Dean Moor
Solar Farm

Environmental Statement: Appendix 6.2 – Geophysical Survey Report

on behalf of **FVS Dean Moor Limited**

March 2025
Prepared by: Stantec UK Ltd
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DEAN MOOR SOLAR FARM
ENVIRONMENTAL STATEMENT
APPENDIX 6.2 – GEOPHYSICAL SURVEY REPORT
PLANNING INSPECTORATE REFERENCE EN010155
PREPARED ON BEHALF OF FVS DEAN MOOR LIMITED

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, Regulation 5(2)(a)

Project Ref:	**EN010155/ES/Appendix 6.2: Geophysical Report**
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Contents

Appendices

1 Introduction

1.1 Project Background

1.1.1 This Geophysical Survey Report has been produced for FVS Dean Moor Limited (the 'Applicant') to support the DCO application for the Dean Moor Solar Farm ('the Proposed Development') on approximately 276.5ha of land located between the villages of Gilgarran and Branthwaite in West Cumbria (the 'Site'), which is situated within the administrative area of Cumberland Council ('the Council').

1.1.2 Headland Archaeology (UK) Ltd was commissioned by Stantec (the Consultant) on behalf of the Applicant to undertake a geophysical (magnetometer) survey on a single parcel of land approximately 206ha in size at Dean Moor, located to the east and southeast of Lillyhall, between the settlements of Gilgarran and Branthwaite Edge, Cumbria (Illus 1). Investigations are currently being undertaken to determine the suitability of the land for development. This geophysical survey report will be submitted as part of the planning application for the Proposed Development. The results may also inform future archaeological strategy, if required.

1.1.3 The scheme of work was undertaken in accordance with the requirements of the National Planning Policy Framework (DLUHC 2023) and with the Written Scheme of Investigation for Geophysical Survey (WSI) (Headland Archaeology 2023).

1.1.4 The WSI was produced to the standards laid down in the European Archaeological Council's guideline publication, EAC Guidelines for the Use of Geophysics in Archaeology (Europae Archaeologia Consilium 2016) and the Chartered Institute for Archaeologists' (CIfA) Standard and Guidance for Archaeological Geophysical Survey (CifA 2014b). The survey was also carried out in line with the same best practice guidelines.

1.1.5 The survey was carried out between July 31 and August 24 2023.

1.2 Site Location, Topography, and Land Use

1.2.1 The geophysical survey area (GSA), covering approximately 206ha, is centred at NGR NY 304742 522897 and comprises a single sub-square parcel of land at Dean Moor, located between Gilgarran in the west and Branthwaite Edge in the east. The GSA is bounded by unnamed roads to the north, south and east and woodland (Lime Kiln Wood and Saw Mill Quarry Wood) and agricultural land to the west. A stream (Thief Gill) and narrow valley with steep sides runs through the GSA.

1.2.2 All fields within the GSA were pasture at the time of survey (Illus 2, Illus 3 and Illus 4), with broad areas, notably in the south, unsuitable for survey due to the very steep valley sides (Illus 5).

1.2.3 The GSA contains significant topographic variations but generally slopes up to the south, from a low point of approximately 114m Above Ordnance Data (AOD) at the north-west corner to approximately 200m AOD at the southern boundary of the Site. In addition to the general trend of higher ground to the south there are also significant undulations and slopes within individual fields across the GSA in addition to steep drops and valleys around Thief Gill.

Geology and Soils

1.2.4 The underlying geology across the GSA consists largely of mudstone, siltstone and sandstone of different formations all formed during the Carboniferous period. Sandstone of the Whitehaven Sandstone Formation underlies an area at the southern boundary and south-west corner of the GSA. The south-eastern and north-eastern corners of the GSA are underlain by mudstone, siltstone and sandstone of the Pennine Lower Coal Measures Formation and central areas of the Pennine Middle Coal Measures Formation. The bedrock geology at the eastern boundary is recorded as mudstone, siltstone, and sandstone of the Stainmore Formation.

1.2.5 Superficial deposits overlay large parts of the GSA. Till (diamicton), is the most prevalent and overlies central, south-eastern and the northernmost

parts of the GSA. A spread of peat is recorded towards the north-west boundary and two patches of alluvium in the location of a watercourse called Thief Gill at the centre and north-eastern corner of the Site. A sinuous spread of alluvial deposits and peat follows the line of a drain/watercourse located between Thief Gill and Distington Beck. No superficial deposits are recorded across the southern part of the GSA (NERC 2023).

1.2.6 The soils overlying the majority of the GSA are classified in Soilscape Association 17 as slowly permeable seasonally wet acid loamy and clayey soils. The soils over the south-western corner of the GSA are classified in Soilscape Association 6 as freely draining slightly acid loamy soils (Cranfield University 2023).

2 Archaeological Background

2.1.1 The following archaeological background is derived from an online search of the Westmorland and Furness Council online Historic Environment Record (HER). This identified four heritage assets within the GSA and a scheduled ancient monument at the western boundary of the GSA (Illus 6).

2.1.2 Assets identified within the GSA comprise unclassified cropmarks (HER 16629) and cropmarks of ridge and furrow (HER 16630) located towards the centre and southern boundary of the GSA respectively, Thief Gill Quarry (11699), a post- medieval quarry recorded in the location of Thief Gill watercourse close to the southern boundary of the Site, and also Dean Moor mine workings (HER11805), a post-medieval mine located in the south-east of the GSA.

2.1.3 Dean Moor Stone Circle, a scheduled ancient monument (SMR 3048, List Entry 1014588) lies at the western boundary of the GSA. The monument includes a large irregular stone circle, within which there is a round cairn, which is situated close to the highest point of the moor. The circle includes 15 sandstone boulders, several of which have fallen and are partly or totally buried. The presence of the stone circle and cairn likely attest to prehistoric activity in the wider landscape and raises the archaeological potential of this part of the Site and other nearby high points within the GSA.

2.1.4 Several further assets lie just outside of the GSA including Rigg House Earthworks (HER16634), comprising building foundations, a mound and ridge and furrow of uncertain date, located at Rigg House to the north-east. A post-medieval sawmill (HER4603) is located on the north-western edge of the GSA.

3 Aims, Methodology, and Presentation

3.1 Aims and Objectives

3.1.1 The principal aim of the geophysical survey was to gather information to establish the presence/absence, character, and extent of any archaeological remains within the GSA. This will enable an assessment to be made of the impact of the Proposed Development on any sub-surface archaeological remains if present, and thereby inform any further investigation strategies, as appropriate.

3.1.2 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 determine the likely presence/absence and extent of any buried archaeological features; and
- To prepare a report summarising the results of the survey.

3.2 Methodology

3.2.1 Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried archaeological remains. A feature such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations detailed plans of sites can be obtained, as buried features often produce reasonably characteristic anomaly shapes and strengths (Gaffney & Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

3.2.2 Magnetometry is the most widely used geophysical survey technique in archaeology as it can quickly evaluate large areas and, under favourable conditions, identify a wide range of archaeological features including infilled cut features such as large pits, gullies and ditches, hearths, and areas of burning, and kilns and brick structures. It is therefore good at locating settlements of all periods, prehistoric field systems and enclosures, and areas of industrial or modern activity, amongst others. It is

less successful in identifying smaller features such as post-holes and small pits (except when using a non- standard sampling interval), unenclosed (prehistoric) settlement sites and graves/burial grounds. However, magnetometry is by far the single most useful technique and was assessed as the best non- intrusive evaluation tool for this site.

3.2.3 The survey was undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10-15cm sample interval) on roaming traverses (swaths) 4m apart (Illus 6). These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R12 Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point.

3.2.4 MLGrad601 and MultiGrad601 (Geomar Software Inc.) software was used to collect and export the data. Anomaly GeoSurvey v1.12.3 (Lichenstone Geoscience) and QGIS v.3.28.5 software was used to process and present the data respectively.

3.3 Data Presentation and Technical Detail

3.3.1 A general site location plan is shown in Illus 1 at a scale of 1:20,000. Illus 2 to Illus 5 inclusive are site condition photographs. Illus 6 shows the GPS swaths, and the location, direction of the Site condition photographs and Historic Environment Record assets, at 1:15,000. Illus 7 and Illus 8 show overviews of the processed magnetometer data and interpretation respectively, at a scale of 1:10,000. Fully processed (greyscale) data, minimally processed data (XY trace plot) data and interpretative plans are presented by Sector, at 1:2,500, in Illus 9 to Illus 32 inclusive.

3.3.2 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.

3.3.3 The survey methodology, report and any recommendations comply with the Written Scheme of Investigation (Headland Archaeology 2023), guidelines outlined by Europae Archaeologiae Consilium (EAC 2016) and by the Chartered Institute for Archaeologists (CIfA 2014b). All illustrations from Ordnance Survey (OS) mapping are reproduced with the permission of the controller of His Majesty's Stationery Office (© Crown Copyright).

3.3.4 The Illustrations in this report have been produced following analysis of the data in 'raw' (minimally processed) and processed formats and over a range of different display levels. All illustrations are presented to display and interpret the data to best effect. The interpretations are based on the experience and knowledge of Headland management and reporting staff.

4 Results and Discussion

4.1 Site Conditions

4.1.1 Magnetometer survey is generally recommended over any sedimentary bedrock but the 'average response' on sandstones, siltstones and mudstones is variable, with results ranging from good to poor (English Heritage 2008; Table 4). Nevertheless, magnetometry was still the most appropriate non-intrusive geophysical technique for evaluating the GSA, taking account of the limitations noted in Section 3.2 and above.

4.1.2 Surface conditions were generally good (Illus 2 to Illus 4 inclusive), and data quality was also good with only minimal post-processing required. No problems were encountered during the fieldwork although steep undulations in the topography, notably in the south of the GSA, meant that a broad area was unsuitable for survey (Illus 5).

4.1.3 The magnetic background varies greatly within the GSA, some of which coincide with the changes in superficial geologies, while others will be caused by changes in topography or water movement.

4.1.4 Against this magnetic background, anomalies of various origin have been recorded (Illus 8). The fact that anomalies were recorded confirms that there was sufficient magnetic contrast, for the detection of potentially archaeological features, notwithstanding the limitations of magnetometer survey to identify the types, sizes, and period of archaeological features as described in Section 3.2 and keeping in mind the variable response to magnetometer survey on siltstone, sandstone and mudstone, the prevailing geologies. The results of the survey therefore likely provide a reasonably good indication of the extent of sub-surface archaeological features within the GSA.

4.1.5 The anomalies are discussed below according to their interpreted origin.

4.2 Ferrous and Modern Anomalies

4.2.1 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 introduced into the topsoil during manuring or tipping/infilling.

4.2.2 Bands or small areas of magnetic disturbance recorded along the field edges are likely to be due to the accumulation of ferrous debris around field margins or to ferrous material in the boundary itself. Other areas of magnetic disturbance could also be caused by former areas of mineworking recorded to have been undertaken in the area.

4.2.3 Several linear bands of magnetic disturbance such as those recorded in the south of F8, and the east of F6 locate farm access tracks (Illus 8).

4.2.4 Strong ‘halos’ of magnetic disturbance recorded in F8 and F6 are due to the proximity of electricity pylons. Further areas of strong magnetic disturbance in F14 and F3 are due to the proximity of nearby farm buildings (Illus 8).

4.3 Agricultural Anomalies

4.3.1 Identified within almost every field, the most common agricultural anomaly recorded within the GSA are land drains. These manifest as low magnitude, sometimes dipolar linear features on varying orientations, such as the parallel series recorded in F7, F8, and F9, or those that branch off from a central drain, such as those identified within F16 and F17 (Illus 26 and Illus 32).

4.3.2 One low magnitude linear anomaly identified in the north of F14 (Illus 18 and Illus 23 – FB1) corresponds with a former field boundary recorded on the 1892 25 Inch First Edition Ordnance Survey map.

4.3.3 Elsewhere, closely spaced, low magnitude linear trend anomalies denote the orientation of modern cultivation regimes and are mostly recorded in the east and north-east of the GSA (Illus 8). No evidence of the ridge and furrow cultivation (HER 16630) recorded in the HER has been detected by the survey.

4.4 Anomalies of Geological Origin

4.4.1 The magnetic background varies across the GSA, as a result of the sandstone, mudstone, and siltstone geology, in addition to the overlying superficial deposits, where present. In contrast to this there are several areas where the magnetic background appears more homogenous which to a large degree correlates with the location of mapped peat and alluvium deposits, mainly found in parts of fields F18 and F19, but also F6, F8 and F9. Additional areas of homogenous response throughout the GSA, but specifically F14, F13 and F17 could identify further peat deposits or the natural deposition of material as a result of localised topographic variations. The archaeological potential of these areas is considered low.

4.4.2 Elsewhere, the background manifests as spreads of discrete geological anomalies, with broader zones where these are denser, likely corresponding to changes in depth and composition of the superficial geologies.

4.5 Anomalies of Uncertain Origin

4.5.1 Several anomalies recorded have been interpreted as of uncertain origin on the basis that they cannot be confidentially interpreted in any other category (Illus 8 – U1 to U9). Most are identified as low magnitude, discontinuous linear anomalies which likely derive from agricultural or geological origins. However, some are oblique to extant or buried field boundaries and do not align to cultivation regimes identified by the survey, and thus have the potential to be of possible archaeological interest.

4.5.2 U1, located in the north-east of F10 (Illus 14), presents as a low magnitude, discontinuous circular anomaly, with a large, magnetically enhanced anomaly bisecting its northern edge. This anomaly is

considered most likely to be natural in origin, but its more regular morphology means it stands out from the other natural anomalies within the GSA. As such, an archaeological origin cannot be completely discounted although a more confident interpretation than uncertain cannot be ascribed.

4.6 Anomalies of Possible or Probable Archaeological Origin

4.6.1 No anomalies of possible or probable archaeological origin are identified by the survey.

5 Conclusion

5.1.1 By far the most common anomalies identified within the dataset are due to geological, agricultural, or modern causes. An anomaly locating a single former field boundary has been identified as well as anomalies caused by field drains and modern agricultural regimes. Nine anomalies of uncertain origin have been recorded, although these are considered to most likely be geological in origin. No anomalies of clear archaeological potential have been recorded.

5.1.2 Overall, it is determined that the survey results provide a reliable indication of the archaeological potential of the geophysical survey area (GSA). The archaeological potential is consequently assessed as low.

6 References

Chartered Institute for Archaeologists (CIfA) 2014b Standard and guidance for archaeological geophysical survey (Reading) [redacted] accessed 10 October 2023

Cranfield University 2020 Cranfield Soil and Agrifood Institute Soilscapes http://www.landis.org.uk/soilscapes/ accessed 10 October 2023

English Heritage 2008 Geophysical Survey in Archaeological Field Evaluation

Europae Archaeologiae Consillium (EAC) 2016 EAC Guidelines for the Use of Geophysics in Archaeology: Question to Ask and Points to Consider (Namur, Belgium) [redacted] accessed 10 October 2023

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

Headland Archaeology 2023 Dean Moor, Cumbria Written Scheme of Investigation for Geophysical Survey Unpublished Client Document Ref. DNMR23

Natural Environment Research Council (UKRI) 2021 British Geological Survey [redacted] accessed 10 October 2023

The Department for Levelling Up, Housing and Communities (DLUHC) 2023 The National Planning Policy Framework

https://assets.publishing.service.gov.uk/governmen t/uploads/system/uploads/attachment_data/file/11 82995/NPPF_Sept_23.pdf accessed 10 October 2023

Appendix A Magnetometer Survey

Magnetic Susceptibility and Soil Magnetism

A.1.1 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).

A.1.2 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 the topsoil, subsoil, and rock, 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.

A.1.3 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

A.1.4 In most 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.

A.1.5 Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

A.1.6 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.

A.1.7 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 introduced into the topsoil during 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 and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.
- **Lightning-induced remnant magnetisation (LIRM):** LIRM anomalies are thought to be caused in the near surface soil horizons by the flow of an electrical current associated with lightning strikes. These observed anomalies have a strong bipolar signal which decreases with distance from the spike point and often appear as linear or radial in shape.
- **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 B Survey Location Information

B.1.1 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 R10 model).

B.1.2 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.

B.1.3 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 C Geophysical Survey Archive

C.1.1 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.

C.1.2 The project will be archived in-house in accordance with recent good practice guidelines[1]. The data will be stored in an indexed archive and migrated to new formats when necessary.

