



WYAS
**Archaeological
Services**

Shepley

Huddersfield

West Yorkshire

Geophysical Survey

Report no. 4364
September 2025

Client: Banks Property Limited



Shepley, Huddersfield, West Yorkshire

Geophysical Survey

Summary

A geophysical (magnetometer) survey was undertaken on approximately 4 hectares of land located to the east of Shepley, Huddersfield, West Yorkshire. Anomalies primarily associated with agricultural activity have been detected including field drains and modern ploughing regimes. Magnetic disturbance is present within the Site boundaries due to proximity with extant buildings and yards, whilst other areas of disturbance within the Site can be attributed to ferrous material within the topsoil, likely as a result of green waste manuring practices. Geological anomalies have been recorded throughout due to variations within the soils, with an enhanced spread of geological responses in the south of the dataset. Uncertain anomalies within the dataset are likely to be anthropogenic in origin, although more likely to be modern than archaeological. Overall, the archaeological potential of the Site is deemed to be low.



Report Information

Client: Banks Property Limited
Report Type: Geophysical Survey
Location: Shepley
County: West Yorkshire
Grid Reference: SE 19738 09697
Period(s) of activity: Post medieval
Report Number: 4364
Project Number: XT12
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Contents

Report Information ii

Document Issue Record iii

Contents..... iii

List of Figuresiv

List of Platesiv

1 Introduction1

 Site location, topography and land-use 1

 Soils and geology..... 1

2 Archaeological Background1

3 Aims, Methodology and Presentation2

 Magnetometer survey2

 Reporting2

4 Results and Discussion.....3

 Ferrous anomalies and magnetic disturbance3

 Geological anomalies.....3

 Agricultural anomalies.....4

 Uncertain anomalies4

5 Conclusions.....4

Figures

Plates

Appendices

Appendix 1: Magnetic survey - technical information

Appendix 2: Survey location information

Appendix 3: Geophysical archive and metadata

Appendix 4: Oasis form

Bibliography

List of Figures

- 1 Site location (1:50000)
- 2 Survey location showing processed greyscale magnetometer data (1:2500 @ A3)
- 3 Processed greyscale magnetometer data (1:1250 @ A3)
- 4 XY trace plot of minimally processed greyscale magnetometer data (1:1250 @ A3)
- 5 Interpretation of magnetometer data (1:1250 @ A3)

List of Plates

- 1 General view of Site, looking northwest
- 2 General view of Site, looking southeast
- 3 General view of Site, looking southwest
- 4 General view of Site, looking northeast

1 Introduction

Archaeological Services ASWYAS has been commissioned by Pegasus Group on behalf of Banks Property Limited to undertake a geophysical survey at land to the east of Shepley, Huddersfield, West Yorkshire. This was undertaken in line with current best practice (CIfA 2020; Schmidt *et al.* 2015). The survey was carried out on the 19th of August 2025 to provide additional information on the archaeological resource of the Site.

Site location, topography and land-use

The Site is located at SE197096 (approximate centre), comprising c. 4ha over four fields situated to the south of Shepley (see Fig. 1).

The Site is bounded by a housing estate to the north, with a small patch of woodland running from the eastern section to the south and western edges of the Site, more arable land also borders the north-western edge. Fields at the Site are divided by hedgerows. The above Ordnance Datum (aOD) for the Site ranges from 199.2m at its northern boundary, to 213.4m at its southern boundary and 203.3m at its eastern boundary to 209.1m at its western boundary. The Site can be understood as being on a north-south oriented incline.

Soils and geology

Bedrock geology in the north of the Site comprises Grenoside Sandstone (Sandstone), a sedimentary bedrock that formed between 319 and 318 million years ago during the Carboniferous period. At the south of the Site, the bedrock geology consists of Pennine Lower Coal Measures Formation (mudstone, siltstone and sandstone), a sedimentary bedrock that formed between 319 and 318 million years ago during the Carboniferous period. No superficial deposits have been recorded.

