

# Written Scheme of Investigation

**Warren Farm  
Garton Road  
Sledmere  
East Riding of Yorkshire**

**Controlled observation, investigation and recording (watching brief) for the erection of a  
livestock building (Building 1)**

Prepared on behalf of:  
**Mr. C. Watt (J. Watt & Son)**

Agent:  
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|                    |                          |
|--------------------|--------------------------|
| Planning Ref:      | <b>DC/20/03376/PLF</b>   |
| HHER Ref:          | <b>HER/PA/CONS/28304</b> |
| National Grid Ref: | <b>SE 95685 62518</b>    |
| Site Code:         | <b>2021.084.WFS</b>      |



PastSearch

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K. Adams  
**February**

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## 1 SUMMARY

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The purpose of this written scheme of investigation is to present an archaeological strategy in support for the below ground works associated with a controlled observation, investigation and recording (watching brief) for the erection of a livestock building (Building 1) at Warren Farm, Garton Road, Sledmere, East Riding of Yorkshire. (NGR: SE 95685 62518). Application number: DC/20/03376/PLF; HHER Ref: HER/PA/CONS/28304.

The commencement date for works and archaeological monitoring to be confirmed.

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## 2 INTRODUCTION

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### 2.1 Site Archaeological Background

The following information has been provided by the HHER (24 November 2020).

“The site of the proposed development lies within an archaeological landscape which contains heritage assets dating from the prehistoric period. Evidence of prehistoric activity exists within in the immediate area at Warren Farm with the identification of two Bronze Age round barrows on aerial photographs. Another round barrow is known from the field directly to the north of Warren Farm; this barrow is known as Mortimer’s no.274 and was excavated by him in 1891. When excavated the barrow measured 75ft in diameter and 16inches high, it contained a crouched inhumation along with a crushed food vessel. Round barrows often occur in groups and it is likely that the ones talked about above are all part of the same cemetery. In addition to these three barrows there are also a number of crop-marks and soil-marks known from the fields to the south and east of Warren Farm. The soil-marks to the south includes a group of possible linear dykes, ditches and a ring ditch; these lie close to a complex of cropmarks which represent a settlement site, this complex has been designated as nationally important and is therefore a Scheduled Monument. An Anglo-Saxon cemetery also lies close to the above Scheduled Monument, finds from the cemetery have included inhumations, arrowheads, coins, pottery and spearheads. The cropmarks which have been identified to the east include a number of enclosures, a ditch system and an extensive linear ditch which has been identified running for over a 1000 metres in a north to south direction.”

### 2.2 Site Location and Geology

The site is centred on NGR: SE 95685 62518 at Warren Farm, Garton Road, Sledmere, East Riding of Yorkshire

The underlying solid geology of the site is:

**Bedrock Geology:** Flamborough Chalk Formation - Chalk. Sedimentary Bedrock formed approximately 72 to 86 million years ago in the Cretaceous Period. Local environment previously dominated by warm chalk seas.

**Setting:** warm chalk seas. These sedimentary rocks are shallow-marine in origin. They are biogenic and detrital, generally comprising carbonate material (coccoliths), forming distinctive beds of chalk.

**Superficial Deposits:** None recorded.

*British Geological Survey*

## 2.3 Planning Background

Permission for this development was granted on 16 February 2021 subject to various conditions including an archaeological condition (Condition no. 4) that:

“No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved by the Planning Authority. Development shall be carried out in accordance with the approved details and comply with the ENV3 of the East Riding Local Plan 2016.

The request for this condition is in line with Policies 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201 and 202 within Section 16 ‘Conserving and enhancing the historic environment’, in the National Planning Policy Framework 2019.”

The recommendation of a programme of observation, investigation and recording (watching brief) during all below ground works has been requested because “the application site in an area of prehistoric activity, close to the sites of three Bronze Age round barrows.”

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## 3 AIMS AND OBJECTIVES

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The aim of this archaeological recording shall be to:

- ▶ Establish the presence/absence, nature, date, depth, quality and importance of any archaeological features and deposits, including burials.
- ▶ Enable an assessment of the potential and significance of the archaeology of the site to be made, and the impact which development will have upon them.

The current knowledge of the site and its environs suggests that archaeological remains of Bronze Age date might be present. The objective of the archaeological investigation will therefore be to:

- ▶ Identify and record all archaeological features and artefacts exposed during the below ground works;
- ▶ Establish the sequence of archaeological deposits;
- ▶ Determine the form and function of any archaeological features identified;
- ▶ Retrieve dating and palaeoecological evidence from archaeological features;
- ▶ Identify the spatial distribution of activity.

The results will be presented in appropriate detail in a post-excavation assessment report. Assessment of the results of the fieldwork will also aim to provide recommendations as to the need, or otherwise, for further research on any of the excavated material and will determine the appropriate methods for dissemination of the results should they be of any archaeological significance.

All archaeological work will be carried out to a sufficient standard to satisfy the aims of the project and the requirements of HHER, as outlined in their Notes for archaeological contractors proposing to work in the area covered by the HHER (Evans 1999); the work will also conform to the standards promoted in the Institute of Field Archaeologists’ Standards and Guidance for archaeological excavation (CIfA 2014c).

