Southampton to London Pipeline Project

Volume 6

Environmental Statement (Volume D)
Appendix 9.2: Geophysical Survey (1 of 2)

Application Document: 6.4

Planning Inspectorate Reference Number: EN070005
APFP Regulation No. 5(2)(a)
Revision No. 1.0

May 2019

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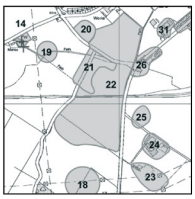
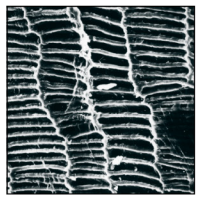
STLP18










SOUTHAMPTON TO LONDON PIPELINE PROJECT

GEOPHYSICAL SURVEY

commissioned by Jacobs UK Ltd
on behalf of Esso Petroleum Company Limited

May 2019

HEADLAND ARCHAEOLOGY

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This report adheres to the quality standard of ISO 9001:2015

PROJECT INFO:

HA Project Code **STLP18** / NGR **SU 5128 1438, TQ 0550 7078** / Local Authority **HampshireSurrey** / OASIS Ref. **headland5-350652**

PROJECT TEAM:

Project Manager **Sam Harrison** / Author **David Harrison** / Fieldwork **Beth Shenton, Krasimir Dyulgerski, Mark Evans, Olivier Vansassenbrouck, Phoebe Utting, Richard McGregor Edwards, Ross Bishop** / Graphics **Beata Wieczorek-Oleksy, Nick Hannon**

Approved by **Sam Harrison**

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HEADLAND ARCHAEOLOGY

PROJECT SUMMARY

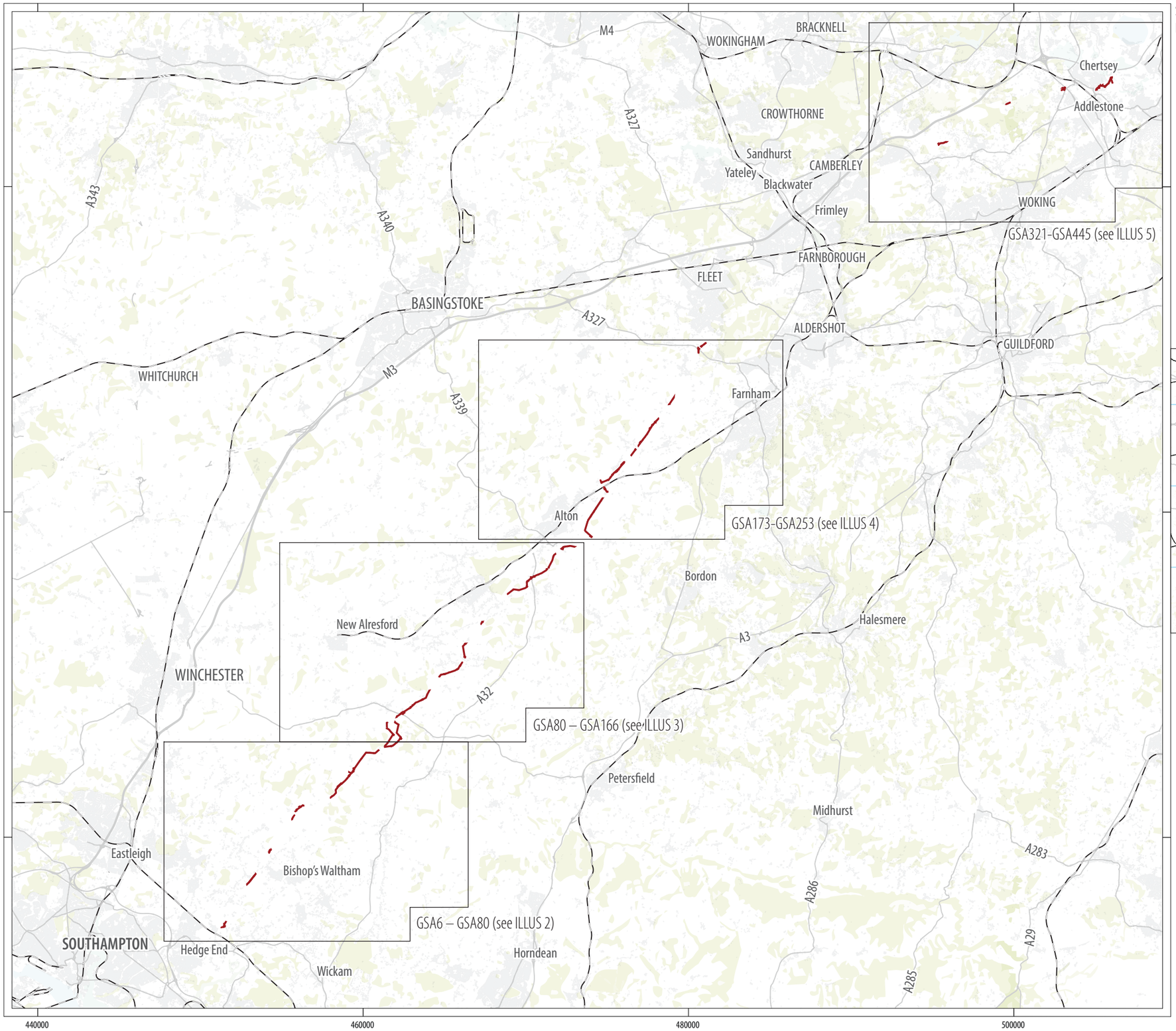
Headland Archaeology (UK) Ltd has undertaken a geophysical (magnetometer) survey, covering approximately 126 hectares, along the proposed route of the Southampton to London Pipeline. This study informs the cultural heritage inputs for the Environmental Statement, prior to the installation of the replacement pipeline (the project).

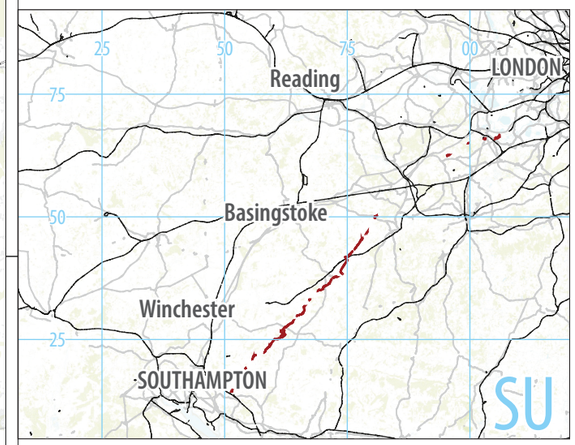
The survey has evaluated 102 Geophysical Survey Areas, identifying two distinct areas of clear archaeological activity comprising a ring-ditch and a sub-rectangular enclosure. These areas are assessed as having high archaeological potential. Anomalies at several other locations have been interpreted as having possible archaeological potential, including possible infilled pits and ditches. However, the narrow survey corridor, fragmentary nature of the anomalies, magnetic interference from the existing pipeline and/or an absence of supporting archaeological information (cropmarks or HER data) precludes a confident interpretation. These anomalies are ascribed a moderate archaeological potential.

Anomalies due to geological and pedological variation are common throughout all survey areas and linear trend anomalies due to post-medieval agricultural activity (boundary removal, field drains or ploughing) are also recorded in virtually all parts of the corridor.

CONTENTS

LIST OF ILLUSTRATIONS





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0 5km
1:250,000 @ A3

geophysical survey area

ILLUS 1 Site location (1:250,000)

SOUTHAMPTON TO LONDON PIPELINE PROJECT

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by Jacobs UK Ltd (the Consultant), on behalf of Esso Petroleum Company Limited, to undertake a geophysical (magnetometer) survey along the proposed route of a 90km replacement aviation fuel pipeline between Southampton and London. The survey was carried out to inform the assessment of the heritage potential of the route for the Environmental Statement (ES).

The work was undertaken in accordance with a Written Scheme of Investigation (Jacobs 2018), and in line with current best practice (Chartered Institute for Archaeologists 2016, Europae Archaeologia Consilium 2016).

The survey was carried out between the 16th October and the 8th November 2018.

1.1 SITE LOCATION, TOPOGRAPHY AND LAND-USE

The project extends from Boorley Green, Hampshire, to the West London Terminal storage facility in Hounslow, Surrey (see Illus 1) and comprises 102 Geophysical Survey Areas (GSAs). These have been determined based on suitability for survey and on the results of the Desk-Based Survey. The scope of the survey has also been informed by engagement with Historic England and the local authority heritage advisors.

The route through Hampshire runs predominantly over flat arable land to the north of chalk and greensand hills which dominate the landscape. In Surrey, the route is characterised by flat areas surrounding the Thames Basin and large expanses of heathland, enclosed wooded gills, river valleys, water bodies, intimate small-scale farmland and open meadows.

1.2 GEOLOGY

The bedrock geology along the route as it passes through Hampshire is sedimentary, comprising predominantly of Bracklesham and Barton Group in the south, White Chalk Formations in the centre and Gault and Upper Greensand Formations in the northeast. Where present, the bedrock is overlain by superficial deposits of brick earth in the south, clay with flints and alluvial deposits in the centre and river terrace deposits along the Surrey County boundary. In Surrey, the bedrock is dominated by Bracklesham and Barton Group (sand, silt and clay) and is overlain by alluvium along the course of rivers (NERC 2018). Geological conditions within individual GSAs are shown in Appendix 1.

2 ARCHAEOLOGICAL BACKGROUND

The WSI (Jacobs 2018) records a total of 463 archaeological remains within the proposed pipeline corridor and within a 300m area extending from it. These include nine Scheduled Monuments, comprising Roman and Medieval settlements, an eighteenth-century bridge and a number of prehistoric earthwork monuments. Those within close proximity of, the GSAs are recorded in Appendix 1.

3 AIMS, METHODOLOGY AND PRESENTATION

The aim of the geophysical survey was to inform the cultural heritage inputs into the forthcoming ES and to disseminate the results.

The specific archaeological objectives of the geophysical survey were:

- to identify, record and interpret archaeological remains within the GSAs;
- prepare an interpretative report on the results of the archaeological geophysical survey;
- use the results of the magnetometer survey to inform the baseline, assessment of value, magnitude, significance of effect, mitigation and residual significance of effect to be presented in the cultural heritage chapter of the ES. This report forms a technical appendix supporting the ES Chapter 9 Historic Environment; and
- issue the report on the results of the archaeological geophysical survey to the Hampshire Archaeology and Historic Buildings Record (the Hampshire HER), the Winchester Historic Environment Record and the Surrey Historic Environment Record and prepare and deposit an ordered archive to the Archaeology Data Service (ADS) and a suitable final repository.

3.1 MAGNETOMETER SURVEY

Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried archaeological remains. A feature such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations, detailed plans of sites can be obtained as buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney & Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 2.

The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid carrying frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10–15cm sample interval) on roaming traverses (swaths) 4m apart. These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point.

MLGrad601 and MultiGrad601 (Geomar Software Inc.) software was used to collect and export the data. Terrasurveyor V3.0.32.4 (DWConsulting) software was used to process and present the data.

3.2 REPORTING

A general site location plan is shown in Illus 1 at a scale of 1:250,000. Illus 2–5 are 1:50,000 survey location plans. Large-scale, fully processed (greyscale) data, minimally processed data (XY traceplot) and interpretative plots are presented at a scale of 1:2,500 in Illus 6 to Illus 152 inclusive with more detailed plots (1:1,000) of the two areas of archaeological activity (AAA) shown in Illus 153 to Illus 158 inclusive.

Technical information on magnetic survey methodology and interpretation is given in Appendix 2. Appendix 3 details the survey location information and Appendix 4 describes the composition and location of the site archive. Data processing details are presented in Appendix 5. A copy of the OASIS entry (Online Access to the Index of Archaeological Investigations) is reproduced in Appendix 6.

The illustrations in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All illustrations are presented to most suitably display and interpret the data from this site based on the experience and knowledge of management and reporting staff.

4 RESULTS AND DISCUSSION

The corridor is only 30m wide and it is often difficult to accurately interpret linear single responses which cross the corridor or zones of variable magnetic response. It is particularly difficult to gauge whether the latter are simply a result of localised variations in the soils and geology. Throughout several of the GSAs, confident interpretation of the data is further hindered by the close proximity of the existing aviation fuel pipeline, the magnetic response from which saturates the datasets, potentially masking any low magnitude anomalies of archaeological potential, if present.

Nevertheless, generally a variable magnetic background has been recorded throughout the GSAs manifesting in the data as a plethora of discrete areas of magnetic enhancement. These are due to localised variations in the depth and composition of the soils and the bedrock and/or superficial deposits from which they derive. Areas of variation are also caused by differing agricultural activities and ploughing regimes.

Ground conditions were generally good across the GSAs and the data quality is correspondingly good throughout. It is therefore assessed that the results provide a reliable indication of the extent of the sub-surface archaeological remains. The reliability of the results over alluvial and colluvial (Head) deposits, and over glacial sand and gravels is less clear, and detection of some soil-filled features may be hampered by low magnetic contrast in the soils and/or the depth of the superficial deposits. In these instances, some isolated and/or low magnitude features, and localised areas of unenclosed settlement, may not manifest in the data at all.

The anomalies identified by the survey fall into a number of categories according to their origin. These are discussed below with those anomalies with modern, agricultural or geological origins discussed first followed by those anomalies with a possible or probable archaeological cause. The results are summarised in Appendix 1.

4.1 FERROUS ANOMALIES

Ferrous anomalies, characterised as individual 'spikes', are typically caused by ferrous (magnetic) material, either on the ground surface or in the plough-soil. Little importance is normally given to such anomalies, unless there is any supporting evidence for an archaeological interpretation, as modern ferrous debris is common on most sites, often being present as a consequence of manuring or tipping/infilling. Throughout the GSAs, there is no obvious clustering to these ferrous anomalies which might indicate an archaeological

origin. Far more probable is that the 'spike' responses are likely caused by the random distribution of ferrous debris in the upper soil horizons.

The existing aviation fuel pipe has been detected as a high magnitude dipolar linear anomaly across many of the GSAs such as GSA68 (see Illus 24–26), and GSA176–181 (see Illus 96–104). In many cases the magnetic response from this pipe dominates more than half of the 30m corridor. Magnetic disturbance of this type may mask any lower magnitude anomalies of archaeological potential, if present, within the affected area. Several other high magnitude dipolar linear anomalies have also been identified across the GSAs, such as those in GSA198 (see Illus 111–116) and Area 435 (see Illus 144–146). These are caused by buried service pipes.

Localised areas of magnetic disturbance within GSA101 (see Illus 57–59), GSA180 (see Illus 102–104) and GSA198 (see Illus 111–113) locate former ponds which are depicted on historic Ordnance Survey maps (Old-Maps 2018). The disturbance in the north of GSA87 (see Illus 48–50) corresponds to a chalk pit which is also shown on historic OS maps whereas the larger area of disturbance in the northeast of GSA155 (see Illus 81–83) corresponds to a larger former quarry. The disturbance is caused by magnetic material used to infill the features.

Magnetic disturbance around the field edges is due to ferrous material within or close to the adjacent field boundaries and is of no archaeological interest.

4.2 AGRICULTURAL ANOMALIES

Analysis of historic OS maps (Old-Maps 2018) indicates that the pattern of land division throughout the GSAs has changed little since the publication of the first edition OS maps in the late 19th century with only a small number of boundaries having been removed to create larger fields. These former boundaries manifest in the data as linear anomalies - soil-filled ditches, such as those within GSA84 (see Illus 45–47) or as linear alignments of ferrous anomalies, such as those within GSA159 (see Illus 84–86) which are caused by modern debris within the fill of the ditch or which accumulated at the former field margins.

Closely-spaced linear anomalies, aligned parallel with the extant field boundaries, are due to modern ploughing. No anomalies have been identified in any of the magnetic datasets which are clearly indicative of medieval and/or post medieval ridge and furrow cultivation.

The magnetic background in GSA87 (see Illus 45–50) is notably elevated appearing 'speckled' throughout. This may be due to modern manuring/spreading of magnetically enhanced material. A similarly elevated background is visible throughout GSA196 (see Illus 111–113) and is also thought to be due to agricultural spreading.

4.3 GEOLOGICAL ANOMALIES

Geological anomalies are identified throughout the GSAs. These are mostly due to changes in the depth and composition of the topsoil, or the accumulation of topsoil along the breaks in, or bottom of, slopes. Broader areas of enhanced magnetic response such as those in GSA8 (see Illus 6–8), GSA321–322 (see Illus 138–140) and GSA445 (see Illus 150–152) correspond to alluvial and river terrace deposits recorded by the British Geological Survey (NERC 2018). The anomalies are caused by variations in the sand, gravel, silt and clay. In these areas, detection of some soil-filled features may be hampered by low (or conversely extremely high) magnetic contrast in the soils and/or the depth of the superficial deposits. In these instances, some isolated and/or low magnitude features, and localised areas of unenclosed settlement, if present, may not manifest in the data at all.

The variable and elevated magnetic background across GSA104–114 (see Illus 60–68) is more pock-marked in appearance and corresponds to superficial deposits of clay with flints formation, whereas the sinuous bands of enhanced response across GSA154–157) are caused by variations in the Head superficial deposits.

It can be difficult or impossible to identify any archaeological responses where geological anomalies are dense and/or of a high magnitude.

4.4 POSSIBLE ARCHAEOLOGICAL ANOMALIES

Anomalies interpreted as being of possible archaeological origin are caused by soil-filled features such as pits or ditches or by spreads of magnetically enhanced material within the upper soil horizons. Whilst these anomalies do not manifest in any coherent archaeological pattern, they are either located near to areas of known archaeology, or cannot be satisfactorily interpreted as either modern, agricultural or geological in origin. On this basis, these anomalies are ascribed moderate archaeological potential.

4.5 AREAS OF ARCHAEOLOGICAL ACTIVITY

Two distinct areas of archaeological activity (AAA) have been identified and are discussed below.

AAA1

AAA1 is located in the south of GSA 159, centred at SU 7145 3662 (see Illus 153–155). It comprises the eastern extent of a sub-rectangular enclosure, aligned north/south and measuring 43m from north to south. No anomalies of clear archaeological potential are visible within the interior of the enclosure although a number of low magnitude discrete anomalies are assessed as being potentially archaeological in origin, perhaps being due to pits.

AAA2

AAA2 is located in an elevated position in the southwest of GSA206, centred at SU 7736 4455 (see Illus 156–158). It comprises the northwestern extent of a ring-ditch, probably a barrow, measuring 20m in diameter. High magnitude discrete anomalies within the interior of the ring-ditch may be due to pits.

5 CONCLUSION

The survey has successfully evaluated the geophysical survey area and has identified two distinct, localised areas of archaeological activity comprising a sub-rectangular enclosure and a ring-ditch. These areas are assessed as of high archaeological potential. The survey has further advanced knowledge of the archaeological potential along the proposed pipeline, although there remain sections where survey was not possible, either due to current land use or access issues. Several other areas are identified throughout the Geophysical Survey Areas where anomalies of possible archaeological potential have also been identified. In these areas it has not been possible to give a definite interpretation due to the fragmented nature of the anomalies combined with the narrow corridor width and magnetic interference from the existing aviation fuel pipe.

6 REFERENCES

Chartered Institute for Archaeologists (ClfA) 2016 ***Standard and guidance for archaeological geophysical survey*** (Reading) http://www.archaeologists.net/sites/default/files/ClfAS%26GGeophysics_2.pdf accessed 6 November 2018

Europae Archaeologia Consilium (EAC) 2015 ***AC Guidelines for the Use of Geophysics in Archaeology: Questions to Ask and Points to Consider*** (Namur, Belgium) https://historicengland.org.uk/images-books/publications/eac-guidelines-for-use-of-geophysics-in-archaeology/ accessed 6 November 2018

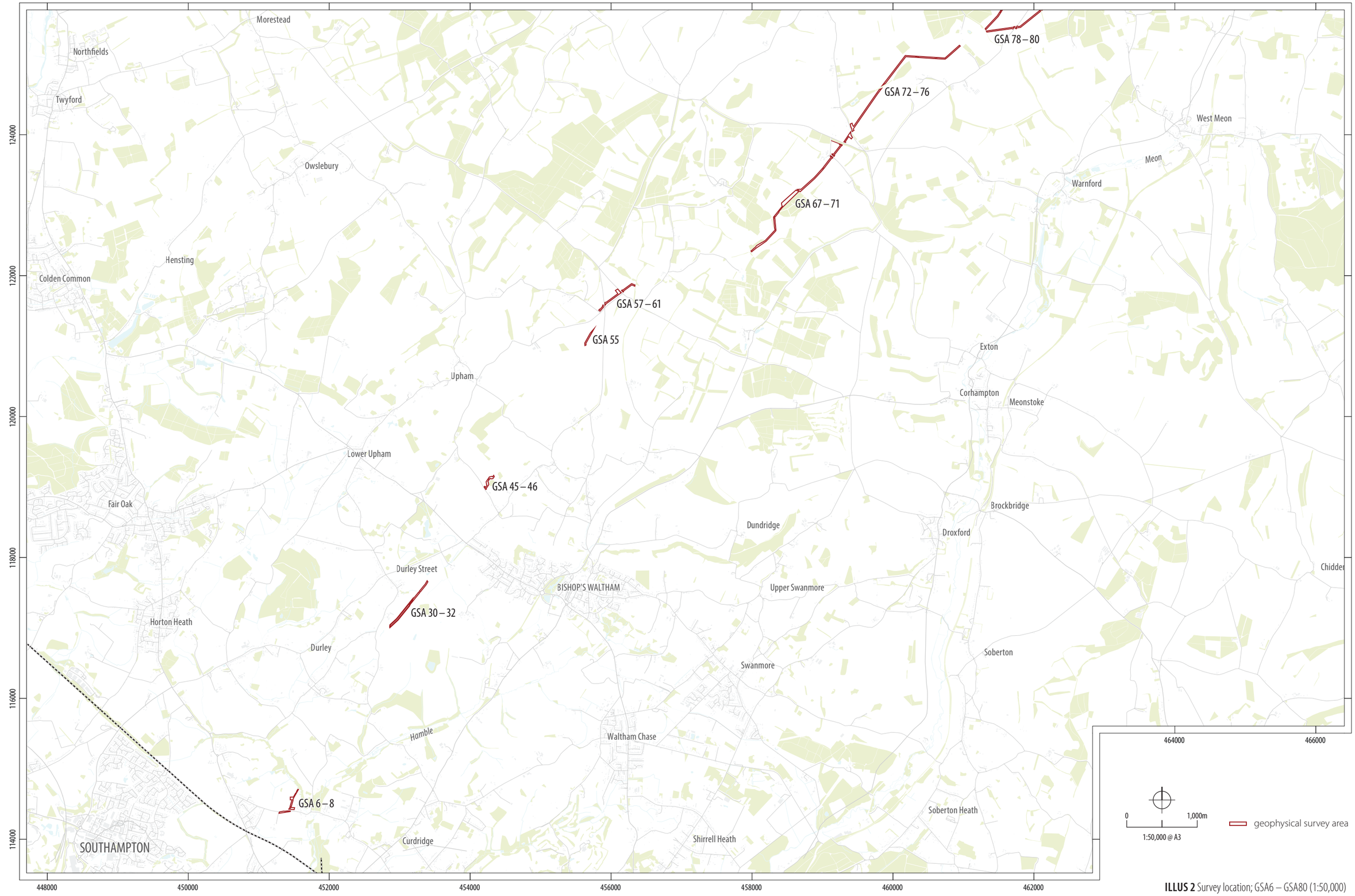
Gaffney C & Gater J (2003) ***Revealing the Buried Past: Geophysics for Archaeologists Stroud***

Jacobs 2018 ***Southampton to London Pipeline Project; Invitation to Tender – Archaeological Geophysical Survey Contact, Part 2 – Written Scheme of Investigation*** [unpublished client document] Jacobs UK Ltd Ref B2324300-JAC-000-ENV-REP-000064

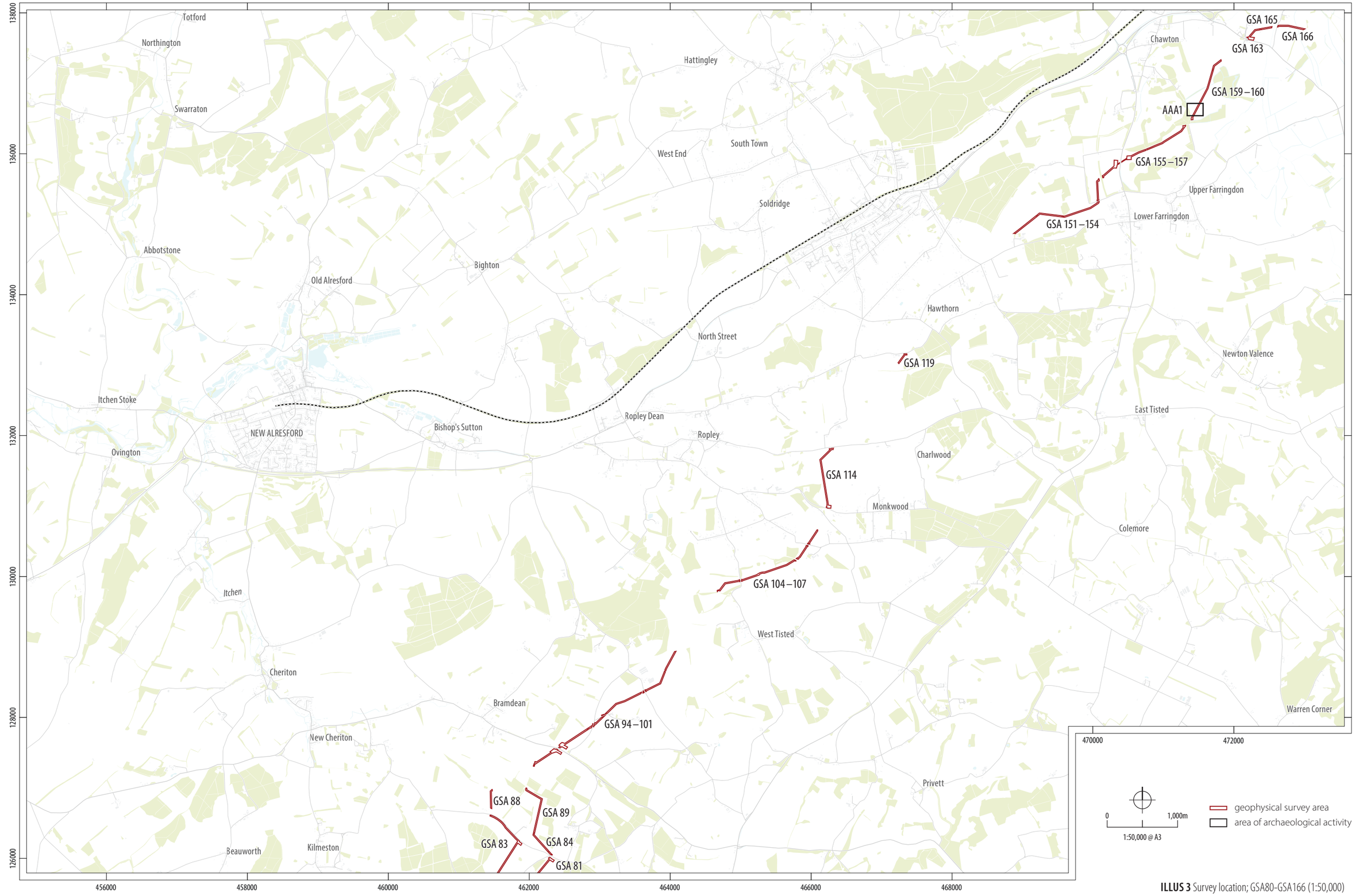
Ministry of Housing, Communities and Local Government (MHCLG) 2018 ***National Planning Policy Framework*** https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf accessed 13 November 2018

Natural Environment Research Council (NERC) 2018 ***British Geological Survey*** http://www.bgs.ac.uk/ accessed 6 November 2018

