



**magnitude**  
surveys

**Geophysical Survey Report  
of  
Land to the East of Leeds Road and Heybeck Lane, Chidswell**

**For  
Cotswold Archaeology**

**On Behalf Of  
CC Projects**

**Magnitude Surveys Ref: MSSE562**

**HER Event Number: To be issued when submitted to HER**

**October 2019**



## **magnitude surveys**

**Unit 17, Commerce Court**

**Challenge Way**

**Bradford**

**BD4 8NW**

**01274 926020**

**[info@magnitudesurveys.co.uk](mailto:info@magnitudesurveys.co.uk)**

**Report By:**

Hugo Kesterton BSc (Hons) & Lauren Beck BA (Hons)

**Report Approved By:**

Finnegan Pope-Carter BSc (Hons) MSc FGS

**Issue Date:**

09 December 2019

### **Abstract**

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 119 ha area of Land to the East of Leeds Road and Heybeck Lane, Chidswell, West Yorkshire. The report covers both the Heybeck Lane site and Land to the East of Leeds Road site which together make up the total survey area. A fluxgate gradiometer survey was successfully completed across the site, identifying extensive archaeological activity in the form of former field systems comprising connected rectilinear enclosures, possibly showing a continuity of land use since the Iron Age. Historical agricultural use has been recorded as large areas of ridge and furrow cultivation and former field boundaries. Mining and/or extraction activity, including the remains of a colliery, have been identified. Natural variations relating to geological faulting and slope slumping have also been identified. The impact of modern activity is limited to the area's peripheries and pylons.

## Contents

Abstract.....	2
List of Figures .....	4
1. Introduction .....	6
2. Quality Assurance .....	6
3. Objectives.....	6
4. Geographic Background.....	7
5. Archaeological Background.....	9
6. Methodology.....	10
6.1. Data Collection.....	10
6.2. Data Processing.....	10
6.3. Data Visualisation and Interpretation.....	11
7. Results.....	12
7.1. Qualification.....	12
7.2. Discussion.....	12
7.3. Interpretation.....	13
7.3.1. General Statements .....	13
7.3.2. Magnetic Results - Specific Anomalies.....	13
8. Conclusions .....	15
9. Archiving .....	16
10. Copyright.....	16
11. References .....	16
12. Project Metadata .....	17
13. Document History .....	17

## List of Figures

Figure 1:	Site Location	1:25,000 @ A4
Figure 2:	Location of Survey Areas	1:8,000 @ A3
Figure 3:	Magnetic Total Field (Lower Sensor) (Overview North)	1:4,000 @ A3
Figure 4:	Magnetic Interpretation Over Historic Maps (Overview North)	1:4,000 @ A3
Figure 5:	Magnetic Total Field (Lower Sensor) (Overview South)	1:4,000 @ A3
Figure 6:	Magnetic Interpretation Over Historic Maps (Overview South)	1:4,000 @ A3
Figures 7:	Magnetic Gradient (North)	1:1,500 @ A3
Figure 8:	Magnetic Interpretation (North)	1:1,500 @ A3
Figure 9:	XY Trace Plot (North)	1:1,500 @ A3
Figure 10:	Magnetic Gradient (North-West)	1:1,500 @ A3
Figure 11:	Magnetic Interpretation (North-West)	1:1,500 @ A3
Figure 12:	XY Trace Plot (North-West)	1:1,500 @ A3
Figure 13:	Magnetic Gradient (North-East)	1:1,500 @ A3
Figure 14:	Magnetic Interpretation (North-East)	1:1,500 @ A3
Figure 15:	XY Trace Plot (North-East)	1:1,500 @ A3
Figure 16:	Magnetic Gradient (Centre-Northwest)	1:1,500 @ A3
Figure 17:	Magnetic Interpretation (Centre-Northwest)	1:1,500 @ A3
Figure 18:	XY Trace Plot (Centre-Northwest)	1:1,500 @ A3
Figure 19:	Magnetic Gradient (Centre-Northeast)	1:1,500 @ A3
Figure 20:	Magnetic Interpretation (Centre-Northeast)	1:1,500 @ A3
Figure 21:	XY Trace Plot (Centre-Northeast)	1:1,500 @ A3
Figure 22:	Magnetic Gradient (Centre-West)	1:1,500 @ A3
Figure 23:	Magnetic Interpretation (Centre-West)	1:1,500 @ A3
Figure 24:	XY Trace Plot (Centre-West)	1:1,500 @ A3
Figure 25:	Magnetic Gradient (Centre-East)	1:1,500 @ A3

Figure 26:	Magnetic Interpretation (Centre-East)	1:1,500 @ A3
Figure 27:	XY Trace Plot (Centre-East)	1:1,500 @ A3
Figure 28:	Magnetic Gradient (South-West)	1:1,500 @ A3
Figure 29:	Magnetic Interpretation (South-West)	1:1,500 @ A3
Figure 30:	XY Trace Plot (South-West)	1:1,500 @ A3
Figure 31:	Magnetic Gradient (South-Centre)	1:1,500 @ A3
Figure 32:	Magnetic Interpretation (South-Centre)	1:1,500 @ A3
Figure 33:	XY Trace Plot (South-Centre)	1:1,500 @ A3
Figure 34:	Magnetic Gradient (South-East)	1:1,500 @ A3
Figure 35:	Magnetic Interpretation (South-East)	1:1,500 @ A3
Figure 36:	XY Trace Plot (South-East)	1:1,500 @ A3

## 1. Introduction

- 1.1. Magnitude Surveys Ltd (MS) was commissioned by Cotswold Archaeology on behalf of CC Projects to undertake a geophysical survey on a c. 119 ha area of land at Chidswell, Dewsbury, West Yorkshire (SE 27262 23492). The survey and the report cover both the Heybeck Lane site and Land to the East of Leeds Road site which together make up the total survey area.
- 1.2. The geophysical survey comprised hand-pulled and quad-towed, cart-mounted GNSS-positioned fluxgate gradiometer survey.
- 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, 2014) and the European Archaeological Council (Schmidt et al., 2015).
- 1.4. It was conducted in line with a WSI produced by MS (2019).
- 1.5. The survey commenced on 30<sup>th</sup> of September 2019 and took three weeks to complete.

## 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 of Archaeological Prospection).
- 2.2. Director Dr. Chrys Harris is a Member of CifA, has a PhD in archaeological geophysics from the University of Bradford and is the Vice-Chair of ISAP. Director Finnegan Pope-Carter is a Fellow of the London Geological Society, the chartered UK body for geophysicists and geologists, as well as a member of GeoSIG, the CifA Geophysics Special Interest Group. Reporting Analyst Dr. Kayt Armstrong has a PhD in archaeological geophysics from Bournemouth University, is the Vice Conference Secretary and Editor of ISAP News for ISAP, and is the UK Management Committee representative for the COST Action SAGA.
- 2.3. All MS managers have relevant degree qualifications in archaeology or geophysics. All MS field and office staff have relevant archaeology or geophysics degrees and/or field experience.

## 3. Objectives

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

## 4. Geographic Background

4.1. The site is located immediately adjacent to the village of Chidswell, West Yorkshire (Figure 1). Survey was undertaken across multiple fields under agricultural use. The site is bounded by Hey Beck Lane to the north, arable land and woodland to the east and south, and the A653 and the village of Chidswell to the west (Figure 2).

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
1	Arable stubble, sloping downward from northeast to southwest.	Bound to the north by houses, to the east by hedgerow, the south by a track and hedgerow and to the west by more houses. A hedgerow divided the field northeast to southwest. The southern boundary was crossed by overhead power lines.
2	Grassland, sloping northeast to southwest.	Bound to the north by houses, to the east by hedgerow, the south was a continuation of the same field.
3	Grassland, sloping northeast to southwest.	Bound to the north by houses, to the east by hedgerow, the south was a continuation of the same field.
4	Flat arable stubble.	Bound on all sides by hedgerows. A metal pylon was located in the field with overhead cables aligned west to east.
5	Arable stubble with a slight rise to the southwest.	Bound by hedgerows on all sides.
6	Arable, stubble sloping southwest to northeast.	Bound by hedgerows with houses to the south and west.
7	Arable stubble, sloping downwards to the southeast.	Bound by hedgerows on all boundaries, as well as ditches to the north, east and south. The field was bisected by a trackway orientated northeast to southwest. Overhead cables crossed the northwestern edge of the survey area.
8	Arable stubble, flat.	Bound by hedgerows on all sides.
9	Arable stubble with a slight rise to the southeast.	Bound by hedgerows on all sides and a trackway to the northeast.
10	Arable stubble with a fairly steep decline on the southern boundary towards the stream.	Bound by a stream and trees to the south, hedgerows to the west, northwest and north east and a woodland to the north. Two metal pylons were positioned in the area with overhead cables running roughly northwest to southeast.
11	Arable stubble, sloping downwards northwest to southeast.	Bound by hedgerows on all sides.
12	Arable stubble, sloping down to the south towards a stream.	Bound on all sides by hedgerow apart from the south, which was a stream.
13	Arable stubble, sloping down to the north towards a farm track.	Bound to the north by a wire fence and farm track, all other boundaries were hedgerow.

14	Arable stubble, sloping down to the northwest towards a farm track.	Bound on all sides by hedgerow.
15	Arable stubble, sloping down from south to north.	Bound on all sides by hedgerow, with a farm track following the northern boundary. An area of standing water in the northeastern corner was not surveyable.
16	Arable stubble, flat.	Bound on all sides by hedgerow.
17	Arable, young crop. Sloping down from the centre of the field to the northwest and southeast.	Bound to the north and northwest by hedgerow, to the west by wooden fencing, to the southwest, south and east by wire fencing. A metal tank was located in the southwestern corner of the area.
19	Grassland, horse paddock, flat.	Bound to the west by wire fencing, to the north and west by both wire fencing and hedgerow. Two hay bales and a trailer were located in the northern extent of the area.
20	Arable field, largely flat but sloping upwards in the south eastern extent.	Bound on all sides by wire fencing and hedgerows.
21	Arable, with short stubble, sloping down to the south.	Bound by hedgerows and trees to the north, south and east. To the west there was no physical boundary.
22	Arable, with short stubble, slightly sloping down to the northeast.	Bound by trees and hedges to the south and west. Bound by metallic and wire fencing to the north and east.
23	Arable, recently sown field. Largely flat with a slight slope to the centre.	Bound on all sides by trees and hedgerows.

4.3. The underlying geology comprises of Pennine Middle Coal Measures Formation (mudstone, siltstone and sandstone) as well as Horbury Rock (sandstone). No superficial deposits are recorded (British Geological Survey, 2019).

4.4. The soils consist of slowly permeable, seasonally wet, acidic, loamy and clayey soils, as well as freely draining slightly acidic loamy soils (Soilscapes, 2019).

## 5. Archaeological Background

- 5.1. The following is a summary of two Heritage Assessments produced and provided by Cotswold Archaeology (Cotswold Archaeology 2018a, 2018b).
- 5.2. No heritage assets of prehistoric or Roman origin were identified within the site. However, in 1998 a geophysical survey across parts of the site suggested possible prehistoric or Roman period features corresponding with known cropmarks. Cropmarks are recorded in the northern part of the site to the southwest of Dum Wood and in the centre of the site. They are not dated but their shapes indicate a probable prehistoric or Roman origin.
- 5.3. Approximately 450m to the east of the site, archaeological salvage investigations found a large sub-rectangular enclosure, previously identified by cropmarks. Further investigation of the cropmarks determined that the marks were likely to be the buried remains of a seasonal Roman military marching camp.
- 5.4. On the First Edition Ordnance Survey (OS map 1854) a small structure referred as “Dogloitch Water Pit” located c.240m north of Dogloitch Wood is likely to have been associated with mining activity. The northern part of the Site is occupied by the Babes in the Wood Colliery (25-inch First Edition Ordnance Survey map of 1894). However, further documentary evidence suggests the colliery was in used from 1862 until 1887. Two mine shafts are labelled on the map in addition to several small buildings related to the colliery. It was then noted as “Disused” on the 1908 Ordnance Survey map.
- 5.5. West Yorkshire HER records the remains of a possible World War II bombing decoy site in the southeastern part of the site, just south of Dogloitch Wood. The precise location is unknown, but the 1998 geophysical survey identified two strong linear anomalies that formed an ‘L’ shape in the region where the decoy is expected to be, although no exact location references were provided with the geophysical survey results.

## 6. Methodology

### 6.1. Data Collection

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

6.1.2. 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

6.1.3. The magnetic data were collected using MS' bespoke hand-pulled and quad-towed cart system GNSS-positioned system.

6.1.3.1. MS' cart 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.

6.1.3.2. 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.

6.1.3.3. 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 Historic England's standards for "raw or minimally processed data" (see sect 4.2 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 upper and/or 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 at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figures 9, 12, 15, 18, 21, 24, 27, 30, 33 & 36). XY trace plots visualise the magnitude and form of the geophysical response, aiding in 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, historic maps, LiDAR data, and soil and geology maps. Google Earth (2019) was consulted as well, to compare the results with recent land usages.

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 of further work in order to constantly improve our knowledge and service.

### 7.2. Discussion

7.2.1. The geophysical results are presented in consideration with historic maps (Figures 4 & 6).

7.2.2. The fluxgate gradiometer survey has responded well to the environment of the survey area. The geophysical data is characterised by strong magnetic enhancement that is typical of coal measure geology (see section 4.3). This provides a high magnetic contrast that aids the detection of magnetic anomalies of archaeological origin, though it also serves to enhance anomalies of recent origin, including modern ploughing trends. Modern interference is limited to magnetic haloes around electricity pylons, services, as well as wire fences along some of the field edges (see section 4.2). Natural variations have been identified as broad, high-variance anomalies characteristic of geological fault zones and anomalies associated with subaerial slope slumping and surface water runoff.

7.2.3. Archaeological activity has been identified across the survey area in the form of broadly rectilinear field systems and enclosures possibly dating from the Iron Age. The densest concentration of which have been detected near the centre of survey area (Figures 17 and 23). A group of similar rectilinear features was also identified in the northeastern extent of the site, likely representing a continuation of the same system, although they are somewhat separated from the centre group (Figure 14). Intervening historic field boundaries follow a similar alignment and in two cases appear to follow the course of natural features that may have served as useful field divisions back into prehistory (Figure 23). These suggest a long period of continuous cultivation since possibly the Iron Age until recently (former field boundaries visible on the First Edition Ordnance Survey).

7.2.4. A further field system of archaeological origin was detected in the southern extent of the survey area (Figure 32). The system follows a radial pattern somewhat distinct from that of the neighbouring rectilinear fields. This may indicate a separate temporal phase, but it is likely that this morphology is dictated by the steep topography in this part of the site. Intervening historic field boundaries also suggest a continuation of land use. A smaller enclosure, located close to the northern boundary of the survey area, was also identified (Figure 8). This feature does not have an apparent relationship with the extensive field system further south.

7.2.5. Evidence for industrial activity related to coal extraction is present in the northern, southeastern, and southwestern corners of the survey area. Demolition rubble from the Babes in the Wood Colliery (Figure 4) has been detected at the northern boundary of the site. In the southwest is a dense concentration of anomalies related to coal extraction pits.

7.2.6. Agricultural activity has been detected across the site in the form of the remains of extensive ridge and furrow agriculture of varying orientations, modern ploughing (especially in areas of the site with more pronounced magnetic enhancement), and a large number of modern drains. Multiple former field boundaries were detected, most of which are evident in historic OS mapping (Figures 4 & 6).

7.2.7. Multiple linear features of undetermined origin were detected across the survey area, these appear anthropological in origin though it is unclear whether they relate to more recent agricultural or archaeological activity.

## 7.3. Interpretation

### 7.3.1. General Statements

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

7.3.1.2. **Magnetic Disturbance** – The strong anomalies produced by extant metallic structures along the edges of the field have been classified as ‘Magnetic Disturbance’. These magnetic ‘haloes’ will obscure the response of any weaker underlying features, should they be present, often over a greater footprint than the structure they are being caused by.