[1] Available at: http://guides.archaeologydataservice.ac.uk/g2gp/ Geophysics_3

Appendix D Data Processing

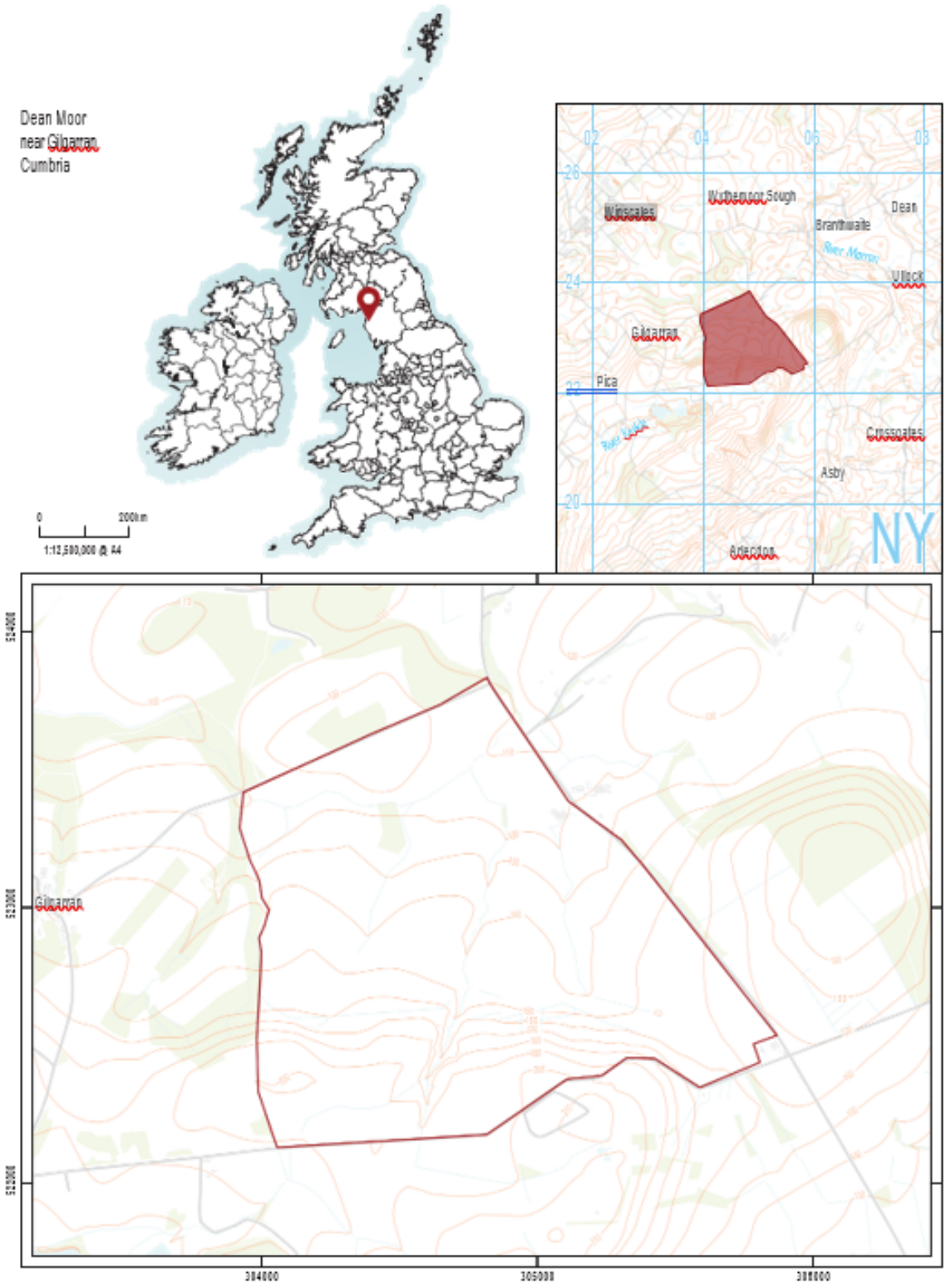
D.1.1 The gradiometer data has been presented in this report in processed greyscale and minimally processed XY trace plot format.

D.1.2 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.

D.1.3 A high pass filter has been applied to the greyscale plots to remove low frequency anomalies (relating to survey tracks and modern agricultural features) to maximise the clarity and interpretability of the archaeological anomalies.

D.1.4 The data has also been clipped to remove extreme values and to improve data contrast.

Appendix E Oasis Archive

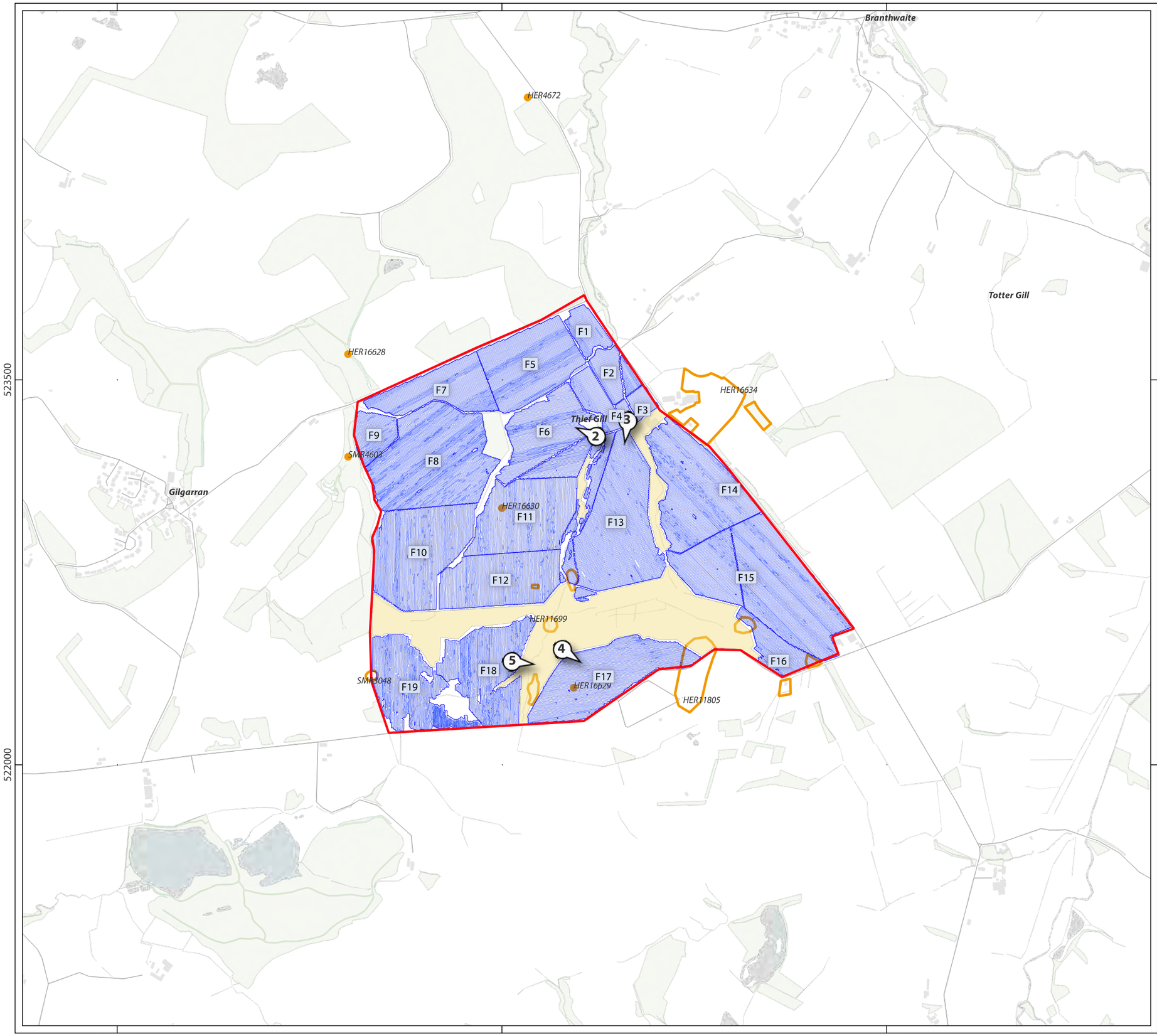


Illus 2 F6, looking north-west

Illus 3 F13, looking south-west

Illus 4 F17, looking south-east

Illus 5 F17, area unsuitable for survey, looking east



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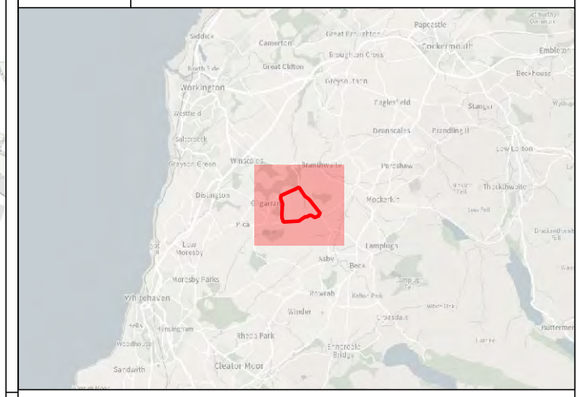


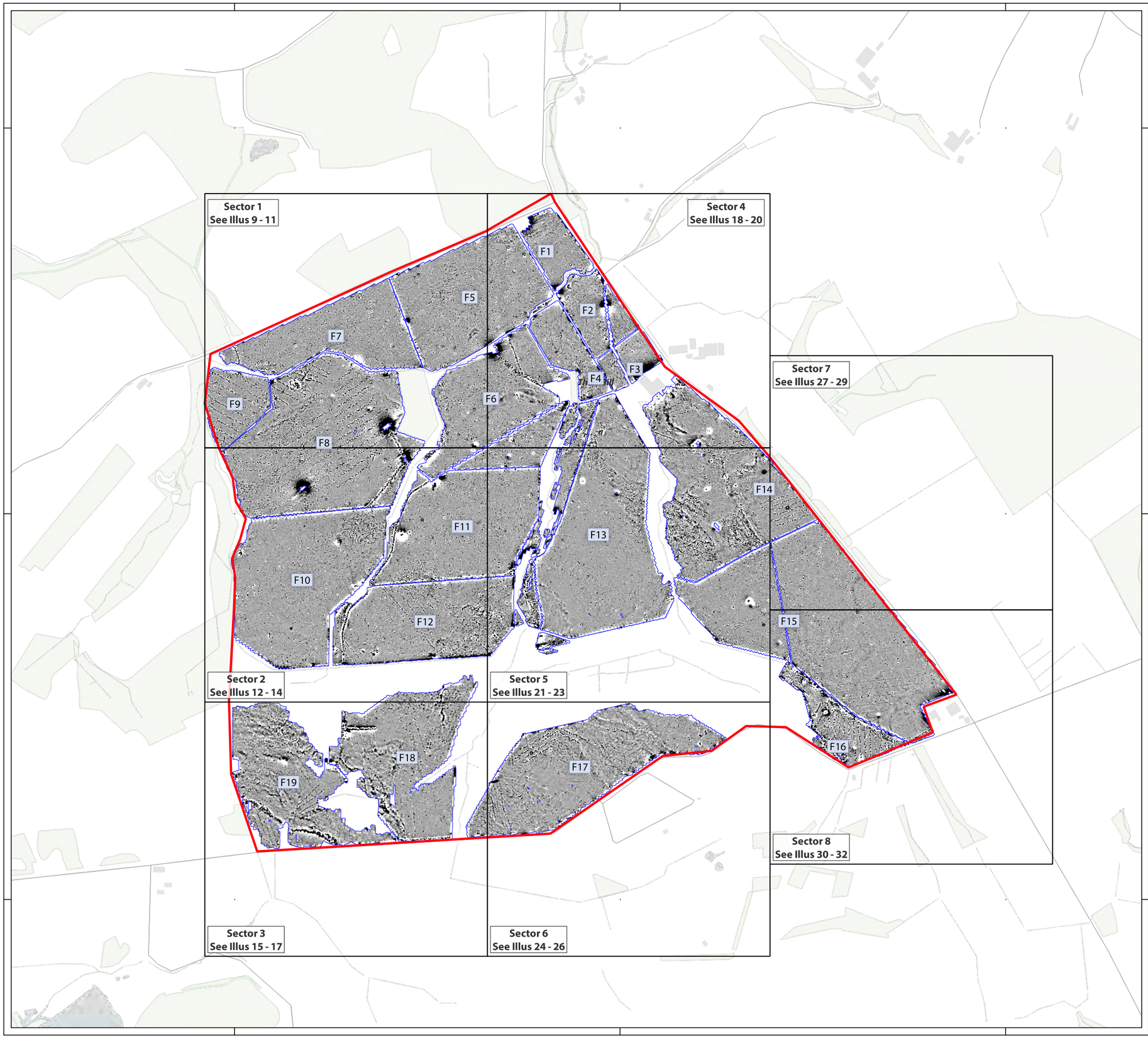
Key

- Geophysical Survey Area
- Survey Extent
- Location and Direction of Illus 02-05
- GPS Swaths
- Unsuitable Survey Area
- Historic Environment Record Asset Line Data
- Historic Environment Record Asset Point Data

0 300 600 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:15,000 @ A3

Illus 06 - Survey location showing GPS swaths and photograph locations



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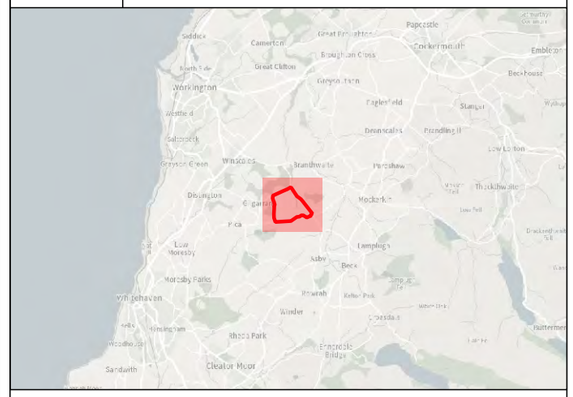


Key

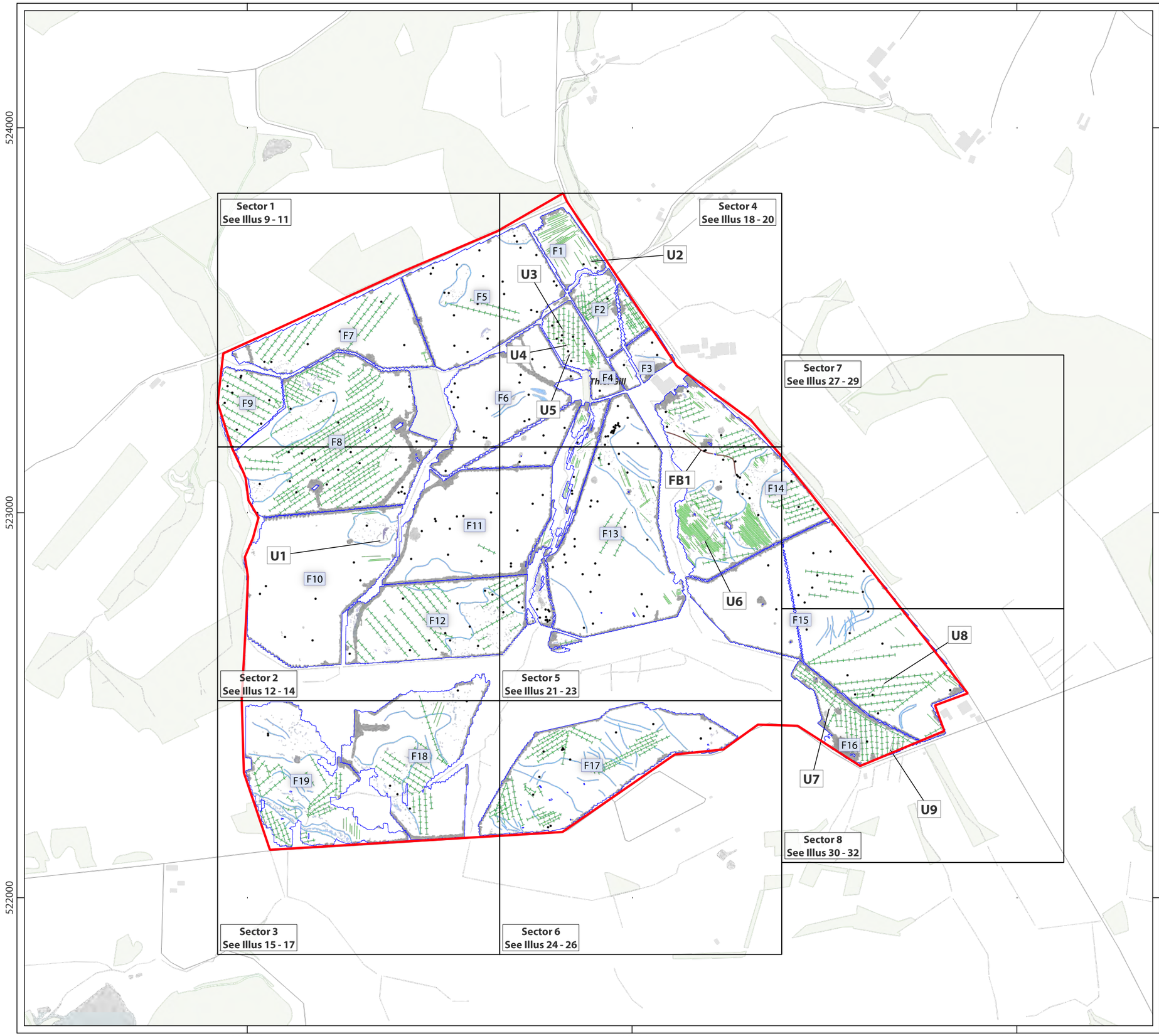
- Geophysical Survey Area
- Survey Extent

+2nT
-1nT

0 200 400 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:10,000 @ A3

Illus 07 - Overall greyscale plot of processed magnetometer data



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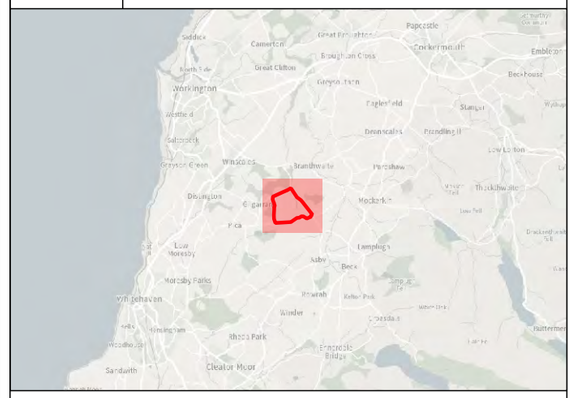


Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Boundary
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Magnetic Disturbance (Below Ground)
- Natural
- Uncertain

