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Geophysical Survey Report

National Grid Cotswolds AONB VIP, Cheltenham

Gloucestershire

For

Cotswold Archaeology

On Behalf Of

National Grid

Magnitude Surveys Ref: MSSP1587

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Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 167.5ha area of land near to the town of Cheltenham, Gloucestershire. A gradiometer survey was successfully undertaken across the majority of the survey area with c. 23.7ha unable to be surveyed due to unsuitable ground conditions. Archaeological activity has been identified mostly within the south of the survey area in the form of three *foci* of activity. The first *focus* includes a large sub-square enclosure containing dense concentrations of overlapping anomalies suggestive of multiphase activity and likely corresponding to a previously recorded Roman villa; a possible Romano-celtic temple, and a possible round barrow. A second *focus* of archaeological activity includes a complex of enclosures of likely Iron Age date, alongside a series of possible boundaries and/or routeways; while the third *focus* comprises a large sub-elliptical enclosure of uncertain date. Ridge and furrow cultivation and former mapped/unmapped field boundaries were identified, and modern agricultural activity has been recorded as drains and ploughing trends. Natural variations have been recorded and are likely attributed to transportation of sediments downslope, and to the dissolution of the limestone bedrock, infilled with contrasting sediment. Anomalies of an undetermined origin were also detected. Modern interference is limited to extant field boundaries, services and overhead cables.

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1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Cotswold Archaeology on behalf of National Grid to undertake a geophysical survey over a c. 167.5ha area of land near Cheltenham (SO 9953 2119), of which c.23.7ha could not be surveyed due to unsuitable ground conditions.

1.2. The geophysical survey comprised of both quad-towed, and hand-carried GNSS-positioned fluxgate gradiometer survey. Magnetic survey is the standard primary geophysical method for archaeological applications in the UK due to its ability to detect a range of different features. The technique is particularly suited for detecting fired or magnetically enhanced features, such as ditches, pits, kilns, sunken featured buildings (SFBs) and industrial activity (David *et al*., 2008).

1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David *et al*., 2008), the Chartered Institute for Archaeologists (CIfA, 2020) and the European Archaeological Council (Schmidt *et al.,* 2015).

1.4. It was conducted in line with a WSI produced by MS (O'Connor, 2023)

1.5. The survey took 32 days to complete, and was undertaken over a series of deployments between 5/07/23 and 24/11/23.

2. Quality Assurance

2.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society for Archaeological Prospection).

2.2. The directors of MS are involved in cutting edge research and the development of guidance/policy. Specifically, Dr Chrys Harris has a PhD in archaeological geophysics from the University of Bradford, is a Member of CIfA and has served as the Vice-Chair of the International Society for Archaeological Prospection (ISAP); Finnegan Pope-Carter has an MSc in archaeological geophysics and is a Fellow of the London Geological Society, as well as a member of GeoSIG (CIfA Geophysics Special Interest Group); Dr Paul Johnson has a PhD in archaeology from the University of Southampton, is a Fellow of the Society of Antiquaries of London and a Member of CIfA, has been a member of the ISAP Management Committee since 2015, and is currently the Chair of the Archaeological Prospection Community of the European Archaeological Association.

2.3. All MS managers, field and office staff have degree qualifications relevant to archaeology or geophysics and/or field experience.

3. Objectives

3.1. The objective of this geophysical survey was to assess the subsurface archaeological potential of the survey area.

3.2. The results of the geophysical survey programme will be used to inform intrusive evaluation and/or mitigation.

4. Geographic Background

4.1. The survey area was located c. 12km east of Cheltenham (Figure 1). The gradiometer survey was undertaken across 28 fields under arable cultivation and pasture. The survey area was predominantly surrounded by arable and pasture fields. The area was delimited by woodland to the north; fields to the west, Aggs Hill and Ham Road traversed the site from west to east; Dowdeswell Wood was located to the south of the site; further fields and the village of Whittington were located to the east (Figure 2). Around 23.7ha could not be surveyed due to the presence of tall crop (Areas S5, S29 & S41), and overgrown vegetation (Area S8).

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
S19	The survey area consisted of a cultivated field, gently sloping down to the east.	The survey area was surrounded on all sides by hedges and wire fencing.
S20	The survey area consisted of a cultivated field, gently sloping down towards the northeast.	The survey area was surrounded on all sides by hedges and wire fencing.
S27	The survey area consisted of a field of pasture, sloping down to the east.	The survey area was bordered to the north by a concrete wall and fence, and by hedges and metal fences to the east, south and west.
S28	The survey area consists of pasture, gently sloping down towards the northeast.	The survey area was surrounded on all sides by hedges. A pylon was noted within the northwest of the survey area.
S35	The survey area consisted of pasture, gently sloping down towards the south.	The survey area was surrounded on all sides by hedges.
S36	The survey area consisted of flat pasture.	The survey area was bordered to the north, east and south by a metal fence and the west by a combination of hedges and a metal fence. A pylon was noted within the southeastern corner of the survey area.
S37	The survey area consisted of pasture, gently sloping down towards the southeast.	The survey area was surrounded on all sides by hedges and a wire fence. Overhead cables were identified within the west of the survey area, running in a northeast-southwest orientation. A water tank was noted within the northeastern corner of the survey area.
S38	The survey area consisted of mostly flat pasture. A gentle slope was noted within the southeastern corner, gently sloping down to the southeast.	The survey area was surrounded on all sides by hedges and a wire fence. Overhead cables were noted over the west of the survey area running in a northeast-southwest orientation. Agricultural equipment, a telegraph pole and a borehole were identified within the southeast. A metal storage tank was noted at the northeastern edge.

S42	The survey area consisted of flat pasture.	The survey area was bordered to the north, northeast, south and west by hedges and to the southeast by a wooden fence.
S4401	The survey area consisted of pasture, sloping down to the south.	The survey area was surrounded on all sides by hedges and trees. A feeding trough was located within the southeastern edge.
S4402	The survey area consisted of flat pasture.	The survey area was bordered to the north by a wire fence, a combination of hedges and fence to the south and a trackway to the west. The field continued to the east beyond the survey area.
S46	The survey area consisted of undulating pasture.	The survey area was surrounded on all sides by hedges. Trees were noted throughout the survey area. A ditch was also identified within the southeastern corner.
S49	The survey area consisted of flat pasture.	The survey area was surrounded on all sides by hedges. A telephone pole was noted within the south of the survey area with cables running in a east-west orientation.
S50	The survey area consisted of an arable field containing an unidentified, low crop. The field gently sloped down to the south.	The survey area was surrounded on all sides by metal fencing and hedges.
S51-5101	The survey area consisted of an arable field containing an unidentified crop. The field gently down to the southeast.	The survey area was surrounded on all sides by metal fencing and hedges.
S55	The survey area consisted of pasture, sloping steeply down to the southwest.	The survey area was surrounded to the north, south and west by hedges. The field continued to the east beyond the survey area.
S60	The survey area consisted of an arable field containing an unidentified crop. The field sloped gently down to the south.	The survey area was bordered to the northeast, east and south by a combination of trees, hedges and metal fencing. The west was bordered by hedges and trees.
S61	The survey area consisted of a flat arable field containing cereal crop stubble.	The survey area was bordered to the north by overgrown vegetation and the east, south and west were bordered by a combination of wire fencing and trees.
S63	The survey area was split over two fields consisting of undulating pasture. Extant ridge and furrow regimes were noted at the time of survey.	The survey area was surrounded on all sides by trees and hedges. Three gullies were recorded within the east of the survey area running in a roughly east-west and northeast-southwest orientation.
S64	The survey area consisted of undulating pasture.	The survey area was surrounded on all sides by overgrown vegetation.

4.3. The underlying geology comprises Birdlip limestone across the majority of the survey area with some sections of Whitby mudstone nucleated in the south areas of S63, S64, S65, S66 & S67 (British Geological Survey, 2024).

4.4. The soils consist of shallow lime-rich soils over chalk or limestone (Soilscapes, 2024).

5. Archaeological Background

5.1. The following is a summary of a DBA produced and provided by Cotswold Archaeology (Jorge, 2021).

5.2. Evidence of prehistoric activity was identified in proximity to the survey area. Two bowl barrows, both being scheduled monuments, were identified c. 500m directly west of the centre-western boundary of S19 and c. 200m directly west of the centre-western boundary of S27 respectively. Further evidence of barrows was recorded in the form of earthworks located c. 600m west of the centre-western boundary of S5, and earthworks of two round barrows located within Arle Grove. Additionally, cropmarks of a prehistoric or Roman field system are visible c. 1km directly west of south-western boundary of S12. Evidence of Iron Age activity is present in the form of a possible Iron Age hillfort, located north-west of the survey area along a strip of present-day woodland neighbouring Area S19. This hillfort is named as Arle Grove Camp.

5.3. Roman activity has been identified within the survey area. This includes a possible Roman villa known as Waltham Roman villa, located in Area S63 and identified in 1978 when a single trench was excavated in the location of 'CA Ref. 125' and evidence of dressed stone, mortar, and roof tiles were identified (Cox 1979). The complex was interpreted as a possible villa with two or three phases of redevelopment (1st to 4th or early 5th century AD). Further evidence of Roman activity was identified in the immediate surroundings of the survey area, including two further villas: Whittington Roman Villa, discovered during the clearing of Whittington Wood, c.700 east of Area S63; a likely Roman villa at Arle Grove, c. 1Km west of Area S63).

5.4. Features pertaining to medieval activity are comparatively sparse, with evidence limited to boundary earthworks at Arle Grove and a Saxon boundary point located c. 950m south-east of the southernmost part of the survey area, near Lineover Wood.

5.5. Evidence of extensive post-medieval activity was identified within a 1km radius of the survey area. The evidence comprises several Listed Buildings located between c. 600m and 1km east of the southernmost part of the survey area and further buildings located between c. 200m and 700m south-west of southernmost part of the survey area. Extant ridge and furrow is present in the surroundings of the survey. Additionally, earthworks of post-medieval quarries and ponds have been identified across the 1km radius of the DBA search area.

6. Methodology

6.1. Data Collection

6.1.1. Magnetometer surveys are generally the most cost effective and suitable geophysical technique for the detection of archaeology in England. Therefore, a magnetometer survey should be the preferred geophysical technique unless its use is precluded by any specific survey objectives or the site environment. For this site, no factors precluded the

recommendation of a standard magnetometer survey. Geophysical survey therefore comprised the magnetic method as described in the following section.

6.1.2. Geophysical prospection comprised the magnetic method as described in the following table.

6.1.3. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Magnetic	Bartington Instruments Grad-13 Digital Three-Axis Gradiometer	1m	200Hz reprojected to 0.125m

6.1.4. The magnetic data were collected using MS' bespoke quad-towed and hand-carried GNSS-positioned system.

6.1.4.1. MS' system was comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing was through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

6.1.4.2. Magnetic and GPS data were stored on an SD card within MS' bespoke datalogger. The datalogger was continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allowed for data collection, processing and visualisation to be monitored in real-time as fieldwork was ongoing.

6.1.4.3. A navigation system was integrated with the RTK GPS, which was used to guide the surveyor. Data were collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

6.2. Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to the EAC and Historic England guidelines for 'minimally enhanced data' (see Section 3.8 in Schmidt *et al.*, 2015: 33 and Section IV.2 in David *et al.,* 2008: 11).

Sensor Calibration – The sensors were calibrated using a bespoke in-house algorithm, which conforms to Olsen *et al*. (2003).

Zero Median Traverse – The median of each sensor traverse is calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data are rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data are interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

6.3.Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data from the lower sensors. The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images of the gradient and total field at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figures 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60). XY trace plots visualise the magnitude and form of the geophysical response, aiding anomaly interpretation.

6.3.2. Geophysical results have been interpreted using greyscale images and XY traces in a layered environment, overlaid against open street maps, satellite imagery, historical maps, LiDAR data, and soil and geology maps. Google Earth (20242024) was also consulted, to compare the results with recent land use.

6.3.3. Geodetic position of results – All vector and raster data have been projected into OSGB36 (ESPG27700) and can be provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures are provided with raster and vector data projected against OS Open Data.

7. Results

7.1. Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible, an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports, as well as reports from further work, in order to constantly improve our knowledge and service.

8. Discussion

8.1.1. A fluxgate gradiometer survey was successfully undertaken across c. 143.8ha of the total area. About 23.7ha could not be surveyed due to tall crop (S5, S29 & S41) and overgrown grass (S8). The survey has generally responded well to the environment of the survey area which produced a relatively quiet magnetic background, and modern interference is generally limited to field boundaries, services and overhead cables. Throughout the west of the survey area, natural variations relating to downslope transportation of unconsolidated material has produced braids and bands of more-positively enhanced sediments categorised as "Natural Geology (Strong & Weak)" (Areas S5, S12, S13, S14, S19, S20, S35, S37, S38, S44, S45, S67) (Figures 4, 6, 8, 10 & 12). In the east of the survey area, broad areas characterised by a mottled effect have been identified (Areas S42, S46, S50-51, S55, S60, S61 & S63) (Figures 4 & 6). These will have likely been produced by dissolution of the calcite structure of the limestone bedrock, and its subsequent infilling with contrasting sediment.

8.1.2. Three main *foci* of anomalies indicating archaeological activity have been identified in the southeast of the survey area. The first and most complex *focus*, located across Areas S60 and S63, consists of a large sub-square enclosure, covering c. 4ha (Figure 4). Dense concentrations of linear and discrete anomalies appear to be located within an internal, central sub-rectangular enclosure and likely indicate the areas where activities were concentrated. Occasional overlaps of these anomalies and features suggest prolonged, and multiple phases in the use of this space. Anomalies exhibiting a negative magnetic signal may suggest the presence of remains of possible building footings, or be indicative of robber-trenches, or equally that there are features with a less magnetically enhanced signal compared to the surrounding background. The area beyond this central enclosure, but within the outer concentric enclosure, displays fewer internal subdivisions and a much quieter background. These anomalies correspond with the remains of Waltham Roman Villa and appear to confirm and expand on the findings from an excavation in 1978 (see Section 5.5.3). This complex may indicate the presence

of a large country estate located less than 1Km from the Whittington Court and Arle Grove villas.

8.1.3. Located c. 100m east of this large, sub-square enclosure is a much smaller group of anomalies describing a square, concentric layout, measuring 15m by 15m (Area S63; Figure 4). The layout and dimensions of this group of anomalies are possibly indicative of a Romano-celtic temple displaying a central *cella* and an outer ambulatory. It is unclear whether this possible temple may have been associated with the Roman settlement discovered during the clearing of Whitting Wood, which is now Arle Grove, located c. 1.5km north-west of this location (see Section 5.3), or if it may have been connected with the large, sub-square enclosure complex in Areas S60 & S63.

8.1.4. To the immediate east of the large, sub-square enclosure, a partial ring ditch with a central discrete anomaly was identified (Figure 4). While it is possible that this anomaly may represent a round barrow, which could date from the early Bronze Age to the Iron Age, its date and purpose cannot be defined with more certainty.

8.1.5. Located within Area S61, a second *focus* of archaeological activity was identified (Figure 4) and includes a series of polygonal and sub-circular enclosures with internal features as well as a series of possible pit alignments. Two partially superimposed, polygonal enclosures were identified in the north of Area S61 (c. 0.5ha area), while another polygonal enclosure with a c. 100m-long entrance passageway was identified to the south of them. This latter feature is suggestive of a Banjo Enclosure occupying a c. 0.5ha area. Banjo Enclosures mostly date from the middle to the late Iron Age, with some of them continuing into use throughout the Roman period, and are normally indicative of settlements, which were sometimes of high status. Based on their morphology, the partially superimposed enclosures may also be Iron Age in date, or could be more broadly attributed to the prehistoric period. To the immediate south of the possible Banjo Enclosure, a sub-circular enclosure was identified: this seems to be bisected by a linear series of discrete anomalies which continue outside of the enclosure, towards the northeast. A series of linear and sub-circular pit alignments have also been recorded around the banjo enclosure and the trackway running on a northwest to southeast alignment.

8.1.6. Around these enclosures, sets of curvilinear anomalies have been identified running across Area S61, with one of them possibly continuing northwards, across Area S63. These may relate to boundaries and/or routeways present in antiquity.

8.1.7. Elements of the possible prehistoric complex consisting of a series of curvilinear anomalies appear to extend into S60 and S63 to the north, intersecting the large, sub-square complex on divergent orientations.

8.1.8. Two, roughly parallel linear anomalies c. 20m apart, measuring c. 3-4m in width and exhibiting a seemingly negative signal have been identified running broadly east-west across Area 63 (Figure 4). While it is difficult to ascertain their nature, these are considered likely to be archaeological in origin and may possibly be related to either the

large, sub-square enclosure complex in Areas S60 & S63 or to the prehistoric enclosures in Area S61.

8.1.9. A third *focus* of archaeological activity was identified in the form of a large sub-elliptical enclosure located in the west of Area S51 and continuing into the east of Area S50 (Figures 4 & 6). This enclosure occupies an area of over 1.5ha and has possible internal features and a possible field system associated with it. Circular and sub-circular anomalies have also been identified to the immediate northeast and east of the enclosure. Based on the geophysical data alone, it is hard to determine a possible date or function for this enclosure

8.1.10. Several linear and discrete anomalies have been identified throughout the survey area and marked as "Archaeology Possible" (Figures 4, 6, 8, 10 & 12). These are considered likely to relate to further possible archaeological features such as land divisions, partial enclosures, and pits; however, their discontinuity and/or lack of direct relationships with anomalies of probable archaeological origin led to less confidence in their interpretation.

8.1.11. Agricultural activity is evidenced as mapped and unmapped field boundaries, identified respectively in Areas S14, S38, S44 & S46 (Figures 6, 8 7 12) and Area S12, as well as in the form of drains (Areas S28, 38, 42 & 44). Ridge and furrow cultivation trends have also been identified across Areas S60 and S63 (Figure 4). Modern ploughing was also recorded throughout the majority of the survey area.

8.1.12. Anomalies of undetermined origin have also been identified across the survey area. Present across S35 and S44, a series of weak, positively enhanced curvilinear anomalies have been identified (Figure 6). These describe partial circles, c. 7-11m in diameter, and often include a circular, linear or discrete anomaly within them. It is possible, although unlikely, that these features may represent round barrows. Alternatively, these could result from modern activity of unknown origin. Further, curvilinear anomalies of undetermined origin have been identified in Areas S13, S19 and S20 (Figures 10 & 12). These do not appear to correlate with anything visible on historical mapping or on past satellite imagery. Based on their morphology, they may have origins as natural features such as streams; however, their defined edges are suggestive of a possible re-use as ditched field boundaries.

8.2.Interpretation

8.2.1. General Statements

8.2.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

8.2.1.2. **Ferrous (Spike)** – Discrete dipolar anomalies are likely to be the result of isolated pieces of modern ferrous debris on or near the ground surface.

8.2.1.3. **Magnetic Disturbance** – The strong anomalies produced by extant metallic structures, typically including fencing, pylons, vehicles and service pipes, have

been classified as 'Magnetic Disturbance'. These magnetic 'haloes' will obscure weaker anomalies relating to nearby features, should they be present, often over a greater footprint than the structure causing them.

8.2.1.4. **Services** – These features show a strongly enhanced dipolar signal with a strong magnetic halo, typically caused by buried services and similar features.

8.2.1.5. **Undetermined** – Anomalies are classified as Undetermined when the origin of the geophysical anomaly is ambiguous and there is no supporting contextual evidence to justify a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally distinct from those caused by ferrous sources.

8.2.2. Magnetic Results - Specific Anomalies

8.2.2.1. **Archaeology Probable (Strong & Weak) –** Located across Areas S60 & S63, a complex series of linear anomalies indicative of infilled ditches **[S60a & S63a]** have been identified and are seen forming a large, partial, sub-square enclosure which occupies a c. 4ha area of land and contains several linear and discrete anomalies (Figures 16 & 17). The large outer enclosure has clearly-defined edges on its northern, western and southern edges, while the eastern corner and southwestern side appear to be either missing or are much harder to identify. Portions of these borders appear to be double-ditched. Within Area S60, the layout of the large enclosure includes a central area where several linear and discrete anomalies have been detected, some of which are negative in magnetic signal and may relate to remains of stone buildings or to robbed structures. This area appears to be the location of the main focus of activities, and is surrounded by a less dense concentration of anomalies. Within Area S63, an even more intricate group of linear and discrete anomalies has been identified (Figures 16 & 17), the majority of which exhibit strongly positive magnetic signals. The density of the anomalies identified in this area and the occasional overlapping are indicative of multiple phases of occupation over a prolonged period of time.

8.2.2.2. **Archaeology Probable (Strong & Weak) –** Located in the centre-west of Area S63, a penannular anomaly indicative of a partial ring ditch **[S63b]** has been identified (Figures 16 & 17). This is c. 10m in diameter, has a central discrete anomaly and is located in immediate proximity with anomalies **[S63a].** Its southern side also appears to possibly extend outwards towards the west. While it is possible that this anomaly may represent a round barrow, dating from the early Bronze Age to the Iron Age, it may also represent the presence of a roundhouse, possibly associated with the complex of anomalies to the west **[S63a].**

8.2.2.3. **Archaeology Probable (Strong & Weak) –** Situated c. 100m east of anomalies **[S63a]** are further linear and rectilinear anomalies **[S63c]** (Figures 13 & 14). These define a square shape, measuring c. 15m by 15m, with an internal,

smaller, incomplete concentric square. The layout and dimensions of this group of anomalies are possibly indicative of a Romano-celtic temple displaying a central *cella* and an outer ambulatory. It is unclear whether this possible temple may have been associated with the Roman settlement discovered during the clearing of Whittington Wood (now Arle Grove), located c. 1.5km north-west of the temple, or if it may have been connected with the nearby complex of anomalies **[S63a]**.

8.2.2.4. **Archaeology Probable (Spread) –** A broad concentration of small, discrete anomalies characterised by a positive enhancement has been identified in Areas S60 & S63, occupying the same areas as anomalies **[S60a, S63a, S63b & S63d]** (Figures 16 & 17). This has been labelled as "Archaeology Probable (Spread)" as it is interpreted as resulting from a series of anthropogenic activities, likely over a prolonged period of time, and that were difficult to individually define. The presence of this spread of anomalies in the dataset is also likely to be related to the increased enhancement of the soil in these areas as a result of prolonged human occupation.