7.3.1.3. **Ferrous (Spike)** – Discrete ferrous-like, dipolar anomalies are likely to be the result of isolated modern metallic debris on or near the ground surface.

7.3.1.4. **Ferrous/Debris (Spread)** – A ferrous/debris spread refers to a concentrated deposition of discrete, dipolar ferrous anomalies and other highly magnetic material.

7.3.1.5. **Undetermined** – Anomalies are classified as Undetermined when the anomaly origin is ambiguous through the geophysical results and there is no supporting or correlative evidence to warrant 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 not ferrous in nature.

### 7.3.2. Magnetic Results - Specific Anomalies

7.3.2.1. **Probable/Possible Archaeology** – In the centre and west of the survey area, several strong linear anomalies [21a], [24a], [14b], [15a], [20a] and [25a] have been identified. These cross Area 21, the central and western parts of Area 24, and extend into the western parts of Areas 14, 15, 20 and 25 (Figures 17, 23, 26 & 29). These form an interconnected field system and network of rectilinear enclosures covering an area of c. 28ha, which may extend to the north and south where features appear truncated by the survey extents. The enclosure system is broadly aligned northeast to southwest

and approximately aligns with two prominent natural features that show clearly in the magnetic data (a pronounced ridge towards the south of the field [21b] and a gully that runs from the centre of the field towards its northeastern boundary [21c] (Figure 5)). There is little clear evidence for multiple phases of activity; those linear anomalies that do appear to cut through the general pattern may be the result of modern agricultural activity, and so have been classified as possible rather than probable archaeology. It is notable that former field boundaries and the ridge and furrow follows a similar alignment to the archaeological field systems, which suggests a long period of continuous cultivation in this part of the survey area.

**7.3.2.2. Probable/Possible Archaeology** – Further east, in the southern-most fields of the survey area (in the east of Area 24 and west of Area 23), linear and curvilinear anomalies [24b] and [23a] have been identified (Figure 32). These exhibit strong positive magnetic signals most explicit in the total field data (Figure 5). These are suggestive of a network of irregular enclosures covering an area of c. 4ha and broadly aligned on a north to south orientation, which may extend beyond the boundaries of the survey to the south. These anomalies may represent an extension of the archaeological field system immediately to the west [21a, 24a, 14a, 14b, 15a, 20a & 25a], though they lack a shared alignment or clear physical connection with these anomalies. Therefore the relationship between the two field systems is undetermined.

**7.3.2.3. Probable/Possible Archaeology** – In the northeastern extent of the survey area (in the southern part of Area 10 and across much of Area 7), strong linear positive anomalies [10a], [10b], [7a], [7b] and [7c] have been identified (Figure 14). Most clear in the magnetic gradient data, these anomalies are recorded running broadly northeast to southwest. Two parallel linear anomalies [10a] and [7a], c. 280m in length are characteristic of a trackway feature, and [10b], [7b] and [7c] are indicative of enclosures positioned off this trackway. This may represent a continuation of the field systems c. 320m to the southwest [21a, 24a, 14b, 15a, 20a & 25a] and c. 680m to the south [10a, 10b, 7a, 7b & 7c], with which it shares both an alignment and similar magnetic signal. However, there are no clear anomalies of archaeological origin connecting these two field systems, therefore the precise relationship between them is unclear.

**7.3.2.4. Probable/Possible Archaeology** – In the southeastern corner of the survey area (in the east of Area 23), three strongly enhanced linear anomalies with a right-angular return [23b] have been identified (Figure 35). These exhibit a similar magnetic signal to other anomalies of archaeological origin identified within the survey area, which are most visible in the total field data (Figure 5). The anomalies [23b] are suggestive of fragmentary remnants of enclosures possibly enclosing an area of c. 2ha, on a northwest to southeast alignment. These anomalies are situated c. 320m east of the nearest other anomalies of archaeological origin, with no clear relationship between these features and others detected during the survey.

**7.3.2.5. Probable/Possible Archaeology** – Close to the northern boundary of the survey area, towards the northeastern corner of Area 1, a rectilinear anomaly and possible

associated linear anomalies [1a] have been identified (Figure 8). These exhibit a strong positive magnetic signal most explicit in the total field data (Figure 3). The rectilinear anomaly measures c. 30m by c. 25m and is recorded running on a northeast to southwest orientation. The anomaly is suggestive of a small enclosure, which appears to be connected to further possible archaeological activity northwards, the full extent of which appears to be obscured by modern activity relating to [1b].

**7.3.2.6. Agricultural** – Towards the centre of Areas 8 and 14, strongly enhanced linear and curvilinear positive anomalies [8a] and [14c] have been identified as historic field boundaries (Figures 4 and 17). These are recorded running in a northeast to southwest alignment, and [14c] is recorded on 2<sup>nd</sup> Edition OS mapping (Figure 4). [8a] can be inferred to be agricultural in origin due to its shared alignment and similar magnetic signal to [14c] and other nearby agricultural activity relating to former field boundaries. [8a] and [14c] also share a similar alignment and magnetic signal to archaeological activity in the survey area, most clearly [21a] to the southwest, and [7b] to the northeast (figure 14). The natural anomaly [21c] also shares this alignment; it is possible that [8a] and [14c] follow the path of earlier archaeological field boundaries, which may correspond to the course of a natural barrier such as a stream.

**7.3.2.7. Mining/Extraction** – In the north of Area 1, a spread of dipolar anomalies with broad linear anomalies within it [1b] has been identified (Figure 8). It exhibits a very strong magnetic signal most explicit in the total field data (Figure 3). It corresponds to the location of the Babes in the Wood Colliery recorded on 2<sup>nd</sup> Edition OS mapping (Figure 4). [1b] is indicative of demolition rubble associated with this colliery.

**7.3.2.8. Mining/Extraction** – In Areas 1, 2, 21, 22 and 23, discrete linear anomalies, pit-like anomalies, and spreads of dipolar anomalies [1c], [2a], [21b], [22a] and [23c] have been identified, which are typical of extraction (Figure 6). [23c] has been identified at the approximate location of a decoy facility dating from WWII (see section 5.5) which may indicate a possible other origin. These are generally confined to the edges of the survey area, and as such have had minimal impact on the interpretation of other anomalies within the survey area.

## 8. Conclusions

8.1. A fluxgate gradiometer survey has successfully been undertaken across the site. The geophysical survey has detected a range of different types of anomalies of archaeological, agricultural, natural, industrial and modern origin. Underlying coal measures geology has contributed to the strong enhancement of the magnetic data. Natural activity has been detected across the site as geological faulting, subaerial slope slumping and other, broader natural variations. Modern interference is limited to the peripheries of fields and some small areas of magnetic disturbance created by pylons within fields.

8.2. Archaeological activity has been identified across much of the site. A large, long-lived field hyper system, possibly of Iron Age origin, comprising multiple connected rectilinear enclosures covers much of the central and southern areas of the site. Further rectilinear enclosures have been identified in the north, east and southeast of the site, which may also relate to the field system in the centre and south.

- 8.3. Agricultural activity has been detected across the site as ridge and furrow, modern ploughing and drainage, and historic field boundaries.
- 8.4. Activity relating to mining and extraction has been identified in the north, southeast and southwest of the site as areas of strong magnetic disturbance, which is most pronounced at the location of the Babes in the Wood Colliery recorded on historic mapping.

## 9. Archiving

- 9.1. 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.
- 9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to the any dictated time embargoes.

## 10. Copyright

- 10.1. Copyright and the intellectual property pertaining to all reports, figures, and datasets produced by Magnitude Services Ltd. is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

## 11. References

- British Geological Survey, 2019. Geology of Britain. Dewsbury, West Yorkshire. [<http://mapapps.bgs.ac.uk/geologyofbritain/home.html/>]. [Accessed 17/10/2019].
- Chartered Institute for Archaeologists, 2014. Standards and guidance for archaeological geophysical survey. ClfA.
- Cotswold Archaeology, 2018a. Heritage assessment, Land at Heybeck Lane.
- Cotswold Archaeology, 2018b. Heritage assessment, Land off Leeds Road.
- David, A., Linford, N., Linford, P. and Martin, L., 2008. Geophysical survey in archaeological field evaluation: research and professional services guidelines (2<sup>nd</sup> edition). Historic England.
- Google Earth, 2019. Google Earth Pro V 7.1.7.2606.
- Magnitude Surveys, 2019. Written Scheme of Investigation For a Geophysical Survey of Chidswell, Dewsbury, West Yorkshire.
- Olsen, N., Toffner-Clausen, L., Sabaka, T.J., Brauer, P., Merayo, J.M.G., Jorgensen, J.L., Leger, J.M., Nielsen, O.V., Primdahl, F., and Risbo, T., 2003. Calibration of the Orsted vector magnetometer. *Earth Planets Space* 55: 11-18.
- Schmidt, A. and Ernenwein, E., 2013. Guide to good practice: geophysical data in archaeology. 2nd ed., Oxbow Books, Oxford.

Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. and Fassbinder, J., 2015. Guidelines for the use of geophysics in archaeology: questions to ask and points to consider. EAC Guidelines 2. European Archaeological Council: Belgium.

Soilscapes, 2019. Dewsbury, West Yorkshire. Cranfield University, National Soil Resources Institute [http://landis.org.uk]. [Accessed 17/10/2019].

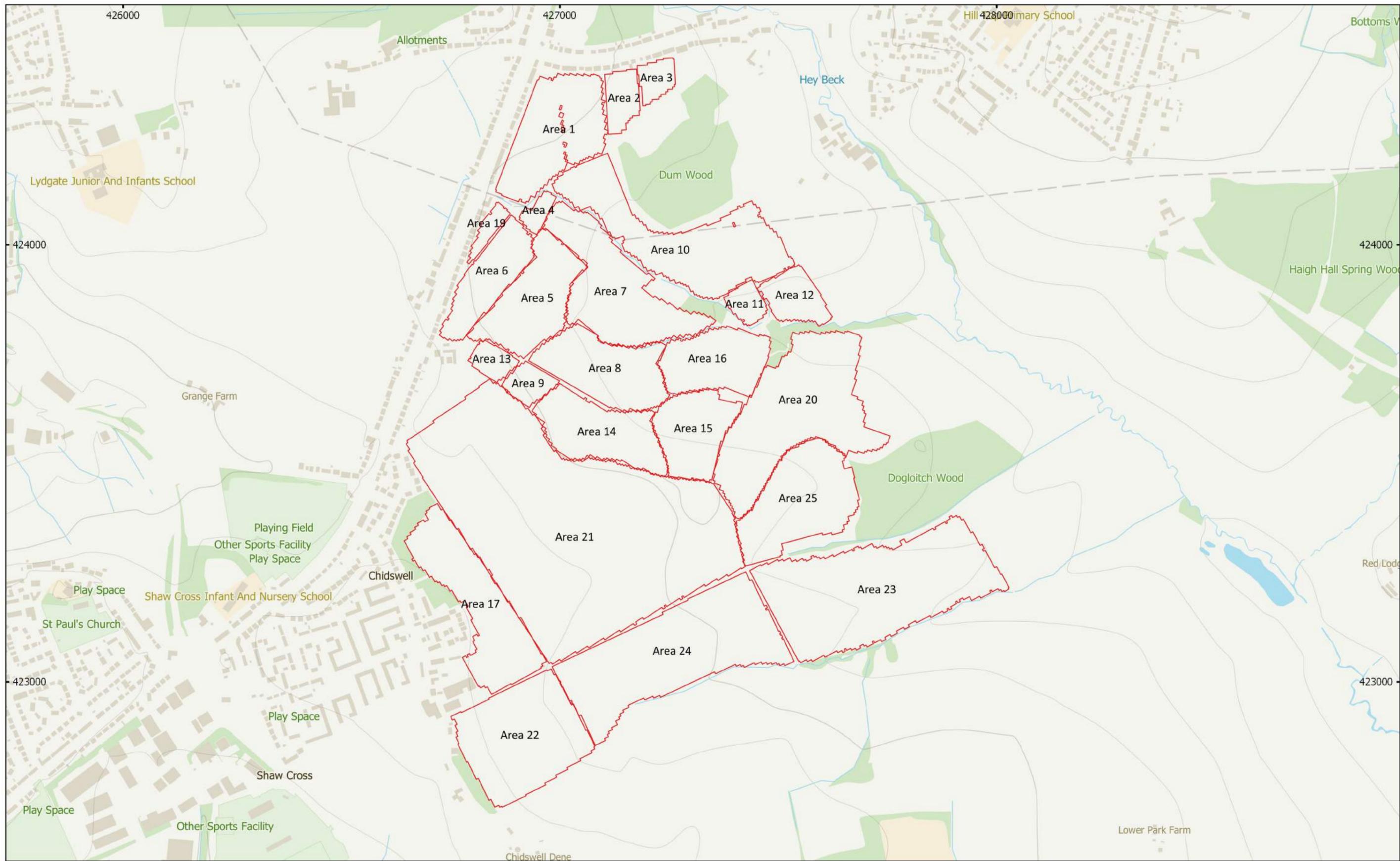
## 12. Project Metadata

MS Job Code	MSSE562
Project Name	Land at Chidswell, West Yorkshire
Client	Cotswold Archaeology
Grid Reference	SE 27262 23492
Survey Techniques	Magnetometry
Survey Size (ha)	119ha (Magnetometry)
Survey Dates	30/09/ 2019 to 18/10/2019
Project Manager	Chrys Harris BA MSc PhD approved by Finnegan Pope-Carter BSc (Hons) MSc FGS
Project Officer	Julia Cantarano <i>Ingénieur</i> PCIfA
HER Event No	To be attributed when the report has been accepted by West Yorkshire Archaeological Advisory Service
OASIS No	N/A
S42 Licence No	N/A
Report Version	2.2

## 13. Document History

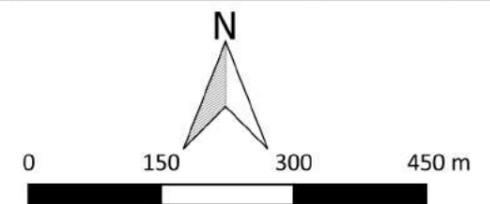
Version	Comments	Author	Checked By	Date
1.0	Initial draft for Project Officer to Review	HK, LB, PT, MC, RL, CN	JC	29/10/2019
1.1	Internal corrections	HK, LB, MF	FPC	30/10/2019
2.0	Corrections from Client	JC	JC	08/11/2019
2.1	Corrections from Client's Client	JC	JC	09/12/2019
2.2	Site Name Updated	JC	JC	11/12/2019