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## METHODOLOGY

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### 4.1 The Site (Fig: 1; Plate: 1)

#### 4.1.1 Area for Livestock Building

The removal of topsoil to be undertaken by an appropriate mechanical excavator with a toothless bucket, under direct archaeological supervision, down to the highest level of archaeology or the natural subsoil.

The exposed surface will then be thoroughly cleaned, in order to assist the identification of any features. The work will involve identifying, planning and photographing features to a standard acceptable to HHER. This will be followed by targeted excavation if archaeological features are encountered. Should more extensive or significant features be exposed, a meeting will be convened between the contractor, the client and HHER to determine further strategy.

#### 4.1.2 Stanchion Pits

The excavation of stanchion pits to be undertaken by an appropriate mechanical excavator with a toothless bucket, under direct archaeological supervision, down to the required levels. The monitoring will involve identifying, planning and photographing features to a standard acceptable to HHER.

#### 4.1.3 Soak-away and Service Trenches

The digging of soak-away and service trenches to be undertaken by an appropriate mechanical excavator with a toothless bucket, under direct archaeological supervision, down to the required levels. The monitoring will involve identifying, planning and photographing features to a standard acceptable to HHER.

#### 4.1.4 Any Other Associated Work

In the possibility that further ground work is required other than outlined above, these areas will also be undertaken by an appropriate mechanical excavator with a toothless bucket, under direct archaeological supervision, down to the required levels. The monitoring will involve identifying, planning and photographing features to a standard acceptable to HHER

**N.B.** If the construction programme is to be excavated in phased stages, then the archaeological work may be similarly phased, but the basic approach and methodology will remain the same.

### 4.2 Excavation

If it becomes clear during the monitoring work that little archaeological interest is likely to survive on the site, the recording work may be halted, in consultation with the HHER. However, if structures, features, finds or deposits of archaeological interest are exposed, or disturbed, PastSearch will be allowed time to clean, assess, and hand excavate, sample and record the archaeological features, as necessary and appropriate according to the nature of the remains. Excavators will not be operated in the immediate vicinity of any archaeological remains until they have been recorded, and PastSearch has given explicit permission for operations to commence at that location.

If, in the professional judgement of PastSearch, unexpectedly significant or complex discoveries are made that require more recording than is covered by this WSI, immediate contact will be made with the main contractor and HHER, allowing appropriate amendments to be made for the extra recording work, in agreement with all parties concerned.

Where features of archaeological interest are present, recording procedures will be those generally used on archaeological excavations. Plans will be completed at an appropriate scale (e.g. 1:20 or 1:50). Sections will also be drawn at an appropriate scale (e.g. 1:10), and written context description will be compiled. Digital photographs will be taken of all encountered features, as well as general progress of the development, using a camera of 10 megapixels minimum. 35mm monochrome print film and colour slides will be taken of selected features. The level of features or deposits relative to Ordnance Datum will be determined where possible.

Any artefacts recovered will be bagged according to their context. The recovery and processing of the finds will be undertaken in accordance with Cifa and ULIC standards and guidelines (2014; Watkinson and Neal 1998). Soil samples will be taken from features or deposits deemed likely to have palaeoenvironmental

potential (see below). The environmental sampling and subsequent assessment and/or analysis (if required) will be in line with the recommendations of English Heritage policy guidance (2011 2<sup>nd</sup> edition).

If finds or archaeological remains of special significance are encountered, negotiations between the client, PastSearch and HHER should take place to determine appropriate procedures.

#### **4.3 Finds Strategy (See also Appendix 1)**

Finds encountered will be recorded to professional standards; in line with ClfA and MoRPHE guidelines and also compliant with specifications of MAP2 (ClfA 2014c; English Heritage 2008; *ibid* 1991) using recognised procedures and numbering systems compatible with the accessioning system employed by the recipient museum. Recording, marking and storage materials will be of archive quality. Finds of particular interest – ie. Those other than bulk finds such as animal bone, pottery or ceramic building materials – will be allocated a Recorded Find number and their description will be entered onto an appropriate *pro forma* sheet. A site-specific accession number will be agreed with the Museum Service.

The estimate provided to the client includes costings for analysis/conservation work of a minimal finds assemblage which may be collected from the site. If, after quantification of any such material, further costs are required this will be discussed with the clients so that funding can be agreed.

Artefacts such as gold or silver, as defined under the categories of ‘treasure’ in accordance with Section C of The Treasure Act 1996 Code of Practice, will be reported to the Coroner.

#### **4.4 Human Remains**

If human burials are encountered, they will be recorded in situ and removed in accordance with the conditions set out in a license for the removal of Human Remains, issued by the Ministry of Justice. PastSearch will contact the Ministry on the client’s behalf. The osteologist will be contacted as soon as skeletal material is encountered, and invited to make a site visit.

Human remains will be treated with due respect and adequately recorded using recording forms designed specifically for such use, in line with procedures outlined in ClfA Guidelines to the Standards for Recording Human Remains (Brickley and McKinley 2004) and English Heritage guidelines (2004; 2005). Any skeletal material will be lifted and arrangements made for storage, unless licence specifies reburial or cremation.

#### **4.5 Strategy for the Recovery and Sampling of Biological Remains (See also Appendix 2)**

Environmental samples to be taken from any identifiable archaeological features; the sampling and subsequent assessment and/or analysis will be in line with the recommendations of English Heritage policy guidance (2011 2<sup>nd</sup> edition).

