Cottam Solar Project

Environmental Statement Appendix 13.2:

Archaeological Geophysical Survey Reports (Part 7 of 13)

Prepared by: Archaeological Services WYAS

January 2023

PINS reference: EN010133
Document reference: APP/C6.3.13.2
APFP Regulation 5(2)(a)

Cottam
SOLAR PROJECT

Cottam Solar Project

Cottam 2

Lincolnshire

Geophysical Survey

Report no. 3769
May 2022

Client:

Cottam Solar Project
Cottam 2
Lincolnshire

Geophysical Survey

Summary

A geophysical (magnetometer) survey was undertaken on land consisting of approximately 132 hectares of land associated with Cottam 2 located to the east of Corringham, Lincolnshire. The majority of the anomalies recorded are agricultural including field drains, ridge and furrow cultivation, modern ploughing and former field boundaries. Archaeological and possible archaeological responses have been recorded in at least three separate clusters which are likely to relate to settlement activity. Based on the geophysical survey, the archaeological potential of this site is deemed to be high in Areas H5 and H8 and low elsewhere.

WYAS Archaeological Services

Report Information

Client:	Cottam Solar Project Limited
Report Type:	Geophysical Survey
Location:	Cottam 2
County:	Lincolnshire
Grid Reference:	SK 8838 9216
Period(s) of activity:	?Romano-British/medieval/post-medieval/modern
Report Number:	3769
Project Number:	XB85
Site Code:	CWB21
OASIS ID:	archaeol11-506599
Date of fieldwork:	July, November, December 2021 & February, April 2022
Date of report:	May 2022
Project Management:	Emma Brunning BSc MCIfA
Fieldwork:	Jake Freeman BA
	Amy Chatterton BSc MA
	Jet Jansen BA MA
	Claire Stephens BA MA
Illustrations:	Emma Brunning
	Claire Stephens
Report:	Emma Brunning

Authorisation for distribution: ---

Nepshaw Lane South, Morley, Leeds LS27 7JQ
Telephone: 0113 535 0163
Email: admin@aswyas.com

Document Issue Record

Ver	Author(s)	Reviewer	Approver	Date
1.0	EB	JR/DW	JR	May 2022

Contents

Report information ii
Document Issue Record ii
Contents........ iii
List of Figures iv

1 Introduction 1
Site location, topography and land-use 1
Soils and geology........1
2 Archaeological Background........1
Prehistoric and Roman periods (c. 9500 BC – c. AD 410) 2
Early medieval and medieval periods (c. AD 410– c. 1540) 2
Post-medieval to present (1540-present) 2
3 Aims, Methodology and Presentation 2
Magnetometer survey 3
Reporting 3
4 Results and Discussion........4
Ferrous anomalies and magnetic disturbance 4
Geological anomalies........4
Agricultural anomalies........4
Uncertain anomalies 5
Archaeological and possible archaeological anomalies........5
5 Conclusions........5

Figures
Appendices
Appendix 1: Magnetic survey - technical information
Appendix 2: Survey location information
Appendix 3: Geophysical archive and metadata
Appendix 4: Oasis form

Bibliography

List of Figures

1 Site location (1:50000)
2 Location of survey areas (1:10000 @A3)
3 Cottam 2 location showing processed magnetometer data (1:10000 @A3)
4 Cottam 2 overall interpretation of magnetometer data (1:10000 @ A3)
5 Processed greyscale magnetometer data; Sector 1 (1:1500 @ A3)
6 XY trace plot of minimally processed magnetometer data; Sector 1 (1:1500 @ A3)
7 Interpretation of magnetometer data; Sector 1 (1:1500 @ A3)
8 Processed greyscale magnetometer data; Sector 2 (1:1500 @ A3)
9 XY trace plot of minimally processed magnetometer data; Sector 2 (1:1500 @ A3)
10 Interpretation of magnetometer data; Sector 2 (1:1500 @ A3)
11 Processed greyscale magnetometer data; Sector 3 (1:1500 @ A3)
12 XY trace plot of minimally processed magnetometer data; Sector 3 (1:1500 @ A3)
13 Interpretation of magnetometer data; Sector 3 (1:1500 @ A3)
14 Processed greyscale magnetometer data; Sector 4 (1:1500 @ A3)
15 XY trace plot of minimally processed magnetometer data; Sector 4 (1:1500 @ A3)
16 Interpretation of magnetometer data; Sector 4 (1:1500 @ A3)
17 Processed greyscale magnetometer data; Sector 5 (1:1500 @ A3)
18 XY trace plot of minimally processed magnetometer data; Sector 5 (1:1500 @ A3)
19 Interpretation of magnetometer data; Sector 5 (1:1500 @ A3)
20 Processed greyscale magnetometer data; Sector 6 (1:1500 @ A3)
21 XY trace plot of minimally processed magnetometer data; Sector 6 (1:1500 @ A3)
22 Interpretation of magnetometer data; Sector 6 (1:1500 @ A3)
23 Processed greyscale magnetometer data; Sector 7 (1:1500 @ A3)
24 XY trace plot of minimally processed magnetometer data; Sector 7 (1:1500 @ A3)
25 Interpretation of magnetometer data; Sector 7 (1:1500 @ A3)
26 Processed greyscale magnetometer data; Sector 8 (1:1500 @ A3)
27 XY trace plot of minimally processed magnetometer data; Sector 8 (1:1500 @ A3)
28 Interpretation of magnetometer data; Sector 8 (1:1500 @ A3)
29 Processed greyscale magnetometer data; Sector 9 (1:1500 @ A3)
30 XY trace plot of minimally processed magnetometer data; Sector 9 (1:1500 @ A3)
31 Interpretation of magnetometer data; Sector 9 (1:1500 @ A3)
32 Processed greyscale magnetometer data; Sector 10 (1:1500 @ A3)
33 XY trace plot of minimally processed magnetometer data; Sector 10 (1:1500 @ A3)
34 Interpretation of magnetometer data; Sector 10 (1:1500 @ A3)
35 Processed greyscale magnetometer data; Sector 11 (1:1500 @ A3)
36 XY trace plot of minimally processed magnetometer data; Sector 11 (1:1500 @ A3)
37 Interpretation of magnetometer data; Sector 11 (1:1500 @ A3)
38 Processed greyscale magnetometer data; Sector 12 (1:1500 @ A3)
39 XY trace plot of minimally processed magnetometer data; Sector 12 (1:1500 @ A3)

40 Interpretation of magnetometer data; Sector 12 (1:1500 @ A3)

1 Introduction

Archaeological Services ASWYAS has been commissioned by Lanpro Services on behalf of their client, Cottam Solar Project Limited to undertake a geophysical survey in advance of the Cottam and West Burton Solar Scheme, North Lincolnshire. This survey relates to the Cottam 2 parcel of land, hereafter referred to as the 'study site'. This was undertaken in line with current best practice (CIfA 2020; Schmidt *et al.* 2015). The survey was carried out in February, March and April 2022 to provide additional information on the archaeological resource of the study site.

Site location, topography and land-use

Cottam 2 consists of a single land parcel and covers an area of approximately 132ha centred at approximately (SK 88447 92158; Fig. 1).

The study site consists of arable land, and at the time of survey was under a young crop. The site is bounded by Corringham Beck to the north-west, and Yewthorpe Beck to the east. Corringham Beck appears to be canalised, with wide banks with only low vegetation. Yewthorpe Beck is a meandering river with established vegetation and trees lining its banks. There is a farmstead, and a house which are surrounded by the study site. The land is relatively flat and is predominantly well screened from its immediate surroundings by tall hedges around the boundaries of the sites. The fields are generally large and typically have dividing hedgerows. The study site is generally level lying between 17m and 19m aOD (above Ordnance Datum).

Soils and geology

The recorded bedrock geology comprises Scunthorpe Mudstone Formation, a sedimentary bedrock that formed approximately 191 to 210 million years ago in the Jurassic and Triassic Periods. Superficial deposits have been recorded as Till, comprising mid-Pleistocene Diamicton deposits formed up to 2 million years ago in the Quaternary Period (BGS 2022). Soils are described as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (Soilscape 18) (CSAI 2022).

2 Archaeological Background

The archaeological background below is taken from an environmental impact assessment scoping report prepared by Lanpro Services (Crichton 2022) for Cottam sites 1-3. This included a review of monuments and events within the site boundary and also a 1km search area around the Cottam 2 study site.

The Cottam 2 study site in its entirety does not contain any designated heritage assets.

Prehistoric and Roman periods (*c.* 9500 BC – *c.* AD 410)

Despite the lack or limited nature of previously recorded evidence for prehistoric and Roman period activity within the study site the results of the geophysical survey from other areas of the Cottam Solar Project have identified previously unrecorded remains dating to these periods, and the presence of such remains within the study area cannot be discounted. If archaeological remains dating to the prehistoric or Roman periods are present in the study area, the significance of these would be vested in their evidential value and the potential contribution these could make to national and regional research agendas.

Early medieval and medieval periods (*c.* AD 410– *c.* 1540)

It is considered that there may be some limited potential for the survival of previously unrecorded remains relating to Early Anglo-Saxon period activity away from the pattern of settlements that may have emerged in the Middle to Late Anglo-Saxon periods. It is, however, likely that the study area remained in primarily agricultural use throughout the early medieval and medieval periods. Therefore, the majority of any potential buried archaeological features dating to the early or later medieval period within the study area are likely to relate to agricultural activity, such as ploughing, field boundaries and drainage, and would be considered to be of negligible significance.

Approximately 375m to the west of the study site lies the old moated manor house known as Old Hall (HER number MLI50287).

Post-medieval to present (*c.* 1540-present)

The study site has remained in agricultural use throughout the post-medieval period. Any potential buried archaeological features dating to the post-medieval period would likely relate to agricultural activity, such as ploughing, field boundaries and drainage, and would be considered to be of negligible significance

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

Area H9 was laid out using a Trimble VRS differential Global Positioning System (Trimble R6 model). The survey was undertaken using Bartington Grad601 magnetic gradiometers. These were employed taking readings at 0.25m intervals on zig-zag traverses 1.0m apart within 30m by 30m grids, so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation.

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 the location of the survey areas at a scale of 1:10000. Figure 3 shows the processed magnetometer data at a scale of 1:10000 whilst Figure 4 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 5 to 40 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. 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 5 to 40)

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.

An area of magnetic disturbance (**F1**) in Area H6 (Sector 7) corresponds to a farm building shown on historic mapping dating from 1905 (NLS 2022) and likely relates to demolition material. To the northeast of **F1** another area of magnetic disturbance (**F2**) has been recorded which corresponds to a pond, also shown on the 1905 map.

Magnetic disturbance along the limits of the survey areas is due to metal fencing within the field boundaries and adjacent farm buildings.

Linear dipolar trends have been recorded in Areas H1, H5, H10 and H11 which relate to service pipes.

Geological anomalies

The survey has detected 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.

Sinuous responses (**G1**) in Area H5 (Sectors 5 and 6) may be associated with a former water course or palaeochannel.

Agricultural anomalies

Former field boundaries (**FB1** – **FB6**) in Area H5 (Sectors 5 and 6), Area H6 (Sectors 7 and 8), Area H7 (Sector 10), and Area H10 (Sectors 10 and 11) have been recorded which correspond to the first edition Ordnance Survey mapping dating from 1905. All the boundaries are still visible on the historic map published in 1956 (NLS 2022).

Field drains can be seen within most of the fields. They are of differing magnetic strength which is likely to be associated with the construction of the drains. Those that are particularly strong are likely to be of a fired clay construction.

Medieval or post-medieval ridge and furrow cultivation have been recorded throughout.

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

Uncertain anomalies

A handful of anomalies within the dataset have been interpreted as having an uncertain origin such as those at **U1** in Area H9 (Sector 8). There is a possibility that these have an archaeological origin as they have a stronger magnetic signal than surrounding anomalies, but it is more likely that they are associated with an old trackway shown on historic mapping dated 1905 (NLS 2022) or are geological responses.

Archaeological and possible archaeological anomalies

Magnetically weak trends (**P1**) in the southwest of Area H2 (Sector 2) seem to form rectilinear patterns and may have an archaeological origin.

Rectilinear responses (**A1** - **A3**) in Area H5 (Sectors 4 and 5) appear to represent enclosures with **A1** and **A2** being on the same alignment and therefore perhaps contemporary. Enclosure **A1** measures approximately 62m by 40m, **A2** measures approximately 30m by 22m and enclosure **A3** measures approximately 20m by 18m. A few short anomalies and trends close to the enclosures (**P3**) have been interpreted as possible archaeology and may be associated, but it is also possible that they are agricultural in origin.

Two sub-circular trends (**P2**) in Area H6 (Sector 7) are magnetically weak but may have an archaeological origin. The southern circular trend measures approximately 16m in diameter and the northern one 11m in diameter. The responses are isolated and therefore the interpretation is cautious.

Ditches and linear trends of both a definite and possible archaeological origin (**A4** and **P4**) have been recorded in the east of Area H8 (Sector 10) and are likely to be associated with settlement activity. The possible archaeological responses (**P4**) are of a weaker magnetic strength than **A4** hence the caution with the interpretation. They cover an area of approximately 85m by 85m. Interpretation has been difficult due to the agricultural responses in the area but the archaeological and possible archaeological responses appear to form a coherent group.

5 Conclusions

The geophysical survey has detected a number of magnetic anomalies associated mainly with an agricultural landscape including former field boundaries, medieval/post-medieval ridge and furrow cultivation, modern ploughing and land drains. Archaeological and possible archaeological responses have been recorded within the study which comprise linear ditches and trends, rectilinear enclosures and sub-circular trends, perhaps indicative of settlement activity.

Magnetic disturbance within the dataset can be attributed to adjacent modern buildings, demolition material and metal fencing within field boundaries. A large service pipe has also been recorded in the east of the study site.

Based on the geophysical survey the archaeological potential of the study site is deemed to be high in Areas H5 and H8 and low elsewhere.

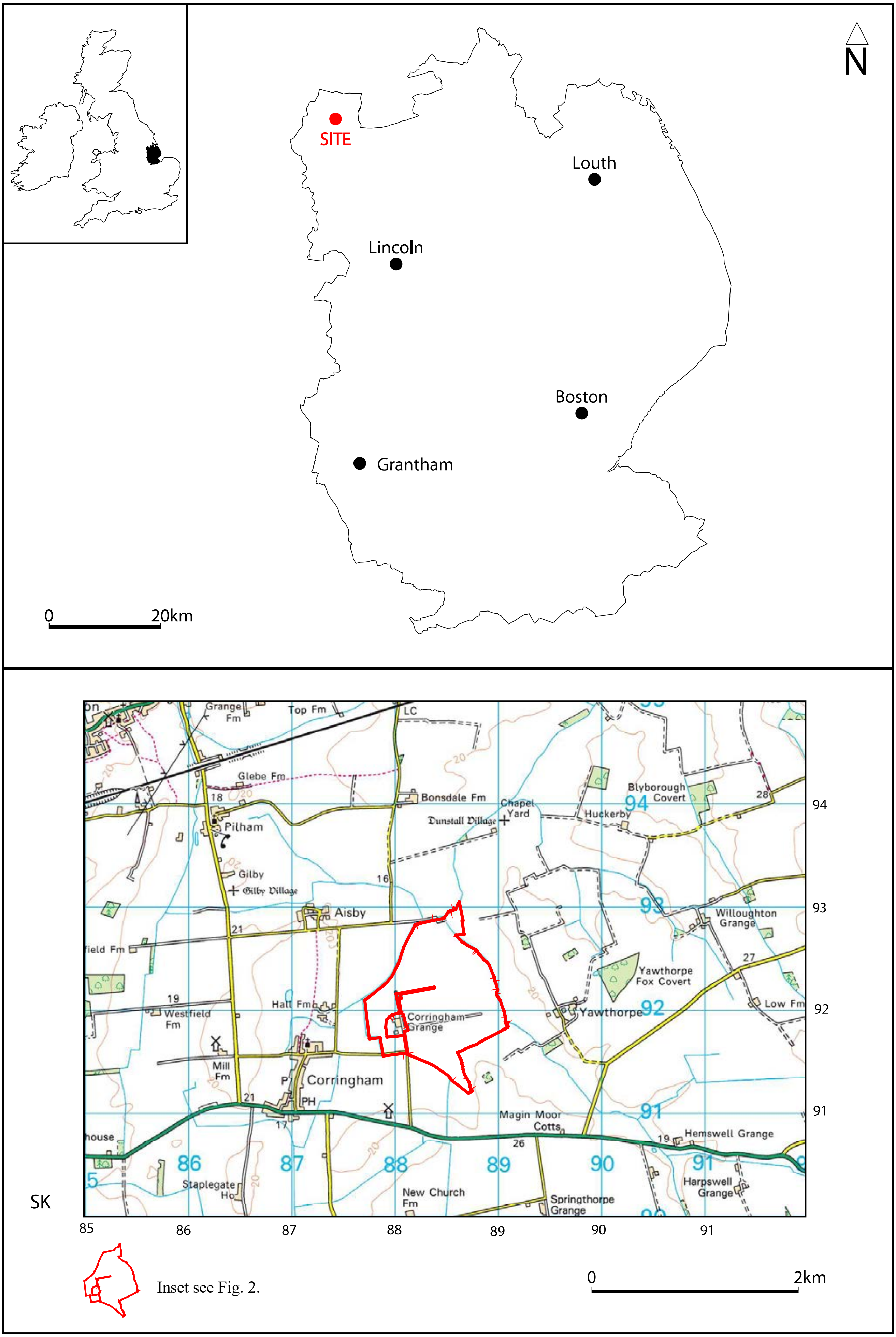
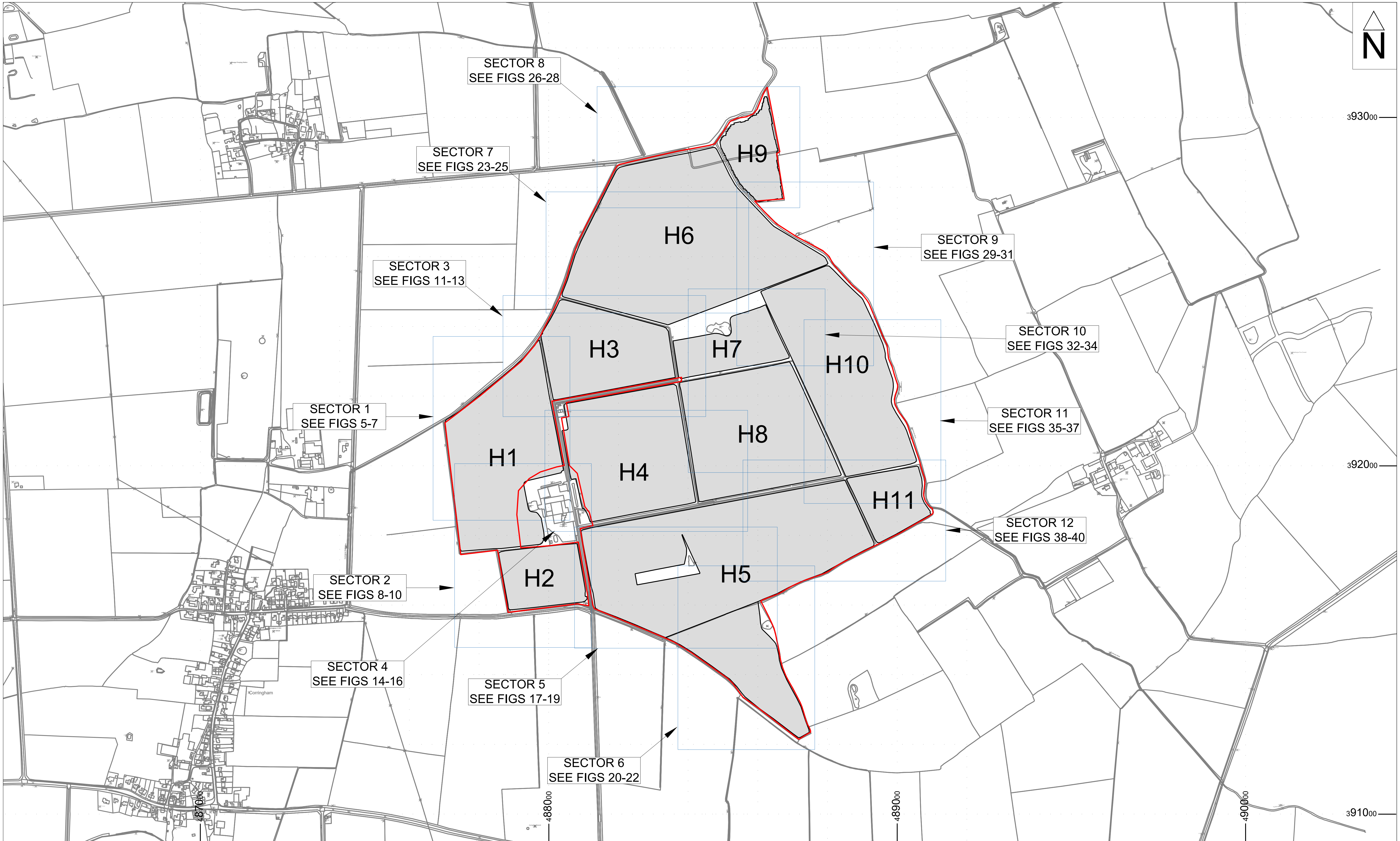