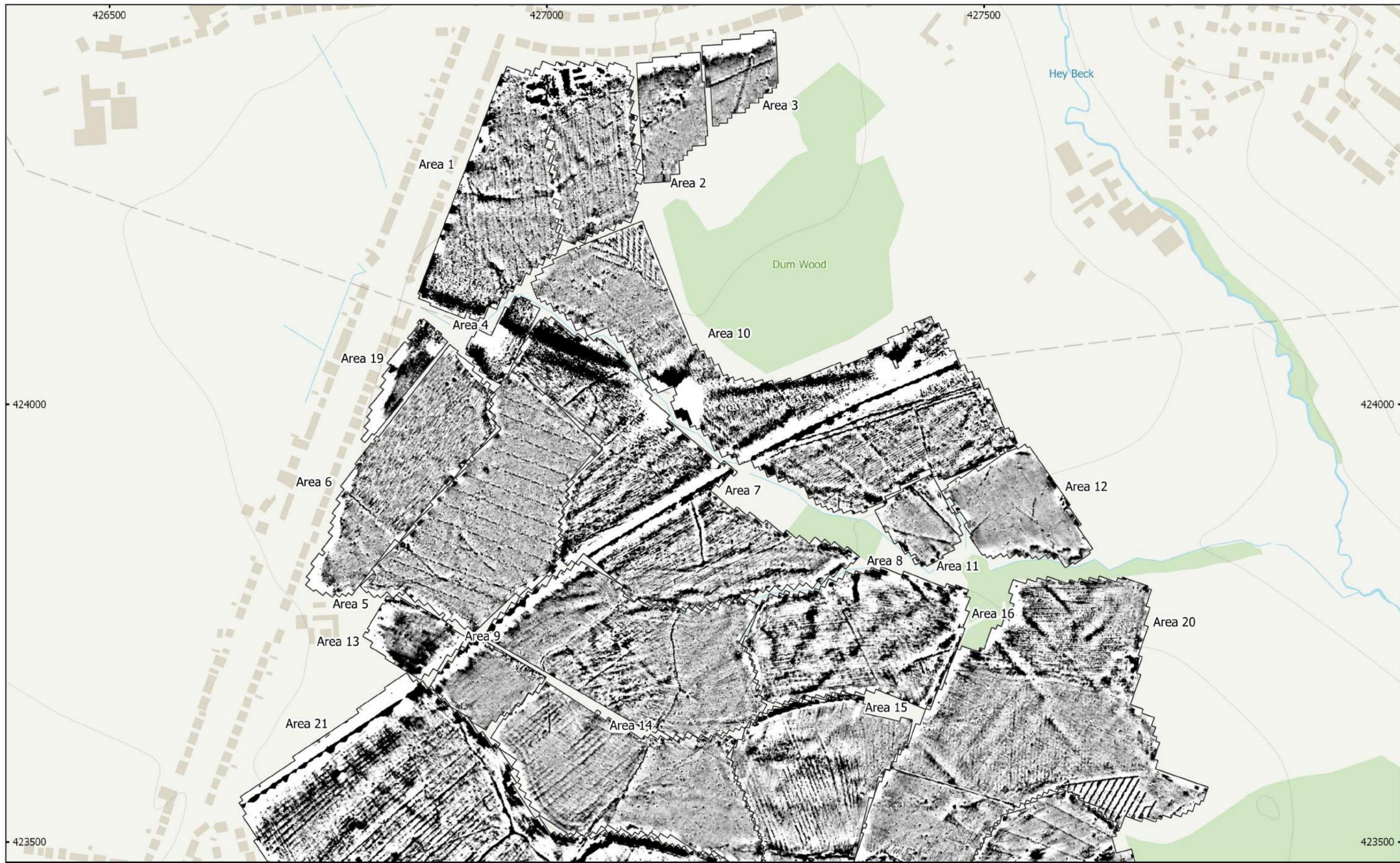




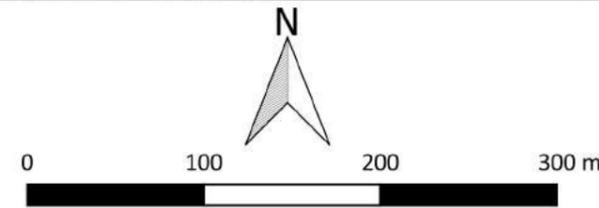
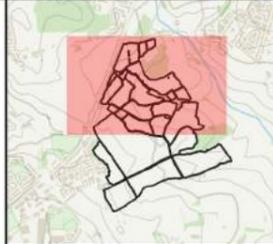
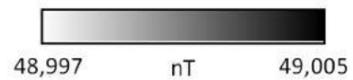
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 2 - Location of Survey Areas  
 1:8,000 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains OS data © Crown copyright and database right 2019

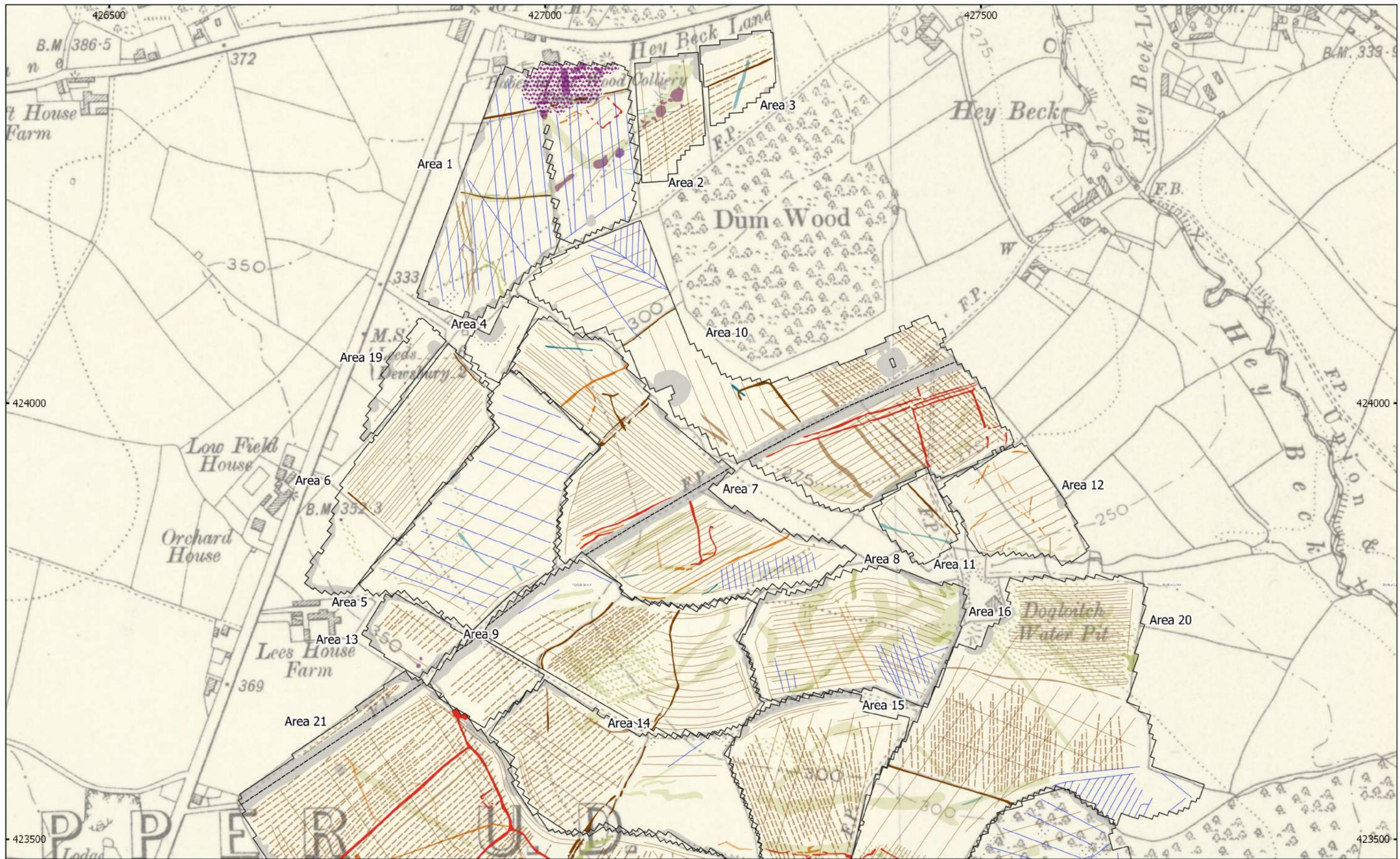
 Survey Extent





MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 3 - Magnetic Total Field (Lower Sensor) (Overview North)  
 1:4,000 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019





MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 4 - Magnetic Interpretation Over Historic Maps (Overview North)  
 1:4,000 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains historic maps: Ordnance Survey, 6" 2nd edition c. 1882-1913 ©  
 National Library of Scotland

	Archaeology Probable (Strong)		Magnetic Disturbance		Agricultural (Trend)
	Archaeology Possible (Strong)		Ferrous/Debris (Spread)		Natural (Trend)
	Archaeology Possible (Weak)		Natural (Strong)		Service
	Agricultural (Strong)		Natural (Weak)		Ridge and Furrow (Trend)
	Agricultural (Weak)		Natural (Spread)		Drainage Feature
	Mining/Extraction		Undetermined (Strong)		
	Mining/Extraction (Spread)		Undetermined (Weak)		

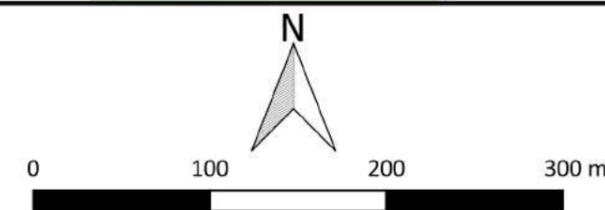
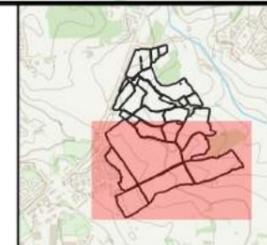
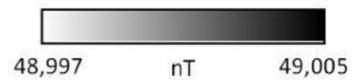


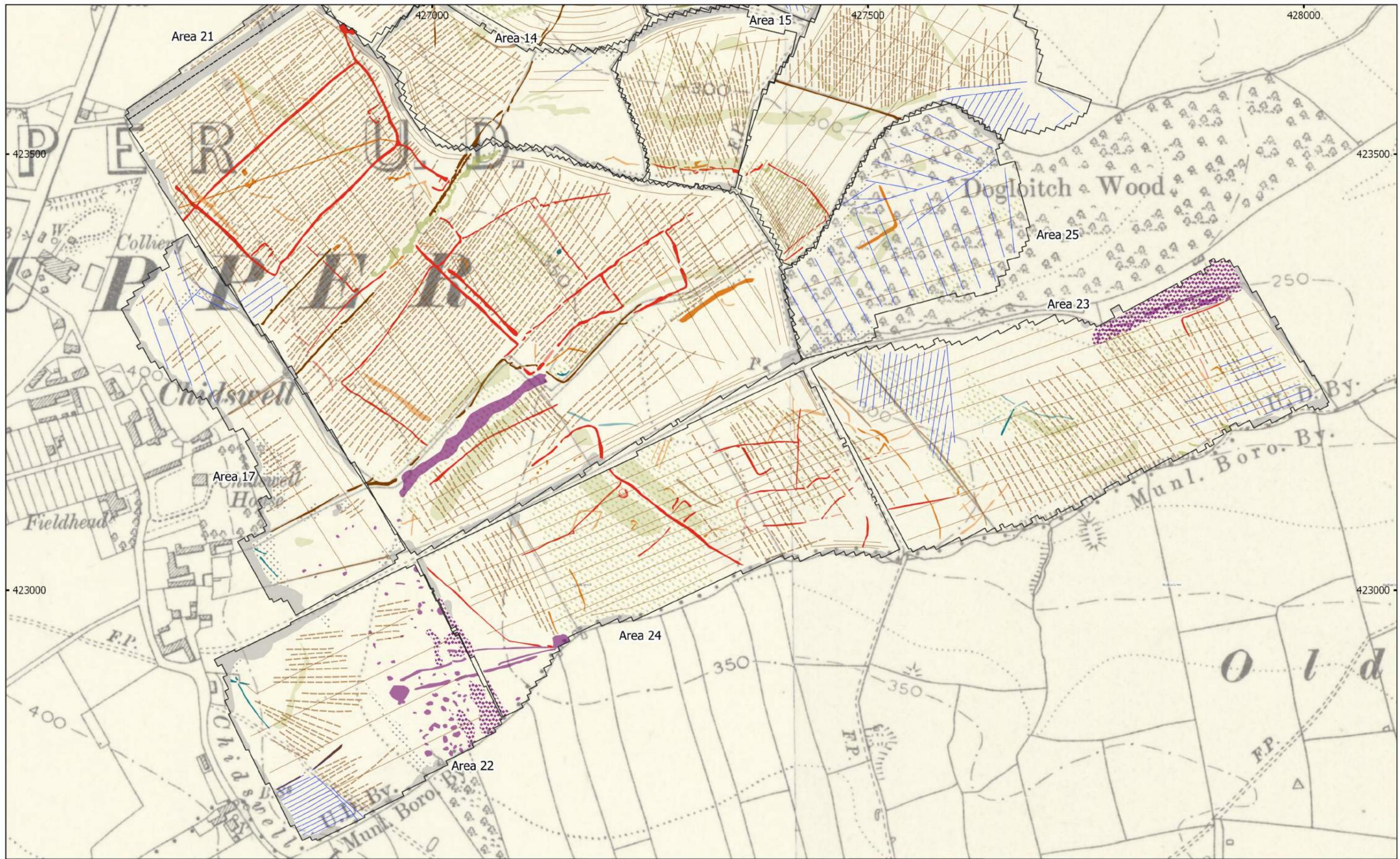
0 100 200 300 m

**magnitude surveys**



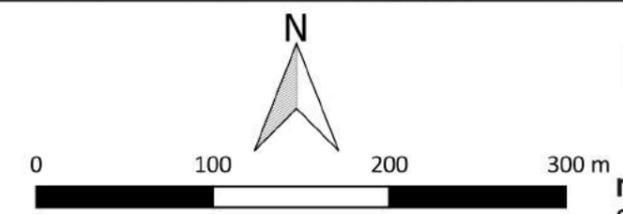
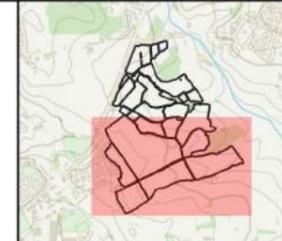
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 5 - Magnetic Total Field (Lower Sensor) (Overview South)  
 1:4,000 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019





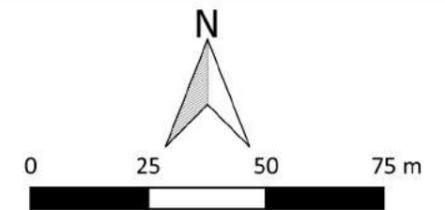
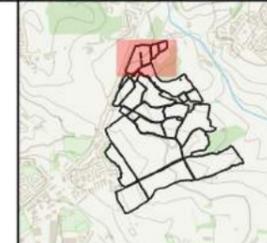
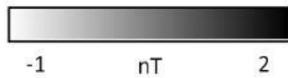
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 6 - Magnetic Interpretation Over Historic Maps (Overview South)  
 1:4,000 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains historic maps: Ordnance Survey, 6" 2nd edition c. 1882-1913 ©  
 National Library of Scotland

- |                               |                            |                          |
|-------------------------------|----------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction          | Natural (Spread)         |
| Archaeology Probable (Weak)   | Mining/Extraction (Spread) | Undetermined (Strong)    |
| Archaeology Possible (Strong) | Magnetic Disturbance       | Undetermined (Weak)      |
| Archaeology Possible (Weak)   | Ferrous/Debris (Spread)    | Agricultural (Trend)     |
| Agricultural (Strong)         | Natural (Strong)           | Ridge and Furrow (Trend) |
| Agricultural (Weak)           | Natural (Weak)             | Drainage Feature         |





MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 7 - Magnetic Gradient (North)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

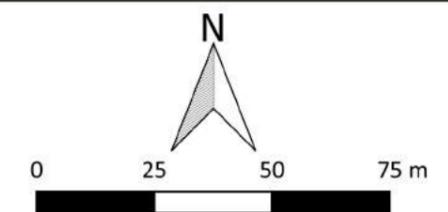
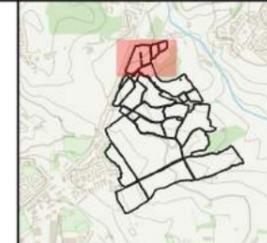


