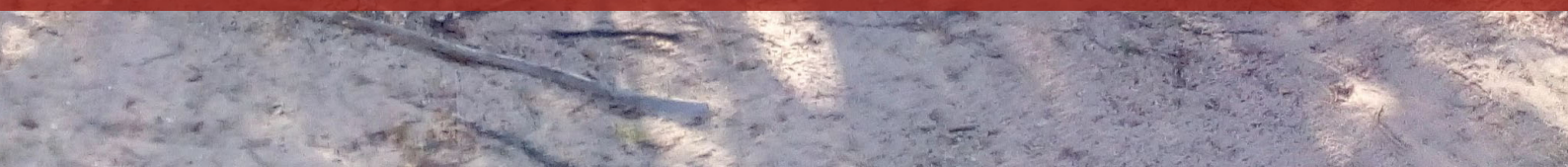




Langholme Lake, Haxey, North Lincolnshire  
WSI for archaeological test pit evaluation

Report YA/2022/008 v1

York Archaeology 2022



**Langholme Lake, Haxey, North Lincolnshire:  
Written Scheme of Investigation for archaeological test pit evaluation**

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## Key Project Information

|                        |  |
|------------------------|--|
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| Report status          | Draft for approval   |
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Figure 1: Site location

Figure 2: Proposed test pit locations

## 1. SUMMARY

- 1.1. Mr. Mick Walter and Mr. Peter Huddart have received advice on a planning application for works at Langolme Lake, Haxey, North Lincolnshire (planning ref. PA/2021/1954). The scheme will include an extension of approximately 1.75 acres to the existing fishing lake, as well as the construction of two adjacent shower/WC cabins.
- 1.2. The following archaeological advice on the planning application has been provided by the North Lincolnshire Historic Environment Record (NHLHER):
- *Further to the HER's pre-application advice, the applicant has submitted a Heritage Statement comprising an archaeological desk-based assessment incorporating a geo-archaeological assessment*
  - *The scope and content of the Heritage Statement is appropriate to the potential for archaeological and palaeoenvironment remains in this area*
  - *The report identifies that the sand has potential to preserve archaeological and geoarchaeological deposits and recommends the excavation of test pits to determine the preservation potential of the site*
  - *The results of test pitting would inform the nature and scope of any further archaeological work to be undertaken either in advance of or during the excavation of the pond necessary to offset any harm to remains*
  - *The applicant should submit a Written Scheme of Investigation (WSI) comprising this programme of work prior to determination of the planning application for the planning authority to consider*
  - *Where the planning authority is minded to grant consent, any permission should be subject to conditions securing the implementation of an agreed WSI; pre-commencement conditions would only be necessary where a Mitigation Strategy and WSI is not in place.*
- 1.3. This document forms the Written Scheme of Investigation (WSI) for the proposed test pit evaluation. It has been prepared in response to the recommendations of the NLHER, in consultation with York Archaeology's geoarchaeological advisor. The WSI outlines the principal objectives of the work, and the detailed methodology by which the works will be carried out. Its implementation will be conducted under the approval and monitoring of the North Lincolnshire Archaeological Advisor. Should further work be necessary this will be the subject of a separate WSI.
- 1.4. This document has also been produced in accordance with Historic England guidance (2015), and the principles of the Chartered Institute for Archaeology (CIfA) Code of Conduct and all relevant standards and guidance.

## 2. SITE LOCATION & DESCRIPTION

- 2.1. The proposal site is Langholme Lake, Langholme Lane, Haxey, North Lincolnshire, DN9 1EP (Figure 1). It is located 2.7km to the southwest of Haxey and 1.3km to the south of Westwoodside, in the Isle of Axholme area and is centred on SK 7504 9805. The northern boundary of the site is a railway line running just south of the warping drain. The site represents a proposed extension to an existing fishing lake that was formed within a former aggregate quarry, for which no records are available. It is currently occupied by an area of scrubland to the north of the existing lake.
- 2.2. The underlying geology of the study area according to the British Geological Survey (BGS) is the Mercia Mudstone group. This is overlain by the Sutton Sand Formation. Within the vicinity of

the site, to the east of the study area, the sands are overlain by Warp deposits and extensive Holocene Peats.