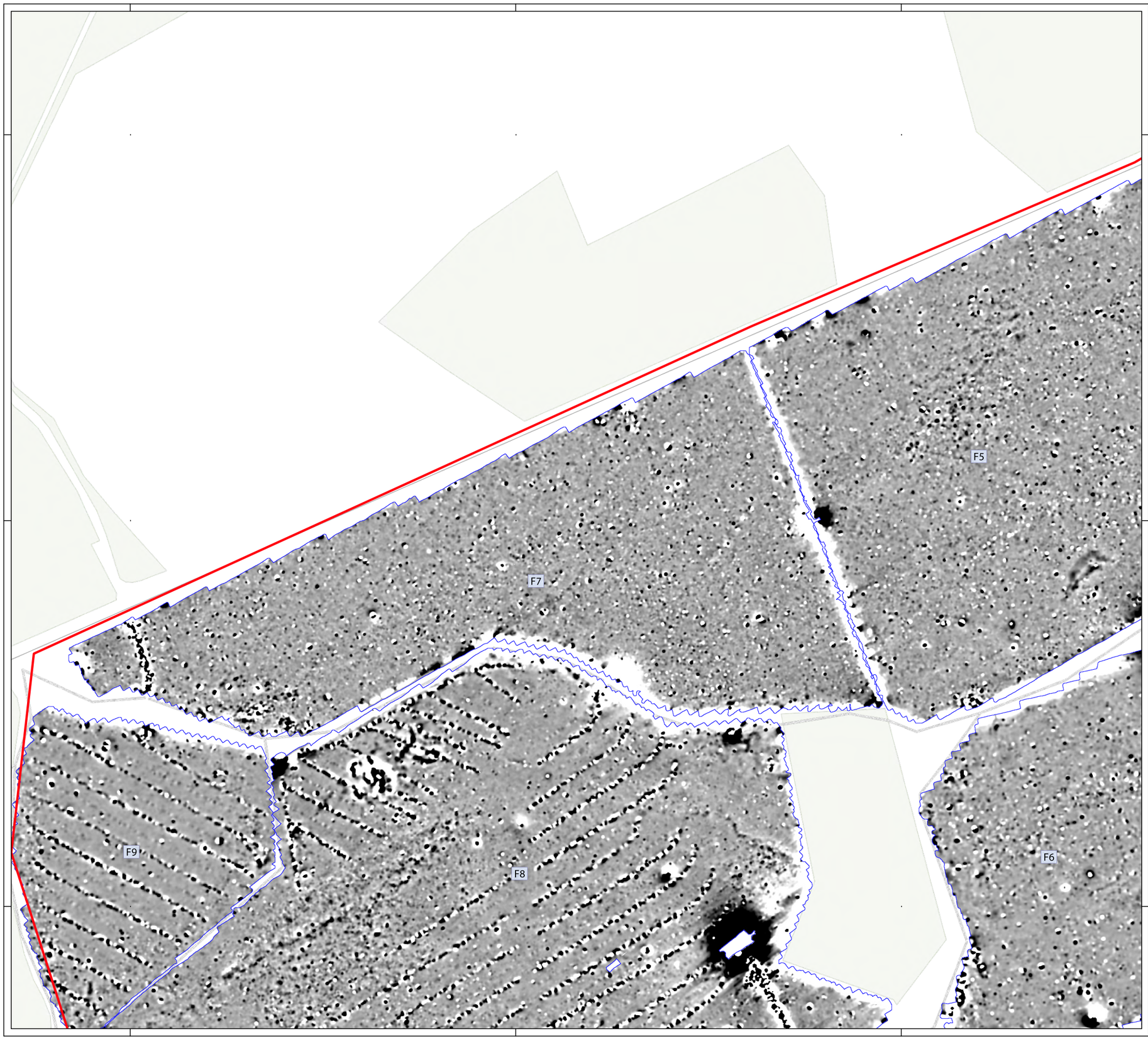
Abbreviations

U	Uncertain
FB	Field Boundary

0 200 400 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:10,000 @ A3

Illus 08 - Overall interpretation of magnetometer data



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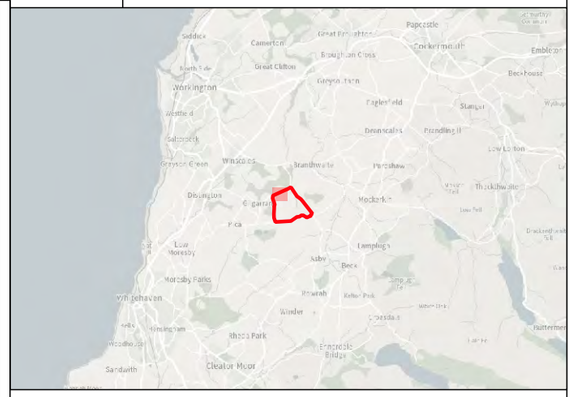


Key

Geophysical Survey Area

Survey Extent

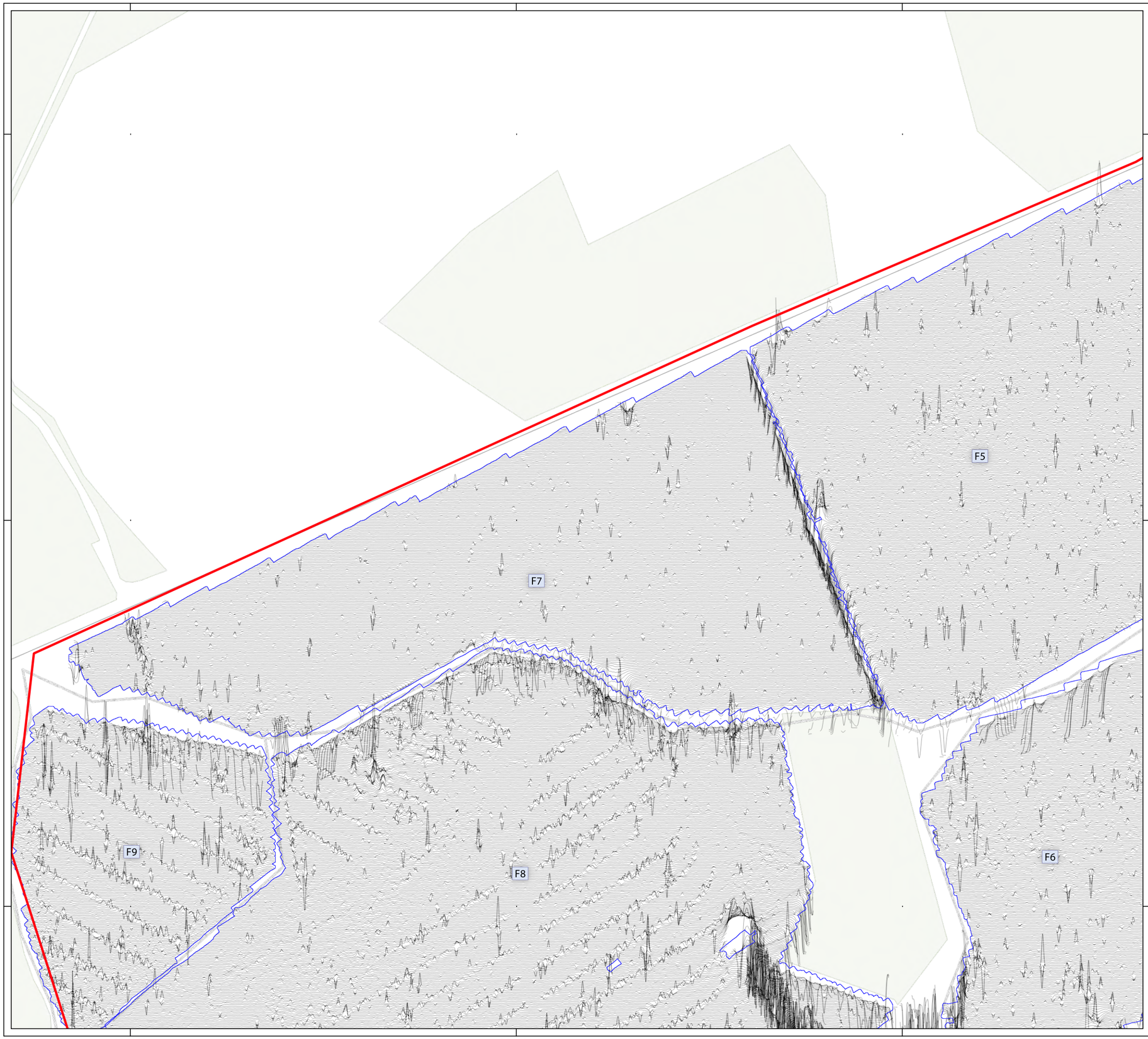
+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 09 Processed greyscale magnetometer data; Sector 1



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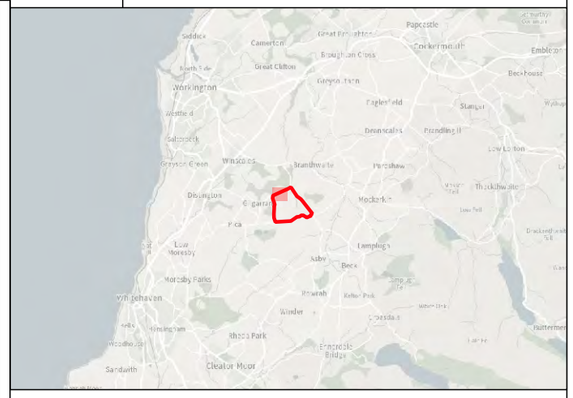


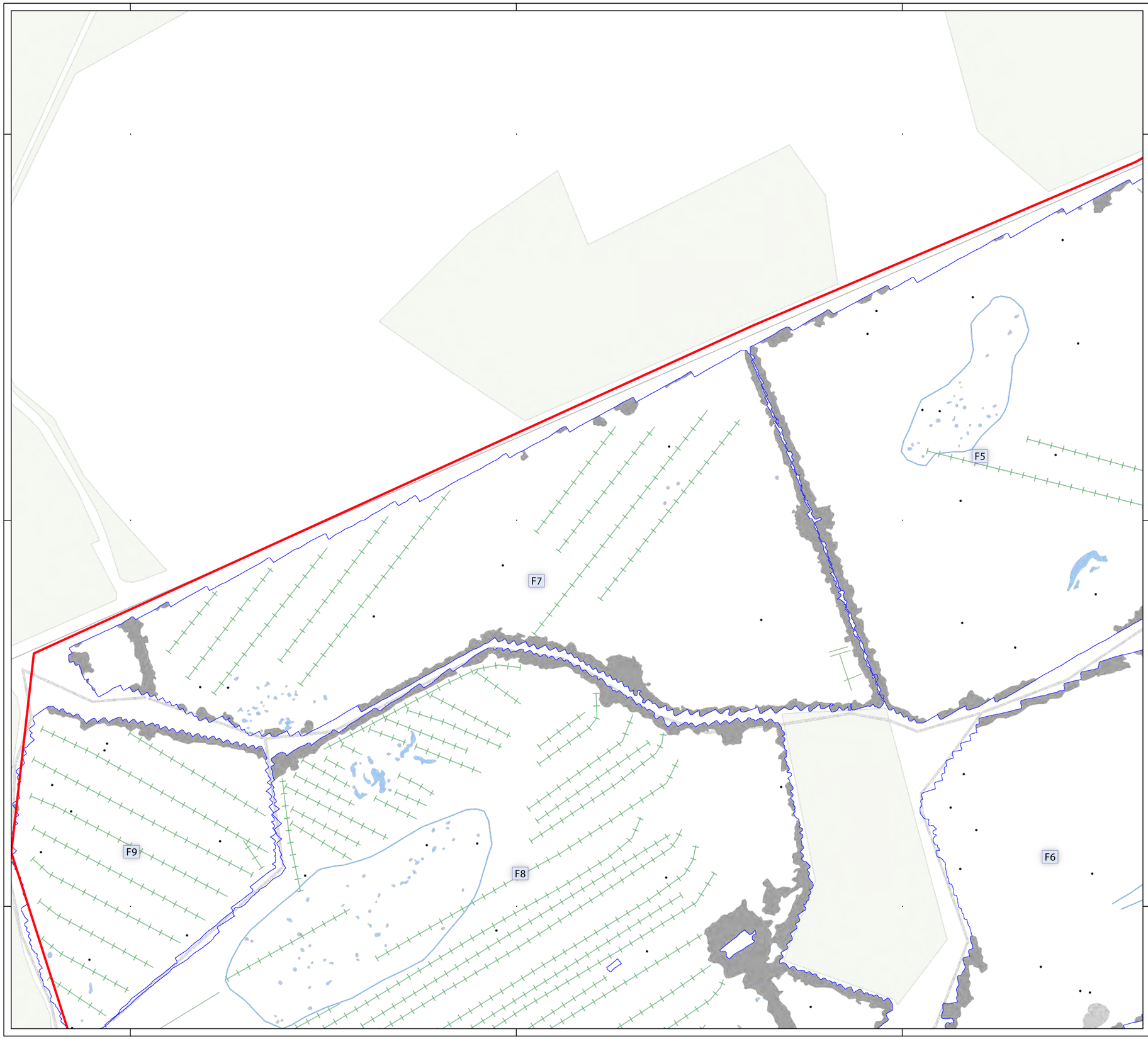
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 10 XY trace plot of minimally processed magnetometer data; Sector 1



N

HEADLAND ARCHAEOLOGY
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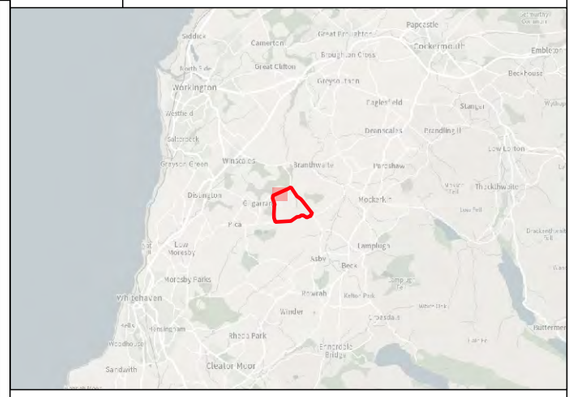


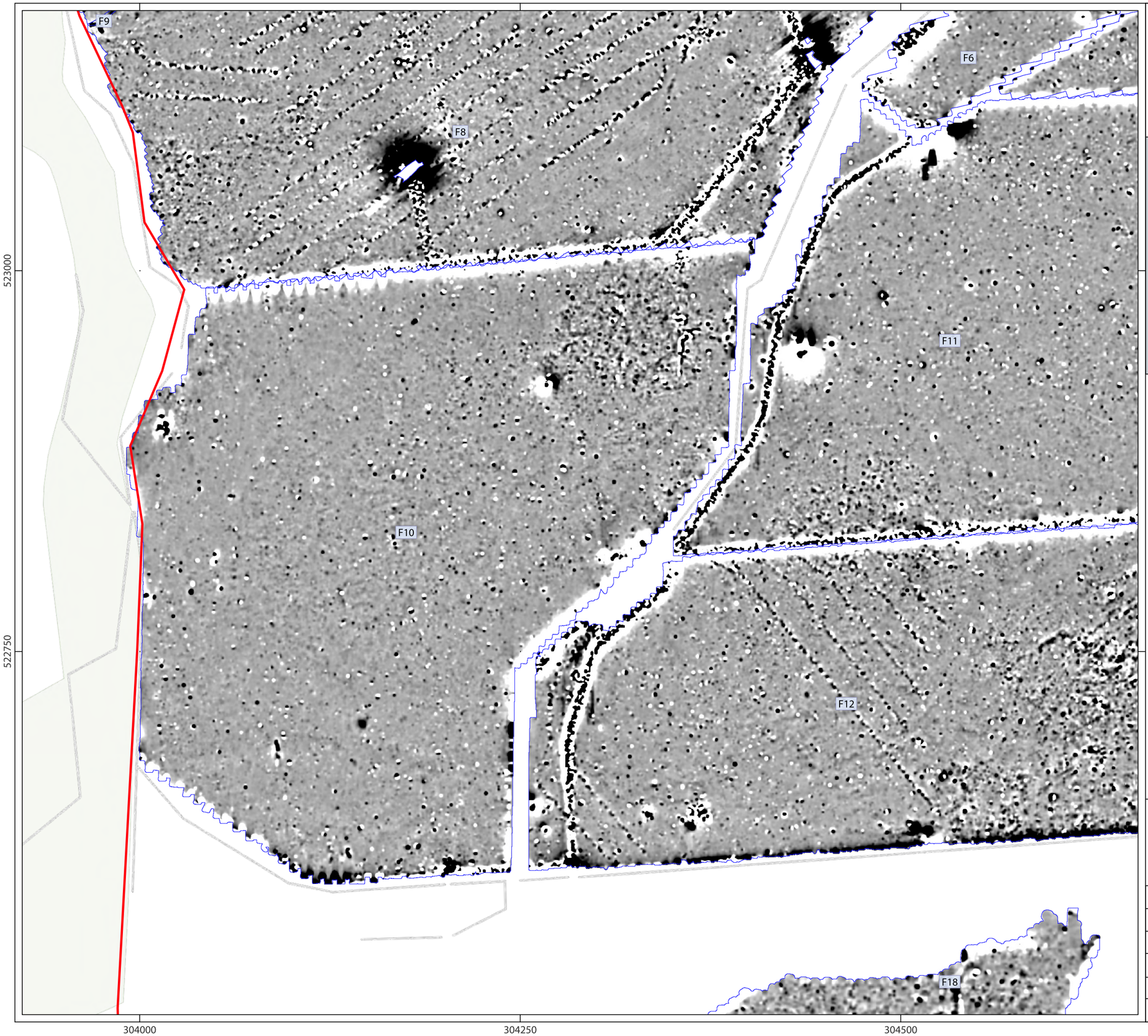
Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Magnetic Disturbance (Below Ground)
- Natural

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 11 Interpretation of magnetometer data; Sector 1



N

HEADLAND ARCHAEOLOGY
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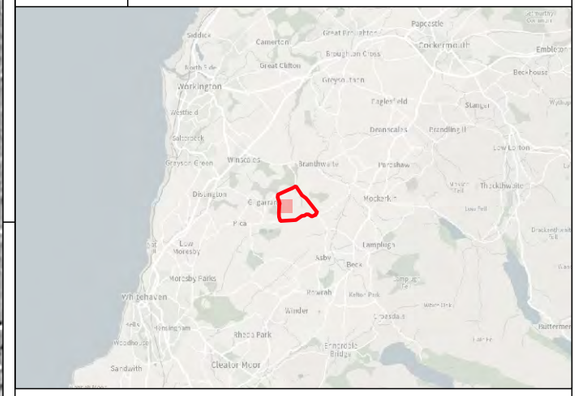

Key

Geophysical Survey Area

Survey Extent

+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 12 Processed greyscale magnetometer data; Sector 2

F9
F8
F6
F11
F10
F12
F18

523000
522750
304000
304250
304500

N

HEADLAND ARCHAEOLOGY
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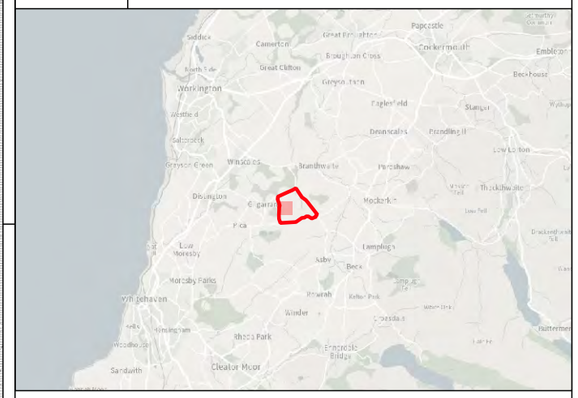