8.2.2.5. **Archaeology Probable (Strong & Weak)** – Located in the southeast of Area S60 and partially overlapping anomalies **[S60a]** are curvilinear anomalies [**S60b]** (Figures 16 & 17). These are suggestive of infilled ditches and exhibit a particularly strong magnetic signal which is comparable to that of anomalies **[S61c],** located c. 100 m to the south. The shape of these anomalies and the fact that they overlap with anomalies **[S60a]** is suggestive that **[S60b]** pertain to a different phase/complex and it is possible that this represents a continuation of the prehistoric complex identified in Area S61 (see paragraph 8.2.2.8 for a discussion on this complex). Two linear anomalies **[S63d],** equally positive and very strong in magnetic signal, have been identified in Area S63, crossing anomalies **[S63a]** at an angle (Figures 16 & 17). These are also considered likely to relate to a different phase than **[S63a]** and are quite likely to be a continuation of the linear anomalies to the southwest in Area S61 **[S61c].**

8.2.2.6. **Archaeology Probable (Strong & Weak)** – Running on a northeast to southwest alignment across the south of Area S63 are linear anomalies **[S63e]** (Figures 13 & 14). These are visible as two negative, linear anomalies, each one displaying weakly positive borders. These anomalies are spaced c.20m apart and are roughly parallel to one another, although they appear to diverge toward their southwestern ends. These appear to possibly lead towards the complex in Area S61, although no direct connection between these anomalies and those in Area S61 could be identified. While it is difficult to ascertain the purpose of these linear anomalies, these are considered likely to be archaeological in origin.

8.2.2.7. **Archaeology Probable (Strong & Weak) –** Running across Area 61, at least two main sets of parallel curvilinear anomalies **[S61a & b]** have been identified (Figures 25 & 26). These exhibit signals which range from strongly to weakly positively enhanced and are suggestive of possible routeways and/or

boundaries. Further linear anomalies **[S61c]** appear to branch out from **[S61a]** and seem to continue northwards across Area 63.

8.2.2.8. **Archaeology Probable (Strong & Weak)** – In proximity to these possible routeways or boundaries are a series of polygonal and sub-circular enclosures with internal features as well as a series of possible pit alignments. In the north of Area 61, two superimposed polygonal enclosures **[S61d]** have been identified, the northernmost of which appears to extend beyond the boundaries of the survey area (Figures 25 & 26). These cover an area of c. 0.5ha and include several linear and discrete anomalies indicative of internal features. Based on their morphology, they could be Iron Age in date. Another irregular polygonal enclosure, **[S61e],** was identified c. 50 m south of **[S61d]** (Figures 25 & 26). This also exhibits a series of internal features as well as a particularly elongated entrance passageway, which is c. 100m long and connects the enclosure with the trackway **[S61a].** This layout is suggestive of a Banjo Enclosure, suggesting a high status settlement with a possible middle to late Iron Age date, possibly continuing in use into the Roman period. About 30m south of the long entranceway to **[S61e]** is a sub-circular enclosure **[S61f]** (Figures 25 & 26). This seems to be bisected by a series of discrete anomalies which continue beyond the enclosure to the northeast. It is unclear whether this alignment of discrete features connects the enclosure to trackway **[S61a],** or if these are unrelated. A series of linear and sub-circular pit alignments **[S61g]** have also been identified located around enclosure **[S61e]** and trackway **[S61a].**

8.2.2.9. **Archaeology Probable (Strong & Weak)** – A large sub-elliptical enclosure **[S51a & S50a]** was identified located in the west of Area S51, continuing into the east of Area S50 (Figures 22 & 23). This enclosure occupies an area of c. 1.5ha and exhibits possible internal features. A series of linear anomalies identified in the immediate surroundings of the enclosure may possibly relate to a field system associated with it. Based on the geophysical data alone, it is hard to determine a possible date or function for this enclosure.

8.2.2.10. **Archaeology Possible (Strong & Weak)** – Several linear and discrete anomalies have been identified throughout the survey area and marked as "Archaeology Possible" (Figures 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50 & 53). These may relate to further possible archaeological features such as land divisions and are considered likely to relate to further possible archaeological features such as land divisions, partial enclosures, and pits; however, their discontinuity and lack of clear relationships with anomalies of probable archaeological origin determined their categorisation as "Possible" rather than "Probable".

8.2.2.11. **Recent Agricultural (Mapped) –** Linear anomalies of varying signal strength have been identified across the survey area corresponding with former mapped field boundaries. These are located in Areas S14, S38, S44 & S46 (Figures 59, 44, 38, 29).

8.2.2.12. **Recent Agricultural (Unmapped)** – Linear anomalies that do not match any recorded features on historical maps or any features visible on satellite imagery have been identified in the north of Area S12. Given their strongly positive enhancement and their defined edges, these have been interpreted as possibly corresponding with unmapped field boundaries.

8.2.2.13. **Drainage Feature** – Linear anomalies have been identified across the survey area that likely relate to drainage features. While some exhibit a weak positive magnetic signal (Area S44, Figures 37 & 38), others show a strongly positive magnetic signal (Areas S28 & 42, Figures 47 & 29). Another linear anomaly exhibits a dipolar signal instead which is typical of ceramic drains (Area S38, Figures 28 & 29).

8.2.2.14. **Natural Geology (Strong, Weak & Spread)** – Across the survey area, several bands and discrete anomalies were identified which have been interpreted as natural in origin. Throughout the west of the survey area, natural variations relating to downslope transportation of unconsolidated material has produced braids and bands of more positively enhanced sediments categorised as "Natural Geology (Strong & Weak)" Areas S5, S12, S13, S14, S19, S20, S35, S37, S38, S44, S45, S67) (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56 & 59). In the east of the survey area, broad areas characterised by a mottled effect have been identified (Areas S42, S46, S50-51, S55, S60, S61 & S63) (Figures 14, 17, 20, 23, 26 & 29). These will have likely been produced from dissolution of the calcite structure of the limestone bedrock and its subsequent infilling with contrasting sediment.

8.2.2.15. **Recent Industry** – Two strongly enhanced, amorphous, dipolar anomalies have been identified within the east of Area S44 and west of Area S35 (Figures 34 & 35). These anomalies align with a quarry, depicted on historical OS maps (Figure 6)

8.2.2.16. **Undetermined** – Scattered across Areas S35 and S44 are a series of weak, positively enhanced curvilinear anomalies have been identified **[S35a, S44a]** (Figures 35 & 38). These appear to describe partial circles and often include a circular, linear or discrete anomaly within. They share similar dimensions, ranging from 7m to 11m in diameter, and do not correspond with anything recorded on historical mapping. Given their shape and dimensions, it is possible (though unlikely) that these represent round barrows. However, their weak signal and discontinuous layout makes it difficult to attribute a more certain interpretation and they are perhaps more likely to indicate modern activity of unknown origin.

8.2.2.17. **Undetermined** – Strongly enhanced, curvilinear anomalies have been identified in Areas S13 **[13a]**, S19 **[19a]** and S20 **[20a]** (Figures 49 & 50). These do not appear to correlate with anything visible on historical mapping or on available satellite imagery. Based on their morphology, they may relate to natural

features such as streams; however, their very defined edges are suggestive of a possible re-use as field boundaries. Their origin remains overall uncertain.

9. Conclusions

9.1. A fluxgate gradiometer survey has successfully been undertaken across a c. 143.8ha area of land, with c. 23.7ha unable to be surveyed due to unsuitable ground conditions. The survey has generally responded well to the environment of the survey area which produced a relatively quiet magnetic background. Modern interference is generally limited to field boundaries, services and overhead cables. Bands related to the downslope transportation of unconsolidated material have been identified in the west of the survey area, while broad areas characterised by a mottled effect and likely to have been produced from dissolution of the calcite structure of the limestone bedrock have been identified in the east of the survey area.

9.2. Three main *foci* of archaeological activity have been identified in the southeast of the survey area. The first focus, located in Areas S60 and S63, consists of a complex group of anomalies comprising a large, partial square enclosure, with dense concentrations of linear and discrete anomalies located within it. This complex occupies a c. 4ha area of land and corresponds with the remains of Waltham Roman Villa (see Section 5.5.3). About 100m east of this complex, a group of smaller square concentric anomalies has been identified that may represent a Romano-celtic temple.

9.3. A circular feature has been identified to the immediate east of the large, sub-square enclosure, in Area S63. This may either indicate the presence of a round barrow or, alternatively a roundhouse or similar structure, possibly associated with the large sub-square enclosure complex.

9.4. A second *focus* of archaeological activity was recorded in Area S61. This comprises a series of polygonal and sub-circular enclosures with internal features, as well as a series of possible pit alignments. The enclosures include: two superimposed polygonal enclosures; a possible Banjo Enclosure; a small, sub-circular enclosure; and a series of linear and sub-circular pit alignments recorded around the possible Banjo Enclosure. Around these enclosures are a series of curvilinear anomalies which may relate to boundaries and/or routeways. This complex is considered likely to date to the Iron Age but earlier dates and/or a continuation of use through to the Roman period cannot be excluded.

9.5. Possible extensions of this prehistoric complex have been identified crossing the large, sub-square complex, located to its immediate north, within Areas S60 and S63. These consist of a series of curvilinear anomalies overlapping and running at an angle to the anomalies pertaining to the sub-square complex. Two roughly parallel linear anomalies crossing Area S63 on an east-west alignment were also identified and may relate to a large routeway or to two separate trackways. It is unclear whether these may relate to the prehistoric complex in Area S61 or to the large, sub-square enclosure in Areas S60 and S63.

9.6. A third *focus* of archaeological activity was identified in the form of a large sub-elliptical enclosure located in the west of Area S51 and continuing into the east of Area S50. Based on the geophysical data alone, it is hard to determine a possible date or function for this enclosure.

9.7. Evidence of mapped and unmapped field boundaries was identified across Areas S14, S38, S44 & S46 and Area S12 respectively. Ridge and furrow cultivation trends were identified in Areas S60 and S63 and modern ploughing trends and drains were also recorded throughout the majority of the survey area.

9.8. Anomalies of undetermined origin have also been identified across the survey area. Present across Areas S35 and S44 area a series of anomalies that could represent round barrows; however, their weak signal and discontinuous layout makes it difficult to attribute a more certain interpretation. Further, curvilinear anomalies of undetermined origin have been identified in Areas S13, S19 and S20. Based on their morphology, they may relate to natural features such as streams; however, their very defined edges are suggestive of a possible re-use as field boundaries.

10. Archiving

10.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report.

10.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to any dictated time embargoes.

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12. References

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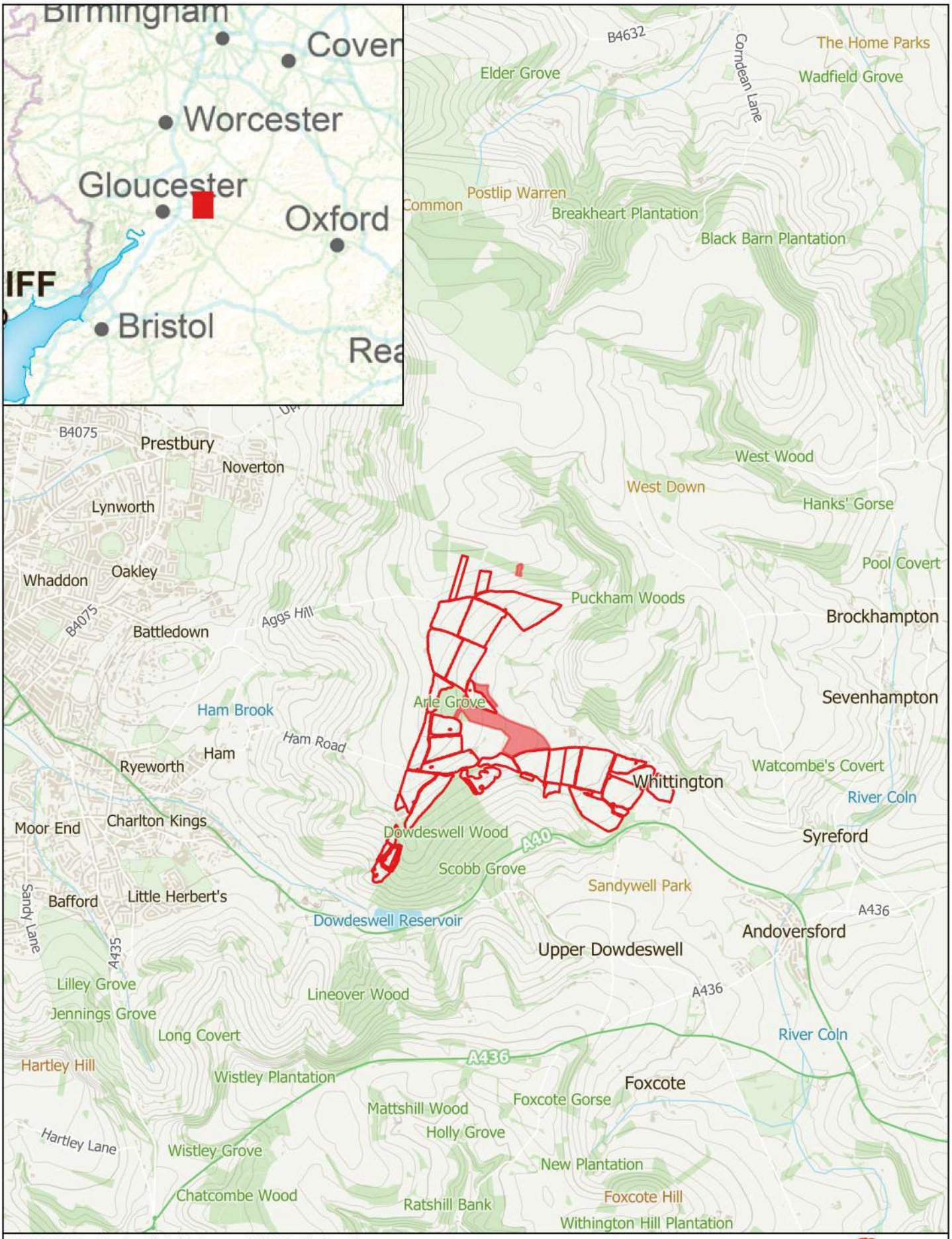
13. Project Metadata

MS Job Code	MSSP1587
Project Name	National Grid Cotswold, Cheltenham
Client	Cotswold Archaeology
Grid Reference	(SO 9953 2119)
Survey Techniques	Magnetometry
Survey Size (ha)	178.35ha (Magnetometry)
Survey Dates	2023-07-05 to 2023-11-08
Project Lead	Dr Paul S. Johnson FSA MCIfA
Project Officer	Isabella Carli BA MA PCIfA, Sacha O' Connor BA, Daniel Wilkinson BA (Hons)
HER Event No	TBD
OASIS No	TBD
S42 Licence No	N/A
Report Version	0.5

14. Document History

Version	Comments	Author	Checked By	Date
0.1	Initial draft for Project Lead to Review	BO	IC	04 January 2024
0.2	Comments from Project Officer	IC, DW, MC	PSJ	10 January 2024
0.3	Comments from Director	IC, MC	PSJ	15 January 2024
0.4	Further Comments from Director	IC, MC	PSJ	17 January 2024
0.5	Comments from Client	IC	PSJ	18 January 2024



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 1 - Site Location
1:25,000 @ A4
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N

0 0.5 1 1.5 km

Site Boundary

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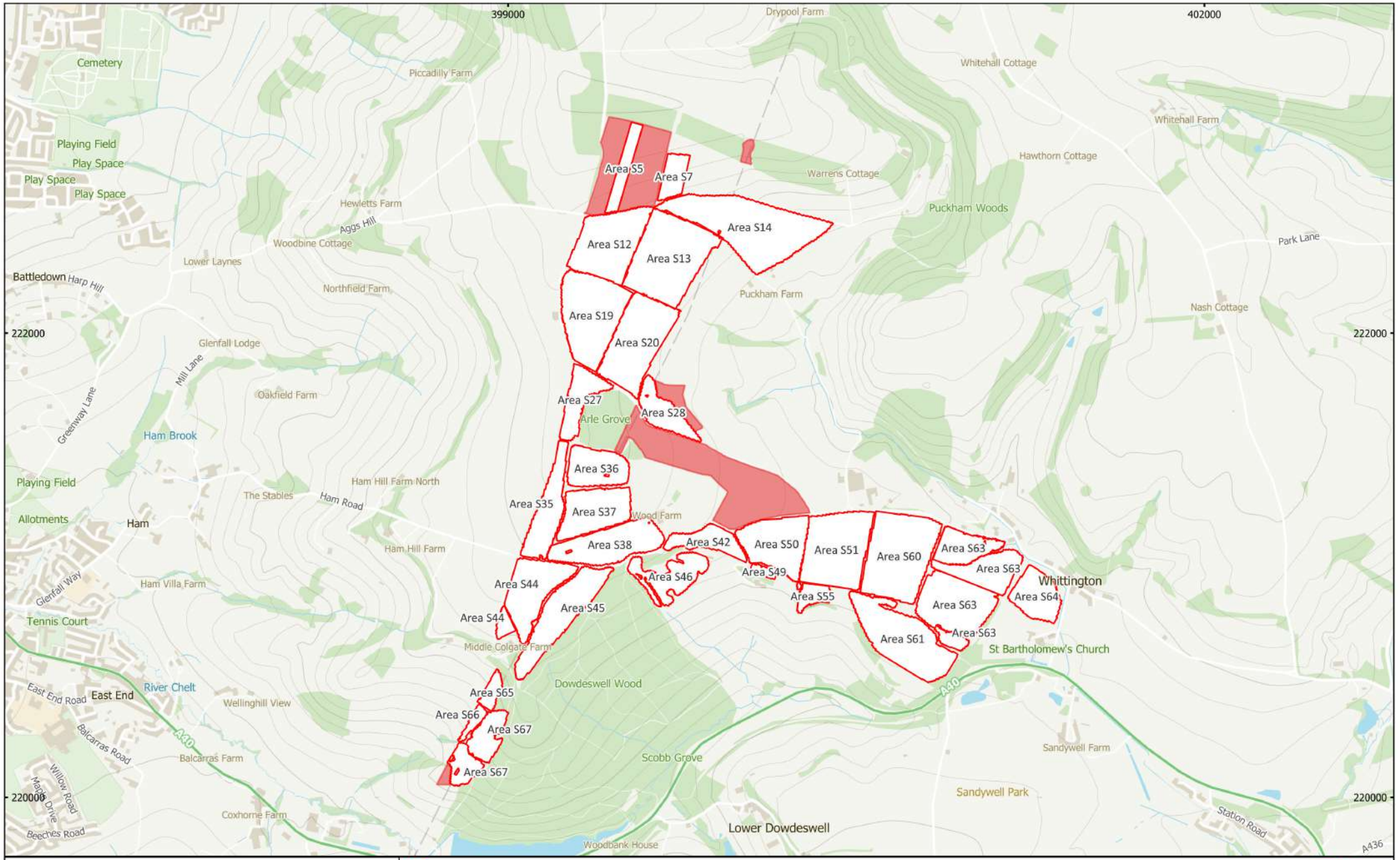

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Figure 2 - Location of Survey Areas
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Survey Extent
Not Able to be Surveyed

N

0 200 400 600 m

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Figure 3 - Magnetic Total Field (Lower Sensor) (Overview) (Areas S50, S51, S55, S60, S61, S63 & S64)
1:3,500 @ A3
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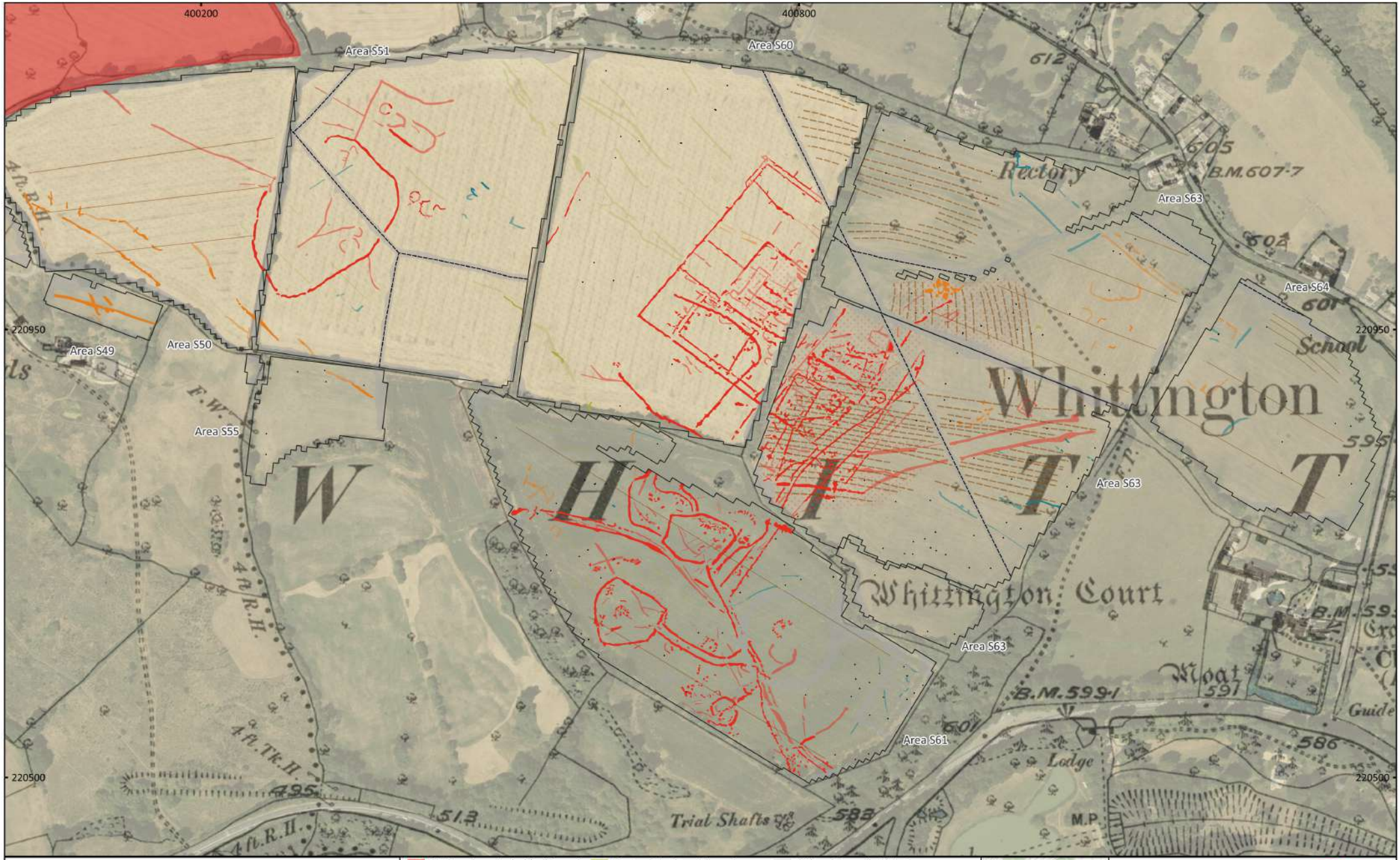

