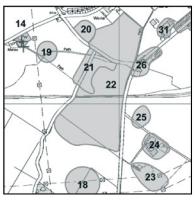
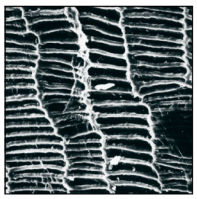
DHFE17










DUNTON HILLS FARM, EAST HORNDON, ESSEX

GEOPHYSICAL SURVEY

commissioned by Orion Heritage
on behalf of CEG Land Promotions Ltd

November 2017

HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

DUNTON HILLS FARM, EAST HORNDON, ESSEX

GEOPHYSICAL SURVEY

commissioned by Orion Heritage
on behalf of CEG Land Promotions Ltd

November 2017

This report adheres to the quality standard of ISO 9001:2008

PROJECT INFO:

HA Project Code **DHFE17** / NGR **TQ 6420, 8870** / Parish **West Horndon** / Local Authority **Essex County Council** / OASIS Ref. **headland5-302370**

PROJECT TEAM:

Project Manager **Sam Harrison** / Author **Alistair Webb** / Fieldwork **Kevin Heaton, Matt Berry, Neil Paveley, Olivier Vansassenbrouck, Peter Heykoop, Ron Organ, Ross Bishop** / Graphics **Caroline Norrman, Rafael Maya-Torcelly**

Approved by **Sam Harrison** .....

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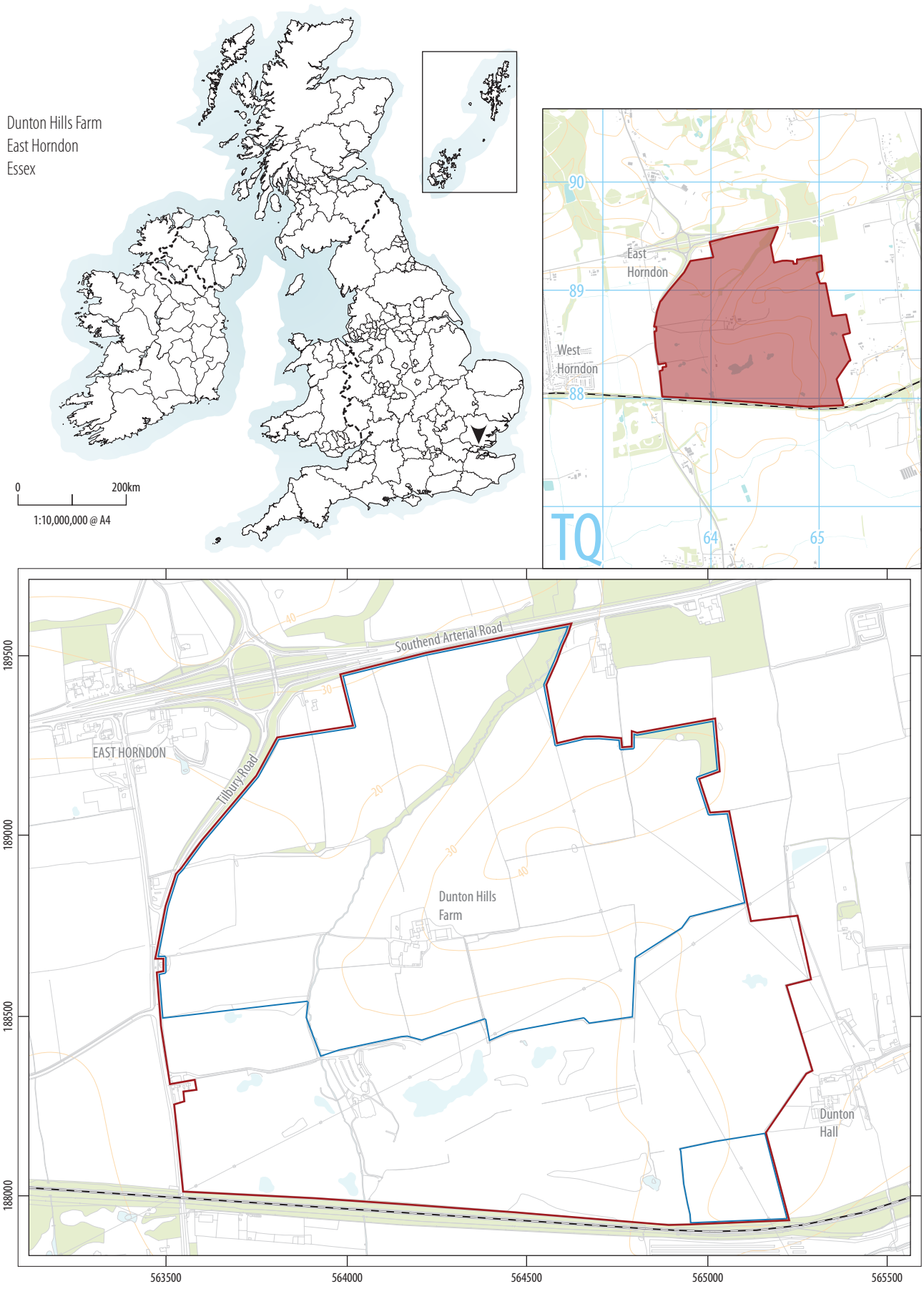
HEADLAND ARCHAEOLOGY

PROJECT SUMMARY

Headland Archaeology (UK) Ltd, in collaboration with the Bartlett Clark Consultancy, undertook a geophysical (magnetometer) survey covering approximately 117 hectares, of land surrounding Dunton Hills Farm and Dunton Hills Family Golf Centre at East Horndon, Essex, to inform planning proposals for a proposed residential development. Anomalies indicative of modern activity, pipes, field drains and former field boundaries have been identified. No anomalies of likely archaeological potential have been identified by the survey. Consequently the site is assessed (on the basis of the geophysical survey) as of very low archaeological potential, confirming the conclusions of an earlier desk-based assessment.

CONTENTS

LIST OF ILLUSTRATIONS



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ILLUS 1 Site location

DUNTON HILLS FARM, EAST HORNDON, ESSEX

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by Orion Heritage on behalf of CEG Land Promotions Ltd, to undertake a geophysical (magnetometer) survey surrounding Dunton Hills Farm, East Horndon, Essex (Illus 1), where a residential housing development is proposed.

The work was undertaken in accordance with a Method Statement (Harrison 2017) submitted to, and approved by Orion Heritage, and with guidance contained in the National Planning Policy Framework (DCLG 2012). All work was undertaken in line with current best practice (Chartered Institute for Archaeologists 2014, English Heritage 2008).

The survey was carried out between October 16th and November 3rd 2017.

1.1 SITE LOCATION, LAND-USE AND TOPOGRAPHY

The proposed development area (PDA), comprises a large block of land (225 hectares) at East Horndon, to the west of Basildon, Essex (centred at TQ 6420 8870 – Illus 1), a combination of agricultural land surrounding Dunton Hills Farm and the adjoining golf course (Dunton Hills Family Golf Centre). The PDA is located immediately south of the Southend Arterial Road (A127) and east of Tilbury Road (A128). A railway line marks the southern boundary of the PDA with the eastern boundary comprising extant field boundaries. However, the survey was limited to the agricultural land, an area of approximately 117ha. Two areas were unsuitable for survey; a small area of woodland in the north-eastern corner of F9 and a heavily landscaped area around a wind turbine immediately east of Dunston Hall Farm in F10.

Fields 1-6 were sown with rape (Illus 2 and Illus 3) with the remainder being winter wheat with the exception of F12 and F16 which were permanent pasture (Illus 4).

Topographically the site slopes gradually up from south to north from approximately 18m above Ordnance Datum (AOD) along the southern boundary to about 30m along Southend Arterial Road on the northern edge. However, the highest point within the survey area is a plateau immediately east of Dunton Hills Farm, in F10 where the wind turbine is located, which is situated at a height of between 35m and 40m AOD. Field 16, to the south-east of the main survey area, is situated at between 22m AOD and 33m AOD sloping up from west to east.

