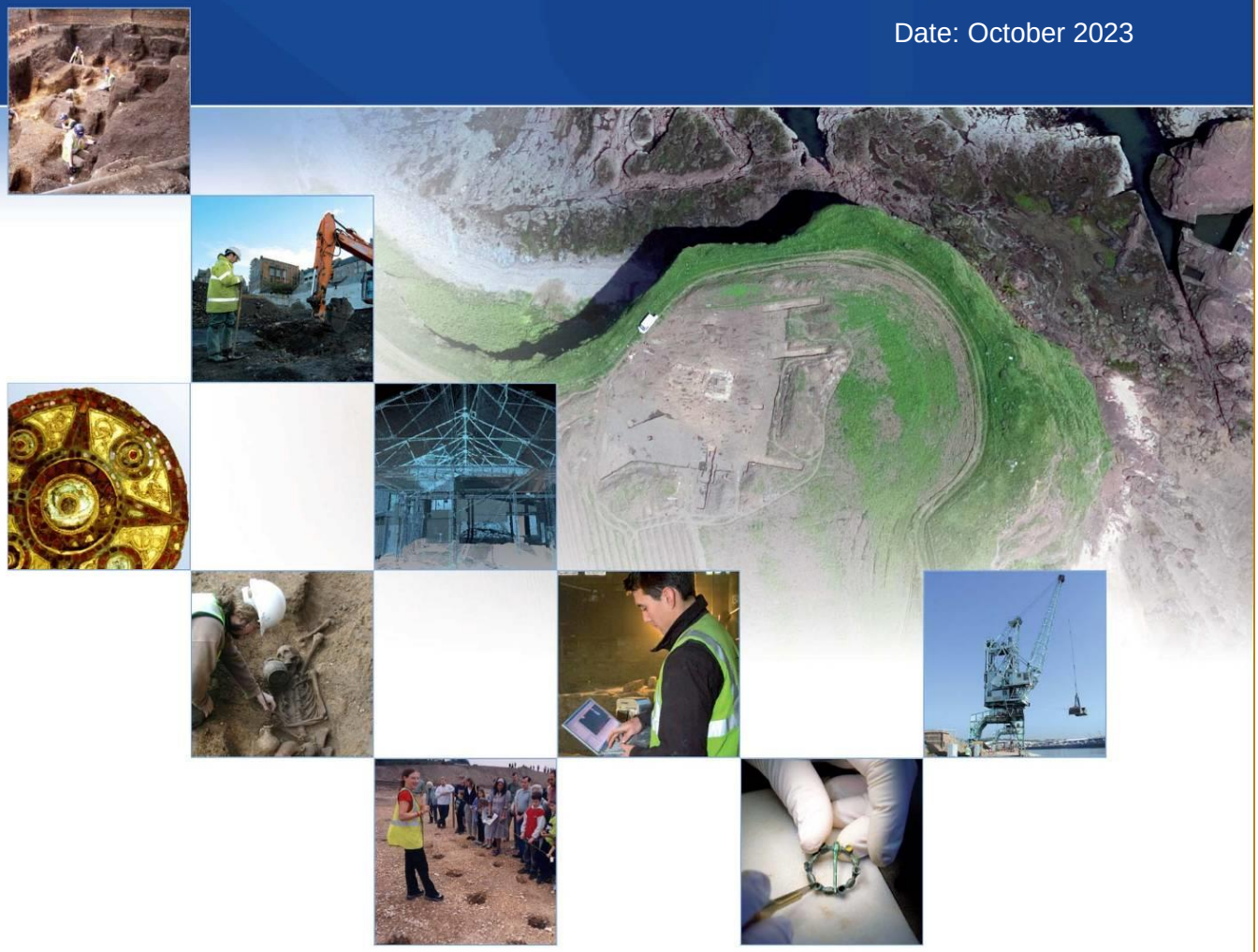
LAND AT BICKER FEN, BOSTON/SOUTH HOLLAND, LINCOLNSHIRE: WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL EVALUATION

National Grid Reference: 520641 338018 (Centred)

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AOC Archaeology Group

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Date:	**October 2023**

This document has been prepared in accordance with AOC standard operating procedures.

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1 INTRODUCTION

1.1 This document is a Written Scheme of Investigation (WSI) setting out the methodology for an archaeological evaluation of Land at Bicker Fen, Lincolnshire (hereafter referred to as 'the Site', centred at NGR: 520641 338018 (Figure 1). The Site is located across the boundary between Boston Borough Council and South Holland District Council.

1.2 The Site measures 97.3h, of which approximately 90ha is available for trenching. It is located within agricultural land c.1.5km to the west of Bicker, and c.1.2km to the north of Donington. The north-eastern extent of the Site is bounded by the route of Cowbridge Road, the northern extent is bounded by a wetland field boundary and the north-eastern and central western extent is bounded by the course of Hammond Beck (drain) and associated public footpath. The central eastern extent of the Site is bounded to the north by the route of Ing Road and to the south by North Fen Drove. The southern extent of the Site lies to the west of Hammond Beck and is separated by the route of Middle Fen Drove. The southern boundary of the Site lies adjacent to North Ing Drove and Northorpe Farm.

1.3 This WSI sets out the methodology for an archaeological evaluation in order to assess the presence or absence of archaeological remains, their extent, nature, quality, date and character. All works will be undertaken by a team of suitably qualified professional archaeologists in accordance with current best practice standards and guidance. The results will be published online via Archaeological Data Service (ADS).

2 PLANNING BACKGROUND

2.1 Planning permission has been sought from South Holland District Council (SHDC; ref H04-0849-22) and Boston Borough Council (BBC; B/22/0356) for the installation and operation of a renewable energy generating station comprising photovoltaic solar array, grid connection, access improvement works and ancillary development.

2.2 The archaeological potential of the Site was determined a desk-based assessment (DBA; CA 2022) and a programme of geophysical survey (AOC 2022). These identified possible archaeological remains of significance within the Site. Consultation with the Historic Environment Officer at Lincolnshire County Council (LCC), acting as the archaeological advisor to South Holland District Council, determined a requirement for trial trenching in order to adequately assess the depth, condition and significance of any buried remains present within the Site. The scope of the trial trenching was defined in discussions between Cotswold Archaeology (CA) and the Historic Environment Officer at LCC. This WSI will be submitted to the Historic Environment Officer at LCC for review prior to the commencement of fieldwork.

2.3 The archaeological work will be undertaken in accordance with this WSI and the requirements of nationally recognised archaeological guidance, including the professional standards issued by the Chartered Institute for Archaeologists (CIfA), specifically the Standard and Guidance for Archaeological Field Evaluation (CIfA 2020a).

2.4 The archaeological works will be managed in accordance with the Historic England publications Management of Research Projects in the Historic Environment (MoRPHE): Project Managers Guide (2006), the MoRPHE Project Planning Note 3: Archaeological Excavation (PPN3) (2008) and the Lincolnshire Archaeology Handbook (revised 2019). It will also meet the requirements of the National Planning Policy Framework (NPPF; Chapter 16: 'Conserving and enhancing the historic environment'; DLUHC 2021).

3 GEOLOGY AND TOPOGRAPHY

3.1 The Site lies on a bedrock geology of Oxford Clay Formation, which formed during the Jurassic Period c.157 to 166 million years ago. This deposit formed when the local environment was dominated by shallow seas (BGS 2023). The superficial geology of the Site comprises tidal flat deposits, which formed from c.2 million years ago. They were likely laid down until just before the process of reclamation during the postmedieval period, as shallow shore-line sediments (BGS 2023).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 The archaeological background below is extracted from the previous WSI produced by Cotswold Archaeology (CA 2023). All references in Section 4 below can be found in that document, which is referenced in the bibliography of this report.

Prehistoric

4.2 The earliest evidence for activity within the area surrounding the Site is a single discoidal flint scraper dated to the Neolithic period recovered during borehole ground investigation works (NAA 2005). It is likely that the fenland environment rendered the site unsuitable for settlement during much of the earlier prehistoric period.