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 4 - Magnetic Interpretation Over Historical Maps and Satellite Imagery (Overview) (Areas S50, S51, S55, S60, S61, S63 & S64)
1:3,500 @ A3
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Contains satellite imagery © Bing Satellite 2024

- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Probable (Spread)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 5 - Magnetic Total Field (Lower Sensor) (Overview) (Areas S35, S36, S37, S38, S44, S45, S46 & S50)
1:3,500 @ A3
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48,990 nT 49,020

N

0 50 100 150 m

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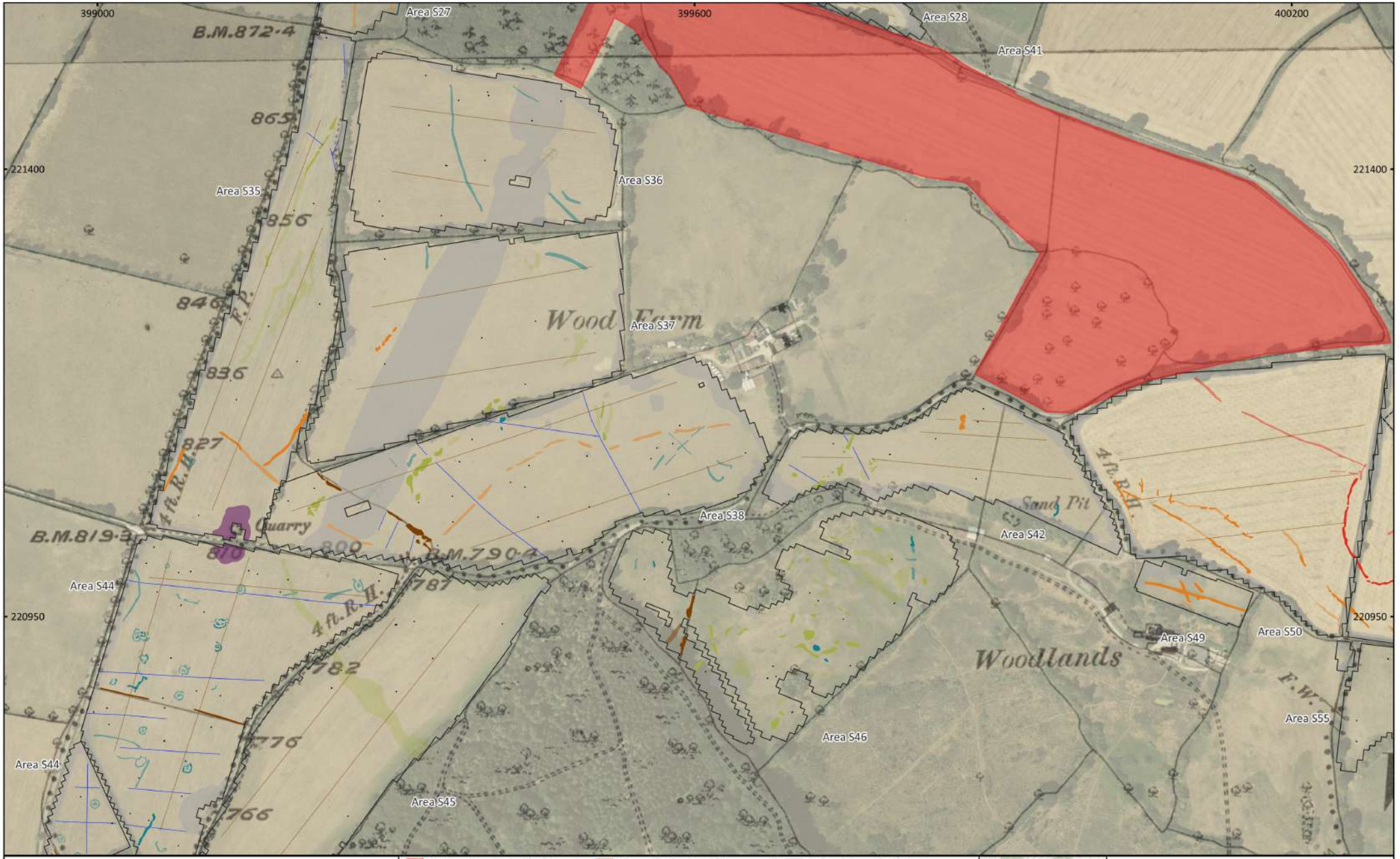

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Figure 6 - Magnetic Interpretation Over Historical Maps and Satellite Imagery (Overview) (Areas S35, S36, S37, S38, S44, S45, S46 & S50)
1:3,500 @ A3
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- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Recent Industry
- Recent Agricultural (Mapped)
- Recent Agricultural (Unmapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Drainage Feature
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

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Figure 7 - Magnetic Total Field (Lower Sensor) (Overview) (Areas S44, S45, S65, S66 & S67)
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48,990 nT 49,020

N

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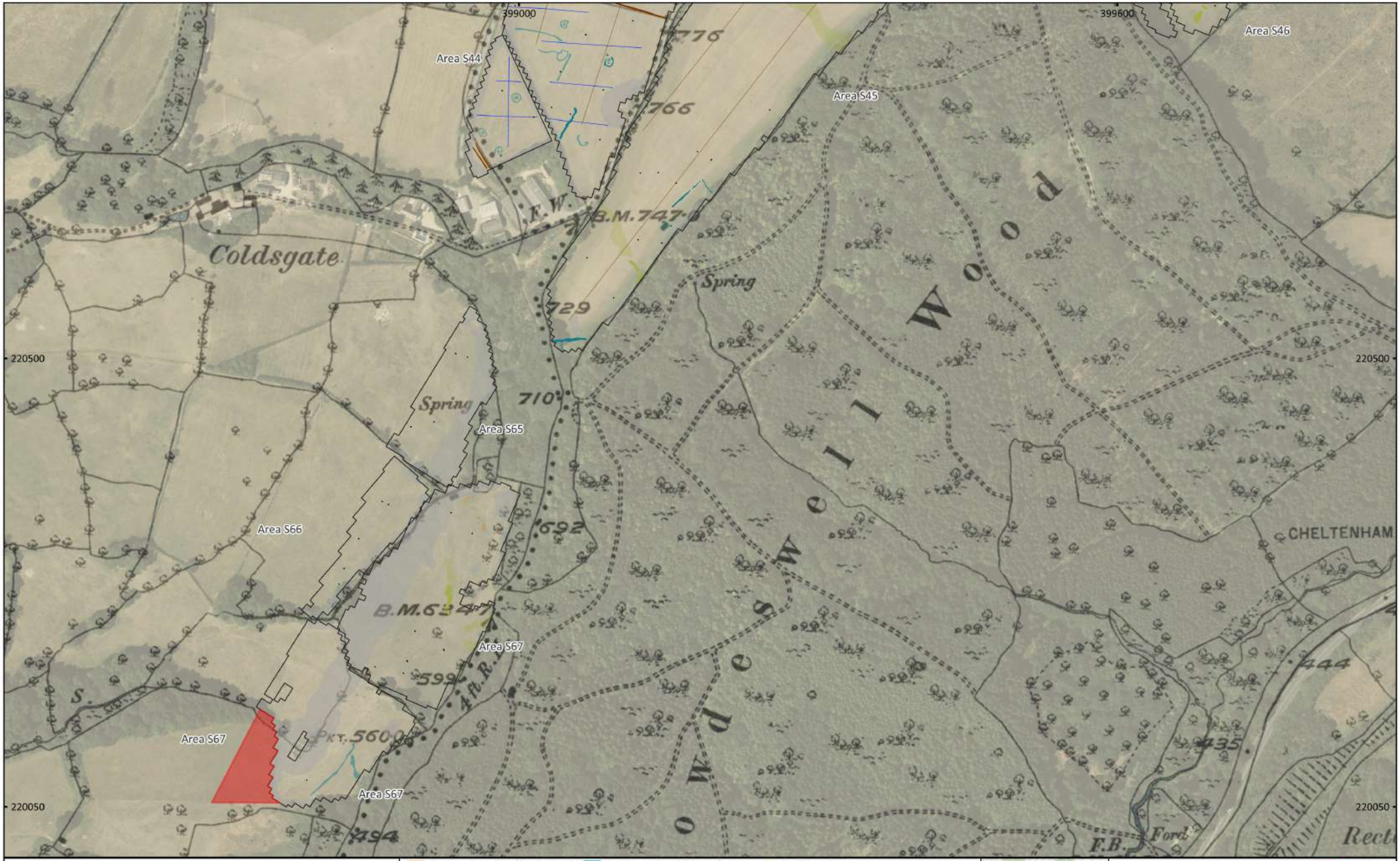

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Figure 8 - Magnetic Interpretation Over Historical Maps and Satellite Imagery (Overview) (Areas S44, S45, S65, S66 & S67)
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- Archaeology Possible (Weak)
- Recent Agricultural (Mapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Drainage Feature
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

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Figure 9 - Magnetic Total Field (Lower Sensor) (Overview) (Areas S19, S20, S27, S28 & S29)
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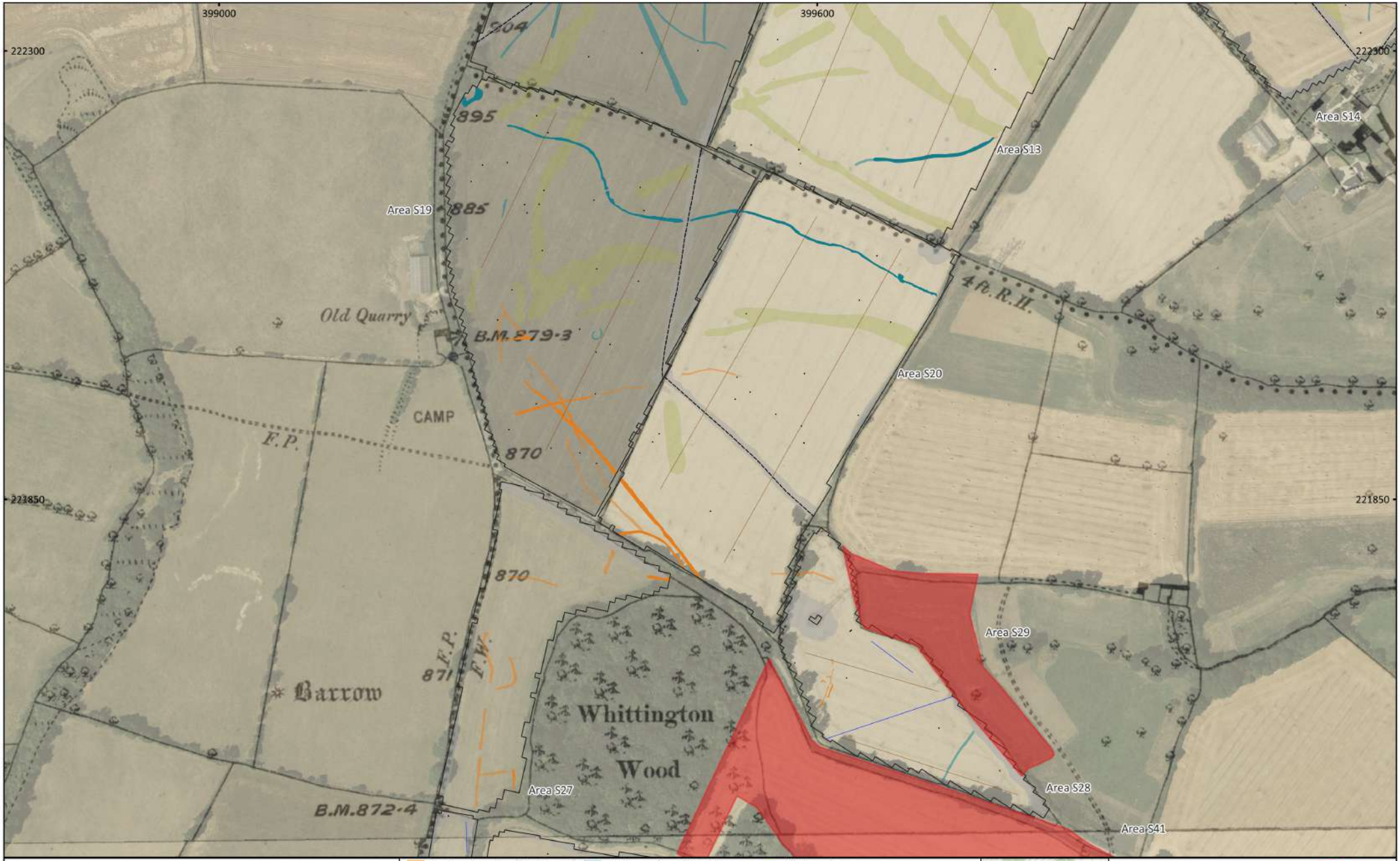

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Figure 10 - Magnetic Interpretation Over Historical Maps and Satellite Imagery (Overview) (Areas S19, S20, S27, S28 & S29)
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- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Drainage Feature
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

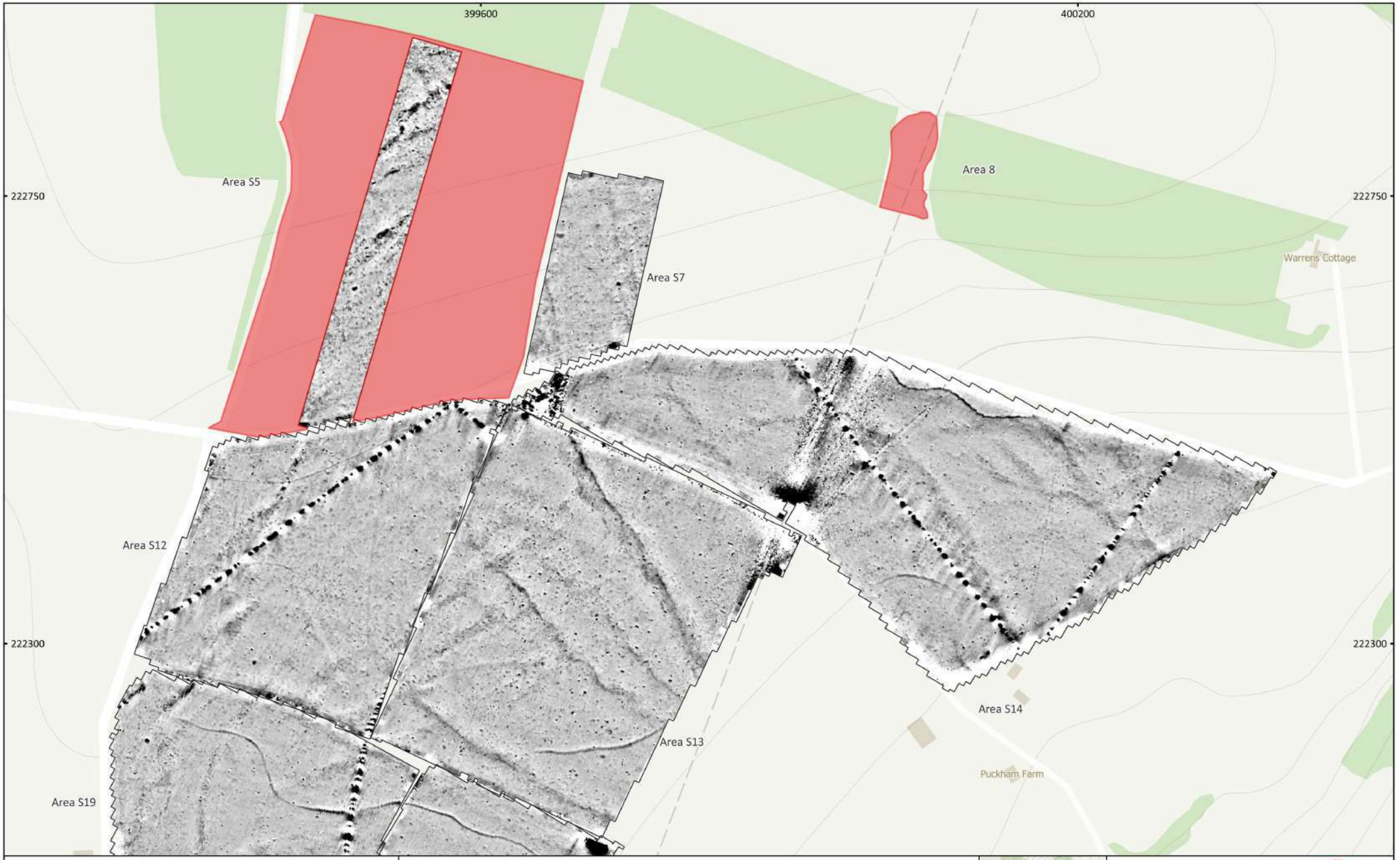

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Figure 11 - Magnetic Total Field (Lower Sensor) (Overview) (Areas S5, S7, S12, S13 & S14)
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48,990 nT 49,020

N

0 50 100 150 m

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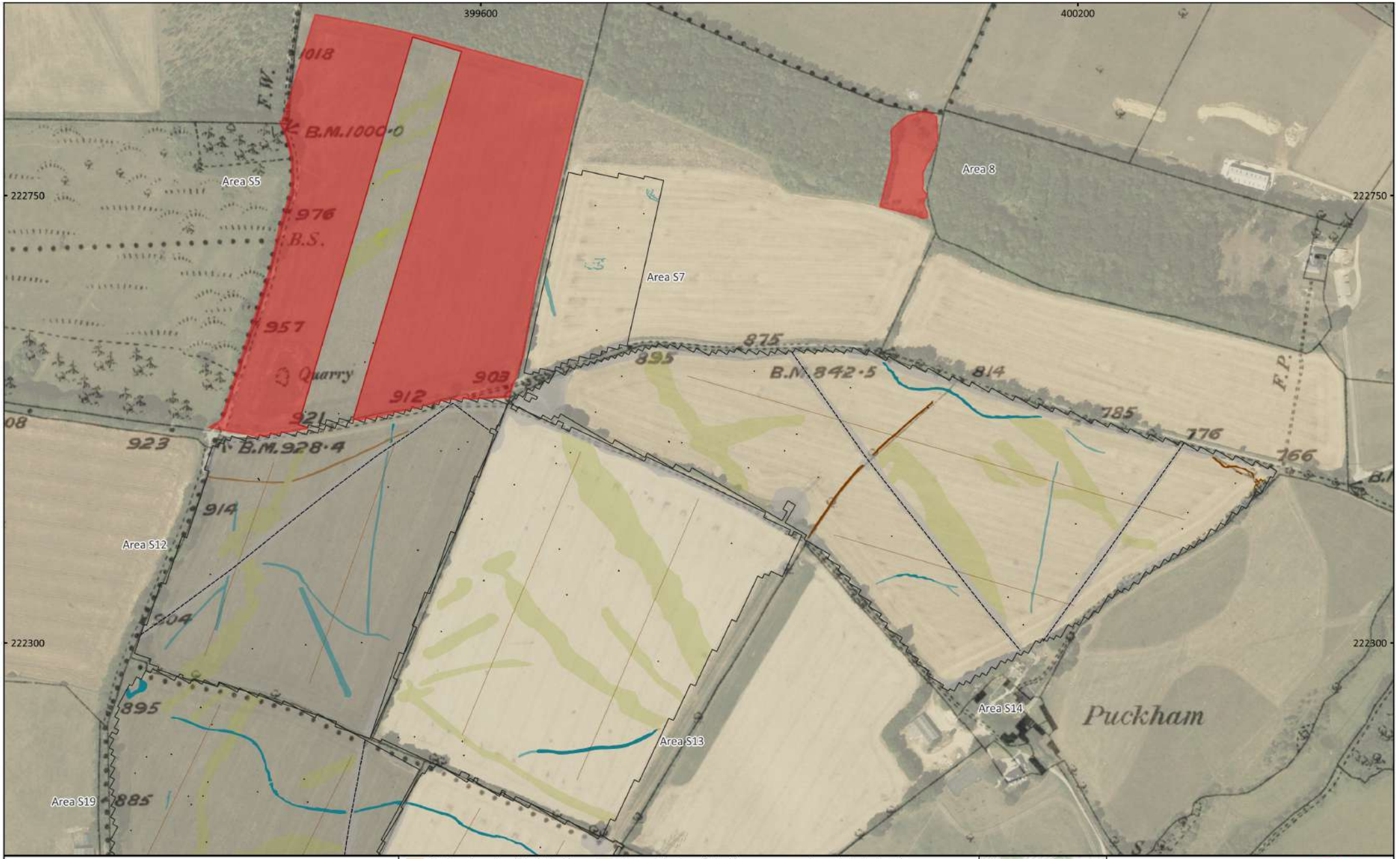

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Figure 12 - Magnetic Interpretation Over Historical Maps and Satellite Imagery (Overview) (Areas S5, S7, S12, S13 & S14)
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- Archaeology Possible (Weak)
- Recent Agricultural (Mapped)
- Recent Agricultural (Unmapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 50 100 150 m