Fig. 1. Site location



© ASWYAS 2022.
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

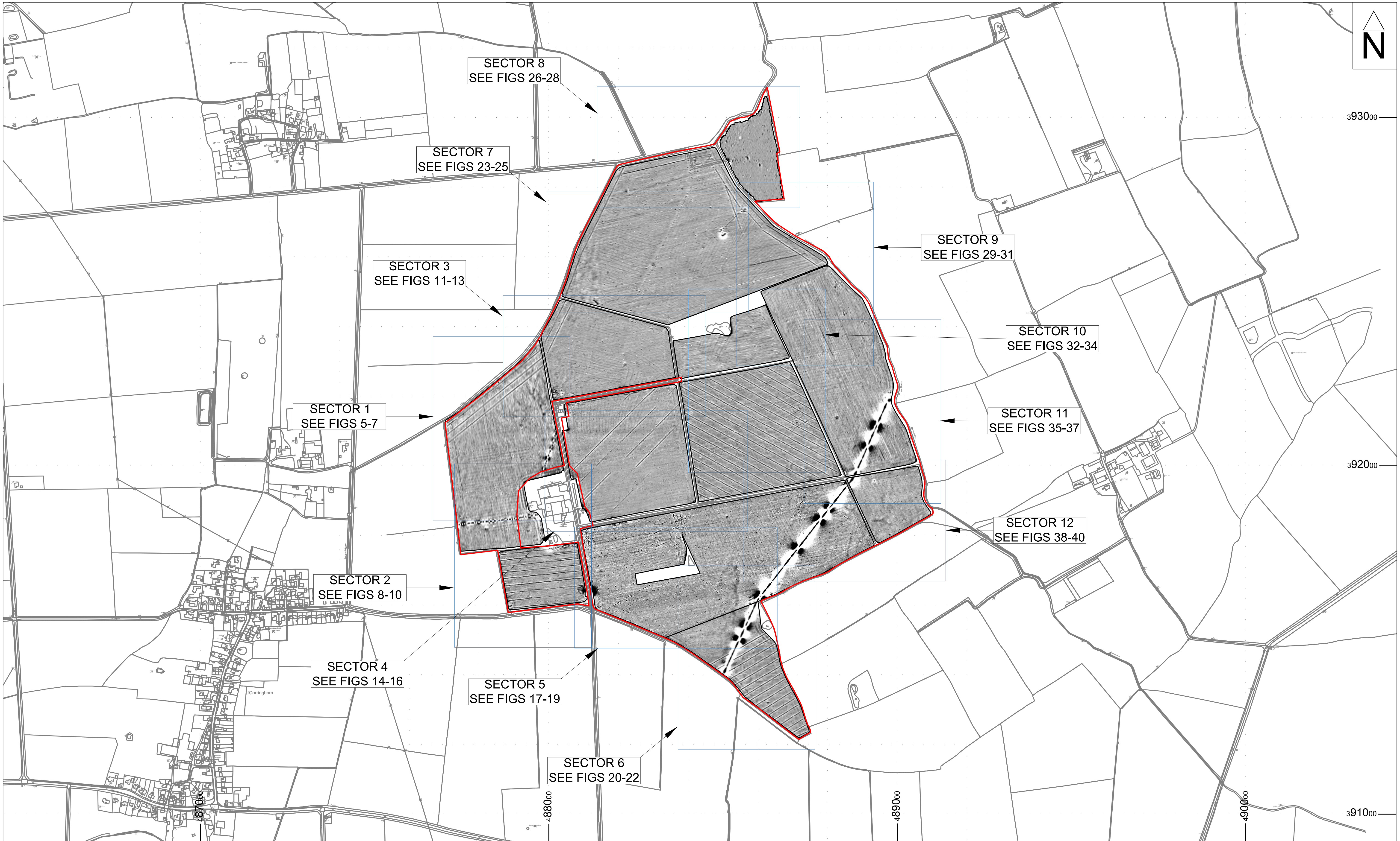
Project ID: XB85_CWB21 Cottam 2

Location of survey areas

Fig. 2

Title

	SURVEY AREA
H1	FIELD NUMBERS
	SECTOR BOUNDARY



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Cottam 2 location showing processed magnetometer data

Fig. 2

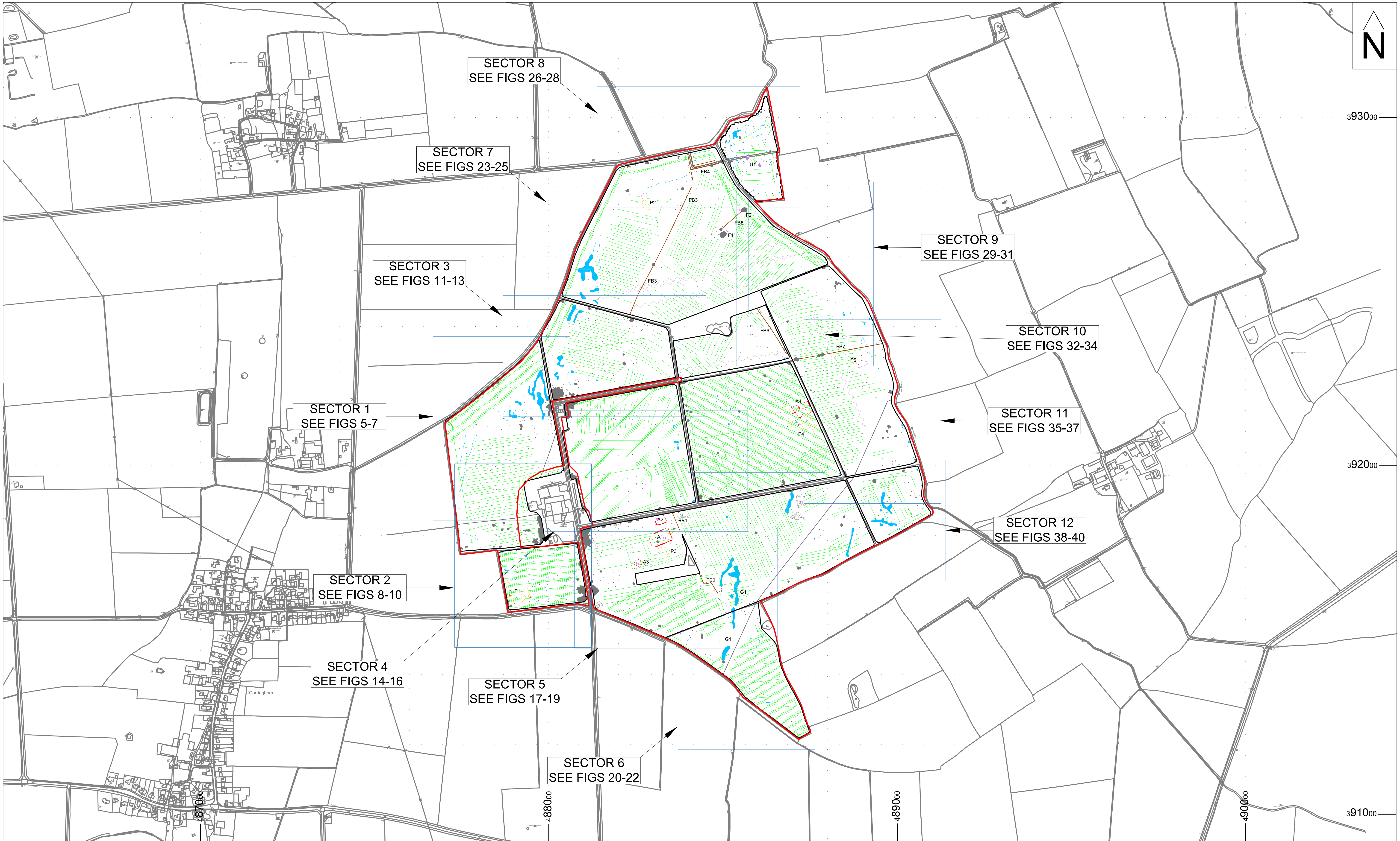
Title

	SURVEY AREA
	SECTOR BOUNDARY

nT -1.0 1.0

0 400m

1:10,000 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Cottam 2 overall interpretation of magnetomer data

Fig. 4

Title
- SURVEY AREA
- SECTOR BOUNDARY

Interpretation
- FERROUS
- SERVICE PIPE
- MAGNETIC DISTURBANCE
- FIELD DRAIN
- RIDGE & FURROW
- AGRICULTURAL
- FORMER FIELD BOUNDARY
- GEOLOGY
- UNCERTAIN
- ARCHAEOLOGY?
- ARCHAEOLOGY
- INTERFERENCE

0 400m

1:10,000 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 1

Fig. 5

nT -1.0 2.0

0 50m

1:1500 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

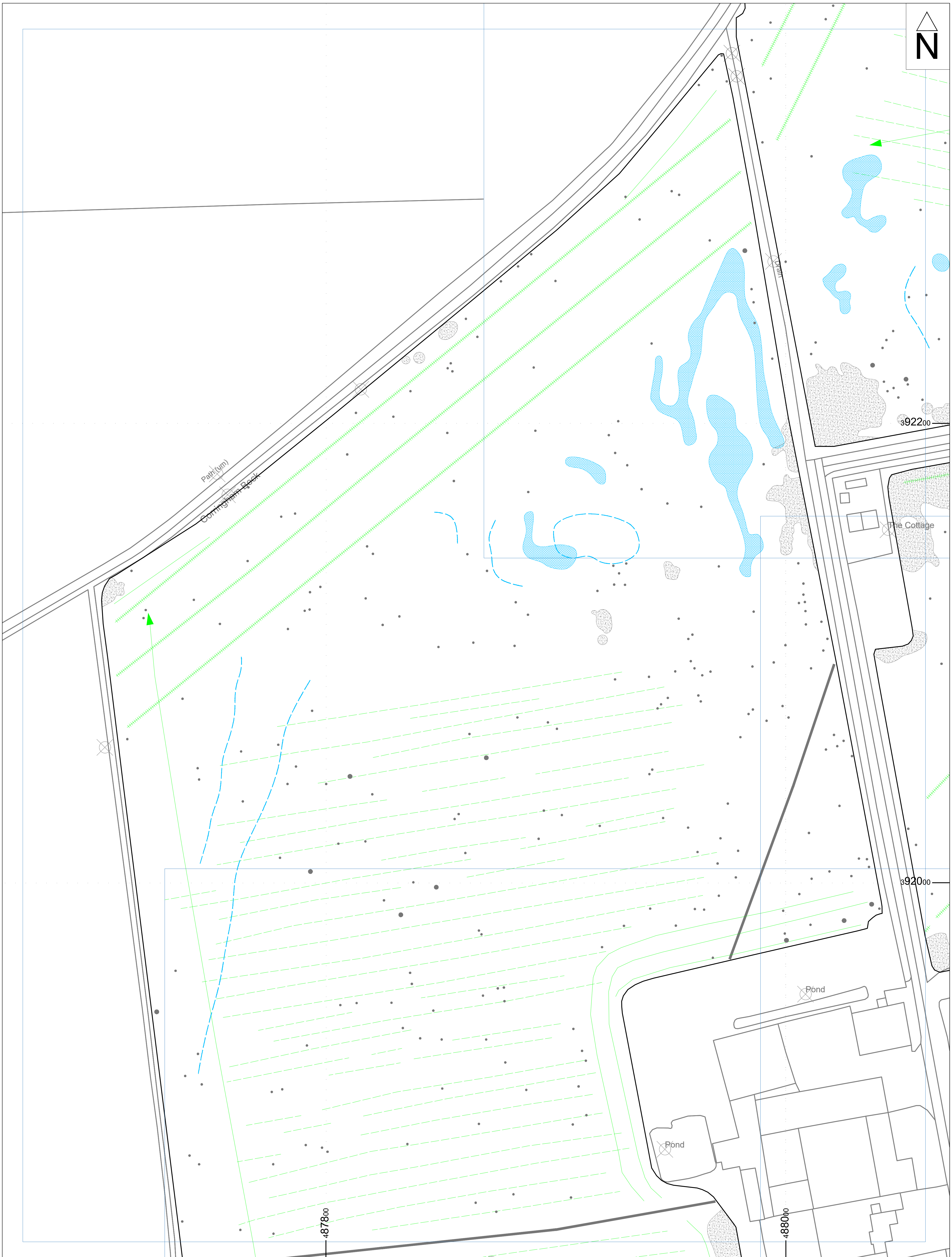
XY trace plot of minimally processed magnetometer data; Sector 1

Fig. 6

15.0 nT/cm

0 50m

1:1500 @ A3



© ASWYAS 2022.
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Interpretation of magnetometer data; Sector 1

Fig. 7

Interpretation

FERROUS
SERVICE PIPE
MAGNETIC DISTURBANCE
FIELD DRAIN
RIDGE & FURROW
AGRICULTURAL
GEOLOGY

0 50m

1:1500 @ A3

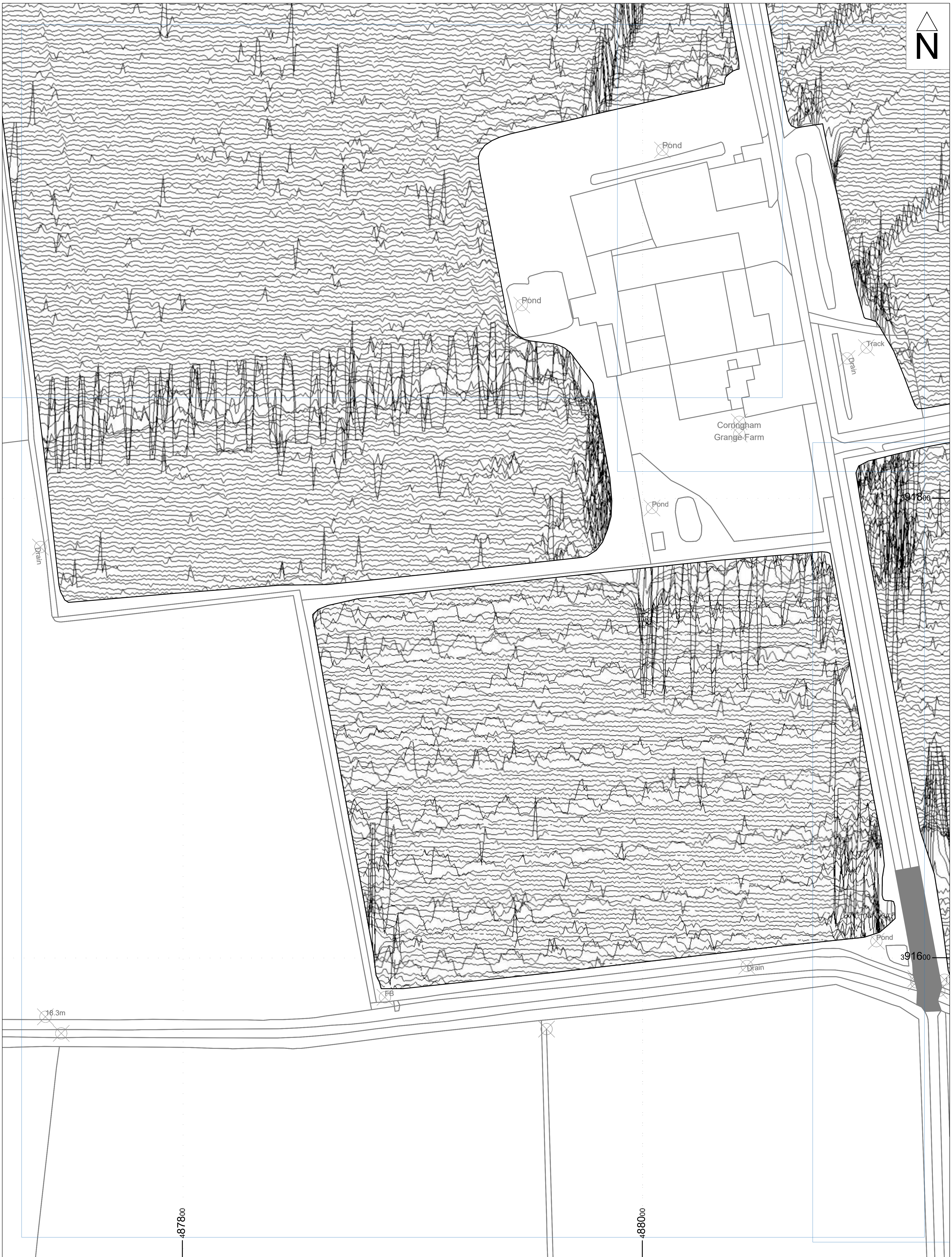
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 2

