



WYAS
**Archaeological
Services**

**Clump Farm,
Enderby,
Leicestershire**

Geophysical Survey

Report no. 3681
November 2021

Client: Clump Farm Solar Limited



Clump Farm, Enderby, Leicestershire

Geophysical Survey

Summary

A geophysical (magnetometer) survey was undertaken on approximately 65 hectares of land located at Clump Farm to the west of Enderby, Leicestershire. Anomalies of both a definite and a possible archaeological origin have been detected including settlement features, a trackway, pits, field systems, likely Roman buildings and a square response which may indicate a mausoleum. Former field boundaries, modern ploughing and field drains have also been recorded. Geological responses can be seen throughout. Based on the geophysical survey the archaeological potential of the Site is deemed to be high.

Report Information

Client: Clump Farm Solar Limited
Address: Suite 3/1, 58 Waterloo Street, Glasgow, G2 7DA
Report Type: Geophysical Survey
Location: Clump Farm, Enderby
County: Leicestershire
Grid Reference: SK 48105 00021
Period(s) of activity: Roman/modern
Report Number: 3681
Project Number: XC53
Site Code: CPF21
OASIS ID: archaeol11-503078
Date of fieldwork: September 2021
Date of report: November 2021
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Authorisation for
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1 Introduction

Archaeological Services ASWYAS has been commissioned by Clump Farm Solar Limited to undertake a geophysical survey at land at Clump Farm, Enderby, Leicestershire. This was undertaken in line with current best practice (CIFA 2020; Schmidt *et al.* 2015). The survey was carried out between the 23rd to 24th August and the 1st to 4th November 2021 to provide additional information on the archaeological resource of the Site.

Site location, topography and land-use

The Site is located at SK 48105 00021 (approximate centre), comprising *c.* 65ha over five areas situated to the west of Enderby (see Fig. 1).

The Site is situated to the west of the A47 with land consisting of arable fields (see Plates 1-8). It is bounded to the east by the A47, and to the north, west and south by agricultural fields. Numerous unnamed farm tracks run across the site. The elevation of the site varies from 110m aOD (above Ordnance Datum) to the west, falling to approximately 95m aOD to the east.

Soils and geology

The recorded bedrock geology varies across site. To the south it comprises Edwalton Member – Mudstone, a sedimentary bedrock formed approximately 228 to 237 million years ago in the Triassic Period, when the local environment was dominated by hot deserts. To the west it comprises Gunthorpe Member – Mudstone, a sedimentary bedrock also formed approximately 237 to 247 million years ago in the Triassic Period. A thin band of Cotgrave Sandstone Member – Sandstone runs across site from north east to south west. This bedrock comprises a sedimentary bedrock, again of the Triassic Period. No superficial deposits have been recorded (BGS 2021).

Soils are of the Whimple 3 Association (572f) which are slightly acid loamy and clayey soils with impeded drainage (SSEW 1983).

2 Archaeological Background

The following archaeological background is taken from Heritage Gateway, using a search radius of 1km. It is designed to give a broad indication of the archaeological potential within the survey boundary and also the wider area.

A long enclosure (Monument Number 964904) is visible as cropmarks 500m west of Site. This is a possible Neolithic long barrow and has been photographed, along with two other unclear cropmarks.

A findspot to the immediate northwest of Site consist of an early Bronze Age thumbnail scraper (HER Ref MLE6360). Further cropmarks (HER Ref MLE8704) have been noted in aerial photographs in the 1980s but these remain undated and unclassified.

Shallow ditches and mounds (Monument number 965041) of unknown date can be seen 900m to the south east of Site. These are visible on aerial photographs taken in 1972.

A large sub-circular soil mark is visible in a field 1km south west of Site. This feature (Monument Number 964760) is 100m in diameter, and remains as yet undated as it has not been investigated further. Multiple other soil marks have been noticed in aerial photographs of the surrounding areas and may indicate circular enclosures (HER Ref MLE3037, MLE3038).

A small scattering of Iron Age pottery has been found 400m south of Site (HER Ref MLE15929) during fieldwalking. Two quern stones were found alongside the pottery. This concentrated scatter of pottery continues across multiple fields (HER Ref MLE15931) suggesting an Iron Age settlement in the area.

In 2001 a Roman gold wire earring (HER Ref MLE16849) was found immediately west of site. In 2008 two kiln bars were found in the same area. Metal detecting between 2004 and 2019 has recovered various Iron Age/Roman finds across the area, including various types of brooch, and multiple coins.

At Basset House, 400m to the south east of site, numerous features relating to a medieval moated site can be seen (Monument Number 965040). These consist of a ruined stone building surrounded by a moat and associated with fishponds. The moat shows up as a cropmark around the present farmhouse.

400m south of the Site the cropmarks of a square moat with associated linear features is visible on aerial photographs (HER Ref MLE341). These are almost certainly features relating to Brackenholme Park and Lodge, dating to the early 13th century.

Within the survey area situated at SP 48350 99860 lies a major pond bay, now covered by tree growth. This feature (Monument Number 337970) is probably late medieval in origin.

Previous work relating to the Earl Shilton Bypass was carried out by the University of Leicester Archaeological Service immediately to the south west of Site. These works comprised fieldwalking, metal detecting, auger and geophysical survey. These recorded no significant archaeological activity.

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 objectives 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 survey was undertaken using a cart-based survey 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 1:6000 whilst Figure 3 shows an overview of the interpretation at the same scale. Processed and minimally processed data, together with interpretation of the survey results are presented in Figures 4 to 21 inclusive at a scale of 1:1500.

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 and metadata. 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 Her 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 4 to 21)

Ferrous anomalies and magnetic disturbance

Ferrous anomalies, as individual ‘spikes’, or as large discrete areas 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 or material is common on rural sites, often being present as a consequence of manuring or tipping/infilling. There is no obvious pattern or clustering to their distribution in this survey to suggest anything other than a random background scatter of ferrous debris in the plough-soil.

A service pipe which has caused a large halo of magnetic disturbance can be seen running across the Site on a southwest to northeast alignment. A similar sized pipe can also be seen in Area 2 on a northwest to southeast alignment. Smaller services pipes have also been recorded in Area 2.

Magnetic disturbance along the southern limits of Area 5 are due to metal fencing within the field boundaries and interference from the adjacent road.

Geological anomalies

The survey has detected a number of anomalies 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. These are particularly evident in Areas 2 and 4.

The band of responses in Area 4 correspond to cropmarks which can be seen on aerial imagery dating from 2006 (Google Earth 2021). It is possible that some of these amorphous responses are of an archaeological origin.

Agricultural anomalies

Former field boundaries (**FFB1 – FFB4**) have been recorded within Areas 1, 4 and 5 and correspond to historic mapping dating from 1903 (NLS 2021).

Modern ploughing trends can be seen throughout all areas and follow the current direction of cultivation. The interpretation figures show the direction of the ploughing, but not all have been digitised, unless especially prominent within the dataset.

The western half of Area 1 is dominated by field drains, laid out in a traditional herringbone pattern and likely to be of a clay construction due to the magnetic signature. Further drains have been recorded in Areas 2 and 5 but not at the scale of those in Area 1.

Uncertain anomalies

Five magnetically strong square responses (**U1**) have been recorded in Area 3 to the southeast of **P3**. They measure approximately 4m by 4m and are either indicative of an intense area of burning or are buried iron/steel objects. Due to their close proximity to **P3**, they may have an archaeological origin but it is unclear as to what they represent hence the uncertain interpretation.

Anomalies (**U2** and **U3**) are situated along the line of a band of geological responses but have a hint of a more linear or rectilinear feel to them and are therefore given an uncertain interpretation.

Possible and definite archaeological anomalies

Anomalies of both a definite and possible archaeological origin have been recorded within the dataset. The most prominent of these lie in the centre of the Site; either side of a modern track and represent settlement activity (**A1**). A number of rectangular enclosures can be seen within this complex which cover an area of approximately 115m by 120m. In the northwest of the complex lies a rectangular feature (**A2**) which is magnetically stronger than the surrounding enclosure ditches and could be indicative of burning. The feature measures approximately 25m by 6m and could represent a Roman period building. Although this interpretation is speculative, the Roman finds that have been recovered within the vicinity add weight to this hypothesis. The surrounding large enclosures are likely to be smaller fields associated with the building.

Leading from the feature at **A2**, a double ditched linear response (**A3**) can be seen heading southwards. The eastern ditch forms part of the large enclosures to the adjacent east. The double ditched feature is likely to be a trackway leading to the building. To the immediate north of **A2**, a number of pits and pit-like anomalies have been recorded. Some are magnetically strong, suggesting the fill is of burnt material or that intensive burning once took place *in situ*.

To the northeast of the complex **A1**, a small square response (**P1**) can be seen. This measures approximately 5m by 5m and lies to the south of a possible boundary ditch (**P2**). One possible interpretation of this is that it represents a Roman period mausoleum associated with the settlement. Mausolea would usually be constructed of stone, brick or tile which would give a negative geophysical response. As this is a positive response, perhaps the foundations have been 'robbed out' and the foundation ditches are being recorded.

Approximately 180m to the south of **P1** lies another possible, but smaller enclosure system (**A4**). The enclosure measures approximately 30m by 25m with appended ditches (**A5**) suggesting part of former field systems. Further anomalies include a group of pit-like responses (**P3**) and negative trends on a linear alignment, covering an area of approximately 30m by 10m. It is possible that these represents a second potential building with the negative responses suggesting wall foundations.

Ditch type responses of an archaeological or possible archaeological origin can be seen within Areas 2-4 (**P4, P5, P6, P7, A6, and A7**) and represent former field systems.

5 Conclusions

The geophysical survey has detected a number of magnetic anomalies associated with archaeological and possible archaeological origins including settlement features, possible Roman buildings, a trackway, pits, field systems and perhaps also a mausoleum of Roman date.

Former field boundaries, modern ploughing and field drains have also been recorded. Anomalies with a very strong magnetic response have been recorded but their origin is uncertain. Service pipes and small scale ferrous anomalies can also be seen throughout.

