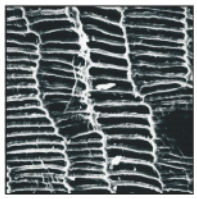
WISF18










WINTERINGHAM INGS TO SOUTH FERRIBY FLOOD ALLEVIATION SCHEME, SOUTH FERRIBY, NORTH LINCOLNSHIRE

GEOPHYSICAL SURVEY

commissioned by Jacobs Ltd
on behalf of the Environment Agency

October 2018

HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

WINTERINGHAM INGS TO SOUTH FERRIBY FLOOD ALLEVIATION SCHEME, SOUTH FERRIBY, NORTH LINCOLNSHIRE

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This report adheres to the quality standard of ISO 9001:2015

PROJECT INFO:

HA Project Code **WISF18** / NGR **SE 9788 2112** / Parish **South Ferriby** / Local Authority **North Lincolnshire** / OASIS Ref. **headland5-329506**

PROJECT TEAM:

Project Manager **Sam Harrison** / Author **Krasimir Dyulgerski with Alistair Webb** / Fieldwork **Krasimir Dyulgerski, Mark Evans, Phoebe Utting** / Graphics **Caroline Norrman, David Harrison, Krasimir Dyulgerski, Rafael Maya Torcelly**

Approved by **Sam Harrison**

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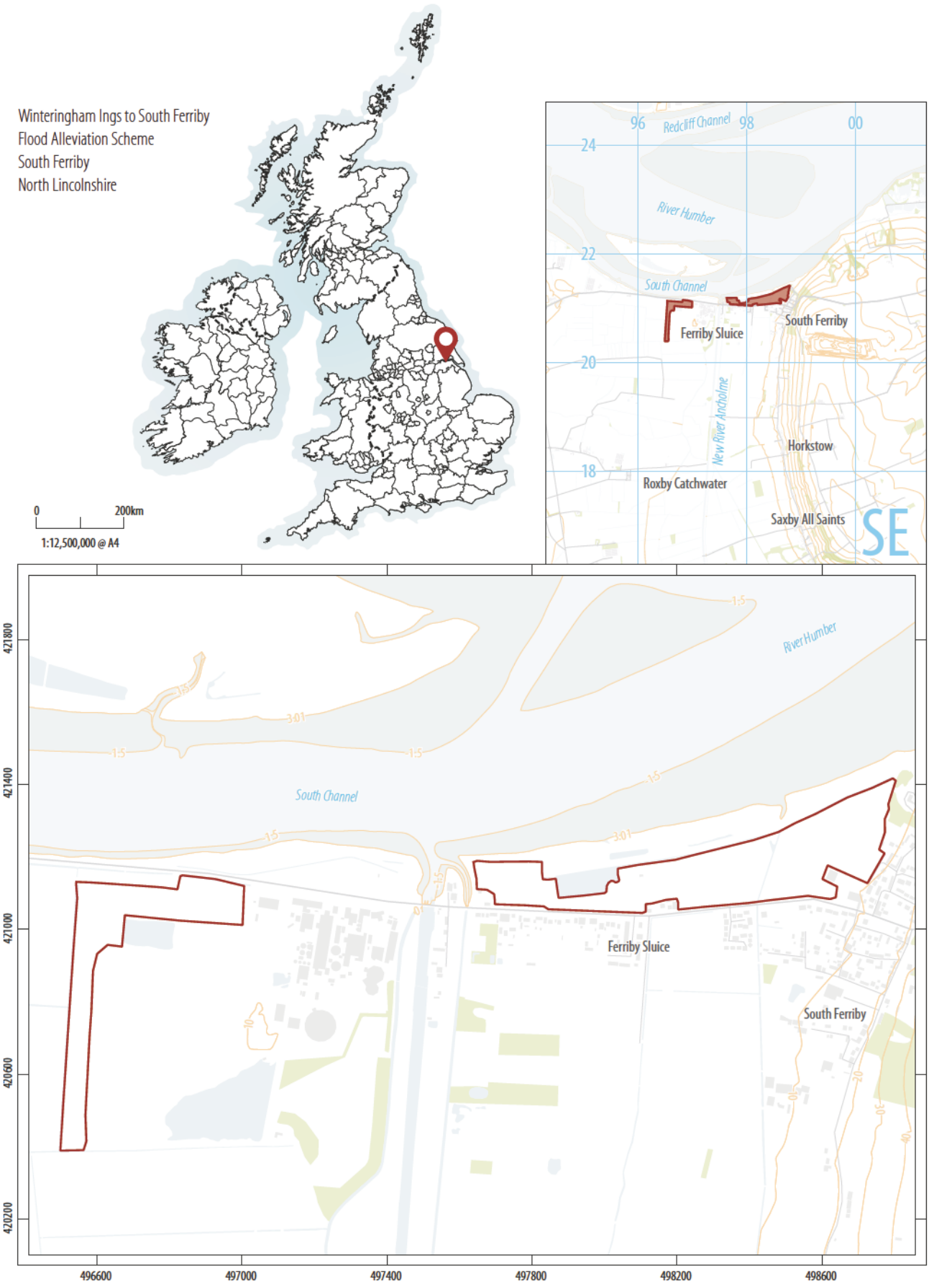
HEADLAND ARCHAEOLOGY

PROJECT SUMMARY

Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey, covering 25 hectares, at two locations bordering the Humber Estuary at Winteringham Ings and South Ferriby, North Lincolnshire, in advance of improvements to the existing flood defences. The scheme would impact directly on a scheduled monument (Ferriby Sluice) and also non-designated former assets (the channel of the River Ancholme and a post medieval brickyard), both located within the eastern part of the Scheme. Overall the data is dominated by anomalies indicative of former shorelines, inlets and estuarine alluvial deposits. The survey has confirmed the location of the brickyard and the former river channel. In addition the survey has clearly located a second site of brick manufacture (not shown on historic mapping) with the identification of three possible brick clamps or structures. A linear anomaly may locate the continuation of a medieval causeway although this interpretation is deemed tentative. Overall the survey has provided additional information of the cultural heritage potential of the area likely to be impacted by the proposed flood defence works.

CONTENTS

LIST OF ILLUSTRATIONS



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ILLUS 1 Site location

WINTERINGHAM INGS TO SOUTH FERRIBY FLOOD ALLEVIATION SCHEME, SOUTH FERRIBY, NORTH LINCOLNSHIRE

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by Jacobs Ltd (The Consultant), on behalf of the Environment Agency (The Client), to undertake a geophysical (magnetometer) survey on land that will be impacted by groundworks during proposed improvements to the existing flood defences west of South Ferriby along the Humber Estuary (see Illus 1). The survey was carried out as part of a baseline study which aims to assess the heritage potential of the survey area.

The work was undertaken in accordance with a Written Scheme of Investigation for Archaeological Geophysical Survey (Dyulgerski 2018) and in line with current best practice (Chartered Institute for Archaeologists 2016, Europae Archaeologia Consilium 2015).

The survey was carried out between August 20th and August 24th 2018.

1.1 SITE LOCATION, TOPOGRAPHY AND LAND-USE

The geophysical survey area (GSA) comprises two irregular blocks of land covering a combined area of 25 hectares. The western area (Winteringham Ings), centred on SE 9533 2091, comprises two fields (F1 and F2) which are bound by Sluice Road to the north, the CEMEX cement works to the east and a field drain to the west. The eastern area (South Ferriby), centred on SE 9838 2116, comprises eight fields which are bound by Sluice Road to the south, the River Humber to the north and the village of South Ferriby to the east.

Both areas occupy low-lying ground on the southern bank of the South Channel of the Humber Estuary at a height of between 2m and 3m Above Ordnance Datum (AOD).

All of the fields in GSA comprised permanent pasture with the exception of F7 which was fallow following the recent harvest.