Soils at the Site principally comprise of the Soilscape 17 soil association: “slowly permeable seasonally wet acid loamy and clayey soils” (CSAI 2025). A small strip of Soilscape 6: “freely draining slightly acid loamy soils”, can be seen across the northern section of the Site

2 Archaeological Background

The following archaeological background is derived from a search of the Historic Environment Record (HER) for known heritage assets within a 1km radius of the Site.

The majority of entries in the HER within a 1km radius of the Site consist of extant buildings of post-medieval origin. The most relevant and notable of these is the mill complex ‘Victoria Mills’ directly to the north of the Site which was established in the latter half of the 19th century, with the majority of the buildings still extant in the present being used as offices for various private businesses.

Within the centre of Shepley several post-medieval buildings are recorded, including Croft Head Farmhouse built in the 16th century, The Granary built in the late 17th century, and Shepley Old Hall, built in the early 17th century, all of which are approximately 440m west of the Site. The Church of St Paul, Shepley is of a later date, originating in the mid-19th century, and is located around 920m west of the Site (SE 191500 9700).

3 Aims, Methodology and Presentation

The aims and objectives of the programme of geophysical survey were to gather sufficient information to establish the presence/absence, character and extent, of any archaeological remains within the specific area and to inform an assessment of the archaeological potential of the site. To achieve this aim, a magnetometer survey covering all amenable parts of the Site was undertaken (see Fig. 2).

The general aims of the geophysical survey were:

- to provide information about the nature and possible interpretation of any magnetic anomalies identified;
- to therefore determine the presence/absence and extent of any buried archaeological features; and
- to prepare a report summarising the results of the survey.

Magnetometer survey

The cart-based survey was undertaken using an eight channel SenSYS MX V3 system containing eight FGM650 sensors. Readings are taken every 20MHz (between 0.05 and 0.1m). Data were recorded onto a device, using a Carlson GNSS Smart antenna, for centimetre accuracy. These readings were stored in the memory of the instrument and downloaded for processing and interpretation. DLMGPS and MAGNETO software, alongside bespoke in-house software was used to process and present the data. Further details are given in Appendix 1.

Reporting

A general site location plan, incorporating the 1:50000 Ordnance Survey (OS) mapping, is shown in Figure 1. Figure 2 displays processed magnetometer data at a scale of 1:2500. Processed and minimally processed data, together with interpretation of the survey results are presented in Figures 4 to 12 inclusive at a scale of 1:1250.

Technical information on the equipment used, data processing and survey methodologies are given in Appendix 1. Technical information on locating the survey area is provided in

Appendix 2. Appendix 3 describes the composition and location of the archive. A copy of the completed OASIS form is included in Appendix 4.

The survey methodology, report and any recommendations comply with guidelines outlined by the European Archaeological Council (Schmidt *et al.* 2015) and by the Chartered Institute for Archaeologists (CIfA 2020). All figures reproduced from Ordnance Survey mapping are with the permission of the controller of His Majesty's Stationery Office (© Crown copyright).

The figures in this report have been produced following analysis of the data in processed formats and over a range of different display levels. All figures are presented to most suitably display and interpret the data from this site based on the experience and knowledge of Archaeological Services staff.

4 Results and Discussion (see Figures 3 to 5)

Ferrous anomalies and magnetic disturbance

Magnetic disturbance of varying levels of intensity is present across most of the Site. Strong magnetic shadows at the edges of the survey areas are due to adjacent surface and buried ferrous material, and the proximity with extant buildings and yards. Other disturbance, comprising dense concentrations of iron spikes and other small strong responses, is characteristic of the deliberate spreading of waste material, possibly green waste, over the fields as part of landscaping or land management practices (Gerrard *et al* 2015).

In the areas unaffected by the disturbance, individual iron spikes have been highlighted. These are typical of small pieces of ferrous material and other strongly magnetic material scattered in the topsoil and are likely to be modern in origin.

Geological anomalies

The survey has detected anomalies throughout that have been interpreted as geological in origin. It is thought that the responses have been detected because of the variation in the composition and depth of the deposits of superficial material in which they derive.

A few zones of elevated background response have been recorded in the southern parts of the Site. This noise is not as pronounced as the anomalies described above and this could indicate natural enhancement of the soils. It is however possible that this noise also relates to modern land management practices.