Based on the geophysical survey the archaeological potential of the Site is deemed to be high

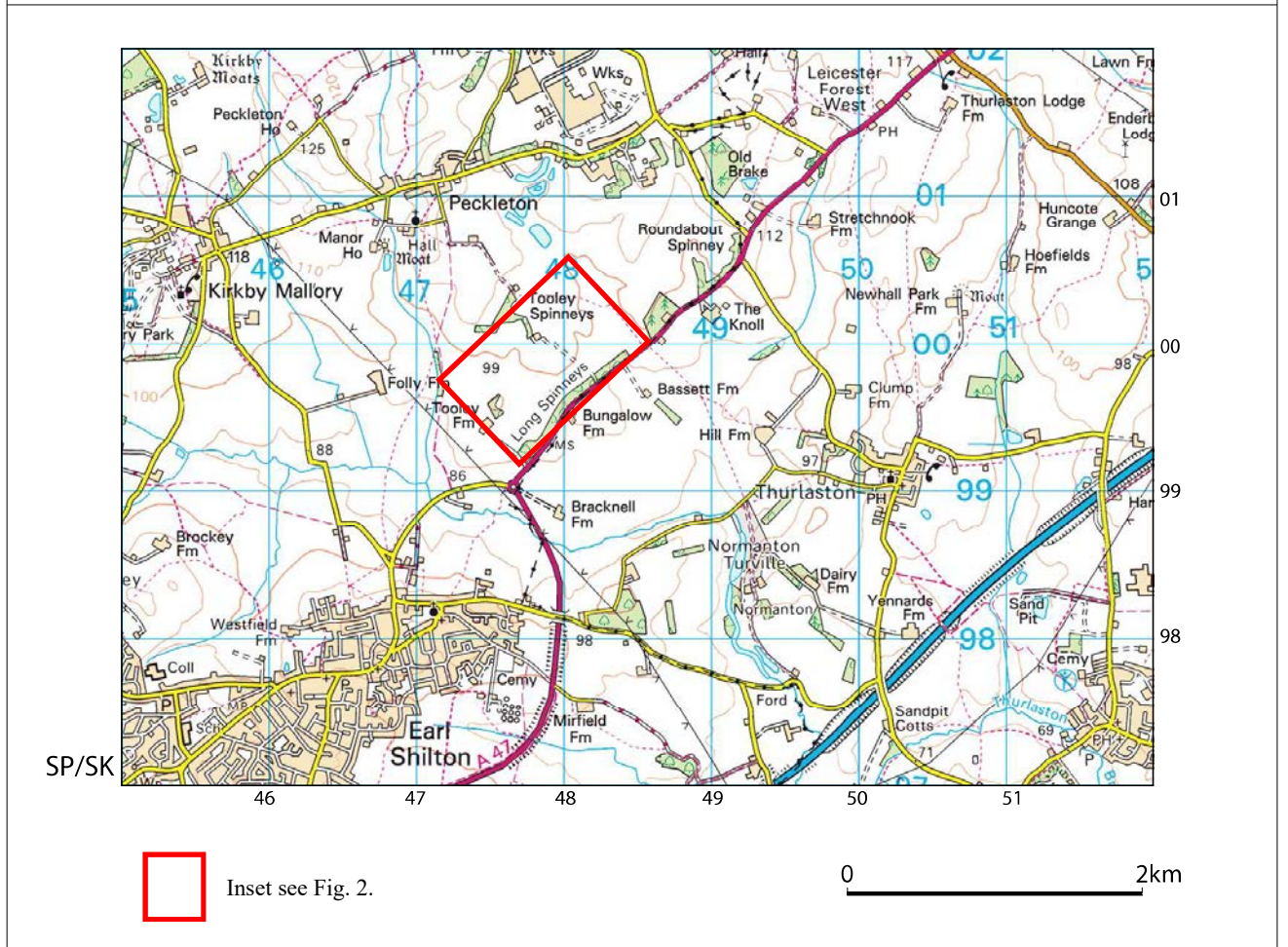
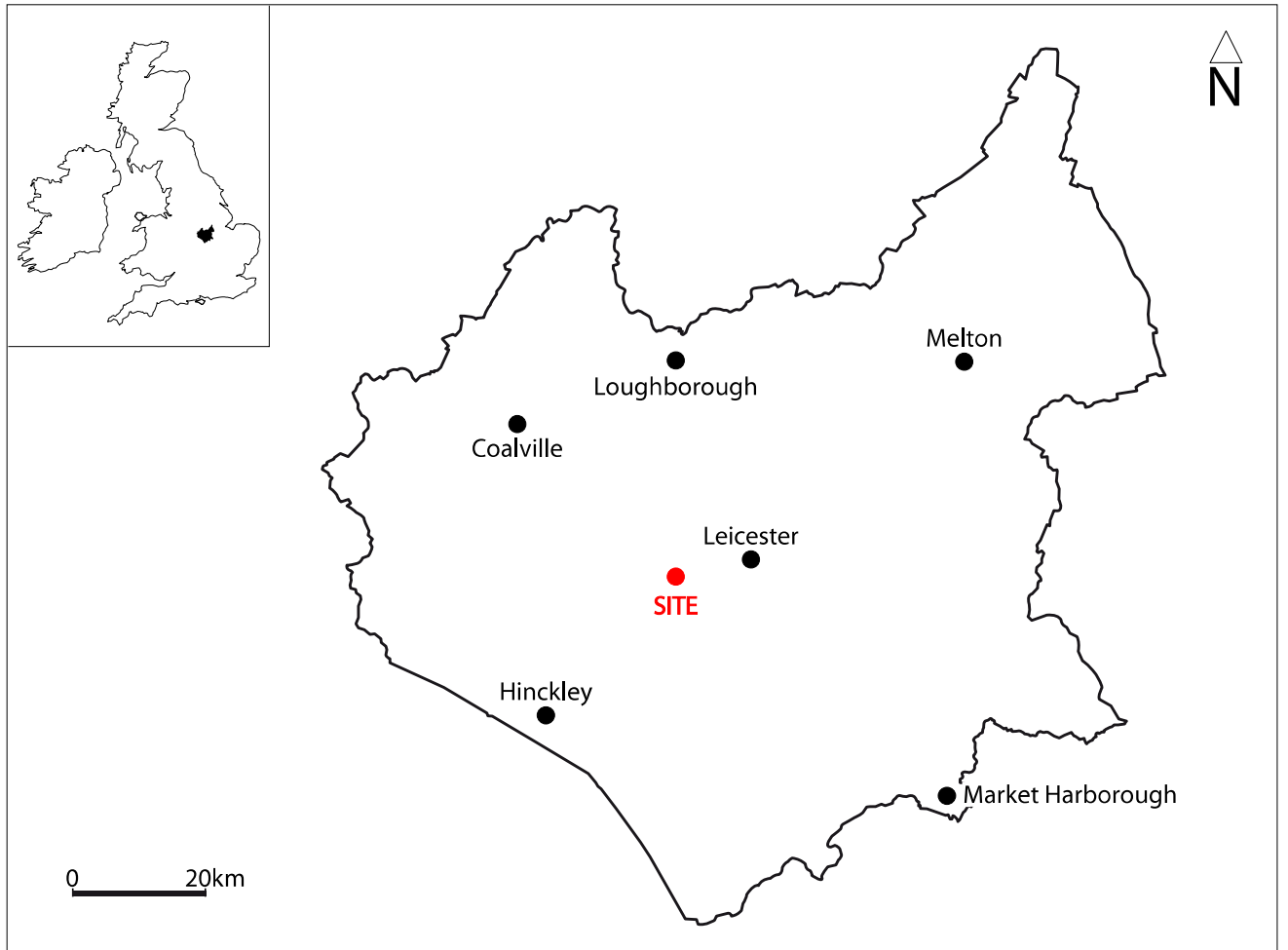
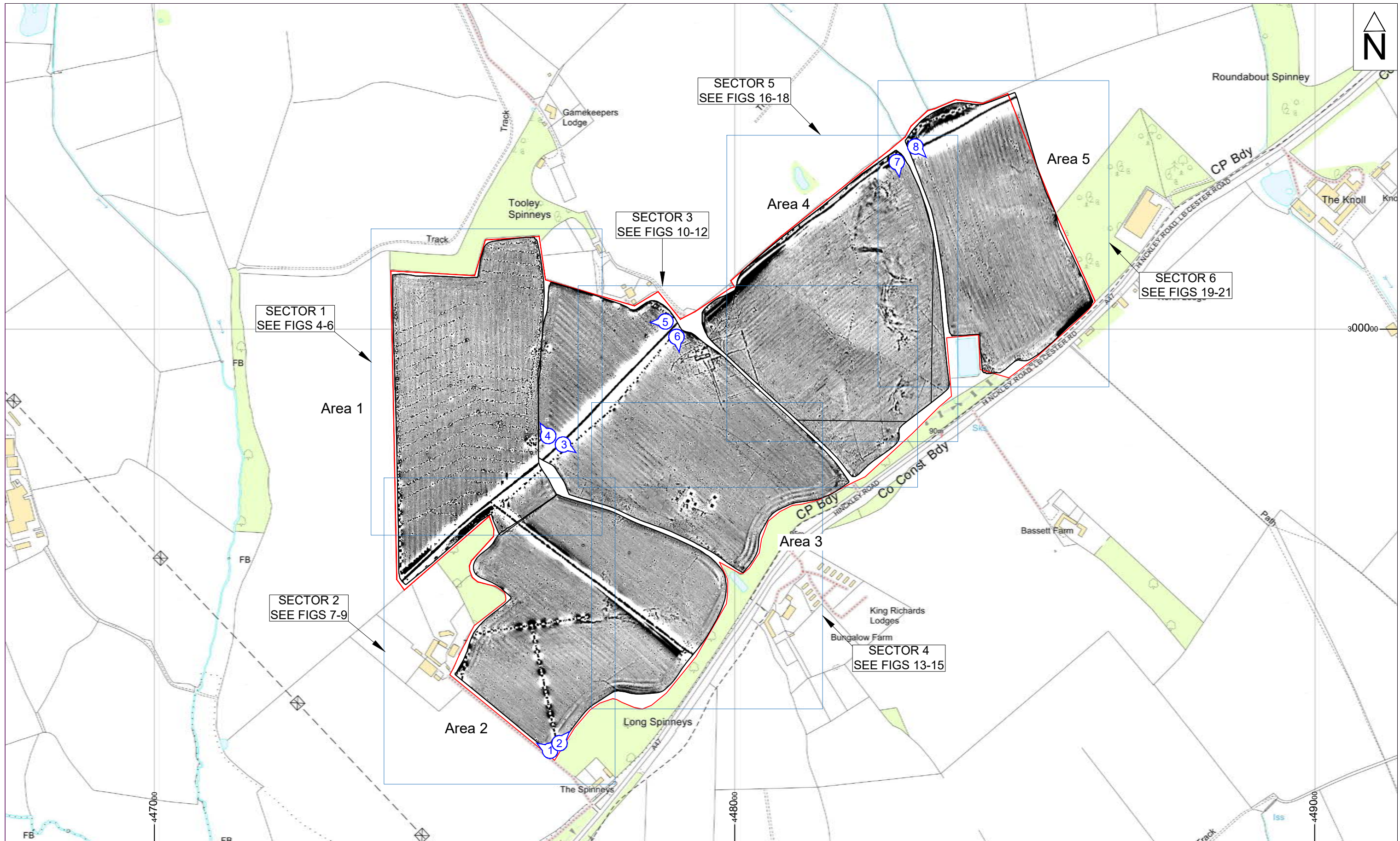