1.2 GEOLOGY AND SOILS

The bedrock geology in the eastern area comprises mudstone of the Ampthill Clay Formation which is overlain by superficial deposits of alluvium (clay, silt, sand and gravel). At Winteringham Ings the bedrock geology comprises mudstone and siltstone of the West Walton Formation to the west of the block and Oxford Clay Formation mudstones to the east. Superficial deposits of alluvium overlay the whole area (NERC 2018).

The soils are classified in the Soilscape 20 association as naturally wet loams and clay floodplain soils over both the eastern and western blocks (Cranfield University 2018).

2 ARCHAEOLOGICAL BACKGROUND

A Cultural Heritage Desk-based Assessment (DBA) (Jacobs 2018) identified Roman, medieval, post-medieval and modern activity in the vicinity of the GSA. This includes a possible Roman Road connecting the settlements at Old Winteringham (HER MLS2068) to the west and South Ferriby Cliff (HER MLS1661) to the east. The projected alignment of this feature (HER MLS16777) crosses the western part of the scheme. Medieval activity within the wider study area focuses around South Ferriby itself and the agricultural and settlement patterns on the periphery of the village. Two surviving historic landscape elements that cross the GSA are the former channel of the River Ancholme (HER MLS20413) and the causeway from South Ferriby to the crossing of the River Ancholme (HER MLS26041). Post-medieval assets within the GSA include a former brickyard (HER MLS21994) and associated areas of extraction.

ILLUS 2 Field 1; looking east towards CEMEX plant **ILLUS 3** Field 4; looking east **ILLUS 4** Field 5, showing probable former brickworks building; looking north

Analysis of Ordnance Survey (OS) maps covering the extent of the scheme has identified a few changes in the pattern of enclosure since the publication of the first edition map (Old-maps.co.uk, 2018), with several boundaries being removed over the last 150 years.

3 AIMS, METHODOLOGY AND PRESENTATION

The general aim of the geophysical survey was to provide sufficient information to establish the presence/absence, character and extent of any archaeological remains within the GSA.

The specific archaeological objectives of the geophysical survey were:

- to provide information about the nature and possible interpretation of any magnetic anomalies identified;
- to therefore determine the likely presence/absence and extent of any buried archaeological features; and
- to produce a comprehensive site archive and report.

3.1 MAGNETOMETER SURVEY

Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried archaeological remains. A feature such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations, detailed plans of sites can be obtained as

ILLUS 5 Field 8; looking west

buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney & Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid carrying frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10–15cm sample interval) on roaming traverses (swaths) 4m apart. These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point. It is estimated that the maximum depth of recording of the magnetometer sesnsors is between 1.0m and 1.5m.

MLGrad601 and MultiGrad601 (Geomar Software Inc.) software was used to collect and export the data. Terrasurveyor V3.0.32.4 (DWConsulting) software was used to process and present the data.

3.2 REPORTING

A general site location plan is shown in Illus 1 at a scale of 1:15,000. Illus 2–5 are site condition photographs. Illus 6 is a 1:7,500 survey location plan showing photo directions. Overviews of the data from the whole GSA with an accompanying interpretative plot are produced at a scale of 1:7,500 as Illus 7 and Illus 8. Detailed plots of the fully processed (greyscale) and minimally processed (XY traceplot) data, together with interpretation plots are presented at a scale of 1:2,000 as Illus 9 to Illus 17 inclusive.

Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the site archive. Data processing details are presented in Appendix 4.

The survey methodology, report and any recommendations comply with the Written Scheme of Investigation for Archaeological Geophysical Survey (Dyulgerski 2018) submitted to the client, guidelines outlined by Historic England (Europae Archaeologia Consilium 2015) and by the Chartered Institute for Archaeologists (CIfA 2016). All illustrations from Ordnance Survey mapping are reproduced with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

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

4 RESULTS AND DISCUSSION

The ground conditions were good throughout and the overall data quality is good. The magnetic background is variable throughout,

with large parts of the GSA dominated by broad and amorphous high magnitude anomalies which are typical of alluvium and tidal flat deposits. Against this background it is potentially difficult to identify much weaker archaeological anomalies, if present.

In areas unaffected by the prevailing geological background other anomalies have been identified and these are discussed below and cross-referenced to specific examples on the interpretive figures, where appropriate.

4.1 FERROUS ANOMALIES

Ferrous anomalies, characterised as individual 'spikes', are typically caused by ferrous (magnetic) material, either on the ground surface or in the plough-soil. Little importance is normally given to such anomalies, unless there is any supporting evidence for an archaeological interpretation, as modern ferrous debris is common on most sites, often being present due to manuring or tipping/infilling. There is no obvious clustering to these individual ferrous anomalies which might indicate an archaeological origin. Far more probable is that the 'spike' responses are likely caused by the random distribution of ferrous debris in the upper soil horizons.

Linear bands of magnetic disturbance around field edges and bordering roads are due to ferrous material within the field boundaries.

The data from the whole of F3 is magnetically disturbed suggesting that this whole parcel of land has been tipped on and/or that a former structure may have been demolished and the material spread across the field.

4.2 MODERN ANOMALIES

Two well defined areas of magnetic disturbance are identified, both of which are interpreted as areas of brick manufacture. Most of the disturbance is due to the random distribution of the fired material (bricks) in the plough soil although the linearity of some of the anomalies is indicative of in situ, sub-surface, survival of structural remains, possibly the bases of brick clamps/kilns.

The first brickyard, BY1, is located in the north-eastern corner of F3, focused around three rectilinear anomalies with their long axis aligned east/west. These anomalies are interpreted as probable brick clamps (Illus 8, Illus 12–14, BC1 to BC3 inclusive) or other structures associated with brick manufacture. This brickyard does not appear on any historical mapping.

The second brickyard, BY2, is located in the north-eastern corner of F5 extending across into F6. Again, three rectilinear anomalies, this time with their long axis aligned north/south, are clearly identified at the northern edge of the field. These anomalies (Illus 8, Illus 12–14, BC4 to BC6 inclusive) are again interpreted as brick clamps or other structures associated with brickmaking. This brickyard is recorded on the historic mapping and corresponds with the site of a 19th century brickworks (HER MLS21994).

A sub-circular area of disturbance locates an infilled pond (Illus 8 and Illus 9–11; IP), probably originally a former clay pit associated with the nearby brick making activity; there are still several extant ponds in the immediate vicinity of the GSA.

4.3 AGRICULTURAL ANOMALIES

Linear anomalies or linear trends in the data are identified in the majority of the fields. All of these anomalies are due to agricultural activity (boundary removal, ploughing or drainage) over the last 200 years.

Analysis of the historic OS mapping indicates that the pattern of enclosure has changed since the publication of the first edition with several former boundaries having been removed to increase field size. These former boundaries manifest in the data as high magnitude linear anomalies (FB1–FB13) and are mostly parallel or at right angles to extant boundaries.

L-shaped anomaly (Illus 8 and Illus 9–11; FB3), corresponds to a former embankment as recorded on the 1908 OS map.

In F4 the 'stepped' linear trend anomaly (Illus 8 and Illus 12–14; FH1) correlates with the boundary or headland enclosing an area of boggy ground marked on historic mapping.

A series of linear anomalies identified in F8 (Illus 8 and Illus 15–17), oblique to the extant field boundaries and exhibit a 'speckled' appearance, are caused by field drains.

All other linear trend anomalies are also interpreted as of agricultural origin and are interpreted as being indicative of recent ploughing/cultivation.

4.4 GEOLOGICAL ANOMALIES

The data from the GSA is dominated by broad amorphous high magnitude anomalies which are typical of alluvial and tidal flat deposits laid down in estuarine or low-lying coastal areas.

In F1 a series of slightly curving anomalies (Illus 8 and Illus 7–11; FS1–FS5), aligned broadly from east to west parallel with the foreshore of the estuary, are caused by the accumulation of sediments along former beachlines and bars of the River Humber.

