

# Clayton West Sewage Treatment Works, Huddersfield West Yorkshire

Written Scheme of Investigation for an Archaeological Watching Brief

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## Document Issue Record

Ver	Status	Author(s)	Reviewer	Approver	Date
1.0	Issue	KM	JR	JR	Jul-24
1.1	Revision	KM	DH (WYAAS)	KM	August-24

August 2024



# Written Scheme of Investigation for an Archaeological Watching Brief at Clayton West Sewage Treatment Works, Huddersfield, West Yorkshire

## 1. Introduction

- 1.1 This Written Scheme of Investigation (WSI) has been prepared by Archaeological Services WYAS (ASWYAS) for Stantec UK on behalf of Yorkshire Water. It details an archaeological watching brief at the site of the Clayton West Sewage Treatment Works (STW), Huddersfield, West Yorkshire (hereafter referred to as 'the Site'). This WSI has been produced in support of a planning application (2023/62/93805/E) for updates to the pipework and pump station at West Clayton Wastewater Treatment Works (WwTW) and the construction of a new integrated wetland.
- 1.2 The watching brief will focus on the southern half of the Site, where a possible prehistoric earthen barrow or mortuary structure was uncovered during the excavation works conducted in April 2024 (Ahmed and Moon 2024; Fig. 2). This approach was agreed with the Principal Archaeologist at West Yorkshire Archaeology Advisory Service (WYAAS) on the 4th of July 2024.
- 1.3 This document details a programme of archaeological watching brief and has been produced to the standards laid down in Historic England's guideline publication *Management of Research Projects in the Historic Environment (MoRPHE): Project Managers Guide* (2006a), the *MoRPHE Project Planning Note 3: Archaeological Excavation* (PPN3) (2008), the ClfA universal guidance for archaeological monitoring and recording (ClfA 2023) and in accordance with the Scope of Works produced by Stantec (Carroll 2024).

## 2. Site Location, Description and Topography

- 2.1 The Site is located approximately 1.5km to the northeast of Clayton West, Huddersfield, West Yorkshire, centred on NGR SE 26700 11800 (Fig. 1), within the township of Elmley. The Site measures approximately 14.3ha over four undeveloped agricultural fields found to the north of West Clayton WwTW, the work is focused on the southern field which measures 3.1ha. The Site lies to the south of Wakefield Road and the river Dearne runs along the south-eastern side of the site, and it is bounded on all sides by agricultural land (Fig. 2).

## 3. Geology and Soils

- 3.1 The underlying bedrock comprises Pennine Lower Coal Measures Formation - Mudstone, siltstone and sandstone, a sedimentary bedrock formed between 319 and 318 million years ago during the Carboniferous period (BGS 2024). Superficial deposits are recorded in the north and west of the site as Alluvium - clay, silt, sand and gravel, a sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period. The

soils recorded as slowly permeable seasonally wet acid loamy and clayey soils (CSAI 2024).

#### **4. Archaeological and Historic Background**

- 4.1 The following background information is sourced from an archaeological scope of works produced by Stantec (Carroll 2024).
- 4.2 A Historic Environment Desk-Based Assessment (HEDBA) was prepared to accompany the planning application for the Proposed Scheme (Stantec 2022). A review of the West Yorkshire Historic Environment Record (HER) database within 1km of the Site identified one Registered Park and Garden (NHLE: 1001217), one Scheduled Monument (NHLE: 1005786) and five Grade II Listed Buildings. None of these are located within the Site boundary and it is not anticipated that the Proposed Scheme will impact upon their setting or heritage significance.
- 4.3 A prehistoric enclosure found c. 925m north-east of the Site is the only definitive evidence for pre-medieval settlement activity within the 1km study area.
- 4.4 The Site falls within the ancient parish of Emley (also Amalie/Amelai/Elmeley) and the associated village was a Saxon settlement during the 9th century. The neighbouring village of Denby Dale is recorded in the Domesday Book in the hundred of Staincross and the County of Yorkshire. The remains of the medieval Emley Park boundary, represented by a hedgerow and footpath, define the western border of the Site.
- 4.5 Extensive medieval mining activity has been identified across the study area, with a concentration of bell pits and iron stone mines found to the north-east of the Site including the Scheduled Iron Mining Shaft Mounds (NHLE: 1005786) located either side of Woodhouse Lane. A medieval corn mill has also been found c. 950m to the north.
- 4.6 The surrounding landscape is defined by agricultural fields that have been in use since the post-medieval period, if not earlier, although 20th-century extraction has been identified from aerial photographs in the northernmost fields of the study area. Despite the industrial success of the West Yorkshire textile industry, only one mill and ropewalk are recorded on Whirmoor Drive approximately 585m south-west of the Site.
- 4.7 Cartographic evidence found that the two hedgerows located within the Site boundary are visible on the 1820 enclosure map of Emley, demonstrating that they are of historical importance.
- 4.8 A geophysical survey was undertaken in 2023 by Terradat of the Site (Bird 2023; Figs 2 and 3). This suggested a double-ditched boundary in the north of the Site, which corresponds with changes in the direction of the former field