1.2 GEOLOGY AND SOILS

The bedrock geology underlying the survey area consists of London Clay Formation overlain by superficial deposits of Head to the southern and western parts of the site (Illus 5). A linear band of alluvium is present either side of the stream that meanders through the site from south-west to north-east (NERC 2017).

The soils are classified in the Soilscape 18 association, characterised as slowly permeable seasonally wet slightly acid but base-rich loams and clays (Cranfield University 2017).

2 ARCHAEOLOGICAL BACKGROUND

A Heritage Desk-Based Assessment (Orion Heritage 2016) concluded that 'based on the available evidence, the study site is considered to have low potential for remains of all archaeological periods'. However

ILLUS 2 Field 8 (north), looking north

the assessment also concluded that the presence of archaeological remains could not be ruled out completely.

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 survey area. This will therefore enable an assessment to be made of the impact of the proposed development on any sub-surface archaeological remains, if present.

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 model the presence/absence and extent of any buried archaeological features; and
- to prepare a report summarising the results of the survey.

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 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.

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.

ILLUS 3 Field 10, looking south

3.2 REPORTING

A general site location plan is shown in Illus 1 at a scale of 1:15,000. Illus 2, 3 and 4 are site condition photographs. Illus 5 is a 1:7,500 scale survey location plan showing the superficial geology. Illus 6 shows the survey area overlying the six inch Ordnance Survey (OS) map (1888–1913), also at 1:7,500. Detailed data plots of the fully processed data and accompanying interpretative plot are produced, also at 1:7,500, as Illus 7 and Illus 8. The fully processed (greyscale) data, minimally processed data (XY traceplot) and accompanying interpretative plots are presented at a scale of 1:2,500 in Illus 9 to Illus 23 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. A copy of the OASIS entry (Online Access to the Index of Archaeological Investigations) is reproduced in Appendix 5.

The survey methodology, report and any recommendations comply with the Method Statement (Harrison 2017) and guidelines outlined by Historic England (English Heritage 2008) and by the Chartered Institute for Archaeologists (ClfA 2014). 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 across the PDA were generally good but slow going in the rape fields (Illus 2 and Illus 3) but the overall quality of the data collected was consequently good throughout.

The survey has detected little change in levels of background magnetic variation between those areas where superficial deposits are present and where they are not. Small areas of very homogenous readings are recorded adjacent to the stream indicating the presence of alluvium.

Against this background, numerous anomalies have been identified. Those anomalies with modern, agricultural or geological origins are discussed first followed by those anomalies with a possible archaeological cause. All are discussed below and cross-referenced to specific anomalies on the interpretative drawings, where appropriate.

ILLUS 4 Field 16, looking north

4.1 FERROUS AND MODERN 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 as a consequence of manuring or tipping/infilling. There is no obvious clustering to these 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.

Large areas of magnetic disturbance are identified around the edge of the farm complex, particularly to the south-east of the farm. This is due to the tipping or spreading of modern material, possibly bricks or other fired or highly magnetic material. Magnetic disturbance around the field edges is due to ferrous material within or close to the adjacent field boundaries, or to pipes laid alongside farm tracks, and is of no archaeological interest. Areas of disturbance are also identified around electricity pylons to the east and south-east of the survey area.

Linear dipolar anomalies in F1, F6, F7, F11 and F15 locate sub-surface pipes.

Two clusters of ferrous responses are identified in F13 and F16. There are no features recorded on the historic mapping at these locations to afford a confident interpretation to be made but they are assumed to be of modern origin, perhaps locating the infilled remains of former small scale, localised sand and/or gravel pits; both clusters of anomalies are located in areas where the superficial head (sand and gravel) deposits are recorded and there are several extant ponds in and around the survey area which might also have their origin in quarrying activity.

4.2 AGRICULTURAL ANOMALIES

Analysis of historic OS mapping indicates that the division and layout of land within the PDA has changed little since 1888 but five field boundaries have been removed over the last 129 years. These former boundaries are not specifically identified but are inferred from the line of a sub-surface pipe (in F15), the line of a field drain (F1), the termination of field drains (also F1) or by the line of 'spiked' dipolar responses in Field 10.

High magnitude linear anomalies are identified across the survey area, being particularly noticeable in F5, F6 and F11, where a distinct herring-bone pattern can be seen. These anomalies are caused by field drains. Linear and curvilinear anomalies in F9 and F10 locate drains leading to/from small extant ponds.

Curvilinear anomalies in F13 and F14, immediately south of the farm, locate former farm tracks (no longer extant) that are recorded on historic mapping.

4.3 GEOLOGICAL ANOMALIES

Vague linear trends in the data are recorded in F8, F9 and F10.These are due to localised variations in the depth and composition of the soils and the superficial deposits from which they derive.

4.4 POSSIBLE ARCHAEOLOGICAL ANOMALIES

No anomalies of possible or probable archaeological origin have been identified anywhere in the survey area.

5 CONCLUSION

The survey has successfully evaluated the survey area identifying anomalies exclusively due to recent land usage, including pipes, drains, former boundaries and trackways. No anomalies of possible or probable archaeological origin have been identified. On the basis of the geophysical survey the archaeological potential of the survey area is assessed as very low corroborating the conclusion of a recent desk-based assessment.

6 REFERENCES

Chartered Institute for Archaeologists (CIfA) 2014 ***Standard and guidance for archaeological geophysical survey*** (Reading) http://www.archaeologists.net/sites/default/files/CIfAS&Geophysics_1.pdf accessed 27 November 2017

Cranfield University 2017 ***Cranfield Soil and Agrifood Institute Soilscapes*** http://www.landis.org.uk/soilscapes/ accessed 27 November 2017

Department of Communities and Local Government (DCLG) 2012 ***National Planning Policy Framework*** https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf accessed 27 November 2017

English Heritage 2008 ***Geophysical Survey in Archaeological Field Evaluation: Research and Professional Services Guidelines*** (2nd edn) http://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf accessed 27 November 2017

Gaffney C & Gater J (2003) ***Revealing the Buried Past: Geophysics for Archaeologists*** Stroud

Harrison S 2017 ***Dunton Hills Farm, Essex: Written Scheme of Investigation for Geophysical Method Statement*** [unpublished client document] Headland Archaeology, Ref. DHFE17

Natural Environment Research Council (NERC) 2017 ***British Geological Survey*** http://www.bgs.ac.uk/ accessed 27 November 2017

Orion Heritage 2016 ***Dunton Hills Farm, Essex: Heritage Desk Based Assessment*** [unpublished client document] Ref. QU-00155/1