In F1, F3, F5, F9, and F10 a number of coherent sinuous curvilinear anomalies are interpreted as former silted up creeks or channels.

In F6 (Illus 8 and Illus 15–17) a homogenous band of low magnetic readings running from the River Humber inland for approximately 200m on a south-west to north-east alignment locates the former medieval channel of the River Ancholme (Illus 6, HER MLS20413).

4.5 ARCHAEOLOGICAL ANOMALIES

No anomalies of definite archaeological potential have been identified by the geophysical survey. However, three anomalies of possible archaeological potential have been identified in F5 (Illus 8 and Illus 12–14). These anomalies are aligned oblique to the current field boundaries and cannot be confidently interpreted as

either modern, geological or agricultural in origin and are therefore interpreted as of possible archaeological origin.

The discrete parallel linear anomalies D1 and D2, aligned south-east/north-west, are spaced 4.5m apart and may be caused by soil-filled ditches, possibly ditches either side of a former trackway or road. However, there is no evidence on the historic mapping to support this interpretation which is consequently assessed as tentative.

A third discrete linear anomaly (CW1, Illus 8, Illus 12–14) with a length of 70m running south-east to north-west, is identified. This anomaly, interpreted to be of possible archaeological origin, may locate the continuation of a medieval causeway located 75m south-east and identified as a heritage asset in the DBA (Illus6, HER MLS26041).

5 CONCLUSION

The geophysical survey has successfully evaluated the area of the proposed flood alleviation scheme and has identified anomalies consistent with historical agricultural activity in the landscape (boundary removal, laying of field drains and ploughing), post-medieval industrial activity (clay extraction and brick manufacture) and the former estuarine landscape (relict shorelines, creeks, inlets, a former river course) and the widespread occurrence of alluvial deposits. The areas of brick manufacture may be of moderate archaeological interest.

No anomalies of definite archaeological origin have been identified although three linear anomalies of possible archaeological origin are interpreted one of which may locate the continuation of a medieval causeway, identified in the DBA.

It should be noted that the relatively weak responses from archaeological features (if present) may be masked by the much stronger responses from the alluvial deposits and estuarine features.

In conclusion the results of the survey corroborate the findings of the DBA and assesses the archaeological potential of the GSA as moderate in the vicinity of the identified anomalies.

6 REFERENCES

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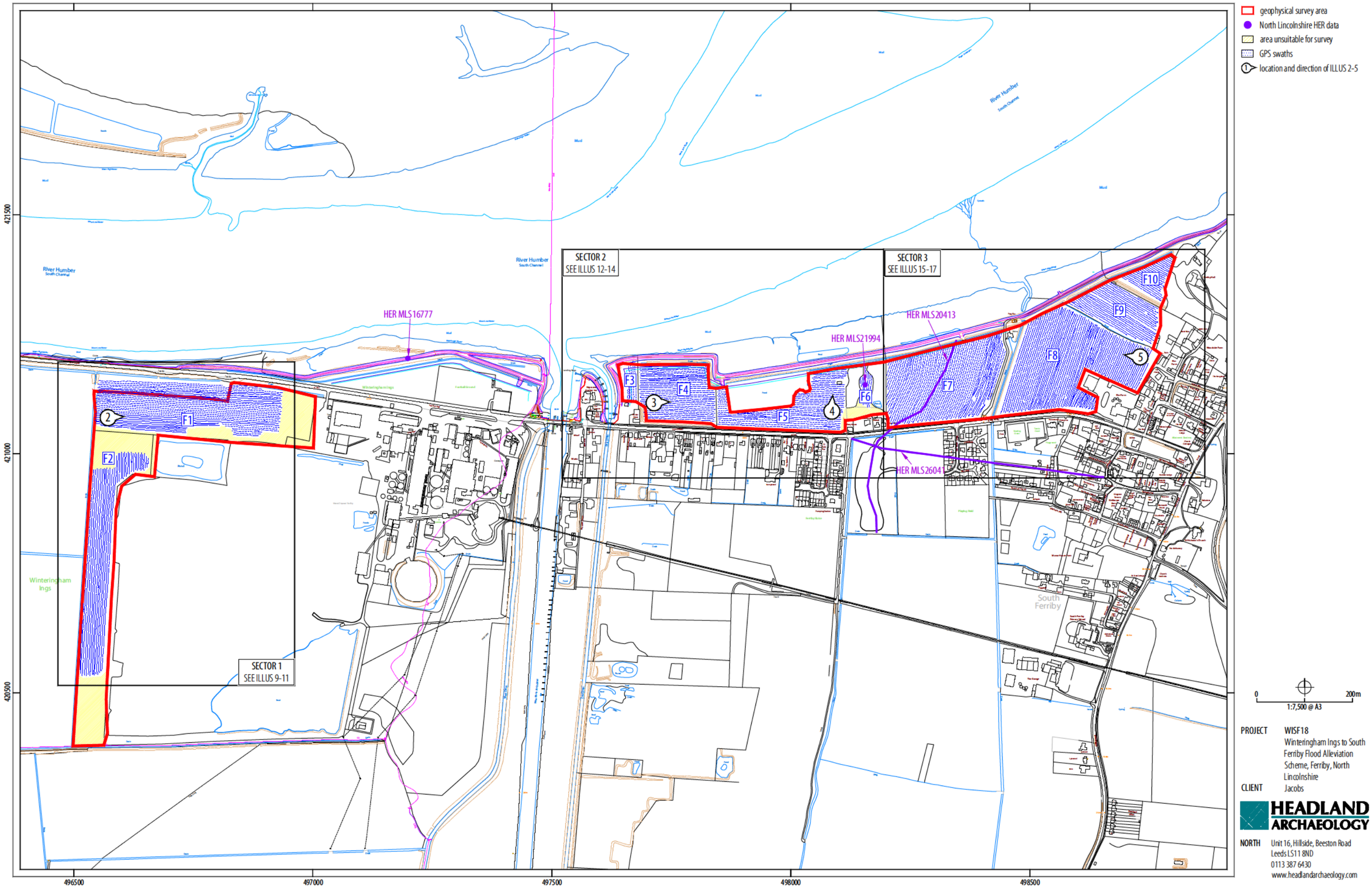

