WYAS Archaeological Services

Junction 24 East, Bridgwater, Somerset

Geophysical Survey

Report no. 3082
February 2018

Client: Cotswold Archaeology

West Yorkshire Joint Services

Junction 24 East, Bridgwater, Somerset

Geophysical Survey

Summary

A geophysical (magnetometer) survey, covering approximately 34 hectares, was undertaken within six fields to the immediate east of Junction 24 of the M5 motorway. This was in advance of a proposed development. The survey has detected anomalies of a ferrous, agricultural and geological origin. Linear trends of a possible and definite archaeological origin have been identified, predominantly within the largest and central survey area. Therefore based on the geophysical survey, the archaeological potential of the site is considered to be moderate to high.

WYAS
Archaeological Services

Report Information

Client:	Cotswold Archaeology
Address:	Building 11, Kemble Enterprise Park, Cirencester, Gloucestershire, GL7 6BQ
Report Type:	Geophysical Survey
Location:	Bridgwater,
County:	Somerset
Grid Reference:	ST 30866 34278
Period(s) of activity:	Prehistoric?/ Roman/ Modern
Report Number:	3082
Project Number:	6884
Site Code:	BGW17
OASIS ID:	Archaeol11-310040
Date of fieldwork:	January 2018
Date of report:	February 2018
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1 Introduction

Archaeological Services WYAS (ASWYAS) were commissioned by Cotswold Archaeology to undertake a geophysical (magnetometer) survey on agricultural land to the east of junction 24 of the M5, Bridgwater, Somerset. This is in advance of a proposed development. Guidance contained within the National Planning Policy Framework (DCLG 2012) was followed, in line with current best practice (CIfA 2014; David *et al*. 2008). The survey was carried out between 15th – 19th January 2018.

Site location, topography and land-use

The survey area is approximately centred on National Grid Reference ST 30866 34278 and located to the immediate east of Junction 24 of the M5 motorway. The survey area gently slopes from 25m in the south to 8m above Ordnance Datum (aOD), to the north. The survey area is approximately 34 hectares consisting of six fields. The survey area is bounded to the west by the M5, to the east by Huntworth Lane, to the north by fields and the Bridgwater and Taunton canal and fields to the south.

Soils and geology

The underlying bedrock geology comprises of Mercia Mudstone Group Formation while the superficial deposits for the survey area consist of undifferentiated River Terrace Deposits (BGS 2018). The overlying soils are free draining and slightly acidic loams (SSEW 1983).

2 Archaeological Background

This archaeological background has been complied using a Heritage Appraisal prepared by Cotswold Archaeology (Dowding 2017).

Within 500m of the site, there are three Grade II listed buildings:

- Hayes (NHLE: 1344992), situated *c*. 30m east of the site, a 19th-century building;
- Huntworth House (NHLE: 1177863), situated c. 60m east of the site, a small 17th or 18th-century country house;
- Huntworth Park House (NHLE: 1307243), situated c. 30m south-west of the site, a 17th or 18th-century house.

An assessment of data held by the Somerset Historic Environment Record has identified over 40 non-designated heritage assets within the wider area, three of which are depicted as continuing into the site.

The heritage assets recorded within the site are dated to the prehistoric period and include a potential settlement on the southwest side (SHER reference number 11264). This site was identified through soil marks defining a small enclosure with other linear features lying on the line of the M5 and extending to the west. The area to the west of the M5 was excavated in 2006 and revealed finds dated from the late Iron Age onwards. The other assets recorded within the site, which also potentially date to the prehistoric period, are an additional enclosure (SHER reference number 11920) and a ring ditch (SHER reference number 11921), which, however, may have been a modern animal tether, on the north edge of the site.

There are no Roman or medieval period heritage assets recorded within the site, although assets of these dates are known from the wider area.

An assessment of readily available cartographic sources, aerial photographs and Historic Landscape Characterisation (HLC) data has indicated that the site remained in agricultural use since at least the 19th century, with sections along the north border of the site used as a plantation at the beginning of the 20th century.

3 Aims, Methodology and Presentation

The main aim of the geophysical survey was to provide additional information on the known archaeology within the area. To achieve this, a magnetometer survey covering all available parts of the PDA 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 site grid 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. Geoplot 3 (Geoscan Research) 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 shows a more detailed site location plan at a scale of 1:4000. Figure 3 is an overall interpretation at the same scale. The processed and minimally processed data, together with an interpretation of the survey results are presented in Figures 4 to 24 inclusive at a scale of 1:1000.

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 English Heritage (David *et al.* 2008) and by the Chartered Institute for Archaeologists (CIfA 2014). 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 Figs 4 to 24)

Ferrous anomalies

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.

Agricultural anomalies

Two former field boundaries have been identified in Field 4. They are recorded in the first edition mapping of the area and removed post-1960 (NLS, 2018). In addition, to the north of Field 4 faint evidence of field drains has been detected.

Geological anomalies

Throughout the survey area, there are scatters of geological anomalies. They are more prominent in areas where the former field boundaries have been removed and the underlying material has been brought to the surface.

Possible archaeological anomalies

The anomalies categorised with a possible archaeological origin are predominantly located in Fields 1 – 3, in the southwest of the survey area (Figs 4 – 12). These anomalies (**P1**-**P7**, Table 1) are magnetically enhanced features and may indicate possible enclosures, but given the weaker magnetic strength of the features, in comparison to those identified as archaeological, they have been given a possible archaeological interpretation. In the southeast of Field 3, a faint linear trend (**P5**) can be seen which may represent a square enclosure. A semi-circular feature (**P7**) has also been identified in the northwest corner of Field 3.

Table 1. Possible archaeological anomalies

ID	Field Location	Figs	Dimensions (m)
P1	1	(4-6)	95m
P2	1	(4-6)	212m
P3	1	(4-6)	50m
P4	2	(7-9)	99m
P5	3	(7-9)	27m x 26m
P6	3	(7-12)	97m
P7	3	(7-9)	32m x 15m
P8	4	(13-15)	30m x 21m
P9	5	(22-25)	40m

Throughout Field 4 a number of possible archaeological anomalies have been identified, largely in close proximity to the clear archaeological features. Given the size and characteristic magnetic response of the anomalies, coupled with recent ground disturbance, they could also be geological in origin.

Within Field 4 a feature (**P8)** is an ephemeral square-shaped anomaly in the landscape and therefore has a possible archaeological origin, based on its shape.

Finally, in Field 5 a series of broad linear trends, similar in characteristics to those identified in Fields 1 -3 may have an archaeological origin, however, given their short nature only a possible origin has been given.

Archaeological anomalies

Two magnetic anomalies have been identified in Fields 2 and 3 (**A1** and **A2**). They are likely to be part of the same anomaly bisected by the modern field boundary.

A3 is a lengthy curvilinear feature which is cut by a later double-ditched feature (**A4**). Whilst the magnetic signature is weaker for **A3** in comparison to other identified archaeological anomalies, it is considered to be archaeological in nature as it predates A4.

From the M5 to Huntworth Lane, in Field 4, a double-ditched trackway feature (**A4**) overlies **A3**. It has similar characteristics as the two former field boundaries, but the magnetic variation for **A4** is significantly different, and it is not recorded on historic mapping, and hence is deemed to be archaeological in nature.

