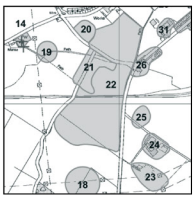
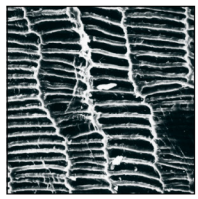
MVBB/01










MARSTON VALLEY BEDFORDSHIRE

GEOPHYSICAL SURVEY

commissioned by Archaeology Collective

July 2017

HEADLAND ARCHAEOLOGY

REGISTERED ORGANISATION CIfA

MARSTON VALLEY BEDFORDSHIRE

GEOPHYSICAL SURVEY

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July 2017

project info

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PARISH	Marston Moretaine, Lidlington, Brogborough
LOCAL AUTHORITY	Central Bedfordshire
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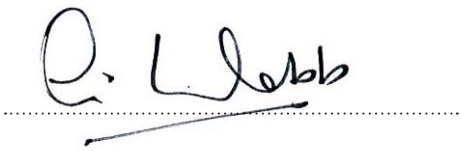

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PROJECT SUMMARY

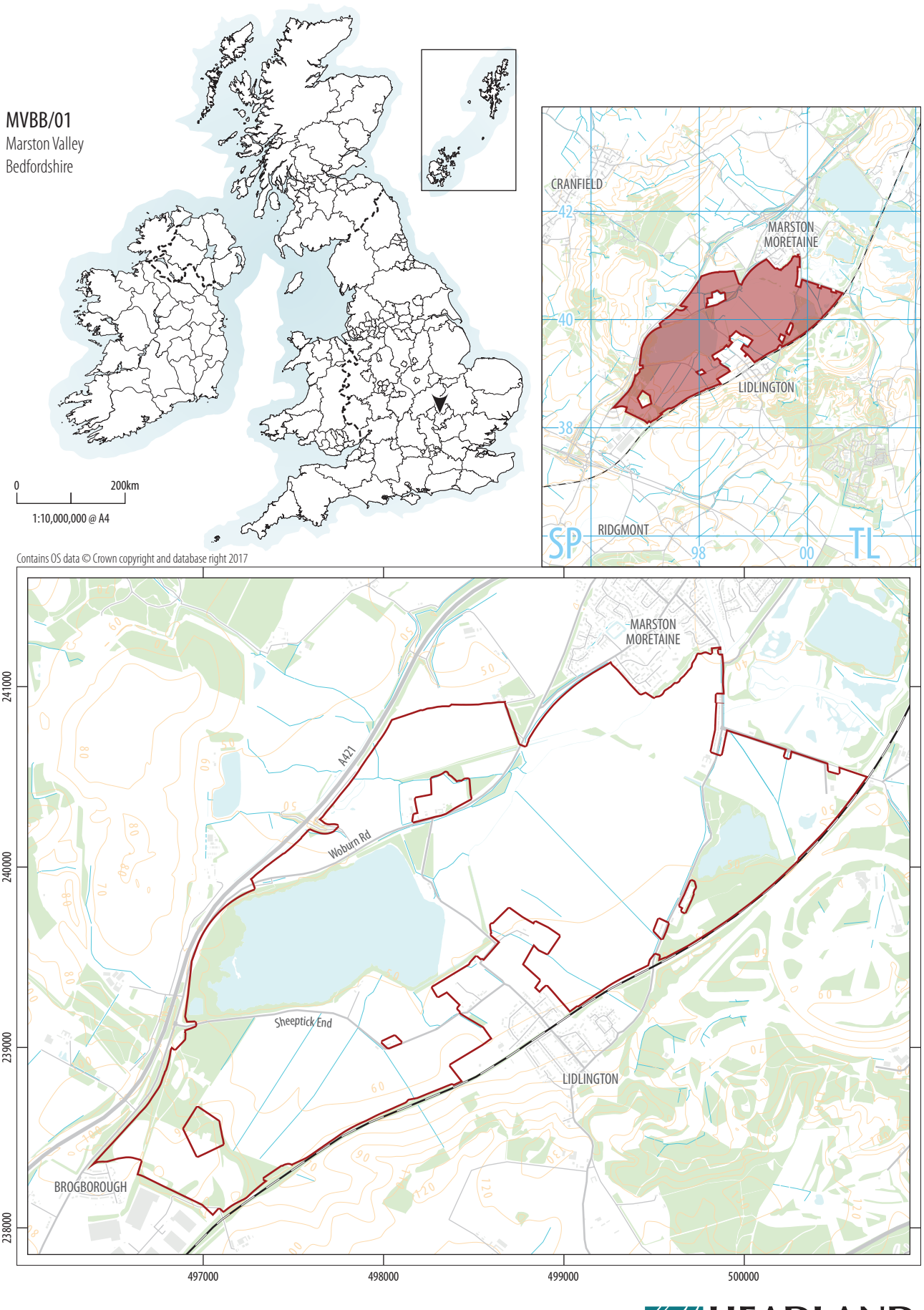
Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) survey of a 570 hectare site at Marston Valley, Bedfordshire, as part of a baseline assessment of the heritage potential of the site. This information will help guide archaeological strategy in advance of the proposed development of a new town. The site is located within Marston Vale, a low-lying flat basin in a landscape of high archaeological potential as indicated by the Central Bedfordshire and Luton Historic Environment Record and by recent investigations in advance of improvements to the A421 which borders the site to the west. The survey has successfully evaluated the possible application site and significantly enhanced the archaeological record by identifying 13 distinct areas of archaeological activity including two moated sites, and up to ten settlement sites, the largest of which covers 24 hectares and includes roadside settlement, ditched enclosures and several outlying roundhouses. Ten of these sites were previously unrecorded, or were only suggested by find spots. These areas are assessed as of high archaeological potential. Anomalies locating a post-medieval isolation hospital to the west of Lidlington are also ascribed high archaeological potential, as are two curvilinear anomalies locating historic parish boundaries which are thought to be medieval, or earlier, in origin. At Sheeptick End a broad area of magnetic disturbance may locate the 'Cheife Lodge' to Brogborough deerpark which was documented in the seventeenth century. This is ascribed a moderate archaeological potential as are numerous isolated anomalies suggestive of pits and ditches, but forming no clear pattern, which have been identified at several locations across the site.

Alluvial and colluvial superficial deposits across the lower-lying northern half of the site may mask the response from archaeological features, if present. For this reason, the archaeological potential of the site may be greater than indicated by the survey. However, there are still large parts of the site where no anomalies of archaeological potential have been identified and based on the results of the survey, the archaeological potential across these areas is considered to be moderate to low.

CONTENTS

LIST OF ILLUSTRATIONS

MVBB/01
Marston Valley
Bedfordshire



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ILLUS 1 Site location

MARSTON VALLEY BEDFORDSHIRE

GEOPHYSICAL SURVEY

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by Archaeology Collective (The Client) to undertake a geophysical (magnetometer) survey of land at Marston Valley, Bedfordshire, where a new town is being proposed. The survey was carried out as part of a baseline study which aimed to assess the heritage potential of the possible application site (PAS), and therefore the impact of the proposed development on the historic environment. The survey was carried out in order to provide information on the archaeological potential of the PAS and to help guide future development proposals.

The work was undertaken in accordance with a Written Scheme of Investigation (Headland Archaeology 2017), produced on behalf of the client and approved by Central Bedfordshire County Council, and was undertaken in accordance with guidance contained within the National Planning Policy Framework (DCLG 2012). All work was undertaken in line with current best practice (Chartered Institute for Archaeologists 2014, English Heritage 2008).

The survey was carried out in two phases to allow for different cropping regimes and poor ground conditions. Phase 1 was undertaken - between January 17th and February 17th 2017 and Phase 2 between April 12th and April 26th 2017.

1.1 SITE LOCATION, LAND-USE AND TOPOGRAPHY

The PAS covers a large contiguous but irregularly shaped block of land measuring 570ha south-east of the A421. It extends southwards for a distance of 3.8km from the village of Marston Moretaine in the north-east to the northern edge of the ProLogis Park Marston Gate industrial estate at Brogborough in the south-west and is bound by the A421 in the north-west and the Marston Valley railway along its south-eastern edge (see Illus 10). The PAS comprises a mixture of farmland and industrial workings associated with 20th century brickmaking which include over 81ha of flooded clay extraction pits. Only the farmland was suitable for survey, an area of approximately 360ha over forty two fields (F1–F42). The majority of the fields were under recently sown or immature crops at the time of survey, with the exception of F1–F7, F30 and F40–F41 which were pasture, and F8, F24, F29 and F39 which were fallow. F21 was in use as a recreation facility and overgrown vegetation restricted survey elsewhere.

The PAS lies at the south-eastern end of Marston Vale, a low-lying flat basin draining the rivers Great Ouse and Nene and their tributaries. The Elstow Brook runs from the south-west of the site to Marston Moretaine in the north-east. The site is bounded by higher ground to the east, south and west. The PAS is largely flat but generally falls from 57m above Ordnance Datum (AOD) in the south of F37 to 40m AOD at the northern tip of F15. South-west of F37 the land rises steeply to 97m AOD on the crest of a ridge upon which stands the site of the former Brogborough Park Farm and adjacent house known as 'The Round House'.

1.2 GEOLOGY AND SOILS

The underlying bedrock mainly comprises of Peterborough Mudstone. Mudstones of the Stewartby Member, Weymouth Member and Oxford Clay Formation are recorded towards the south of the application site (see Illus 14). No superficial deposits are recorded over much of the site although Oadby Member (diamicton) is recorded at Brogborough with Head (clay, silt, sand and gravel) recorded towards Marston Moretaine along with a band of alluvium along a minor watercourse (NERC 2017).

The soils are mainly classified in the Soilscape 18 association, characterised as slowly permeable, seasonally wet loams and clays with impeded drainage. In the far north of the site, lime-rich loams and clays (Soilscape 9) are recorded (Cranfield University 2017).

ILLUS 2 Field 9 (west), looking north

2 ARCHAEOLOGICAL BACKGROUND

The PAS is located in a landscape of high archaeological potential, as identified within Central Bedfordshire Historic Environment Record (BHER) (see Illus 11). An Archaeological Desk-Based Assessment (Archaeology Collective 2016) for the possible development concluded that there is a high potential for the presence of unrecorded later prehistoric and Roman remains at the northern site boundary, along the route of the A421. In addition the application site has been shown to have a moderate to high potential for encountering activity from the Anglo-Saxon/early Medieval periods and high potential for encountering medieval remains at specific locations adjacent to known settlement sites, earthworks and within the documented Brogborough deer park. The deer park boundary which crosses the application site, along with two parish boundaries, are historic boundaries, which are medieval or earlier in origin.

Analysis of historical mapping indicates that the division and layout of land within the PAS has undergone considerable change since the publication of the first edition Ordnance Survey (OS) map in 1883–4, including the removal of several field boundaries to form larger fields and the back-filling of several ponds. Extensive alterations to the agricultural landscape occurred with the introduction of the brickmaking industry at the beginning of the 20th century, which resulted in the excavation of large-scale extraction pits, and the construction of brickwork kilns and associated infrastructure.

3 AIMS, METHODOLOGY AND PRESENTATION

The general aim of the geophysical survey was to provide sufficient information to establish the presence/absence, character and extent of any archaeological remains within the PAS. This would therefore enable an assessment to be made of the impact of the proposed development on any sub-surface archaeological remains, if present.

The specific archaeological objectives of the geophysical survey were:

- to provide information about the nature and possible interpretation of any magnetic anomalies identified;
- to therefore model the presence/absence and extent of any buried archaeological features; and
- to prepare a report summarising the results of the survey.

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

ILLUS 3 Field 18 (north), looking north-west

shapes and strengths (Gaffney and Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

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 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 V3.0.31.4 (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 1:30,000. Illus 2–9 inclusive are site condition photographs. Illus 10 is a 1:15,000 scale survey location plan showing the direction of the survey traverse. The Central Bedfordshire and Luton HER data is shown in Illus 11 overlying the 1888–1913 six inch Ordnance Survey map. The processed greyscale data and an overall interpretation plot are also presented at 1:15,000 on Illus 12 and Illus 13 respectively. Illus 14 shows the areas of archaeological activity over the bedrock geology and superficial deposits (scale 1:15,000) and Illus 15 shows the location of Illus 16–114. Detailed data plots of the fully processed data (greyscale), the minimally processed data (XY traceplot) and accompanying interpretative plots, are presented at a scale of 1:2,500 in Illus 16–63 inclusive, with more detailed (1:1,000) plots of the areas of archaeological activity (AAA) in Illus 64–114 inclusive.

Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the site archive. Data processing details are presented in Appendix 4. A copy of the OASIS entry (Online Access to the Index of Archaeological Investigations) is reproduced in Appendix 5.

The survey methodology, report and any recommendations comply with the Written Scheme of Investigation (Headland Archaeology 2017) and guidelines outlined by Historic England (English Heritage 2008) and by the Chartered Institute for Archaeologists (CIfA 2014). All illustrations from Ordnance Survey mapping are reproduced with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

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.

ILLUS 4 Field 22, looking north

4 RESULTS AND DISCUSSION

A variable magnetic background has been detected across the PAS manifesting in the data as a plethora of discrete areas of magnetic enhancement. These are due to localised variations in the composition of the soils. Sinuous low magnitude trends across the PAS are caused by variations in the depth and composition of the superficial deposits. Areas of variation are also caused by different agricultural activities such as the numerous criss-crossing land drains and cultivation trends which have been identified across the lower-lying parts of the site. Survey of F14–F16, F22 (east), F25 (south) F31/F32 and F34 was suspended due to heavily ploughed wet and sticky clays with survey resuming following reseeding. Nevertheless, ground conditions were generally good across the site and the data quality was correspondingly good throughout, with the exception of a small area in F25 (north) where ground conditions and crop growth prevented resurvey of poor data. The impact of this data on the overall interpretation is negligible. It is therefore assessed that the results provide a reliable indication of the extent of the sub-surface archaeological remains, except on the alluvium, where detection of soil-filled features may be hampered by low magnetic contrast in the surrounding soils and/or the depth of the superficial deposits.

Against this variable background numerous linear and discrete anomalies have been identified including thirteen distinct areas of archaeological activity. 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. All anomalies are cross-referenced to specific anomalies on the interpretative drawings, where appropriate.

4.1 FERROUS AND MODERN 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.

High magnitude dipolar linear anomalies (SP1–SP17) are identified on varying alignments in F15/F16, F22, F24/F25, F30/F31, F33/F34/F35, F36/F37/F38, F41 and F42 (eg Illus 61–63). These anomalies are caused by sub-surface pipes.

Broad areas of magnetic disturbance (PY) are recorded in F10, F24, F27/F28, and F36. The disturbance is caused by a line of electricity pylons running broadly north/south through the PAS. Telegraph poles (TP) carrying overhead wires are also recorded in various locations across the site as more localised high magnitude responses.

Localised amorphous high magnitude anomalies (FP1–FP13) in F4, F10, F22, F24/F25, and F36 locate ponds which are recorded on the 1888–1913 six inch Ordnance Survey map (see Illus 11). The anomalies are caused by magnetic material used to infill the features.

Two former tramways are identified by linear bands of magnetic disturbance (FT1 and FT2) either side of Woburn Road in the north of the PAS. FT1 is aligned north-east/south-west across the north

ILLUS 5 Field 34 (south), looking west

of F3 and F5 (Illus 18) and FT2 is recorded on a similar alignment across F13 and F24 (Illus 24 and Illus 42). The disturbance is thought to be due to the buried remains of the ballast perhaps with tracks in situ. A band of low magnitude east/west aligned anomalies (D1; Illus 49–51) correspond to the diverted route of the Elstow Brook as shown on the 1976 edition OS map. The anomaly is caused by the magnetic contrast between the soil fill of the former ditch and the surrounding soil.

Another broad area of magnetic disturbance (PU1) is identified along the north-western edge of F36 (see Illus49 - Illus54). This disturbance corresponds to the former location of a pump which is shown on the 1888–1913 six inch Ordnance Survey map (see Illus 11) and to a cluster of buildings which can be seen on 20th century Google earth images (The Geoinformation Group 2017). The disturbance is due to demolition material within the topsoil and is unlikely to be of any more than local historical interest.

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. The magnetic disturbance is particularly prevalent along the Marston Valley railway line which forms the south-eastern site boundary. More extensive areas of disturbance dominate the magnetic data throughout F1 and F39. This is caused by the spreading of ferrous material (eg brick, concrete etc.) throughout the fields. Any anomalies of archaeological potential, if present, may be masked at these locations.

4.2 AGRICULTURAL ANOMALIES

Seventeen former field boundaries (FB1–FB17) and two parish boundaries (see Section 4.5) have been identified as high magnitude linear anomalies. All are recorded on the 1888–1913 six inch Ordnance Survey map (see Illus 11). Some former field boundaries in F9/F10 and F41 have not been detected by the survey, probably due to their removal by later ploughing activity rather than a lack of magnetic contrast. A former farm track (TR1) is identified on a north-east/south-west alignment across F25/F26 (see Illus 37–39).

Slightly curvilinear, broadly-spaced parallel trend anomalies have been recorded in almost all of the fields surveyed. Theses anomalies are caused by the medieval and post medieval practice of ridge and furrow cultivation. The striped appearance to the data is due to the magnetic contrast between the former ridges and the soil-filled furrows. The ridge and furrow is no longer extant, with the exception of F30, and is unlikely to be of anything other than local historical interest. Several former fields, defined by ridge and furrow on varying alignments, are visible throughout F22, with series of broad high magnitude anomalies (TT) between the former field plots. The cause of these anomalies is unclear but they may be due to soil-filled tree throws planted along of former field boundaries.

The more widely-spaced parallel linear trends, often speckled in appearance and oblique to the field boundaries are caused by field drains. Much straighter and more closely-spaced parallel linear anomalies are characteristic of modern cultivation.

ILLUS 6 Field 37, looking north-east

4.3 GEOLOGICAL ANOMALIES

Numerous discrete anomalies are visible throughout the datasets. These are interpreted as geological in origin and are due to minor variations in the depth and composition of the topsoil. A broad winding anomaly (FW) aligned north/south within F22 is thought to be due to a former watercourse whilst numerous vague sinuous trend anomalies are thought to be due to the accumulation of superficial deposits of alluvium along minor watercourses and/or colluvium (Head–clay, silt, sand and gravel) which is recorded across much of the north of the PAS.

4.4 ANOMALIES OF POSSIBLE ARCHAEOLOGICAL POTENTIAL

Unless otherwise specified the anomalies of possible archaeological potential (APAP) 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 interpreted as potentially archaeological in origin.

A concentration of possible pits and ditches (APAP1) towards the north-west corner of F38 (see Illus 58–60) is particularly worthy of note. Whilst no clear archaeological pattern is discernible, the anomalies are located both within Brogborough deerpark and close to the projected route of a Roman road (MBD485). For this reason, these anomalies are ascribed a moderate to high archaeological potential. However, the anomalies are located close to the 20th century clay extraction workings (MBD667) and within an area which has been extensively drained and it is possible that the identified anomalies relate to modern activity.

A broad area of magnetic disturbance (B1) within the north-east of F36 (see Illus 49–54) corresponds to a building (MBD13328) which is shown close to the north-east boundary of F36 on 18th century mapping (Illus 11; Archaeology Collective 2016). The disturbance is likely to be due to demolition material (eg brick and rubble) within the topsoil and probably relates to the site of Rookery Farm which had been demolished by 1882. However, it is possible that some of the disturbance may relate to earlier activity, perhaps the 'Chiefe Lodge' to Brogborough deerpark (MBD9035) which is recorded a short distance to the west, although the actual location is unknown.

Buildings (MBD13327) are also recorded on the BHER on the northern side of Sheeptick End, in F32 (see Illus 11). No anomalies have been located to accurately locate the buildings but a broad area of increased background response (B2) in the approximate area may be due to magnetically enhanced material such as brick and rubble within the topsoil.

A broad area of magnetic disturbance (B3) in the south-east corner of F5 locates a building which is shown on the northern side of Woburn Road on the 1888–1913 six inch OS map (see Illus 11).

ILLUS 7 Field 38, looking south-west

4.4 AREAS OF ARCHAEOLOGICAL ACTIVITY

Unless specified all the linear anomalies described are likely to be due to soil filled cut features, such as ditches, forming clear patterns of enclosure and land division. With the variable magnetic background it is difficult to confidently discriminate between discrete anomalies which may be due to archaeological features, such as pits, which may be indicative of occupational activity, and those that are probably due to localised geological variation. For this reason most of the discrete anomalies within enclosures have been ascribed a possible archaeological origin with those outside, except where the responses are particularly broad or high in magnitude, interpreted as of non-archaeological origin.

Thirteen distinct areas of archaeological activity have been identified which are discussed below. These range from individual features to extensive areas of settlement or enclosure.

AAA1 (Illus 64–66)

A cluster of high magnitude anomalies within the south of F4 (centred at SP 9776 4008) correspond to a moated site which is recorded on the BHER (MBD56). The anomalies are constrained to the north by an extant rectilinear ditch and to the west by a high magnitude band of magnetic disturbance. This is caused by magnetically enhanced material within an infilled ditch. The southern part of the moat has not been detected by the survey, and probably extends south of the survey area. Within the interior a dense concentration of high magnitude anomalies suggest settlement activity and are caused by archaeological spreads and pits. Linear and curvilinear anomalies (soil-filled ditches) extend north-eastwards from the moat into the south-west corner of F5 for 105m, forming at least four enclosures aligned north-west/south-east.

Another moated site (MBD3399) is recorded on the BHER in the south-east corner of F5. This may be defined by existing ponds and areas of waterlogging in this part of the field but has not been accurately located by the geophysical survey, although amorphous areas of magnetic disturbance may be associated.

AAA2 (Illus 67–69)

A complex of curvilinear anomalies, centred at SP 9801 4064, is identified within the west of F9, and extending into F8, defining several interlinking enclosures. The anomalies extend at least 250m from north to south and 190m from east to west and are mainly concentrated along the eastern edge of a minor north/south watercourse. The high density of anomalies closest to the watercourse are characteristic of multiphase settlement activity with the larger, more clearly defined enclosures to the east more typical of field/stock enclosures. Archaeological investigations within F8 as part of the A421 improvements identified Late Iron Age/Roman activity including three cremation burials. F8 is thought to have been stripped of topsoil during these works and used for stockpiling, but the survey has identified curving anomalies which may locate soil-filled ditches.

ILLUS 8 Field 39, looking north

The presence of superficial deposits of Head (clay, silt, sand and gravel) within the north of F9 is worthy of note. The north-eastern extent of AAA2 fades at the southern edge of this deposit (see Illus 14) and it is possible that further anomalies of archaeological potential, if present, may not be detected in these conditions. However, the morphology of the site suggests that any features affected are likely to be outlying ancillary field enclosures rather than areas of settlement.

AAA3 (Illus 70–72)

Concentric rectilinear anomalies identified within the west of F14, centred at SP 9886 4079, define a ditched rectangular enclosure on a north-west/south-east alignment. The enclosure measures 46m from east to west and at least 60m from north to south, probably extending beyond the survey area to the north. With the exception of the internal rectangular ditch few internal anomalies have been identified, although discrete areas of enhancement may locate pits. The BHER records Iron Age/Roman find spots a short distant to the south-east.

AAA4 (Illus 73–75)

Within the north-west of F14, 325m from AAA3, a series of fragmented rectilinear anomalies describe at least four enclosures centred at SP 9921 4100 and oriented broadly north-east/south-west. The anomalies measure 160m from east to west and 65m from north to south. Several high magnitude anomalies within the south of the complex are likely to be archaeological in origin, probably locating pits, hearths and spreads of magnetically enhanced material.

AAA5 (Illus 76–78)

AAA5 locates a complex of linear anomalies in the east of F15, aligned broadly north-east/south-west and centred at SP 9982 4108. The complex comprises of at least three enclosures containing internal divisions, numerous high magnitude internal anomalies and a ring-ditch, probably a round-house (RD1). The site is located immediately west of two BHER records which record both Iron Age (MBD17734) and Saxon activity (MBD22507). Three findspots from F15 also suggest Iron Age/Roman activity within the locality. Faint curvilinear anomalies extend south-westwards from the complex into F16, and whilst no coherent pattern is visible, are ascribed a probable archaeological interpretation on the basis of this alignment.

AAA6 (Illus 79–81)

This area comprises of at least four conjoined enclosures, aligned east/west and located immediately south of Station Lane, centred at SP 0038 4056. Numerous discrete anomalies within the interior of the enclosures are ascribed a possible archaeological interpretation and may be due to pits. The projected route of a Roman road (MBD5020) passes 70m north of AAA6.

AAA7 (Illus 82–96)

An extensive series of ditches, trackways, conjoined enclosures and ring-ditches has been identified over an area 630m north/south and 520m east/west on a slightly elevated position (48m AOD) within the south and east of F22 (centred at SP 9952 4008).

ILLUS 9 Field 41, looking east

The complex is broadly aligned north-east/south-west, extending either side of a broad track or droveway, a characteristic typical of Romano-British ladder settlement. Numerous internal anomalies are suggestive of settlement activity whilst at least eighteen ring-ditches (RD2–RD19) have been identified. The ring-ditches measure 10–13m in diameter and are thought to locate round-houses, several of which display a probable entrance along the eastern side. The complex is largely constrained in the west by a broad sinuous anomaly (FW), a probable former watercourse, which winds from north to south. It is notable that AAA7 is located in an area with no recorded underlying superficial deposits (see Illus 14) and that the archaeological anomalies do not extend westwards or to the north-east into those areas overlain by Head (clay, silt, sand and gravel). It is possible that there may be insufficient magnetic contrast over the Head deposits for low magnitude anomalies of archaeological potential, if present, to manifest as magnetic anomalies, particularly in those areas away from the main focus of the settlement activity.

AAA8 (Illus 97–99)

A dense cluster of high magnitude anomalies within the north-west of F25, centred at SP 9856 4010, locates a moated site (MBD7831) which is recorded on the BHER. The anomalies are broadly rectangular in form measuring 60m north-east/south-west and 80m north-west/south-east and are bound to the north by the Elstow Brook.

AAA9 (Illus 100–102)

A faint sub-oval anomaly within the north of F34, centred at SP 9805 3933, locates a ditched enclosure, approximately 40m in diameter. The isolated and sub-oval shape of AAA9 differs from the more rectilinear and interlinking morphology of the other areas of archaeological activity identified within the PAS, perhaps indicating differing functions or origins. Several low magnitude anomalies have been identified in the interior of the enclosure, perhaps being due to pits.

AAA10 (Illus 103–105)

A complex of linear and rectilinear anomalies is identified 170m south of AAA9 in the south of F34, centred at SP 9808 3910. The complex is identified on a north-west/south-east alignment with the linear anomalies being due to soil-filled ditches. Numerous discrete anomalies are also identified which may be due to pits. Roman find spots (MBD1594) in this part of F34 suggest Roman origins.

AAA11 (Illus 106–108)

AAA11 defines a broad area of magnetic disturbance within the centre of F33, centred at SP 9827 3891. The disturbance corresponds closely to the site of a post-medieval 'Pest House' for infectious diseases which is recorded on the BHER (MBD13319). The anomalies are caused by demolition material within the topsoil as well as possible in situ remains.

AAA12 (Illus 109–111)

AAA12 and AAA13 are located either side of Brogborough House and a ringwork (Scheduled Monument 1013016) on an elevated ridge overlooking Marston Vale to the north-east. AAA12 is located on either side of a disused tramway in the east of F42 and the west of F41. It comprises a series of linear and curvilinear anomalies (soil-filled ditches) defining several enclosures on a north-south alignment. Numerous anomalies are identified within the interior of the enclosures which are suggestive of settlement activity. The BHER records the route of a Roman road (MBD485) to the south-east of AAA12 although no anomalies have been identified which might locate a road. Roman roads by their nature are often difficult to detect with geophysical survey as there is often little magnetic contrast between the material used to construct the road (clays, sands and gravels) and the surrounding soils.

AAA13 (Illus 112–114)

This complex is located 240m south-east of AAA12 within the east of F41 and extending into F40, centred at SP 9702 3831. It comprises a series of linear and rectilinear anomalies defining at least four enclosures on a north-west/south-east alignment. Numerous internal anomalies have been identified which are suggestive of internal divisions and pits. A clear trackway, defined to parallel linear anomalies (soil-filled ditches), is identified extending from the north of the complex and extending towards the Scheduled Monument to the north.

Parish boundaries

Two parish boundaries (PB1 and PB2) have been identified as faint and fragmented linear anomalies across the north and south of the PAS respectively. PB1 is identified on a north-west/south-east alignment within F14, F23 and F22 (Illus 22–27) and is due to a soil-filled ditch. PB2 is identified on the same alignment within the south-west of F36/F38. The parish boundaries are thought to be medieval or earlier in origin and are thought to be of high archaeological potential (Archaeology Collective 2016).

5 CONCLUSION

The geophysical survey has successfully evaluated the possible application site and has provided evidence for thirteen areas of clear archaeological activity including two moated sites and up to ten settlement sites. These areas are located across all parts of the site and range in size from individual enclosures to extensive areas of conjoining enclosures, trackways and structures (round-houses), the largest of which covers 24 hectares. Two moated sites which are recorded on the BHER have been accurately mapped and the survey has identified ten sites which were previously unrecorded, or which were only suggested by find spots. The site types are indicative of later Iron Age/Roman and medieval activity, a pattern repeated in the surrounding landscape. These anomalies are considered to be of high archaeological potential. Areas of magnetic disturbance which may locate the 'Chiefe Lodge' to Brogborough deerpark and a post-medieval isolation hospital are also considered to be of high archaeological potential.

Across the lower-lying northern part of the site alluvial and colluvial superficial deposits may mask the response from archaeological deposits, if present. For this reason, the archaeological potential of the site may be greater than indicated by the survey. However, there are still large parts of the site where no anomalies of archaeological potential have been identified and based on the results of the survey, the archaeological potential across the majority of the site is considered to be moderate to low.

6 REFERENCES

Archaeological Collective 2016 ***Archaeological Desk Based Assessment; Marston Valley*** Unpublished Client Doc Ref AC00175A

Chartered Institute for Archaeologists (ClfA) 2014 ***Standard and guidance for archaeological geophysical survey*** [online document] Accessed 2 May 2017 from http://www.archaeologists.net/sites/default/files/ClfAS&GGeophysics_1.pdf

Cranfield University 2017 ***Cranfield Soil and Agrifood Institute Soilscapes*** [online] Accessed 18 May 2017 from www.landis.org.uk/soilscapes/

Department of Communities and Local Government (DCLG) 2012 ***National Planning Policy Framework*** [online document] Accessed 18 May 2017 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

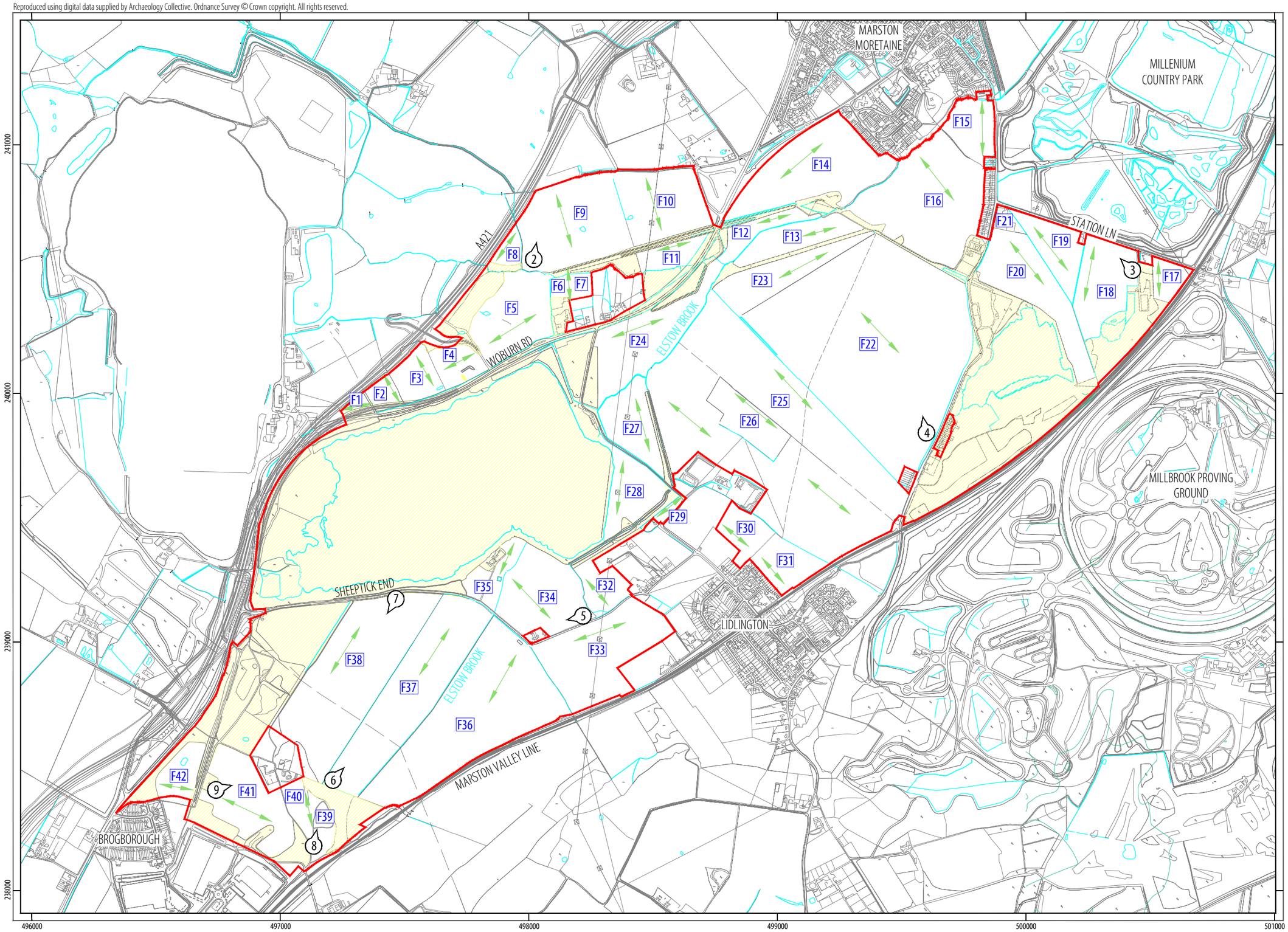
English Heritage 2008 ***Geophysical Survey in Archaeological Field Evaluation: Research and Professional Services Guidelines*** (2nd edition) [online document] Accessed 18 May 2017 from http://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf

Gaffney, C & Gater, J 2003 ***Revealing the Buried Past: Geophysics for Archaeologists*** The History Press: Stroud

Headland Archaeology 2017 ***Marston Valley, Bedfordshire: Written Scheme of Investigation for Geophysical Survey*** Unpublished Headland document ref MVBB/01

Natural Environment Research Council (NERC) 2017 ***British Geological Survey*** [online] Accessed 18 May 2017 from http://www.bgs.ac.uk/

The Geoinformation Group 2017 ***Google earth V 7.1.5.1557*** (image date January 1 1945) [online] Sheeptick End (52° 02'17.13'N, 1° 34'34.44'W, Eye alt 1000m. Accessed 18 May 2017 from http://www.earth.google.com



possible application site
area unsuitable for survey
direction of traverse
location and direction of ILLUS 2-9

-1.0 nT 2.0

N

0 500m

scale 1:15,000 @ A3

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Bedfordshireshire

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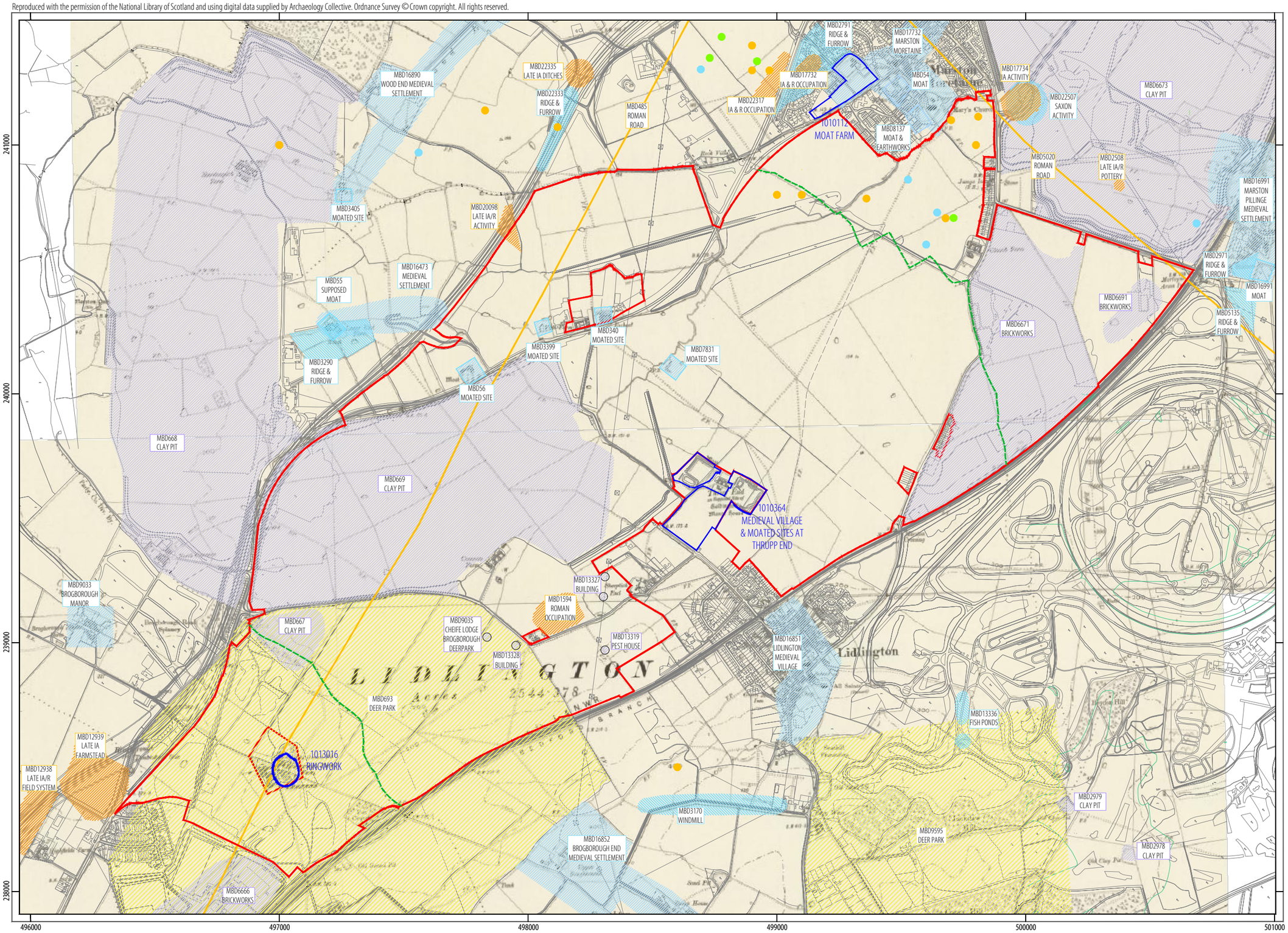
ILLUS 10 Survey location showing field numbers and direction of traverse



possible application site
scheduled monument
parish boundary

BHER DATA
- iron age / roman
- roman road
- medieval
- medieval deer park
- post medieval

FINDSPOTS
- iron age / roman
- medieval
- post medieval

N
0 500m
scale 1:15,000 @ A3

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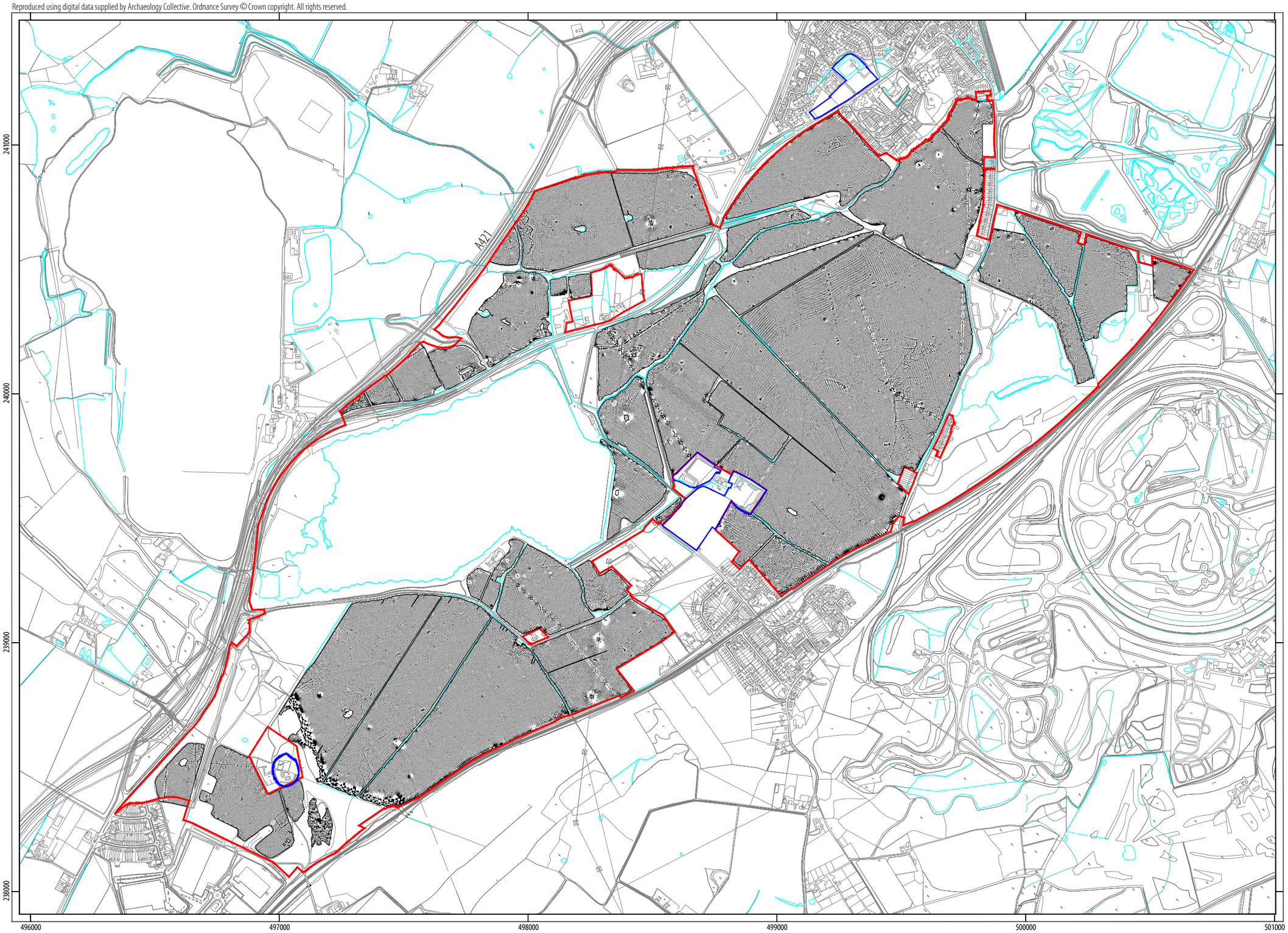
ILLUS 11 Survey location showing Central Bedfordshire & Luton HER data and overlying 1888-1913 six inch Ordnance Survey map



possible application site
scheduled monument

nT
-1.0 2.0

N

0 500m
scale 1:15,000 @ A3

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ILLUS 12 Overall Processed greyscale magnetometer data

AAA1
AAA2
AAA3
AAA4
AAA5
AAA6
AAA7
AAA8
AAA9
AAA10
AAA11
AAA12
AAA13

TYPE OF ANOMALY	INTERPRETATION
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
linear	former field boundary
linear	parish boundary
magnetic enhancement	tree throw?
magnetic enhancement	former pond
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

241000
240000
239000
238000
496000
497000
498000
499000
500000
501000

N
0 500m
scale 1:15,000 @ A3

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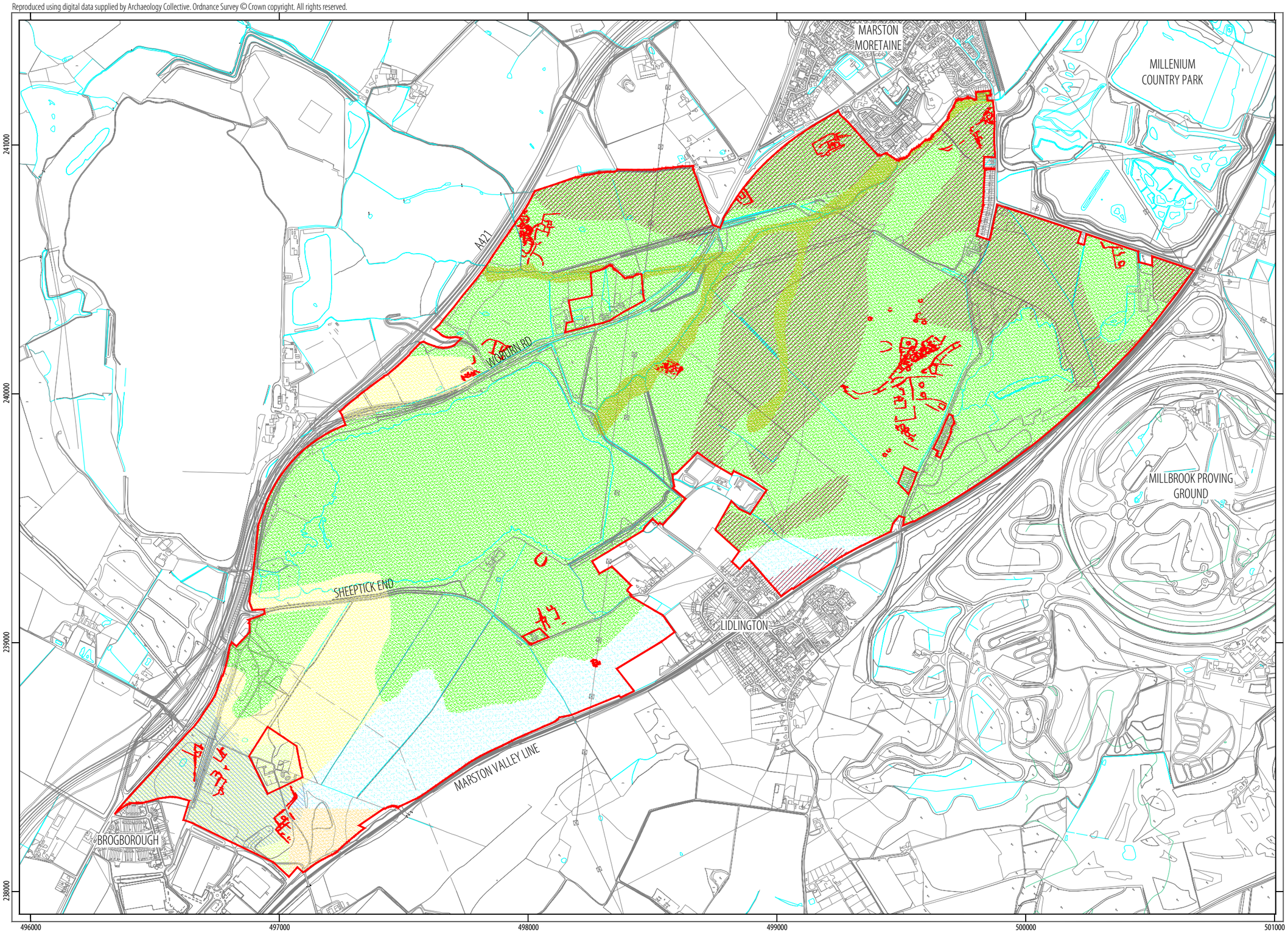
ILLUS 13 Overall interpretation of magnetometer data excluding ferrous and geological anomalies



possible application site
archaeological anomalies

BEDROCK GEOLOGY
- Peterborough Member - mudstone
- Stewartby Member - mudstone
- Weymouth Member - mudstone
- Stewartby Member & Weymouth Member - mudstone
- Oxford Clay Formation - mudstone

SUPERFICIAL GEOLOGY
- Head- clay, silt, sand and gravel
- Alluvium - clay and silt
- Oadby Member - diamicton

N
0 500m
scale 1:15,000 @ A3

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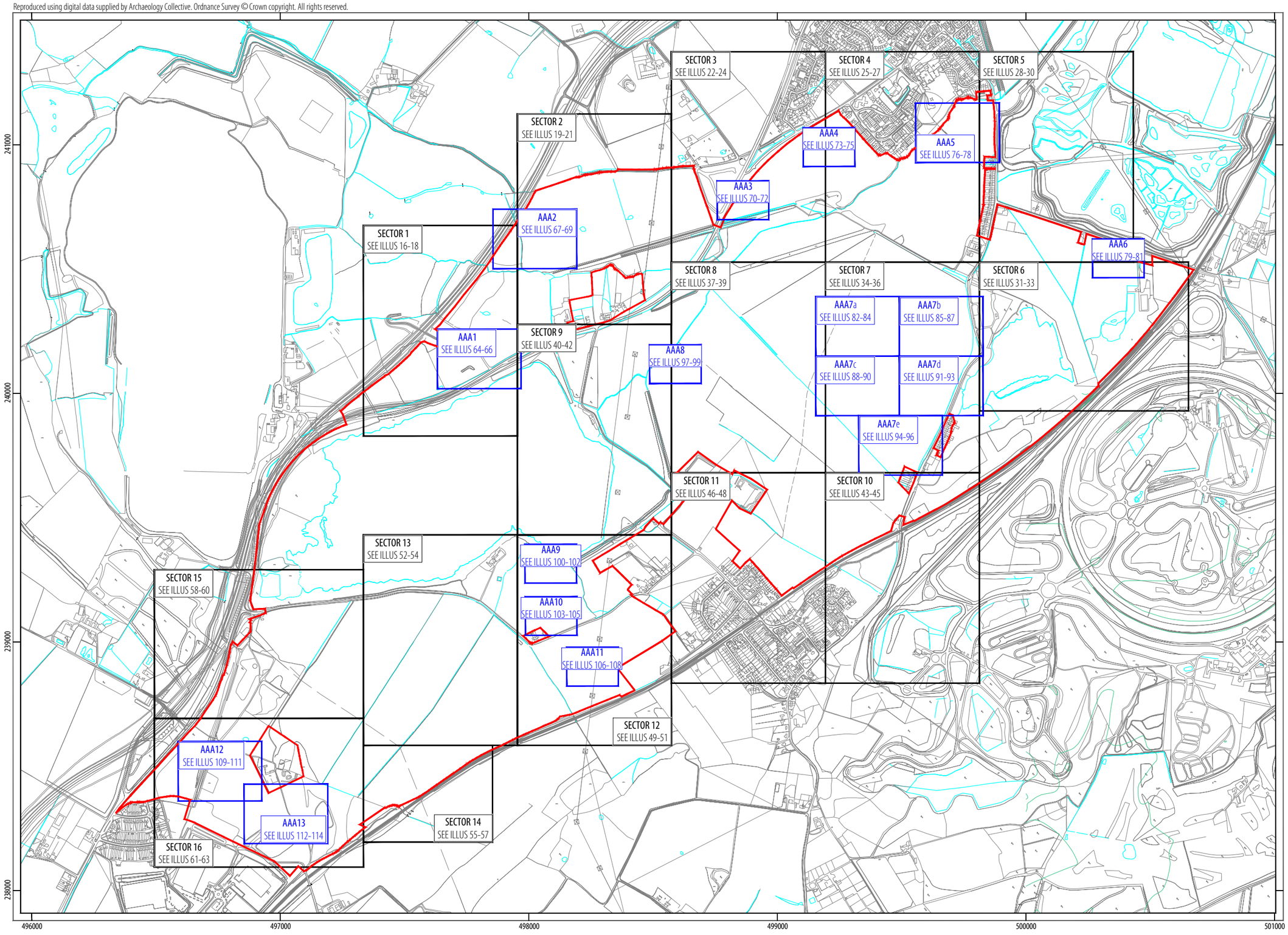
ILLUS 14 Bedrock geology and superficial deposits (after NERC 2017) showing areas of archaeological activity



possible application site

N

0 500m

scale 1:15,000 @ A3

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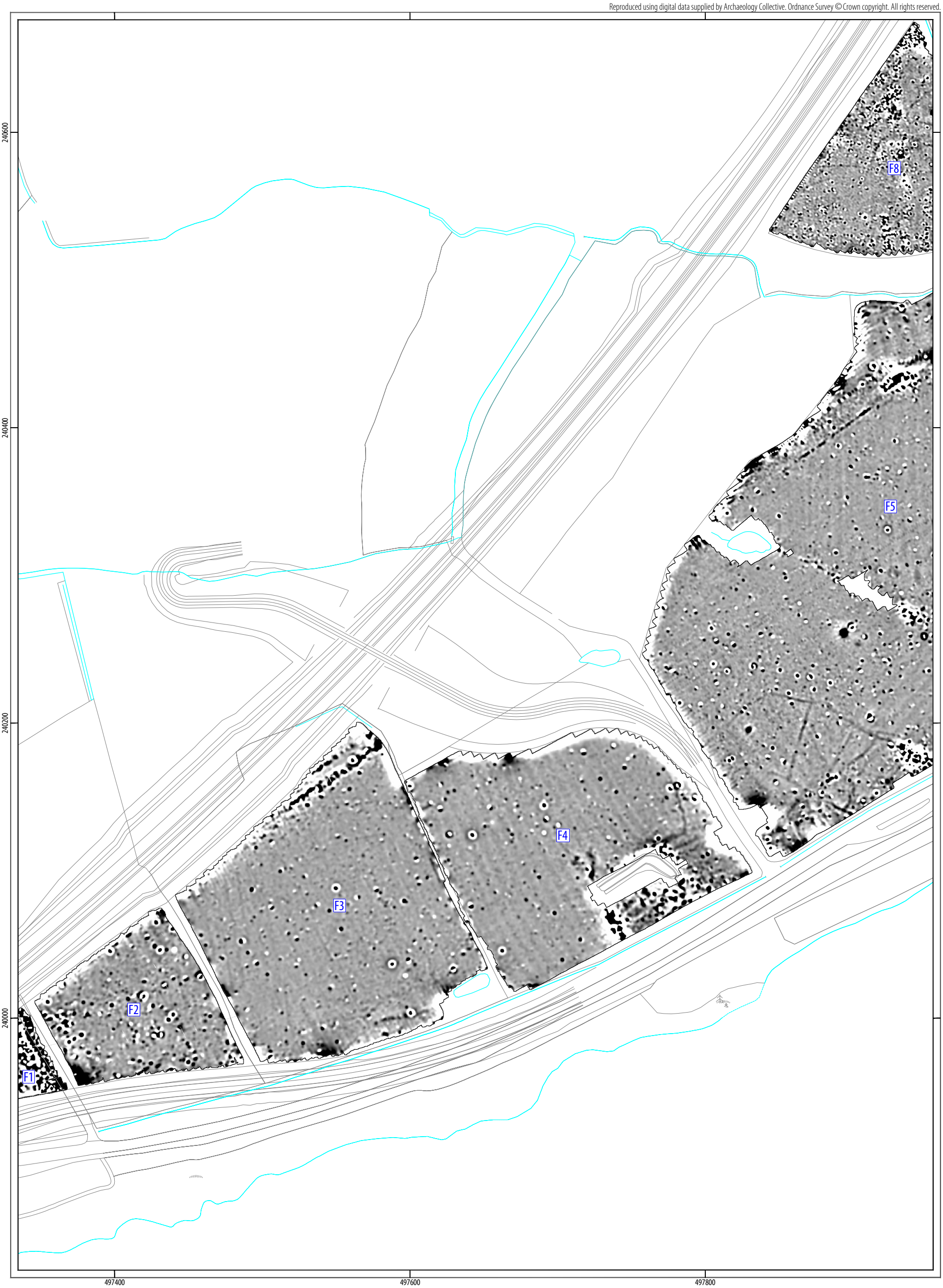
ILLUS 15 Location of Illus 16 to Illus 114