A nominal number of environmental samples to be processed has been included within the estimate to the client, should further samples be required the material will be quantified, estimates for the assessment (and where necessary, subsequent analysis) will be passed to the client to arrange funding, as outlined in the estimate contingencies.

The aim of sediment sampling within the context of this programme of observation, investigation and recording (watching brief) will be to gather sufficient material for analysis of biological remains within archaeological features and to assess their bio-archaeological potential. To this end a number of samples will be taken from excavated features. It is not intended to introduce an extensive blanket sampling policy involving the routine sampling of features; rather, a range of dated and undated contexts will be targeted, combining judgement with systematic sampling where this is appropriate. These may include burnt deposits and those with visible preserved organic material from specific types of features e.g. pit fills, ditch fills, occupation deposit/floor silts (if clearly uncontaminated, i.e. separated from modern soils, sealed beneath other clay floors).

A selection will also be made of deposits with no visible potential. The exceptions will be deposits which are unstratified, unsealed (liable to contamination), ground makeups or other deposits which are likely to have

been imported and contain residual or intrusive material, except where specific questions are posed. This is in line with the recommendations of English Heritage policy guidance (2011 2<sup>nd</sup> edition).

All samples will initially be examined at PastSearch premises. In light of this examination and the results of the fieldwork, suitable material will be sent to Palaeoecology Research Services (PRS) based in Hull for assessment.

#### **4.6 Spot/ID Samples**

A small number of spot samples, such as concentrations of small bones, seeds etc. might be taken, as may sample of wood for identification.

#### **4.7 Animal Bones**

Animal bones will be hand-collected from all excavated features, and will be bagged and labelled according to their excavated context. Where deposits are noted to contain dense concentrations of bones, then these will be sampled as BS samples as described in the English Heritage policy guidance (2011, 2<sup>nd</sup> edition). Collected bones will be examined by PRS.

#### **4.8 Specialist Dating**

Specialist dating may be considered in certain circumstances, normally where contexts or features cannot be dated by other 'conventional' methods (e.g. pottery, artefacts, documentary). There are three main types which may be considered, broadly: dendrochronological sampling of preserved timbers; archaeo-magnetic assay of slow-accumulated water lain silts and hearth/kiln structures; radiocarbon/accelerator mass spectroscopy (AMS) dating of organic material recovered either from GBA/BS samples or taken as Spot/ID samples (e.g. bone, shell, organic sediments). Costs for such analyses will be approved with the client before expenditure

#### **4.9 Off-site Works**

##### **4.9.1 Assessment**

Upon completion of the programme of observation, investigation and recording (watching brief), the artefacts, soil samples, and written and drawn information will be retained for assessment which will comply with CIfA and MoRPHE guidelines and also compliant with specifications of MAP 2 (CIfA 2014c; English Heritage 2008; *ibid* 1991). At which time its full potential and significance can be properly assessed. The site records will be indexed and assessed, leading to the production of a detailed report; this will include the discussion of each area in turn with a unified phasing structure based on the stratigraphic sequence.

All finds will be examined, catalogued and prepared for the archive. PastSearch retain the right at this stage to discard unstratified material; particularly that from modern topsoil and overburden, unless of clear intrinsic interest, following consultation with specialists.

Collected material will be sent to the appropriate sub-contracted specialist for assessment, the results and recommendations of which will be integrated into the report and the site phasing checked for consistency.

Provision will be made for the radiography of all stratified metal finds and the assessment of the conservation needs of the whole finds assemblage by a recognized specialist, such as the York Archaeological Trust (YAT) conservation laboratory. A sum will be allocated to allow for initial conservation or stabilization of artefacts found. If applicable, a report will be produced by the conservator on the results of this assessment for inclusion in the main report.

The pottery will be assessed by a sub-contracted pottery specialist with experience of regional ceramic forms and fabrics.

Soil samples will be sent to an environmental specialist following an initial selection process for more detailed examination, including paraffin flotation for the recovery of insect remains in necessary. Arrangements will also be made to assess specialist samples where these have been taken.

The animal bones and any human bones will be assessed by suitably qualified specialists.



Artefacts requiring radiocarbon, dendrochronology or species identification will also be selected for specialist analysis.

#### **4.9.2 Archive Preparation and Deposition (Including Finds Retention/Disposal)**

The archive will be prepared (including finds retention/disposal) in accordance with our usual procedures which are in line with those recommended by English Heritage (2008) and the CIfA (2014c; Brown 2007). The site archive, including finds and environmental material, subject to the permission of the relevant landowners, will be labelled, conserved and stored according to the United Kingdom Institute for Conservation (UKIC) (Walker 1990) and the Museums and Galleries Commission (MGC 1992).

It is intended that the site archive will be deposited with a suitable repository which meets the criteria for the storage of archaeological material; they will be contacted at an early stage in the project. Finds remain the property of the landowner until such time as they may grant title to a museum.

Upon completion of post-excavation work, the ownership of the finds can be transferred to the museum, with the written archive also being transferred by the archaeological contractor. All recorded finds would be deposited as a matter of course, but discussions would need to take place upon completion of post-excavation work to determine which bulk finds were of sufficient importance to be deposited as per the recipient museums guidelines. An allowance will be made as a contribution to the recipient museum towards the long-term curation and storage of materials.