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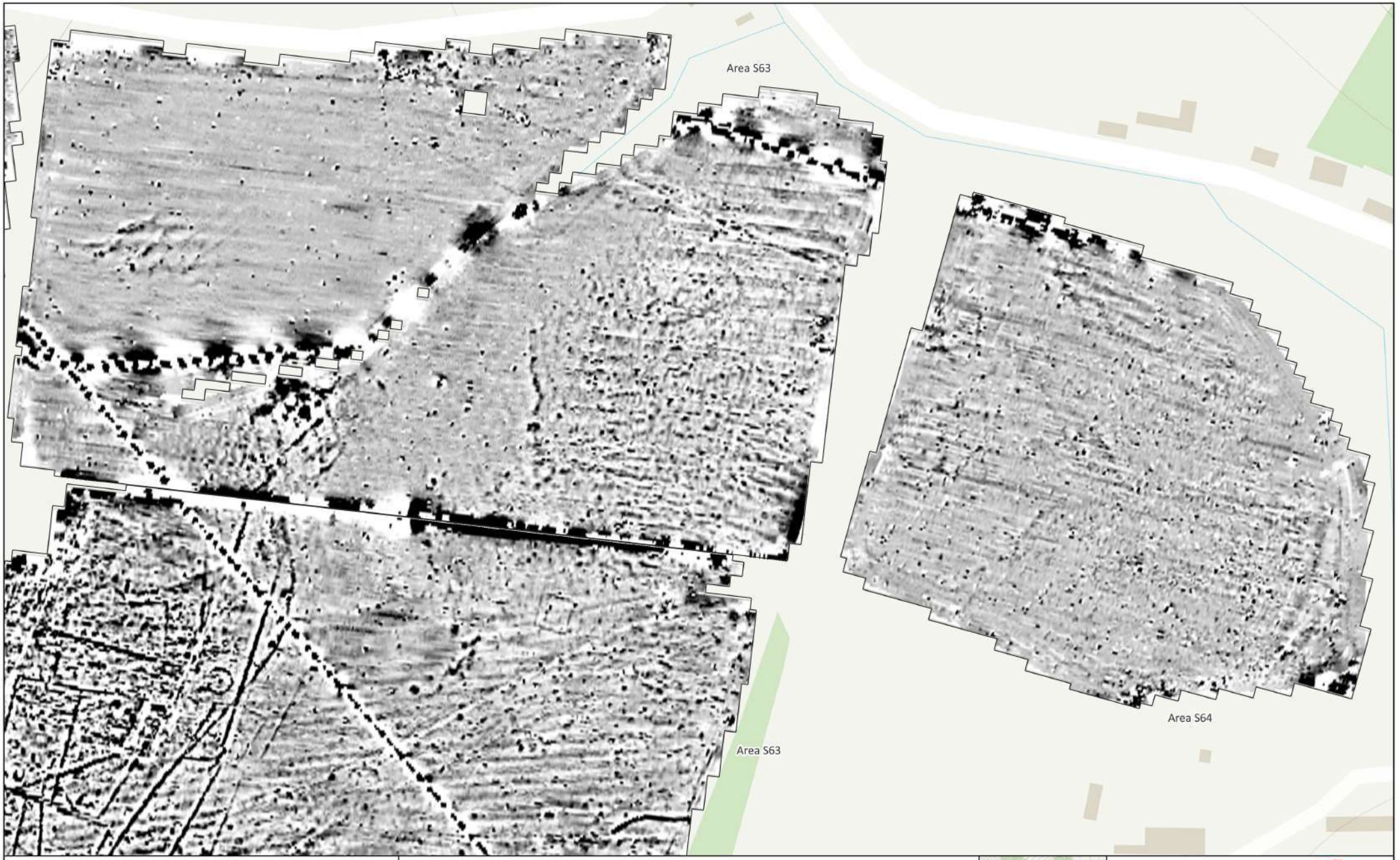

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Figure 13 - Magnetic Gradient (Areas S63 & S64)
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-1 nT 2

N

0 20 40 60 m

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Figure 14 - Magnetic Interpretation (Areas S63 & S64)
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- Archaeology Probable (Weak)
- Archaeology Probable (Spread)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys

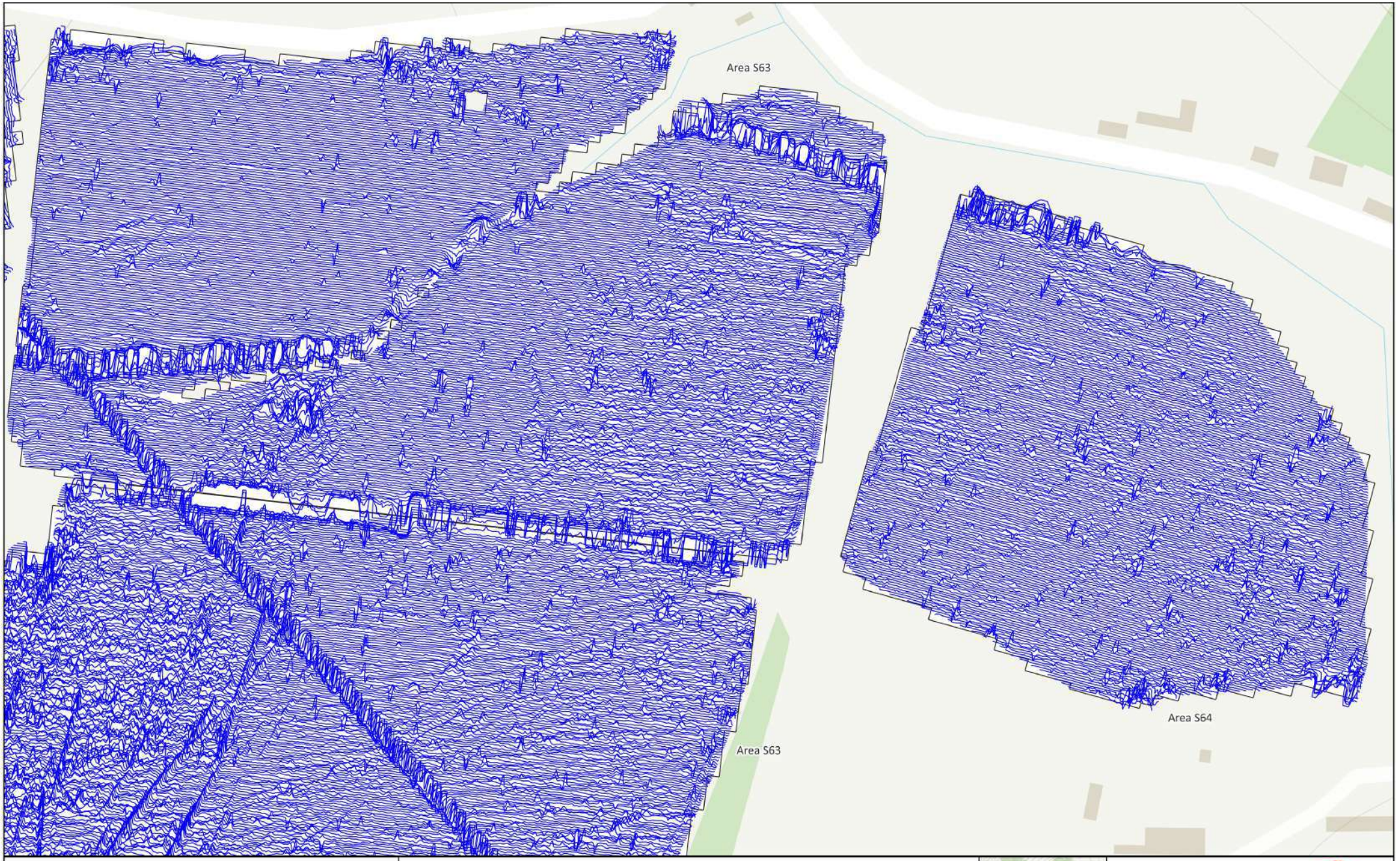

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Figure 15 - XY Trace Plot (Areas S63 & S64)
30nT/cm at 1:1,500 @ A3
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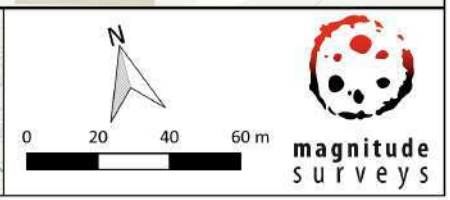

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Figure 16 - Magnetic Gradient (Areas S60, S61 & S63)
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-1 nT 2

N

0 20 40 60 m

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Figure 17 - Magnetic Interpretation (Areas S60, S61 & S63)
1:1,500 @ A3
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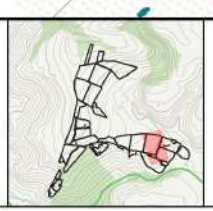
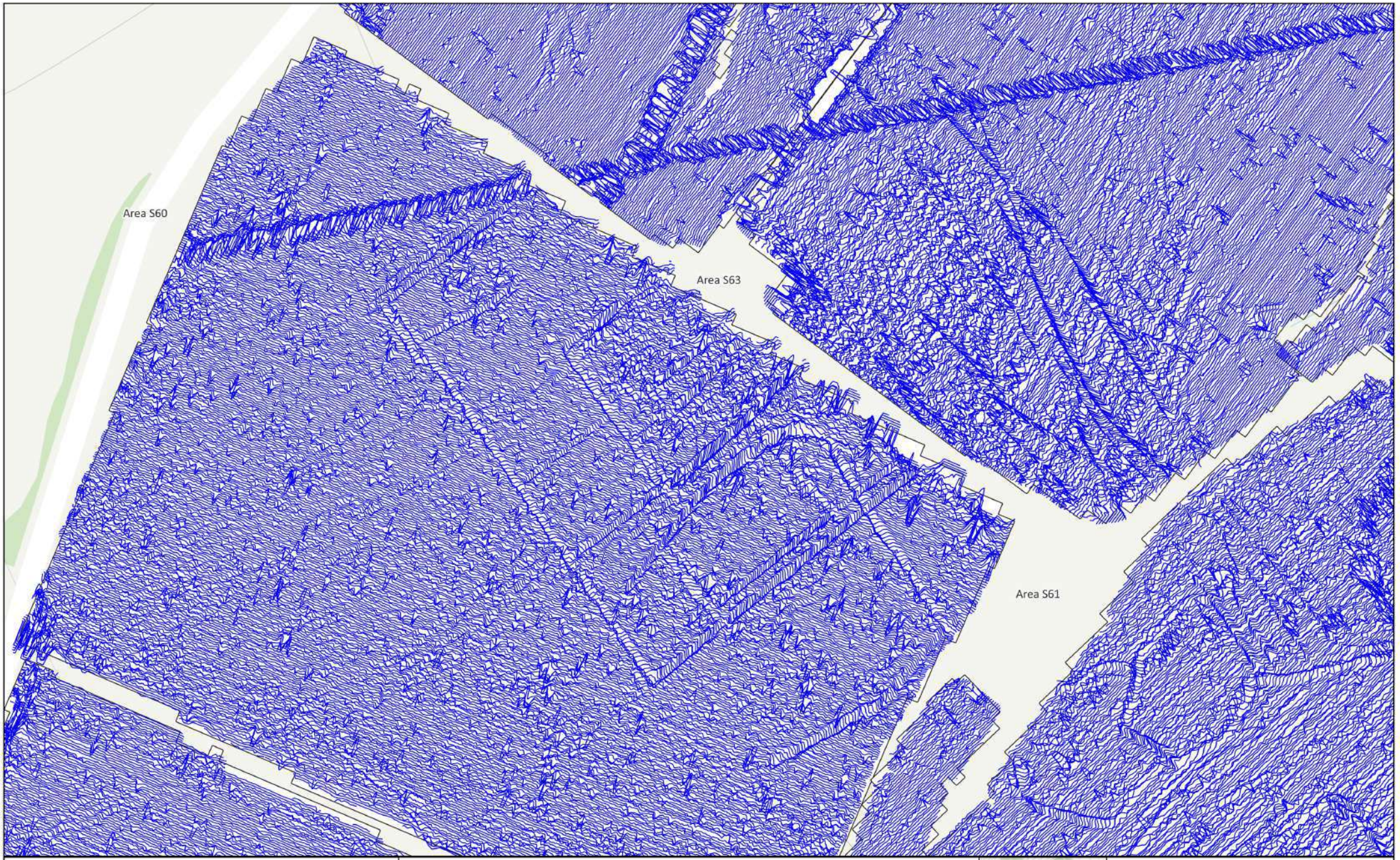
- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Probable (Spread)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Recent Agricultural
- Service
- Ferrous (Spike)



N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 18 - XY Trace Plot (Areas S60, S61 & S63)
30nT/cm at 1:1,500 @ A3
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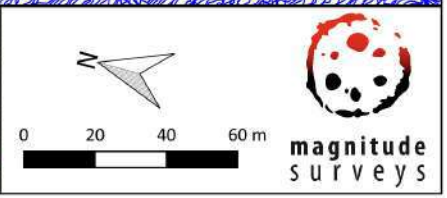

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 19 - Magnetic Gradient (Areas S49, S50, S55 & S61)
1:1,500 @ A3
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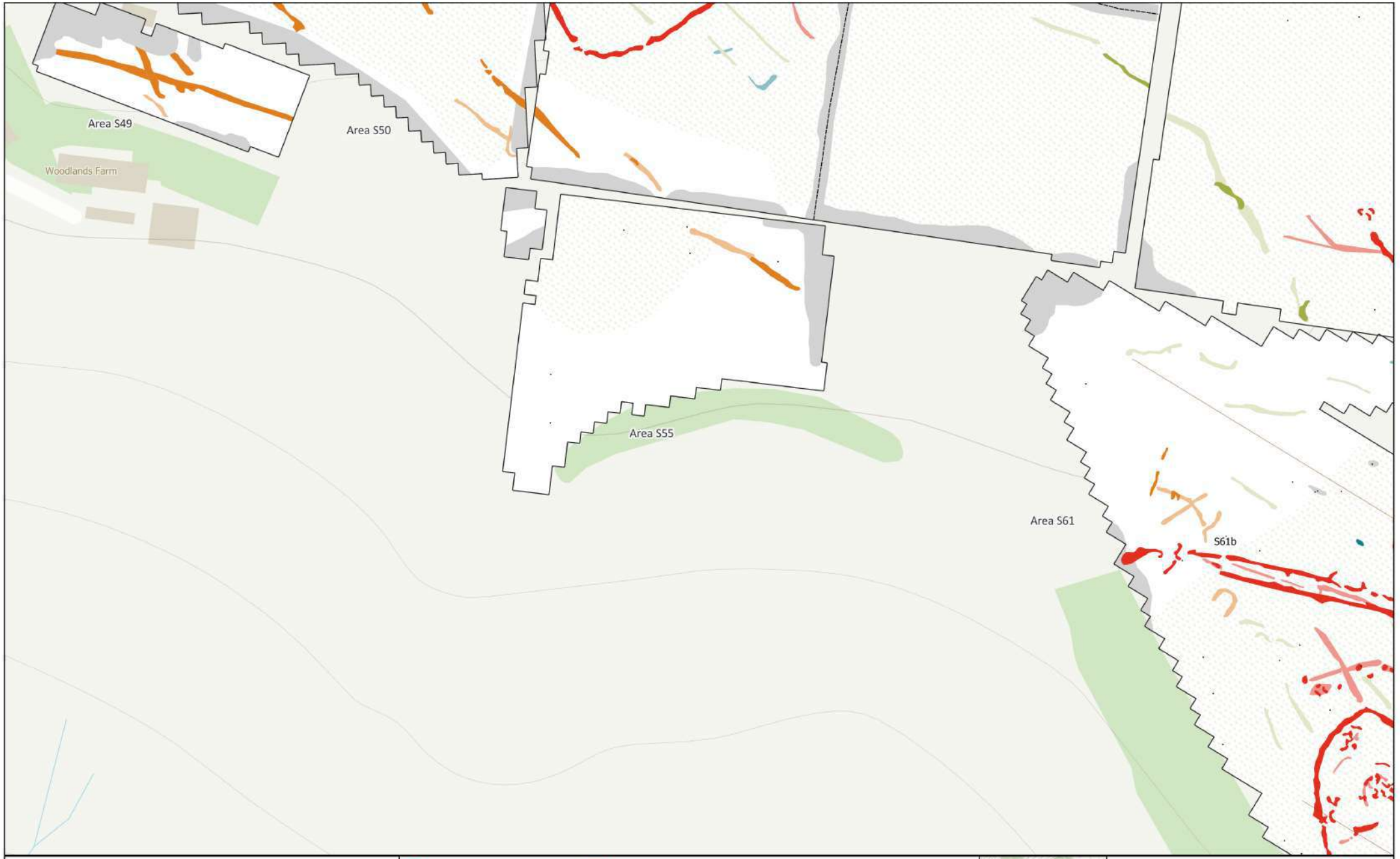
-1 nT 2

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 20 - Magnetic Interpretation (Areas S49, S50, S55 & S61)
1:1,500 @ A3
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- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 21 - XY Trace Plot (Areas S49, S50, S55 & S61)
30nT/cm at 1:1,500 @ A3
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N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 22 - Magnetic Gradient (Areas S49, S50 & S51)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

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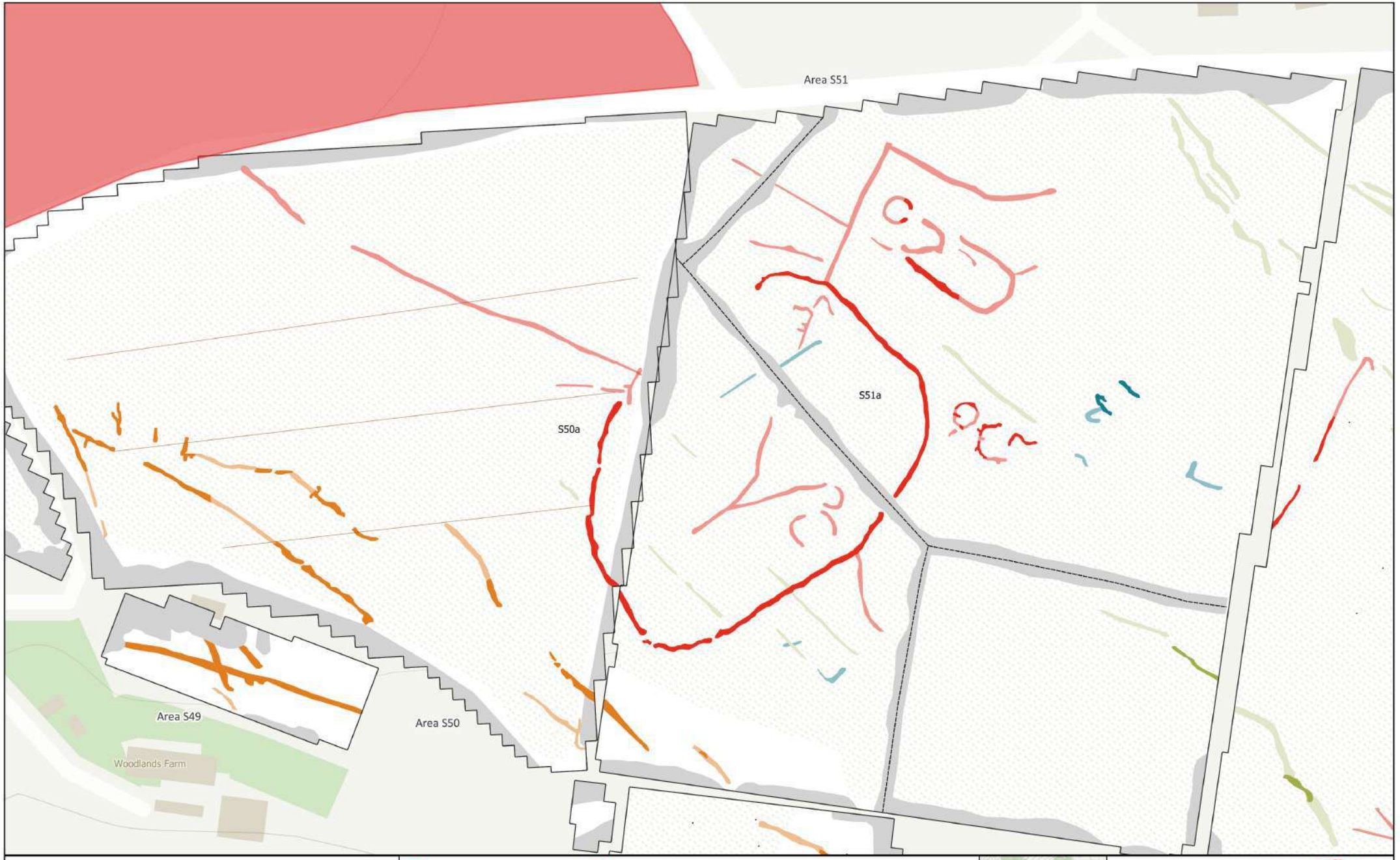