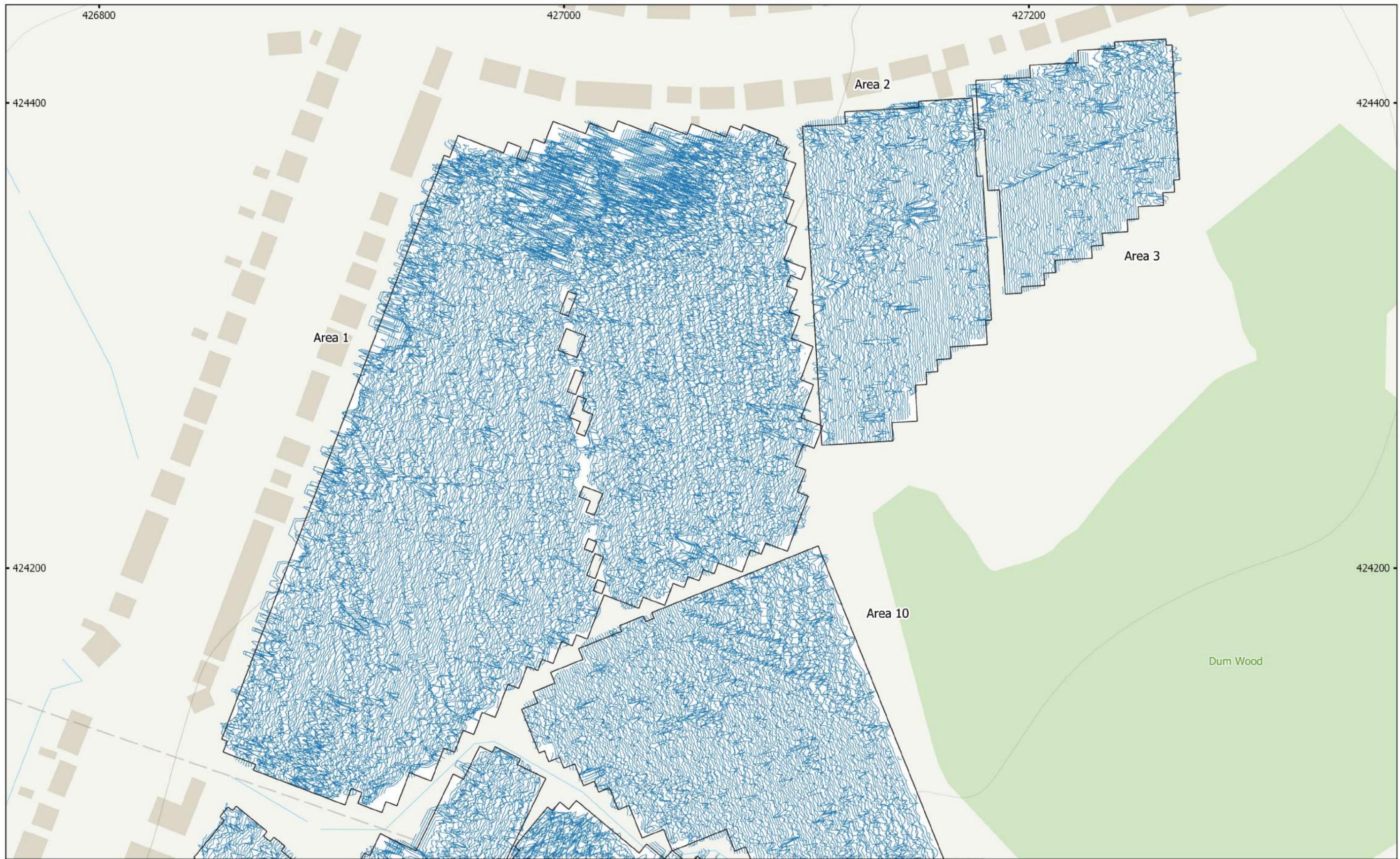
**magnitude**  
surveys



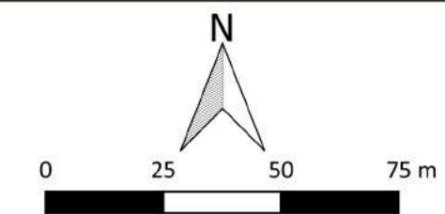
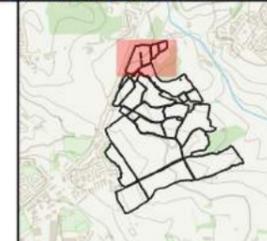
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 8 - Magnetic Interpretation (North)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                            |                          |
|-------------------------------|----------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction (Spread) | Agricultural (Trend)     |
| Archaeology Possible (Strong) | Magnetic Disturbance       | Natural (Trend)          |
| Archaeology Possible (Weak)   | Ferrous/Debris (Spread)    | Ridge and Furrow (Trend) |
| Agricultural (Strong)         | Natural (Strong)           | Drainage Feature         |
| Agricultural (Weak)           | Natural (Weak)             | Ferrous (Spike)          |
| Mining/Extraction             | Undetermined (Weak)        |                          |



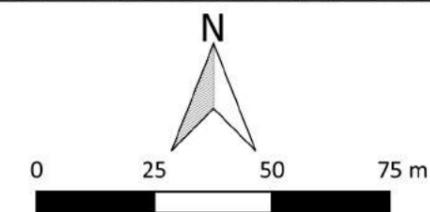
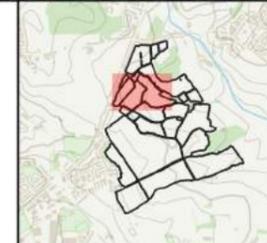


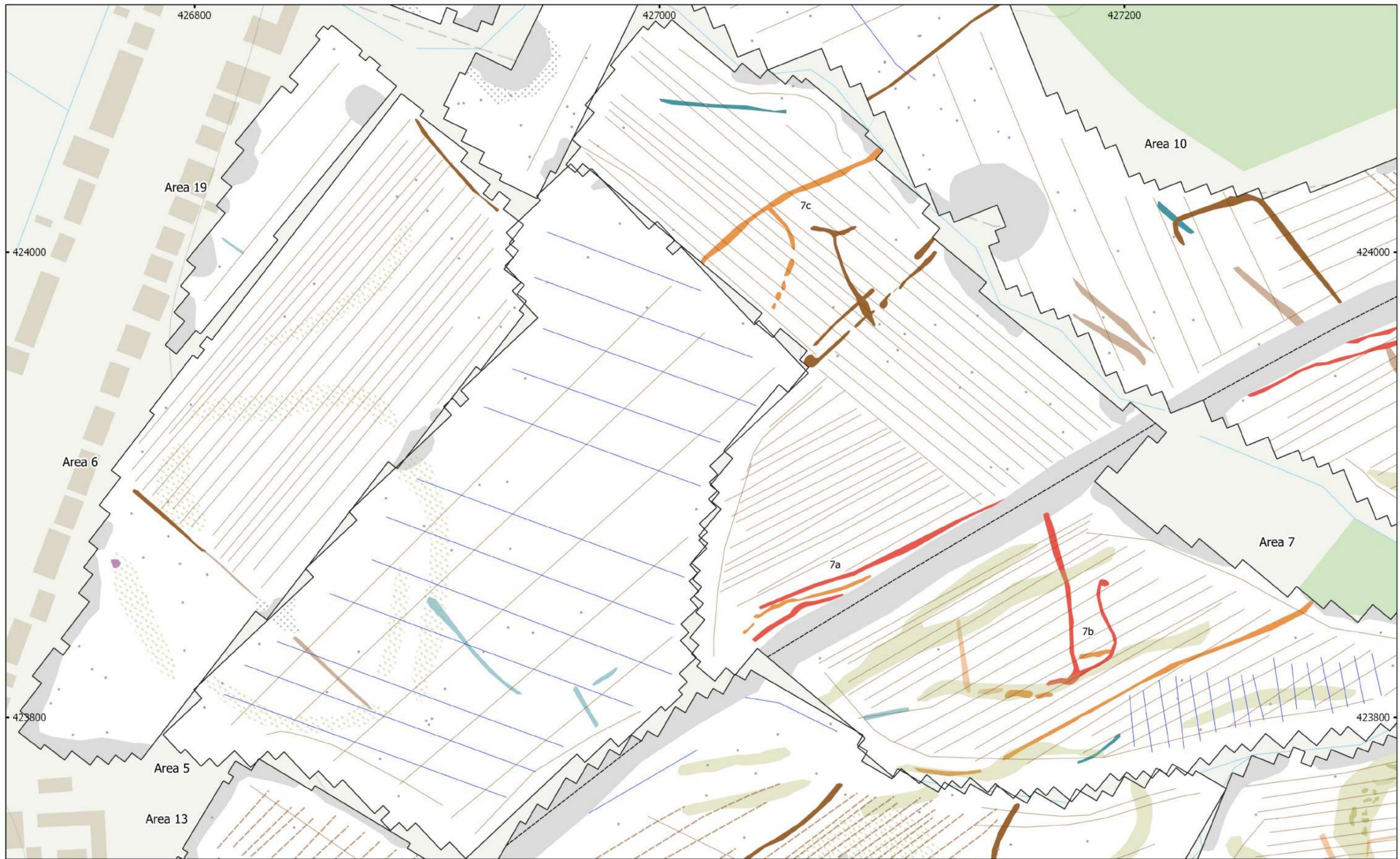
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 9 - XY Trace Plot (North)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





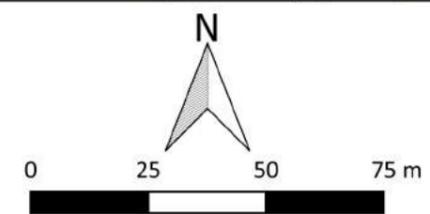
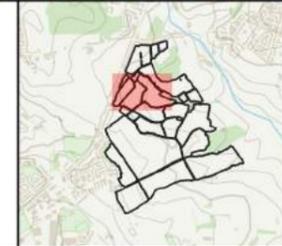
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 10 - Magnetic Gradient (North-West)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

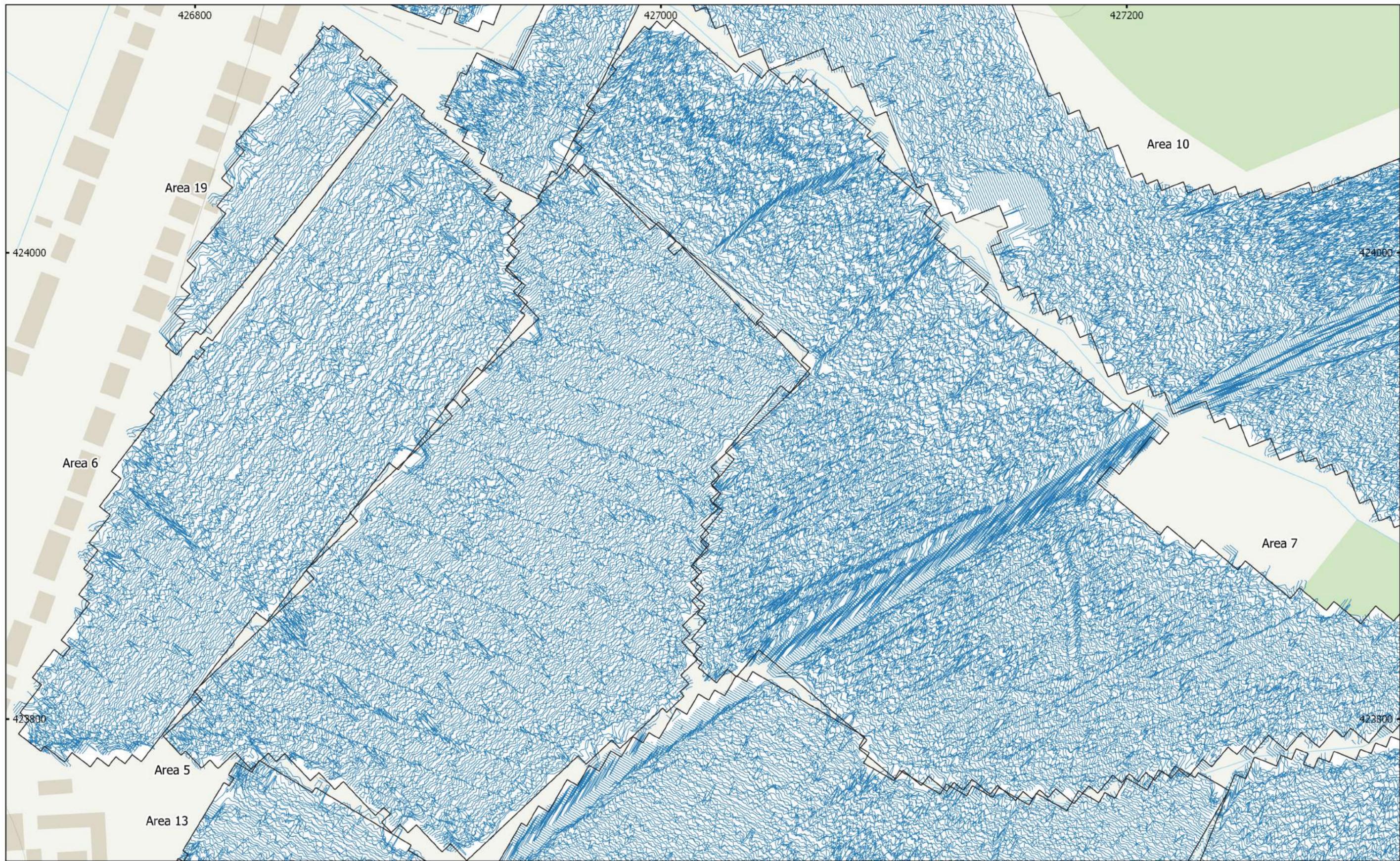




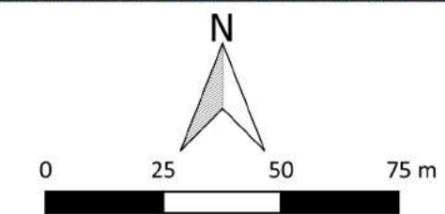
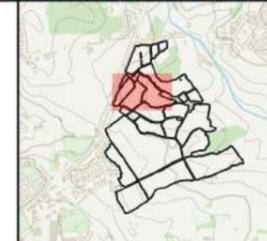
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 11 - Magnetic Interpretation (North-West)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

	Archaeology Probable (Strong)		Magnetic Disturbance		Undetermined (Weak)
	Archaeology Possible (Strong)		Ferrous/Debris (Spread)		Agricultural (Trend)
	Archaeology Possible (Weak)		Natural (Strong)		Service
	Agricultural (Strong)		Natural (Weak)		Ridge and Furrow (Trend)
	Agricultural (Weak)		Natural (Spread)		Drainage Feature
	Mining/Extraction		Undetermined (Strong)		Ferrous (Spike)



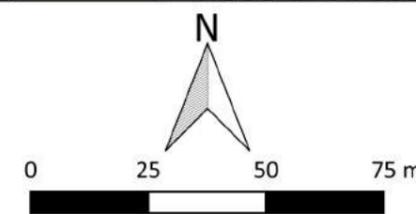
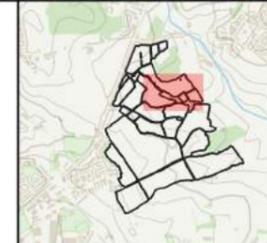
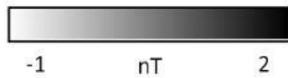