4.3 During the Iron Age the area of modern-day Lincolnshire was occupied by the Corieltauvi tribe, with one of several key settlements located at Sleaford, c.15km to the north-west of the Site, which contained a mint during this period. During the prehistoric period, the eastern portion of Lincolnshire was formed of marsh and fens. There is evidence that, during the Iron Age, wooden causeways were constructed to cross some of the fenland (e.g. at Fiskerton, c.50km to the west of the Site). Due to the presence of Roman period activity within the area (discussed below), it is likely that the Site lies within a landscape that was also in use during the later prehistoric period. However, the landscape was likely sensitive to fluctuating climatic conditionsand prone to flooding. Furthermore, any slight increases in sea levels would render landscapes inaccessible (Redding and Nunns 2017).

Late prehistoric and early Roman

4.4 The geophysical survey carried out within the Site (AOC 2022) identified anomalies indicative of later prehistoric or, possibly, Roman period activity (see below). These anomalies comprise the remains of a series of small square-type enclosures suggestive of possible industrial salt-working (AOC 2022), a type of activity which is considered common in these tidal and fen landscapes.

4.5 It is suggested that the anomalies of likely later prehistoric origin identified within the Site represent a continuation of activity identified during an earlier programme of geophysical survey immediately to the west (Headland 2017a), which identified a dense cluster of enclosures, possible trackways and associated features.

4.6 Within the wider landscape there is abundant evidence of Roman period activity that broadly concentrates along a possible roddon (although it is only a slight difference in elevation from the surrounding land). Roddons are the remains of dried out and raised river channels that were formed by/ of silting within an area of peat. As the peat dried out and decreased in height the silted river channel remained at its original level, providing a slightly raised area of ground. It has been suggested (Godwin 1938) that roddons in this area predominantly formed during the Roman period. However, there is evidence that some settlement activity occurred within the lower areas of land to the north and south of the roddon, suggesting the landscape was generally dryer during this period.

4.7 This suggests that whilst the majority of any pre-medieval activity was concentrated along the roddons there is nonetheless some potential, evidenced by the geophysical survey results, for occupation/ settlement-related activity to have occurred on lower ground, which was likely drier during the late prehistoric and Roman periods owing to a fall in sea levels.

Roman

4.8 During this period the wider region was still defined by wet, marsh conditions. Within the fens, there were areas of high land/islands, which would have provided land for settlement. The Romans utilised Lincoln as an inland port and relied on the course of the River Witham to traverse the region.

4.9 The geophysical survey of the Site (AOC 2022) identified anomalies indicative of a possible Roman villa or bath-house. These anomalies are sited on slightly raised ground (remains of a roddon) and comprise a rectilinear plan with evidence of interior partitions. The rectilinear plan measures approximate maximum dimensions of 140m x 90m orientated broadly north to south. Due to its magnetic response, it has been interpreted as the remains of a stone-built structure. This structure extends further south beyond the Site boundary.

4.10 The previous archaeological investigations within the area have identified an abundance of Roman period activity, predominantly dated to the 2nd – 4th centuries AD (Royal Haskoning DHV 2020).

4.11 The main area of Roman period activity is focussed on an area c.455m to the west of the Site, which was identified due to the density of geophysical survey anomalies (Headland 2017a). Subsequent excavation revealed the remains of ditches that formed a series of enclosures and boundary ditches, which contained sherds of 2nd to 4th century pottery. It should be noted that no evidence of structural remains was identified, with the exception of a single posthole (which contained two Roman roof tiles possibly used as post-packing). The environmental evidence identified from the evaluation (Headland 2017b) suggests that the local environment was marshy and waterlogged, and only a few cereal grains were identified. Assemblages of animal bone, comprising cattle, horse and sheep/goat were also identified. Analysis of these bones suggested that only some of the animals had been butchered, suggesting that the community during this period relied on an animal rearing economy and may have imported grain instead.

4.12 Approximately 470m to the south of the Site, further remains comprising a boundary ditch and pit were dated to the Roman period. Towards the end of the Roman period, the landscape experienced substantial flooding due to environmental changes, which resulted in the decrease in use and abandonment of settlements. The landscape remained predominately unused during the post-Roman period (Trent & Peak 2017).

Early medieval and medieval

4.13 Due to the increase in fluvial activity (Trent & Peak 2017), there is no evidence of habitation or activity dated to the early medieval period within the Site and surrounding area.

4.14 Both Bicker and Donington (nearby settlements to the Site) are recorded within the Domesday Survey of 1086 (Powell-Smith 2021). Bicker, c.1.5km to the east of the Site, is recorded as under the ownership of the Archbishop of St Peter's, York and included one salthouse with a substantially sized settlement. The records suggest that Bicker was waste land prior to its reacquisition in 1066 (ibid.). Donington, c.1.4km to the south of the Site, is recorded as containing 62 salthouses, under the ownership of three individuals, suggesting its great wealth at the time (ibid.). The presence of the salthouses suggests this formed part a significant part of the settlement's economy.

4.15 Evidence of medieval activity has also been recorded within the surrounding area; c.735m to the west of the Site are the remains of ditches dated to the 14th – 15th century (later medieval period; Viking Link 2017). To the north of Donington and c.600m to the south of the Site are cropmarks interpreted as the remains of ridge and furrow and a trackway. The presence of ridge and furrow systems to the west and south suggest that the dryland edge would have been located to the south of the Site, with the Site itself located within the fenland environment.

Post-Medieval and modern

4.16 The Site formed part of a fenland during the early post-medieval period. The early 17th century saw the first attempt to drain this area (known as the Black Sluice Area). However, it was not until the Enclosure Act of 1766 that the Site (along with several hundreds of acres) was formerly drained and maintained (Wheeler 1868, 98). The Site formed part of the land maintained by the Black Sluice and South Forty Foot Drainage system, c.1.3km to the west of the Site. Although until the 19th century, the Black Sluice Drainage area was almost continually flooded by the River Witham, until the river banks were straightened/ embanked (Wheeler 1868, 244).

4.17 No remains dated to the post-medieval are recorded within the Site. Adjacent to the Site and located throughout the study area, are historic farmsteads (predominantly dated to the post-medieval period and later). These farmsteads suggest the surrounding land (and the Site) formed part of a widespread agricultural landscape during this period and suggest a successful process of reclamation. Prior to this, it is likely that any settlement was nucleated around Bicker and Donington, to the east and south of the Site respectively.

4.18 The remains of post-medieval flood defence ditches were identified c.310m to the west of the Site, which suggests that it was necessary to maintain the land from flooding during this period. On the outskirts of Bicker, c.770m to the south-east of the Site, findspot locations of post-medieval coins and tokens are recorded.

4.19 The First Edition Ordnance Survey Map of 1888 depicts the Site as parcelled into several arable fields within a substantial agricultural landscape. Evidence of former field boundaries was also identified as anomalies on the geophysical survey within the Site (AOC 2022).

4.20 With the exception of the removal of only a few field boundaries, the Site and surrounding landscape remained predominantly unaltered until the construction of electricity pylons in the 20th century and Bicker windfarm and substation to the west of the Site in 2007.

Geophysical survey (AOC 2022)

4.21 Evidence of probable archaeological occupation was identified, localised within Fields 3 and 5, at the centre of the Site. These probable archaeological responses took the form of regular distinctive negative anomalies suggestive of a Romano-British type building (in Field 3), situated to benefit from the natural topography/ higher ground within the Site, which also corresponds with the location of the roddons detailed in the DBA (CA 2022).

4.22 In addition, a collection of anomalies were identified that were also considered to be of possible archaeological in origin, again because they exploit the natural, albeit subtle, topography of the survey area (Field 5). Areas of uncertain origin were also identified; while these might be archaeological in origin, alternatives such as a modern agricultural or geological origin are as likely.

4.23 Former field boundaries were also identified that matched boundaries depicted on historic maps of the area, most prominently in the southwestern field (Field 2) where cartographic evidence shows that the landscape has changed and developed significantly over time.

4.24 Evidence of palaeo-channels and changes in the underlying geology of the area was recorded throughout. These anomalies are quite sinuous in nature and interwoven between fields. Magnetically enhanced anomalies indicative of agricultural activity, including field drainage and modern ploughing regimes, were also revealed. A number of areas of magnetic disturbance, most likely the result of modern activity, were also recorded particularly around the current field boundaries.