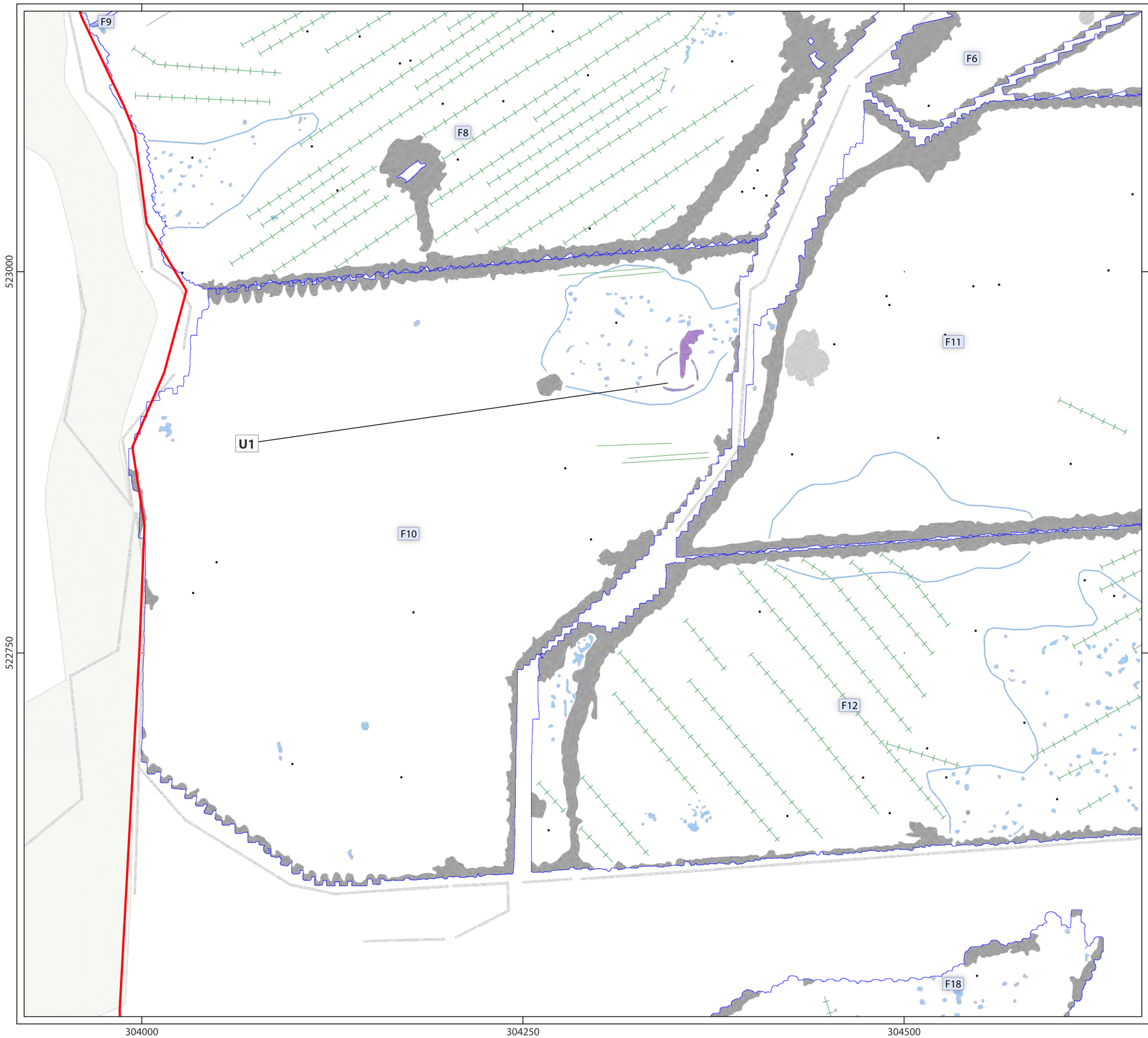
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 13 XY trace plot of minimally processed magnetometer data; Sector 2



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HEADLAND ARCHAEOLOGY
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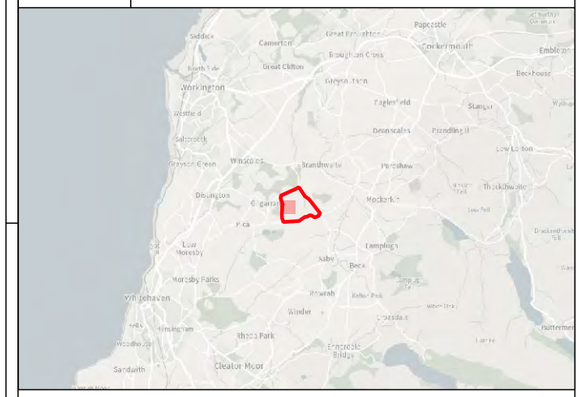


Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Magnetic Disturbance (Below Ground)
- Natural
- Uncertain

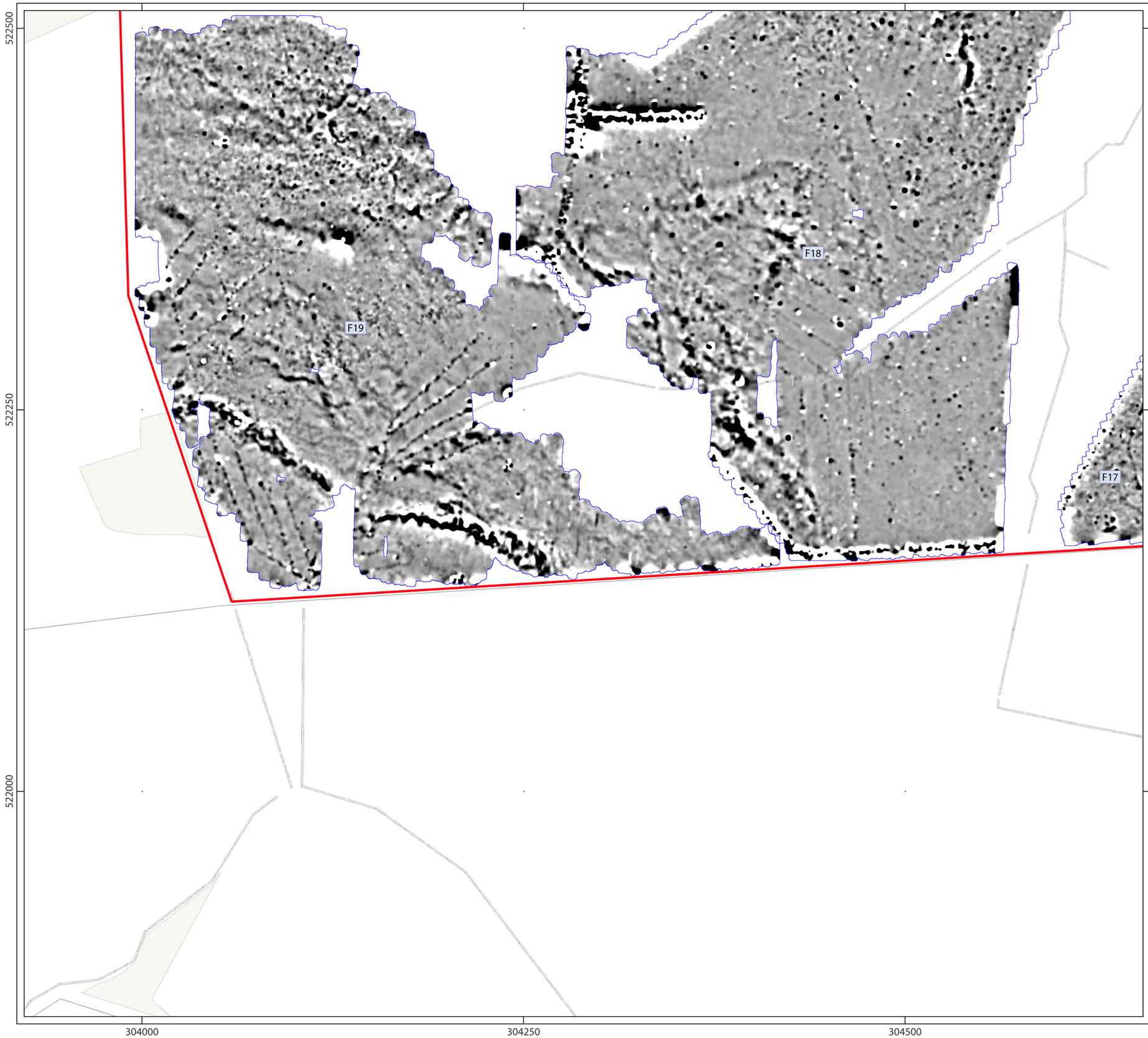
Abbreviations

U Uncertain

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 14 Interpretation of magnetometer data; Sector 2



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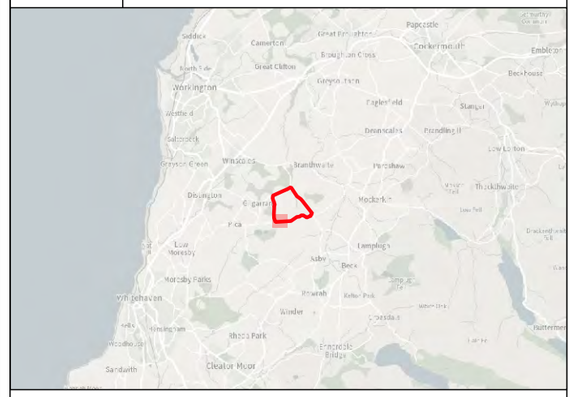
HEADLAND ARCHAEOLOGY
part of the RSK Group



Key

Geophysical Survey Area

Survey Extent

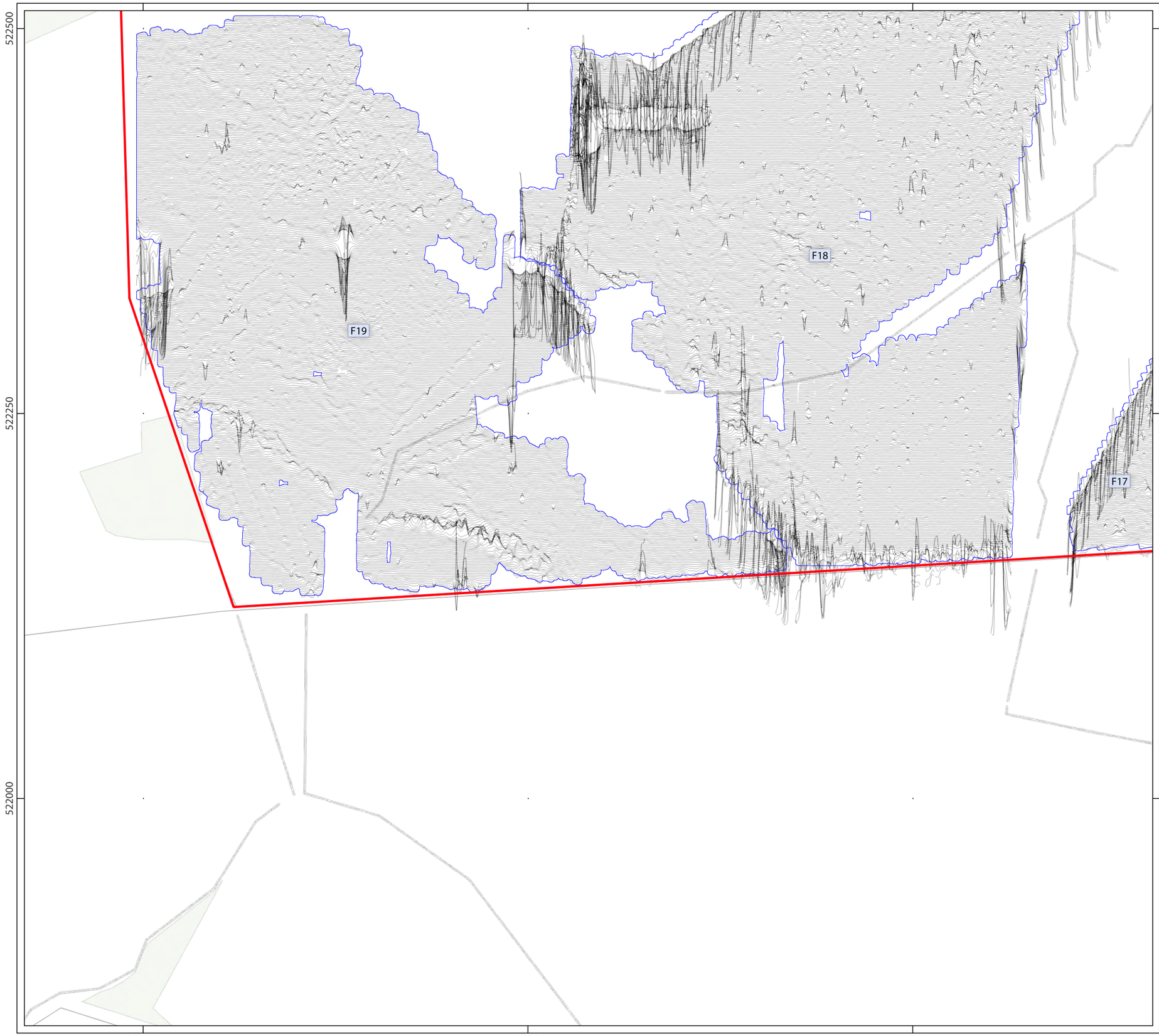
+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 15 Processed greyscale magnetometer data; Sector 3



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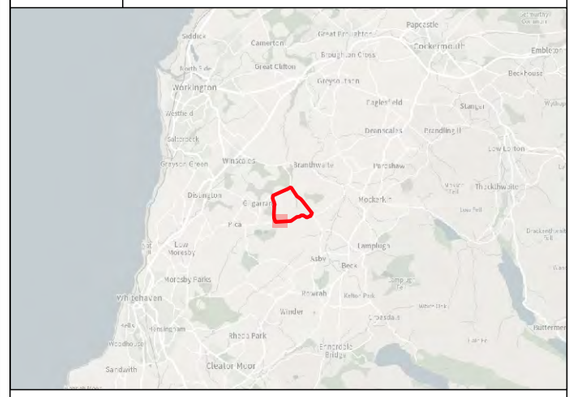
HEADLAND ARCHAEOLOGY
part of the RSK Group



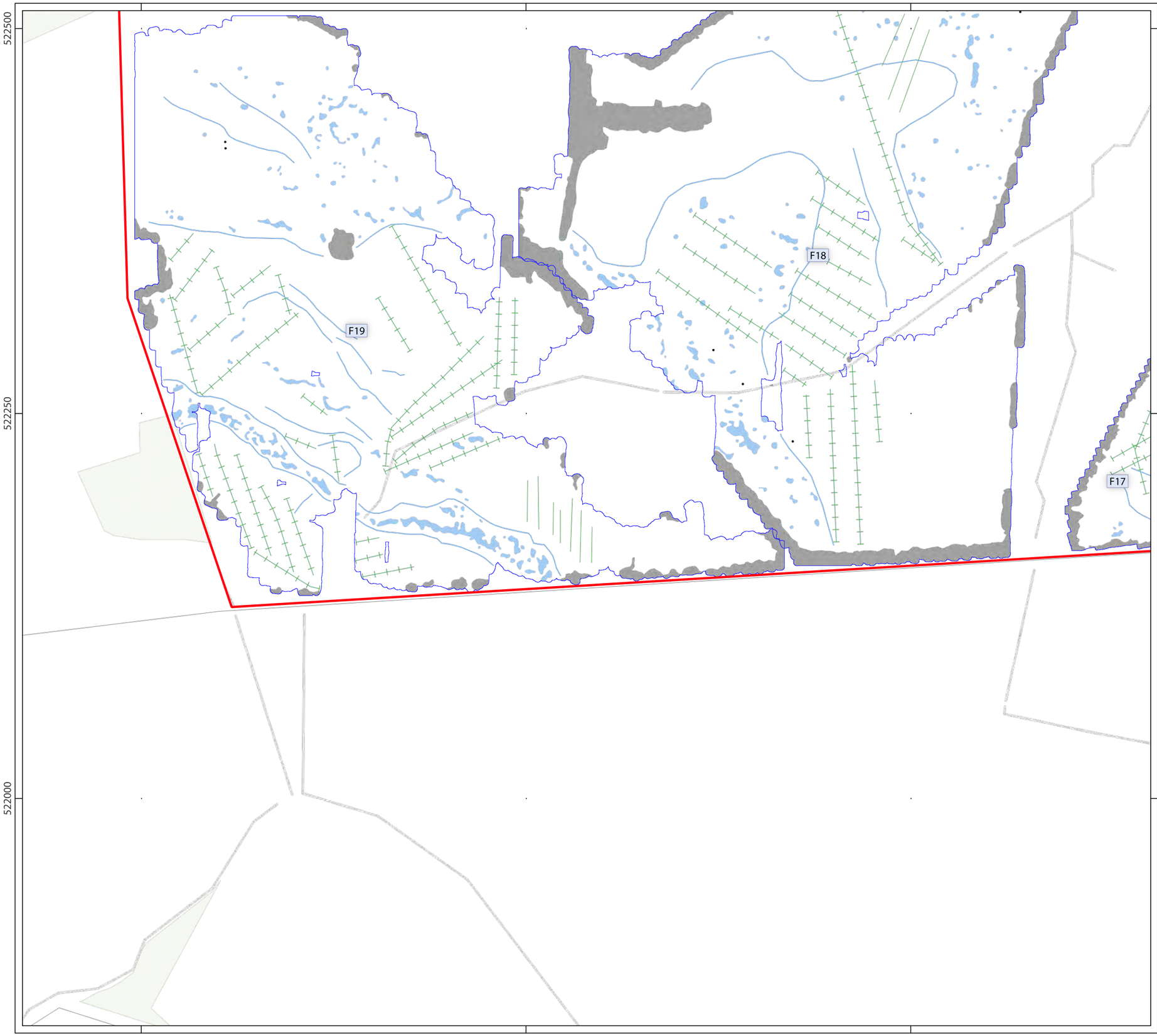
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 16 XY trace plot of minimally processed magnetometer data; Sector 3



