WYAS Archaeological Services

Land to the East of Bredon Road

Tewkesbury

Worcestershire

Geophysical Survey

Report no. 3033
November 2017

Client: Mactaggart and Mickel and Barratt Developments Plc

Land East of Bredon Road, Tewkesbury, Worcestershire

Geophysical Survey

Summary

A geophysical (magnetometer) survey, was undertaken on approximately 37 hectares of land to the east of Bredon Road, Worcestershire. This is in support of a planning application for proposed housing development. Two anomalies of possible archaeological interest have been detected in a localised area on the cusp of the flood plain, at the south eastern edge of the site. Agricultural trends can be seen throughout the survey area as can former field boundaries. Geological anomalies and areas of magnetic disturbance have also been detected. Therefore the archaeological potential of the survey area is deemed to be low across the site, apart from the in the immediate area of the two anomalies mentioned above.

WYAS
Archaeological Services

Report Information

Client:	Mactaggart and Mickel and Barratt Developments Plc
Report Type:	Geophysical Survey
Location:	Mitton
County:	Worcestershire
Grid Reference:	SO 908 342
Period(s) of activity:	Prehistoric?/ Post-Medieval/ Modern
Report Number:	3033
Project Number:	6857
Site Code:	BRE17
OASIS ID:	archaeol11-299711
Date of fieldwork:	November 2017
Date of report:	November 2017
Project Management:	Chris Sykes BSc MSc MCIfA
Fieldwork:	Rebecca Goulding BSc MSc
	Alastair Trace BSc MSc
	Jake Freeman BA
	Chris Sykes
Report:	Chris Sykes
Illustrations:	Chris Sykes
Photography:	Chris Sykes
Research:	Emma Brunning BSc MCIfA

Authorisation for distribution: ----------

Nepshaw Lane South, Morley, Leeds LS27 7JQ
Telephone: 0113 383 7500.
Email: admin@aswyas.com

Contents

Report information ii
Contents iii
List of Figures iv
List of Plates iv

1 Introduction 1
Site location, topography and land-use 1
Soils and geology 1
2 Archaeological Background 1
3 Aims and Methodology 2
Magnetometer survey 2
Reporting 2
4 Results and Discussion 3
Ferrous anomalies 3
Geological anomalies 3
Agricultural anomalies 3
Possible archaeological anomalies 4
5 Conclusions 4

Figures
Plates

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

Bibliography

List of Figures

1 Site location (1:50000)
2 Survey location showing greyscale magnetometer data (1:7500 @ A3)
3 Overall interpretation of magnetometer data (1:7500 @ A3)
4 Greyscale of processed magnetometer data; Sector 1 (1:1000 @ A3)
5 XY trace plot of minimally processed magnetometer data; Sector 1 (1:1000 @ A3)
6 Interpretation of magnetometer data; Sector 1 (1:1000 @ A3)
7 Greyscale of processed magnetometer data; Sector 2 (1:1000 @ A3)
8 XY trace plot of minimally processed magnetometer data; Sector 2 (1:1000 @ A3)
9 Interpretation of magnetometer data; Sector 2 (1:1000 @ A3)
10 Greyscale of processed magnetometer data; Sector 3 (1:1000 @ A3)
11 XY trace plot of minimally processed magnetometer data; Sector 3 (1:1000 @ A3)
12 Interpretation of magnetometer data; Sector 3 (1:1000 @ A3)
13 Greyscale of processed magnetometer data; Sector 4 (1:1000 @ A4)
14 XY trace plot of minimally processed magnetometer data; Sector 4 (1:1000 @ A4)
15 Interpretation of magnetometer data; Sector 4 (1:1000 @ A4)
16 Greyscale of processed magnetometer data; Sector 5 (1:1000 @ A3)
17 XY trace plot of minimally processed magnetometer data; Sector 5 (1:1000 @ A3)
18 Interpretation of magnetometer data; Sector 5 (1:1000 @ A3)
19 Greyscale of processed magnetometer data; Sector 6 (1:1000 @ A4)
20 XY trace plot of minimally processed magnetometer data; Sector 6 (1:1000 @ A4)
21 Interpretation of magnetometer data; Sector 6 (1:1000 @ A4)
22 Greyscale of processed magnetometer data; Sector 7 (1:1000 @ A3)
23 XY trace plot of minimally processed magnetometer data; Sector 7 (1:1000 @ A3)
24 Interpretation of magnetometer data; Sector 7 (1:1000 @ A3)
25 Greyscale of processed magnetometer data; Sector 8 (1:1000 @ A4)
26 XY trace plot of minimally processed magnetometer data; Sector 8 (1:1000 @ A4)
27 Interpretation of magnetometer data; Sector 8 (1:1000 @ A4)

List of Plates

1 General view of field 4, looking south
2 General view of field 11, looking east
3 General view of field 9, looking east
4 General view of field 9, looking west
5 General view of field 5, looking northwest
6 General view of field 7, looking south

1 Introduction

Archaeological Services WYAS (ASWYAS) were commissioned by the Environmental Dimension Partnership Ltd (EDP), on behalf of Mactaggart and Mickel and Barratt Developments Plc (the Client), to undertake a geophysical (magnetometer) survey on land to the east of Bredon Road, Tewkesbury to support a planning application for proposed residential 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) and a project design (ASWYAS 2017) agreed in advance with the LPA archaeological advisor. The survey was carried out between 16th – 20th October 2017 to provide additional information on the archaeological resource of the Proposed Development Area (PDA).

Site location, topography and land-use

The site is located to the northeast of Tewkesbury (see Fig. 1). The survey area consists of eleven self-contained pasture fields totalling approximately 37ha. It is bounded to the west by the B4048 Bredon Road, to the east by Carrant Brook, houses to the south and open fields to the north. The site is centred at SO 908 342. The topography of the site was largely flat, with a gentle slope from the road to the brook with a height above Ordnance Datum (aOD) of approximately 30m by the road down to approximately 13m by the brook.

Soils and geology

The underlying geology of the site belongs to the Charmouth Mudstone Formation (BGS 2017). Superficial deposits have been recorded along the northwest boundary as sands and gravels of the Cropthorne Member with overlying soils belong to the Evesham 2 association (411b) described as slowly permeable calcareous clays (SSEW 1983).

2 Archaeological Background

Within a 1km search area, there are eleven listed buildings and one conservation area, but no designated heritage assets within the site (ASWYAS 2017).

A series of earthworks (WSM46879) were identified via aerial photography and interpreted previously as house platforms for a former medieval settlement, which were flattened in 1983, to the south of Mitton Lodge. However there is doubt upon this interpretation based upon documentary and physical evidence (EDP 2017).

There were medieval or later earthworks comprising a water meadow located within the southeast of the site. This has been subsequently flattened. In addition ridge and furrow earthworks and cropmarks relating to quarrying and a WWII searchlight battery have been noted to the northeast of the survey area.

3 Aims and Methodology

The main aim of the geophysical survey was to provide sufficient information to enable an assessment to be made of the impact of the development on potential sub-surface archaeological remains and for further evaluation or mitigation proposals, if appropriate, to be recommended. To achieve this aim, a magnetometer survey covering all amenable 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 5800 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 displays processed magnetometer data at a scale of 1:7500 with Figure 3 displaying 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 27 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 Figures 4 to 27)

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.

Around the periphery of the smaller fields (Sectors 1, 3 and 5) which have been sub-divided into smaller fields by wire fences, magnetic disturbance associated with these boundaries has been defined.

A gas main, labelled as a service on the figures, runs along the southern boundary of the survey area (Figs 18 and 27).