#### **4.10 Report Production**

Following the completion of the on-site work and analysis of collected material, a report will be produced by PastSearch. A digital copy (PDF) and paper copy to be submitted to HHER for their approval.

Digital copies of the reports (in PDF format) will also be supplied to the Agent and/or client, for submitting to the Local Planning Authority, in order for the archaeological condition on the planning application to be discharged. A PDF copy will also be sent to Historic England, as the development site is located near to a nationally Scheduled Monument.

The final report will include the following (as appropriate)

- ▶ A summary
- ▶ Site code /project number
- ▶ Planning reference number and HHER casework number
- ▶ Dates for fieldwork visits
- ▶ Grid reference
- ▶ A location plan, with scale
- ▶ A plan of the developer's plan showing the areas monitored (e.g. the site of the new dwelling, service trenches, and the new access road), and indicating the position of archaeological features in relation to the foundations etc., with scale
- ▶ Section and plan drawings (where archaeological deposits are exposed), with ground level, Ordnance Datum and vertical and horizontal scales
- ▶ Photographs where significant archaeological deposits or artefacts are encountered; also general photographs to show the prevailing condition of the site at the time of the fieldwork
- ▶ A written description and analysis of the methods and results of the archaeological fieldwork, in the context of the known archaeology of the area
- ▶ Specialist artefact and environmental reports, as necessary



#### **4.11 Copyright, Confidentiality and Publicity**

Unless the client wishes to state otherwise, the copyright of any written, graphic or photographic records and reports rests with the originating body; that is the archaeological organization undertaking the fieldwork and analysis.

The results of the work will remain confidential, initially being distributed only to the clients, their agents, and HHER, and will remain so until such time as it is submitted in support of a planning application and is then deemed to have entered the public domain. After which PastSearch may make information available to interested parties, for example in the form of a presentation to community groups.

A brief note on the findings may be submitted for publication in a local or regional archaeological journal. However, the findings may be of insufficient importance to merit more detailed publication. Recommendations as to the need or otherwise for additional post-excavation works to produce a published report, will be identified in the assessment reports.

#### **4.12 Health and Safety, Insurance**

Health and Safety will take priority over archaeological matters. Under the terms of the Management of Health and Safety Regulations 1992, PastSearch will prepare a Risk Assessment for any excavations undertaken. Overall policy is in line with recommendations set out by SCAUM Manual Health and Safety in Field Archaeology (Allen and St. John Holt 2006).

Members of staff are given a Health and Safety induction at commencement of all projects. PastSearch is fully covered by a Public Liability Insurance Policy.

#### **4.13 Monitoring**

The work will be monitored by HHER to ensure that it is carried out to the required standard. This written scheme of investigation has been submitted to them for approval. The opportunity will be afforded for them to visit the site and to inspect and comment upon the excavation and recording procedures.

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## **5 TIMETABLE AND STAFFING**

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### **5.1 Timetable for the Work**

The archaeological recording work should not cause undue delay to the overall programme of site work, however, the main contractor and client will ensure that PastSearch has sufficient time and resources to make sure fulfilment with all elements of this WSI.

The works expected to be undertaken over a period of days, commencement date to be confirmed. The fieldwork will be followed by a post-excavation period, during which the assessment report will be produced, including (as appropriate) any specialist assessments.

### **5.2 Project Team, Staff Experience and Technical Expertise**

The on-site monitoring will be carried out by a Project Officer. Subsequent hand-cleaning and investigation, recording or surveying, will require the assistance of Site Assistants.

The off-site team will comprise the Project Officer, Finds Officer and an Illustrator, with the assessment of any pottery and ceramic building material being undertaken by a specific sub-contracted specialist, and contributions from other artefact and environmental specialists as required. The above will be under the overall direction of the Project Officer. The project team includes the following, with expertise drawn as necessary from the external specialists listed.

#### **Project Manager**

K. Adams – Extensive professional experience in archaeological fieldwork since 1986, on excavations covering a large range of archaeological periods, in particular Iron Age and Romano-British. Also finds processing in accordance with MAP2 and MoRPHE requirements.

### **Site/Finds Assistants**

Experienced staff who have worked in the region on numerous projects.

### **Finds Consultant**

S. Tibbles, Cert. Arch. (Hull) & Dip. Arch. (Hull) – has extensive experience in finds assessments and publications.

### **Pottery Specialists**

P. Didsbury, MPhil, Cert.Ed. – who has extensive experience of pottery research on material from the region, and in particular, has published reports on Saxon, medieval and post-medieval regional assemblages.

T. Manby - has extensive experience of prehistoric pottery from the region and has published report on regional assemblages.

### **Ceramic Building Materials**

J. Tibbles, BA (Hons), Cert.Arch. (Hull), Dip.H.E, AIFA. – has extensive experience in CBM assessments and publication reports for all periods. Has also developed the regional typology for CBM over recent years.

S. Tibbles, Cert. Arch. (Hull) & Dip. Arch. (Hull) – has extensive experience in CBM assessments and publications. Has developed the regional Romano-British tegula typology.

### **Environmental Specialists**

Palaeoecology Research Services (biological remains).

### **Conservation**

York Archaeological Trust Conservation Laboratory (conservation, specialist reports on wood and leather).