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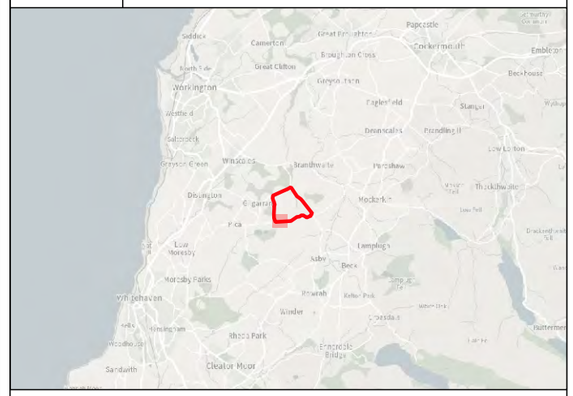
HEADLAND ARCHAEOLOGY
part of the RSK Group



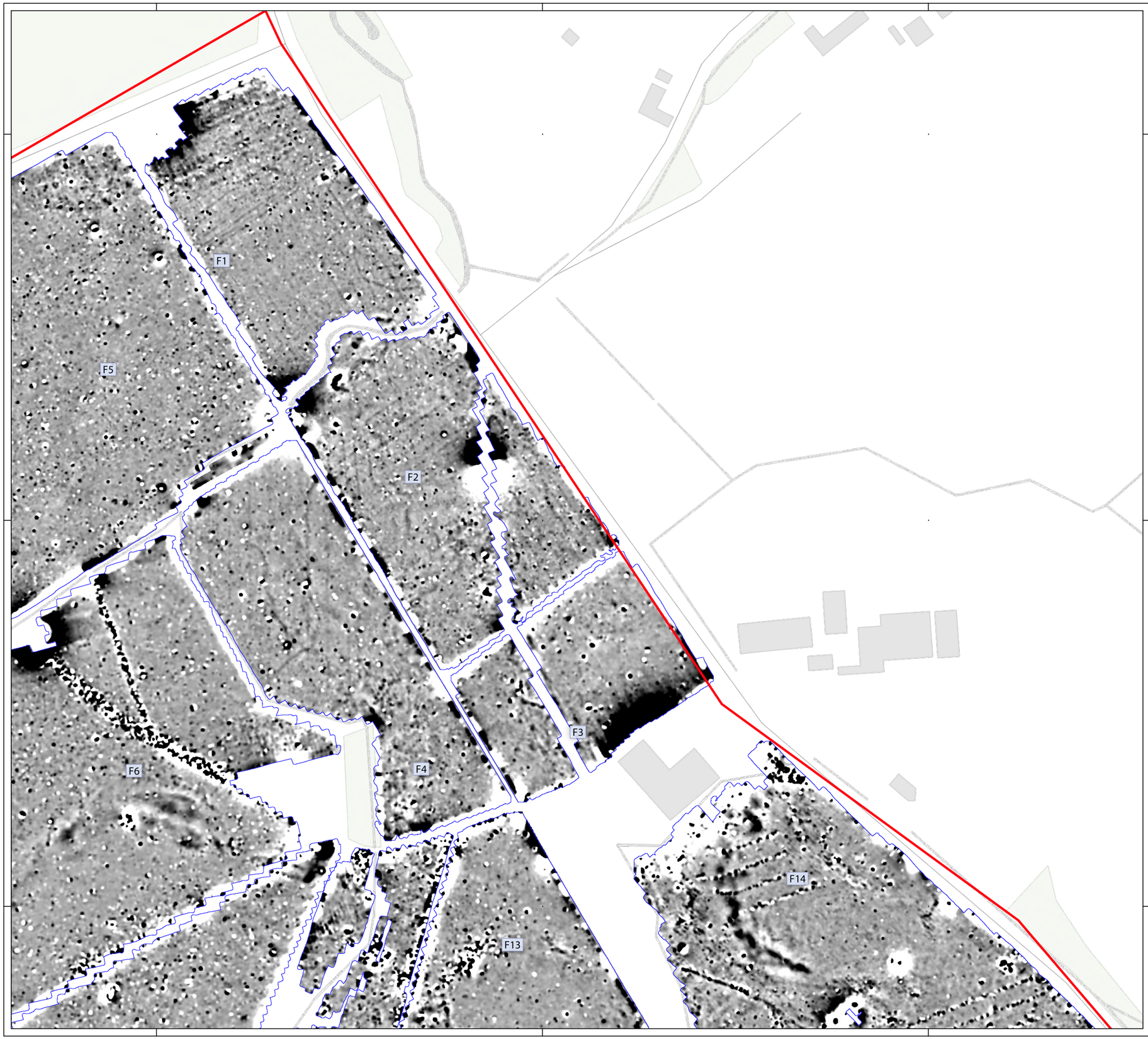
Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Natural

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 17 Interpretation of magnetometer data; Sector 3



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HEADLAND ARCHAEOLOGY
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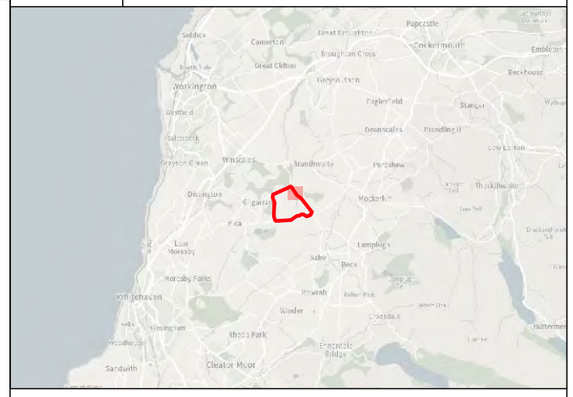


Key

Geophysical Survey Area

Survey Extent

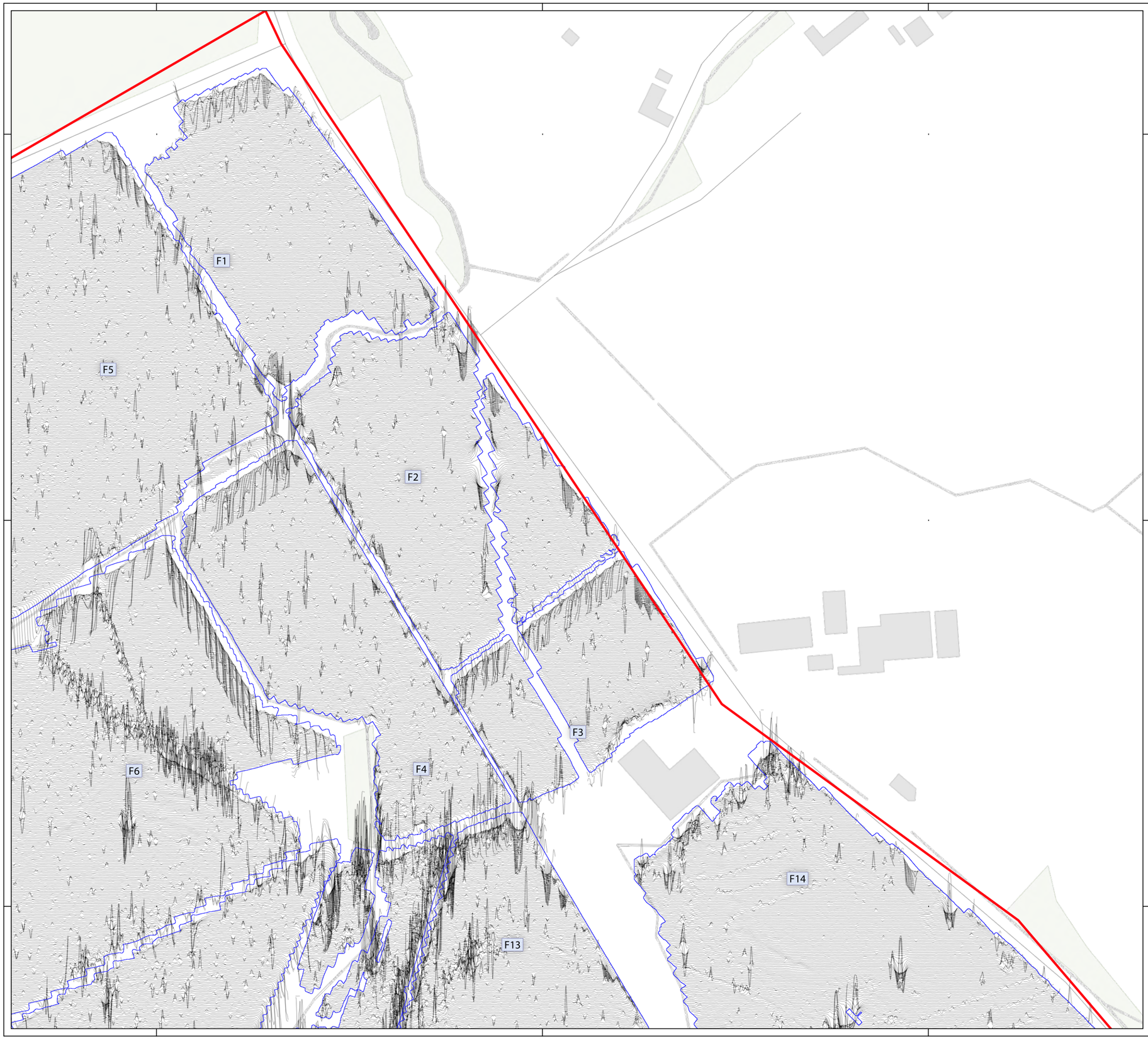
+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 18 Processed greyscale magnetometer data; Sector 4



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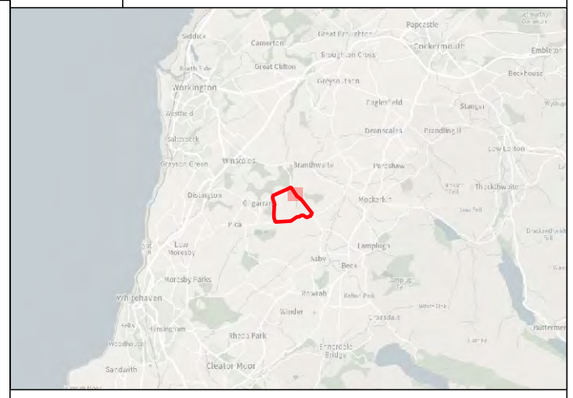
HEADLAND ARCHAEOLOGY
part of the RSK Group



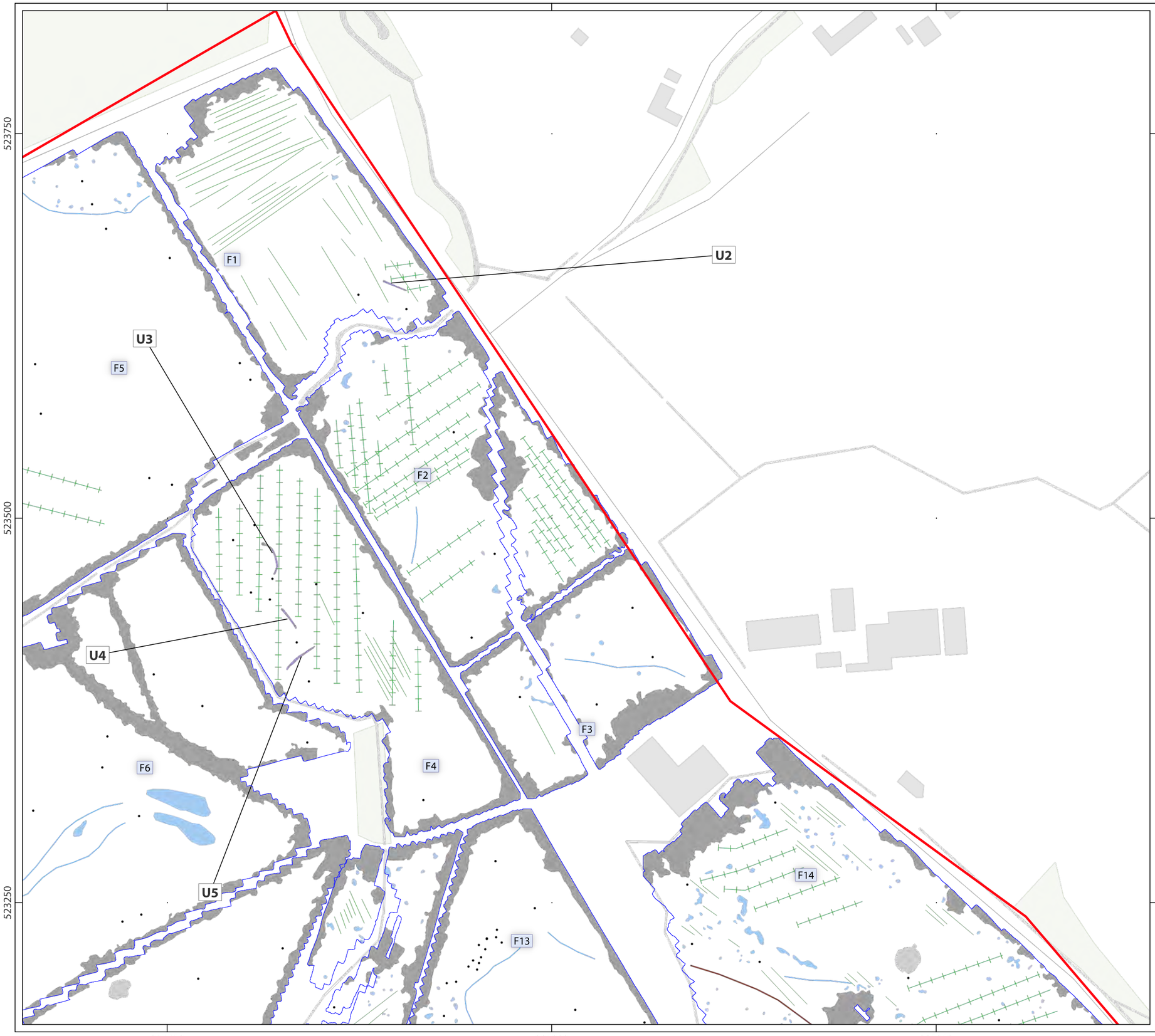
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 19 XY trace plot of minimally processed magnetometer data; Sector 4



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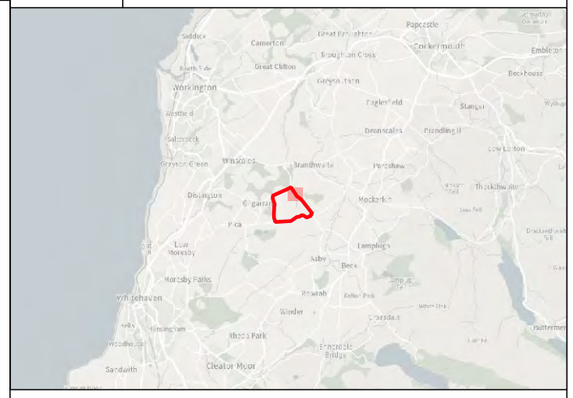
HEADLAND ARCHAEOLOGY
part of the RSK Group



Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Boundary
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Magnetic Disturbance (Below Ground)
- Natural
- Uncertain

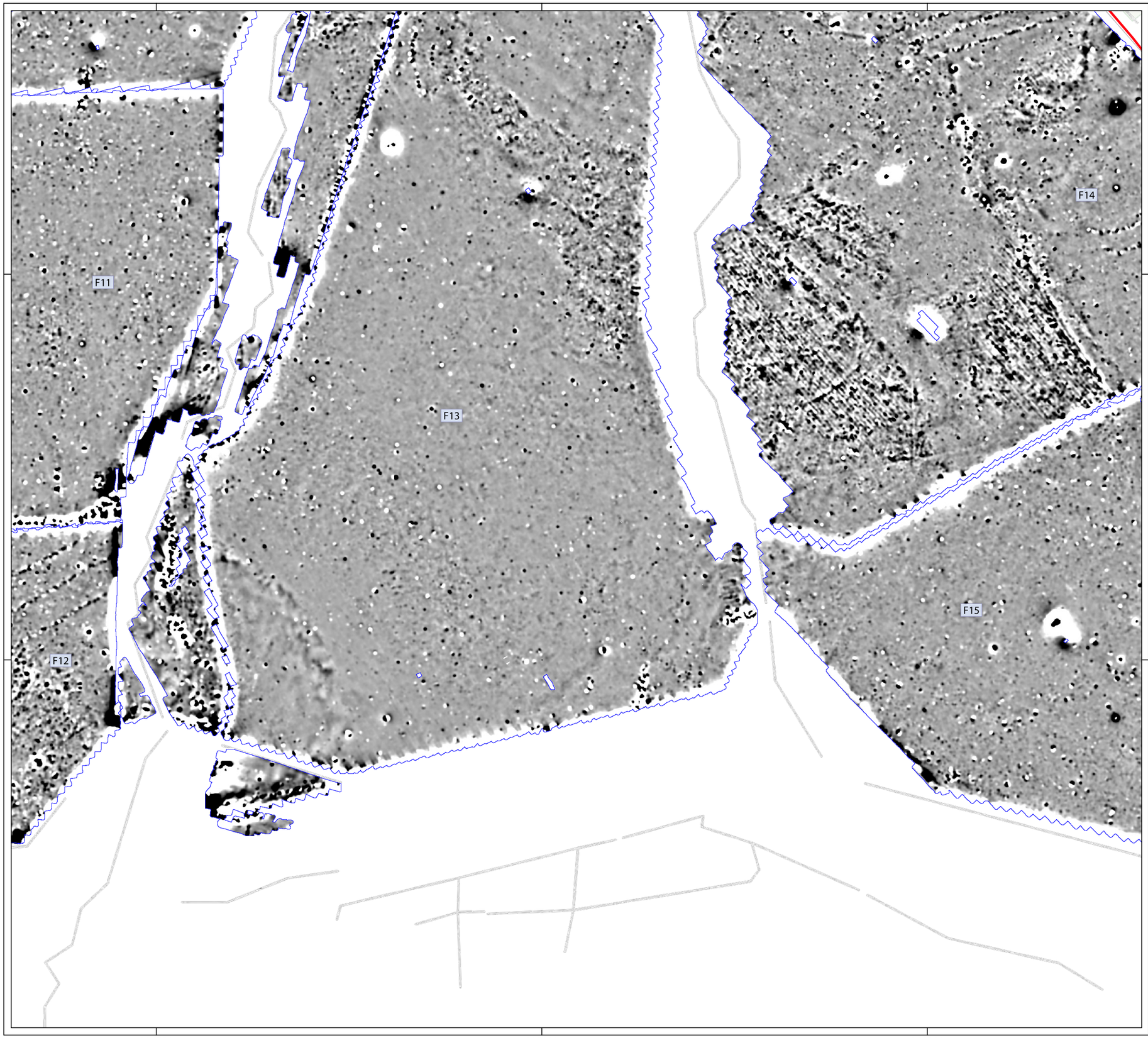
Abbreviations

U Uncertain

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 20 Interpretation of magnetometer data; Sector 4