- 2.3. Two BGS boreholes are recorded to the east at Langholme Farm. One recorded the Sutton Sands as 'clayey sand with rare pebbles' 7.0m thick which overlies the terrace gravels of the Idle 5.5m thick, in turn resting on the Mudstone (BGS reference: SK79NW18). The second borehole recorded much more extensive deposit of sands up to 14m in thickness (BGS reference: SK79NW70). To the southwest of the study area along Tindale Bank Road, the BGS records 1.0m of Blown Sand overlying 1.0m of Peat which rests on the Terrace Gravels (BGS reference: SK79NW17). To the north and west of the site Warp deposits are recorded up to 4.50m thick. The Warp clay and silt represents artificially induced alluvium, likely associated with post-medieval agricultural improvements.
- 2.4. During the site walkover the underlying sand deposits were visible across the area of proposed lake extension due to the limited vegetation ground cover. The sand was fine-grained with occasional pea-grit gravel.

### **3. DESIGNATIONS & CONSTRAINTS**

- 3.1. The site is not covered by any recorded heritage designations (e.g. Scheduled Monument, Conservation Area, etc), and contains no recorded undesignated heritage assets.
- 3.2. There are no known constraints on access to the site for the evaluation fieldwork.

### **4. ARCHAEOLOGICAL INTEREST**

- 4.1. A Heritage Statement was produced for the site (ArcHeritage 2021), incorporating a desk-based assessment and geoarchaeological assessment. This summary is based on information from the heritage statement.
- 4.2. The desk-based research indicated that the site is likely to have been wetland from at least the later prehistoric period until it was enclosed and drained for agricultural use in the early 19<sup>th</sup> century. It was within an area proposed for enclosure as part of Cornelius Vermuyden's Hatfield Chase drainage scheme, but does not appear to have been directly affected by these works, with the possible exception of the western boundary of the property. Drainage and agricultural use of the site from the 19<sup>th</sup> century onwards, as well as 20<sup>th</sup>-century sand extraction, are likely to have removed any peat coverage at the site, although there could be the potential for survival of thin organic horizons within the sand deposits. The later 20<sup>th</sup>-century quarrying prior to the creation of the fishing lake may have impacted on the topsoil within the area of the proposed extension.
- 4.3. Recorded archaeology within the vicinity of the site includes sparse findspots of prehistoric lithic material, and post-medieval to 19<sup>th</sup>-century remains associated with drainage of the area and agricultural improvements. The heritage statement concluded that although the potential for the preservation of prehistoric to Roman archaeological and palaeoenvironmental remains appears to be generally low, it cannot be ruled out on the basis of available evidence.
- 4.4. The proposed lake extension is likely to impact the sand to a depth of up to 2.50m BGL. The geoarchaeological assessment indicated that the site is likely to contain extensive thicknesses of fine-grained sand, with possible interleaved organic units. The lack of data from the former aggregate extraction area prevents detailed comment on the likelihood of archaeological remains being preserved at the site. Compared with results from other investigations in the

region, there is a possibility for the sands to preserve multiple archaeological and geoarchaeological horizons, but further work is required to state this with confidence.

- 4.5. Prospection for archaeological remains and deposits of geoarchaeological significance within such deposits is problematic and standard methodologies may not be effective. Geophysical survey is unlikely to detect more ephemeral and deeply buried remains, and therefore test pitting was considered to be a preferable alternative approach to determine the preservation potential of the site.

## 5. AIMS

- 5.1. The aims of the archaeological test pits are:

- to determine the presence, condition, character, importance and date of any archaeological remains present
- to assess the potential for the preservation of archaeological and geoarchaeological horizons within sand deposits that will be impacted by the proposed lake
- to provide information that will enable the remains to be placed within their local, regional, and national context and allow an assessment of the significance of the archaeology of the proposal area to be made
- to provide information to enable the local authority to decide any requirements for further archaeological mitigation for the site