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 23 - Magnetic Interpretation (Areas S49, S50 & S51)
1:1,500 @ A3
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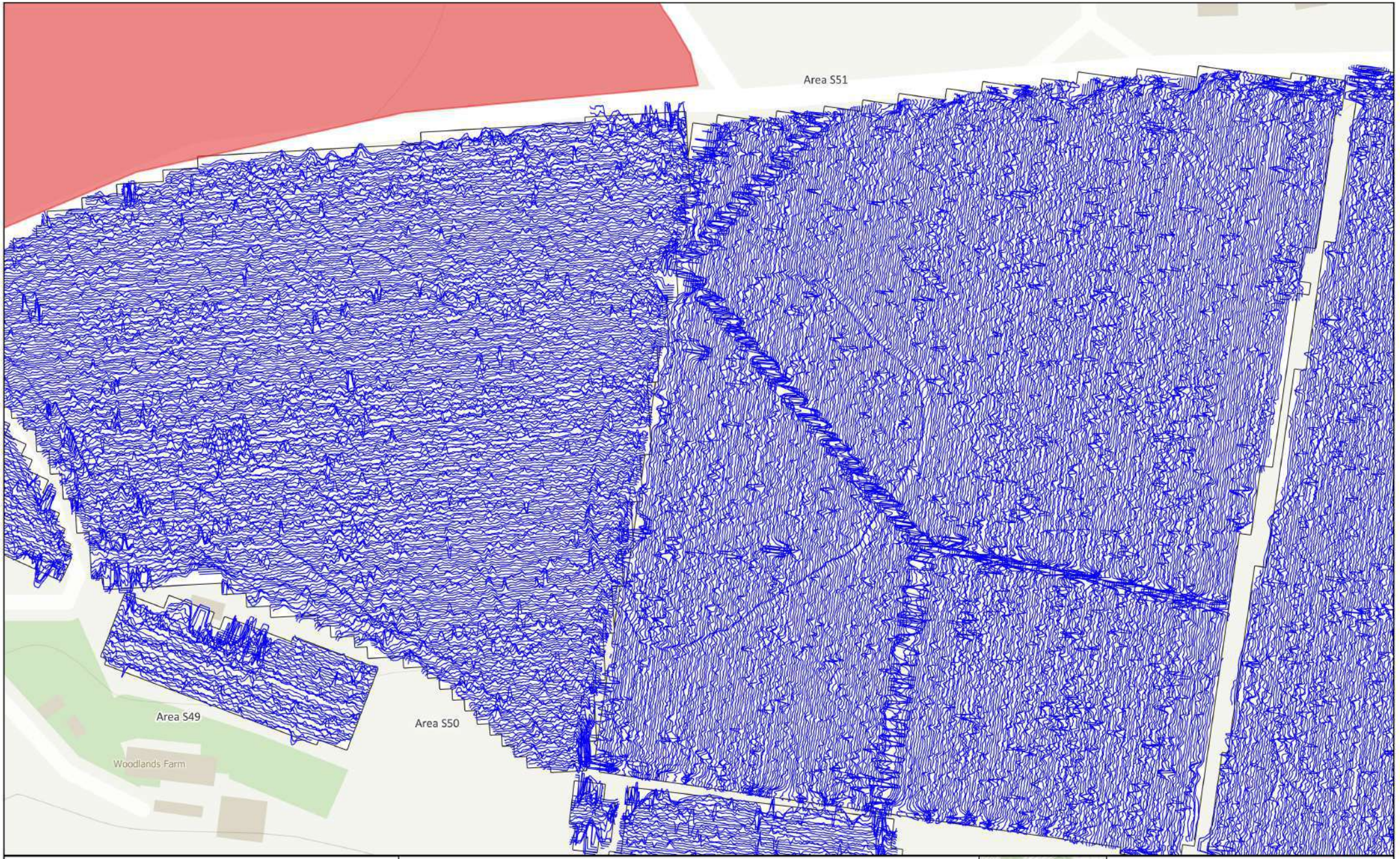
- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 24 - XY Trace Plot (Areas S49, S50 & S51)
30nT/cm at 1:1,500 @ A3
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N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 25 - Magnetic Gradient (Areas S61 & S63)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 26 - Magnetic Interpretation (Areas S61 & S63)
1:1,500 @ A3
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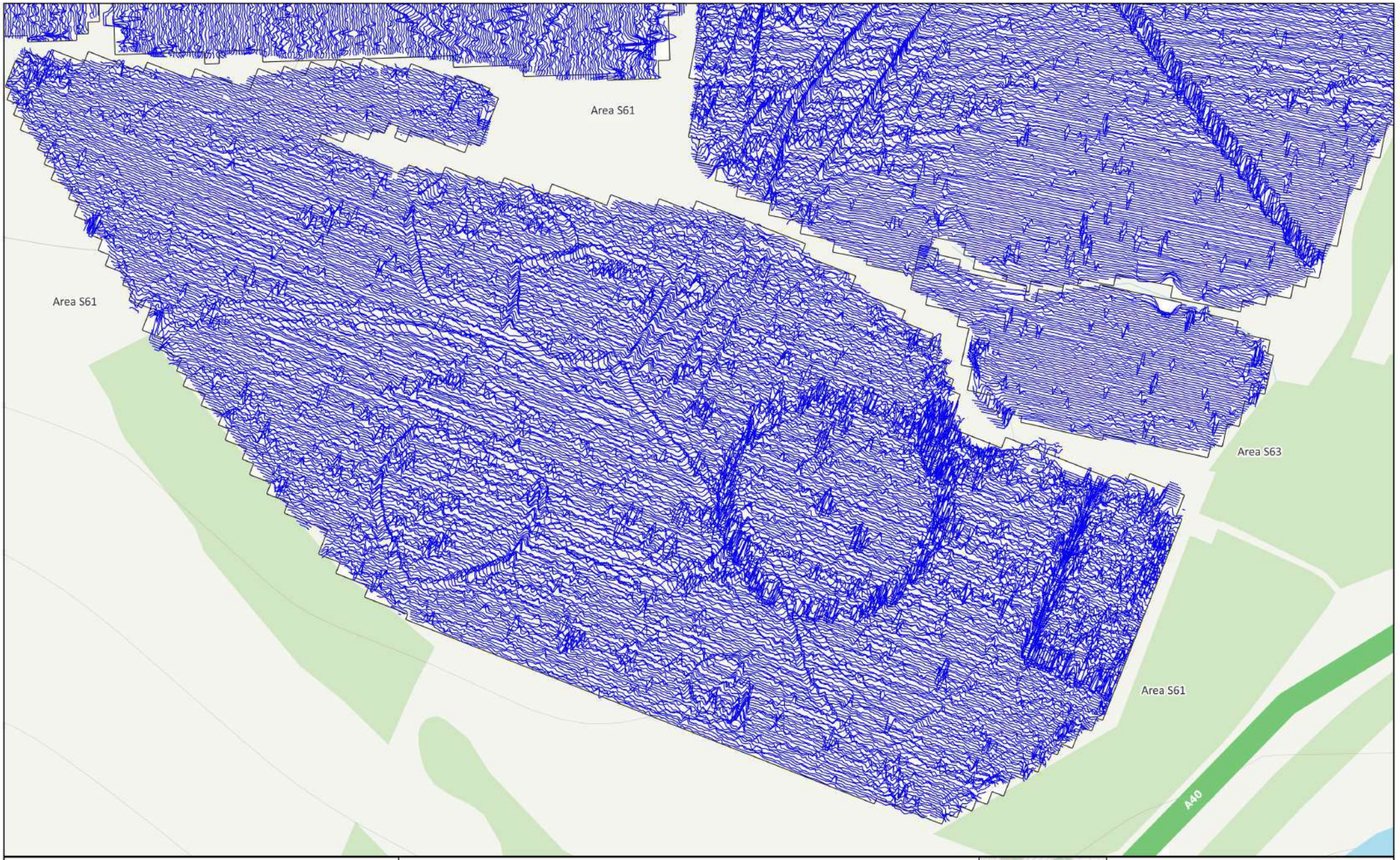
- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Probable (Spread)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 27 - XY Trace Plot (Areas S61 & S63)
30nT/cm at 1:1,500 @ A3
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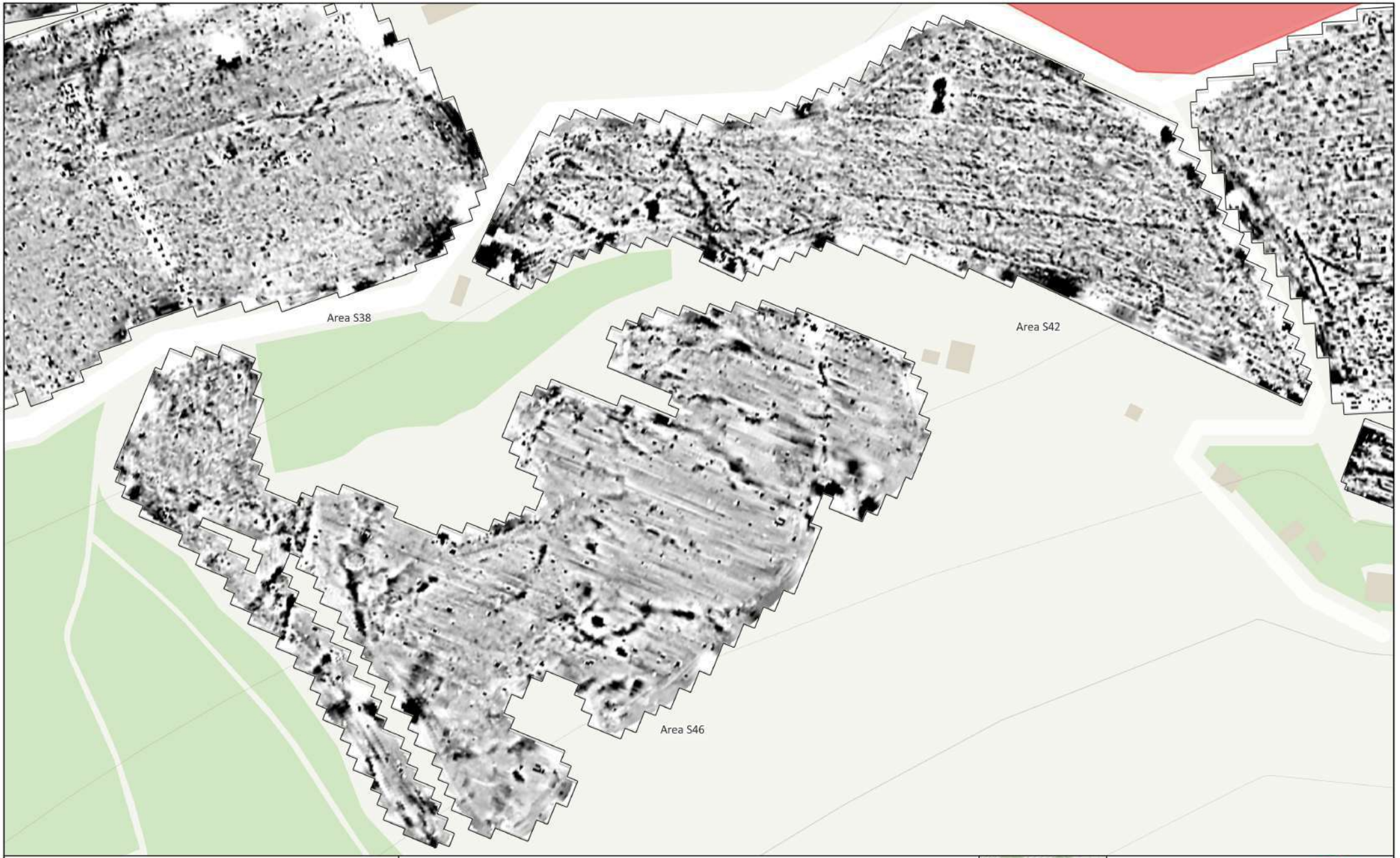
N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 28 - Magnetic Gradient (Areas S38, S42, S45 & S46)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 29 - Magnetic Interpretation (Areas S38, S42, S45 & S46)
1:1,500 @ A3
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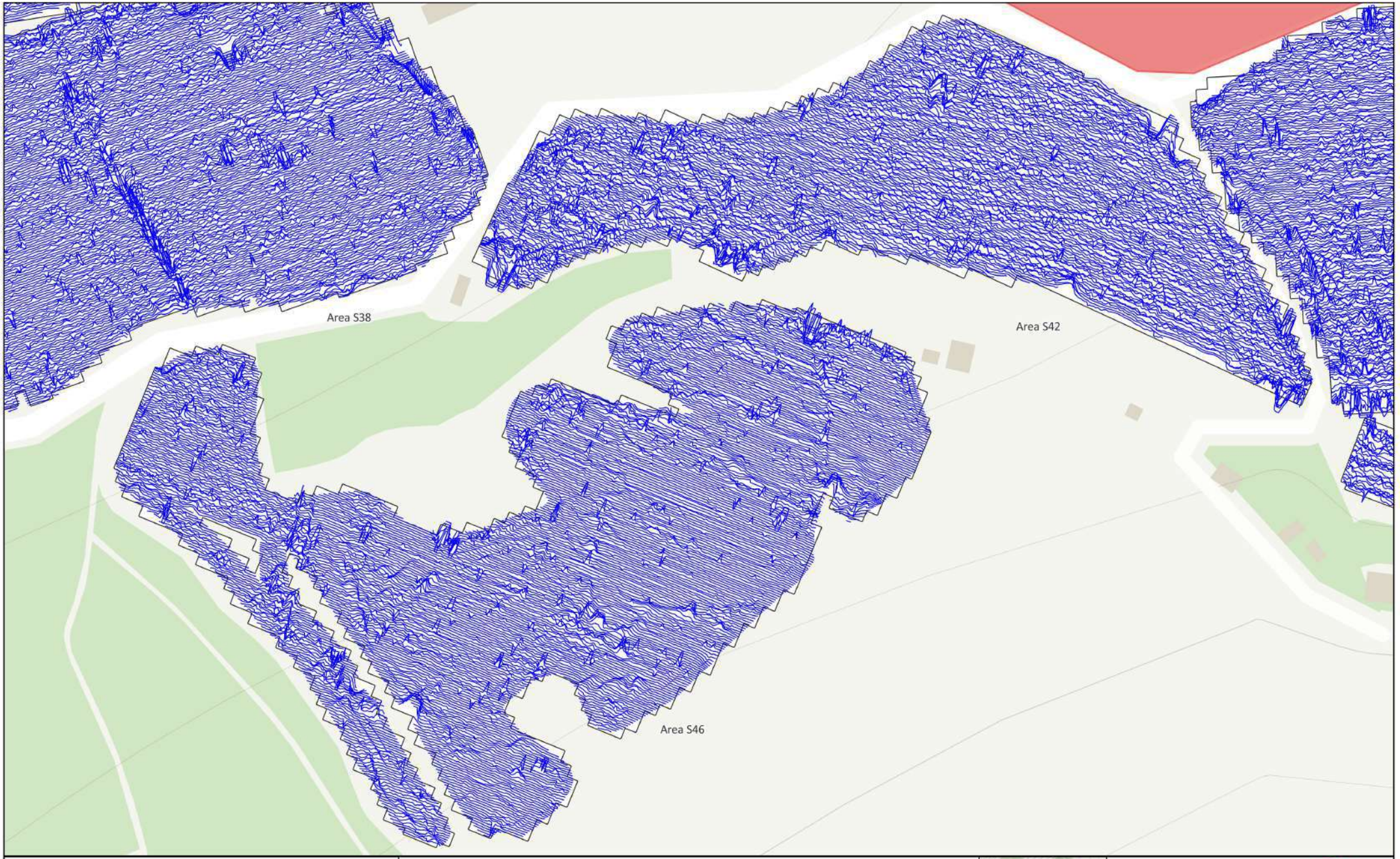
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Recent Agricultural (Mapped)
- Recent Agricultural (Unmapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Natural Geology (Spread)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Drainage Feature
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 30 - XY Trace Plot (Areas S38, S42, S45 & S46)
30nT/cm at 1:1,500 @ A3
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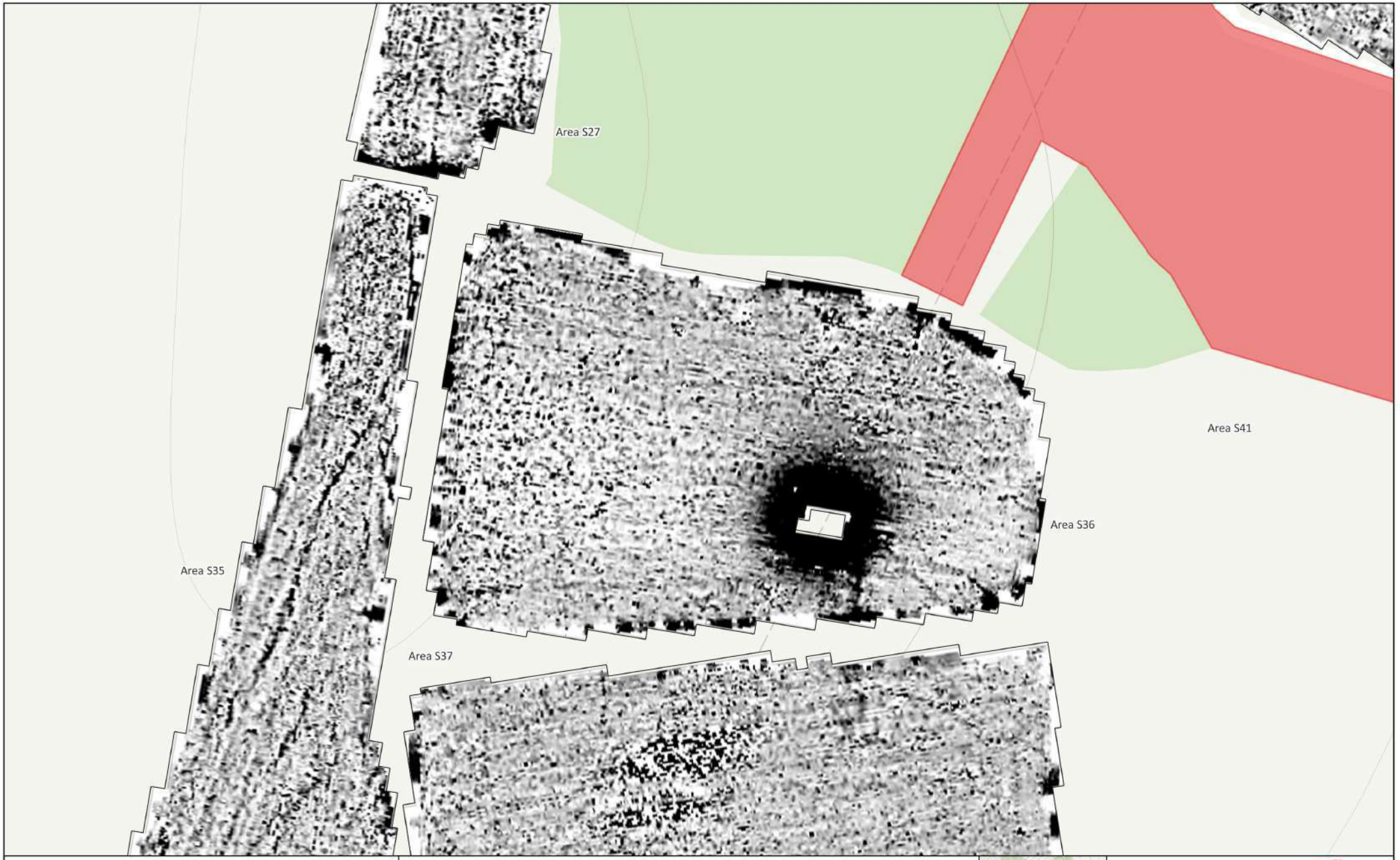
N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 31 - Magnetic Gradient (Areas S27, S35, S36 & S37)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

magnitude surveys

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 32 - Magnetic Interpretation (Areas S27, S35, S36 & S37)
1:1,500 @ A3
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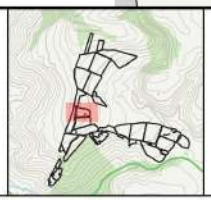
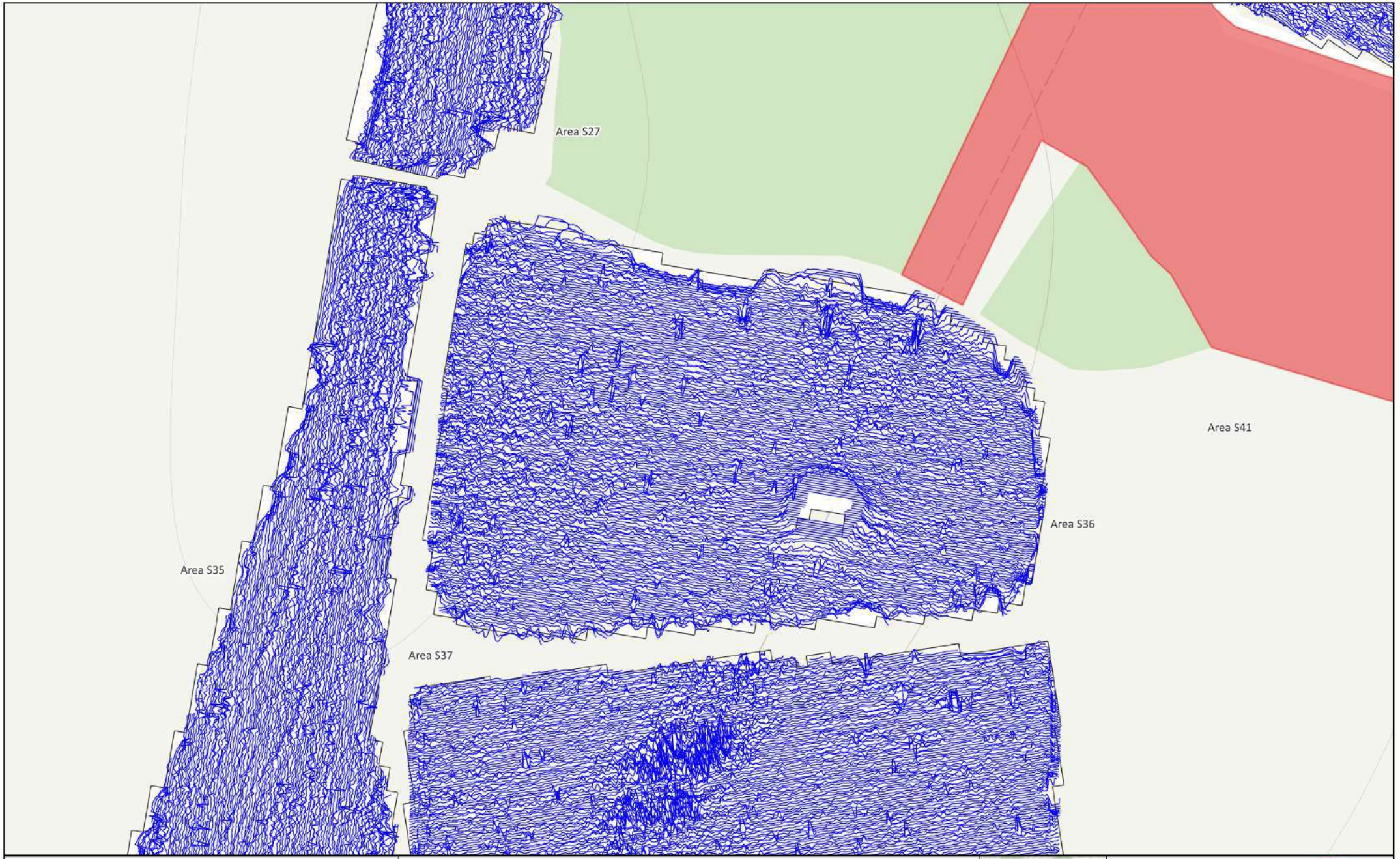
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Drainage Feature
- Ferrous (Spike)



N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 33 - XY Trace Plot (Areas S27, S35, S36 & S37)
30nT/cm at 1:1,500 @ A3
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N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 34 - Magnetic Gradient (Areas S35 & S37)
1:1,500 @ A3
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-1 nT 2