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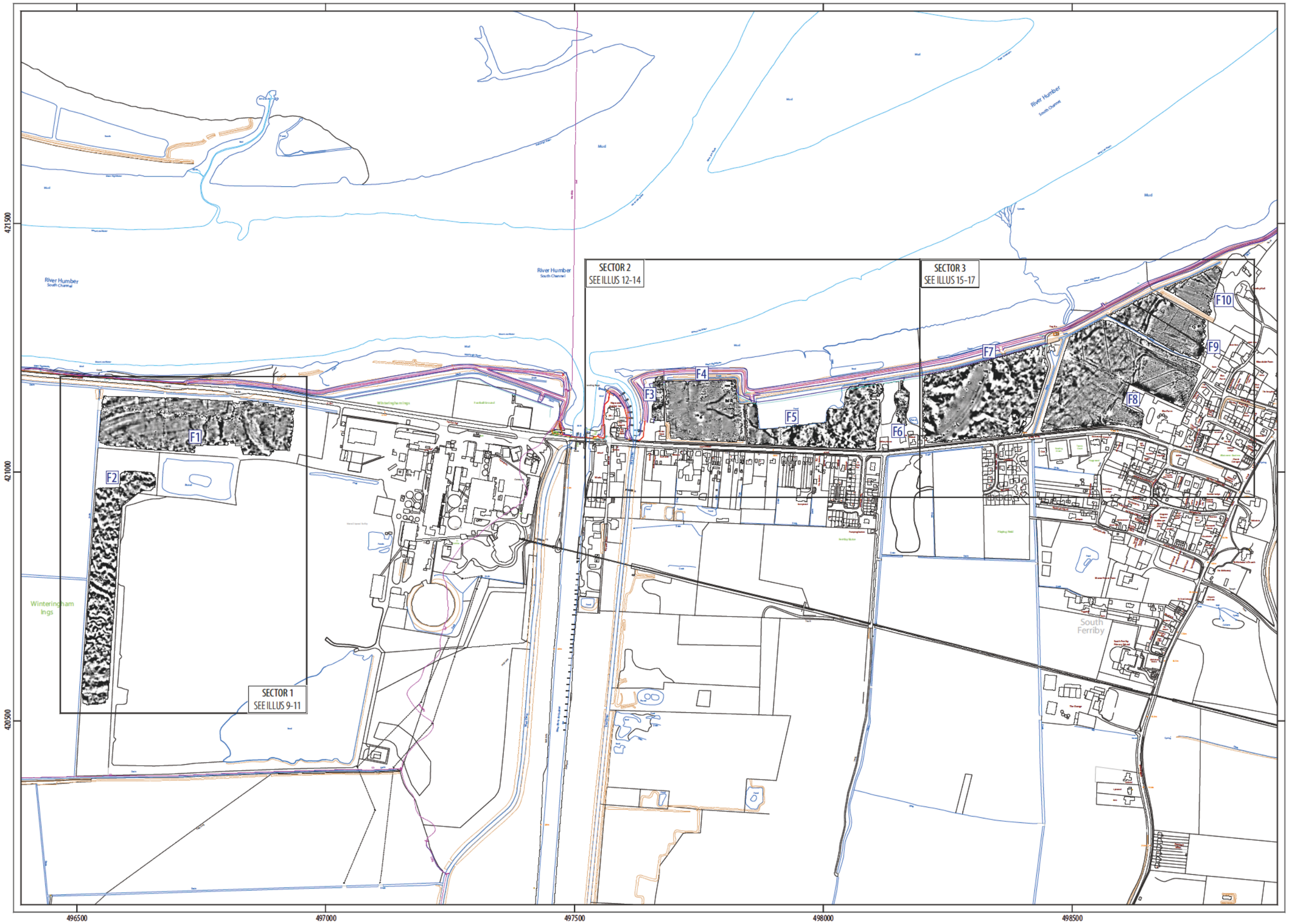
ILLUS 6 Survey location showing GPS swaths, photo locations and North Lincolnshire HER assets (1:7,500)



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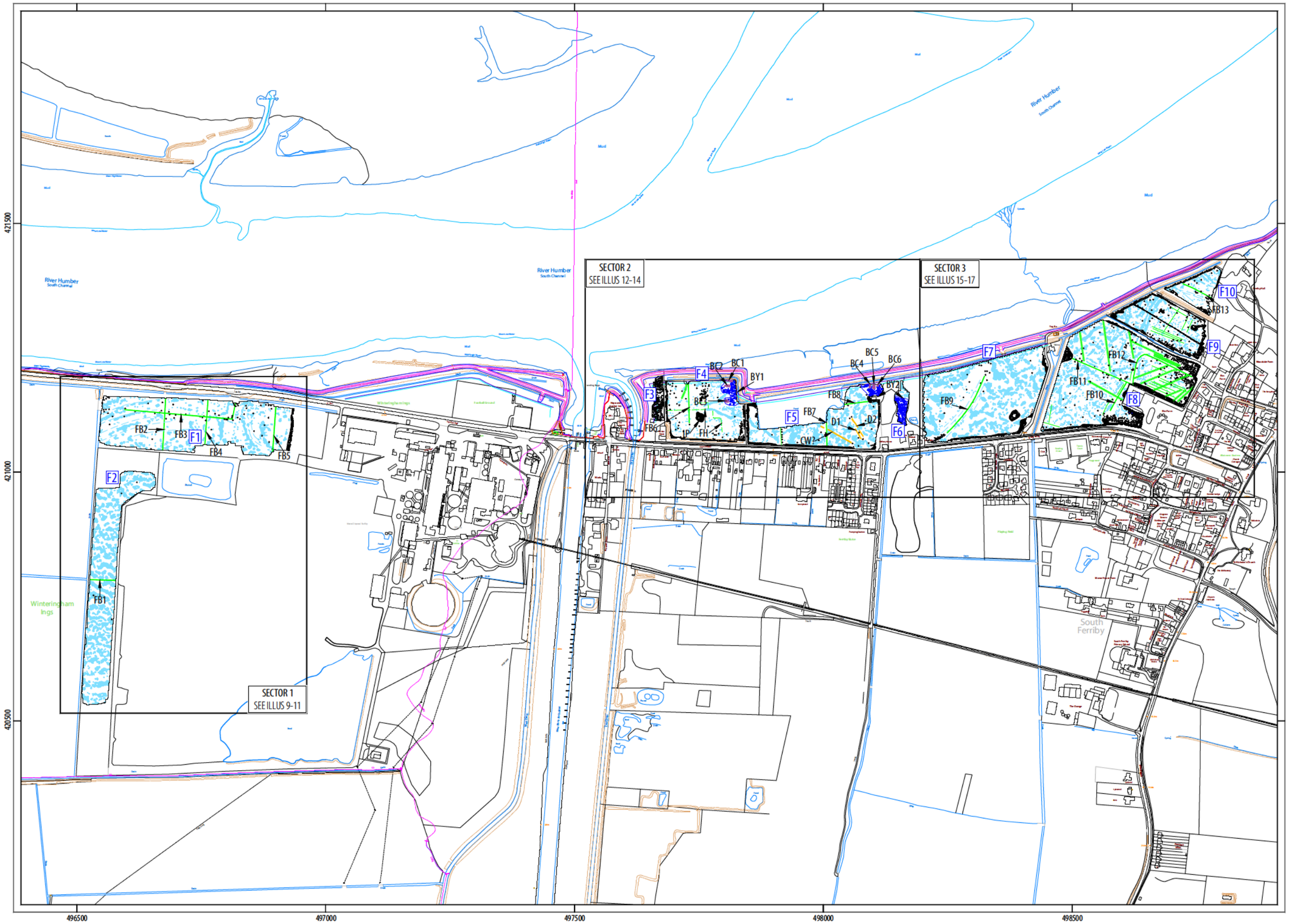
ILLUS 7 Processed greyscale magnetometer data (1:7,500)



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
magnetic disturbance	modern/industrial
magnetic disturbance	modern/industrial
linear trend	agricultural
linear trend	former headland
linear trend	field drain
linear	former field boundary
linear trend	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?

ABBREVIATIONS

BC brick clamp
BY brick yard
CW? causeway?
D ditch
FB former boundary
FH former headland
IP infilled pond