Fig. 1. Site location







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Survey location showing processed magnetometer data

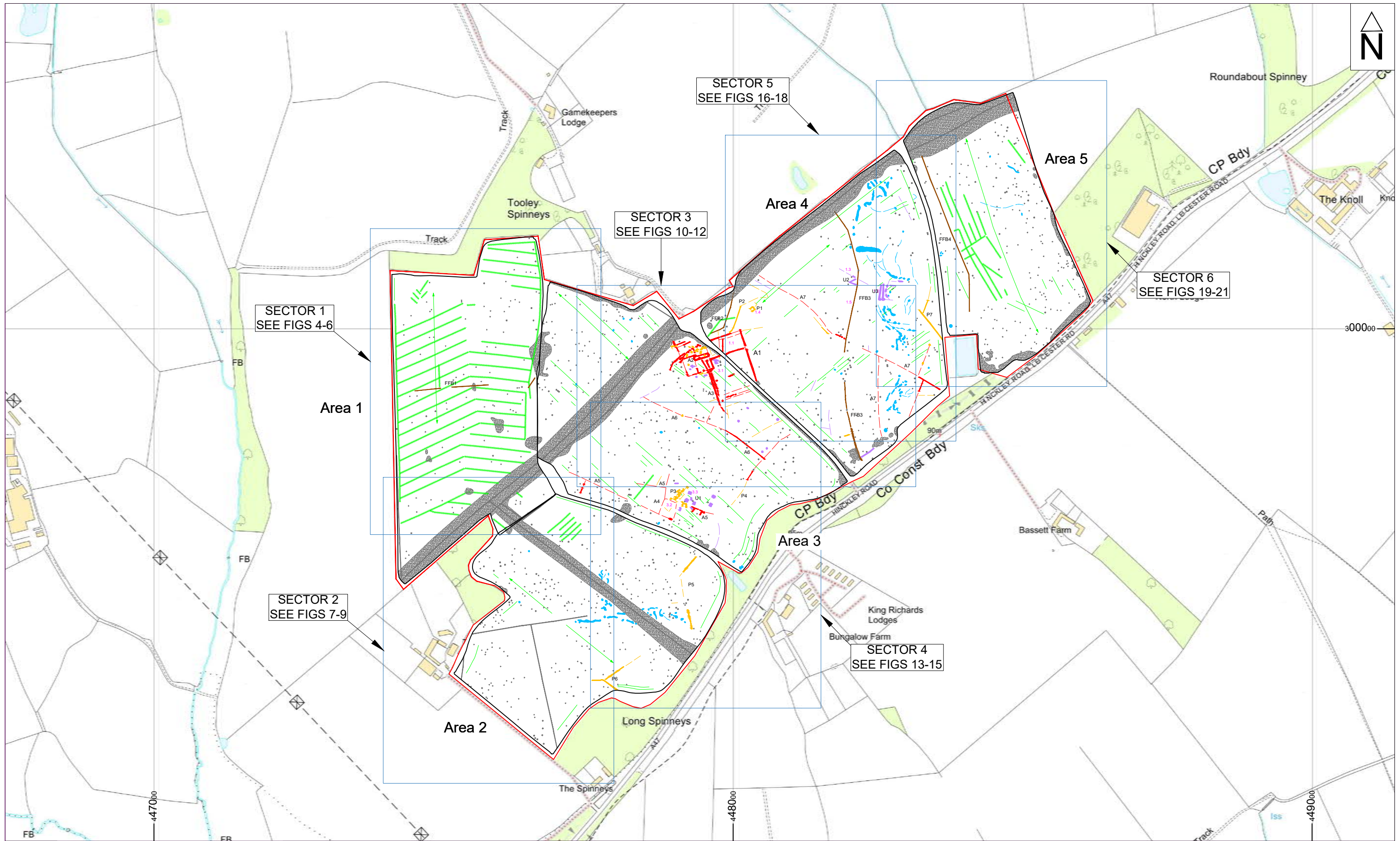
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Title	
	SURVEY AREA
	SECTOR BOUNDARY
	PHOTO LOCATIONS



1:6000 @ A3

Fig. 2



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Title	
	SURVEY AREA
	SECTOR BOUNDARY

Interpretation					
	FERROUS		AGRICULTURAL		ARCHAEOLOGY?
	SERVICE PIPE		FORMER FIELD BOUNDARY		ARCHAEOLOGY
	MAGNETIC DISTURBANCE		GEOLOGY		UNCERTAIN
	FIELD DRAIN				

0 200m
 1:6000 @ A3

Fig. 3





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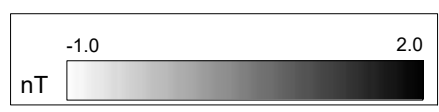
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Processed greyscale magnetometer data; Sector 1

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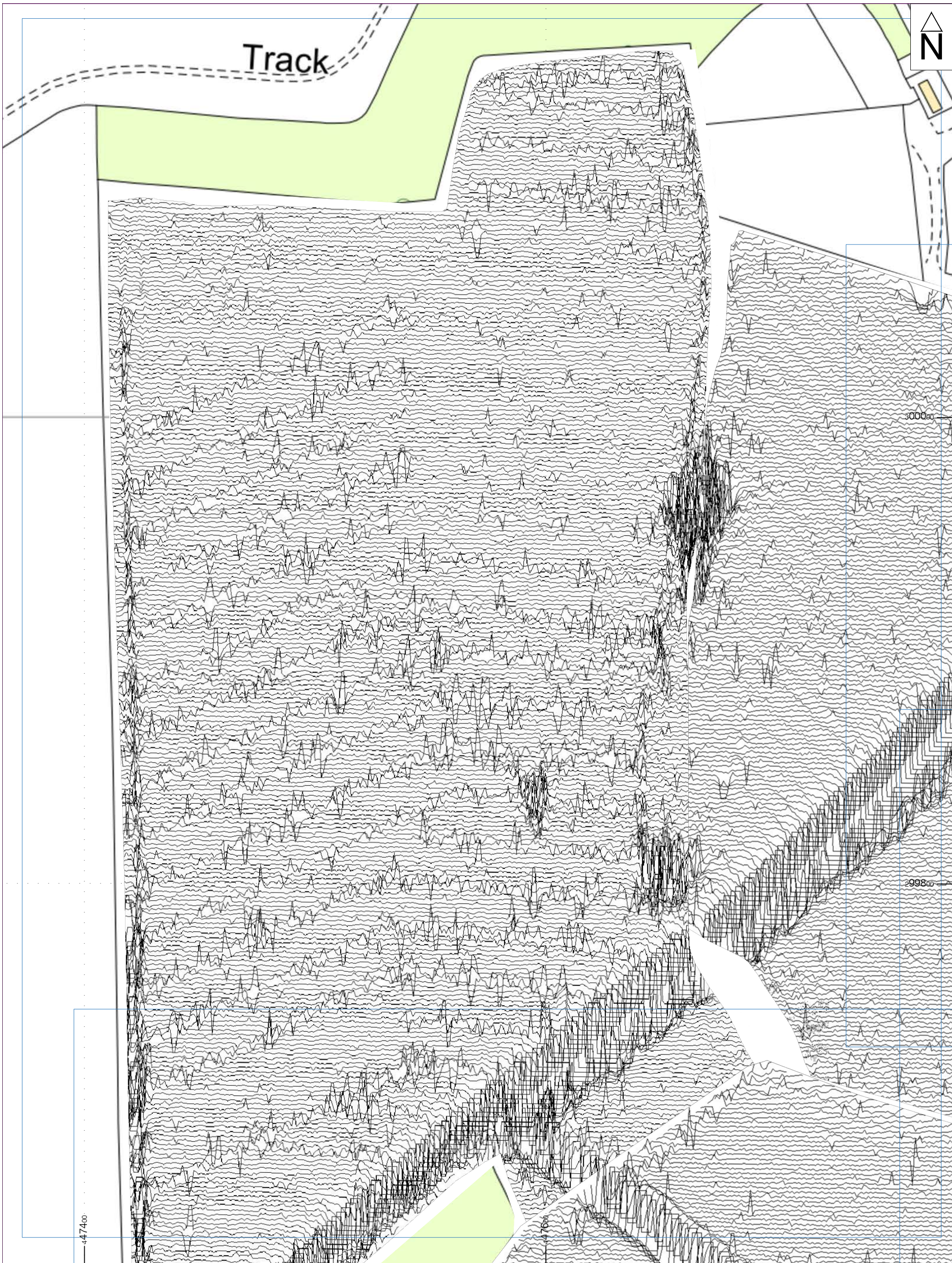
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 SECTOR BOUNDARY



1:1500 @ A3

Fig. 4



Track




3000

2998

47400

47600



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XY trace plot of minimally processed data; Sector 1

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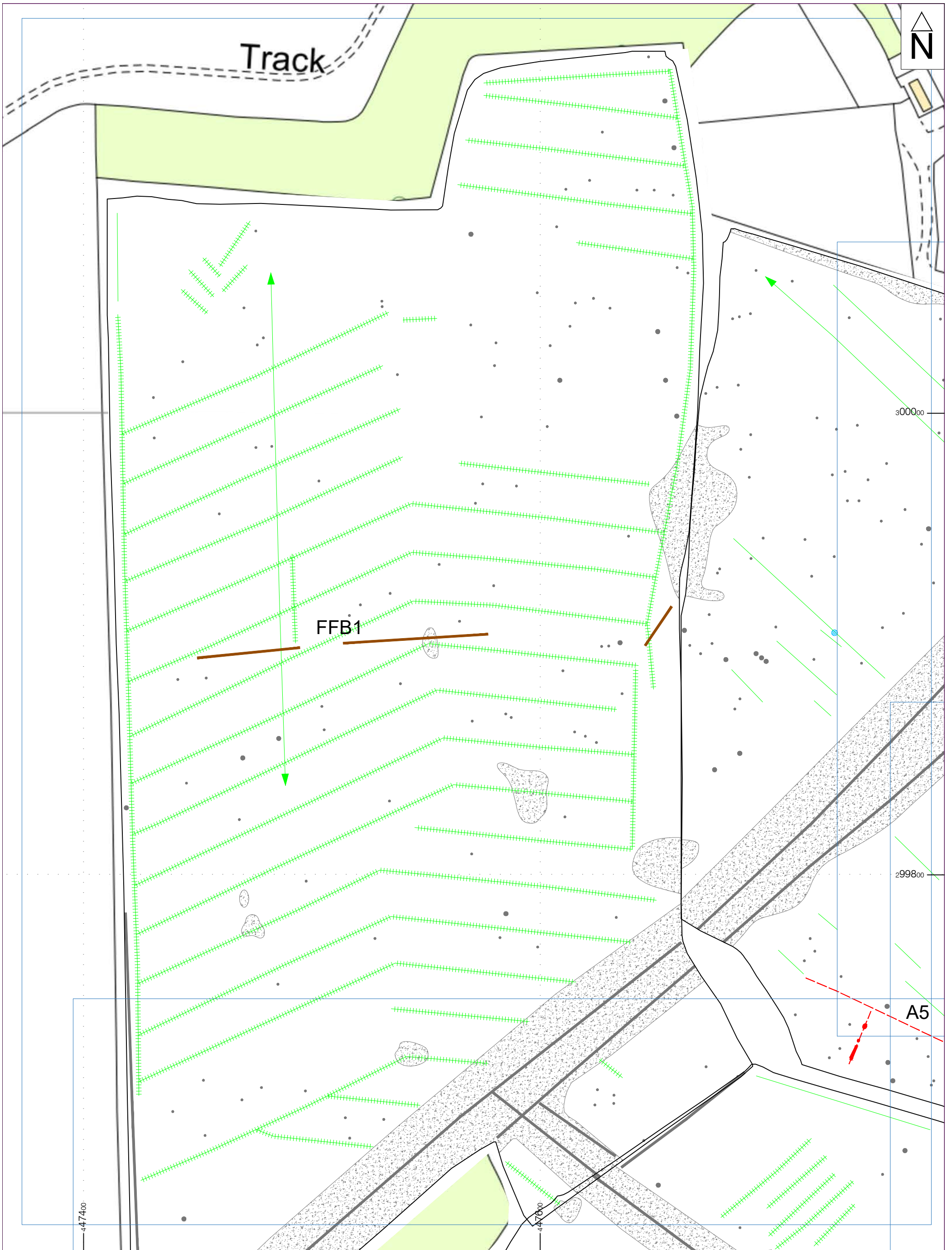
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15.0 nT/cm