-1.0 nT 2.0

N

0 50m

scale 1:2,500 @ A3

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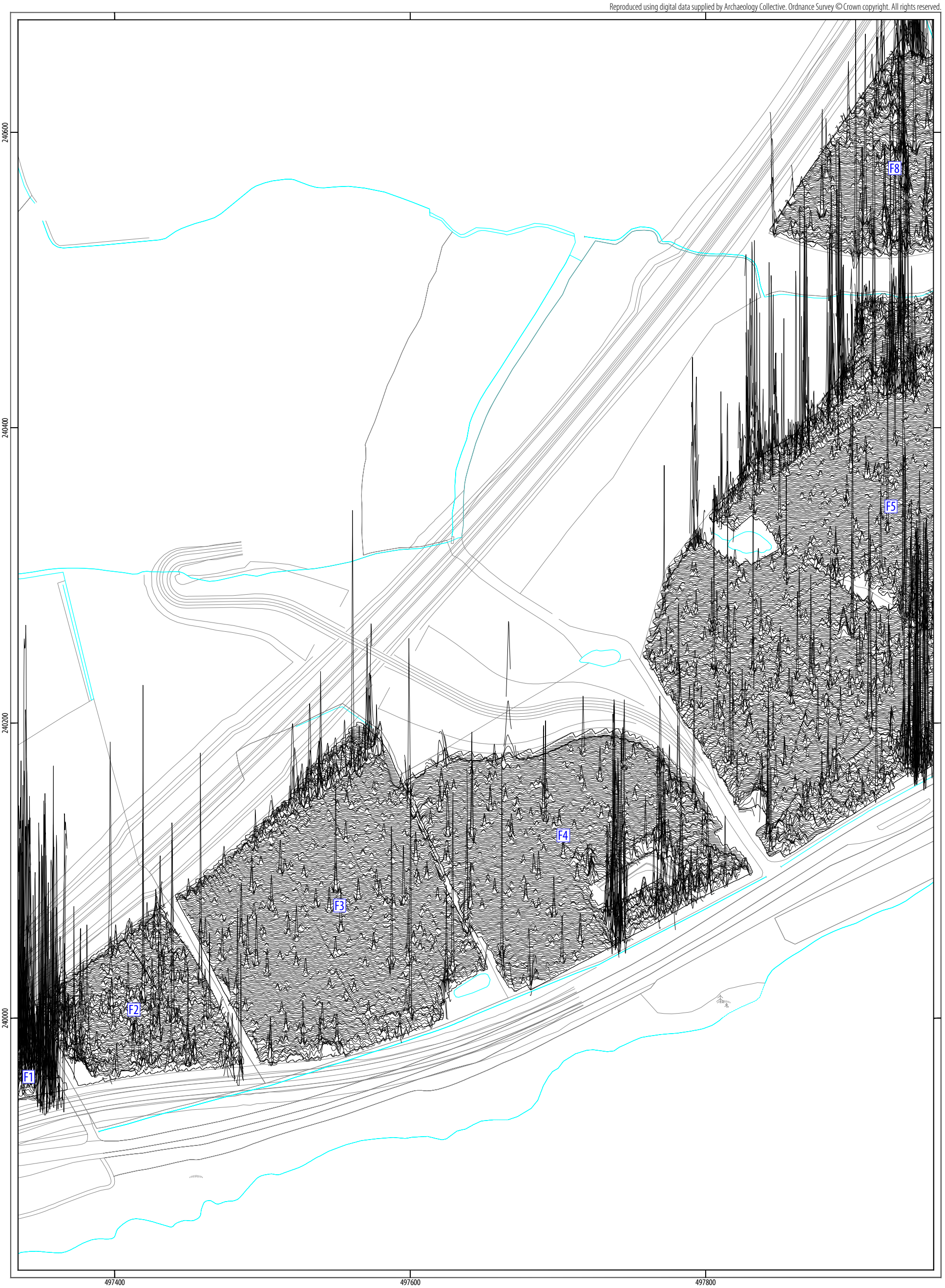
ILLUS 16 Processed greyscale magnetometer data; Sector 1



40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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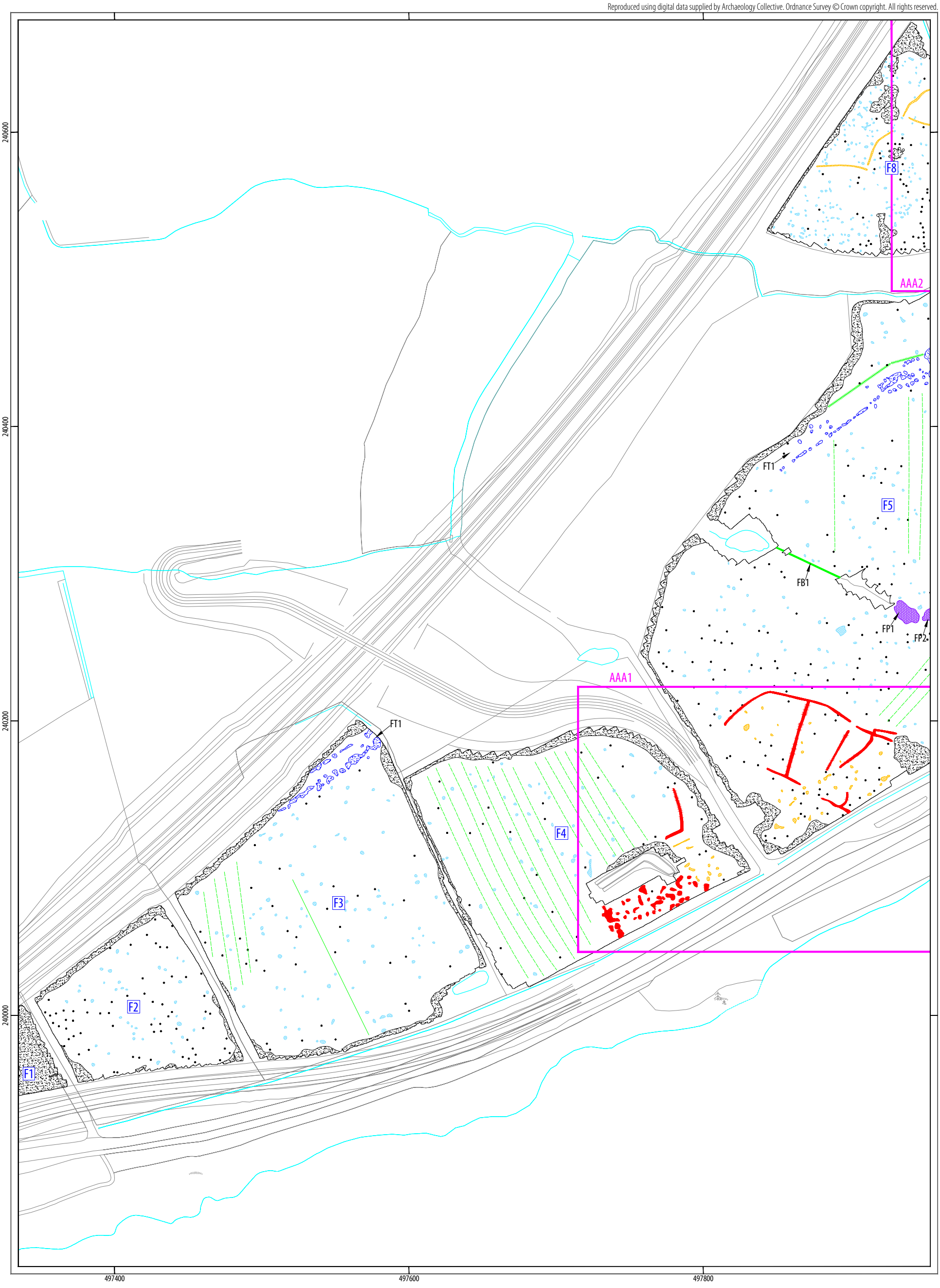
ILLUS 17 XY trace plot of minimally processed magnetometer data; Sector 1



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
magnetic disturbance	modern
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain

TYPE OF ANOMALY	INTERPRETATION
linear	former field boundary
magnetic enhancement	former pond
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity
FB former boundary
FP former pond
FT former tramway

N
0 50m
scale 1:2,500 @ A3

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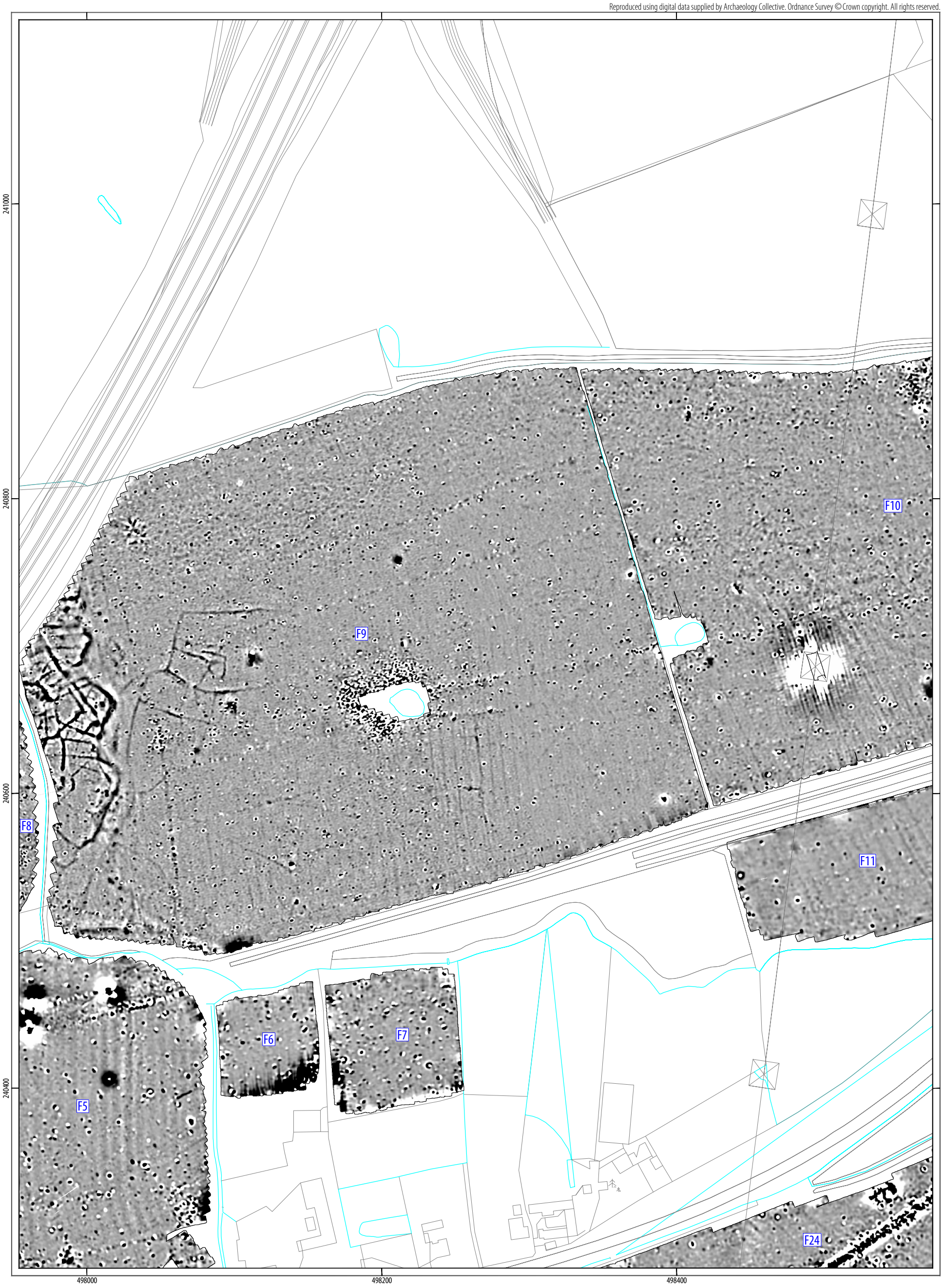
ILLUS 18 Interpretation of magnetometer data; Sector 1



nT
-1.0 2.0

N

0 50m
scale 1:2,500 @ A3

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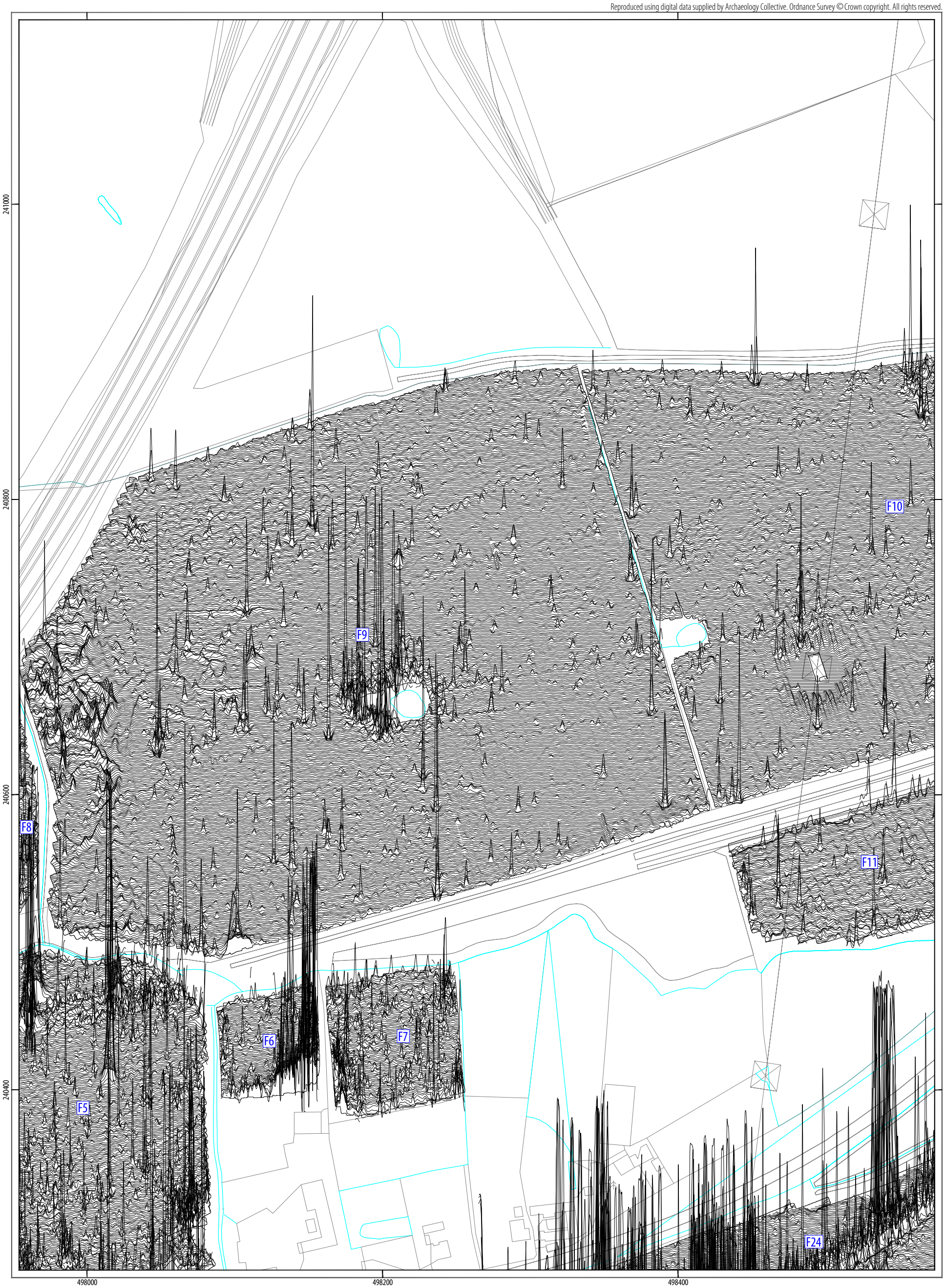
ILLUS 19 Processed greyscale magnetometer data; Sector 2



40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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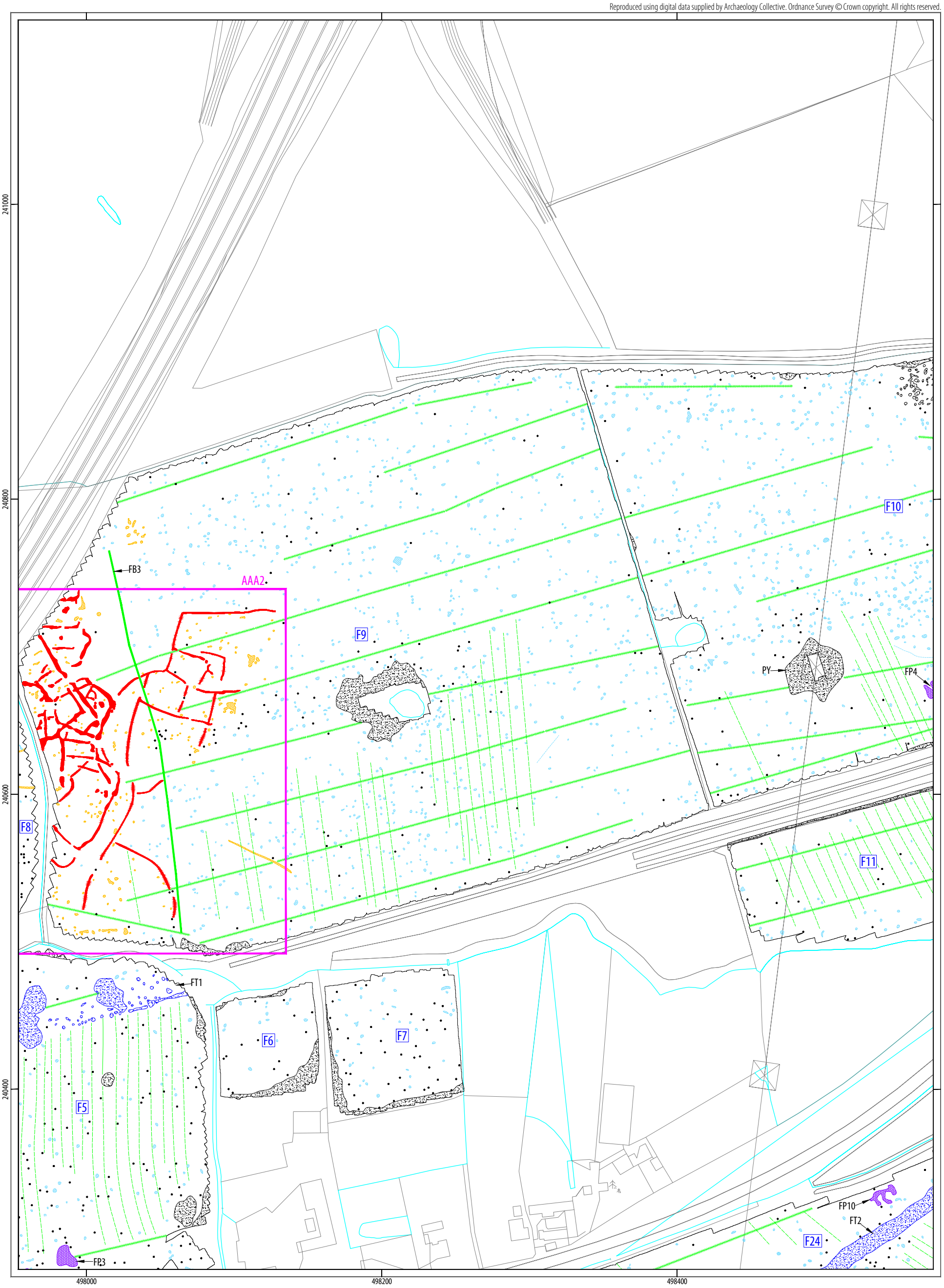
ILLUS 20 XY trace plot of minimally processed magnetometer data; Sector 2



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
magnetic disturbance	modern
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain

TYPE OF ANOMALY	INTERPRETATION
linear	former field boundary
magnetic enhancement	former pond
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity
FB former boundary
FP former pond
FT former tramway
PY pylon

N
0 50m
scale 1:2,500 @ A3

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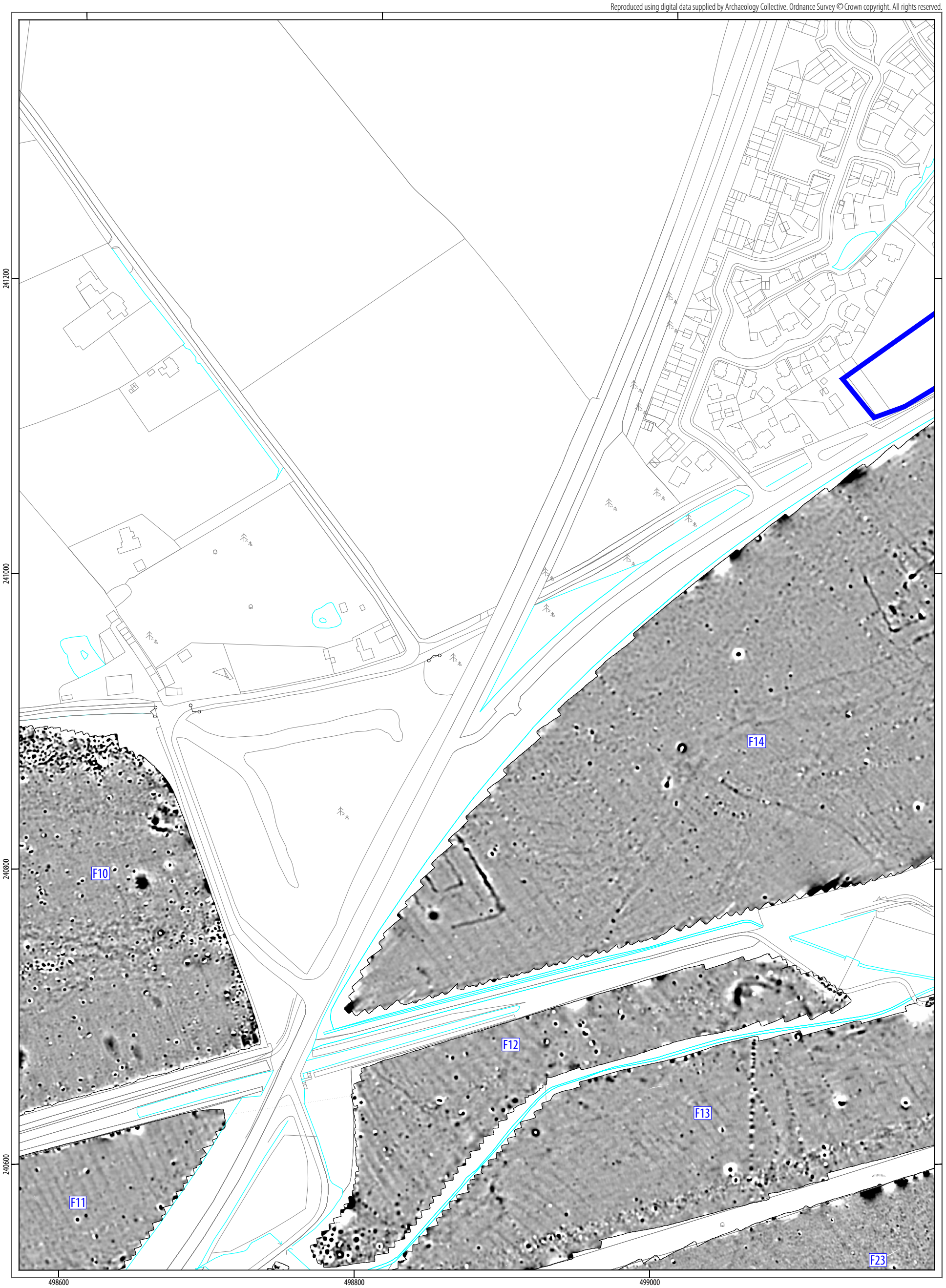
ILLUS 21 Interpretation of magnetometer data; Sector 2



scheduled monument

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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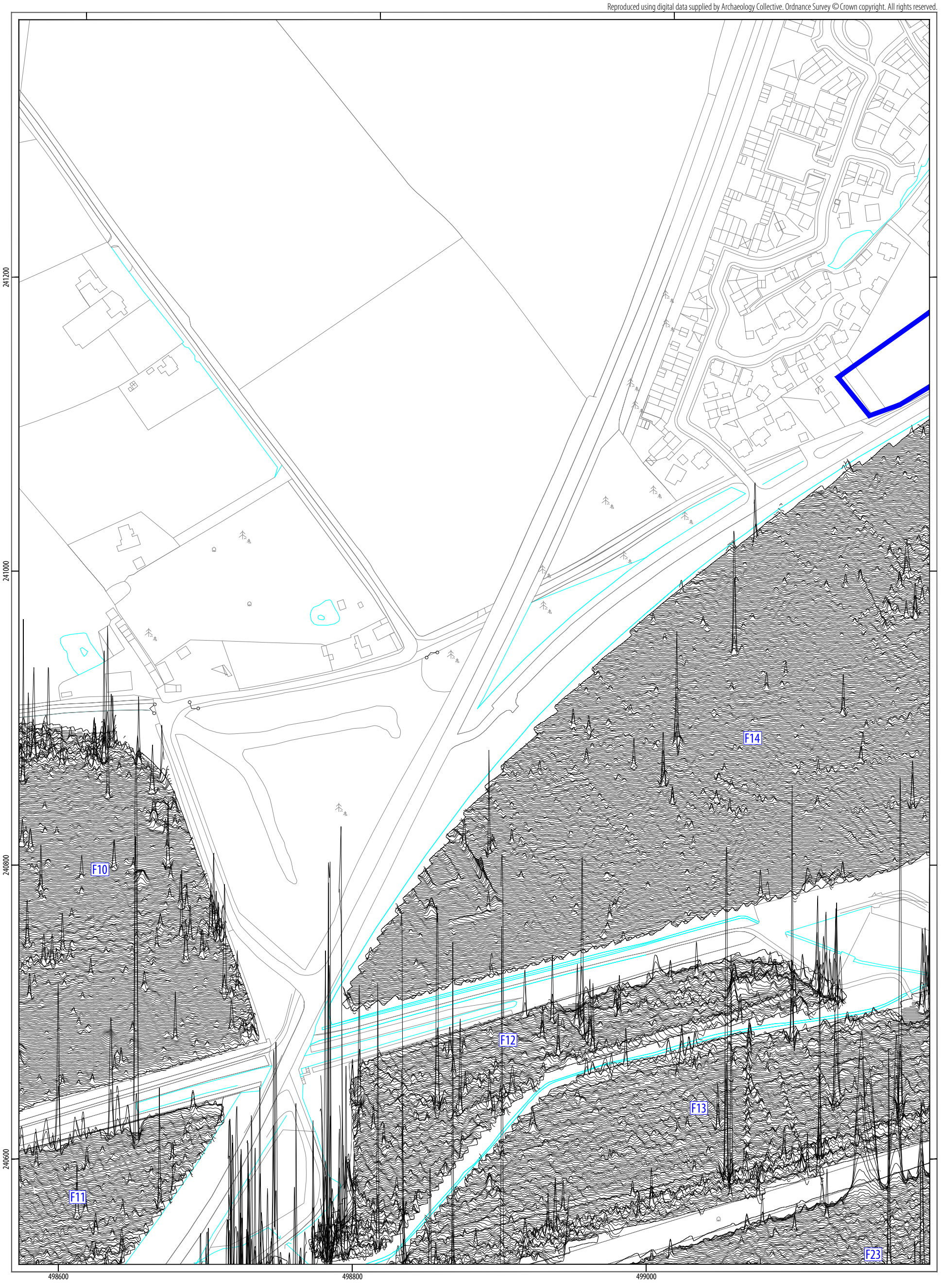
ILLUS 22 Processed greyscale magnetometer data; Sector 3



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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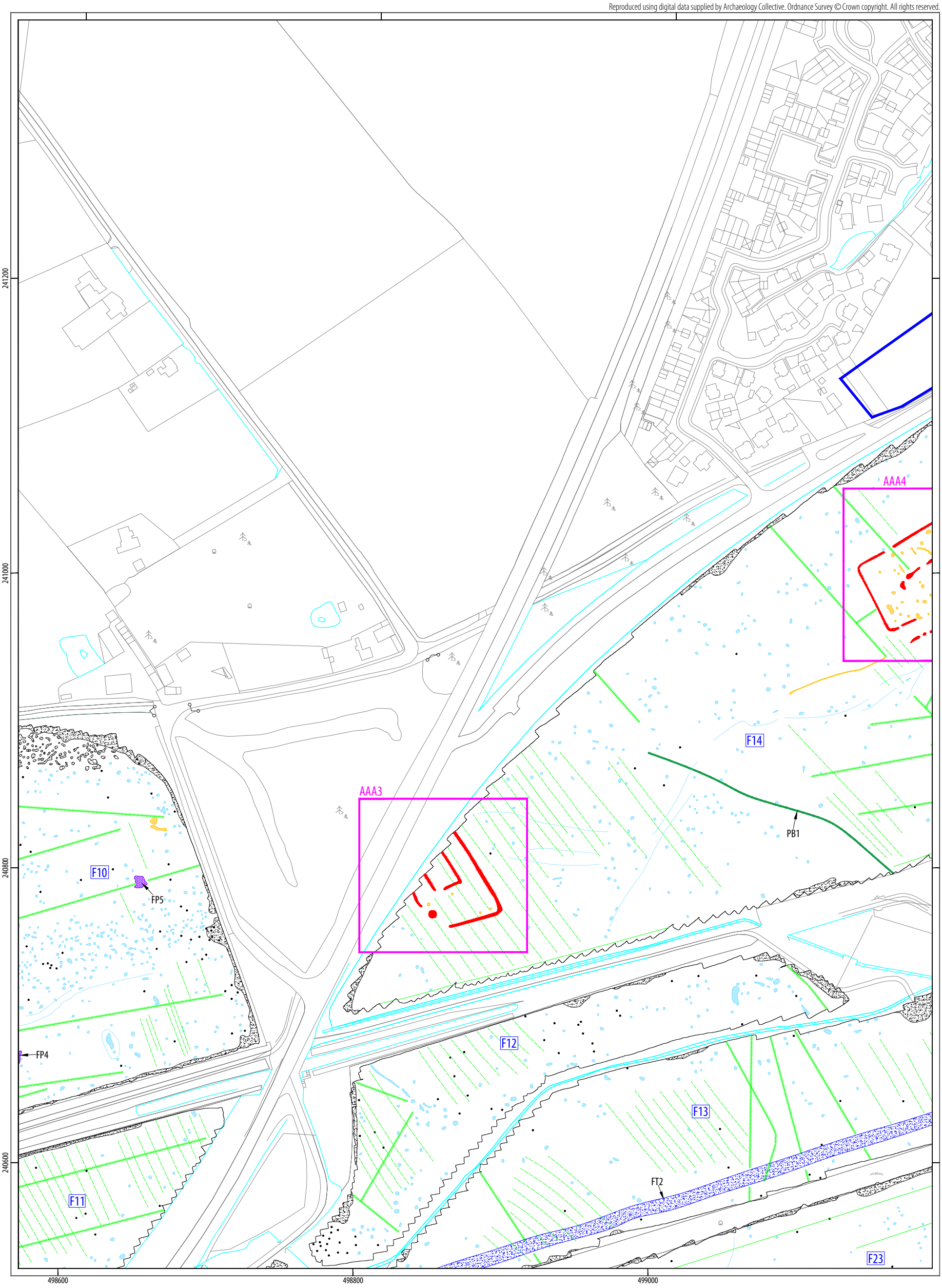
ILLUS 23 XY trace plot of minimally processed magnetometer data; Sector 3



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
magnetic disturbance	modern
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain

TYPE OF ANOMALY	INTERPRETATION
linear	former field boundary
linear	parish boundary
magnetic enhancement	former pond
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?

TYPE OF ANOMALY	INTERPRETATION
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity
FB former boundary **PB** parish boundary
FP former pond
FT former tramway

scheduled monument

N
0 50m
scale 1:2,500 @ A3

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ILLUS 24 Interpretation of magnetometer data; Sector 3

241200
241000
240800
240600

F13
F14
F15
F16
F22
F23

499200
499400
499600
499800

scheduled monument

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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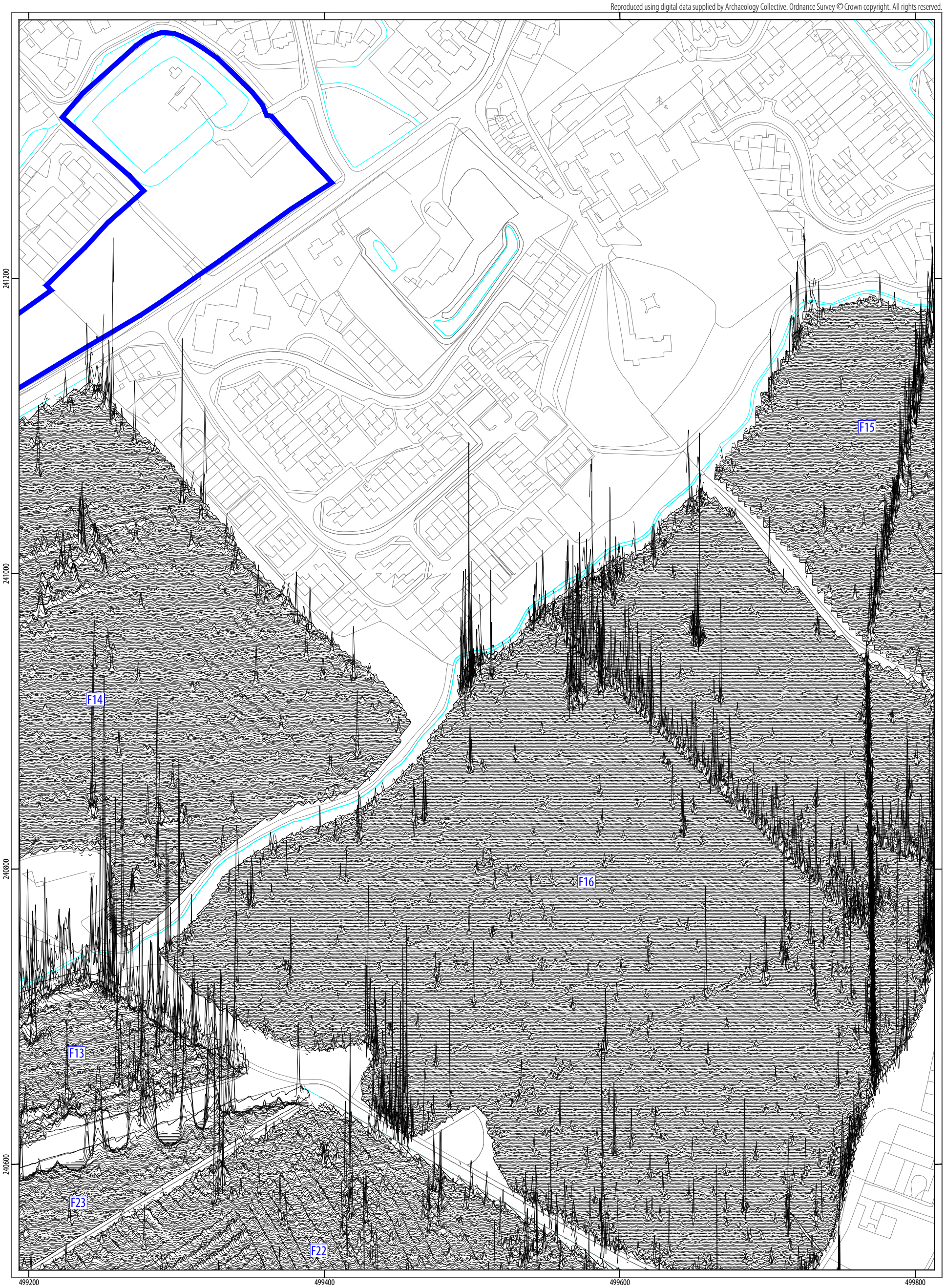
ILLUS 25 Processed greyscale magnetometer data; Sector 4



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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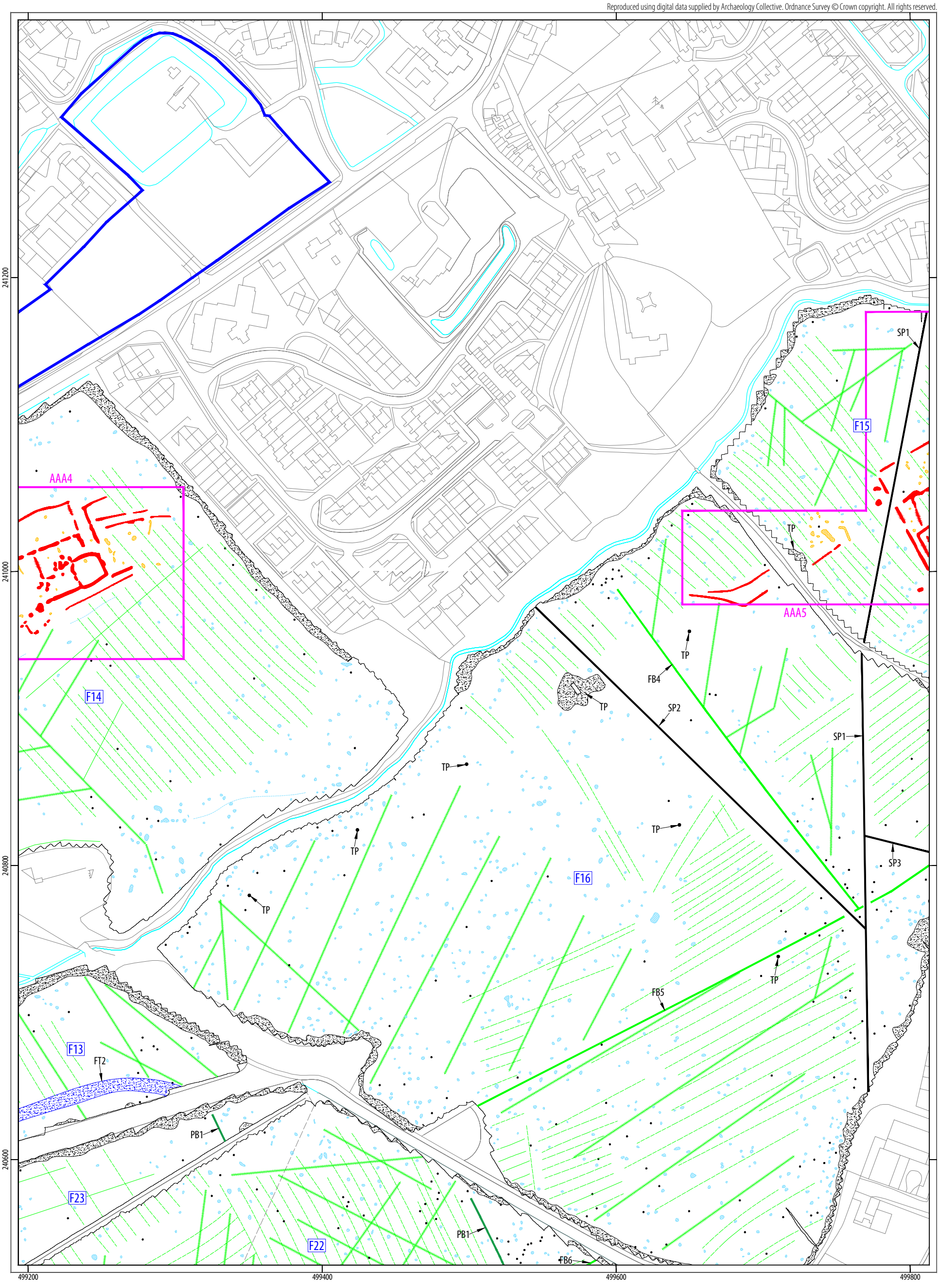
ILLUS 26 XY trace plot of minimally processed magnetometer data; Sector 4



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipoar linear	service pipe
magnetic disturbance	modern
linear trend	ridge and furrow
linear trend	agricultural

TYPE OF ANOMALY	INTERPRETATION
linear trend	field drain
linear	former field boundary
linear	parish boundary
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?

TYPE OF ANOMALY	INTERPRETATION
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity
FB former boundary
FT former tramway
PB parish boundary
SP service pipe
TP telegraph pole

scheduled monument

N
0 50m
scale 1:2,500 @ A3

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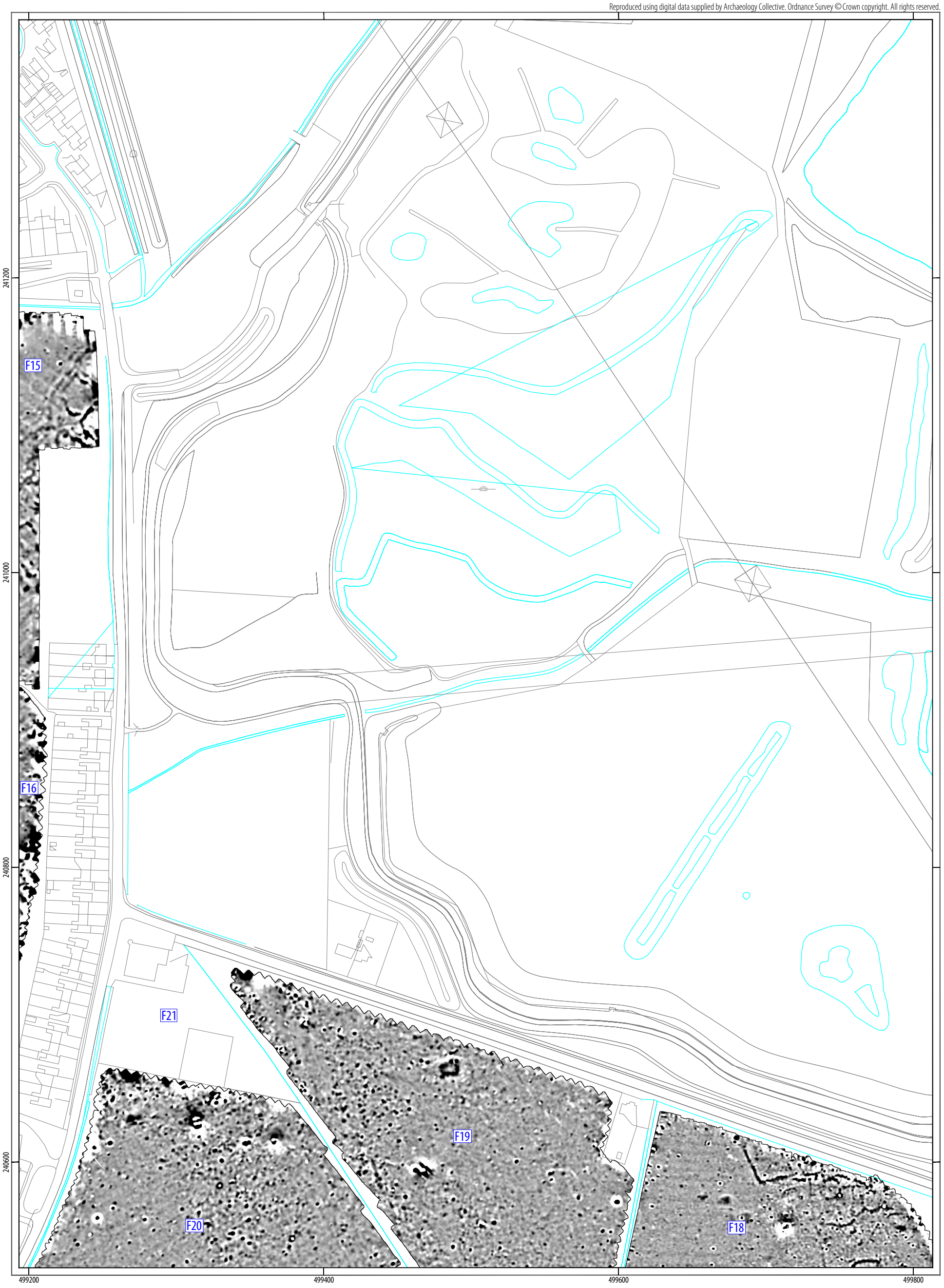
ILLUS 27 Interpretation of magnetometer data; Sector 4



nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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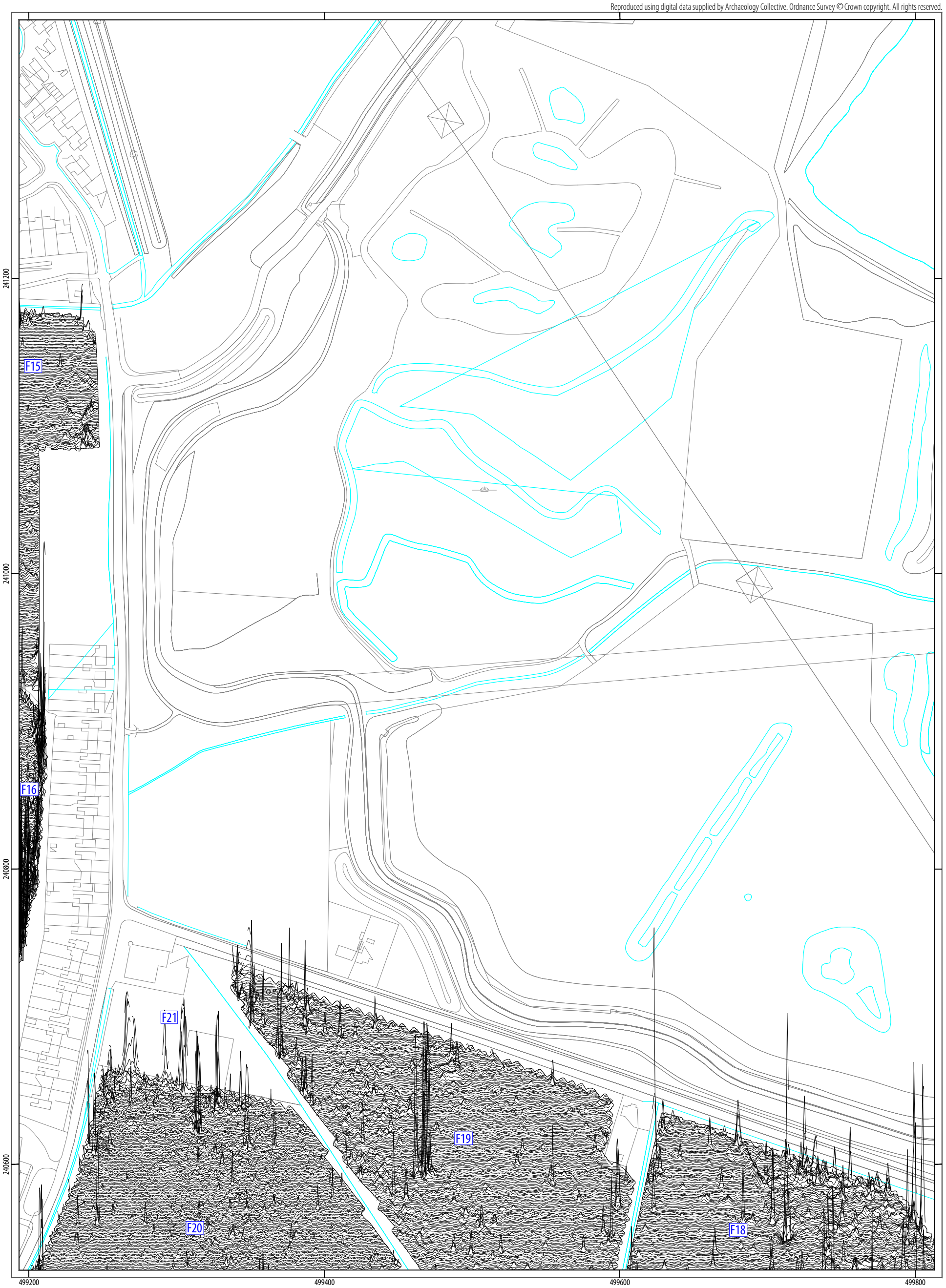
ILLUS 28 Processed greyscale magnetometer data; Sector 5



40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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ILLUS 29 XY trace plot of minimally processed magnetometer data; Sector 5

241200
241000
240800
240600
499200
499400
499600
499800

F15
RD1
AAA5
F16
SP3
F21
TP
F20
F19
TP
AAA6
F18
TP

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipoar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain

TYPE OF ANOMALY	INTERPRETATION
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity
RD ring-ditch
SP service pipe
TP telegraph pole

N
0 50m
scale 1:2,500 @ A3

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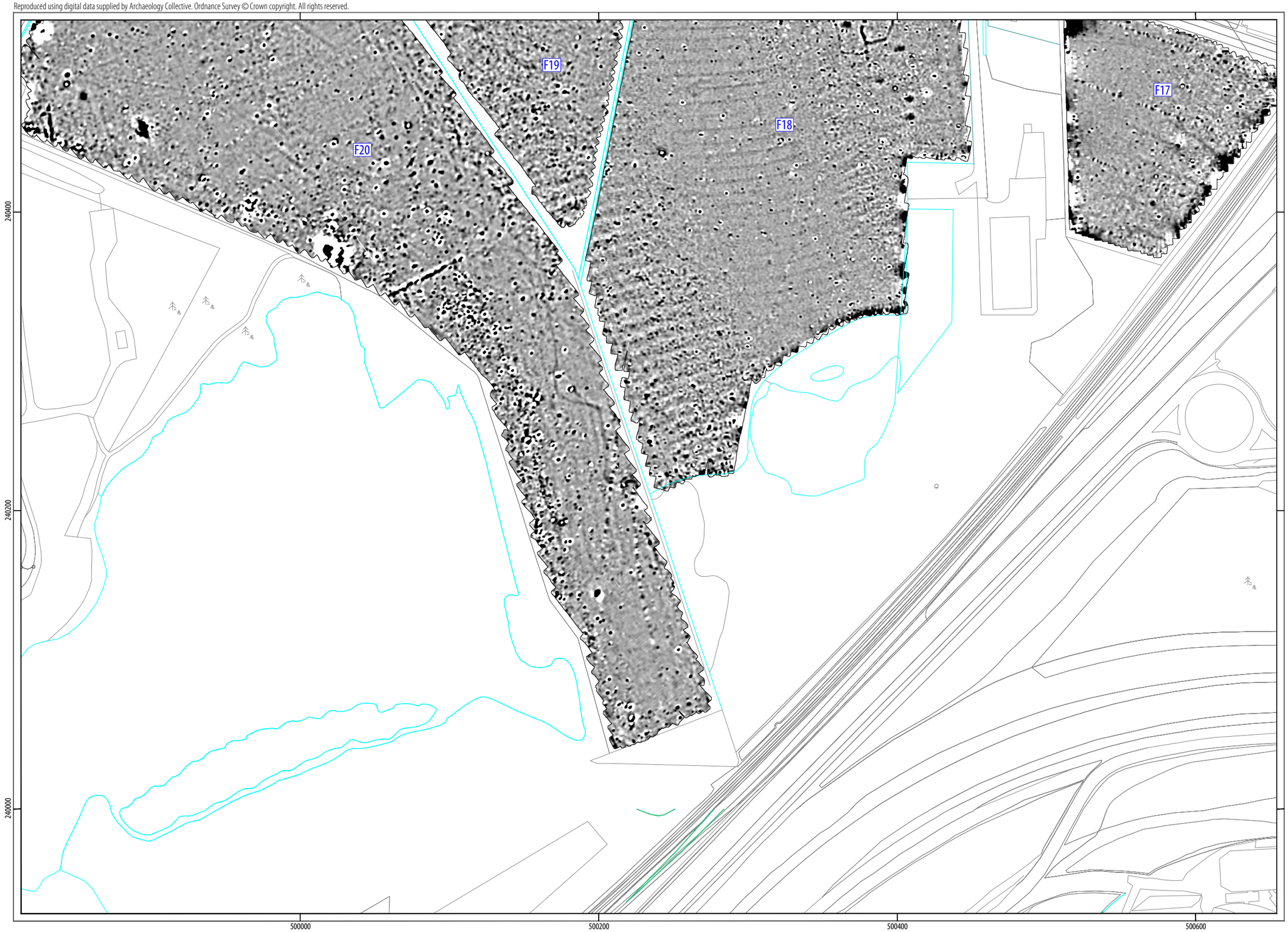
ILLUS 30 Interpretation of magnetometer data; Sector 5



