and eight pieces of debitage retrieved during the processing of environmental samples.

The worked flints are not directly dateable but their technological characteristics suggest a broadly Neolithic to Bronze Age date. The miscellaneous retouched flake also fits to this broad later prehistoric period. The assemblage recovered from context (39)/[38] is associated with early Bronze Age pottery and is probably of the same age. The character of the assemblage is typical of later prehistoric worked flint and is similar to the assemblage recovered during the trial trench evaluation (OA 2006).

Pottery

The excavations produced a small assemblage of pottery, comprising sixteen sherds (and some crumbs) weighing 71g. The majority of this is from hand-built pottery, at least some of which can be attributed to the early Bronze Age on the basis of fabric and decoration, although two sherds could be Roman in date. The material comprises only small sherds, typically soft and abraded, providing no evidence for the vessel forms from which they derive.

The small group from pit [36] included two sherds in the Beaker fabric, evidently from the same vessel, which are decorated with parallel incised lines (Appendix 2; fig 1). Unfortunately, too little survives to say anything more general about the decorative scheme beyond it lying within the range that occurs on Beaker pottery.

The single sherd from cremation burial [66] is a body sherd from a thick-walled vessel, 9-13mm thick, decorated with three oblique deeply incised lines. It has a grey core and orange surfaces and is in the same Beaker fabric, containing pellets of grog, as the material from pit [36], but in this instance the fabric also contains flint. On the basis of the fabric and the decoration it is also likely to be a Beaker vessel of the early Bronze Age.

Pit [38] contained three sherds in a flint-gritted fabric very similar to sherds in pit [36], suggesting that this is probably also of early Bronze Age date. The sherd in a coarse sandy fabric from pit [62] does not have a close parallel in the rest of the assemblage.

The two small sherds from grave [40] containing the inhumation burial are thinner-walled and harder than the others, and are likely to be Roman in date.

2.3 Summary of skeletal evidence

The following comprises the principal author's summary extracted and condensed from the specialist report (see Appendix 3).

The preservation of the inhumation is fair although some root etching may prevent the observation of minor pathologies such as periostitis. The preservation of the cremated deposits is excellent, with no evidence for weathering in any of the deposits.

The inhumation is approximately 75% complete but is fragmentary with many long bone joint surfaces missing. A 90% complete, but fragmentary skull is present. The pelvis is highly fragmented and cannot be used to estimate age or sex.

It is likely that all of the cremations are incomplete, however, in the case of cremations (71), (69) and (65) it should be possible to identify a substantial amount of material.

A total of six individuals are represented at the site; one inhumation and five cremated deposits (deposits (16) and (17) are from the same cremation). There is no evidence of multiple individuals in any of the cremated deposits.

The age of the inhumation is adult. All epiphyses were fused. The teeth suggest advanced age as many are missing or are worn down to the root. The inhumation is probably that of a male individual evidenced from an extremely robust skull and long bones. Unfortunately, pelvic indicators are fragmentary and cannot be used in the estimation of sex in this individual.

As cremation deposits (67) and (16/17) have a few grams of material, estimation of age is unlikely. On inspection, cremations (71), (69) and (65) contain bones that have completed epiphyseal fusion and are therefore adult. Cremations (71) and (65) both have thin supraorbital margins that suggest the individuals could be female. No indicators of sex were visible in the remaining cremated deposits.

The inhumed individual shows evidence of osteoarthritis in the spine. The individual also has dental caries and antemortem tooth loss. No gross pathological changes consistent with trauma, cancer, congenital deformities or infection were identified in the skeleton.

The destructive nature of the cremation process usually prevents the observation of pathologies. In this case there was no evidence for pathological changes in any of the cremated deposits.

2.4 Summary of environmental evidence

The following comprises the principal author's summary extracted and condensed from the specialist report (see Appendix 4).

A total of 10 samples were collected during the course of trial excavation. Six of these samples were cremations (see above). The four non cremations were assessed to determine the presence, nature and preservation of ecofacts and to inform on any future sampling strategies.

A small number of ecofacts were noted in the non cremations, suggesting material washed or blown into features from activities taking place elsewhere. The presence of wild/weed seeds and cereal grains in samples from cremations suggests the possible use of straw and other dry vegetation as kindling. Charcoal was present in all of the sampled contexts.