0 50m

1:1500 @ A3

Fig. 5












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Interpretation of magnetometer data; Sector 1

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Interpretation


	FERROUS		FIELD DRAIN		GEOLOGY
	SERVICE PIPE		AGRICULTURAL (direction of)		ARCHAEOLOGY
	MAGNETIC DISTURBANCE		FORMER FIELD BOUNDARY		



1:1500 @ A3

Fig. 6





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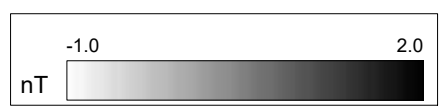
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1:1500 @ A3

Fig. 7





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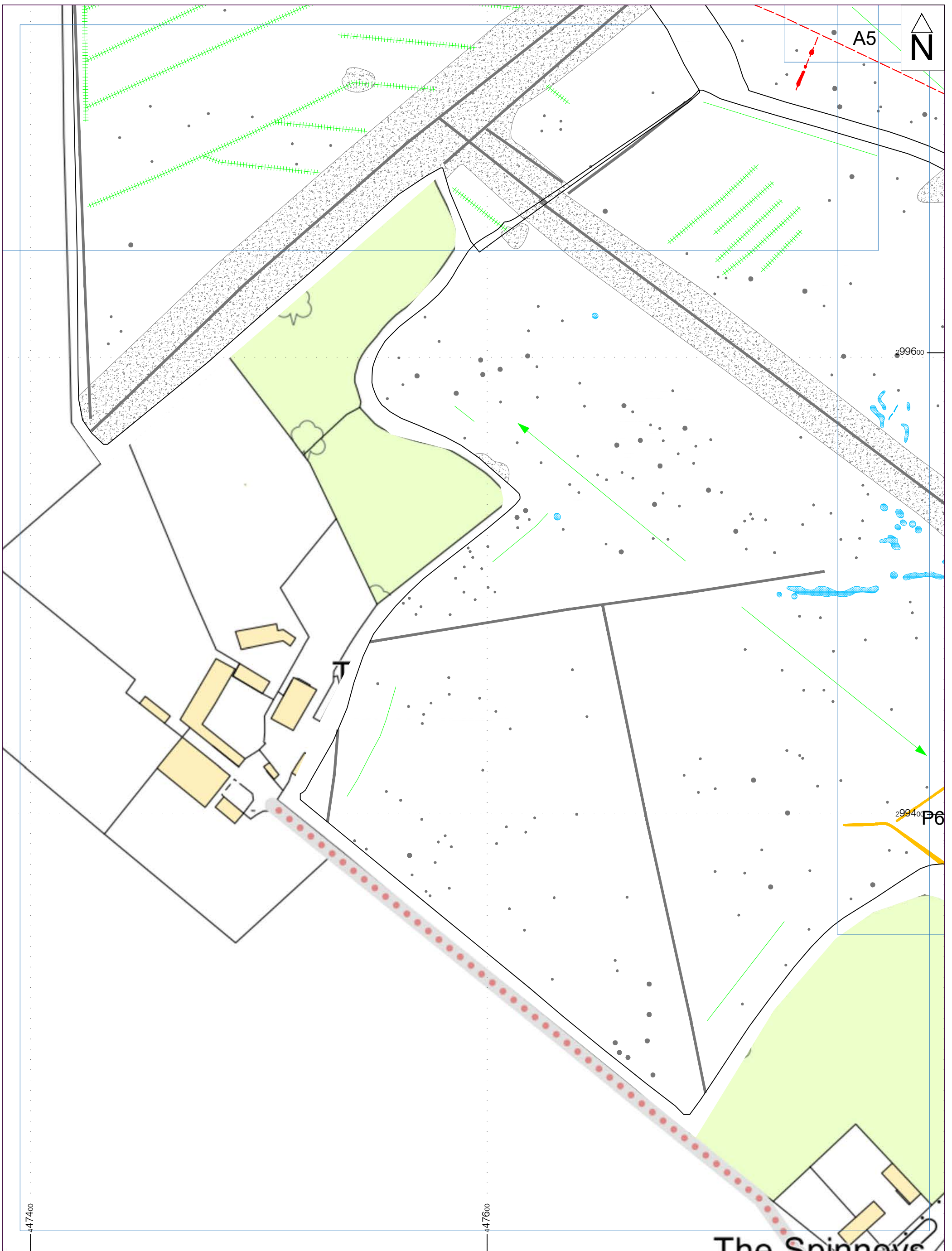
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15.0 nT/cm

0 50m

1:1500 @ A3

Fig. 8








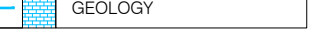



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Interpretation of magnetometer data; Sector 2

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Interpretation					
	FERROUS		FIELD DRAIN		ARCHAEOLOGY?
	SERVICE PIPE		AGRICULTURAL (direction of)		ARCHAEOLOGY
	MAGNETIC DISTURBANCE		GEOLOGY		




 1:1500 @ A3

Fig. 9





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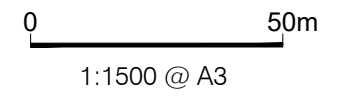
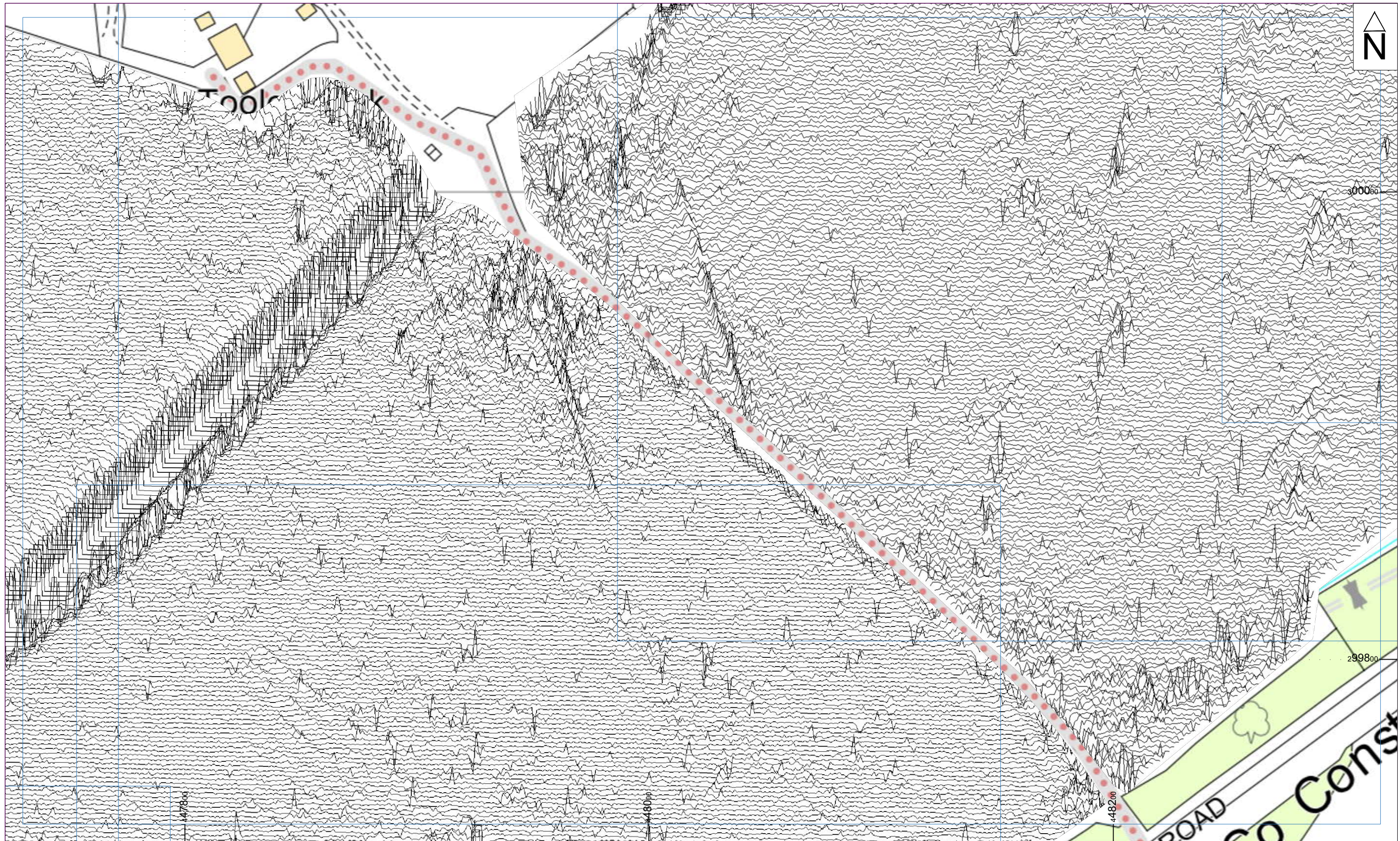



Fig. 10





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XY trace plot of minimally processed data; Sector 3