-1.0 nT 2.0

N

0 100m

scale 1:4,000 @ A3

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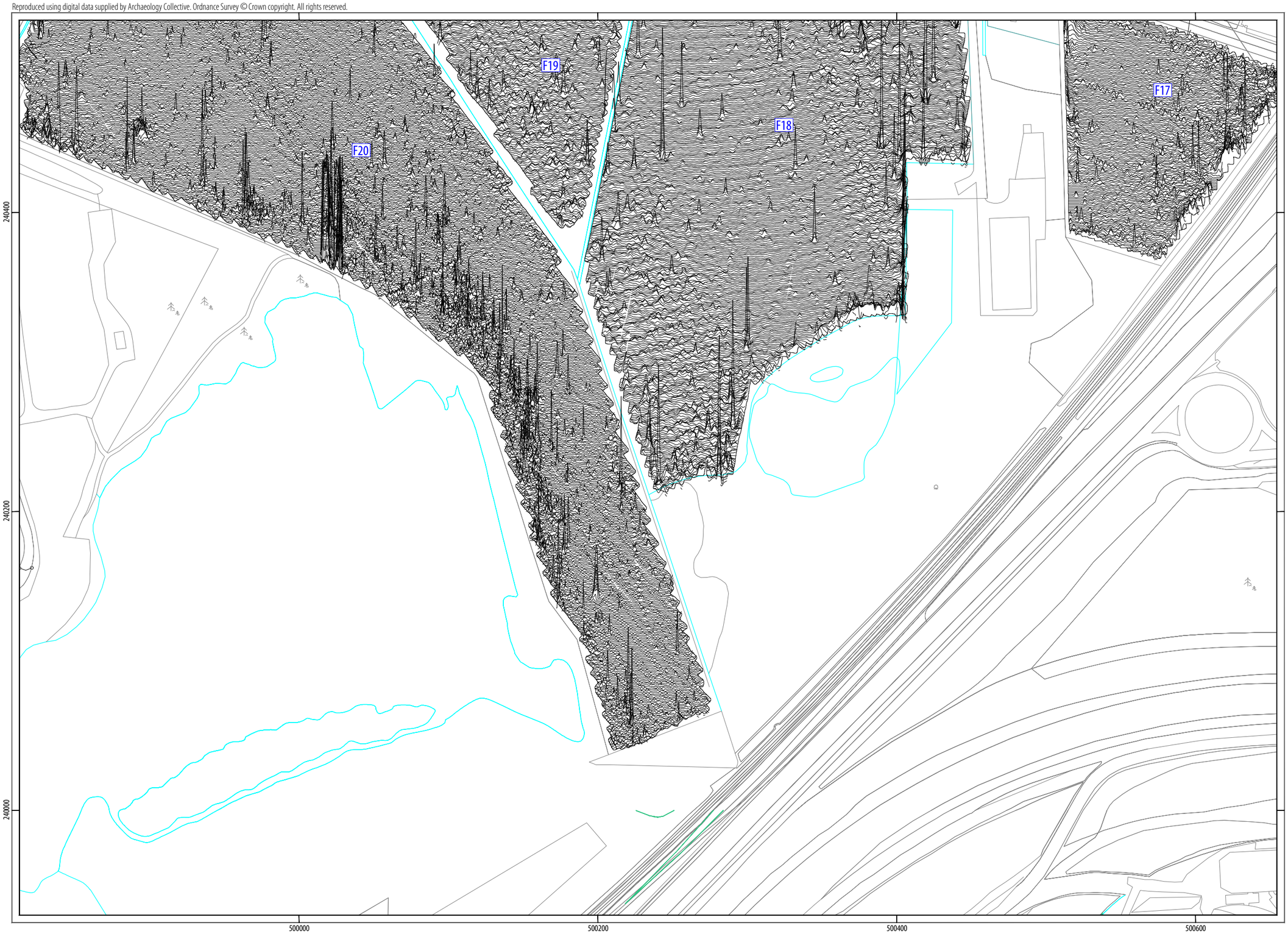
ILLUS 31 Processed greyscale magnetometer data; Sector 6



40.0nT/cm

N

0 100m

scale 1:4,000 @ A3

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ILLUS 32 XY trace plot of minimally processed magnetometer data; Sector 5

F19
F17
F18
AAA6
F20

240400
240200
240000
500000
500200
500400
500600

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity

N

0 100m

scale 1:4,000 @ A3

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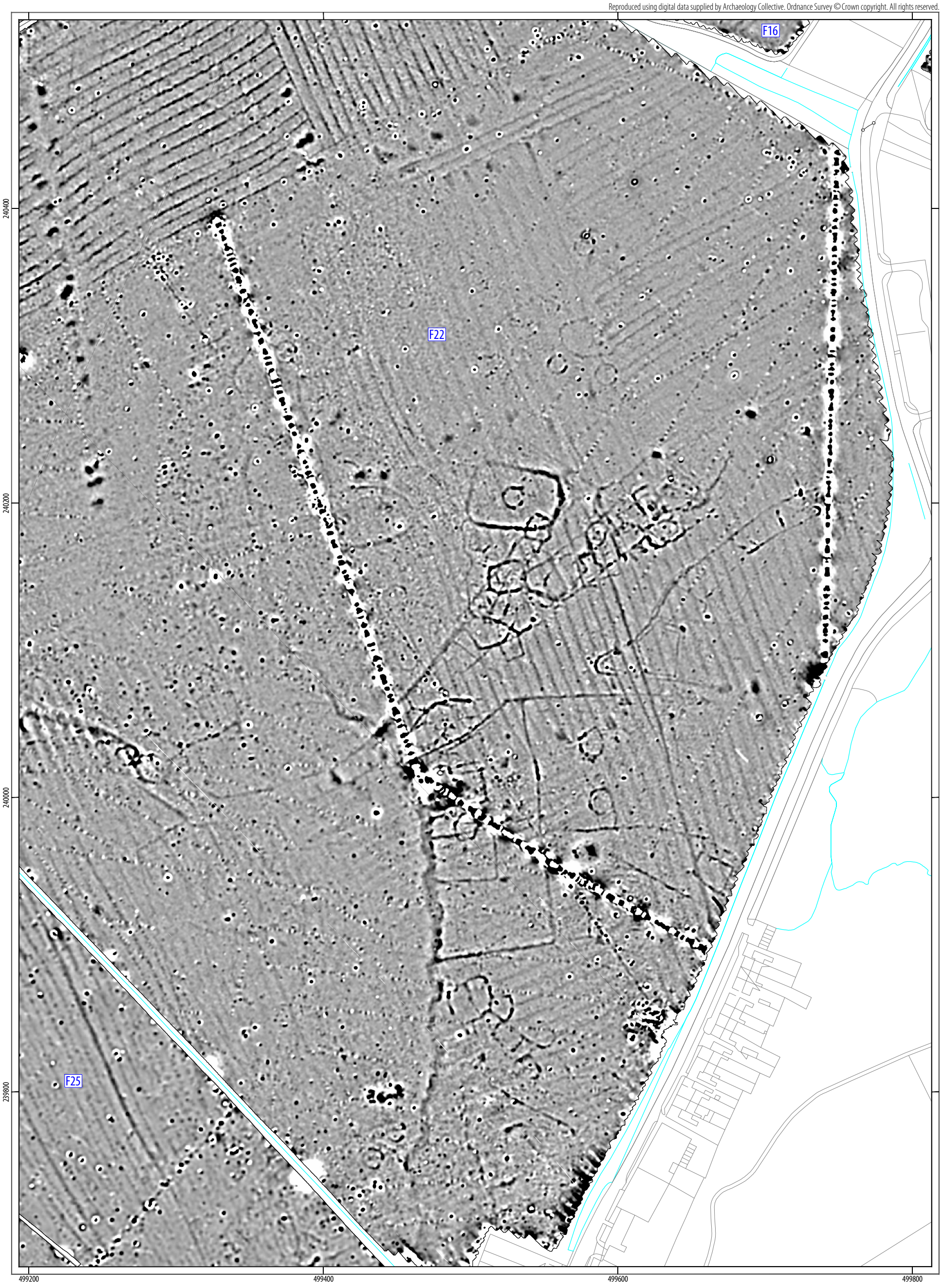
ILLUS 33 Interpretation of magnetometer data; Sector 6



-1.0 nT 2.0

N

0 50m

scale 1:2,500 @ A3

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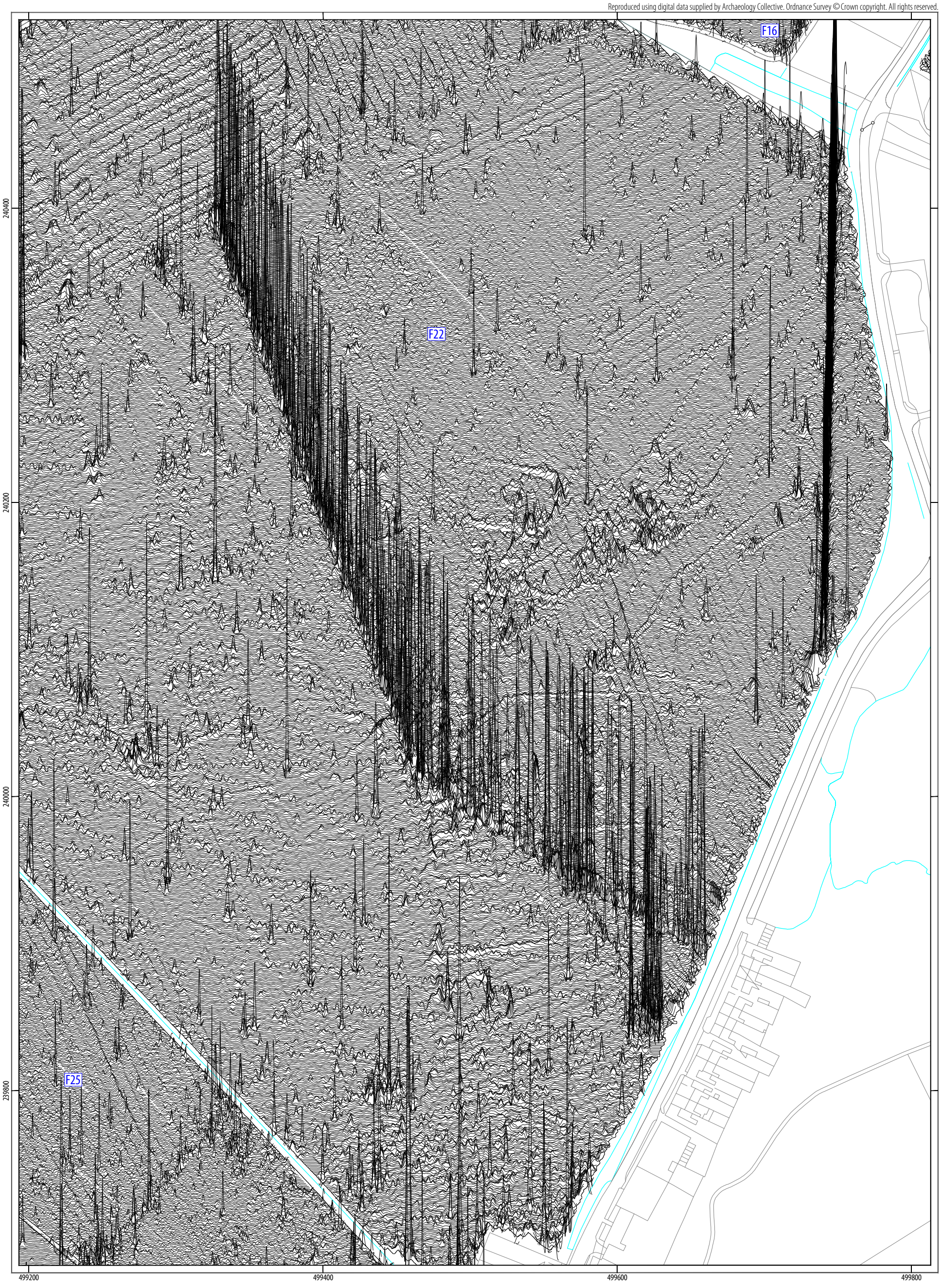
ILLUS 34 Processed greyscale magnetometer data; Sector 7



40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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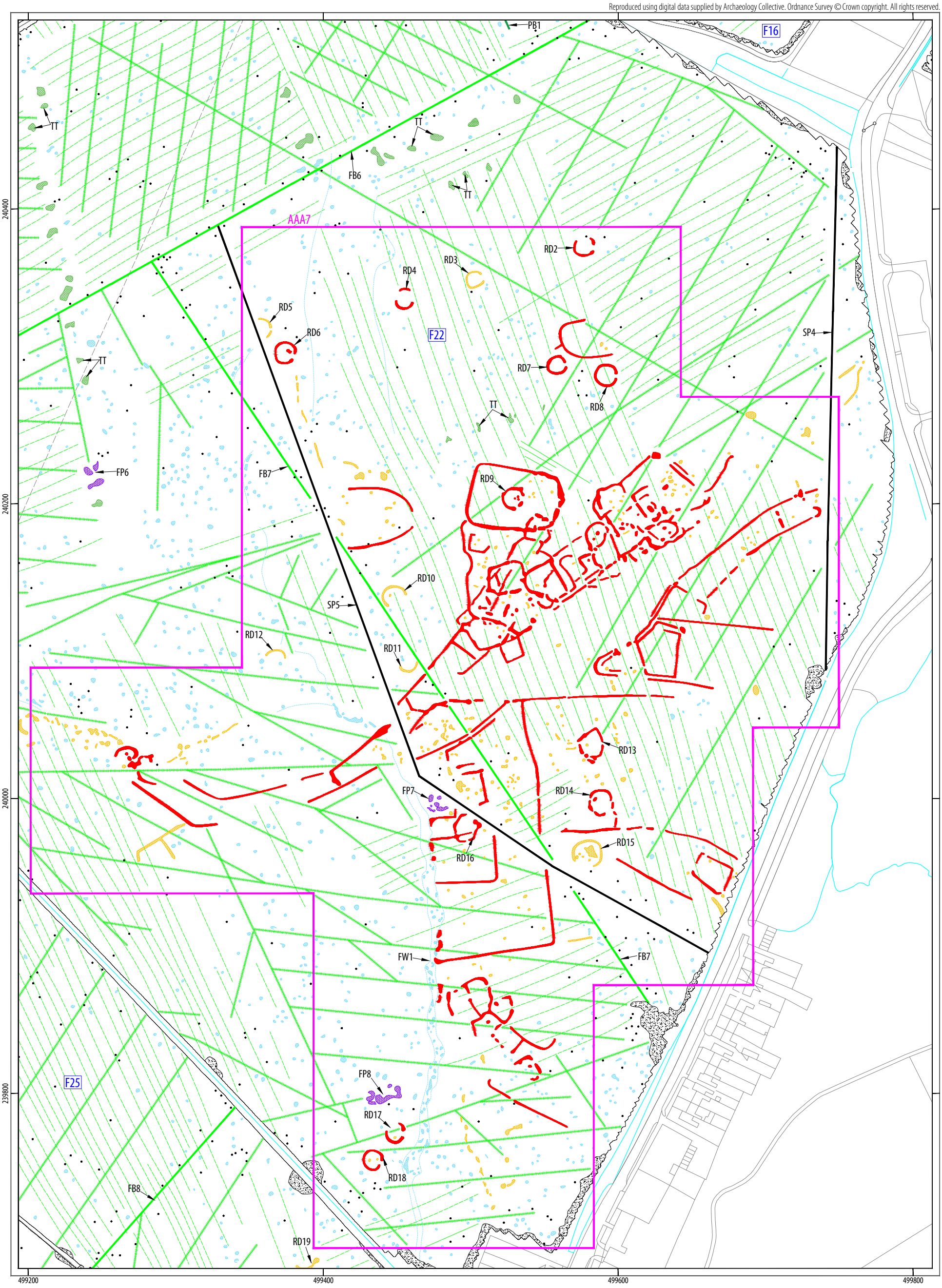
ILLUS 35 XY trace plot of minimally processed magnetometer data; Sector 7



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipoar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain

TYPE OF ANOMALY	INTERPRETATION
linear	former field boundary
linear	parish boundary
magnetic enhancement	tree throw?
magnetic enhancement	former pond
linear	geological variation
magnetic enhancement	geology

TYPE OF ANOMALY	INTERPRETATION
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

AAA	area of archaeological activity	RD	ring-ditch
FB	former boundary	SP	service pipe
FW	former watercourse	TP	telegraph pole
PB	parish boundary	TT	tree throw

N

0 50m

scale 1:2,500 @ A3

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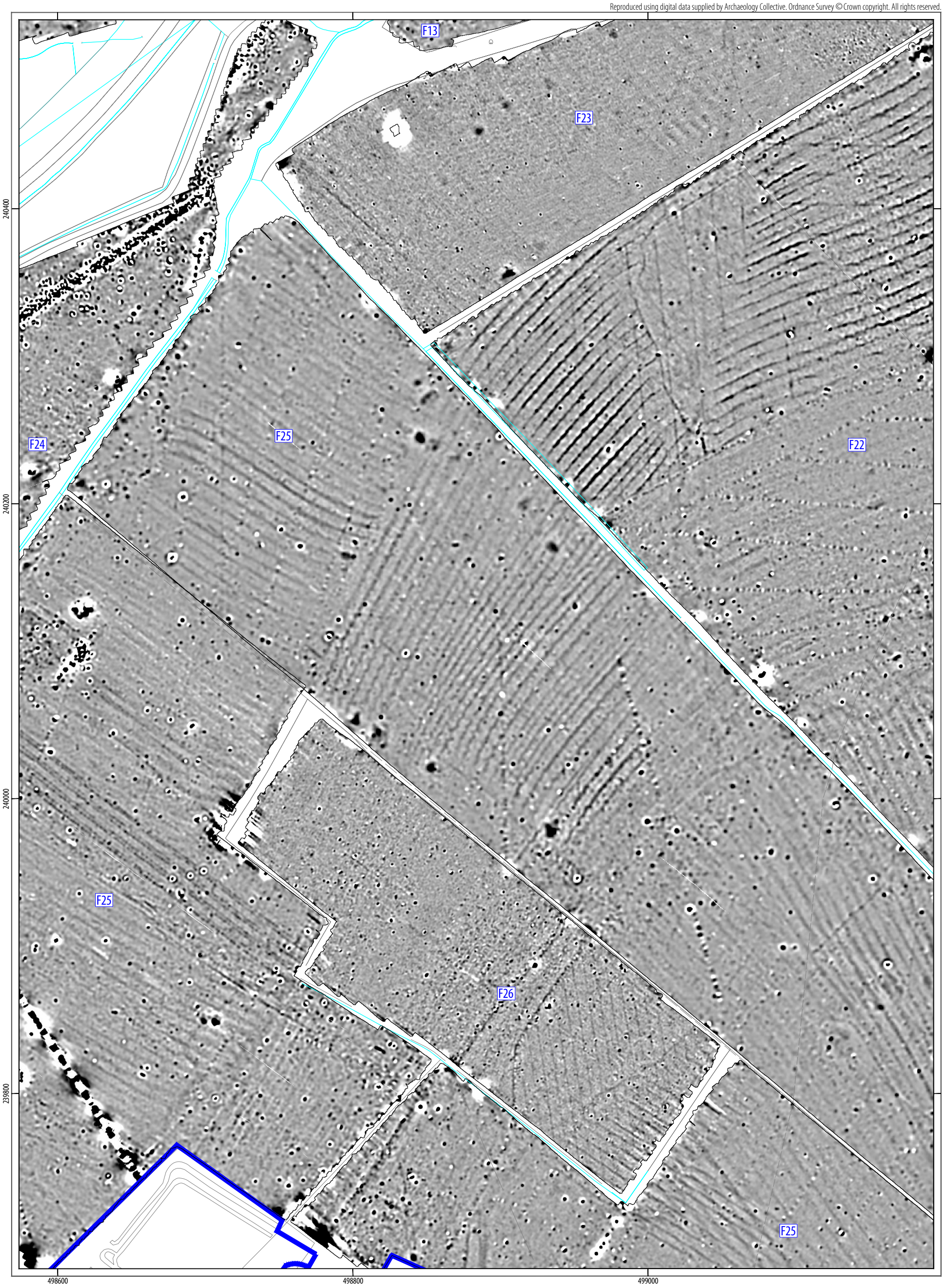
ILLUS 36 Interpretation of magnetometer data; Sector 7



scheduled monument

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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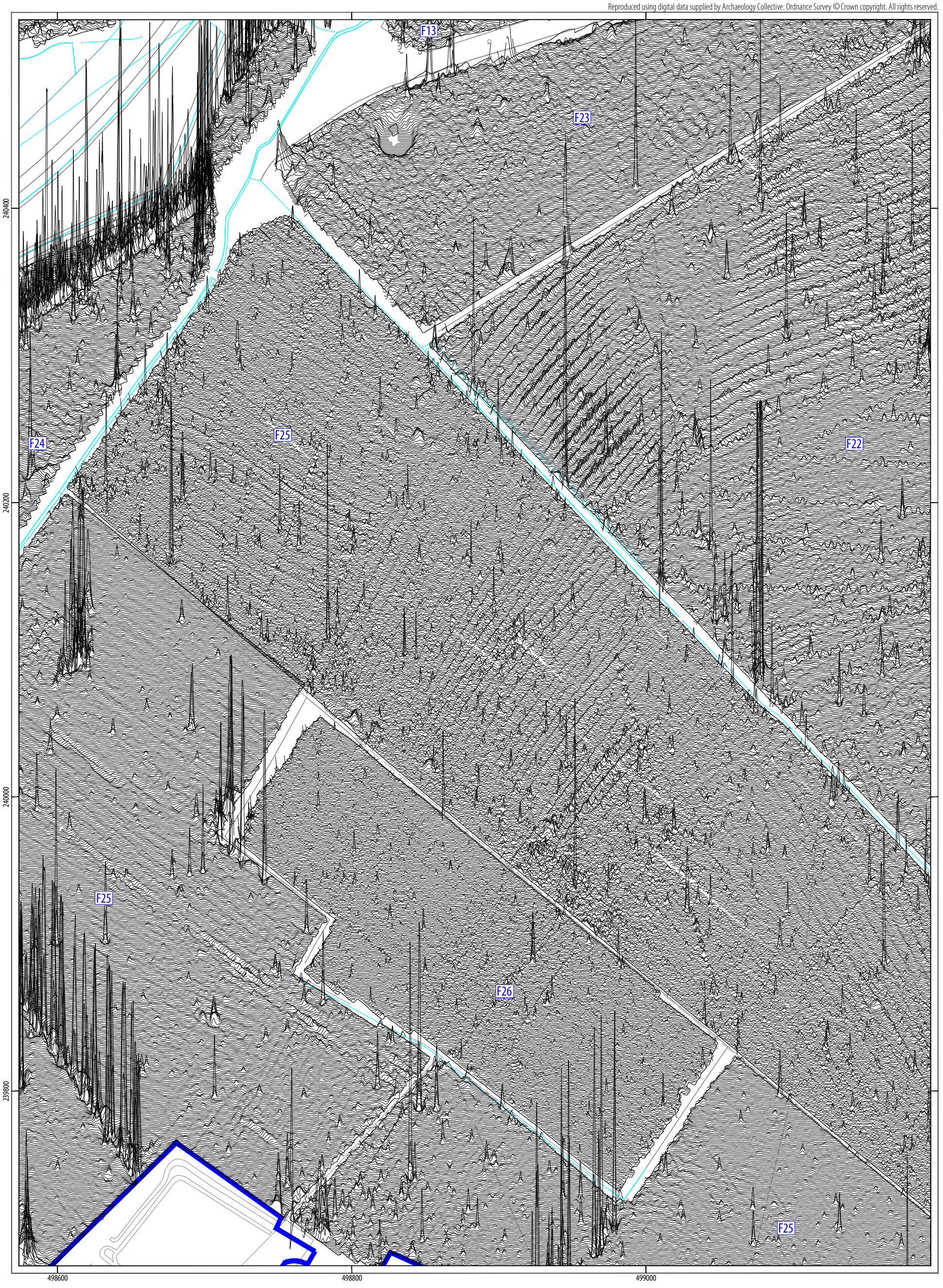
ILLUS 37 Processed greyscale magnetometer data; Sector 8



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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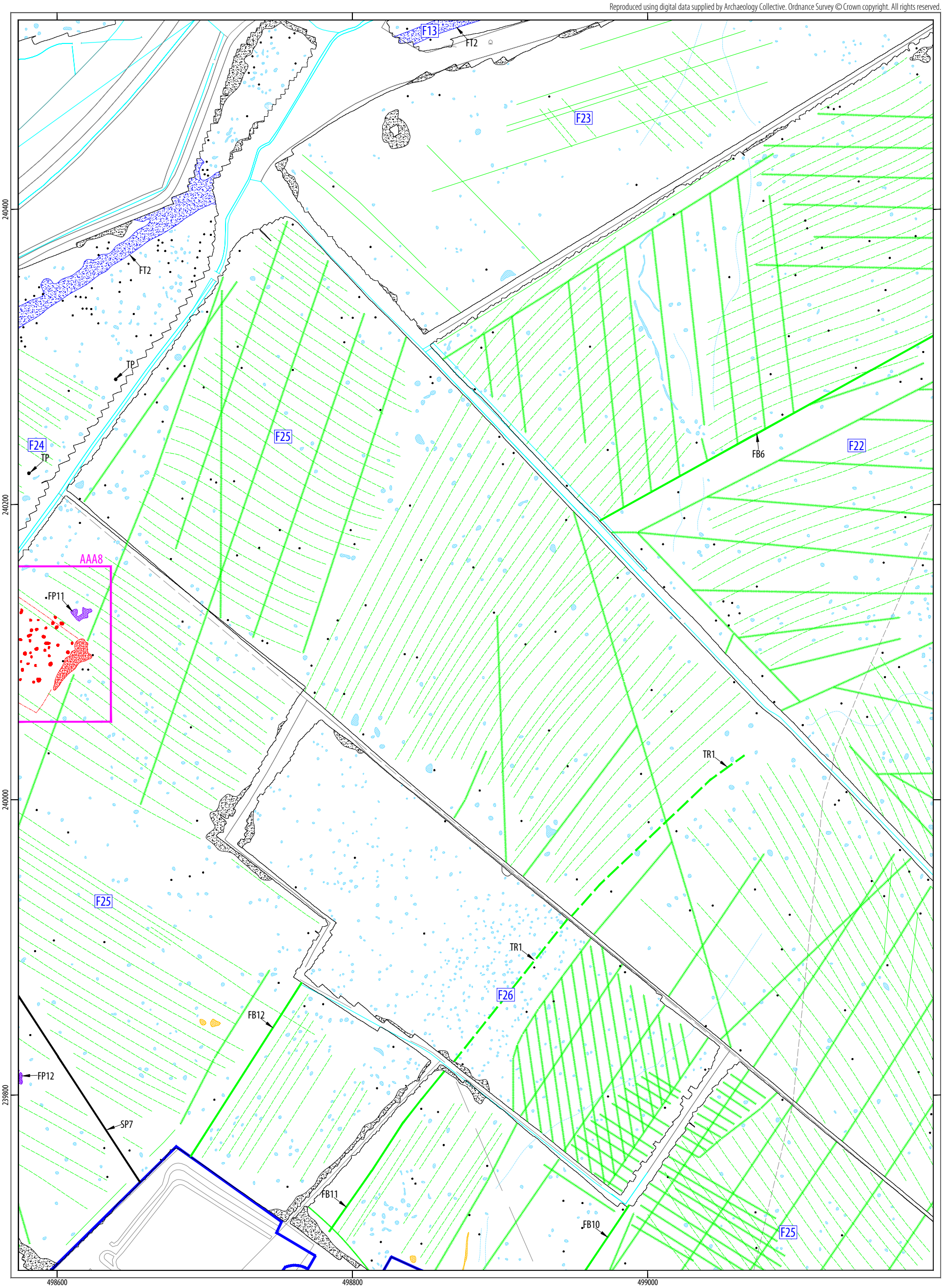
ILLUS 38 XY trace plot of minimally processed magnetometer data; Sector 8



TYPE OF ANOMALY	INTERPRETATION	TYPE OF ANOMALY	INTERPRETATION	TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material	linear trend	field drain	magnetic enhancement	archaeology
magnetic disturbance	ferrous material	linear	former field boundary		
dipolar linear	service pipe	magnetic enhancement	former pond		
magnetic disturbance	modern	linear	geological variation		
linear trend	ridge and furrow	magnetic enhancement	geology		
linear trend	agricultural	magnetic enhancement	archaeology?		

ABBREVIATIONS

AAA area of archaeological activity

FB former boundary
FP former pond
FT former tramway
SP service pipe
TP telegraph pole
TR former farm track

scheduled monument

N

0 50m

scale 1:2,500 @ A3

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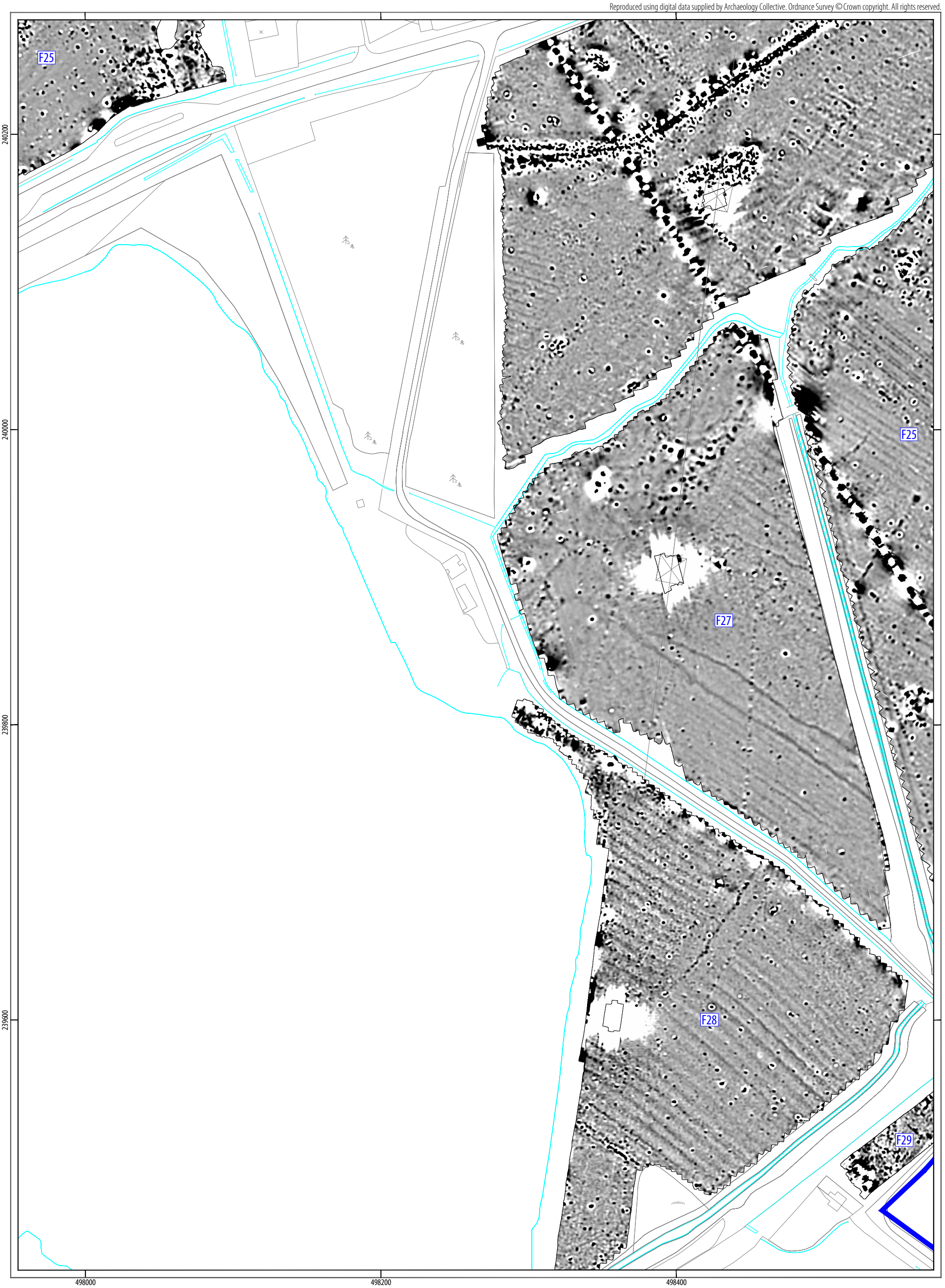
ILLUS 39 Interpretation of magnetometer data; Sector 8



scheduled monument

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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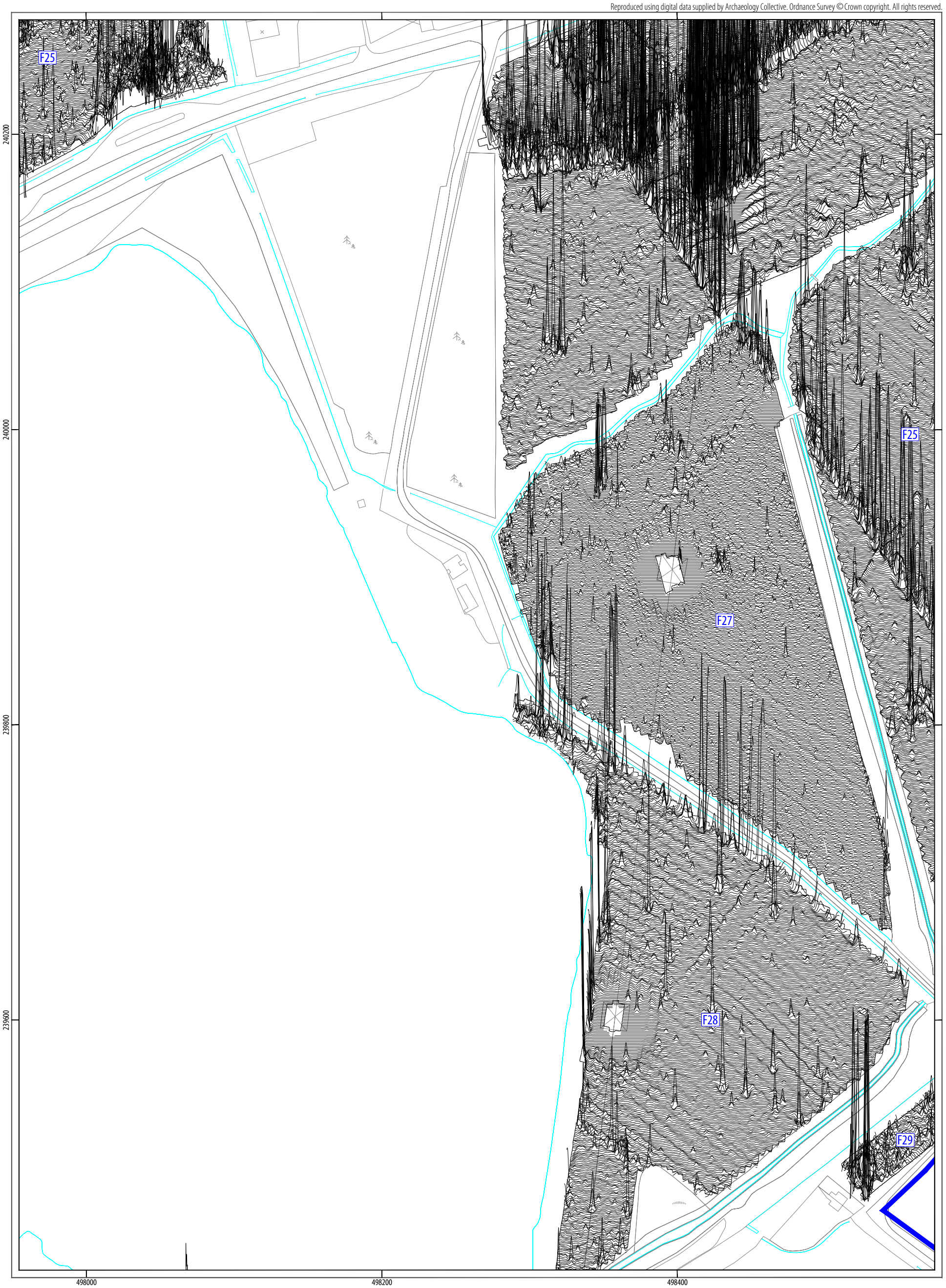
ILLUS 40 Processed greyscale magnetometer data; Sector 9



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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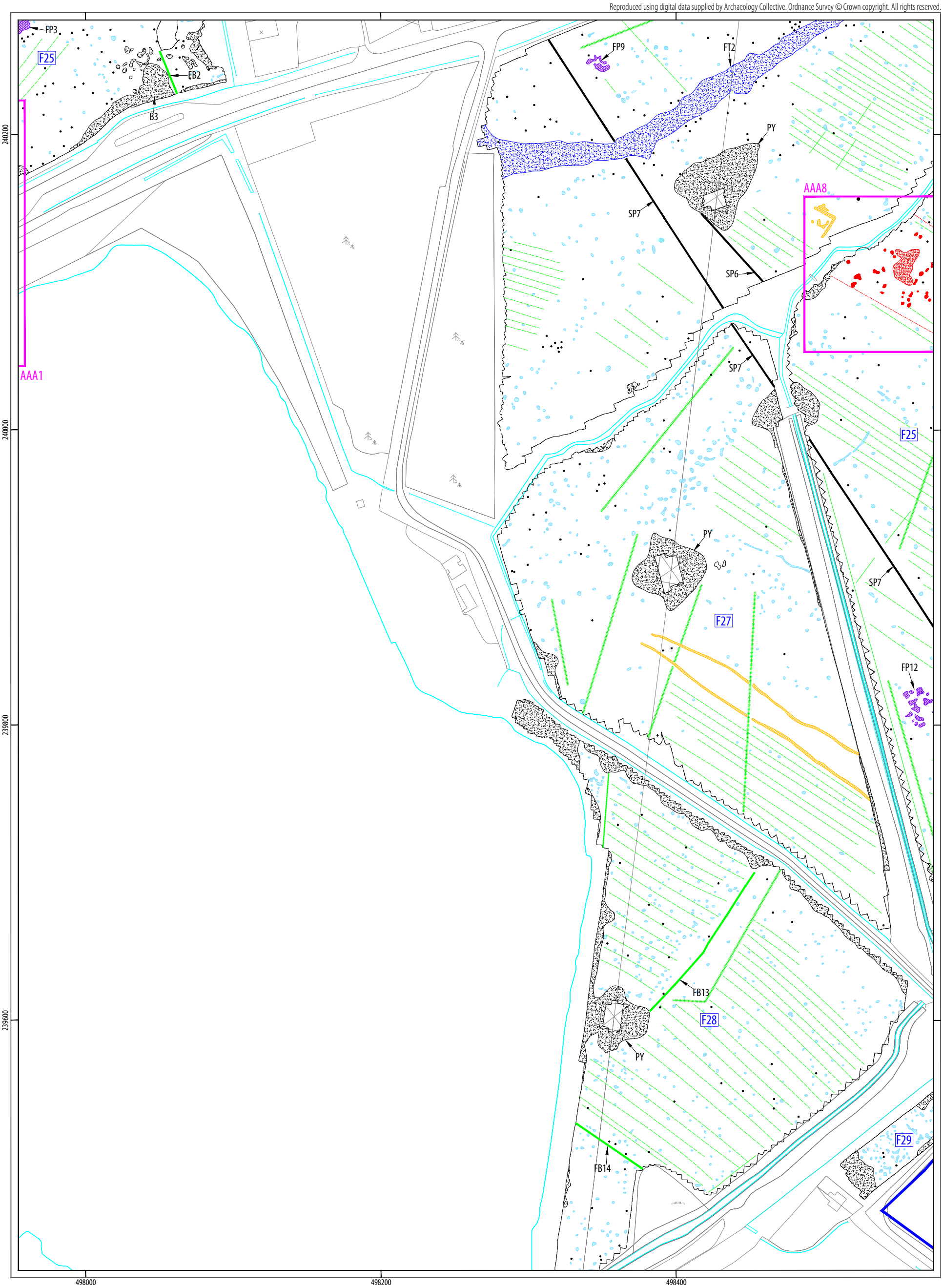
ILLUS 41 XY trace plot of minimally processed magnetometer data; Sector 9



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
magnetic disturbance	modern
linear trend	ridge and furrow
linear trend	agricultural

TYPE OF ANOMALY	INTERPRETATION
linear trend	field drain
linear	former field boundary
magnetic enhancement	former pond
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS	
AAA	area of archaeological activity
B	building
FB	former boundary
FP	former pond
FT	former tramway
SP	service pipe

scheduled monument

N

0 50m

scale 1:2,500 @ A3

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ILLUS 42 Interpretation of magnetometer data; Sector 9

scheduled monument

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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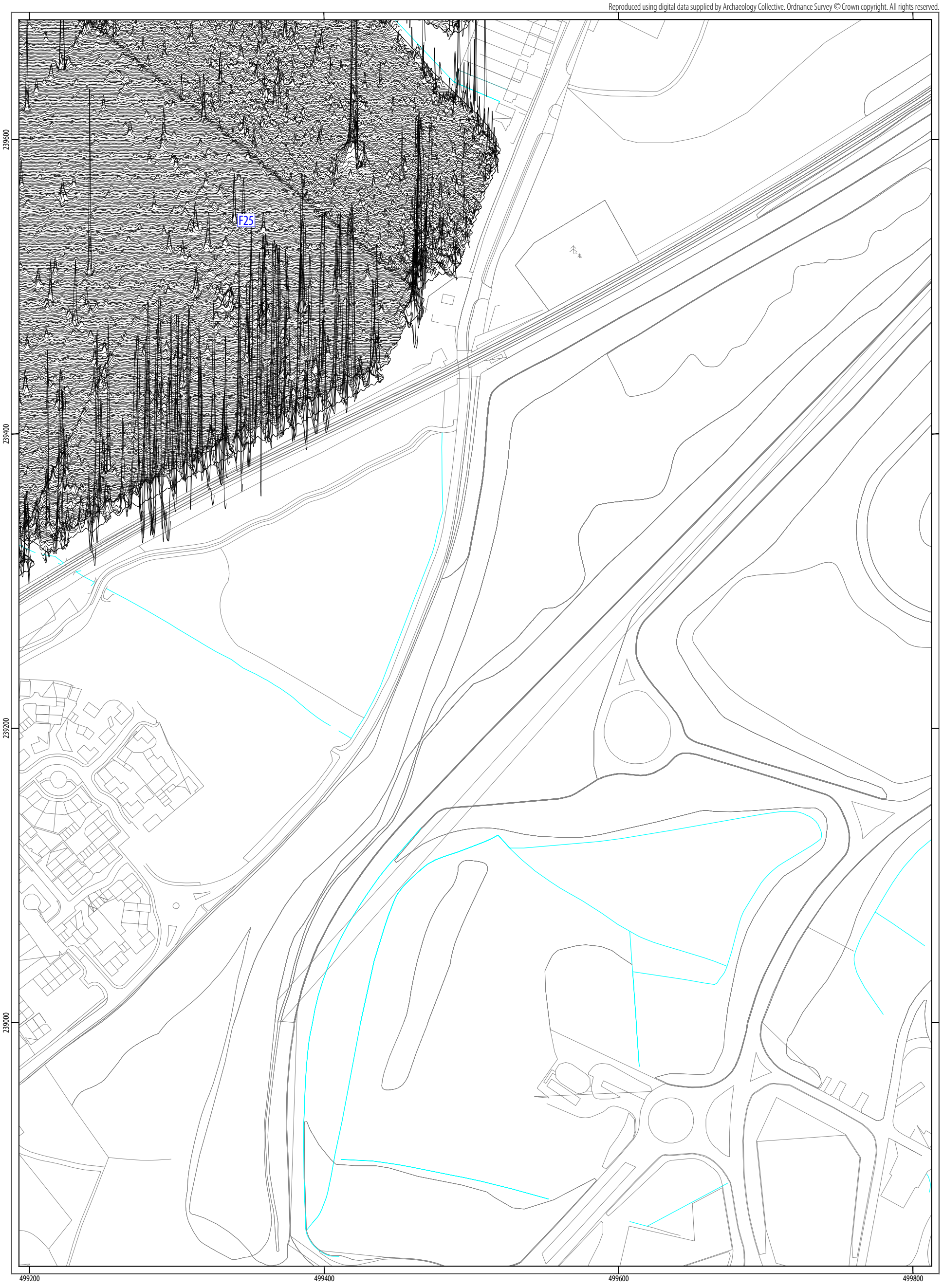
ILLUS 43 Processed greyscale magnetometer data; Sector 10



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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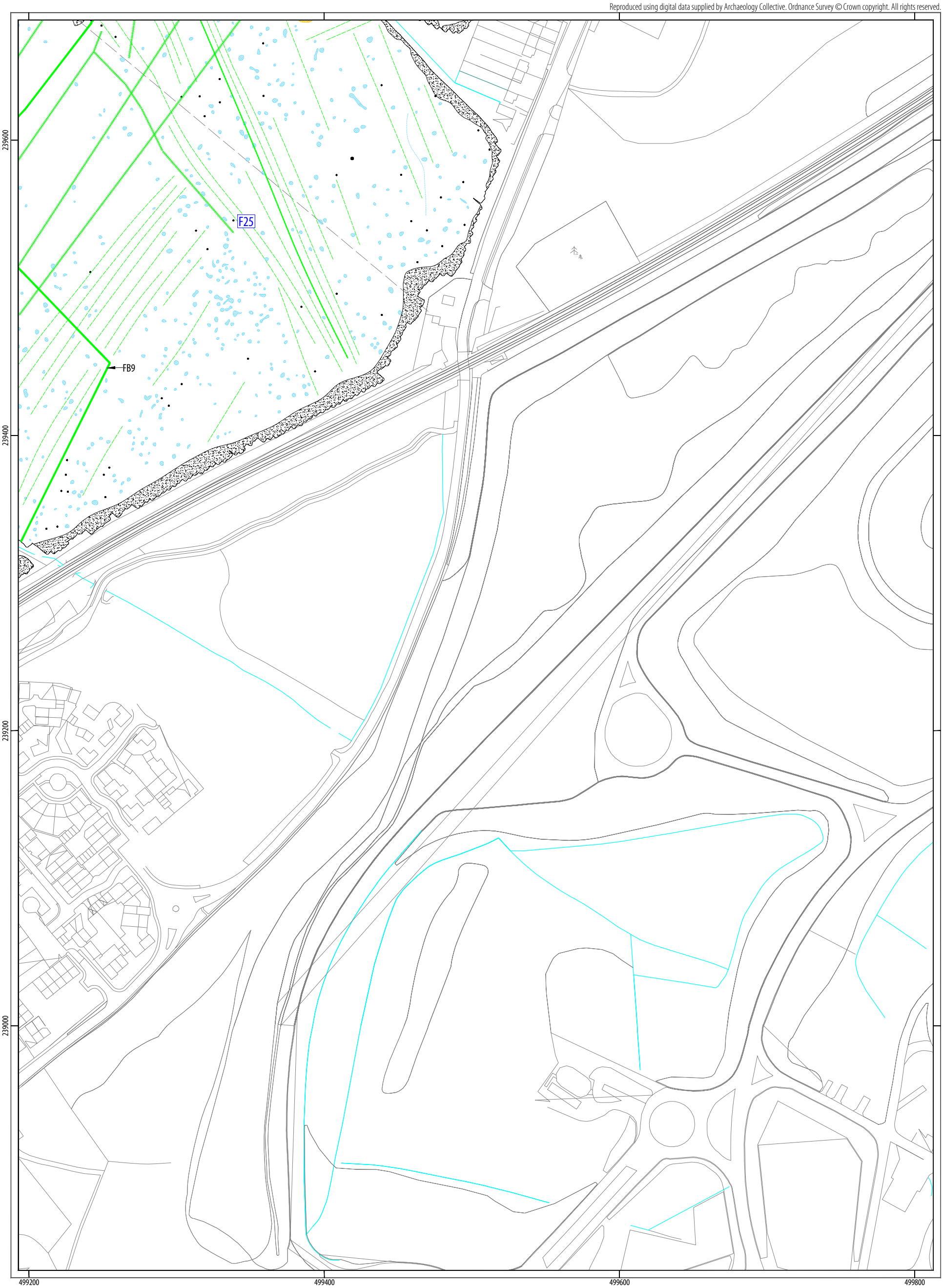
ILLUS 44 XY trace plot of minimally processed magnetometer data; Sector 10



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	field drain
linear	former field boundary
linear	geology

TYPE OF ANOMALY	INTERPRETATION
magnetic enhancement	geology
magnetic enhancement	archaeology?