Old-Maps 2018 http://www.old-maps.co.uk accessed 20 November 2018

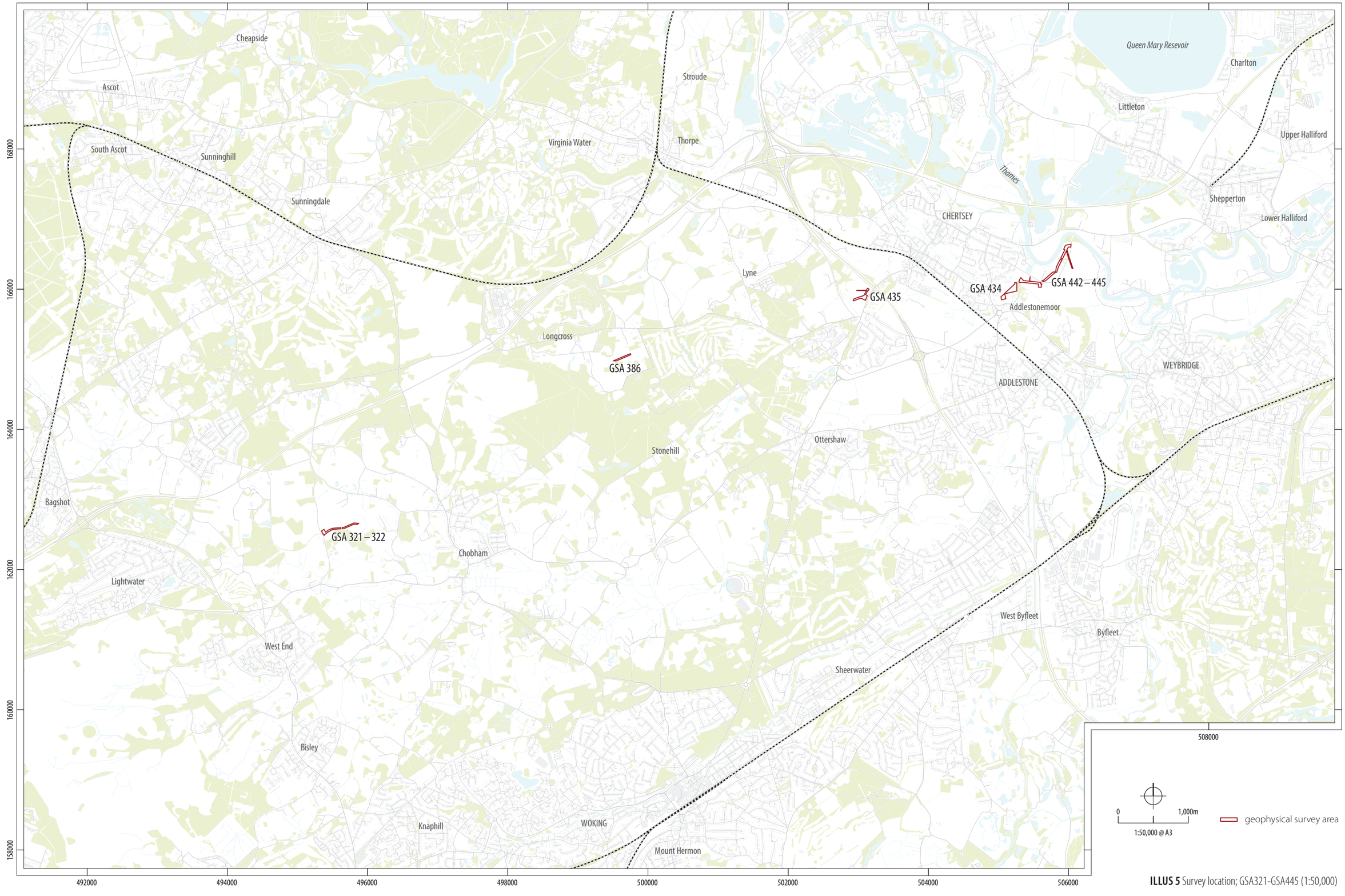


ILLUS 2 Survey location; GSA6 – GSA80 (1:50,000)



ILLUS 3 Survey location; GSA80-GSA166 (1:50,000)

ILLUS 4 Survey location; GSA173-GSA253 (1:50,000)



ILLUS 5 Survey location; GSA321-GSA445 (1:50,000)

geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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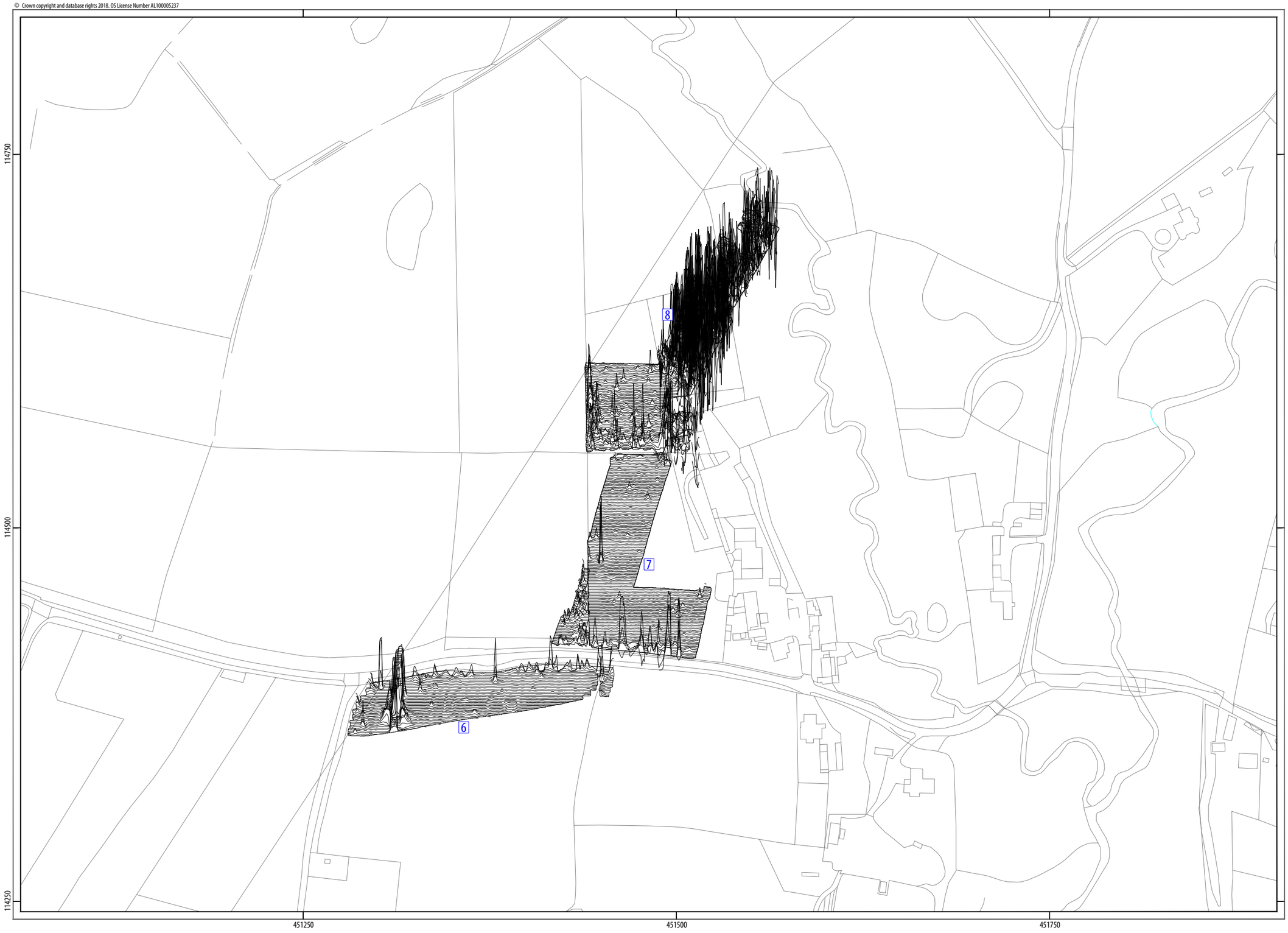
ILLUS 6 Processed greyscale magnetometer data; GSA6, GSA7 & GSA8



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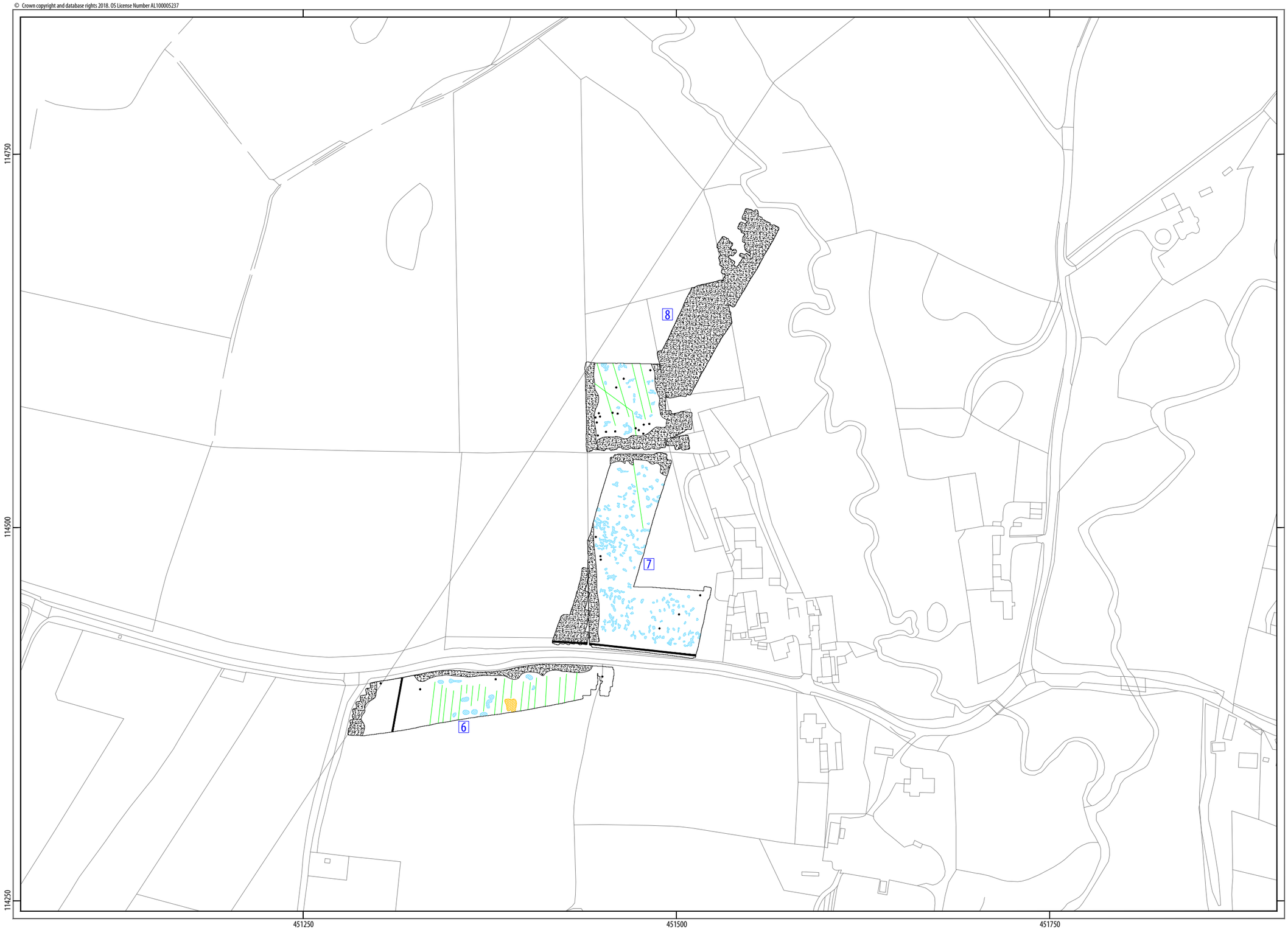
ILLUS 7 XY trace plot of minimally processed magnetometer data; GSA6, GSA7 & GSA8



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology
- archaeology?

0 50m
1:2,500 @ A3

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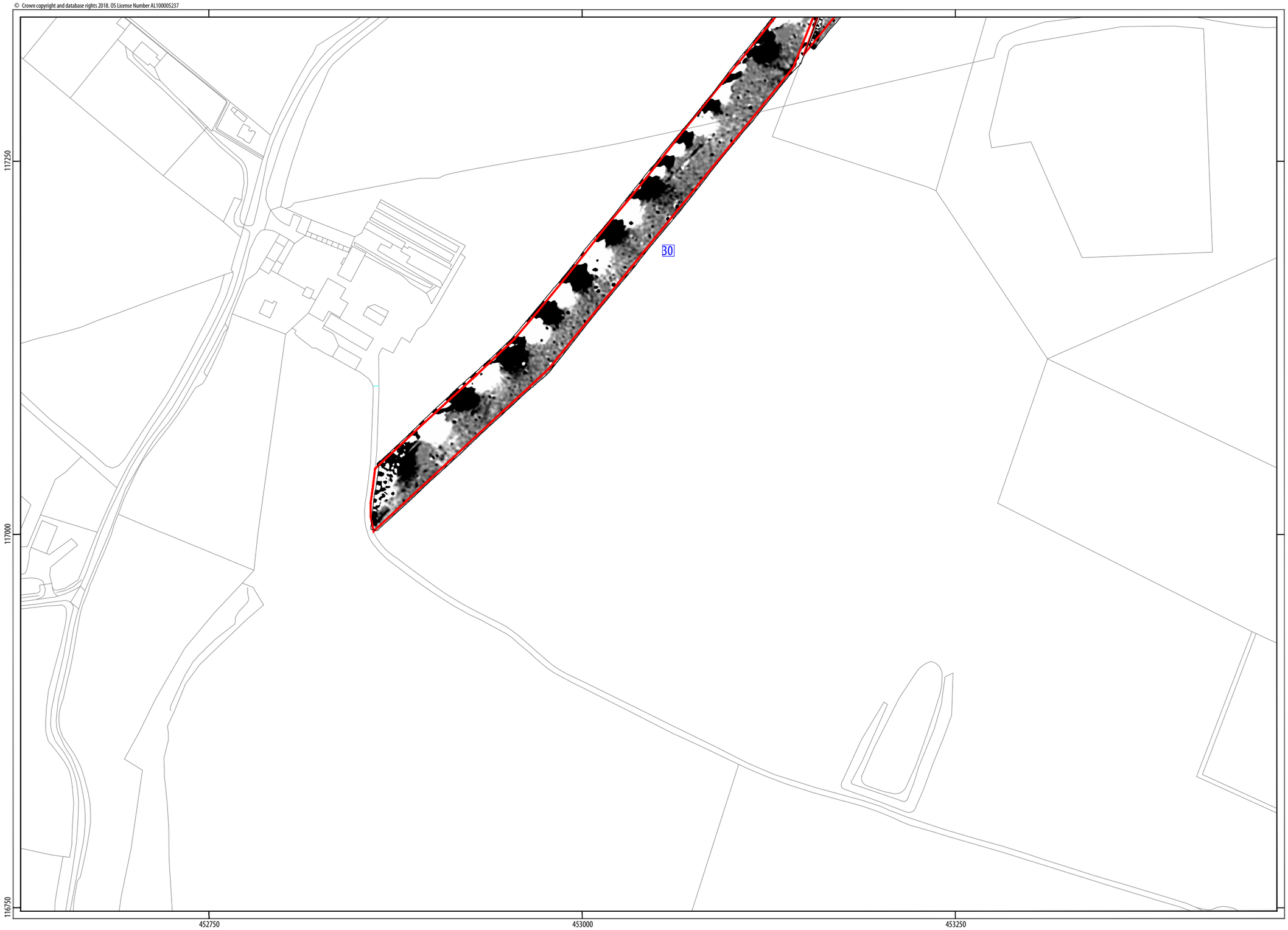
ILLUS 8 Interpretation of magnetometer data; GSA6, GSA7 & GSA8



geophysical survey area

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50m
1:2,500 @ A3

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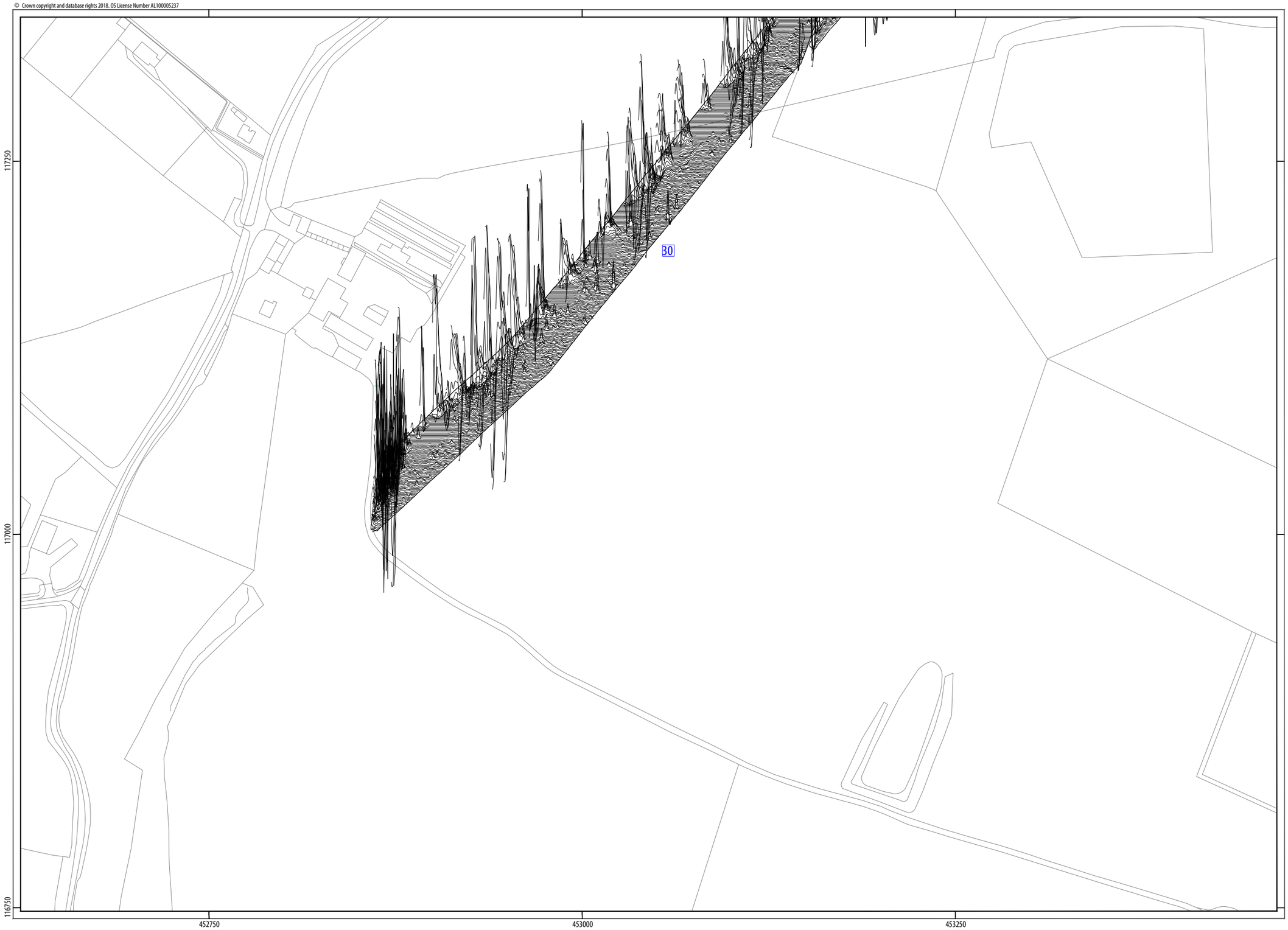
ILLUS 9 Processed greyscale magnetometer data; GSA30



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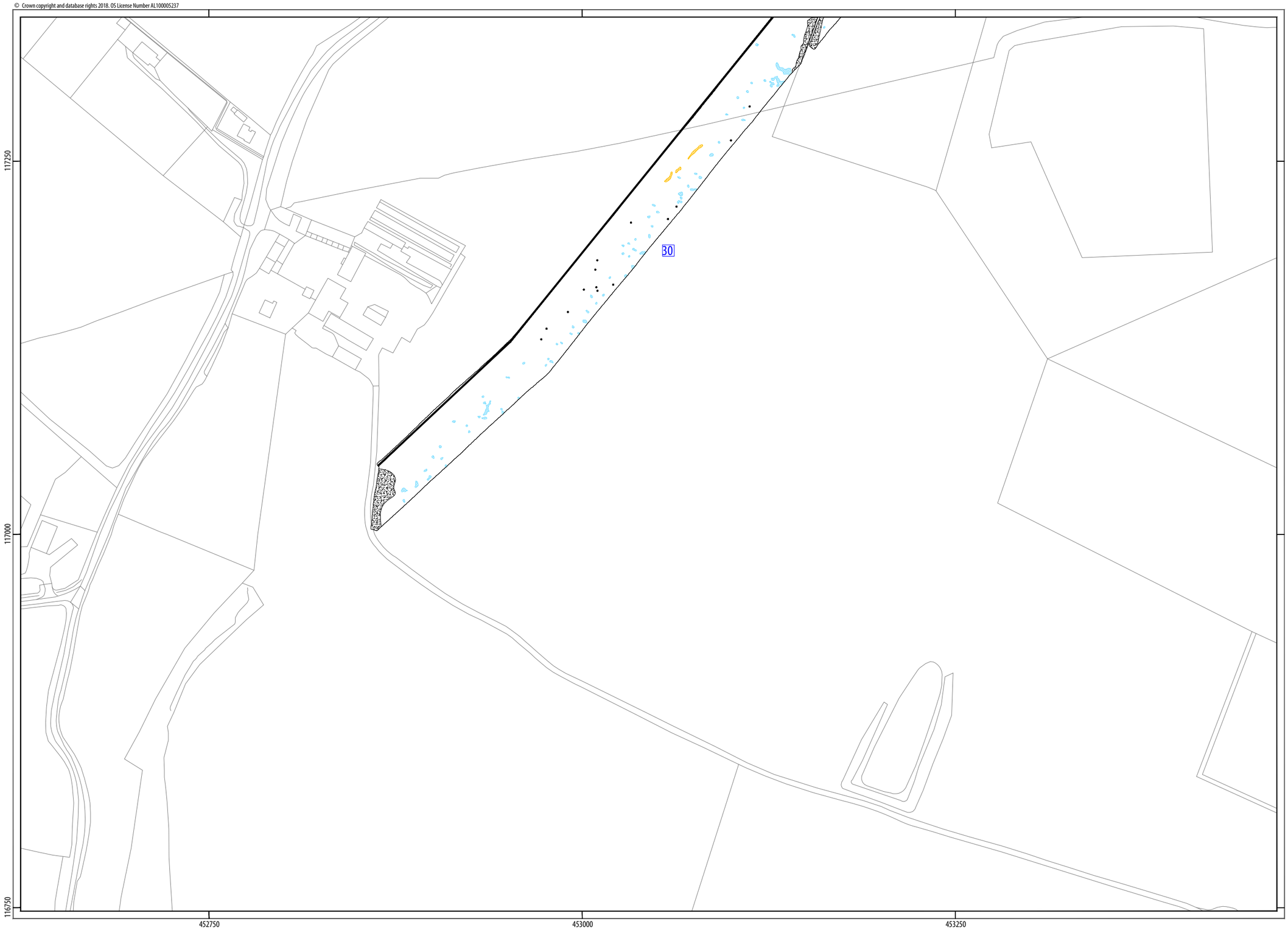
ILLUS 10 XY trace plot of minimally processed magnetometer data; GSA30



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- geology
- archaeology?

0 50m
1:2,500 @ A3

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ILLUS 11 Interpretation of magnetometer data; GSA30

geophysical survey area

-1.0 nT 1.0

0 50m

1:2,500 @ A3

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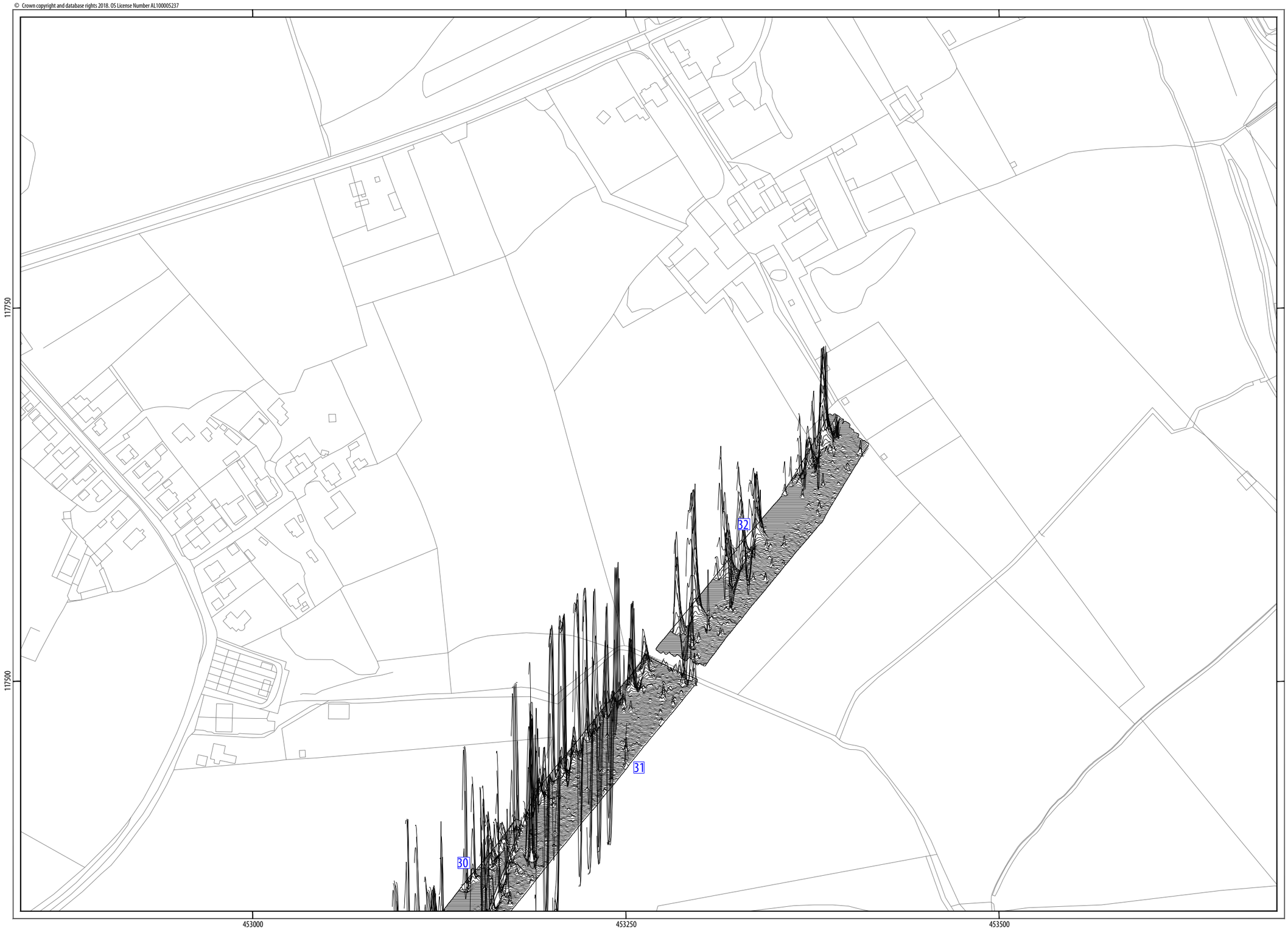
ILLUS 12 Processed greyscale magnetometer data; GSA30, GSA31 & GSA32