5 AIMS OF THE INVESTIGATION

5.1 The aims of the archaeological evaluation are defined as being:

- To establish the presence/absence of archaeological remains within the Site.
- To determine the extent, condition, nature, character, quality and date of any archaeological remains encountered.
- To record and sample excavate any archaeological remains encountered.
- To assess the ecofactual and environmental potential of any archaeological features and deposits.
- To determine the extent of previous truncations of the archaeological deposits.
- To enable the Historic Environment Officer at LCC, acting as the archaeological advisor to South Holland District Council, to make an informed decision on the status of the application, and any possible requirement for further work.
- To make available to interested parties the results of the investigation.

5.2 The specific aims of the archaeological evaluation are defined as being:

- To test the results of the geophysical survey.
- to investigate the potential Roman building and possible salterns as well as other possible archaeological features recorded by the geophysical survey.
- To determine the if results of the evaluation can contribute to the East Midlands Historic Environment Research Framework (2020), Strategic Objective 5H (*Investigate the landscape context of rural settlements*), particularly with regard to research objectives

5.4.4 (the evolution of field and boundary systems), and 5.4.6 (the daily life of settlements and their role in the processing and marketing of agricultural products).

5.3 The final aim is to make public the results of the investigation, subject to any confidentiality restrictions.

6 SCOPE OF WORKS AND STRATEGY

6.1 The scope of archaeological evaluation has been outlined during consultation with the Historic Environment Officer at LCC, acting as the archaeological advisor to South Holland District Council.

6.2 The Site measures 97.3ha of which approximately 90ha is available for trenching. The scope of the archaeological works comprises excavation of 128no. trial trenches each measuring 50m by 2m (Figure 2). The trenches provide a 2% sample, or 66no. trenches, of areas of higher potential, focused on geophysical targets and roddons (total area c.33ha) and a 1% sample, or 62no. trenches, of the remainder of the Site (total area c.57ha).

6.3 The evaluation and subsequent post-excavation work will conform to current best archaeological practice and local and national standards and guidelines:

- Chartered Institute for Archaeologists (2020a). Standard and Guidance for an Archaeological Evaluation.
- Chartered Institute for Archaeologists (2020b). Standards and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives.
- Chartered Institute for Archaeologists (2020c). Standards and Guidance and Guidelines for the collection, documentation, conservation and research of archaeological materials.
- Historic England (2015). Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide
- Historic England (2018) Archaeological Guidance Paper 3: Standards and Practices in Archaeological Fieldwork.
- Museum of London (MoL 1994) – Archaeological Site Manual (Third Edition).
- RESCUE & ICON – First (2001) Aid for Finds.
- East Midlands Historic Environment Research Framework (2020).
- United Kingdom Institute for Conservation (UKIC 1990)– Guidance for Archaeological Conservation Practice.

6.4 Insurances, copyright and confidentiality, and standards are defined in Appendix A.

6.5 A unique site code for the project (TBC) will be used as the site identifier for all records produced.

6.6 The archaeological investigation will be carried out by a Project Officer assisted by two teams of archaeologists, and managed by Ross Murray (MCIfA, SMSTS), Project Manager AOC Archaeology. The works will be monitored by the Historic Environment Officer at LCC.

6.7 A copy of the approved WSI will be held on site along with the detailed site risk assessment. All site staff will be made aware of and will have reviewed both documents.

6.8 The Historic Environment Officer at LCC will be advised at least 2 weeks prior of the proposed start date of works and site monitoring meetings will be arranged to review the results of the trenching prior to backfilling. No trenches will be backfilled without official sign off.

6.9 If significant archaeological remains are identified in the initial phase of works, a programme of mitigation, which may include elements of preservation in situ, excavation or conservation, may be required in accordance with an agreed revised Written Scheme of Investigation.

7 METHODOLOGY

7.1 The evaluation trenches will be opened by a mechanical excavator, each under the supervision of a competent member of AOC staff. Undifferentiated topsoil or overburden of recent origin will be removed in successive level spits down to the first significant archaeological horizon, or the natural substratum, whichever is encountered first. The excavated material will be kept separate from other deposits and examined for archaeological materials. The location of the evaluation trenches is shown on Figure 2 and in detail on Figures 3-7. The trenches will be set out using a Differential GPS.

7.2 In order to avoid trenching across existing agricultural tramlines, trenches will be split as required if any tramlines are found on the ground to cross trenching locations. Any trenches split in order to avoid excavating across a tramline will then be extended by the width of the tramline, to ensure that the overall excavated trench length remains at 50m long as planned.

7.3 Current service plans will be consulted, and the entire site will be visually inspected prior to the commencement of any machine excavation, including the examination of any available exposures (e.g. recently cut ditches and geotechnical test pits). The area will be CAT scanned before excavation.

7.4 When access to the trench is needed the machine will cease operations and if necessary, relocated to ensure safe access. Subject to safe access, the archaeologist will enter the trench to carry out excavation or recording as required. Trenches will be battered or stepped to ensure safe access/egress.

7.5 On completion of machine excavation, all faces of the trench that require examination or recording will be cleaned using appropriate hand tools.

7.6 Sample excavation of archaeological deposits will be sufficient to achieve the aims and objectives identified in Section 5 (above). All trenches and features will be excavated/ investigated to natural and all exposed archaeological features will be investigated and recorded by hand, unless otherwise agreed with the Historic Environment Officer at LCC. Investigation slots through all linear features will be at least 1m in length. Discrete features will be half-sectioned or excavated in quadrants where they are large.

7.7 Trenches will be stepped or tested by sondage to facilitate investigation of the full deposit sequence/ deep excavation; hand auger will be used where excavation of deep features continues below a level that is not practicable or safe at this stage of investigation (e.g. wells).

7.8 Where structural features, hearths, kilns, ovens or areas of complex remains are encountered then any excavation will not compromise the integrity of the archaeological record and will be carried out in such a way as to allow for the subsequent protection of remains, either for conservation or to allow more detailed investigations to be conducted at a later date.

7.9 Archaeological recording, where not precluded by Health & Safety considerations, will consist of:

- Hand cleaning of archaeological features, sections and surfaces sufficient to establish the stratigraphic sequence exposed.
- Excavated material will be examined in order to retrieve artefacts to assist in the analysis of their spatial distribution.
- Sample excavation of exposed features sufficient to enable their date, nature, extent and condition to be described. No archaeological deposits should be entirely removed unless this is unavoidable. The depth of archaeological deposits across the site will need to be assessed.
- Completion of pro-forma record sheets.
- Plans and sections of all exposed archaeological features and horizons (including boundaries of natural) at an appropriate scale. 1:100/1:200 will be utilized to initially map the entire exposure and linked to detail plans at 1:20 of excavated features and sections at 1:10, if necessary. All features will be accurate tied into the Ordnance Survey National Grid and Ordnance Datum.
- A scaled photographic record of representative exposed sections and surfaces, along with sufficient photographs to establish the setting and scale of the ground works.
- A record of the datum levels of archaeological deposits.

7.10 Records will be produced using either pro-forma context or trench record sheets and by the single context planning method and will be compatible with those published by the Museum of London (MoL 1994).

7.11 A record of the full sequence of all archaeological deposits as revealed in the watching brief will be made. Plans and sections of features will be drawn at an appropriate scale of 1:10 or 1:20, with sections drawn at 1:10.

7.12 A photographic record of all significant features observed will be undertaken. This will consist of digital SLR photography which supplies both Jpeg and Raw formats.

7.13 An environmental sampling strategy will be agreed between AOC's environmental specialists and the Historic Environment Officer at LCC once the fieldwork is underway. Once a sampling strategy has been agreed and should archaeological features be present, bulk samples of 40 litres in volume will be taken from appropriate contexts for the recovery and assessment of environmental data. Sampling methods will also follow national guidelines (HE 2015c).

7.14 A metal detector will be made available on site to aid in the recovery of artefacts. Stripped areas and spoil heaps of topsoil and subsoil will be scanned. The detector will not be set to discriminate against iron.

7.15 Any finds of human remains will be left in situ, covered and protected. The Ministry of Justice, the local constabulary and the Historic Environment Officer at LCC will be informed. If removal is essential advice on how best to proceed will be sought from the Ministry of Justice and the local authority environmental health officer.