The two wild/weed taxa present were both annual weeds of disturbed ground. Fat hen (*Chenopodium album*) is the most common taxa; it is ubiquitous on sites of all periods.

2.5 Statement of potential

The excavated evidence

The excavation has successfully achieved its primary aim of mitigating the effect of the development on the existing archaeology through preservation by record. Further analysis and reporting will enable the dissemination of the results to a wider audience.

There is also potential to address areas of research highlighted in *Research Framework for the Eastern Counties* (Brown and Glazebrook 2000). Further study of the morphology of the site, in tandem with an appraisal of the artefacts and human skeletal remains and comparison with other sites in the region has the potential to further our understanding of patterns of burial practice in the Bronze Age and the Roman period. Scientific dating could refine the dating of the key elements of the site. Comparative work will also allow the examination of the relationship between settlement and burial sites, and the development and use of monuments including

burial mounds as key elements in understanding the landscape.

Artefactual evidence

Flint

Due to the small size of the assemblage there is limited potential for comment on the development, frequency and significance of regional flintworking throughout the Neolithic and Bronze Age.

Pottery

Although the pottery assemblage is small, there is potential for corroboration/refinement of typologies through scientific dating of organic material found in associated contexts.

Skeletal evidence

A substantial amount of osteological data is available from the possible Roman burial. Estimates of age, sex and stature will be possible. Pathological changes will inform us as to the health of the individual at the time of death. This data then can be compared to other Roman burials associated with Bronze Age features from Norfolk.

Despite the small quantities of bone in the cremated deposits, it is possible to get some idea of age and even sex in two of the deposits (71 and 65). A further adult female individual was examined by Geber (2006) and this could be added to the data set. Overall, it is interesting to note that three of the cremations (including the one assessed by Geber) are possibly of females.

The colour of the cremated remains will be able to provide information regarding pyre conditions.

Substantial Bronze Age activity has been identified in Norfolk, particularly around the Thetford area. This provides a rich comparative sample for the Watton remains. Therefore there is potential to learn a little more about the burial rites accorded to the individuals and the commonality of the occurrence of Roman burials in the vicinity of Bronze Age features in the region.

Environmental evidence

The potential for further work for charred seeds and grains is limited due to the paucity of material and its poor preservation. Samples 1, 5, 6, 7, 8 and 10 produced charcoal fragments which would be large enough for further identification and possibly radiocarbon dating.

Species identification of charcoal from the cremation deposits may hold the potential to inform us of the pyre conditions.

2.6 Storage and curation

Excavation archive

The site archive is currently stored at the offices of Northamptonshire Archaeology. Following the completion of the project it is envisaged that it will eventually be deposited with Norwich Museums.

Table 1: Quantification of site records

Contexts	71
Plans	3
Section drawings	18
Photographs b&w (films)	2
Photographs colour slide (films)	2
Environmental samples	4
Cremations	5
Inhumations	1

3 UPDATED PROJECT DESIGN SPECIFICATION

3.1 Background

The aims and objectives of the project, as expressed in the original project design, are set out above.

The project has recovered the plan of the site and assembled a body of evidence including an inhumation and five cremations, artefactual material comprising flint, pottery, and environmental evidence comprising plant macrofossils and charcoal. These have been quantified and assessed to establish their potential to address the aims and objectives of the project and contribute to regional research.

3.2 Aims and objectives of post-excavation research

Following assessment, the following post-excavation aims and objectives have been identified in order to address areas of research highlighted in *Research and Archaeology: a framework for the Eastern Counties* (Brown and Glazebrook 2000):

- To clarify the nature, duration and development of the archaeological features
- To refine the dating of the excavated remains through scientific techniques
- To compare the burial rites at Watton with patterns of Bronze Age and Roman burial practice on a regional level
- To examine the relationship between settlement and burial sites on a regional level and consider the development and use of burial mounds as key elements in understanding the landscape
- To corroborate/refine typological identification of later Bronze Age pottery through scientific dating techniques.

3.3 Method statement

Stratigraphy and morphology

The excavated evidence will be fully integrated with the results of the earlier evaluation (OA 2006) and the results of a forthcoming watching brief to achieve a better understanding of the site and its wider setting. An important aspect of this work will be to establish the relationship between the central urned cremation deposit (whose ceramic date lies in the middle Bronze Age), the satellite cremation deposits and the pits, some of which contained early Bronze Age pottery. To this end, it is proposed to retrieve the urned cremation deposit from archive (Norfolk Museums Service Accession No 42674 WAT) for further work.