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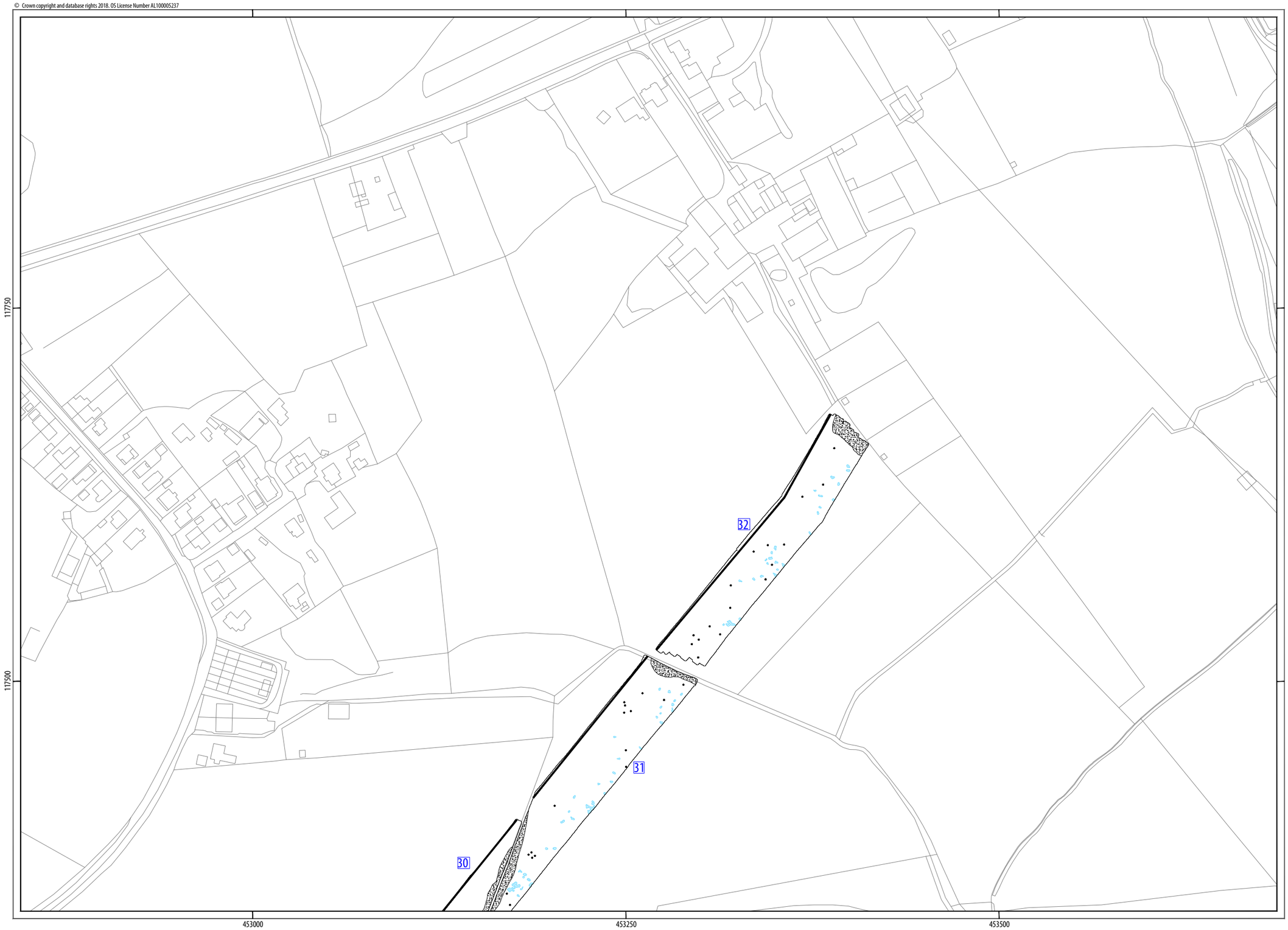
ILLUS 13 XY trace plot of minimally processed magnetometer data; GSA30, GSA31 & GSA32



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- geology

0 50m
1:2,500 @ A3

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ILLUS 14 Interpretation of magnetometer data; GSA30, GSA31 & GSA32

geophysical survey area

nT
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0 50m
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ILLUS 15 Processed greyscale magnetometer data; GSA45 & GSA46

15.0nT/cm

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ILLUS 16 XY trace plot of minimally processed magnetometer data; GSA45 & GSA46

INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology

0 50m
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ILLUS 17 Interpretation of magnetometer data; GSA45 & GSA46

geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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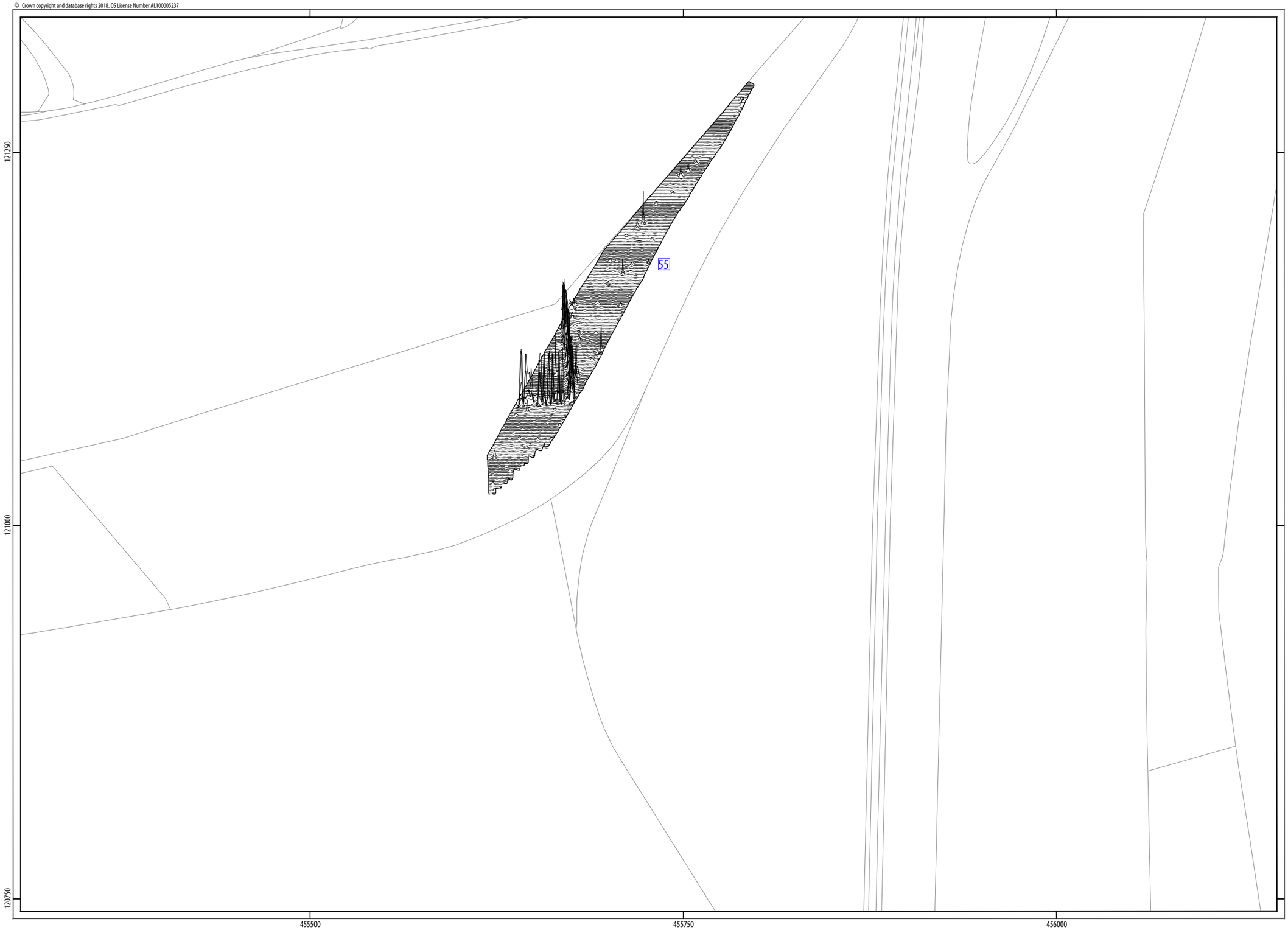
ILLUS 18 Processed greyscale magnetometer data; GSA55



15.0nT/cm

0 50m

1:2,500 @ A3

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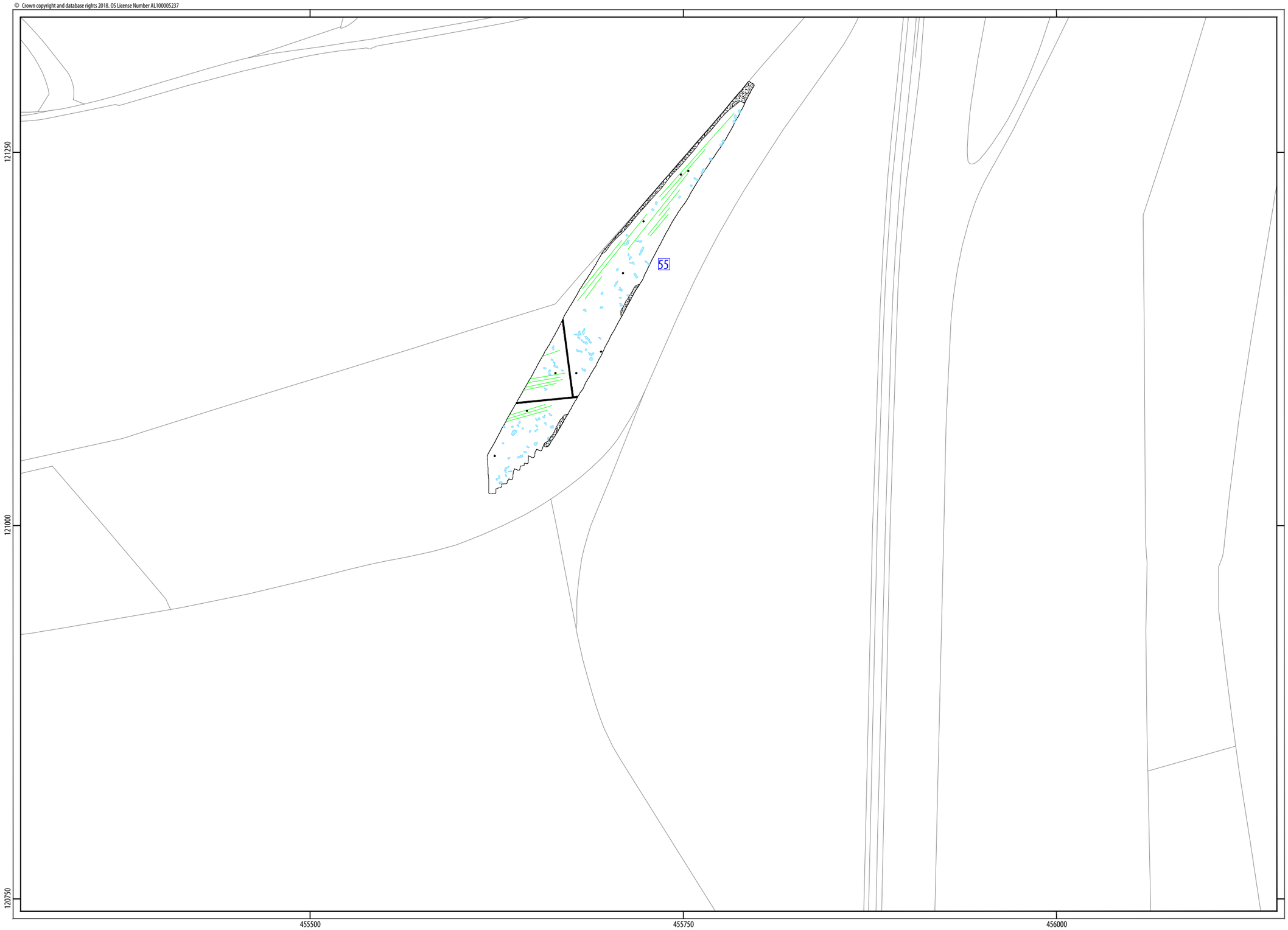
ILLUS 19 XY trace plot of minimally processed magnetometer data; GSA55



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology

0 50m
1:2,500 @ A3

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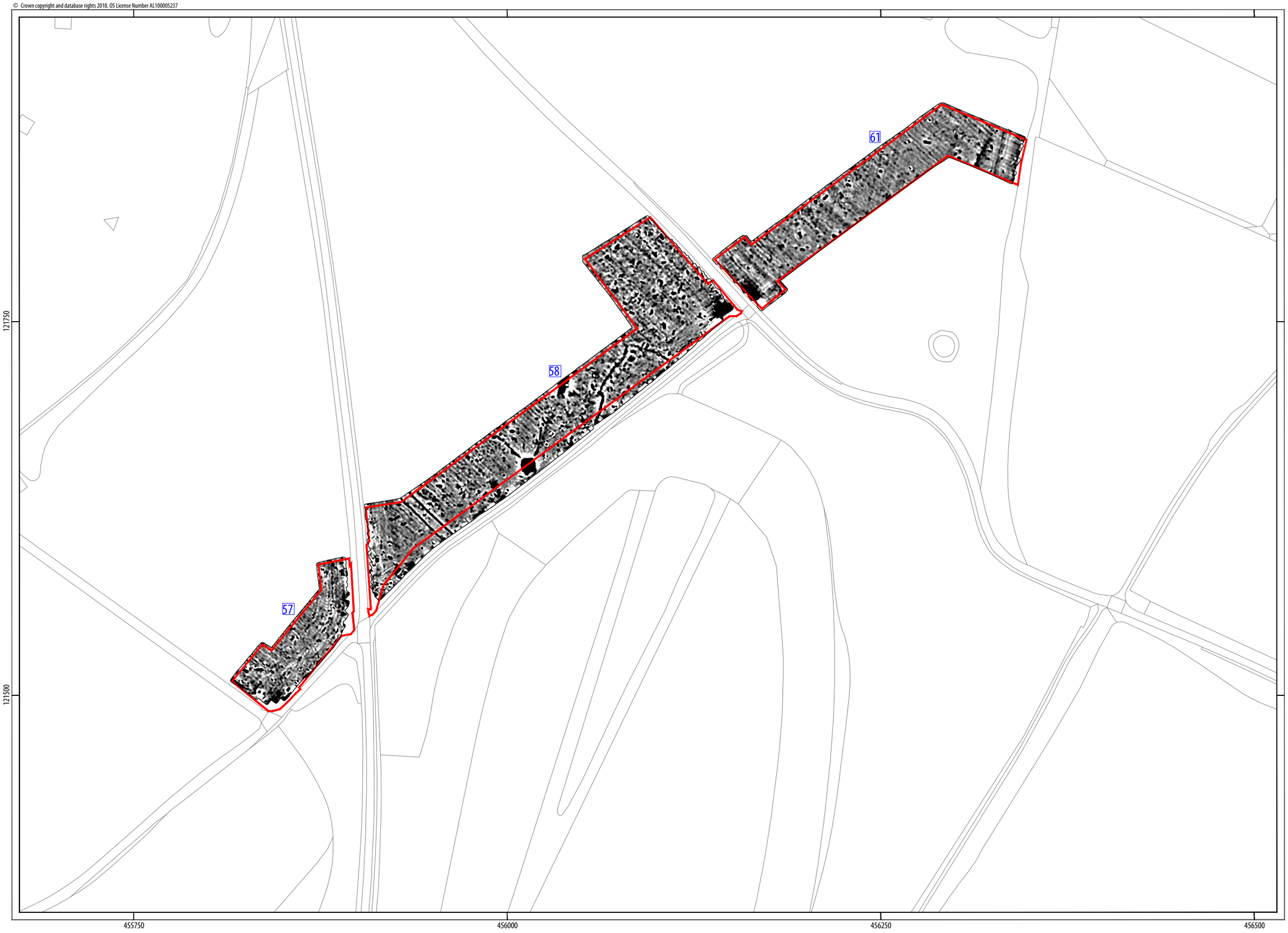
ILLUS 20 Interpretation of magnetometer data; GSA55



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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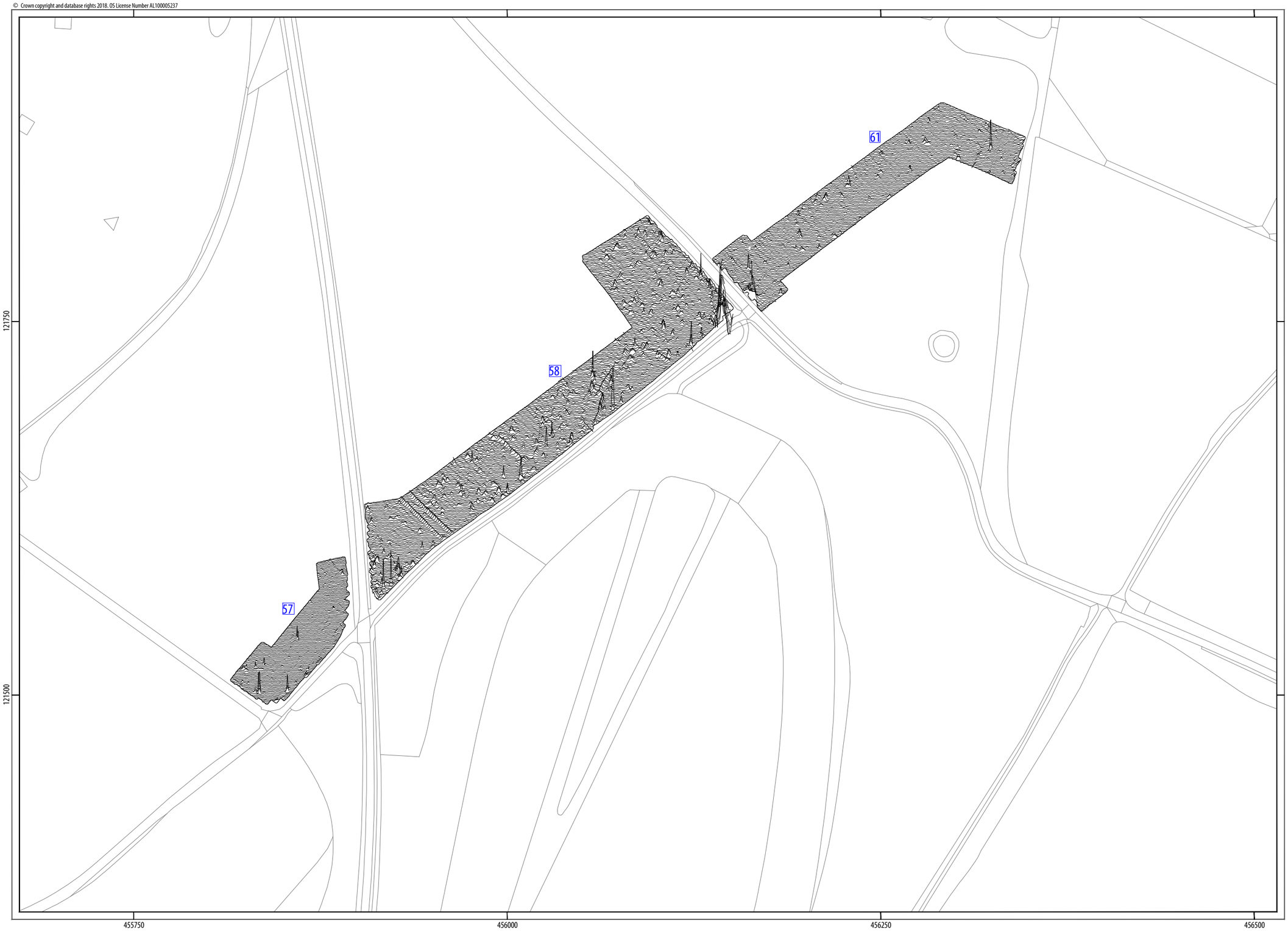
ILLUS 21 Processed greyscale magnetometer data; GSA57, GSA58 & GSA61



15.0nT/cm

0 50m

1:2,500 @ A3

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ILLUS 22 XY trace plot of minimally processed magnetometer data; GSA57, GSA58 & GSA61

INTERPRETATION
- ferrous material
- ferrous material
- agricultural
- geology
- archaeology?

0 50m
1:2,500 @ A3

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ILLUS 23 Interpretation of magnetometer data; GSA57, GSA58 & GSA61

68

67

122750

122500

458000

458250

458500

geophysical survey area

-1.0 nT 1.0

0 50m

1:2,500 @ A3

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ILLUS 24 Processed greyscale magnetometer data; GSA67 & GSA68

68

67

122750

122500

458000

458250

458500

15.0nT/cm

0 50m

1:2,500 @ A3

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ILLUS 25 XY trace plot of minimally processed magnetometer data; GSA67 & GSA68

68

67

122750

122500

458000

458250

458500

INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology

0 50m
1:2,500 @ A3

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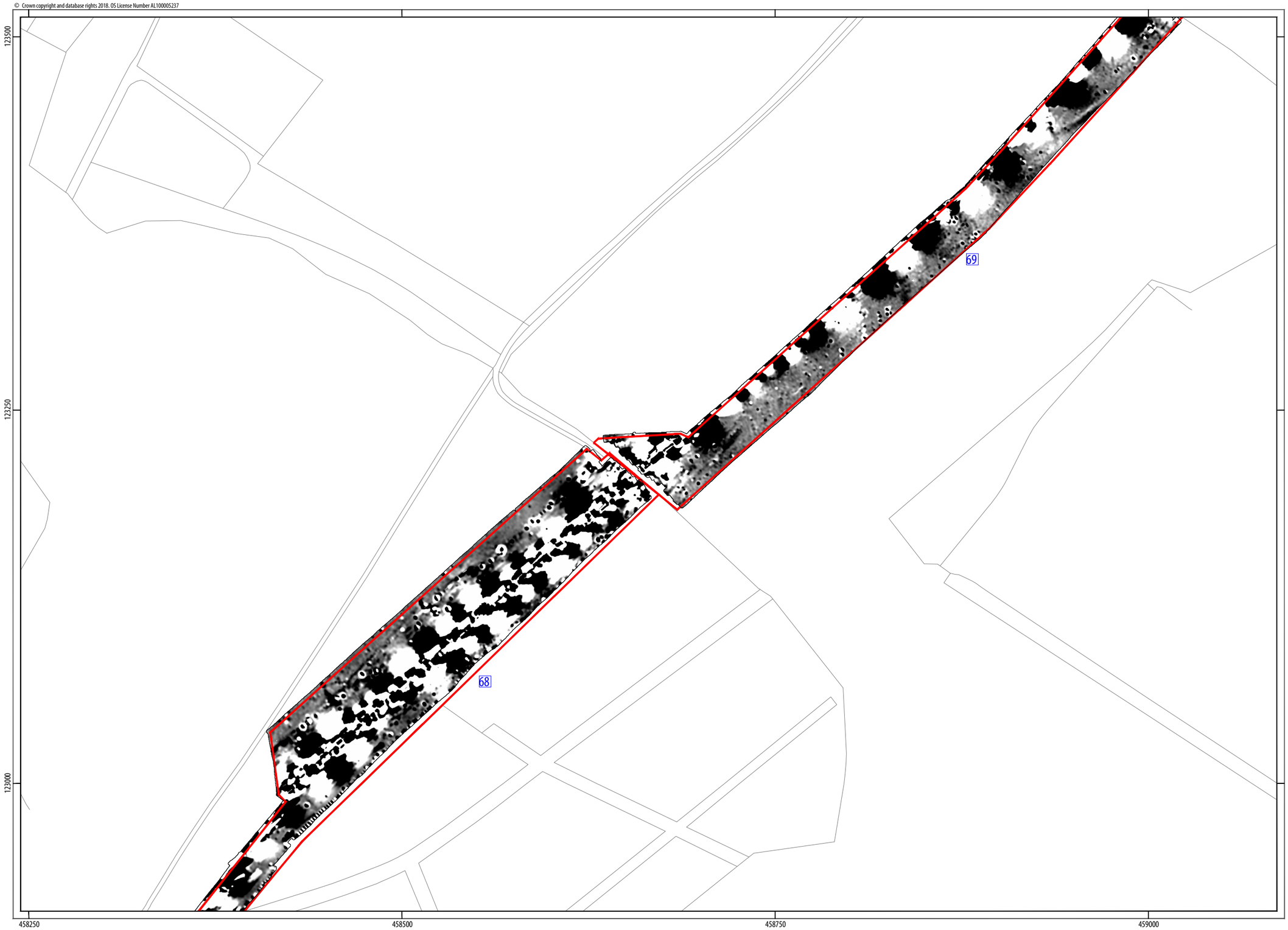
ILLUS 26 Interpretation of magnetometer data; GSA67 & GSA68



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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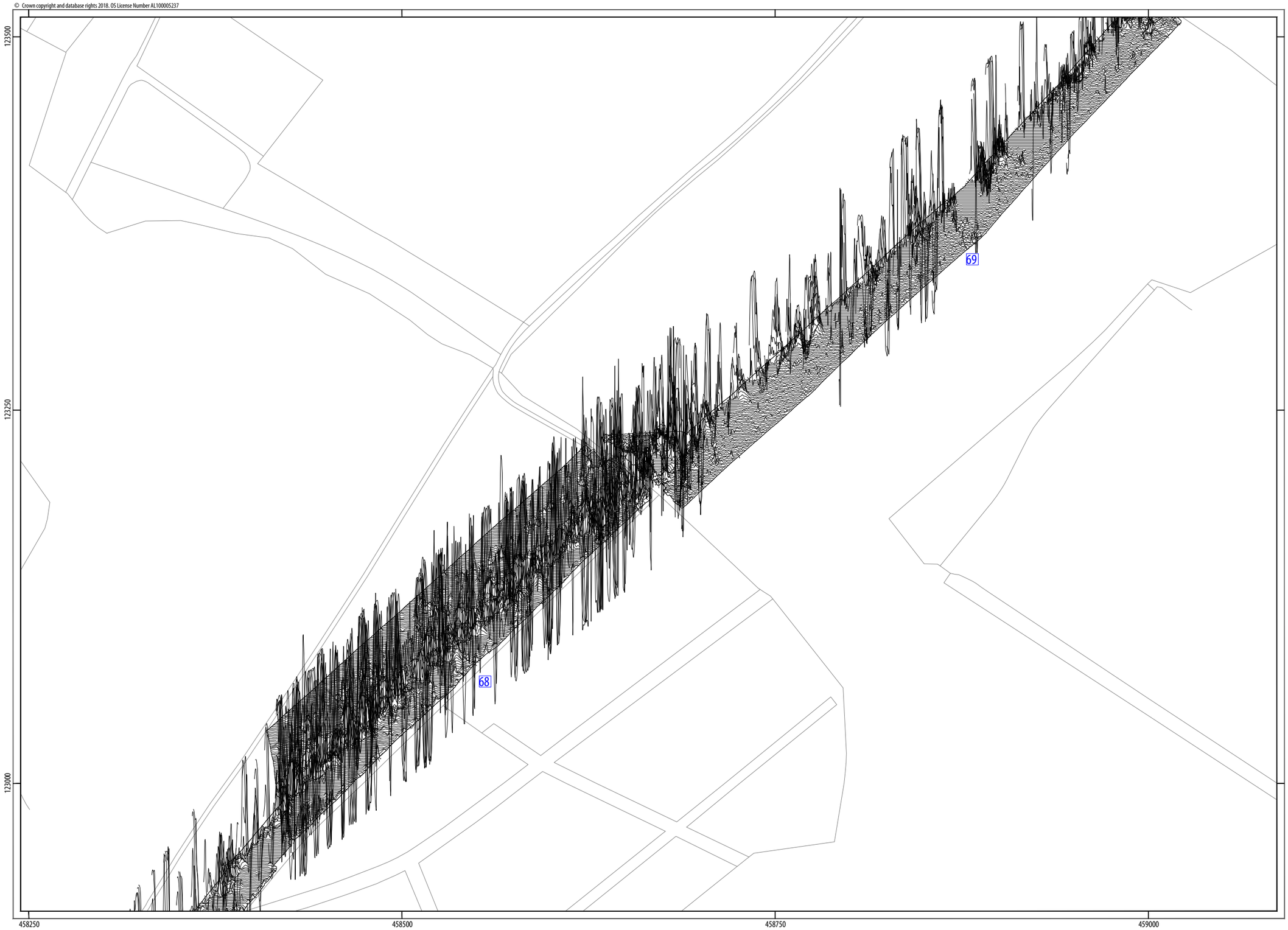
ILLUS 27 Processed greyscale magnetometer data; GSA68 & GSA69