ABBREVIATIONS

FB former boundary

N

0 50m

scale 1:2,500 @ A3

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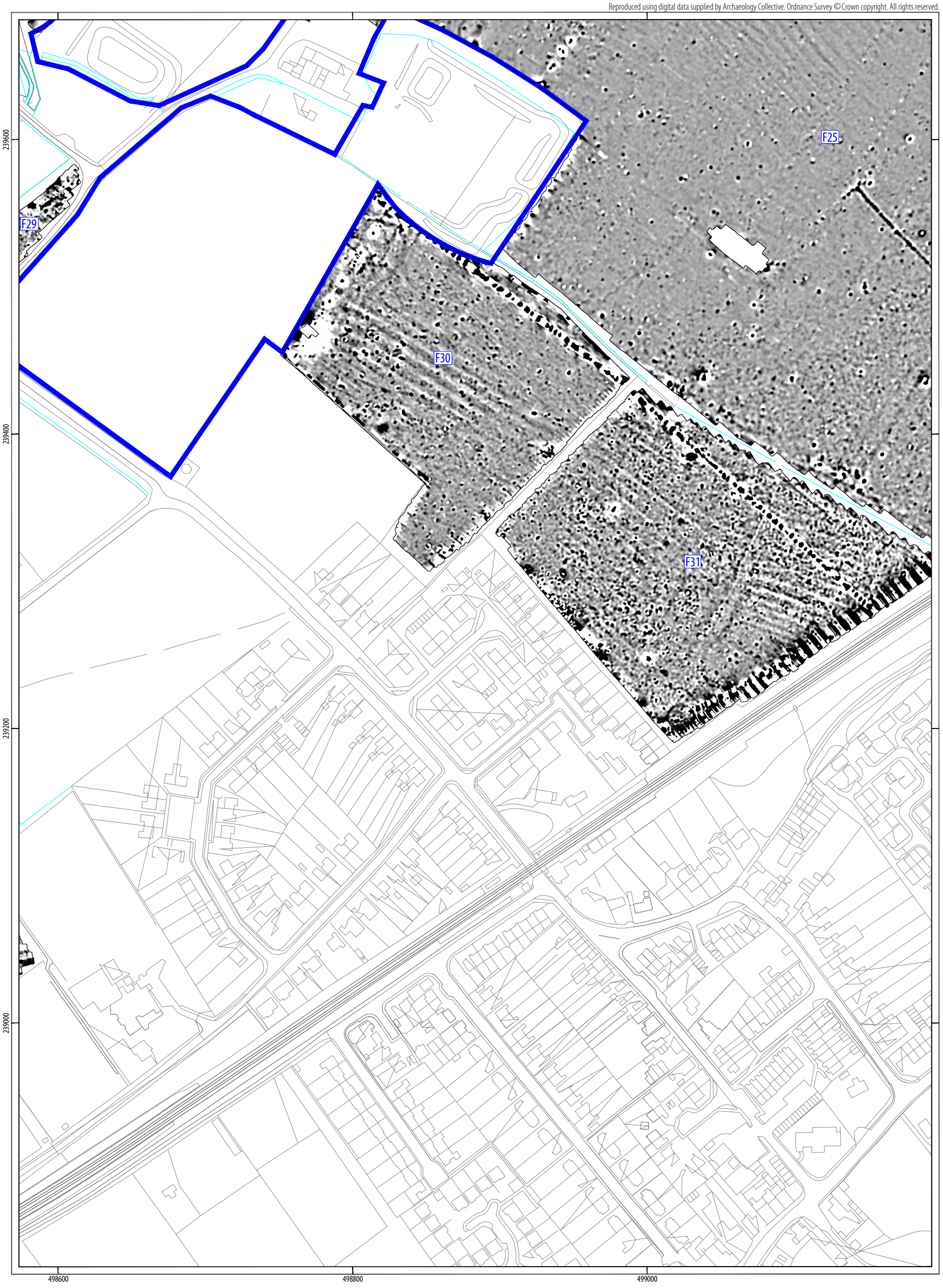
ILLUS 45 Interpretation of magnetometer data; Sector 10



scheduled monument

nT
-1.0
2.0

N

0
50m
scale 1:2,500 @ A3

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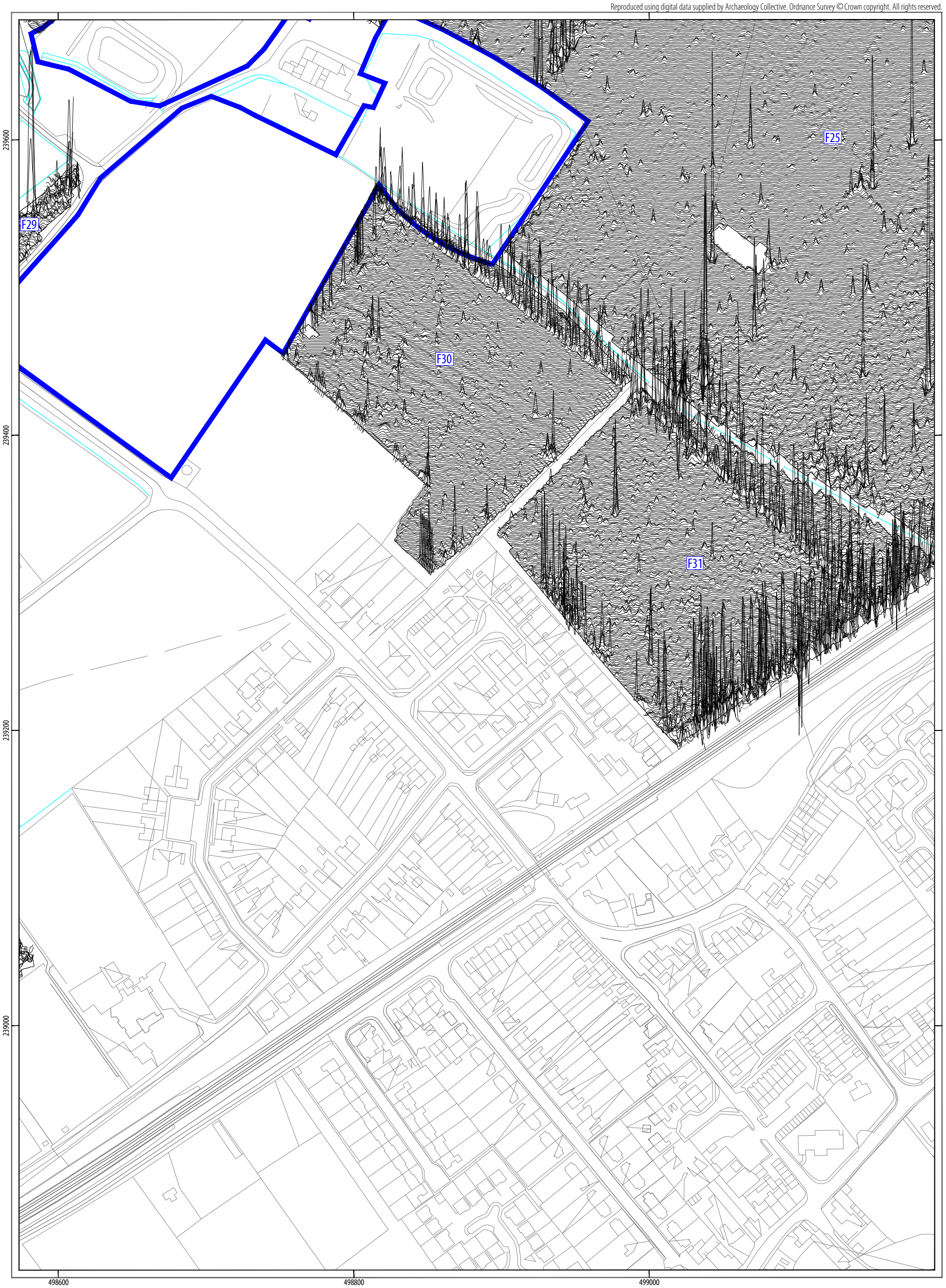
ILLUS 46 Processed greyscale magnetometer data; Sector 11



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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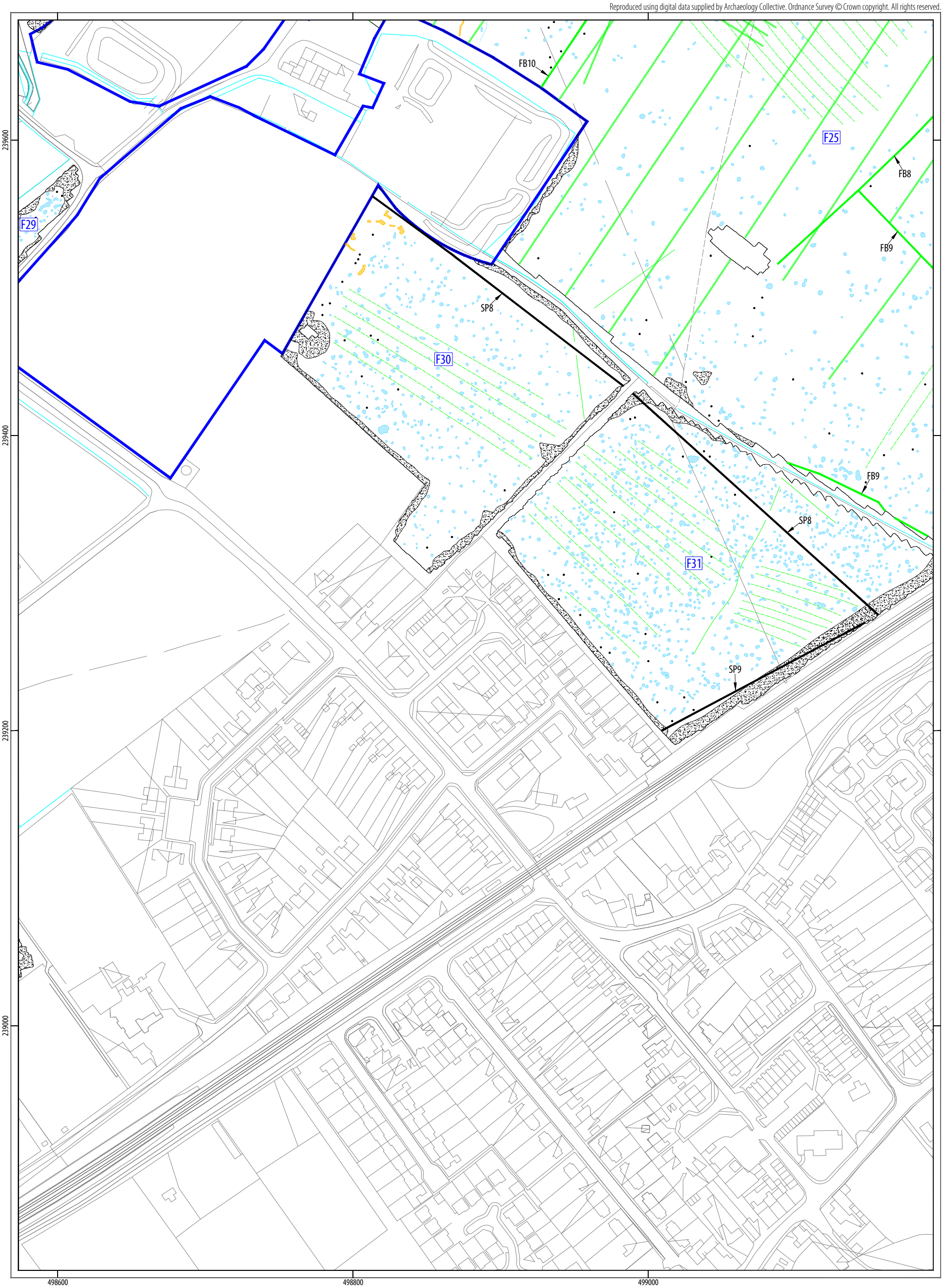
ILLUS 47 XY trace plot of minimally processed magnetometer data; Sector 11



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain

TYPE OF ANOMALY	INTERPRETATION
linear	former field boundary
magnetic enhancement	geology
magnetic enhancement	archaeology?

ABBREVIATIONS	
FB	former boundary
SP	service pipe

scheduled monument

N

0 50m

scale 1:2,500 @ A3

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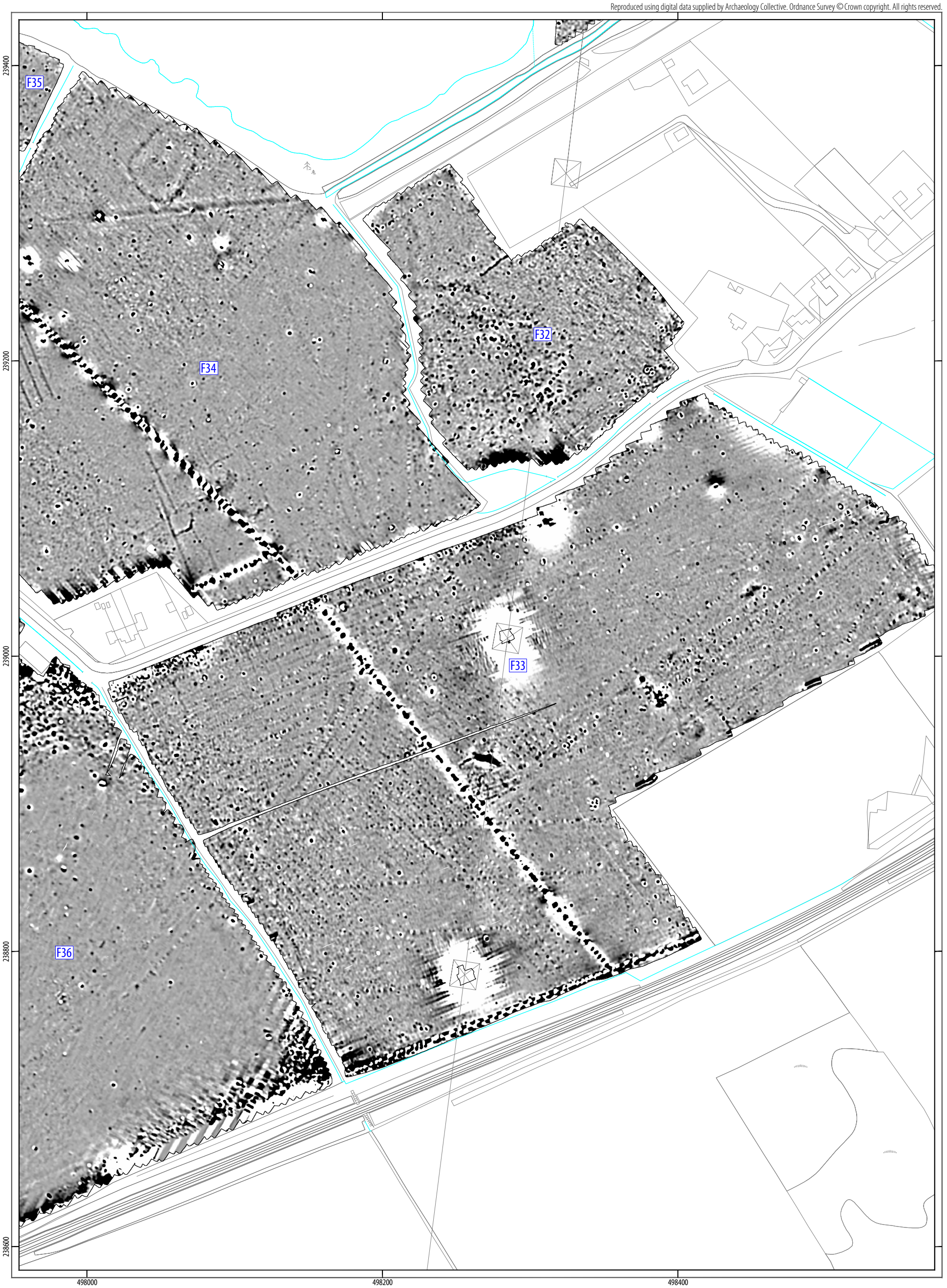
ILLUS 48 Interpretation of magnetometer data; Sector 11



scheduled monument

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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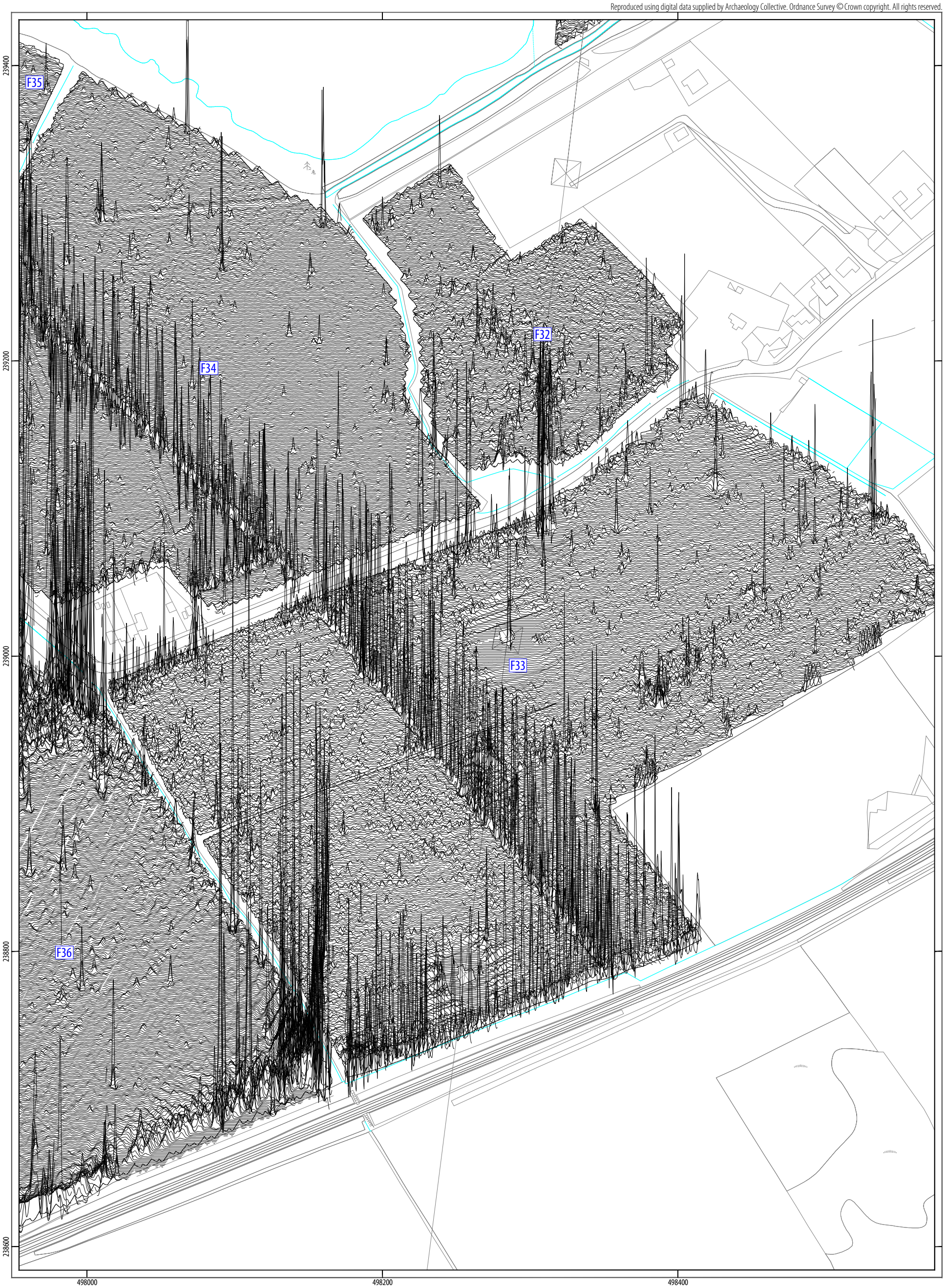
ILLUS 49 Processed greyscale magnetometer data; Sector 12



scheduled monument

40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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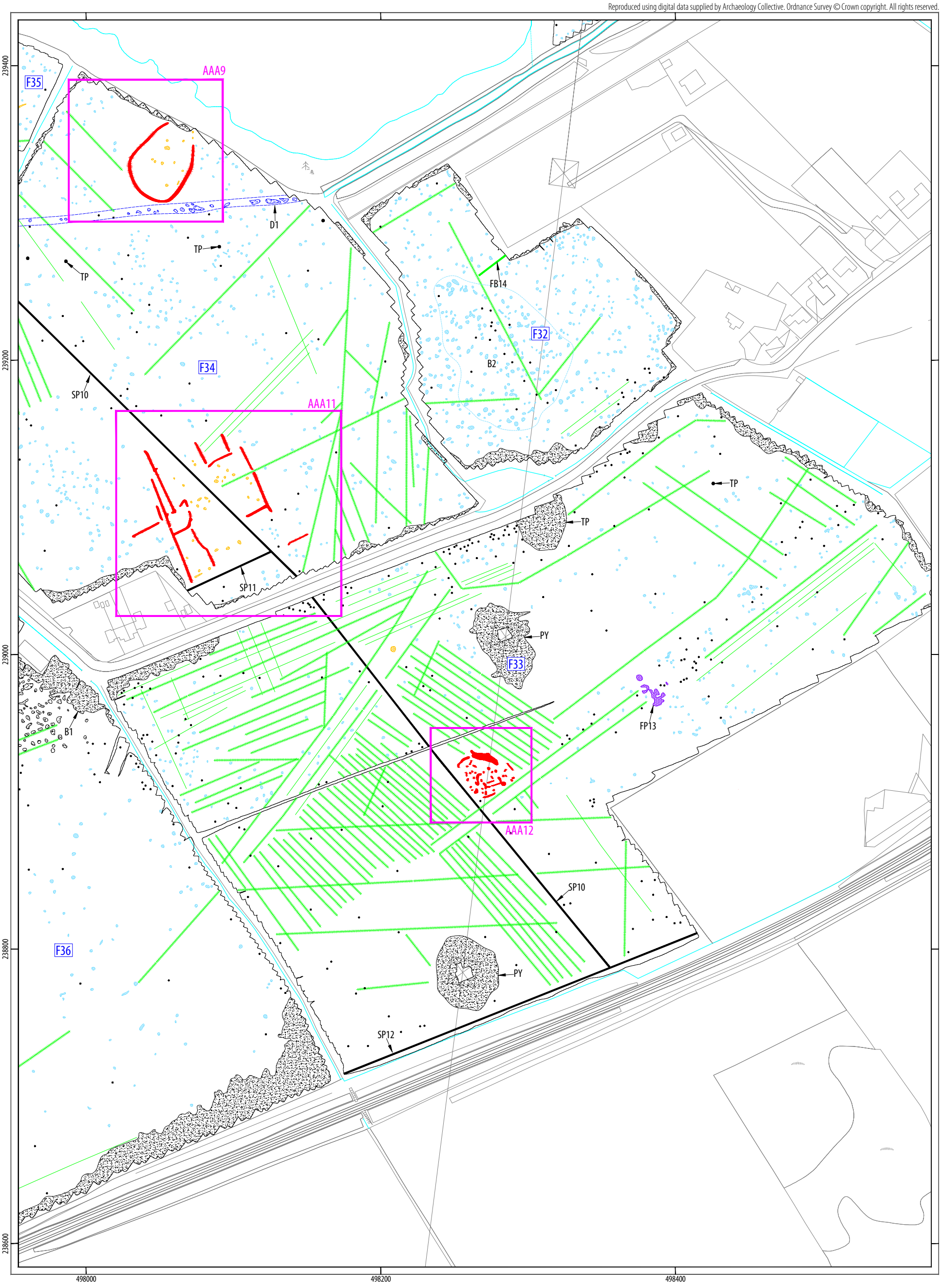
ILLUS 50 XY trace plot of minimally processed magnetometer data; Sector 12



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
magnetic disturbance	modern
linear trend	ridge and furrow
linear trend	agricultural

TYPE OF ANOMALY	INTERPRETATION
linear trend	field drain
linear	former field boundary
magnetic enhancement	former pond
linear	geology
magnetic enhancement	geology
magnetic enhancement	archaeology?

TYPE OF ANOMALY	INTERPRETATION
magnetic enhancement	archaeology

ABBREVIATIONS

AAA	area of archaeological activity	FP	former pond
B	building	PY	pylon
D	ditch	SP	service pipe
FB	former boundary	TP	telegraph pole

N

0 50m

scale 1:2,500 @ A3

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ILLUS 51 Interpretation of magnetometer data; Sector 12

F35
F34
F38
F37
F36

239400
239200
239000
238800
238600
497400
497600
497800

nT
-1.0
2.0

N
0
50m
scale 1:2,500 @ A3

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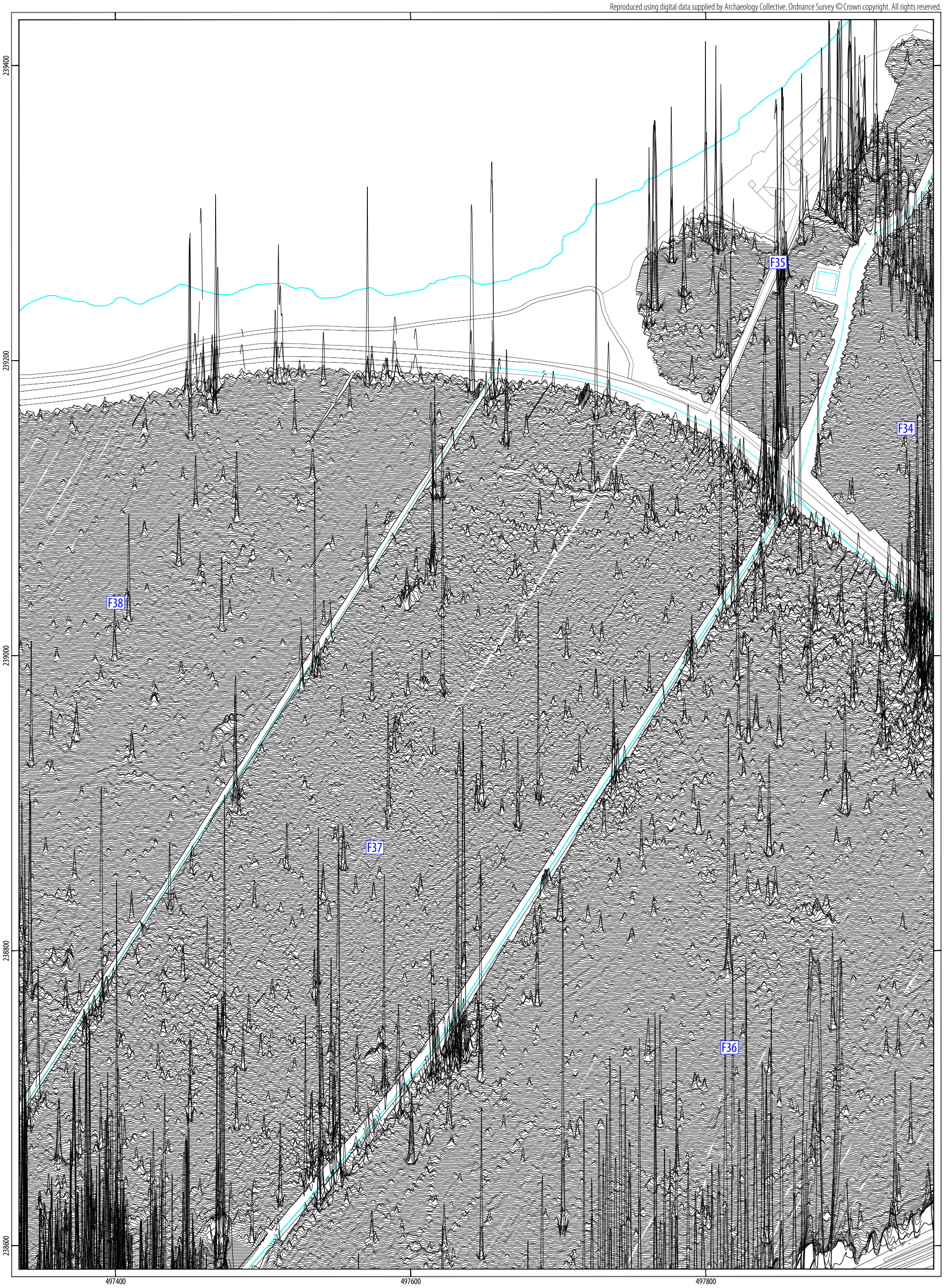
ILLUS 52 Processed greyscale magnetometer data; Sector 13



40.0nT/cm

N

0 50m

scale 1:2,500 @ A3

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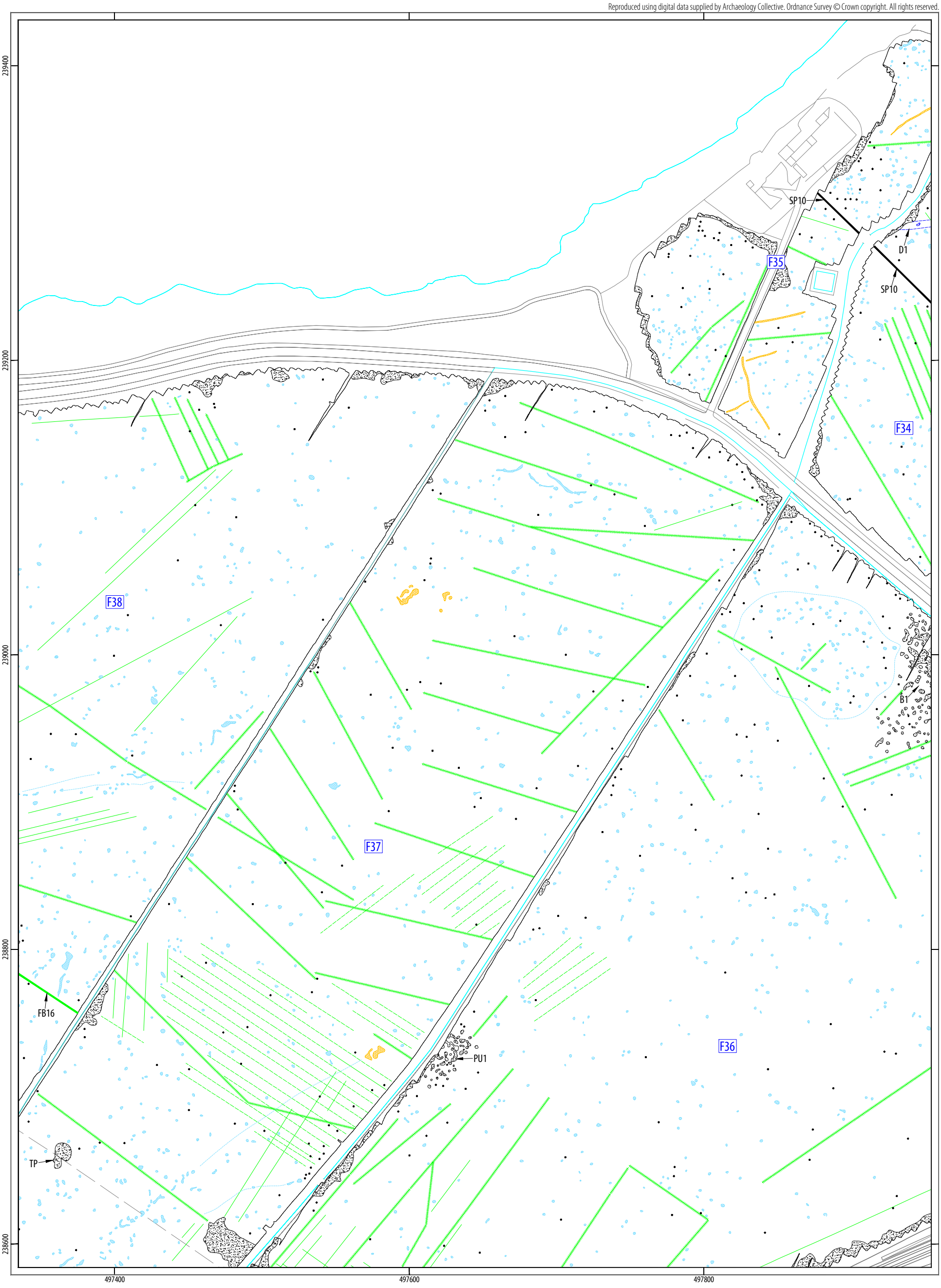
ILLUS 53 XY trace plot of minimally processed magnetometer data; Sector 13



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
magnetic disturbance	modern
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural

TYPE OF ANOMALY	INTERPRETATION
linear trend	field drain
linear	former field boundary
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?

ABBREVIATIONS

B	building
D	ditch
FB	former boundary
PU	pump
SP	service pipe
TP	telegraph pole

N

0 50m

scale 1:2,500 @ A3

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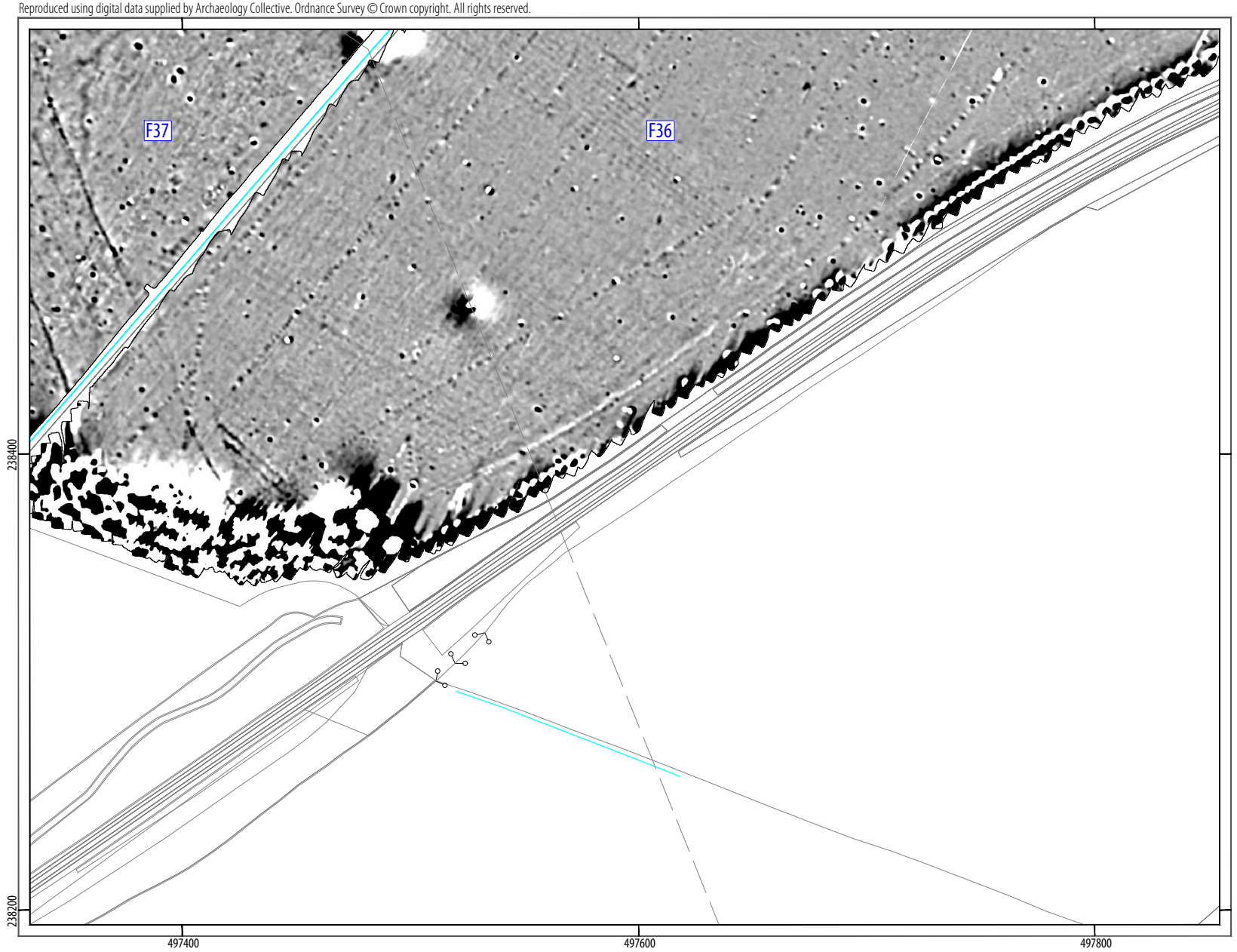
ILLUS 54 Interpretation of magnetometer data; Sector 13



nT
-1.0 2.0

N
0 50m
scale 1:2,500 @ A4

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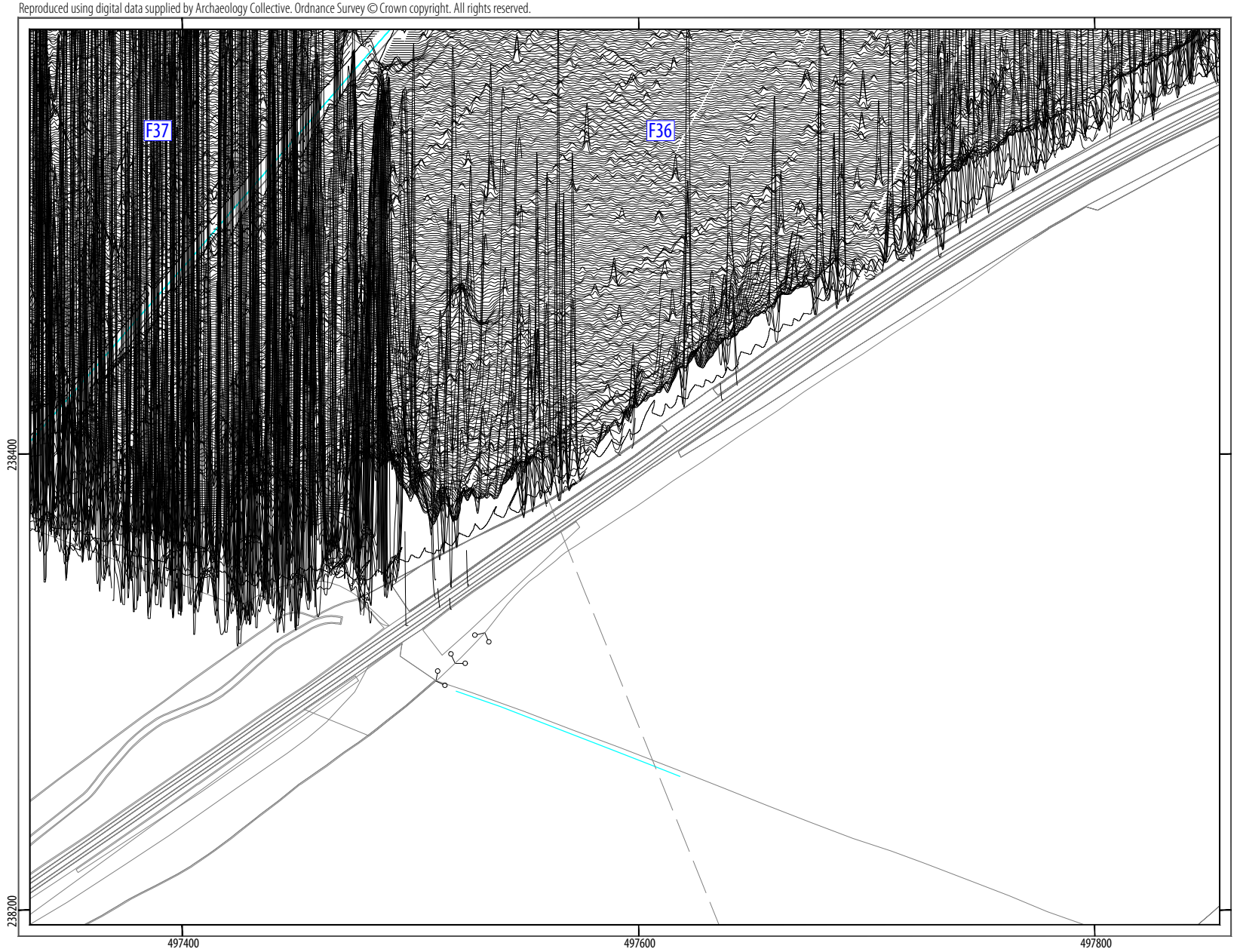
ILLUS 55 Processed greyscale magnetometer data; Sector 14



40.0nT/cm

N

0 50m

scale 1:2,500 @ A4

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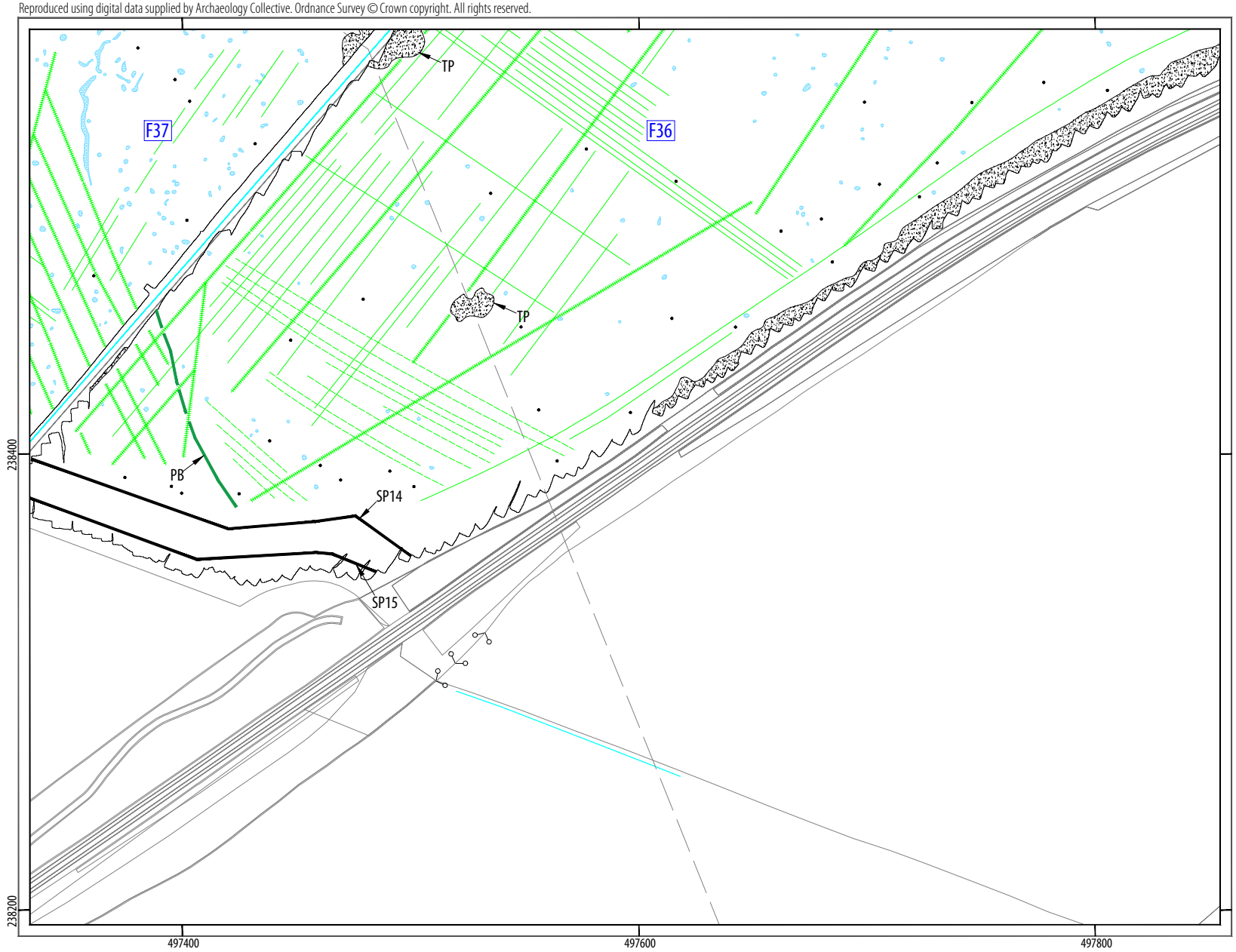
ILLUS 56 XY trace plot of minimally processed magnetometer data; Sector 14



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
linear	parish boundary
magnetic enhancement	geology

ABBREVIATIONS

PB parish boundary
SP service pipe
TP telegraph pole

N

0 50m

scale 1:2,500 @ A4

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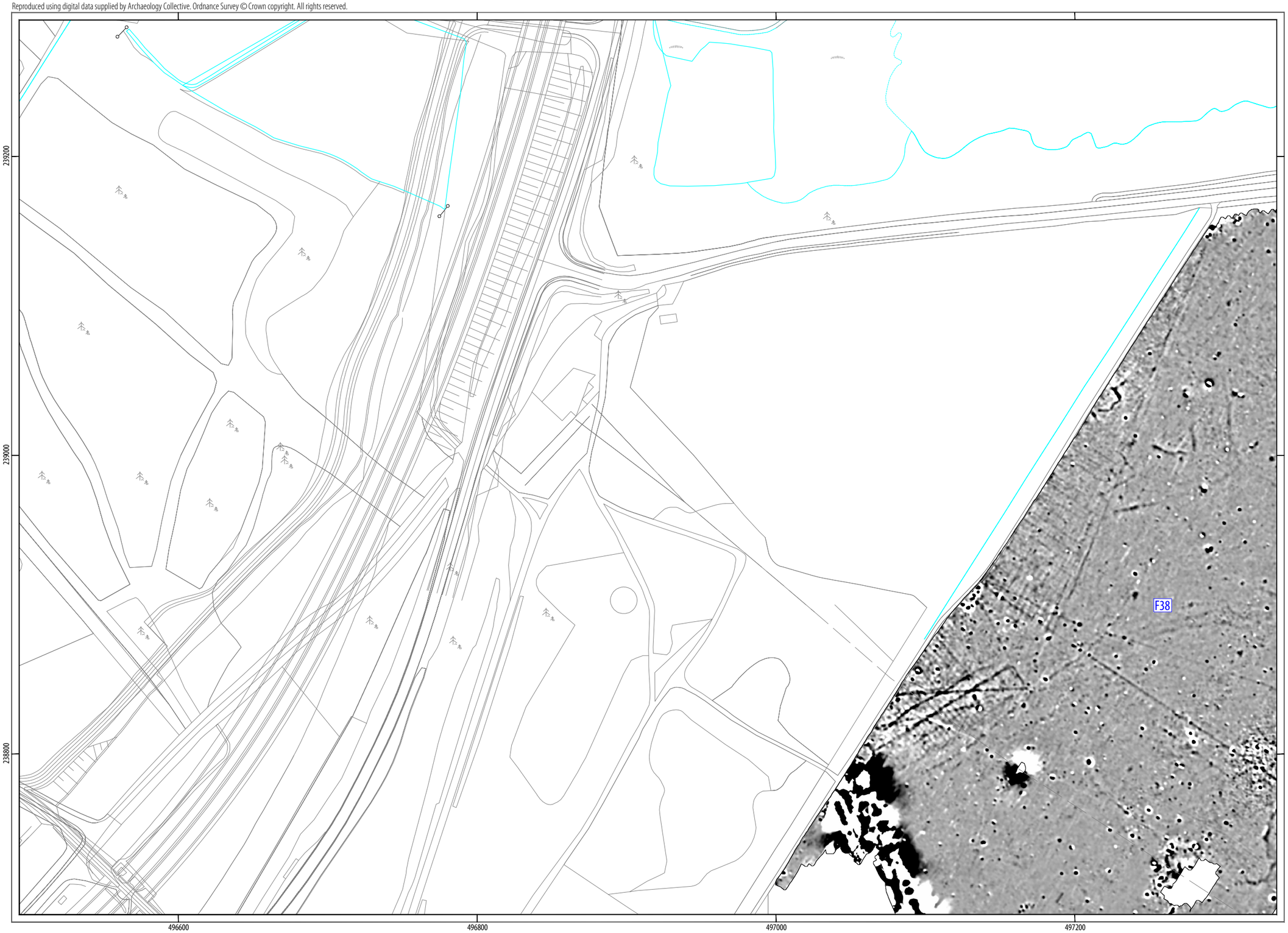
ILLUS 57 Interpretation of magnetometer data; Sector 14



-1.0 nT 2.0

N

0 100m

scale 1:4,000 @ A3

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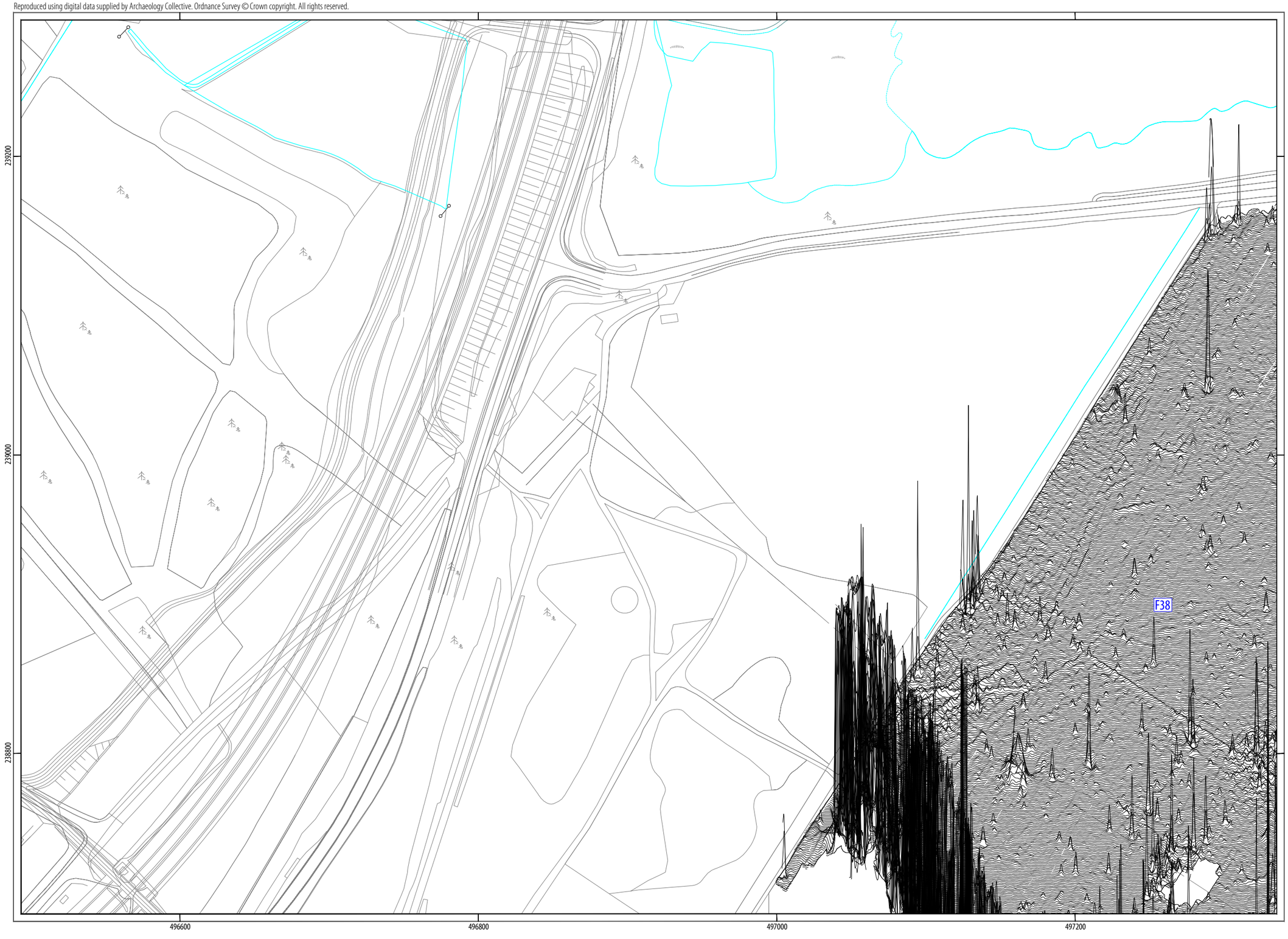
ILLUS 58 Processed greyscale magnetometer data; Sector 15



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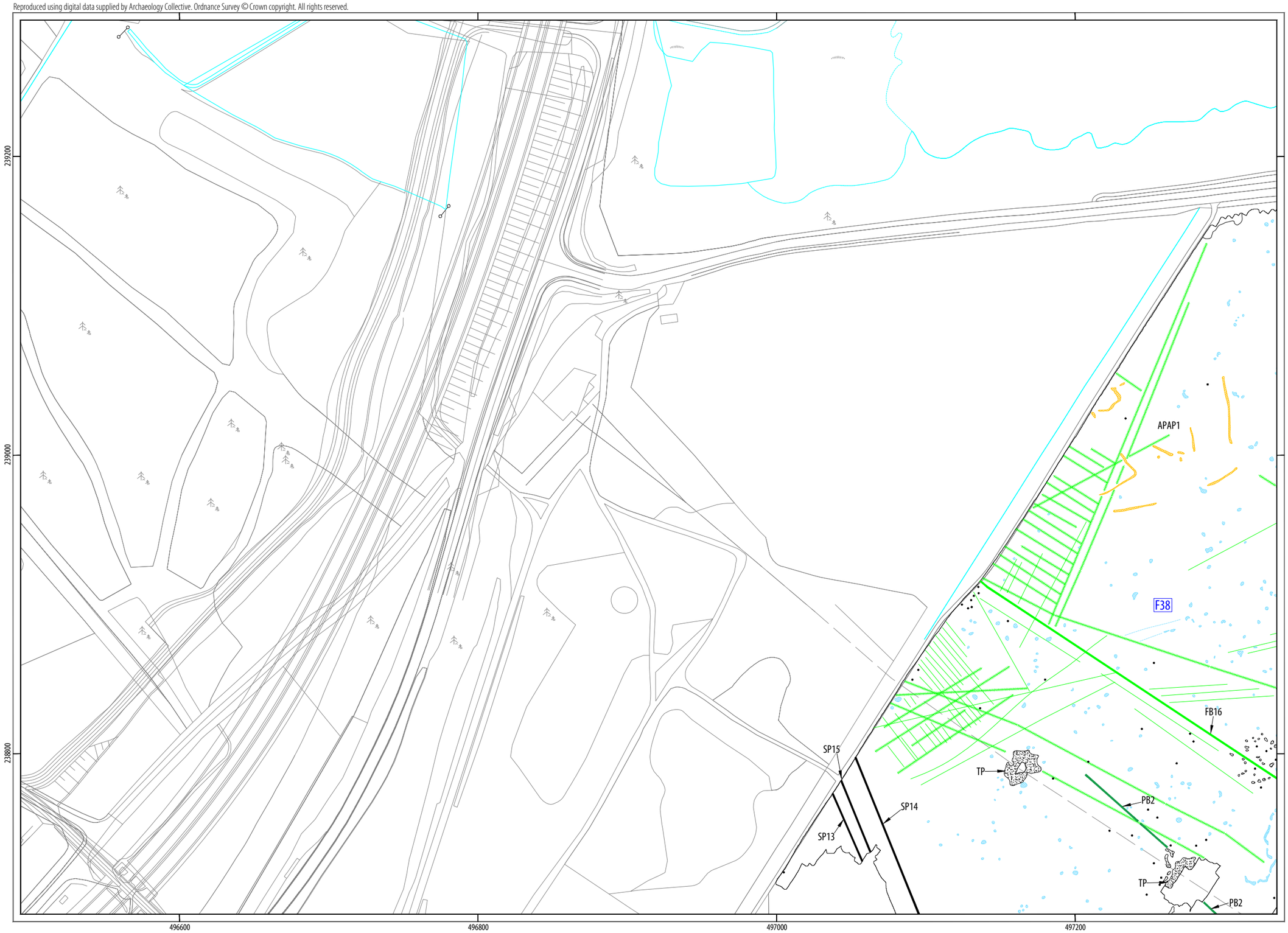
ILLUS 59 XY trace plot of minimally processed magnetometer data; Sector 15



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	agricultural
linear trend	field drain
linear	former field boundary
linear	geology
magnetic enhancement	geology
magnetic enhancement	archaeology?