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HEADLAND ARCHAEOLOGY
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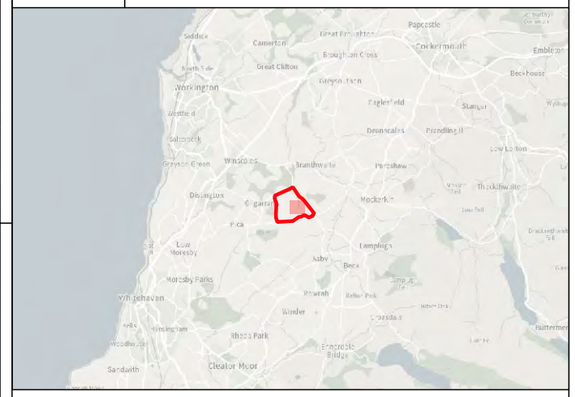


Key

Geophysical Survey Area

Survey Extent

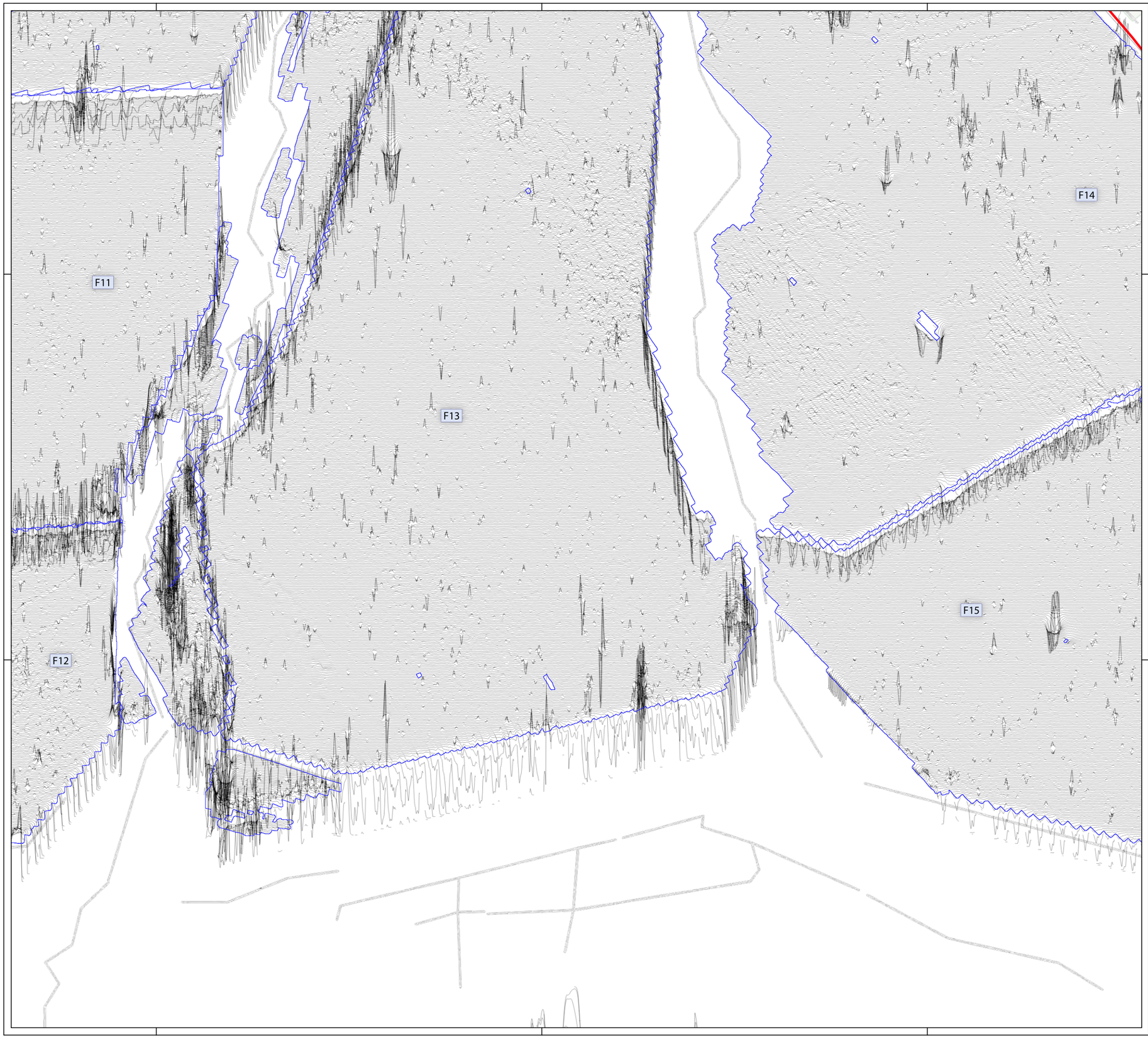
+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 21 Processed greyscale magnetometer data; Sector 5



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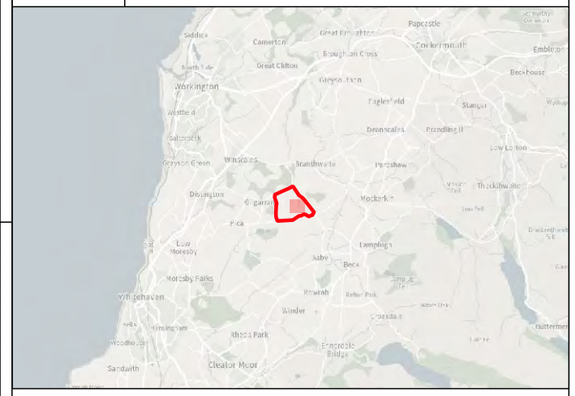
HEADLAND ARCHAEOLOGY
part of the RSK Group



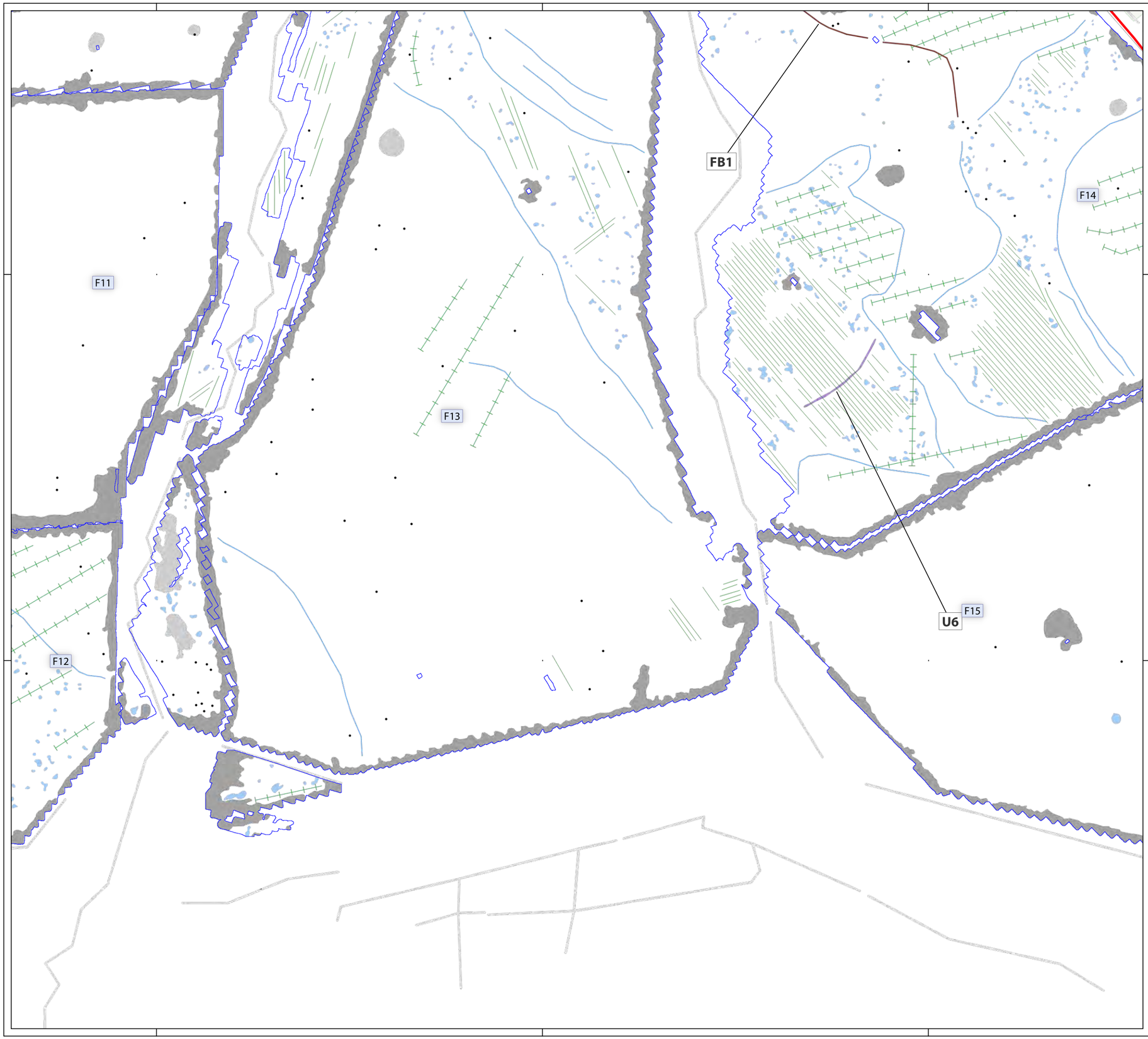
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 22 XY trace plot of minimally processed magnetometer data; Sector 5



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HEADLAND ARCHAEOLOGY
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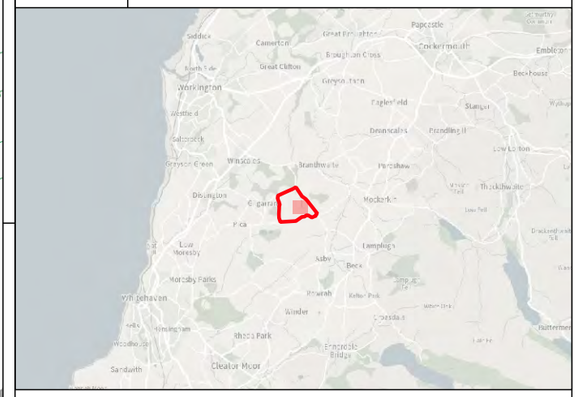


Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Boundary
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Magnetic Disturbance (Below Ground)
- Natural
- Uncertain

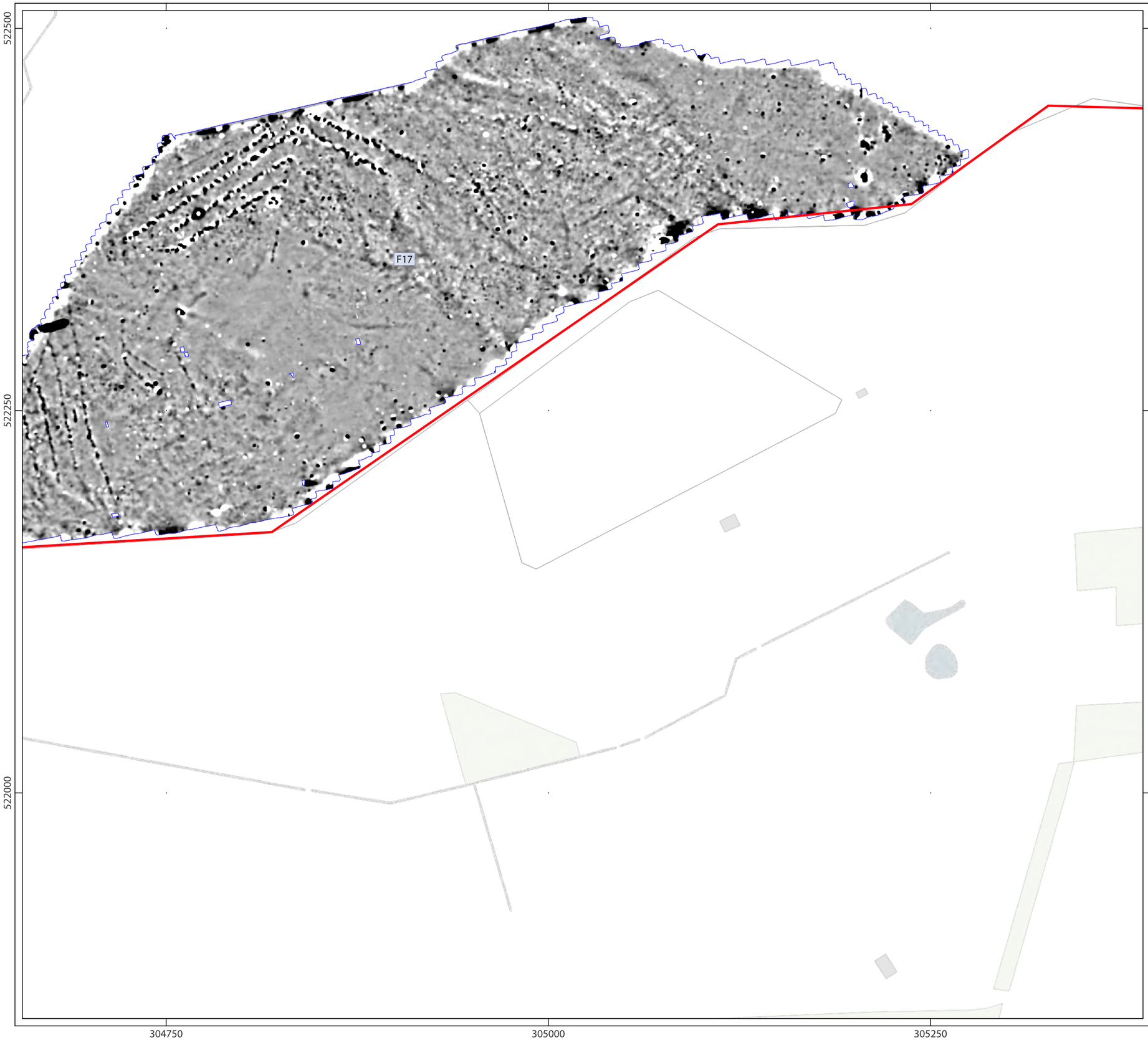
Abbreviations

U	Uncertain
FB	Field Boundary

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 23 Interpretation of magnetometer data; Sector 5



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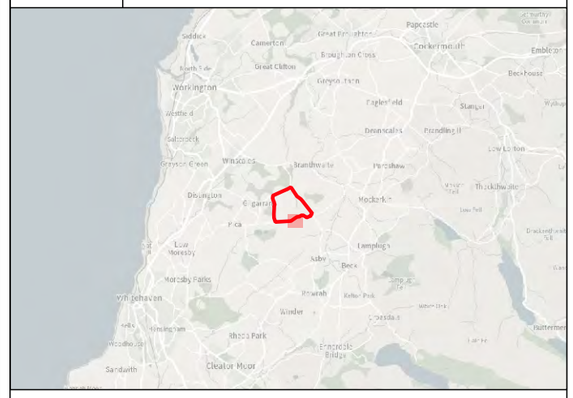
HEADLAND ARCHAEOLOGY
part of the RSK Group