SECTOR 1
SEE ILLUS 33-33

SECTOR 2
SEE ILLUS 33-33

SECTOR 3
SEE ILLUS 33-33

SECTOR 4
SEE ILLUS 33-33

SECTOR 5
SEE ILLUS 33-33

SOUTHEND ARTERIAL ROAD

TILBURY ROAD

DUNTON HILLS FARM

DUNTON HILLS FAMILY GOLF CENTRE

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16

2 3 4

189000

188000

564000

565000

proposed development area

geophysical survey area

Head - clay, silt, sand and gravel

Alluvium - clay, silt, sand and gravel

location and direction of ILLUS 2-4

0 200m

1:7,500 @ A3

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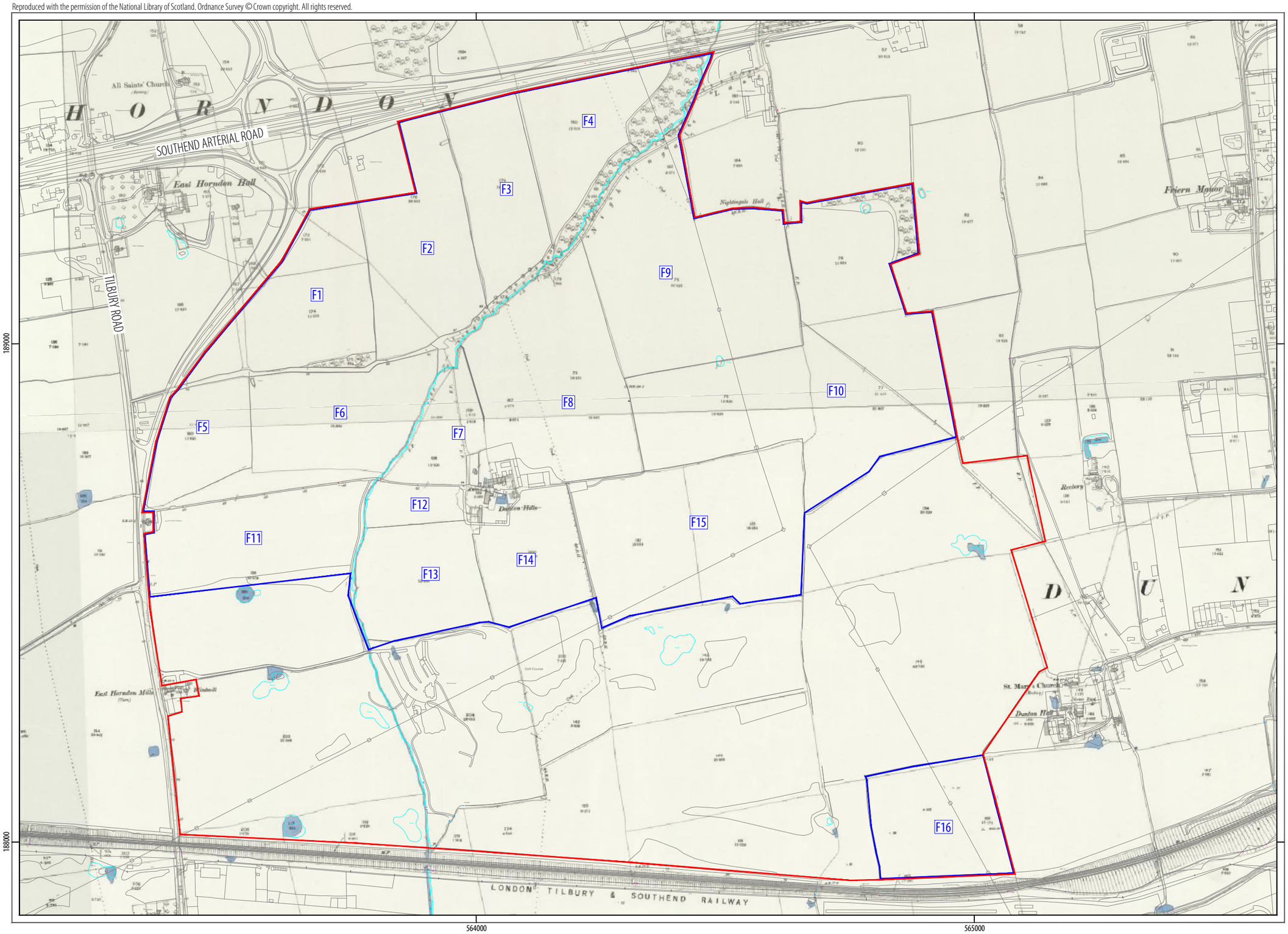
ILLUS 5 Survey location showing superficial deposits



proposed development area
geophysical survey area

0 200m
1:7,500 @ A3

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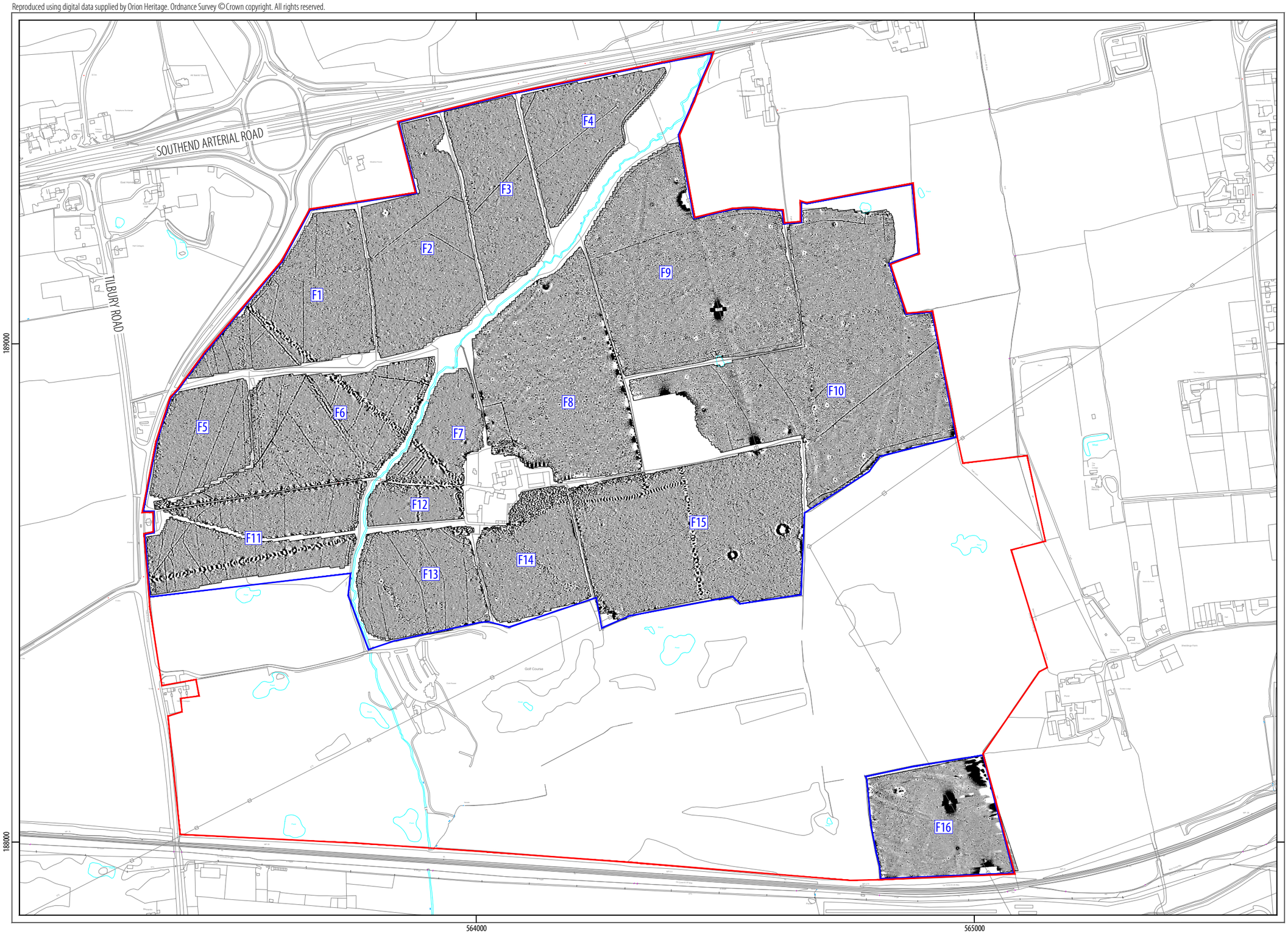
ILLUS 6 Survey location overlying 1888-1913 six inch OS map