15.0nT/cm

0 50m

1:2,500 @ A3

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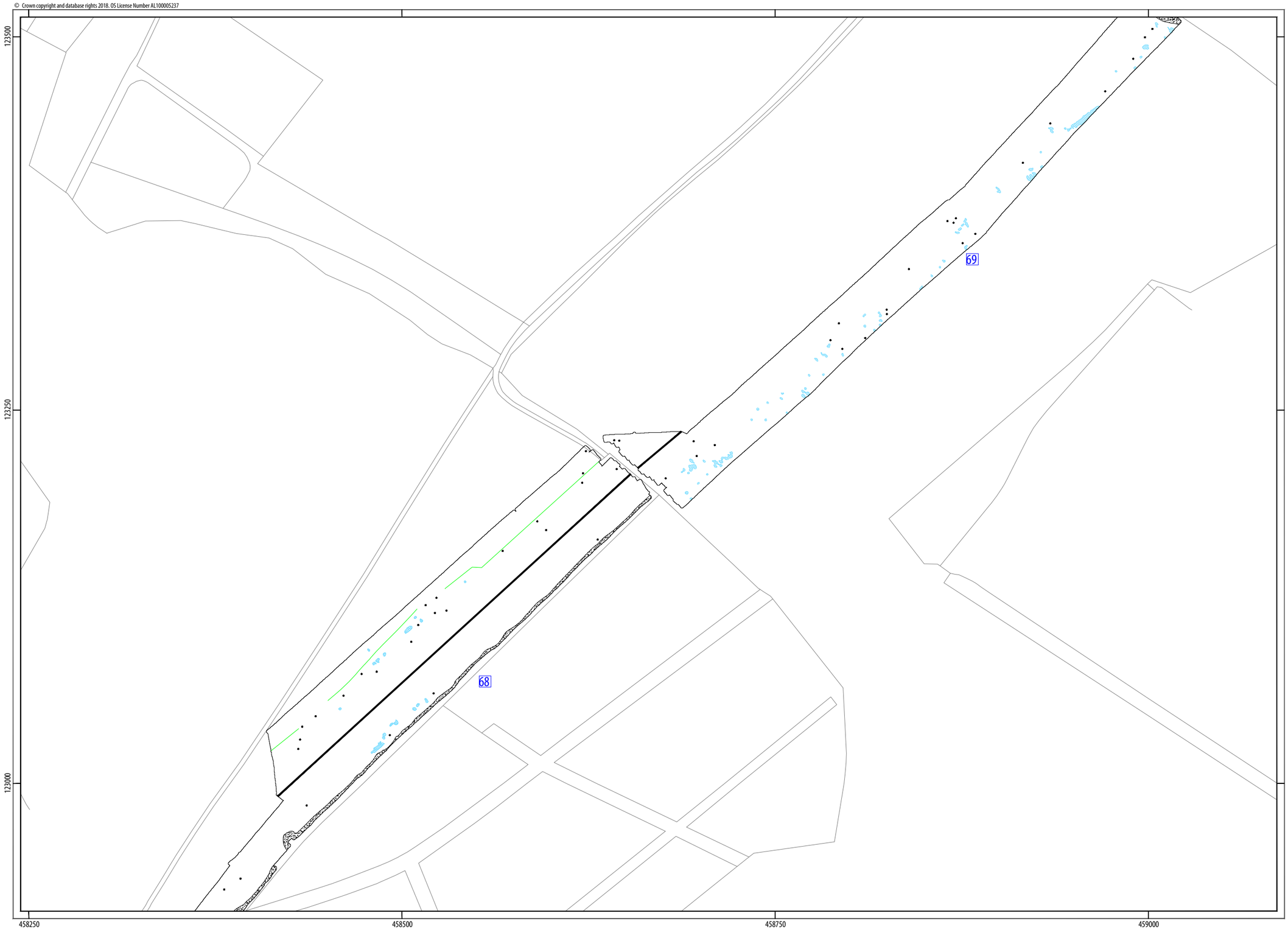
ILLUS 28 XY trace plot of minimally processed magnetometer data; GSA68 & GSA69



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology

0 50m
1:2,500 @ A3

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ILLUS 29 Interpretation of magnetometer data; GSA68 & GSA69

geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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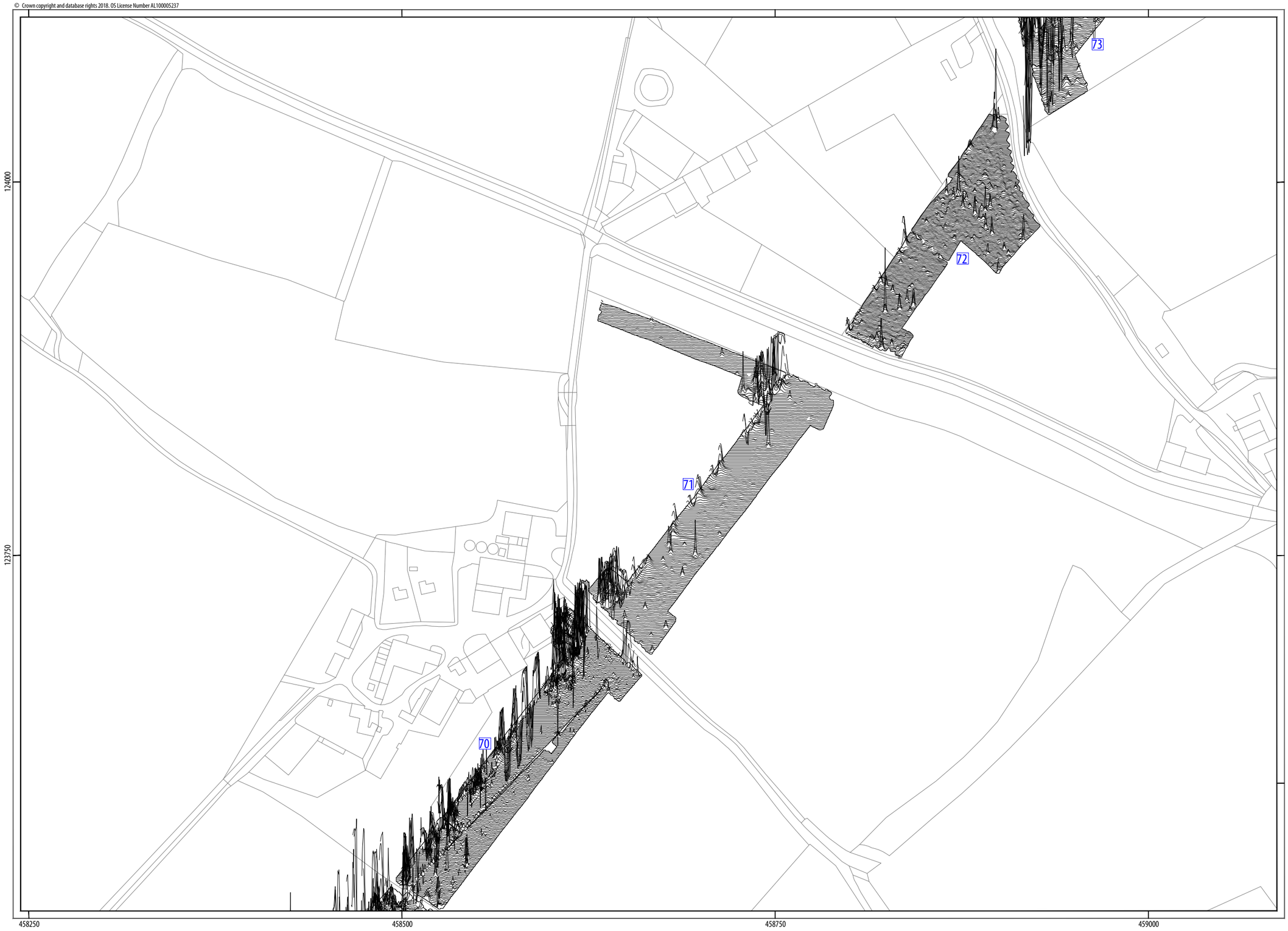
ILLUS 30 Processed greyscale magnetometer data; GSA70, GSA71, GSA72 & GSA73



15.0nT/cm

0 50m

1:2,500 @ A3

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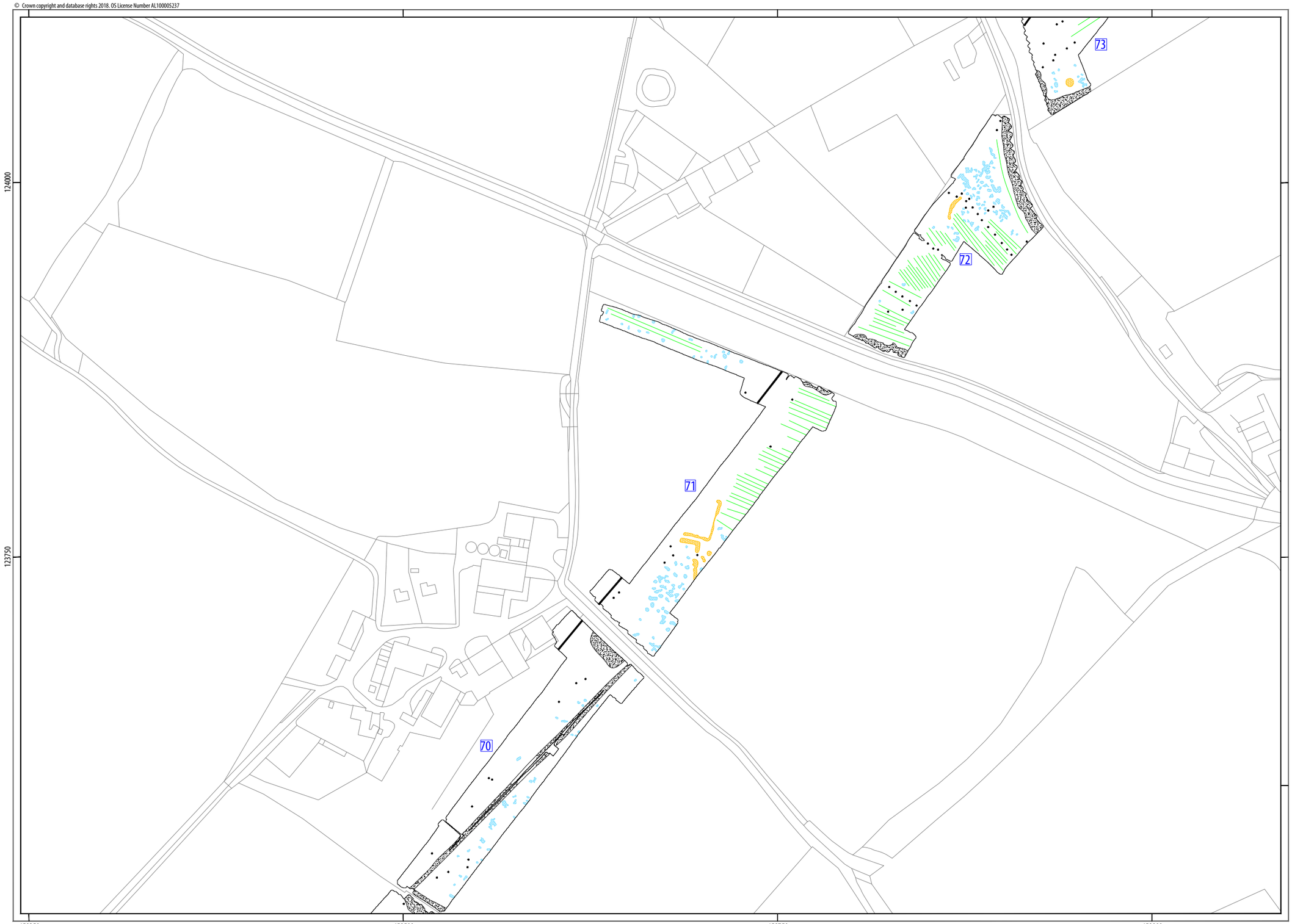
ILLUS 31 XY trace plot of minimally processed magnetometer data; GSA70, GSA71, GSA72 & GSA73



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology
- archaeology?

0 50m
1:2,500 @ A3

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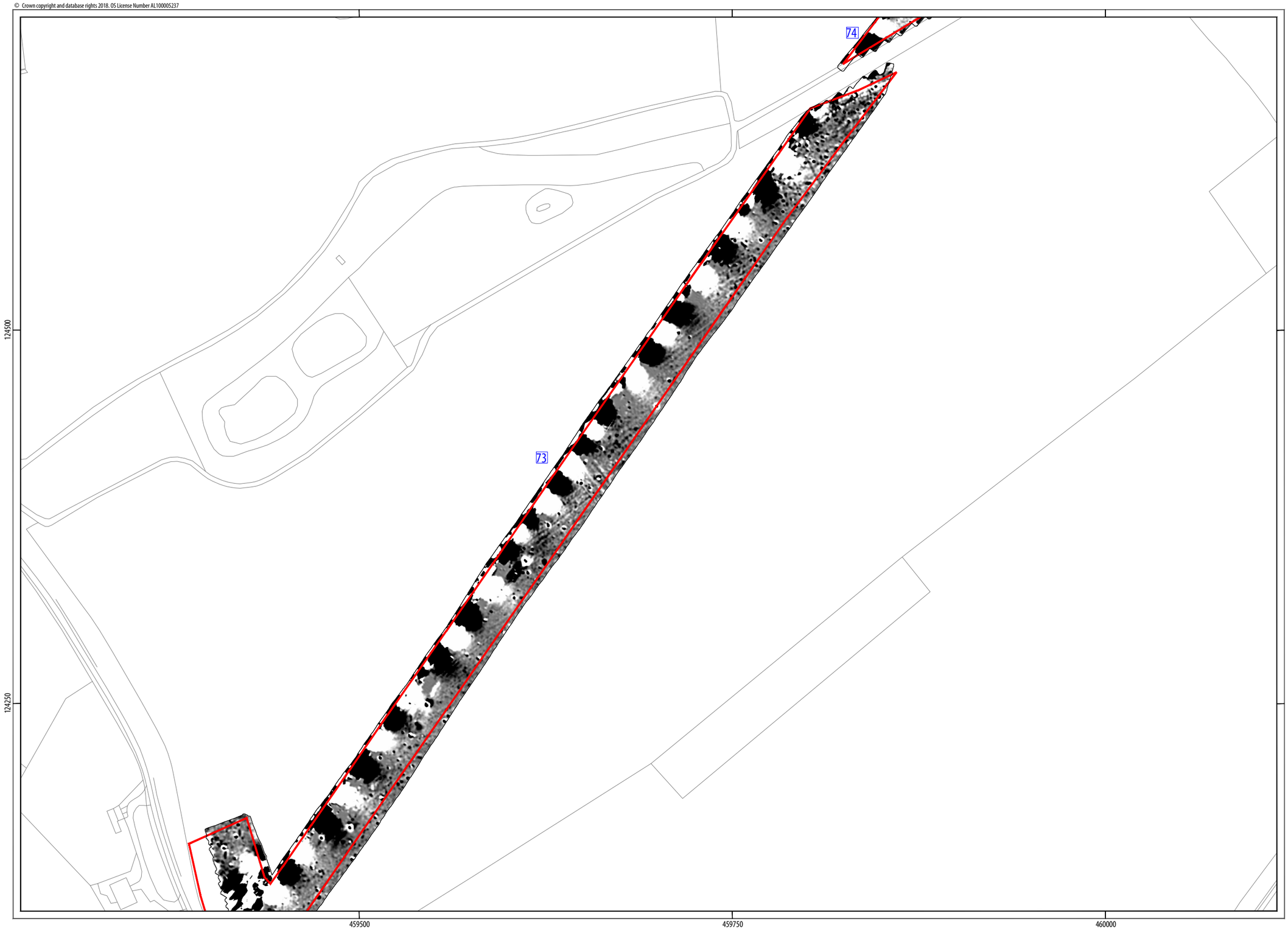
ILLUS 32 Interpretation of magnetometer data; GSA70, GSA71, GSA72 & GSA73



geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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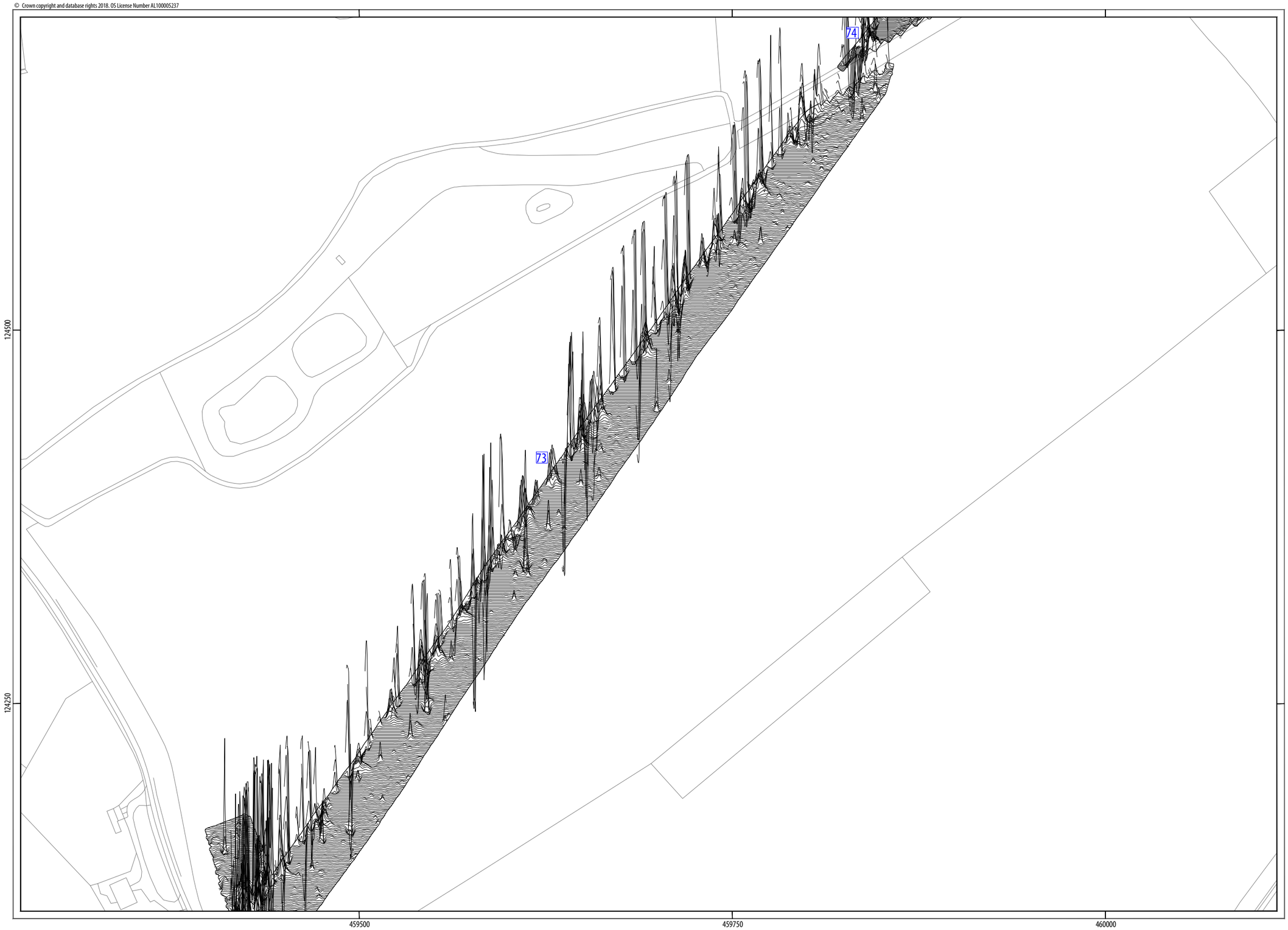
ILLUS 33 Processed greyscale magnetometer data; GSA73 & GSA74



15.0nT/cm

0 50m

1:2,500 @ A3

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ILLUS 34 XY trace plot of minimally processed magnetometer data; GSA73 & GSA74

74

73

124500

124250

459500

459750

460000

INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- former field boundary
- geology

0 50m
1:2,500 @ A3

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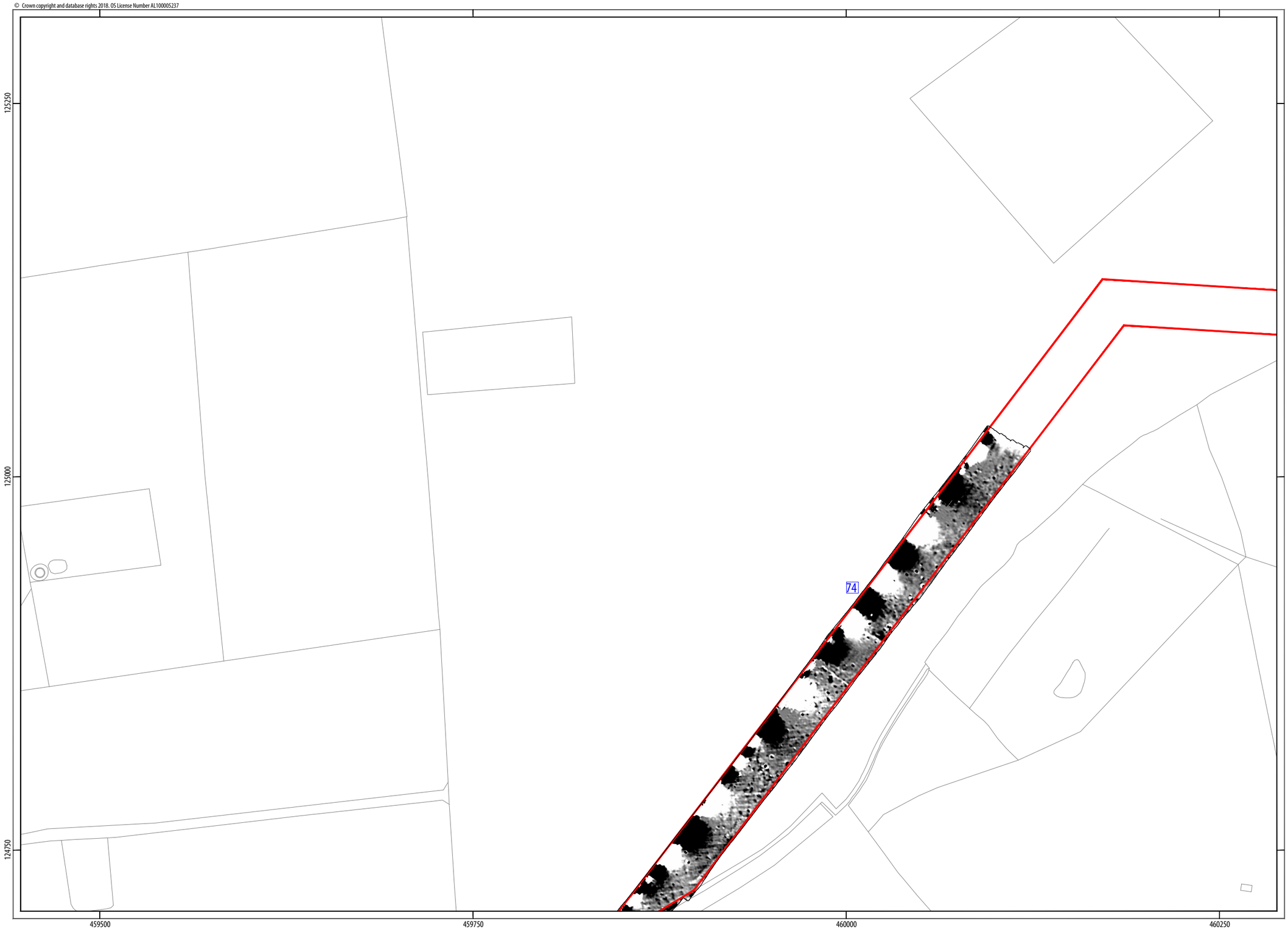
ILLUS 35 Interpretation of magnetometer data; GSA73 & GSA74



geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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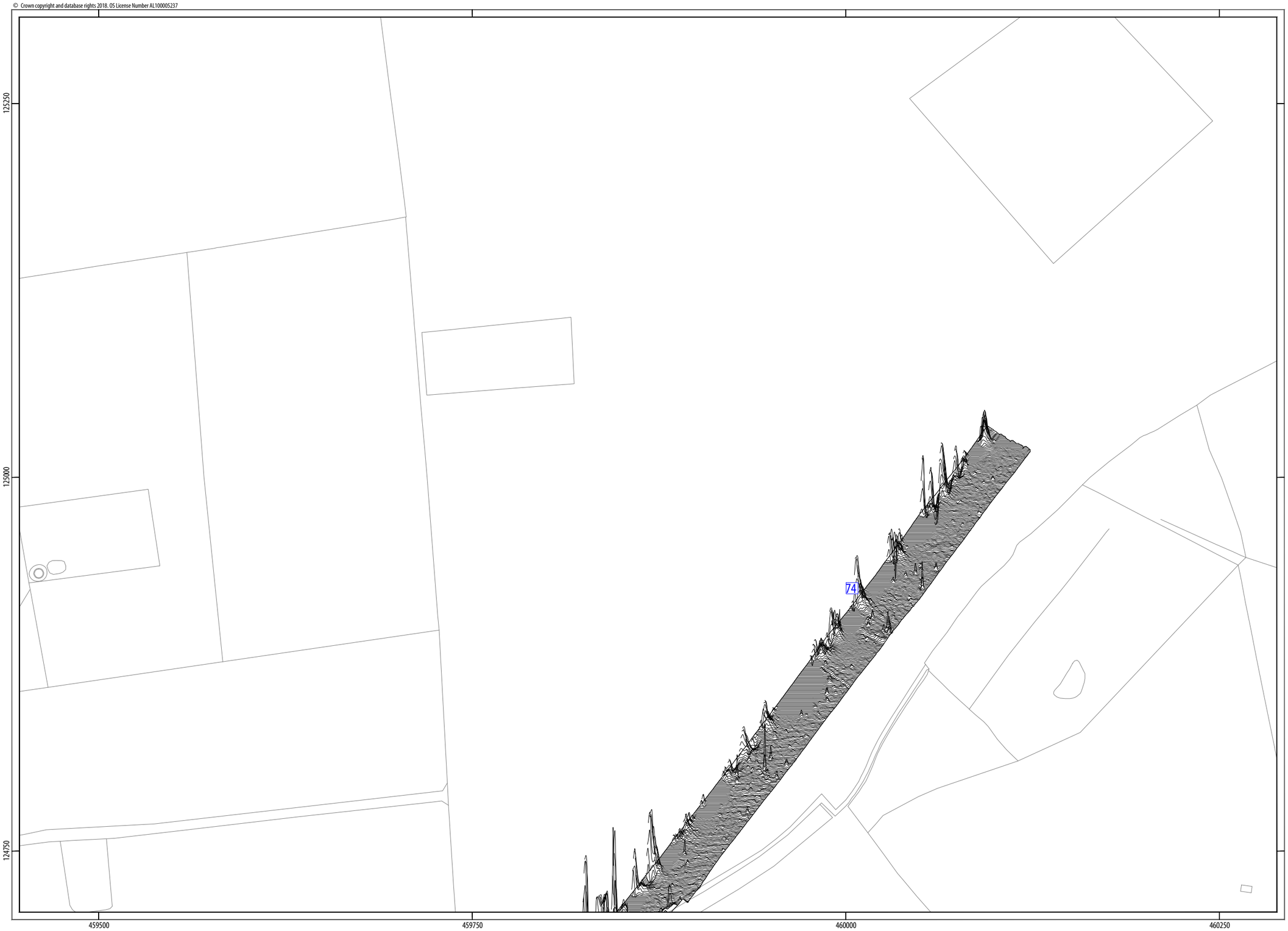
ILLUS 36 Processed greyscale magnetometer data; GSA74