To the north of **A4**, close to Huntworth Lane, anomaly **A5** is a semi-circular feature which may represent a former structure.

A6 – **A8** are a series of fragmented responses to the south of the clearly defined features of **A9**. **A6** and **A7** appear to form part of rectangular enclosures, with **A8** partially detected within the survey area and partially removed by the construction of Huntworth Lane.

The most significant and clear archaeological anomalies (**A9**) lie centrally within Field 4, between the two former field boundaries. It forms a complex, which includes two rectangular enclosed spaces, a smaller rectangle to the northwest, a small square enclosure to the southeast, a linear anomaly to the west and a square anomaly aligned along a different axis. It is likely that the possible magnetic responses within the enclosed spaces form internal divisions.

Finally, **A10** is a fragmented linear response which may be associated with the complex of responses in **A9**. The different alignment however, suggests a different phase of activity.

Table 2. Archaeological anomalies

ID	Field Location	Figs	Dimensions (m)
A1	2	(7-9)	55m
A2	3	(7-9)	34m
A3	4	13-15)	200m
A4	4	(13-15)	253m
A5	4	(13-15)	13m x 13m
A6	4	(16-18)	33m x 23m
A7	4	(16-18)	25m X 16m
A8	4	(16-18)	40m x 55m
A9	4	(19-21)	151m x 73m, 41m x 19m, 125m (20m x 20m)
A10	4	(19-21)	63m x 19m

5 Conclusions

The survey area has detected a number of magnetic anomalies. Some agricultural responses in the form of field drains and former field boundaries have been identified. There are a number of geological and possible archaeological anomalies predominantly scattered within Field 4. A complex series of magnetic anomalies have been identified within Field 4: definitive archaeological responses are interspersed with weaker and less well defined anomalies which have been classified as possible archaeology. The archaeological anomalies are likely to be associated with the identified and recorded heritage assets which lie to the west of the M5. Across the site there are responses which are identified as ferrous material, especially around the boundaries.

Overall the archaeological potential of the survey area is considered to be moderate to high, with the greatest potential located in Field 4.

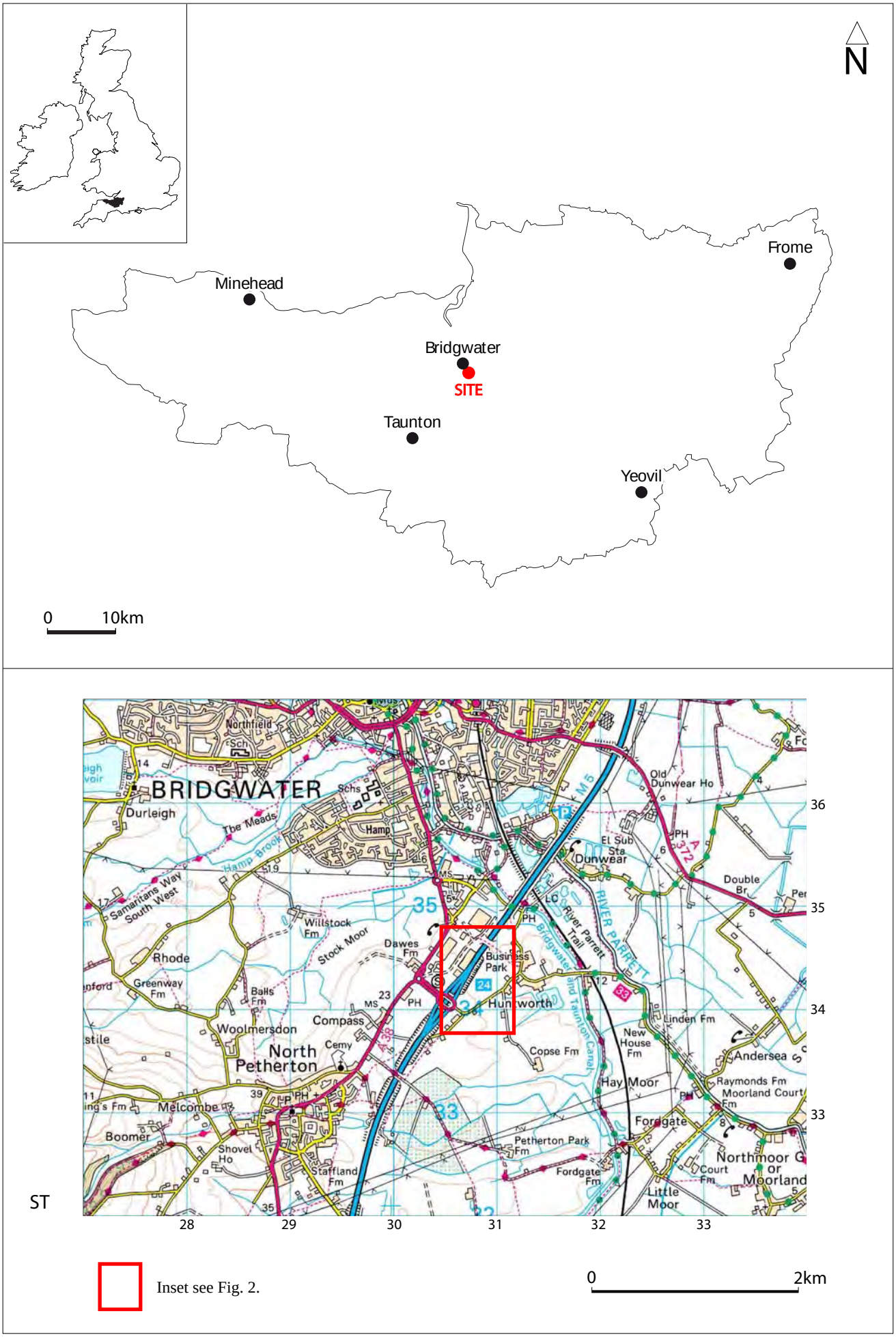

Fig. 1. Site location

PROJECT ID: 6884_BGW18

SECTOR BOUNDARY

SURVEY BOUNDARY

1 LOCATION AND DIRECTION OF PLATES

N

1350 00

SECTOR 7
SEE FIGS 22-24

FIELD 6

FIELD 5

SECTOR 6
SEE FIGS 19-21

4

3

SECTOR 4
SEE FIGS 13-15

FIELD 4

SECTOR 1
SEE FIGS 4-6

SECTOR 5
SEE FIGS 16-18

1340 00

2

1

SECTOR 3
SEE FIGS 10-12

2.0

-1.0

nT

FIELD 3

FIELD 1

FIELD 2

SECTOR 2
SEE FIGS 7-9

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3310 00

Fig. 2. Site location showing greyscale magnetometer data (1:4000 @ A3)

0 100m

PROJECT ID: 6884_BGW18	
	SECTOR BOUNDARY
	SURVEY BOUNDARY

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	FIELD DRAIN
	LINEAR TREND	FORMER FIELD BOUNDARY
	LINEAR TREND	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	GEOLOGY
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY

N

1350$_{00}$

1340$_{00}$

3310$_{00}$

SECTOR 7
SEE FIGS 22-24

FIELD 6

FIELD 4

FIELD 5

SECTOR 6
SEE FIGS 19-21

P9

A9

SECTOR 4
SEE FIGS 13-15

A10

P8

A9

A4

A3

A8

A7

SECTOR 1
SEE FIGS 4-6

A5

A6

P3

SECTOR 5
SEE FIGS 16-18

P7

P6

SECTOR 3
SEE FIGS 10-12

P2

FIELD 3

P1

P5

FIELD 1

A1

A2

SECTOR 2
SEE FIGS 7-9

FIELD 2

P4

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0 100m

Fig. 3. Overall interpretation of magnetometer data (1:4000 @ A3)

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SECTOR BOUNDARY

2.0

-1.0

nT

N

134000

133800

330400

330600

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0 50m

Fig. 4. Processed greyscale magnetometer data; Sector 1 (1:1000 @ A3)

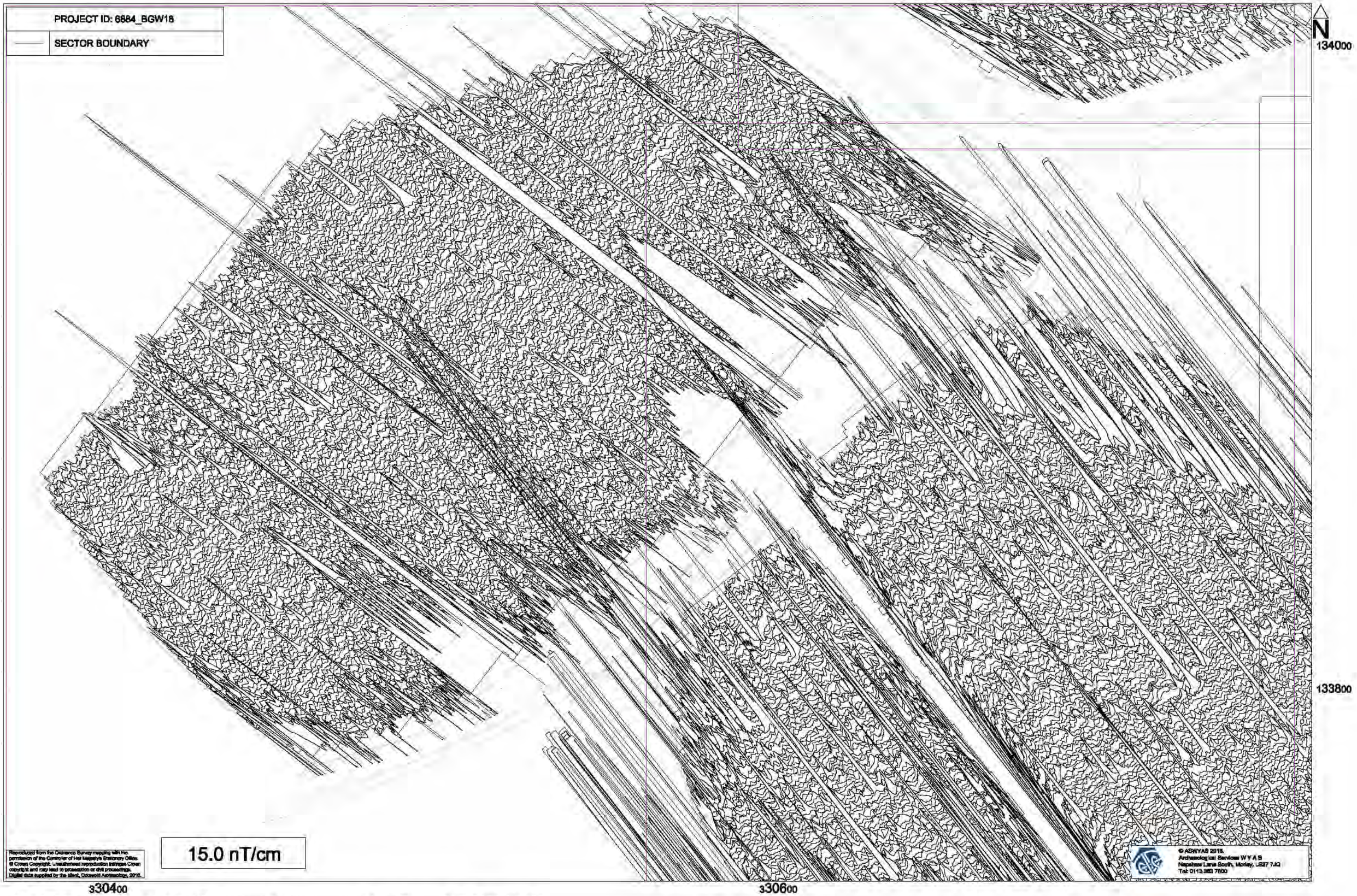

Fig. 5. XY trace plot of minimally processed magnetometer data; Sector 1 (1:1000 @ A3)

PROJECT ID: 6884_BGW18	
	SECTOR BOUNDARY

P1

P2

P3

P3

P3

P6

P7

N

TYPE OF ANOMALY		INTERPRETATION
	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	MAGNETIC ENHANCEMENT	GEOLOGY
	LINEAR TREND	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?

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134000

133800

330400

330600

0 50m

Fig. 6. Interpretation of magnetometer data; Sector 1 (1:1000 @ A3)

PROJECT ID: 6884_BGW18

SECTOR BOUNDARY

N

1338 00

1336 00

2.0

-1.0

nT

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330600

330800

0 50m

Fig. 7. Processed greyscale magnetometer data; Sector 2 (1:1000 @ A3)

PROJECT ID: 6884_BGW18

SECTOR BOUNDARY

N

1338$_{00}$

1336$_{00}$

3306$_{00}$

3308$_{00}$

15.0 nT/cm

0 50m

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Fig. 8. XY trace plot of minimally processed magnetometer data; Sector 2 (1:1000 @ A3)

PROJECT ID: 6884_BGW18

SECTOR BOUNDARY

N

P3

P6

P7

P5

A1

A2

1338$_{00}$

1336$_{00}$

TYPE OF ANOMALY		INTERPRETATION
	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	GEOLOGY
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY

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3306$_{00}$

3308$_{00}$

0 50m

Fig. 9. Interpretation of magnetometer data; Sector 2 (1:1000 @ A3)