- 5.2. The archaeological investigations have the potential to contribute to regional research objectives outlined in the East Midlands regional research framework interactive resource (Knight *et al.* 2012, <https://researchframeworks.org/emherf/>). Objectives to which the project may contribute include:

| Period                  | Objective ID | Objective   |
|-------------------------|--------------|---|
| Mesolithic              | 2B           | Characterise the regional and local evidence for Mesolithic activity                                  |
|                         | 2G           | Investigate the topographic locations of Mesolithic activity  |
| Neolithic to Bronze Age | 3E           | Target sites with Late Mesolithic and Early Neolithic stratigraphy and well-preserved organic remains |
| Roman                   | 5H           | Investigate the landscape context of rural settlements  |
| Post-medieval           | 8E           | Identify agricultural improvements of the 16 <sup>th</sup> to 18 <sup>th</sup> centuries              |

## 6. TECHNIQUES

- 6.1. The recording will comprise the following elements:

- Test pitting
- Reporting

- 6.2. Further stages of work or other mitigation measures could be required by the local authority, depending upon the results of the test pit evaluation.

## 7. TEST PITS

- 7.1. Two test pits will be excavated using a JCB 3CX or other appropriate mechanical excavator fitted with a toothless ditching bucket, under the supervision of an archaeologist. The location of the test pits is shown on Figure 2, although these may need to be modified in the field depending on vegetation.
- 7.2. The test pits will be 2m long by 2m wide, and the aim is to excavate to a depth of 3m, to ensure that the full depth of deposits that may be impacted by the lake excavation is assessed. They will be excavated in spits in order to identify changes in deposits and to ensure that any finds recovered can be attributed to the correct depth and deposit. The water table at the site is stated to be at approximately 0.8m below ground level (BGL). Once water ingress begins, observations will be made rapidly during machining, while deposits are exposed, and test pits will be terminated if it becomes unsafe.
- 7.3. The test pits will not be entered by the archaeologist once they pass a safe working depth, normally 1m dependent on the stability of the test pit, but the pits will not be entered once water ingress occurs, estimated to be at around 0.8m BGL. Beyond that depth, recording will be undertaken from the side of the test pit, at a safe distance to avoid collapsing the edge. If necessary, the test pits may be expanded sufficiently to allow stepping of the sides, in order to achieve the stated size at the base or to adequately record significant deposits encountered below 1m.
- 7.4. The underlying lithology will be recorded by a geoarchaeologist using standard methods and following *Historic England Guidelines for Environmental Archaeology and Geoarchaeology* (2015a and 2015b). The sands and gravel will be sieved for artefact and faunal remains retrieval where possible with 100L sieved at regular intervals to a depth of 1.00m BGL, if possible. This will follow the guidance laid out in the draft *Historic England Guidance Curating the Palaeolithic* (HE 2020b) and *Managing Lithic scatters* (HE 2019). The test pits will be photographed and backfilled prior to the end of the working day.
- 7.5. The test pit locations will be accurately plotted using a survey grade GPS (Leica GS07 or GS18T GNSS), or by measurement to local permanent features shown on published Ordnance Survey maps. All measurements will be accurate to +/-10cm, and the test pits will be locatable on a 1:2500 Ordnance Survey map. This is to ensure that they can be independently relocated in the event of future work.

## 8. RECORDING METHODOLOGY

- 8.1. All archaeological features will be recorded using standardised pro forma record sheets. A section of each test pit will be drawn, and plans where appropriate, and a comprehensive photographic record will be made, including at least one representative plan and section view of each pit.
- 8.2. Archaeological deposits will be planned at a basic scale of 1:20. Larger scales will be utilised as appropriate. Sections of the test pits will be drawn to a basic scale of 1:10 or 1:20 depending on the level of detail required. All drawings will be related to Ordnance Datum. Where it aids interpretation, structural remains will also be recorded in elevation.
- 8.3. Each context will be described in full on a pro forma context record sheet in accordance with the accepted context record conventions. Each context will be given a unique number. These field records will be checked and indexes compiled.