Fig. 8



Project ID: XB85_CWB21 Cottam 2

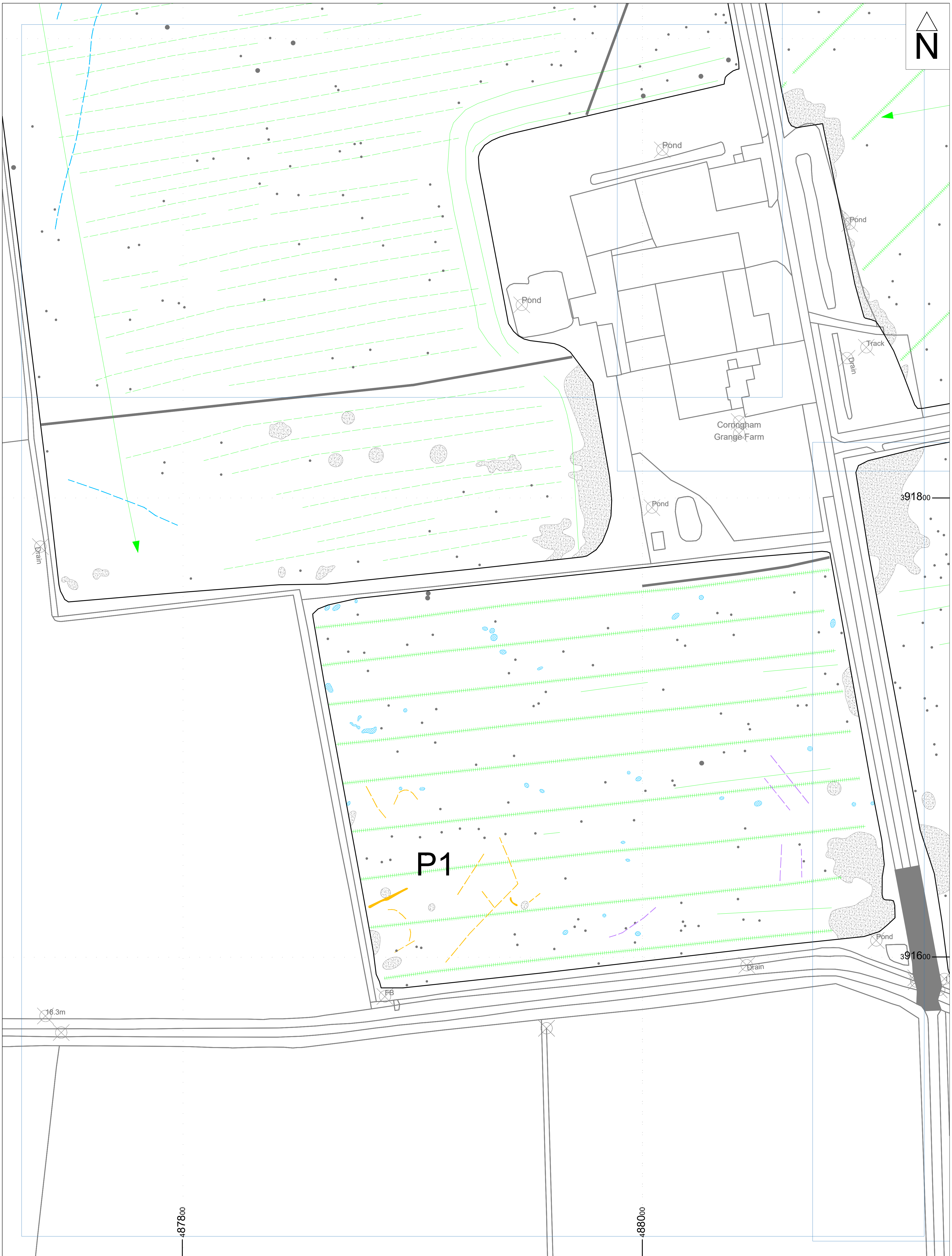
XY trace plot of minimally processed magnetometer data; Sector 2

Fig. 9

15.0 nT/cm

0 50m

1:1500 @ A3



Interpretation

FERROUS	SERVICE PIPE
MAGNETIC DISTURBANCE	FIELD DRAIN
RIDGE & FURROW	AGRICULTURAL
GEOLOGY	UNCERTAIN
ARCHAEOLOGY?	

0 50m

1:1500 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Interpretation of magnetometer data; Sector 2

Fig. 10

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

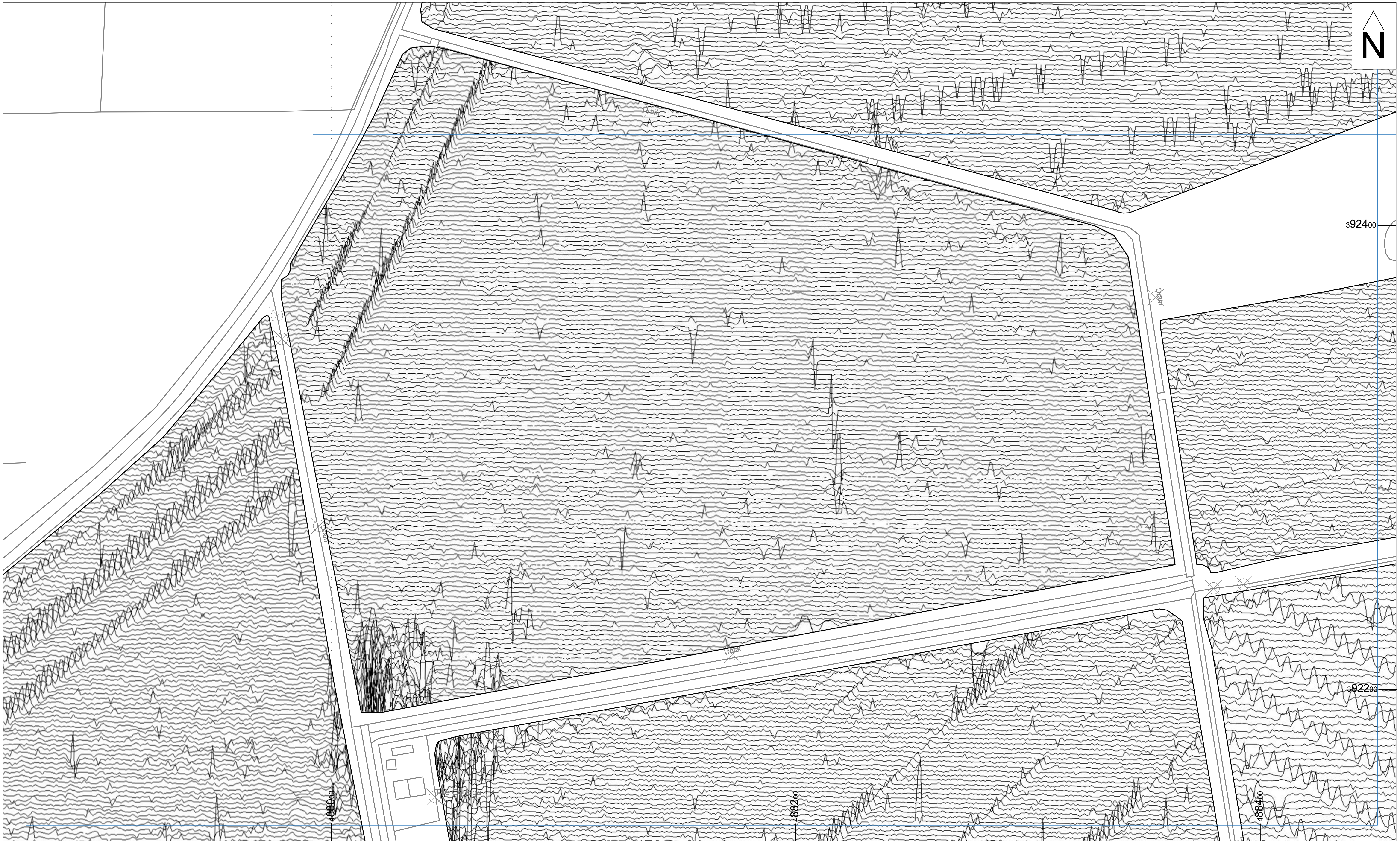
Processed greyscale magnetometer data; Sector 3

Fig. 11

nT -1.0 1.0

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

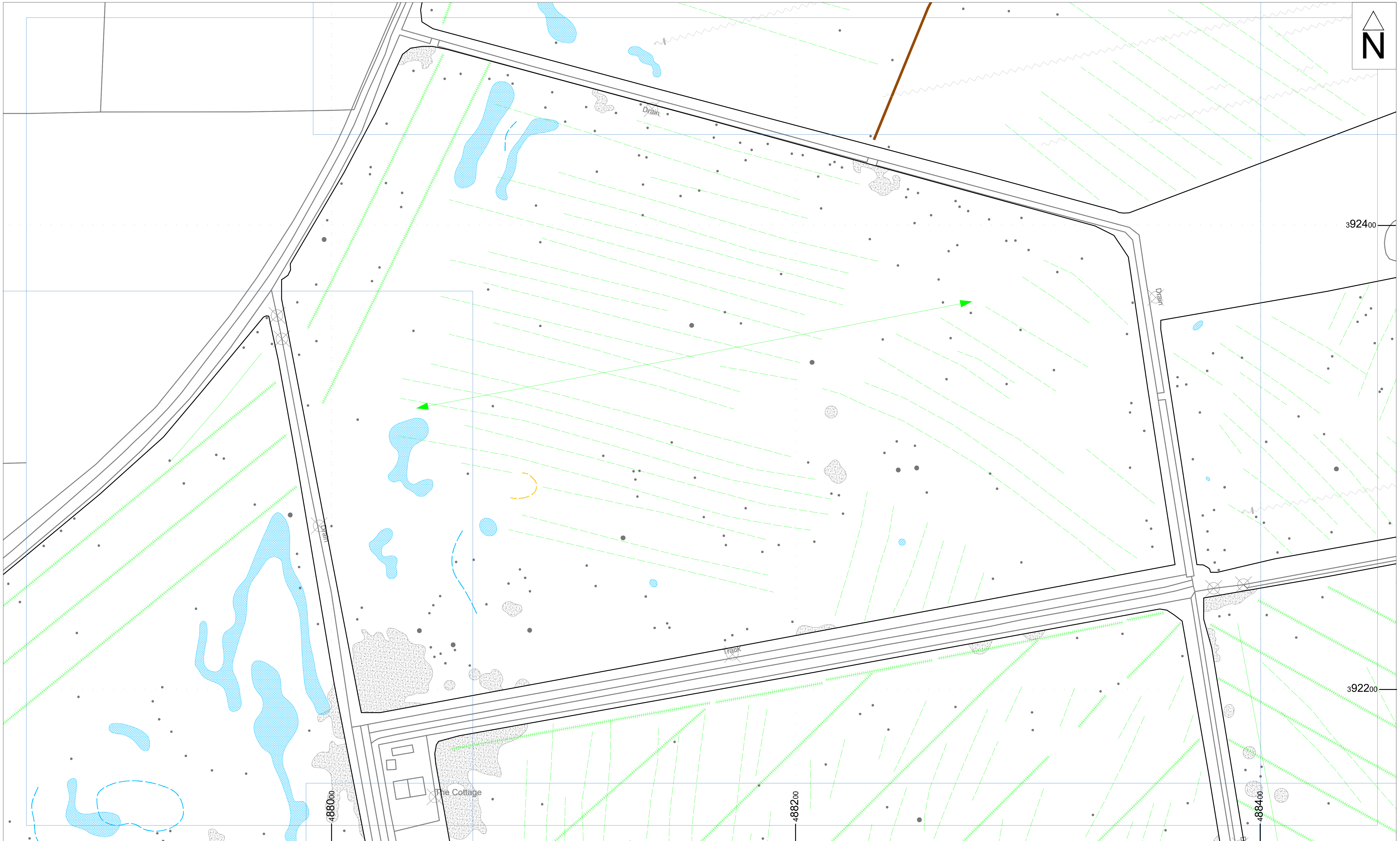
XY trace plot of minimally processed magnetometer data; Sector 3

Fig. 12

15.0 nT/cm

0 50m

1:1500 @ A3



© ASWYAS 2022.
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 3

Fig. 12

Interpretation

FERROUS	RIDGE & FURROW	UNCERTAIN
SERVICE PIPE	AGRICULTURAL	ARCHAEOLOGY?
MAGNETIC DISTURBANCE	FORMER FIELD BOUNDARY	ARCHAEOLOGY
FIELD DRAIN	GEOLOGY	INTERFERENCE

0 50m

1:1500 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

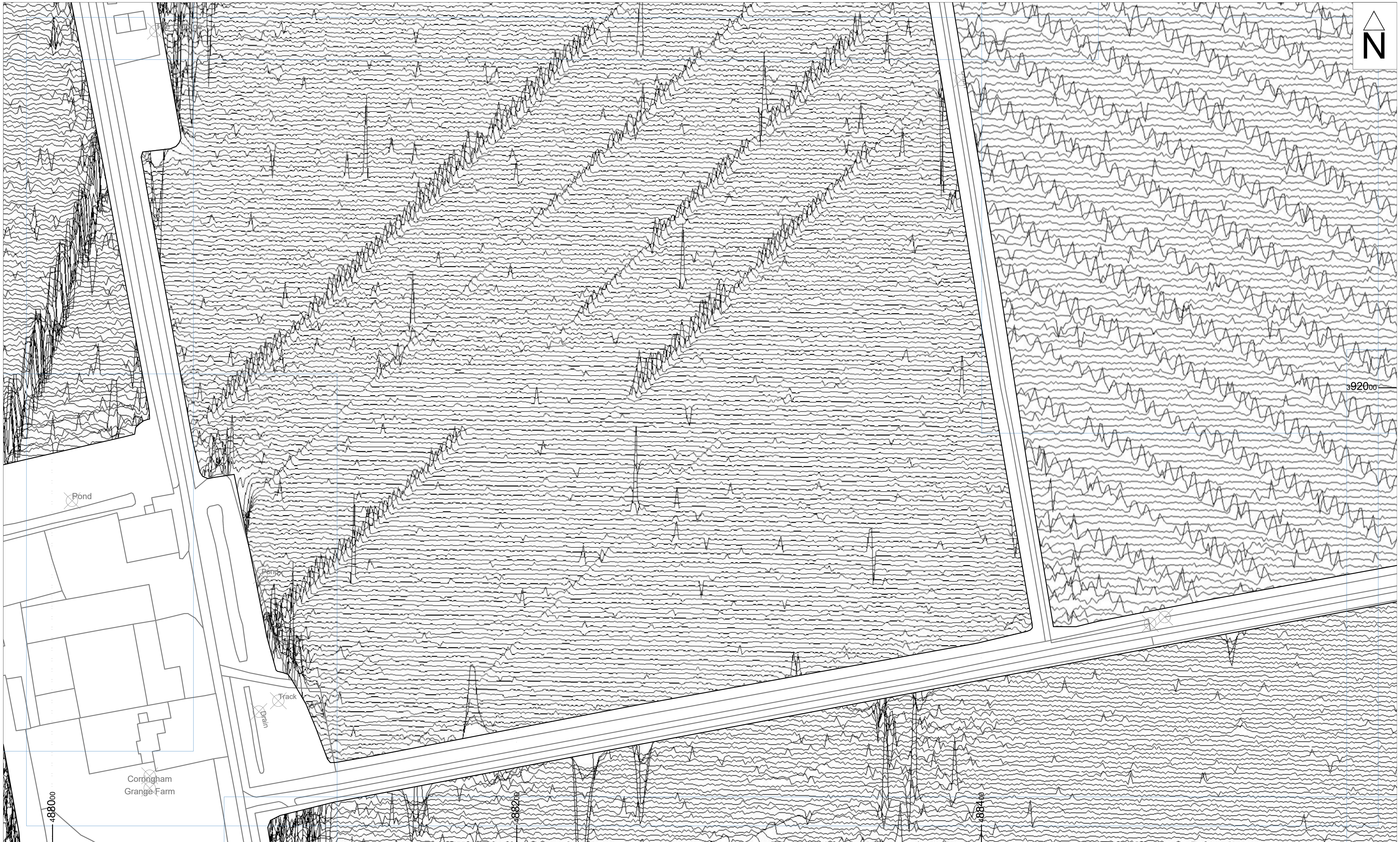
Processed greyscale magnetometer data; Sector 4