Geological anomalies

The survey has detected a small cluster of low magnitude 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. Some of these geological anomalies will be the result of ploughing bringing material to the surface, but also, in part, to the removal of former field boundaries.

A band of geological anomalies have been detected along the base of the slope in Fields 10 and 11 (Figs 7-9 and 13-15). As it largely mirrors the course of the Carrant Brook, these responses are considered to be deposited material or the remnants of a former course of the brook.

Agricultural anomalies

Ridge and furrow cultivation trends have been detected across the survey. Clear responses have been detected to the north and south of the allotments (Sectors 3 and 5, Figs 10-12 and 16-18), with remnant responses detected at the base of the slope in Sectors 6, 7 and 8 (Figs 19-27).

A known field boundary has been identified in Sector 6 (Figs 19-21) with a second, potential field boundary identified in Sector 1 (Figs 4-6).

It is notable that the ridge and furrow in the area of the eroded supposed medieval settlement have been truncated, suggesting that the activity related to the earthworks is later than the medieval period.

Possible archaeological anomalies

A small square-like magnetic response has been identified in Field 10 (Figs 13-15). It is located with the geological responses mentioned above and may be a morphological anomaly associated with the geology of this area. Given the regular shape of the feature, however, a possible archaeological interpretation has been proposed.

To the northeast of this feature, still within Field 10, a thin linear response has been identified close to the field boundary. Given the shape and magnetic strength of this feature, it is unlikely to be archaeological, but given its response in comparison to the rest of the field, it may have archaeological potential.

5 Conclusions

As a whole the survey area is magnetically quiet, and therefore archaeological features, if present would have been detectable in contrast to the quiet magnetic background. The uniformity of magnetic response of the possible archaeological features, along with other anomalies (such as those of agricultural origin), means that they were largely identified on the basis of their shape and alignment. These features comprise of a possible square-shaped anomaly and perhaps a portion of enclosure which have been located to the southeast of Mitton Lodge.

In addition to the possible archaeology, geological anomalies and agricultural ploughing trends can be seen, along with a former field boundary, which again are faint in response.

It is notable that no evidence was identified through the magnetic survey that would support the previous interpretation of a possible medieval settlement to the southwest of Mitton Lodge. Indeed, it is also notable that the medieval ridge and furrow in this area has been truncated in the location of the supposed settlement, suggesting that the eroded earthworks formally recorded in the Worcestershire HER are the result of post-medieval and / or later activity.

Based on the results of the geophysical survey, the archaeological potential of the site is deemed to be low across the survey area apart from the possible archaeological responses mentioned above.

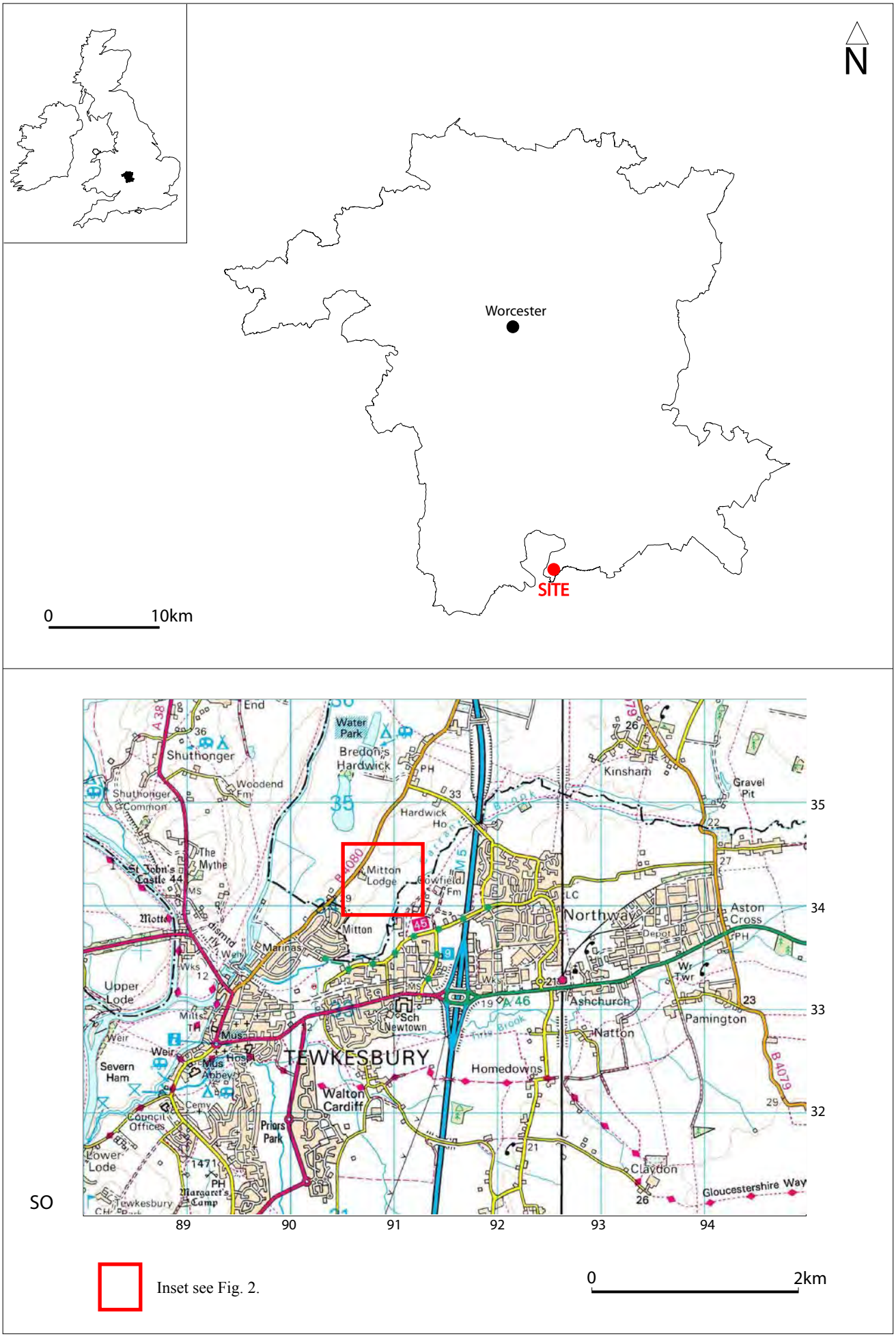

Fig. 1. Site location

PROJECT ID: 6857_BRE17	
	SURVEY BOUNDARY
	SECTOR BOUNDARY
1	LOCATION AND DIRECTION OF PLATES

N

235000

234000

390000

391000

392000

B4080 BREDON ROAD

HARDWICK BANK ROAD

SECTOR 1
SEE FIGS 4-6

SECTOR 2
SEE FIGS 7-9

SECTOR 3
SEE FIGS 10-12

SECTOR 4
SEE FIGS 13-15

SECTOR 5
SEE FIGS 16-18

SECTOR 6
SEE FIGS 19-21

SECTOR 7
SEE FIGS 22-24

SECTOR 8
SEE FIGS 25-27

FIELD 1

FIELD 2

FIELD 3

FIELD 4

FIELD 5

FIELD 6

FIELD 7

FIELD 8

FIELD 9

FIELD 10

FIELD 11

ALLOTMENTS

CARRANT BROOK

1

2

3

4

5

6

2.0

-1.0

nT

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

0 400m

Fig. 2. Site location showing greyscale magnetometer data (1:7500 @ A3)

PROJECT ID: 6857_BRE17	
	SURVEY BOUNDARY
	SECTOR BOUNDARY

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	RIDGE AND FURROW
	LINEAR TREND	AGRICULTURAL
	LINEAR TREND	ARCHAEOLOGY?
	MAGNETIC ENHANCEMENT	GEOLOGY
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?