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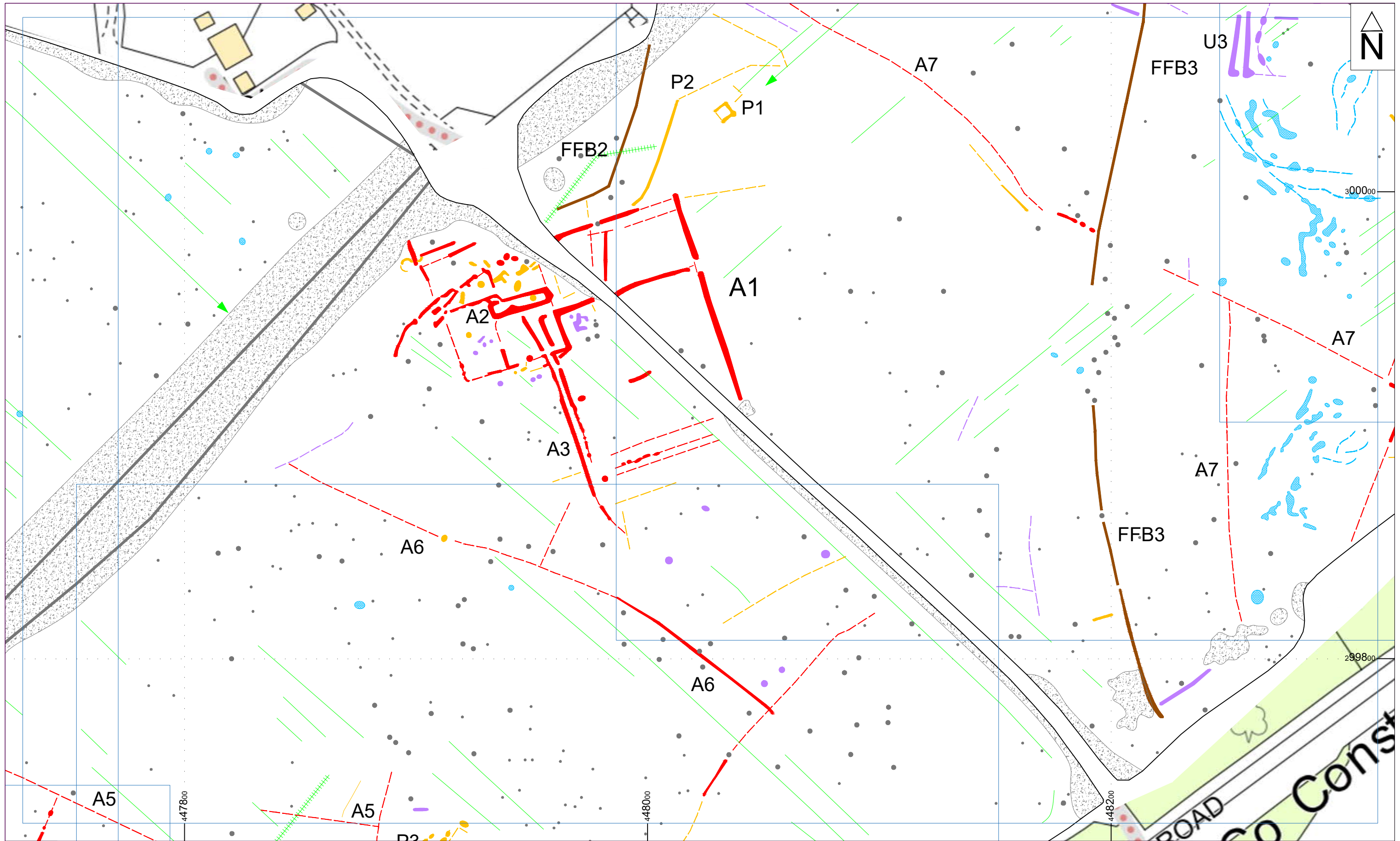
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15.0 nT/cm

0 50m

1:1500 @ A3

Fig. 11





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








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Interpretation of magnetometer data; Sector 3

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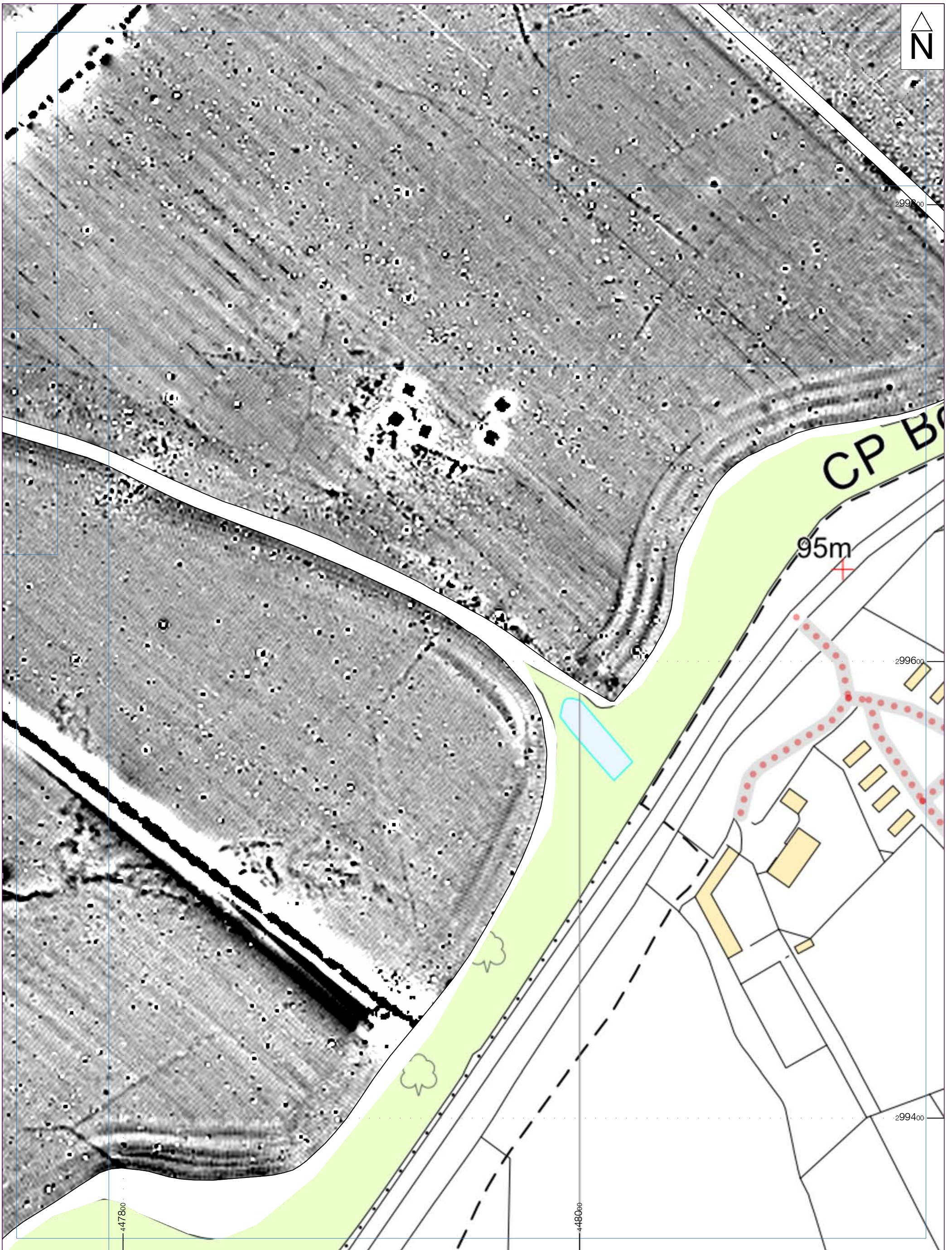
Title
 SECTOR BOUNDARY


Interpretation

 FERROUS	 AGRICULTURAL (direction of)	 ARCHAEOLOGY?
 SERVICE PIPE	 FORMER FIELD BOUNDARY	 ARCHAEOLOGY
 MAGNETIC DISTURBANCE	 GEOLOGY	
 FIELD DRAIN	 UNCERTAIN	

0 50m
 1:1500 @ A3

Fig. 12





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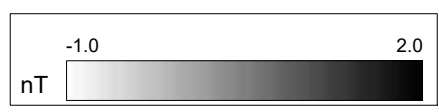
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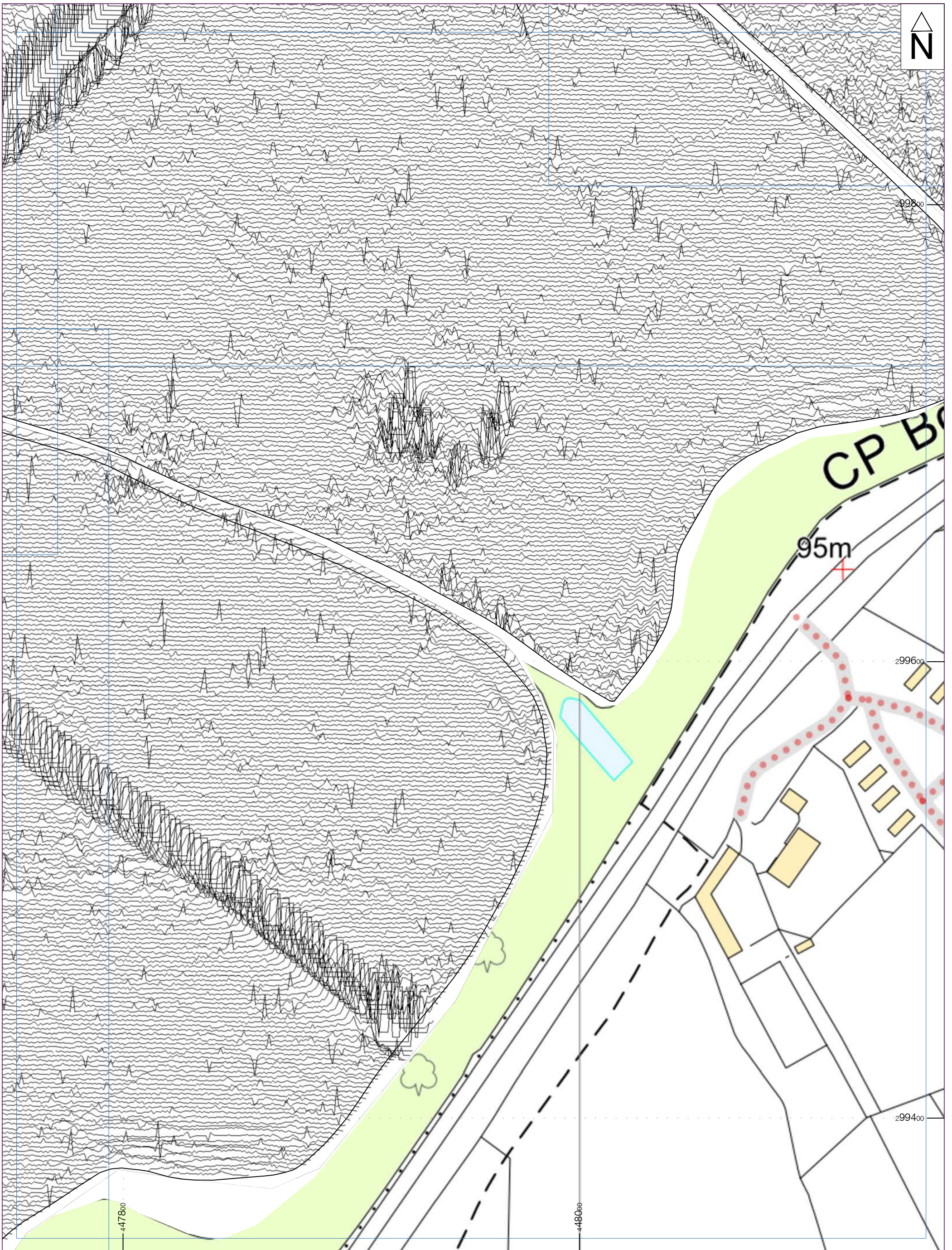
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Fig. 13