15.0nT/cm

0 50m

1:2,500 @ A3

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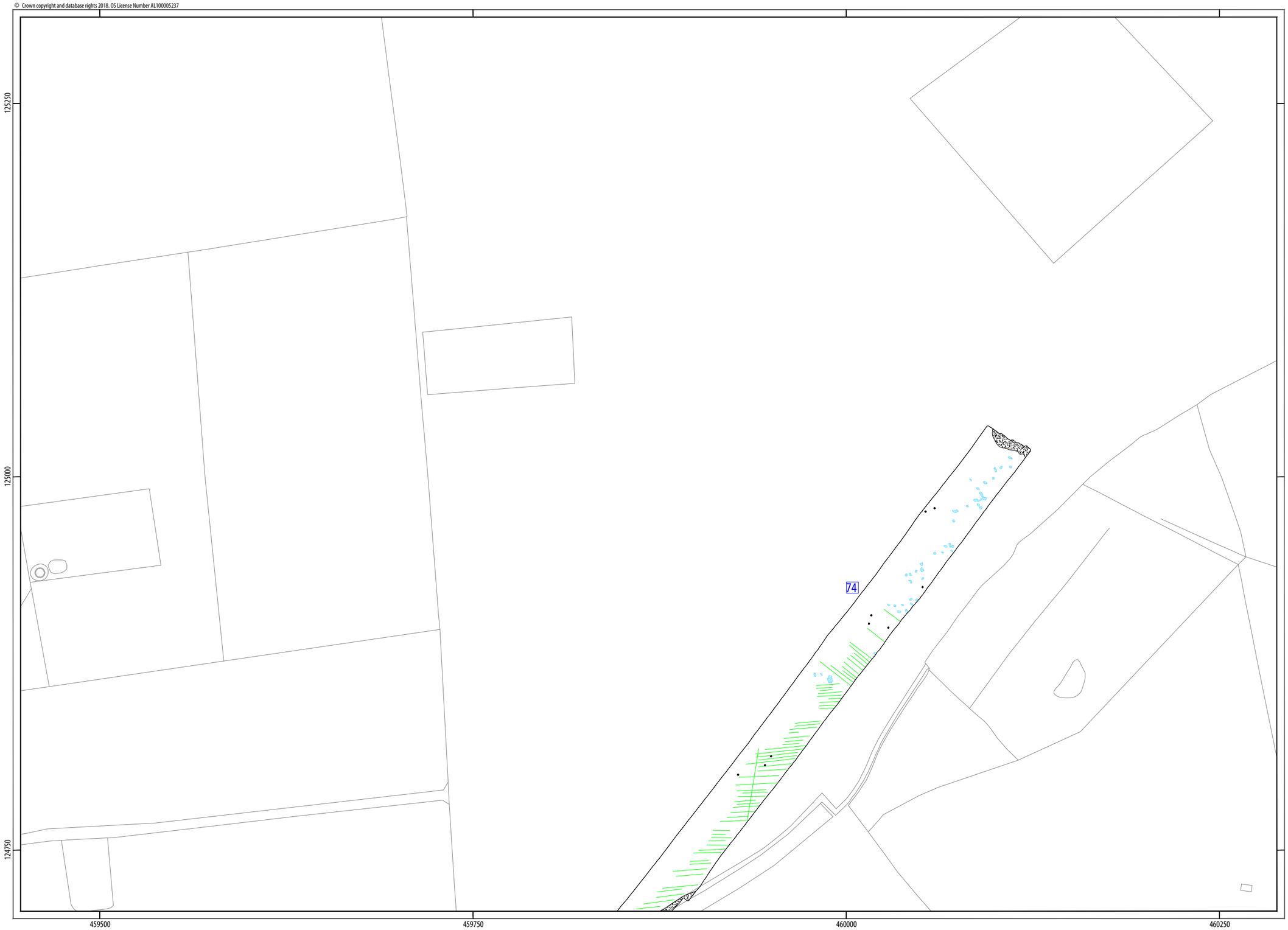
ILLUS 37 XY trace plot of minimally processed magnetometer data; GSA74



INTERPRETATION
- ferrous material
- ferrous material
- agricultural
- geology

0 50m
1:2,500 @ A3

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ILLUS 38 Interpretation of magnetometer data; GSA74

geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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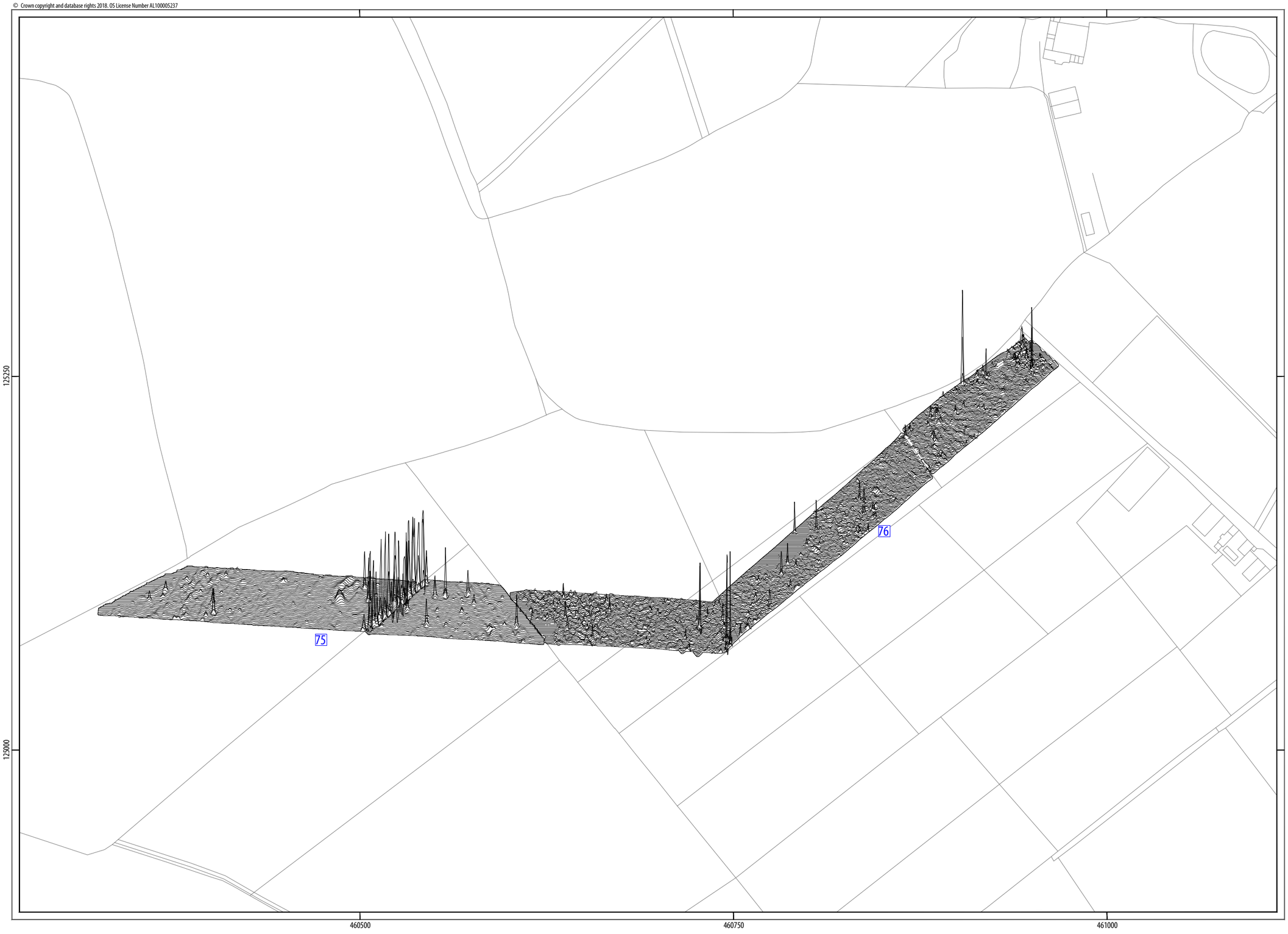
ILLUS 39 Processed greyscale magnetometer data; GSA75 & GSA76



15.0nT/cm

0 50m

1:2,500 @ A3

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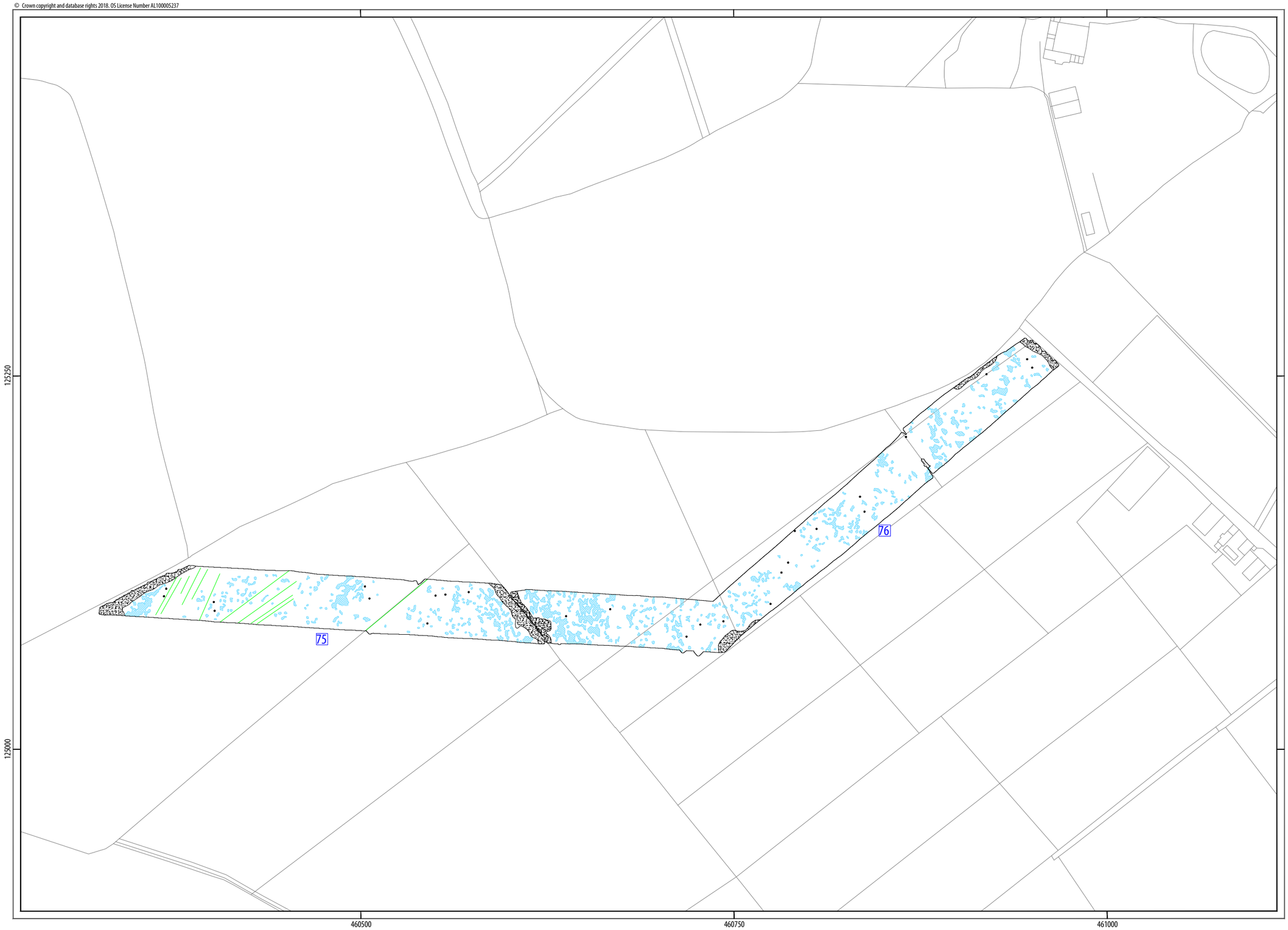
ILLUS 40 XY trace plot of minimally processed magnetometer data; GSA75 & GSA76



INTERPRETATION
- ferrous material
- ferrous material
- agricultural
- geology

0 50m
1:2,500 @ A3

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ILLUS 41 Interpretation of magnetometer data; GSA75 & GSA76

geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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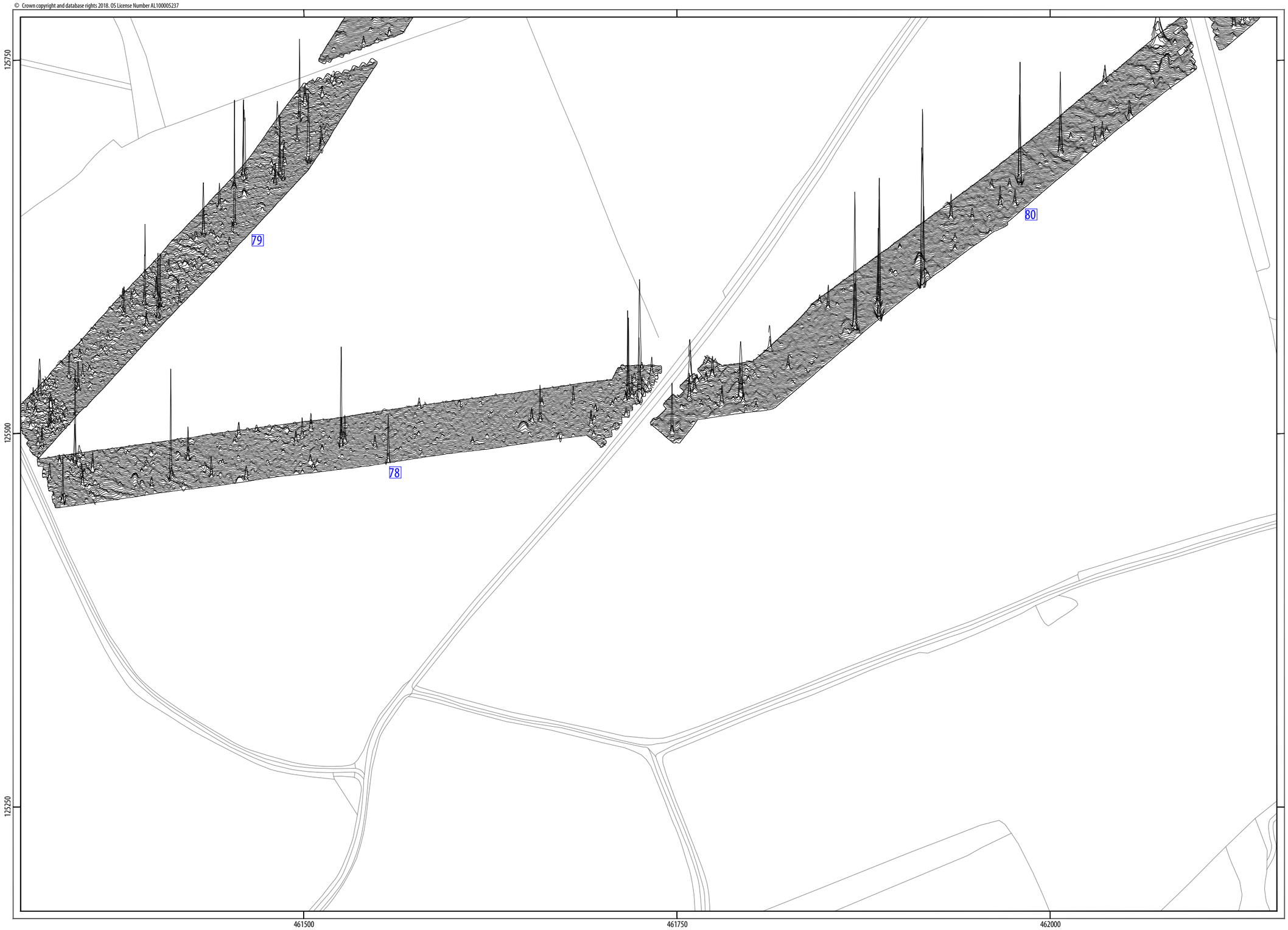
ILLUS 42 Processed greyscale magnetometer data; GSA78, GSA79 & GSA80



15.0nT/cm

0 50m

1:2,500 @ A3

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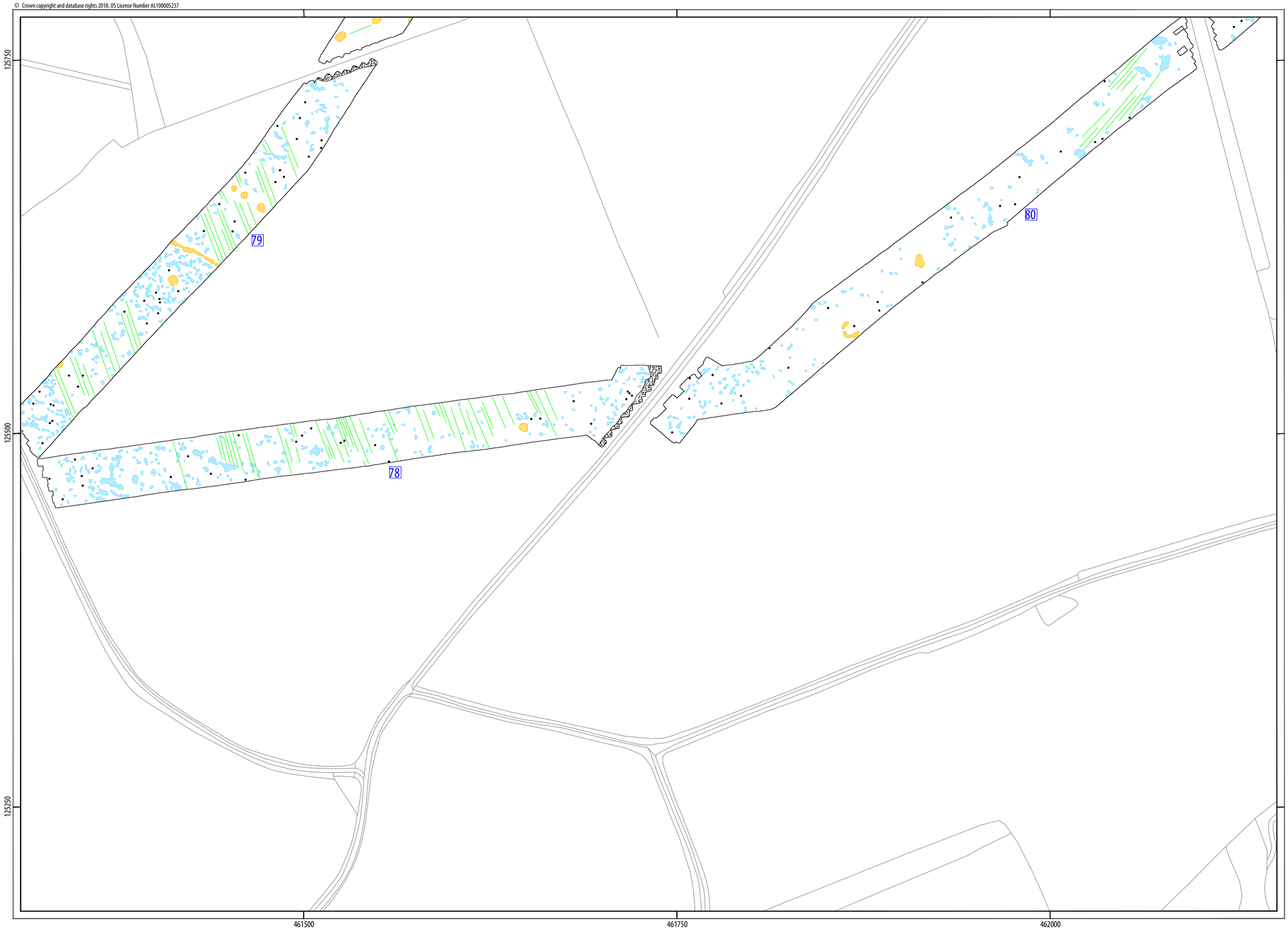
ILLUS 43 XY trace plot of minimally processed magnetometer data; GSA78, GSA79 & GSA80



INTERPRETATION
- ferrous material
- ferrous material
- agricultural
- geology
- archaeology?

0 50m
1:2,500 @ A3

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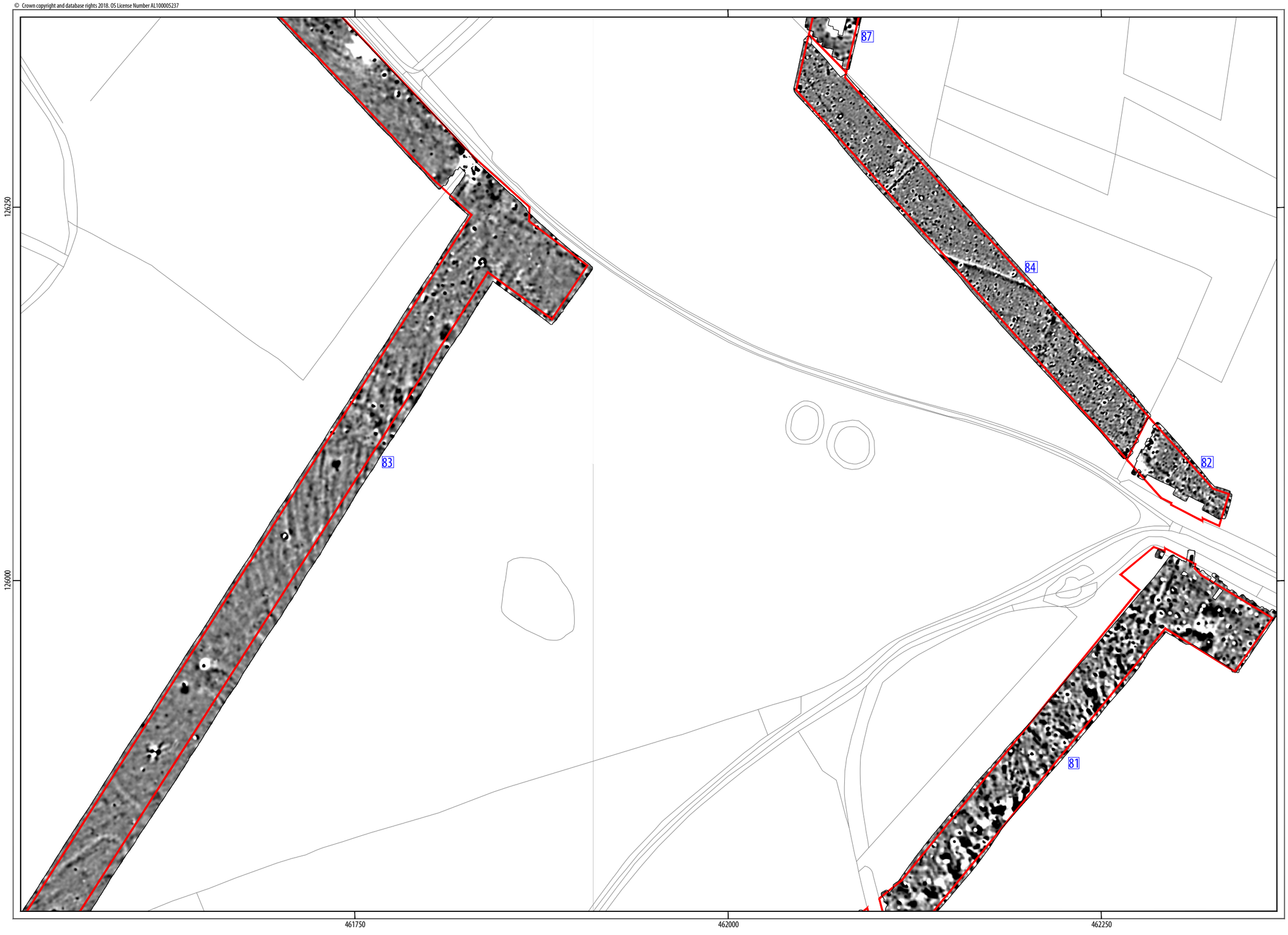
ILLUS 44 Interpretation of magnetometer data; GSA78, GSA79 & GSA80



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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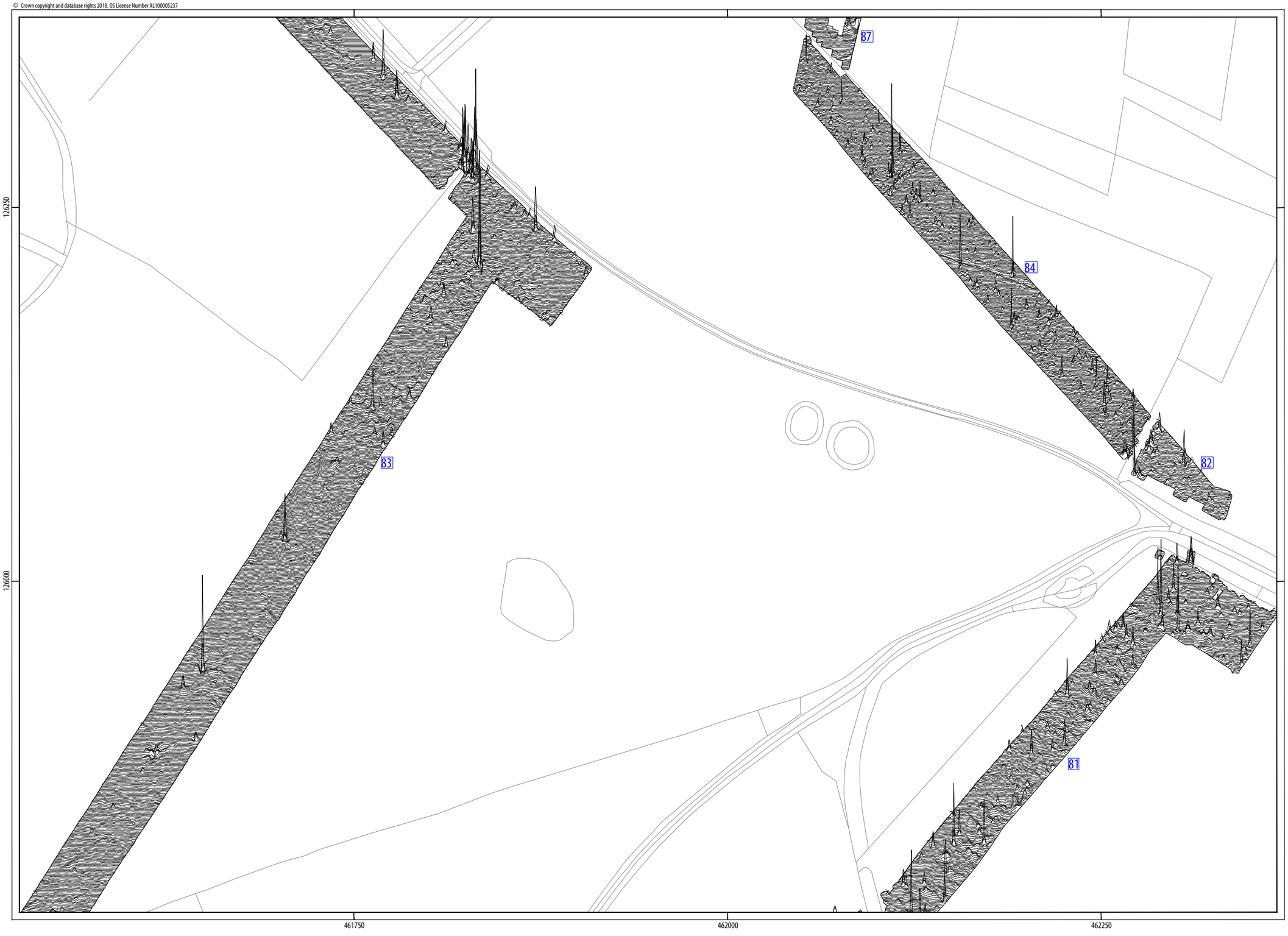
ILLUS 45 Processed greyscale magnetometer data; GSA81, GSA82, GSA83, GSA84 & GSA87



15.0nT/cm

0 50m

1:2,500 @ A3

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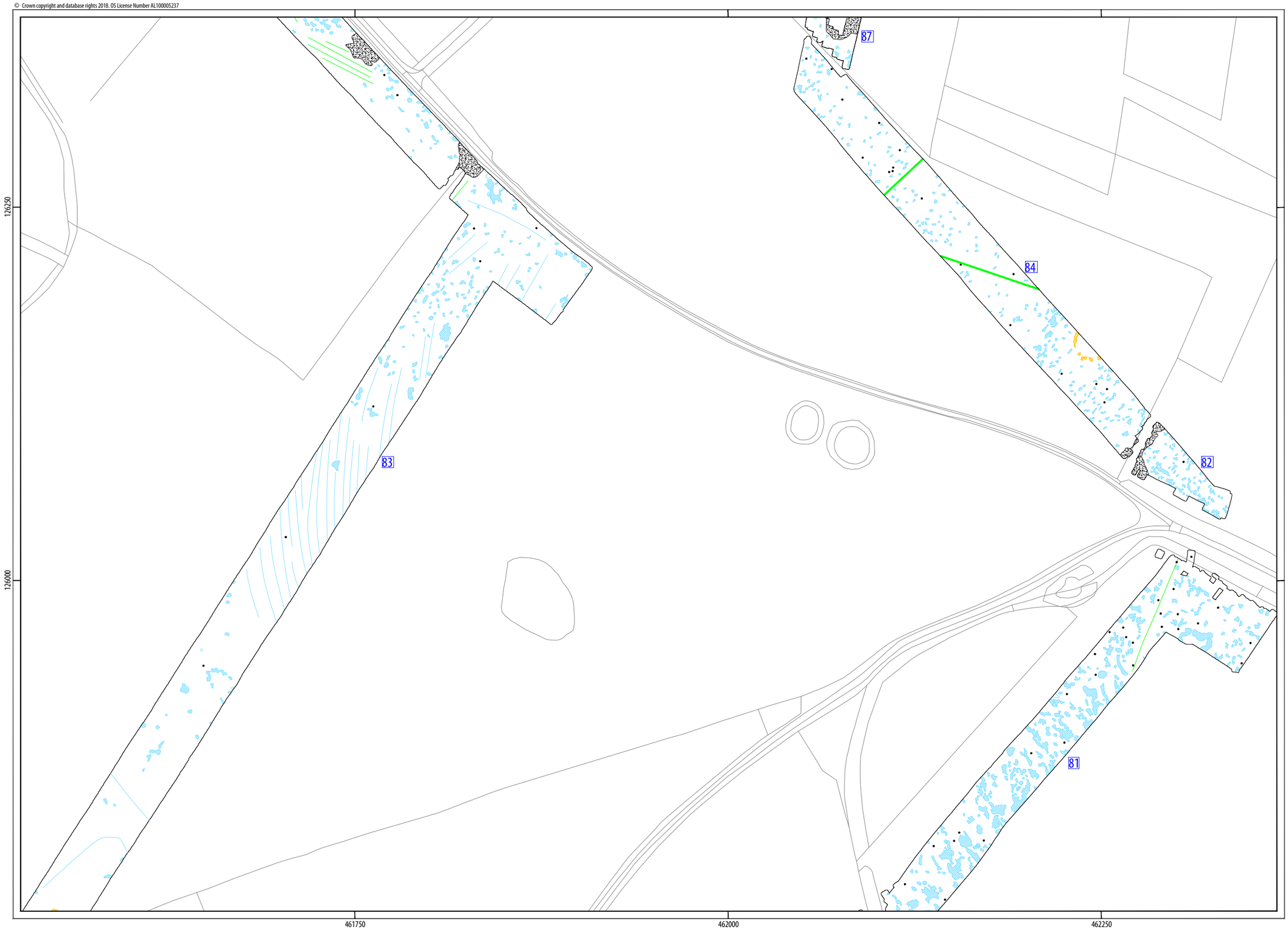
ILLUS 46 XY trace plot of minimally processed magnetometer data; GSA81, GSA82, GSA83, GSA84 & GSA87



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- former field boundary
- geology
- archaeology?