N

B4080 BREDON ROAD

HARDWICK BANK ROAD

SECTOR 1
SEE FIGS 4-6

SECTOR 2
SEE FIGS 7-9

SECTOR 3
SEE FIGS 10-12

FIELD 1

FIELD 2

FIELD 3

FIELD 11

SECTOR 5
SEE FIGS 16-18

FIELD 4

FIELD 10

SECTOR 4
SEE FIGS 13-15

ALLOTMENTS

FIELD 5

FIELD 9

SECTOR 6
SEE FIGS 19-21

FIELD 6

SECTOR 7
SEE FIGS 22-24

FIELD 8

FIELD 7

CARRANT BROOK

SECTOR 8
SEE FIGS 25-27

235000

234000

390000

391000

392000

Archaeological Services W Y A S
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Tel: 0113 383 7500

0 400m

Fig. 3. Overall interpretation of magnetometer data (1:7500 @ A3)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

2.0

-1.0

nT

N

234400

3908 00

3910 00

0 50m

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

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

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

20.0 nT/cm

N

2344000

3908000

3910000

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

0 50m

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

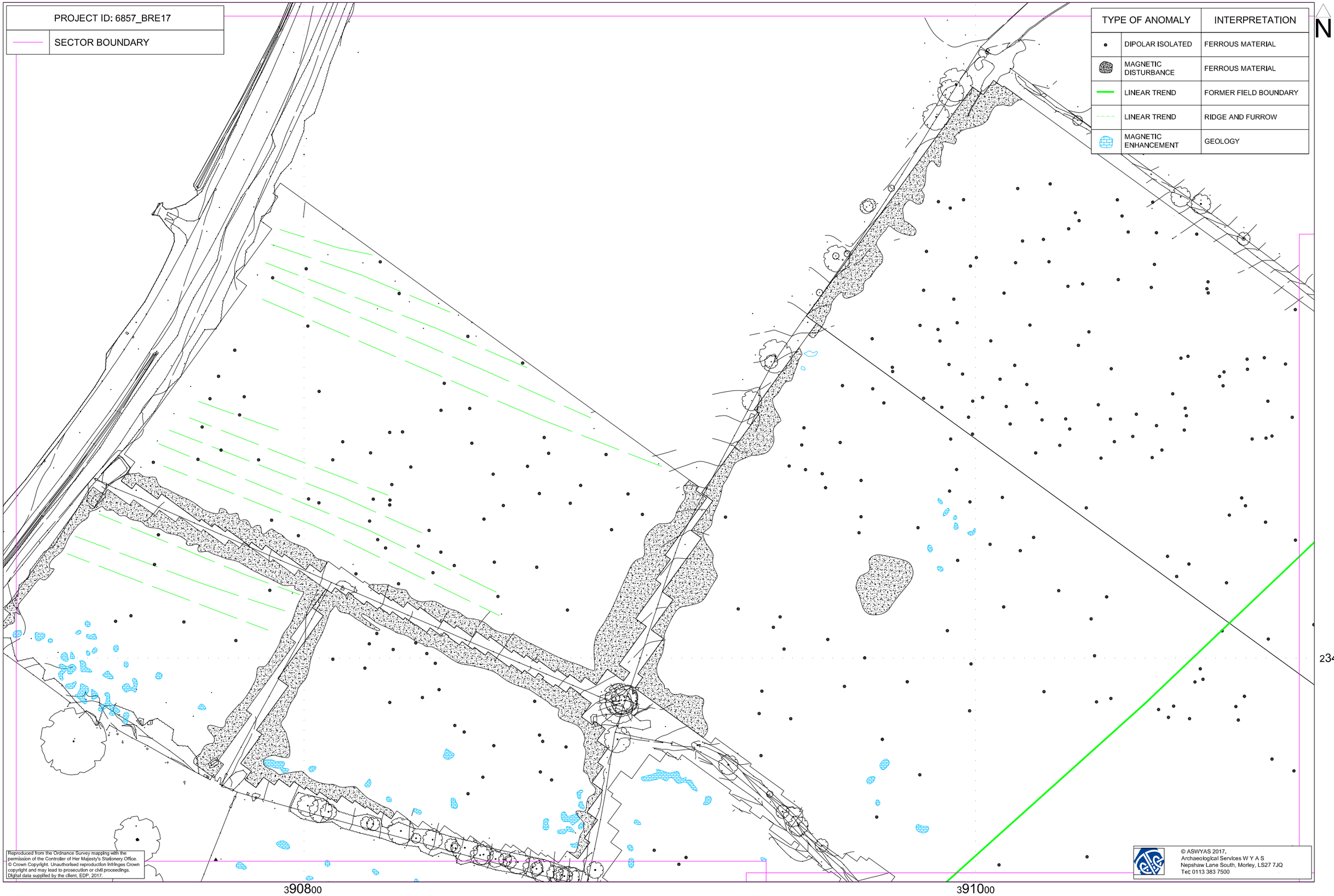

Fig. 6. Interpretation of magnetometer data; Sector 1 (1:1000 @ A3)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

2344 00

2342 00

3912 00

2.0

-1.0

nT

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

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

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

2344 00

2342 00

20.0 nT/cm

3912 00

0 50m

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500 Fax:0113 383 7501

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

PROJECT ID: 6857_BRE17	
	SECTOR BOUNDARY

TYPE OF ANOMALY		INTERPRETATION
	DIPOLAR ISOLATED	FERROUS MATERIAL
	LINEAR TREND	FORMER FIELD BOUNDARY
	MAGNETIC ENHANCEMENT	GEOLOGY

N

2344 00

2342 00

3912 00

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500 Fax:0113 383 7501

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

0 50m

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

2342 00

2.0

-1.0

nT

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

3906 00

3908 00

0 50m

Fig. 10. Processed greyscale magnetometer data; Sector 3 (1:1000 @ A3)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

234200

20.0 nT/cm

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

390600

390800

0 50m

Fig. 11. XY trace plot of minimally processed magnetometer data; Sector 3 (1:1000 @ A3)

PROJECT ID: 6857_BRE17	
	SECTOR BOUNDARY

N

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	RIDGE AND FURROW
	MAGNETIC ENHANCEMENT	GEOLOGY

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

234200

390600

390800

0 50m

Fig. 12. Interpretation of magnetometer data; Sector 3 (1:1000 @ A3)