Dating

AMS (Accelerator Mass Spectrometry) radiocarbon dating of bone and charcoal will be undertaken to corroborate/refine the ceramic dating evidence and provide dating where ceramics were not present. Samples will be taken from the following contexts:

- Inhumation (42), Grave [40]: to corroborate the Roman ceramic date
- The urned cremation deposit buried in the centre of the round barrow to corroborate the middle Bronze Age ceramic date
- Cremation deposit (71), Pit [70]: to provide dating evidence for the group of cremations
- Cremation deposit (16/17), Pit [15]: to provide dating evidence for the single cremation.

Artefactual data*Flint*

No further work is anticipated

Pottery

The ceramic dates will be corroborated/refined with reference to the scientific dating. The Barrel Urn that contained the central cremation deposit will be drawn

Human skeletal remains*Inhumation*

Femoral head measurements will be used to indicate sex and will therefore be taken to help confirm the cranial sex result.

The inhumation will be measured despite the heavy fragmentation of the individual. Maximum long bone lengths cannot be estimated due to the fragmentation and loss of joint surfaces. However, stature estimation is still possible as *in situ* measurements were taken prior to the lifting and fragmentation of the right femur. Trotter and Gleser stature equations will be used to calculate stature. They are based on known height at death individuals of European ancestry (Trotter and Gleser 1952, 1958 and Trotter 1970).

Despite fragmentation, a number of other measurements are possible. The maximum and minimum diameters of the subtrochanteric region of the right femur and maximum and minimum diameters at the nutrient foramen level on the tibiae will be recorded. The maximum diameters of the femoral heads will be recorded which will aid in sex estimation. Epicondylar breadths are available for the humeri. All measurements will be collected following the Standards of Buikstra and Ubelaker (1994) to ensure comparability to other skeletal material. These measurements, with the use of comparative material, enable assessment of whether the individual is typical for the period and region.

Cremations

In excess of 70% of the fragments in cremation (71), and over 60% in cremations (69) and (65) are 5mm or larger. As such, it should be possible to identify a substantial amount of material from these cremated deposits. As deposits (67) and (16/17) have only a few grams of material they will be less informative. Due to fragmentation and warping of bones during the cremation process, metric analysis is inhibited.

Non-metric traits have the ability to inform about genetic relationships and activity. Cranial traits will be recorded following the Standards of Buikstra and Ubelaker (1994) and post cranial traits will be documented following Finnegan (1978). This maximises the amount of information obtained from the burials for comparison to individuals from other sites. This is more important in light of further remains being excavated as there are not enough excavated individuals to undertake an intrapopulation study of non-metric traits.

Despite the small quantities of bone in the cremated deposits, it is possible to get some idea of age and even sex in two of the deposits (71 and 65). A further adult female individual was examined by Geber (2006) and this will be added to the data set.

The colour of the remains will help shed light on the nature of the funeral pyres.

Substantial Bronze Age activity has been identified in Norfolk, particularly around the Thetford area. This will provide a rich comparative sample for the Watton remains. The demographic results and pyre conditions will be compared to other Bronze Age cremated deposits found in Norfolk such as the five deposits found at Fison Way, Thetford (McKinley 1992). This will add to the growing evidence of Bronze Age burial cremation rites in the region.

Environmental data

Plant macrofossils: No further work is anticipated

Charcoal

Species analysis of the charcoal recovered from the cremation deposits will be undertaken in order to further inform the nature of Bronze Age cremation pyres.

3.4 Publication and presentation

Client report synopsis

INTRODUCTION

Background

Geology and topography

Original aims and objectives

Methodology

EXCAVATED EVIDENCE

The pits and postholes

The barrow and the central cremation deposit

The other cremation deposits

The inhumation

ARTEFACTUAL EVIDENCE

Flint

Pottery

HUMAN SKELETAL REMAINS

Inhumation

Cremations

ENVIRONMENTAL EVIDENCE

Plant macrofossils

Charcoal

DISCUSSION

BIBLIOGRAPHY

Publication

Following the submission of the client report, an abridged and illustrated version will be submitted for publication in an appropriate regional journal.