proposed development area
geophysical survey area

nT
-1.0 2.0

0 200m
1:7,500 @ A3

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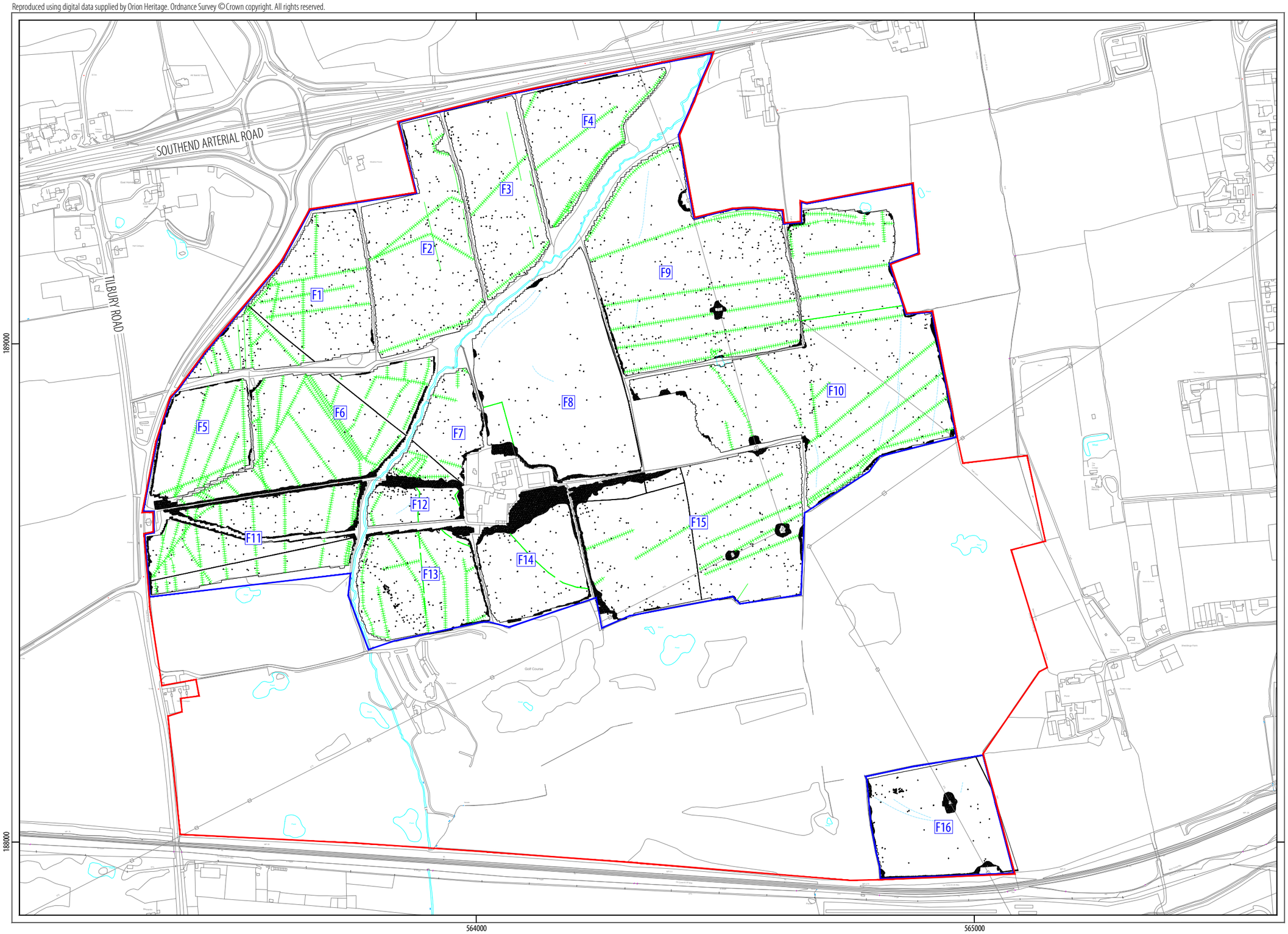
ILLUS 7 Processed greyscale magnetometer data



proposed development area

geophysical survey area

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	agricultural
linear trend	field drain
linear	former field boundary
linear	former farm track
linear trend	geology

0 200m

1:7,500 @ A3

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ILLUS 8 Interpretation of magnetometer data

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ILLUS 9 Processed greyscale magnetometer data; Sector 1

43.0nT/cm

0 50m

1:2,500 @ A3

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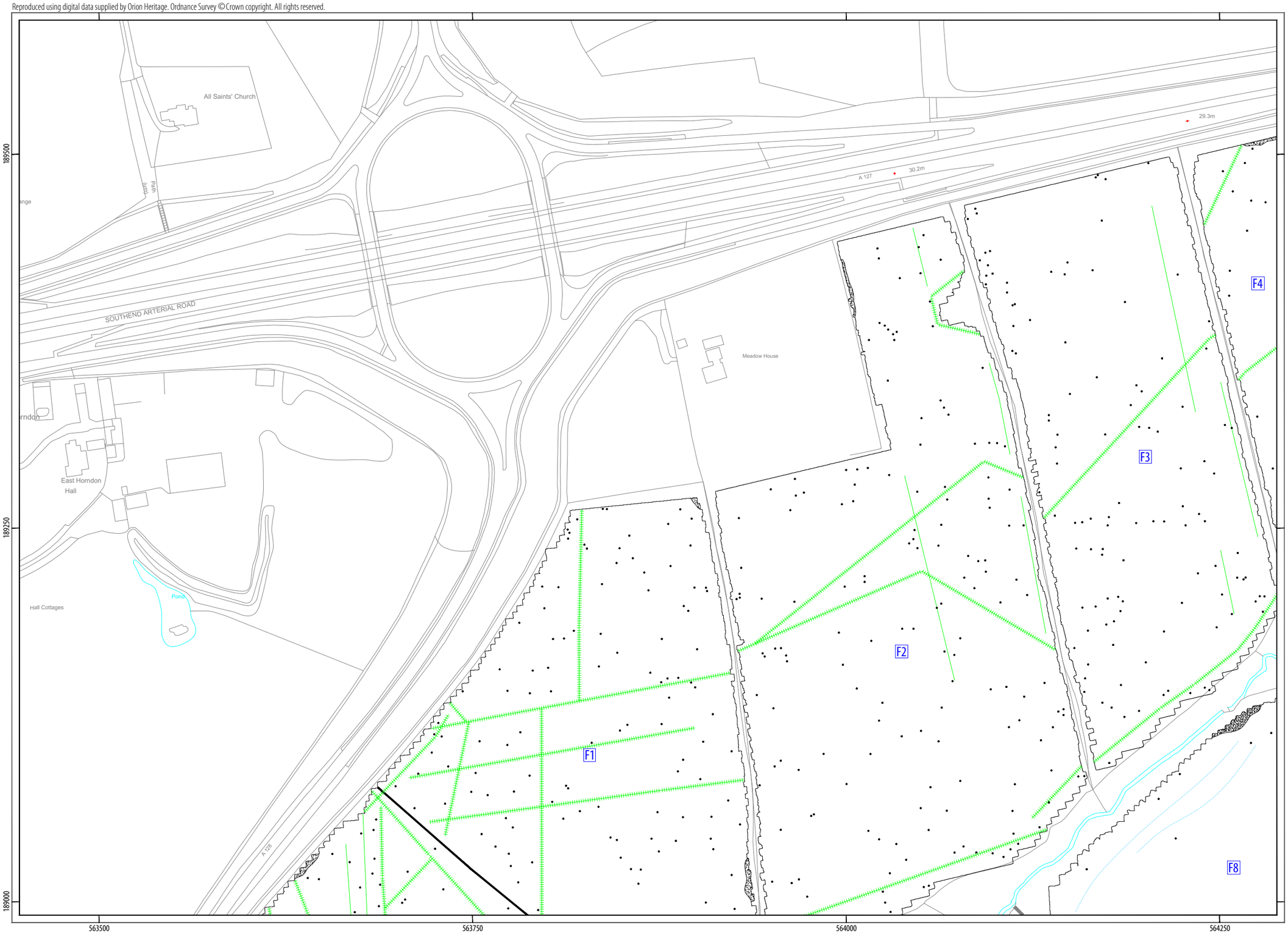
ILLUS 10 XY trace plot of minimally processed magnetometer data; Sector 1