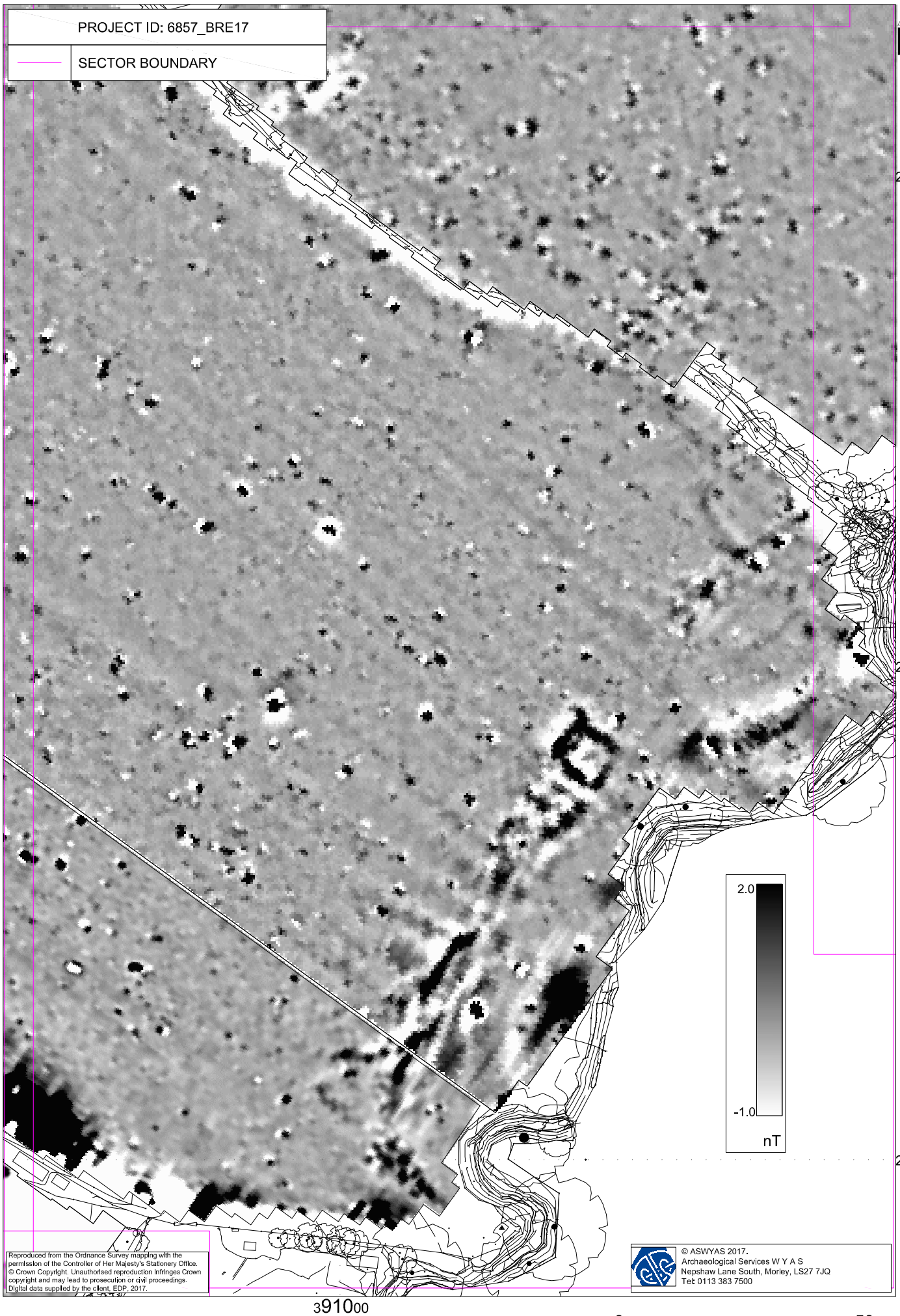

Fig. 13. Processed greyscale of magnetometer data; Sector 4 (1:1000 @ A4)

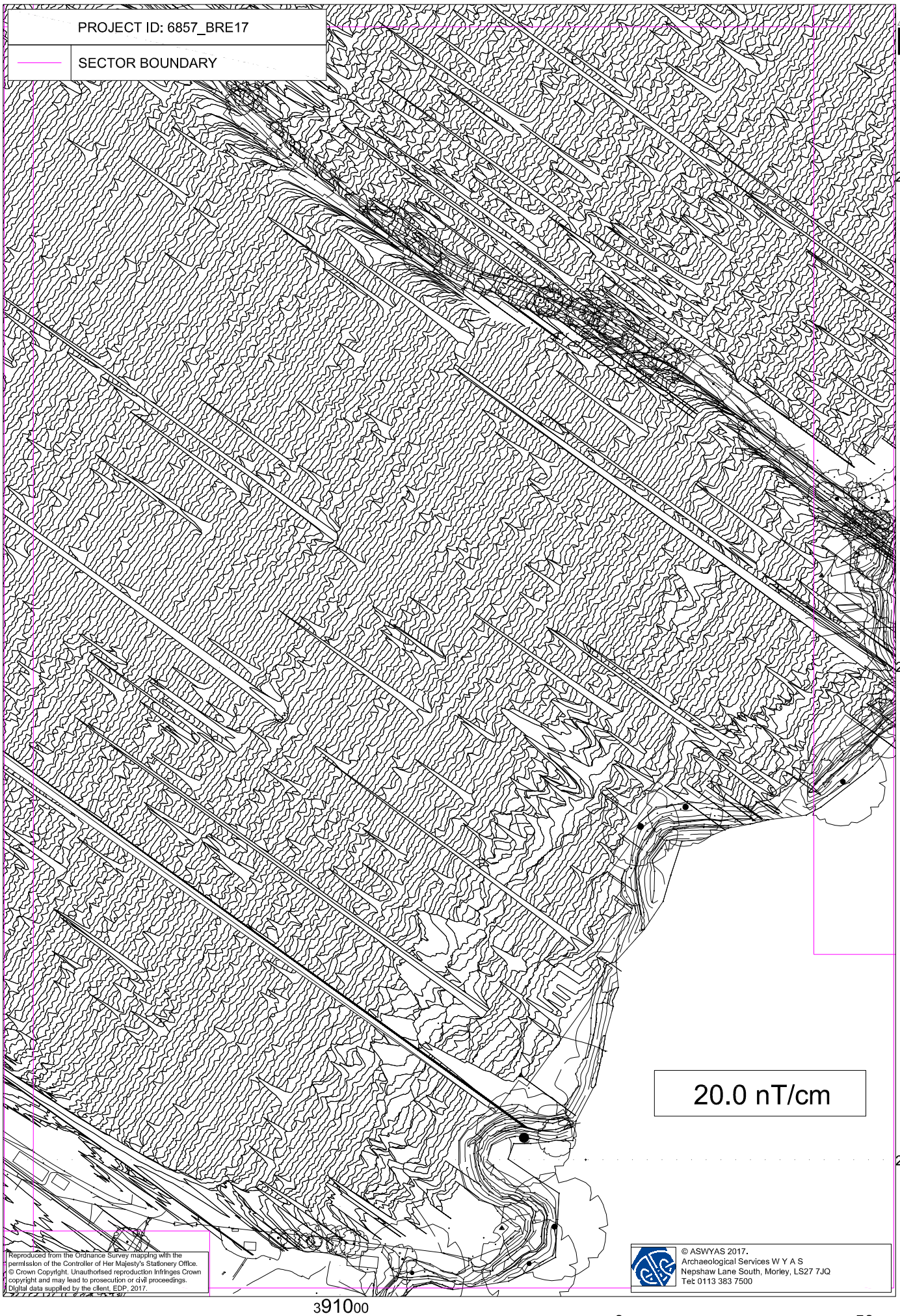

Fig. 14. XY trace plot of minimally processed magnetometer data; Sector 4 (1:1000 @ A4)