3.5 Resources and programming

Staffing and equipment

Overall project management will be undertaken by Mark Holmes, Senior Project Officer, Northamptonshire Archaeology. Authorship will be undertaken by Paul Mason, Project Officer, Northamptonshire Archaeology. Illustrations will be prepared by Amir Bassir, Northamptonshire Archaeology.

Specialist reports will be prepared as shown below:

The worked flint	Yvonne Wolframm-Murray (NA)
The pottery	Andy Chapman (NA)
Human skeletal remains	Sarah Inskip (Southampton University)
Plant macrofossils	Karen Deighton (NA)
Charcoal	Dana Challinor (Oxford)
AMS radiocarbon dating	Beta Analytic Inc, Miami, Florida, USA

Table 2: Proposed tasks

No	Task	Performed by
1	Project management	MH
2	Write site narrative	PM
3	Illustrations	AB
3.1	Plans	AB
3.2	Sections	AB
3.3	Pottery	AB
4	Specialist analysis:	
4.1	Flint	YWM
4.2	Pottery	AC
4.3	Human skeletal remains	SI
4.4	Plant macrofossils	KD
4.5	Charcoal	DC
4.6	AMS radiocarbon dating	Beta Analytical
5	Integration of reports	PM
6	Comparative work	PM
7	Discussion/Conclusion	PM
8	Final internal editing	MH/AC

Timetable

The timetable for the completion of the project is dependent upon the forthcoming programme of watching briefs. A full report, combining all of the fieldwork results, will be submitted with six months of completion of the watching brief. Academic publication will follow thereafter.

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Appendix 1: Worked flint by Yvonne Wolframm-Murray

In total 28 pieces of worked flint were recovered as residual and *in situ* finds from early Bronze Age and Roman contexts (Table 1). The flint comprised sixteen flakes, three blades, one miscellaneous retouched flake, and eight pieces of debitage retrieved during the processing of environmental samples.

The condition of the assemblage is good with flints showing post-depositional edge damage ranging from the occasional or frequent nicks to the edges. Patination is occasionally present on the flint consisting of a white discolouration of the surface.

Two-thirds of the raw material is a vitreous flint, light to dark coloured greys and browns with the remaining flint a light to mid grey opaque flint. The quality of the raw material was variable ranging from good to poor. The cortex present on the dorsal surface of the pieces ranges from a light to mid brown colour and generally had a smooth, rolled and weathered surface. The raw material was likely to have comprised glacio-fluvial deposits.

The flints recovered consist of waste flakes and blades. The assemblage was dominated by sixteen flakes, of which four were broken, and three blades of which two were broken. It is not uncommon for flakes to have unprepared or cortical striking platforms that are relatively long, broad and flat. The miscellaneous retouched flaked has semi-abrupt retouch along one concave lateral edge.

The worked flints are not directly dateable but their technological characteristics suggest a broadly Neolithic to Bronze Age date. The miscellaneous retouched flake also fits to this broad later prehistoric period. The assemblage recovered from context (39)/[38] is associated with early Bronze Age pottery and is probably of the same age. The locally sourced gravel flints, which included the utilisation of small pebbles and poor quality material and above described technological characteristics is not unusual of later prehistoric worked flint and is similar to the assemblage recovered during the trial trench evaluation (OA 2006).

Additionally 23.5g of natural burnt flint was recovered from context (71) from cremation pit [71]. Burnt flint is not intrinsically dateable but is likely to be the same date as the cremation.

There is little scope for further work on this assemblage.

Table 1: Worked flint

Context	Flake/Blade	Portion	Comments
U/S	Flake	Whole	overshot termination
16	1 Debitage		environmental sample
19	Flake	Whole	Patinated
21	Blade	Proximal	post-depositional edge damage
23	Flake	Whole	hinge termination
23	Flake	Distal	Patinated including break
33	Blade	Whole	Patinated
36	Flake	Whole	post-depositional edge damage
39	Flake	Whole	slight post-depositional edge damage
39	Flake	Whole	post-depositional edge damage
39	Flake	Proximal	
39	Flake	Whole	Miscellaneous retouch; semi-abrupt retouch down one lateral edge
39	Blade	Distal	Snapped
39	Flake	Whole	flawed raw material
39	Flake	Whole	
41	Flake	Whole	post-depositional edge damage
61	2 Debitage		environmental sample
63	Flake	Proximal	crushing on striking platform
63	Flake	Whole	small pebble
63	1 Debitage		environmental sample
65	Flake	Whole	cortical striking platform
65	2 Debitage		environmental sample
69	Flake	Distal	environmental sample,debitage
69	1 Debitage		environmental sample
71	Flake	Proximal	environmental sample
71	13 Natural flakes	fragmented	natural burnt flake fragments from a cremation
71	1 Debitage		environmental sample