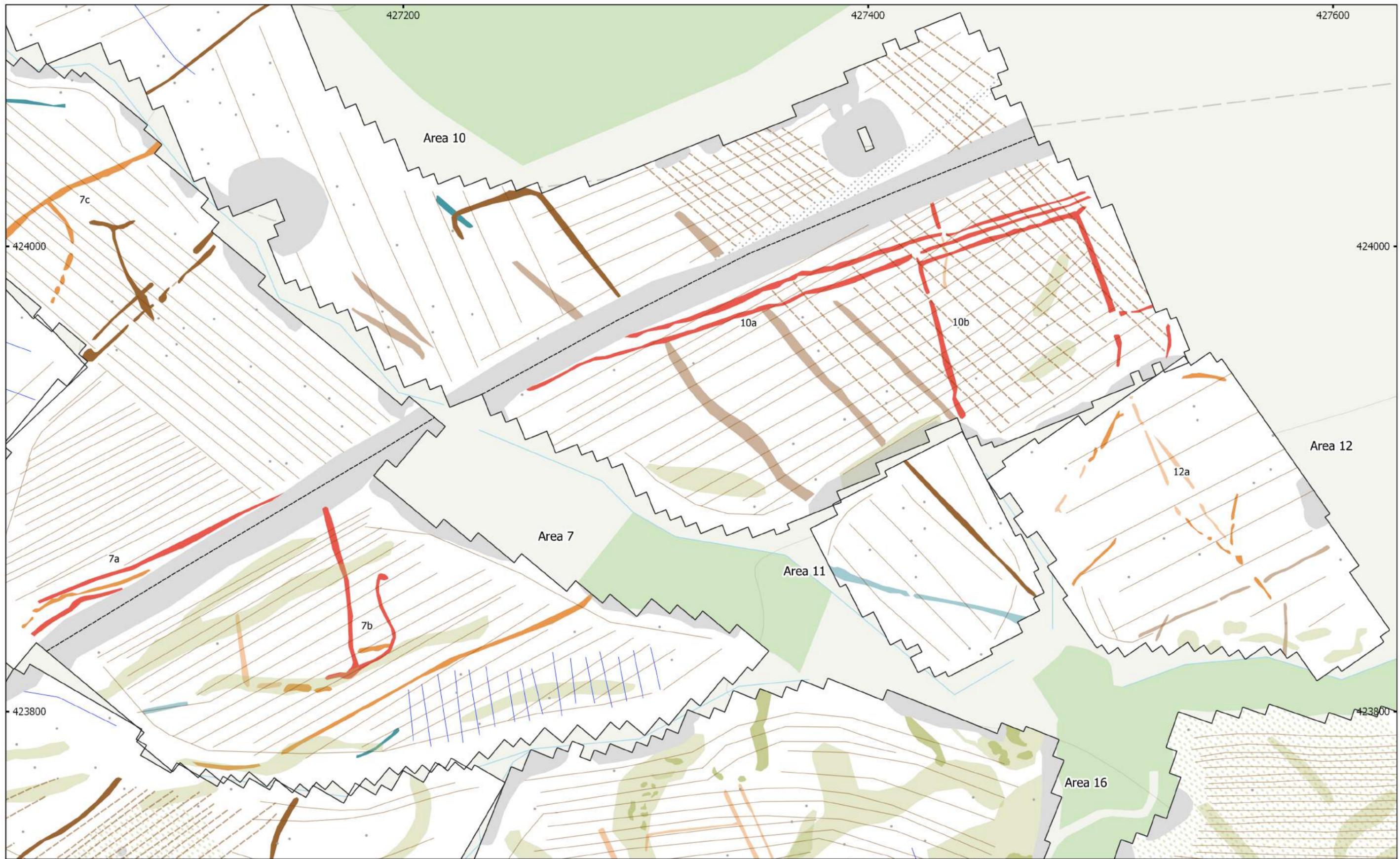
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 12 - XY Trace Plot (North-West)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





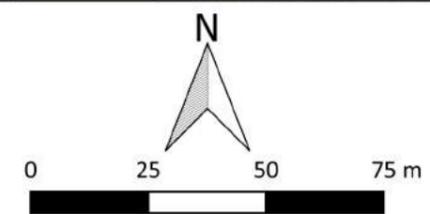
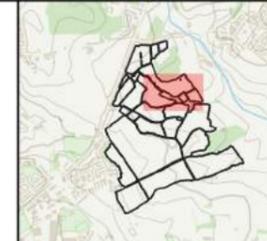
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 13 - Magnetic Gradient (North-East)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

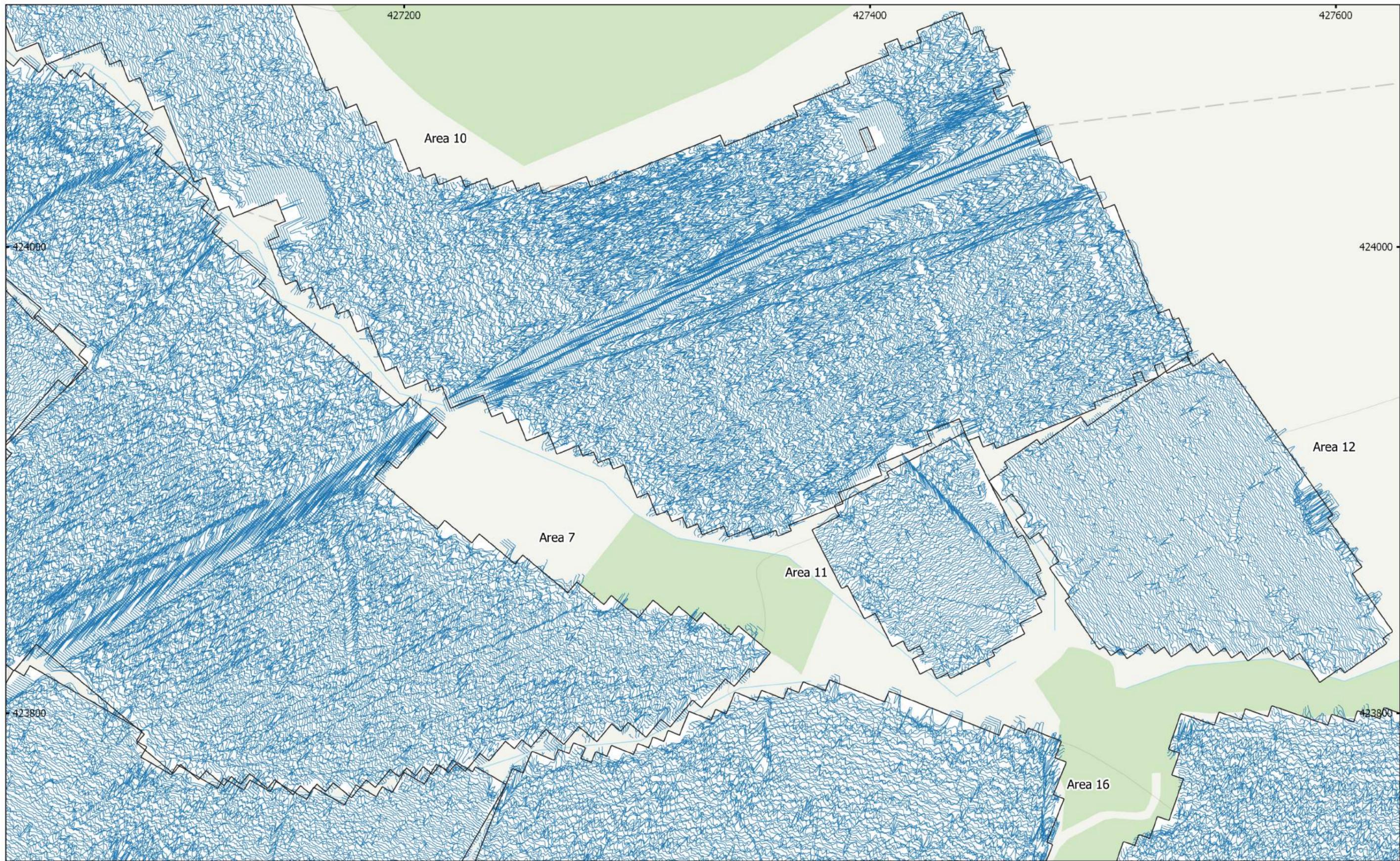




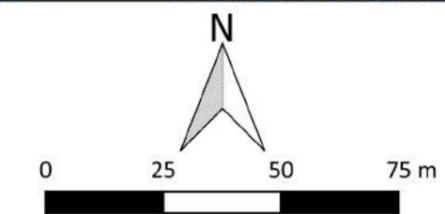
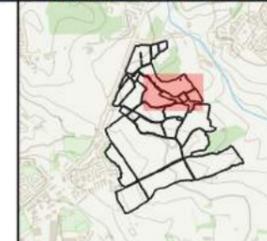
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 14 - Magnetic Interpretation (North-East)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                         |                          |
|-------------------------------|-------------------------|--------------------------|
| Archaeology Probable (Strong) | Ferrous/Debris (Spread) | Agricultural (Trend)     |
| Archaeology Possible (Strong) | Natural (Strong)        | Service                  |
| Archaeology Possible (Weak)   | Natural (Weak)          | Ridge and Furrow (Trend) |
| Agricultural (Strong)         | Natural (Spread)        | Drainage Feature         |
| Agricultural (Weak)           | Undetermined (Strong)   | Ferrous (Spike)          |
| Magnetic Disturbance          | Undetermined (Weak)     |                          |



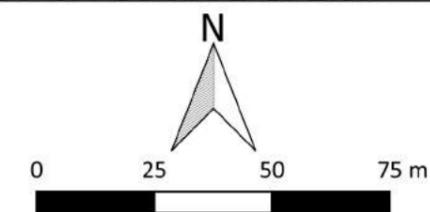
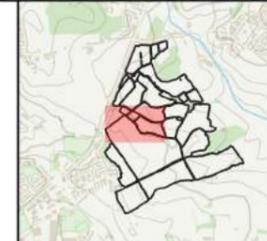


MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 15 - XY Trace Plot (North-East)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





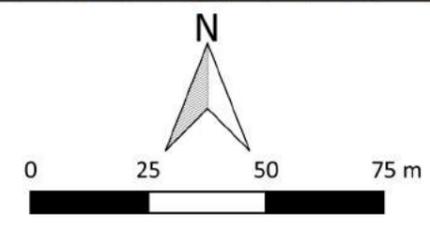
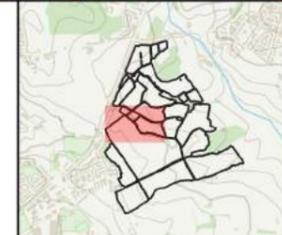
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 16 - Magnetic Gradient (Centre-Northwest)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

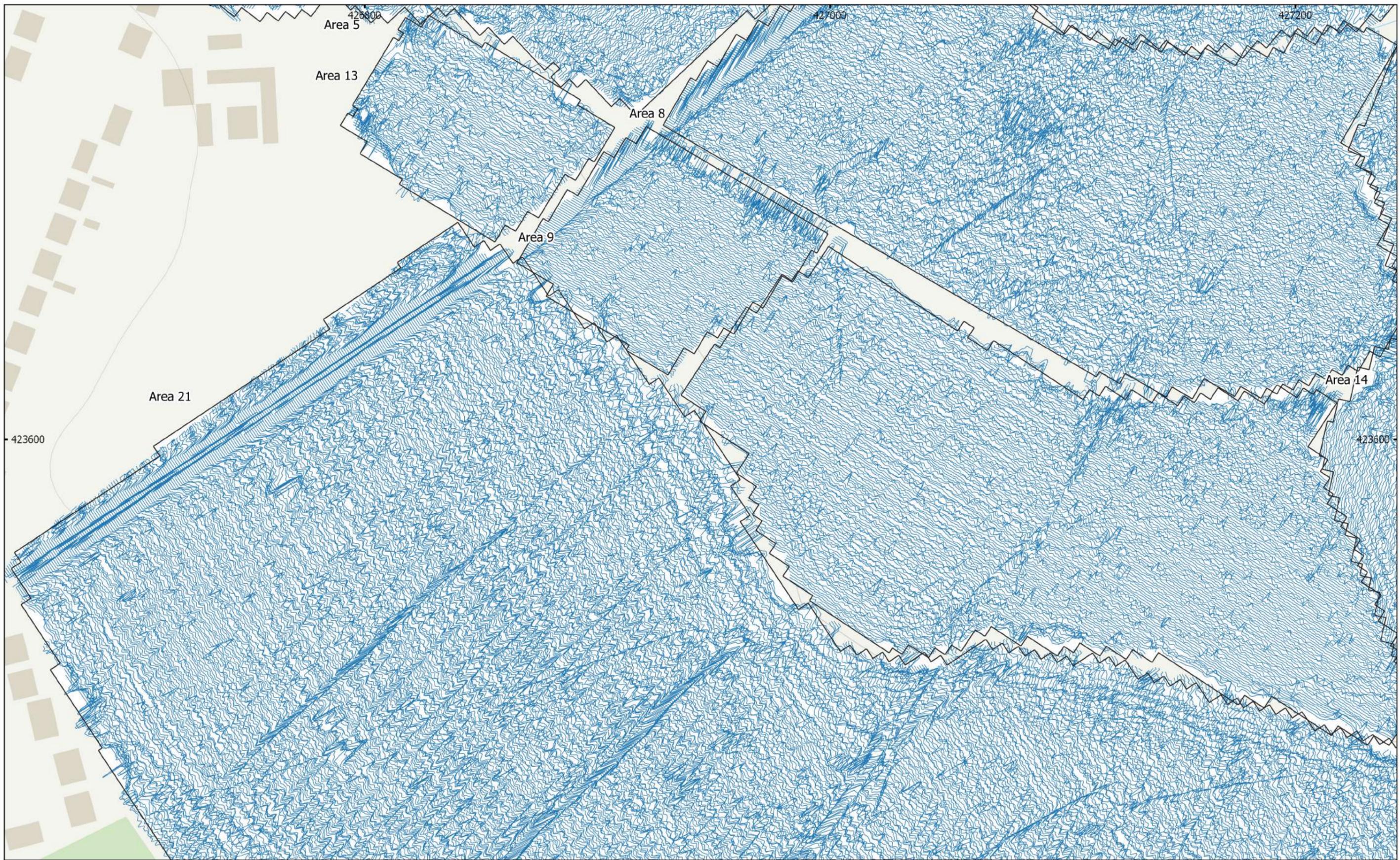




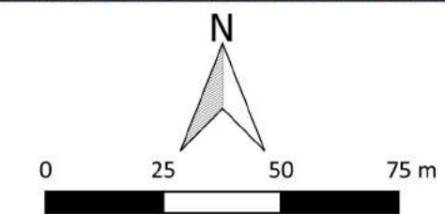
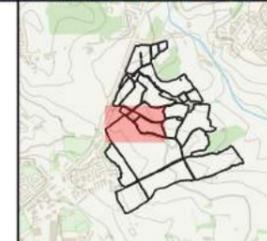
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 17 - Magnetic Interpretation (Centre-Northwest)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                         |                          |
|-------------------------------|-------------------------|--------------------------|
| Archaeology Probable (Strong) | Magnetic Disturbance    | Natural (Trend)          |
| Archaeology Probable (Weak)   | Ferrous/Debris (Spread) | Service                  |
| Archaeology Possible (Strong) | Natural (Strong)        | Ridge and Furrow (Trend) |
| Archaeology Possible (Weak)   | Natural (Weak)          | Drainage Feature         |
| Agricultural (Strong)         | Natural (Spread)        | Ferrous (Spike)          |
| Agricultural (Weak)           | Undetermined (Strong)   |                          |
| Mining/Extraction             | Agricultural (Trend)    |                          |



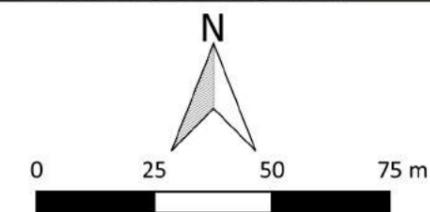
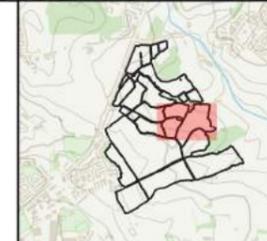


MSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 18 - XY Trace Plot (Centre-Northwest)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