0 20 40 60 m

magnitude surveys

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 35 - Magnetic Interpretation (Areas S35 & S37)
1:1,500 @ A3
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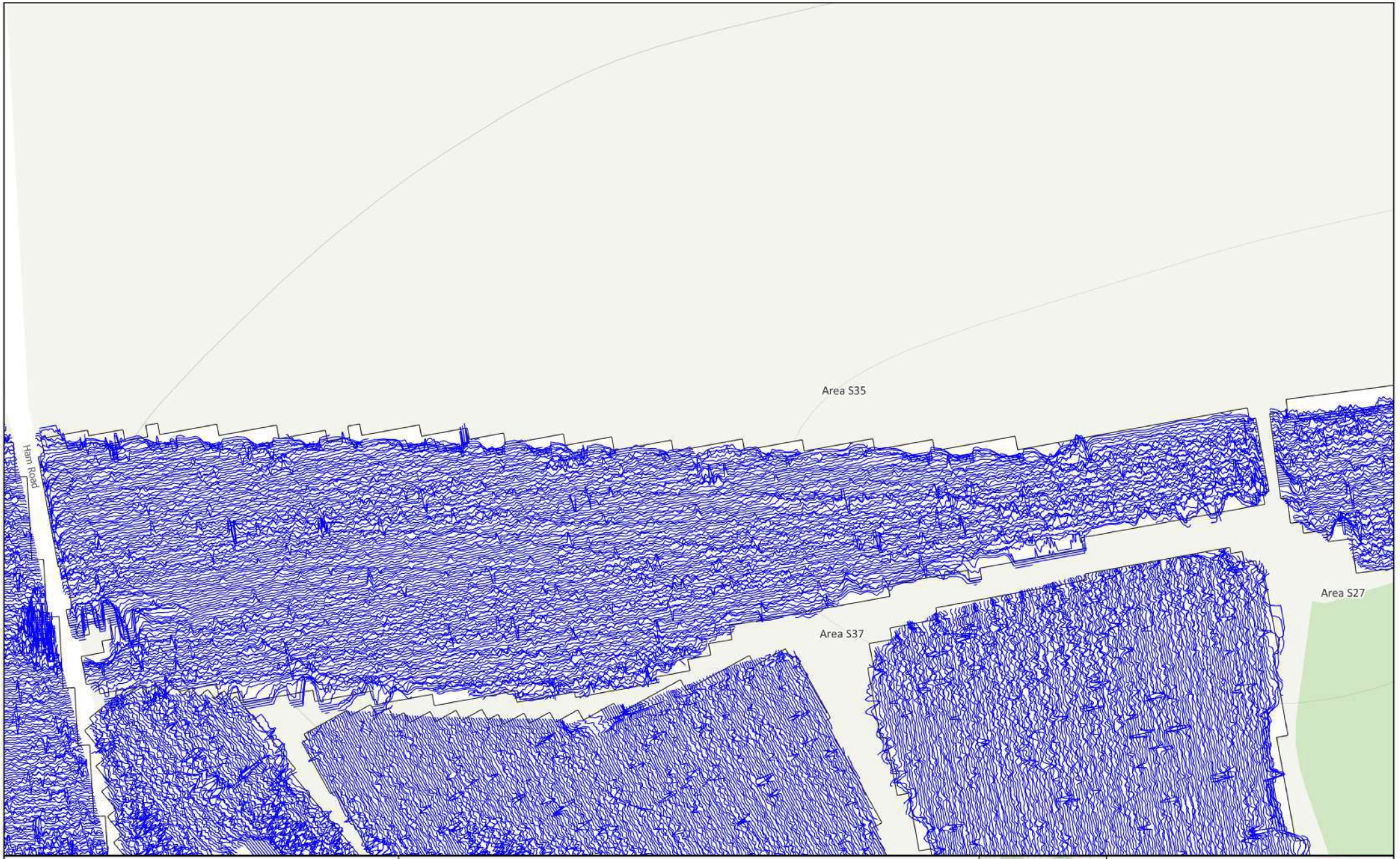
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Recent Agricultural (Mapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Recent Industry
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Drainage Feature
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 36 - XY Trace Plot (Areas S35 & S37)
30nT/cm at 1:1,500 @ A3
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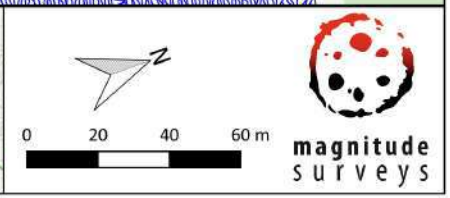

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 37 - Magnetic Gradient (Areas S44 & S45)
1:1,500 @ A3
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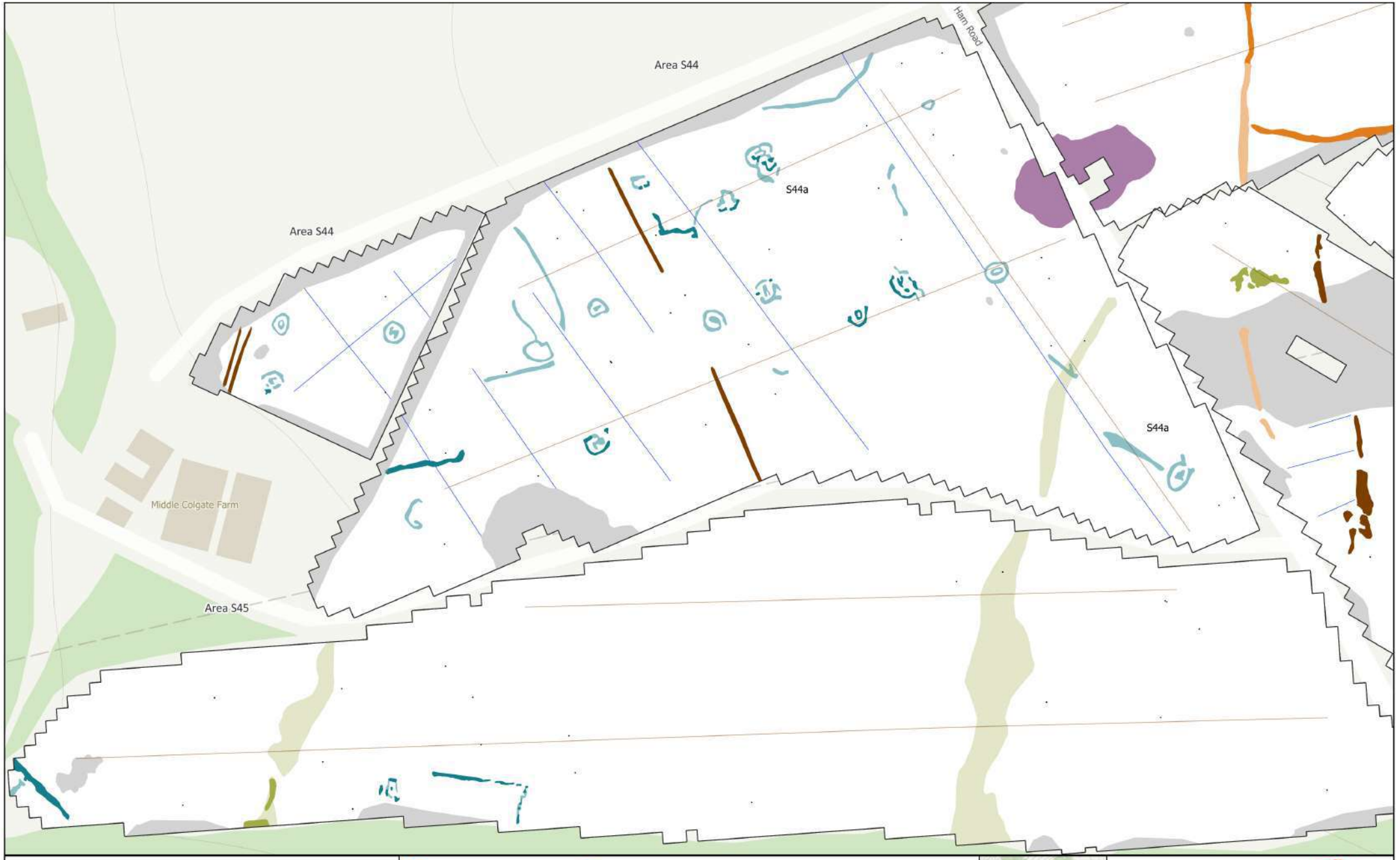
-1 nT 2

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 38 - Magnetic Interpretation (Areas S44 & S45)
1:1,500 @ A3
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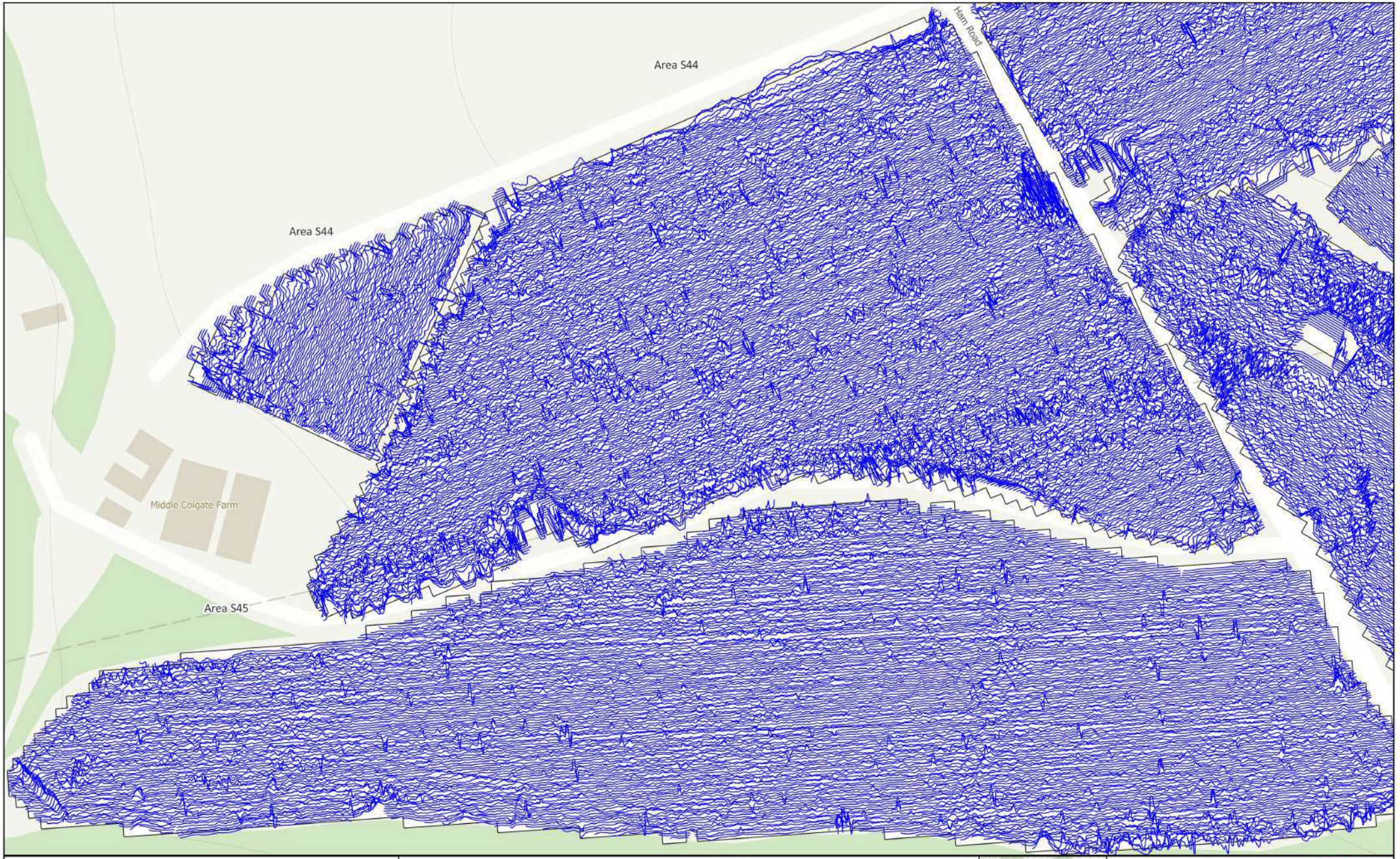
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Recent Agricultural (Mapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Recent Industry
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Drainage Feature
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 39 - XY Trace Plot (Areas S44 & S45)
30nT/cm at 1:1,500 @ A3
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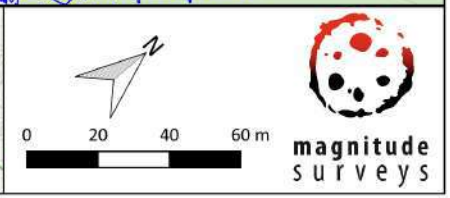

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 40 - Magnetic Gradient (Areas S65, S66 & S67)
1:1,500 @ A3
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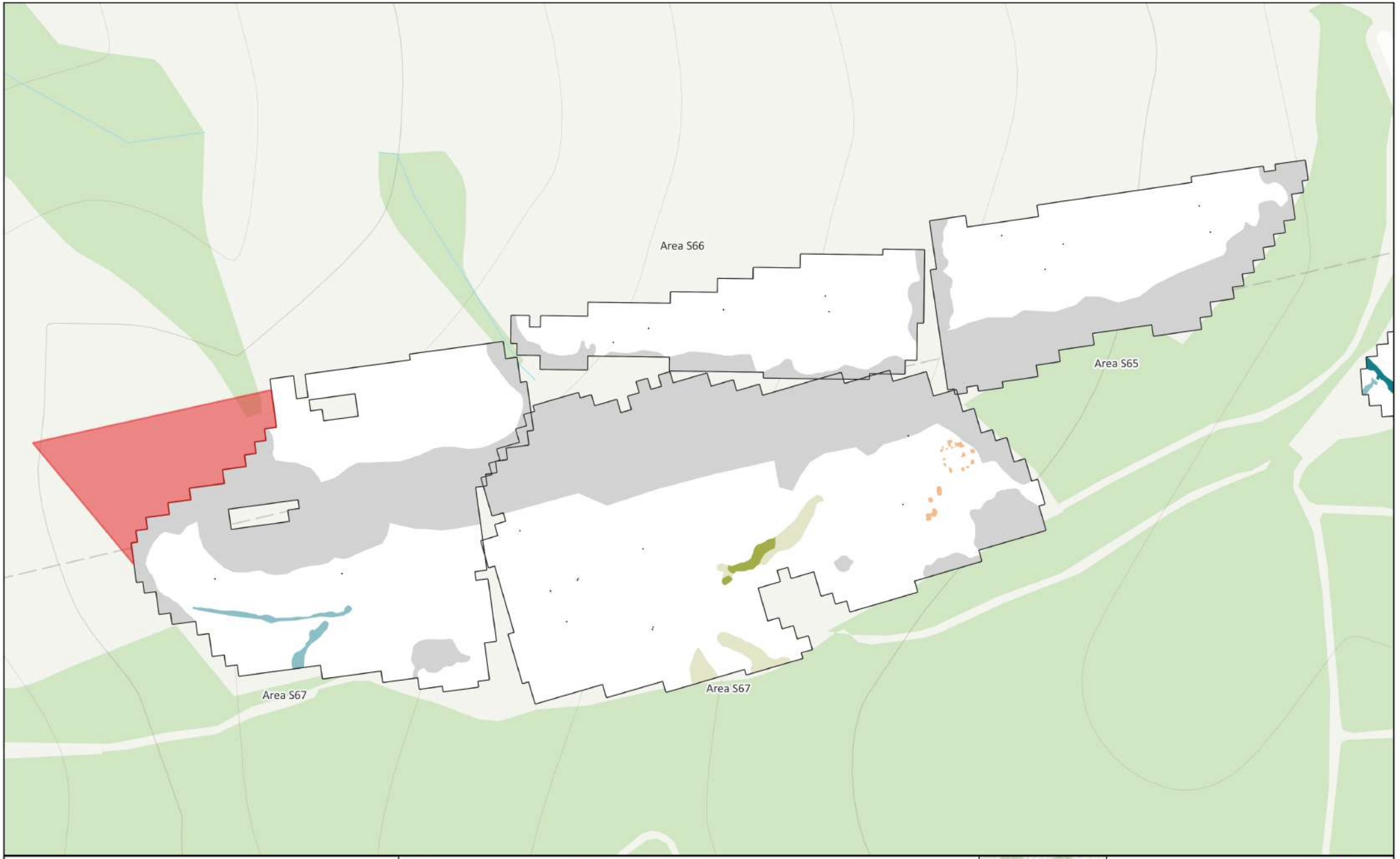
-1 nT 2

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 41 - Magnetic Interpretation (Areas S65, S66 & S67)
1:1,500 @ A3
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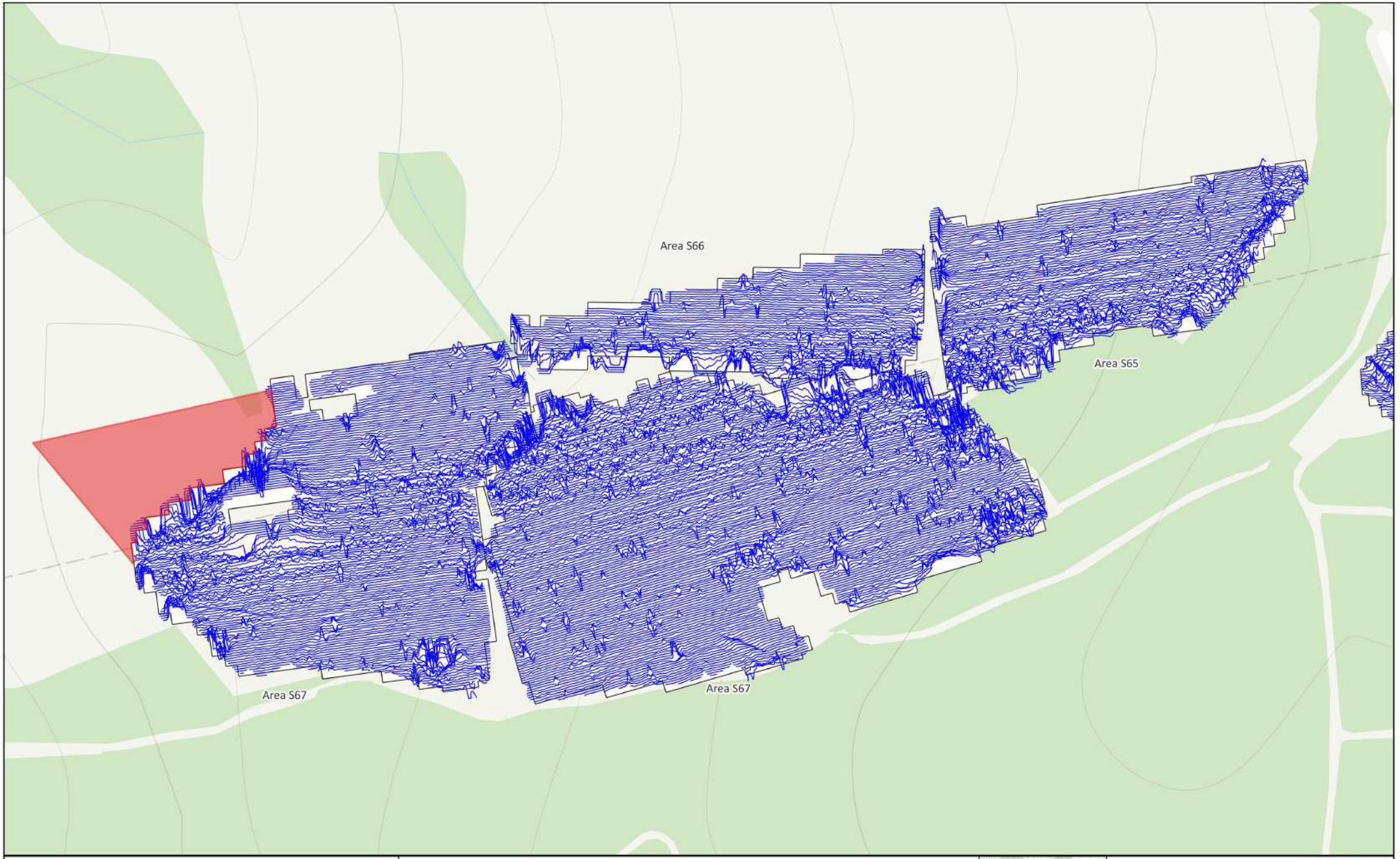
- Archaeology Possible (Weak)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 42 - XY Trace Plot (Areas S65, S66 & S67)
30nT/cm at 1:1,500 @ A3
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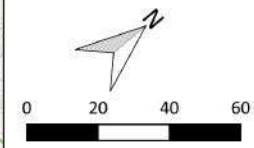
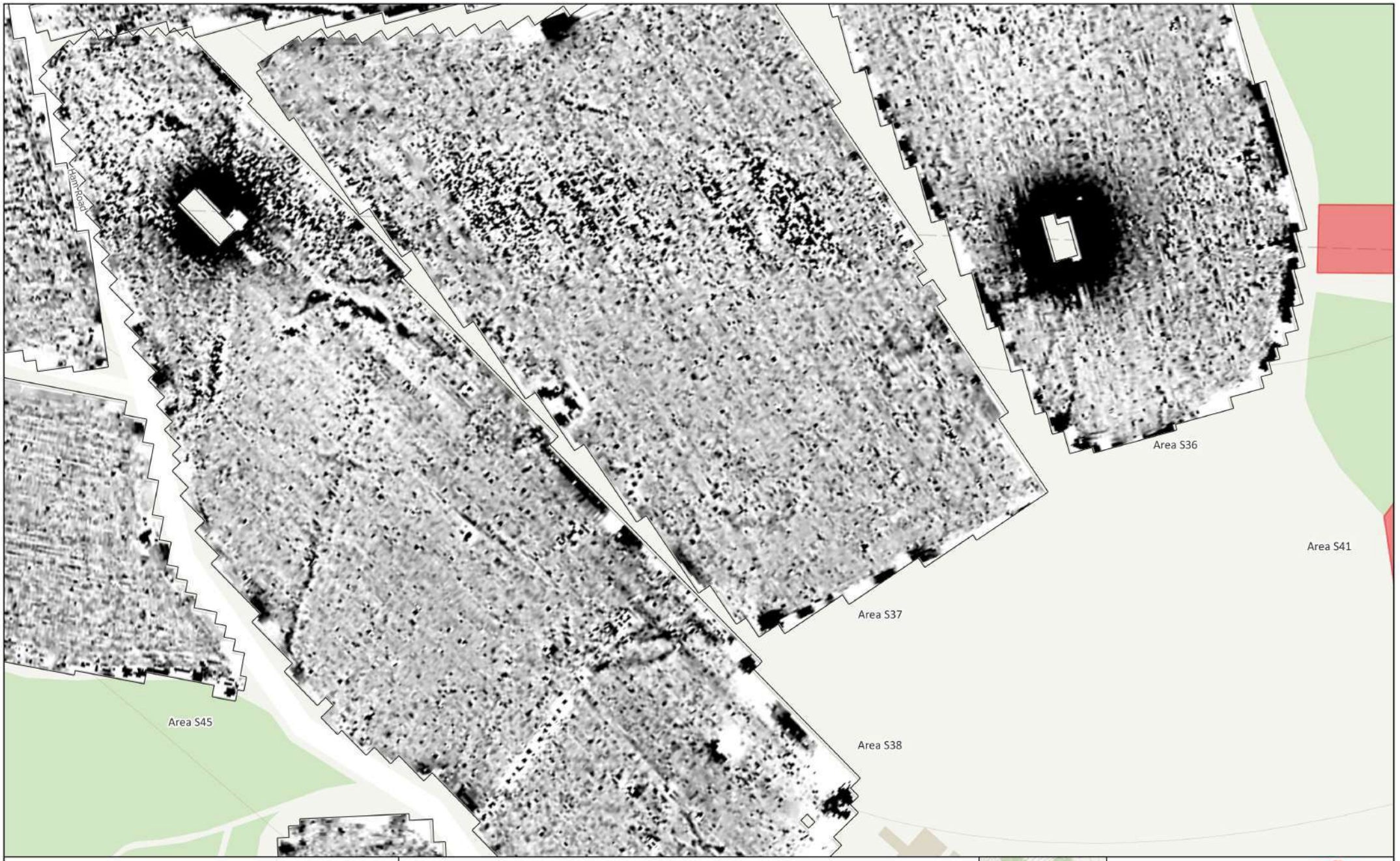


magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 43 - Magnetic Gradient (Areas S36, S37, S38 & S45)
1:1,500 @ A3
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-1 nT 2