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Appendix 2: The pottery by Andy Chapman

The excavations produced a small pottery assemblage, comprising 16 sherds (and some crumbs) weighing 71g. The majority of this is from hand-built pottery, at least some of which can be attributed to the early Bronze Age on the basis of fabric and decoration, although two sherds could be Roman in date. The material comprises only small sherds, typically soft and abraded, providing no evidence for the vessel forms from which they derive.

Table 1: Catalogue of Bronze Age pottery

Fill/cut and feature type	Sherd Count	Weight (g)	Fabrics	Comments/date
(16)	(3 crumbs)	<1	?	
(19)/[18] Barrow ditch	(1 crumb)	1	?	
(37)/[36] Pit	6 (+ 5 crumbs)	24	F1:Beaker (3 sherds + crumbs) F2: grog (2 sherds) F3: flint (1 sherd)	Decorated sherds, early Bronze Age
(39)/[38] Pit	3	17	F3: flint (3 sherds)	Plain body sherds, no diagnostic features early Bronze Age?
(41)/[40] Grave fill	2	3	F2: grog (1 sherd) F3: flint (1 sherd)	Plain thin-walled body sherds, no diagnostic features Roman?
(59)/[58] Pit (= 714 eval'n)	3	5	F1: Beaker (3 sherds)	Plain body sherds early Bronze Age
(63)/[62] Pit	1	12	F2: grog (sandy)	Plain body sherd Uncertain
(67)/[66] Cremation burial	1	9	F1/3: Beaker (with flint) (1 sherd)	Decorated early Bronze Age
Total	16 (+9 crumbs)	71	F1: 7 sherds F2: 4 sherds F3: 5 sherds	

Fabrics

- F1: Beaker, containing small pellets, 0.5-2mm, of orange-brown grog, light grey-brown core with orange surfaces (7 sherds)
- F2: Grog, present in the same contexts as the Beaker fabric, but contains small to large pellets of grey grog, up to 3mm, with a grey core and surfaces, slightly sandy (4 sherds)
- F3: Flint, a sandy fabric containing dense fine quartz and sparse irregular pieces of flint, 2-4mm (5 sherds)

There are seven sherds containing small pellets of light coloured grog, with distinctive orange surfaces, most of which have surviving incised decoration, which can be classified as coming from Beaker vessels of the early Bronze Age (Fig 1). They are present in three features; pits [36] and [58] and the cremation burial in pit [66]. Pit [36] also contained sherds in the other two fabric types; another fabric containing grog, but grey in colour, and a sandy fabric containing flint, and these fabric types occur in other features, but without the characteristic Beaker pottery.

The two small sherds from grave [40] containing the inhumation burial are thinner-walled and harder than the others, and are likely to be Roman in date.

The pottery assemblage

The small group from pit [36] contains the two sherds in the Beaker fabric, evidently from the same vessel, which are decorated with parallel incised lines (Fig 1). Unfortunately, too little survives to say anything more general about the decorative scheme beyond it lying within the range that occurs on Beaker pottery.

The single sherd from cremation burial [66] is a body sherd from a thick-walled vessel, 9-13mm thick, decorated with three oblique deeply incised lines. It has a grey core and orange surfaces and is in the same Beaker fabric, containing pellets of grog, as the material from pit [36], but in this instance the fabric also contains flint. On the basis of the fabric and the decoration it is also likely to be a Beaker vessel of the early Bronze Age.

Pit [38] contained three sherds in a flint-gritted fabric very similar to sherds in pit [36], suggesting that this is probably also of early Bronze Age date. The sherd in a coarse sandy fabric from pit [62] does not have a close parallel in the rest of the assemblage.