Fig. 14

nT -1.0 1.0

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

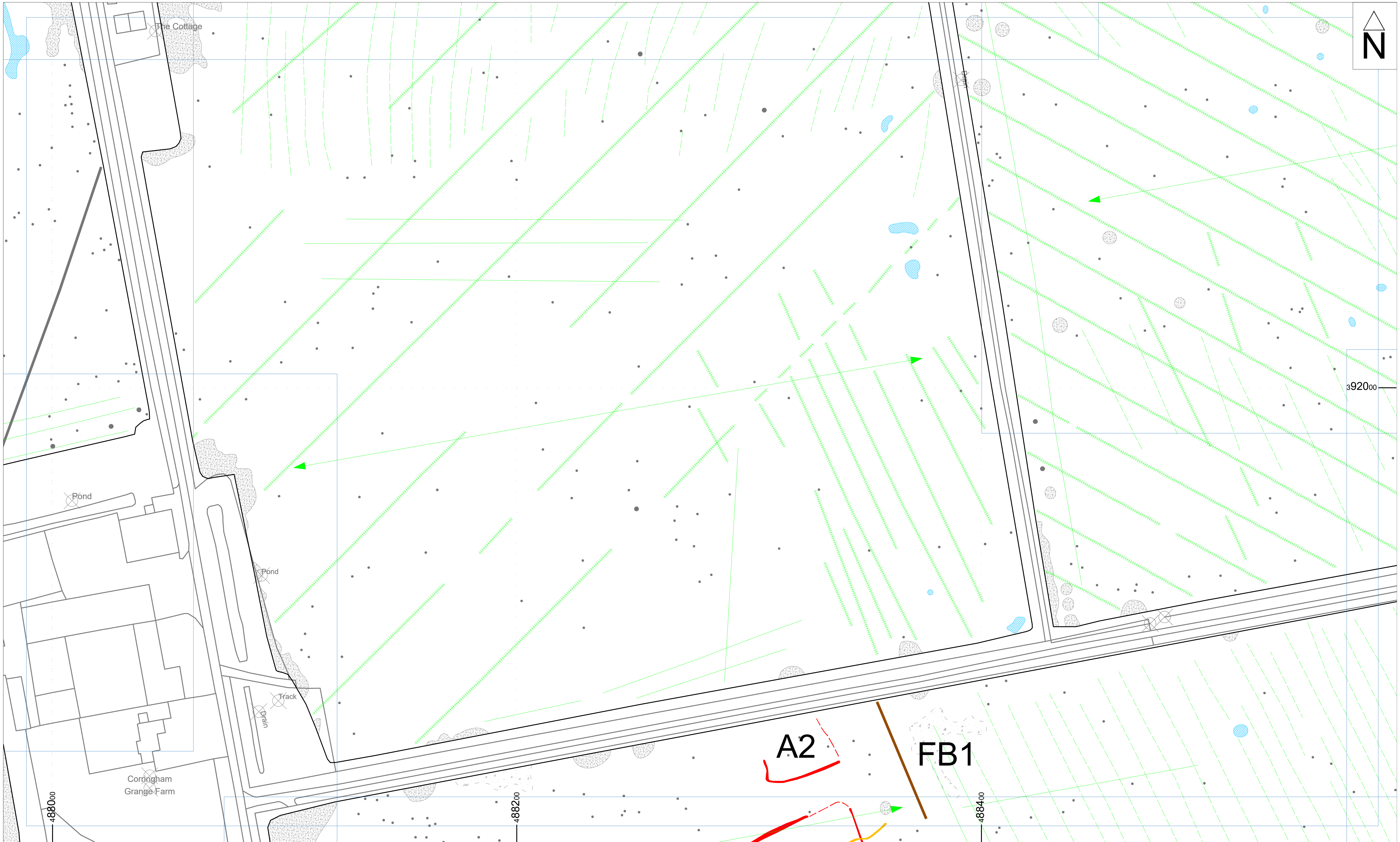
XY trace plot of minimally processed magnetometer data; Sector 4

Fig. 15

15.0 nT/cm

0 50m

1:1500 @ A3



Interpretation

FERROUS	RIDGE & FURROW
SERVICE PIPE	AGRICULTURAL
MAGNETIC DISTURBANCE	FORMER FIELD BOUNDARY
FIELD DRAIN	GEOLOGY
ARCHAEOLOGY?	ARCHAEOLOGY

0 50m

1:1500 @ A3

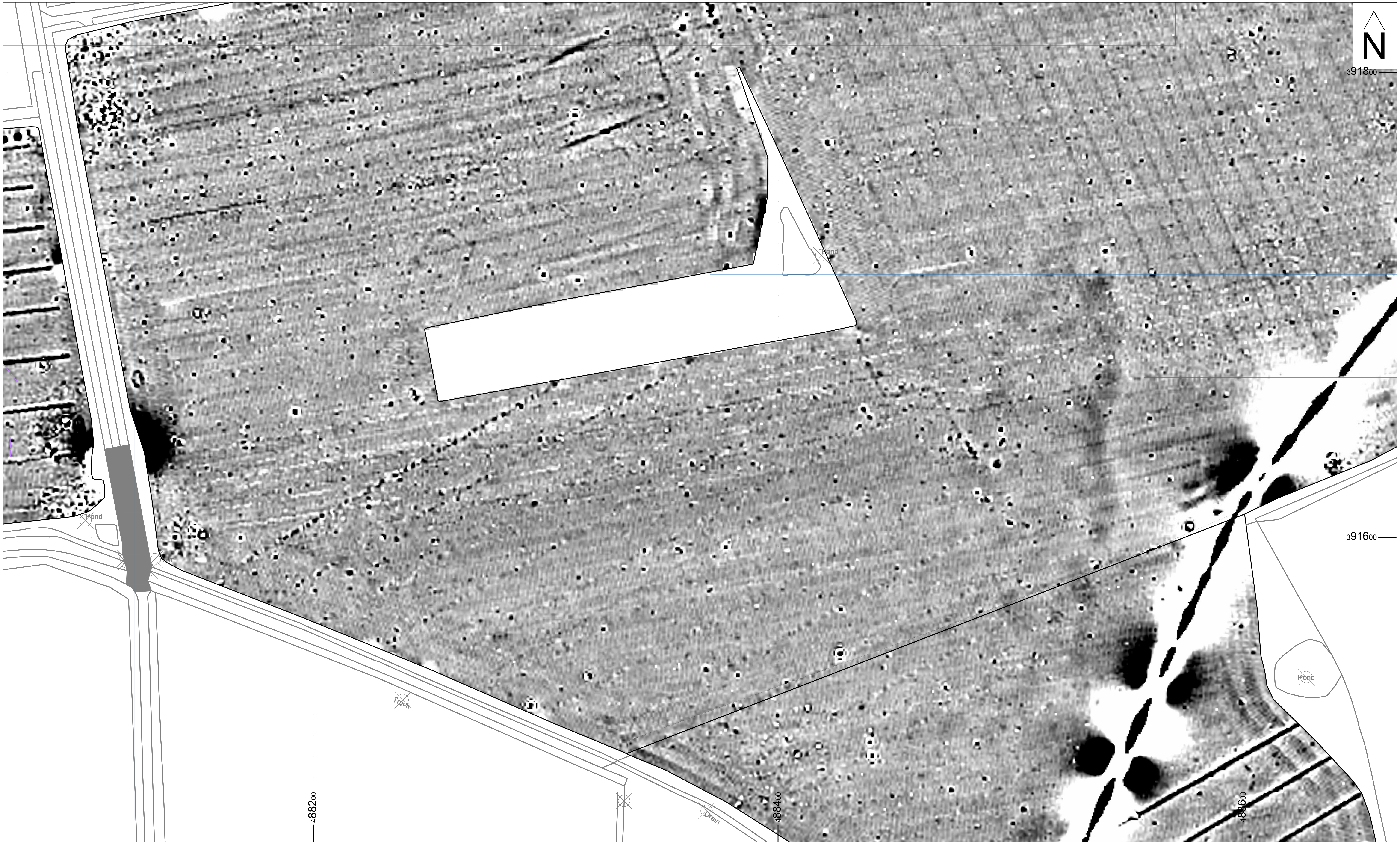
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 4

Fig. 16



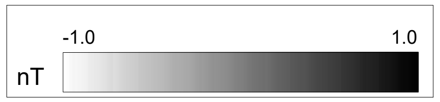
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

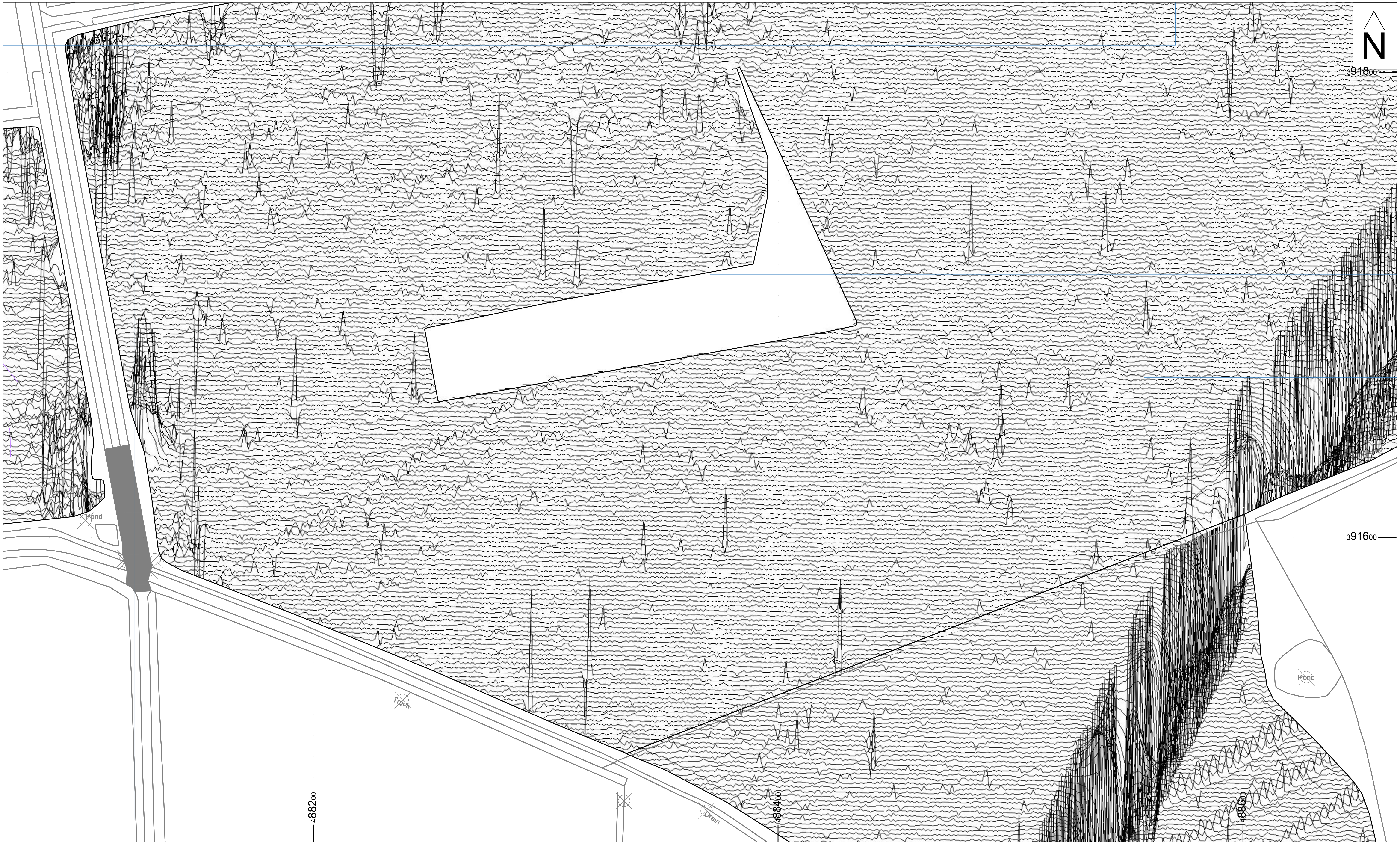
Processed greyscale magnetometer data; Sector 5

Fig. 17



0 50m

1:1500 @ A3



15.0 nT/cm

0 50m

1:1500 @ A3

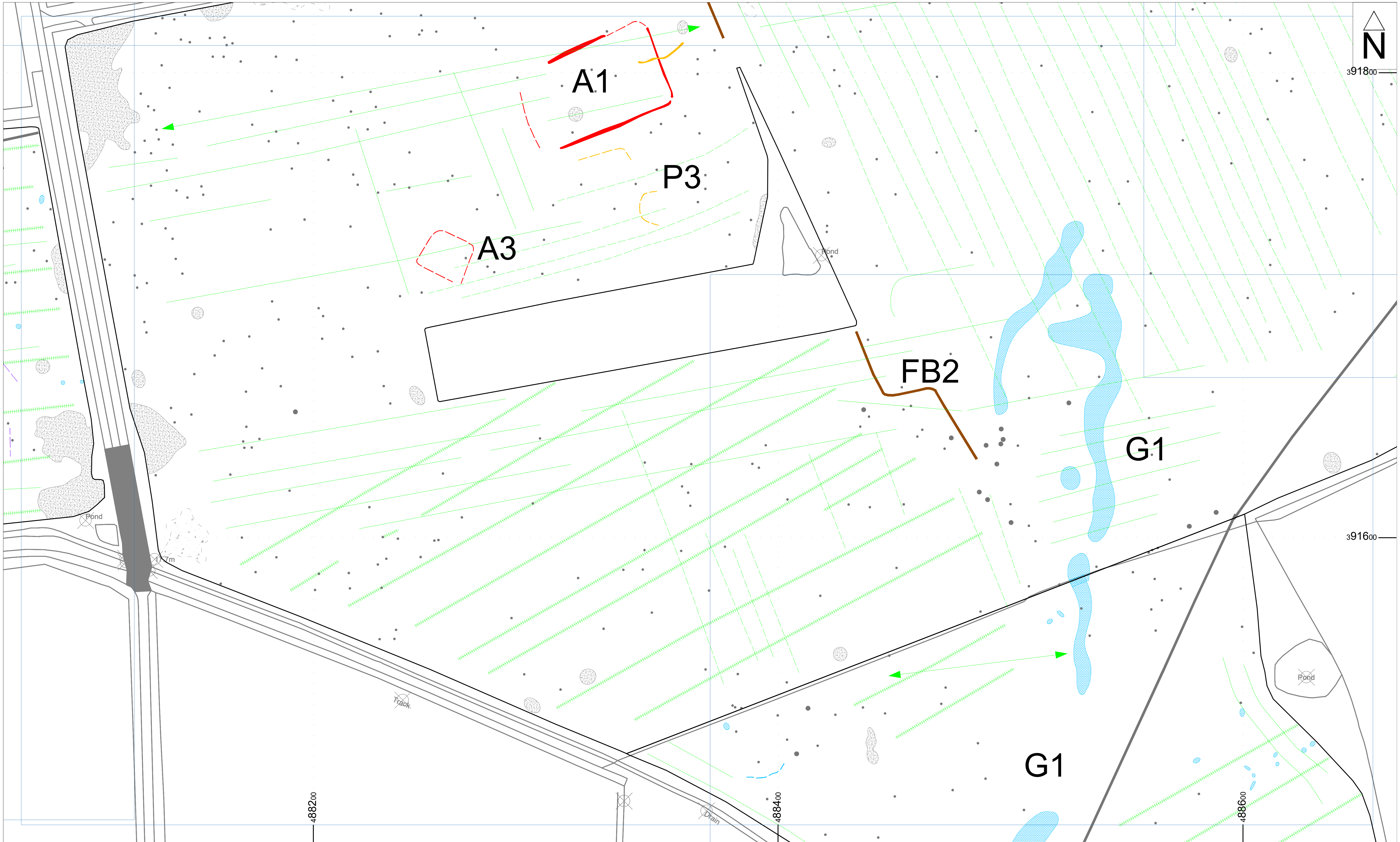
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 5

Fig. 18



Interpretation

FERROUS	RIDGE & FURROW	ARCHAEOLOGY?
SERVICE PIPE	AGRICULTURAL	ARCHAEOLOGY
MAGNETIC DISTURBANCE	FORMER FIELD BOUNDARY	
FIELD DRAIN	GEOLOGY	

0 50m

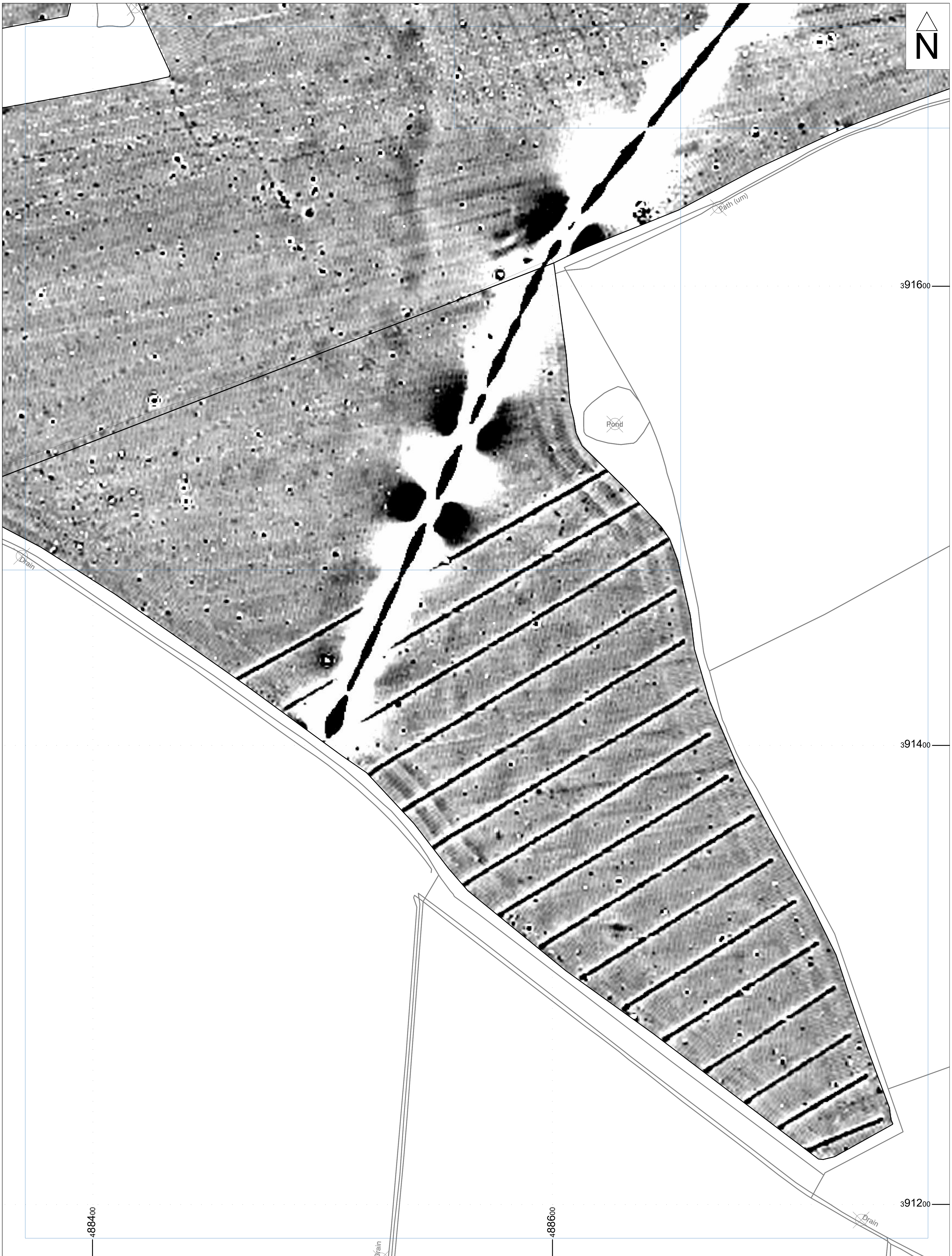
1:1500 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 5