ABBREVIATIONS

APAP	area of possible archaeological potential
FB	former boundary
PB	parish boundary
SP	service pipe
TP	telegraph pole

N

0 100m

scale 1:4,000 @ A3

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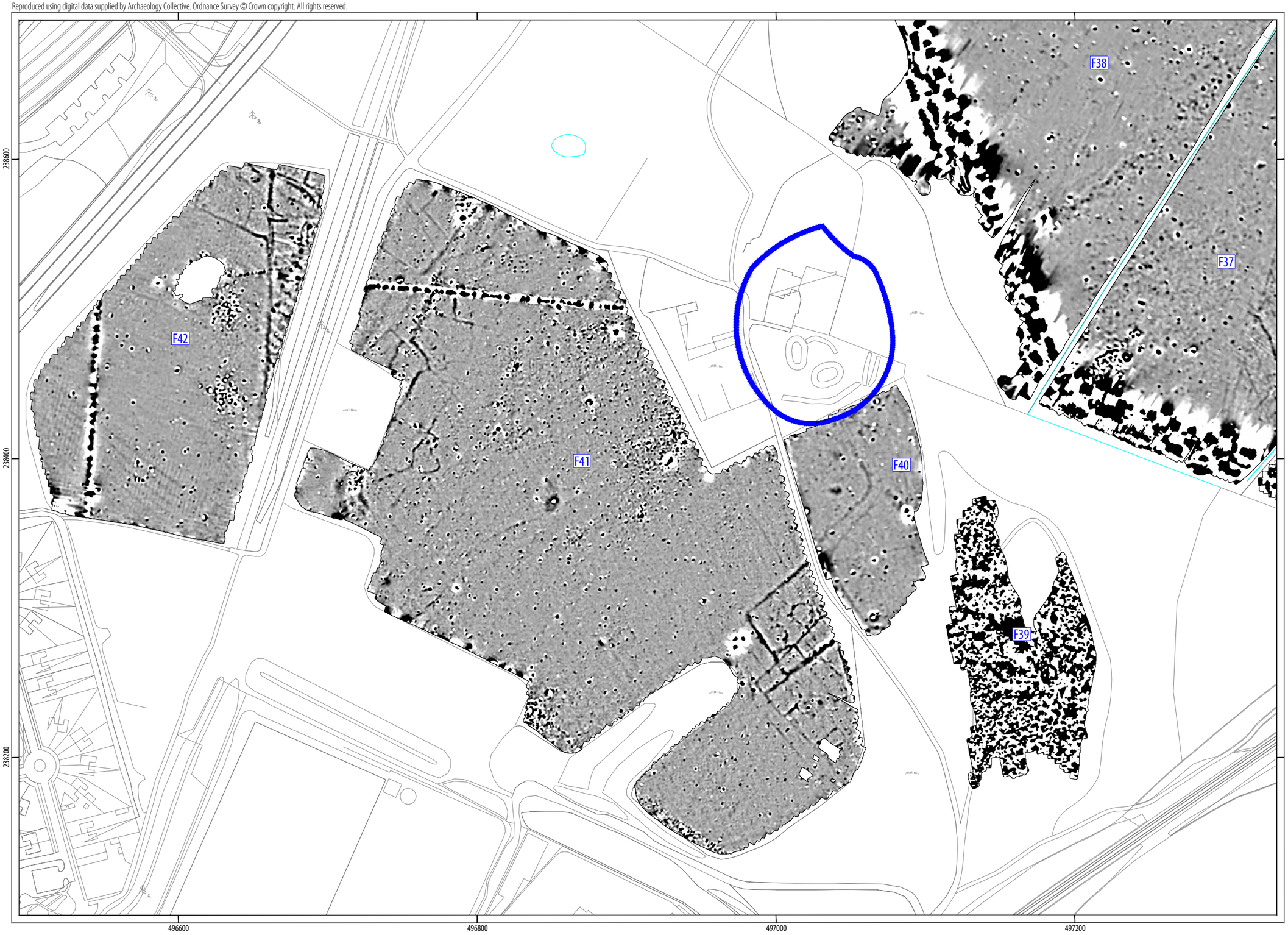
ILLUS 60 Interpretation of magnetometer data; Sector 15



scheduled monument

nT
-1.0
2.0

N
0
100m
scale 1:4,000 @ A3

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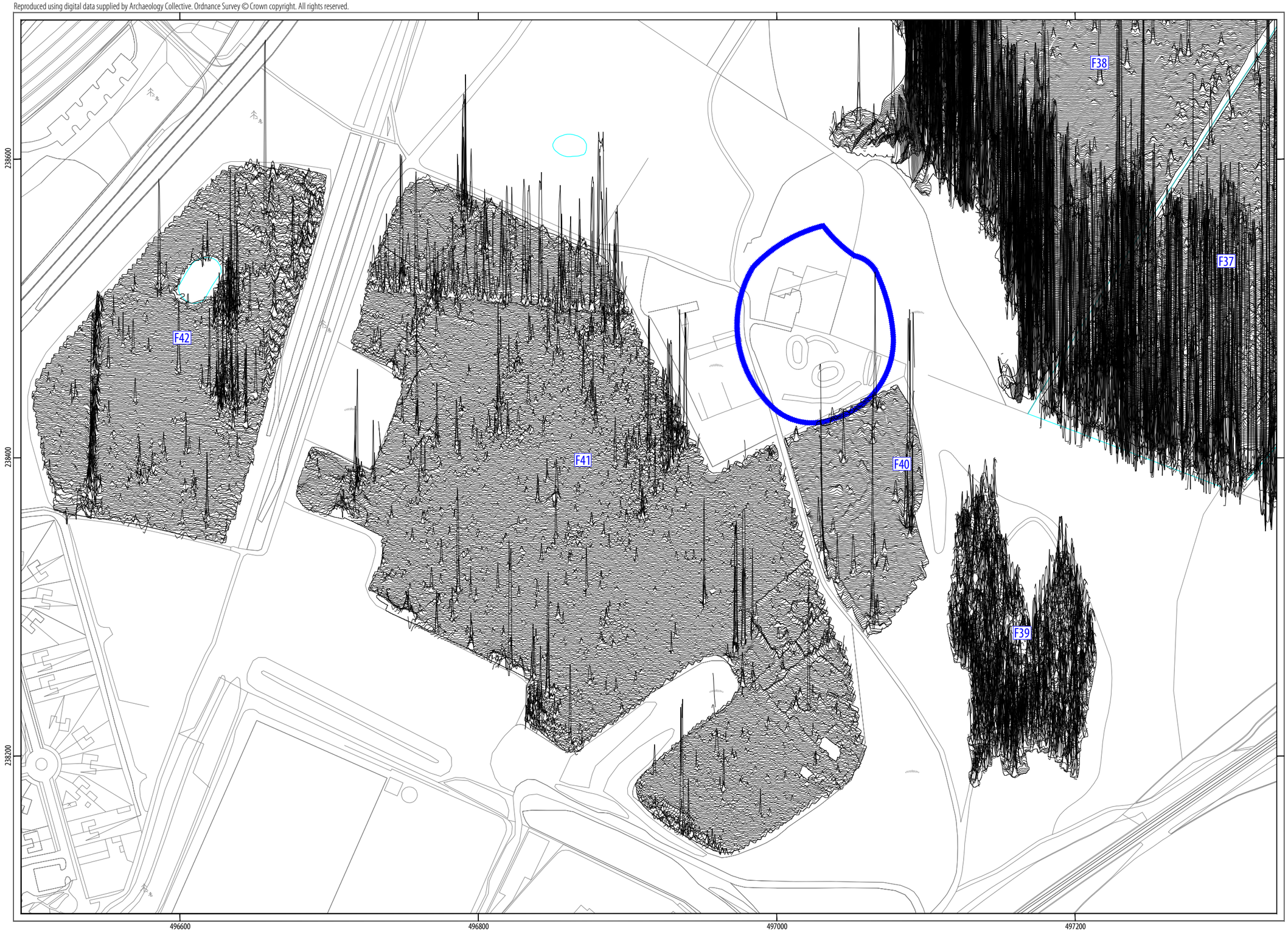
ILLUS 61 Processed greyscale magnetometer data; Sector 16



scheduled monument

40.0nT/cm

N

0 100m

scale 1:4,000 @ A3

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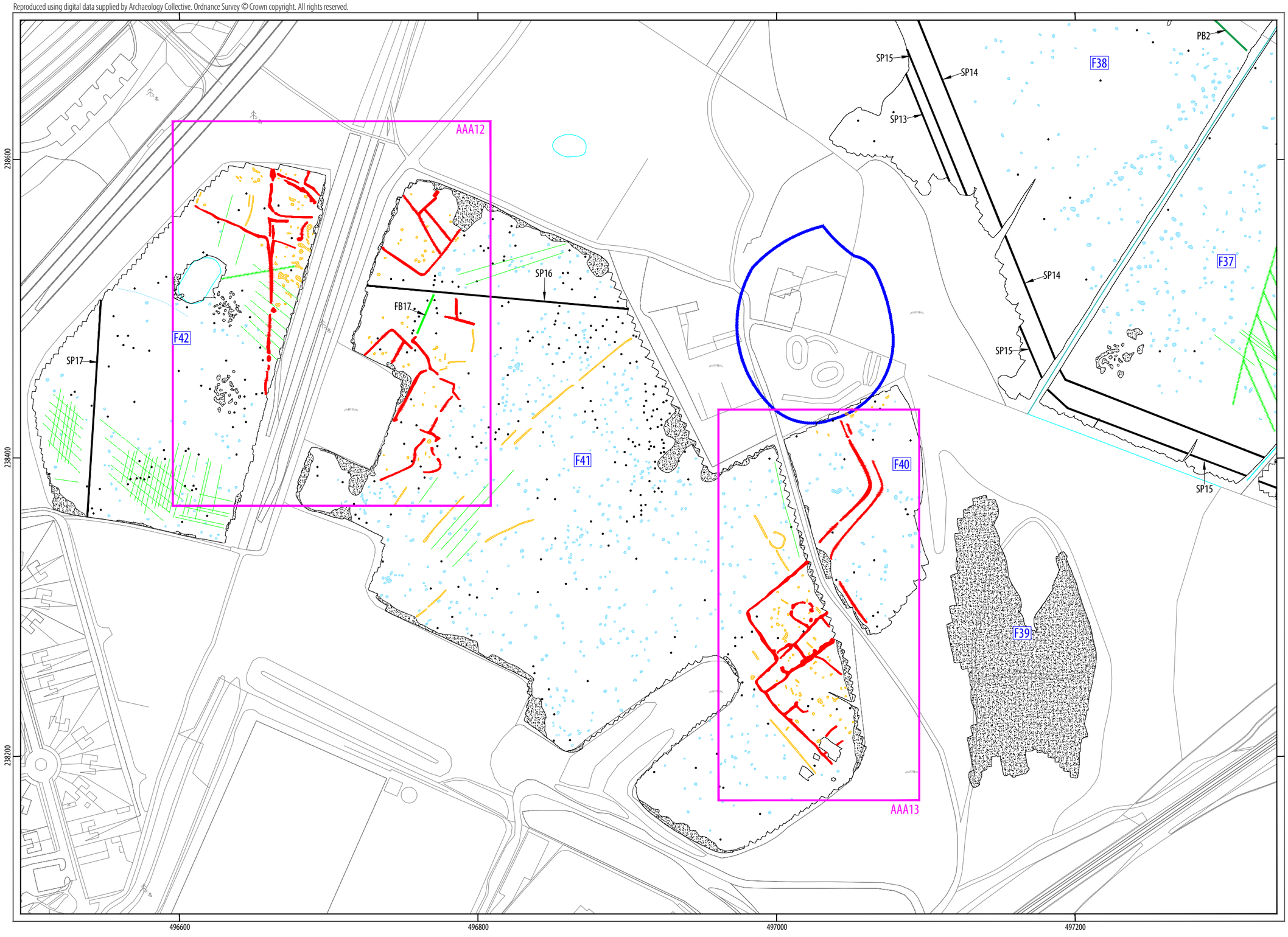
ILLUS 62 XY trace plot of minimally processed magnetometer data; Sector 16



scheduled monument

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
linear	former field boundary
linear	parish boundary
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

AAA area of archaeological activity
FB former boundary
PB parish boundary
SP service pipe

N
0 100m
scale 1:4,000 @ A3

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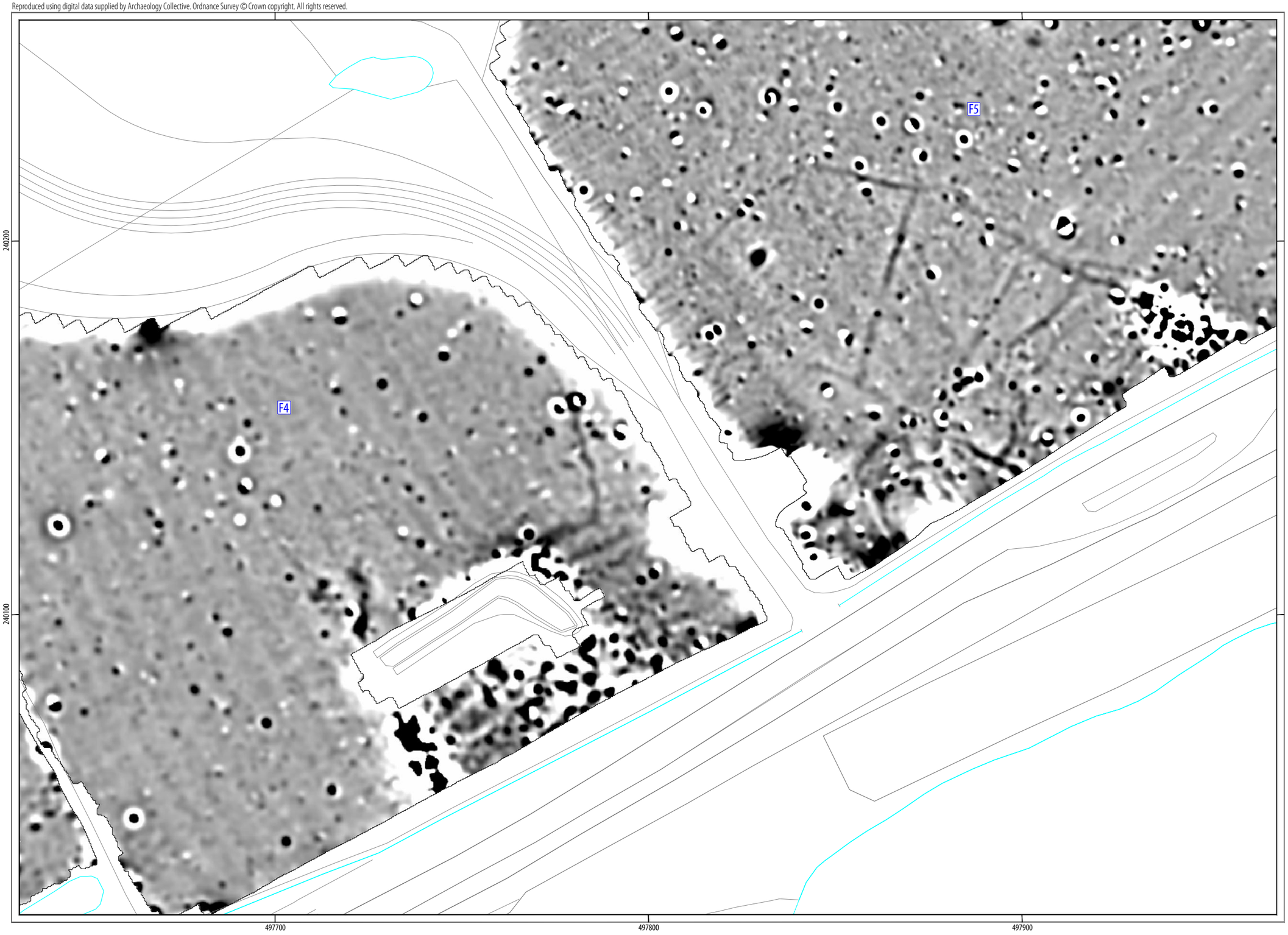
ILLUS 63 Interpretation of magnetometer data; Sector 16



nT
-1.0 2.0

N
0 25m
scale 1:1,000 @ A3

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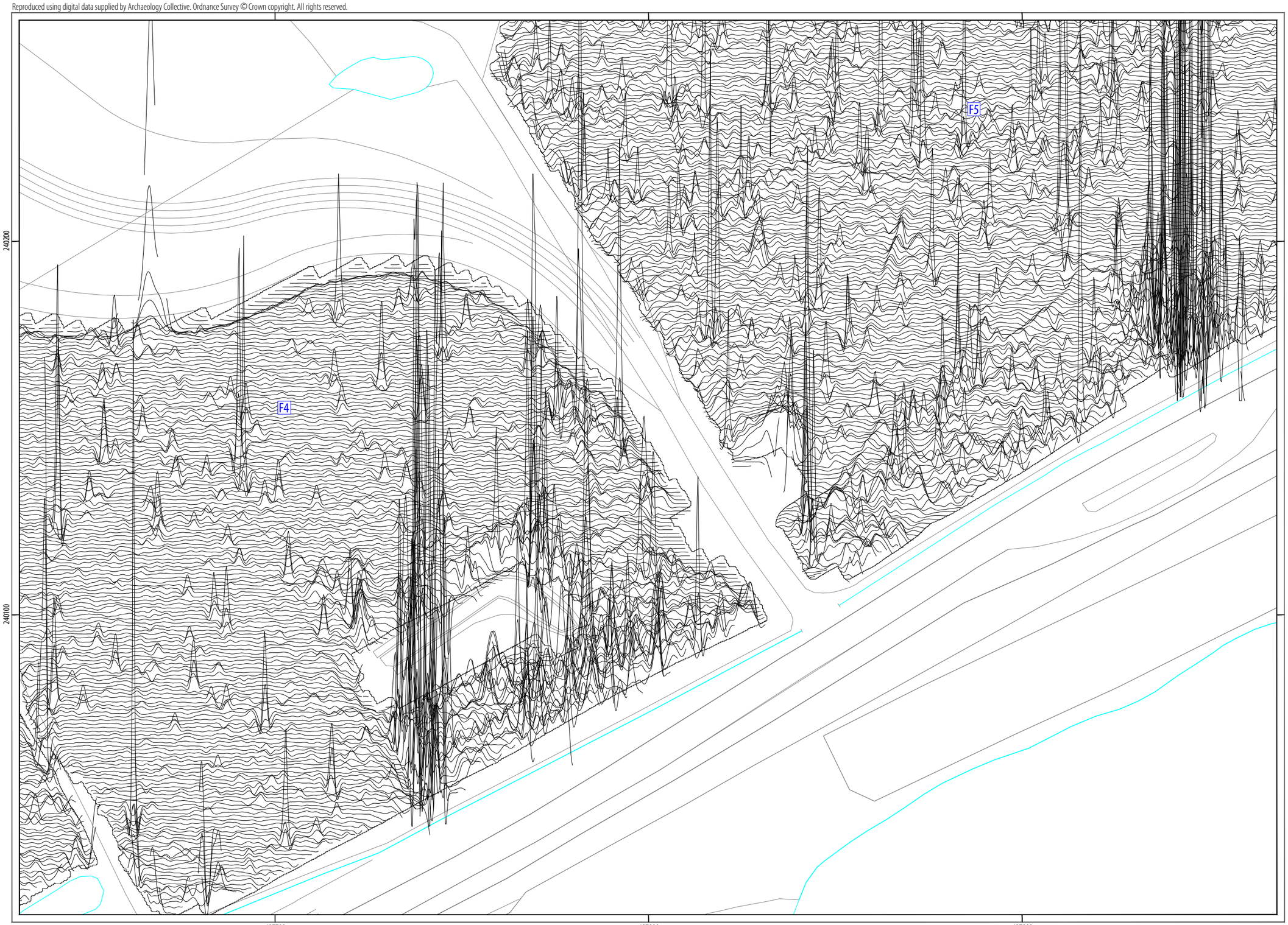
ILLUS 64 Processed greyscale magnetometer data; AAA1



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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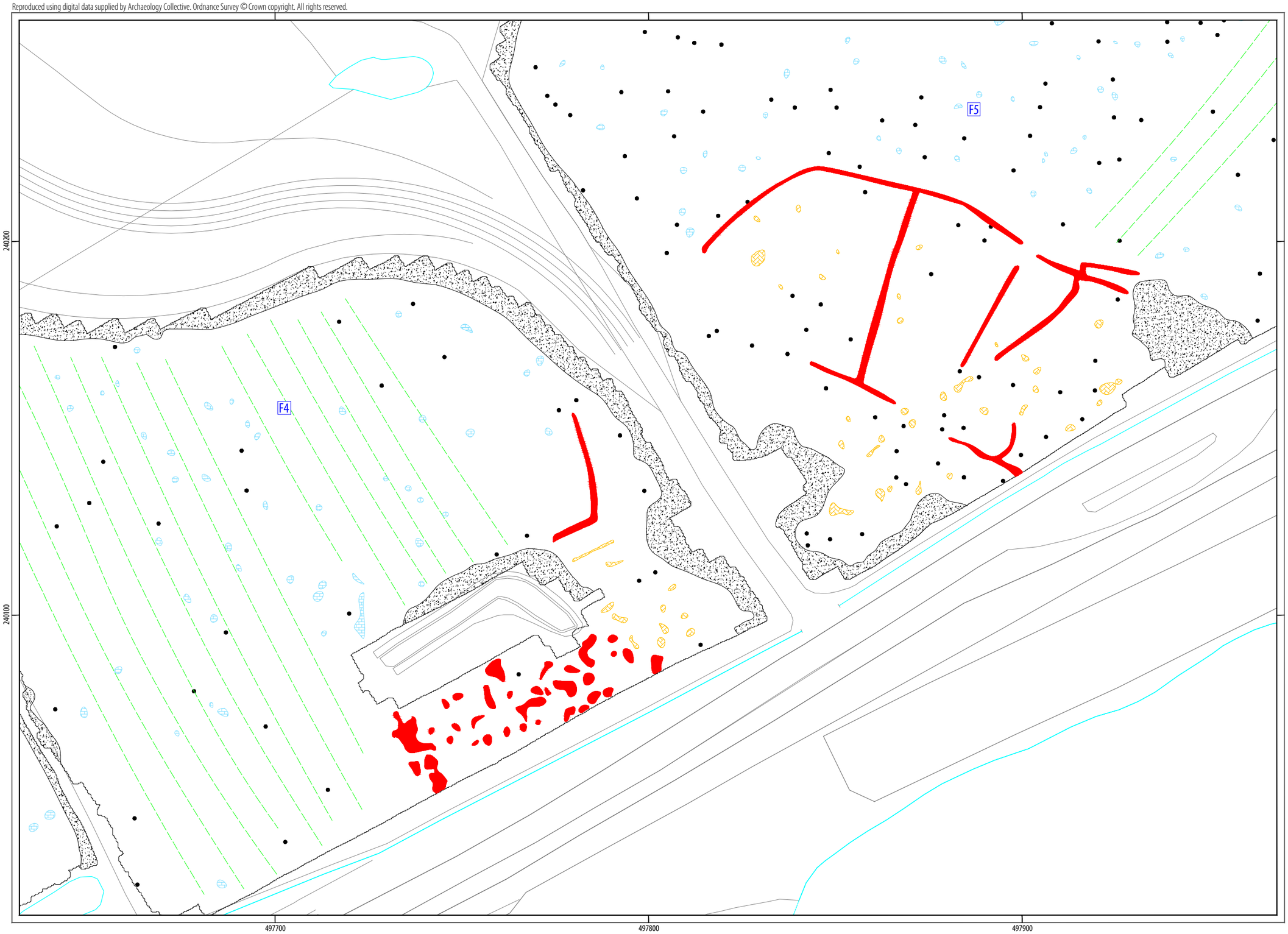
ILLUS 65 XY trace plot of minimally processed magnetometer data; AAA1



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

N

0 25m

scale 1:1,000 @ A3

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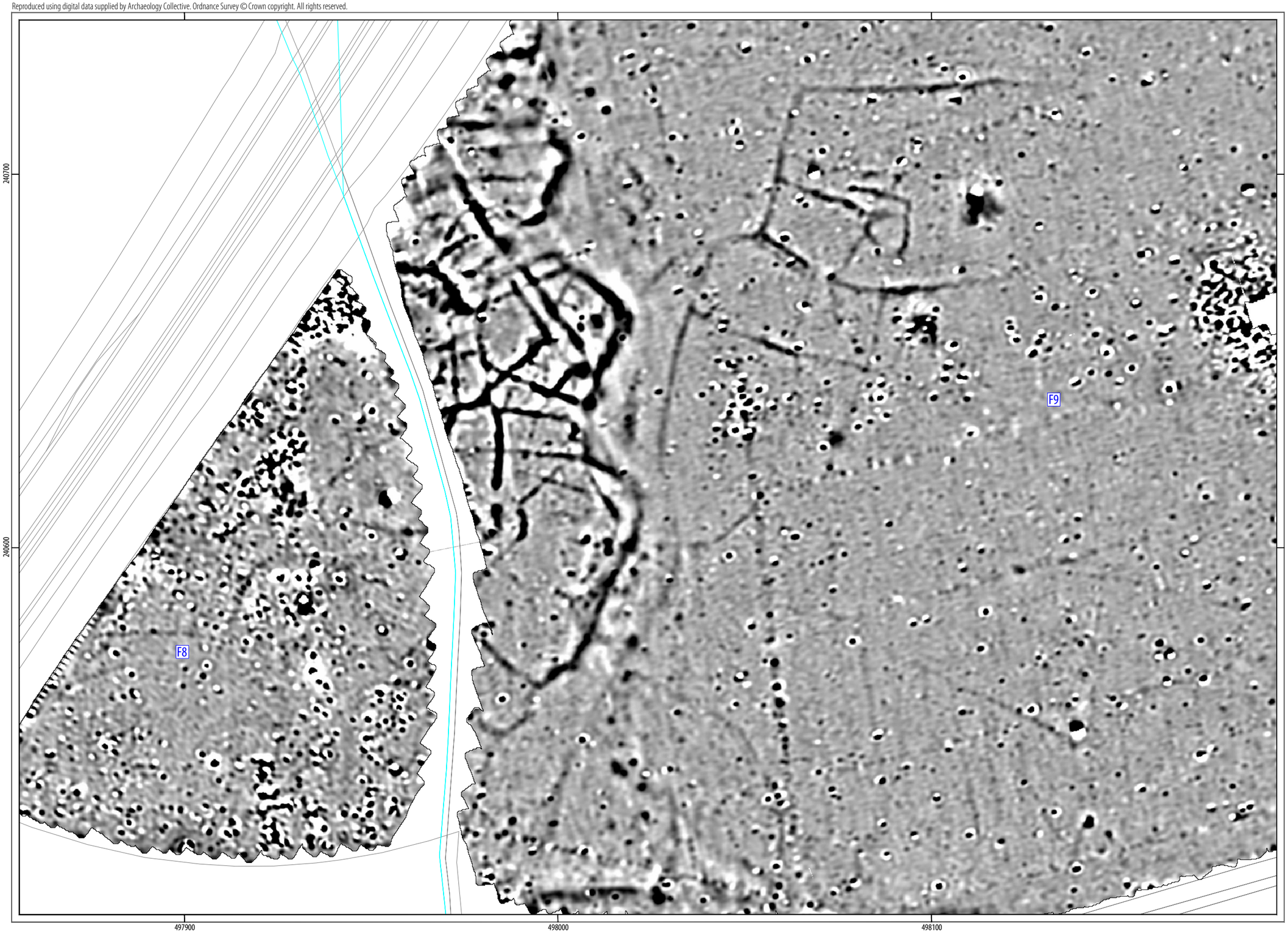
ILLUS 66 Interpretation of magnetometer data; AAA1



-1.0 nT 2.0

N

0 25m

scale 1:1,000 @ A3

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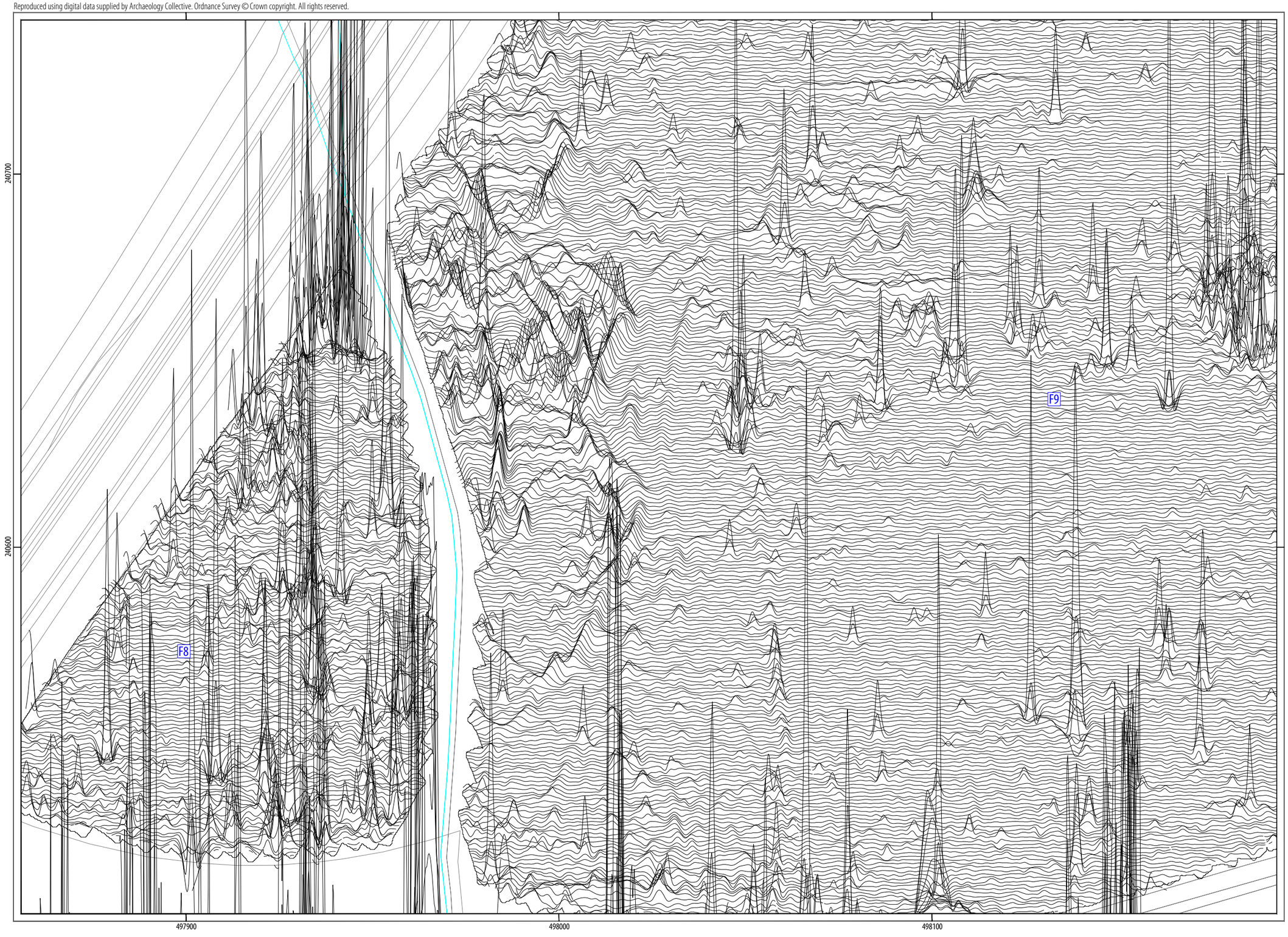
ILLUS 67 Processed greyscale magnetometer data; AAA2



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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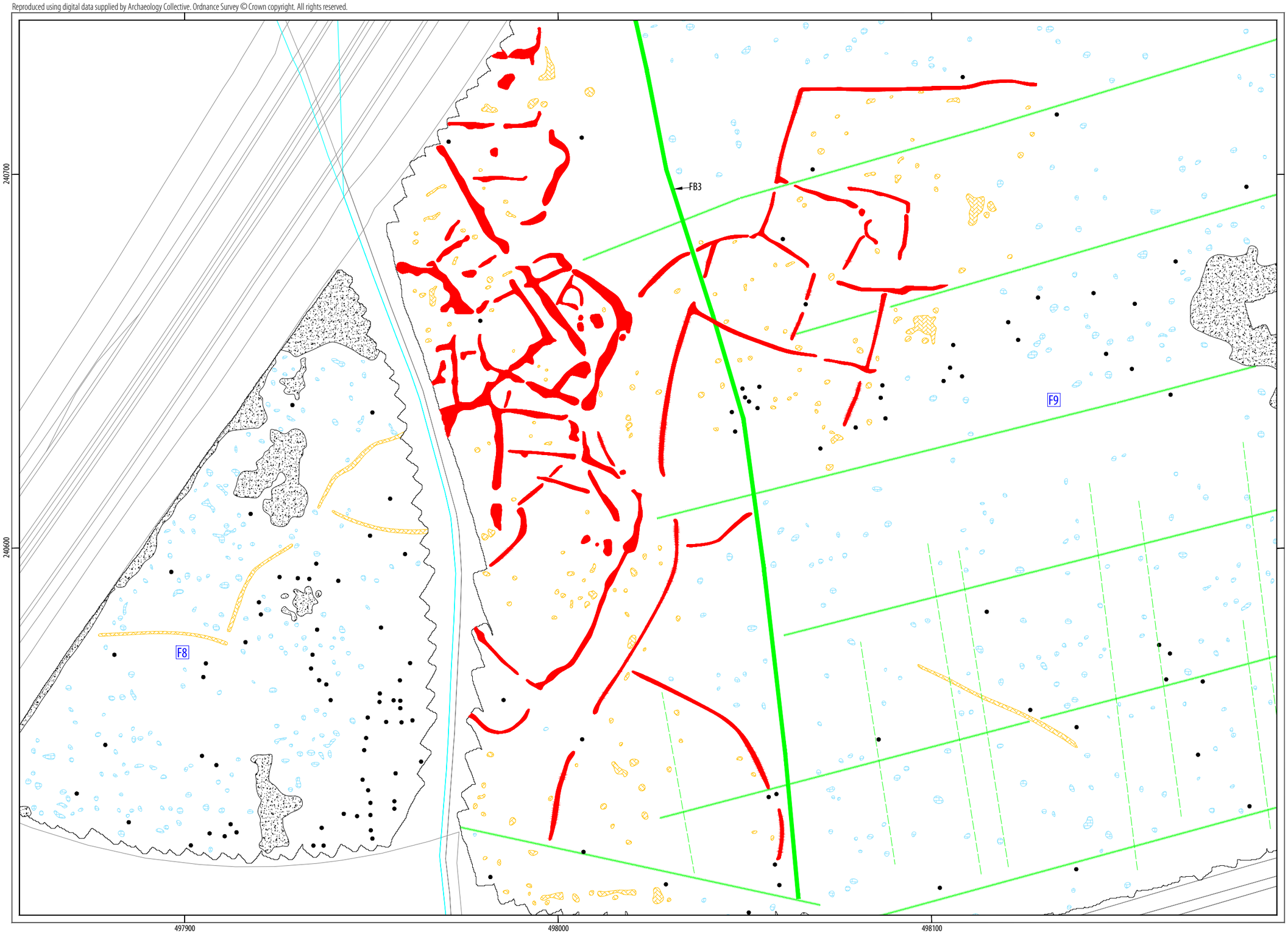
ILLUS 68 XY trace plot of minimally processed magnetometer data; AAA2



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	field drain
linear	former field boundary
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB former boundary

N

0 25m

scale 1:1,000 @ A3

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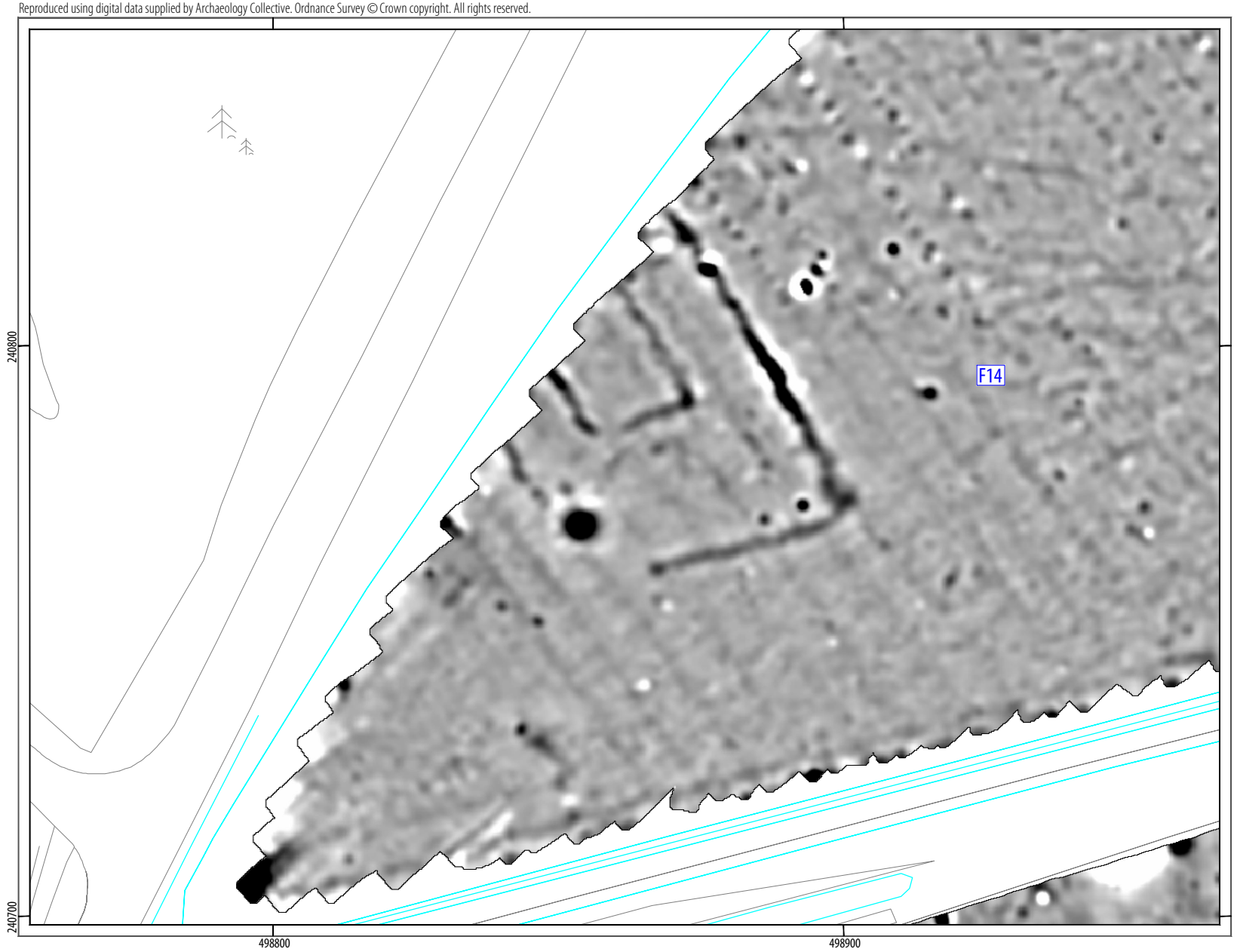
ILLUS 69 Interpretation of magnetometer data; AAA2



nT
-1.0 2.0

N

0 25m
scale 1:1,000 @ A4

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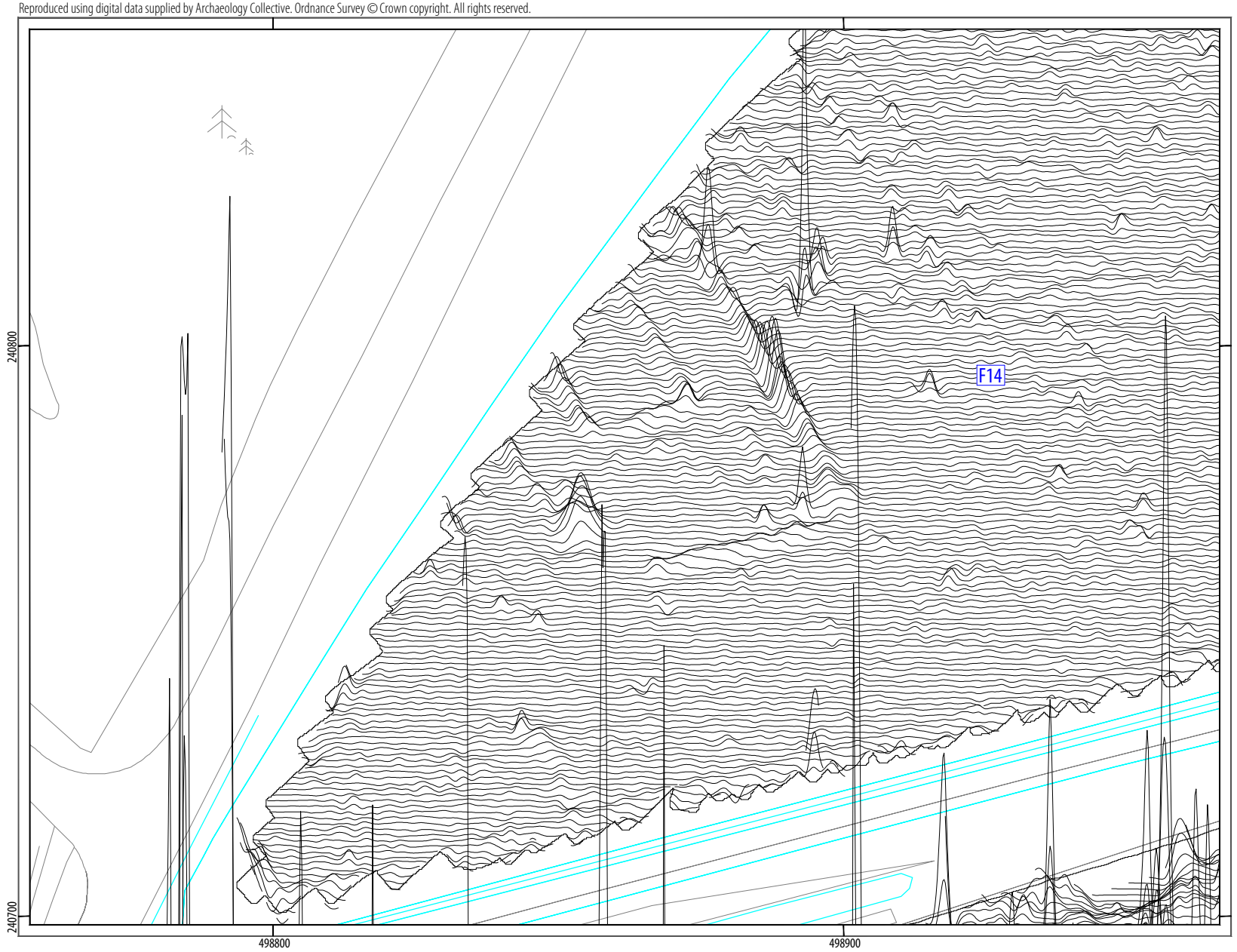
ILLUS 70 Processed greyscale magnetometer data; AAA3



16.0nT/cm

N

0 25m

scale 1:1,000 @ A4

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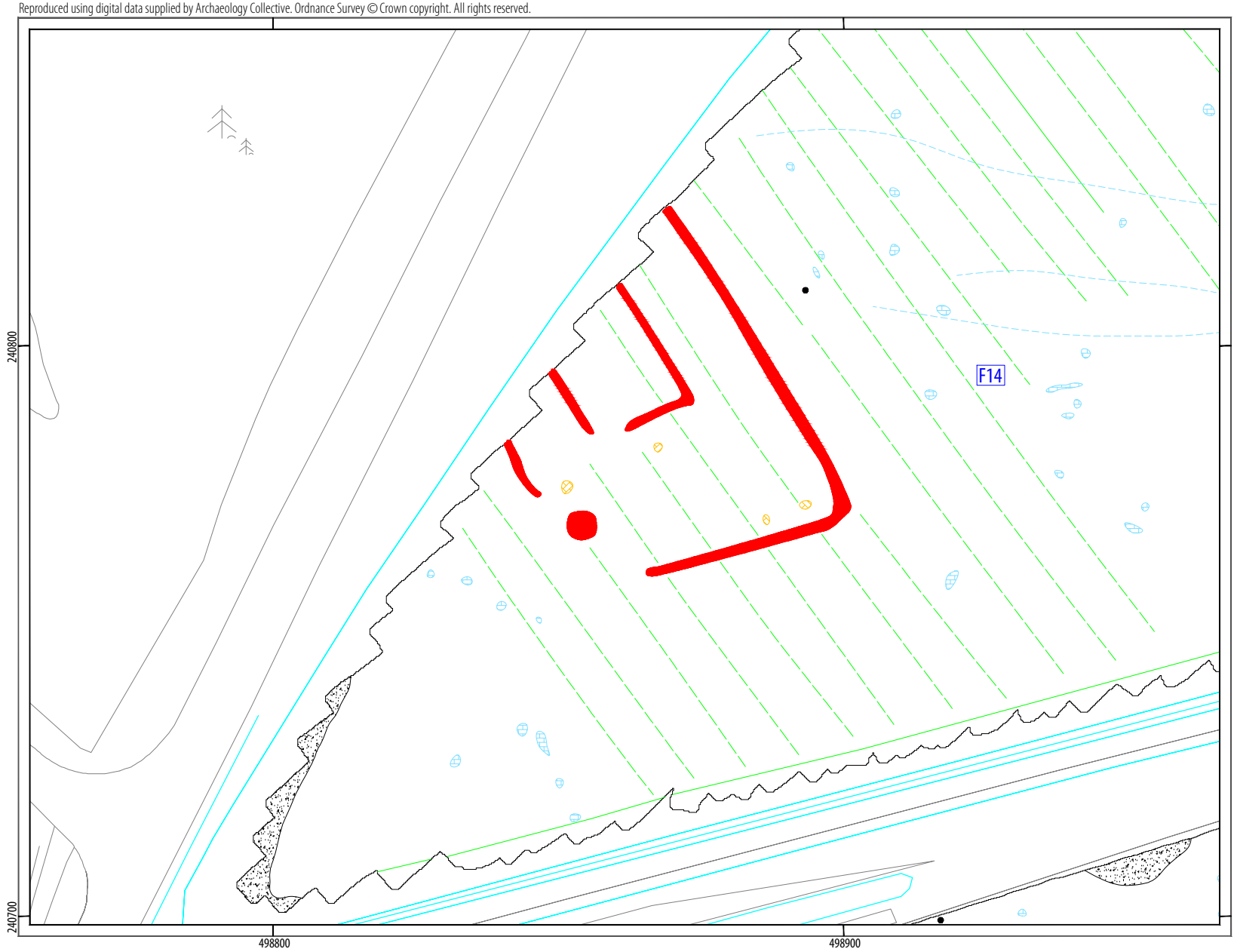
ILLUS 71 XY trace plot of minimally processed magnetometer data; AAA3



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	agricultural
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

N

0 25m

scale 1:1,000 @ A4

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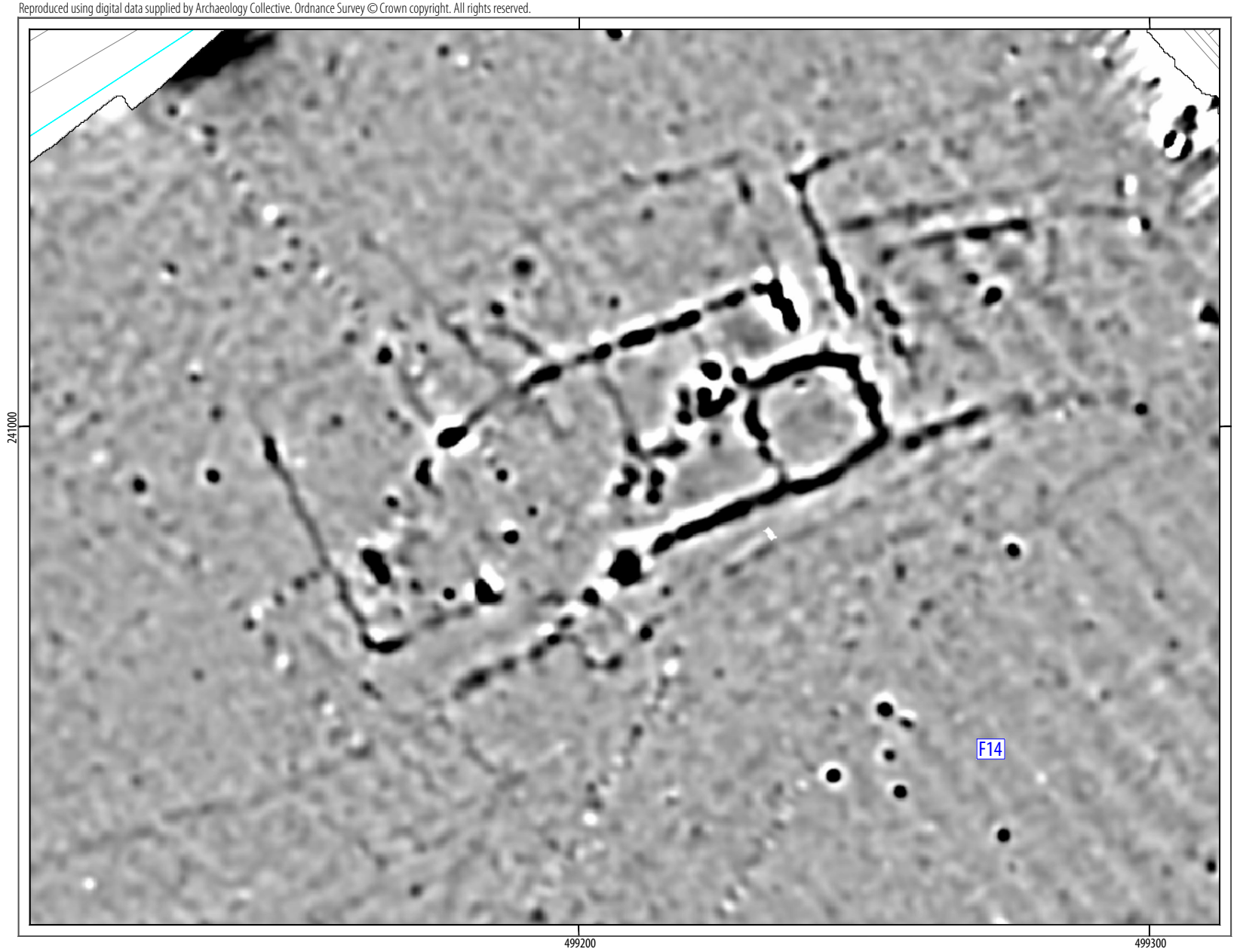
ILLUS 72 Interpretation of magnetometer data; AAA3



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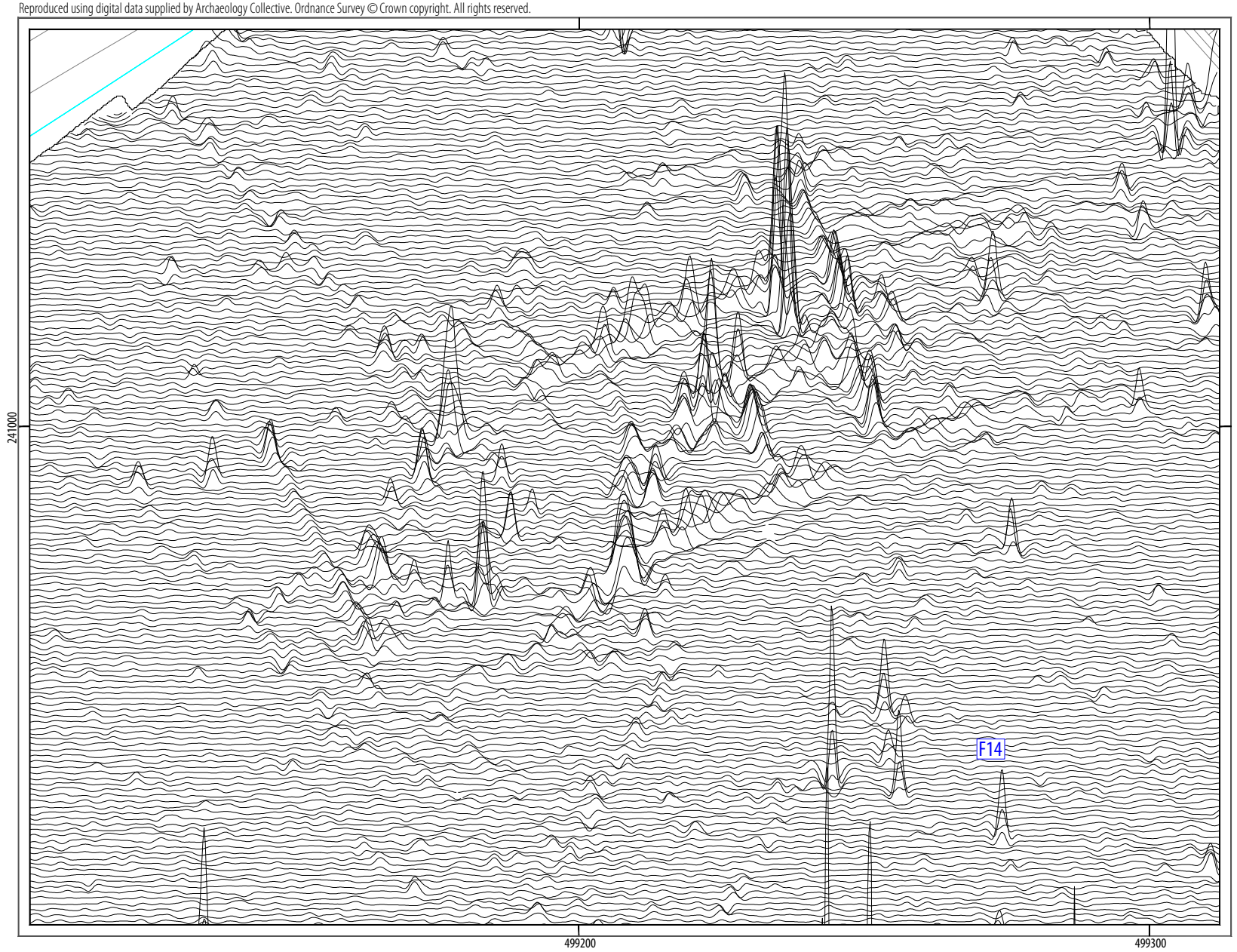
ILLUS 73 Processed greyscale magnetometer data; AAA4