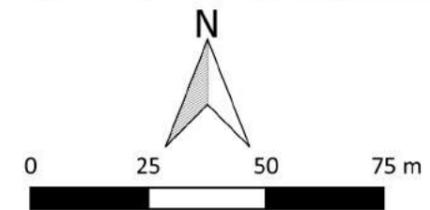
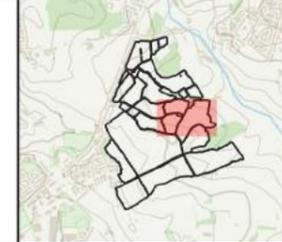
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 19 - Magnetic Gradient (Centre-Northeast)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

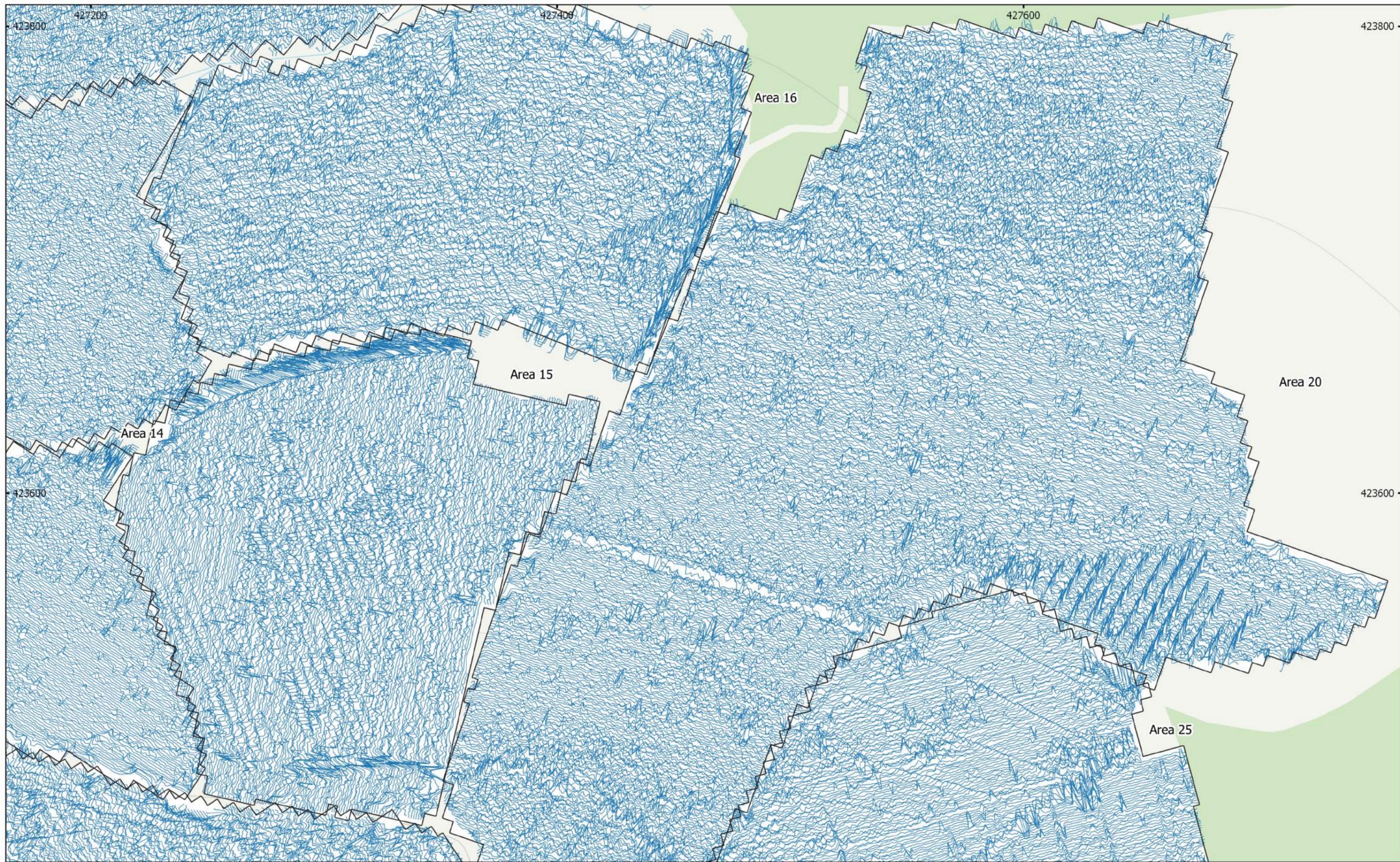




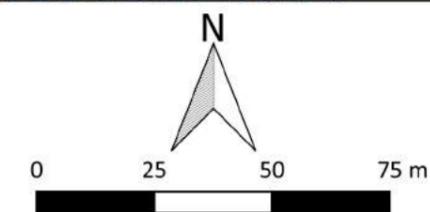
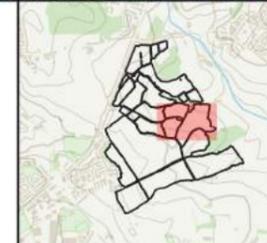
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 20 - Magnetic Interpretation (Centre-Northeast)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                         |                          |
|-------------------------------|-------------------------|--------------------------|
| Archaeology Probable (Strong) | Ferrous/Debris (Spread) | Agricultural (Trend)     |
| Archaeology Possible (Strong) | Natural (Strong)        | Ridge and Furrow (Trend) |
| Archaeology Possible (Weak)   | Natural (Weak)          | Drainage Feature         |
| Agricultural (Strong)         | Natural (Spread)        | Ferrous (Spike)          |
| Agricultural (Weak)           | Undetermined (Strong)   |                          |
| Magnetic Disturbance          | Undetermined (Weak)     |                          |



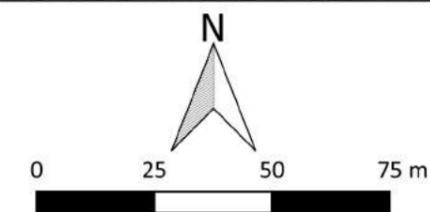
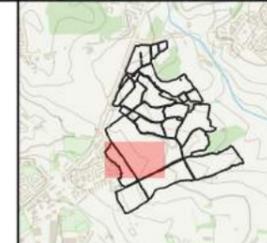


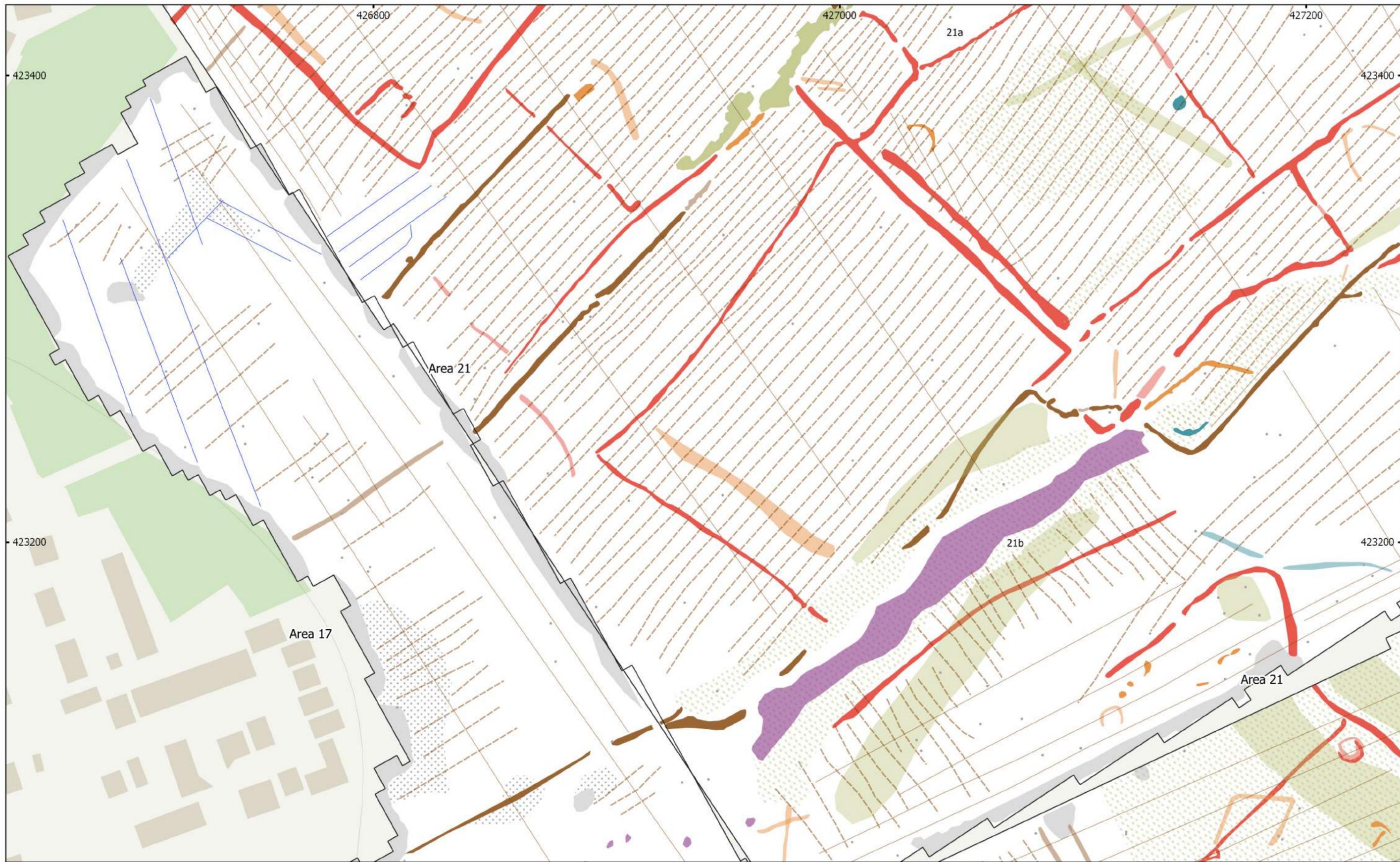
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 21 - XY Trace Plot (Centre-Northeast)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





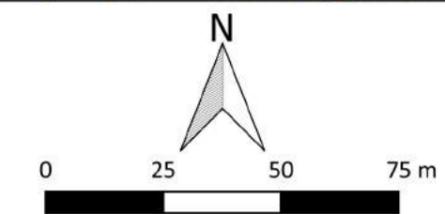
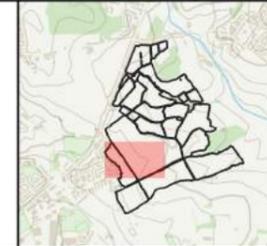
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 22 - Magnetic Gradient (Centre-West)  
1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019

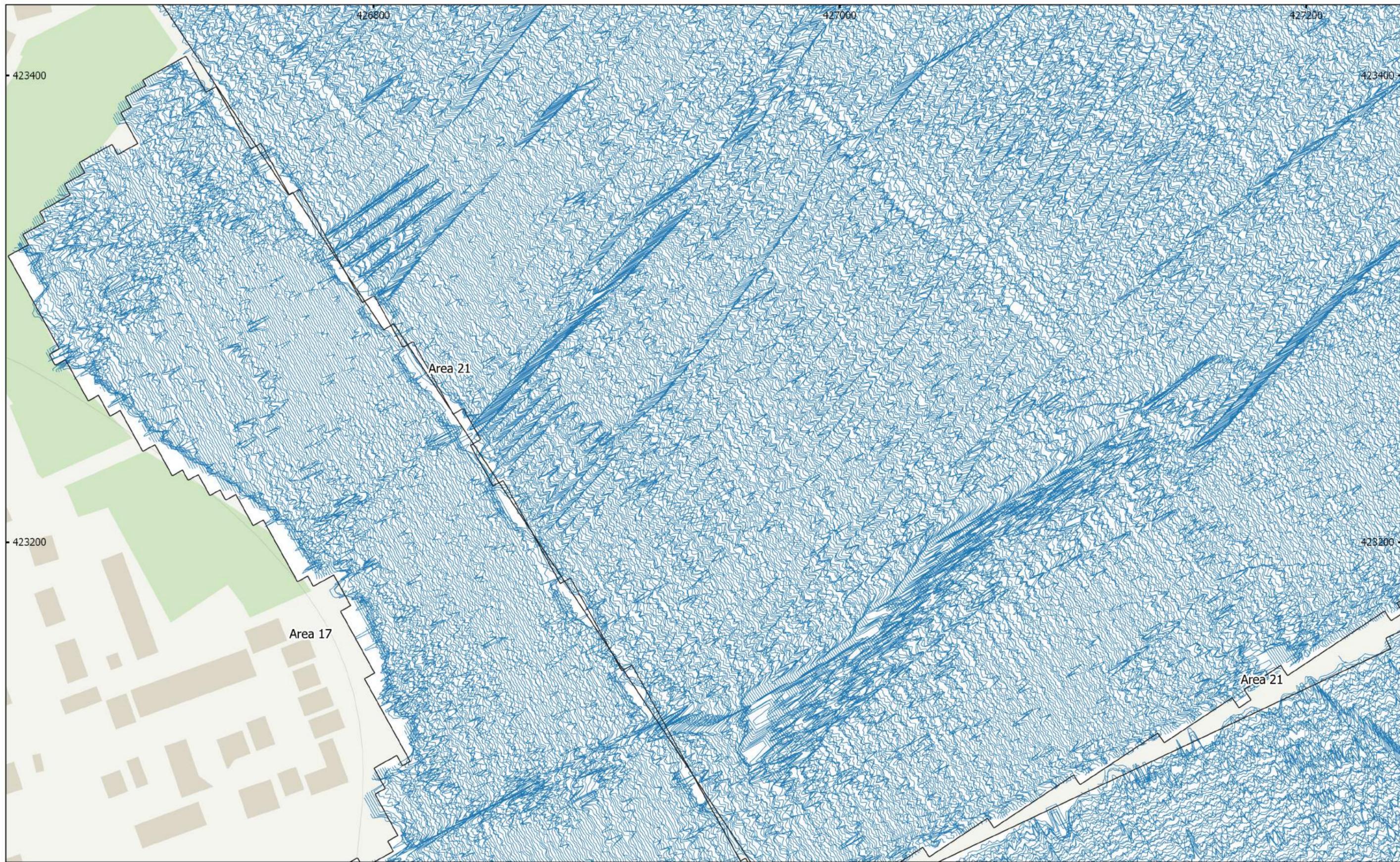




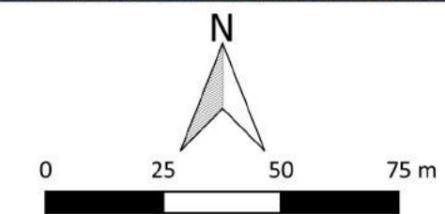
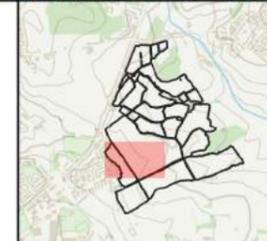
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 23 - Magnetic Interpretation (Centre-West)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                         |                          |
|-------------------------------|-------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction       | Undetermined (Strong)    |
| Archaeology Probable (Weak)   | Magnetic Disturbance    | Undetermined (Weak)      |
| Archaeology Possible (Strong) | Ferrous/Debris (Spread) | Agricultural (Trend)     |
| Archaeology Possible (Weak)   | Natural (Strong)        | Ridge and Furrow (Trend) |
| Agricultural (Strong)         | Natural (Weak)          | Drainage Feature         |
| Agricultural (Weak)           | Natural (Spread)        | Ferrous (Spike)          |



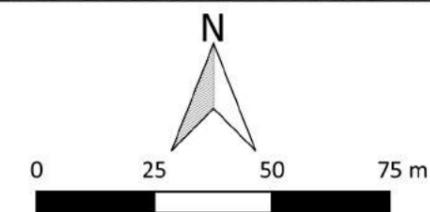
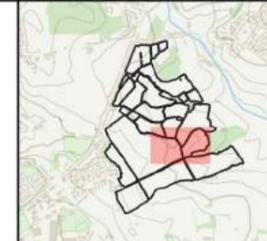


MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 24 - XY Trace Plot (Centre-West)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





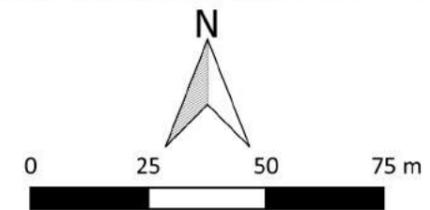
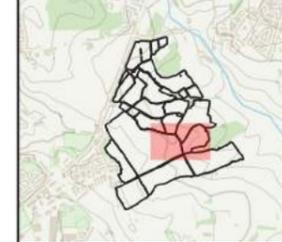
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 25 - Magnetic Gradient (Centre-East)  
1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





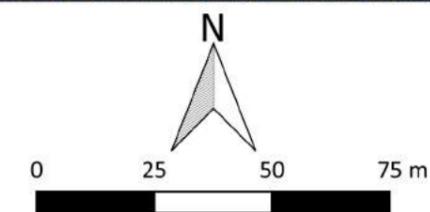
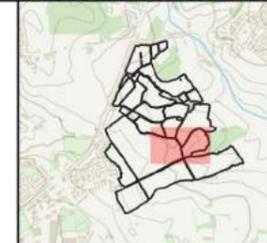
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 26 - Magnetic Interpretation (Centre-East)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                         |                          |
|-------------------------------|-------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction       | Undetermined (Strong)    |
| Archaeology Probable (Weak)   | Magnetic Disturbance    | Undetermined (Weak)      |
| Archaeology Possible (Strong) | Ferrous/Debris (Spread) | Agricultural (Trend)     |
| Archaeology Possible (Weak)   | Natural (Strong)        | Ridge and Furrow (Trend) |
| Agricultural (Strong)         | Natural (Weak)          | Drainage Feature         |
| Agricultural (Weak)           | Natural (Spread)        | Ferrous (Spike)          |



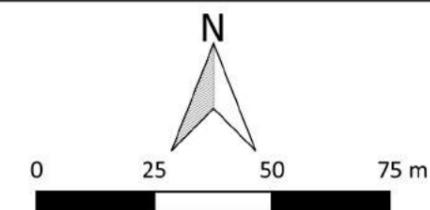
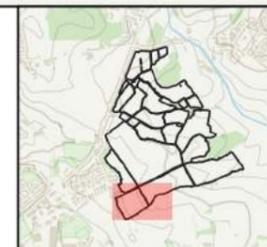


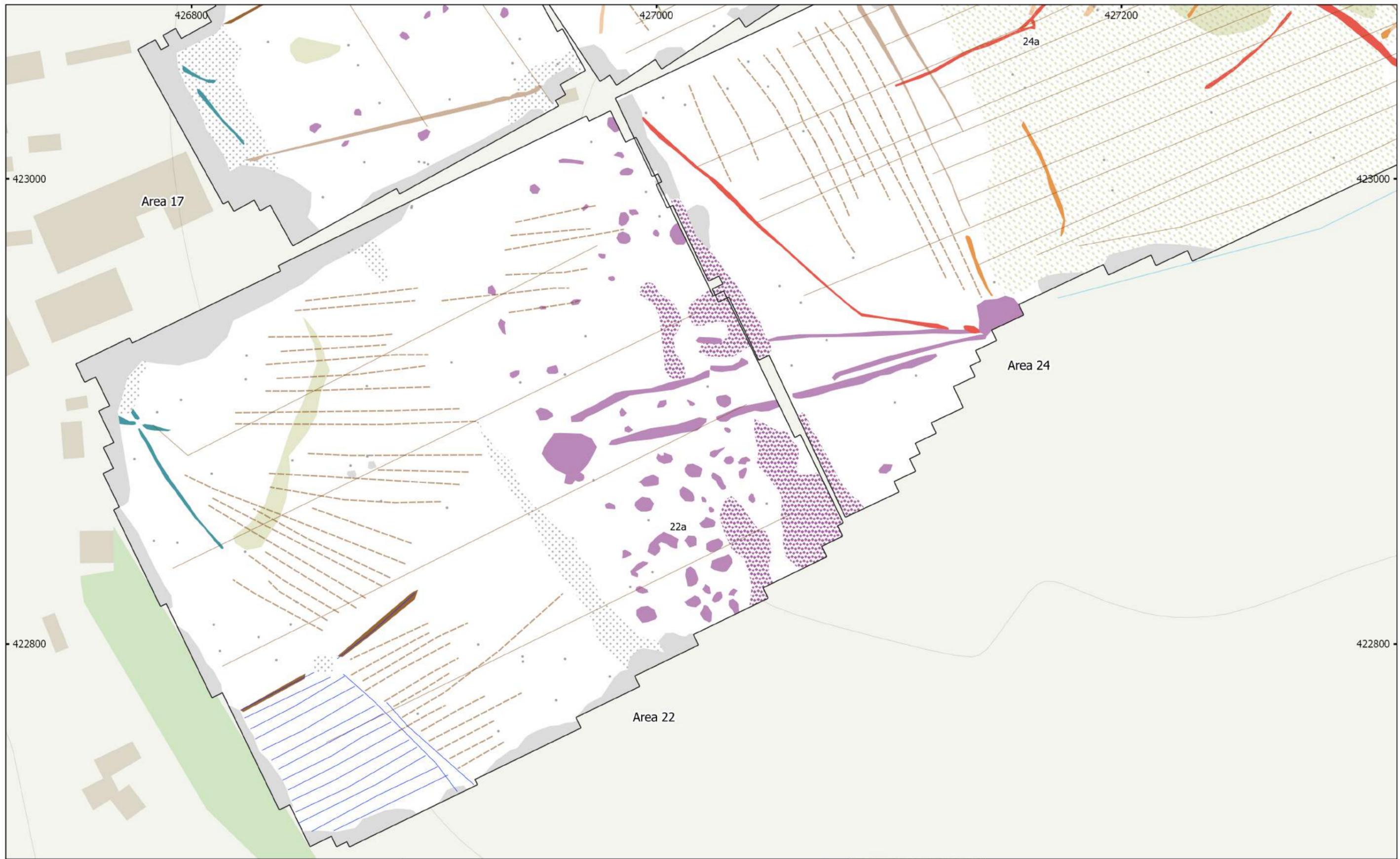
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 27 - XY Trace Plot (Centre-East)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





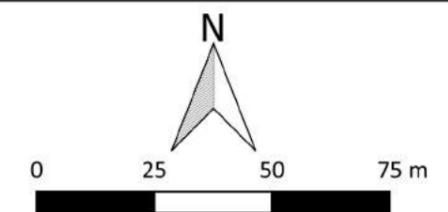
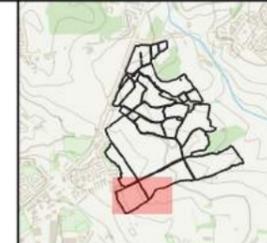
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 28 - Magnetic Gradient (South-West)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

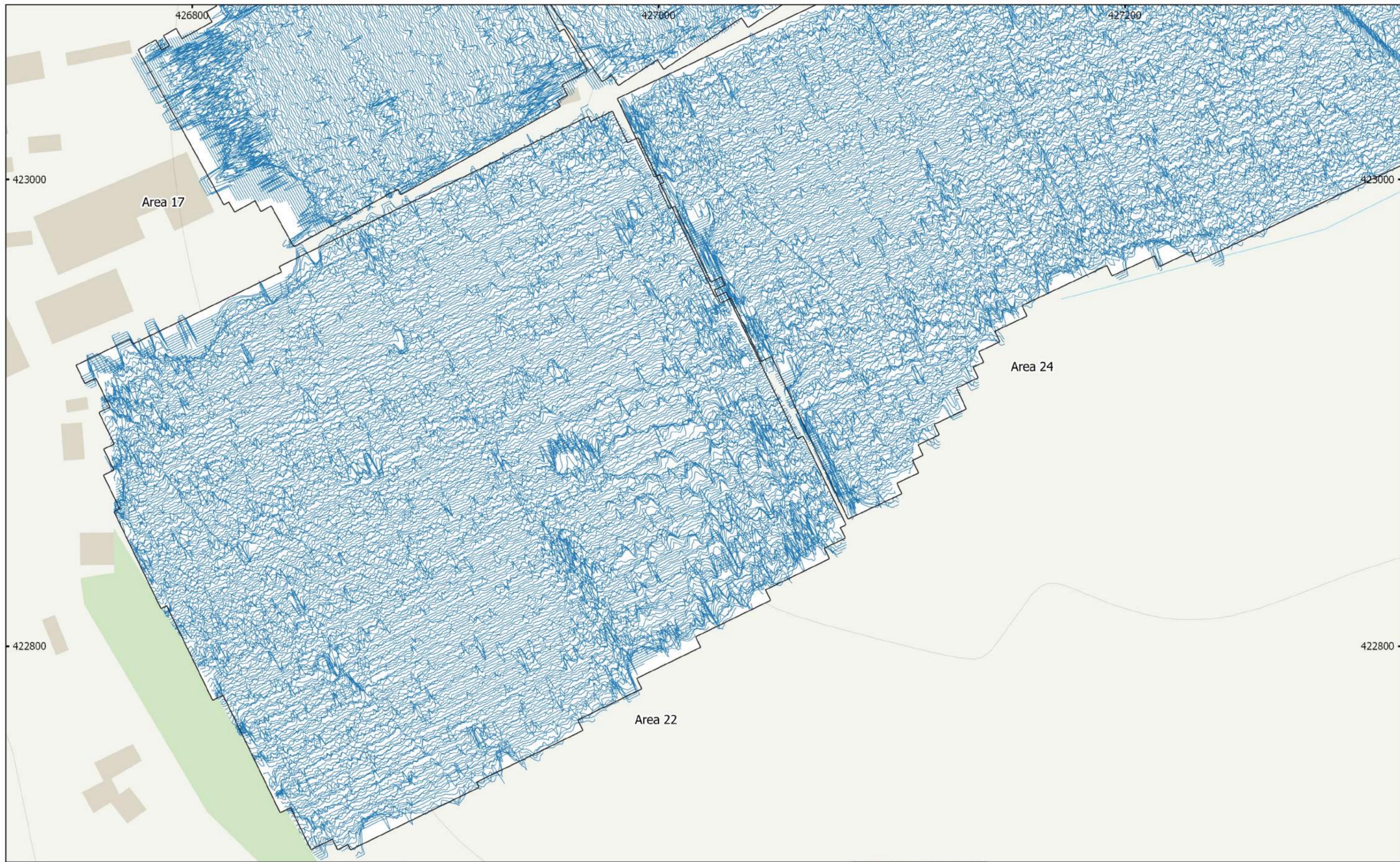




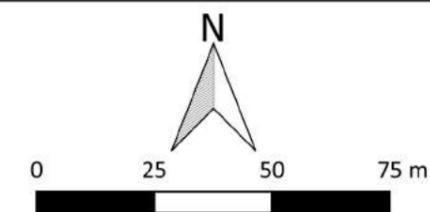
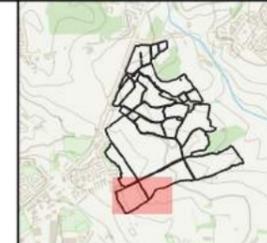
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 29 - Magnetic Interpretation (South-West)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                            |                          |
|-------------------------------|----------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction (Spread) | Agricultural (Trend)     |
| Archaeology Possible (Strong) | Magnetic Disturbance       | Ridge and Furrow (Trend) |
| Archaeology Possible (Weak)   | Ferrous/Debris (Spread)    | Drainage Feature         |
| Agricultural (Strong)         | Natural (Weak)             | Ferrous (Spike)          |
| Agricultural (Weak)           | Natural (Spread)           |                          |
| Mining/Extraction             | Undetermined (Strong)      |                          |



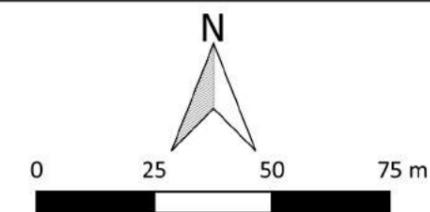
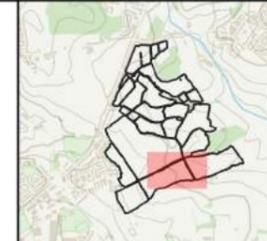


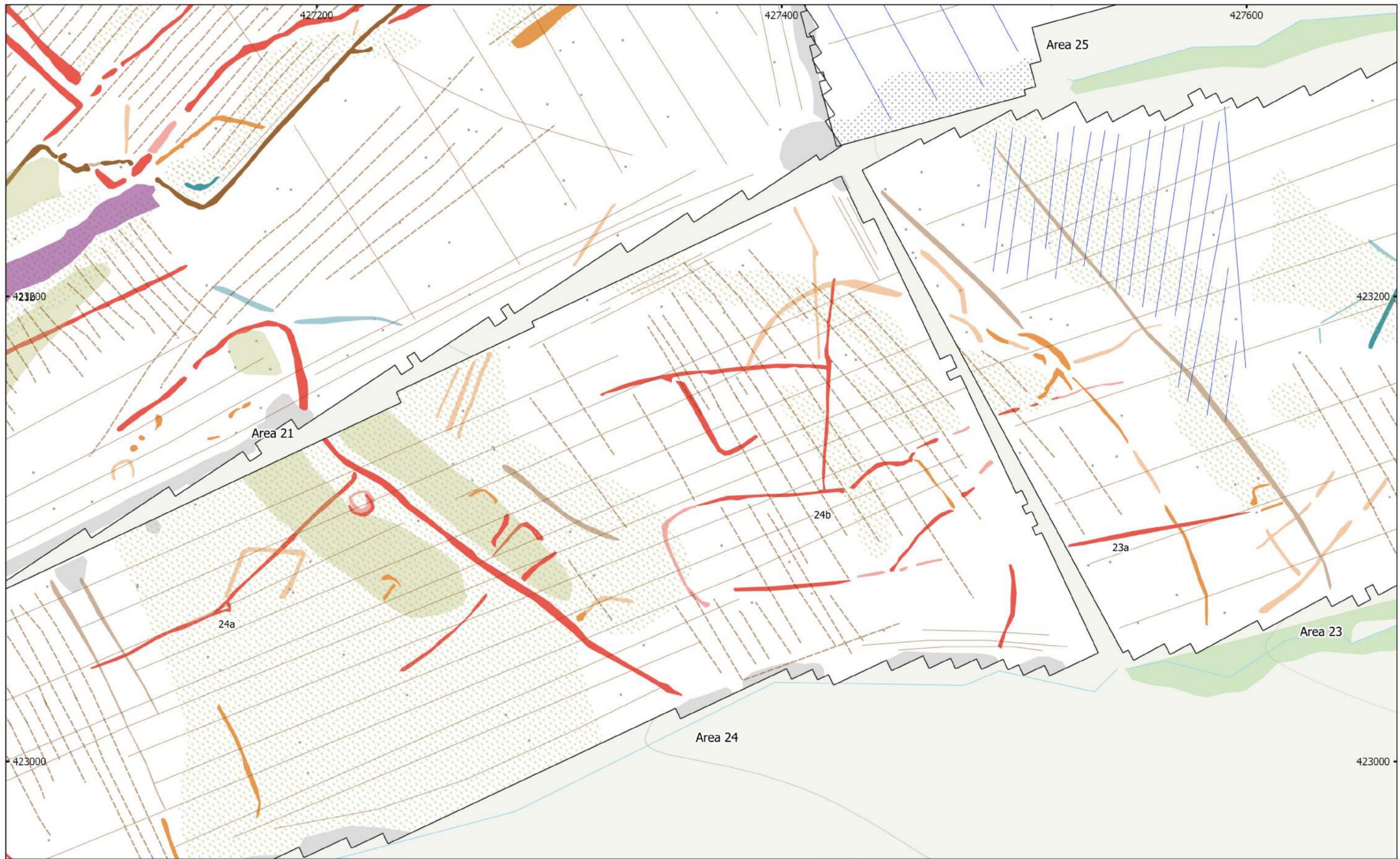
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 30 - XY Trace Plot (South-West)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019