boundaries both to its east and west. This relationship corresponds to that of the boundary between fields 571 and 573 on the 1820 Elmeley Enclosure Map and the double ditched feature can confidently be interpreted as that boundary. Notwithstanding this interpretation, the areas on either side of this boundary show small-scale magnetic featuring, and small archaeological features might be present here. However, they form no coherent overall plan. Minor archaeological features might also be present in the east of the Site, where deposits and features of high magnetic susceptibility are present. These might be an entirely natural product of the riverside location, but the curvilinear positive magnetic anomalies are sharp, and an archaeological origin would be possible. The south of the Site contains much magnetic featuring that could be associated with archaeologically significant features. The apparent presence of an enclosure with an elaborate gateway, with possible internal buildings and agricultural plots, all suggest a site of significance. Further east in Field 2 are magnetic anomalies suggestive of ditches, including a south-west directed 'funnel'.

- 4.9 In July and August 2023, ASWYAS monitored ten ground investigation pits at the Site (Golby and Rose 2023). One pit exposed a stone-built culvert-type land drain, but otherwise no archaeological features or remains were identified.
- 4.10 In March 2024, ASWYAS undertook a trial trench evaluation of the site comprising the excavation of 56 trenches targeting anomalies detected by the previous geophysical survey and apparent 'blank' areas (Dziurawiec and Moon 2024). The evaluation demonstrated extensive quarrying in the northwest fields, while the southern and eastern fields were largely undisturbed and few archaeological features were encountered. A narrow gully was observed in the southern field which likely pre-dates ploughing activity on the site, but no artefactual remains were recovered from the feature to confirm its date. This lack of disturbance and its position in the base of the valley has demonstrated some potential for the survival of prehistoric remains.
- 4.11 An archaeological excavation was undertaken by ASWYAS in April 2024 that consisted of three 10m by 10m excavation areas in the southern half of the Site. Excavation Area 1 contained a pit with post-medieval material, and Excavation Area 3 contained two elongated ditches parallel to each other, and a post-hole/pit. No archaeological finds, features or deposits were recorded in Excavation Area 2. The features in Area 3 were interpreted as a possible small prehistoric mortuary structure; although no artefactual evidence or human remains were uncovered to confirm this (Ahmed and Moon 2024).

## **5. Aims**

- 5.1 The overall aim of the archaeological watching brief is to provide information on the presence or absence and the extent, character, chronology, depth of burial and degree of archaeological survival across the southern part of the site, particularly in reference to any prehistoric activity in the landscape which may

be preserved in the valley bottom. The watching brief will seek to provide further information on:

- The poor correlation between the geophysical survey and the previous evaluation trenches.
- A date for the creation of the present valley bottom landscape which was predated by meandering stream channels and “islands”.

5.2 The watching brief also seeks to obtain more information on the potential for alluvial deposits in the low-lying areas of the site. The opening of a larger area should allow a better view of potential channel fills which were possibly observed as changes in the geology and land use seen in the previous trial trench evaluation.

## **6. Methodology**

- 6.1 All work will be undertaken in accordance with the relevant standards (ClfA 2023; Historic England 2008) and the Stantec Scope of Works (Carroll 2024). The project will be managed by a Member of the Chartered Institute for Archaeologist (MCIfA) and the watching brief will be conducted by appropriately qualified and experienced archaeologists.
- 6.2 The works will comprise the monitoring of topsoil and subsoil removal down to undisturbed natural deposits in the southern part of the site during the groundworks associated with the creation of the STW (Fig. 2).
- 6.3 Any archaeological features/deposits exposed will be manually excavated in an archaeologically controlled and stratigraphic manner, in order to meet the aims and objectives outlined above.
- 6.4 All features will be half sectioned (see below), assessed and if considered desirable 100% excavated in order to meet the project’s goals. The full depth of archaeological deposits will be assessed.
- 6.5 Features will be sample excavated employing the following strategy:
- Linear features: Initially a 20% sample of all linear features (excluding post-medieval drainage ditches, plough furrows or similar) will be undertaken with the excavated slots dispersed along the length of the feature (each sample section to be not less than 1m). These features will be recorded. The complete excavation of all linear features may be appropriate, but only following consultation with the WYAAS.
  - Feature intersections will always be excavated in such a way to determine a stratigraphic relationship.