- 8.4. Photographs of work in progress and post-excavation of the test pits will be taken. This will include general views of the plan and sections and of details of sections as considered necessary. The photographic record will comprise digital photographs at a minimum resolution of 10MP. All site photography will adhere to accepted photographic record guidelines.
- 8.5. Pits which do not contain any archaeological deposits will be photographed and recorded as being archaeologically sterile. The natural stratigraphic sequence within these areas will be recorded.
- 8.6. All finds will be collected and handled following the guidance set out in the ClfA guidance for archaeological materials. Unstratified material will not be kept unless it is of exceptional intrinsic interest. Material discarded as a consequence of this policy will be described and quantified in the field. Finds of particular interest or fragility will be retrieved as Small Finds, and located on plans. Other finds, finds within the topsoil, and dense/discrete deposits of finds will be collected as Bulk Finds, from discrete contexts, bagged by material type. Any dense/discrete deposits will have their limits defined on the appropriate plan.
- 8.7. All artefacts and ecofacts will be appropriately packaged and stored under optimum conditions, as detailed in the RESCUE/UKIC publication *First Aid for Finds*, and recording systems must be compatible with the recipient museum. All finds that fall within the purview of the Treasure Act (1996) will be reported to HM Coroner according to the procedures outlined in the Act, after discussion with the client and the local authority.
- 8.8. An environmental sampling programme will be undertaken for the recovery and identification of charred and waterlogged remains where suitable deposits are identified. The collection and processing of environmental samples will be undertaken in accordance with Historic England guidelines (English Heritage 2015a). Environmental and soil specialists will be consulted during the course of the excavation with regard to the implementation of this sampling programme. The sampling regime will include samples of the four types of deposit sample as appropriate. These are described below:
- **Bulk-sieved Sample (BS).** Sample size will depend upon the context/feature size, but should be up to 40-60 litres in size (if the context size allows). They are taken for the recovery of charcoal, burnt seeds, bone and artefacts. The samples will be processed (flotation) on site where possible with 1mm and 500micron sieves on a rack to collect the carbonised washover. The retents and flots will then be dried, sorted and assessed to advise the potential for further analysis.
  - **General Biological Sample (GBA):** These are only taken if a deposit is waterlogged. A 10 litre sample size will be used (if the context size allows). These samples will be processed in the laboratory, to recover macrofossils and microscopic remains such as pollen and insects.
  - **Column monolith:** Kubiena tin samples may be taken for soils and pollen analysis and to determine soil accumulation processes.
  - **Spot samples:** these samples are taken as required. they may be contexts or material not suited to sieving, such as caches of seeds, pieces of eggshell or any specific finds of organic material. They may also be specialist samples (e.g. charcoal for radiocarbon dating).
- 8.9. Other samples will be taken, as appropriate, in consultation with York Archaeology specialists and the Historic England Regional Science Advisor, as appropriate (e.g. dendrochronology, soil micromorphology, monolith samples, C14, etc.). Samples will be taken for scientific dating

where necessary for the development of subsequent mitigation strategies. Material removed from site will be stored in appropriate controlled environments.

- 8.10. In the event of human remains being discovered during the evaluation these will be left in situ, covered and protected, in the first instance. The removal of human remains will only take place in compliance with environmental health regulations and following discussions with, and with the approval of the Ministry of Justice, and following the issuing of a Burial Licence.
- 8.11. Any grave goods or coffin furniture will be retained for further assessment.
- 8.12. Where a licence is issued, all human skeletal remains must be properly removed in accordance with the terms of that licence. Where a licence is not issued, the treatment of human remains will be in accordance with the requirements of Civil Law, ClfA Technical Paper 13 (1993) and Historic England guidance.

## **9. SPECIALIST ASSESSMENT**

- 9.1. The stratigraphic information, artefacts, soil samples, and residues will be assessed as to their potential and significance for further analysis and study. The material will be quantified (counted and weighted). Specialists will undertake a rapid scan of all excavated material. Ceramic spot dates will be given. Appropriately detailed specialist reports will be included in the report.
- 9.2. Materials considered vulnerable should be selected for stabilisation after specialist recording. Where intervention is necessary, consideration must be given to possible investigative procedures (e.g. glass composition studies, residues on or in pottery, and mineral-preserved organic material). Allowance will be made for preliminary conservation and stabilization of all objects and a written assessment of long-term conservation and storage needs will be produced. Once assessed, all material will be packed and stored in optimum conditions, in accordance with Watkinson and Neal (1998), Boyle and Rawden (2020), Brown (2011) and ClfA (2014c).
- 9.3. All finds will be cleaned, marked and labelled as appropriate, prior to assessment. For ceramic assemblages, any recognised local pottery reference collections, such as the North Lincolnshire Type Series for Roman and Post-Roman ceramics, and relevant fabric Codes will be used.
- 9.4. Allowance will be made for the recovery of material suitable for scientific dating and contingency sums will be made available to undertake such dating, if necessary. This will be decided in consultation with the North Lincolnshire HER.