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	agricultural
linear trend	field drain
linear trend	geology

0 50m
1:2,500 @ A3

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ILLUS 11 Interpretation of magnetometer data; Sector 1

nT
-1.0 2.0

0 50m
1:2,500 @ A3

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ILLUS 12 Processed greyscale magnetometer data; Sector 2

43.0nT/cm

0 50m

1:2,500 @ A3

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ILLUS 13 XY trace plot of minimally processed magnetometer data; Sector 2

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	field drain
linear	former field boundary
linear trend	geology

0 50m
1:2,500 @ A3

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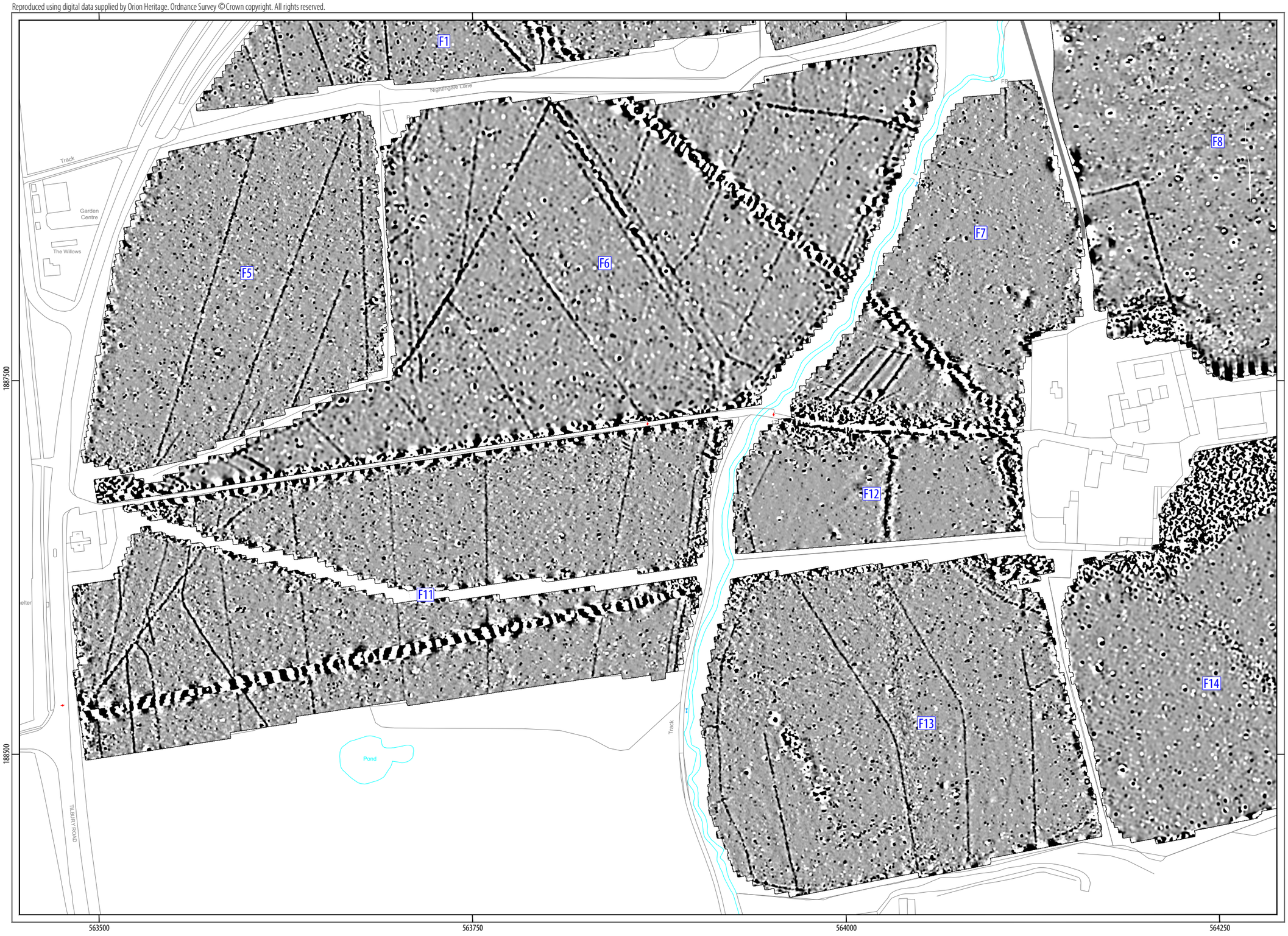
ILLUS 14 Interpretation of magnetometer data; Sector 2



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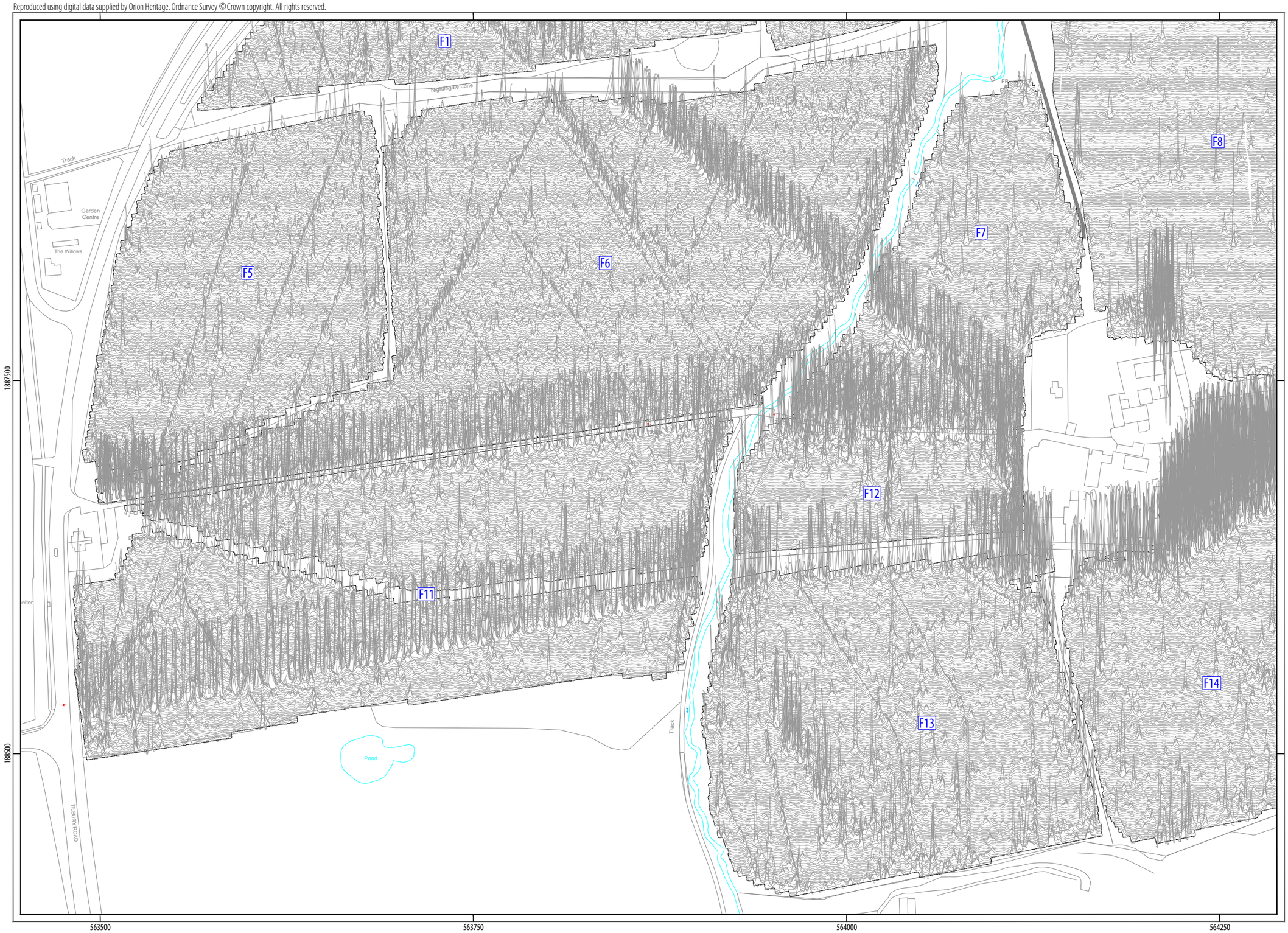
ILLUS 15 Processed greyscale magnetometer data; Sector 3