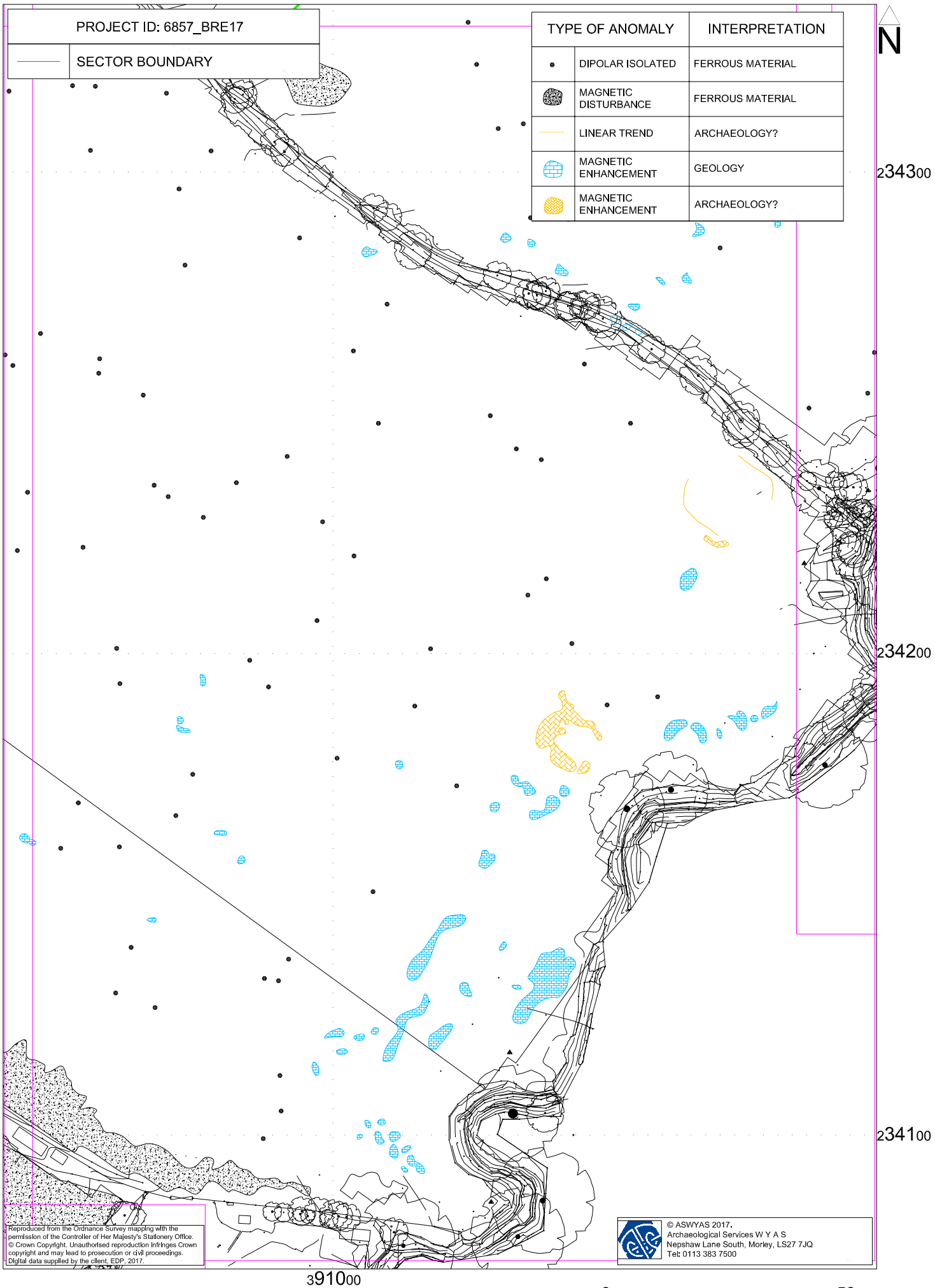

Fig. 15. Interpretation of magnetometer data; Sector 4 (1:1000 @ A4)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

2340 00

2.0

-1.0

nT

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

3904 00

3906 00

0 50m

Fig. 16. Processed greyscale magnetometer data; Sector 5 (1:1000 @ A3)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

20.0 nT/cm

234000

3904 00

3906 00

0 50m

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

Fig. 17. XY trace plot of minimally processed magnetometer data; Sector 5 (1:1000 @ A3)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

234000

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
——	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	MAGNETIC ENHANCEMENT	GEOLOGY

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

390400

390600

0 50m

Fig. 18. Interpretation of magnetometer data; Sector 5 (1:1000 @ A3)

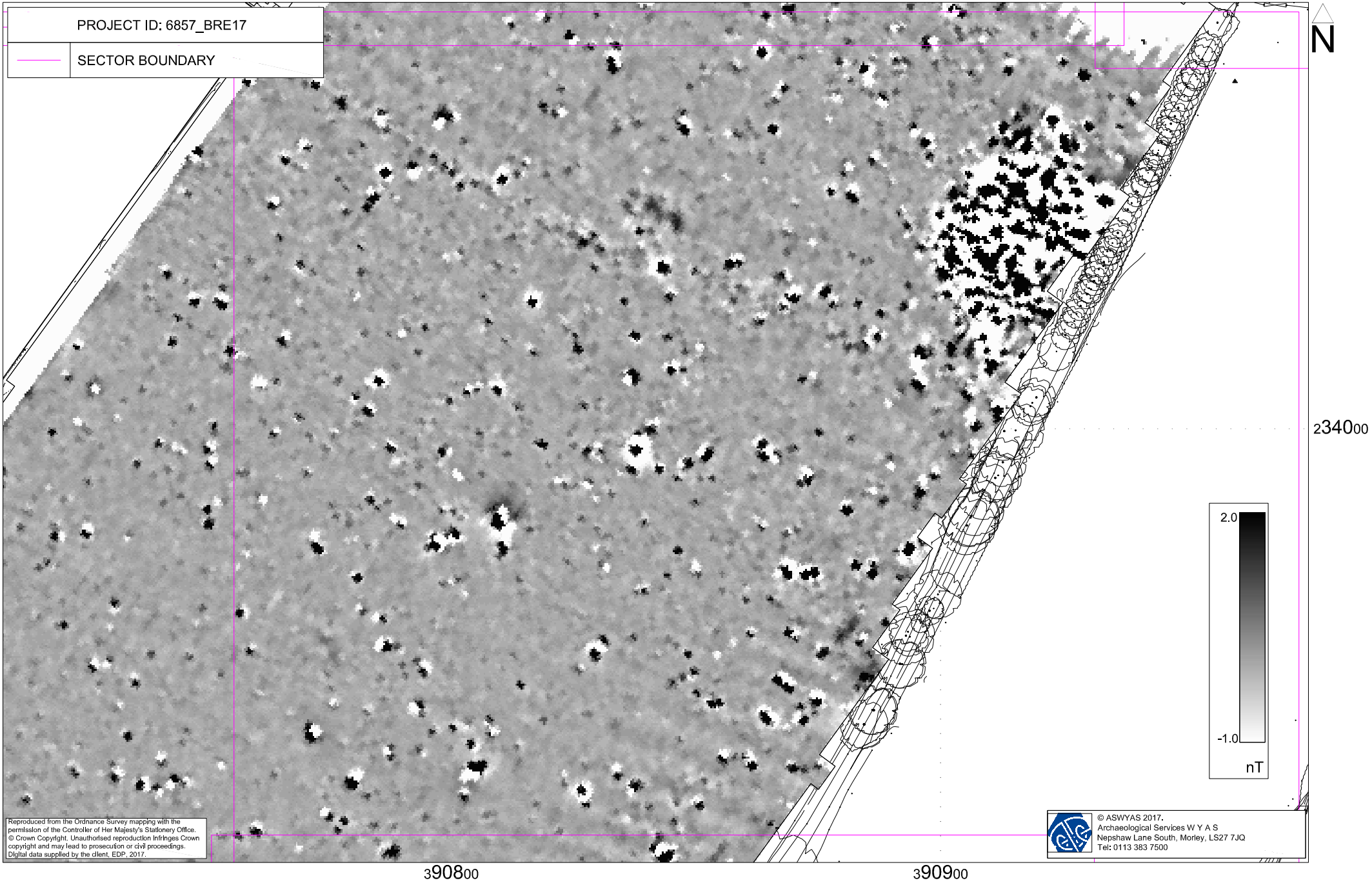

Fig. 19. Processed greyscale magnetometer data; Sector 6 (1:1000 @ A4)