- Discrete features: pits, post-holes and other discrete features will normally be half-sectioned to determine and record their form with a minimum sample of 50% of discrete features in each area. The complete excavation of such features may be appropriate, but only following consultation with the WYAAS.
  - Paleochannels: Initially a 20% sample will be hand excavated through any feature less than 3m in width, to a depth of 1m. If a paleochannel exceeds 3m in width, it may be mechanically excavated, but only after initial consultation with WYAAS.
- 6.6 A full written, drawn and photographic record of all material revealed during the course of the work will be made. The excavation limits will be surveyed using electronic survey equipment with larger scale hand drawn plans of features, at 1:20 or 1:50, being created as appropriate. Sections of linear and discrete features will be drawn at 1:10 or 1:20. All sections, plans and elevations will include spot-heights related to Ordnance Datum in metres as correct to two decimal places. Tie-in information will be undertaken during the course of the watching brief and will be fixed in relation to nearby permanent structures and roads and to the National Grid. The photographic record will be produced using high resolution digital photography of a minimum of 10 megapixels and in RAW format. As part of the primary archive, all digital photographs taken during the course of the project will be archived with the Archaeology Data Service.
- 6.7 All excavated archaeological contexts will be fully recorded by written records, giving details of location, composition, shape, dimensions, relationships, finds, samples, and cross-references to other elements of the record and other relevant contexts, in accordance with best practice. All contexts, and any small finds and samples from them will be given unique numbers. Bulk finds will be collected by context.
- 6.8 All artefacts will be removed from the site for assessment and analysis, and where it is appropriate, their find spots will, if appropriate, be recorded three dimensionally. Non-modern artefacts (pre-20th and 21st century) from the excavated topsoil and subsoil will be collected. Finds material will be stored in controlled environments, where appropriate. All artefacts recovered will be retained, cleaned and stored as detailed in the guidelines laid out by ClfA (2020). Any necessary conservation work will be undertaken by approved conservators working to UKIC guidelines.
- 6.9 A soil-sampling programme will be undertaken during the course of the investigation for the identification and recovery of carbonised and waterlogged remains, vertebrate remains, molluscs and small artefactual material. This will comprise the removal of a bulk sample from every appropriate, significant and securely sealed context, excepting those with excessive levels of residuality or those with minimal 'soil' content. Bulk samples will comprise the entirety of the excavated material to maximise artefact recovery. The post-excavation

processing of all palaeoenvironmental samples will be undertaken in line with Historic England's Environmental Archaeology: A guide to the theory and practice of methods from sampling and recovery to post-excavation (2011).

- 6.10 If appropriate, specialists will visit the site to advise on sampling and their suggested strategies will then be implemented. Historic England's guidance on mapping buried soils (2020) will also be followed.
- 6.11 In the event of human remains being discovered they will, in the first instance, be left *in situ*, covered and protected and the consultant and WYAAS will be informed. The removal of human remains will only take place in compliance with the Burial Act 1857. An exhumation licence must be obtained from the Ministry of Justice prior to the removal of the remains.
- 6.12 If two or more pieces of prehistoric metalwork, two or more gold and silver coins over 300 years old and/or ten or more copper alloy coins found in association with each other are recovered, they and all associated objects will be reported to HM Coroner according to the procedures relating to the Treasure Act (1996) and the Treasure (Designation) Order (2002).
- 6.13 Provision will be made to recover material suitable for scientific dating. Contingency sums will be made available to undertake such dating. When excavating field systems and other significant deposits thermoluminescence dating should be carried out during the works when suitable deposits are identified.
- 6.14 Further contingency provision will be made for additional specialist advice, e.g. for finds analysis and conservation.
- 6.15 The work is programmed to begin in July 2024.