43.0nT/cm

0 50m

1:2,500 @ A3

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ILLUS 16 XY trace plot of minimally processed magnetometer data; Sector 3

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	agricultural
linear trend	field drain
linear	former field boundary
linear	former farm track
linear trend	geology

nT
-1.0 2.0

0 50m
1:2,500 @ A3

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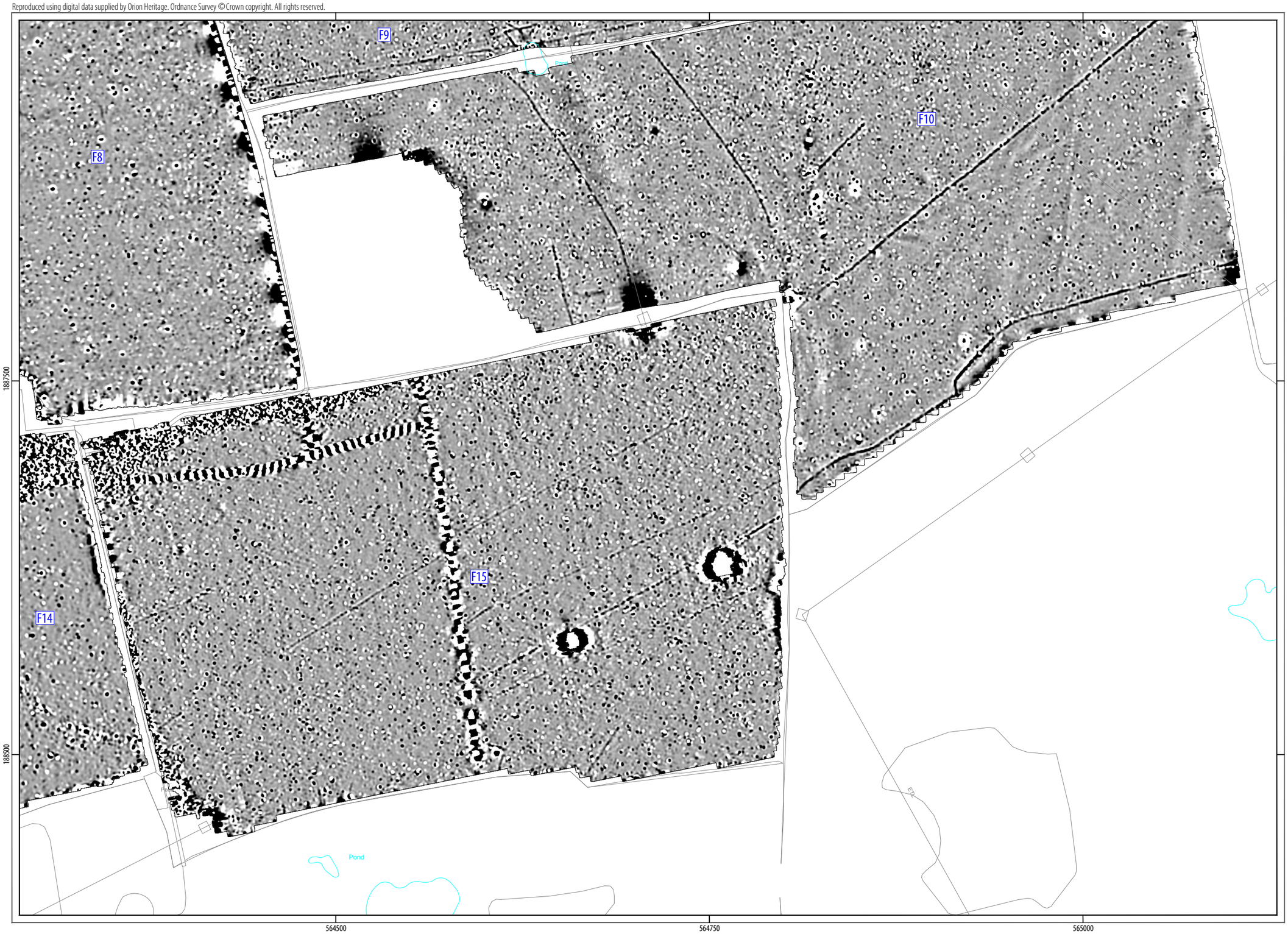
ILLUS 17 Interpretation of magnetometer data; Sector 3



nT
-1.0 2.0

0 50m
1:2,500 @ A3

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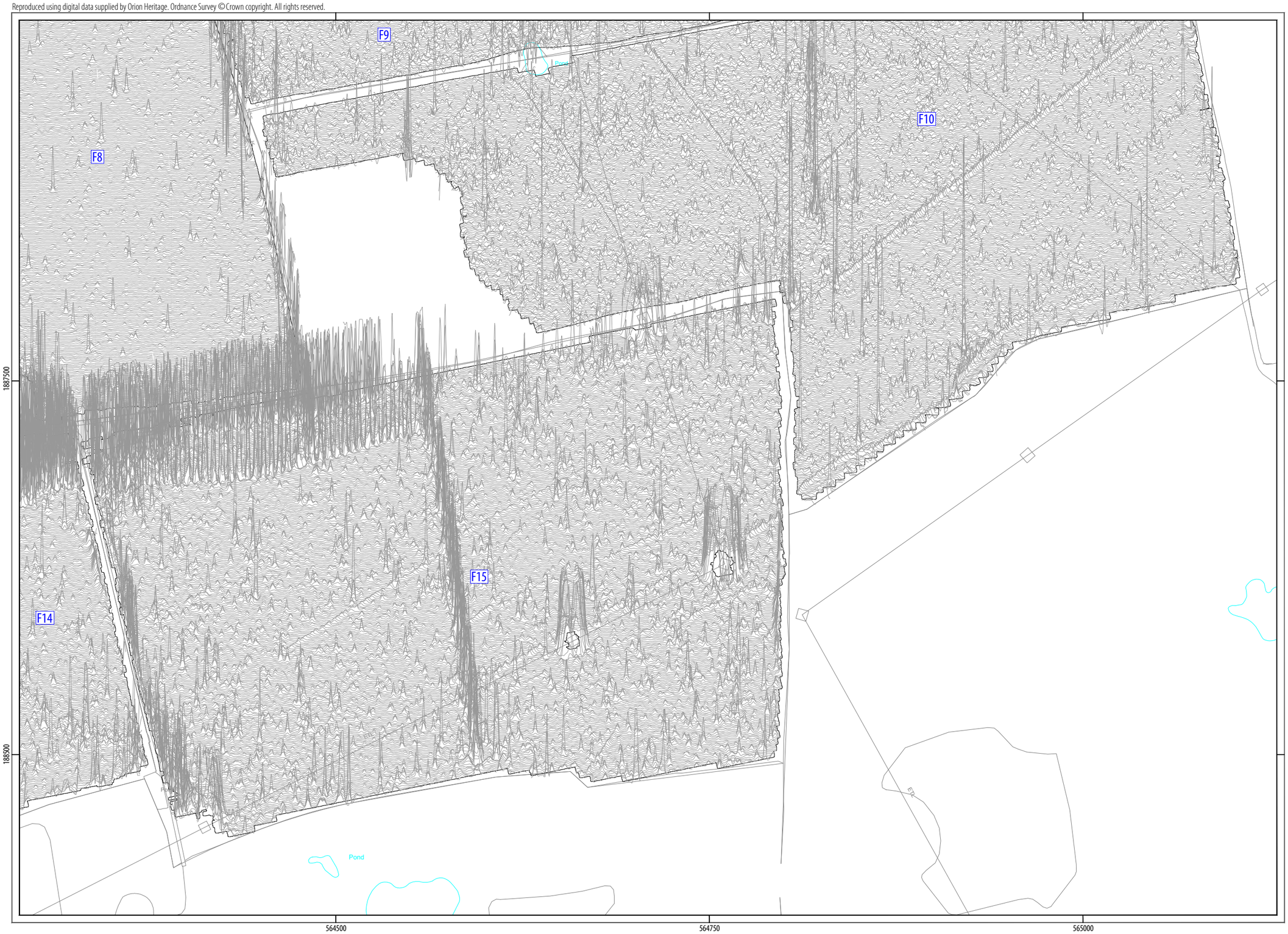
ILLUS 18 Processed greyscale magnetometer data; Sector 4