Decorated Beaker sherds from pit [36] (left and centre) and pit [66]
(Scale 10mm) Fig 1

Appendix 3: The Human skeletal remains by Sarah Inskip

Introduction

The following assessment report examines the human skeletal remains from the Watton Radar site in Norfolk excavated by Northamptonshire Archaeology in 2010. The remains of one Roman inhumation were found buried in a pit near a Bronze Age barrow. The individual was crouched and buried on the right side. Flints and pottery were recovered from the grave. Five early Bronze Age cremation burials were also discovered (deposits 16 and 17 are from the same fill). All were placed directly into the ground. It is possible that some of the cremated remains were disturbed as the thickness of the overlaying subsoil is inconsistent with the rest of the area.

Aims and objectives

The aim of these analyses was to study the skeletal material excavated from Watton Radar site in order to assess the research potential of the remains. The material was assessed to obtain information on age, sex, pathology, metric and non-metric traits. A further aim for the cremations was to explore whether information about pyre technology can be extracted. The objective is to produce recommendations for the future analysis of the remains and highlight the research potential of the material.

Methodology

The remains were examined according to English Heritage's Human Bones from Archaeological Sites, Guidelines for Producing Assessment Documents and Analytical Reports (Mays *et al* 2004).

Preservation

Preservation of the inhumation is determined by how much of the cortical bone surface remained for macroscopic analysis. Cremated human bone is more resistant to decay in the soil than unburnt bone. This is because the organic component is largely removed during the cremation process and bone increases in crystallinity. Bone becomes less attractive to microbes (Mays 1998:209) and more resistant to diagenesis. An indication that bone has been eroded by acidic soil conditions is the appearance of weathering of the bone.

Completeness and number of individuals

Inhumation completeness is determined by the percentage of the skeleton that was present. The presence of skull and pelvis was noted as ageing and sexing rely heavily on these regions. Attention is also paid to the degree of fragmentation of the inhumation as this has implications on the possibility of metric and non-metric analysis.

McKinley (1997, 68) suggests that complete adult cremations weigh on average 1.5kg with a small gracile old woman producing around 1 kg and a large adult male around 3kg. Even child (3 years and above) cremations can be expected to produce over 300g of material. An idea of completeness was obtained by weighing the cremated deposits.

Mays (1998, 209) suggests that cremated material below 4mm in size is very difficult to identify. Accordingly, the cremated deposits were sieved through 10, 5, 2 and 1 mm sieves in order to assess fragmentation levels and the amount of material that is likely to be identifiable. It is not uncommon for burials to contain multiple individuals either through burial rite or through disturbance. Therefore, the number and side of skeletal elements per burial are assessed to determine whether the burial contained bones originating from more than one individual.

Age and sex

The methods for estimating age and sex in unburnt and burnt human remains is the same. For age assessment, the presence of teeth, the conditions of the auricular surface and the pubic symphysis is noted. As the most sexually dimorphic regions of the skeleton, the presence and condition of the skull and the pelvis are recorded and their availability for sex assessment noted.

Pathologies

The presence of common pathologies is noted in the inhumation and the cremated deposits. This includes observation of osteoarthritis, hypoplasia, cribra orbitalia, evidence for trauma, infection and congenital diseases.

Results

Preservation

The preservation of the inhumation is fair, meaning 60% or less of the cortical bone surface is available for analysis (Scores 2 -3 according to Behrensmeyer (1978) weathering scale). Some root etching, especially around the right tibia and fibula, may prevent the observation of minor pathologies such as periostitis.

The preservation of the cremated deposits is excellent, with no evidence for weathering in any of the deposits

Completeness

The inhumation is approximately 75% complete but is fragmentary with many long bone joint surfaces missing. A 90% complete, but fragmentary skull is present. The pelvis is highly fragmented and cannot be used to estimate age or sex.

Table 1 presents the total weight of the cremated deposits. Information on the total amount of cremated material found in each sieve weight section as well as the percentage of the cremated deposit each sieved section makes up is also presented. From the data in Table 1, it is likely that all of the cremation burials are incomplete as weigh less than 1000g. Further to this cremated deposits 69 and 65 were not of young children and are therefore likely to be highly incomplete (see Table 1 below).