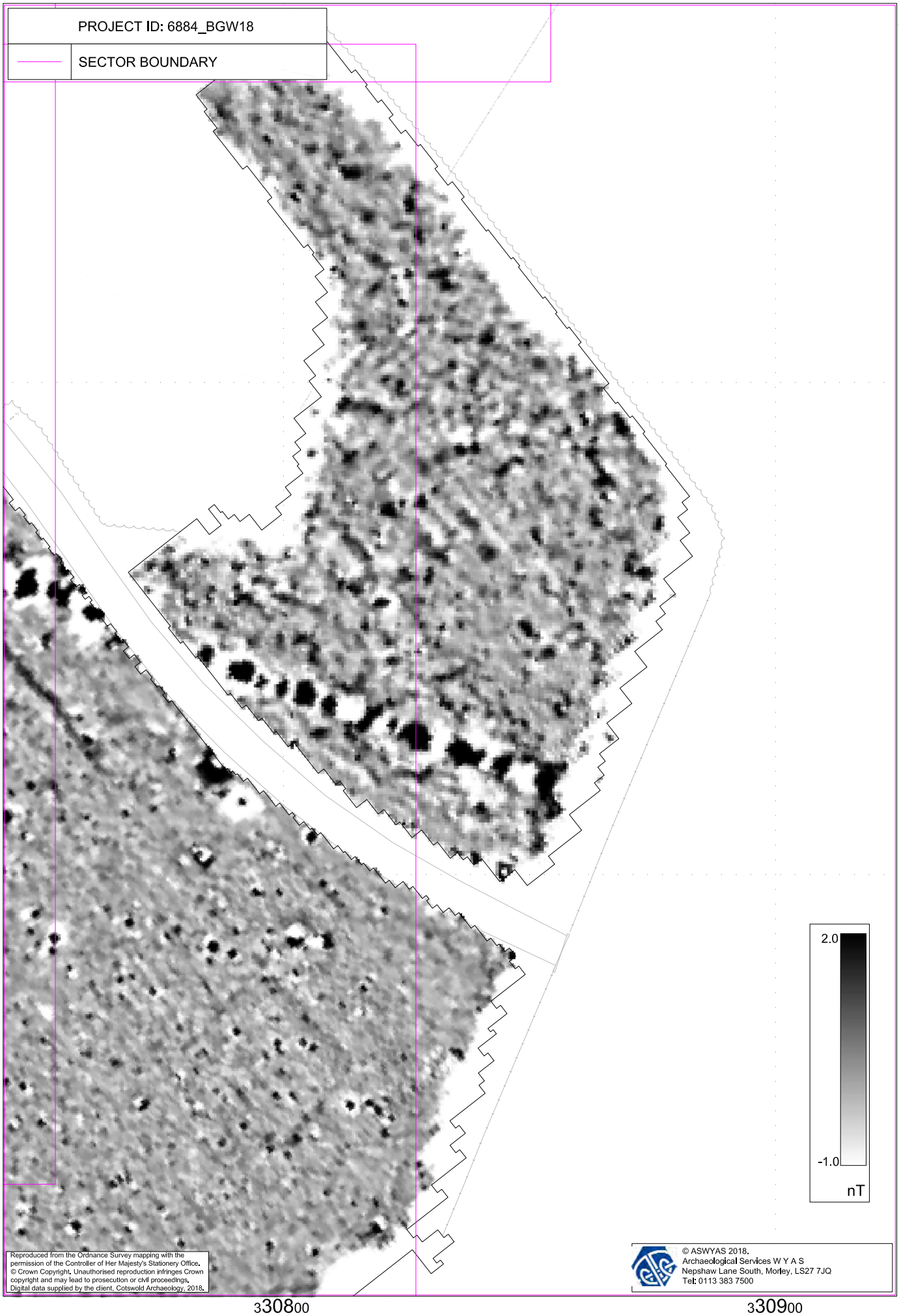

Fig. 10. Processed greyscale magnetometer data; Sector 3 (1:1000 @ A4)

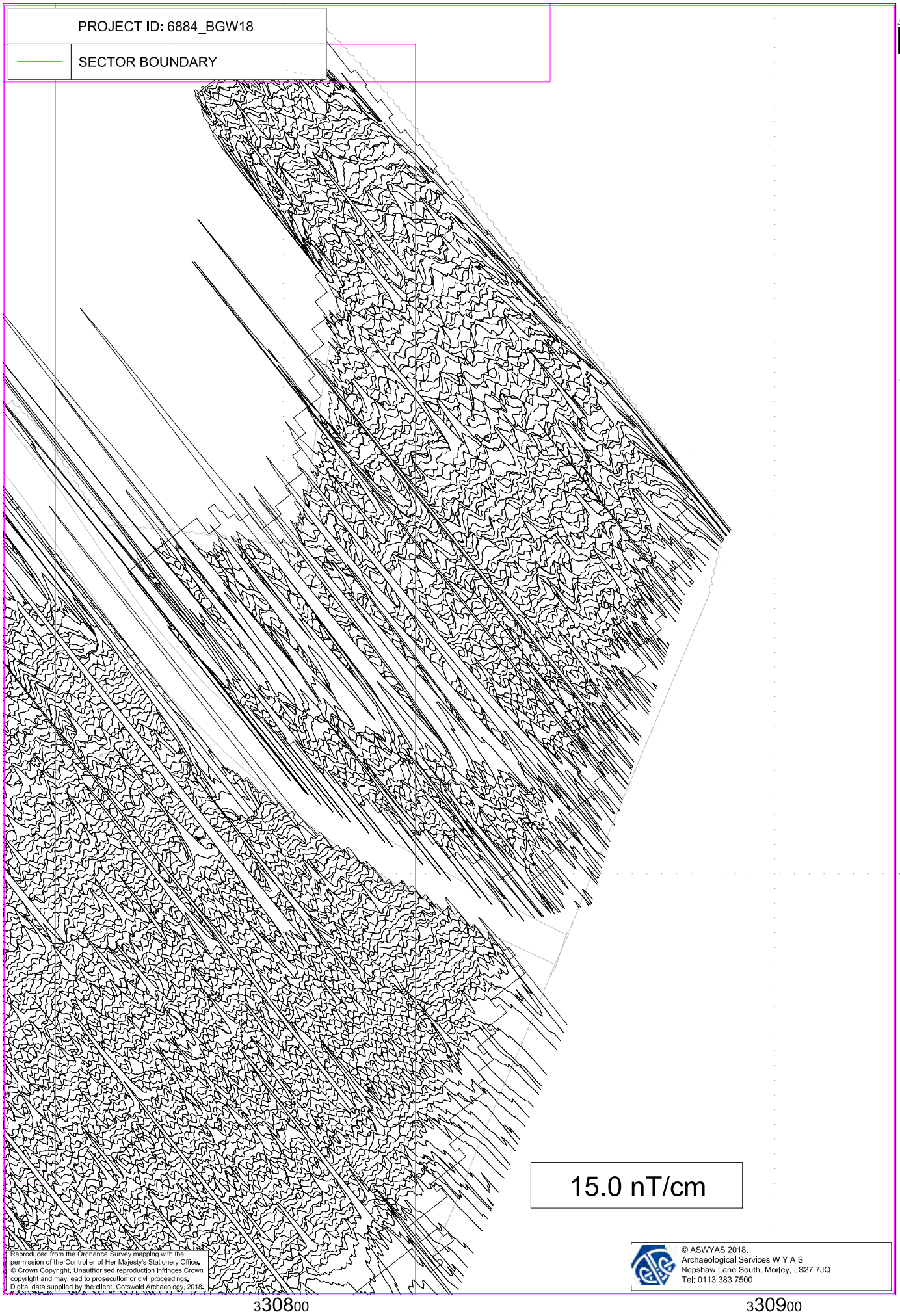

Fig. 11. XY trace plot of minimally processed magnetometer data; Sector 3 (1:1000 @ A4)