43.0nT/cm

0 50m

1:2,500 @ A3

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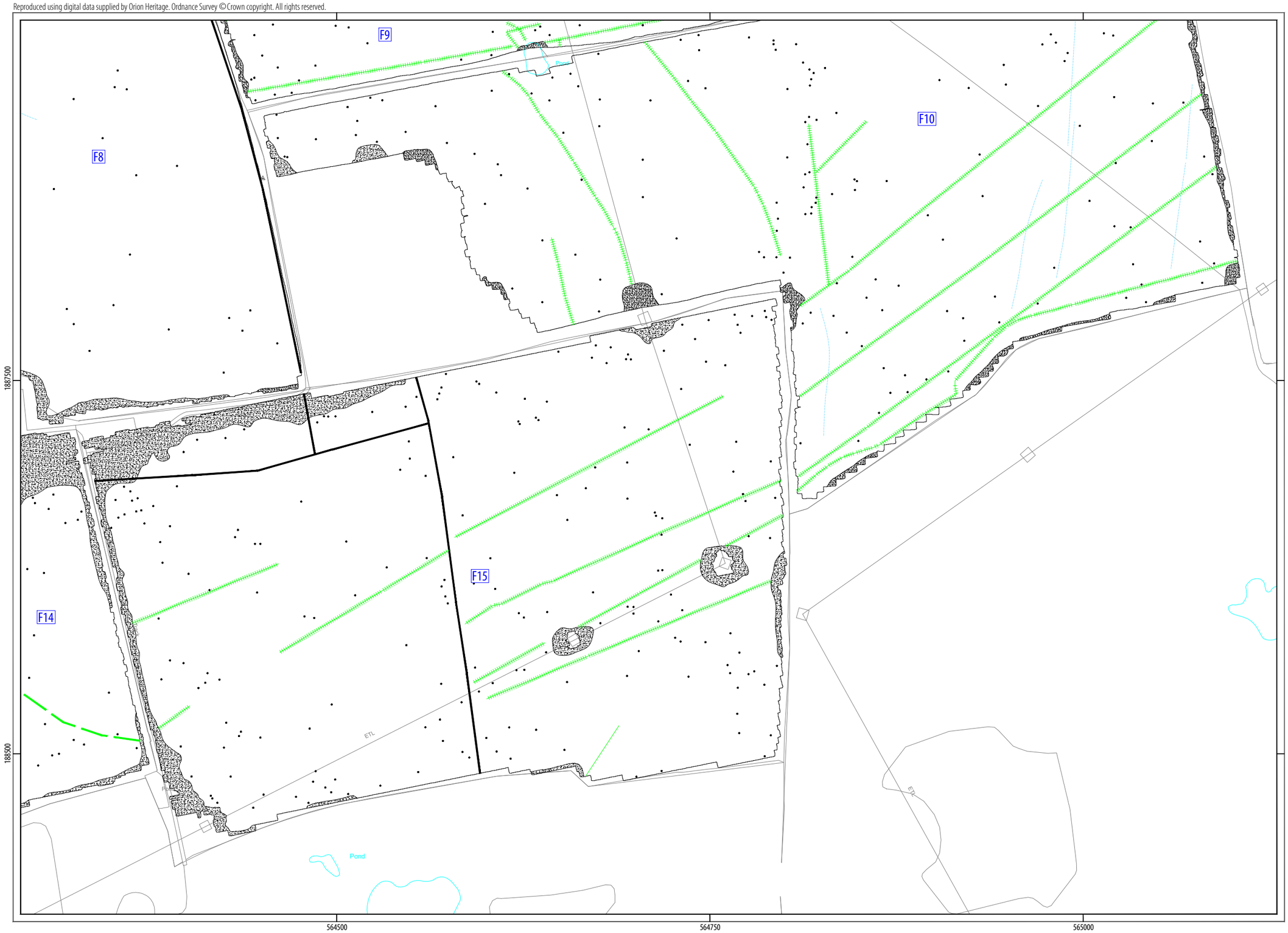
ILLUS 19 XY trace plot of minimally processed magnetometer data; Sector 4



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	field drain
linear	former farm track
linear trend	geology

0 50m
1:2,500 @ A3

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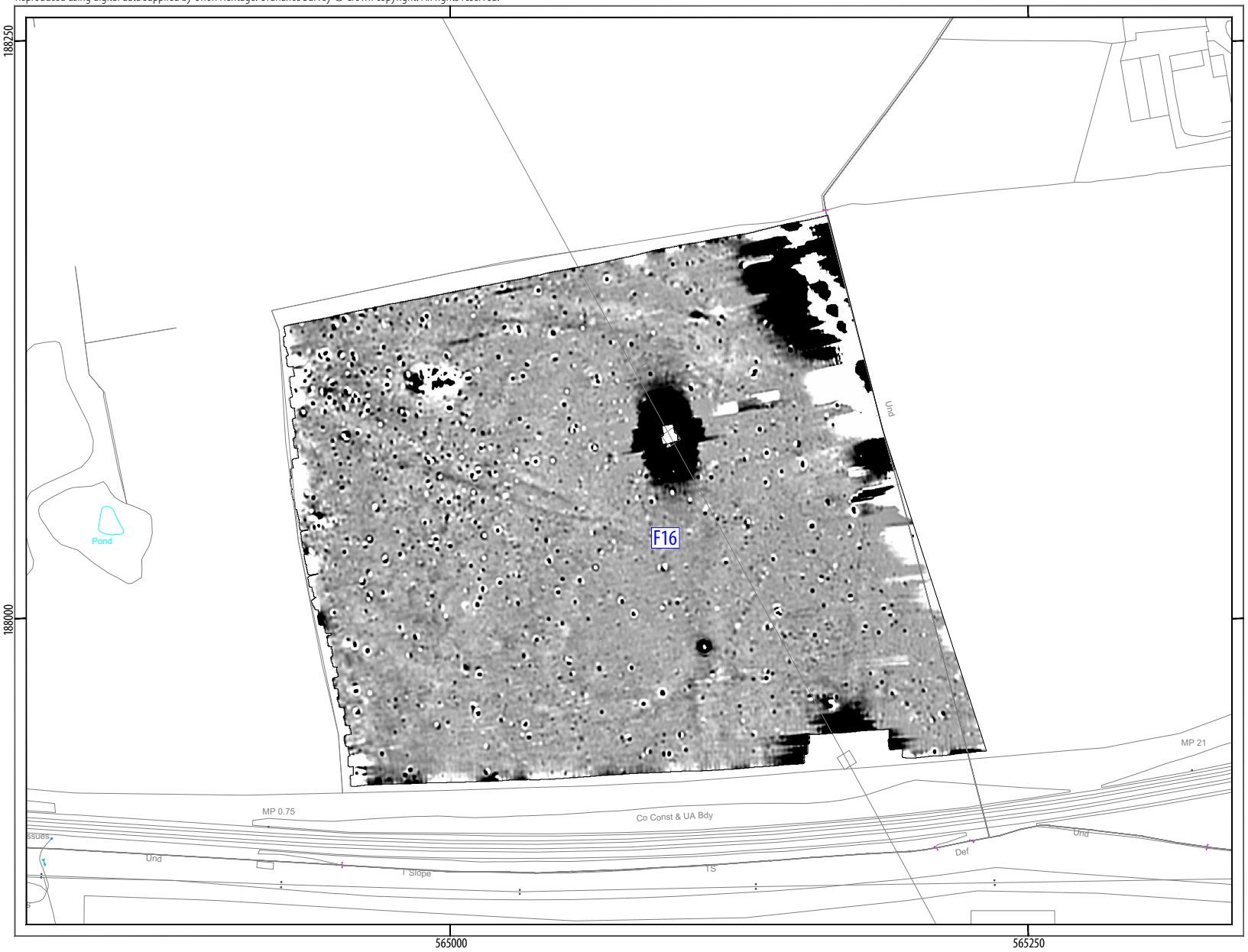
ILLUS 20 Interpretation of magnetometer data; Sector 4