### **Geophysics**

Geophiz.biz

### **Human Remains**

York Osteoarchaeology

**And appropriate specialists for Lithics, Worked Stone, Soil, Archaeomagnetism, Dendrochronology, Radiocarbon/AMS, as required**

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## **6 REFERENCES**

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*Health and Safety in Field Archaeology, Standing Conference of Archaeological Unit Managers.*

Brickley and McKinley (eds), 2004

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*Management of Research Projects in the Historic Environment: The MoRPHE Project Manager' Guide.*  
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- Historic England, 2016  
*Preserving Archaeological Remains*  
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- The Treasure Act, 1996  
*Code of Practice* (2nd Revision)
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- Watkinson, D and Neal, V., 1998  
*First Aid for Finds, RESCUE and the Archaeology Section of the United Kingdom Institute for Conservation,*  
3<sup>rd</sup> edition, London
- Letter from HHER (24 November 2020)
- Notice of Decision (16 February 2021)

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## 7. On-Line Resources

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*Geology of Britain Viewer*, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> [Accessed: 19 February 2021]

Google Earth [Accessed: 19 February 2021]

Grid Reference Finder

<http://gridreferencefinder.com> [Accessed: 19 February 2021]

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## APPENDIX 1

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YORK ARCHAEOLOGICAL TRUST

CONSERVATION LABORATORIES

### Conservation Policy for Inclusion in Written Schemes of Investigation

#### **Introduction**

This document outlines the strategy followed at York Archaeological Trust (YAT) Conservation Laboratories for investigating, conserving and recording finds from archaeological sites.

Conservation input is an essential and integral part of the archaeological process and should be included in the project design to get the maximum amount of information from any finds assemblages and to ensure a stable site archive for the future. Any conservation intervention undertaken at YAT follow codes of ethics and guidelines as provided by ICON (the Institute of Conservation) and the Chartered Institute for Archaeologists (CIfA).

#### **Methodology**

The conservation and post-excavation study of finds should be planned into the archaeological process from the start, including a contingency for unexpected finds. A member of the excavation staff should be given responsibility on-site to ensure correct handling and transportation of finds, and a conservator should be called in if there are any objects on-site that need specialist lifting or care.

Once the excavation is complete, the small finds from the site are made ready for transport to the conservation laboratory, by providing the correct desiccated and/or damp environments appropriate for the finds. The categories of material brought to the lab include metals, worked organic materials (bone, antler, ivory etc), waterlogged wood, leather and textile, jet/shale/coal, amber.

The first stage of conservation intervention is an assessment of the material. The aim of a conservation assessment is to meet the requirements of MAP2 (English Heritage, 1991) and MoRPHE (English Heritage, 2006) to produce a stable site archive by evaluating the condition, stability and packaging of the finds. For metals, this includes radiography (expect for lead objects).

The assessment also includes a summary of the condition of the various classes of material and indicators of unusual preservation are noted. The potential of the assemblage for further analysis and research is discussed, and recommendations made for further investigative conservation and long term storage, including costs and resource requirements.

As part of the assessment phase, all wet packed material (such as glass, leather, textile and small wood finds) is brought to dry storage. Waterlogged timbers are also assessed and recorded and recommendations made about which elements should be put forward for full conservation. The information from the assessment is given in the form of an assessment report.

Once the assessment report has been returned and if costs are agreed, further investigative conservation and essential stabilisation can commence. This would follow the recommendations outlined in the assessment report after agreement with the project directors. Investigative work includes corrosion removal from metal objects to reveal specific features highlighted by the radiography such as decorative platings or specific elements on finds which need clarification, and also chemical stabilisation of any objects which require it, as well as any specialist packaging. Waterlogged timbers recommended for retention would also be brought to dry storage at this stage.

After investigation of the selected small finds, any analysis or further specialist support can be undertaken. This would include elemental analysis of plating materials, species identifications where possible for mineral preserved organics, textile research, metallography and numismatics.

After conservation intervention a full conservation report, including digital images taken before and after treatment, and X-rays, will be returned to the client.

## References

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<http://www.icon.org.uk/>  
<http://www.archaeologists.net/codes/ifa>

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## APPENDIX 2

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### Palaeoecology Research Services

#### Notes regarding the evaluation/assessment of biological remains (other than human bone) from archaeological sites

##### Introduction

Sediment samples ('bulk' sediment samples – principally 'flotation samples' in the sense of the English Heritage guidelines (2011), but which may also include 'coarse-sieved samples'), quantities of hand-collected shell and bone, and perhaps 'spot' finds of organic material ('SPOT' samples – *sensu* Dobney *et al.* 1992), may be expected from any site where undisturbed archaeological deposits are encountered. Furthermore, geoarchaeological investigation and microfossil analysis (e.g. pollen) of buried soils and/or sediment sequences may require specialist samples (e.g. kubiena tin or longer column monoliths) to be collected for off-site evaluation/assessment.

For an evaluation/assessment (the levels of investigation/reporting are similar for both, although an assessment typically assumes that a further analysis stage is likely, whereas such follow-on study from an evaluation is less certain – as a consequence, more detailed investigation may be undertaken on selected material from an evaluation if it seems probable that this will be the only study undertaken), all of the 'bulk' sediment samples collected should be subject to a visual determination of their bioarchaeological potential and, as a guideline, around one-third should be selected for subsample processing. Any sample selection should represent a cross-section of the archaeological feature types and periods represented (reflecting the range across the site as a whole). Any 'SPOT' samples and all of the hand-collected material should be included in the evaluation/assessment, but the level of detail of their recording may vary (for example, modern material and remains from disturbed and/or poorly dated contexts may simply be 'scanned').