7.16 Any finds covered by the provisions of the Treasure Act (1996, amended 2003) and Treasure (Designation) Order 2002, including gold and silver, will be moved to a safe place and reported to the coroner's office according to the procedures determined by the Act. They will also be reported to the Historic Environment Officer at LCC and the local finds liaison officer from the Portable Antiquities Scheme. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the artefacts from theft or damage.

7.17 All identified finds and artefacts will be collected and retained. Certain classes of material, i.e. postmedieval pottery and building material may be discarded after recording if a representative sample is kept. No finds will be discarded without the prior approval of the archaeological advisor and the receiving museum.

7.18 Finds will be scanned to assess the date range of the assemblage with particular reference to pottery. In addition, the artefacts will be used to characterise the site, and to establish the potential for all categories of finds should further archaeological work be necessary.

7.19 Any finds covered by the provisions of the Treasure Act (1996, amended 2003) and Treasure (Designation) Order 2002, including gold and silver, will be moved to a safe place and reported to the coroner's office according to the procedures determined by the Act. They will also be reported to the local Finds Liaison Officer from the Portable Antiquities Scheme. Where removal cannot be affected on the same working day as the discovery, suitable security measures will be taken to protect the artefacts from theft or damage.

7.20 All finds and samples will be treated in a proper manner and to standards agreed in advance with the recipient museum. Finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in United Kingdom Institute for Conservation's Conservation Guidelines (UKIC 1990).

7.21 Provision for onsite conservation and finds treatment, in addition to any scientific dating of materials uncovered, will be undertaken where appropriate.

7.22 Upon completion of the project the landowner and the receiving museum will be contacted regarding the preparation, ownership and deposition of the archive and finds.

7.23 The integrity of any archaeological features or deposits, which might better be excavated in conditions pertaining to full excavation, or might warrant preservation in situ, will not be compromised.

7.24 All identified finds and artefacts will be collected and retained. Certain classes of material i.e. post medieval pottery and building material may be discarded after recording if a representative sample is kept. No finds will be discarded without the prior approval of the Historic Environment Officer at LCC.

7.25 Upon completion of the evaluation, the trenches will be backfilled and compacted with the machine bucket only. Trenches will only backfilled following approval from the Historic Environment Officer at LCC.

7.26 Should significant archaeology be identified, further mitigation may be required prior to development. The decision on the need for further mitigation is the decision of the Historic Environment Officer at LCC, informed by the results of the evaluation trenching.

8 REPORT AND ARCHIVE PREPARATION

8.1 The evaluation report will be completed within four to six weeks from the end of fieldwork, subject to the availability of specialist reports.

- A location plan of the site.
- The date of the record, the names of the recorders and the location of the archive.
- A table of contents and a list of figures and plates.
- Acknowledgements to all contributors to the fieldwork, reporting and analysis. Also, a note of any copyrights for reproduced material.
- A location plan of the trenches.
- Plans and sections of features and/or extent of archaeology located. These will be at an appropriate scale.
- Representative sections of the trenches detailing the stratigraphic sequence.
- A sample of trench photographs.
- A summary statement of the results.
- A table summarizing per trench the deposits, features, classes and numbers of artefacts encountered and spot dating of significant finds.
- The procedures defined in Historic England's Management of Archaeological Projects 2nd edition (1991) will be followed for immediate post-field archive preparation and initial assessment if warranted. It will then be agreed with the Historic Environment Officer at LCC.

8.2 A list of specialist staff that may be used for analysis of samples and artefacts is given in Appendix B.

8.3 Copies of reports will be issued to the Historic Environment Officer at LCC for comments and approval prior to the production of the final report. A copy of the final report, once approved, will also be issued to Boston Borough Council and South Holland District Council on the understanding that it will become a public document after an appropriate period of time.

8.4 An OASIS form has been initiated (Appendix D). This will be completed, and an electronic copy of the evaluation report deposited with the Archaeological Data Service (ADS).

8.5 Oxfordshire Museums Service shall be notified of the fieldwork and an accession number obtained within one month of the commencement of fieldwork. In addition, they will be informed of the expected time limits for deposition of the archive.

Archive Preparation

8.6 The site archive will comprise all artefacts, environmental samples and written and drawn records. It is to be consolidated after completion of the whole project, with records and finds collated and ordered as a permanent record. Archaeological finds rarely have any monetary value but they are an important source of information for future research, included in museum exhibits and teaching collections. The Chartered Institute for Archaeologists (CIfA 2020c) and the Society of Museum Archaeologists (SMA 1993) recommend that finds are publicly accessible and that landowners donate archaeological finds to a local museum.

8.7 On completion of the project AOC will discuss arrangements with the developer/landowner for the archive to be deposited with Lincoln Museum. Following completion of each stage or the full extent of the fieldwork (as appropriate) the site archive will be prepared in the format agreed with the recipient museum.

8.8 In the case where finds are retained, landowner consent will be required to allow transfer of the finds to Lincoln Museum. This will require the completion of a Deed of Transfer form accompanied by a Legal Title Consent Request Letter from the landowner. The evaluation report will confirm if the Deed of Transfer has/has not been signed by the landowner. A complete finds inventory and further finds information can be provided to the landowner on request.

8.9 The site archive will be deposited with Lincoln Museum within one year of the completion of fieldwork (if no further work is required). It will then become publicly accessible. The site archive will be prepared in accordance with the requirements outlined in the Lincolnshire Archaeology Handbook (revised 2019).

9 HEALTH AND SAFETY

9.1 Health and Safety will take priority over all other requirements. A conditional aspect of all archaeological work is both safe access to the area of work and a safe working environment.

9.2 The project will be carried out in accordance with safe working practices and under the defined Health and Safety Policy. The Construction (Design and Management) Regulations 2007 (CDM) may apply to the archaeological work depending on whether contractors other than the archaeological team are present on the site.

9.3 A separate Risk Assessment/Method Statement (RAMS) will be prepared prior to the commencement of the fieldwork.

9.4 Staff present on site will be required to wear the appropriate Personal Protective Equipment (PPE), which will be issued as necessary. Facilities will be made available on site for staff welfare and washing.

9.5 Where AOC is not the main contractor on a site the main contractor's Risk Assessment will have primacy over the AOC document given that:

- The main contractors' risk assessment is aware of, and takes account of, AOC's working practices – i.e. it does not compromise normal and safe archaeological procedure as set out in our Written Scheme of Investigation and Risk Assessment;
- AOC was notified of the full suite of hazards present prior to arriving on site;
- There is a proper induction and monitoring process in place and AOC staff have been through this process;
- There is no significant conflict between AOC H & S procedures and those proposed by the main contractor; and
- AOC are made aware of new threats or hazards as they arise during the course of our on-site involvement.

10 GENERAL

10.1 The methodologies of the WSI will be met in full where reasonably practicable.

10.2 Any significant variations to the proposed methodology will be discussed and agreed with the archaeology advisor in advance of implementation.

10.3 The scope of fieldwork is aimed at meeting the aims of the project in a cost-effective manner. AOC Archaeology attempts to foresee all possible site-specific problems and make allowances for these. However, there may on occasion be unusual circumstances, which have not been included in the programme and costing. These can include:

- unavoidable delays due to extreme bad weather, vandalism etc;
- the presence of deep deposits requiring additional preparation of a trench by stepping or trench support in order to guarantee archaeological deposits can be safely accessed.
- extensions to feature excavation sample sizes requested by the local authority's archaeological advisor; and/or
- complex structures or objects, including those in waterlogged conditions, requiring specialist removal.