16.0nT/cm

N

0 25m

scale 1:1,000 @ A4

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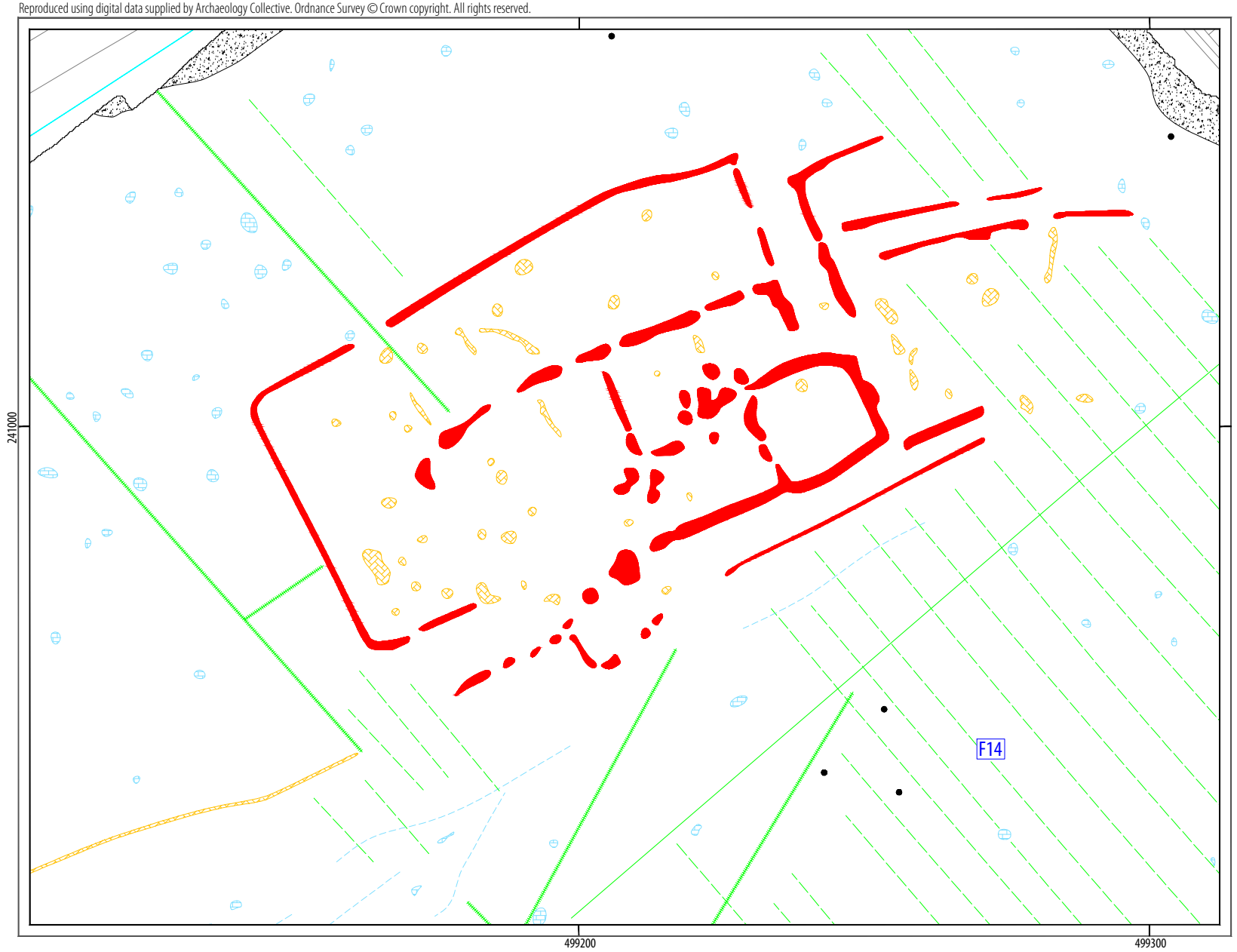
ILLUS 74 XY trace plot of minimally processed magnetometer data; AAA4



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
linear	geological variation
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

N

0 25m

scale 1:1,000 @ A4

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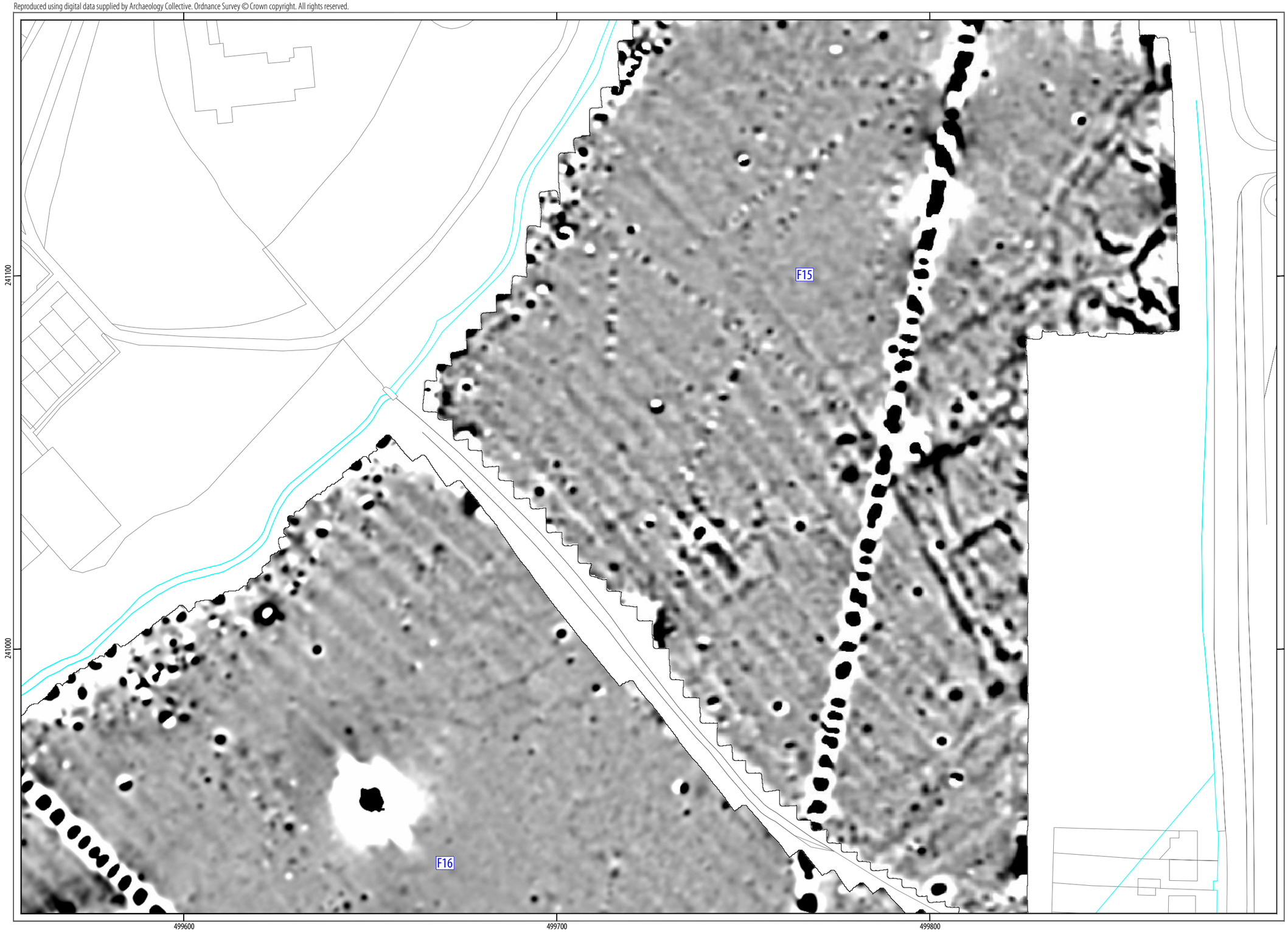
ILLUS 75 Interpretation of magnetometer data; AAA4



nT
-1.0
2.0

N
0
25m
scale 1:1,000 @ A3

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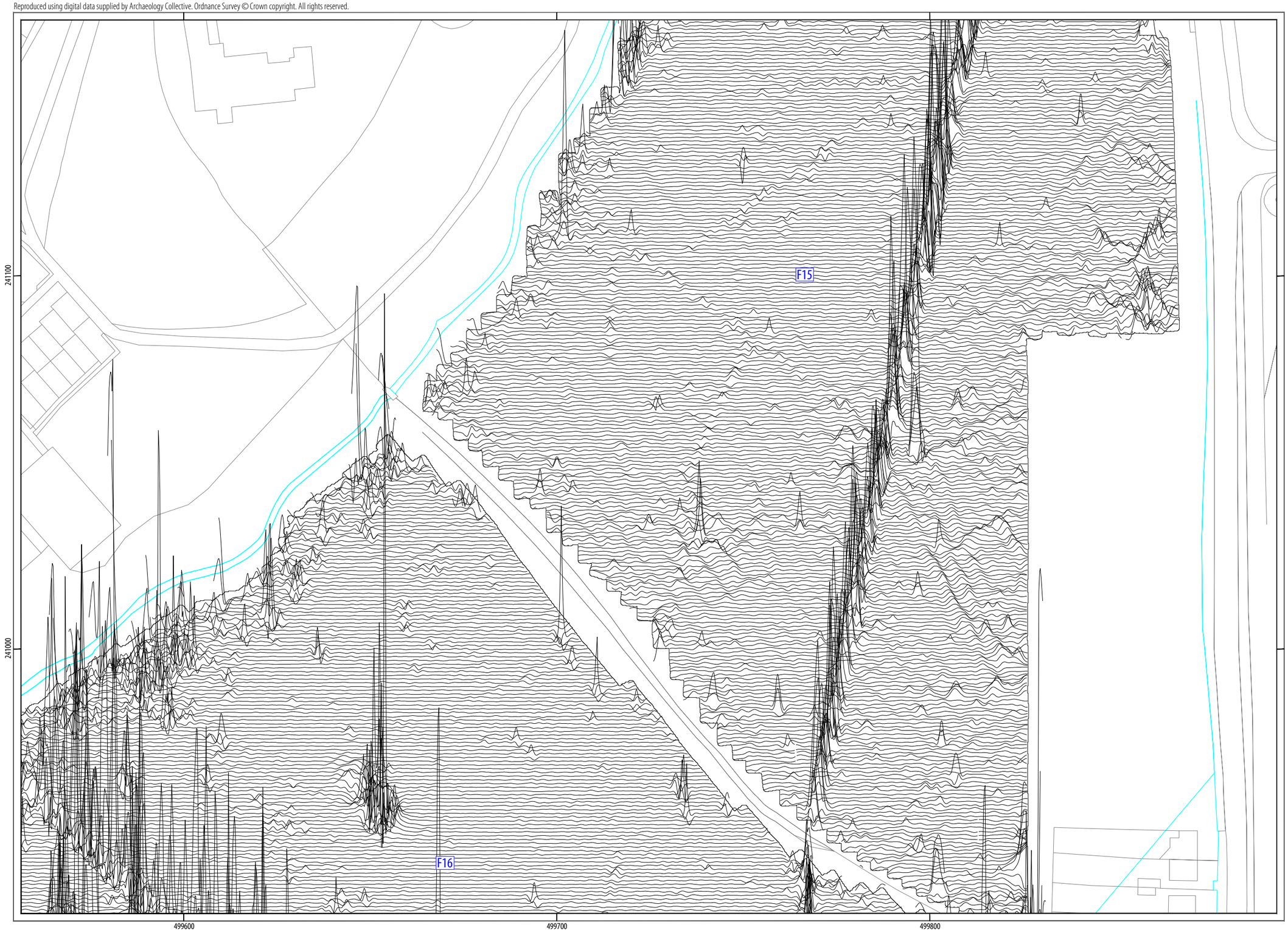
ILLUS 76 Processed greyscale magnetometer data; AAA5



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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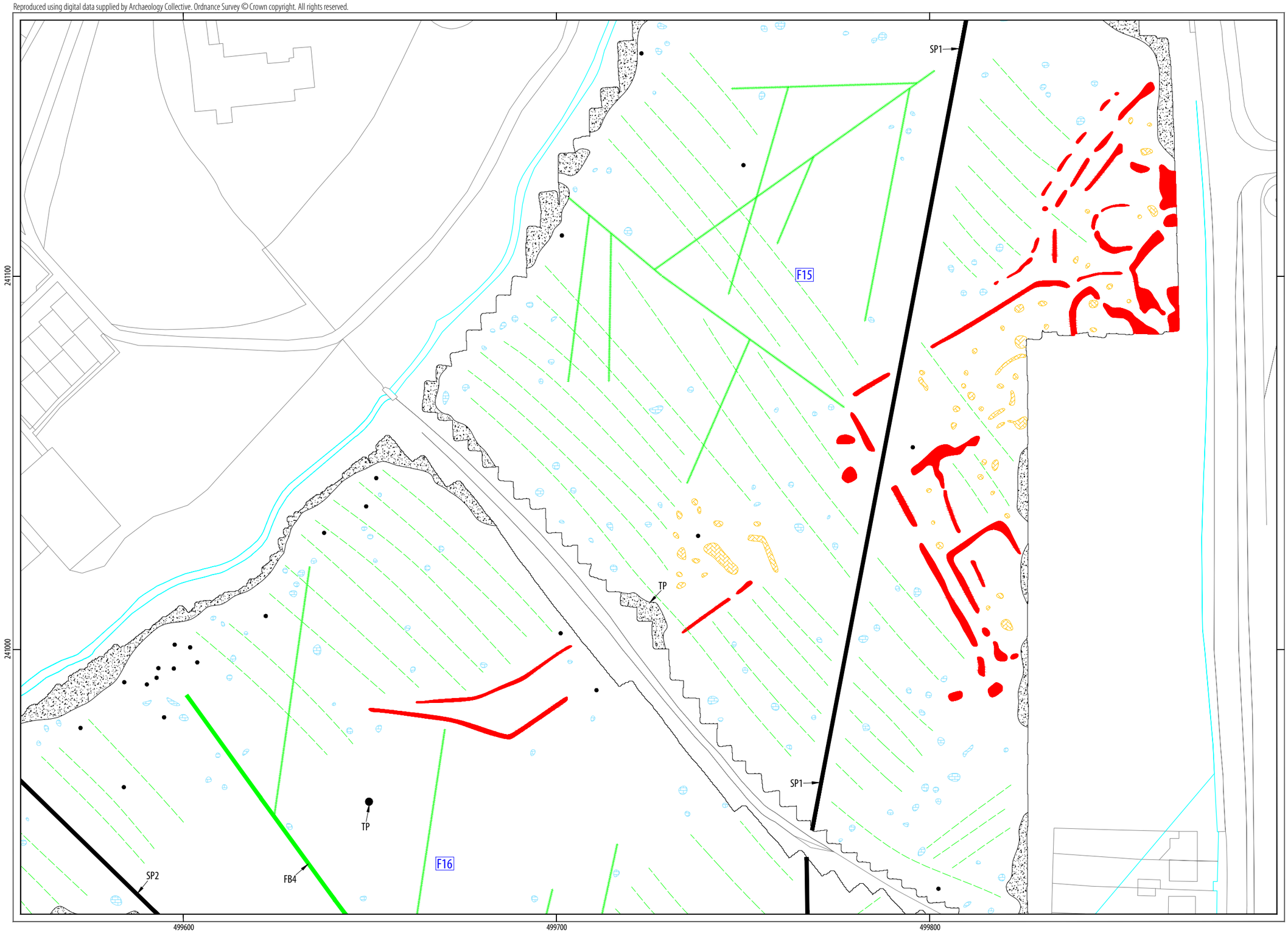
ILLUS 77 XY trace plot of minimally processed magnetometer data; AAA5



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	field drain
linear	former field boundary
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB	former boundary
SP	service pipe
TP	telegraph pole

N

0 25m

scale 1:1,000 @ A3

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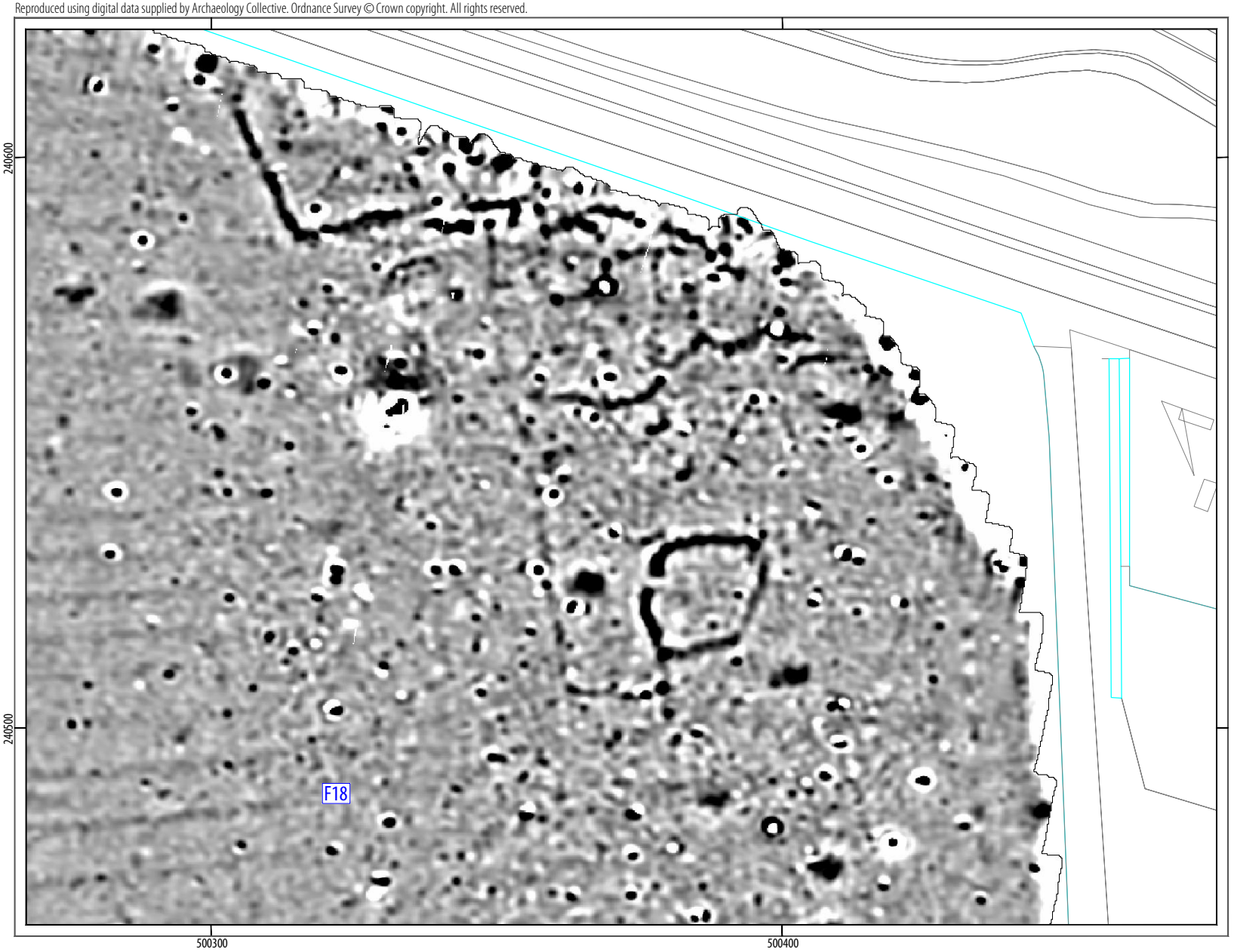
ILLUS 78 Interpretation of magnetometer data; AAA5



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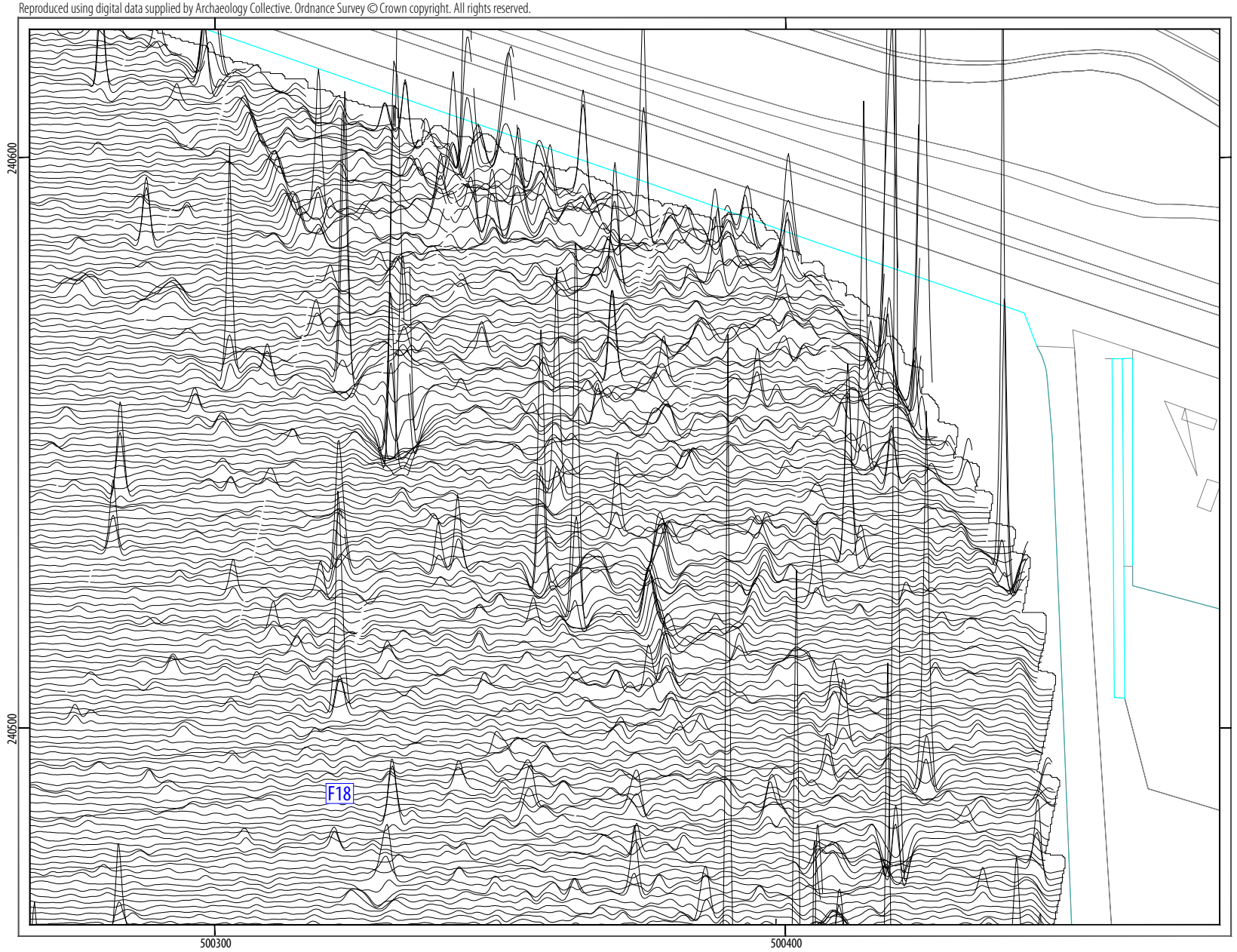
ILLUS 79 Processed greyscale magnetometer data; AAA6



16.0nT/cm

N

0 25m

scale 1:1,000 @ A4

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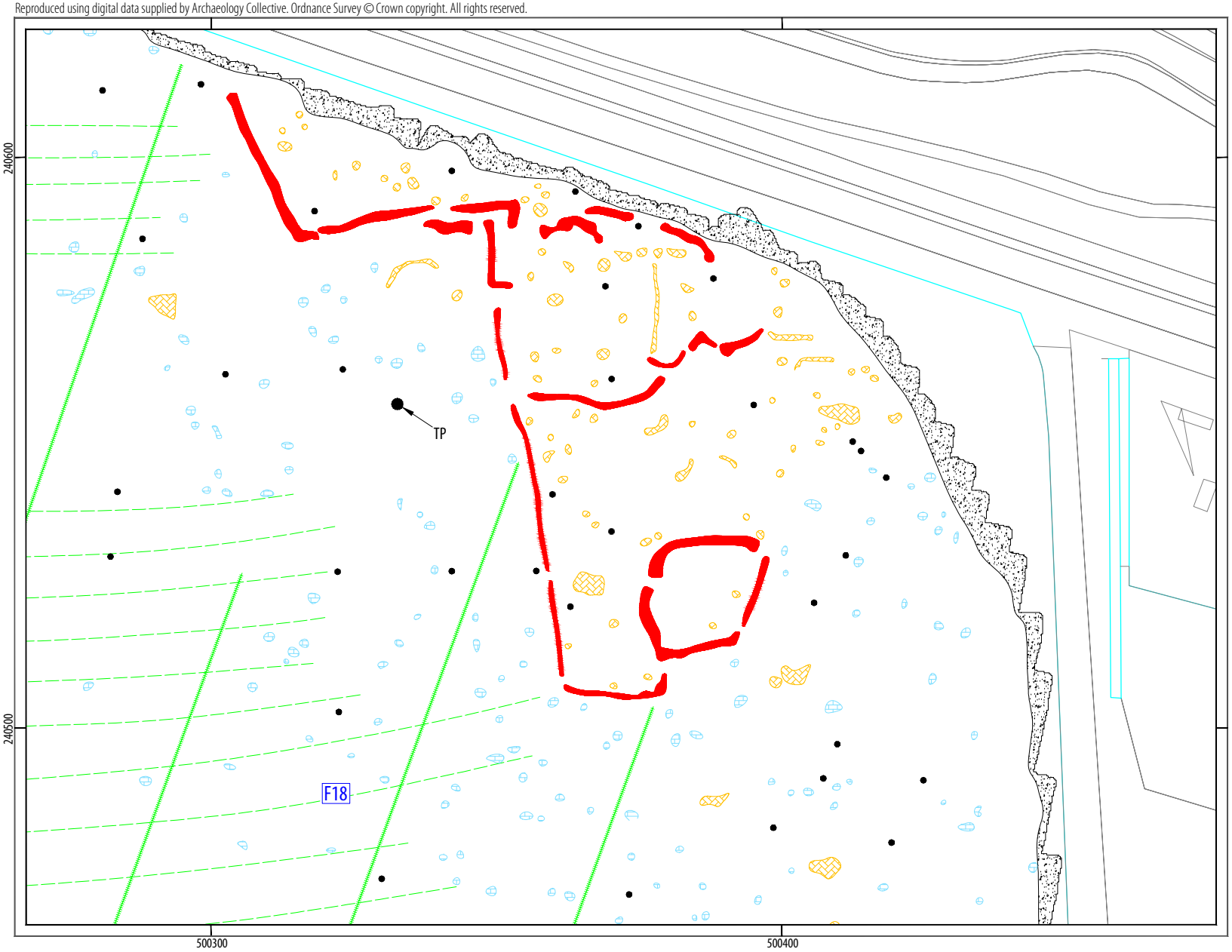
ILLUS 80 XY trace plot of minimally processed magnetometer data; AAA6



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	field drain
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

TP telegraph pole

N

0 25m

scale 1:1,000 @ A4

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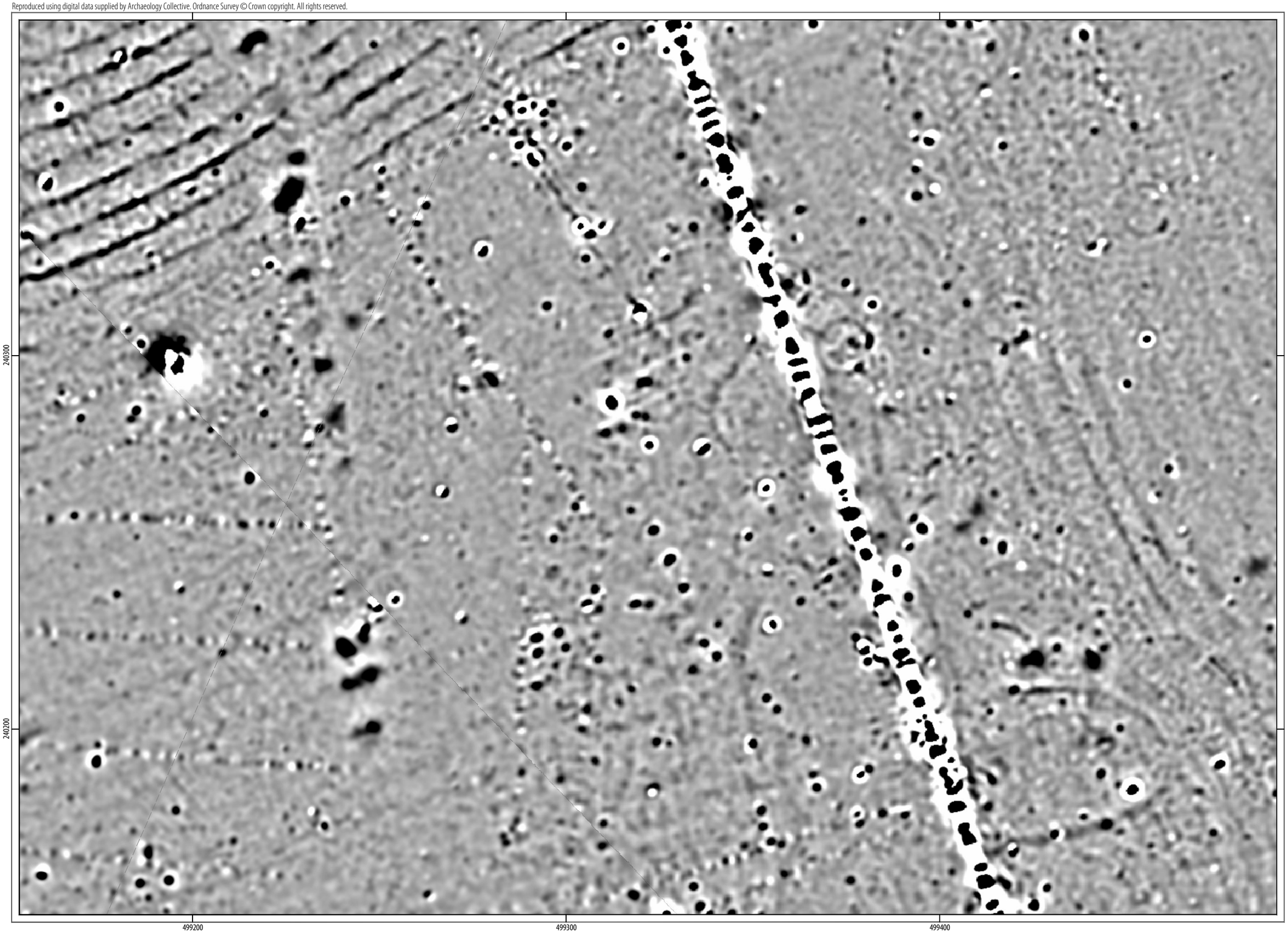
ILLUS 81 Interpretation of magnetometer data; AAA6



nT
-1.0
2.0

N
0
25m
scale 1:1,000 @ A3

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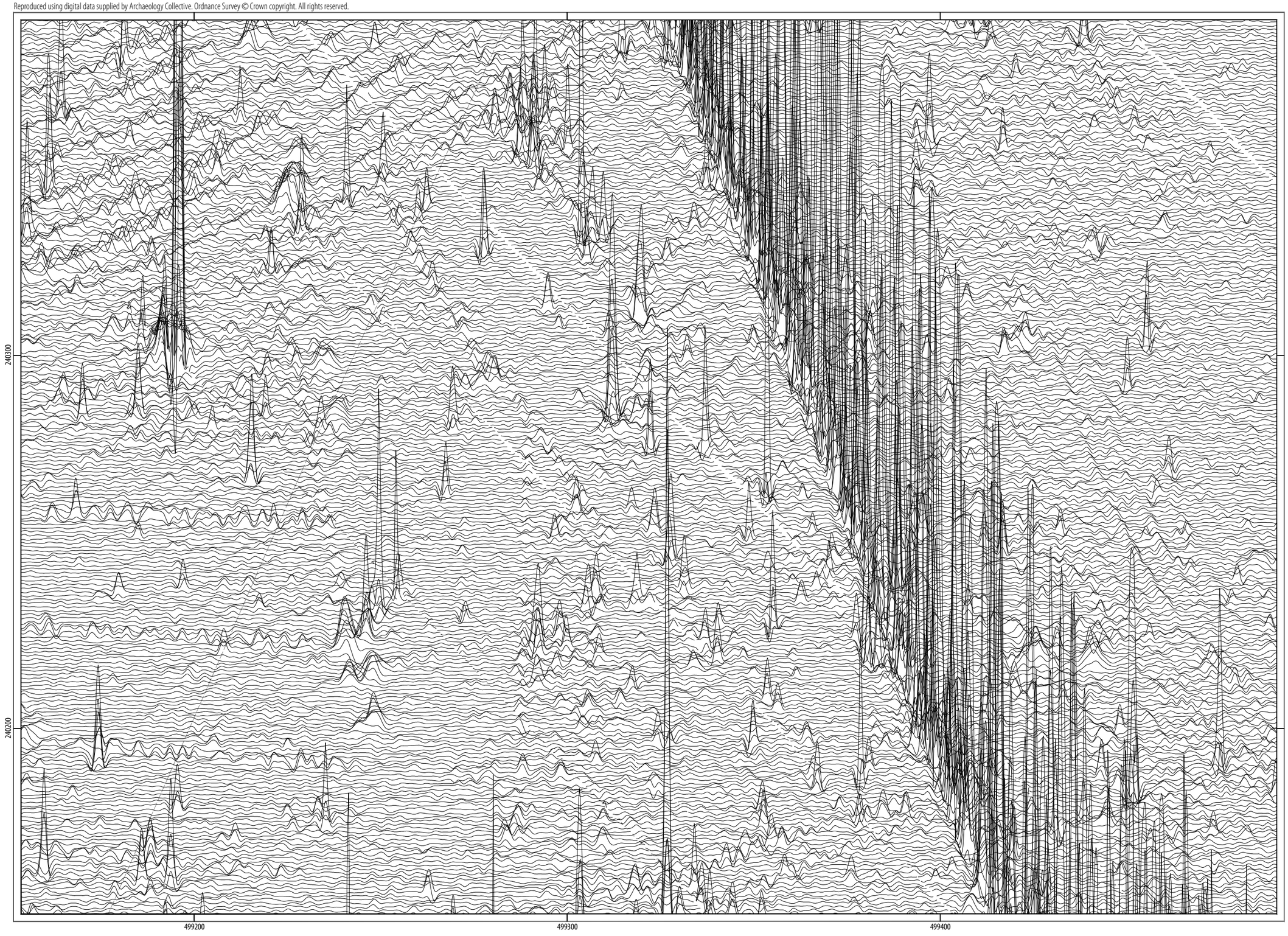
ILLUS 82 Processed greyscale magnetometer data; AAA7a



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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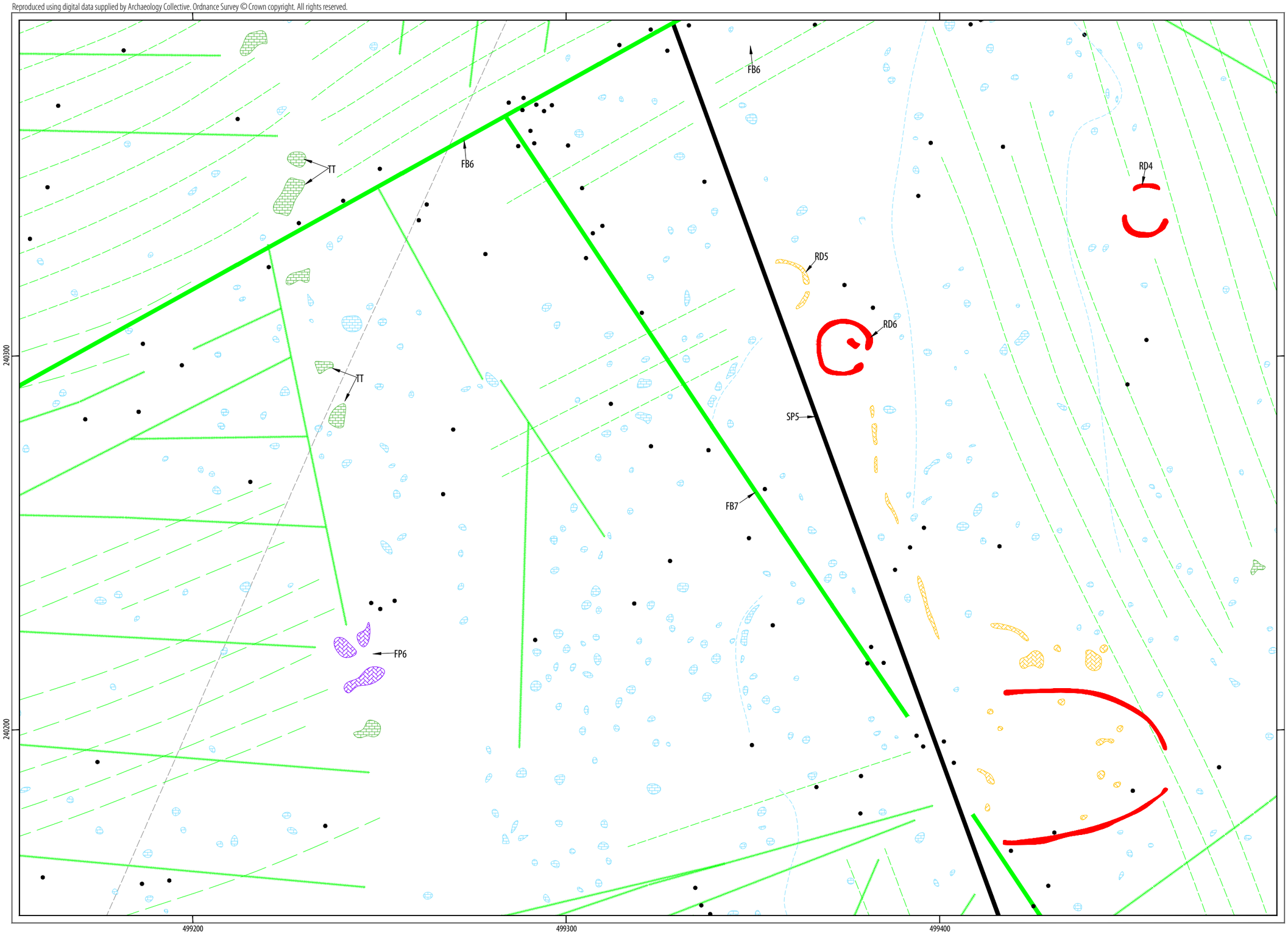
ILLUS 83 XY trace plot of minimally processed magnetometer data; AAA7a



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
linear	former field boundary
magnetic enhancement	tree throw?
magnetic enhancement	geology
magnetic enhancement	former pond
linear	geological variation
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB	former boundary
RD	ring-ditch
SP	service pipe
TT	tree throw

N

0 25m

scale 1:1,000 @ A3

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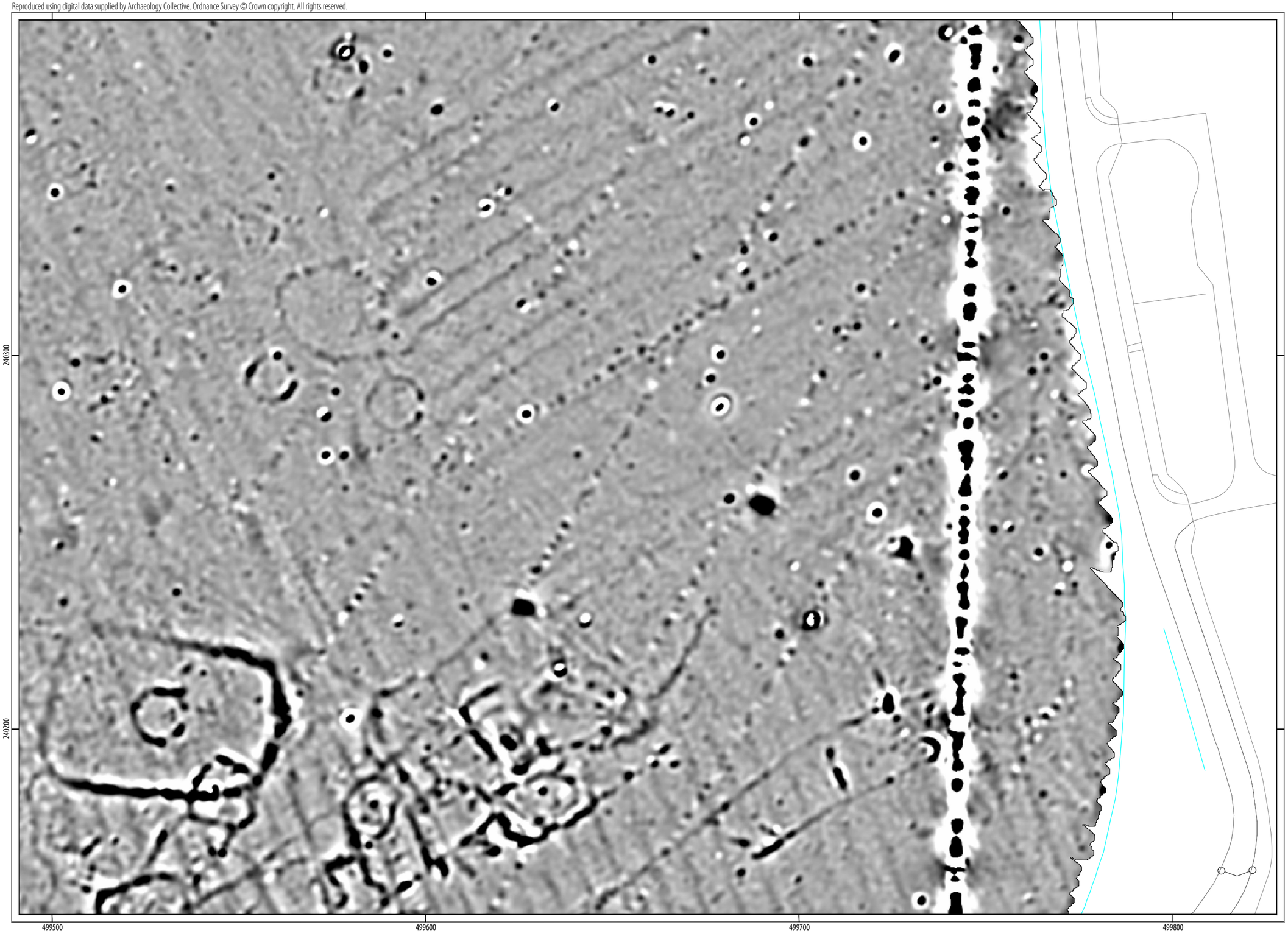
ILLUS 84 Interpretation of magnetometer data; AAA7a



nT
-1.0 2.0

N

0 25m
scale 1:1,000 @ A3

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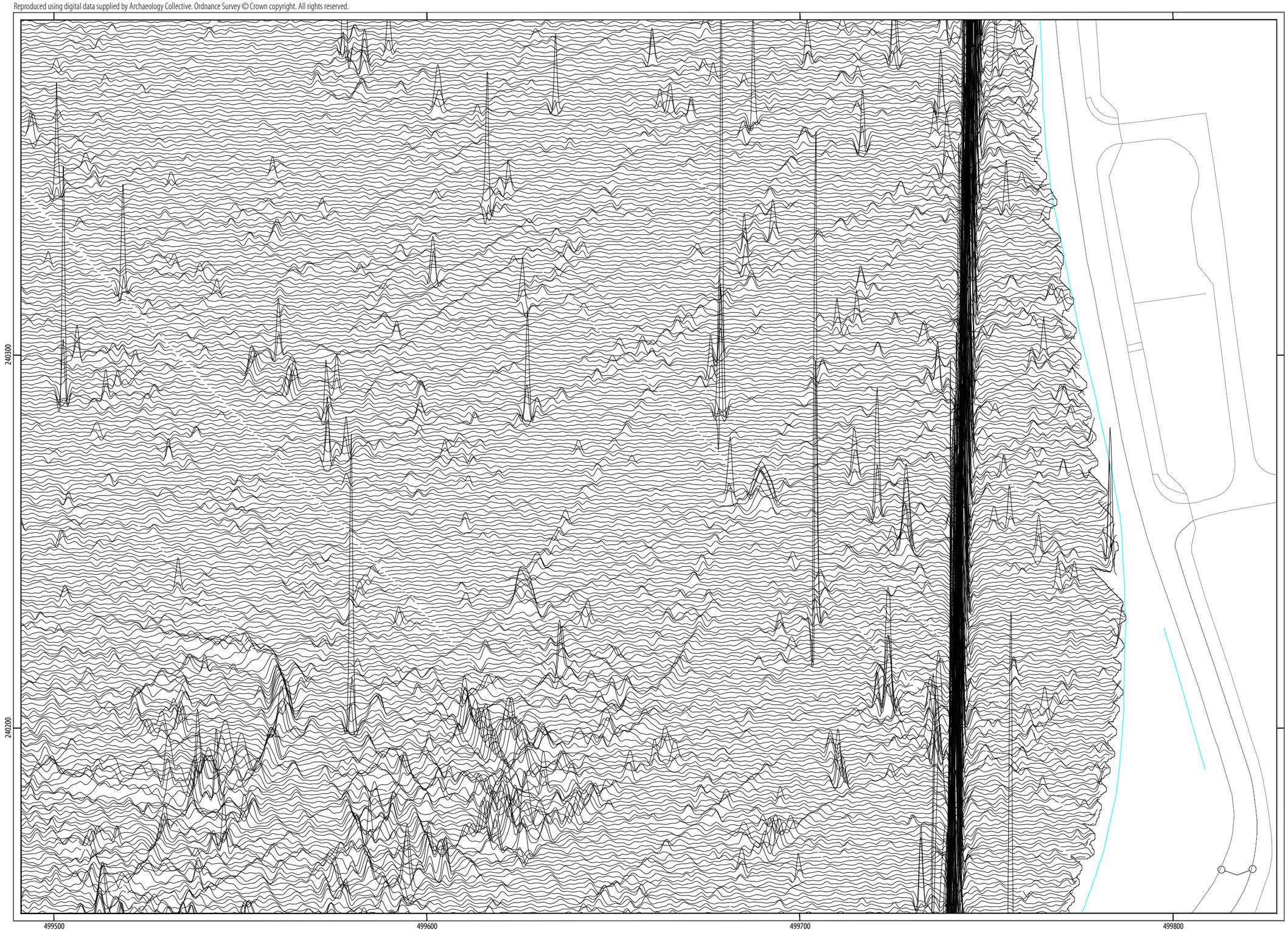
ILLUS 85 Processed greyscale magnetometer data; AAA7b



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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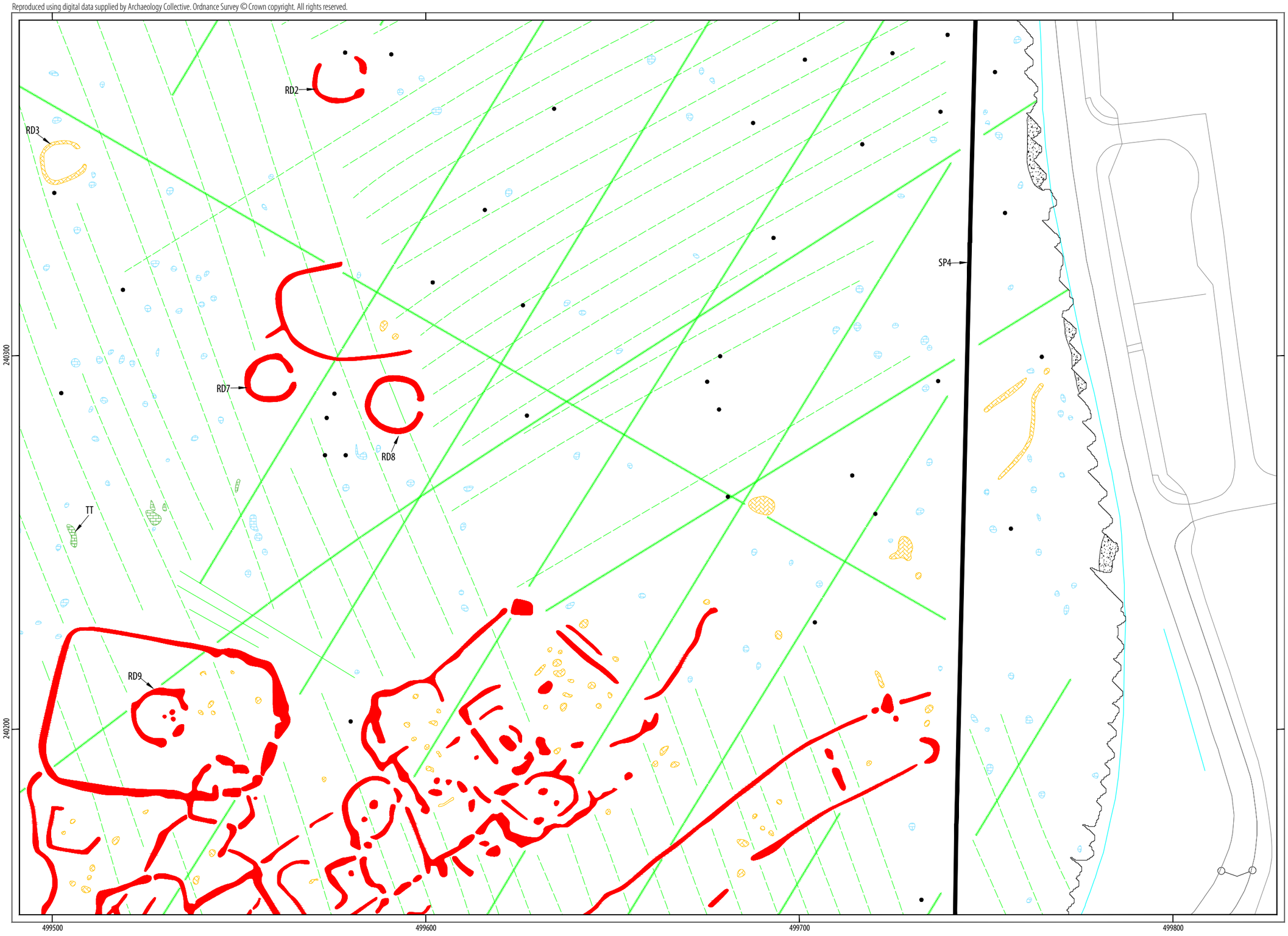
ILLUS 86 XY trace plot of minimally processed magnetometer data; AAA7b



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	agricultural
linear trend	field drain
magnetic enhancement	tree throw?
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

RD	ring-ditch
SP	service pipe
TT	tree throw

N

0 25m

scale 1:1,000 @ A3

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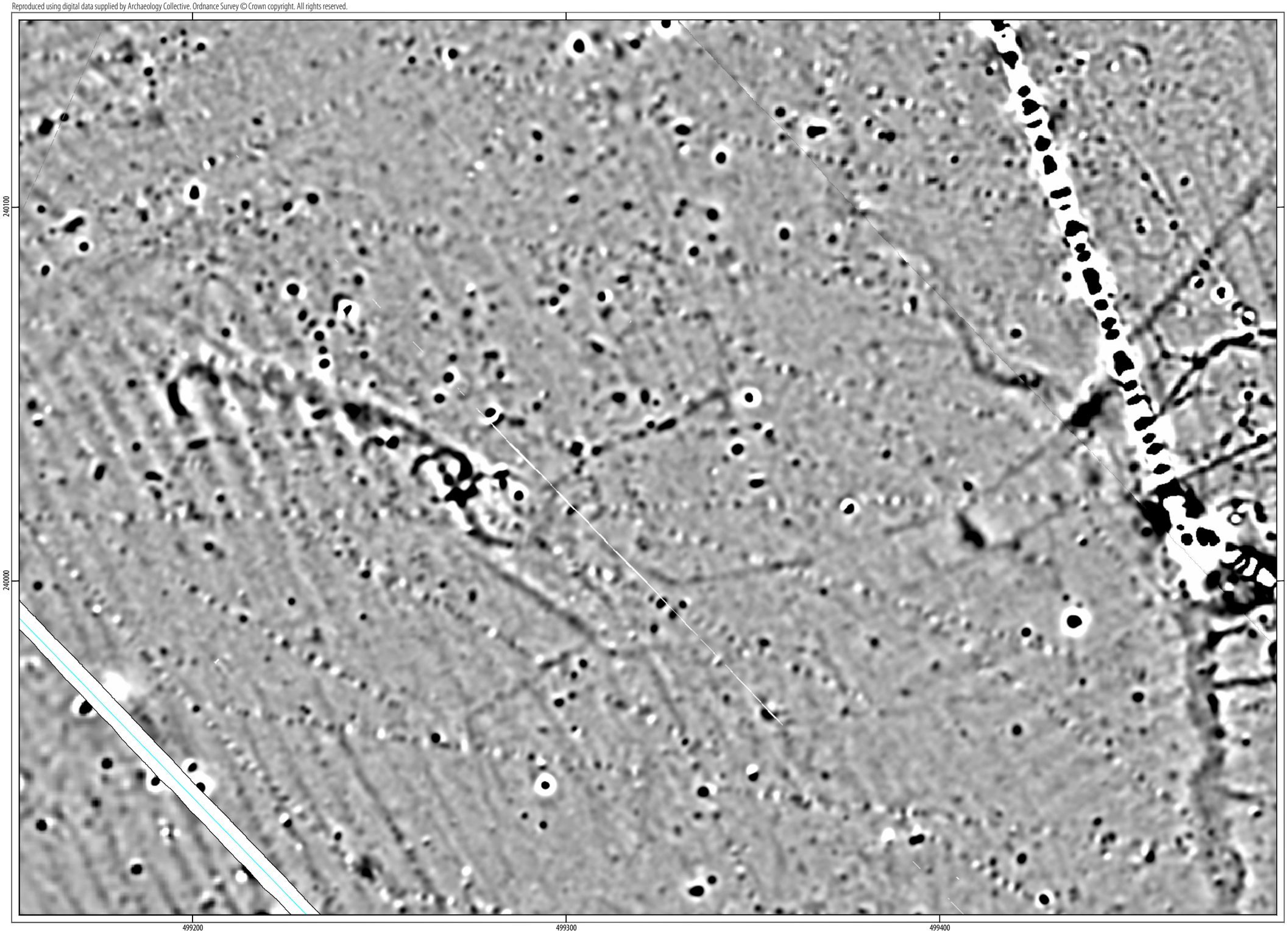
ILLUS 87 Interpretation of magnetometer data; AAA7b



nT
-1.0 2.0

N
0 25m
scale 1:1,000 @ A3

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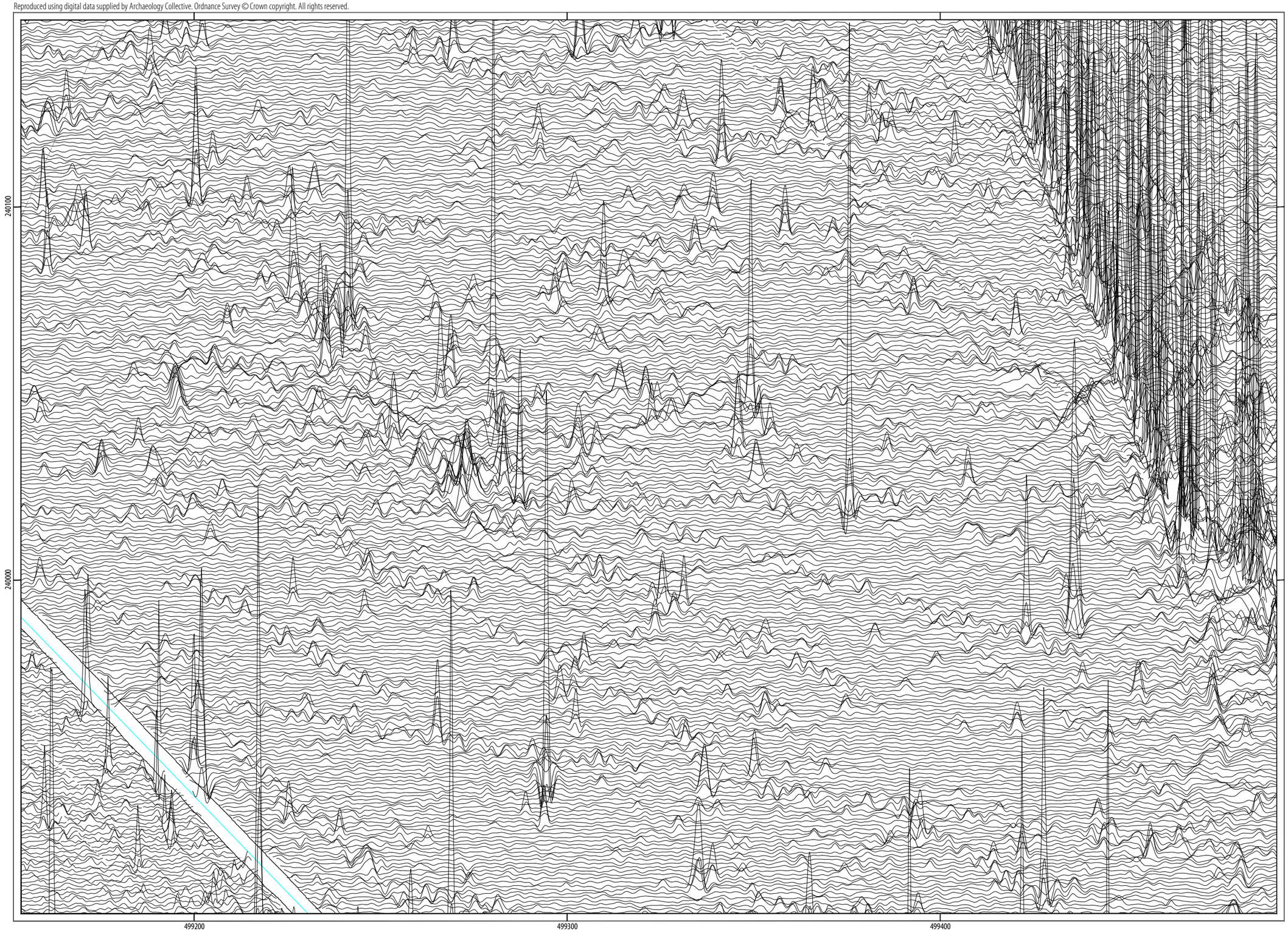
ILLUS 88 Processed greyscale magnetometer data; AAA7c