0 50m
1:2,500 @ A3

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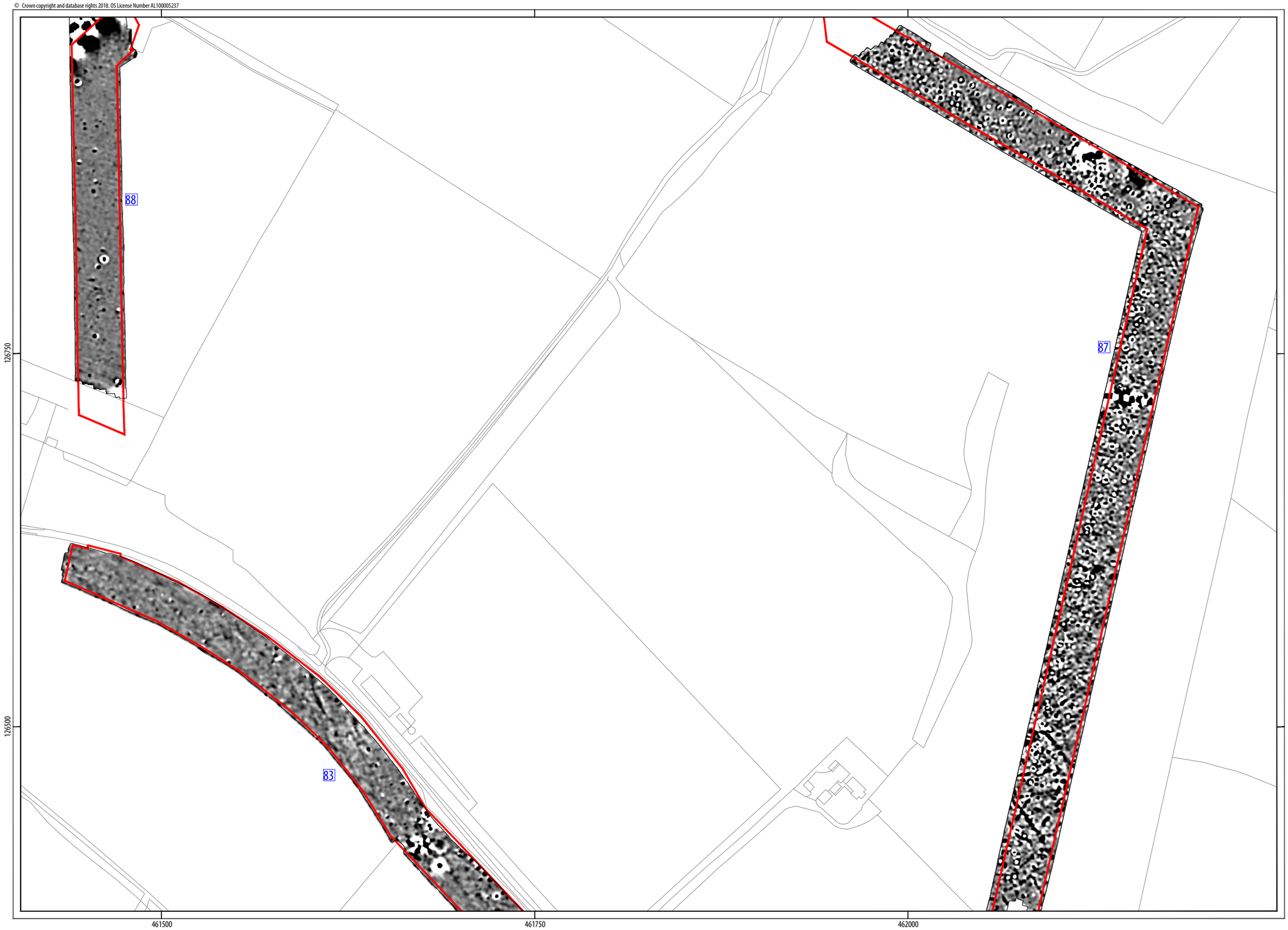
ILLUS 47 Interpretation of magnetometer data; GSA81, GSA82, GSA83, GSA84 & GSA87



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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ILLUS 48 Processed greyscale magnetometer data; GSA83, GSA87 & GSA88

88

87

83

126750

126500

461500

461750

462000

15.0nT/cm

0 50m

1:2,500 @ A3

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ILLUS 49 XY trace plot of minimally processed magnetometer data; GSA83, GSA87 & GSA88

88

87

83

126750

126500

461500

461750

462000

INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology
- archaeology?

0 50m
1:2,500 @ A3

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ILLUS 50 Interpretation of magnetometer data; GSA83, GSA87 & GSA88

geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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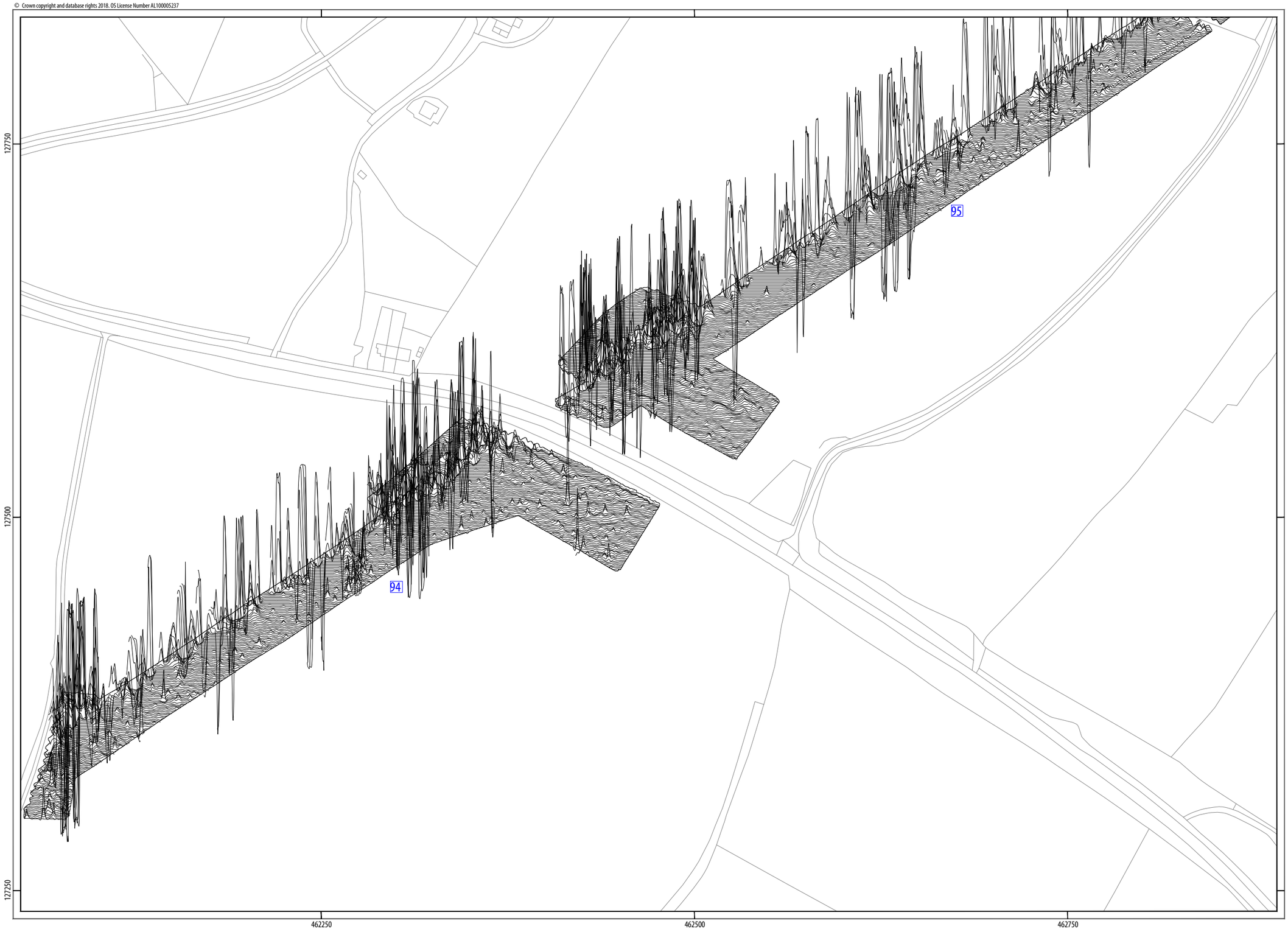
ILLUS 51 Processed greyscale magnetometer data; GSA94 & GSA95



15.0nT/cm

0 50m

1:2,500 @ A3

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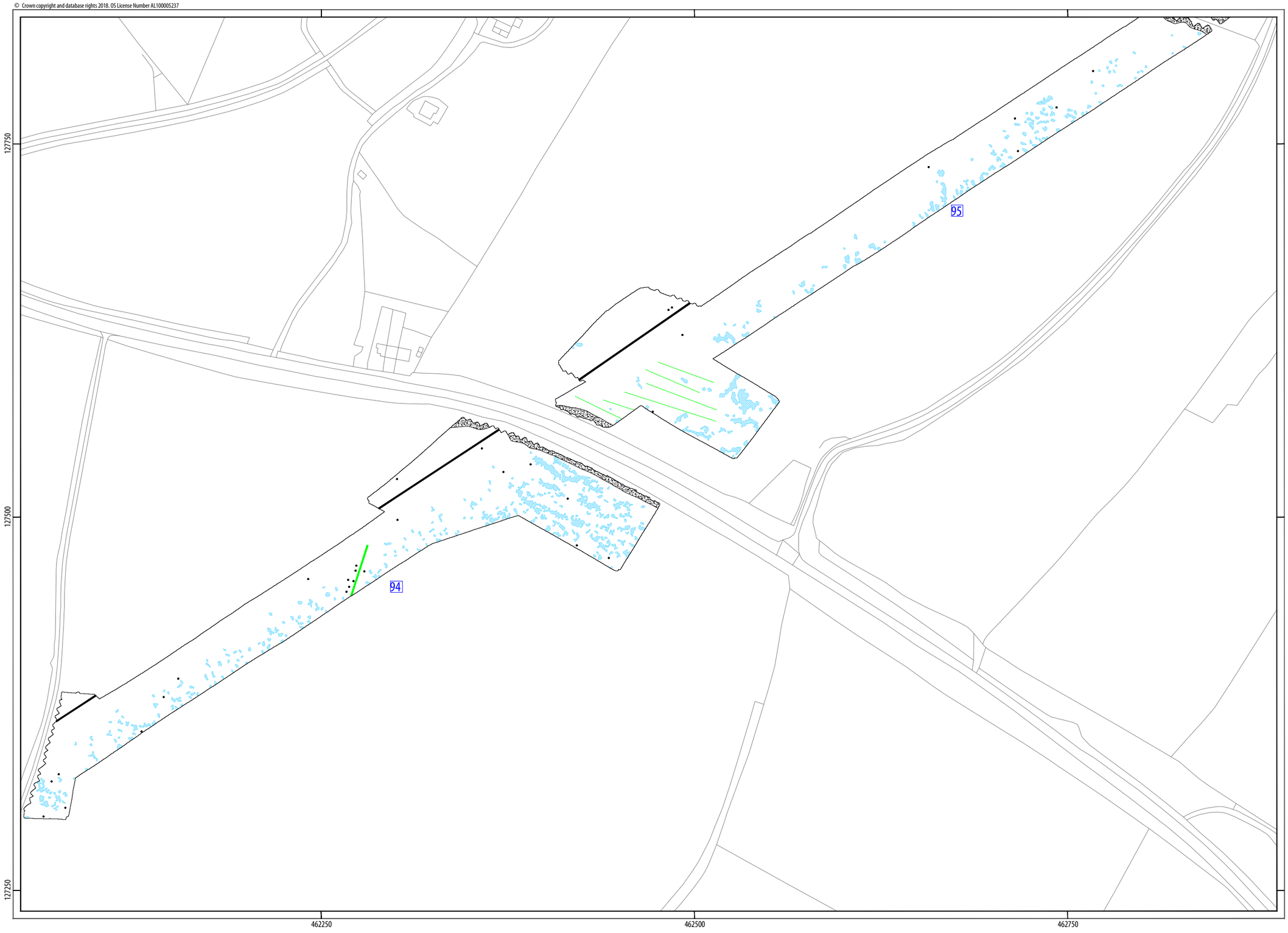
ILLUS 52 XY trace plot of minimally processed magnetometer data; GSA94 & GSA95



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- former field boundary
- geology

0 50m
1:2,500 @ A3

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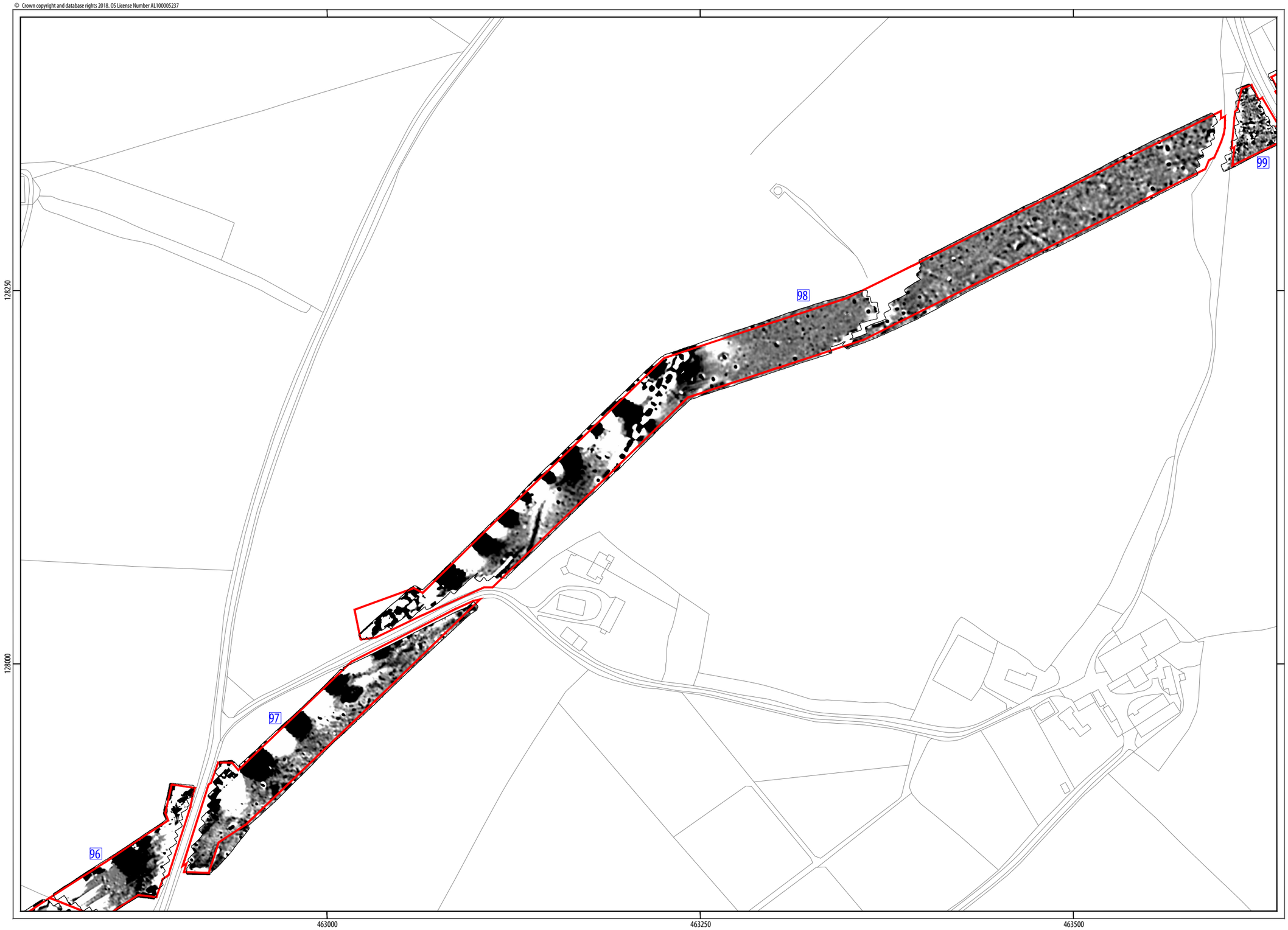
ILLUS 53 Interpretation of magnetometer data; GSA94 & GSA95



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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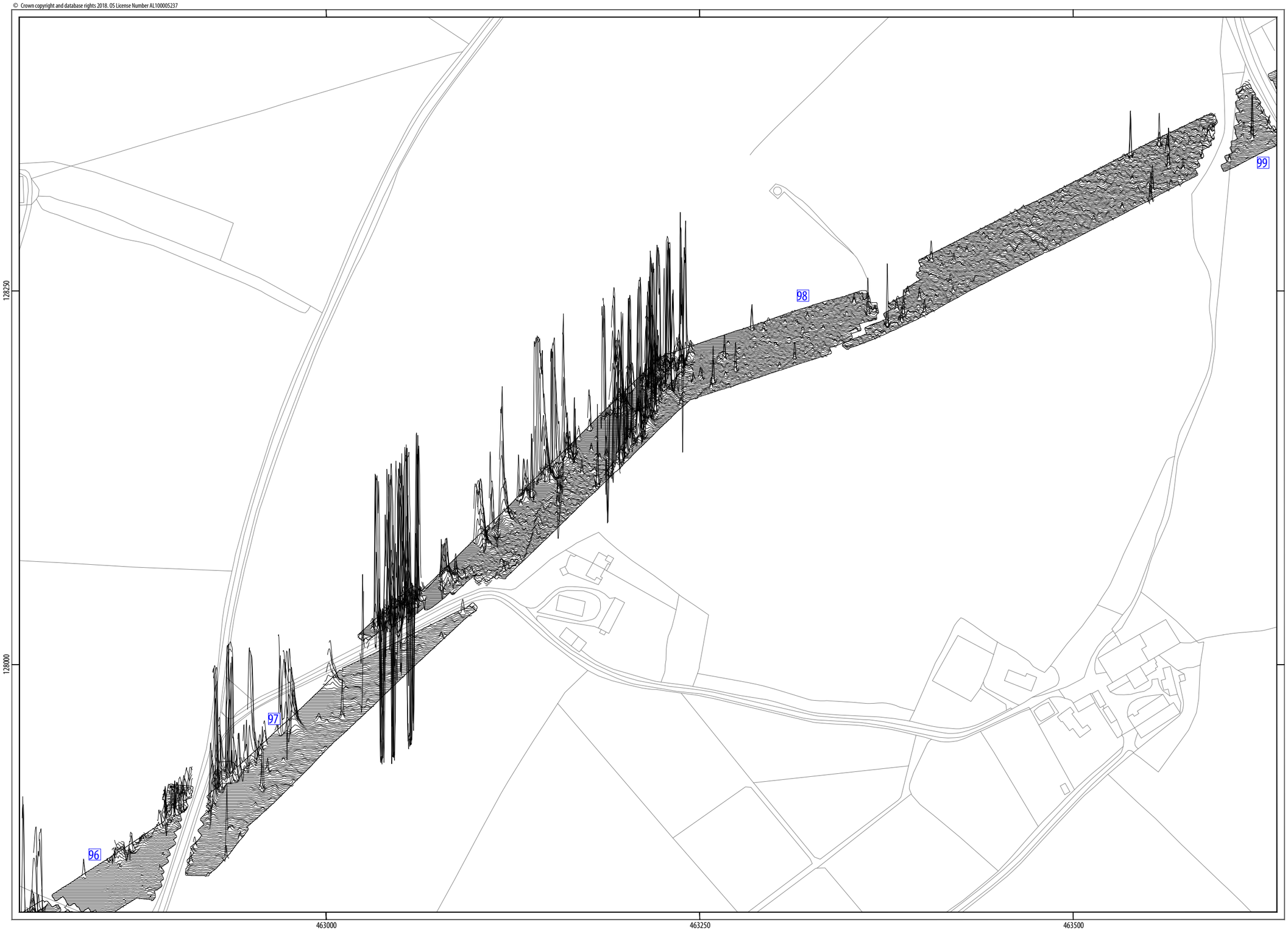
ILLUS 54 Processed greyscale magnetometer data; GSA96, GSA97, GSA98 & GSA99



15.0nT/cm

0 50m

1:2,500 @ A3

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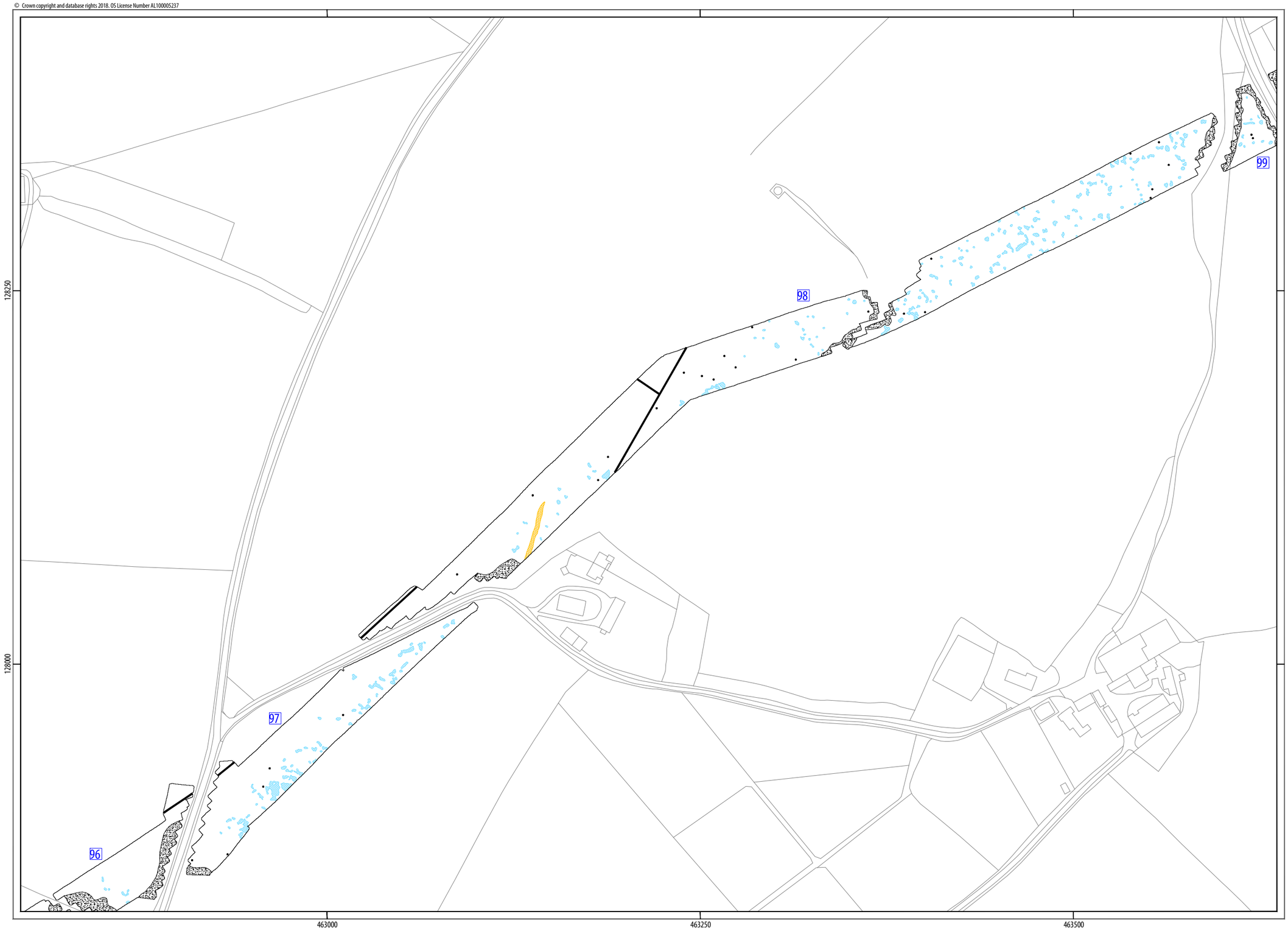
ILLUS 55 XY trace plot of minimally processed magnetometer data; GSA96, GSA97, GSA98 & GSA99



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- geology
- archaeology?