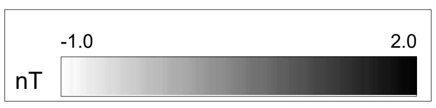
Fig. 19



Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

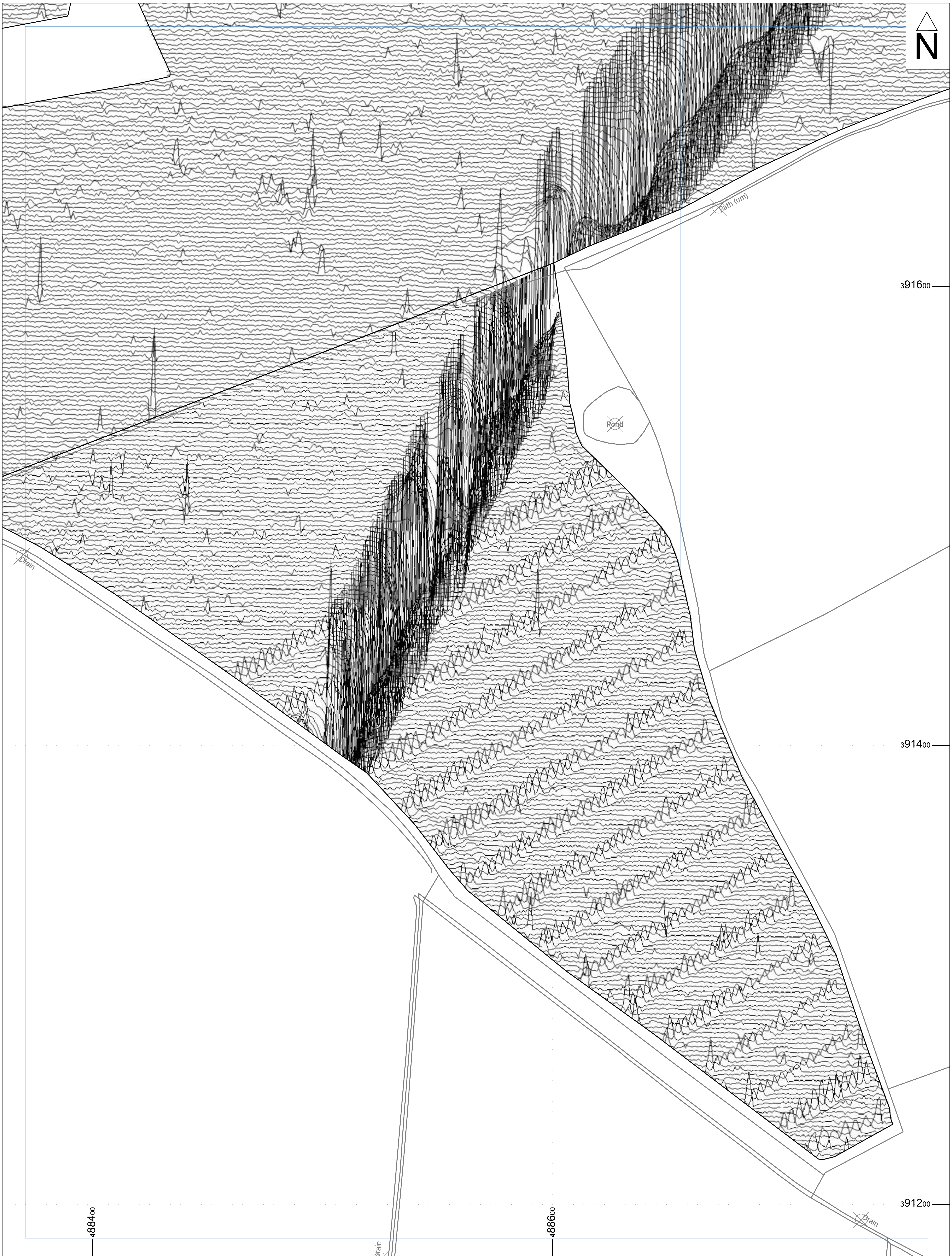
Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 6



1:1500 @ A3

Fig. 20



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

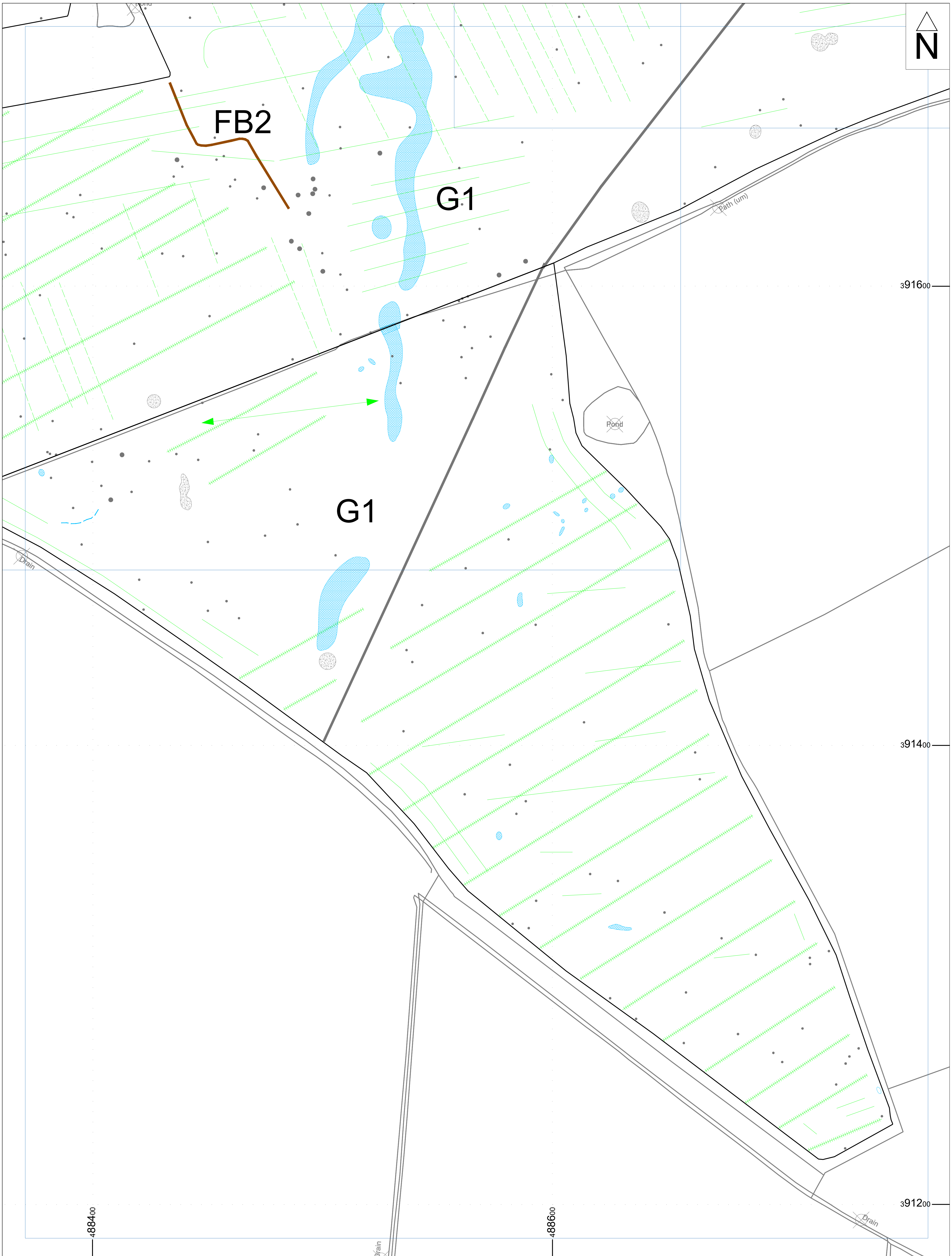
XY trace plot of minimally processed magnetometer data;
Sector 6

Fig. 21

15.0 nT/cm

0 50m

1:1500 @ A3

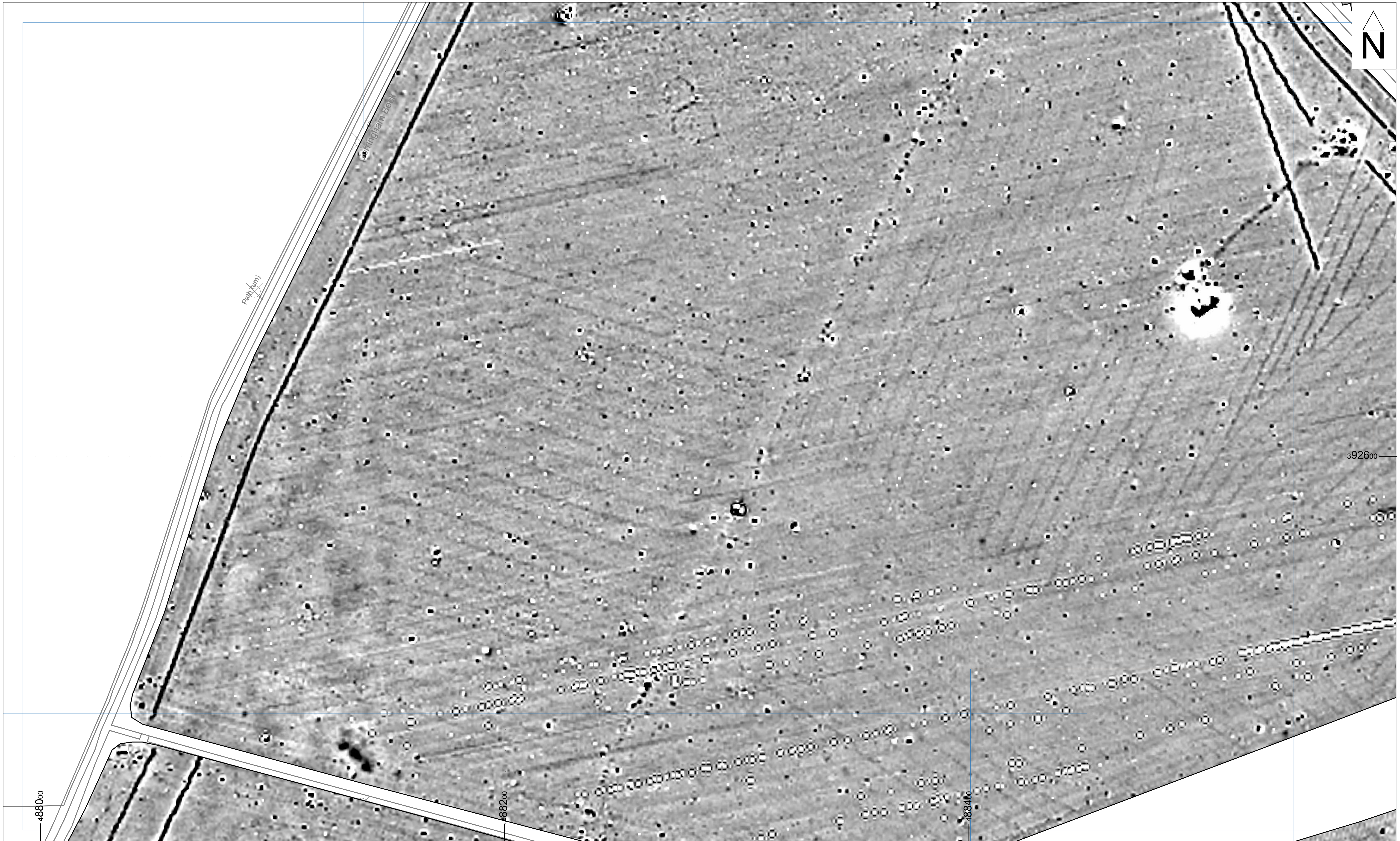


Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Interpretation of magnetometer data; Sector 6

Fig. 22

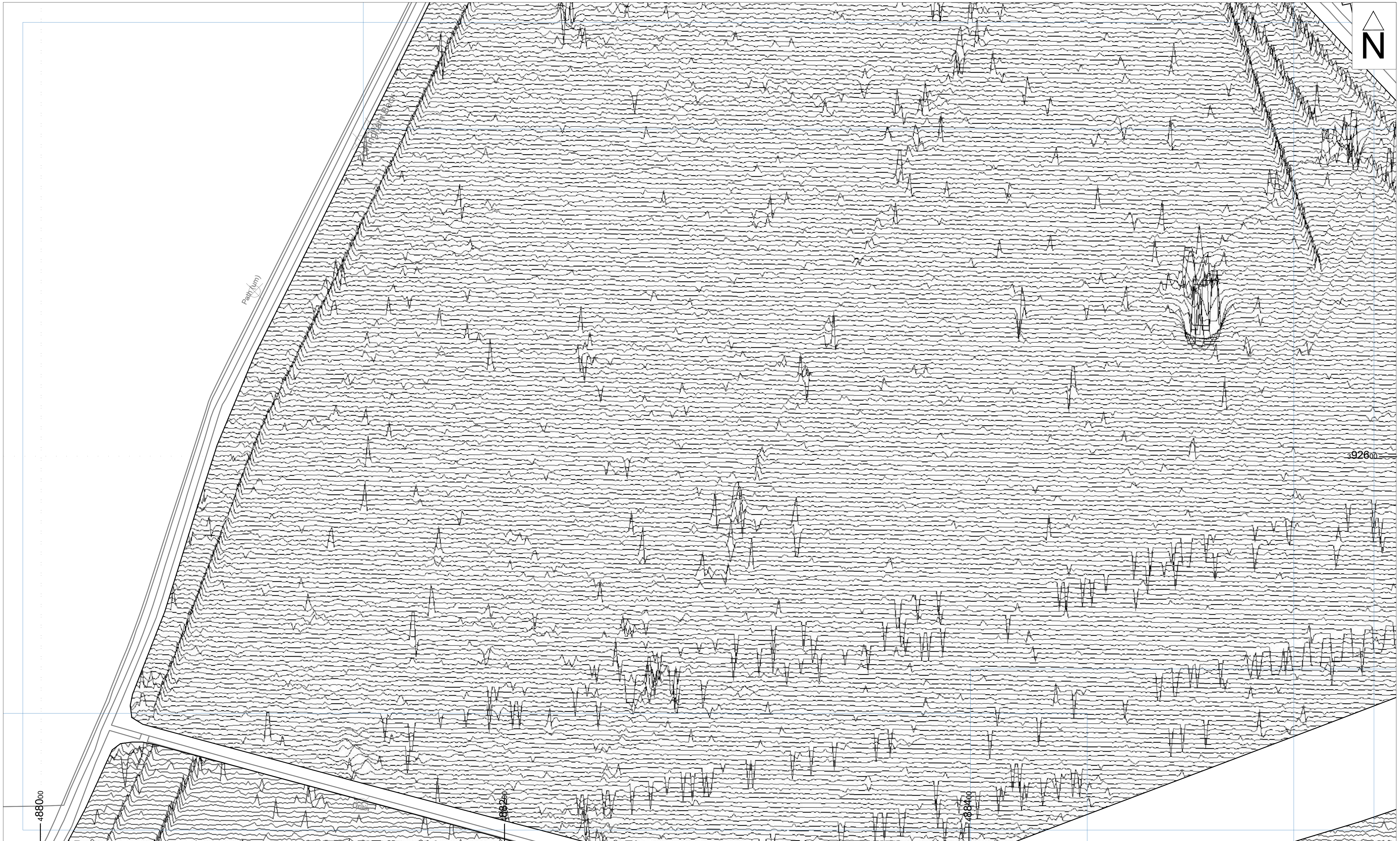


© ASWYAS 2022.
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 7

Fig. 24



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

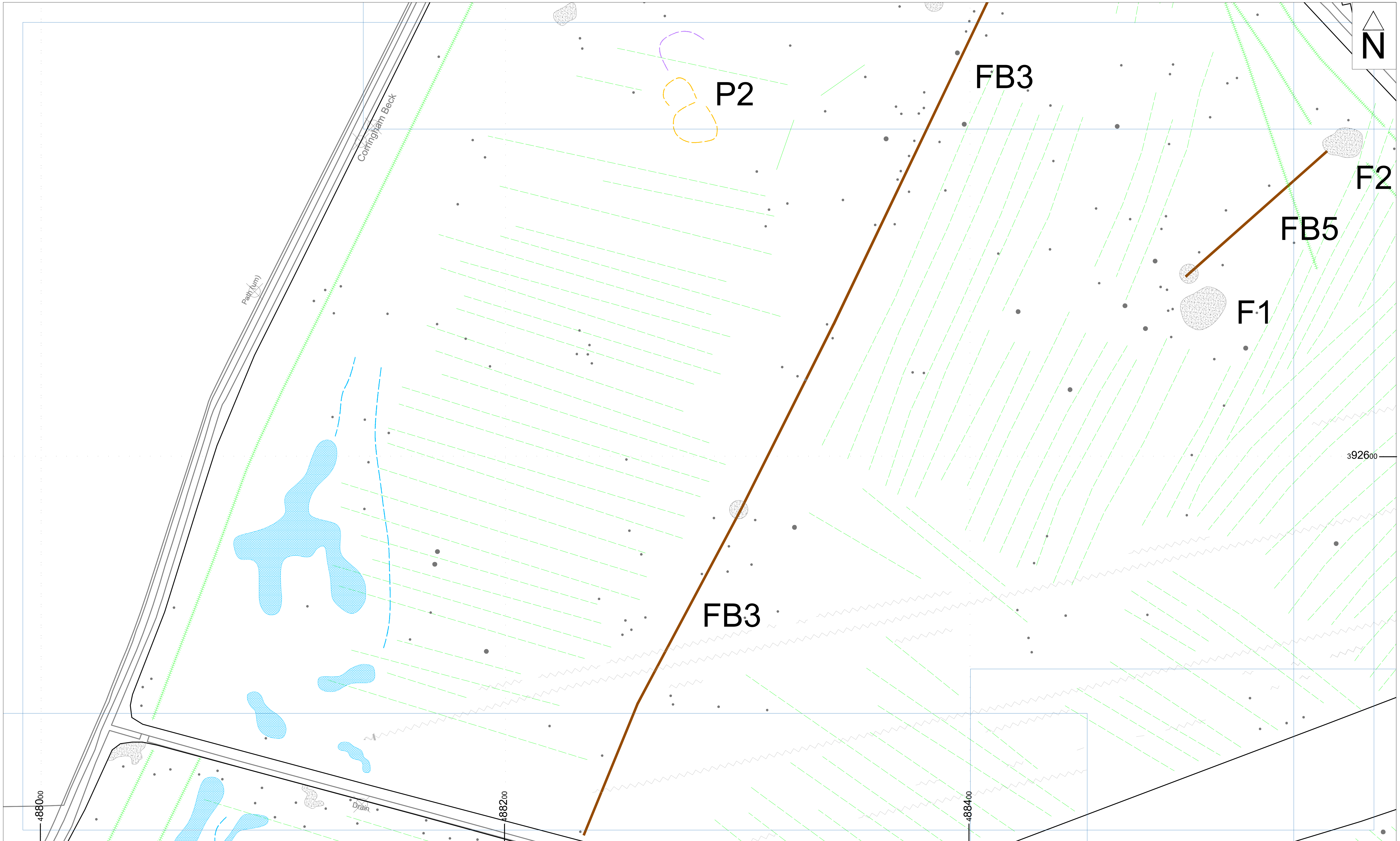
XY trace plot of minimally processed magnetometer data; Sector 7