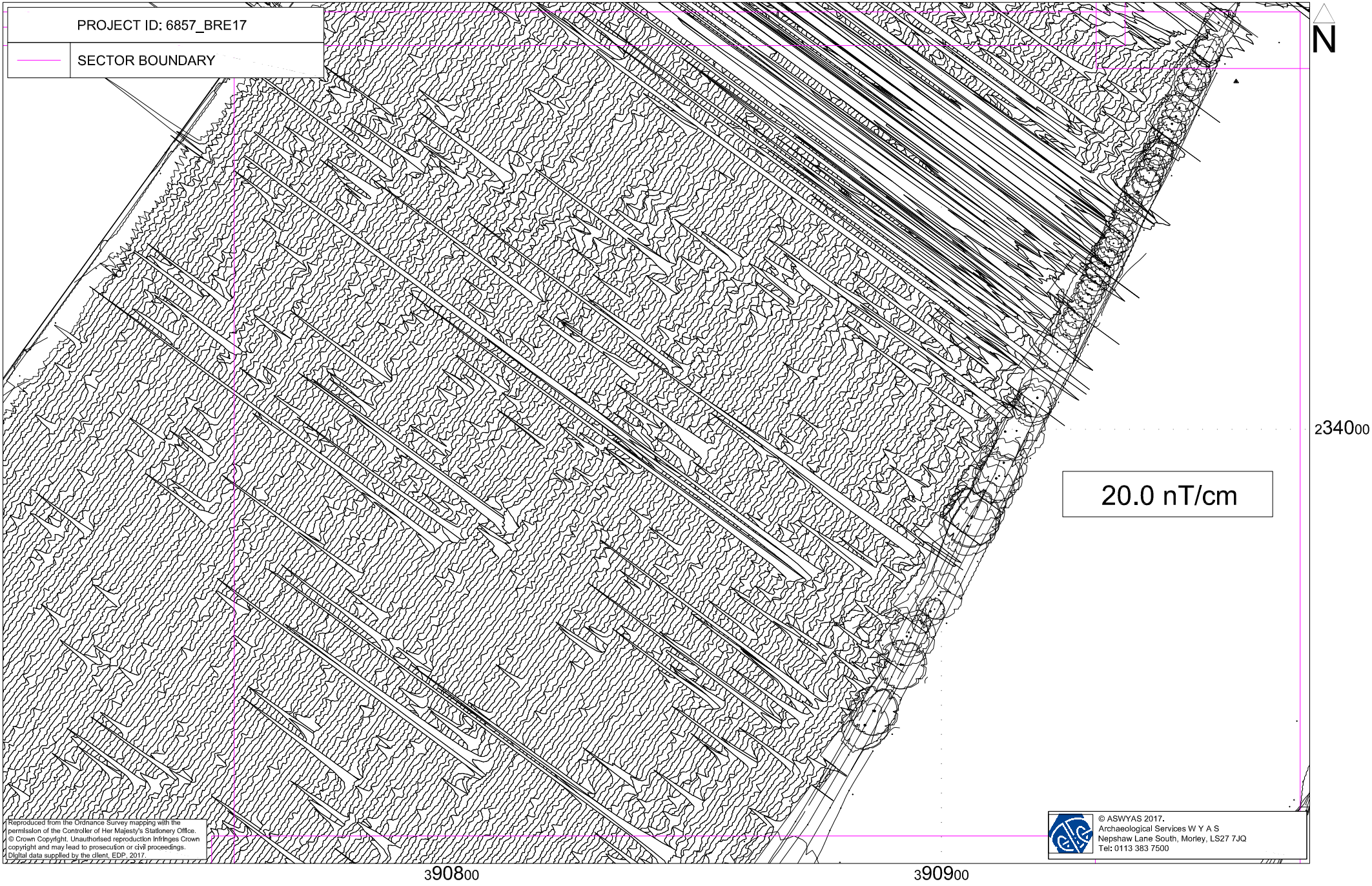

Fig. 20. XY trace plot of minimally processed magnetometer data; Sector 6 (1:1000 @ A4)

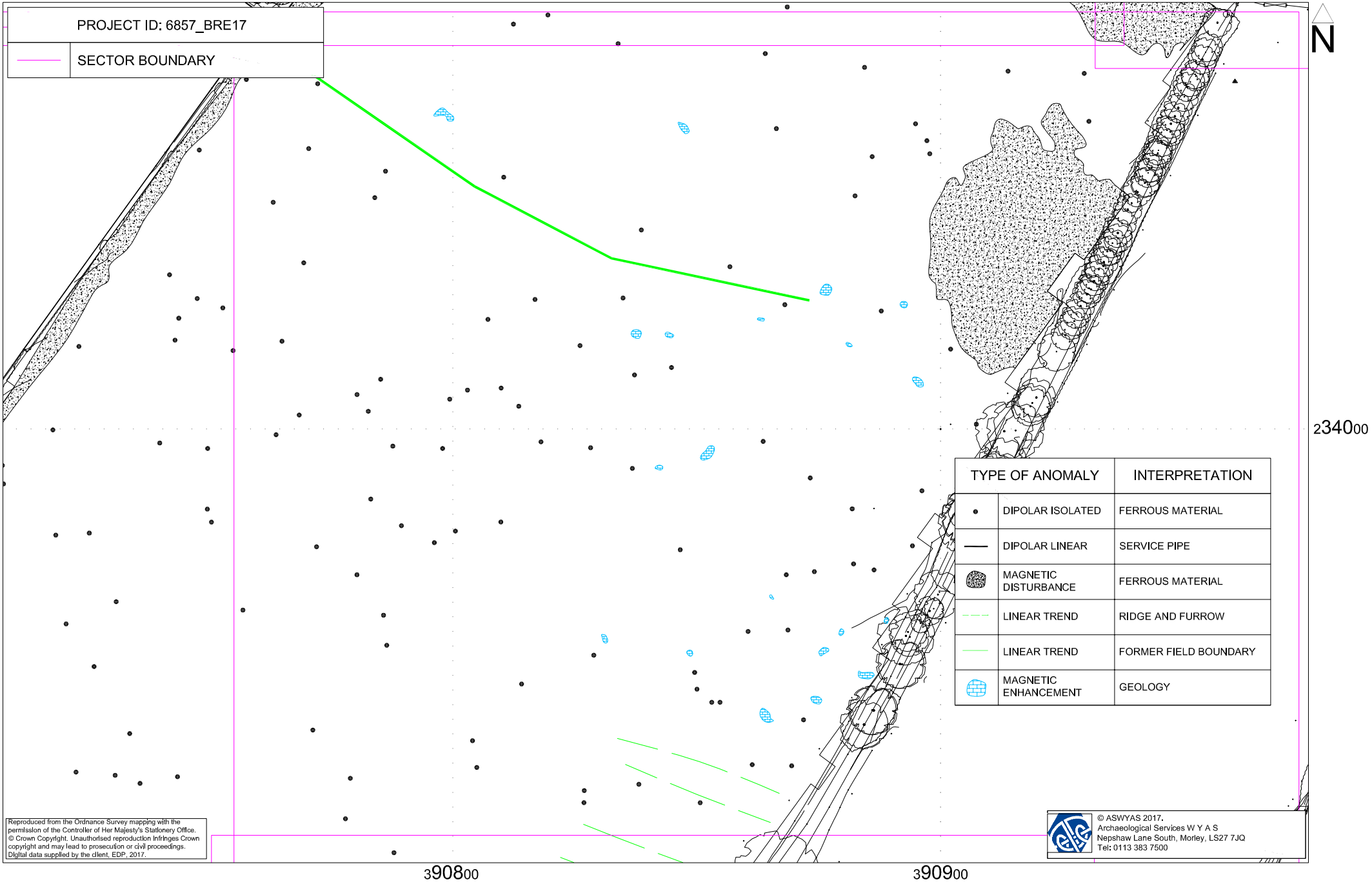

Fig. 21. Interpretation of magnetometer data; Sector 6 (1:1000 @ A4)