Agricultural anomalies

Field drains have been recorded in the southern part of the Site on a north to south alignment. They have quite a low magnetic strength suggesting a non-fired construction material.

Other parallel linear trends can be seen throughout and are associated with modern ploughing. Only a selection of these have been highlighted on the interpretation diagrams to show the direction of the plough lines.

Uncertain anomalies

Two slightly curving trends have been highlighted within the magnetically disturbed zones which do not align with cultivation or drainage. Their precise nature cannot be determined, but given the context, a modern origin seems probable.

5 Conclusions

The geophysical survey has detected a number of magnetic anomalies primarily associated with agricultural activity including field drains and modern ploughing regimes.

Magnetic disturbance within the boundaries is due to proximity with extant buildings and yards, whilst other areas of disturbance within the Site can be attributed to ferrous material within the topsoil, likely as a result of green waste manuring practices.

Geological anomalies have been recorded throughout due to variations within the soils, with an enhanced spread of geological responses in the south of the dataset. Uncertain anomalies within the dataset are likely to be anthropogenic in origin although a more modern agricultural or industrial origin is more likely than an archaeological origin. Overall, the archaeological potential of the Site is deemed to be low.

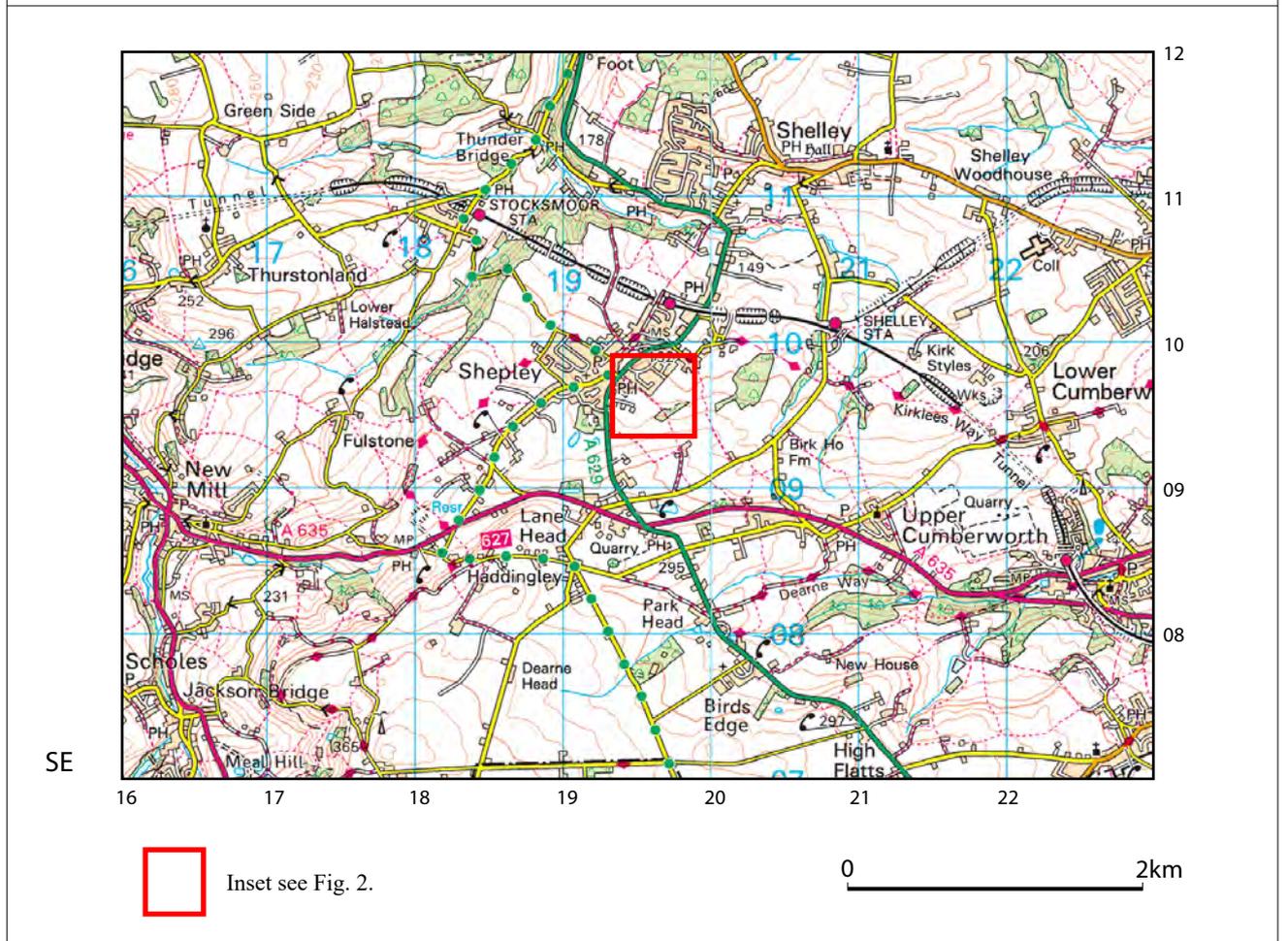
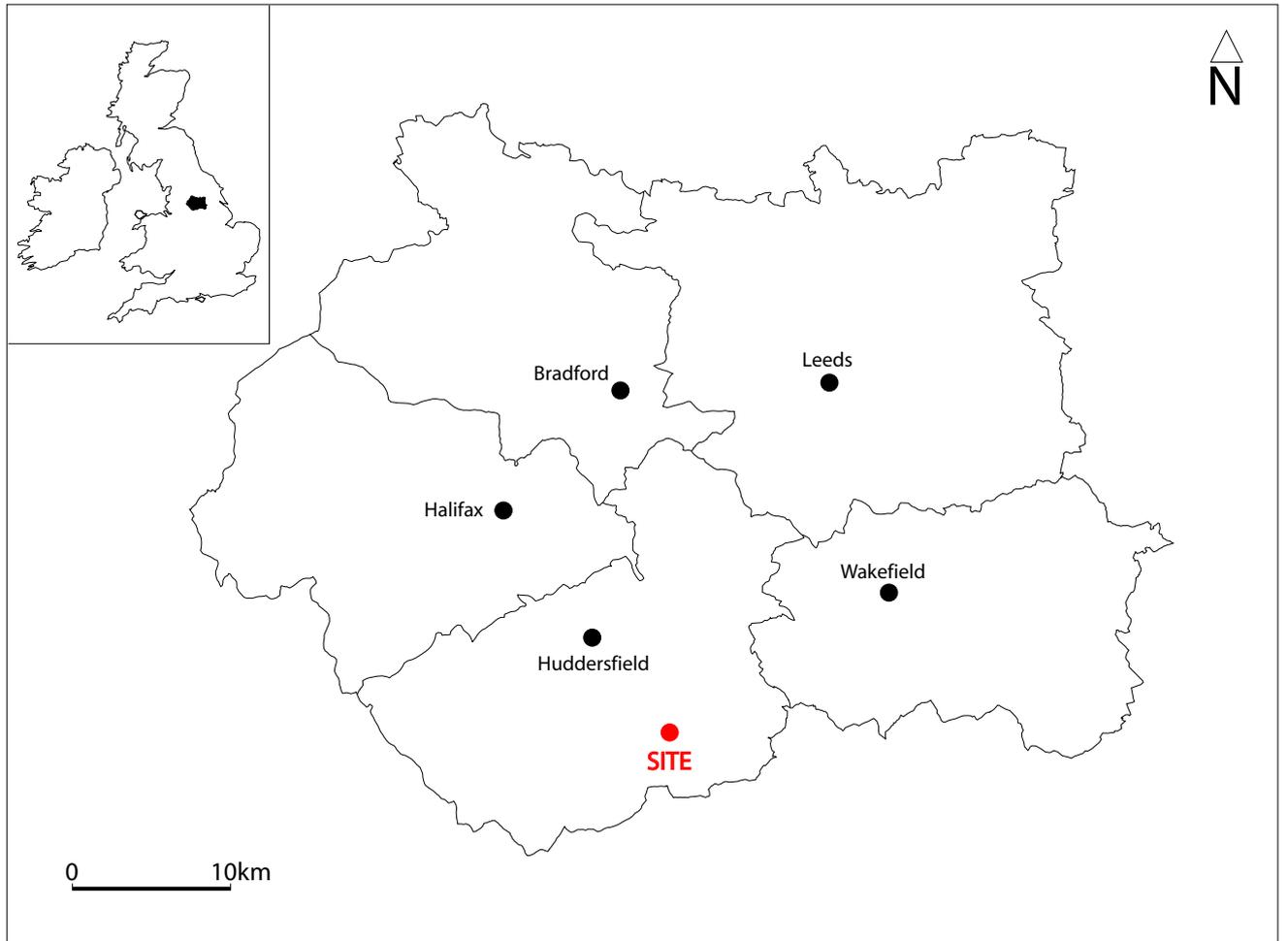