Key

Geophysical Survey Area

Survey Extent

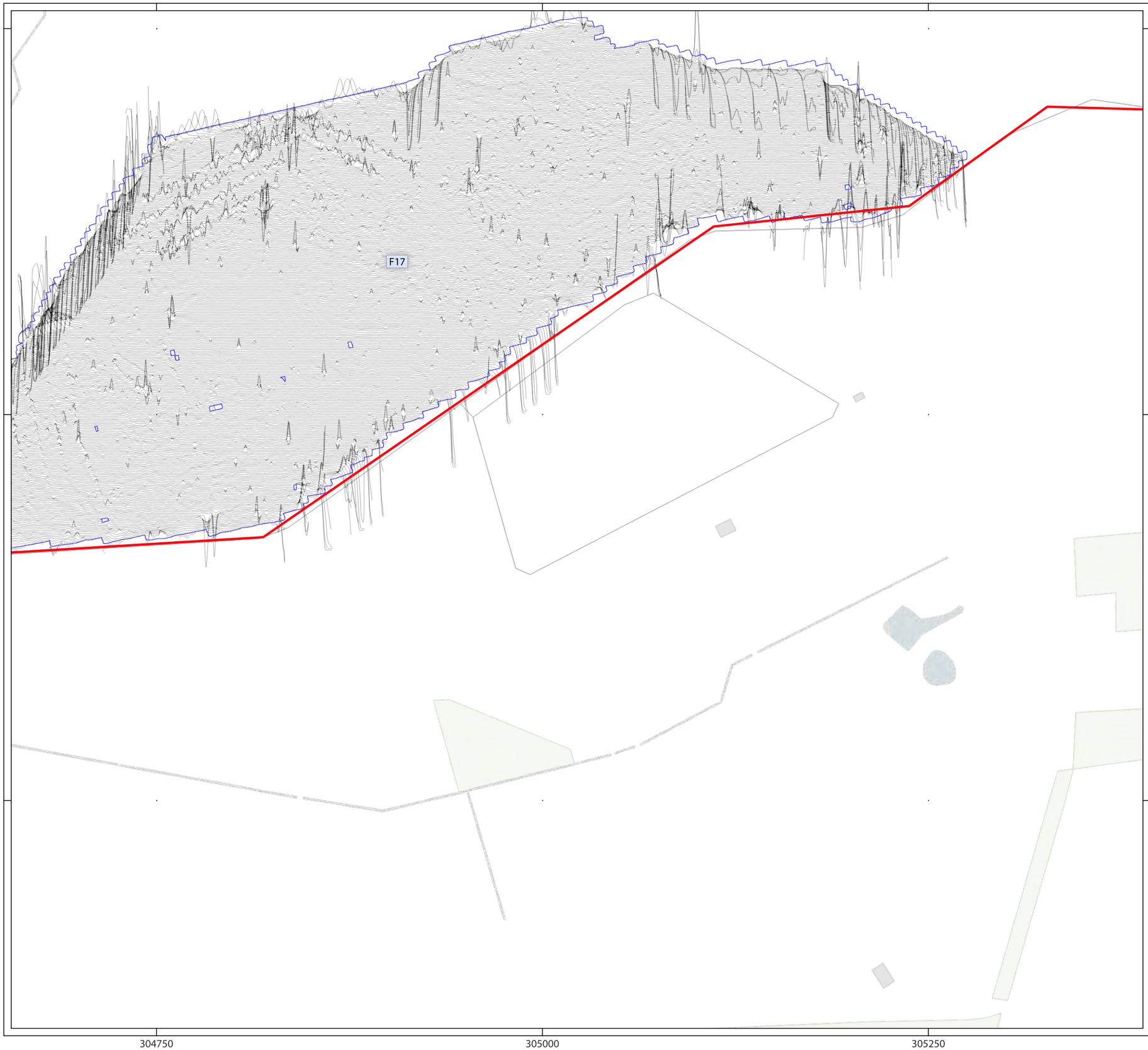
+2nT

-1nT

0 60 120 m

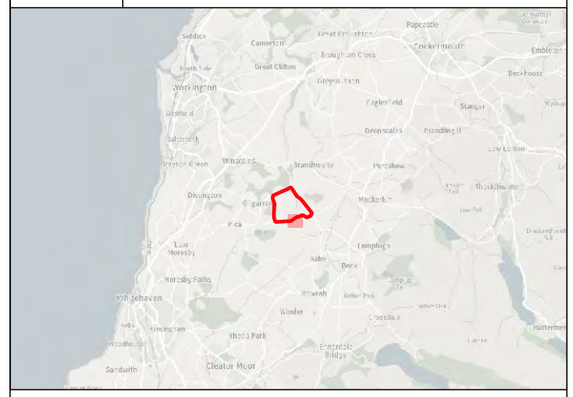
Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 24 Processed greyscale magnetometer data; Sector 6



N

HEADLAND ARCHAEOLOGY
part of the RSK Group



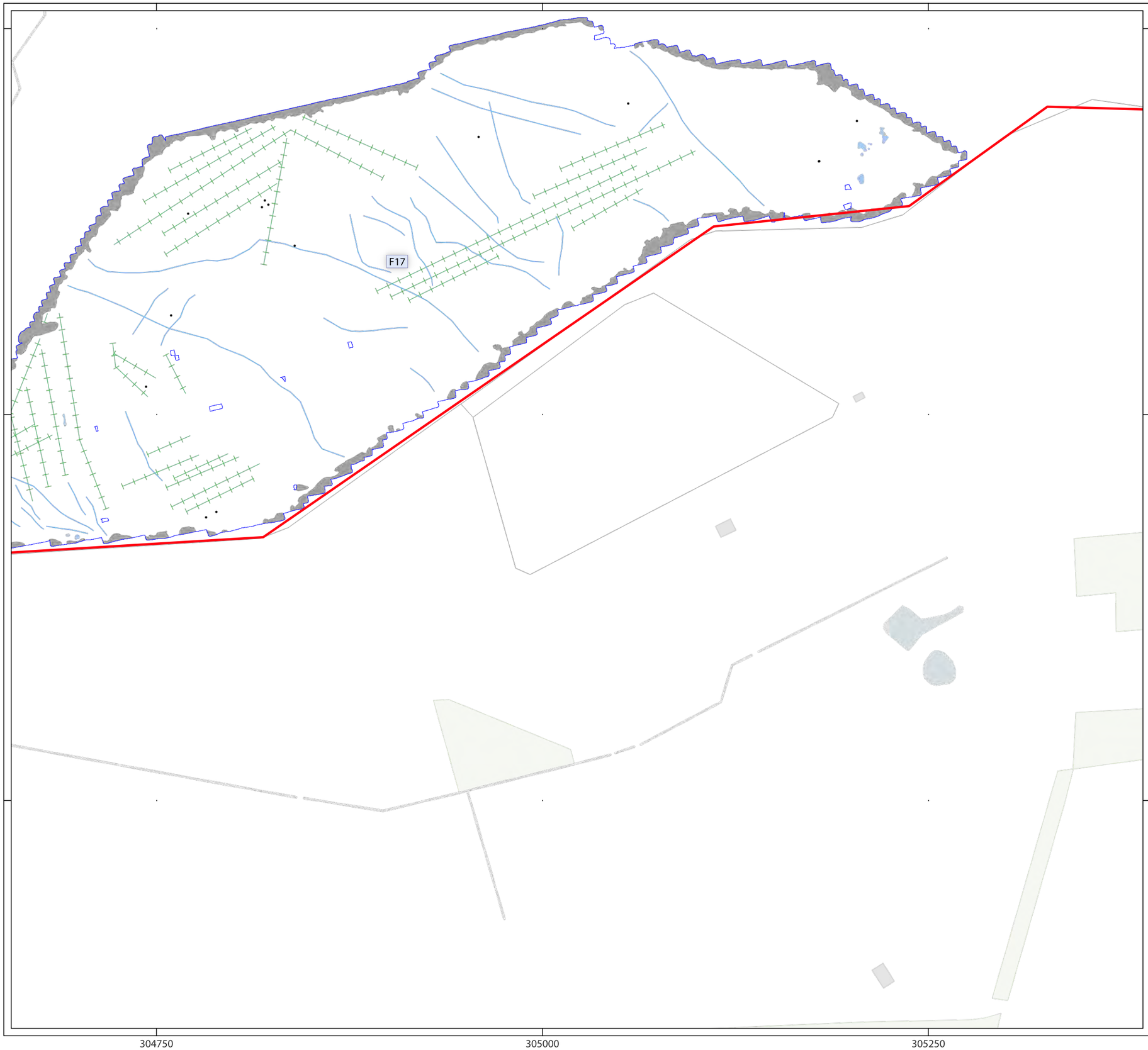
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 25 XY trace plot of minimally processed magnetometer data; Sector 6



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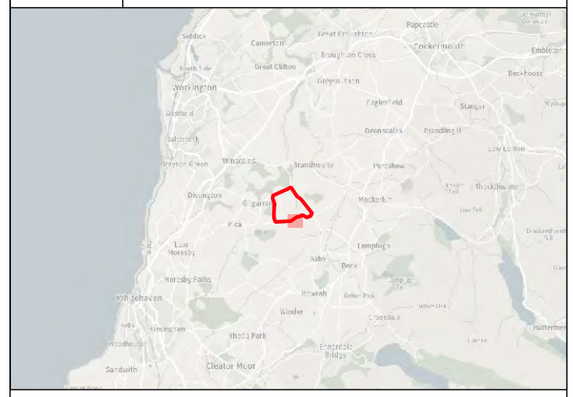
HEADLAND ARCHAEOLOGY
part of the RSK Group



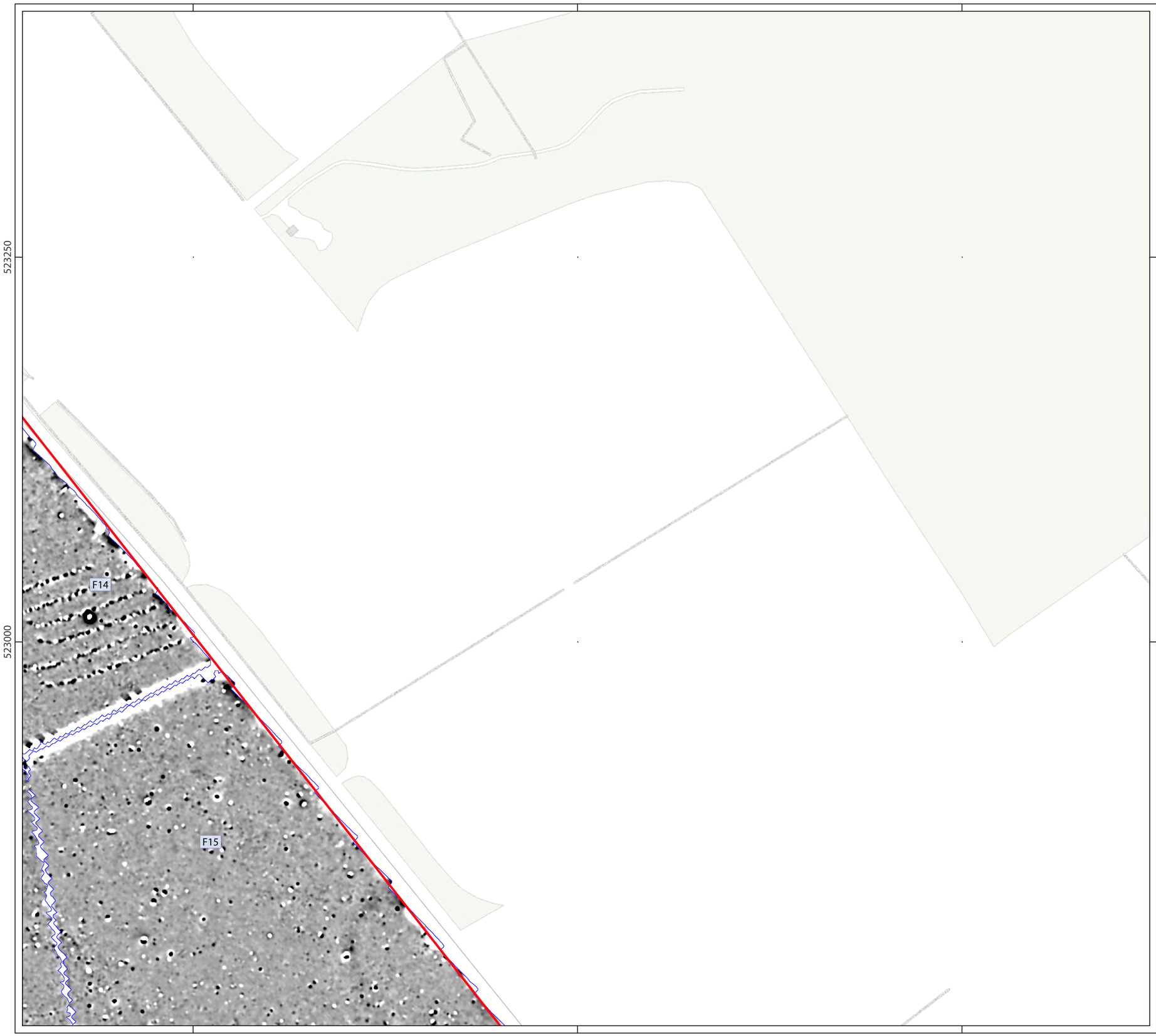
Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Natural

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 26 Interpretation of magnetometer data; Sector 6



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HEADLAND ARCHAEOLOGY
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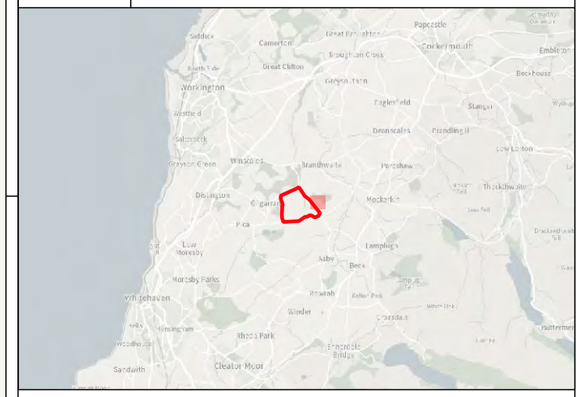


Key

Geophysical Survey Area

Survey Extent

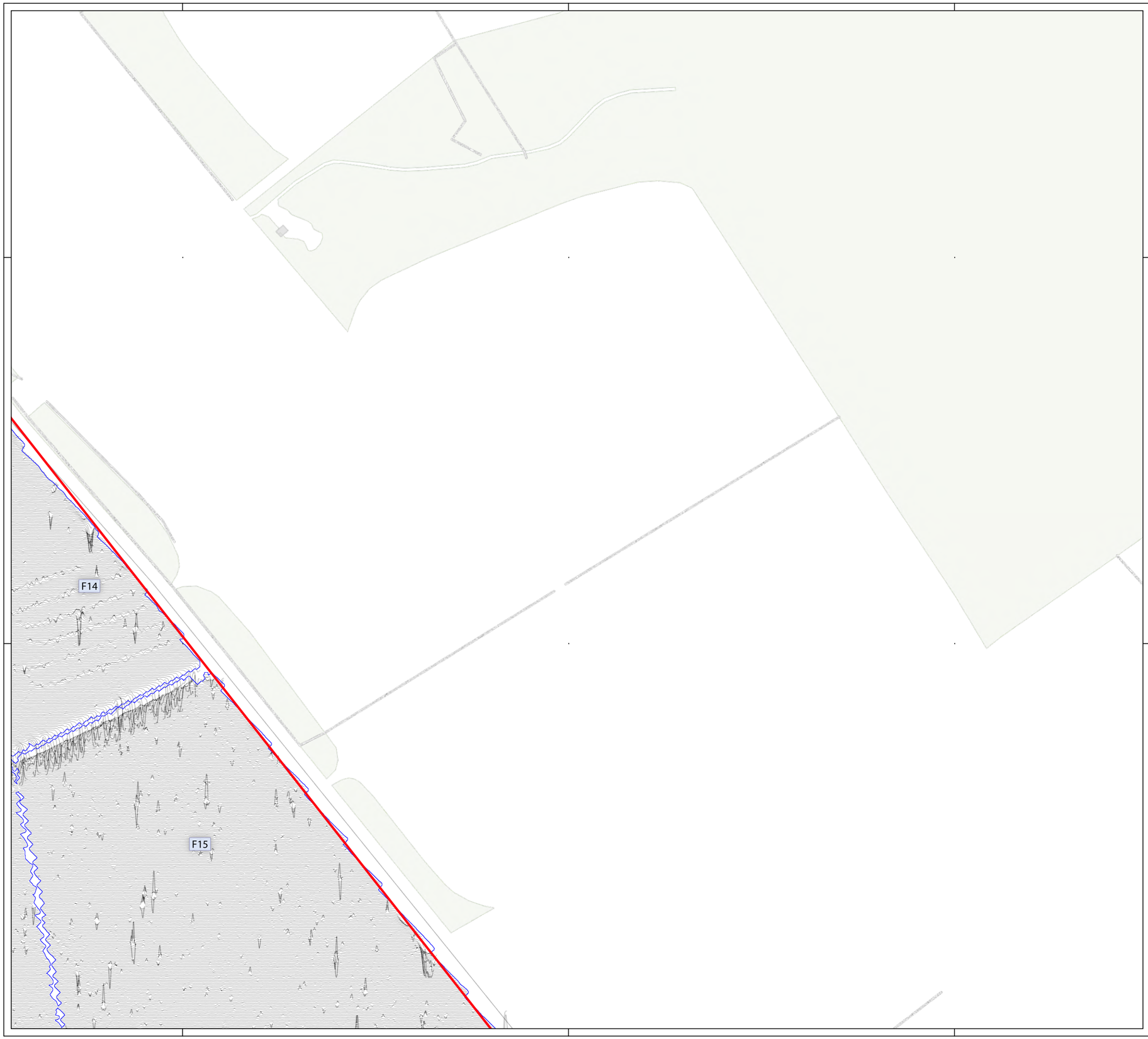
+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 27 Processed greyscale magnetometer data; Sector 7



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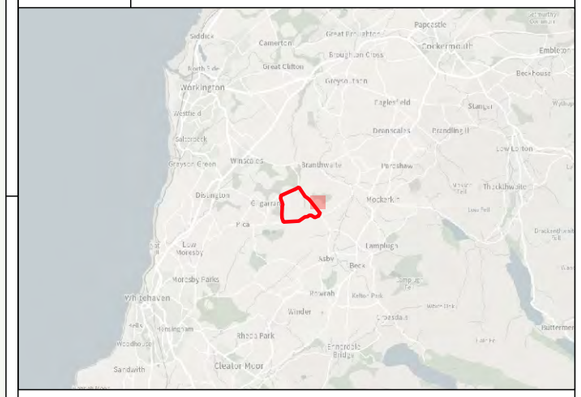
HEADLAND ARCHAEOLOGY
part of the RSK Group