Table 1: Cremated deposit total weight, sieved fraction weight and percentage

Cremation burial	Weight (g)	10 mm	5mm	2mm	1mm	<1mm
71	759	175 (23%)	404 (53%)	167 (22%)	13 (1.7%)	<1 (0.3%)
69	306	43 (14%)	162 (53%)	95 (31%)	2 (0.6%)	4 (1.3%)
65	118	8 (6.8%)	63 (53%)	47 (40%)	<1 (0.1%)	<1 (0.1%)
67	2	0 (0%)	0 (0%)	2 (100%)	<1 (0%)	<1 (0%)
16	1.8	0 (0%)	0 (0%)	1.8 (100%)	<1 (0%)	<1 (0%)
17	6	0 (0%)	3 (50%)	3 (50%)	0 (0%)	0 (0%)

Table 1 shows that in excess of 70% of the fragments in cremation 71, and over 60% in cremations 69 and 65 are 5mm or larger. As such, it should be possible to identify a substantial amount of material from these cremated deposits.

Number of individuals

A total of six individual are represented at the site; one inhumation and five cremated deposits (deposits 16 and 17 are from the same fill). There is no evidence of multiple individuals in any of the cremated deposits.

Age and sex

Table 2 displays the preliminary assessment of age and sex for the six individuals from Watton.

Table 2: Preliminary estimation of age and sex for the individuals from Watton

Burial	Age	Sex
Skeleton 1	Old	Male
71, pit 70	Adult	?female
69, pit 68	Adult	Unknown
65, pit 64	Adult	?female
67, pit 66	Unknown	Unknown
16 and 17, pit 15	Unknown	Unknown

The age of the inhumation is adult. All epiphyses were fused. The teeth suggest advanced age as many are missing or are worn down to the root. Dental wear could be recorded following Brothwell (1981). The pubic symphysis and auricular surface are incomplete and cannot be used to determine age in this individual.

The inhumation is probably that of a male individual evidenced from an extremely robust skull and long bones. Unfortunately, pelvic indicators are fragmentary and cannot be used in the estimation of sex in this individual. However, the extreme masculinity of the skull means that this is not a problem. Femoral head measurements can also be used to indicate sex and will therefore be taken to help confirm the cranial sex result.

As deposits 67 and 16 /17 have only a few grams of material, estimation of age is unlikely. On inspection, cremation burials 71, 69 and 65 contain bones that have completed epiphyseal fusion and are therefore adult. Like the inhumation, the lack of pubis and auricular surfaces means that it is unlikely that an estimate beyond adult will be possible.

Cremation burials 71 and 65 both have thin supraorbital margins that suggest the individuals could be female. No indicators of sex were visible in the remaining cremated deposits.

Pathologies

The inhumed individual shows evidence of osteoarthritis in the spine. The individual also has dental caries and antemortem tooth loss. No gross pathological changes consistent with trauma, cancer, congenital deformities or infection were identified in skeleton 1.

The destructive nature of the cremation process usually prevents the observation of pathologies. In this case there was no evidence for pathological changes in any of the cremated deposits.

Metric assessment

The inhumation can be measured despite the heavy fragmentation of the individual. Maximum long bone lengths cannot be estimated due to the fragmentation and loss of joint surfaces. However stature estimation is still possible as in situ measurements were taken prior to lifting and fragmentation of the right femur. Trotter and Gleser stature equations will be used to calculate stature. They are based on known height at death individuals of European ancestry (Trotter and Gleser 1952, 1958 and Trotter 1970).

Despite fragmentation, a number of other measurements are possible. The maximum and minimum diameters of the subtrochanteric region of the right femur and maximum and minimum diameters at the nutrient foramen level on the tibiae can be recorded. The maximum diameters of the femoral heads can be recorded which will aid in sex estimation. Epicondylar breadths are available for the humeri. All measurements should be collected following the Standards of Buikstra and Ubelaker (1994) to ensure comparability to other skeletal material. These measurements, with the use of comparative material, enable assessment of whether the individual is normal for the period and Norfolk.

Due to fragmentation and warping of bones during the cremation process, metric analysis is inhibited. Further, the incompleteness of the cremated deposits prevents any meaningful data being collected.

Non-metric assessment

Non-metric traits have the ability to inform about genetic relationships and activity. Cranial traits will be recorded following the Standards of Buikstra and Ubelaker (1994) and post cranial traits are documented following Finnegan (1978). This maximises the amount of information obtained from the burials for comparison to individuals from other sites. This is more important in light of further remains being excavated as there are not enough individuals excavated to undertake an intrapopulation study of non-metric traits.