0 200m
1:7,500 @ A3

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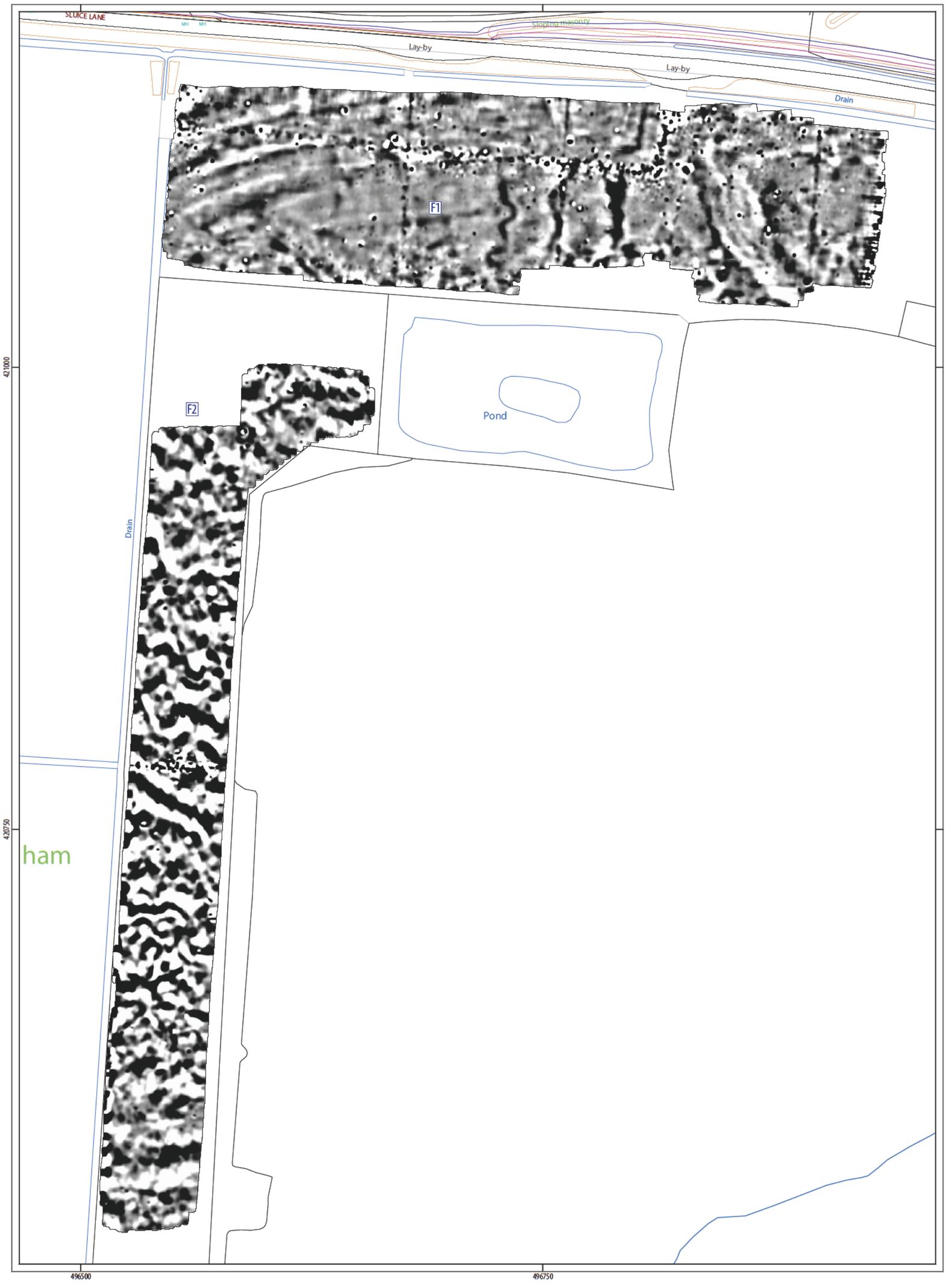
ILLUS 8 Interpretation of magnetometer data (1:7,500)



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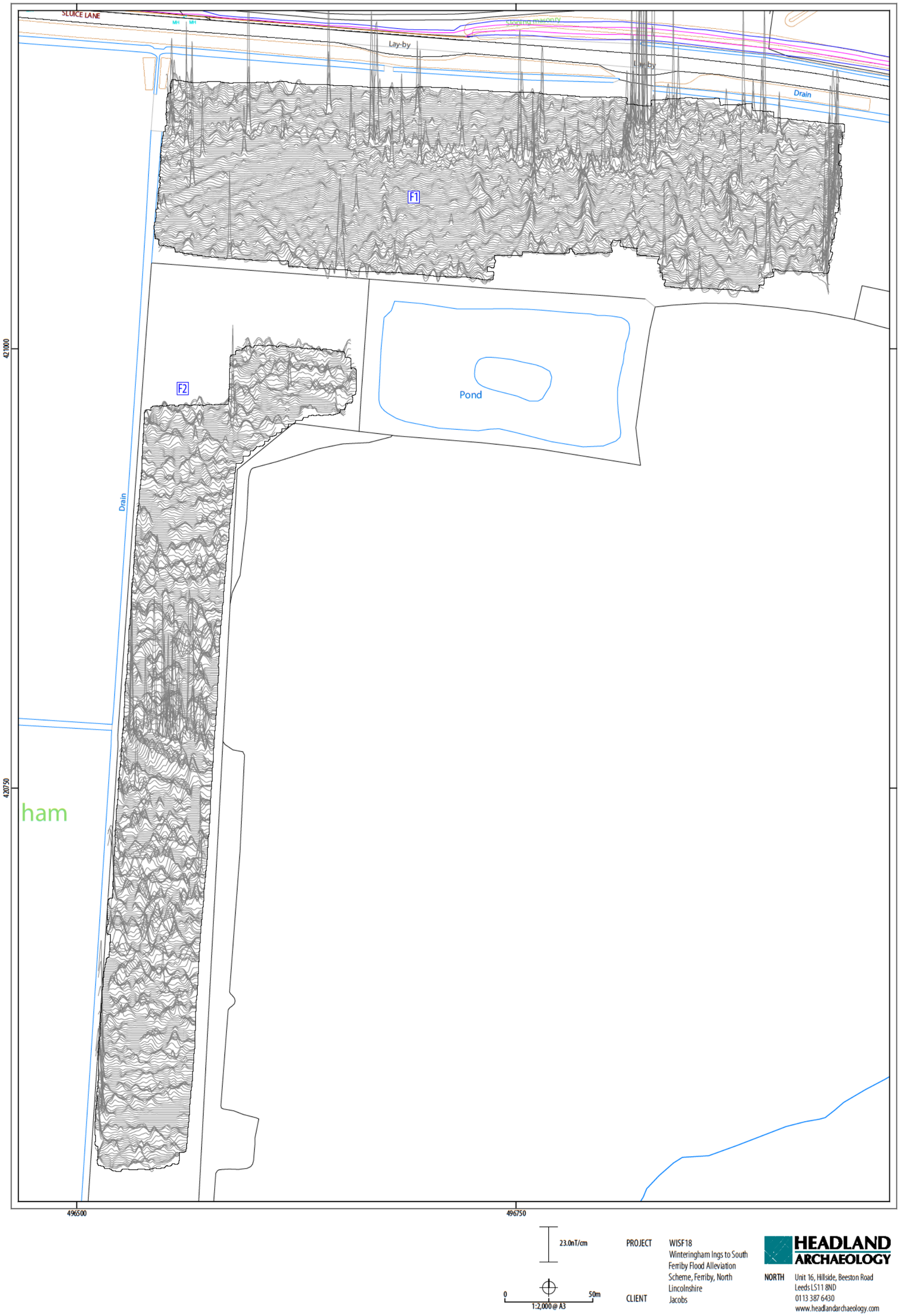
ILLUS 9 Processed greyscale magnetometer data; Sector 1 (1:2,000)