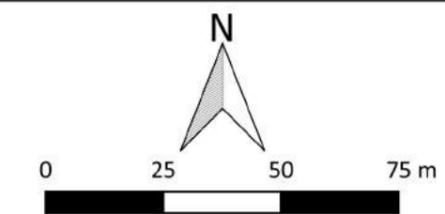
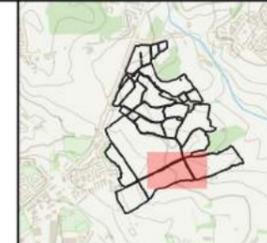
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 31 - Magnetic Gradient (South-Centre)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

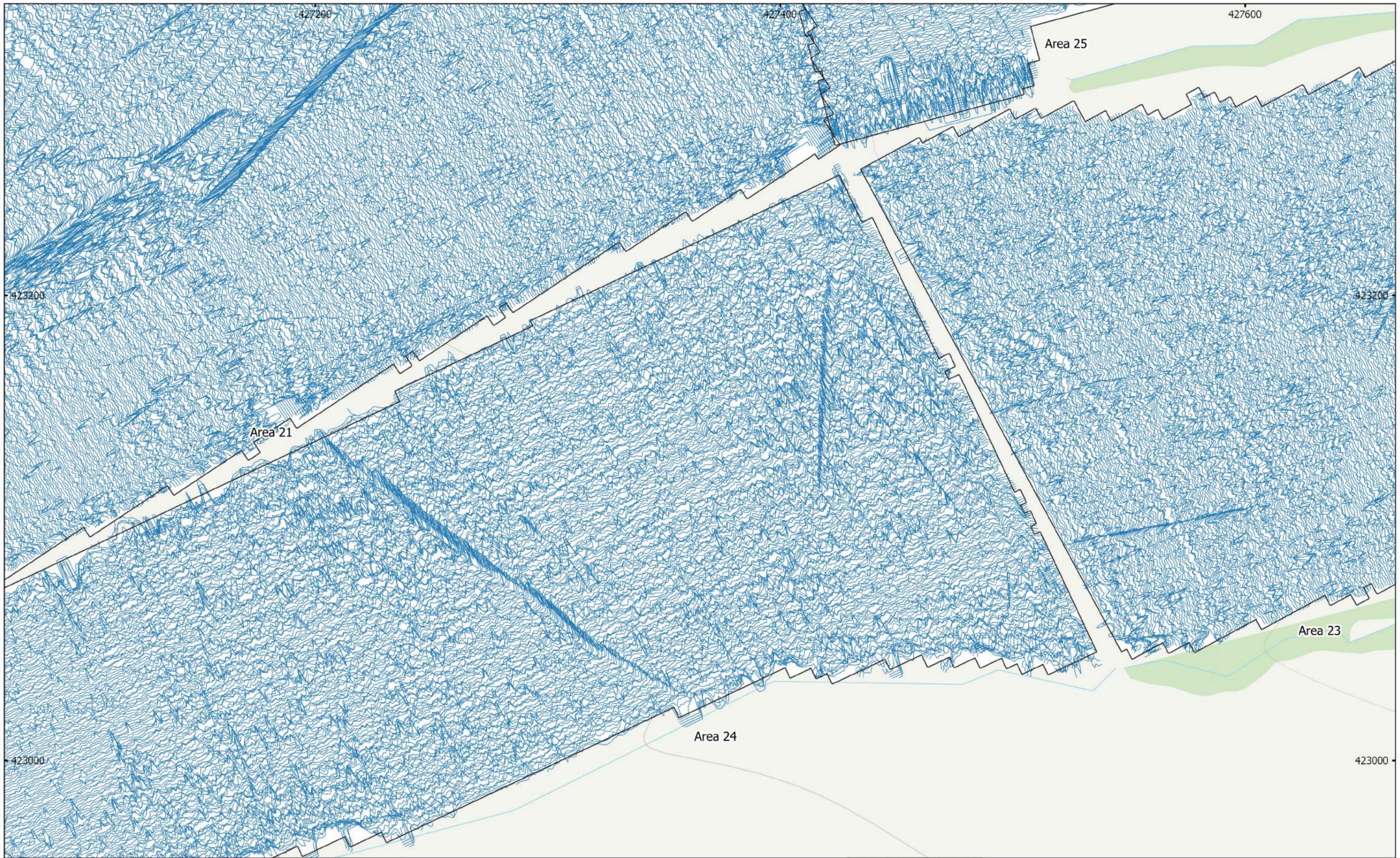




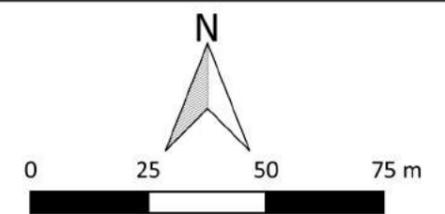
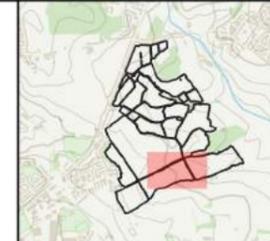
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 32 - Magnetic Interpretation (South-Centre)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                         |                          |
|-------------------------------|-------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction       | Undetermined (Weak)      |
| Archaeology Probable (Weak)   | Magnetic Disturbance    | Agricultural (Trend)     |
| Archaeology Possible (Strong) | Ferrous/Debris (Spread) | Ridge and Furrow (Trend) |
| Archaeology Possible (Weak)   | Natural (Weak)          | Drainage Feature         |
| Agricultural (Strong)         | Natural (Spread)        | Ferrous (Spike)          |
| Agricultural (Weak)           | Undetermined (Strong)   |                          |





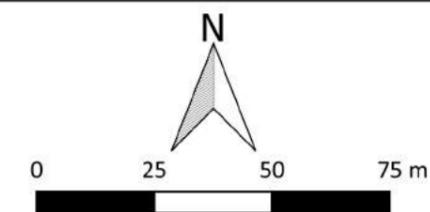
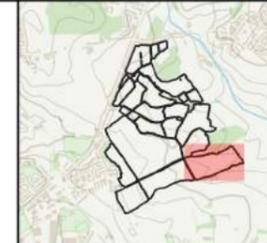
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 33 - XY Trace Plot (South-Centre)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019

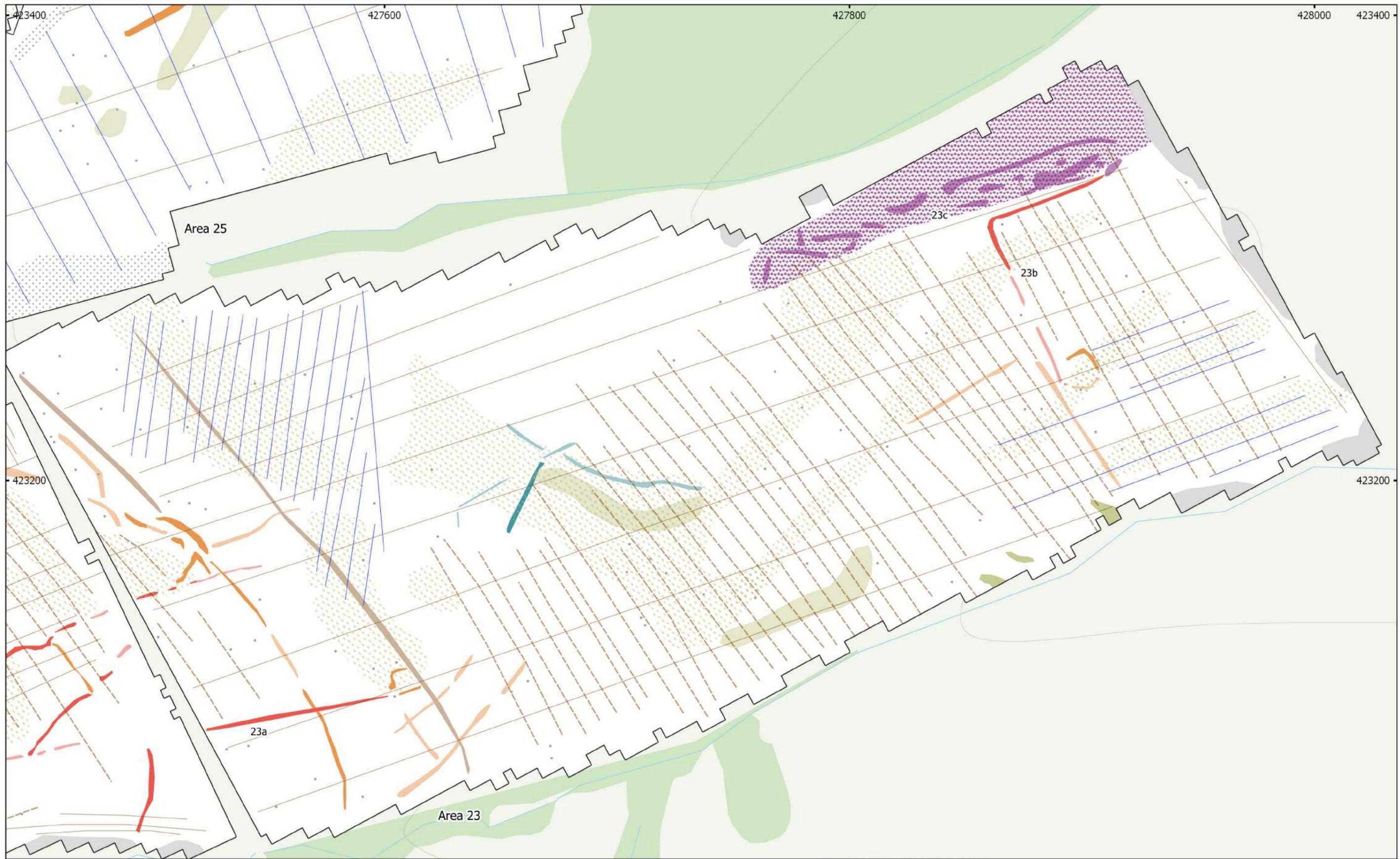


**magnitude**  
surveys



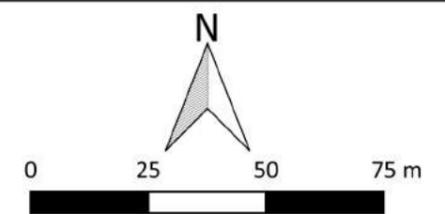
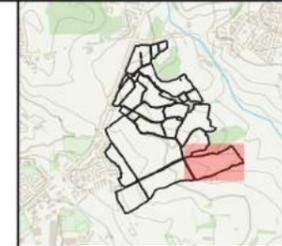
MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 34 - Magnetic Gradient (South-East)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

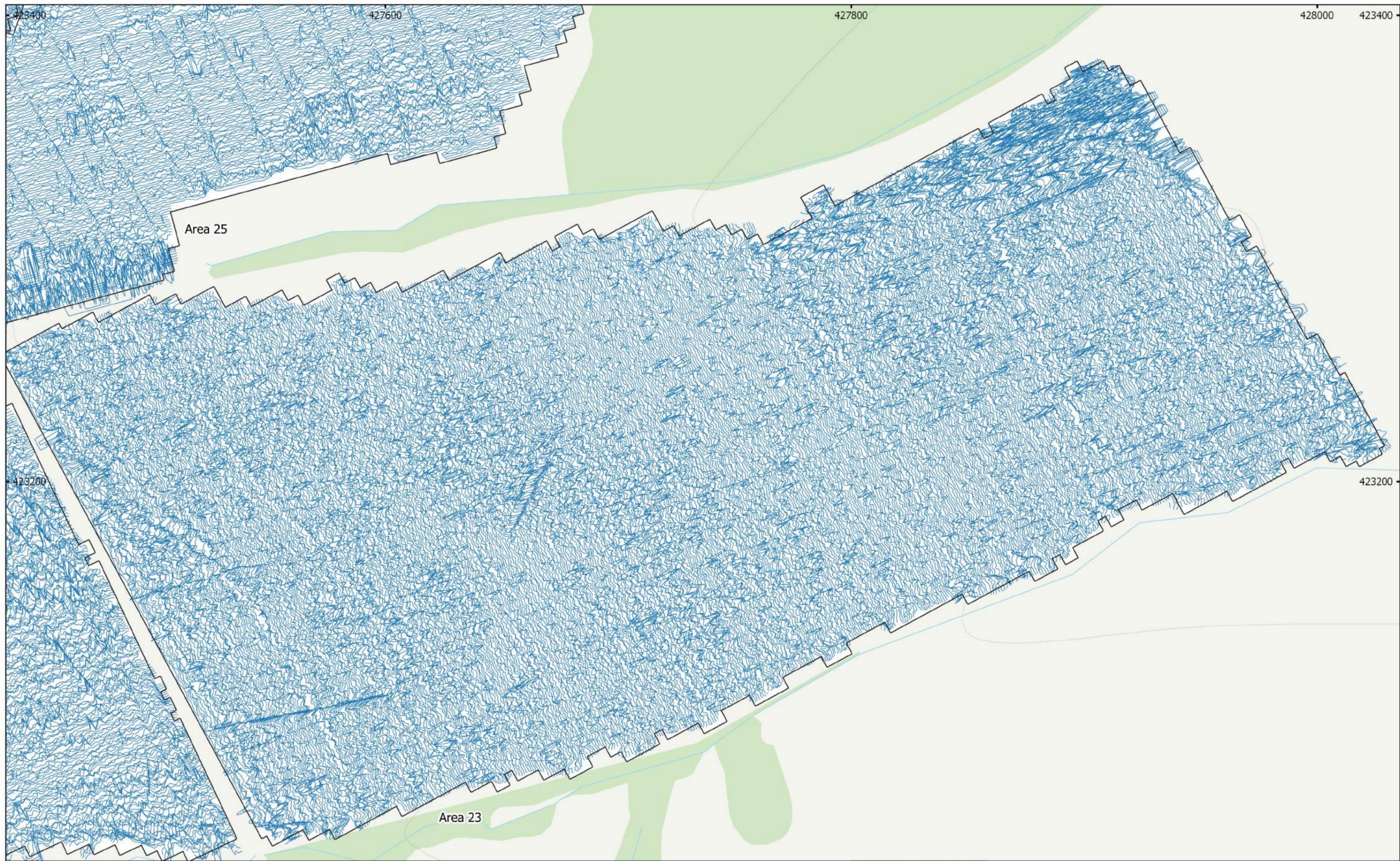




MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
 Figure 35 - Magnetic Interpretation (South-East)  
 1:1,500 @ A3  
 Copyright Magnitude Surveys Ltd 2019  
 Contains Ordnance Survey data © Crown Copyright and database right 2019

- |                               |                            |                          |
|-------------------------------|----------------------------|--------------------------|
| Archaeology Probable (Strong) | Mining/Extraction (Spread) | Undetermined (Strong)    |
| Archaeology Probable (Weak)   | Magnetic Disturbance       | Undetermined (Weak)      |
| Archaeology Possible (Strong) | Ferrous/Debris (Spread)    | Agricultural (Trend)     |
| Archaeology Possible (Weak)   | Natural (Strong)           | Ridge and Furrow (Trend) |
| Agricultural (Weak)           | Natural (Weak)             | Drainage Feature         |
| Mining/Extraction             | Natural (Spread)           | Ferrous (Spike)          |





MSSE562 - Land to the East of Leeds Road and Heybeck Lane, Chidswell  
Figure 36 - XY Trace Plot (South-East)  
30nT/cm at 1:1,500 @ A3  
Copyright Magnitude Surveys Ltd 2019  
Contains Ordnance Survey data © Crown Copyright and database right 2019