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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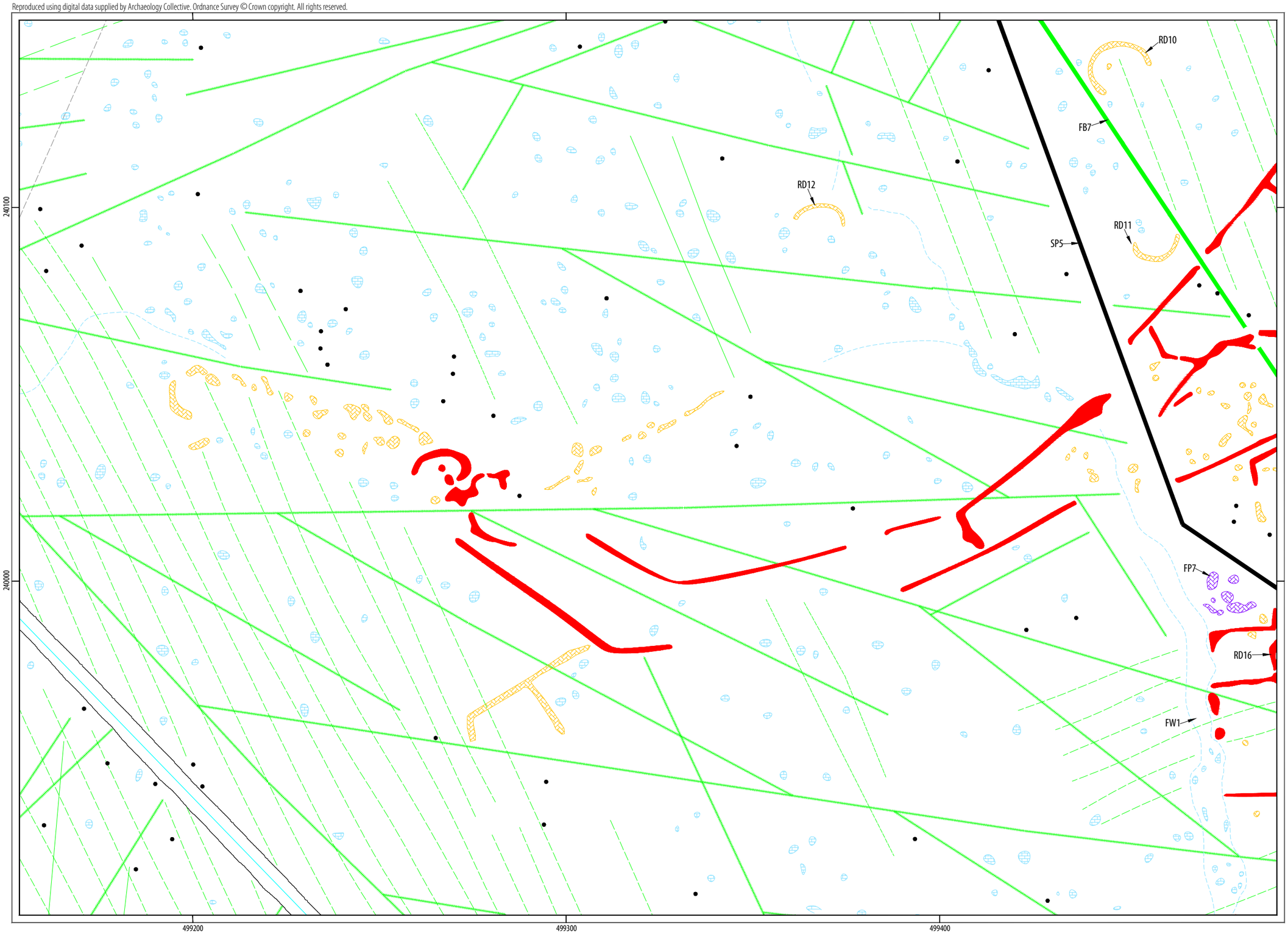
ILLUS 89 XY trace plot of minimally processed magnetometer data; AAA7c



TYPE OF ANOMALY / INTERPRETATION

TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	field drain
linear	former field boundary
magnetic enhancement	geology
magnetic enhancement	former pond
linear	geological variation
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB	former boundary
FP	former pond
FW	former watercourse
RD	ring-ditch
SP	service pipe
TT	tree throw

N

0 25m

scale 1:1,000 @ A3

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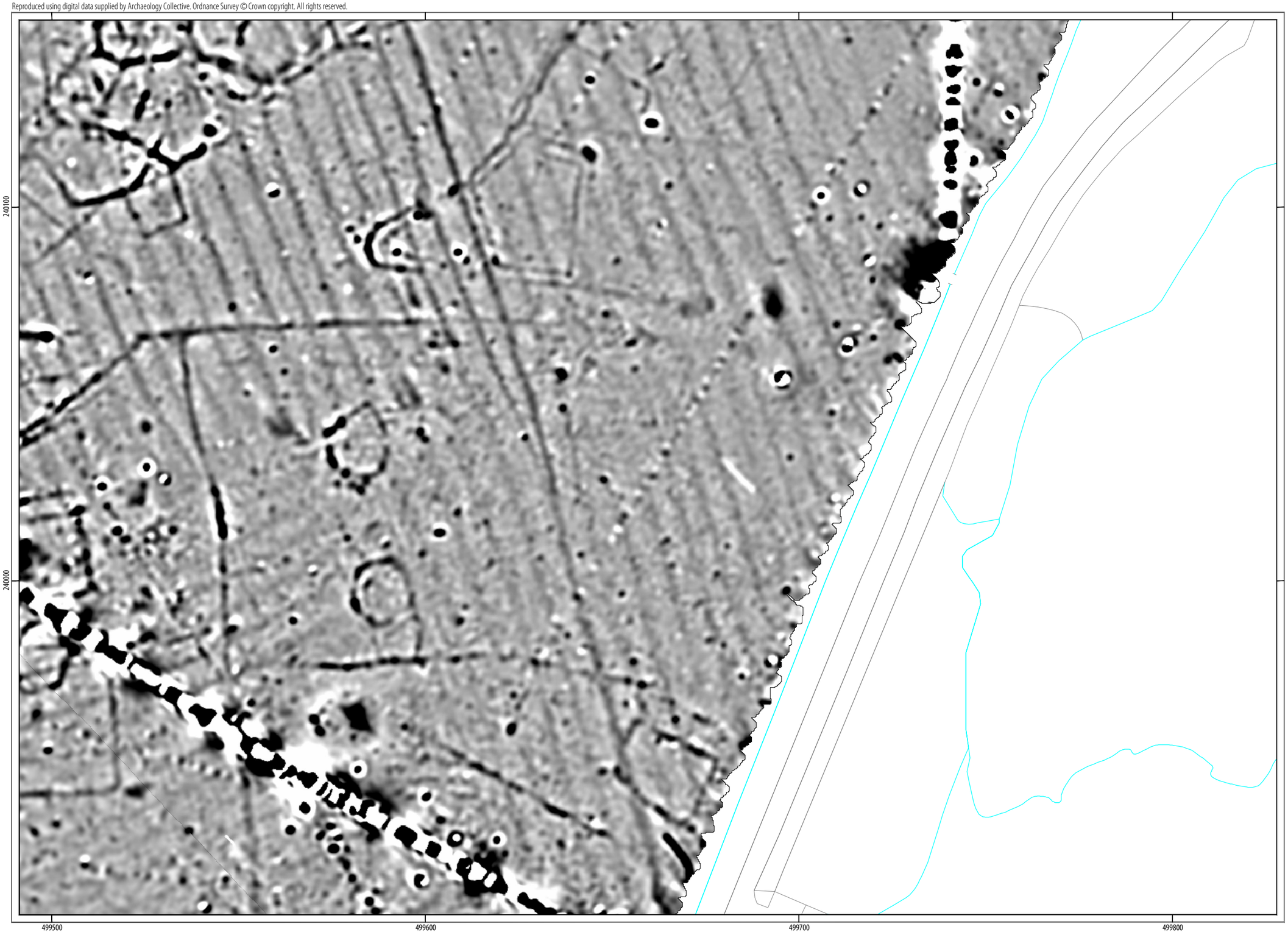
ILLUS 90 Interpretation of magnetometer data; AAA7c



nT
-1.0 2.0

N
0 25m
scale 1:1,000 @ A3

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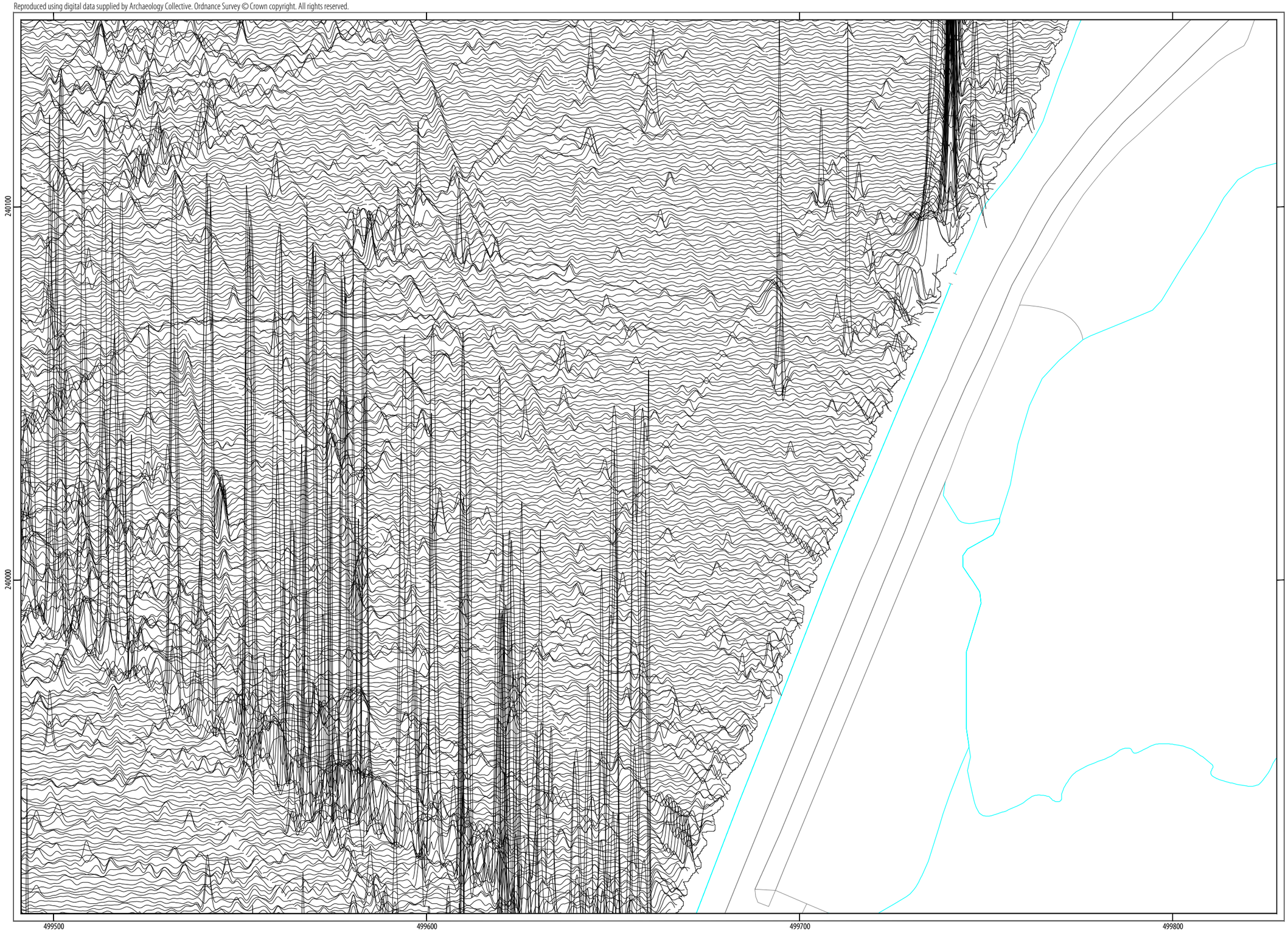
ILLUS 91 Processed greyscale magnetometer data; AAA7d



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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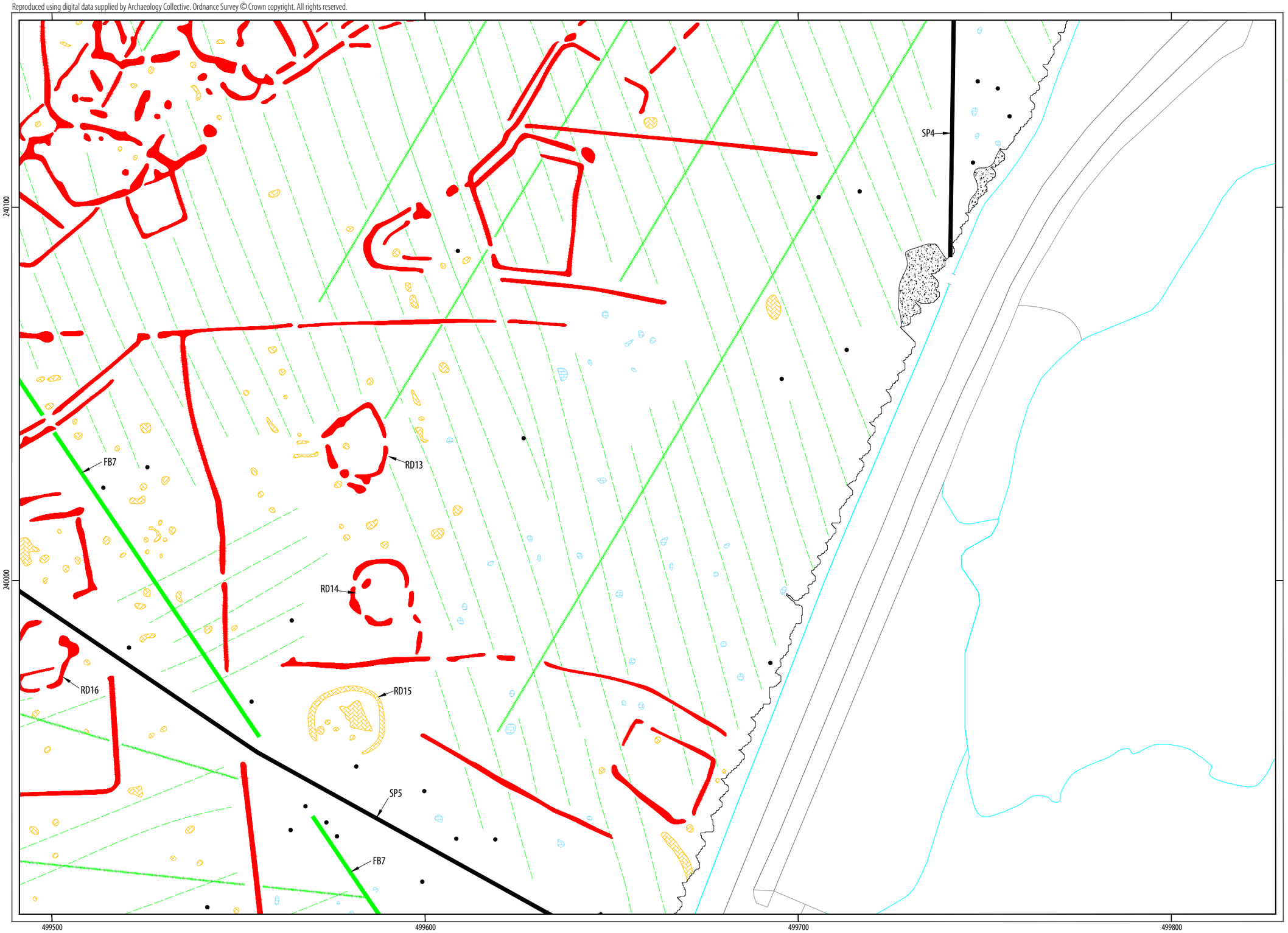
ILLUS 92 XY trace plot of minimally processed magnetometer data; AAA7d



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	field drain
linear	former field boundary
magnetic enhancement	geology
linear	geological variation
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB former boundary
RD ring-ditch
SP service pipe

N

0 25m

scale 1:1,000 @ A3

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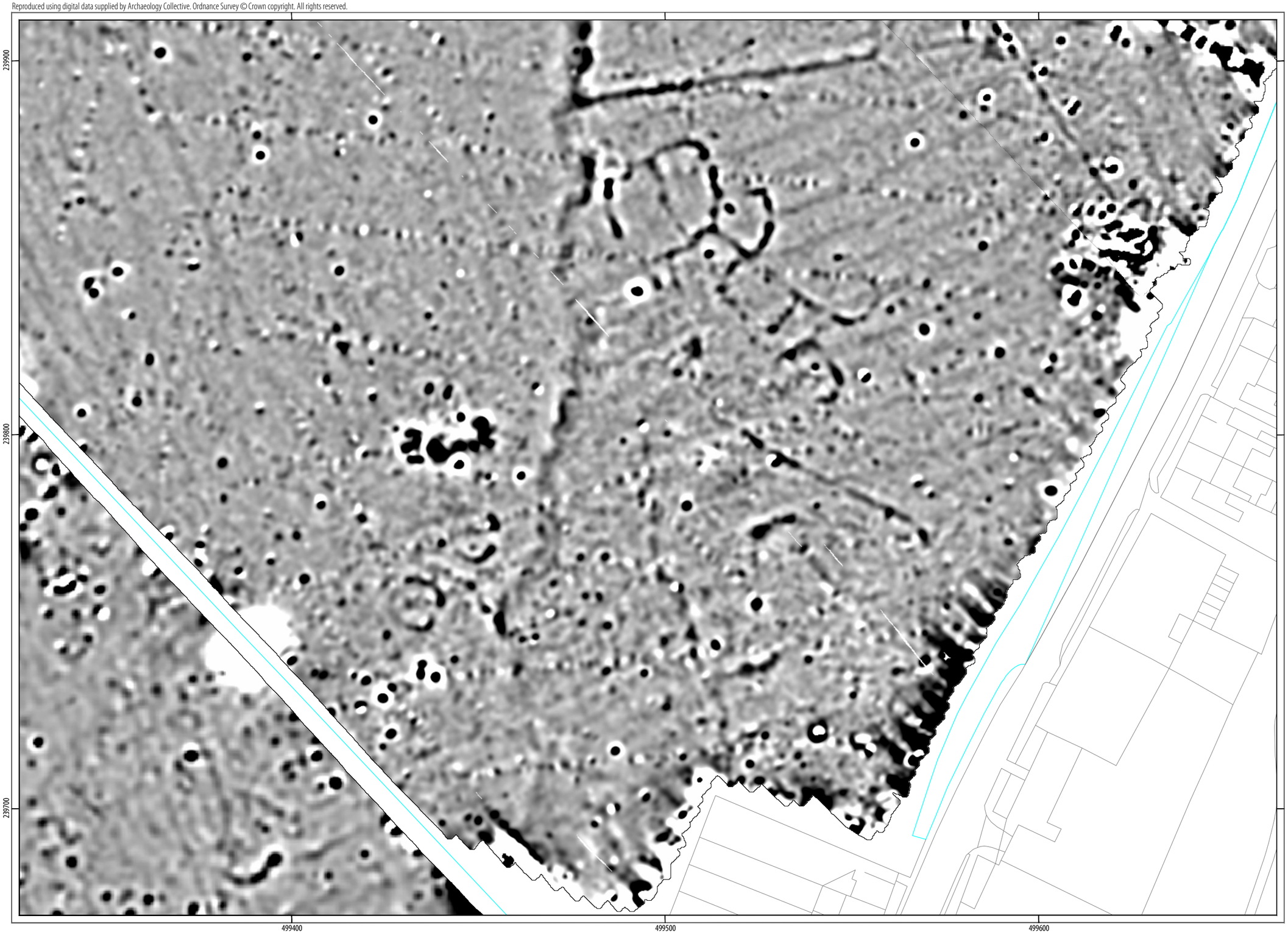
ILLUS 93 Interpretation of magnetometer data; AAA7d



nT
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N
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scale 1:1,000 @ A3

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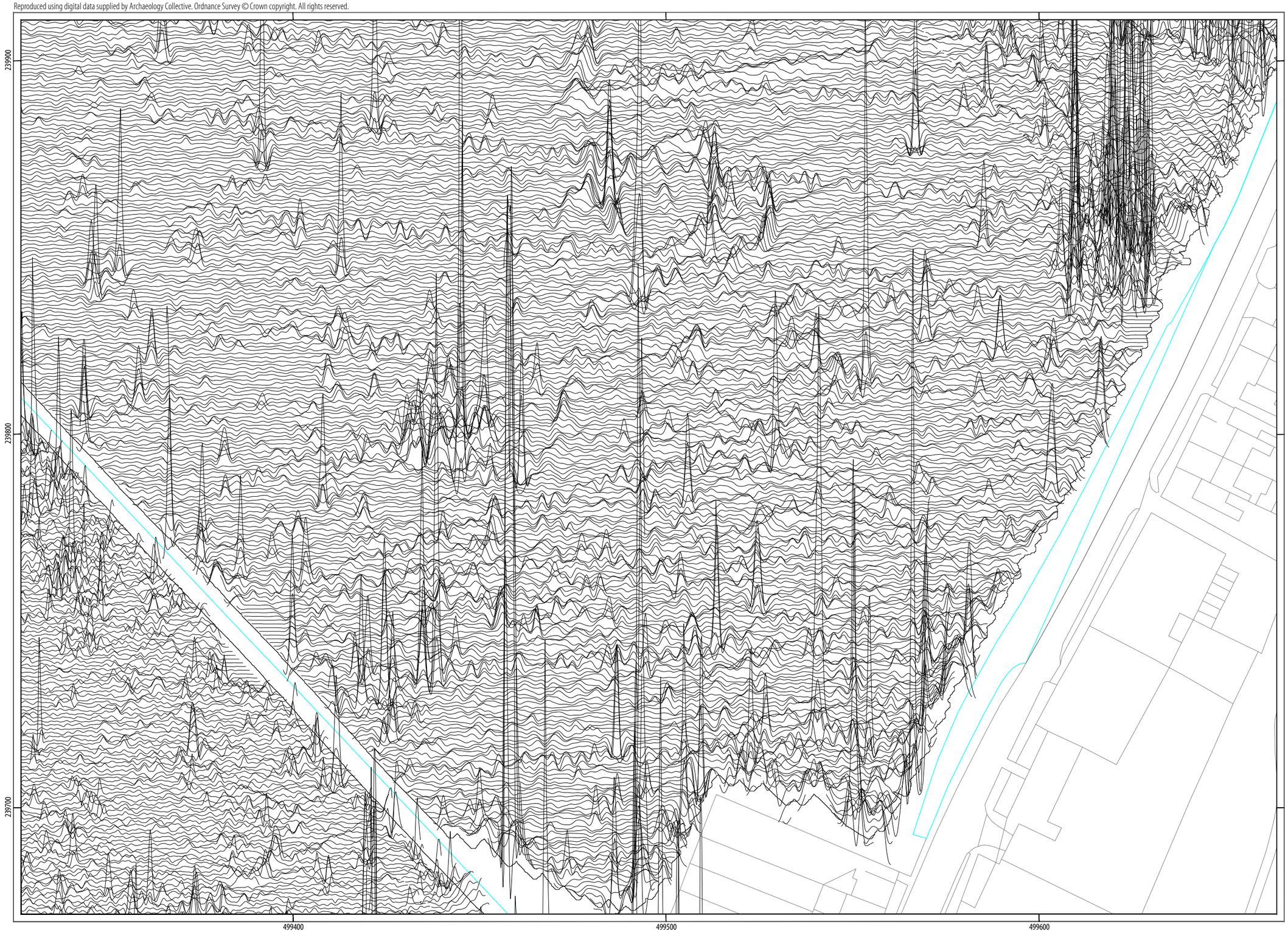
ILLUS 94 Processed greyscale magnetometer data; AAA7d



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scale 1:1,000 @ A3

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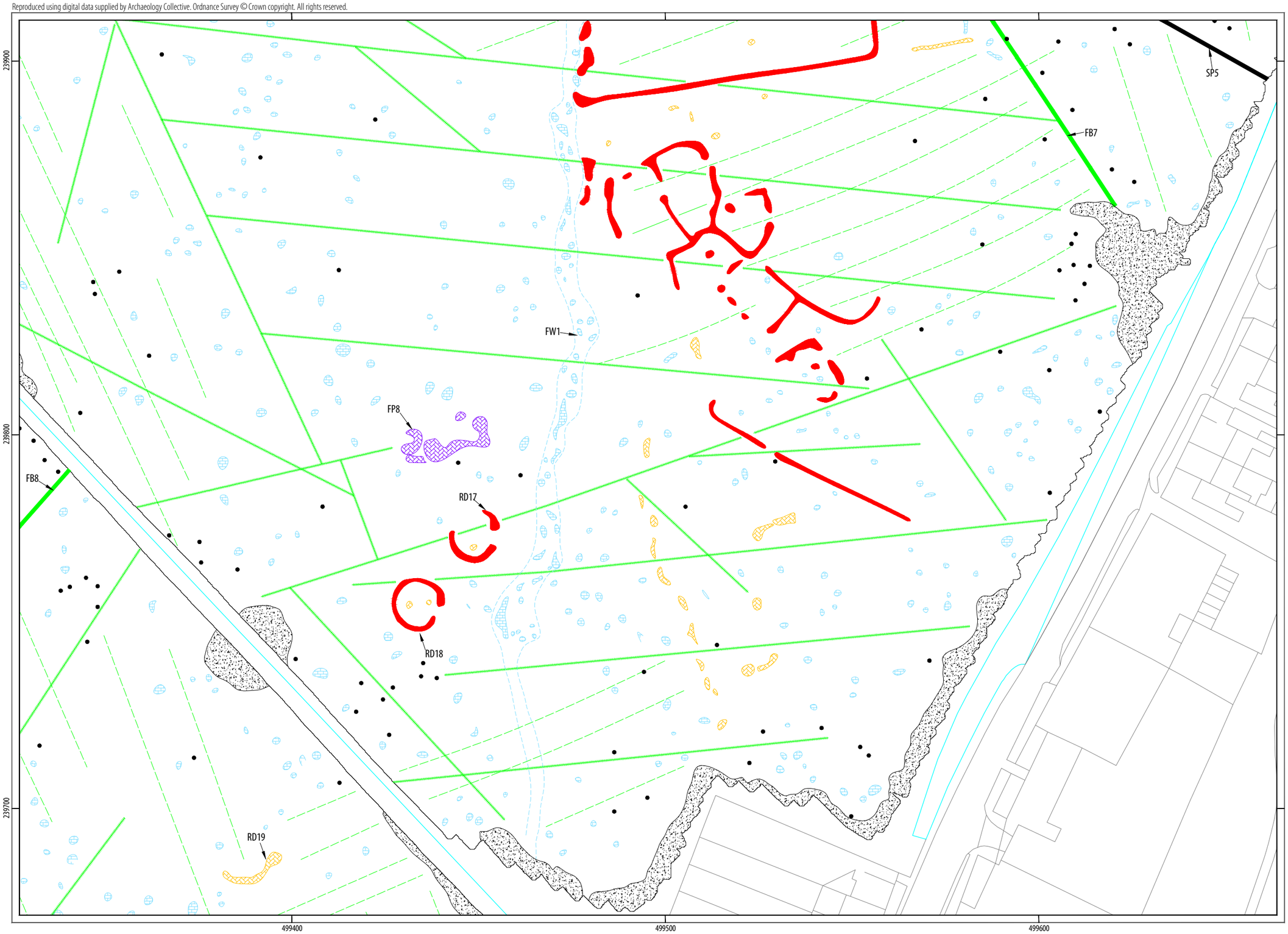
ILLUS 95 XY trace plot of minimally processed magnetometer data; AAA7d



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	field drain
linear	former field boundary
magnetic enhancement	geology
magnetic enhancement	former pond
linear	geological variation
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB	former boundary
FP	former pond
FW	former watercourse
RD	ring-ditch
SP	service pipe

N

0 25m

scale 1:1,000 @ A3

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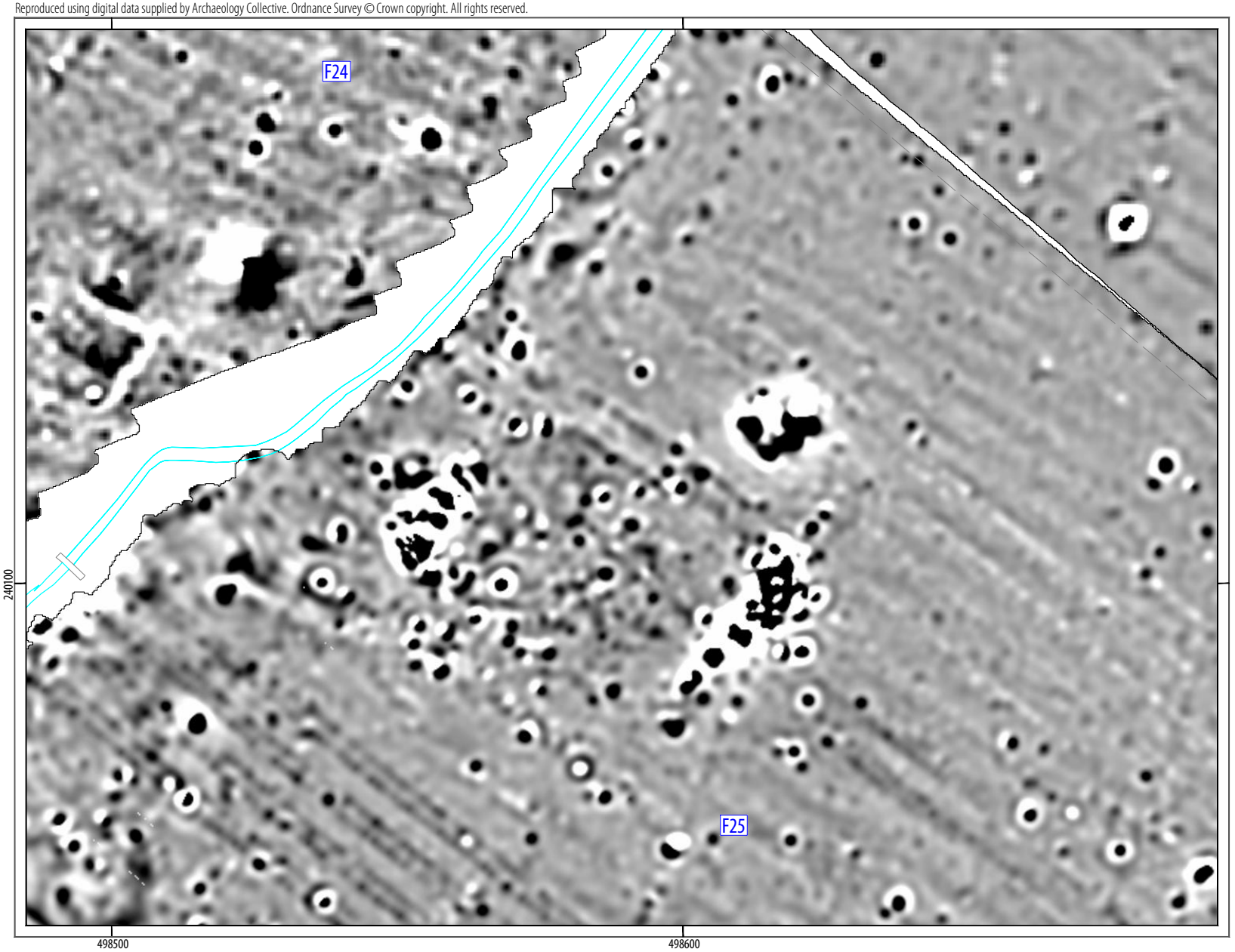
ILLUS 96 Interpretation of magnetometer data; AAA7d



nT
-1.0 2.0

N

0 25m
scale 1:1,000 @ A4

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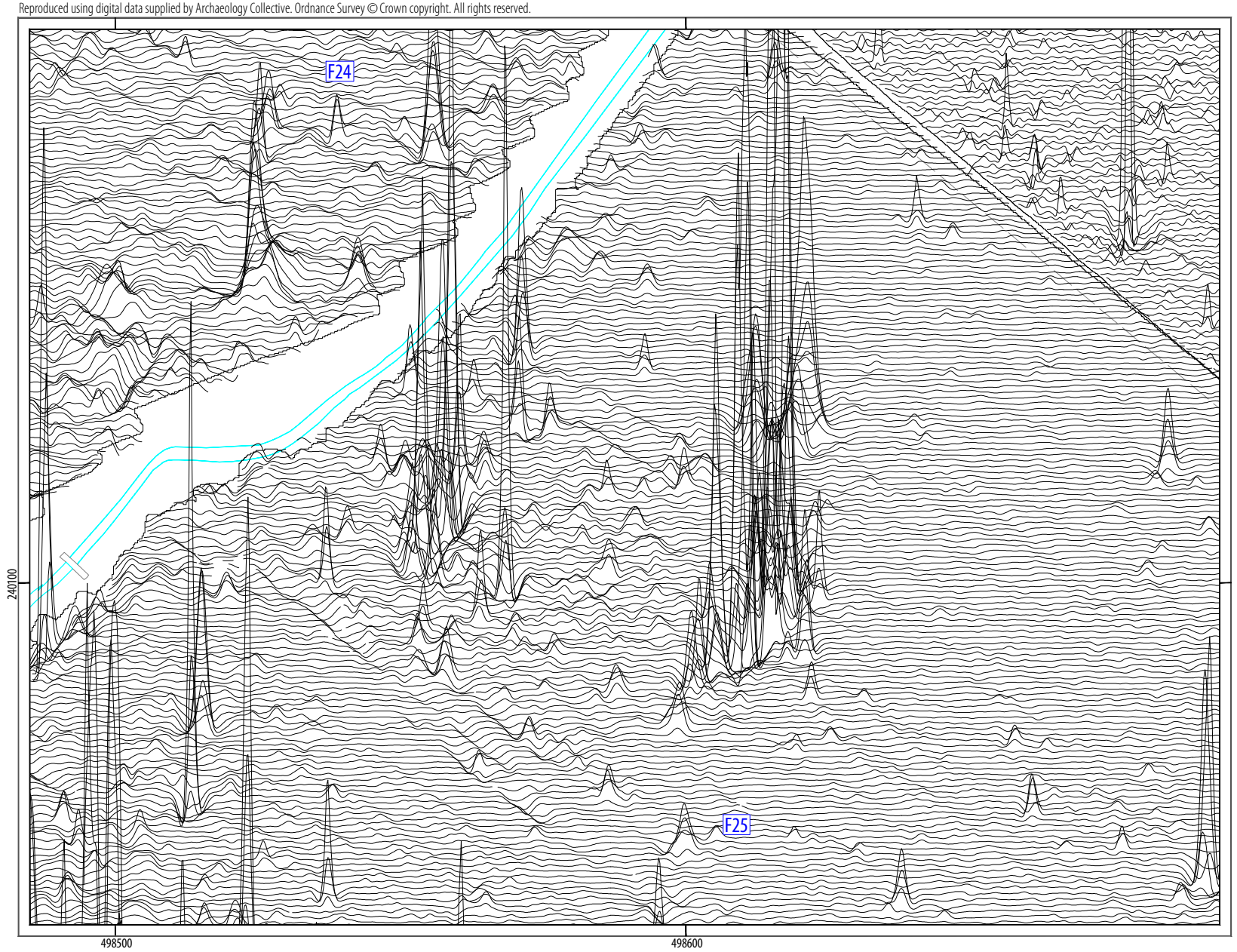
ILLUS 97 Processed greyscale magnetometer data; AAA8



16.0nT/cm

N

0 25m

scale 1:1,000 @ A4

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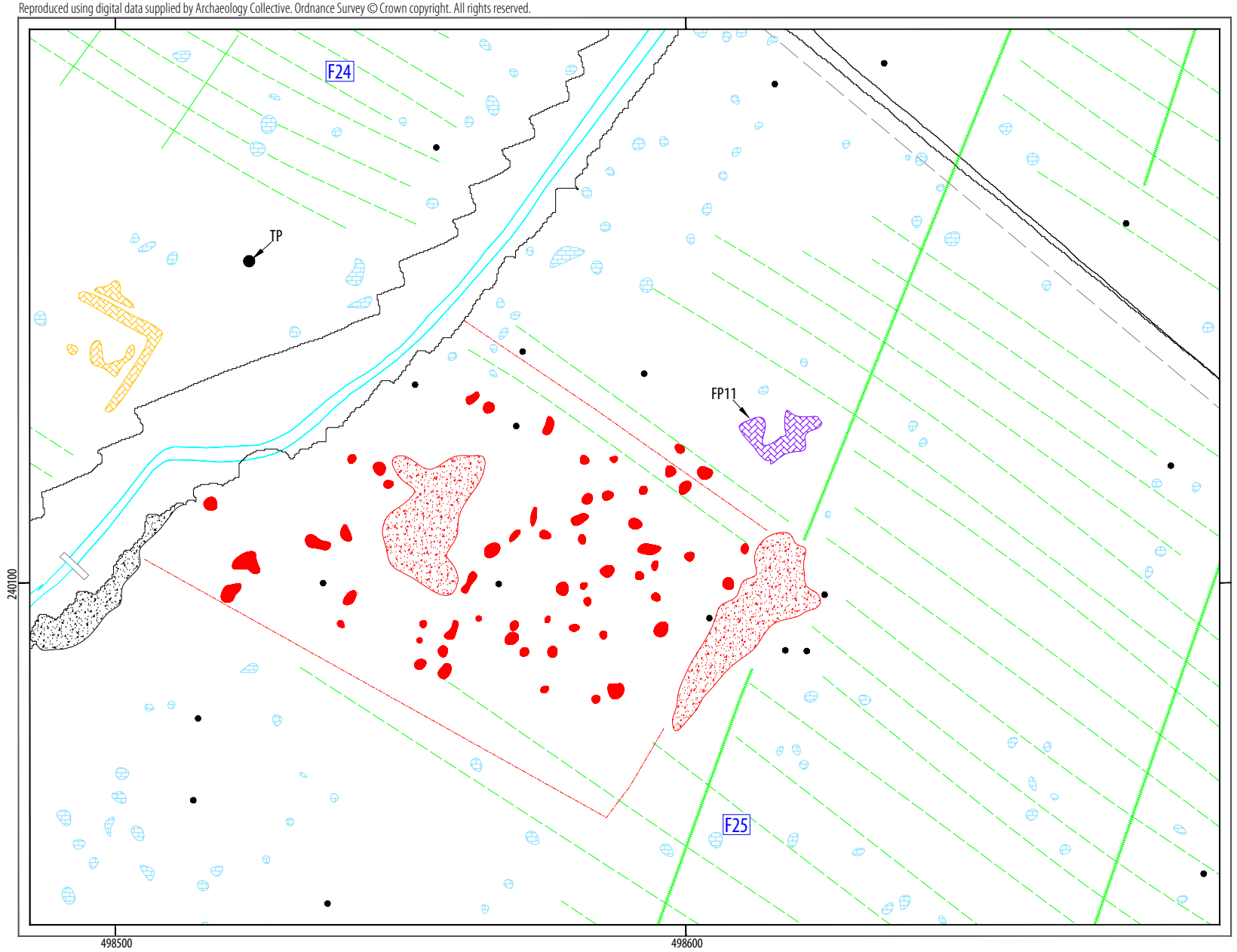
ILLUS 98 XY trace plot of minimally processed magnetometer data; AAA8



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	ridge and furrow
linear trend	field drain
magnetic enhancement	geology
magnetic enhancement	former pond
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FP	former pond
TP	telegraph pole

N

0 25m

scale 1:1,000 @ A4

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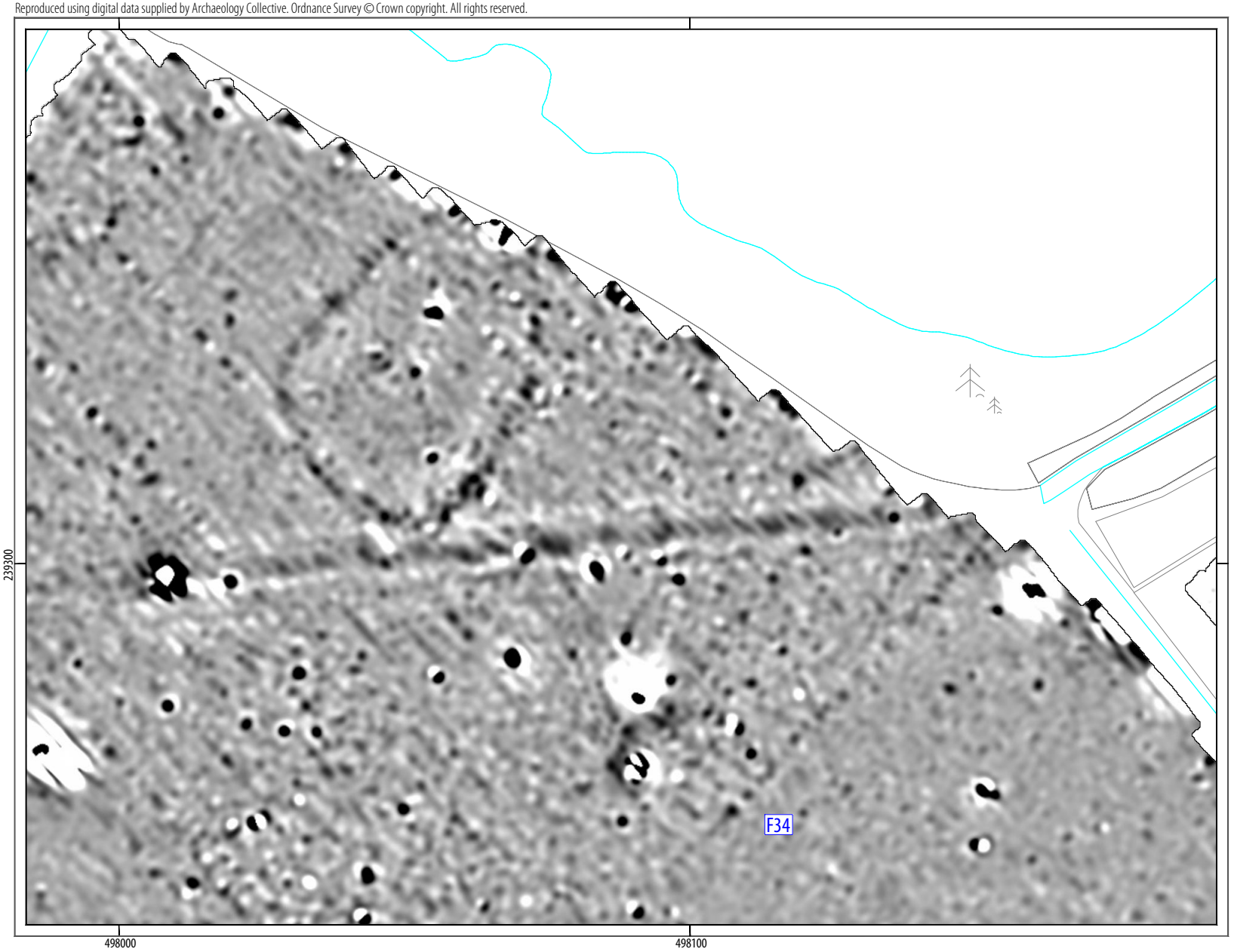
ILLUS 99 Interpretation of magnetometer data; AAA8



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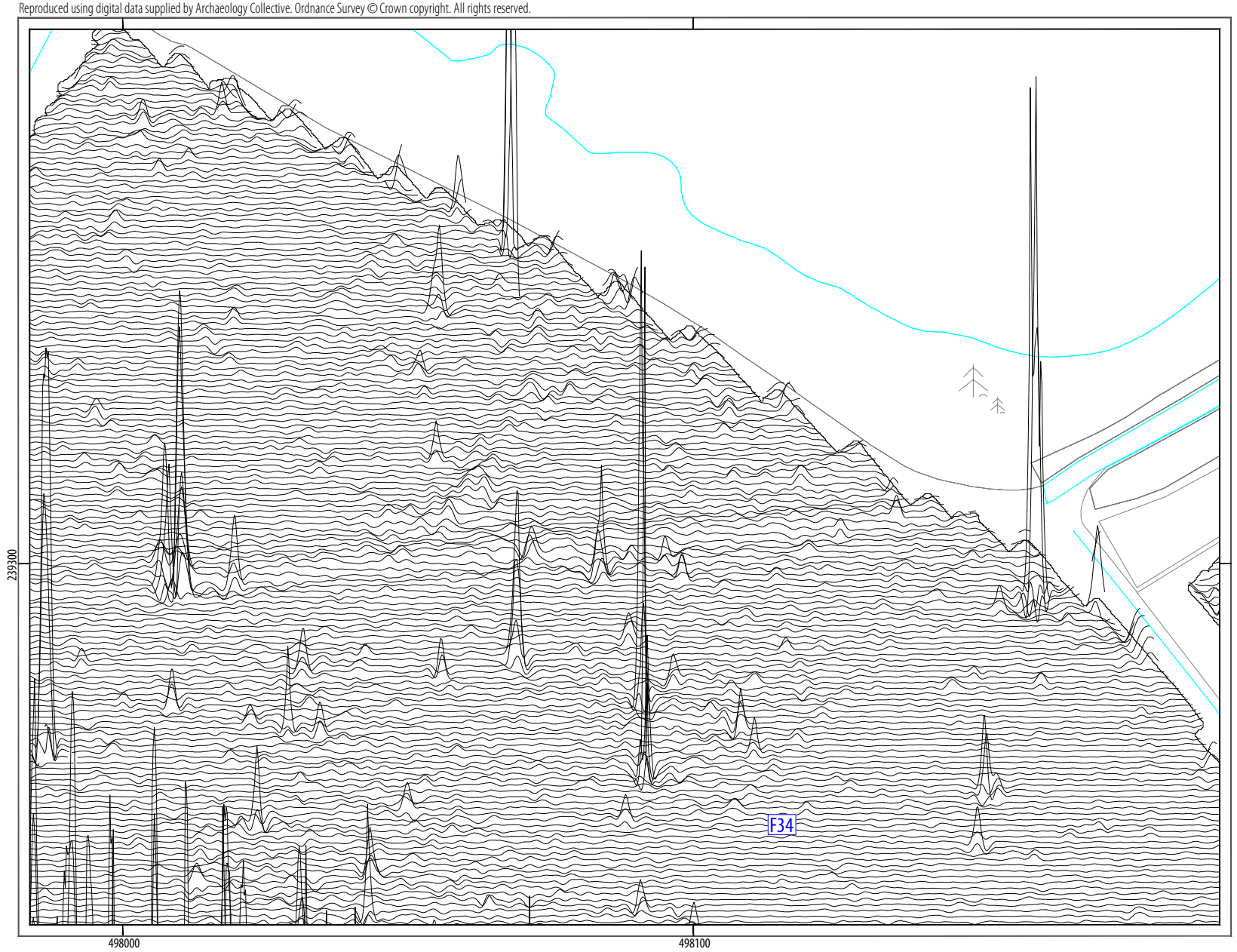
ILLUS 100 Processed greyscale magnetometer data; AAA9



16.0nT/cm

N

0 25m

scale 1:1,000 @ A4

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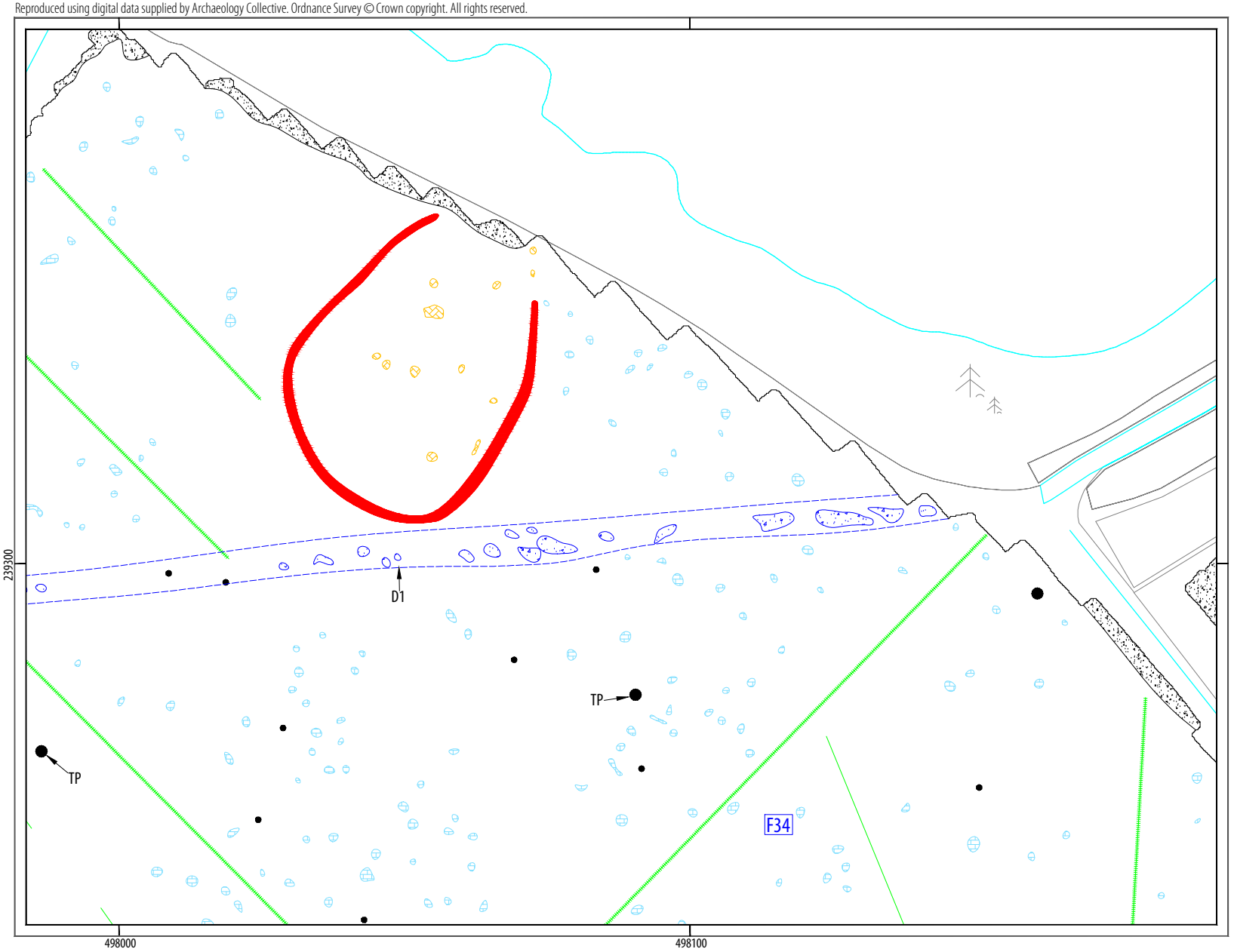
ILLUS 101 XY trace plot of minimally processed magnetometer data; AAA9