Fig. 1. Site location




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Project ID: XT12_SLY25
 Survey location showing processed greyscale magnetometer data

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Title

	SURVEY AREA
	UNSUITABLE FOR SURVEY
	PHOTO LOCATIONS

	
<p>1:2500 @ A3</p>	

Fig. 2



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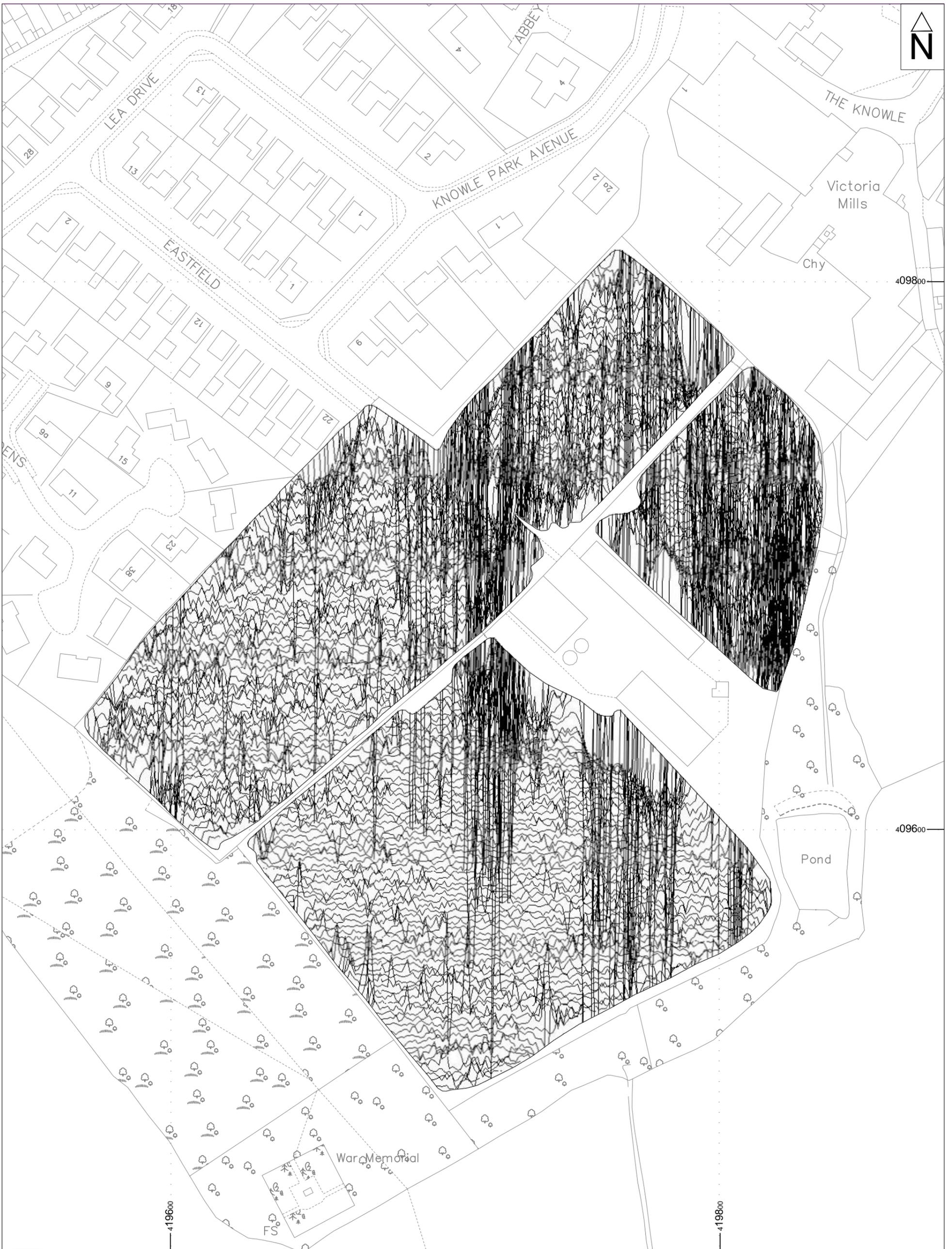
Processed greyscale magnetometer data