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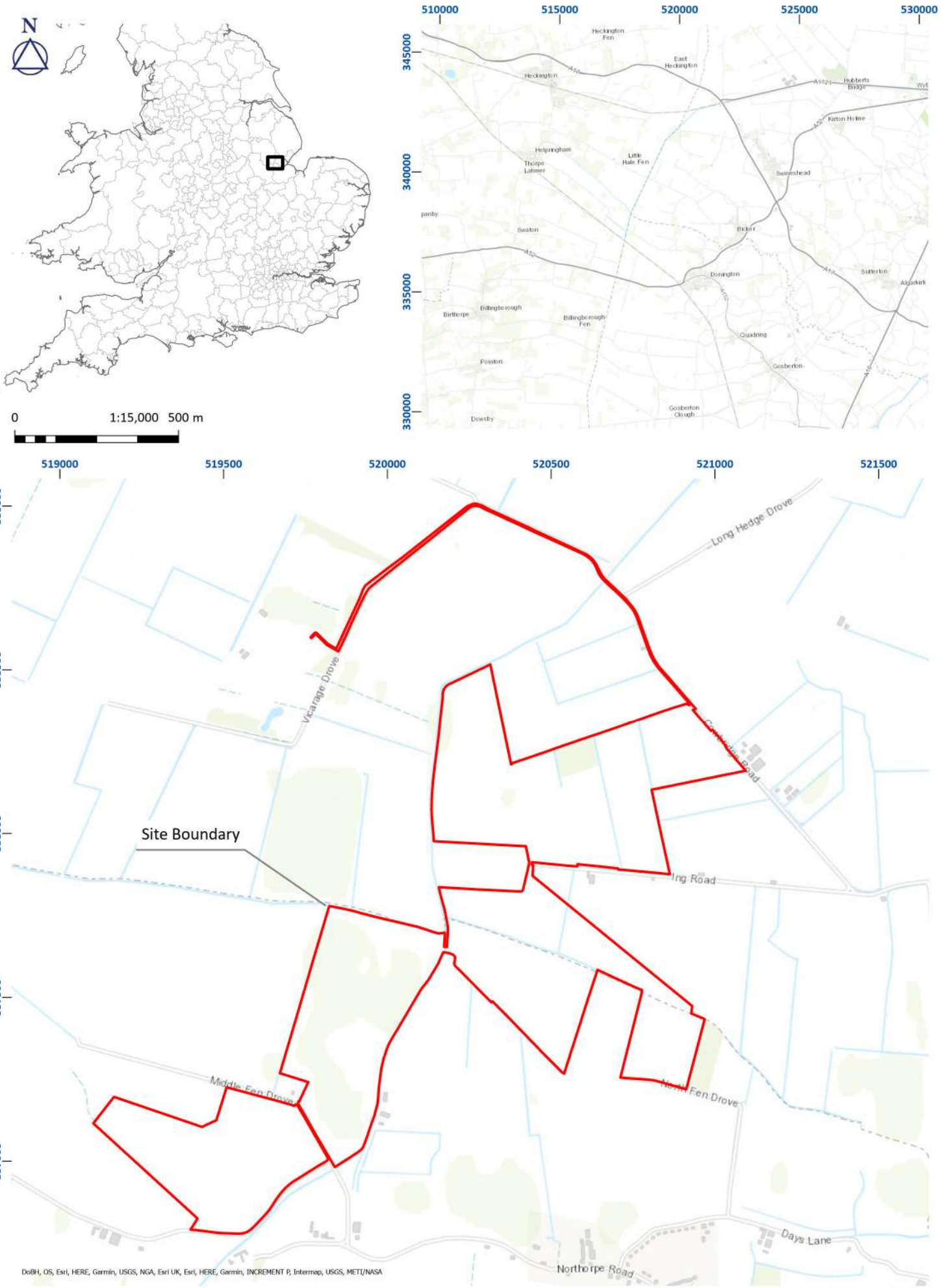
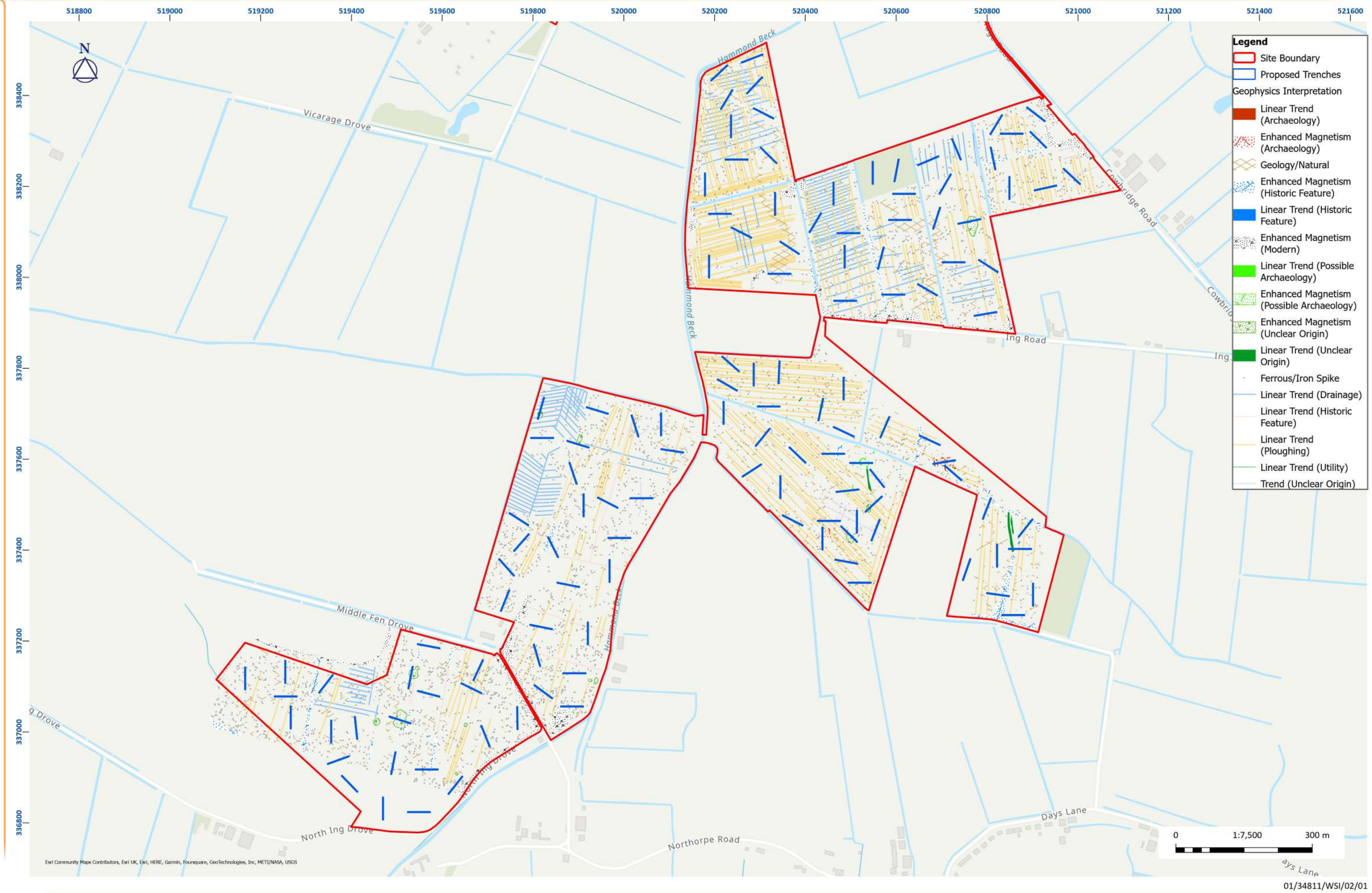