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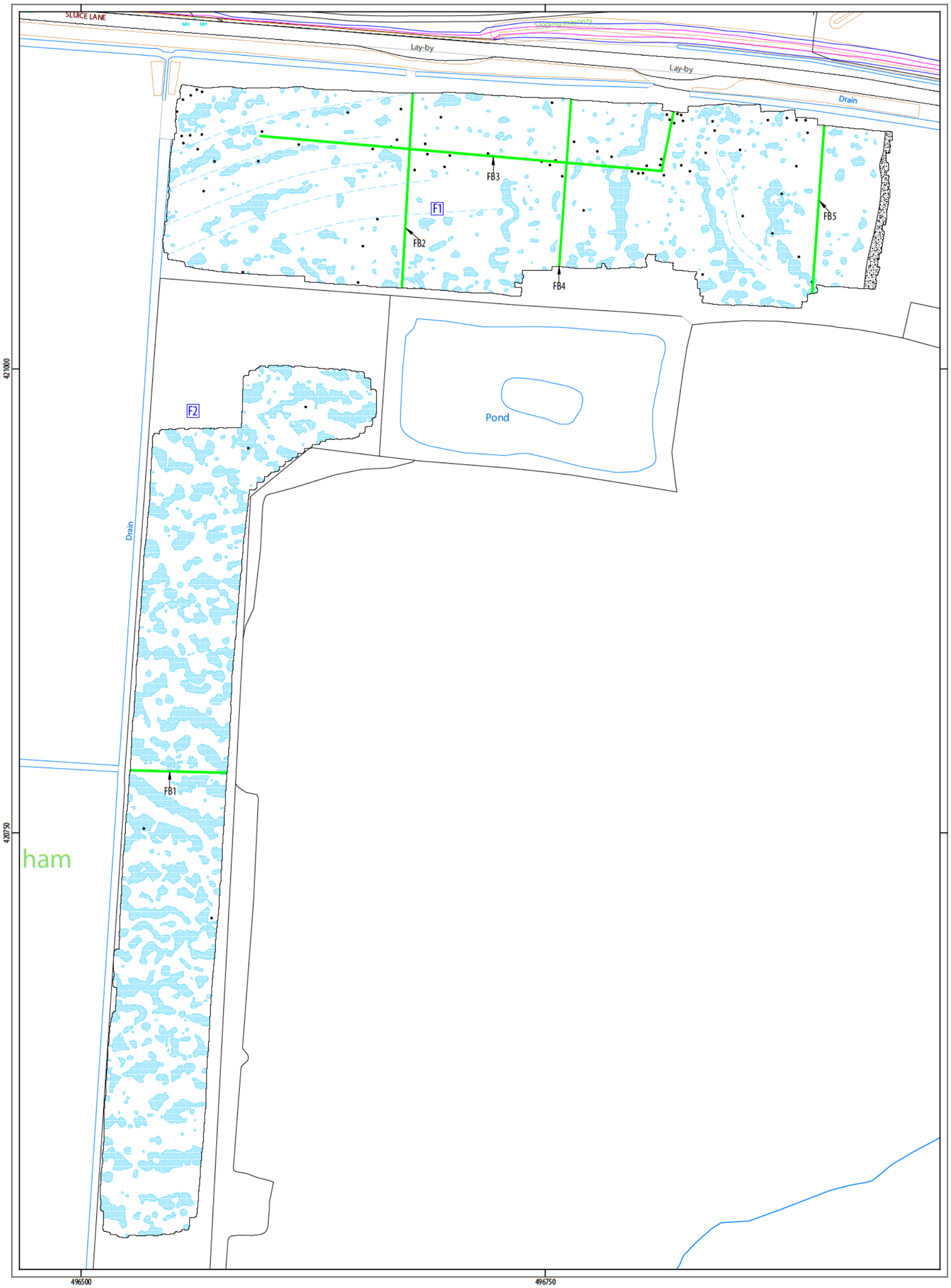
ILLUS 10 XY trace plot of minimally processed magnetometer data; Sector 1 (1:2,000)



TYPE OF ANOMALY | INTERPRETATION

- dipolar isolated | ferrous material
- magnetic disturbance | ferrous material
- linear | former field boundary
- linear trend | geological variation
- magnetic enhancement | geology

ABBREVIATIONS

FB former boundary

0 50m
1:2,000 @ A3

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ILLUS 11 Interpretation of magnetometer data; Sector 1 (1:2,000)

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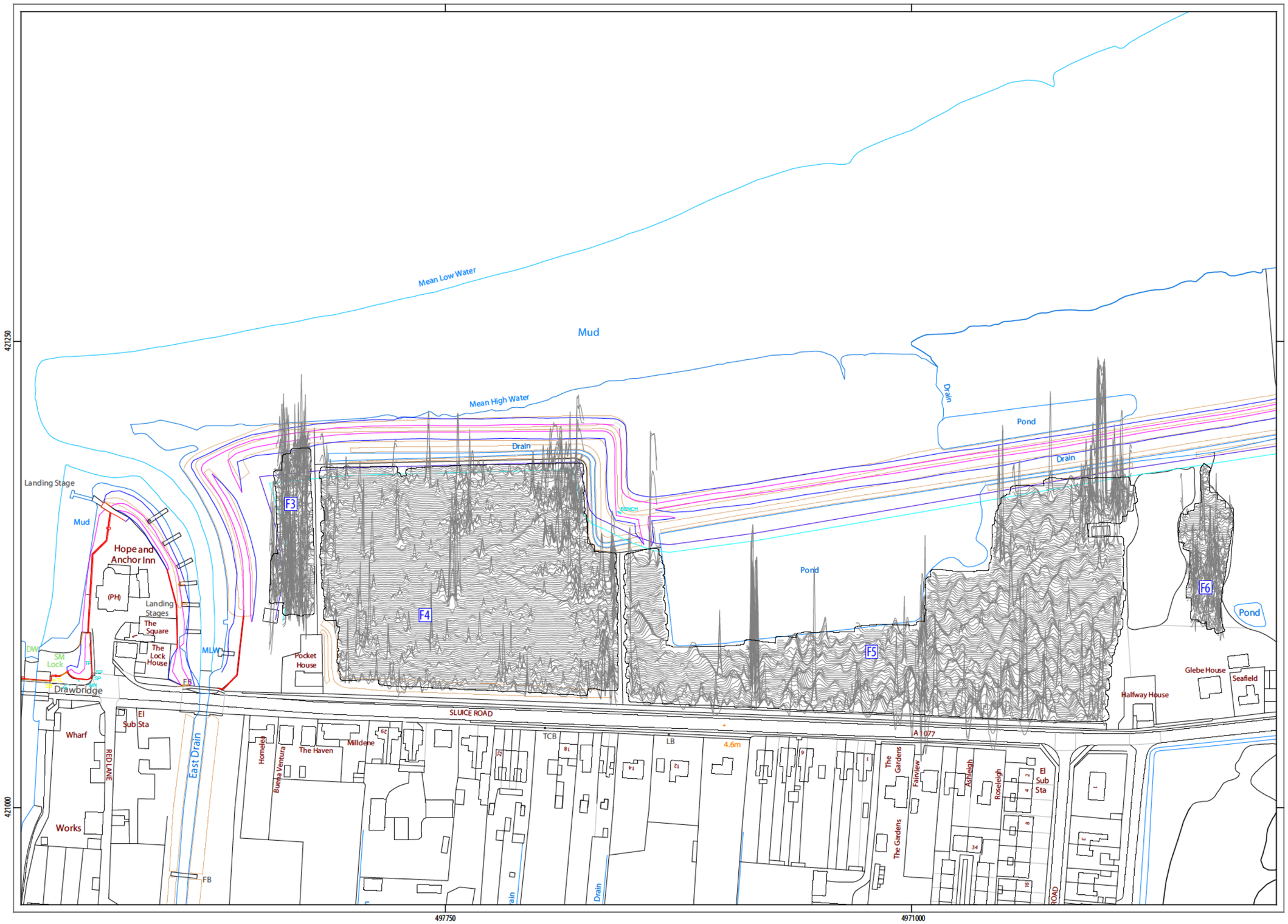
ILLUS 12 Processed greyscale magnetometer data; Sector 2 (1:2,000)