## **7. Analysis and Reporting**

- 7.1 An assessment report should be produced, which should include background information on the need for the project, a description of the methodology employed, and a full description and interpretation of results produced. It is not envisaged that the report is likely to be published, but it should be produced with sufficient care and attention to detail to be of academic use to future researchers.
- 7.2 Location plans should be produced at a scale which enables easy site identification and which depicts the full extent of the site investigated (a scale of 1:50,000 is not regarded as appropriate unless accompanied by a more detailed plan or plans). Site plans should be at an appropriate scale showing area layout (as dug) and features located. Upon completion of each area all sections containing archaeological features will be drawn. Section drawings (at a minimum scale of 1:20) must include heights O.D. Plans (at a minimum scale

of 1:50) must include O.D. spot heights for all principal strata and any features. A plan of the area studied will be supplied.

- 7.3 Artefact analysis is to include the production of a descriptive catalogue, quantification by context and discussion/interpretation if warranted, with finds critical for dating and interpretation illustrated.
- 7.4 Environmental analysis is to include identification of the remains, quantification by context, discussion/interpretation if warranted, and a description of the processing methodology. Radiocarbon results will be presented in full (laboratory sample number, conventional radiocarbon age, delta C13 value, calibration programme). Copies of the laboratory-issued dating certificates will be included as an appendix to the report.
- 7.5 Details of the style and format of the report are to be determined by ASWYAS, but should include a full bibliography, a quantified index to the site archive, and as an appendix, a copy of this written scheme of investigation.
- 7.6 If further specialist analysis is judged by the WY Archaeology Advisory Service to be necessary and appropriate, this work should be commissioned and the results incorporated into a full report. If no further specialist analysis is required, then an "archive report" will be produced. If significant finds are made then a note or longer article should also be published. The West Yorkshire Archaeology Advisory Service suggest that this is supplied to the of the annual Council for British Archaeology's Yorkshire Forum publication (please contact the editor or CBA's website for more information: contact : [associate.editor@cba-yorkshire.org.uk](mailto:associate.editor@cba-yorkshire.org.uk))

## **8. Copyright, Confidentiality and Publicity**

- 8.1 Please note that by depositing this report, ASWYAS gives permission for the material presented within the document to be used by the WYAAS, in perpetuity, although ASWYAS retains the right to be identified as the author of all project documentation and reports as specified in the Copyright, Designs and Patents Act 1988 (chapter IV, section 79). The permission will allow the WYAAS (keeper of the WY Historic Environmental Record (HER)) to reproduce material, including for commercial use by third parties, with the copyright owner suitably acknowledged.
- 8.2 Under the Environmental Information Regulations 2005 (EIR), information submitted to the HER becomes publicly accessible, except where disclosure might lead to environmental damage, and reports cannot be embargoed as 'confidential' or 'commercially sensitive'.
- 8.3 Requests for sensitive information are subject to a public interest test, and if this is met, then the information has to be disclosed. ASWYAS will inform the client of EIR requirements and ensure that any information disclosure issues

are resolved before completion of the work. Intellectual property rights are not affected by the EIR.

- 8.4 Unless the client commissioning the project wishes to state otherwise, the copyright of any written, graphic or photographic record and reports will rest with the originating body (ASWYAS).

## **9. Health and Safety**

- 9.1 ASWYAS has its own Health and Safety policy which has been compiled using national guidelines. These guidelines conform to all relevant Health and Safety legislation.
- 9.2 In addition each project undergoes a 'Risk Assessment' which sets project specific Health and Safety requirements to which all members of staff are made aware of prior to on-site work commencing. Health and Safety will take priority over archaeological matters. Necessary precautions will be taken over underground services and overhead lines at the outset of the project. ASWYAS will ensure that Health and Safety requirements of the main contractor are adhered to.

## **10. Insurance**

- 10.1 ASWYAS is covered by the insurance and indemnities of the West Yorkshire Joint Services Committee. Insurance has been effected with: Zurich Municipal, Zurich House, 2 Gladiator Way, Farnborough, Hampshire GU14 6GB (policy number QLA-03R896-0013). Any further enquiries should be directed to: Head of Finance, Wakefield Council, Wakefield One, PO Box 700, Wakefield, WF1 2EB

## **11. Monitoring**

- 11.1 Access to the site will be arranged through Mott MacDonald and Yorkshire Water.
- 11.2 A minimum of one week's notice should be given to WYAAS prior to the commencement of fieldwork is required.
- 11.3 ASWYAS will ensure that any significant results are brought to the attention of the client, consultant and WYAAS as soon as is practically possible.