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Fig. 3

1:1250 @ A3




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XY trace plot of minimally processed greyscale magnetometer data

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15.0 nT/cm

0 50m

1:1250 @ A3

Fig. 4




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Interpretation of magnetometer data

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Interpretation

 FERROUS	 FIELD DRAIN	 UNCERTAIN
 MAGNETIC DISTURBANCE	 AGRICULTURAL	
 GREEN WASTE?	 GEOLOGY / ZONE OF	

0 50m

1:1250 @ A3

Fig. 5



Plate 1. General view of Site, looking northwest



Plate 2. General view of Site, looking southeast



Plate 3. General view of Site looking southwest



Plate 4. General view of Site, looking northeast

Appendix 1: Magnetic survey - technical information

Magnetic Susceptibility and Soil Magnetism

Iron makes up about 6% of the Earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haemetite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms. Areas of human occupation or settlement can then be identified by measuring the magnetic susceptibility of the topsoil because of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected. The magnetic susceptibility of a soil can also be enhanced by the application of heat and the fermentation and bacterial effects associated with rubbish decomposition. The area of enhancement is usually quite large, mainly due to the tendency of discard areas to extend beyond the limit of the occupation site itself, and spreading by the plough.

Types of Magnetic Anomaly

In the majority of instances anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being present as a consequence of manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. These anomalies are often caused by agricultural activity, either ploughing or land drains being a common cause.

Areas of magnetic enhancement/positive isolated anomalies

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response on two or three successive traverses. In neither instance is there the intense dipolar response characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

Linear and curvilinear anomalies

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

Methodology: Gradiometer Survey

The main method of using the fluxgate gradiometer for commercial evaluations is referred to as *detailed survey* and requires the surveyor to walk at an even pace carrying the instrument within a grid system. A sample trigger automatically takes readings at predetermined points, typically at 0.25m intervals, on traverses 1m apart. These readings are stored in the memory of the instrument and are later dumped to computer for processing and interpretation.

During this survey an eight channel Sensys MX V3 system containing eight FGM650 sensors was also used which was towed across the area using an ATV. Readings were taken every 20MHz (between 0.05 and 0.1m). Data was be recorded onto a device, using a Carlson GNSS Smart antenna, for centimetre accuracy. These readings were stored in the memory of the instrument and downloaded for processing and interpretation.

The gradiometer data have been presented in this report in processed greyscale format. The data in the greyscale images have been interpolated and selectively filtered to remove the effects of drift in instrument calibration and other artificial data constructs and to maximise the clarity and interpretability of the archaeological anomalies.

Appendix 2: Survey location information

Data was recorded onto a device, using a Carlson GNSS BRx7 Smart antenna, for centimetre accuracy. These readings were stored in the memory of the instrument and downloaded for processing and interpretation. The accuracy of the BRx7 is between 0.15cm – 0.8cm. The BRx7 has a built-in tilt sensor to correct collected point coordinates to within 2cm.