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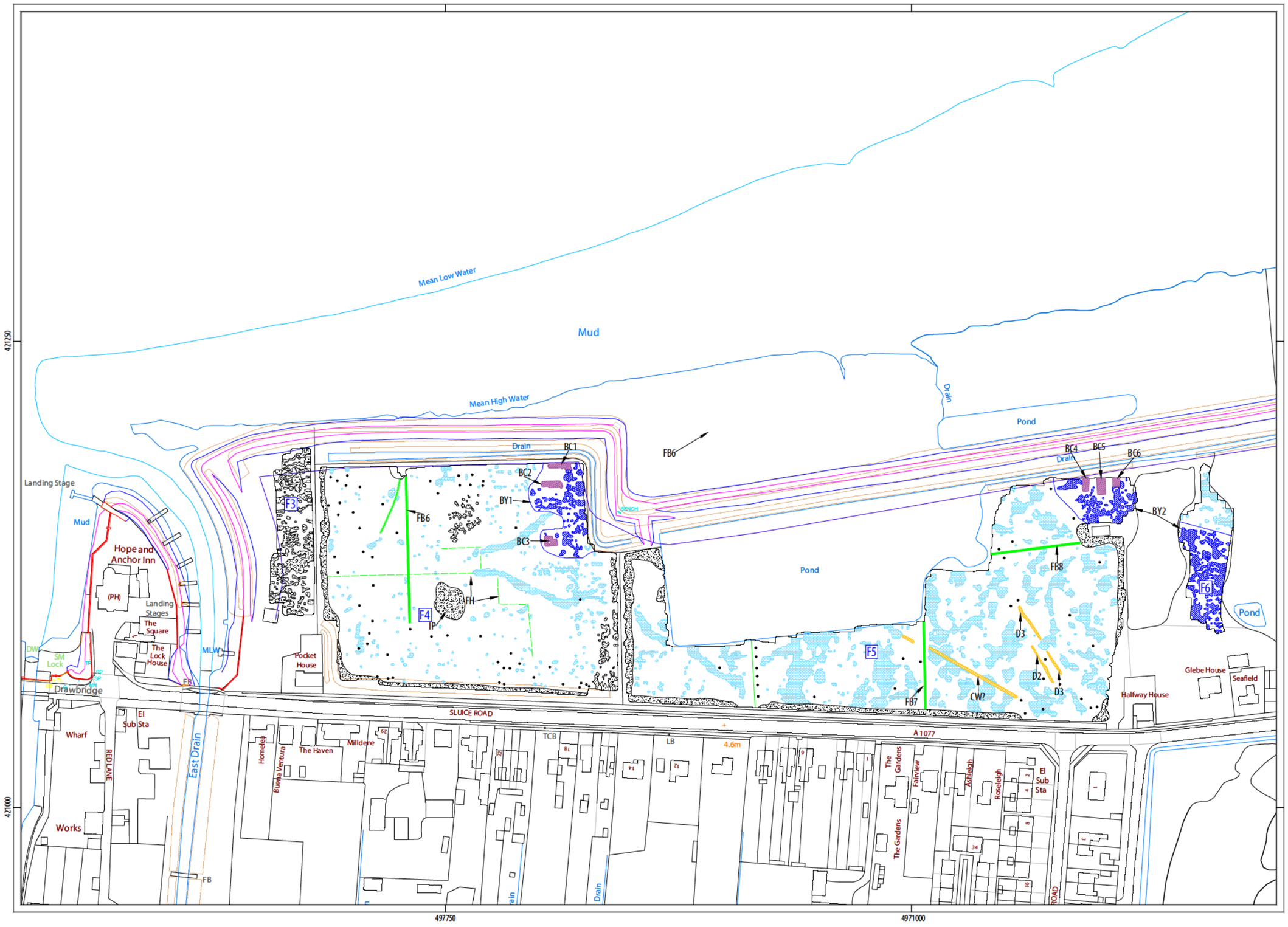
ILLUS 13 XY trace plot of minimally processed magnetometer data; Sector 2 (1:2,000)



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ILLUS 14 Interpretation of magnetometer data; Sector 2 (1:2,000)

ILLUS 15 Processed greyscale magnetometer data; Sector 3 (1:2,000)

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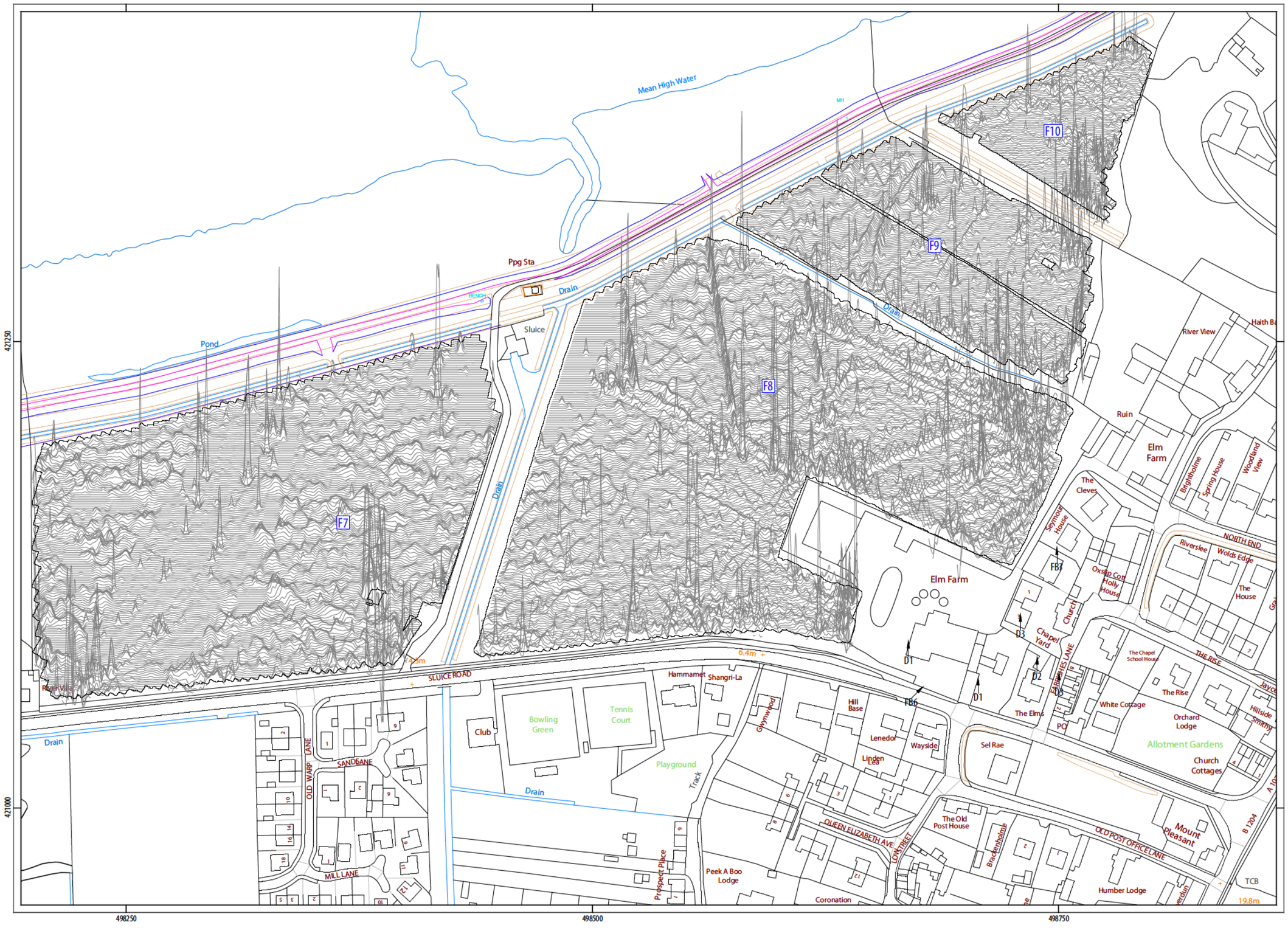