0 50m
1:2,500 @ A3

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ILLUS 56 Interpretation of magnetometer data; GSA96, GSA97, GSA98 & GSA99

geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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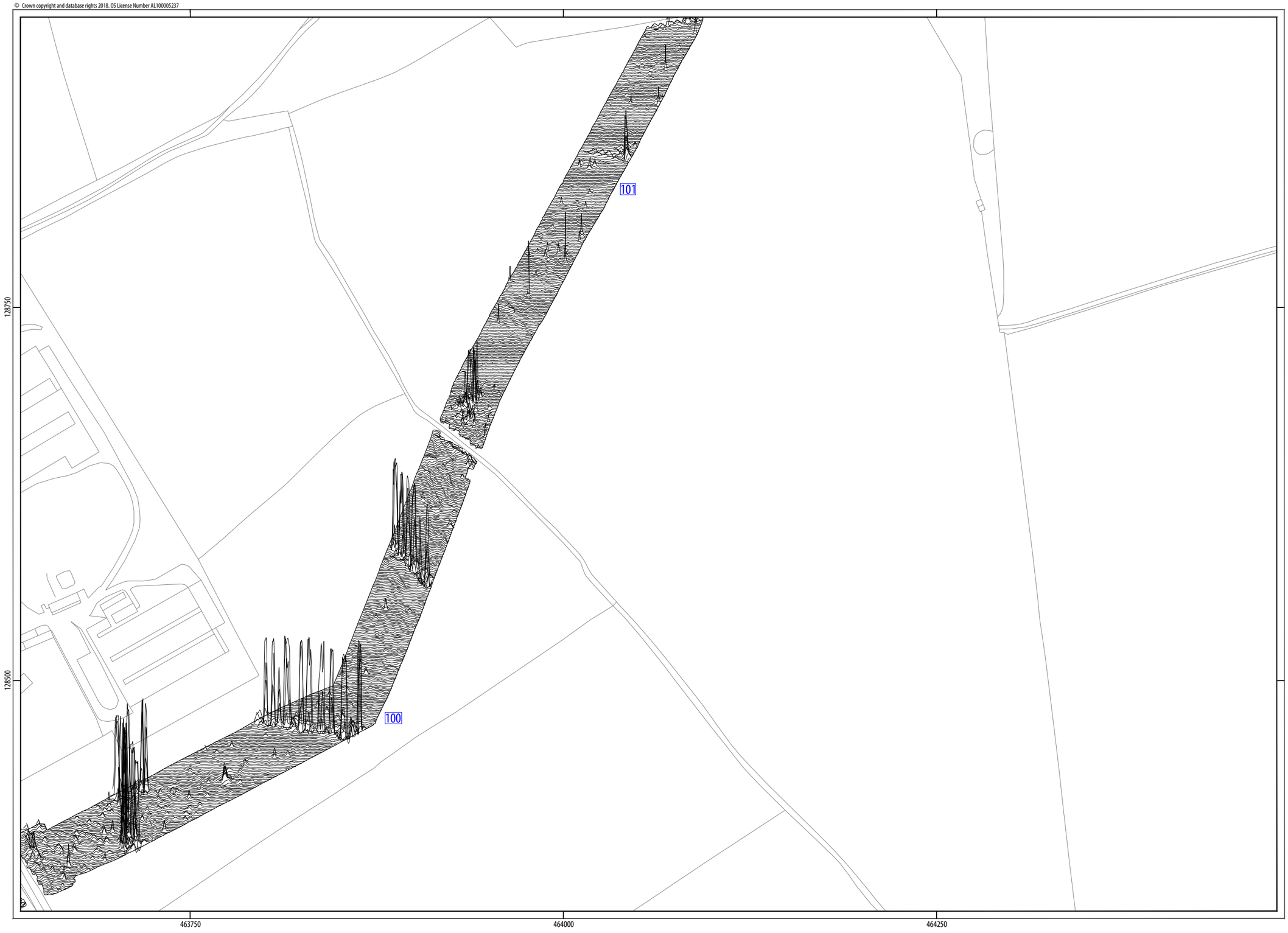
ILLUS 57 Processed greyscale magnetometer data; GSA100 & GSA101



15.0nT/cm

0 50m

1:2,500 @ A3

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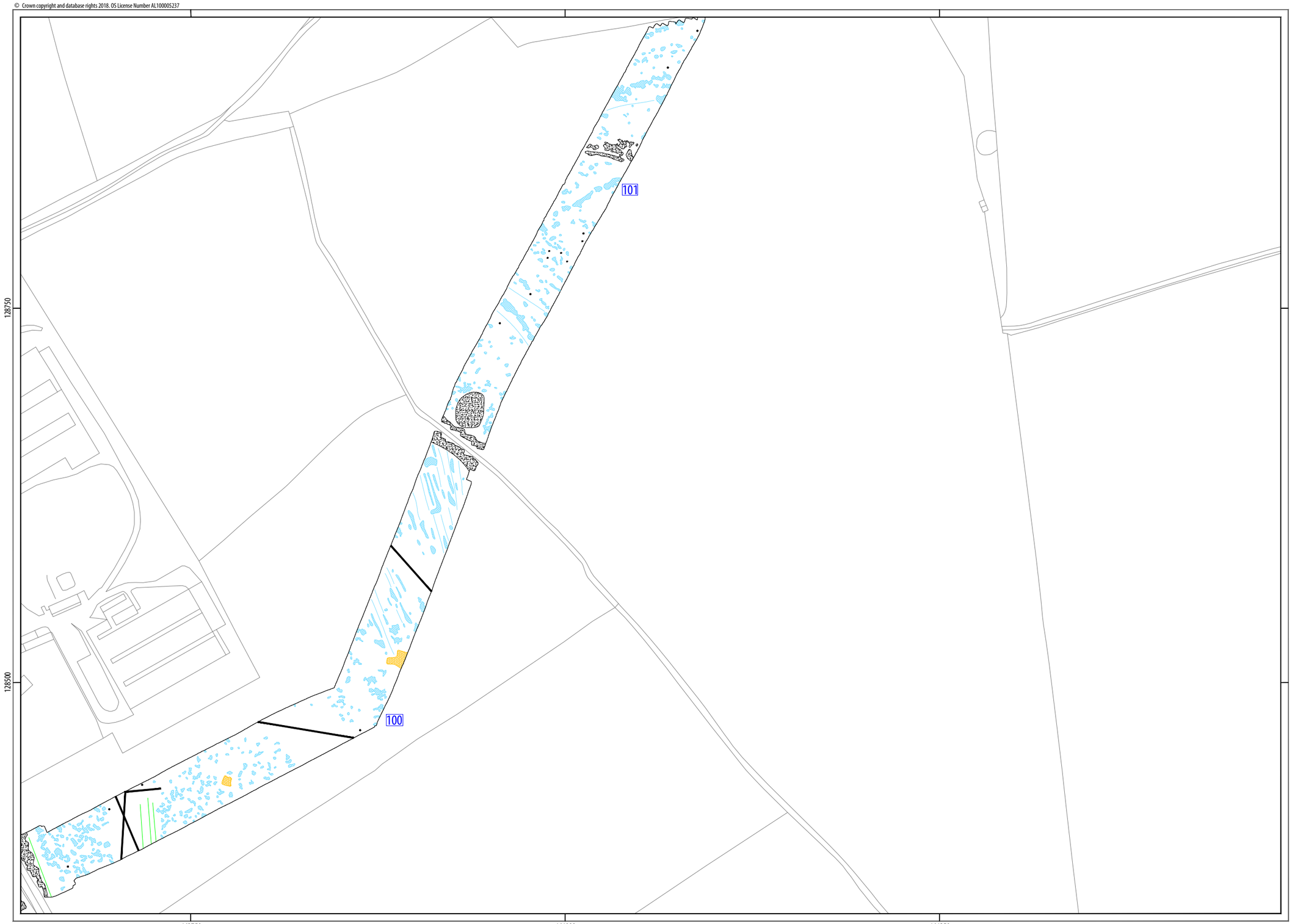
ILLUS 58 XY trace plot of minimally processed magnetometer data; GSA100 & GSA101



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology
- archaeology?

0 50m
1:2,500 @ A3

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ILLUS 59 Interpretation of magnetometer data; GSA100 & GSA101

geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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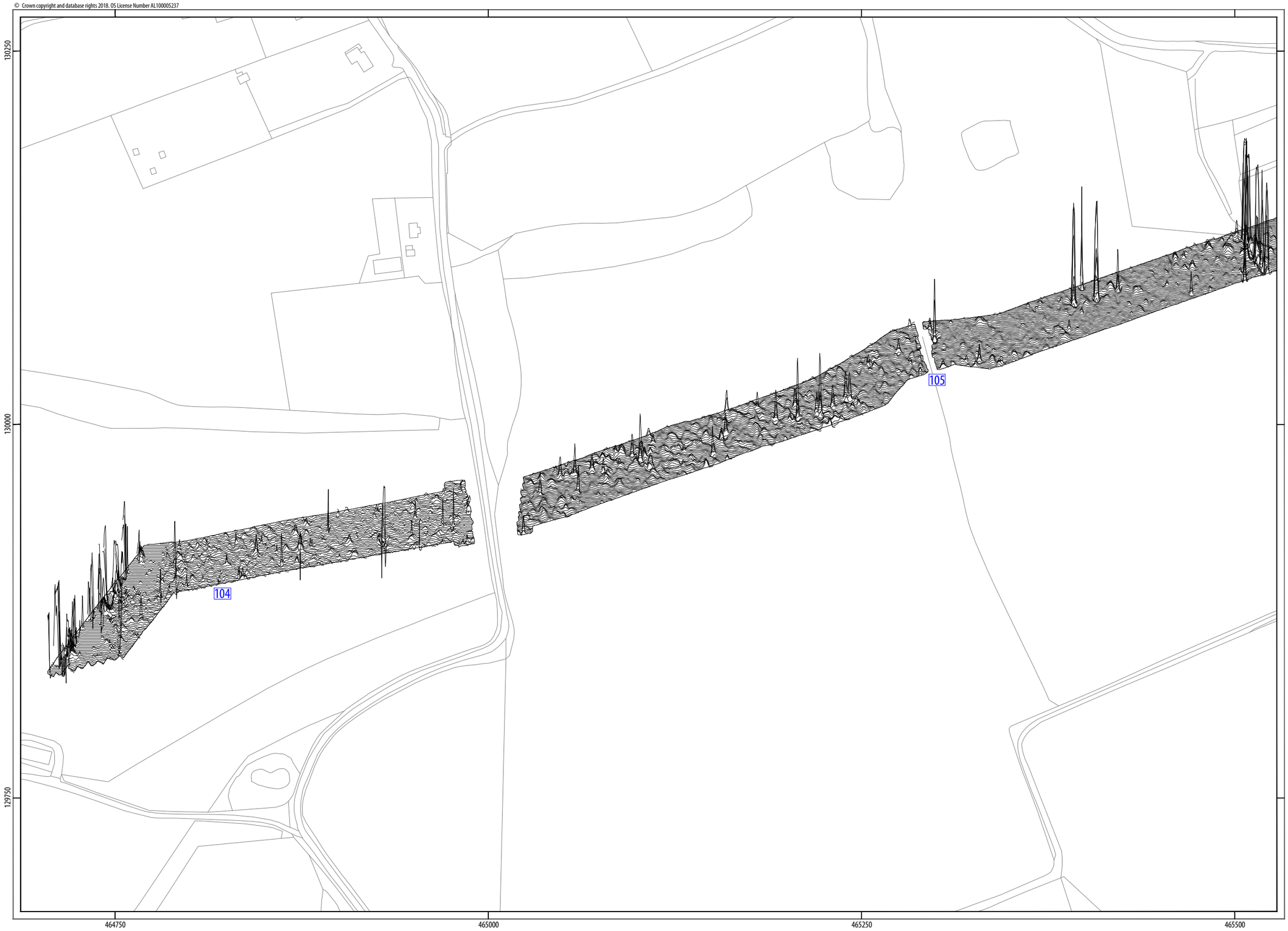
ILLUS 60 Processed greyscale magnetometer data; GSA104 & GSA105



15.0nT/cm

0 50m

1:2,500 @ A3

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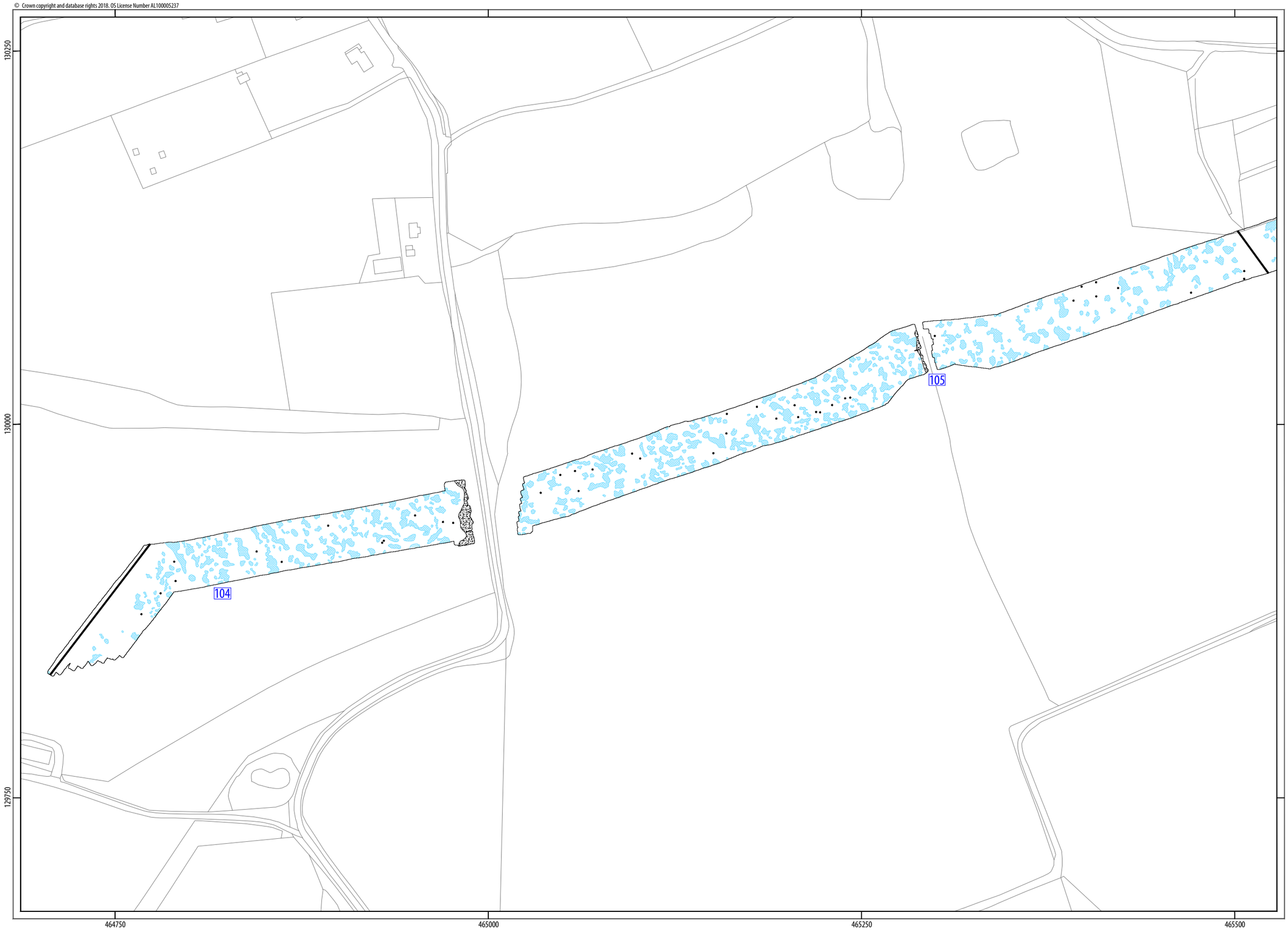
ILLUS 61 XY trace plot of minimally processed magnetometer data; GSA104 & GSA105



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- geology

0 50m
1:2,500 @ A3

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ILLUS 62 Interpretation of magnetometer data; GSA104 & GSA105

geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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ILLUS 63 Processed greyscale magnetometer data; GSA105, GSA106 & GSA107

15.0nT/cm

0 50m

1:2,500 @ A3

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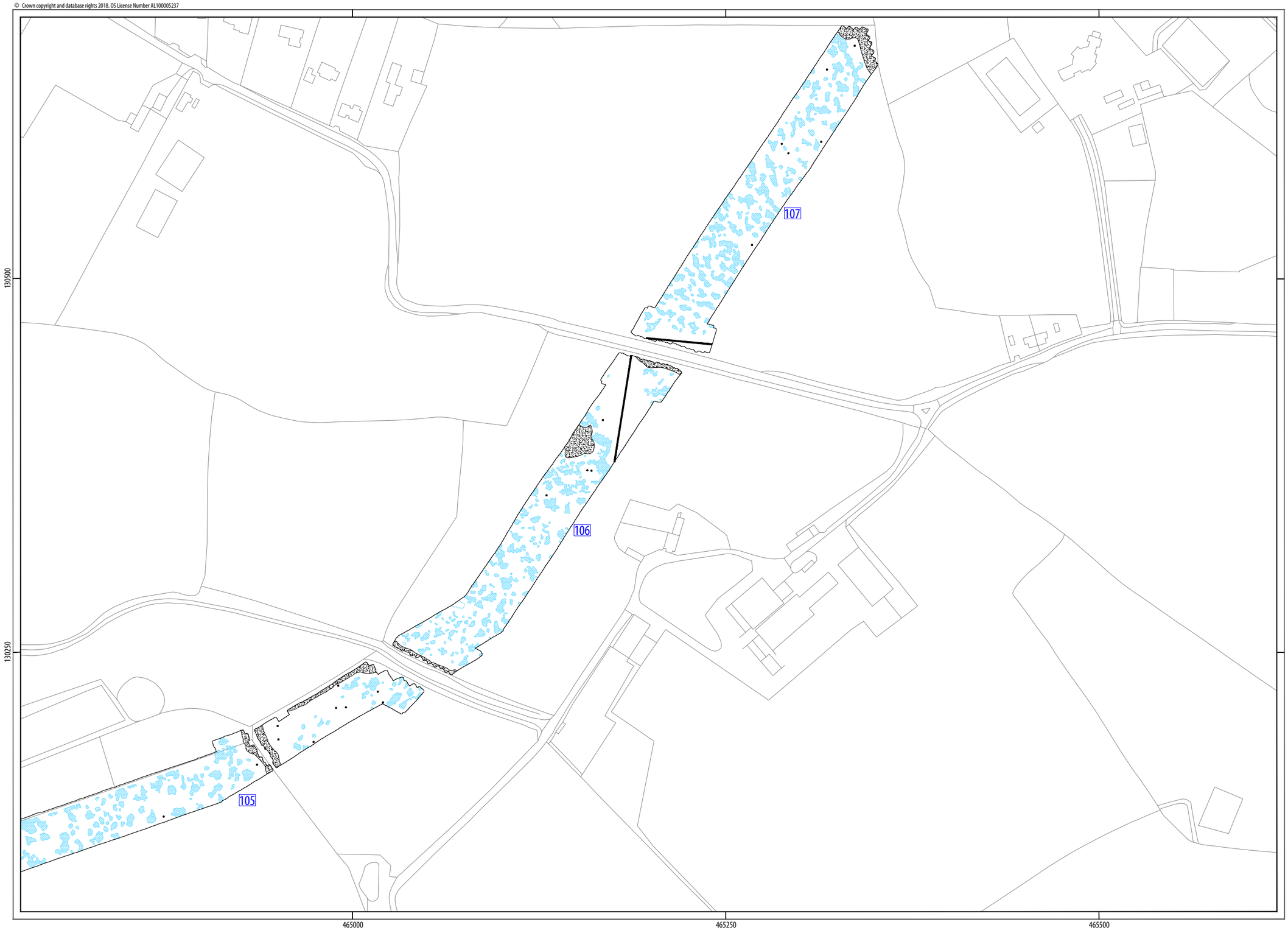
ILLUS 64 XY trace plot of minimally processed magnetometer data; GSA105, GSA106 & GSA107



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- geology

0 50m
1:2,500 @ A3

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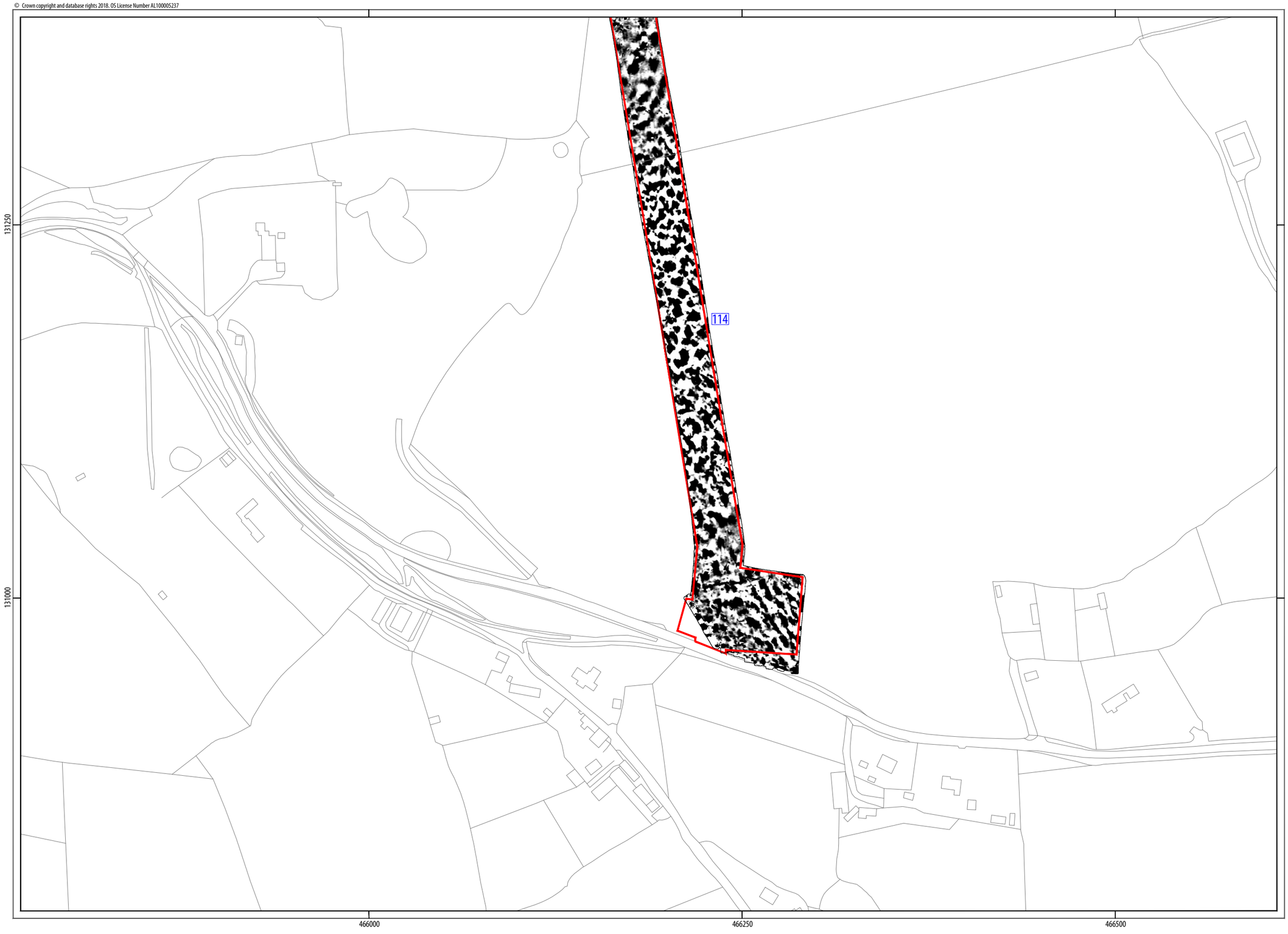
ILLUS 65 Interpretation of magnetometer data; GSA105, GSA106 & GSA107



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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ILLUS 66 Processed greyscale magnetometer data; GSA114

15.0nT/cm

0 50m

1:2,500 @ A3

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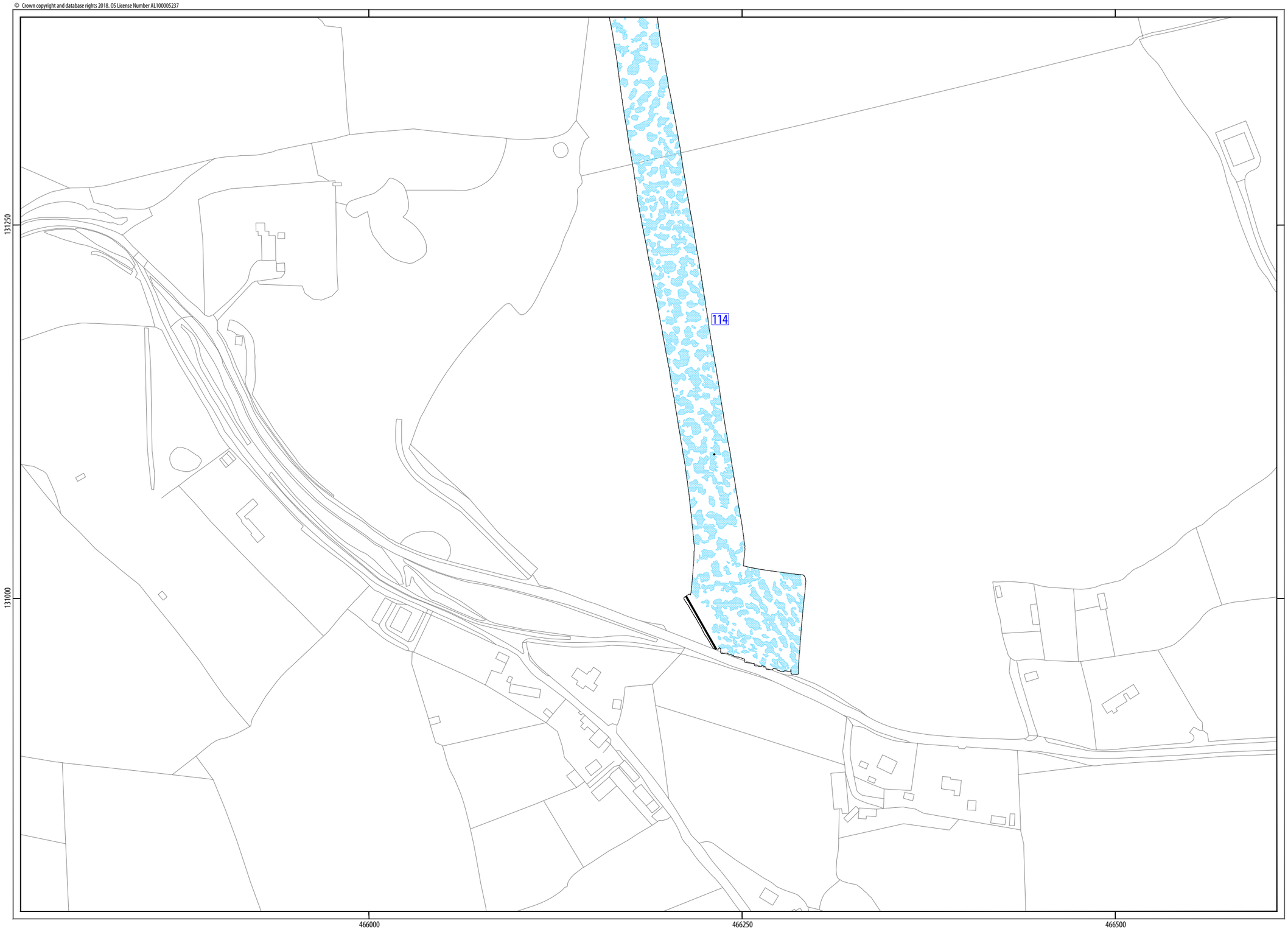
ILLUS 67 XY trace plot of minimally processed magnetometer data; GSA114