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XY trace plot of minimally processed data; Sector 4

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Title

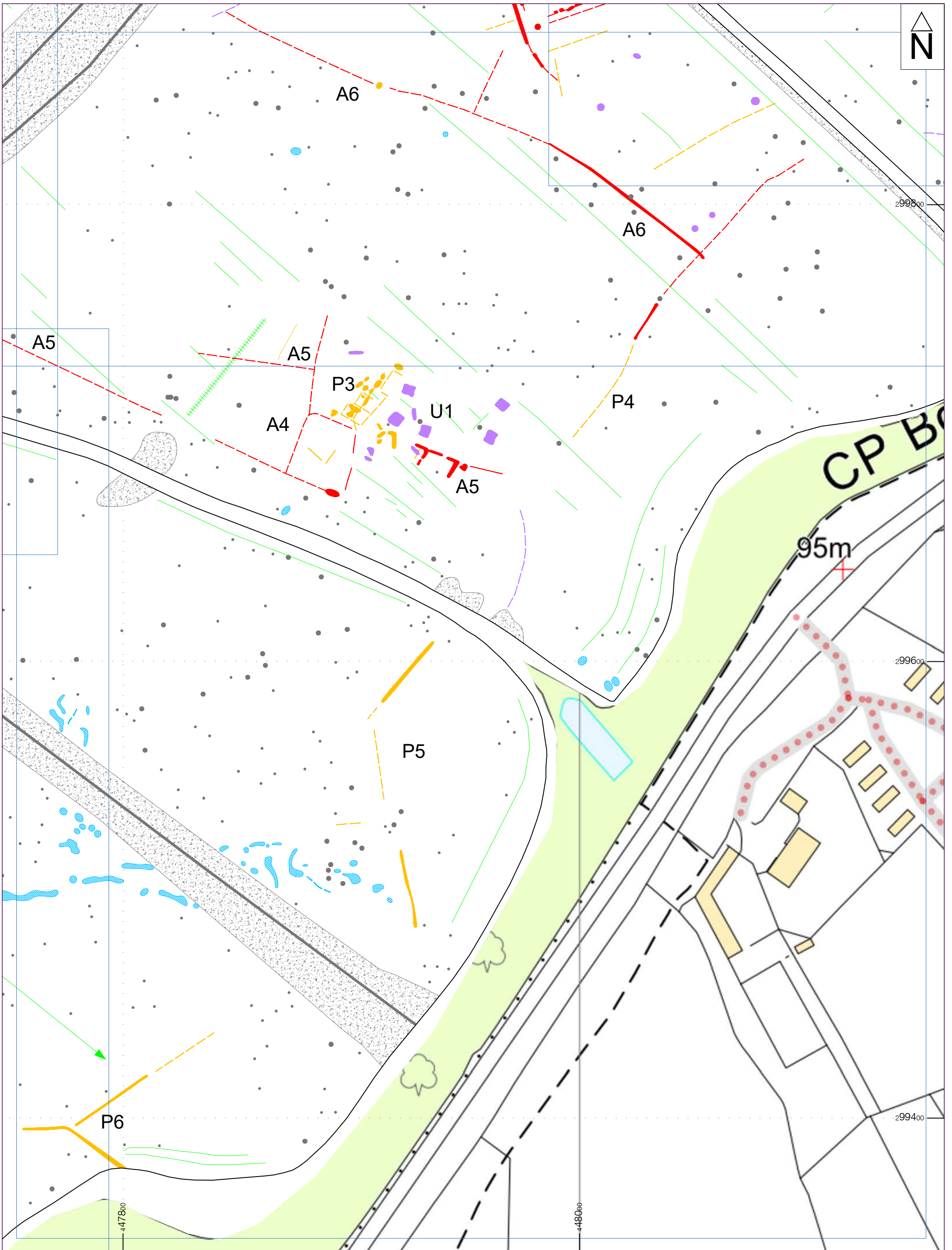
 SECTOR BOUNDARY


15.0 nT/cm

0 50m

1:1500 @ A3

Fig. 14



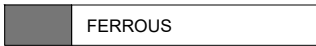









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Interpretation of magnetometer data; Sector 4

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Interpretation


	FERROUS		FIELD DRAIN		UNCERTAIN
	SERVICE PIPE		AGRICULTURAL (direction of)		ARCHAEOLOGY?
	MAGNETIC DISTURBANCE		GEOLOGY		ARCHAEOLOGY

0 50m

1:1500 @ A3

Fig. 15





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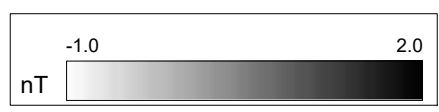
Project ID: XC53_CPF21

Processed greyscale magnetometer data; Sector 5

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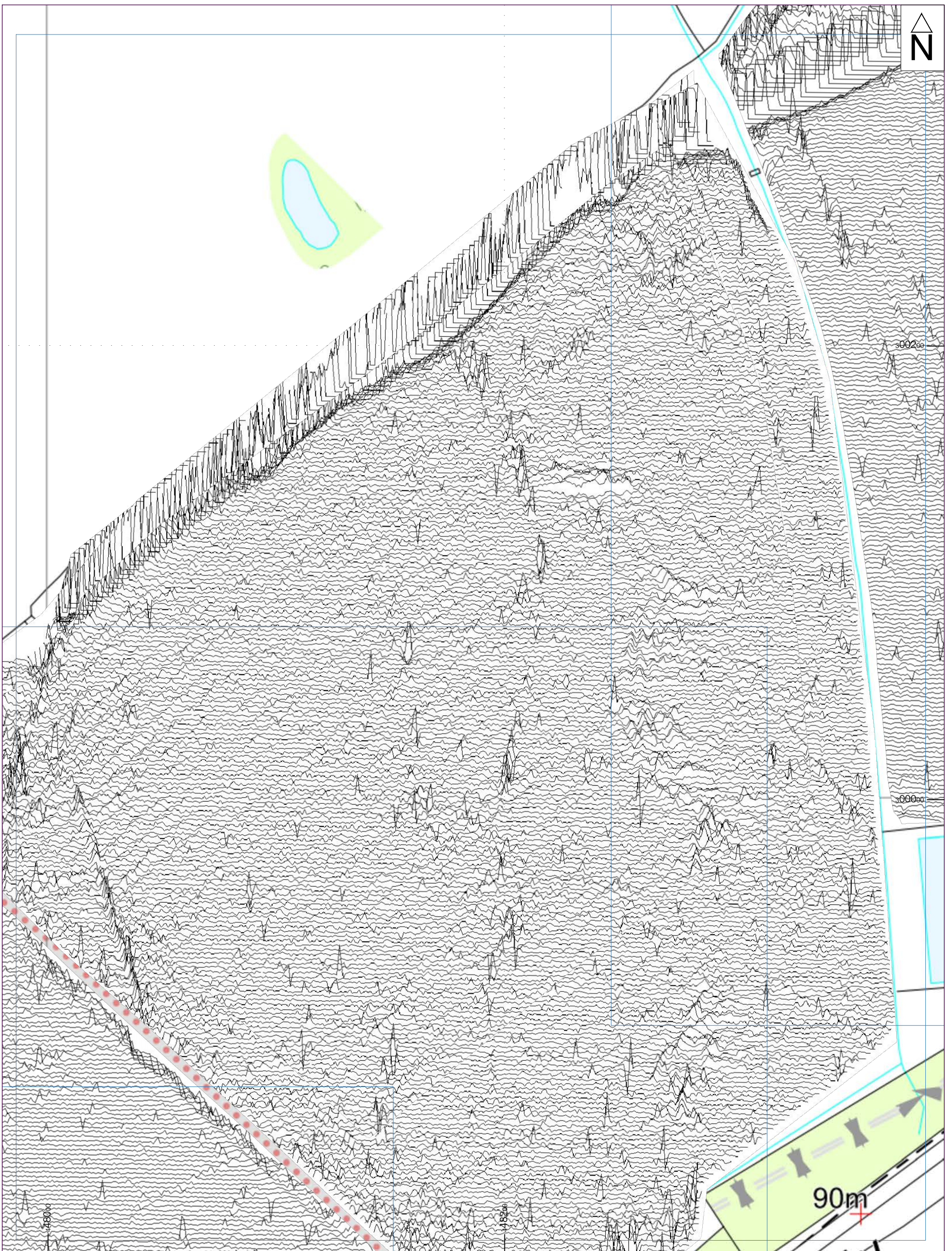
Title


 SECTOR BOUNDARY



1:1500 @ A3

Fig. 16





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XY trace plot of minimally processed data; Sector 5