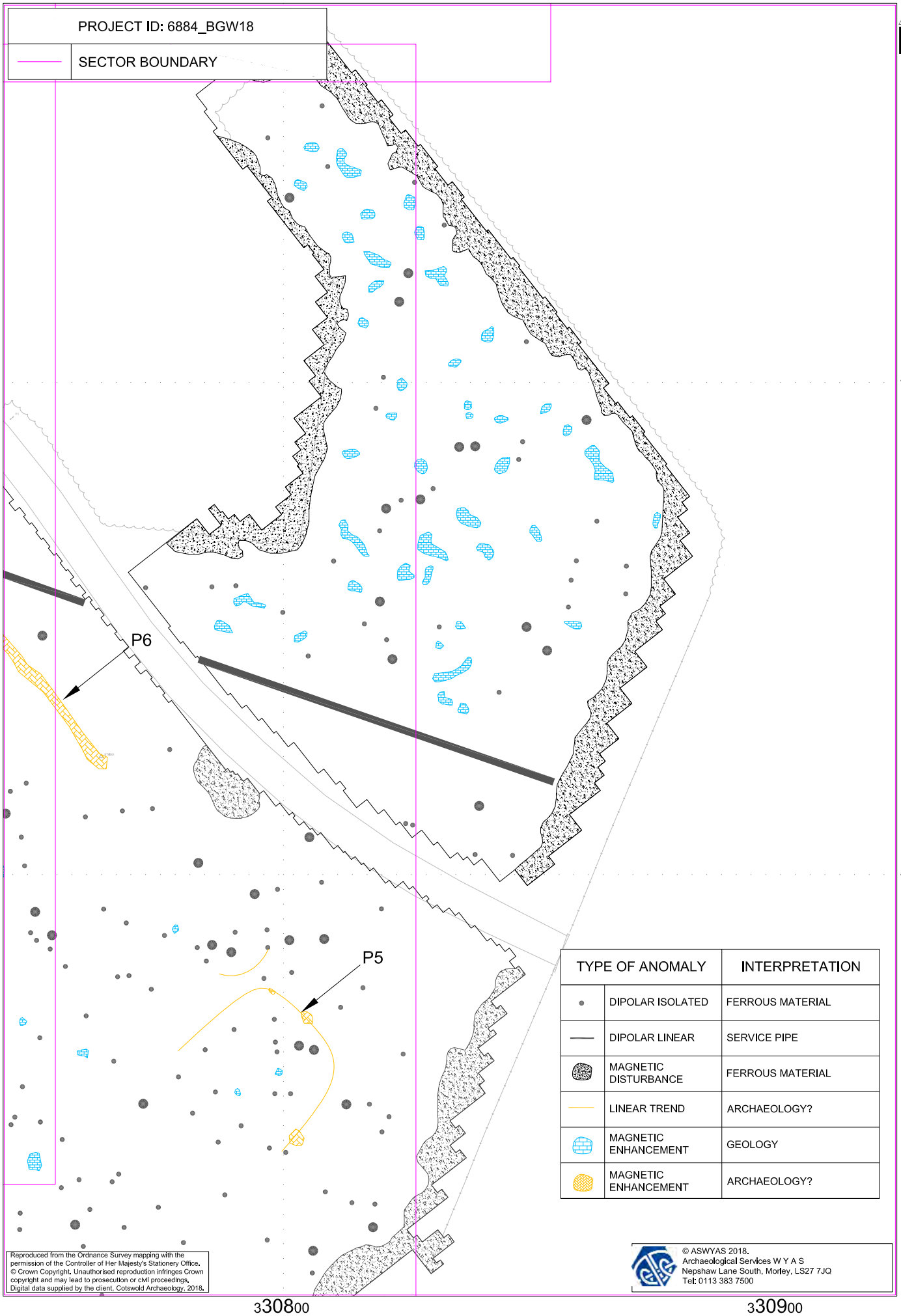

Fig. 12. Interpretation of magnetometer data; Sector 3 (1:1000 @ A4)

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SECTOR BOUNDARY

2.0

-1.0

nT

N

1350 00

1342 00

1340 00

3306 00

3308 00

0 50m

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Fig. 13. Processed greyscale magnetometer data; Sector 4 (1:1000 @ A3)

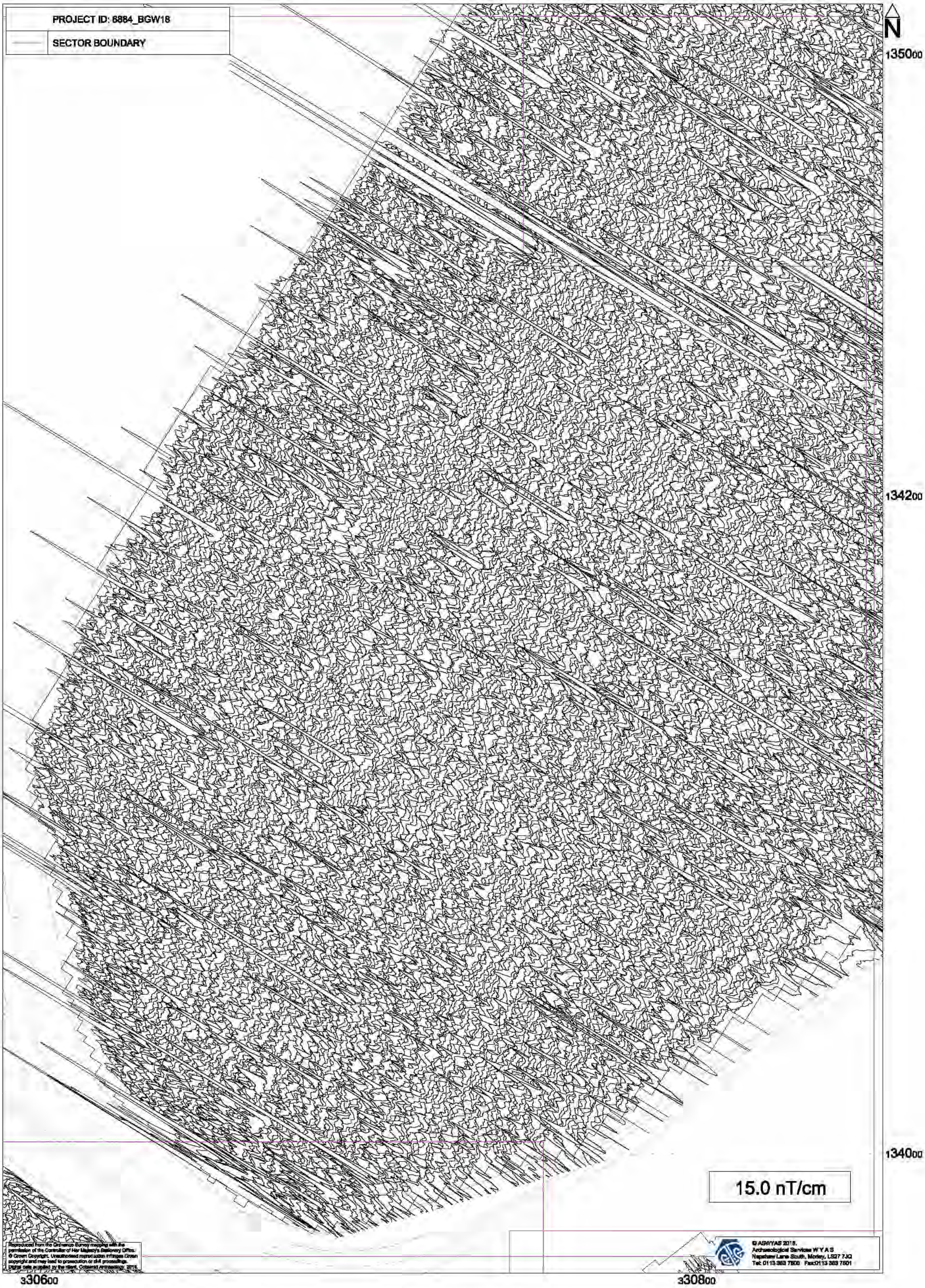

Fig. 14. XY trace plot of minimally processed magnetometer data; Sector 4 (1:1000 @ A3)