The survey data were then super-imposed onto a base map provided by the client to produce the displayed locations. However, it should be noted that Ordnance Survey positional accuracy for digital map data has an error of 0.5m for urban and floodplain areas, 1.0m for rural areas and 2.5m for mountain and moorland areas. This potential error must be considered if co-ordinates are measured off hard copies of the mapping rather than using the digital co-ordinates.

Archaeological Services WYAS cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

Appendix 3: Geophysical archive and metadata

The geophysical archive comprises:-

- an archive disk containing compressed (WinZip 8) files of the raw data, report text (Microsoft Word 2003), and graphics files (Adobe Illustrator CS6 and AutoCAD 2017) files; and
- a full copy of the report.

At present the archive is held by Archaeological Services WYAS although it is anticipated that it may eventually be lodged with the Archaeology Data Service (ADS). Brief details may also be forwarded for inclusion on the English Heritage Geophysical Survey Database after the contents of the report are deemed to be in the public domain (i.e. available for consultation in the West Yorkshire Historic Environment Record).

Appendix 4: Oasis form

OASIS Summary for archaeol11-536668

OASIS ID (UID)	archaeol11-536668
Project Name	Shepley, Huddersfield, West Yorkshire: Geophysical Survey
Sitename	Shepley, Huddersfield, West Yorkshire
Sitecode	SLY25
Project Identifier(s)	Shepley, Huddersfield, West Yorkshire
Activity type	Geophysical Survey, Magnetometry Survey, MAGNETOMETRY SURVEY
Planning Id	
Reason For Investigation	Planning requirement
Organisation Responsible for work	Archaeological Services WYAS
Project Dates	19-Aug-2025 - 19-Aug-2025
Location	Shepley, Huddersfield, West Yorkshire NGR : SE 19738 09697 LL : 53.58349458514845, -1.703333204549872 12 Fig : 419738,409697
Administrative Areas	Country : England County/Local Authority : Kirklees Local Authority District : Kirklees Parish : Kirkburton
Project Methodology	A geophysical (magnetometer) survey was undertaken on approximately 4 hectares of land located to the east of Shepley, Huddersfield, West Yorkshire. The cart-based survey was undertaken using an eight channel SenSYS MX V3 system containing eight FGM650 sensors. Readings are taken every 20MHz (between 0.05 and 0.1m). Data were recorded onto a device, using a Carlson GNSS Smart antenna, for centimetre accuracy. These readings were stored in the memory of the instrument and downloaded for processing and interpretation. DLMGPS and MAGNETO software, alongside bespoke in-house software was used to process and present the data.
Project Results	The geophysical survey has detected a number of magnetic anomalies primarily associated with agricultural activity including field drains and modern ploughing regimes. Magnetic disturbance within the boundaries is due to proximity with extant buildings and yards, whilst other areas of disturbance within the Site can be attributed to ferrous material within the topsoil, likely as a result of green waste manuring practices. Geological anomalies have been recorded throughout due to variations within the soils, with an enhanced spread of geological responses in the south of the dataset. Uncertain anomalies within the dataset are likely to be anthropogenic in origin although a more modern agricultural or industrial origin is more likely than an archaeological origin. Overall, the archaeological potential of the Site is deemed to be low.
Keywords	
Funder	Private or public corporation Banks Property Limited
HER	West Yorkshire HER - unRev - STANDARD
Person Responsible for work	Emma Brunning
HER Identifiers	
Archives	

Bibliography

- BGS, 2025. <https://geologyviewer.bgs.ac.uk> British Geological Survey (viewed September 2025)
- CIfA, 2020. *Standard and Guidance for Archaeological Geophysical Survey*. Chartered Institute for Archaeologists
- CSAI, 2025. <http://www.landis.org.uk/soilscapes/> Cranfield Soil and Agrifood Institute (viewed September 2025)
- Gerrard, J., Caldwell, L and Kennedy, A. 2015. 'Green Waste and Archaeological Geophysics', *Archaeological Prospection* 22 (2), 139-142
- NLS, 2025. <https://maps.nls.uk/index.html>. National Library of Scotland (viewed September 2025)
- Schmidt, A. Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A, and Fassbinder, J. 2015. *EAC Guidelines for the Use of Geophysics in Archaeology*. English Heritage