##### Outline methods statements for the evaluation/assessment of biological remains (non-human)

The following text sections represent generic methods for the treatment of bioarchaeological sediment samples and hand-collected organic remains (other than human) which may be applied as appropriate should the corresponding classes of material be recovered.

##### Sampling

Samples should be collected from deposits where biological remains may provide information regarding past activities and environments at the site. For example, from pit and other cut features which may contain domestic refuse and other waste which reflect the past economy and living conditions of the site and the diet

of the inhabitants; from ditch/gully fills where the remains may allow reconstruction of the local environment; from fills of ‘specialised’ use features such as cess pits where food remains may be preserved as well as other remains (e.g. parasite eggs) which may provide an insight into the general health of the inhabitants. Column (monolith) samples may be collected to represent sequences of archaeological deposits (e.g. the fills of a ditch) to investigate both the depositional environment and the ecology of the wider landscape (via microfossil remains such as pollen and diatoms and also plant and invertebrate macrofossils), but may also be collected from ‘natural’ deposits, such as layers of peat, which can provide similar information regarding deposit formation and palaeoenvironmental data which is of value with or without an archaeological context (i.e. regarding past environments whether influenced by human activity or not). Samples may also be collected from deposits where the demonstration of absence of remains could provide information of interpretative value; to confirm ‘natural’ deposition, for example.

Collection of ‘bulk’ (‘flotation’) and, if appropriate, ‘coarse-sieved’ sediment samples (where rich concentrations of bone are present) from deposits may be undertaken by the excavating unit (following the English Heritage Guidelines 2011). Sample sizes as specified in the English Heritage Guidelines (2011) are 40-60 litres for ‘bulk’ (‘flotation’) samples and a minimum of 100 litres for ‘coarse-sieved’ samples but if the deposit size does not allow the ‘minimum’ quantities to be achieved then smaller sample sizes may be collected. Small deposit size should not be presented as an argument for not collecting a sample (particularly in the event that waterlogged preservation is encountered) and collection must always respect context boundaries seen in the field and any visible heterogeneity of the deposit – for example, at least two samples should be collected from a substantially uniform ditch fill which includes a lens of different sediment, one from each component. Should specialist sampling be required then the appropriate personnel will visit the site for this purpose by arrangement with the excavator.

#### **Evaluation/assessment of biological remains from sediment samples**

Evaluation/assessment of biological remains from the ‘bulk’ (‘flotation’) and ‘coarse-sieved’ samples (if collected) will be via the processing of subsamples – typically around 10 litres, or approximately half of the sediment for any samples of less than 20 litres – for the recovery of plant and invertebrate macrofossils and smaller vertebrate remains (following the methods of Kenward *et al.* 1980; 1986). Processing will be to 300 microns to ensure the retention of small but diagnostic remains (e.g. of cereal chaff or smaller snail species) if present. The remaining sediment will be retained and processed for the recovery of additional material for analysis in the event that the evaluation/assessment determines this to be worthwhile – it is considered more cost-efficient to incur some additional analysis processing costs than to process larger subsamples than are necessary to determine the bioarchaeological potential at the evaluation/assessment stage given that further information regarding the dates and archaeological integrity of the deposits will almost certainly become available as part of the overall evaluation/assessment process.

For deposits with waterlogged preservation of organic remains (should such be encountered), selected subsamples from ‘bulk’ samples (usually 1 to 3 kg) may be processed as General Biological Analysis (‘GBA’ *sensu* Dobney *et al.* 1992) samples, following the methods of Kenward *et al.* (1980; 1986), for the recovery of plant and invertebrate macrofossils.

The fractions resulting from subsample processing will be scanned for biological remains (using a low-power binocular microscope where necessary) and the presence of these, and of other remains, recorded on paper and/or digitally. Species/taxon level identifications for plant, invertebrate and vertebrate remains will be made by reference to comparative material and published works and amounts of remains will be recorded semi-quantitatively (for small numbers of records actual counts may be made on occasion).

During recording, consideration will be given to the identification of suitable remains for submission for radiocarbon dating by standard radiometric technique or [more likely] accelerator mass spectrometry (AMS).

Individual layers may not provide sufficient sediment for such processing to be appropriate and, in such cases, subsamples may be examined as ‘SPOT’ (*sensu* Dobney *et al.* 1992) samples. Small concentrations of biological remains may also be collected specifically as ‘SPOT’ samples and examined as such.

Where appropriate, small subsamples (or ‘SPOT’ samples) will be examined for microfossil remains using the ‘squash’ technique of Dainton (1992). This method was developed primarily for the detection of the eggs



of intestinal parasitic nematodes but may also provide a non-quantitative indication of the presence/absence of other microfossils (e.g. pollen, diatoms) and their state of preservation.