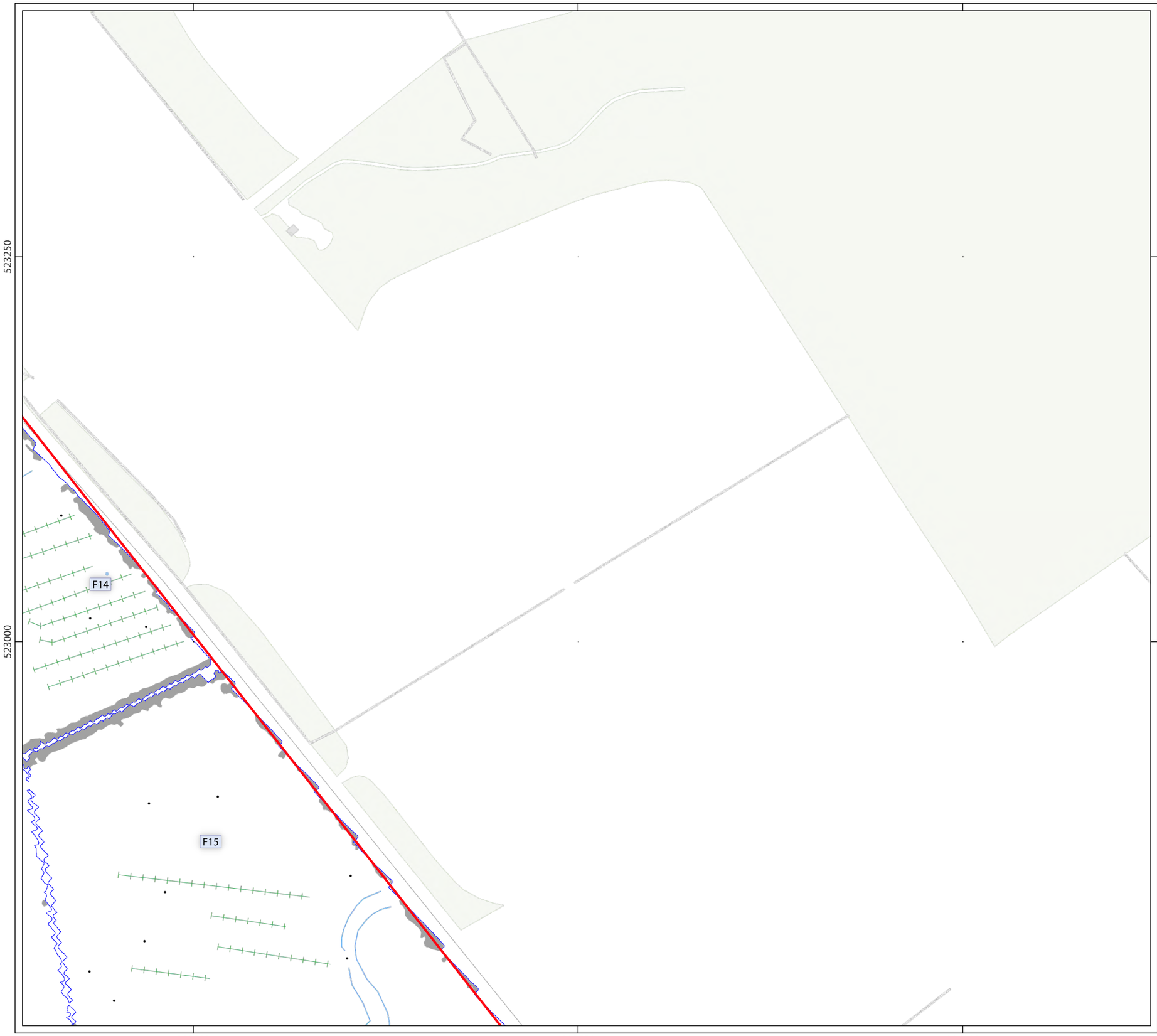
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 28 XY trace plot of minimally processed magnetometer data; Sector 7



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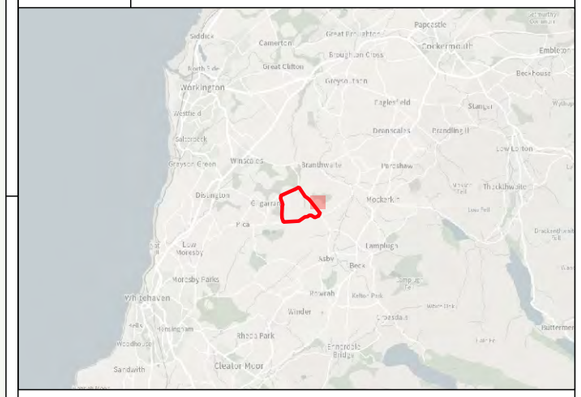
HEADLAND ARCHAEOLOGY
part of the RSK Group



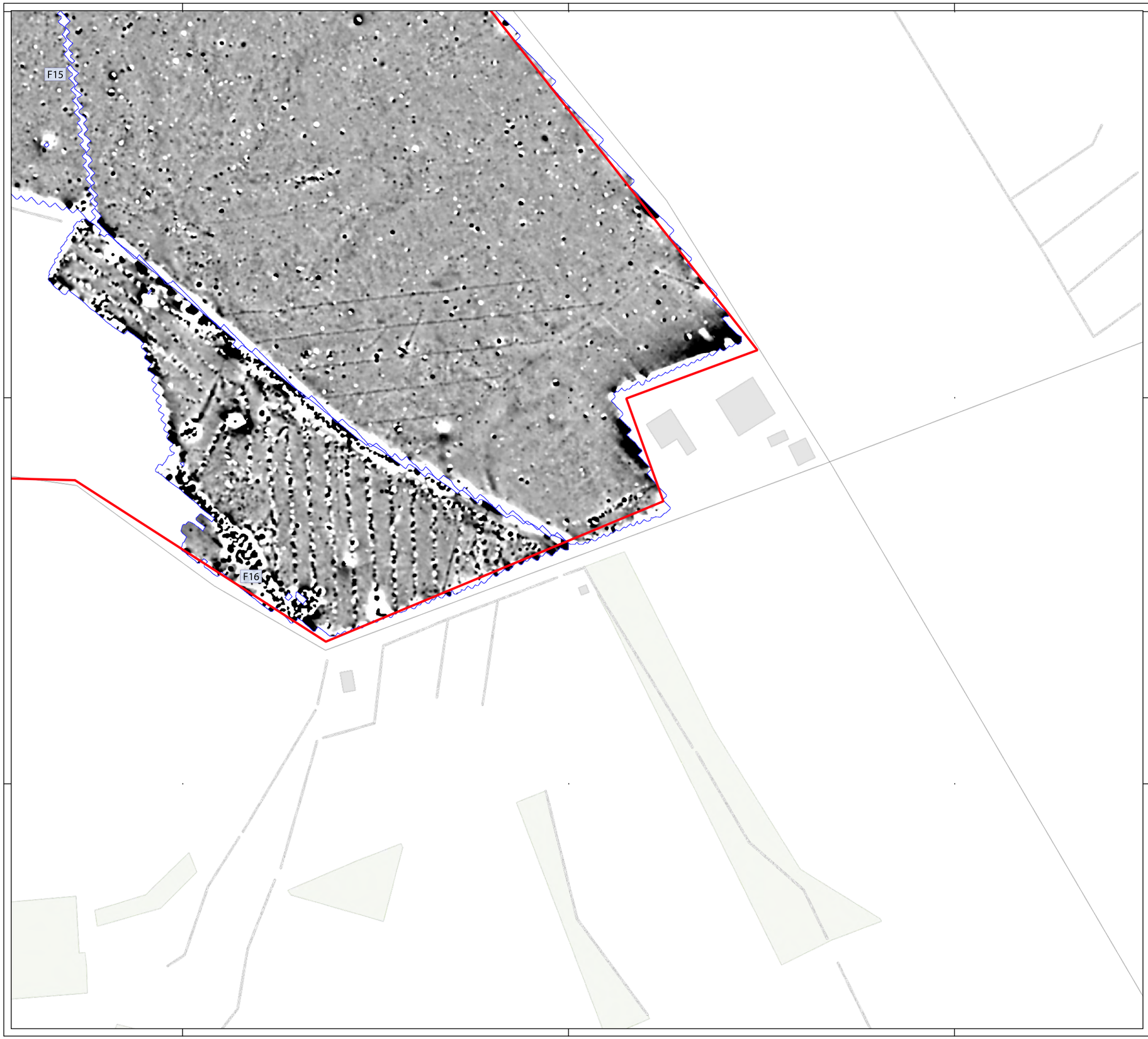
Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Natural

0 60 120 m

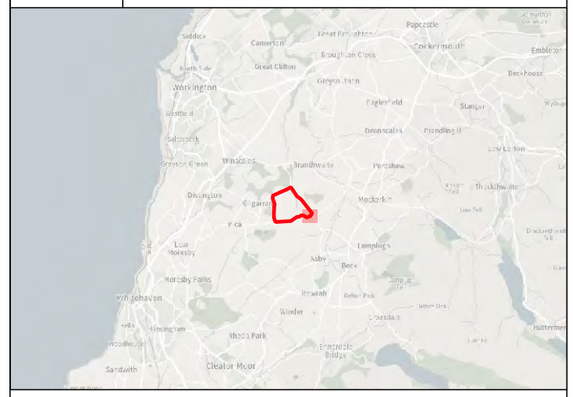
Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 29 Interpretation of magnetometer data; Sector 7



N

HEADLAND ARCHAEOLOGY
part of the RSK Group



Key

Geophysical Survey Area

Survey Extent

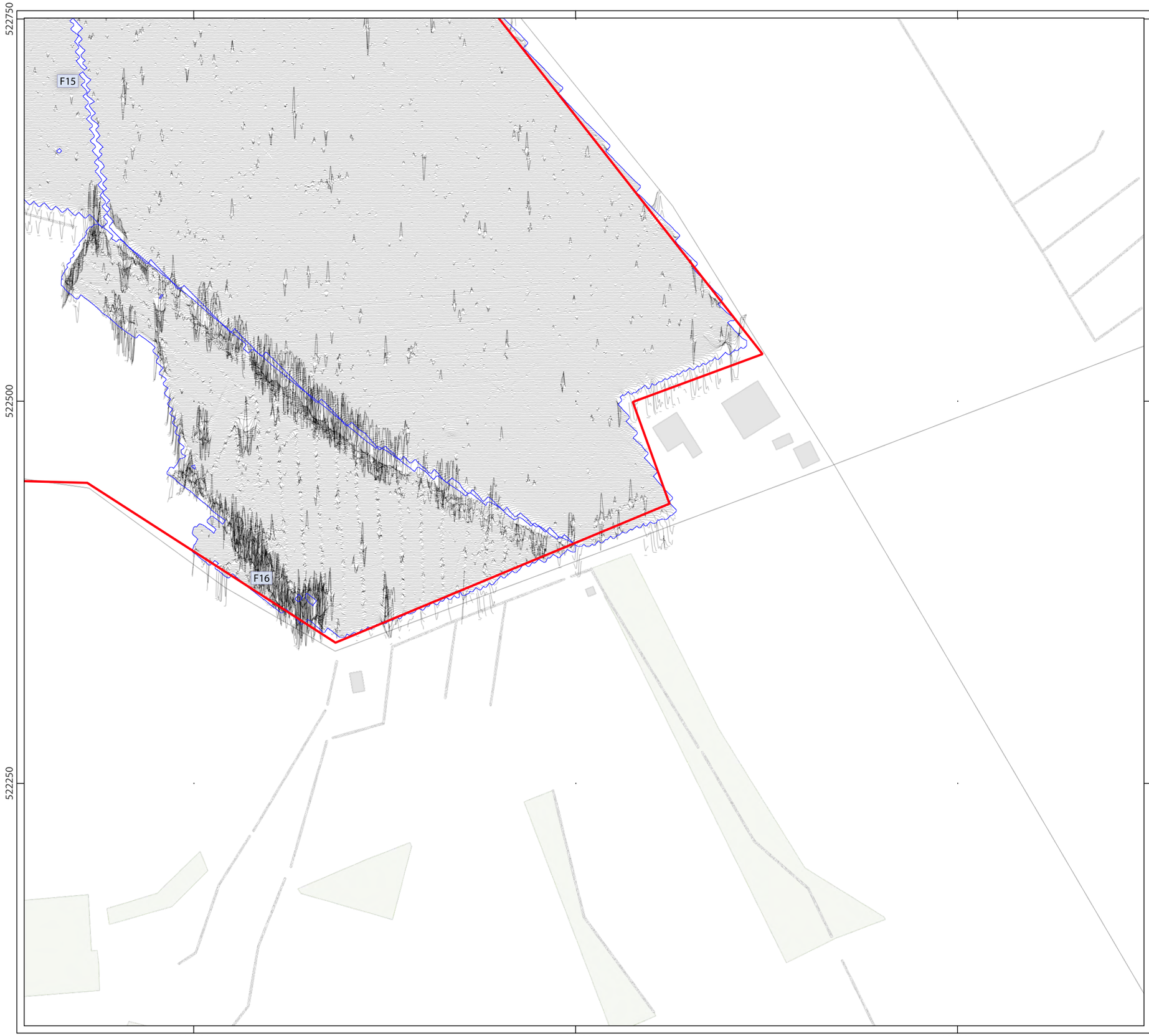
+2nT

-1nT

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 30 Processed greyscale magnetometer data; Sector 8



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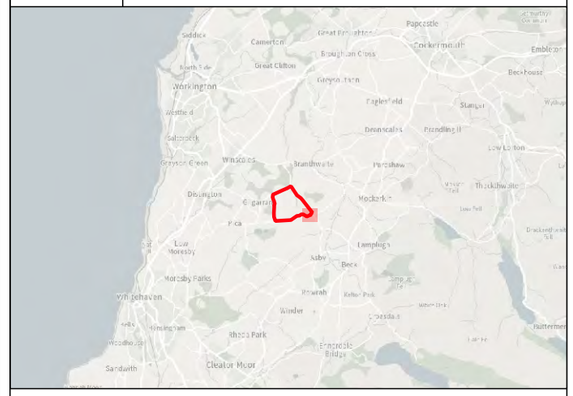


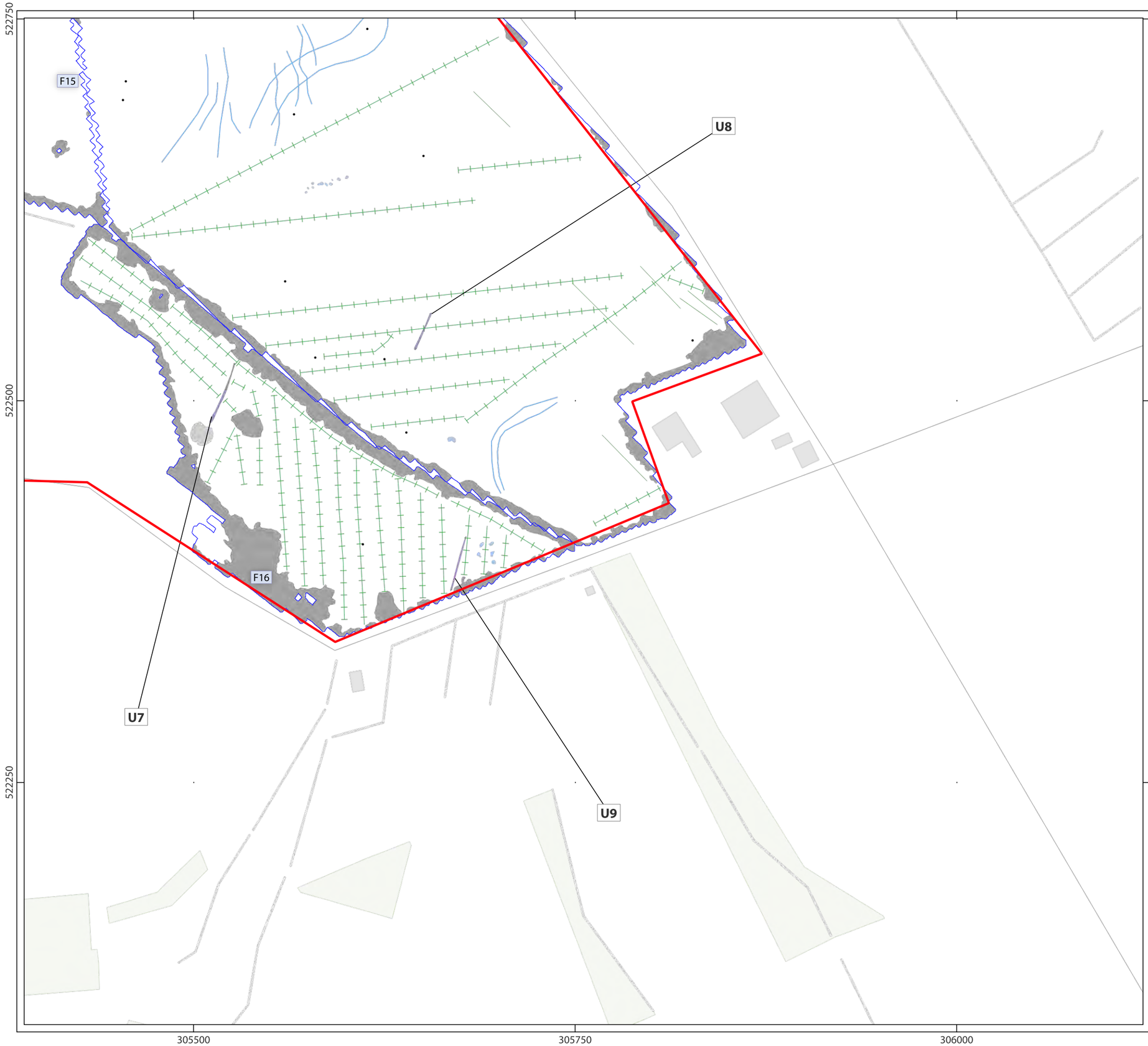
Key

- Geophysical Survey Area
- Survey Extent
- XY Trace (25nT/cm)

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 31 XY trace plot of minimally processed magnetometer data; Sector 8



N

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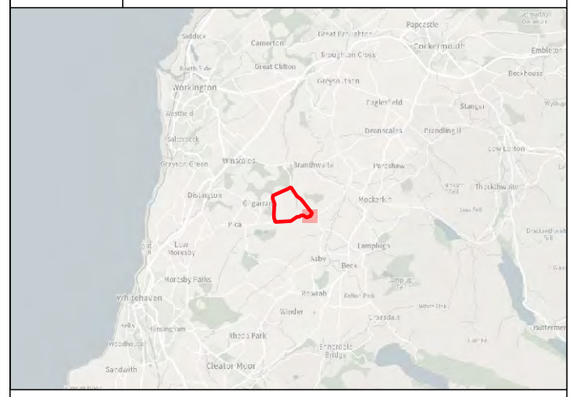

Key

- Geophysical Survey Area
- Survey Extent
- Ferrous Objects
- Agriculture
- Field Drain
- Natural
- Magnetic Disturbance (Above Ground)
- Magnetic Disturbance (Below Ground)
- Natural
- Uncertain

Abbreviations

U Uncertain

0 60 120 m

Site:	DNMR23
Created by:	LD
Checked by:	CA
Version:	v1.0
Date:	27/10/2023
Scale:	1:2,500 @ A3

Illus - 32 Interpretation of magnetometer data; Sector 8