Discussion

With just six individuals represented it is not possible to comment on intra-population trends for either the Roman inhumation or the Bronze Age cremations. However, it may be possible to investigate the burial rites accorded to the individuals and the commonality of the occurrence of Roman burials near to Bronze Age monuments in the region.

Despite the small quantities of bone in the cremated deposits, it is possible to get some idea of age and even sex in two of the deposits (71 and 65). A further adult female individual was examined by Geber (2006) and this could be added to the data set. Overall, it is interesting to note that three of the cremation burials (including the one assessed by Geber) associated with the barrow are possibly of females. Parker-Pearson (2005:144) informs us that at West Cotton, Northamptonshire, a pattern was observed that when a primary burial was male, secondary burials could be of either sex or any age. However, if a central burial is female, it can only be followed by females or juveniles. This is an interesting trend to further explore.

The colour of the remains will be able to inform us about pyre conditions. Substantial Bronze Age activity has been identified in Norfolk, particularly around the Thetford area. This provides a rich comparative sample for the Watton remains. The demographic results and pyre conditions should be compared to other Bronze Age cremated deposits found in Norfolk such as the five deposits found at Fison Way, Thetford (McKinley 1992). This will add to the growing evidence of Bronze Age burial cremation rites in the region.

Roman burials associated with earlier Bronze Age features are not uncommon and examples are highlighted by Williams (1997) at White Horse Hill, Oxfordshire and at Hetty Peglers Tump long barrow in Gloucestershire. The Bronze Age Barrows at Ardleigh, Essex (Brown 1999) and Baldock, Hertfordshire (Phillips 2009) were reused as Roman cemeteries. Reasons behind this practice are multiple and include Romanisation, religious and ritual purposes and retention of native burial practices. A substantial amount of osteological data is available from the Roman burial. Estimates of age, sex and stature will be possible. Pathological changes will inform us as to the health of the individual at the time of death. This data can be compared to other Roman burials from Norfolk.

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Appendix 4: Environmental samples by Karen Deighton**Introduction**

A total of 10 samples were collected during the course of trial excavation. Six of these samples were cremations (see above). The four non cremations were assessed to determine the presence, nature and preservation of ecofacts and to inform on any future sampling strategies.

The samples were processed using a siraf tank fitted with a 250micron mesh and flot sieve. The resulting flots and residues were dried. The flots were sorted with the aid of a microscope (10x magnification). Residues were dry sieved (3.4mm, 1mm) and the 3.4mm retent sorted by eye. The 1mm retent was scanned using a microscope.

The possible cremations were sorted for bone and the results sent to an appropriate specialist. Charred seeds and grains were identified with the aid of the author's small reference collection and Jacomet (2006).

Results

Preservation of plant was solely by charring. Fragmentation was fairly high as was surface abrasion. This poor preservation had an adverse effect on preservation.

Table 1: Ecofacts by sample and context

Cut/fill	22/23	32/33	60/61	62/63
Sample	3	4	5	6
Feature type	Barrow ditch	Barrow ditch	Pit	Pit
Volume (litres)	40	40	40	40
Charcoal (frags)	10	10	100	50
Cereal		2		
Fat Hen	6	28	50	40
Speedwell		1		
Molluscs			4	

Table 2: Ecofacts from cremations

Cut/fill	Sample	Volume (litres)	Charcoal	Fat hen	Cereal	Speedwell
15/17	1	40	50	78		2
15/16	2	20	10	56		
64/65	7	50	10	15		
66/67	8	10	30			
68/69	9	40	20			
70/71	10	120	500	85	2	

Discussion

The small number of ecofacts noted in samples 3, 4, 5 and 6 could suggest their presence in these samples to be “background”. This is material washed or blown into features from activities taking place elsewhere. The presence of wild/weed seeds and cereal grains in samples from cremations suggests the possible use of straw and other dry vegetation as kindling.

The two wild/weed taxa present are both annual weeds of disturbed ground. Fat Hen (*Chenopodium album*) is the most common taxa; it is ubiquitous on sites of all periods.

Potential

The potential for further work for charred seeds and grains is limited due to the paucity of material and its poor preservation. Samples 1, 5, 6, 7, 8 and 10 produced charcoal fragments which would be large enough for further identification and possibly radiocarbon dating.

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