INTERPRETATION
- ferrous material
- service pipe
- geology

0 50m
1:2,500 @ A3

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ILLUS 68 Interpretation of magnetometer data; GSA114

geophysical survey area

nT
-1.0 1.0

0 50m
1:2,500 @ A3

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ILLUS 69 Processed greyscale magnetometer data; GSA114

15.0nT/cm

0 50m

1:2,500 @ A3

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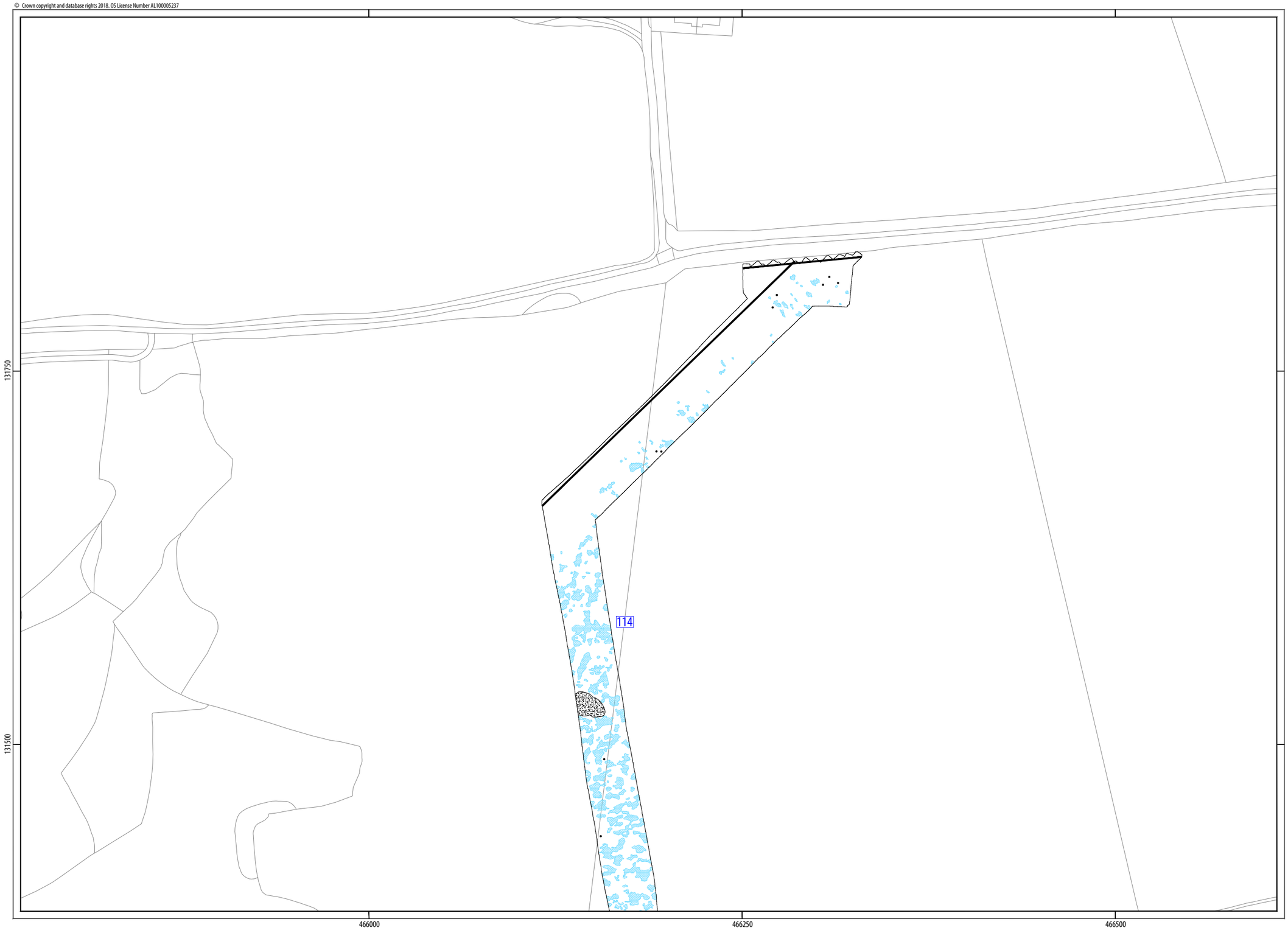
ILLUS 70 XY trace plot of minimally processed magnetometer data; GSA114



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- geology

0 50m
1:2,500 @ A3

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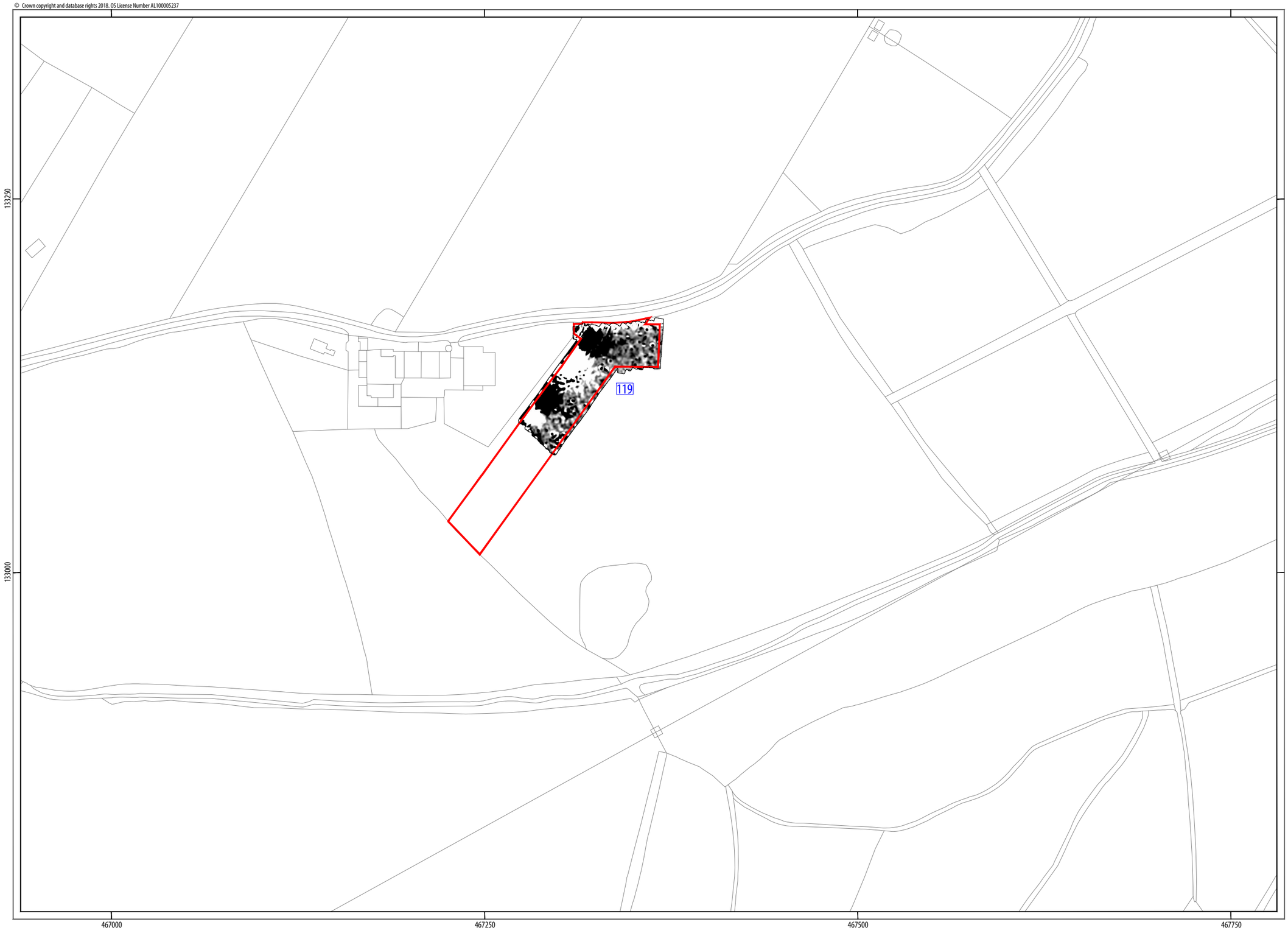
ILLUS 71 Interpretation of magnetometer data; GSA114



geophysical survey area

-1.0 nT 1.0

0 50m

1:2,500 @ A3

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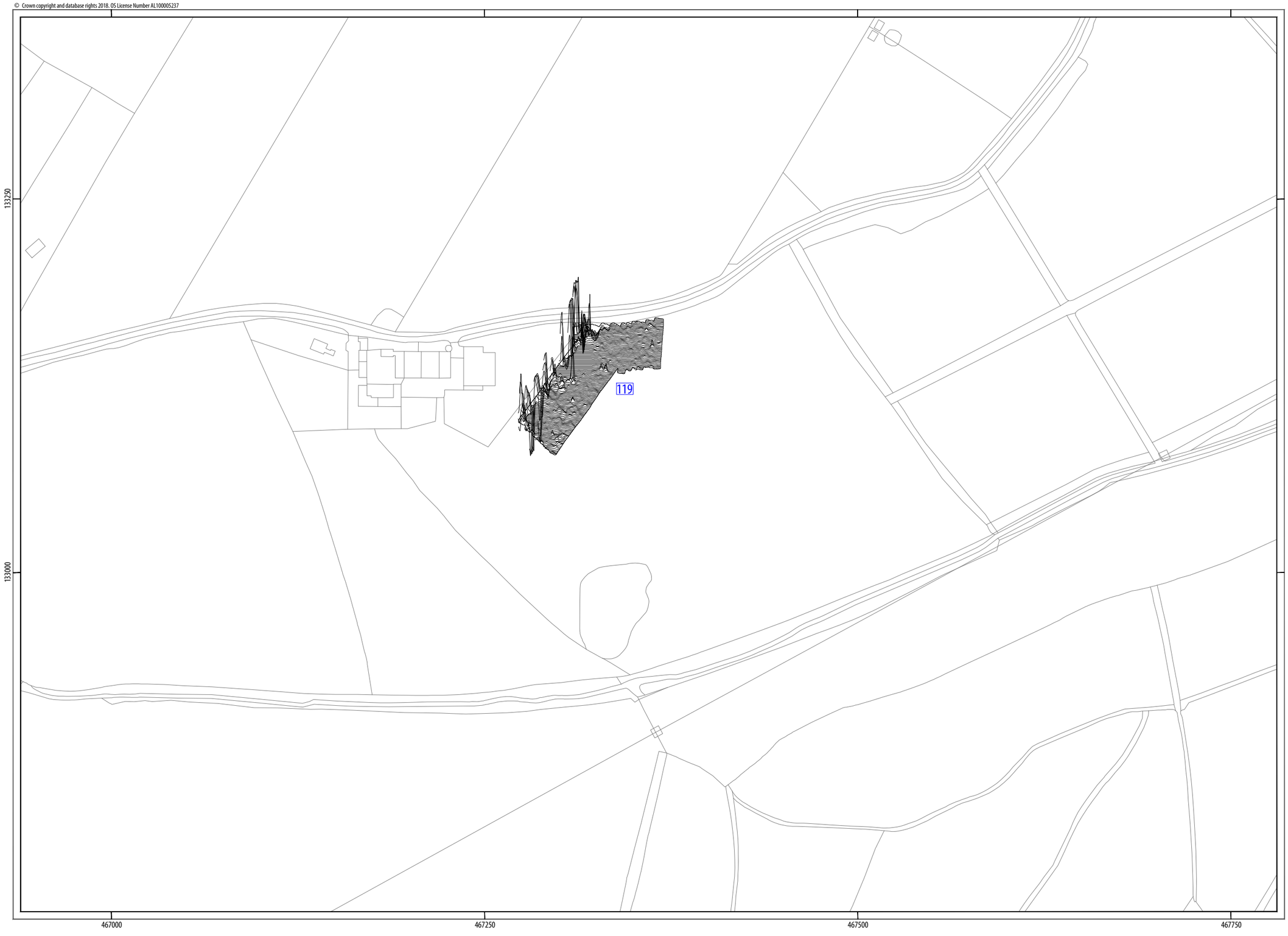
ILLUS 72 Processed greyscale magnetometer data; GSA119



15.0nT/cm

0 50m

1:2,500 @ A3

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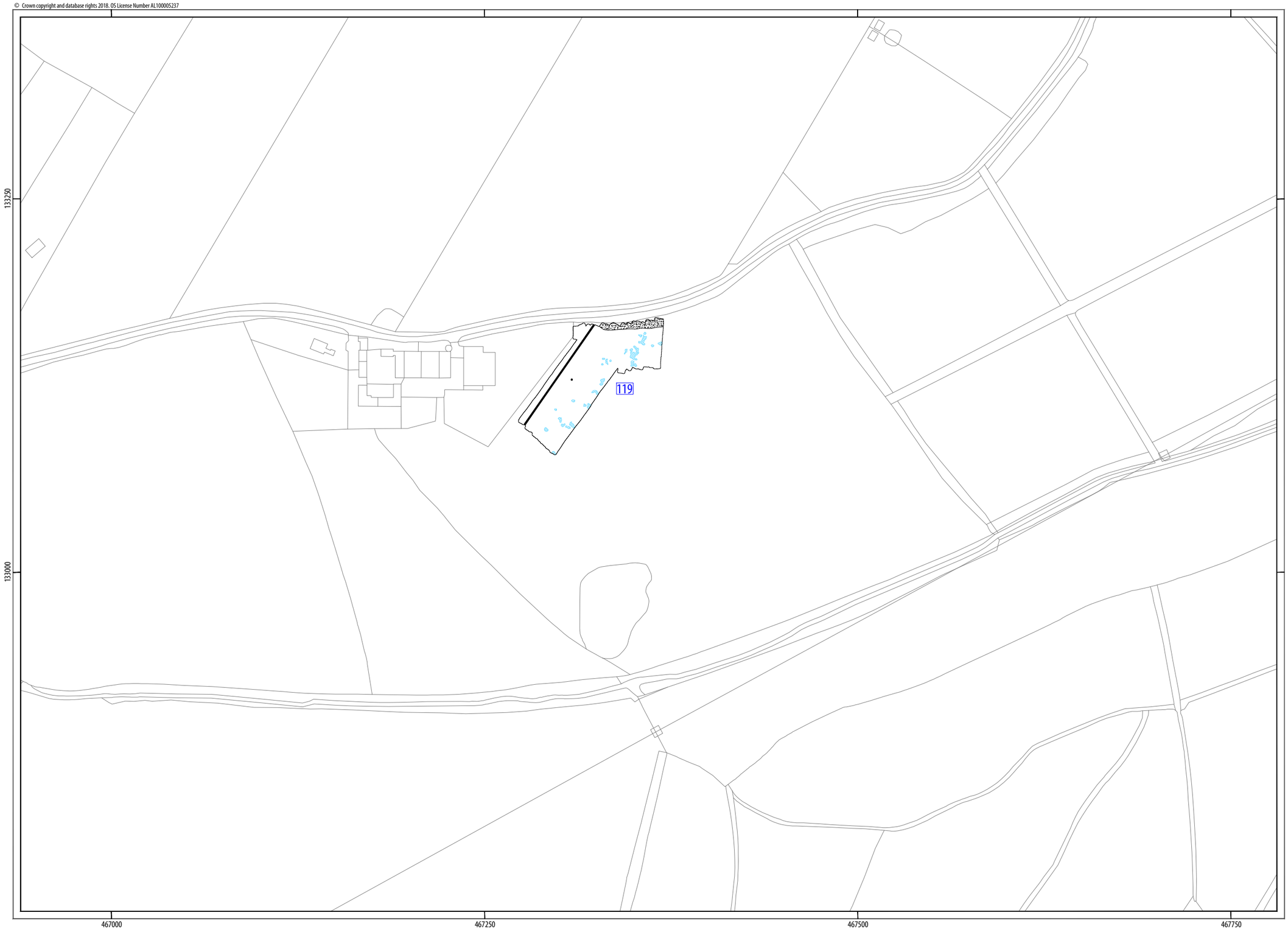
ILLUS 73 XY trace plot of minimally processed magnetometer data; GSA119



INTERPRETATION
service pipe
ferrous material
geology

0 50m
1:2,500 @ A3

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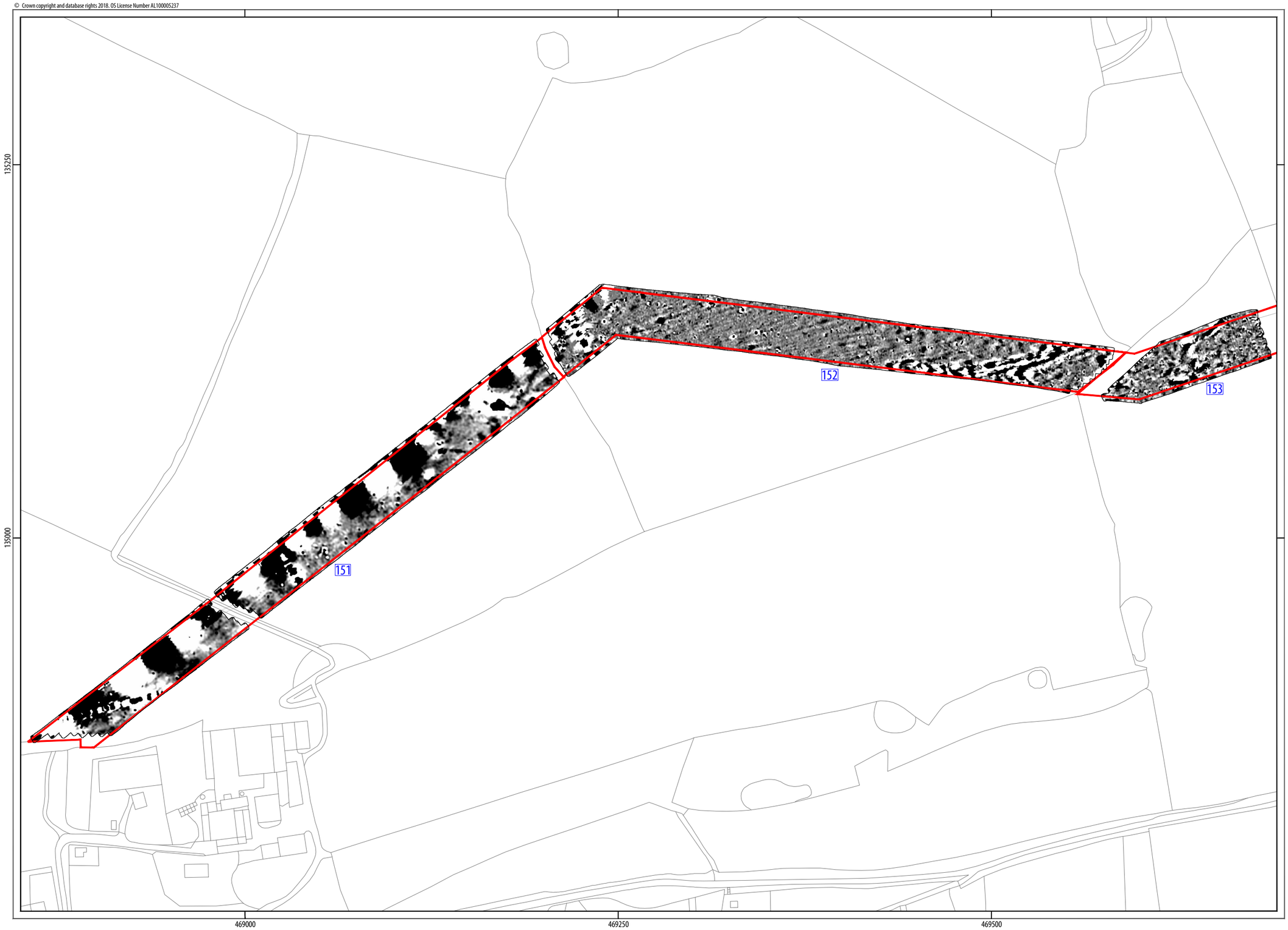
ILLUS 74 Interpretation of magnetometer data; GSA119



geophysical survey area

nT
-1.0
1.0

0
50m
1:2,500 @ A3

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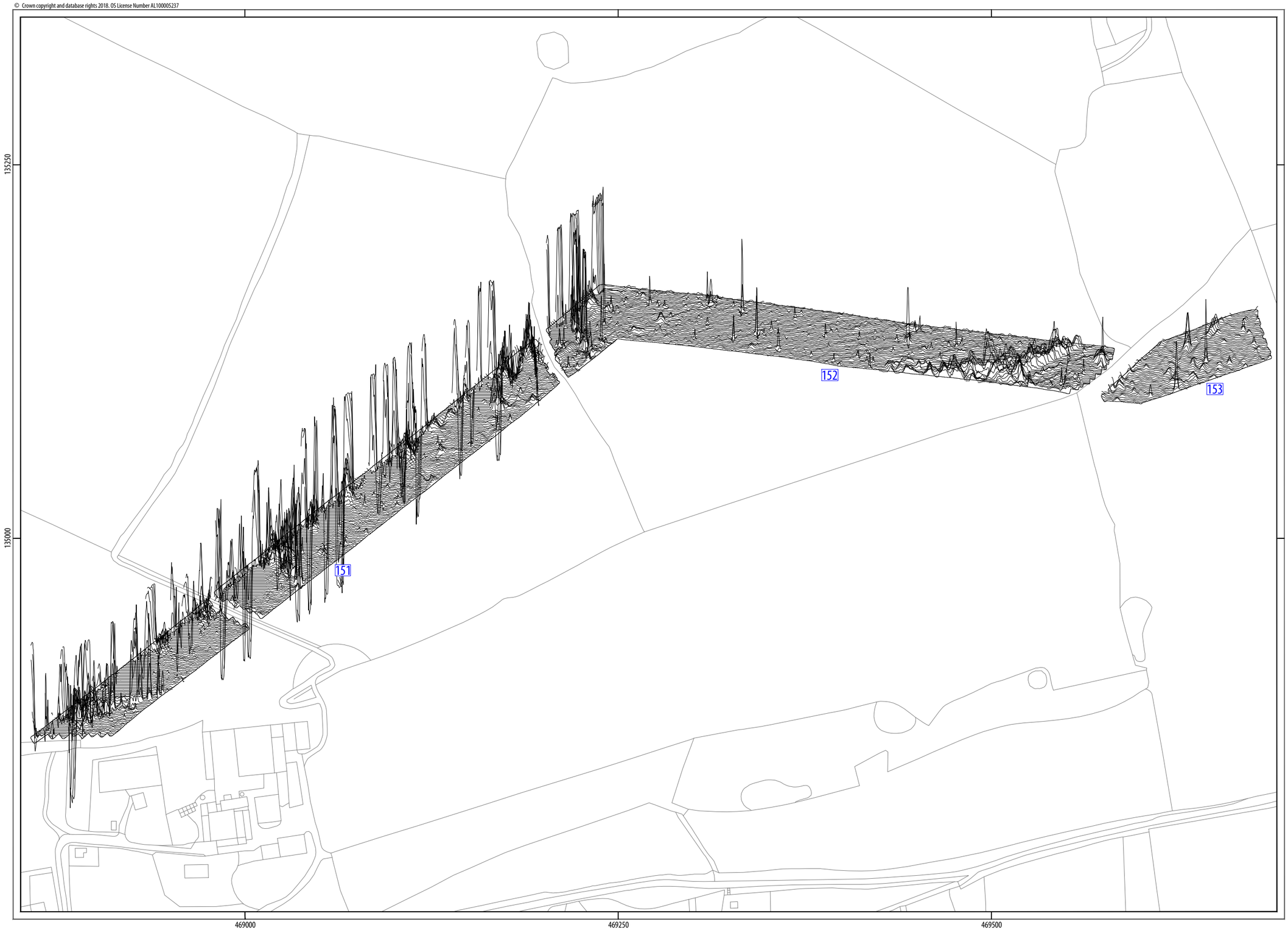
ILLUS 75 Processed greyscale magnetometer data; GSA151, GSA152 & GSA153



15.0nT/cm

0 50m

1:2,500 @ A3

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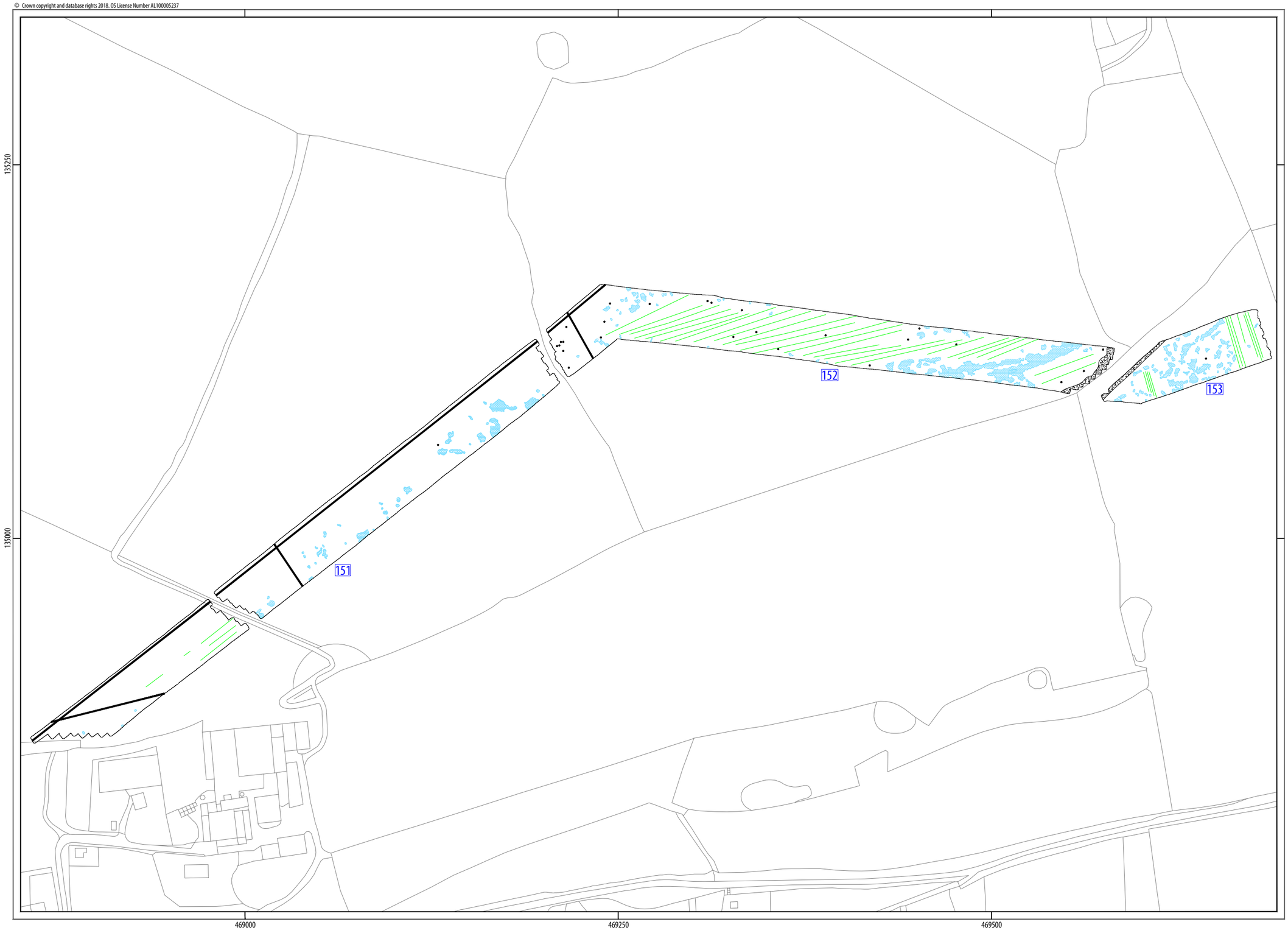
ILLUS 76 XY trace plot of minimally processed magnetometer data; GSA151, GSA152 & GSA153



INTERPRETATION
- ferrous material
- service pipe
- ferrous material
- agricultural
- geology

0 50m
1:2,500 @ A3

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ILLUS 77 Interpretation of magnetometer data; GSA151, GSA152 & GSA153