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Title

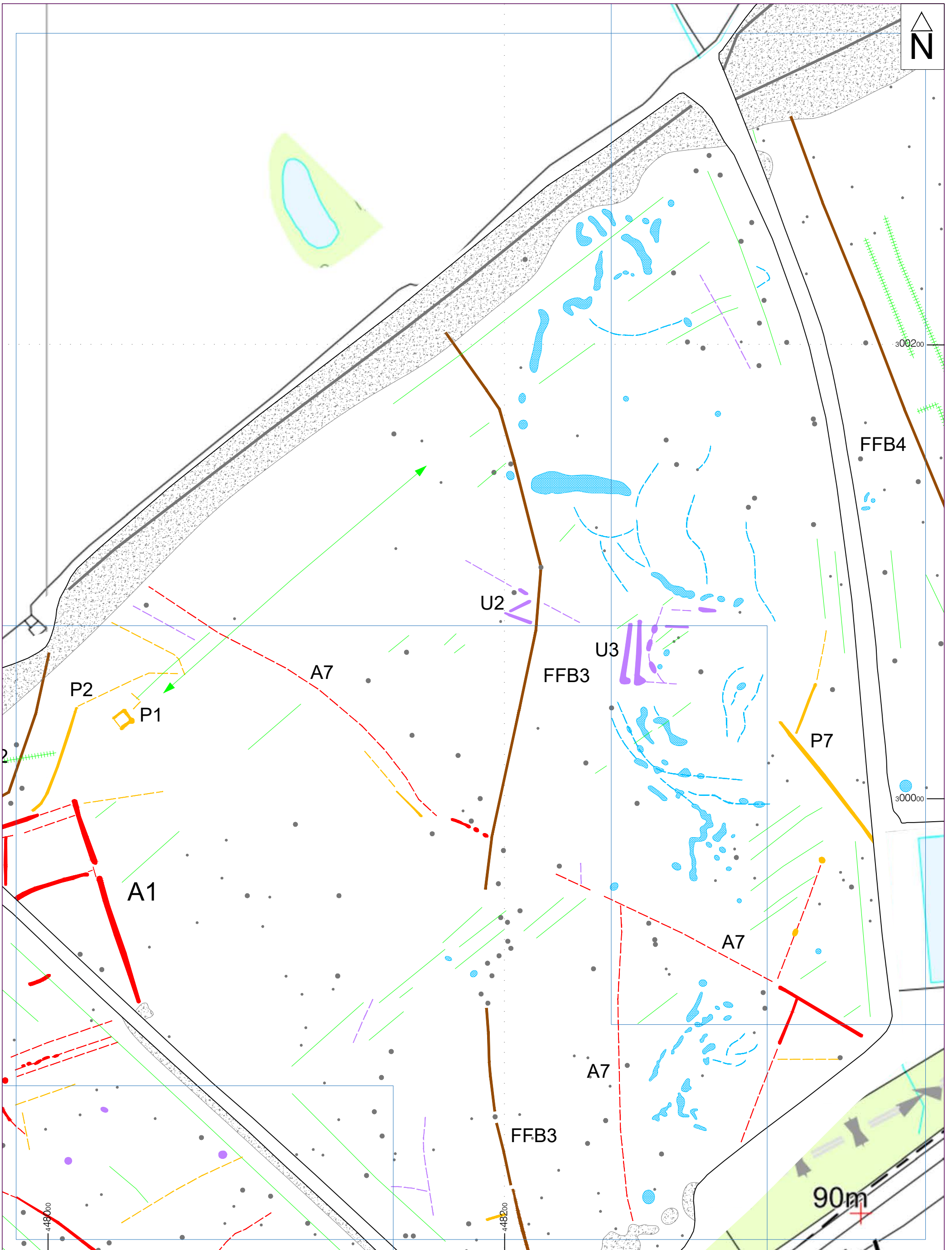
 SECTOR BOUNDARY


15.0 nT/cm

0 50m

1:1500 @ A3

Fig. 17














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Interpretation of magnetometer data; Sector 5

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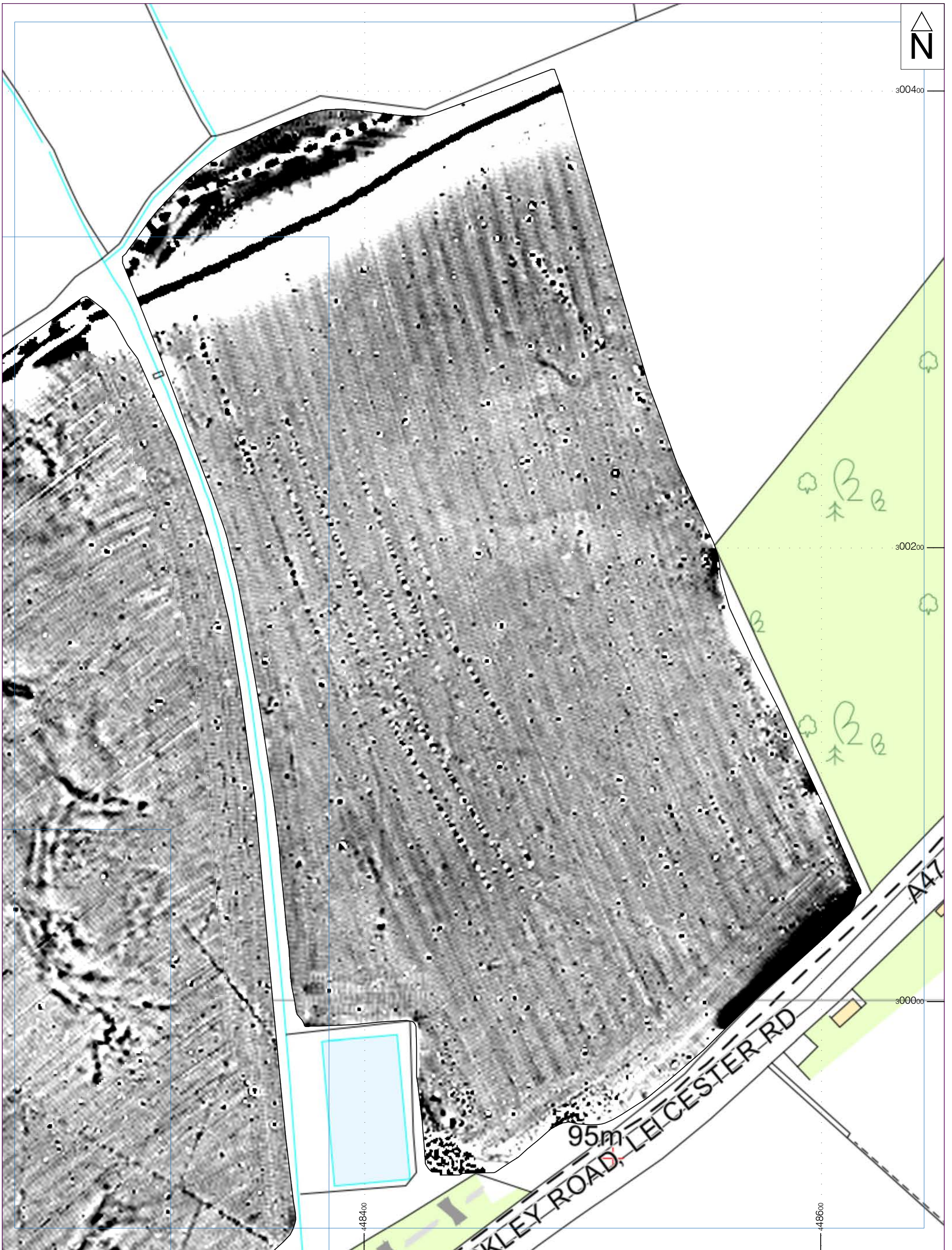
Interpretation


 FERROUS	 AGRICULTURAL (direction of)	 ARCHAEOLOGY?
 SERVICE PIPE	 FORMER FIELD BOUNDARY	 ARCHAEOLOGY
 MAGNETIC DISTURBANCE	 GEOLOGY	
 FIELD DRAIN	 UNCERTAIN	

0 50m

1:1500 @ A3

Fig. 18





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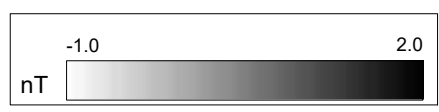
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Processed greyscale magnetometer data; Sector 6

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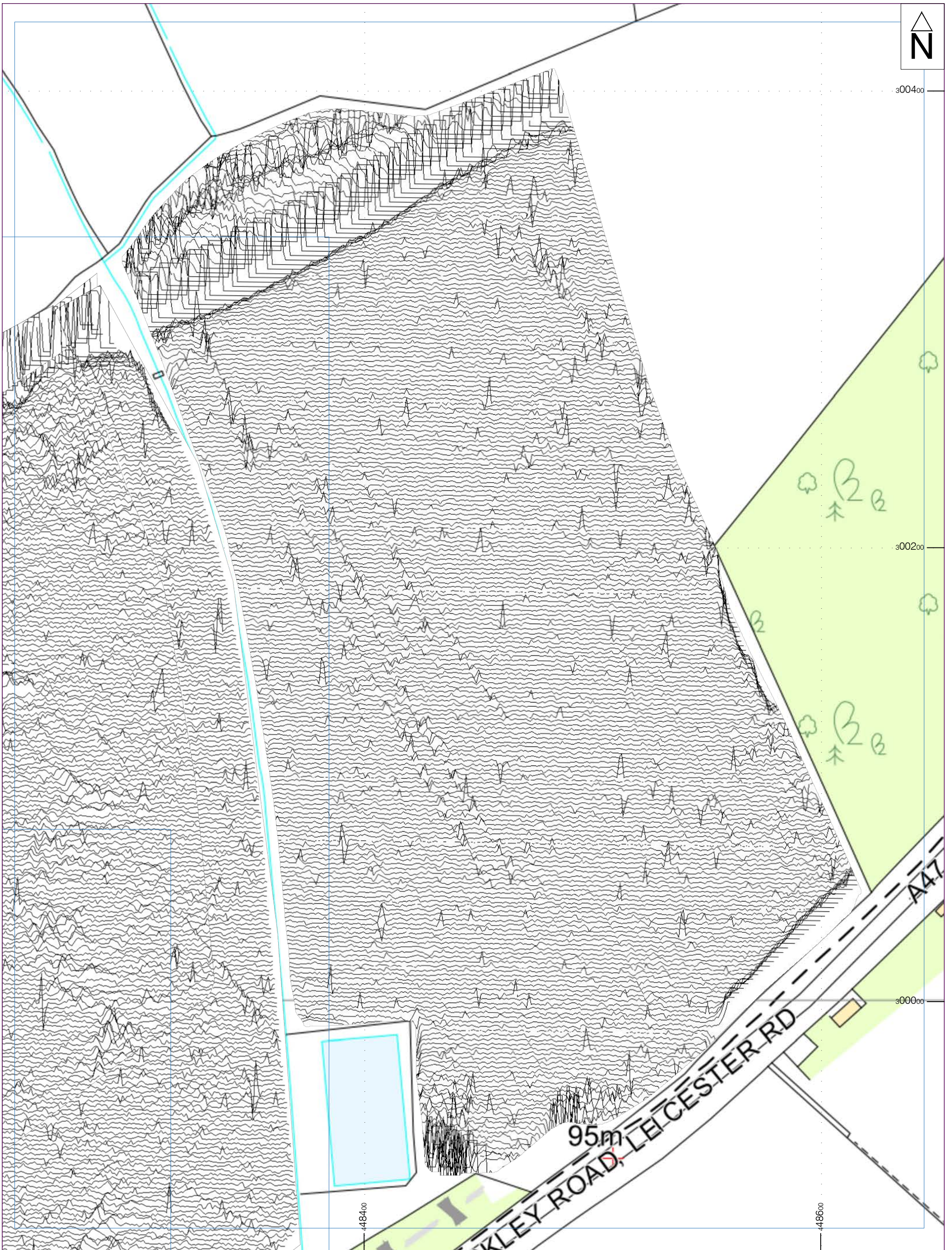
Title