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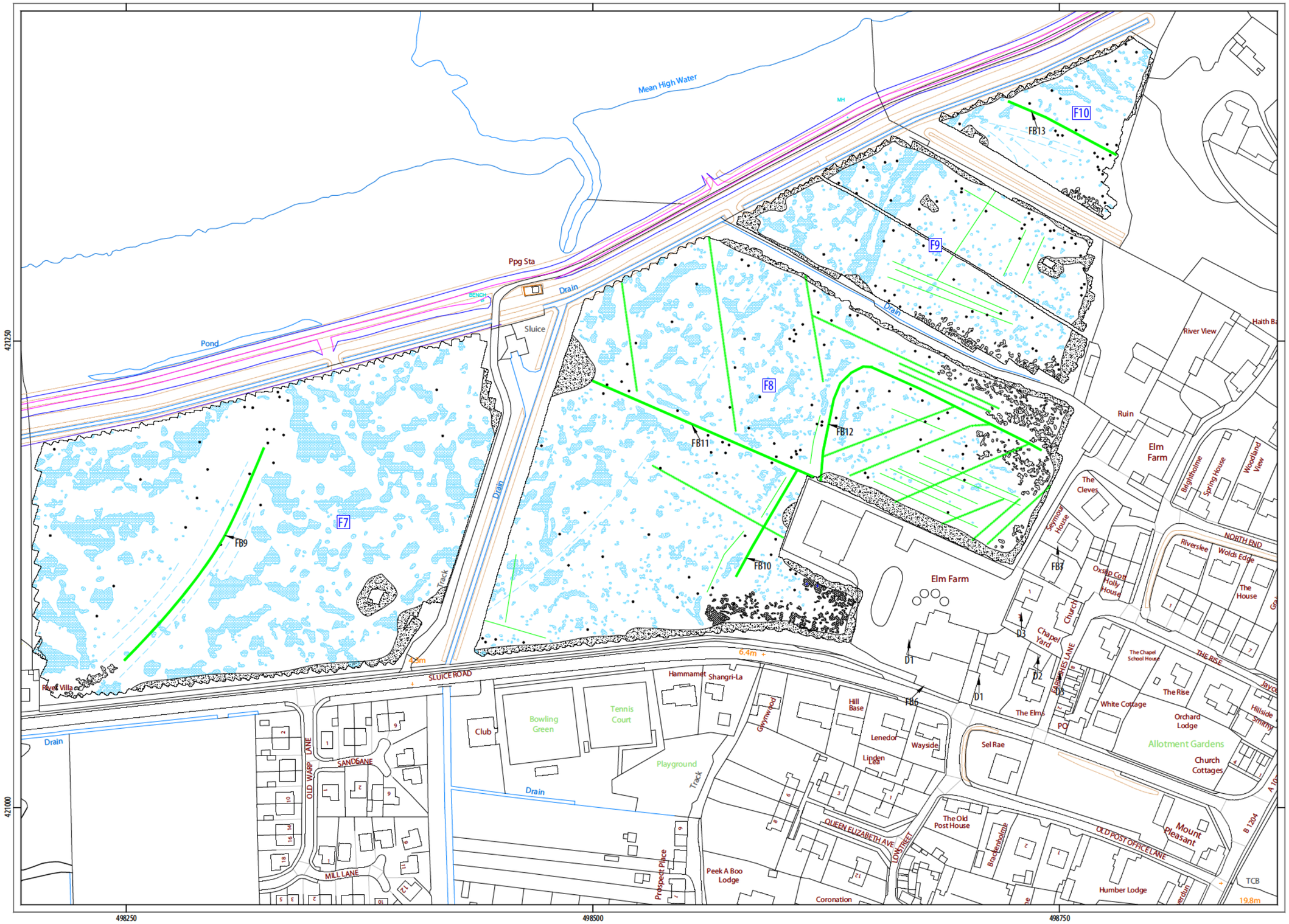
ILLUS 16 XY trace plot of minimally processed magnetometer data; Sector 3 (1:2,000)



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FB former boundary

0 50m
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ILLUS 17 Interpretation of magnetometer data; Sector 3 (1:2,000)

7 APPENDICES

APPENDIX 1 MAGNETOMETER SURVEY

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 haematite. 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 so that by measuring the magnetic susceptibility of the topsoil, areas where human occupation or settlement has occurred can be identified by virtue 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. This effect can lead to the detection of features such as hearths, kilns or areas of burning.

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 (sometimes only visible on an XY trace plot) 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.

APPENDIX 2 SURVEY LOCATION INFORMATION

An initial survey base station was established using a Trimble VRS differential Global Positioning System (dGPS). The magnetometer data was georeferenced using a Trimble RTK differential Global Positioning System (Trimble R8s model).

Temporary sight markers were laid out using a Trimble VRS differential Global Positioning System (Trimble R8s model) to guide the operator and ensure full coverage. The accuracy of this dGPS equipment is better than 0.01m.

The survey data were then super-imposed onto a base map provided by the client to produce the displayed block 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 coordinates are measured off hard copies of the mapping rather than using the digital coordinates.

Headland Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

APPENDIX 3 GEOPHYSICAL SURVEY ARCHIVE

The geophysical archive comprises an archive disk containing the raw data in XYZ format, a raster image of each greyscale plot with associate world file, and a PDF of the report.

The project will be archived in-house in accordance with recent good practice guidelines (http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_3). The data will be stored in an indexed archive and migrated to new formats when necessary.

APPENDIX 4 DATA PROCESSING

The gradiometer data has been presented in this report in processed greyscale and minimally processed XY trace plot format.

Data collected using RTK GPS-based methods cannot be produced without minimal processing of the data. The minimally processed data has been interpolated to project the data onto a regular grid and de-striped to correct for slight variations in instrument calibration drift and any other artificial data.

A high pass filter has been applied to the greyscale plots to remove low frequency anomalies (relating to survey tracks and modern agricultural features) in order to maximise the clarity and interpretability of the archaeological anomalies.

The data has also been clipped to remove extreme values and to improve data contrast.

APPENDIX 5 OASIS DATA COLLECTION FORM: ENGLAND

OASIS ID: headland5-329506

PROJECT DETAILS	
Project name	Winteringham Ings to South Ferriby Flood Alleviation Scheme
Short description of the project	Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey, covering 25 hectares, at two locations bordering the Humber Estuary at Winteringham Ings and South Ferriby, North Lincolnshire, in advance of improvements to the existing flood defences. The scheme would impact directly on a scheduled monument (Ferriby Sluice) and also non-designated former assets (the channel of the River Ancholme and a post medieval brickyard), both located within the eastern part of the Scheme. Overall the data is dominated by anomalies indicative of former shorelines, inlets and estuarine alluvial deposits. The survey has confirmed the location of the brickyard and the former river channel. In addition the survey has clearly located a second site of brick manufacture (not shown on historic mapping) with the identification of three possible brick clamps or structures. A linear anomaly may locate the continuation of a medieval causeway although this interpretation is deemed tentative. Overall the survey has provided additional information of the cultural heritage potential of the area likely to be impacted by the proposed flood defence works.
Project dates	Start: 20-08-2018 End: 24-08-2018
Previous/future work	Not known / Not known
Any associated project reference codes	WISF18 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Cultivated Land 4 - Character Undetermined
Monument type	N/A None
Monument type	N/A None
Significant Finds	N/A None
Significant Finds	N/A None
Methods & techniques	"Geophysical Survey"
Development type	Flood Alleviation
Prompt	National Planning Policy Framework - NPPF
Position in the planning process	Pre-application
Solid geology (other)	Ampthill Clay Formation and West Walton Formation
Drift geology (other)	alluvium
Techniques	Magnetometry

PROJECT LOCATION	
Country	England
Site location	NORTH LINCOLNSHIRE NORTH LINCOLNSHIRE SOUTH FERRIBY Winteringham Ings to South Ferriby Flood Alleviation Scheme
Study area	25 Hectares
Site coordinates	SE 9788 2112 53.677131737838 -0.518028020728 53 40 37 N 000 31 04 W Polygon

PROJECT CREATORS	
Name of Organisation	Headland Archaeology
Project brief originator	Consultant
Project design originator	Headland Archaeology
Project director/manager	Harrison, S
Project supervisor	Dyulgerski, K

Type of sponsor/funding body	Environment Agency

PROJECT ARCHIVES	
Physical Archive Exists?	No
Digital Archive recipient	In house
Digital Contents	"other"
Digital Media available	"Geophysics"
Paper Archive Exists?	No

PROJECT BIBLIOGRAPHY 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Winteringham Ings to South Ferriby Flood Alleviation Scheme, South Ferriby, North Lincolnshire: Geophysical Survey
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