## **10. ASSESSMENT REPORT**

- 10.1. Upon completion of the site work, a report will be prepared to include the following:
  - A non-technical summary of the results of the work.
  - The site code agreed with the recipient museum.
  - An introduction which will include the planning reference number, grid reference and dates when the fieldwork took place.
  - An account of the methodology and detailed results of the operation, describing the stratigraphic data, archaeological features, associated finds and environmental data, and a conclusion and discussion.

- A selection of photographs and drawings, including a detailed location plan and a plan of the site accurately identifying the test pit locations, section drawings, and selected artefacts where appropriate.
  - Specialist artefact and environmental reports where undertaken, and a context list/index.
  - Details of archive location and destination (with accession number, where known), together with a context list and catalogue of what is contained in that archive.
  - A copy of the key OASIS form details
  - A copy of this WSI
  - Additional photographic images may be supplied on a CDROM appended to the report
- 10.2. A digital copy of the report in PDF format will be submitted to the commissioning body. A digital copy of the report in PDF format will be submitted direct to the North Lincolnshire HER for planning purposes, and subsequently for inclusion into the Historic Environment Record.

## 11. POST EXCAVATION ANALYSIS & PUBLICATION

- 11.1. The information contained in the evaluation report will enable decisions to be taken regarding the future treatment of the archaeology of the development site and any material recovered during the evaluation.
- 11.2. If further archaeological investigations (mitigation) take place, any further analyses (as recommended by the specialists, and following agreement with the North Lincolnshire Archaeology Advisor) may be incorporated into the post-excavation stage of the mitigation programme unless such analysis are required to provide information to enable a suitable mitigation strategy to be devised. **Such analysis will form a new piece of work to be commissioned.**
- 11.3. In the event that no further fieldwork takes place on the site, a full programme of post excavation analysis and publication of artefactual and scientific material from the evaluation may be required by the North Lincolnshire Archaeology Advisor. **Where this is required, this work will be a new piece of work to be commissioned.**
- 11.4. If further site works do not take place, allowance will be made for the preparation and publication in a local and/or national journal, if appropriate. The scope of this publication will be dependent on the significance of the results.
- 11.5. If no other publication is recommended, a brief site summary will be presented in digital format for publication in the appropriate volume of *Lincolnshire History and Archaeology*.
- 11.6. The East Midlands Research Framework website will be updated where appropriate at <https://researchframeworks.org/emherf/>.

## 12. ARCHIVE PREPARATION & DEPOSITION

- 12.1. A field archive will be compiled consisting of all primary written documents, plans, sections and photographs. Catalogues of contexts, finds, soil samples, plans, sections and photographs will be produced. York Archaeology will liaise with the North Lincolnshire Museums Service prior to the commencement of fieldwork to establish the detailed curatorial requirements of the museum and discuss archive transfer and to complete the relevant museum forms. The museum curator will be afforded access to visit the site and discuss the project results.

- 12.2. The digital photographic archive will be deposited with the Archaeology Data Service (ADS). It will be prepared in line with guidance from the ADS (2013) and Historic England (2015c). All digital files will include the appropriate metadata.
- 12.3. The compilation of the field archive will follow national and regional guidance (Brown 2011; ClfA 2014c), and will be undertaken with reference to the ClfA Archive Selection Toolkit (ClfA and Historic England 2019).
- Documentary material to be deposited will be selected by the Project Officer, and will include all pro-forma records made within the field and catalogues of such records, as well as copies of all reports produced and the WSI.
  - Artefactual and ecofactual material to be deposited will be selected by the Project Manager and Project Officer, following the collection guidelines of the North Lincolnshire Museums Service, the stated aims and objectives of the project, and the recommendations of specialists. The final selection of material to be deposited will be agreed with the museum curator and the North Lincolnshire HER.
  - Digital material to be deposited with the ADS will be selected by the Project Officer on completion of the report. This will include the digital photographic record. Where duplicate shots exist, only the best example will be selected for deposition.
- 12.4. The owner of the Intellectual Property Rights (IPR) in the information and documentation arising from the work, will grant a licence to the Local Authority and the museum accepting the archive to use such documentation for their statutory functions and provide copies to third parties as an incidental to such functions. Under the Environmental Information Regulations (EIR), such documentation is required to be made available to enquirers if it meets the test of public interest. Any information disclosure issues will be resolved between the client and the archaeological contractor before completion of the work. EIR requirements do not affect IPR.
- 12.5. Upon completion of the project an OASIS form will be completed at <http://oasis.ac.uk/form>.
- 12.6. Deposition of the field archive with the North Lincolnshire Museums Service will occur after the assessment report in the event that no further analysis is required. If further mitigation works, post-excavation analysis and/or publication are required, the archive deposition will follow that phase.