PROJECT ID: 6884_BGW18	
	SECTOR BOUNDARY

TYPE OF ANOMALY		INTERPRETATION
	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	FORMER FIELD BOUNDARY
	LINEAR TREND	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	GEOLOGY
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY

A9

A4

A6

P8

A3

A5

N

1350 00

1342 00

1340 00

3308 00

0 50m

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Fig. 15. Overall interpretation of magnetometer data; Sector 4 (1:1000 @ A3)

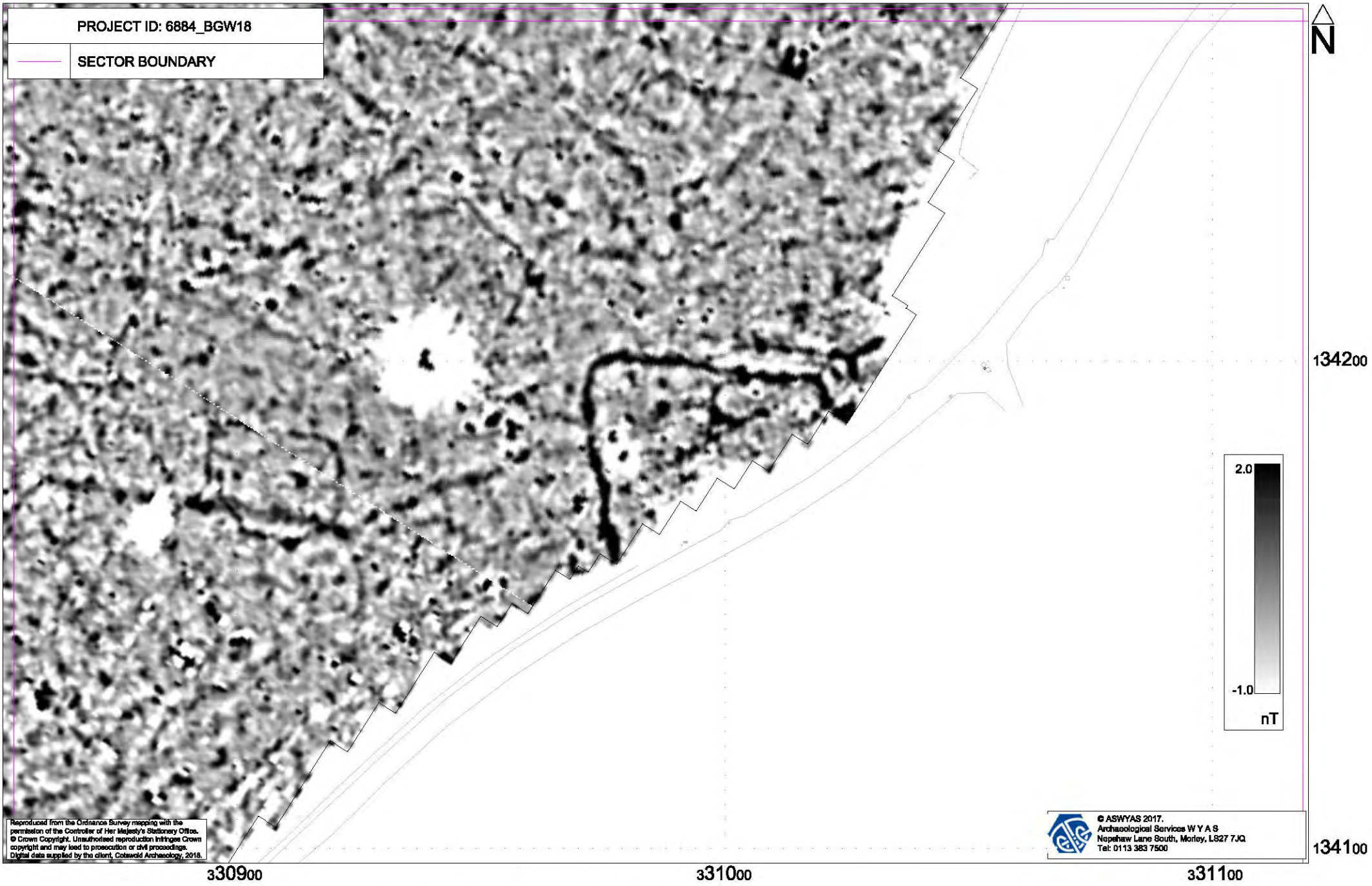

Fig. 16. Processed greyscale magnetometer data; Sector 5 (1:1000 @ A4)