## **12. Resourcing**

- 12.1 Key project personnel:

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Project Management:	Kevin Moon BA MCIfA
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Project Supervisors:	Konrad Dziurawiec MSc
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## 12.2 Post-excavation specialists:

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Prehistoric pottery:	Dr Chris Cumberpatch
Roman pottery:	Dr Ruth Leary or Ian Rowlandson
Medieval pottery:	Dr Chris Cumberpatch
Ceramic building material	Dr Phil Mills
Flint specialist:	Dr Ian P Brooks
Environmental:	Dr Diane Alldritt
Faunal analyst:	Dr Jane Richardson
Human bone:	Malin Holst MA or Dr Alice Rose
Metalwork:	Gail Drinkall
Artefact conservation:	Ian Panter

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12.3 The list of ASWYAS project personnel may be subject to change depending on workload and availability.

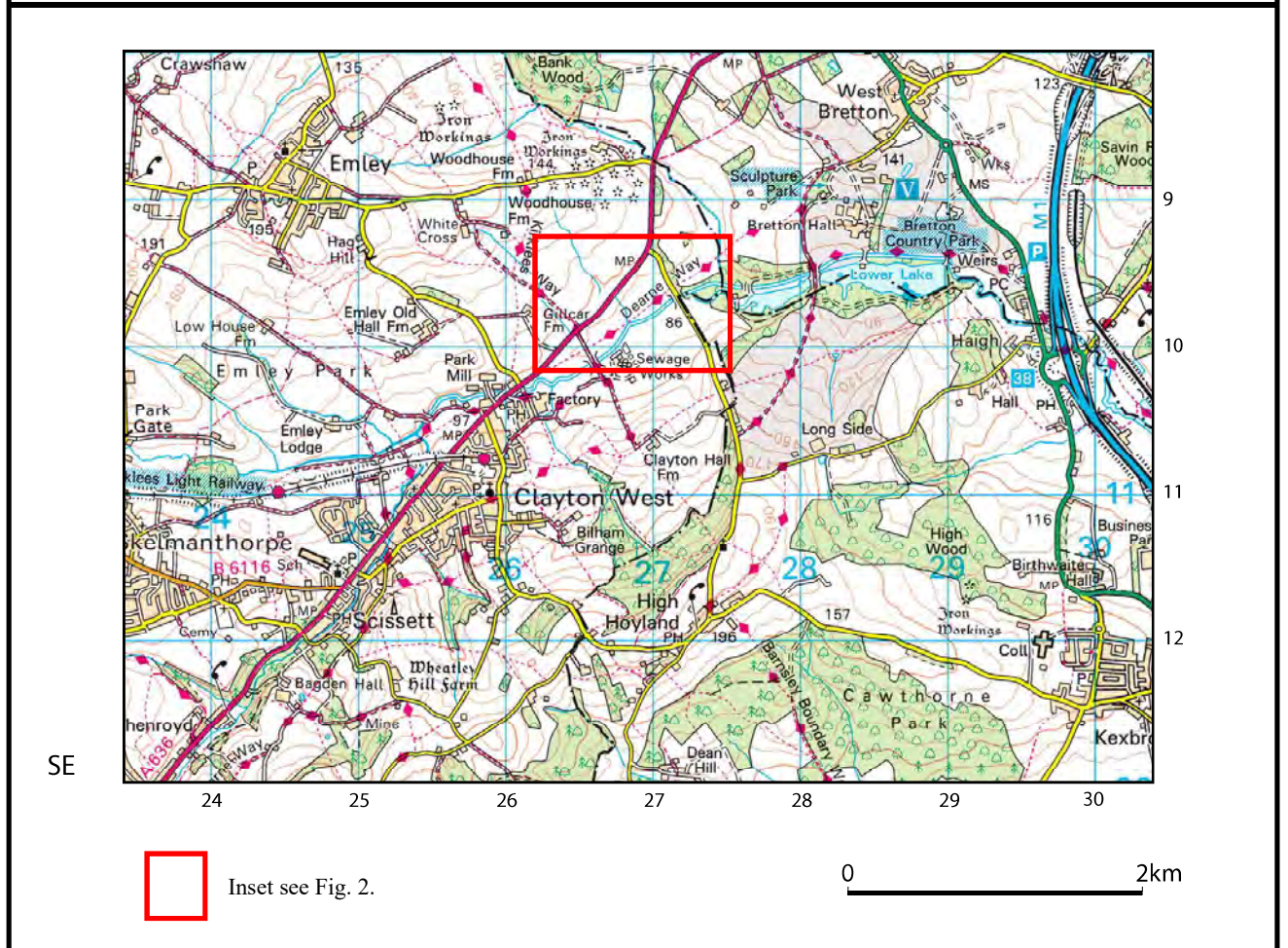
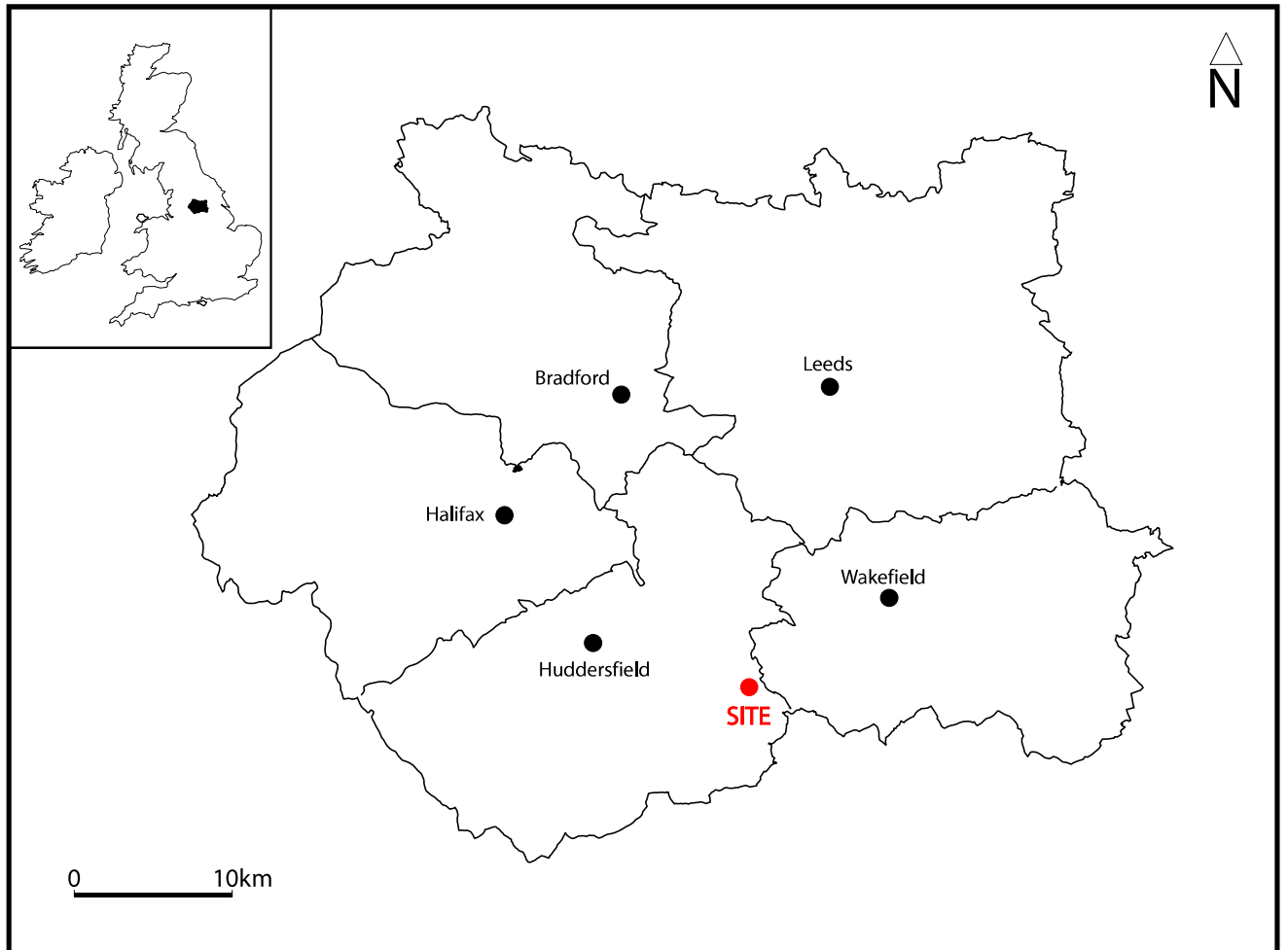
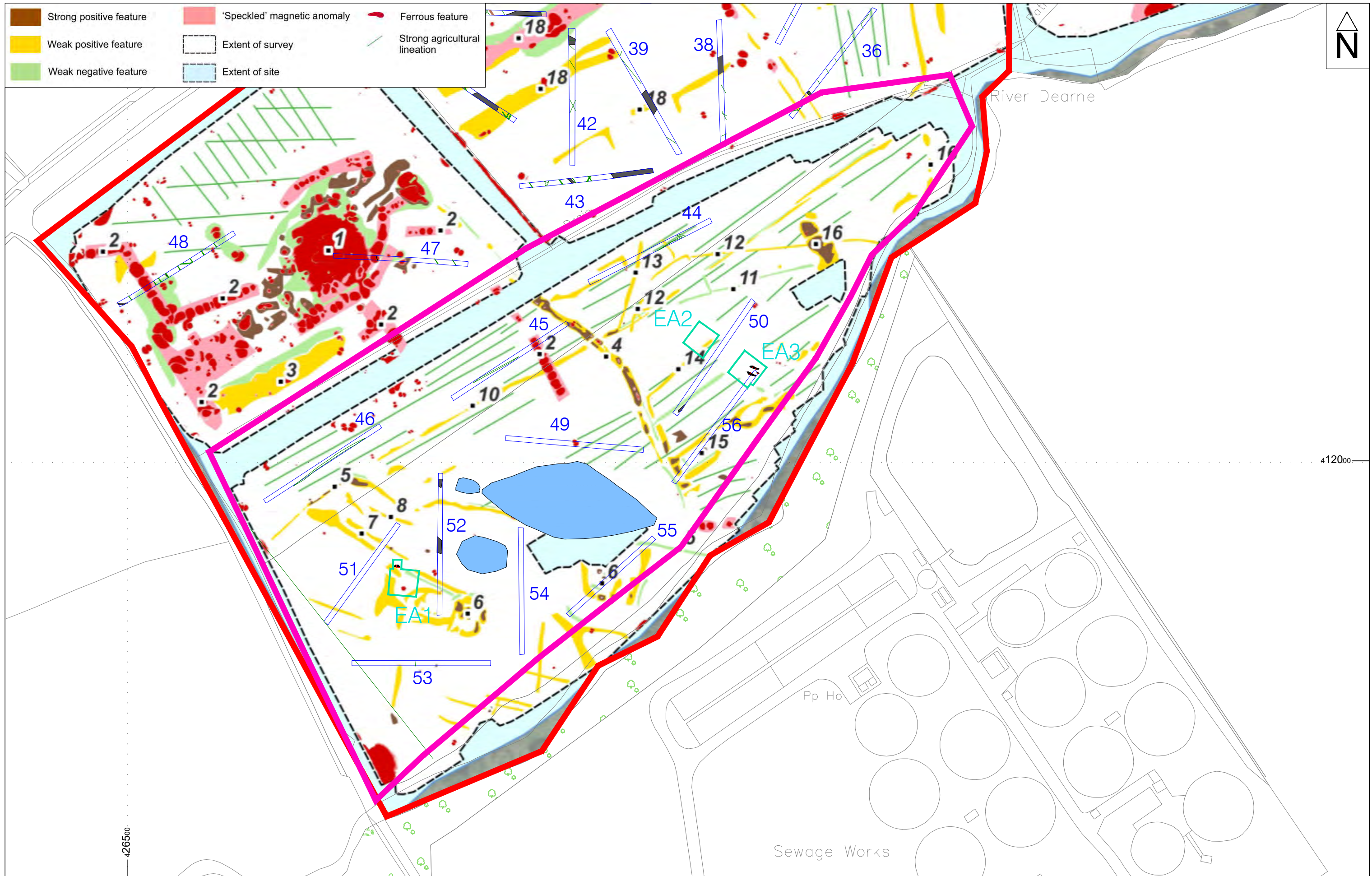



Fig. 1. Site location

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	SITE BOUNDARY		EXCAVATION AREA (10m x 10m)		ARCHAEOLOGICAL FEATURE
	WATCHING BRIEF AREA		DRAIN		
	TRIAL TRENCH (50m x 1.80m)		PLOUGH FURROW		

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