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
magnetic disturbance	modern
linear trend	agricultural
linear trend	field drain
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

D ditch

TP telegraph pole

N

0 25m

scale 1:1,000 @ A4

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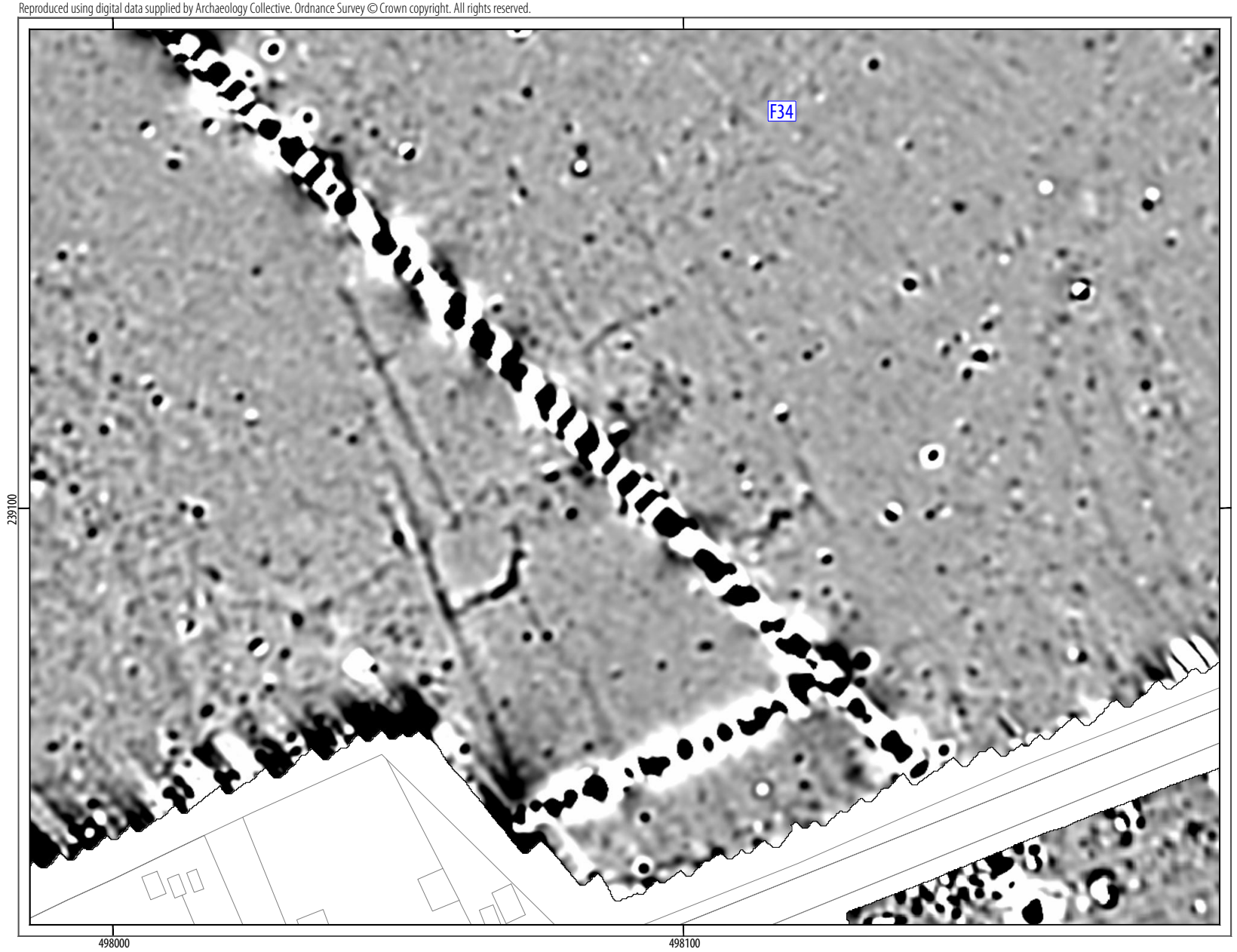
ILLUS 102 Interpretation of magnetometer data; AAA9



nT
-1.0 2.0

N
0 25m
scale 1:1,000 @ A4

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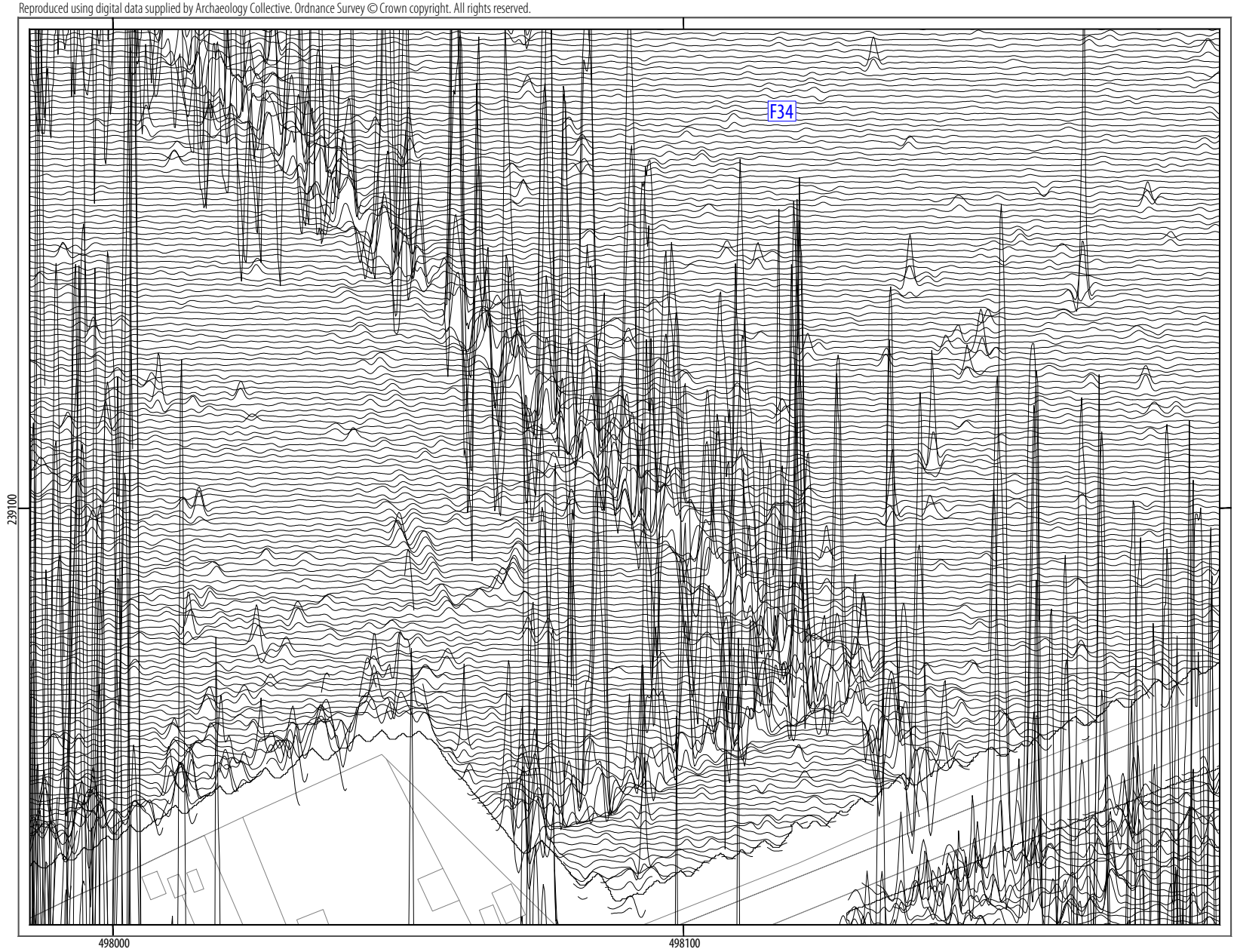
ILLUS 103 Processed greyscale magnetometer data; AAA10



16.0nT/cm

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0 25m

scale 1:1,000 @ A4

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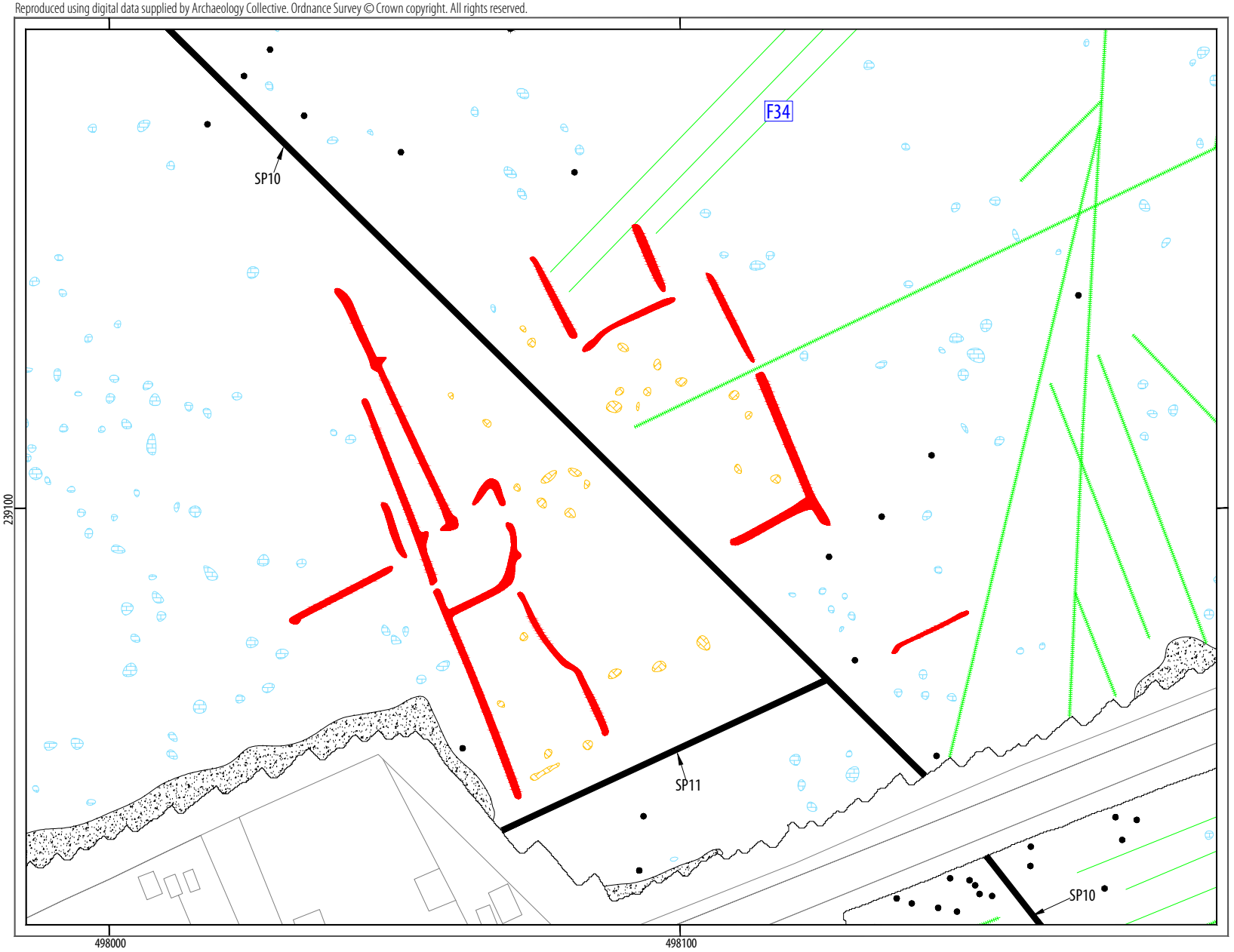
ILLUS 104 XY trace plot of minimally processed magnetometer data; AAA10



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	agricultural
linear trend	field drain
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

SP service pipe

N

0 25m

scale 1:1,000 @ A4

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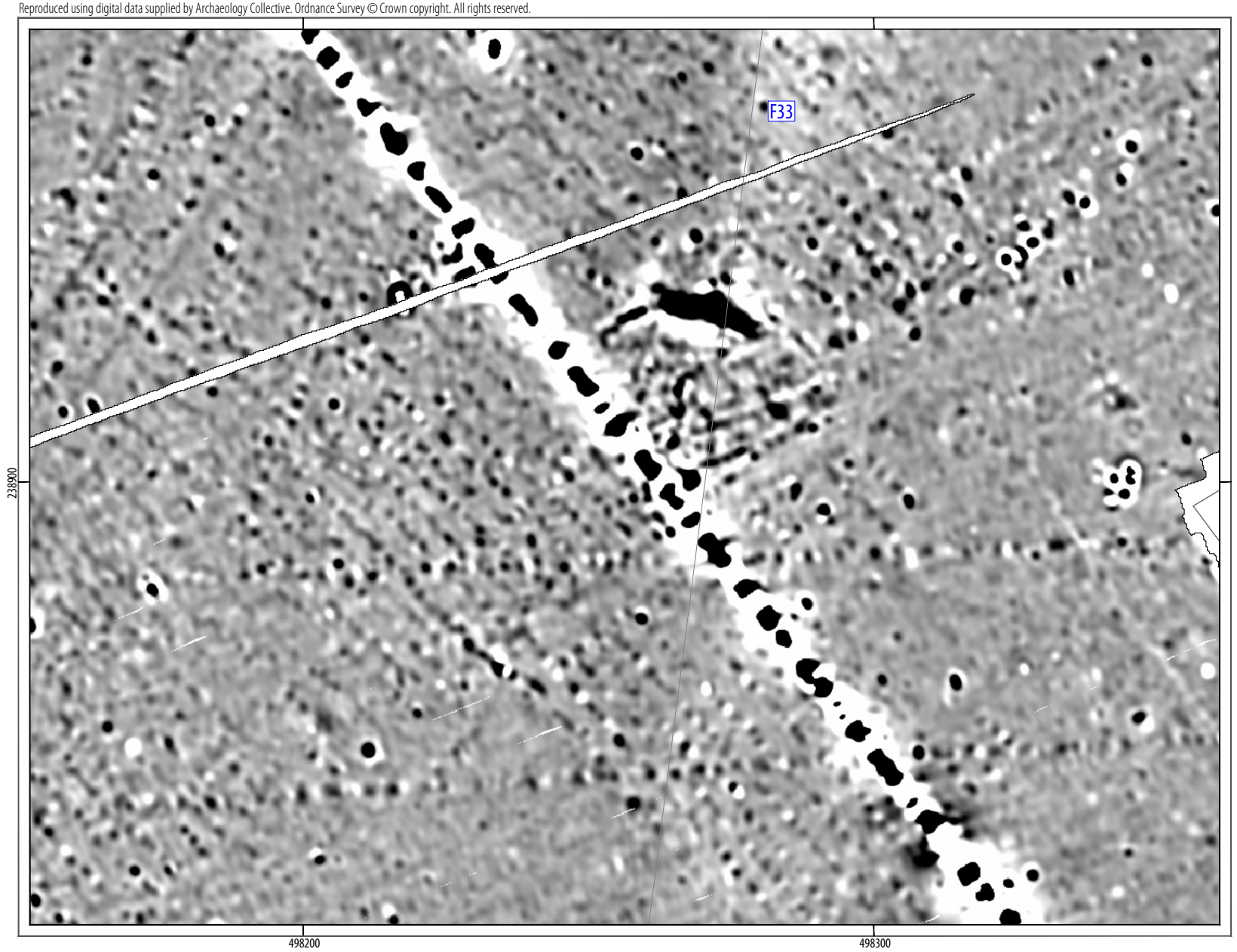
ILLUS 105 Interpretation of magnetometer data; AAA10



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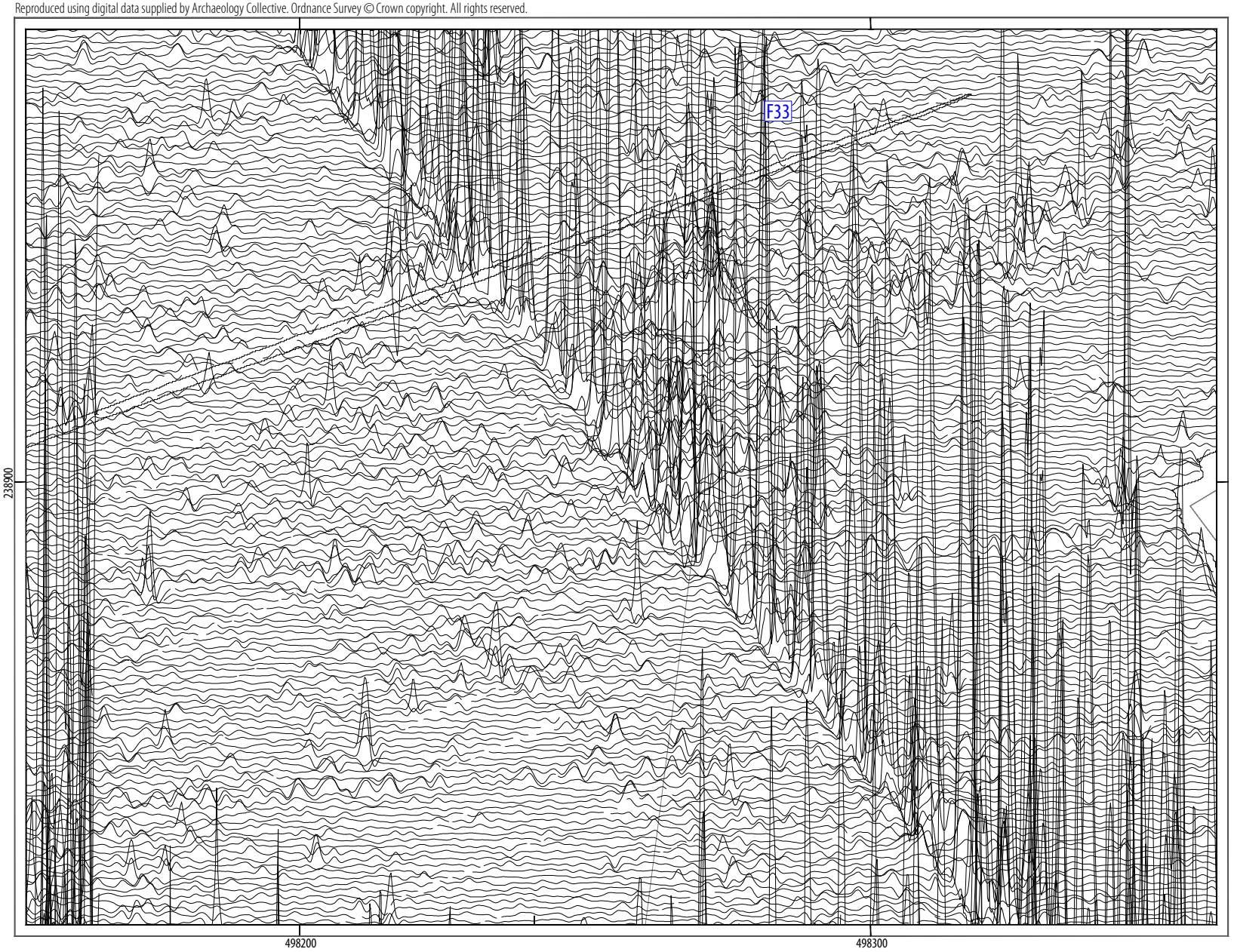
ILLUS 106 Processed greyscale magnetometer data; AAA11



16.0nT/cm

N

0 25m

scale 1:1,000 @ A4

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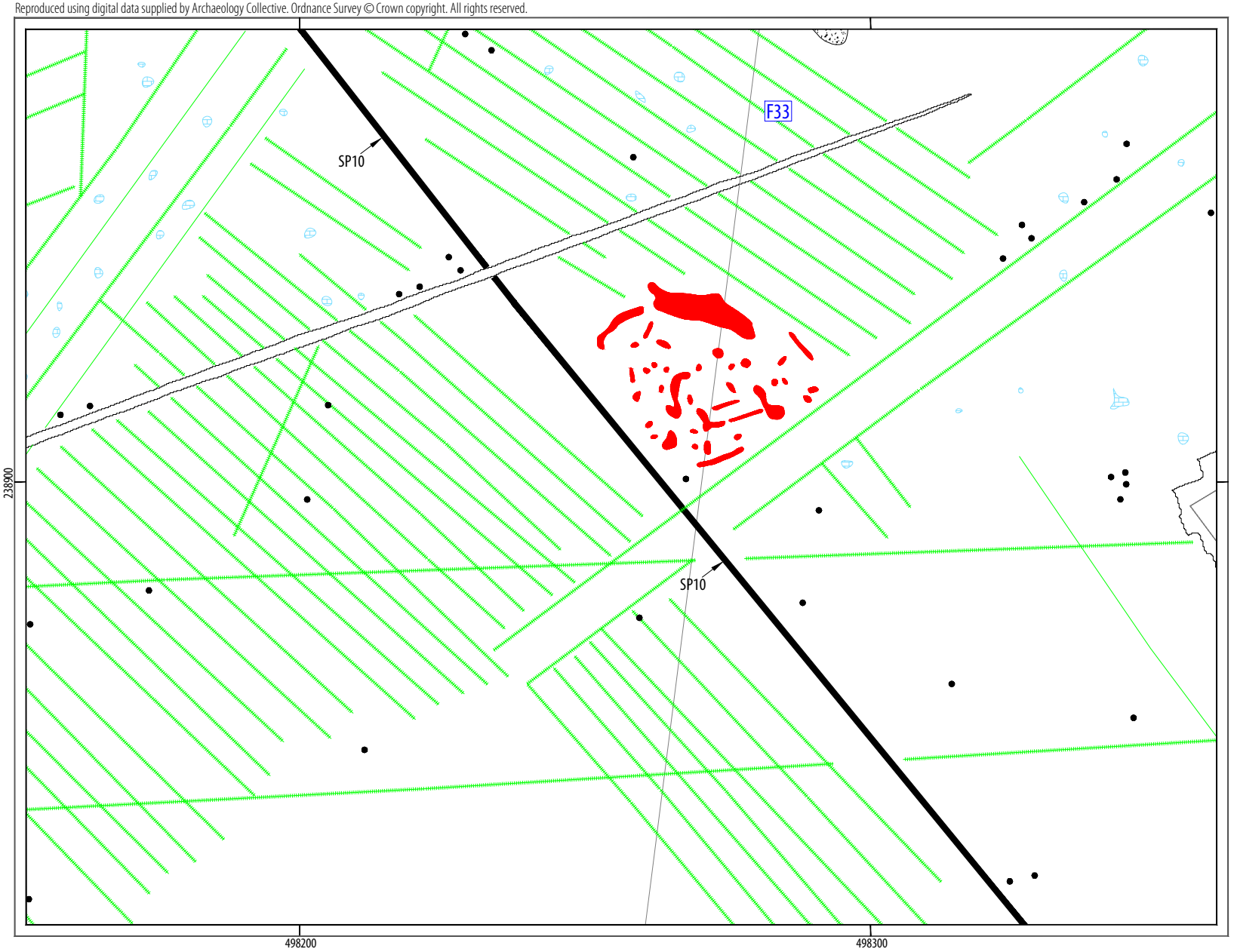
ILLUS 107 XY trace plot of minimally processed magnetometer data; AAA11



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	agricultural
linear trend	field drain
magnetic enhancement	geology
magnetic enhancement	archaeology

ABBREVIATIONS

SP service pipe

N

0 25m

scale 1:1,000 @ A4

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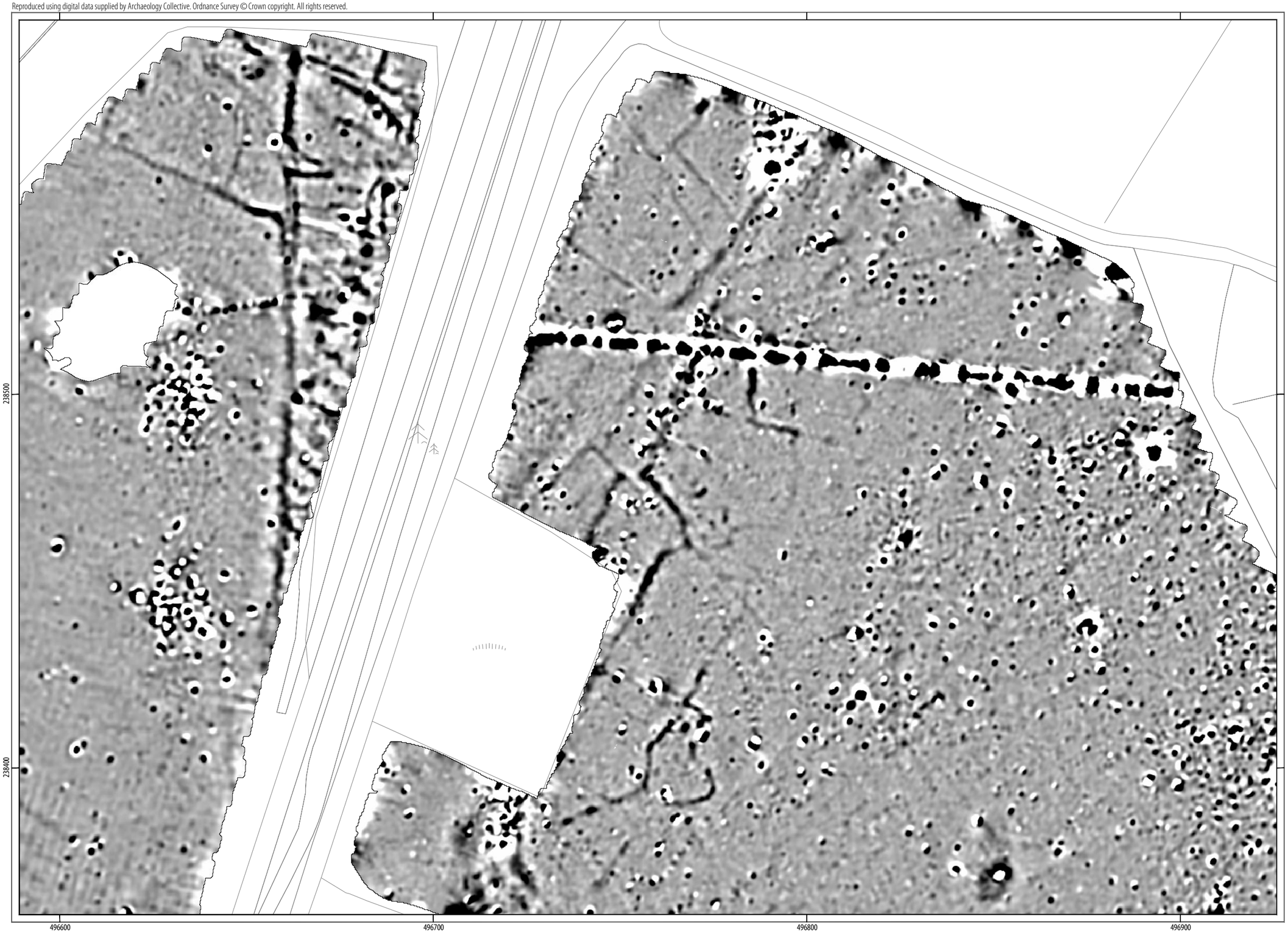
ILLUS 108 Interpretation of magnetometer data; AAA11



-1.0 nT 2.0

N

0 25m

scale 1:1,000 @ A3

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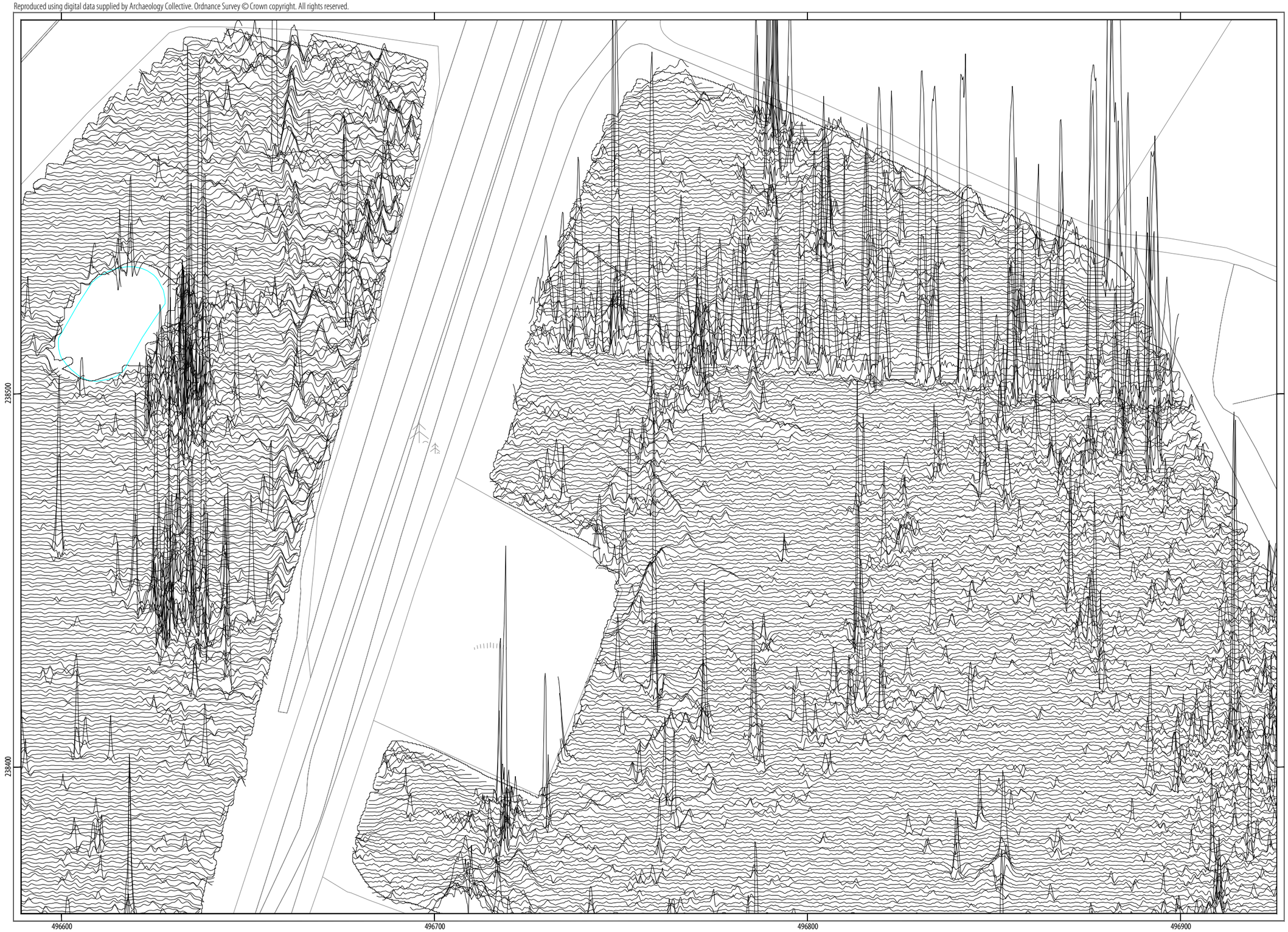
ILLUS 109 Processed greyscale magnetometer data; AAA12



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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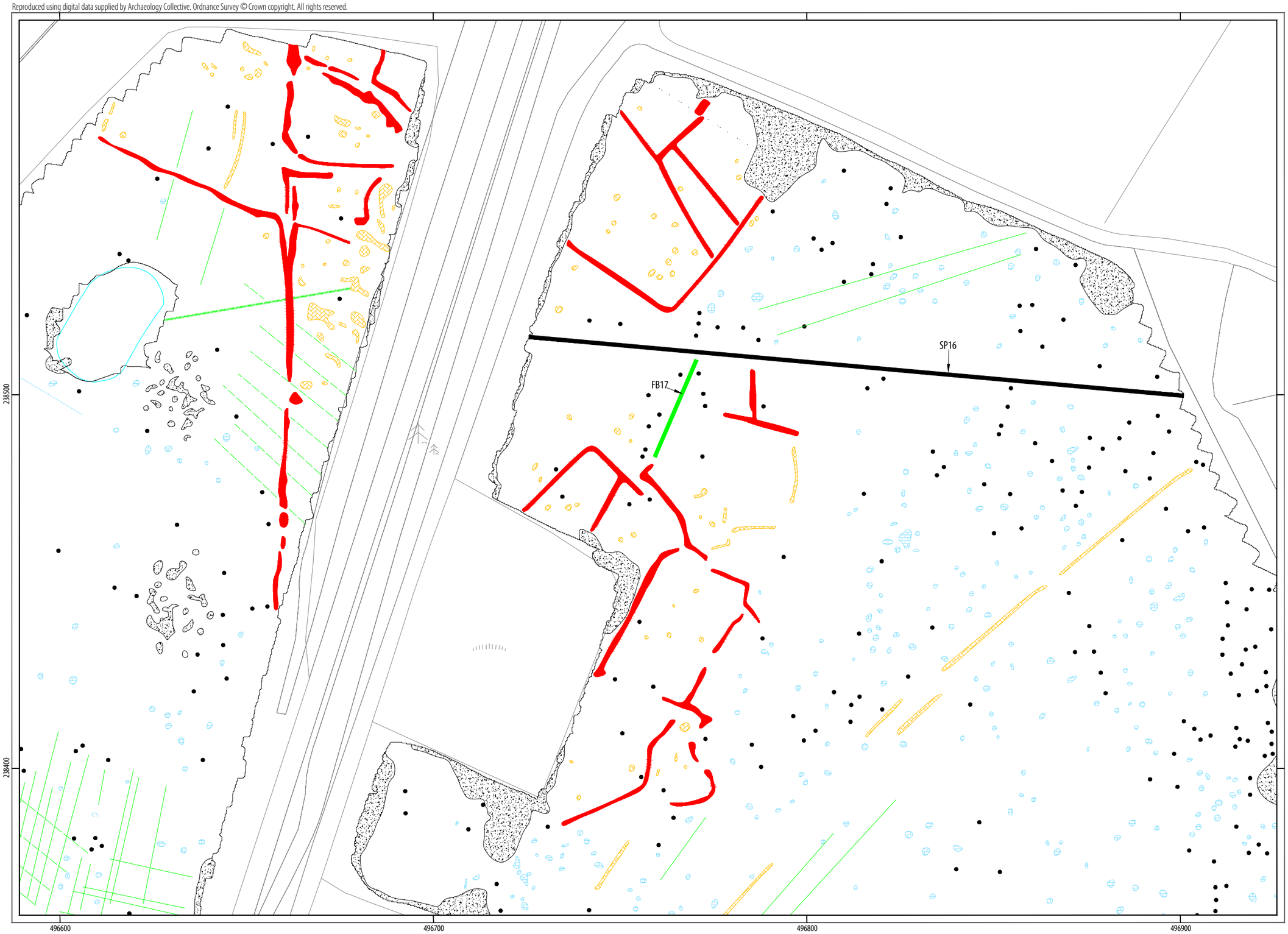
ILLUS 110 XY trace plot of minimally processed magnetometer data; AAA12



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
dipolar linear	service pipe
linear trend	ridge and furrow
linear trend	field drain
linear trend	agricultural
linear	former field boundary
magnetic enhancement	geology
linear	geological variation
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

ABBREVIATIONS

FB former boundary

SP service pipe

N

0 25m

scale 1:1,000 @ A3

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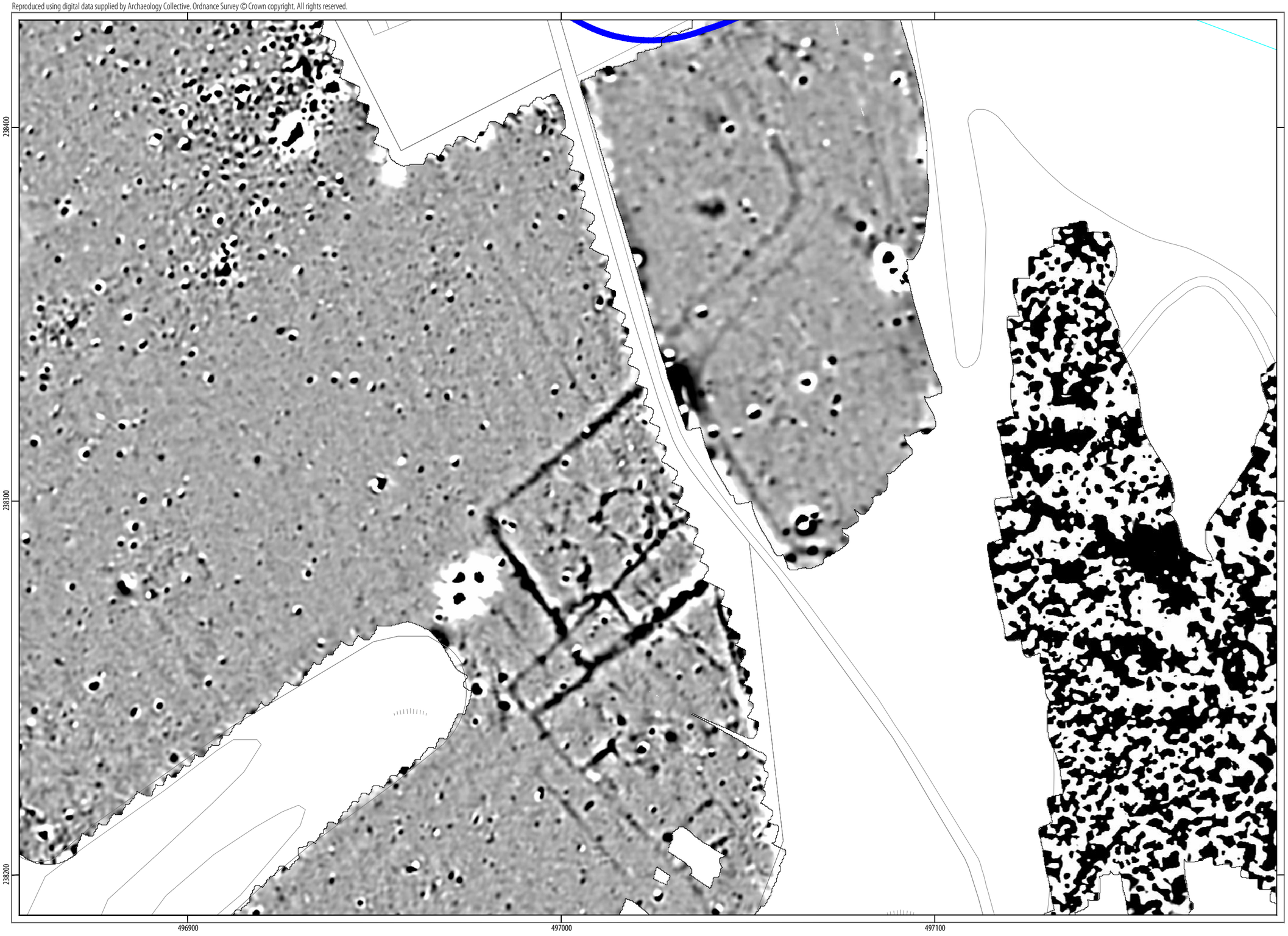
ILLUS 111 Interpretation of magnetometer data; AAA12



-1.0 nT 2.0

N

0 25m

scale 1:1,000 @ A3

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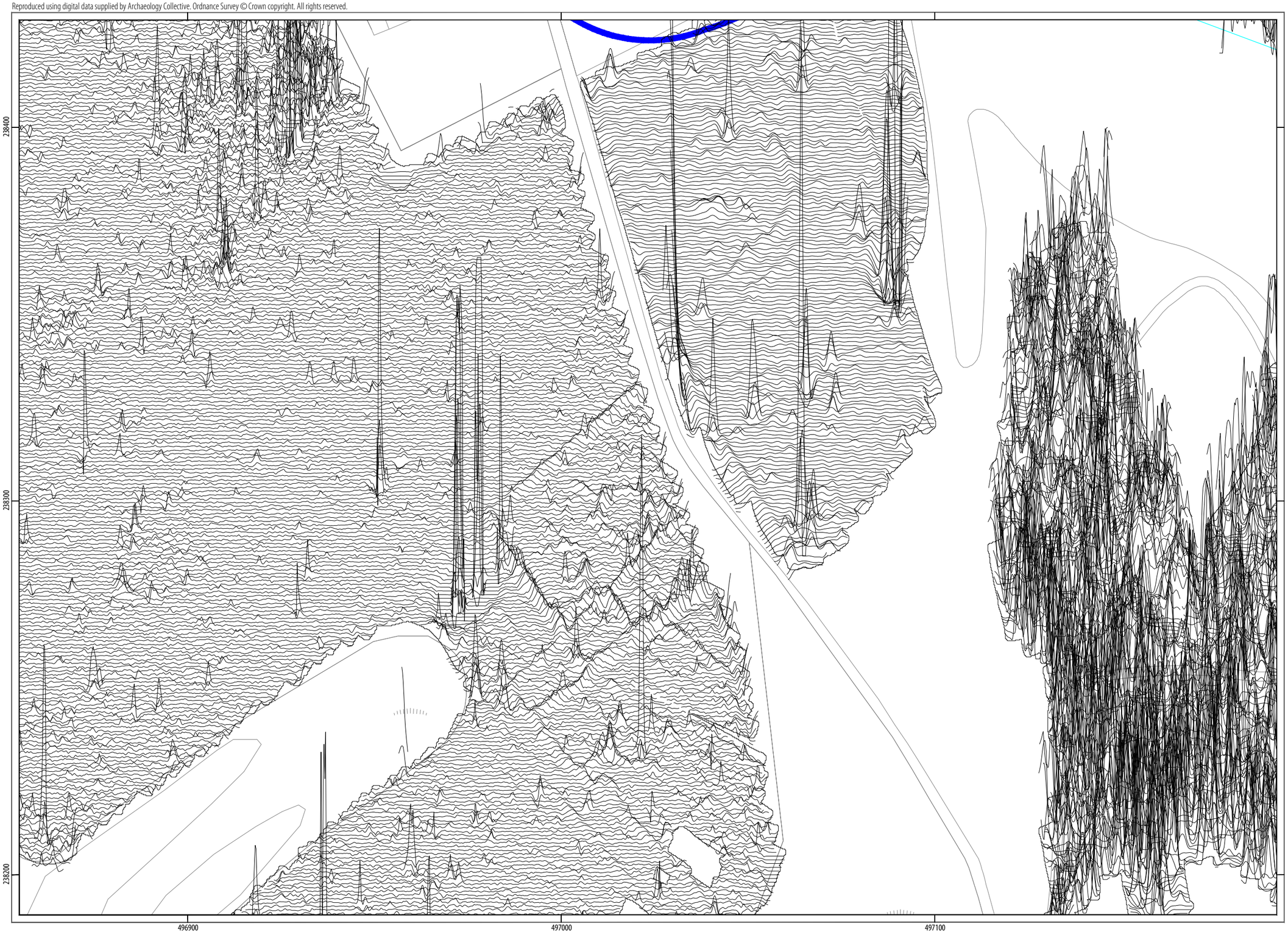
ILLUS 112 Processed greyscale magnetometer data; AAA13



16.0nT/cm

N

0 25m

scale 1:1,000 @ A3

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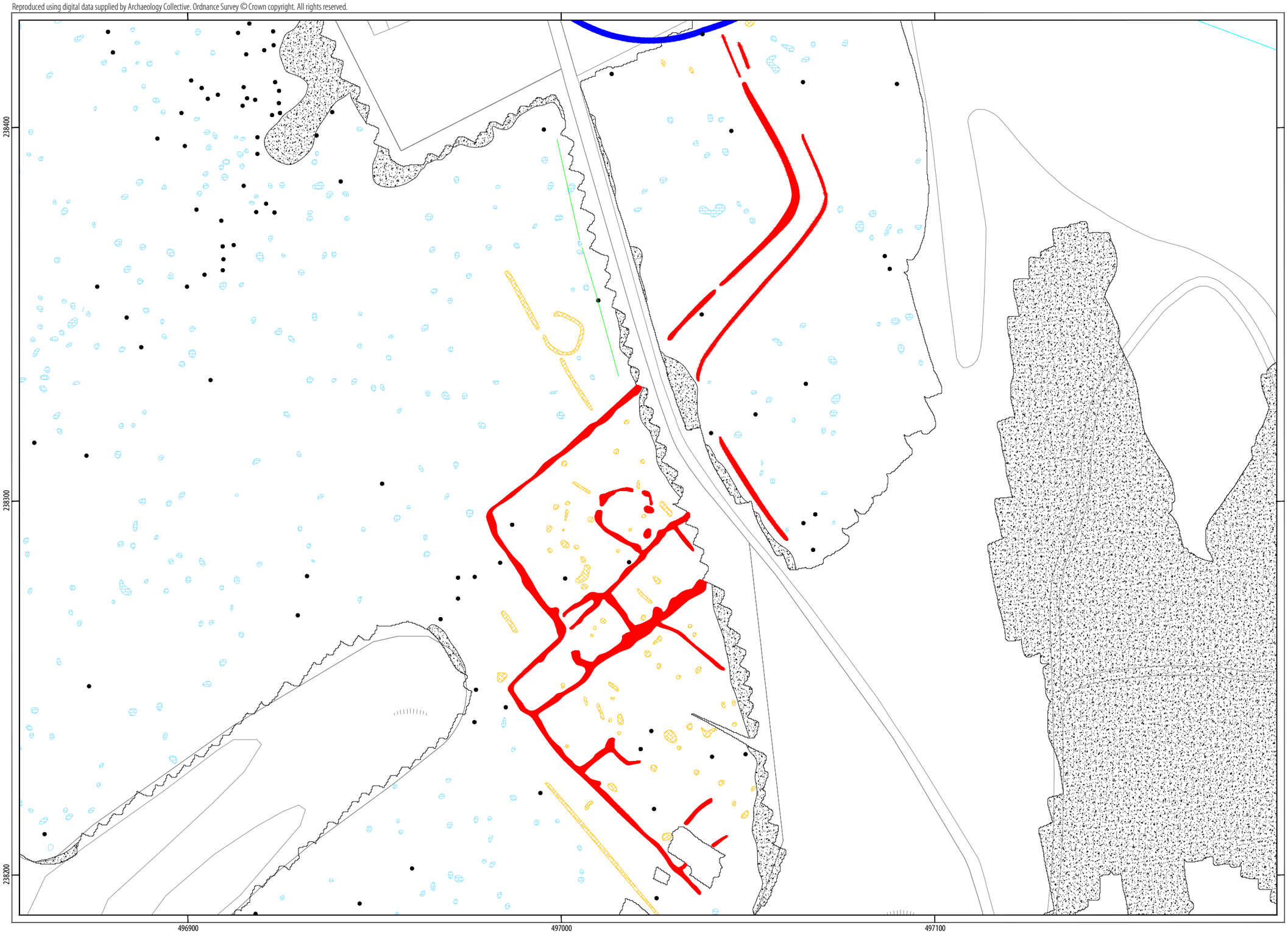
ILLUS 113 XY trace plot of minimally processed magnetometer data; AAA13



TYPE OF ANOMALY	INTERPRETATION
dipolar isolated	ferrous material
magnetic disturbance	ferrous material
linear trend	agricultural
magnetic enhancement	geology
magnetic enhancement	archaeology?
magnetic enhancement	archaeology

N

0 25m

scale 1:1,000 @ A3

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ILLUS 114 Interpretation of magnetometer data; AAA13

APPENDIX 1 MAGNETOMETER SURVEY

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 haematite. 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 so that by measuring the magnetic susceptibility of the topsoil, areas where human occupation or settlement has occurred can be identified by virtue 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. This effect can lead to the detection of features such as hearths, kilns or areas of burning.

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 (sometimes only visible on an XY trace plot) 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.

APPENDIX 2 SURVEY LOCATION INFORMATION

An initial survey base station was established using a Trimble VRS differential Global Positioning System (dGPS). The magnetometer data was georeferenced using a Trimble RTK differential Global Positioning System (Trimble R8s model).

Temporary sight markers were laid out using a Trimble VRS differential Global Positioning System (Trimble R8s model) to guide the operator and ensure full coverage. The accuracy of this dGPS equipment is better than 0.01m.

The survey data were then super-imposed onto a base map provided by the client to produce the displayed block locations. However, it should be noted that Ordnance Survey positional accuracy for digital map data has an error of 0.5m for urban and floodplain areas, 1.0m for rural areas and 2.5m for mountain and moorland areas. This potential error must be considered if coordinates are measured off hard copies of the mapping rather than using the digital coordinates.

Headland Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

APPENDIX 3 GEOPHYSICAL SURVEY ARCHIVE

The geophysical archive comprises an archive disk containing the raw data in XYZ format, a raster image of each greyscale plot with associate world file, and a PDF of the report.

The project will be archived in-house in accordance with recent good practice guidelines (http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_3). The data will be stored in an indexed archive and migrated to new formats when necessary.

APPENDIX 4 DATA PROCESSING

The gradiometer data has been presented in this report in processed greyscale and minimally processed XY trace plot format.

Data collected using RTK GPS-based methods cannot be produced without minimal processing of the data. The minimally processed data has been interpolated to project the data onto a regular grid and de-striped to correct for slight variations in instrument calibration drift and any other artificial data.

A high pass filter has been applied to the greyscale plots to remove low frequency anomalies (relating to survey tracks and modern agricultural features) in order to maximise the clarity and interpretability of the archaeological anomalies.

The data has also been clipped to remove extreme values and to improve data contrast

APPENDIX 5 OASIS DATA COLLECTION FORM: ENGLAND

OASIS ID: headland5–288799

PROJECT DETAILS	
PROJECT NAME	Marston Valley, Bedforshire
SHORT DESCRIPTION OF THE PROJECT	The survey has successfully evaluated the possible application site and significantly enhanced the archaeological record by identifying thirteen distinct areas of archaeological activity including two moated sites, and up to ten settlement sites, the largest of which covers 24 hectares and includes roadside settlement, ditched enclosures and several outlying roundhouses. Ten of these sites were previously unrecorded, or were only suggested by find spots. These areas are assessed as of high archaeological potential. Anomalies locating a post-medieval isolation hospital to the west of Lidlington are also ascribed high archaeological potential, as are two curvilinear anomalies locating historic parish boundaries which are thought to be medieval, or earlier, in origin. At Sheeptick End a broad area of magnetic disturbance may locate the 'Cheife Lodge' to Brogborough deerpark which was documented in the seventeenth century. This is ascribed a moderate archaeological potential as are numerous isolated anomalies suggestive of pits and ditches, but forming no clear pattern, which have been identified at several locations across the site. Alluvial and colluvial superficial deposits across the lower-lying northern half of the site may mask the response from archaeological features, if present. For this reason, the archaeological potential of the site may be greater than indicated by the survey. However, there are still large parts of the site where no anomalies of archaeological potential have been identified and based on the results of the survey, the archaeological potential across these areas is considered to be moderate to low.
PROJECT DATES	Start: 17–01–2017 End: 26–04–2017
PREVIOUS/FUTURE WORK	Not known / Not known
ANY ASSOCIATED PROJECT REFERENCE CODES	MVBB-01 - Contracting Unit No.
TYPE OF PROJECT	Field evaluation
SITE STATUS	None
CURRENT LAND USE	Cultivated Land 4 - Character Undetermined
CURRENT LAND USE	Grassland Heathland 5 - Character undetermined
MONUMENT TYPE	N/A None
MONUMENT TYPE	N/A None
SIGNIFICANT FINDS	N/A None
SIGNIFICANT FINDS	N/A None
METHODS & TECHNIQUES	"Geophysical Survey"
DEVELOPMENT TYPE	Housing estate
PROMPT	National Planning Policy Framework - NPPF
POSITION IN THE PLANNING PROCESS	Pre-application
SOLID GEOLOGY (OTHER)	Peterbororugh Mudstone; Stewartby Member; Weymouth Member; Oxford Clay Formation
DRIFT GEOLOGY	ALLUVIUM
DRIFT GEOLOGY (OTHER)	Oadby Member Diamicton; Head
TECHNIQUES	Magnetometry

PROJECT LOCATION	
COUNTRY	England
SITE LOCATION	BEDFORDSHIRE MID BEDFORDSHIRE LIDLINGTON Marston Valley
STUDY AREA	360 Hectares
SITE COORDINATES	SP 9854 3953 52.044969835009 -0.5629999219838 52 02 41 N 000 33 46 W Point

PROJECT CREATORS	
NAME OF ORGANISATION	Headland Archaeology
PROJECT BRIEF ORIGINATOR	Archaeology Collective
PROJECT DESIGN ORIGINATOR	Headland Archaeology
PROJECT DIRECTOR/MANAGER	Webb, A.
PROJECT SUPERVISOR	Harrison, D
TYPE OF SPONSOR/FUNDING BODY	Developer

PROJECT ARCHIVES	
PHYSICAL ARCHIVE EXISTS?	No
DIGITAL ARCHIVE RECIPIENT	In house
DIGITAL CONTENTS	"Survey"
DIGITAL MEDIA AVAILABLE	"Geophysics"
PAPER ARCHIVE EXISTS?	No

PROJECT BIBLIOGRAPHY 1	
PUBLICATION TYPE	Grey literature (unpublished document/manuscript)
TITLE	Marston Valley, Bedfordshire; Geophysical Survey
AUTHOR(S)/EDITOR(S)	Harrison, D.
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ENTERED BY	David Harrison (david.harrison@headlandarchaeology.com)
ENTERED ON	28 June 2017

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