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 44 - Magnetic Interpretation (Areas S36, S37, S38 & S45)
1:1,500 @ A3
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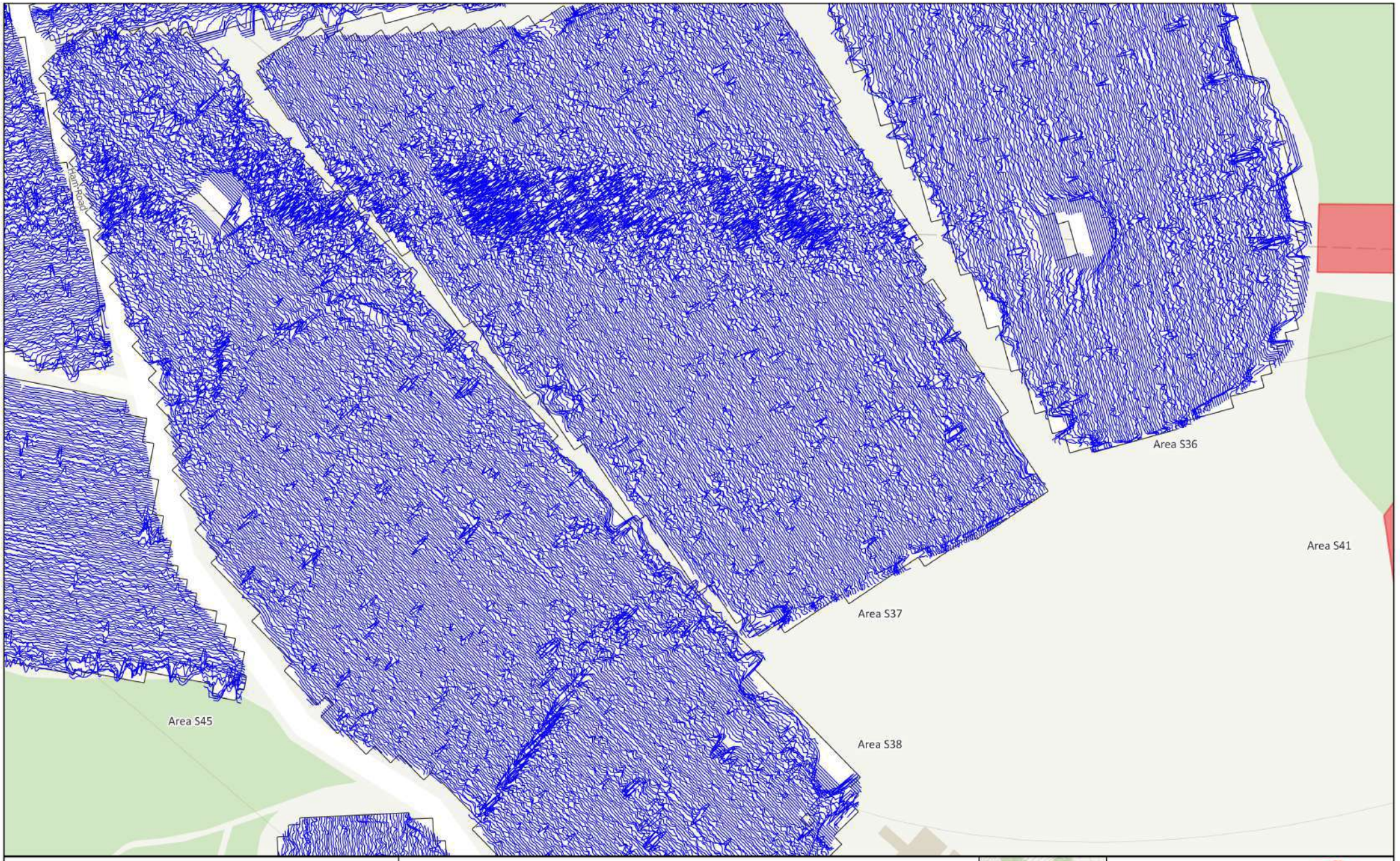
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Recent Agricultural (Mapped)
- Natural Geology (Strong)
- Natural Geology (Weak)
- Recent Industry
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Drainage Feature
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 45 - XY Trace Plot (Areas S36, S37, S38 & S45)
30nT/cm at 1:1,500 @ A3
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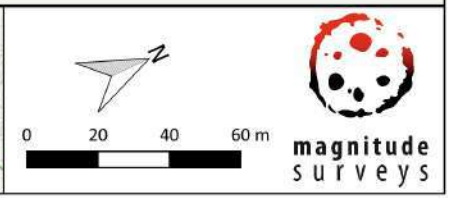

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 46 - Magnetic Gradient (Areas S20, S27, S28 & S29)
1:1,500 @ A3
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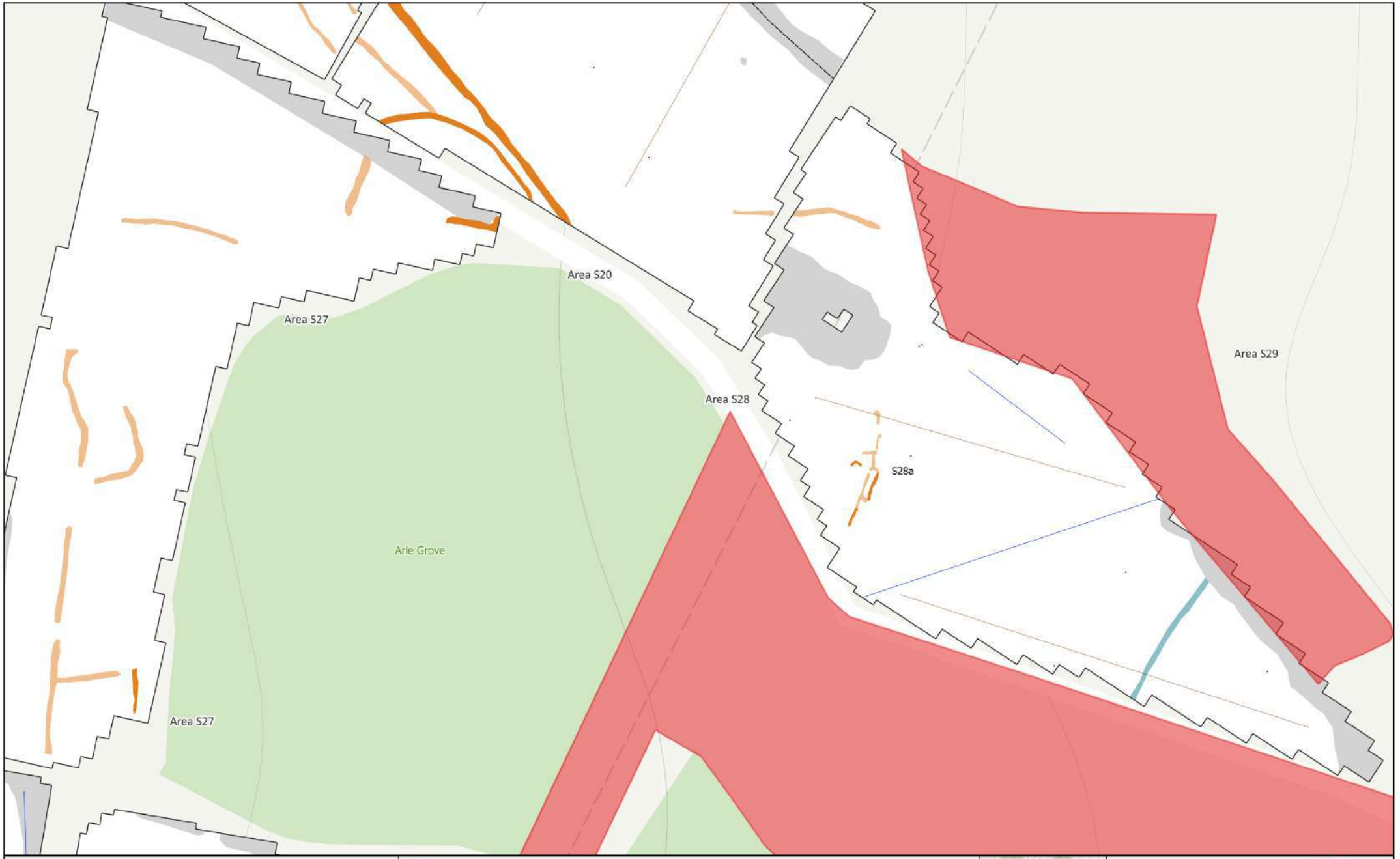
-1 nT 2

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 47 - Magnetic Interpretation (Areas S20, S27, S28 & S29)
1:1,500 @ A3
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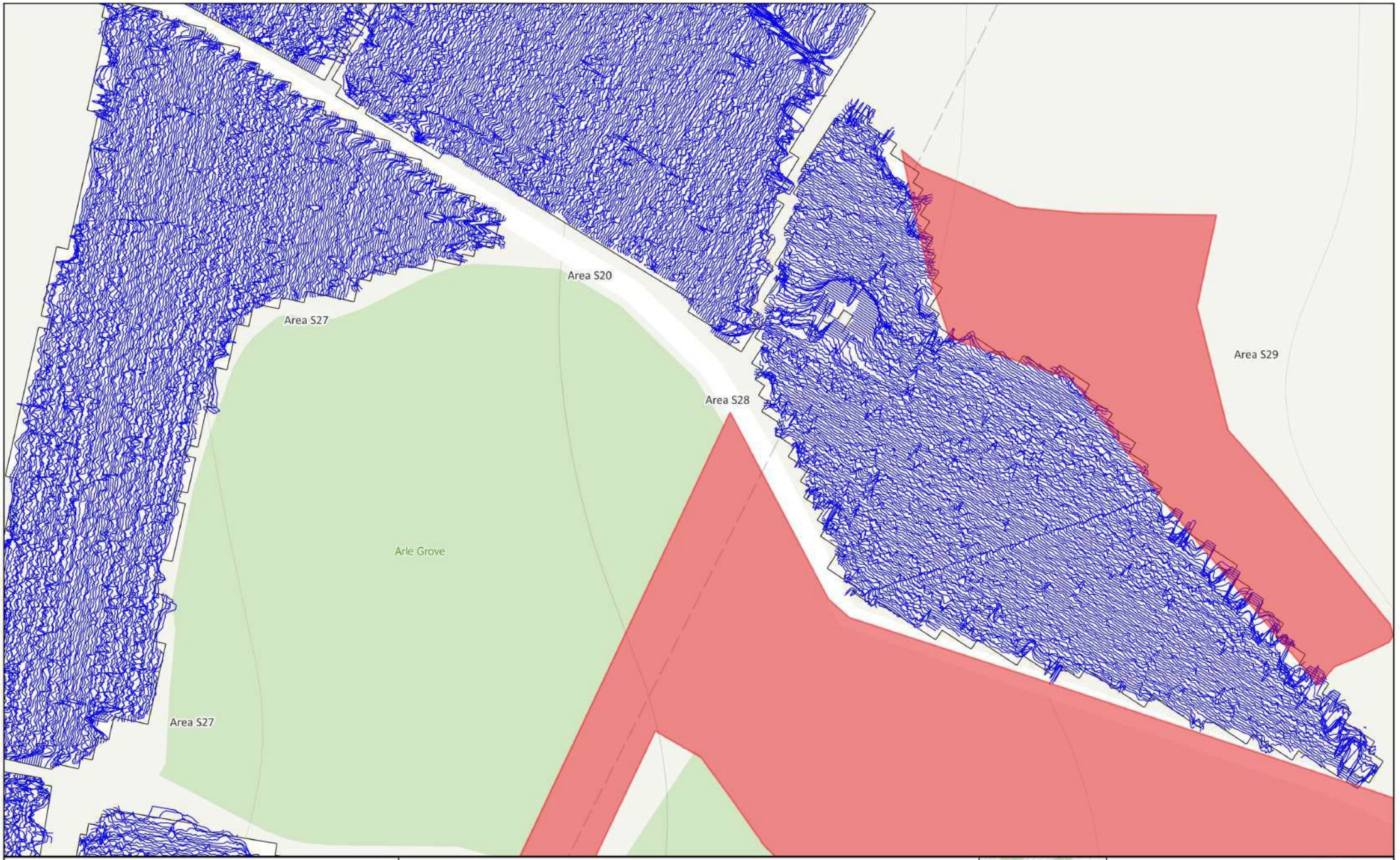
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Drainage Feature
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 48 - XY Trace Plot (Areas S20, S27, S28 & S29)
30nT/cm at 1:1,500 @ A3
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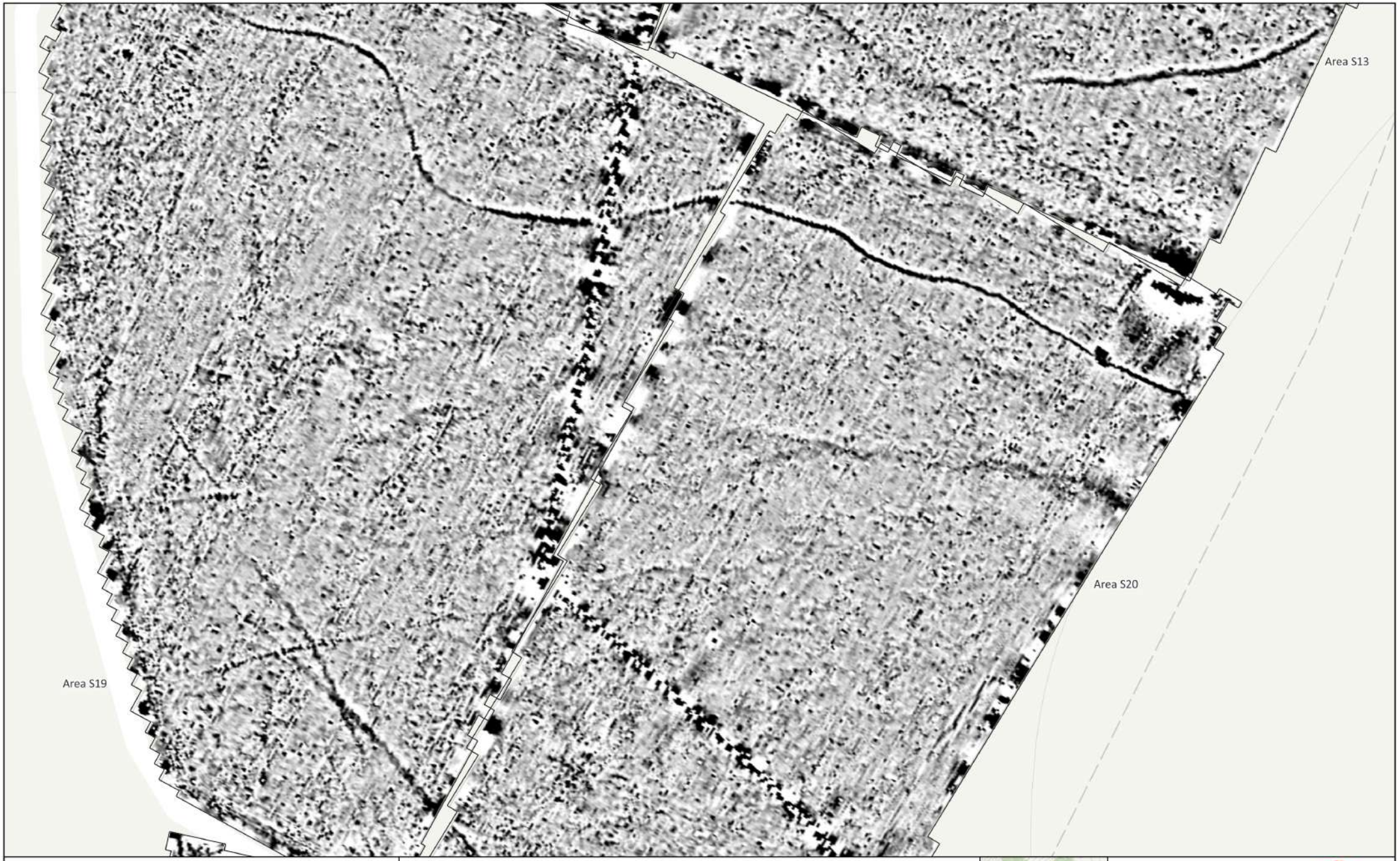
N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 49 - Magnetic Gradient (Areas S13, S19 & S20)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 50 - Magnetic Interpretation (Areas S13, S19 & S20)
1:1,500 @ A3
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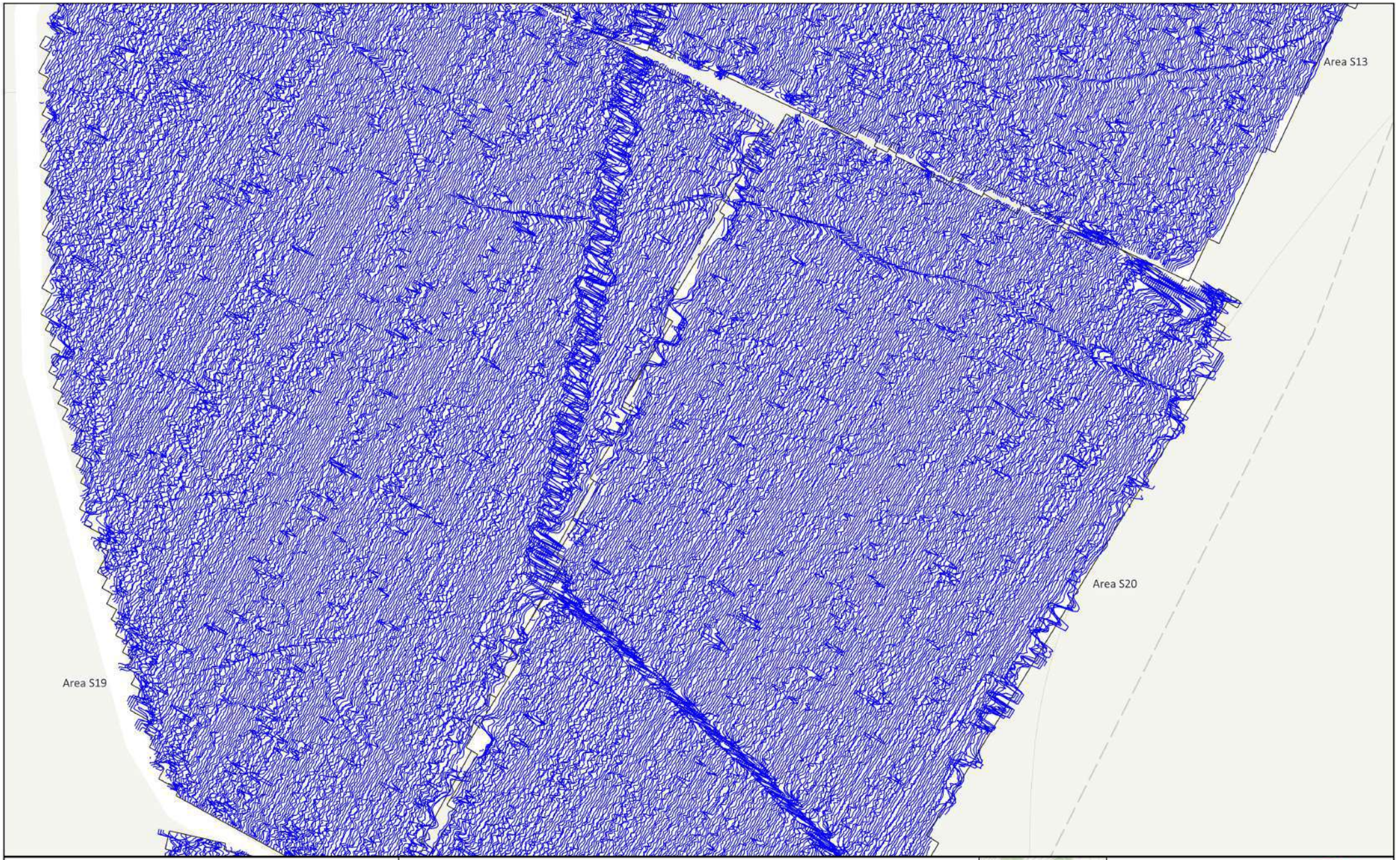
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 51 - XY Trace Plot (Areas S13, S19 & S20)
30nT/cm at 1:1,500 @ A3
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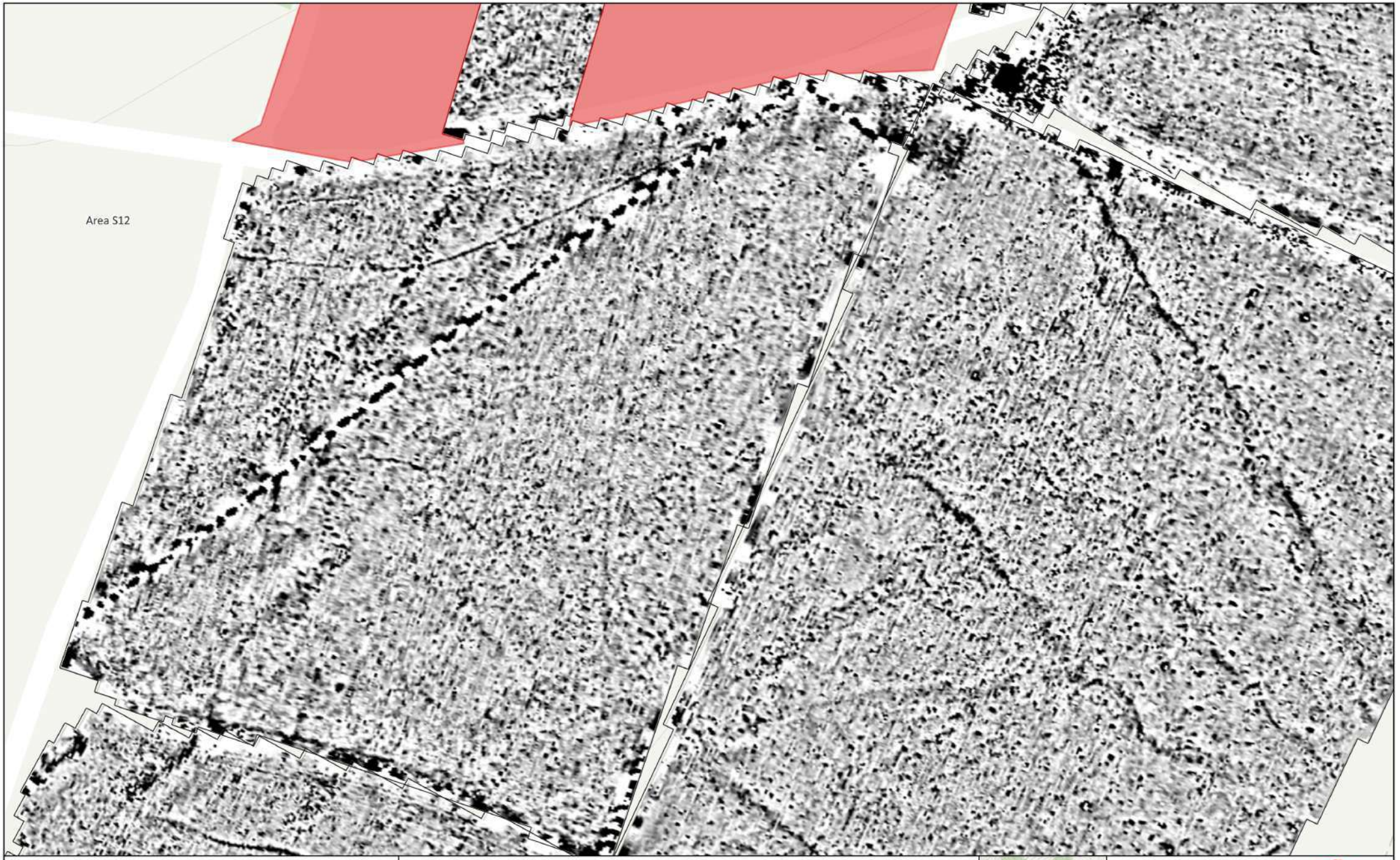
N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 52 - Magnetic Gradient (Areas S12 & S13)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 53 - Magnetic Interpretation (Areas S12 & S13)
1:1,500 @ A3
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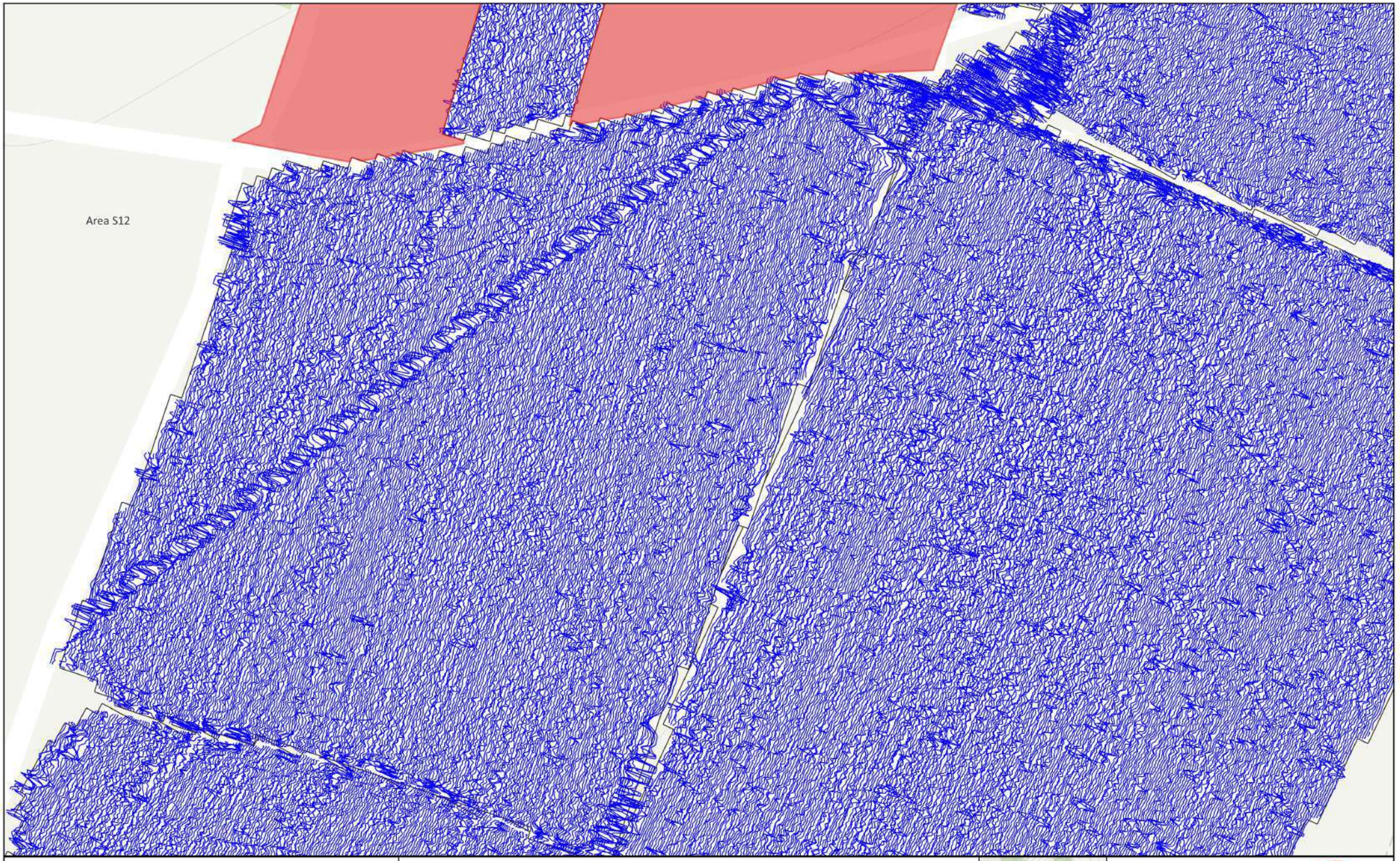
- Archaeology Possible (Weak)
- Recent Agricultural (Unmapped)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 54 - XY Trace Plot (Areas S12 & S13)
30nT/cm at 1:1,500 @ A3
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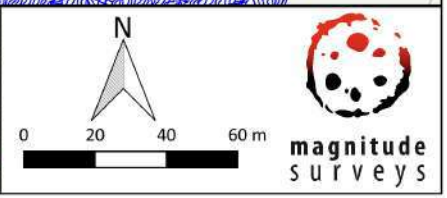