If appropriate, column (monolith) samples may be collected which represent a sequence of deposits. Such samples will be investigated for their microfossil content via a series of small subsamples using the ‘squash’ technique of Dainton (1992). In such cases, the principal focus of the investigation would be to provide basic information regarding the presence/absence of other interpretatively valuable microfossils, such as pollen and diatoms, and, where present, an indication of their state of preservation. The microfossil content of individual layers within the deposit sequence may be examined via further subsampling of the column sample or via corresponding small GBA samples (see above) collected at the same time as, and adjacent to, the column itself – it may also be prudent to retain the column sample intact (against the possibility of future analysis – e.g. palynological or geoarchaeological) and undertake the initial evaluation/assessment for microfossil preservation from subsamples of GBA or ‘bulk’ samples.

### **Non-biological remains from sediment samples**

Non-biological remains relevant to the evaluations/assessments being undertaken by other specialists may well be recovered from the sediment samples (artefacts, waste from craft/‘industrial’ processes such as hammerscale, for example). Where present, such remains will be recorded in brief and returned to the excavator to be forwarded to the appropriate commissioned specialist.

Even in the absence of interpretable organic or archaeological remains, the composition of the mineral component of the sample residues may provide some information regarding depositional processes and the longevity of particular features – for example, deposits formed largely of fine mineral material (e.g. sands, silts) suggest gradual infilling whereas those with a significant coarse mineral component may indicate a rapid collapse. This aspect of the composition of the sampled deposits may also be considered – it is important, therefore, that any samples submitted are either ‘whole earth’ or that it is known in advance if any elements have been removed or deliberately avoided during sample collection

### **Evaluation/assessment of hand-collected biological remains**

Initial discussion of any hand-collected remains will be addressed according to distribution by feature type and date and/or archaeological phase of activity.

#### Shell

Hand-collected shell assemblages are typically composed largely of marine shellfish remains resulting from human food waste and can therefore provide information regarding diet, waste disposal patterns and trade between coastal areas and settlement areas inland. Some larger snail taxa and freshwater bivalves are occasionally also recovered by hand-collection; the latter may provide additional information (for example, freshwater mussel valves were used as containers for mixing pigments in the past) but the former are usually (though not exclusively) of catholic taxa and of little interpretative value (the edible or ‘Roman’ snail being a notable exception).

Notes will be made on the preservational condition of any shell recovered and the remains identified to species where possible. The weight (in grammes) of shell from each context will be recorded.

For oyster (*Ostrea edulis* L.) shell additional notes will be made regarding: numbers of left and right valves; evidence of having being opened using a knife or similar implement; measurability of the valves; damage from other marine biota (e.g. polychaet worms and dog whelks); encrustation by barnacles. Preservation will be recorded using two, subjective, four-point scales for erosion and fragmentation—scale points were: 0 – none apparent; 1 – slight; 2 – moderate; 3 – high.

#### Vertebrate remains (non-human)

Hand-collected animal bone assemblages are also often composed largely of remains resulting from human food waste but this may reflect primary butchery practices and/or domestic waste. Bone assemblages may also contain remains from animals kept primarily for purposes other than for their meat (e.g. cows and sheep for secondary products such as milk and wool, horses for transport or traction) ‘ritual’ animal burials, collections composed of waste from craft processes (e.g. tanning, horn working) or from the production of bone artefacts (and stages of the creation of the artefacts themselves).



Subjective records will be made of the amount (weight in grammes) of bone, state of preservation, colour of the fragments, and appearance of broken surfaces ('angularity'). Additional information, such as dog gnawing, burning, butchery and fresh breaks, will be recorded, where applicable.

Fragments will be identified to species or species group using the PRS modern comparative reference collection. The bones which cannot be identified to species will be described as the 'unidentified' fraction. Within this fraction, fragments not identified to species are, where possible, grouped into categories such as large mammal (assumed to be horse, cow or large cervid), medium-sized mammal 1 (assumed to be sheep/goat, pig or small cervid), medium-sized mammal 2 (assumed to be cat, dog or hare), small mammal (assumed to be voles, mice, shrews, rats etc), unidentified bird, unidentified fish and wholly unidentifiable (other categories may be adopted if required, e.g. amphibian, reptile etc).

Numbers of measurable fragments, mandibles with teeth *in situ*, isolated mandibular teeth and other fragments of use in providing biometrical, ageing or sexing information are counted but detailed recording will not usually be undertaken at this stage (though additional detail may be recorded in the case of exceptional finds).

### **Evaluation/assessment reporting**

The evaluation/assessment will concentrate on determining the presence/absence and, where present, preservational state of biological remains and their potential to provide interpretatively valuable information on the past environment, economy, and activity and living conditions, at the site.

The results of the evaluation/assessment will be presented as a PRS report including preliminary interpretation and recommendations for any further work required. This report will also be supplied to the excavator in electronic form (most usually as a *Microsoft Word* document) for incorporation into the overall evaluation/assessment report for the site (particular data may be more usefully transferred in another software format and this can be undertaken in discussion with the excavator).