Figure 1: Site location plan

01/34811/WSI/01/01



01/34811/WSI/02/01

Figure 2: Site Overview



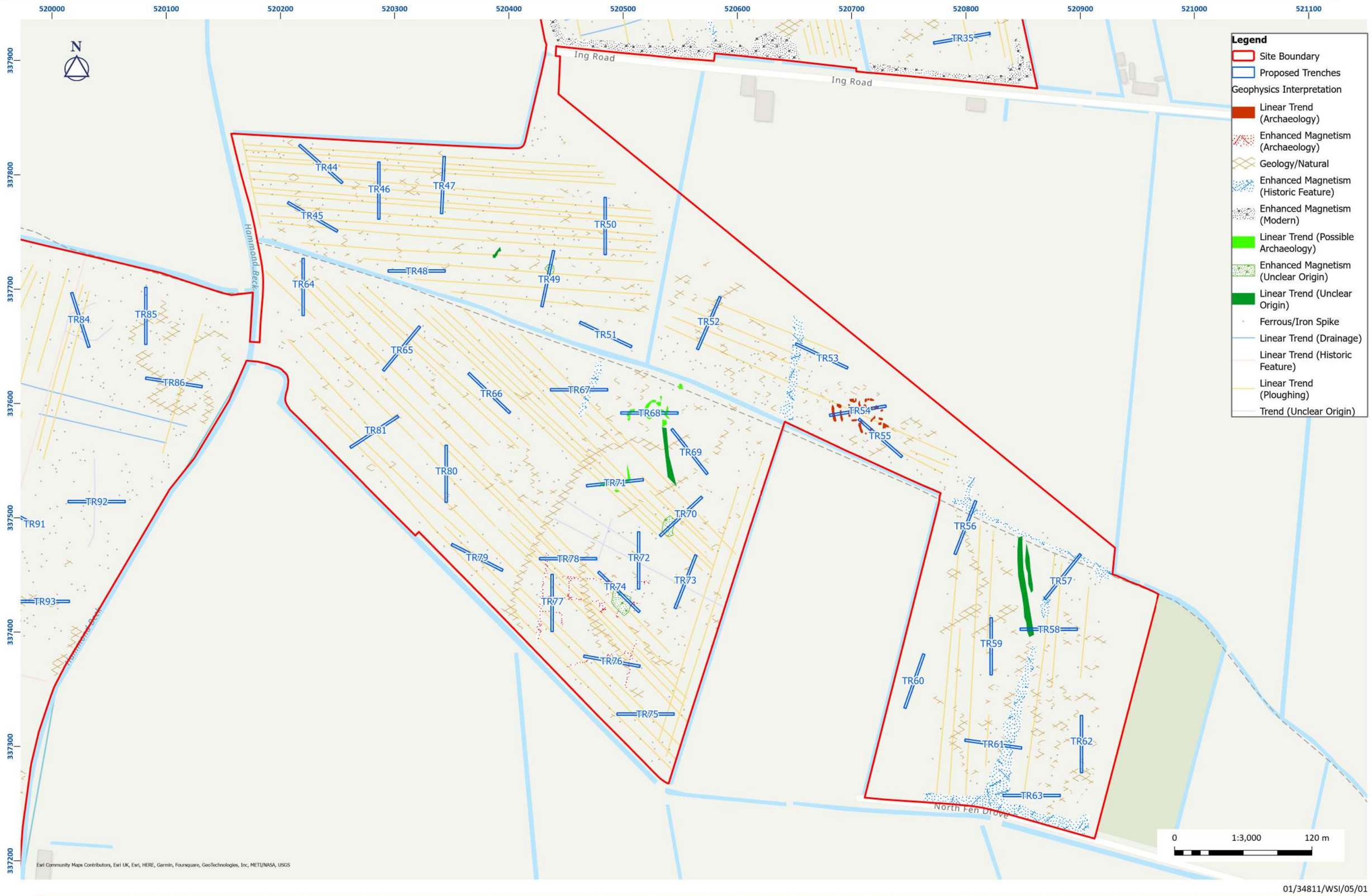
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Figure 3: Detail of Trenches Overlying Geophysics



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Figure 4: Detail of Trenches Overlying Geophysics



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Figure 5: Detail of Trenches Overlying Geophysics



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Figure 6: Detail of Trenches Overlying Geophysics

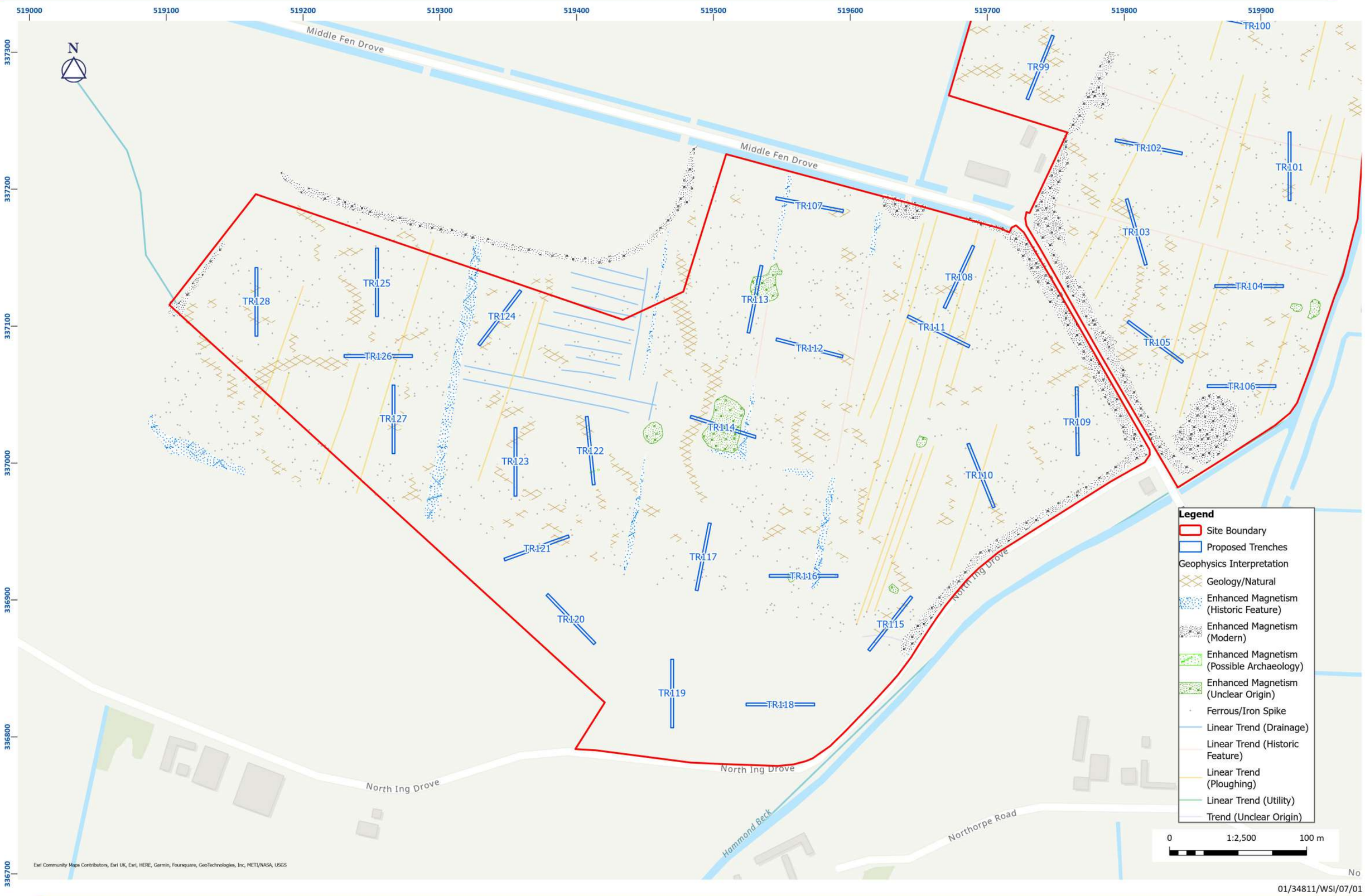


Figure 7: Detail of Trenches Overlying Geophysics

Appendices

APPENDIX A: Insurance, Copyright, and Confidentiality and Standards

Insurances

1. AOC holds Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance. Details can be supplied on request.
2. AOC will not be liable to indemnify the client against any compensation or damages for or with respect to:
   - damage to crops being on the Area or Areas of Work (save in so far as possession has not been given to the Archaeological Contractor)
   - the use or occupation of land (which has been provided by the Client) by the Project or for the purposes of completing the Project (including consequent loss of crops) or interference whether temporary or permanent with any right of way light air or other easement or quasi easement which are the unavoidable result of the Project in accordance with the Agreement
   - any other damage which is the unavoidable result of the Project in accordance with the Agreement
   - injuries or damage to persons or property resulting from any act or neglect or breach of statutory duty done or committed by the client or his agents servants or their contractors (not being employed by AOC Archaeology or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof or in relation thereto
3. Where excavation has taken place evaluation trenches will be backfilled with excavated material but will otherwise not be reinstated unless other arrangements have previously been agreed. Open area excavations normally will not be backfilled but left in a secure manner unless otherwise agreed.