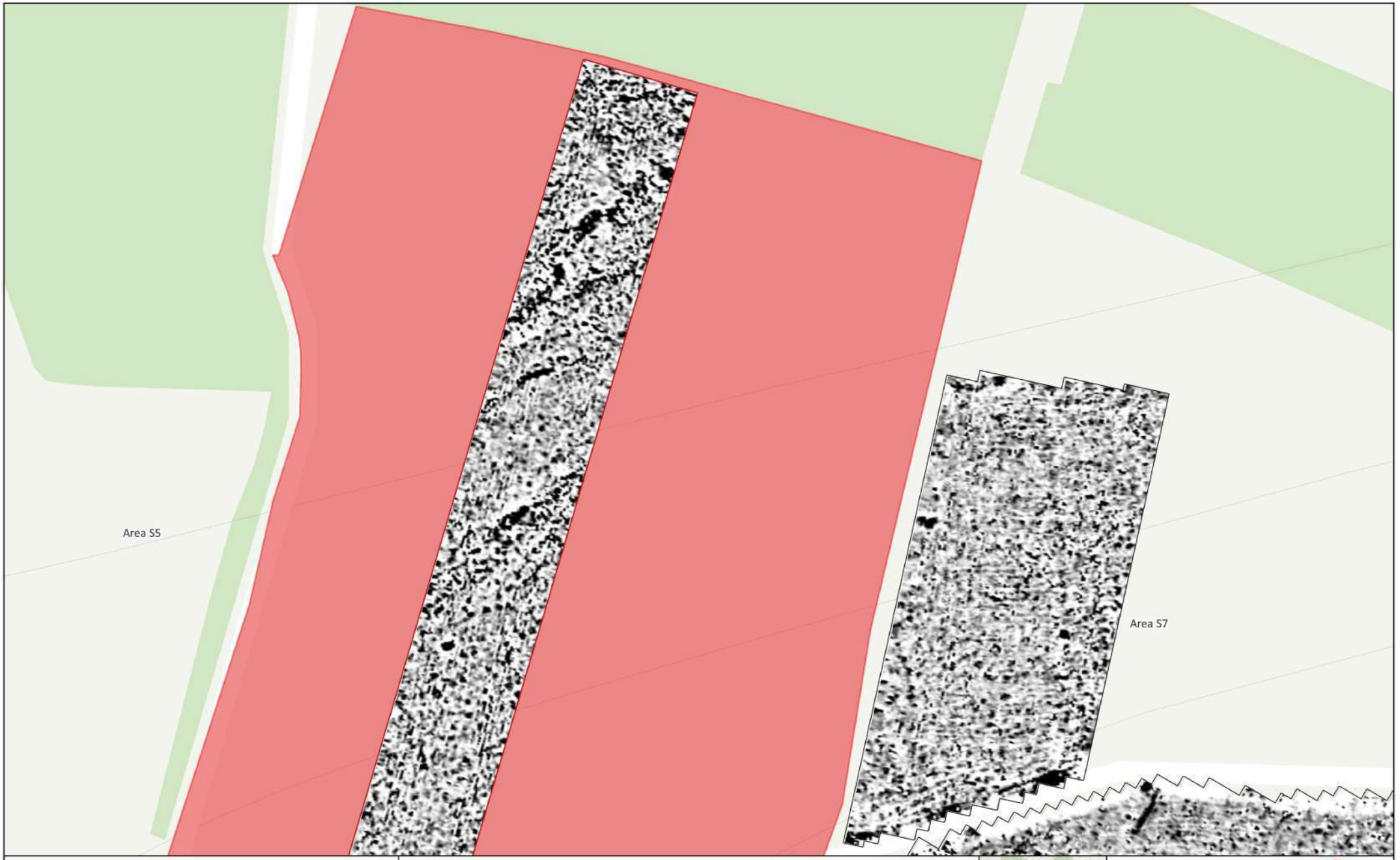

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 55 - Magnetic Gradient (Areas S5 & S7)
1:1,500 @ A3
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-1 nT 2

N

0 20 40 60 m

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MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 56 - Magnetic Interpretation (Areas S5 & S7)
1:1,500 @ A3
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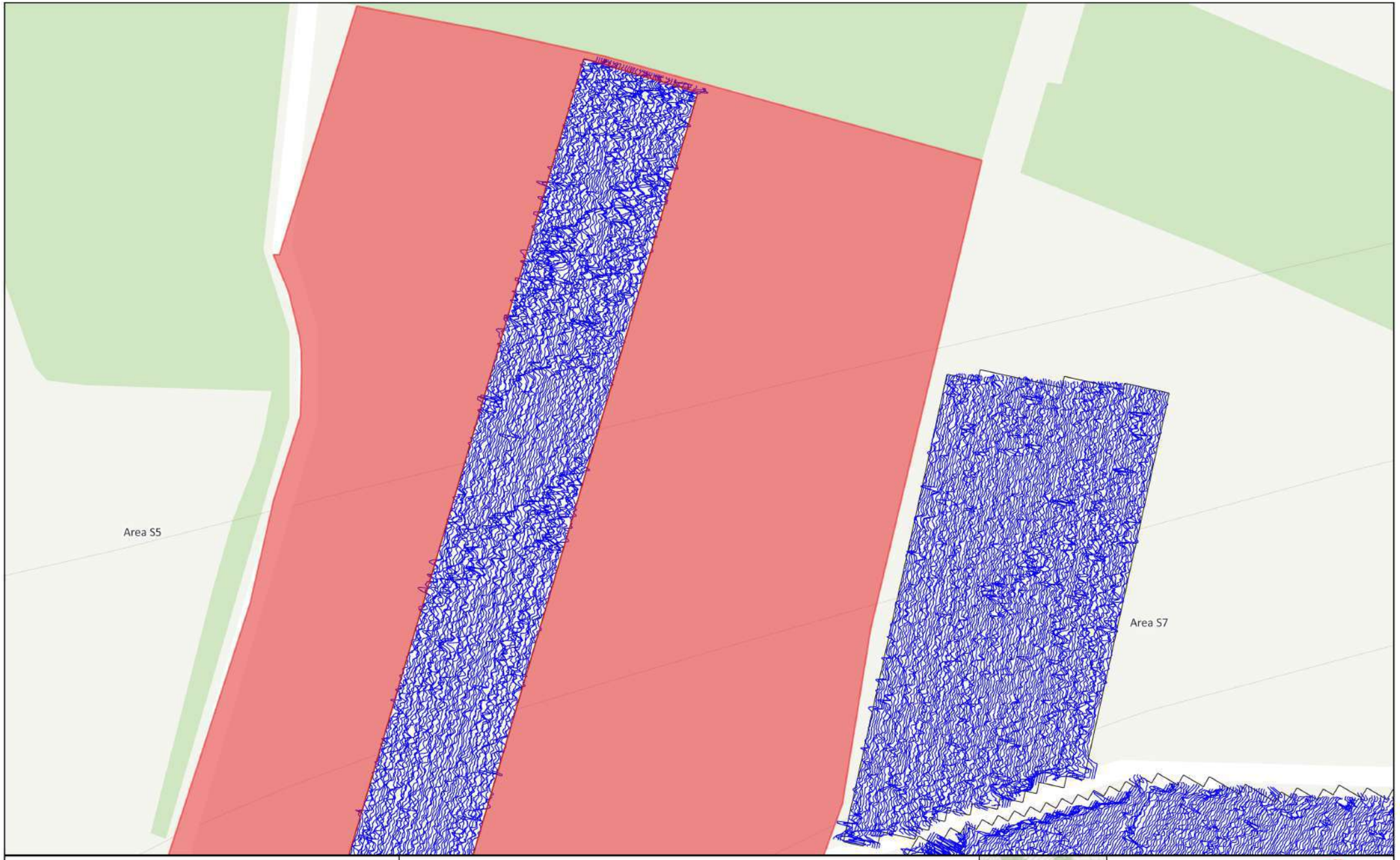
Natural Geology (Strong)
Natural Geology (Weak)
Undetermined (Weak)
Other Magnetic Disturbance
Recent Agricultural
Ferrous (Spike)

N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 57 - XY Trace Plot (Areas S5 & S7)
30nT/cm at 1:1,500 @ A3
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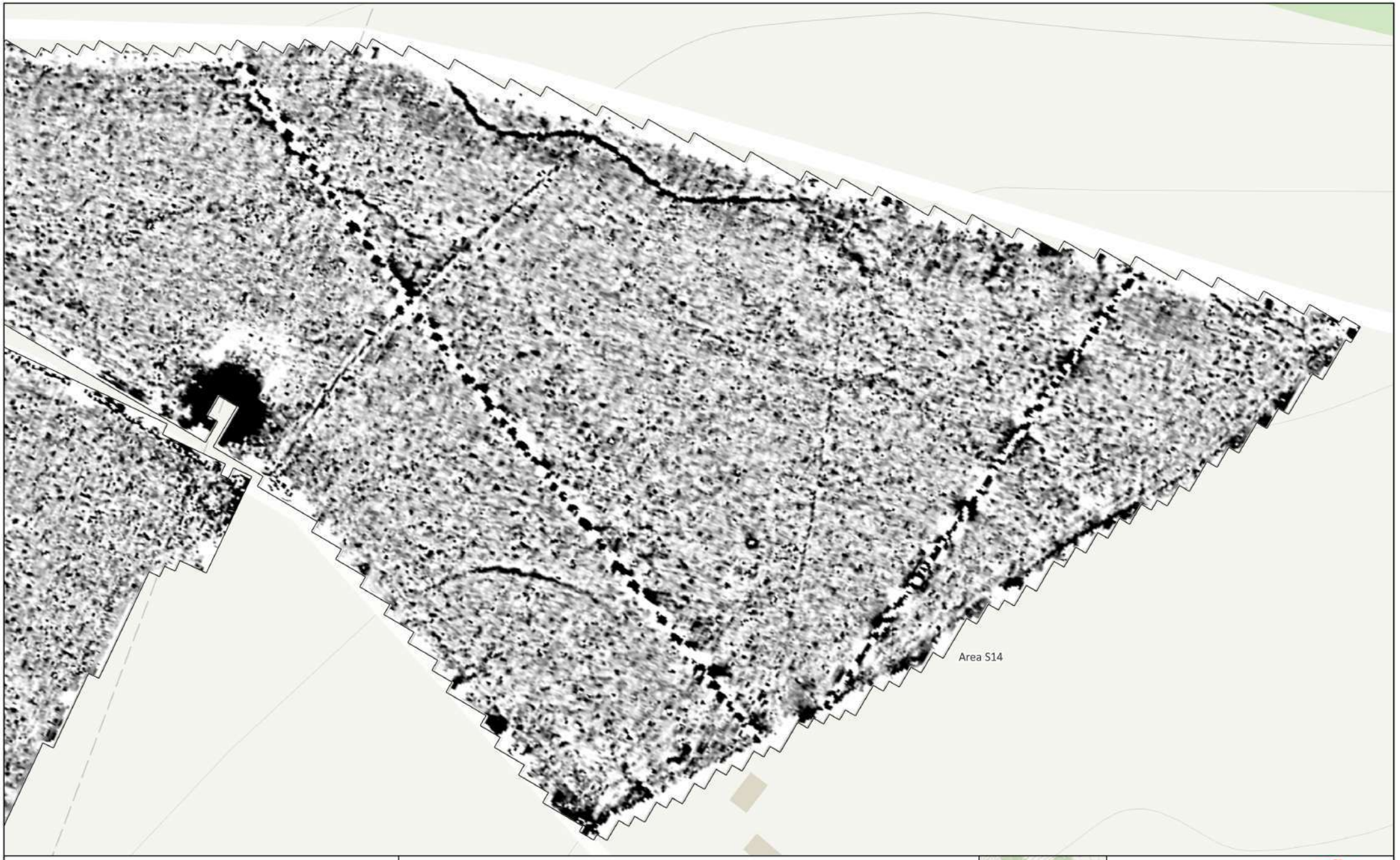
N

0 20 40 60 m

magnitude surveys



MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 58 - Magnetic Gradient (Area S14)
1:1,500 @ A3
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0 20 40 60 m

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Figure 59 - Magnetic Interpretation (Area S14)
1:1,500 @ A3
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- Recent Agricultural (Mapped)
- Natural Geology (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Other Magnetic Disturbance
- Recent Agricultural
- Service
- Ferrous (Spike)

N

0 20 40 60 m

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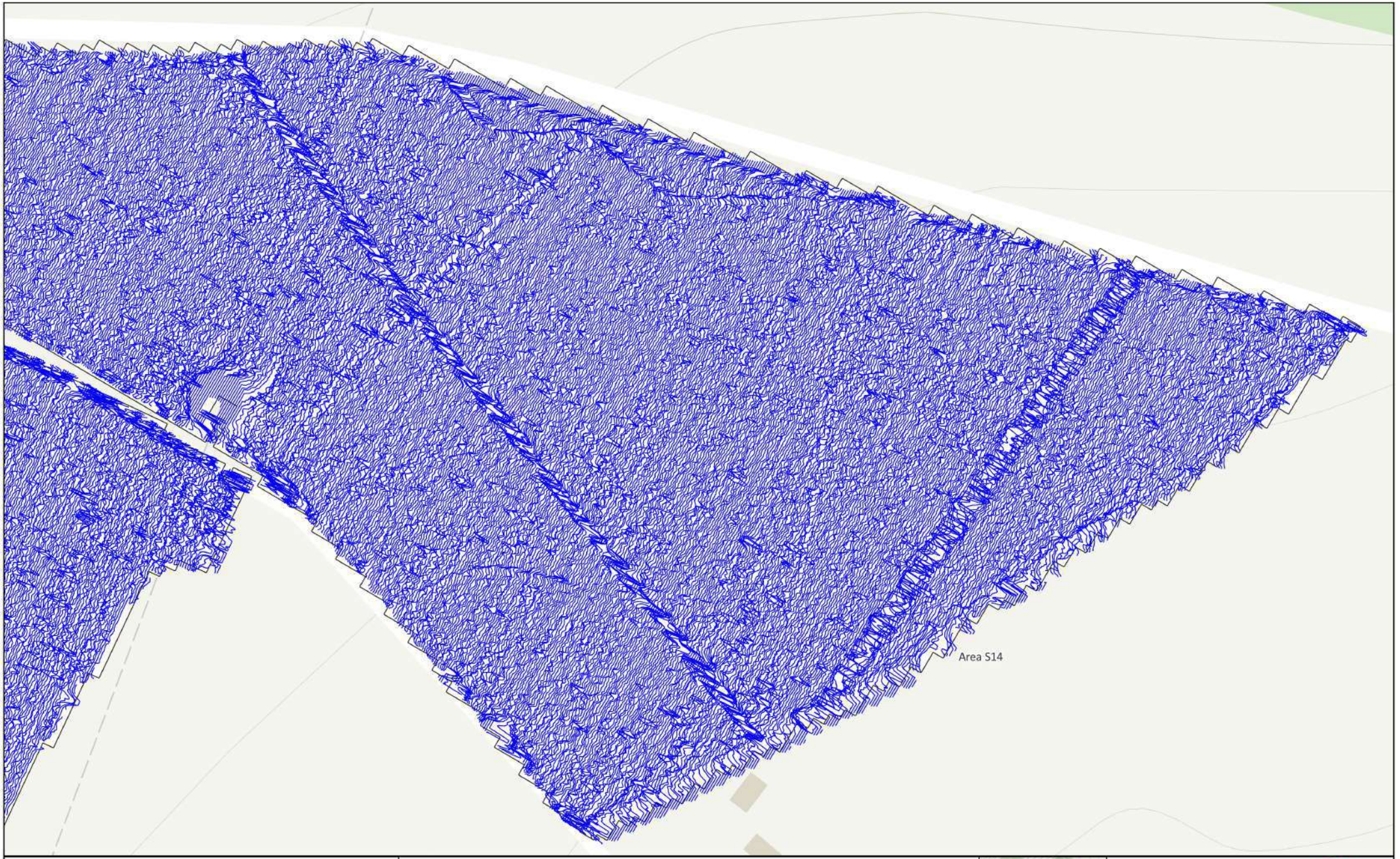

MSSP1587 - National Grid Cotswold VIP, Cheltenham
Figure 60 - XY Trace Plot (Area S14)
30nT/cm at 1:1,500 @ A3
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0 20 40 60 m

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