### **13. HEALTH AND SAFETY**

- 13.1. Health and safety issues will take priority over archaeological matters and all archaeologists will comply with relevant Health and Safety Legislation.
- 13.2. A site-specific Risk Assessment will be prepared prior to the start of site works.

### **14. PRE-START REQUIREMENTS**

- 14.1. The client will be responsible for ensuring site access has been secured prior to the commencement of site works, and that the perimeter of the site is secure.
- 14.2. The client will provide York Archaeology with up to date service plans and will be responsible for ensuring services have been disconnected, where appropriate.
- 14.3. The client will be responsible for ensuring that any existing reports (e.g. ground investigation, borehole logs, contamination reports) are made available to York Archaeology prior to the commencement of work on site.

- 14.4. Prior to commencement of fieldwork, York Archaeology will contact the North Lincolnshire Museums Service to inform them of the project and agree a site code.

## **15. REINSTATEMENT**

- 15.1. Following excavation and recording, the spoil from the test pits will be backfilled unless requested otherwise. The backfill material will be levelled and compressed as far as possible with the mechanical excavator bucket, but will not be compressed to a specification. York Archaeology are not responsible for reinstating any surfaces, including reseeding, unless specifically commissioned by the client who will provide a suitable specification for the work.

## **16. STAFFING**

- 16.1. The test pitting will be undertaken by York Archaeology staff who are suitably qualified for their roles, and will be managed by Kristina Krawiec, the geoarchaeology project manager. Staff CVs can be provided to NLHER prior to the commencement of fieldwork if required.

- 16.2. Specialist staff available for this project are:

- Osteoarchaeology – C. Summerfield Hill
- Palaeoenvironmental remains – Stacey Adams
- Geoarchaeological advice – Kristina Krawiec, Tom Keyworth
- Lithics – Alvaro Mora-Ottomono and George Loffman
- Pollen – Tom Hill
- Roman Pottery – Ian Rowlandson, David Griffiths
- Medieval pottery – Jane Young
- Post-medieval pottery – David Barker and Richard Jackson
- Clay tobacco pipe – Alison Wilson
- Glass – H. Cool
- Animal bone – Kris Poole
- Finds Officer – Nienke Van Doorn
- Archaeometallurgy & industrial residues – Rod Mackenzie
- Conservation – Ian Panter and Mags Felter (YAT Conservation Lab)
- Worked wood – Steve Allen

- 16.3. Other specialist staff may be commissioned as necessary. Appropriate specialist staff will be discussed and agreed with North Lincolnshire HER.

## **17. PROJECT TIMETABLE**

- 17.1. At the time of writing, the dates for the evaluation have not been established. An indicative timetable for the phases of work is given below. An updated timetable can be provided to the NLHER once the date for the evaluation has been arranged. Any changes to the timetable will be agreed with NLHER.
- 17.2. Fieldwork is anticipated to be undertaken in February 2022, and to take one day on site.

- 17.3. Post-excavation assessment and reporting will start on completion of the fieldwork, and will be completed within six weeks. The duration will depend on the nature of the results of the fieldwork.
- 17.4. Deposition of the fieldwork archive will follow the completion and approval of the assessment report, in the event that no further work is required. The museum service will be consulted after the post-excavation assessment is complete, in order to establish what items will be deposited. The archive will be deposited within six months of completion of the final report.