Fig. 24

15.0 nT/cm

0 50m

1:1500 @ A3



© ASWYAS 2022.
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 7

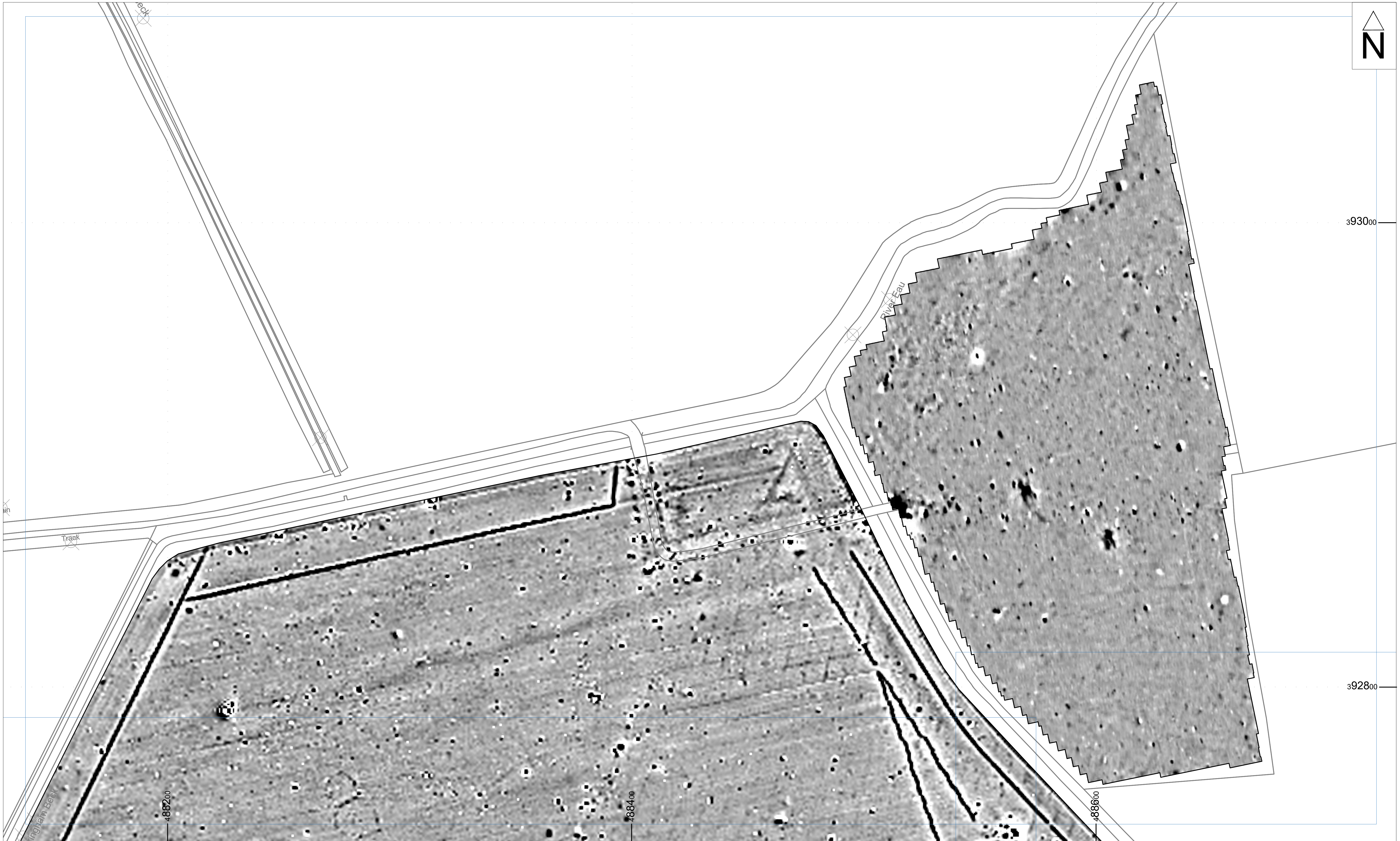
Fig. 25

Interpretation

FERROUS	RIDGE & FURROW	UNCERTAIN
SERVICE PIPE	AGRICULTURAL	ARCHAEOLOGY?
MAGNETIC DISTURBANCE	FORMER FIELD BOUNDARY	INTERFERENCE
FIELD DRAIN	GEOLOGY	

0 50m

1:1500 @ A3



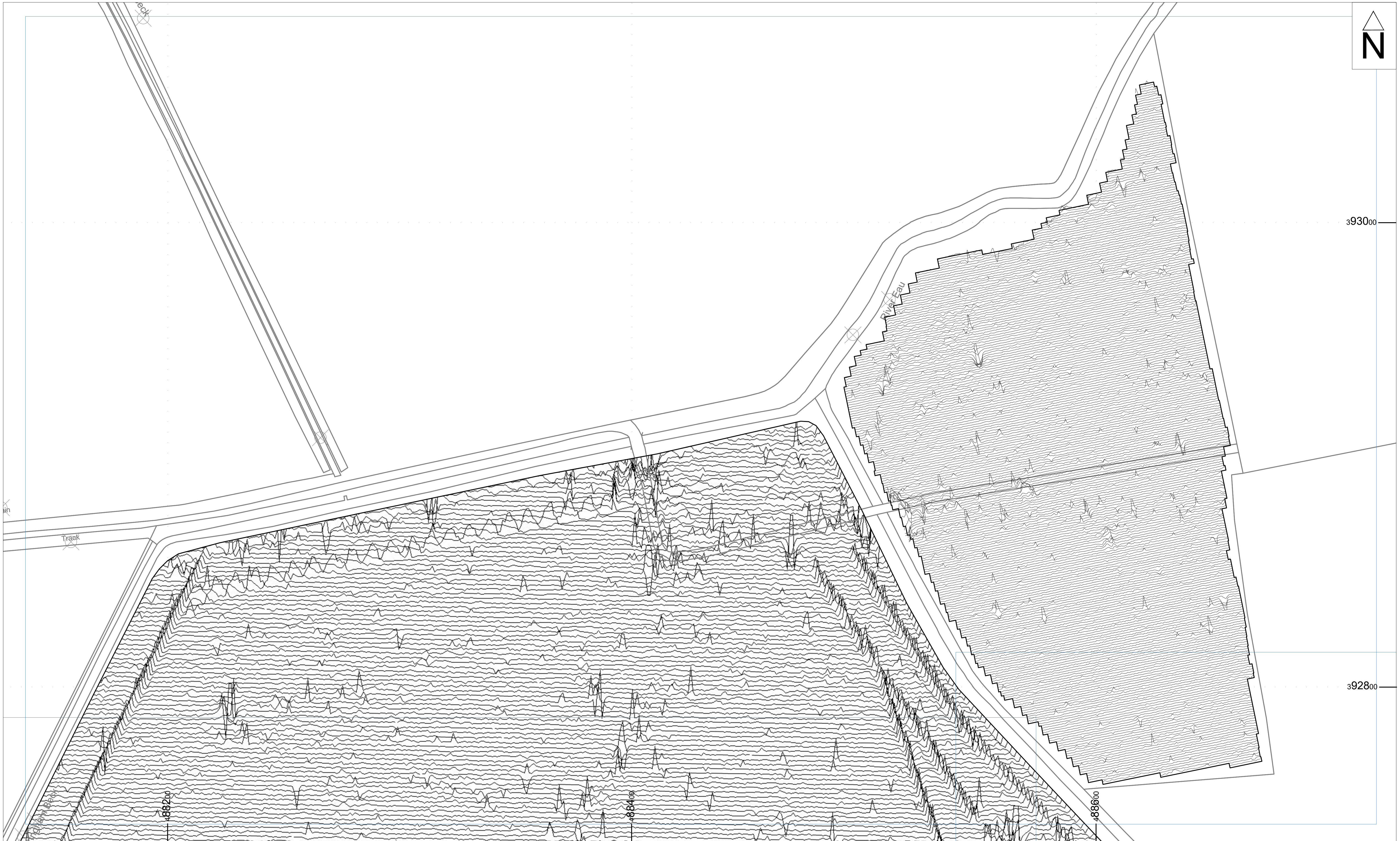
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 8

Fig. 26

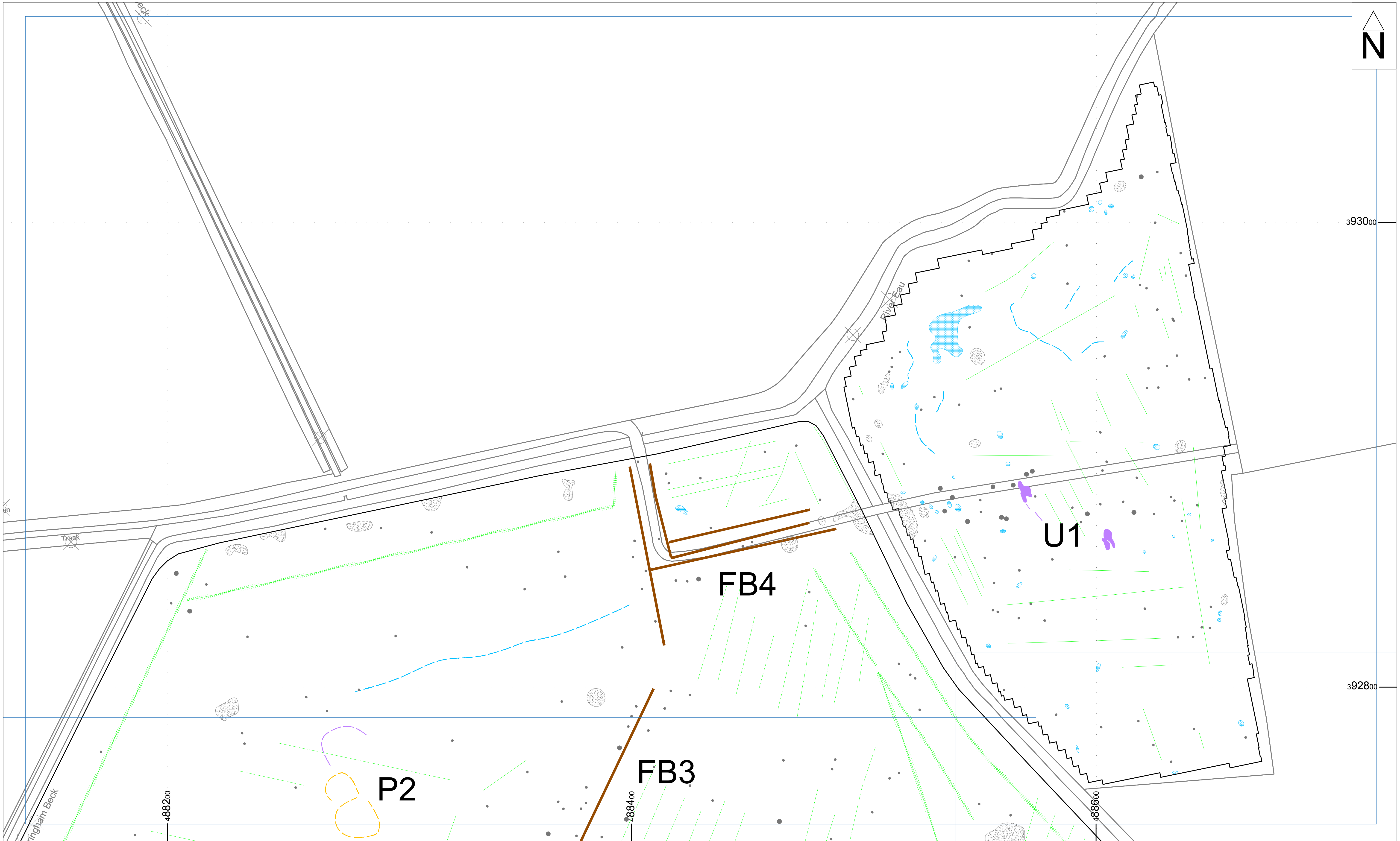


Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 8

Fig. 27



Interpretation

FERROUS	AGRICULTURAL	ARCHAEOLOGY?
MAGNETIC DISTURBANCE	FORMER FIELD BOUNDARY	
FIELD DRAIN	GEOLOGY	
RIDGE & FURROW	UNCERTAIN	

0 50m

1:1500 @ A3

© ASWYAS 2022.
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 8

Fig. 28

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 9

Fig. 29

nT -1.0 2.0

0 50m

1:1500 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

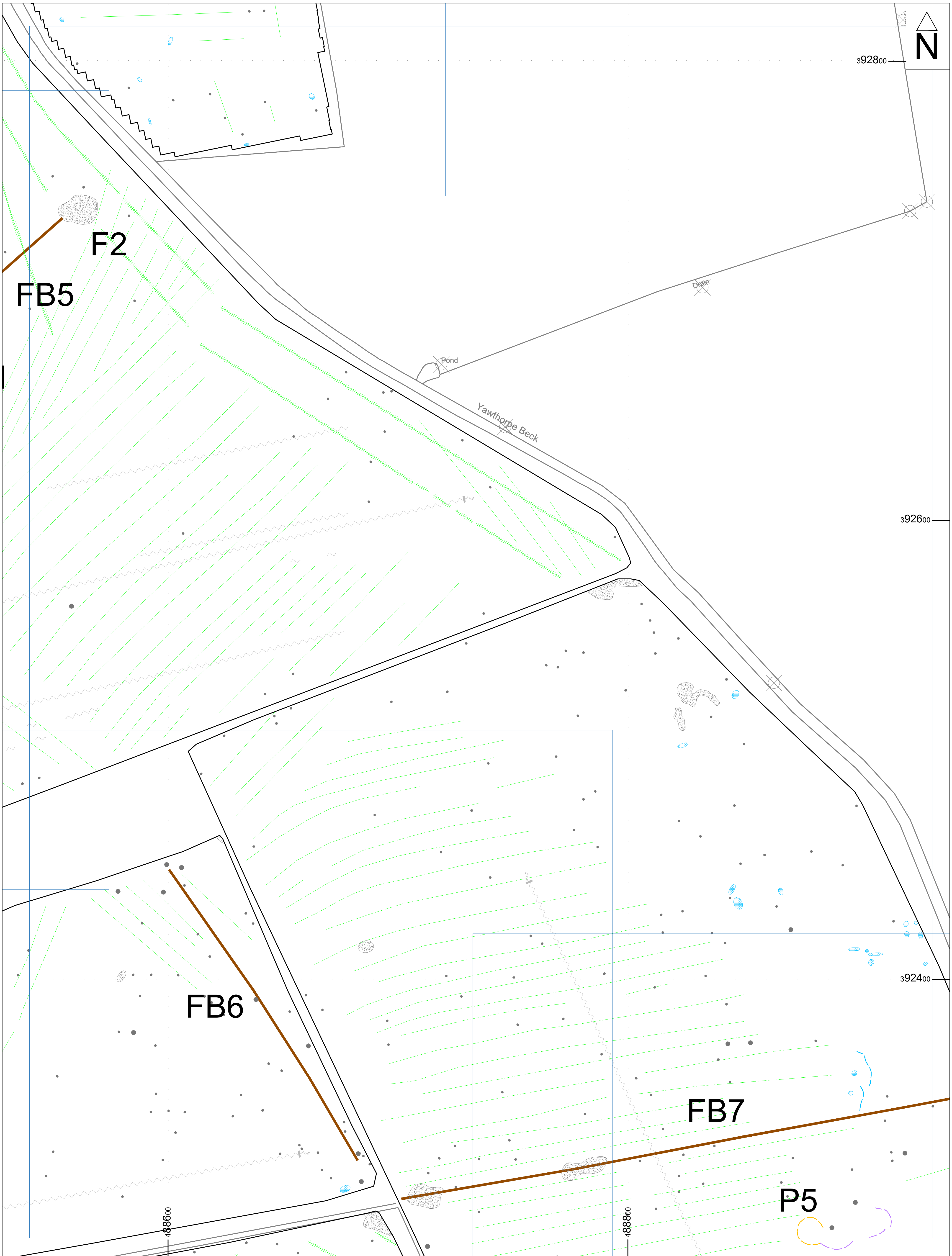
XY trace plot of minimally processed magnetometer data; Sector 9