### **References**

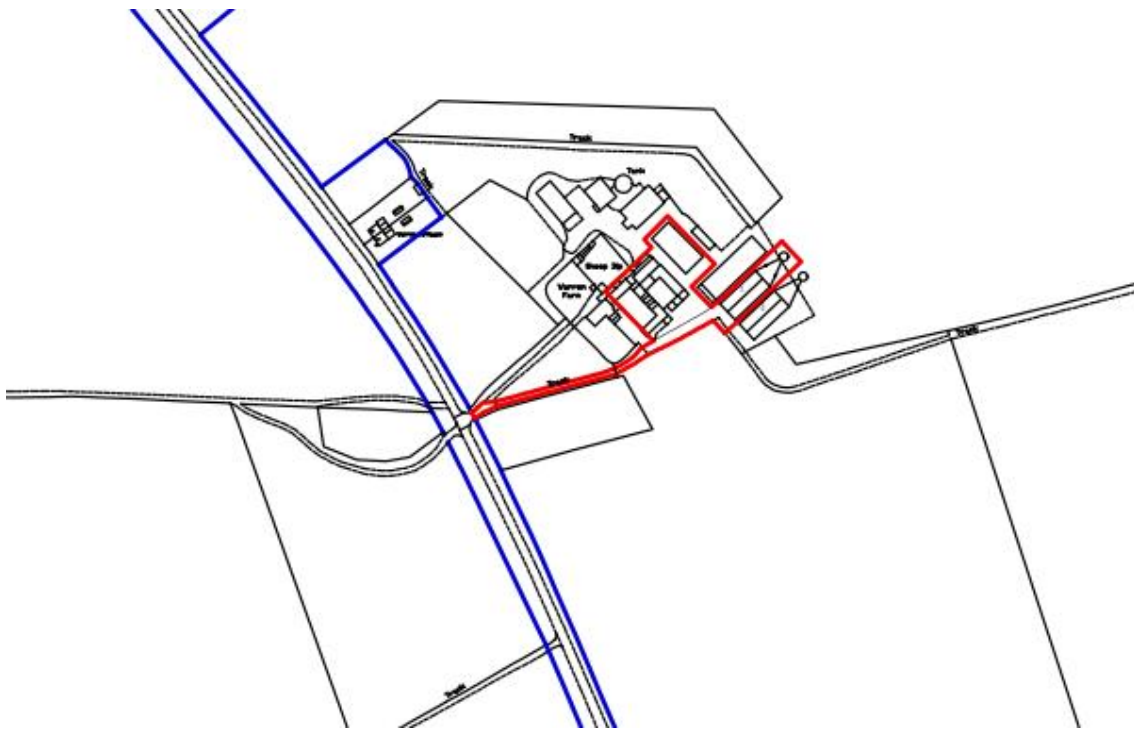
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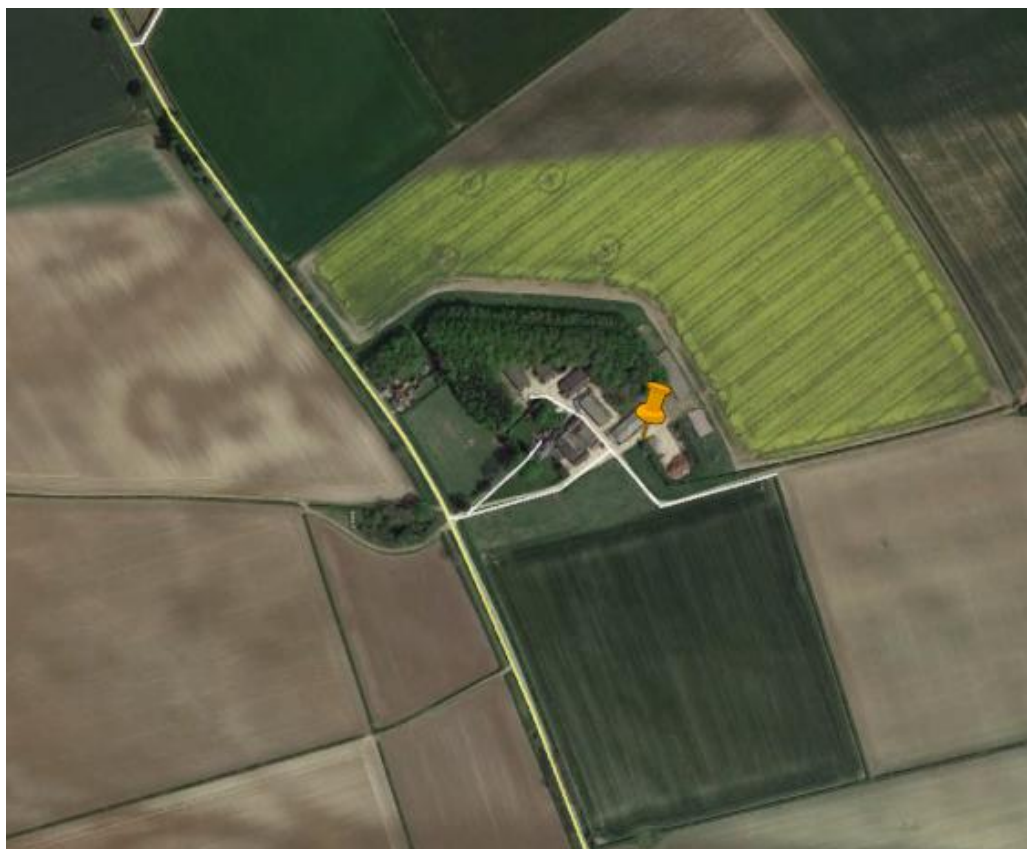
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**Figure 1:** Site location plan (Plan provided by Ian Pick (Ian Pick Associates Ltd)).



**Plate 1:** Aerial photograph (Google Earth 2021).