Copyright and Confidentiality

4. AOC Archaeology will retain full copyright of any commissioned reports, tender documents or other project documents under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive license to the Client in all matters directly relating to the project as described in the Written Scheme of Investigation.
5. AOC will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988.
6. AOC will advise the Client of any such materials supplied in the course of projects, which are not AOC's copyright.
7. AOC undertake to respect all requirements for confidentiality about the Client's proposals provided hat these are clearly stated. In addition, AOC further undertakes to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that Clients respect AOC's and the Chartered Institute for Archaeologists' (CIfA) general ethical obligations not to suppress significant archaeological data for an unreasonable period.

Standards

8. AOC Archaeology is an accredited ISO 9001:2015 organisation and a Registered Archaeological Organisation with the CIfA, operating to nationally agreed guidelines,

processes and procedures. These are set within a framework that endeavours to carry out the required work and submit the final report in a manner that meets the client's specific needs, providing quality assurance throughout the project and for the end product.

9. AOC Archaeology conforms to the standards of professional conduct outlined in the Chartered Institute of Archaeologists' Code of Conduct (CIfA 2022), the CIfA Standard and Guidance for Archaeological Field Evaluation (CIfA 2020a) and the British Archaeologists and Developers Liaison Group Code of Practice (1991).

10. Where practicable AOC will liaise with local archaeological bodies (both professional and amateur) in order that information about particular sites is disseminated both ways (subject to client confidentiality).

APPENDIX B: SPECIALIST STAFF

The following specialist staff may be used on this project depending on the type of artefacts and soil samples recovered during the course of the fieldwork.

Macroscopic plant remains	Virgil Yendell	AOC
Soils and sediments analysis	Virgil Yendell	AOC
Palaeo-environmental archaeology	Virgil Yendell	AOC
Human remains	Alexandra Johnson	AOC
Conservation	Gretel Evans	AOC
Building material	Les Capon	AOC
Lithics	Jon Cotton	Freelance
Mammal and bird bone	Jackaline Robertson	AOC
Prehistoric pottery	Jon Cotton	Freelance
Roman pottery	Andrew Peachey	Archaeological Solutions
Medieval	Peter Thompson	Archaeological Solutions
Post-medieval pottery	Kylie McDermott	AOC
Metal	Dawn McLaren	AOC
Glass	Kylie McDermott	AOC
Geo-archaeology	Virgil Yendell	AOC

APPENDIX C: DATA MANAGEMENT PLAN

1. Project

Site Code:	*34811*
Site Name:	*Bicker Fen*
Project Type:	*FW Evaluation*
OASIS ID:	*aocarcha-1-520046*
Local authority:	*Lincolnshire County Council*
Data Repository:	*the Archaeology Data Service (ADS)*

2. Data Collection and Standards

Data Standards & Methods of Collection

Methods of collection will conform to AOC recording practices and relevant CIfA Standards and Guidance for Archaeological Excavation (CIfA 2014). Digital data acquisition standards are defined from *ADS Guides to Good Practice* (Niven 2021):

https://archaeologydataservice.ac.uk/help-guidance/guides-to-good-practice/the-project-lifecycle/planning-for-the-creation-of-digital-data/

Data collection will adhere to FAIR Principles and will be in line with CIfA *Dig Digital* Guidance:

https://www.archaeologists.net/sites/default/files/downloads/selection-toolkit/digdigital_full_guidance.pdf

The intended repository for digital data is the Archaeology Data Service (ADS)

The intended repository for physical site records is the designated repository of the local authority: Lincolnshire County Council.

Site Records

Records for this project will be:

- *Created digitally using AOC's Field Data Manager and exported to spreadsheets*

Handheld devices running Field Data Manager (FDM) software will be used to record archaeological data. FDM software will be used to produce the following site records on pro forma .csv outputs in line with CIFA Standards and Guidance (2014):

* Context sheets
* Trench records
* Finds registers
* Photographic registers
* Sample registers
* Drawing registers

* Trench record shots
* Working shots

Photographic Record

The photographic record will comprise digital images taken using an SLR camera of at least 12 megapixels. The photography format to be used is:

JPG

Survey

Archaeological features will be surveyed using a Trimble GNSS GPS tied to OSGB with corrections provided by Trimble VRS Network. Tolerance will be to a horizontal and vertical accuracy of +/- 0.05m. Where tree cover or site obstructions prevent a clear GPS signal, survey will be carried out either by Total Station positioned over a known point or tied to a predefined grid or by hand planning. Where hand plans are required, these will be georeferenced in GIS and shapefiles exported for final plans and archiving purposes.

Data Standards

Data collected will include standard formats which maximise use and reuse in the future. The table below conforms to ADS Instructions for Depositors (2021) https://archaeologydataservice.ac.uk/help-guidance/instructions-for-depositors/files-and-metadata/.

The table below provides a summary of the data types and formats for data collected and created. In cases where the project progresses or becomes more complex, additional types will be added to this section where required.

Data Type Collected	Format for Storage and Archive
Spreadsheets ➢ *Context Register* ➢ *Finds Registers* ➢ *Sample Registers* ➢ *Photographic Register* ➢ *Drawing Register* ➢ *Specialist Data Tables* ➢ *Harris Matrices*	Registers and Data Tables Microsoft Excel (**.csv**)
➢ *Metadata Tables*	Metadata as **.csv** files
Text / Documents ➢ *WSI* ➢ *Daybook/watching brief logs* ➢ *Final Report* ➢ *Individual Specialist Reports*	All reports as PDF (.**pdf/a**)
Photography & Raster Images	

Photography will be undertaken using: 1. *Digital SLR* 2. *Colour print* 3. *B/W print* 4. *Colour side* 5. *B/W slide* ➢ *Final Archive Images*	Site photographs will be provided in: Joint Photographic Experts Group JPG (.jpg)
GIS ➢ *Site Plans* ➢ *Survey Data*	ESRI Shapefile (.**shp,.shx & .dbf**, plus associated files) deposited as **.zip** file

Additional Survey Types (if applicable):

-

3. Data Storage and Backup

Field Data

Site Records

- *'Born digital' data from AOC's Field Data Manager app data is uploaded to a live SharePoint list on creation and backed up daily.*
- Paper records are kept in site folders and removed from site at close of work each day

Photographic Backup Strategy

- Site cameras are removed from site at close of work each day

Digital photographs are recorded onto SD cards and backed up as follows:

- SD cards are downloaded to site laptop and duplicated to external hard drive daily

Survey Data

- *Survey data is synced daily to cloud storage and downloaded as a Trimble .job file to the specific project folder on AOCs servers.*

Project Data

- *The primary data storage location for this project is AOC's on-premises servers*
- *Sufficient data storage space is available via AOC's servers and via SharePoint backup. The server is accessible by staff on and off-site through a secure log-in, including 2-factor authentication.*
- *The on-premises server is backed up daily to maintain an up-to-date security copy of the organisation wide data. A working copy is kept in cloud storage.*
- *Off-site access to the project files on AOC's servers is provided to support back-up of raw data while fieldwork is ongoing.*
- *Where internet access for data backup is not possible, the raw data will be backed up to a separate media device (such as laptop and portable external hard drive) and transferred to the server at the earliest possible opportunity.*

- *Project files will be shared with external specialists and contractors directly using the same system, with the wider project team gaining access to only the files needed using permissions-based access.*
- *Project folders and files will be named following established AOC procedures. ProjectNumber_name_date (yyyymmdd) and conform to ADS best practice and version control guidance.*
- *On completion of the project, cloud data will be moved to AOC on-premises servers for long term storage.*
- *Data intended for digital archive will be structured in the server directory as follows:*
    - ***Archive***
        - ***3D***
        - ***Graphics***
        - ***GIS***
        - ***Photos***
        - ***Spreadsheets***
        - ***Reports***

4. Metadata

- *Metadata tables for each data type will be populated as the project progresses and will use the standard format for each data type as recommended by:*

ADS Guides to Good Practice (Niven 2021).

https://archaeologydataservice.ac.uk/help-guidance/guides-to-good-practice/the-project-lifecycle/project-metadata/

- *Data documentation will meet the requirement of the Project, Museum Deposition Guidelines, Digital Repository Guidelines and the methodology described in the WSI.*

5. Ethics and Legal Compliance

- *Personally Identifiable Information (PII) will be removed from the archaeological project archive and permission to include individual's names in any reporting will be gained prior to use.*
- *Copyright for all data collected by the project team belongs to AOC Archaeology Group (AOC Holdings Ltd), and formal permission to include data from external specialists and contractors is secured on the engagement of the specialist or contractor.*
- *Where formal permissions and/or license agreements are linked to data sharing, details of these will be included in the project documentation folders and will accompany the archaeological project archive.*

6. Archive

Digital archive material will be deposited with a trusted digital repository, where data migration and backup procedures are in place, and the integrity of the digital archive is maintained (see Section 1). Where a trusted repository is not specified, digital archive material will be deposited with the county museum on Archival Gold CD.