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

233800

2.0

-1.0

nT

233600

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

390600

390800

0 50m

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

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

2338 00

20.0 nT/cm

2336 00

3906 00

3908 00

0 50m

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

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

PROJECT ID: 6857_BRE17

SECTOR BOUNDARY

N

2338 00

2336 00

3906 00

3908 00

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
——	DIPOLAR LINEAR	SERVICE PIPE
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	MAGNETIC ENHANCEMENT	GEOLOGY

Archaeological Services W Y A S
Nepshaw Lane South, Morley, LS27 7JQ
Tel: 0113 383 7500

0 50m

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

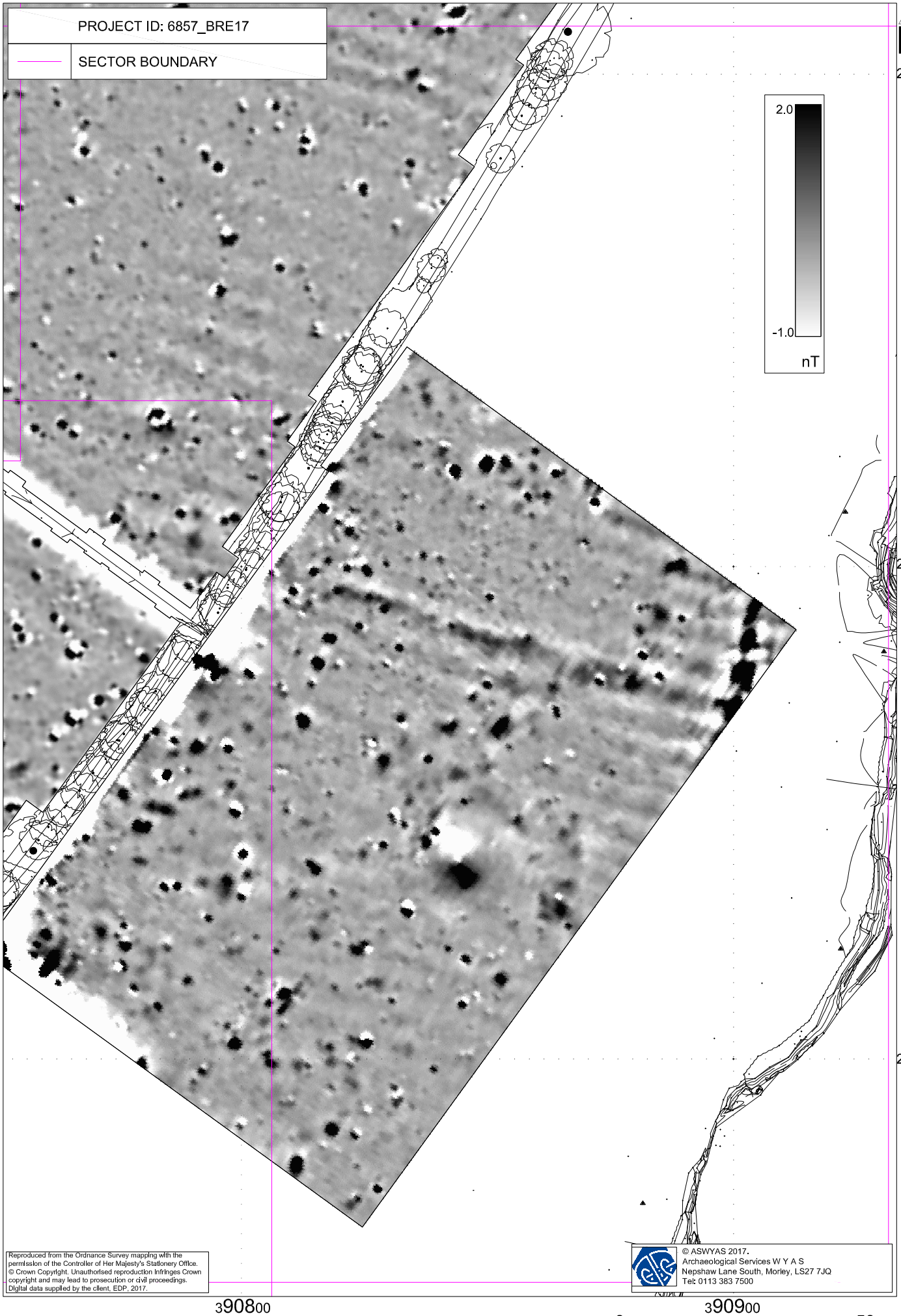

Fig. 25. Processed greyscale of magnetometer data; Sector 8 (1:1000 @ A4)

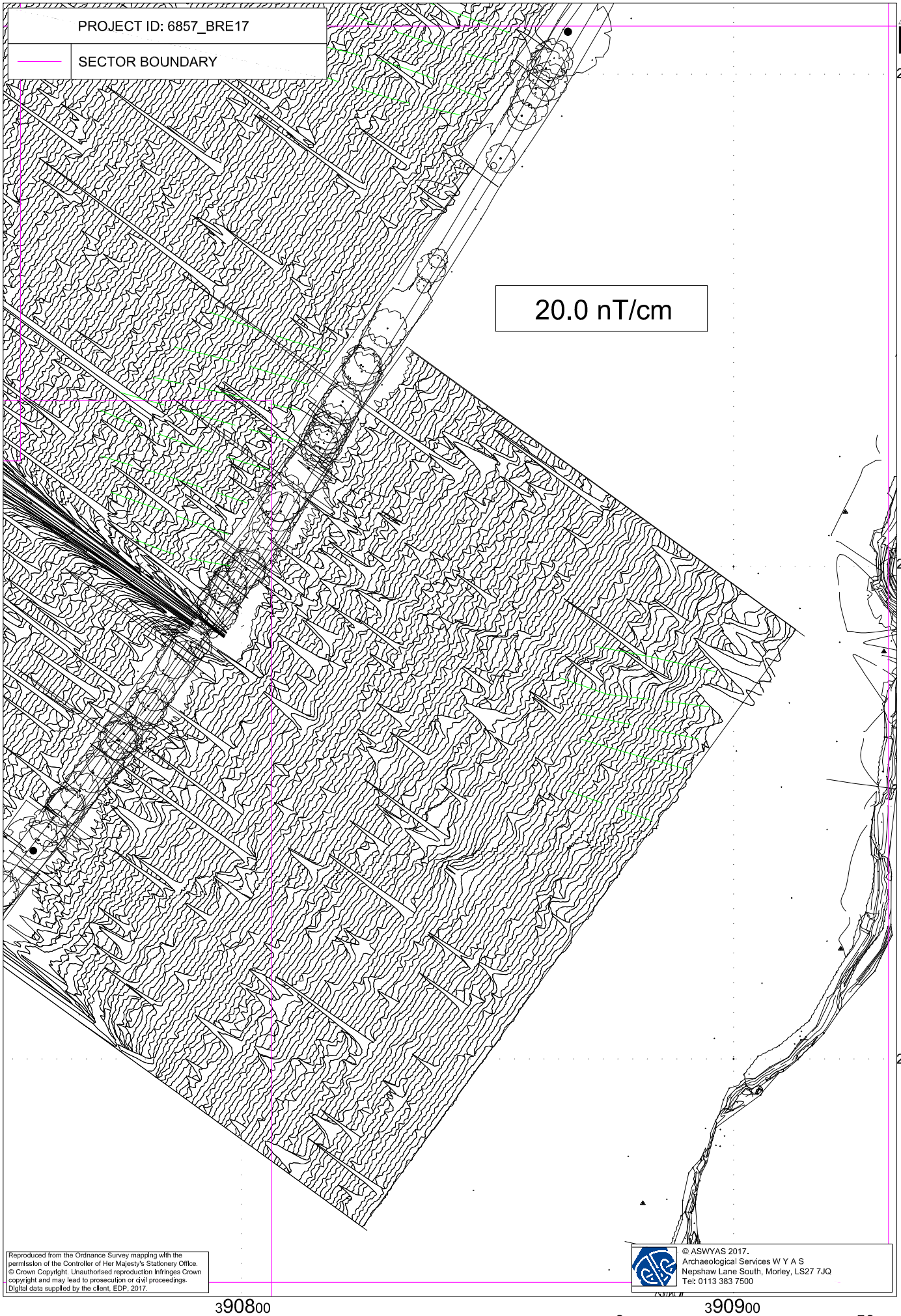

Fig. 26. XY trace plot of minimally processed magnetometer data; Sector 8 (1:1000 @ A4)