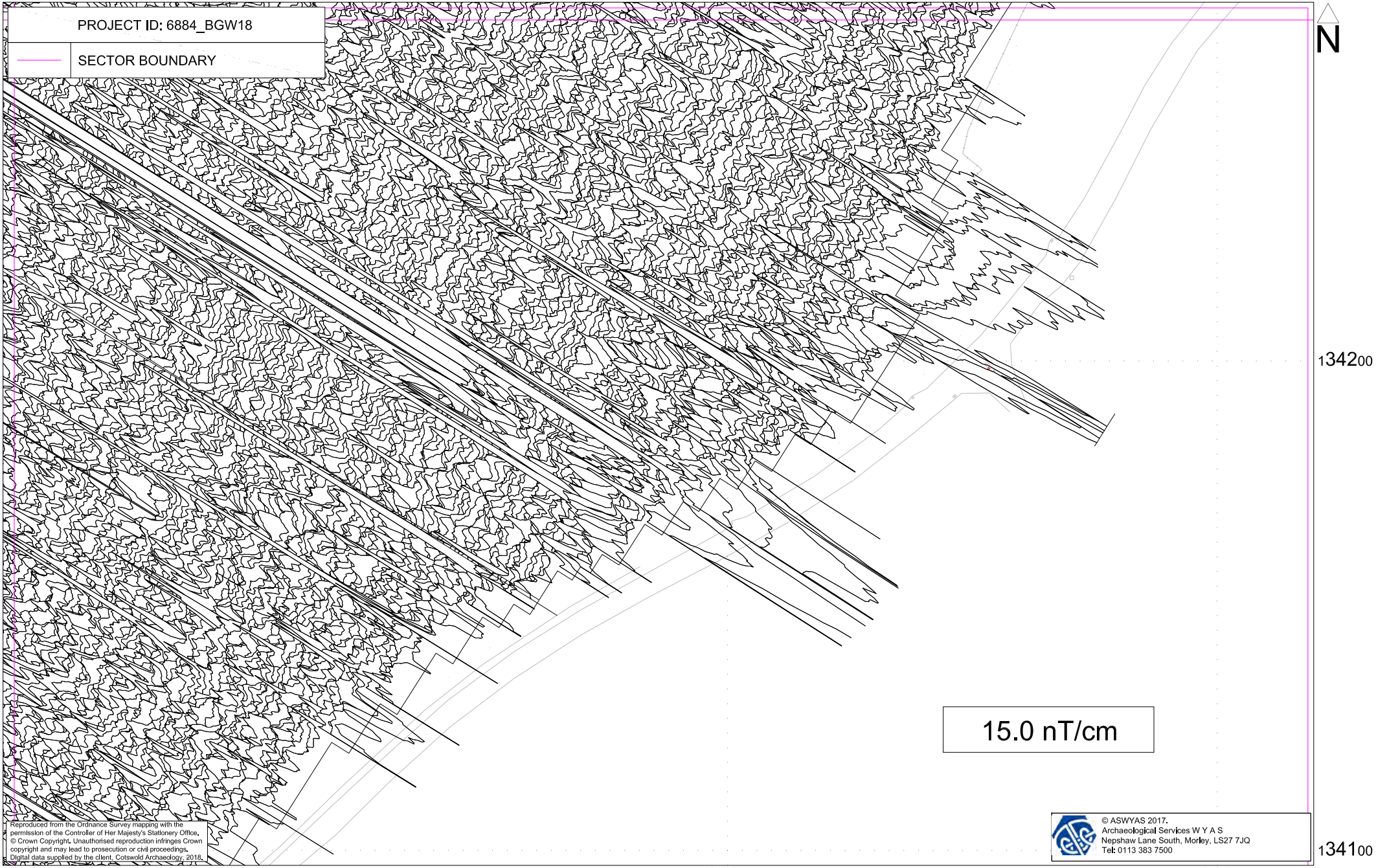

Fig. 17. XY trace plot of minimally processed magnetometer data; Sector 5 (1:1000 @ A4)

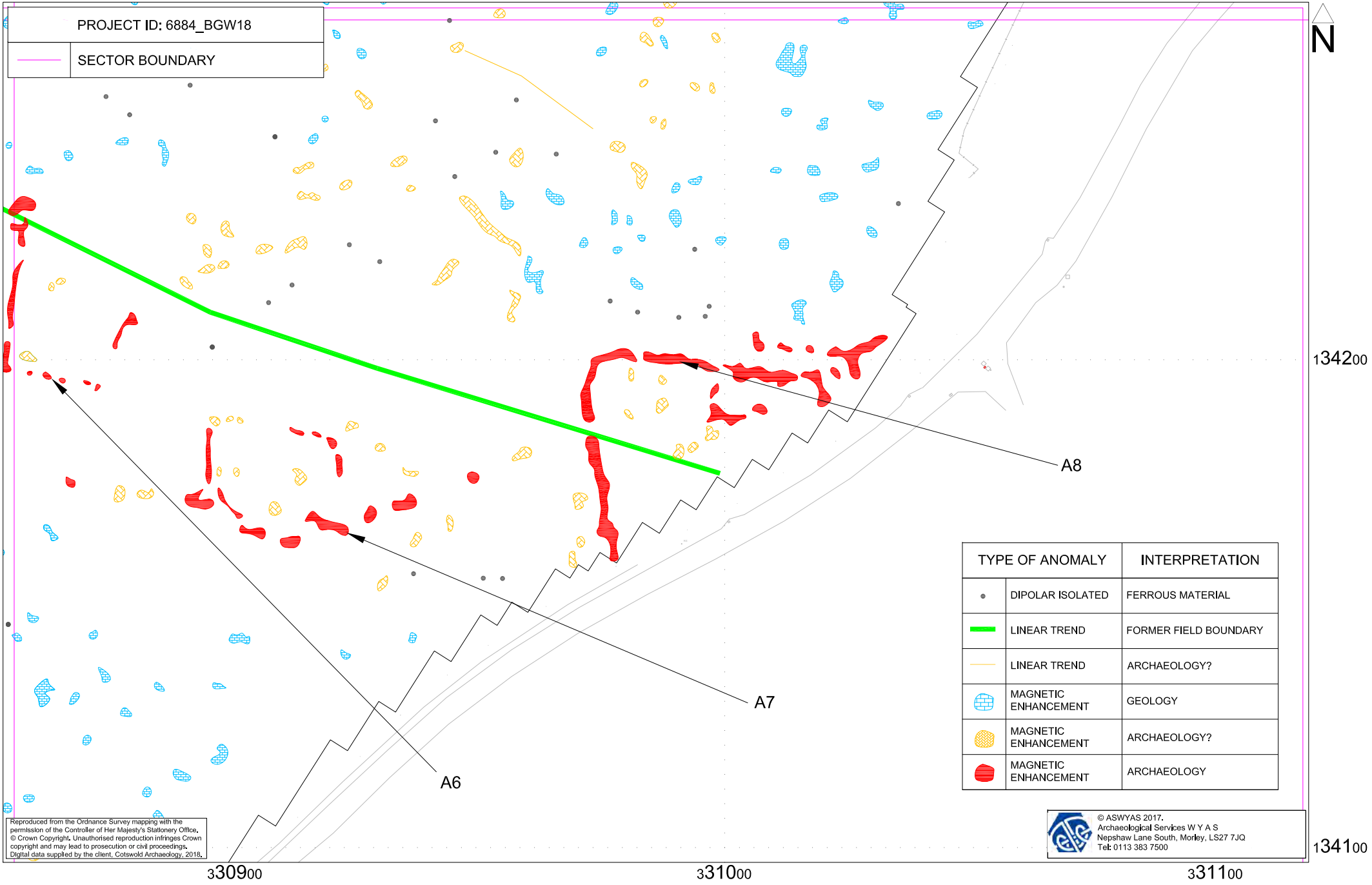

Fig. 18. Interpretation of magnetometer data; Sector 5 (1:1000 @ A4)

PROJECT ID: 6884_BGW18

SECTOR BOUNDARY

N

2.0

-1.0

nT

134400

3308000

3310000

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0 50m

Fig. 19. Processed greyscale magnetometer data; Sector 6 (1:1000 @ A3)