 SECTOR BOUNDARY




1:1500 @ A3

Fig. 19




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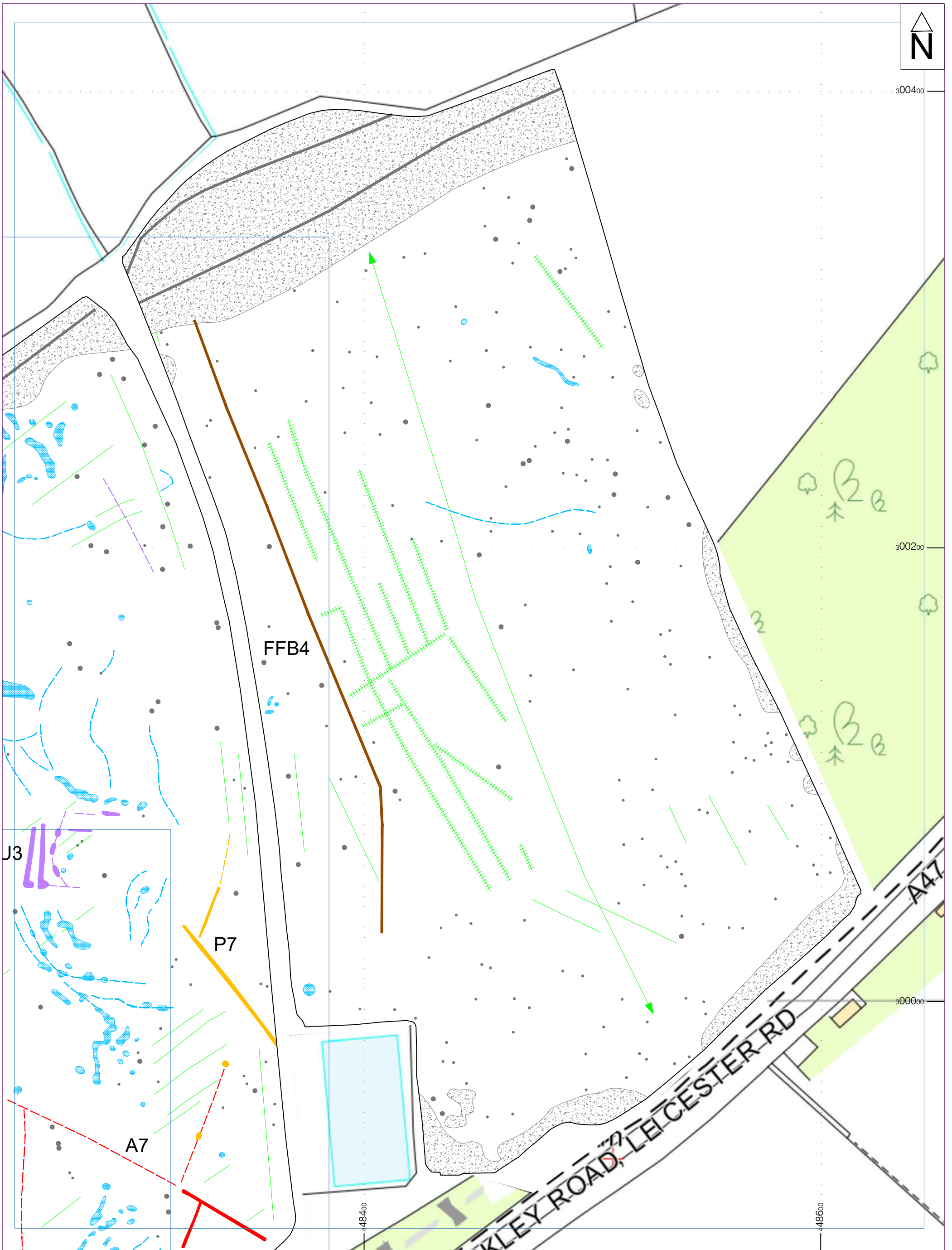
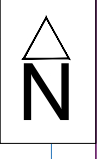
Title
 SECTOR BOUNDARY


15.0 nT/cm

0 50m

1:1500 @ A3

Fig. 20



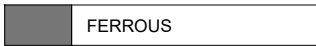





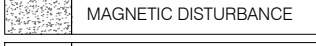




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Interpretation of magnetometer data; Sector 6

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Interpretation

	FERROUS		AGRICULTURAL (direction of)		ARCHAEOLOGY?
	SERVICE PIPE		FORMER FIELD BOUNDARY		ARCHAEOLOGY
	MAGNETIC DISTURBANCE		GEOLOGY		
	FIELD DRAIN		UNCERTAIN		



1:1500 @ A3

Fig. 21



Plate 1. General view of Area 2, looking northwest



Plate 2. General view of Area 2, looking northeast



Plate 3. General view of Area 3, looking southeast



Plate 4. General view of Area 1, looking northwest



Plate 5. General view of Area 3, looking west



Plate 6. General view of Area 3, looking south



Plate 7. General view of Area 4, looking south



Plate 8. General view of Area 5, looking southeast

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 a Bartington Grad601 magnetic gradiometer was used taking readings on the 0.1nT range, at 0.25m intervals on zig-zag traverses 0.5m apart within 30m by 30m square grids. The instrument was checked for electronic and mechanical drift at a common point and calibrated as necessary. The drift from zero was not logged.

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

The data was geo-referenced with a Carlton VRS differential Global Positioning System (Carlton BRX 7). The accuracy of this 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 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 2000), and graphics files (Adobe Illustrator CS2 and AutoCAD 2008) 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 Leicestershire Historic Environment Record).

Metadata

Area 1

filename	XC53_02a.xcp
instument	Sensys DLMGPS
units	nT
NGR: SW	447410.504, 299561.823
NGR: NE	447693.464, 300160.323
dummy value	2047.5
source GPS points	7812981
survey size	293 m x 607 m
x and y interval	1m
stats: max	2290.08
min	-505.46
std dev	49.58
mean	1.26
median	-0.03
composite area	17.785 ha
surveyed area	12.411 ha
Software programme	Magneto 3.01-10
Software programme	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer, Interpolate: X & Y Doubled.

Area 2

filename	XC53_02b.xcp
instument	Sensys DLMGPS
units	nT
NGR: SW	447518.262, 299268.410
NGR: NE	447986.004, 299716.924
dummy value	2047.5
source GPS points	8475317
survey size	471 m x 454 m
x and y interval	1m
stats: max	1820.06
min	-2218.88
std dev	21.56
mean	0.46
median	-0.04
composite area	21.383 ha
surveyed area	12.947 ha
Software programme	Magneto 3.01-10
Software programme	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer, Interpolate: X & Y Doubled.

Area 3

filename	XC53_03.xcp
instument	Sensys DLMGPS
units	nT
NGR: SW	447659.455, 299578.784
NGR: NE	448197.290, 300083.046
dummy value	2047.5
source GPS points	11612910
survey size	543 m x 501 m
x and y interval	1m
stats: max	1805.23
min	-909.05
std dev	43.19
mean	0.09
median	0.00
composite area	27.204 ha
surveyed area	15.355 ha
Software programme	Magneto 3.01-10
Software programme	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer, Interpolate: X & Y Doubled.

Area 4

filename	XC53_01b.xcp
instument	Sensys DLMGPS
units	nT
NGR: SW	447943.893, 299747.792
NGR: NE	448370.221, 300310.464
dummy value	2047.5
source GPS points	5712739
survey size	393 m x 467 m
x and y interval	1m
stats: max	1170.76
min	-729.26
std dev	49.42
mean	0.99
median	-0.08
composite area	18.353 ha
surveyed area	9.751 ha
Software programme	Magneto 3.01-10
Software programme	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer, Interpolate: X & Y Doubled.

Area 4

filename	XC53_01a.xcp
instument	Sensys DLMGPS
units	nT
NGR: SW	447943.893, 299747.792
NGR: NE	448370.221, 300310.464
dummy value	2047.5
source GPS points	3723941
survey size	432 m x 567 m
x and y interval	1m
stats: max	1295.20
min	-397.01
std dev	57.40
mean	2.52
median	-0.08
composite area	24.494 ha
surveyed area	4.9387 ha
Software programme	Magneto 3.01-10
Software programme	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer, Interpolate: X & Y Doubled.

Area 5

filename	XC53_04.xcp
instument	Sensys DLMGPS
units	nT
NGR: SW	448294.086, 299925.504
NGR: NE	448617.330, 300409.494
dummy value	2047.5
source GPS points	6161732
survey size	332 m x 489 m
x and y interval	1m
stats: max	1293.20
min	-380.79
std dev	43.90
mean	0.40
median	-0.03
composite area	16.235 ha
surveyed area	9.3378 ha
Software programme	Magneto 3.01-10
Software programme	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer, Interpolate: X & Y Doubled.

Appendix 4: Oasis form

Summary for archaeol11-503078

OASIS ID (UID)	archaeol11-503078
Project Name	Geophysical Survey at Clump Farm, Enderby
Activity type	Geophysical Survey, MAGNETOMETRY SURVEY
Project Identifier(s)	
Planning Id	
Reason For Investigation	Planning: Pre application
Organisation Responsible for work	Archaeological Services WYAS
Project Dates	23-Aug-2021 - 04-Nov-2021
Location	Clump Farm, Enderby NGR : SK 48105 00021 LL : 52.5958623645646, - 1.29125862071471 12 Fig : 448105,300021
Administrative Areas	Country : England County : Leicestershire District : Hinckley and Bosworth Parish : Peckleton
Project Methodology	The survey was undertaken using a cart-based survey 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	A geophysical (magnetometer) survey was undertaken on approximately 65 hectares of land located at Clump Farm to the west of Enderby, Leicestershire. Anomalies of both a definite and a possible archaeological origin have been detected including settlement features, a trackway, pits, field systems, likely Roman buildings and a square response which may indicate a mausoleum. Former field boundaries, modern ploughing and field drains have also been recorded. Geological responses can be seen throughout. Based on the geophysical survey the archaeological potential of the Site is deemed to be high.
Keywords	Rectangular Enclosure - LATER PREHISTORIC - FISH Thesaurus of Monument Types Trackway - LATER PREHISTORIC - FISH Thesaurus of Monument Types Field System - LATER PREHISTORIC - FISH Thesaurus of Monument Types
HER	Leicestershire HER - unRev - STANDARD
HER Identifiers	
Archives	

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