Fig. 30

15.0 nT/cm

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Interpretation of magnetometer data; Sector 9

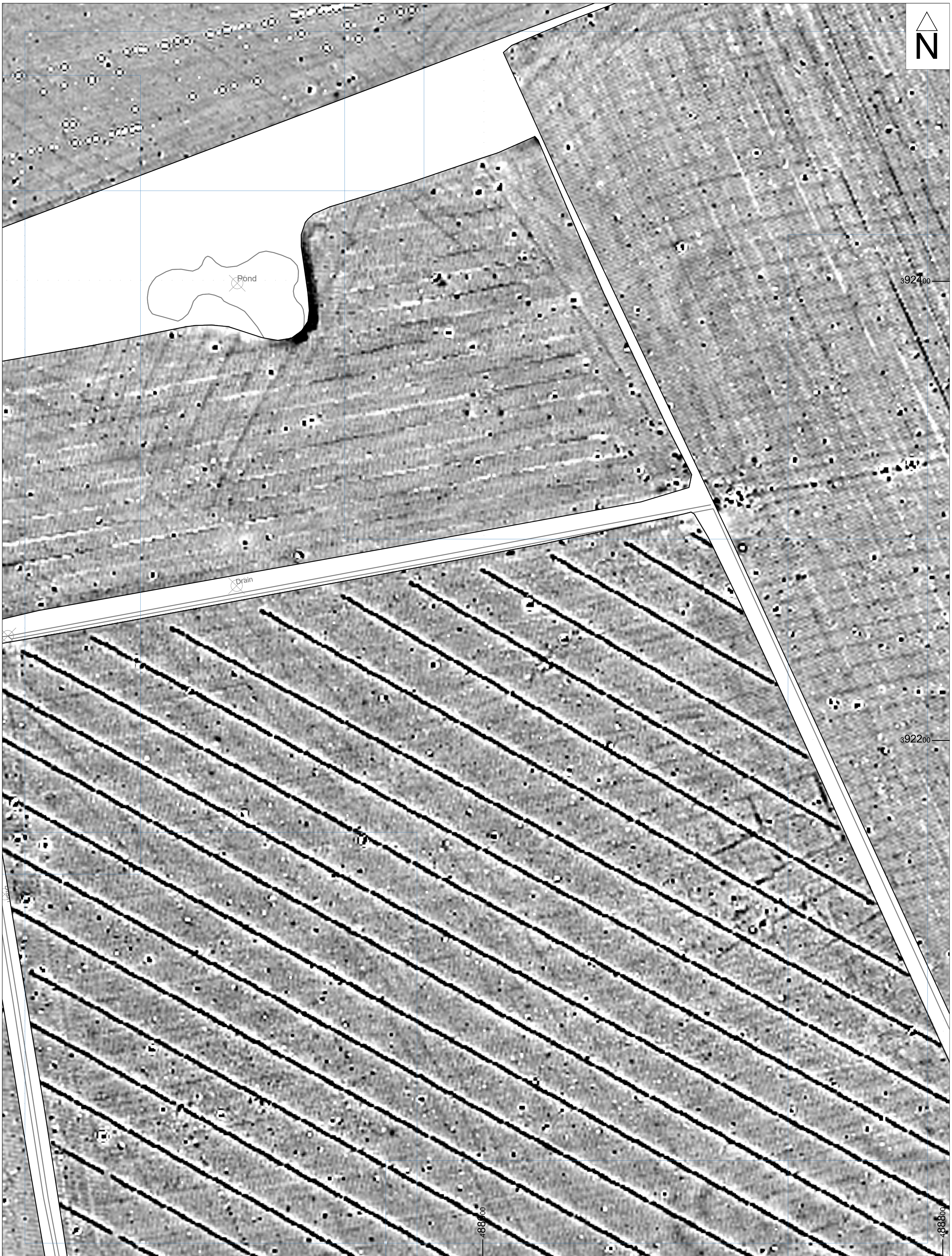
Fig. 31

Interpretation

- FERROUS
- SERVICE PIPE
- MAGNETIC DISTURBANCE
- FIELD DRAIN
- RIDGE & FURROW
- AGRICULTURAL
- FORMER FIELD BOUNDARY
- GEOLOGY
- UNCERTAIN
- ARCHAEOLOGY?
- INTERFERENCE

0 50m

1:1500 @ A3



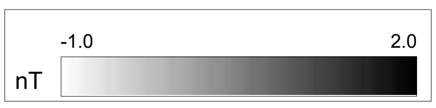
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 10

Fig. 32



1:1500 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

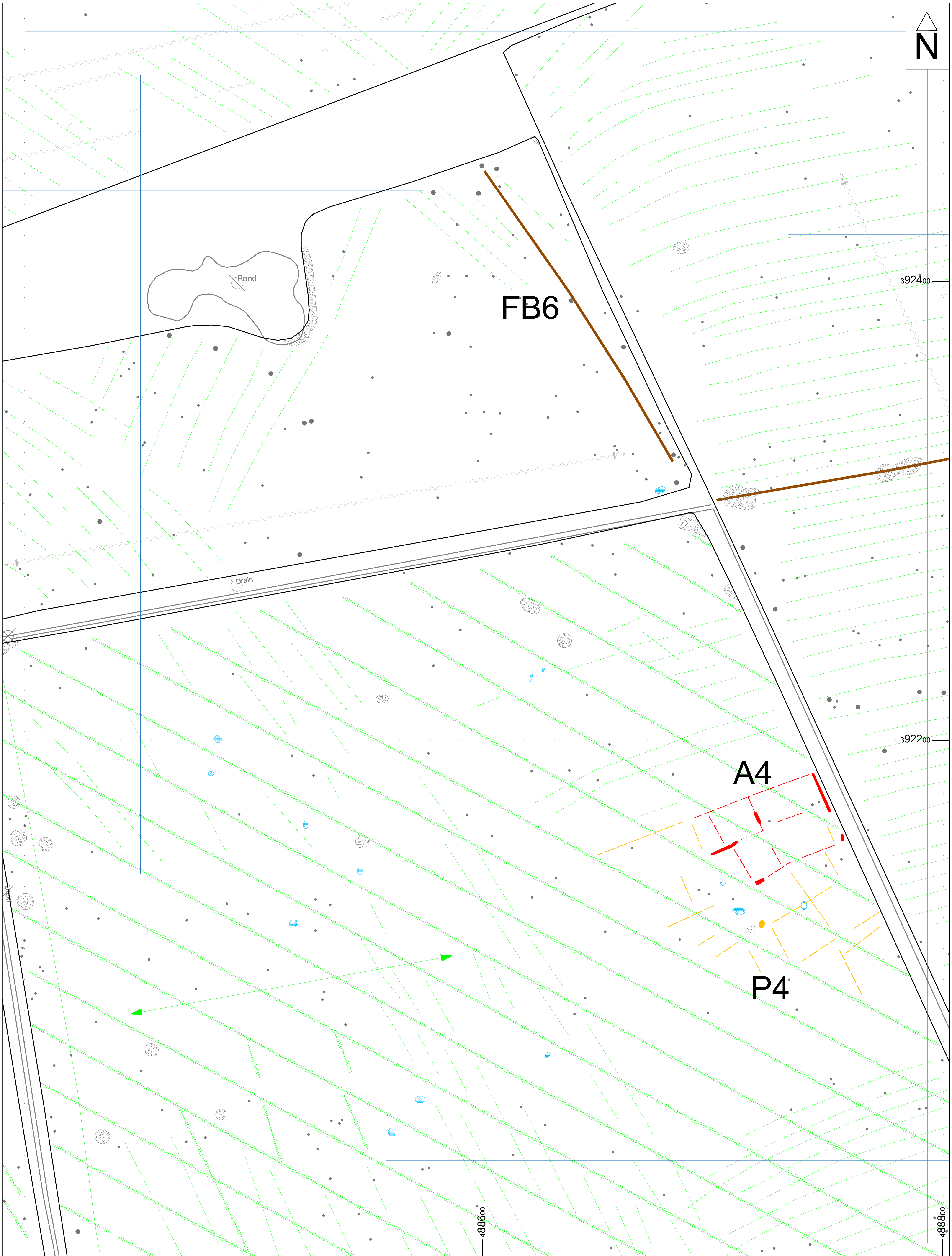
XY trace plot of minimally processed magnetometer data; Sector 10

Fig. 33

15.0 nT/cm

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Interpretation of magnetometer data; Sector 10

Fig. 34

Interpretation

FERROUS	RIDGE & FURROW	GEOLOGY
MAGNETIC DISTURBANCE	AGRICULTURAL	ARCHAEOLOGY?
FIELD DRAIN	FORMER FIELD BOUNDARY	ARCHAEOLOGY
INTERFERENCE		

0 50m

1:1500 @ A3

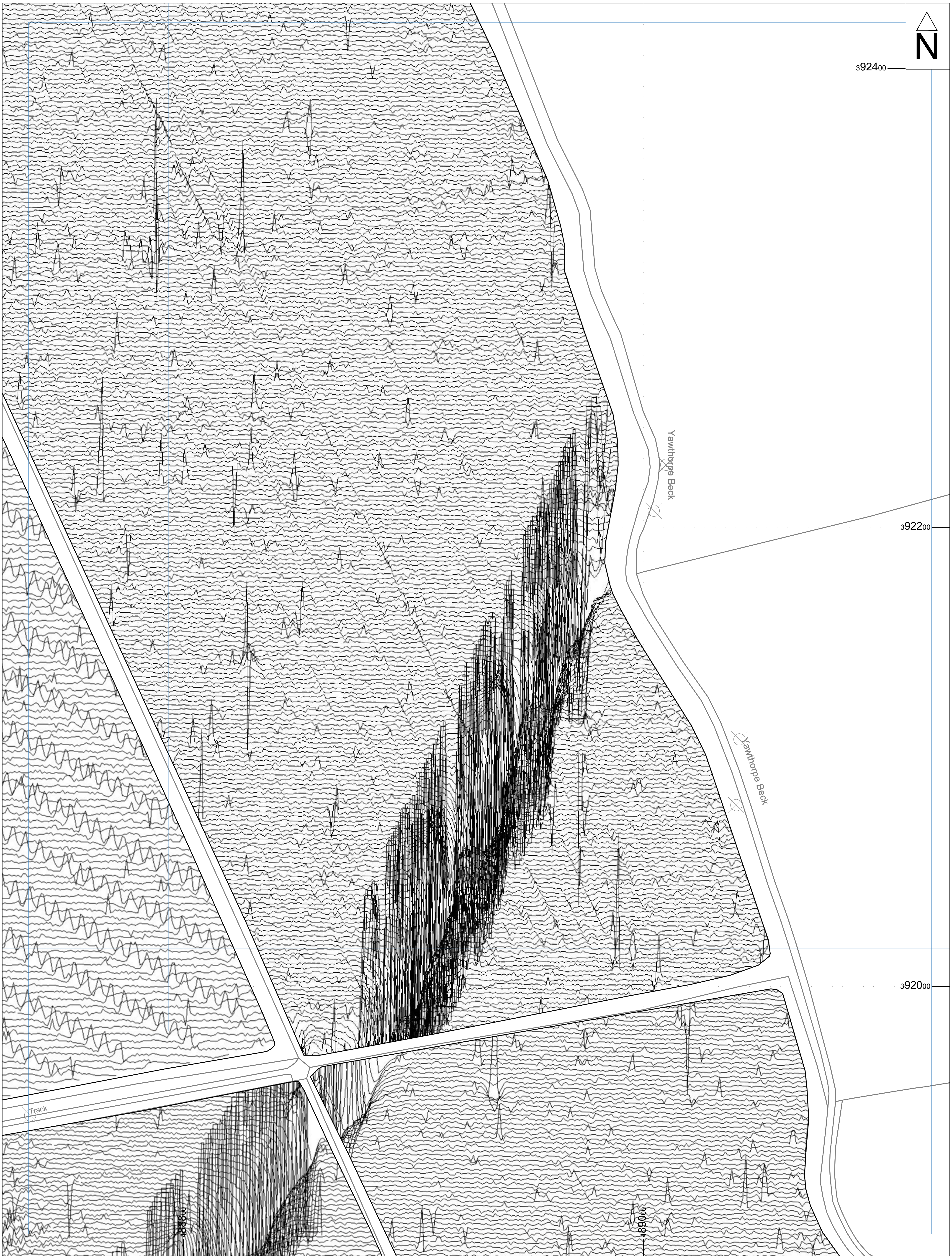
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Processed greyscale magnetometer data; Sector 11

Fig. 35



Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

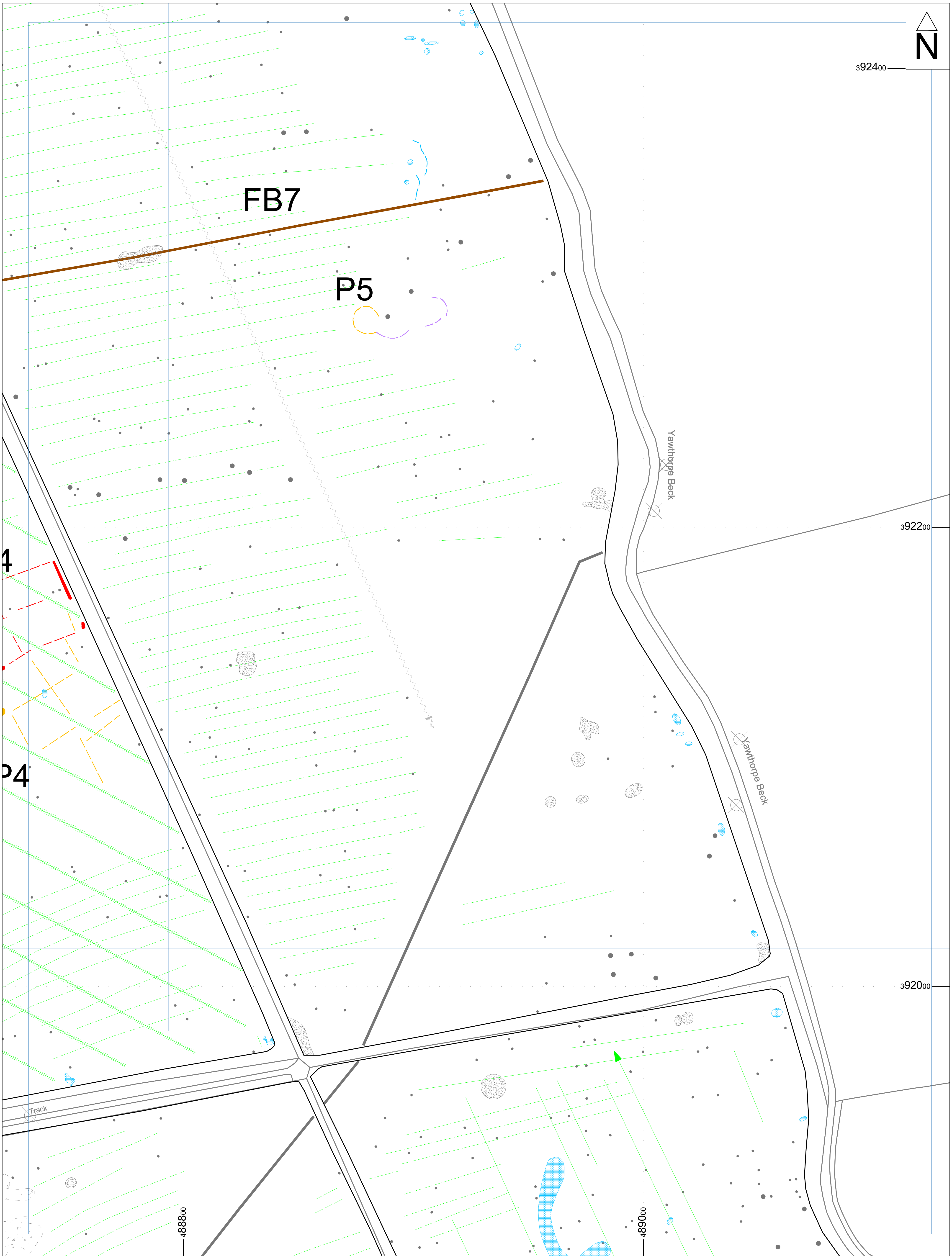
XY trace plot of minimally processed magnetometer data; Sector 11

Fig. 36

15.0 nT/cm

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

Interpretation of magnetometer data; Sector 11

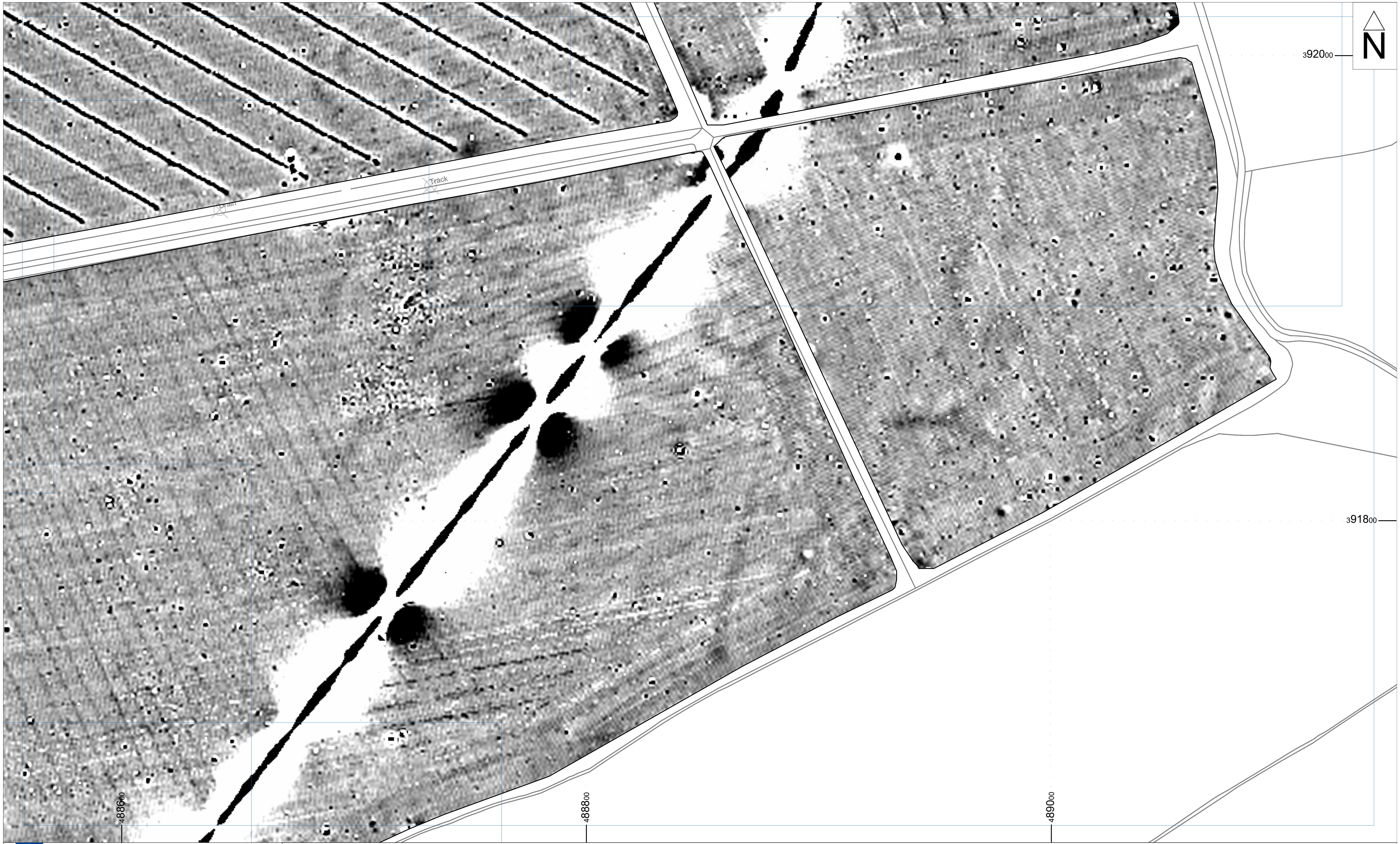
Fig. 37

Interpretation

FERROUS	FIELD DRAIN	FORMER FIELD BOUNDARY	ARCHAEOLOGY
SERVICE PIPE	RIDGE & FURROW	GEOLOGY	INTERFERENCE
MAGNETIC DISTURBANCE	AGRICULTURAL	ARCHAEOLOGY?	