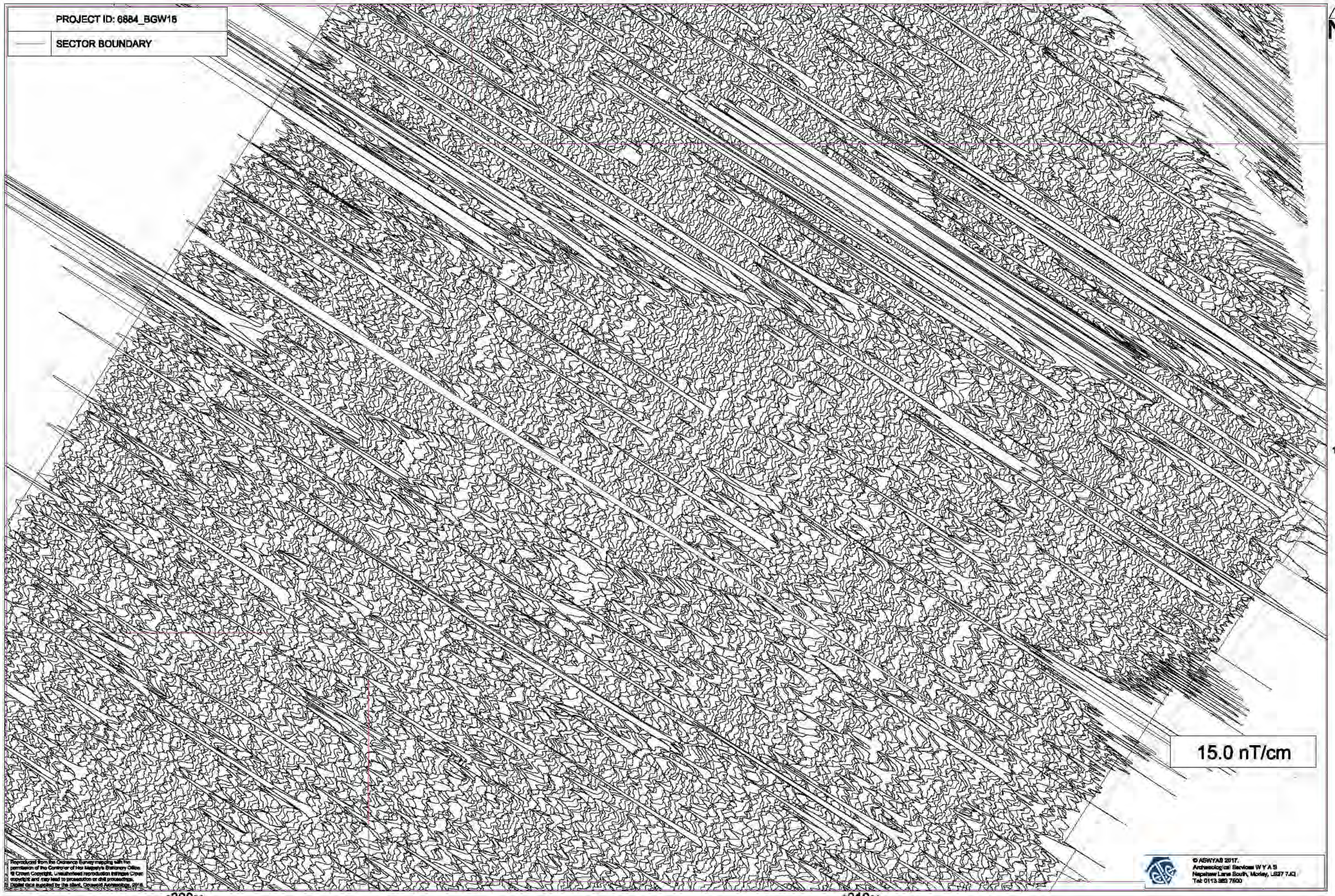

Fig. 20. XY trace plot of minimally processed magnetometer data; Sector 6 (1:1000 @ A3)

PROJECT ID: 6884_BGW18

SECTOR BOUNDARY

N

P9

A9

A10

A9

1344 00

3308 00

3310 00

TYPE OF ANOMALY		INTERPRETATION
	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	FIELD DRAIN
	LINEAR TREND	FORMER FIELD BOUNDARY
	LINEAR TREND	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	GEOLOGY
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY

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0 50m

Fig. 21. Interpretation of magnetometer data; Sector 6 (1:1000 @ A3)

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SECTOR BOUNDARY

N

2.0

-1.0

nT

1348 00

1346 00

3310 00

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0 50m

Fig. 22. Processed greyscale of magnetometer data; Sector 7 (1:1000 @ A3)

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SECTOR BOUNDARY

15.0 nT/cm

N

1348$_{00}$

1346$_{00}$

3310$_{00}$

0 50m

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Fig. 23. XY trace plot of minimally processed magnetometer data; Sector 7 (1:1000 @ A3)

PROJECT ID: 6884_BGW18	
	SECTOR BOUNDARY

TYPE OF ANOMALY		INTERPRETATION
	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	FIELD DRAIN
	MAGNETIC ENHANCEMENT	GEOLOGY
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY

N

1348 00

1346 00

3310 00

P9

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0 50m

Fig. 24. Interpretation of magnetometer data; Sector 7 (1:1000 @ A3)

Plate 1. General overview of Field 1, facing southwest

Plate 2. General overview of Field 4, facing northeast

Plate 3. General overview of Field 4, facing southwest

Plate 4. General overview of Field 5, facing northwest

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.

The results and subsequent interpretation of data from geophysical surveys should not be treated as an absolute representation of the underlying archaeological and non-archaeological remains. Confirmation of the presence or absence of archaeological remains can only be achieved by direct investigation of sub-surface deposits.

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

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 CS6 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 Somerset Historic Environment Record).

Appendix 4: Oasis form

OASIS DATA COLLECTION FORM: England

OASIS ID: archaeol11-310040

Project details

Project name	M5 Bridgwater Gateway
Short description of the project	A geophysical (magnetometer) survey, covering approximately 34 hectares, was undertaken within six fields to the immediate east of Junction 24 of the M5 motorway. This was in advance of a proposed development. The survey has detected anomalies of a ferrous, agricultural and geological origin. Linear trends of a possible and definite archaeological origin have been identified, predominantly within the largest and central survey area. Therefore based on the geophysical survey, the archaeological potential of the site is considered to be moderate to high.
Project dates	Start: 15-01-2018 End: 19-01-2018
Previous/future work	No / Not known
Any associated project reference codes	6884 - Sitecode
Type of project	Field evaluation
Monument type	SETTLEMENT Late Prehistoric
Significant Finds	SETTLEMENT Late Prehistoric
Significant Finds	RING DITCH Late Prehistoric
Methods & techniques	"Geophysical Survey"
Development type	Not recorded
Prompt	National Planning Policy Framework - NPPF
Position in the planning process	Not known / Not recorded
Solid geology (other)	Mercia Mudstone
Drift geology	RIVER TERRACE DEPOSITS
Techniques	Magnetometry

Project location

Country	England
Site location	SOMERSET SEDGEMOOR NORTH PETHERTON M5 Bridgwater Gateway

Study area	34 Hectares
Site coordinates	ST 30860 34278 51.103098384826 -2.987622229107 51 06 11 N 002 59 15 W Point
Height OD / Depth	Min: 8m Max: 25m

Project creators

Name of Organisation	Archaeological Services WYAS
Project brief originator	Cotswold Archaeology
Project design originator	Cotswold Archaeology
Project director/manager	E Brunning
Project supervisor	C. Sykes

Project archives

Physical Archive Exists?	No
Digital Archive recipient	Cotswold Archaeology
Digital Contents	"Survey"
Digital Media available	"Geophysics","Images raster / digital photography","Text"
Paper Archive Exists?	No

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	M5 Bridgwater Gateway, Bridgwater, Somerset
Author(s)/Editor(s)	Sykes, C
Date	2018
Issuer or publisher	ASWYAS
Place of issue or publication	Morley, Leeds
Description	A4 report with A3 figures

Entered by	Emma Brunning (emma.brunning@aswyas.com)
Entered on	22 February 2018

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