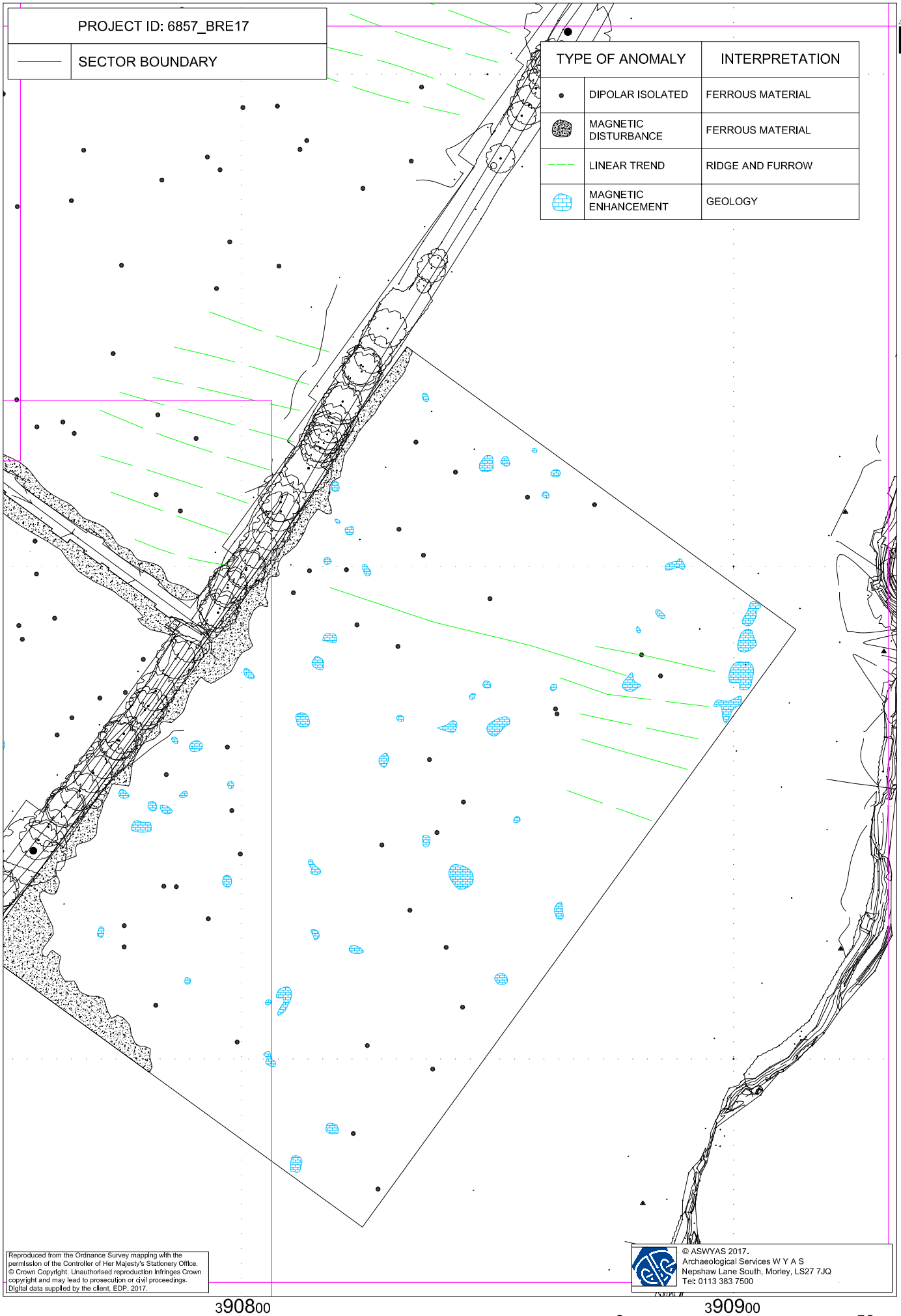

Fig. 27. Interpretation of magnetometer data; Sector 8 (1:1000 @ A4)

Plate 1. General view of field 4, looking south

Plate 2. General view of field 11, looking east

Plate 3. General view of field 9, looking east

Plate 4. General view of field 9, looking west

Plate 5. General view of field 5, looking northwest

Plate 6. General view of field 7, looking south

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

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 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 Worcestershire Historic Environment Record).

Appendix 4: Oasis form

OASIS DATA COLLECTION FORM: England

OASIS ID: archaeol11-299711

Project details

Project name	Land East of Bredon Road,
Short description of the project	A geophysical (magnetometer) survey, was undertaken on approximately 37 hectares of land to the east of Bredon Road, Worcestershire. This is in support of a planning application for proposed housing development. Two anomalies of possible archaeological interest have been detected in a localised area on the cusp of the flood plain, at the south eastern edge of the site. Agricultural trends can be seen throughout the survey area as can former field boundaries. Geological anomalies and areas of magnetic disturbance have also been detected. Therefore the archaeological potential of the survey area is deemed to be low across the site, apart from the in the immediate area of the two anomalies mentioned above.
Project dates	Start: 16-10-2017 End: 20-10-2017
Previous/future work	No / Not known
Any associated project reference codes	6857 - Sitecode
Type of project	Field evaluation
Monument type	SETTLEMENT Medieval
Significant Finds	RIDGE AND FURROW Medieval
Methods & techniques	"Geophysical Survey"
Development type	Housing estate
Prompt	National Planning Policy Framework - NPPF
Position in the planning process	Not known / Not recorded
Solid geology	TRIASSIC MUDSTONES
Drift geology	CLAY WITH FLINTS
Techniques	Magnetometry

Project location

Country	England
Site location	

	WORCESTERSHIRE WYCHAVON BREDON Land East of Bredon Road, Tewkesbury
Study area	37 Hectares
Site coordinates	SO 908 348 52.0111298398 -2.134058203895 52 00 40 N 002 08 02 W Point
Height OD / Depth	Min: 13m Max: 30m

Project creators

Name of Organisation	Archaeological Services WYAS
Project brief originator	Environmental Dimension Partnership
Project design originator	Environmental Dimension Partnership
Project director/manager	C. Sykes
Project supervisor	C. Sykes

Project archives

Physical Archive Exists?	No
Digital Archive recipient	Environmental Dimension Partnership
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	Land East of Bredon Road, Tewkesbury
Author(s)/Editor(s)	Sykes, C.
Date	2017
Issuer or publisher	ASWYAS
Place of issue or publication	Leeds
Description	A4 report with A3 figures

Entered by	Emma Brunning (emma.brunning@aswyas.com)
Entered on	1 November 2017

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