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

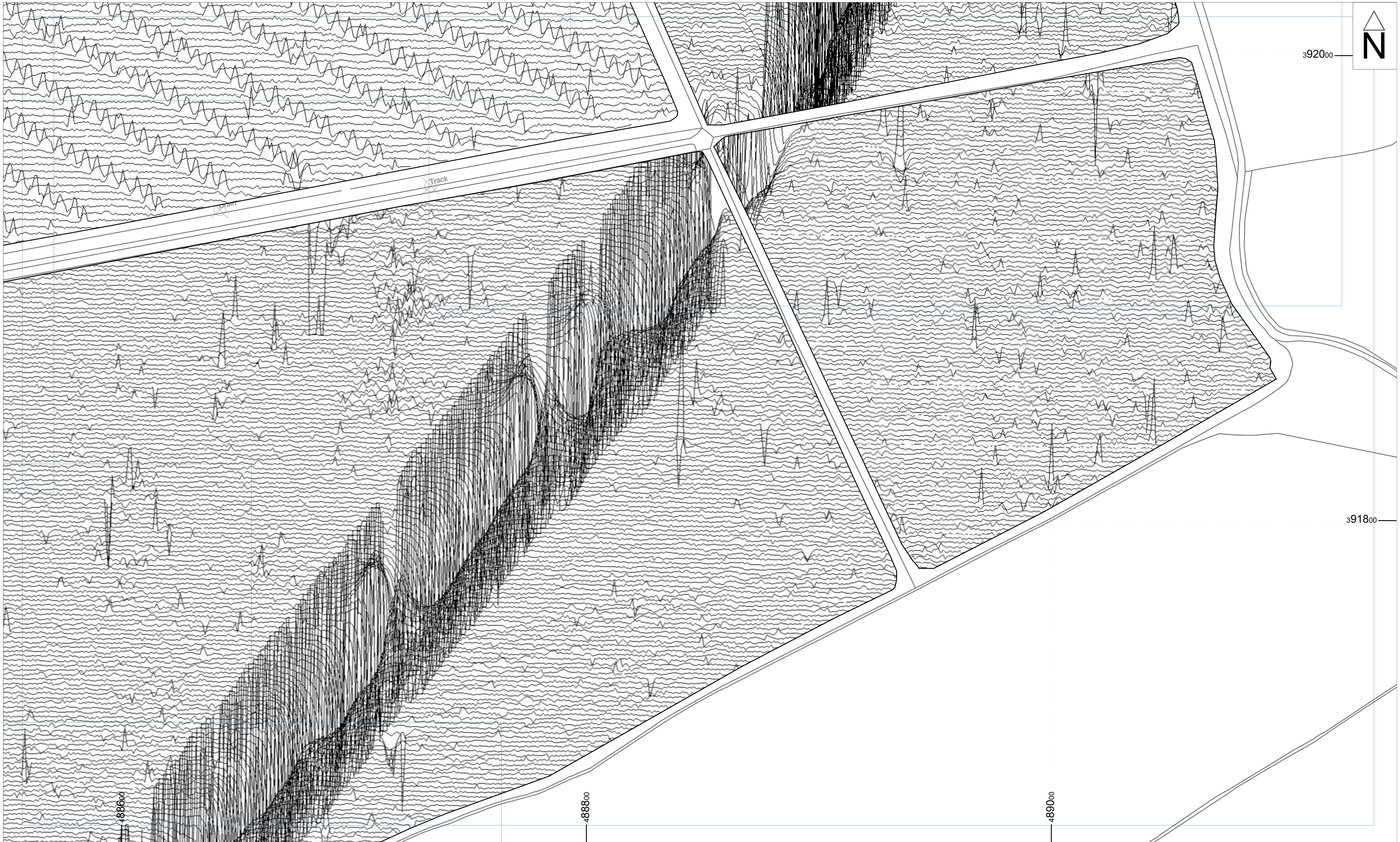
Processed greyscale magnetometer data; Sector 12

Fig. 38

nT -1.0 1.0

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

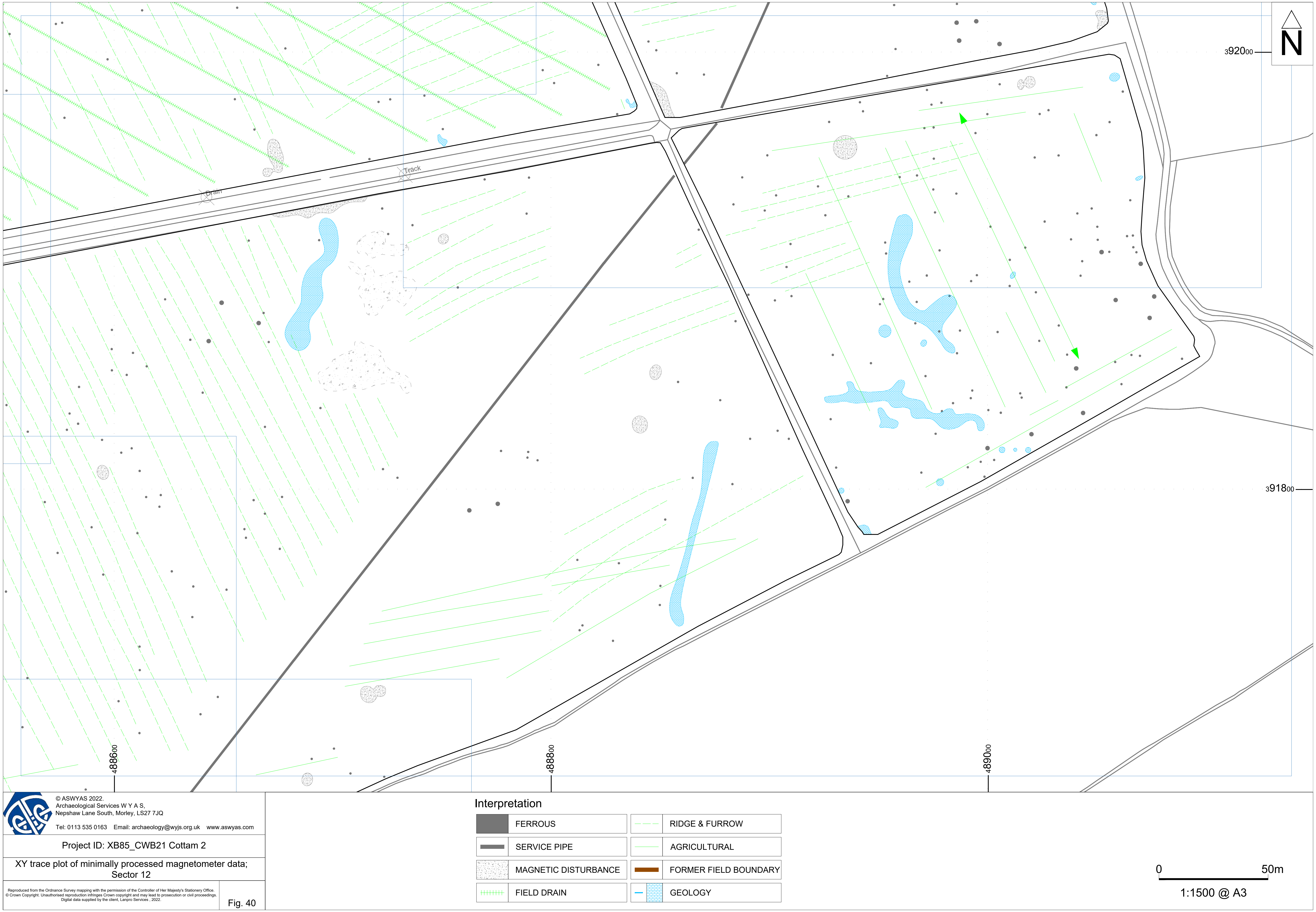
XY trace plot of minimally processed magnetometer data; Sector 12

Fig. 39

15.0 nT/cm

0 50m

1:1500 @ A3



Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB85_CWB21 Cottam 2

XY trace plot of minimally processed magnetometer data; Sector 12

Fig. 40

Appendix 1: Magnetic survey - technical information

Magnetic Susceptibility and Soil Magnetism

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

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

Types of Magnetic Anomaly

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

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

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

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

Isolated dipolar anomalies (iron spikes)

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

Areas of magnetic disturbance

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

Linear trend

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

Areas of magnetic enhancement/positive isolated anomalies

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

Linear and curvilinear anomalies

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

Methodology: Gradiometer Survey

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

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

Area H9 was surveyed using a Bartington Grad601 magnetic gradiometer with readings being taken 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

An initial survey station was established using a Trimble VRS differential Global Positioning System (Trimble R6 model). The data was geo-referenced using the geo-referenced survey station with a Trimble RTK differential Global Positioning System (Trimble R6 model). The accuracy of this equipment is better than 0.01m. The survey grids 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 Lincolnshire Historic Environment Record).

Area H1

filename	XB85_E5.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	487694.086, 391753.354
dummy value	2047.5
source GPS points	7596092
survey size	348 m x 616 m
x and y interval	1m
stats:	
max	568.20
min	-252.46
std dev	6.59
mean	-0.03
median	-0.06
composite area	21.437 ha
surveyed area	13.415 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H2

filename	XB85_E6.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	487850.740, 391585.040
dummy value	2047.5
source GPS points	2671293
survey size	261 m x 199 m
x and y interval	1m
stats:	
max	2206.18
min	-887.57
std dev	17.16
mean	0.19
median	-0.03
composite area	5.1939 ha
surveyed area	3.9908 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H3

filename	XB85_E4.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	487973.787, 392188.657
dummy value	2047.5
source GPS points	4639900
survey size	393 m x 293 m
x and y interval	1m
stats:	
max	1043.40
min	-222.09
std dev	5.43
mean	-0.01
median	-0.06
composite area	11.515 ha
surveyed area	8.07 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H4

filename	XB85_E7.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488031.943, 391837.018
dummy value	2047.5
source GPS points	5747950
survey size	393 m x 408 m
x and y interval	1m
stats:	
max	342.87
min	-2162.72
std dev	16.22
mean	-0.23
median	-0.07
composite area	16.034 ha
surveyed area	11.798 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H5a

filename	XB85_E9.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488084.737, 391507.936
dummy value	2047.5
source GPS points	12345877
survey size	850 m x 465 m
x and y interval	1m
stats:	
max	1265.59
min	-546.11
std dev	25.51
mean	0.02
median	-0.03
composite area	39.525 ha
surveyed area	22.684 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H5b

filename	XB85_E11.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488326.614, 391221.852
dummy value	2047.5
source GPS points	3704158
survey size	423 m x 397 m
x and y interval	1m
stats:	
max	1592.96
min	-868.96
std dev	38.73
mean	0.19
median	-0.03
composite area	16.793 ha
surveyed area	6.3555 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H6

filename	XB85_E3a.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488029.495, 392084.396
dummy value	2047.5
source GPS points	13269008
survey size	1.02E003 m x 842 m
x and y interval	1m
stats:	
max	581.52
min	-618.83
std dev	3.89
mean	-0.02
median	-0.04
composite area	85.463 ha
surveyed area	23.889 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H7

filename	XB85_E3b.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488352.758, 392248.358
dummy value	2047.5
source GPS points	2053760
survey size	340 m x 221 m
x and y interval	1m
stats:	
max	39.76
min	-67.22
std dev	0.96
mean	-0.03
median	-0.06
composite area	7.514 ha
surveyed area	4.0615 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H8

filename	XB85_E8.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488368.923, 391896.016
dummy value	2047.5
source GPS points	6891062
survey size	474 m x 411 m
x and y interval	1m
stats:	
max	191.97
min	-201.39
std dev	2.39
mean	0.14
median	-0.03
composite area	19.481 ha
surveyed area	13.132 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H9

filename	XB85_E1_2.rep
instument	Bartington Grad 601-2
units	nT
survey coordinates:	
SW	488515.375, 392711.616
dummy value	2047.5
survey size	180 m x 330 m
x and y interval	1m
stats:	
max	99.30
min	-93.00
std dev	1.37
mean	0.03
median	0.00
composite area	5.94 ha
surveyed area	3.1505 ha
program	Geoplot 4
processes	Zero Mean Traverse Grid=All LMS=On ZM=Mean Pos.Thresh. = 5 Neg.Thresh. = -5
	Low Pass Filter X=2 Y=1 Wt=G Applications=1

Area H10

filename	XB85_E3c.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488597.579, 391970.700
dummy value	2047.5
source GPS points	6285698
survey size	461 m x 609 m
x and y interval	1m
stats:	
max	1295.27
min	-393.73
std dev	21.97
mean	0.00
median	-0.05
composite area	28.075 ha
surveyed area	14.417 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Area H11

filename	XB85_E10.xcp
instument	Sensys DLMGPS
units	nT
survey coordinates:	
SW	488849.729, 391778.413
dummy value	2047.5
source GPS points	1728766
survey size	250 m x 228 m
x and y interval	1m
stats:	
max	434.02
min	-80.62
std dev	11.45
mean	0.23
median	-0.05
composite area	5.7 ha
surveyed area	3.4279 ha
program	TerraSurveyorPre Version:3.0.37.12
GPS based processes	Base Layer
	Interpolate: X & Y Doubled.

Appendix 4: Oasis form

Summary for archaeol11-506599

OASIS ID (UID)	archaeol11-506599
Project Name	Geophysical Survey at Cottam 2
Sitename	
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	14-Feb-2022 - 08-Apr-2022
Location	Cottam 2 NGR : SK 88380 92160 LL : 53.4188478439369, -0.671630411843944 12 Fig : 488380,392160
Administrative Areas	Country : England County : Lincolnshire District : West Lindsey Parish : Corringham
Project Methodology	The majority of the study site was surveyed using a cart-based survey, undertaken using an eight channel SenSYS MX V3 system containing eight FGM650 sensors. Readings are taken every 20MHz (between 0.05 and 0.1m). Data were recorded onto a device, using a Carlson GNSS Smart antenna, for centimetre accuracy. These readings were stored in the memory of the instrument and downloaded for processing and interpretation. DLMGPS and MAGNETO software, alongside bespoke in-house software was used to process and present the data. Area H9 was laid out using a Trimble VRS differential Global Positioning System (Trimble R6 model). The survey was undertaken using Bartington Grad601 magnetic gradiometers. These were employed taking readings at 0.25m intervals on zig-zag traverses 1.0m apart within 30m by 30m grids, so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation.
Project Results	A geophysical (magnetometer) survey was undertaken on land consisting of approximately 132 hectares of land associated with Cottam 2 located to the east of Corringham, Lincolnshire. The majority of the anomalies recorded are agricultural including field drains, ridge and furrow cultivation, modern ploughing and former field boundaries. Archaeological and possible archaeological responses have been recorded in at least three separate clusters which are likely to relate to settlement activity. Based on the geophysical survey, the archaeological potential of this site is deemed to be high in Areas H5 and H8 and low elsewhere.
Keywords	
Funder	
HER	Lincolnshire HER - unRev - STANDARD
Person Responsible for work	Emma, Brunning
HER Identifiers	
Archives	

Bibliography

BGS, 2022. www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html. British Geological Survey (viewed May 2022)

Brown, I. Burridge, D., Clarke, D., Guy, J., Hellis, J., Lowry, B., Ruckley, N, and Thomas R. 1996. *20th Century Defences in Britain, an introductory guide*. Council for British Archaeology

Crichton, J. 2022. Cottam Solar Project. Environmental Impact Assessment Scoping Report. Lanpro Services, January 2022

CIfA, 2020. *Standard and Guidance for Archaeological Geophysical Survey*. Chartered Institute for Archaeologists

CSAI, 2022. http://www.landis.org.uk/soilscapes/ Cranfield Soil and Agrifood Institute (viewed May 2022)

MHCLG, 2019. *National Planning Policy Framework*. Ministry of Housing, Communities and Local Government.

NLS, 2022. https://maps.nls.uk/index.html. National Library of Scotland (viewed May 2022)

Schmidt, A. Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A, and Fassbinder, J. 2015. *EAC Guidelines for the Use of Geophysics in Archaeology*. English Heritage