- *Version control will be applied throughout the project in line with AOC standard operating procedures and ADS (2021) CIfA (2019) and HE (2015) guidelines.*

- *Only the final version of 'born digital' documents (reports, databases, images, survey files) will be selected for inclusion in the Digital Archive. The material de-selected from inclusion in the preserved archive will be duplicates or re-productions created during the lifespan of the project.*
- *Digital photographs will be assessed during post-excavation and selection based on the principles set out in the ADS (2011) & and HE guidelines (2015).*

- ***Raw data (all formats) will only be preserved if specifically requested by the Client or specified by local authority requirements, e.g. unprocessed survey, raw photogrammetric data. Where an archive of raw data with an accepted repository (e.g. ADS) is required, a subsequent costing for storage and archiving will be provided.***

- *Selection will be defined against the research aims, regional and national research frameworks, specialist advice and the significance of the project results. Selection will be carried out based on the following guidelines:*

ADS (2021) Guidelines for Depositors
http://archaeologydataservice.ac.uk/advice/guidelinesForDepositors

ADS (2018) Guidance for the selection of material for deposit and archive
https://archaeologydataservice.ac.uk/advice/selectionGuidance.xhtml

CIfA (2019) Selection Toolkit for Archaeological Archives
https://www.archaeologists.net/selection-toolkit

Historic England (2015) Digital Image Capture and File Storage – Guidelines for Best Practice
https://historicengland.org.uk/images-books/publications/digital-image-capture-and-file-storage

7. Data Sharing and Accessibility

Data specific requirements, ethical issues or embargos which are linked to particular data formats will be documented within the relevant metadata tables accompanying the project archive.

- *A summary of the project will be included on the OASIS Index of Archaeological Investigation (see Section 1).*
- *A final version of the project report will be supplied to the Historic Environment Record via OASIS, and any data which they request can also be provided directly.*
- *The location(s) of the final Archaeological Archive will be added to OASIS when appropriate.*
- *The Repository in Section 1 will disseminate the digital elements of the Archaeological Archive online under a creative commons licence and the dataset will receive a unique identifier (DOI).*

8. Responsibilities

- *The Project Manager will be responsible for implementing the DMP, and ensuring it is reviewed and revised at each stage of the project.*

***The Project Manager is Ross Murray**.*

- *Data capture, metadata production and data quality are the responsibility of the Project Team, assured by the Project Manager with support from the Geomatics Manager and Archives Officer.*
- *Storage and backup of data in the field is the responsibility of the field team. Data management on site will be supervised by the site lead.*

The site lead responsible for field data management is Alan Duffy.

- *Once data is incorporated into the organisations project server, storage and backup is managed by AOC's IT Support Team.*
- *Data archiving is undertaken by the project team under the guidance of the Archives Officer with the support of the Geomatics Manager.*
- *The Archives Officer is responsible for the transfer of the Archaeological Project Archive to the agreed repository.*
- *Details of the core project team can be provided on request.*

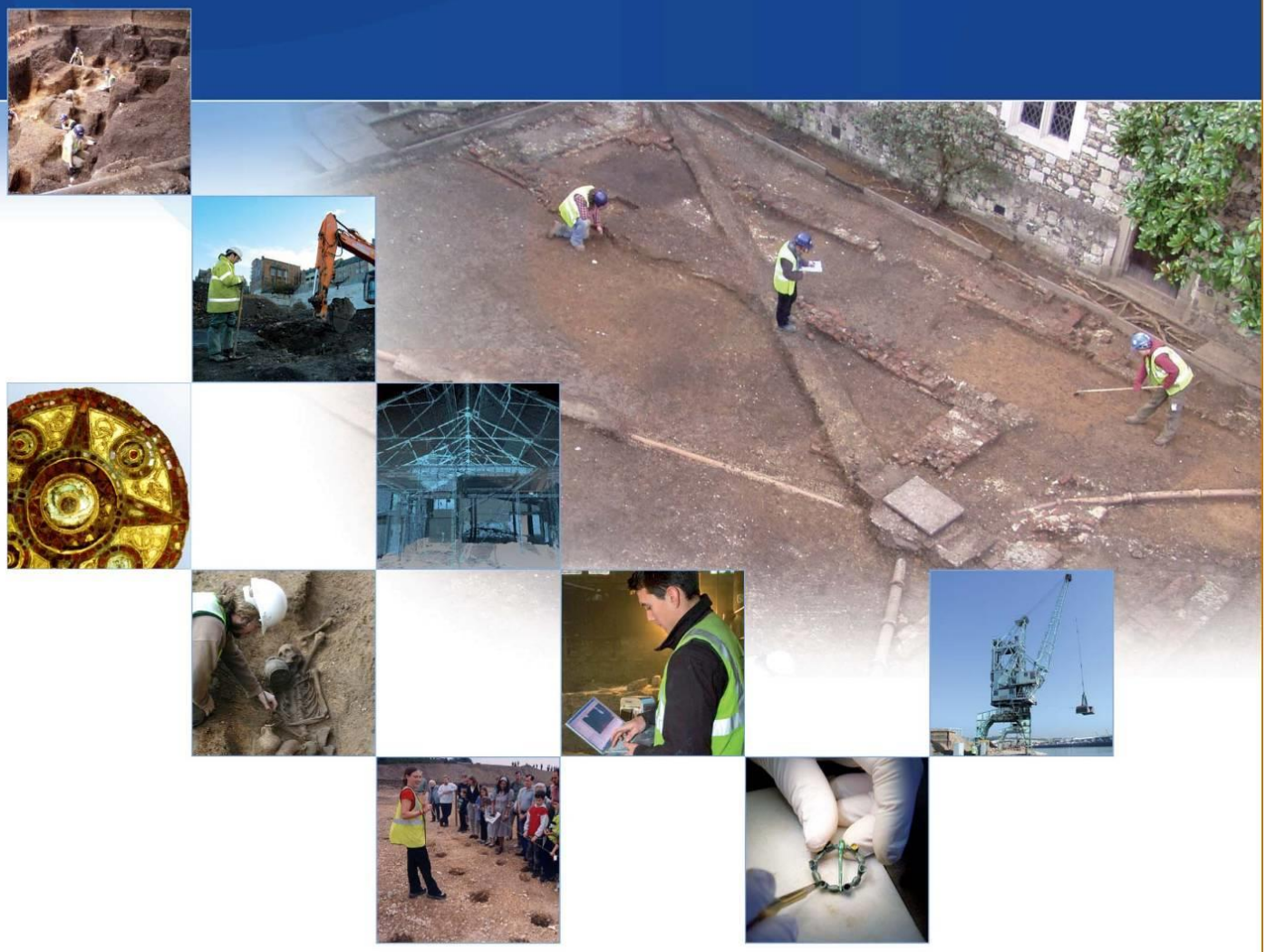
9. Additional References

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CIfA Dig Digital Online Resource, https://www.archaeologists.net/digdigital

APPENDIX D: OASIS FORM

OASIS ID (UID)	aocarcha1-520046
Project Name	Evaluation at Bicker Fen Solar Farm
Sitename	Bicker Fen Solar Farm
Activity type	Evaluation
Sitecode	LCNCC : 2023.2
Project Identifier(s)	34811
Reason For Investigation	Planning: Pre application
Organisation Responsible for work	AOC Archaeology Group,
Project Dates	TBC
Location	Bicker Fen Solar Farm NGR : TF 20641 38018 LL : 52.92602912966907, -0.206834268195544 12 Fig : 520641,338018
Administrative Areas	Country : England County/Local Authority : Lincolnshire Local Authority District : Boston Parish : Bicker
HER	Lincolnshire HER - unRev - STANDARD



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