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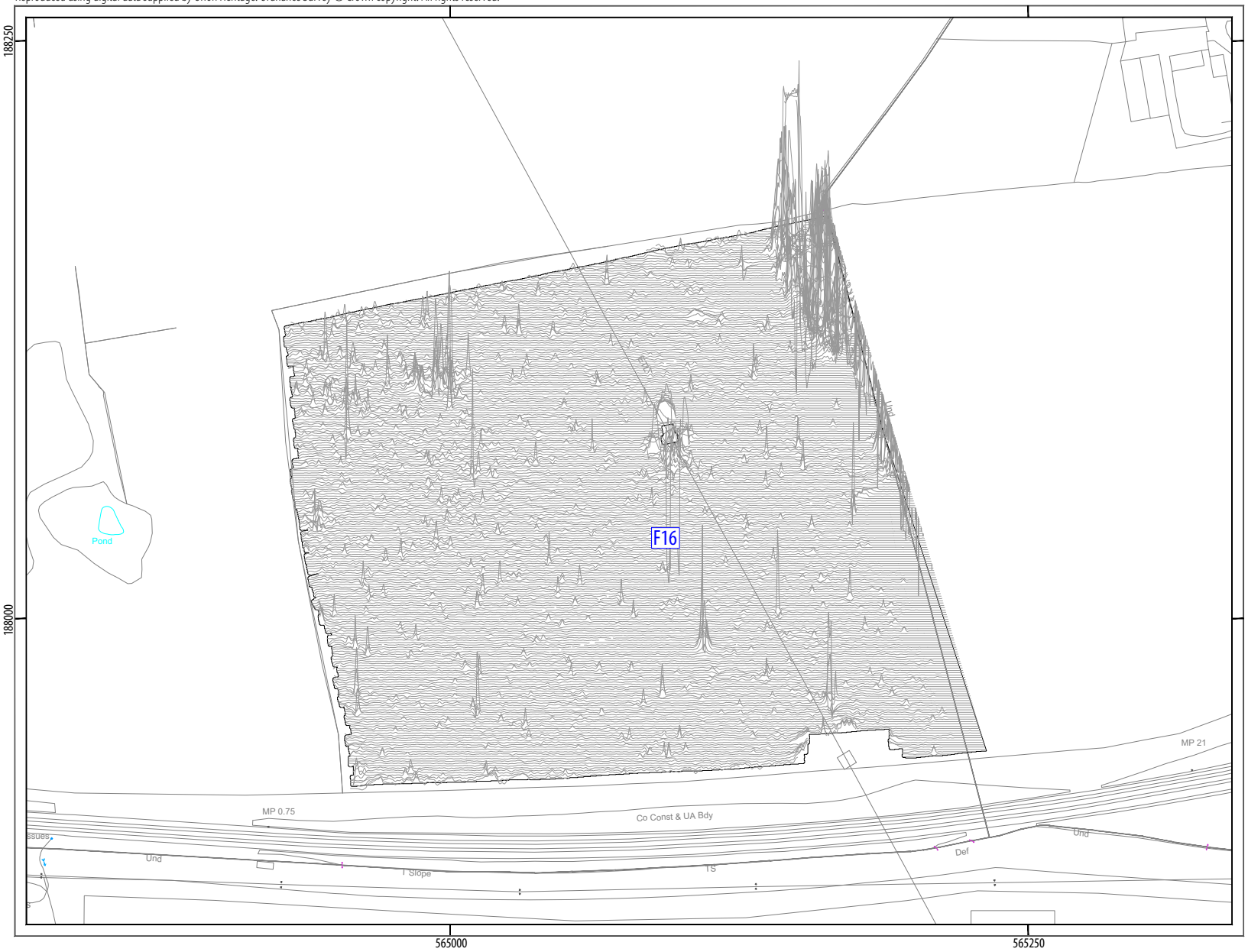
ILLUS 21 Processed greyscale magnetometer data; Sector 5



43.0nT/cm

0 50m

1:2,500 @ A4

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ILLUS 22 XY trace plot of minimally processed magnetometer data; Sector 5

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	geology

0 50m
1:2,500 @ A4

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ILLUS 23 Interpretation of magnetometer data; Sector 5

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: headland5-302370

Project details	
Project name	Dunton Hills Farm, East Horndon, Essex
Short description of the project	Headland Archaeology (UK) Ltd, in collaboration with the Bartlett Clark Consultancy, undertook a geophysical (magnetometer) survey covering approximately 117 hectares, of land surrounding Dunton Hills Farm and Dunton Hills Family Golf Centre at East Horndon, Essex, to inform planning proposals for a proposed residential development. Anomalies indicative of modern activity, pipes, field drains and former field boundaries have been identified. No anomalies of likely archaeological potential have been identified by the survey. Consequently the site is assessed (on the basis of the geophysical survey) as of very low archaeological potential, confirming the conclusions of an earlier desk-based assessment.
Project dates	Start: 16-10-2017 End: 03-11-2017
Previous/future work	Not known / Not known
Any associated project reference codes	DHFE-01 - Contracting Unit No.
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	Housing estate
Prompt	National Planning Policy Framework - NPPF
Position in the planning process	Pre-application
Solid geology	LONDON CLAY
Drift geology	SAND AND GRAVEL OF UNCERTAIN AGE OR ORIGIN
Drift geology	ALLUVIUM
Techniques	Magnetometry
Project location	
Country	England
Site location	ESSEX BRENTWOOD BRENTWOOD Dunton Hills Farm, East Horndon, Essex
Postcode	CM13 3TD
Study area	117 Hectares
Site coordinates	TQ 6420 8870 51.572708601127 0.369715654709 51 34 21 N 000 22 10 E Point
Project creators	
Name of Organisation	Headland Archaeology
Project brief originator	Orion Heritage
Project design originator	Headland Archaeology
Project director/manager	Harrison, S
Project supervisor	Bishop, R
Type of sponsor/funding body	Developer

Project archives	
Physical Archive Exists?	No
Digital Archive recipient	In house
Digital Contents	"Survey"
Digital Media available	"Geophysics"
Paper Archive Exists?	No
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Dunton Hills Farm, East Horndon, Essex; Geophysical Survey
Author(s)/Editor(s)	Webb, A.
Date	2017
Issuer or publisher	Headland Archaeology
Place of issue or publication	Leeds
Description	A4 comb-bound report
Entered by	David Harrison (david.harrison@headlandarchaeology.com)
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