## 18. MONITORING OF ARCHAEOLOGICAL FIELDWORK

- 18.1. As a minimum requirement, North Lincolnshire HER will be given a minimum of one week's notice of work commencing on site, and will be afforded the opportunity to visit the site during and prior to completion of the on-site works so that the general stratigraphy of the site can be assessed and to discuss the requirement any further phases of archaeological work. York Archaeology will notify the NLHER of any discoveries of archaeological significance so that site visits can be made, as necessary. Any changes to this agreed WSI will only be made in consultation with the NLHER.

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See also the websites of the CIfA and Historic England for full lists of Guidance and Standards documentation:

<http://www.archaeologists.net/codes/cifa>

<http://historicengland.org.uk/advice/technical-advice/recording-heritage/>

## FIGURES

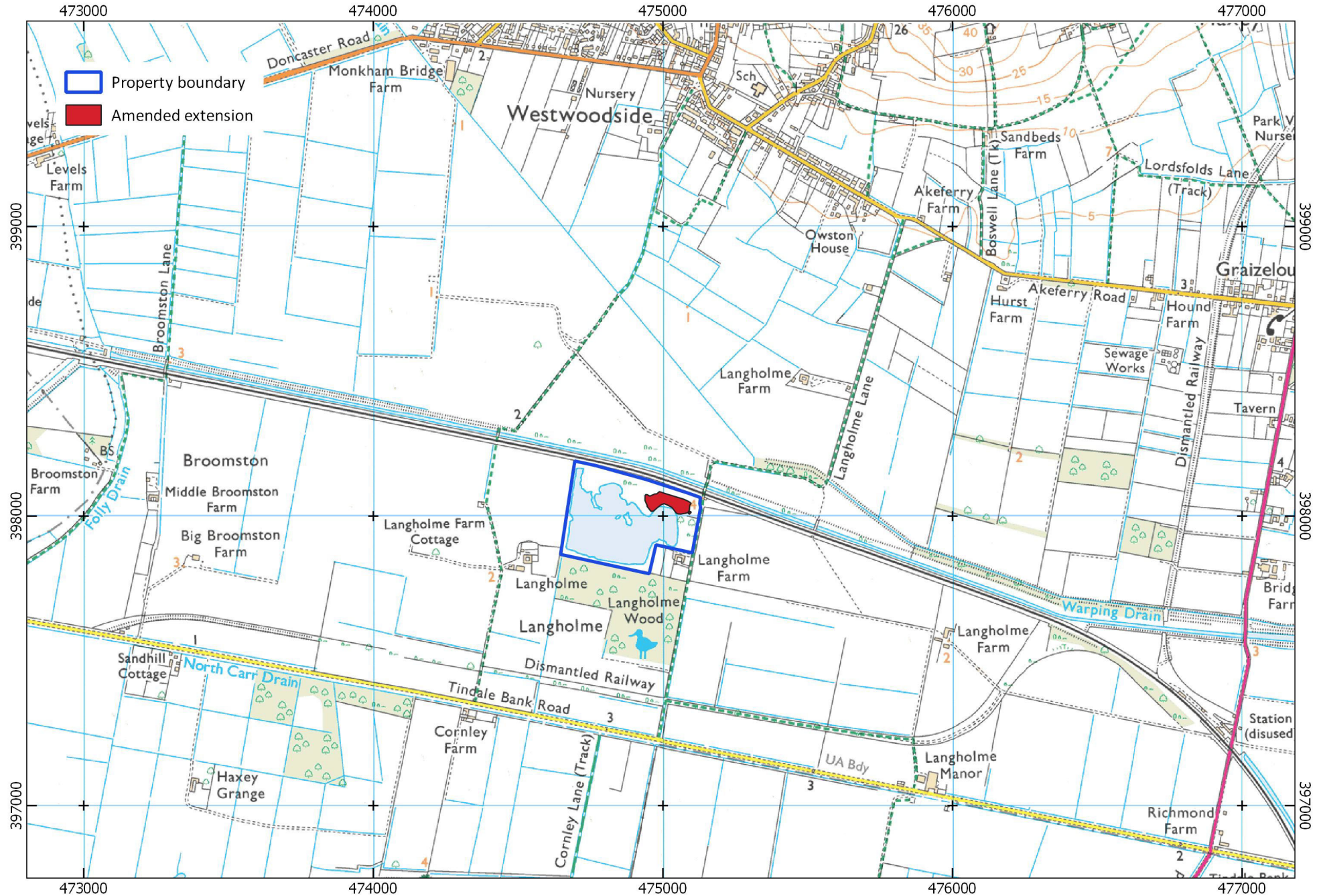
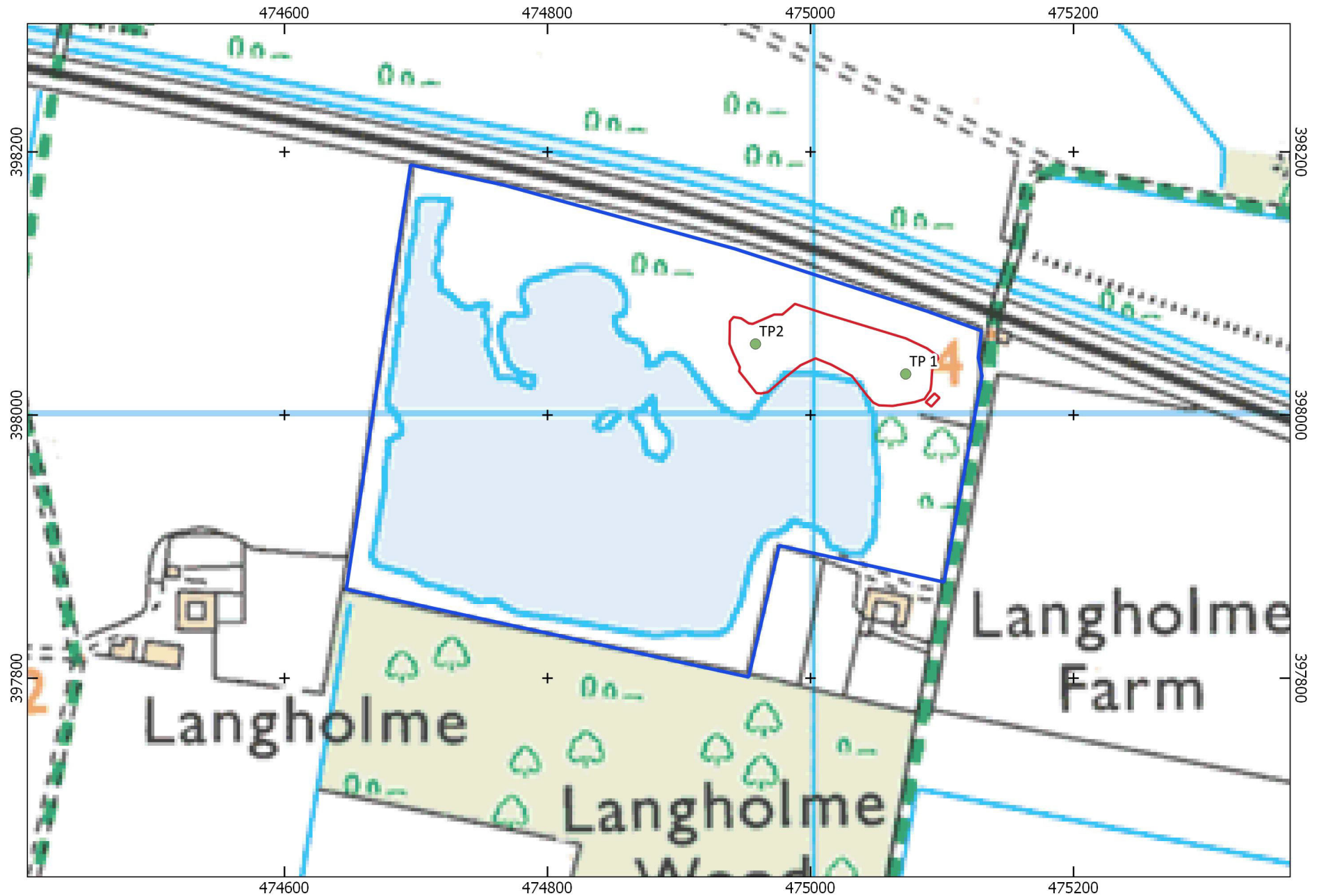


Figure 1: Site location



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