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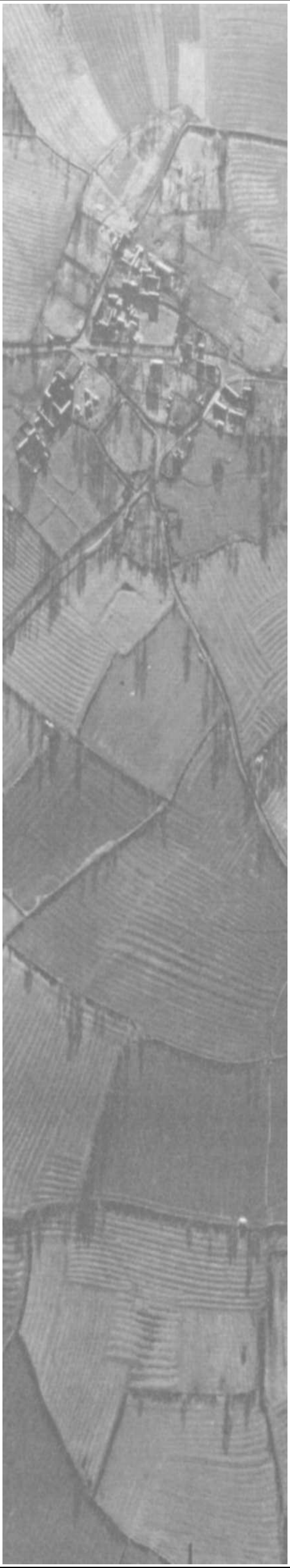

Land at Manor Farm
Yatesbury
Wiltshire

MAGNETOMETER SURVEY REPORT

for

Mr Richard Simpson

Kerry Donaldson & David Sabin

June 2019

Ref. no. J792

ARCHAEOLOGICAL SURVEYS LTD

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Yatesbury
Wiltshire

MAGNETOMETER SURVEY REPORT

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Mr Richard Simpson

Fieldwork by David Sabin BSc (Hons) MCIfA
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Report checked by David Sabin
Primary archive location - Archaeological Surveys Ltd, Yatesbury, Wiltshire

Survey date – 5th June 2019
Ordnance Survey Grid Reference – **SU 06535 73035**

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SUMMARY

A geophysical survey, comprising detailed magnetometry, was carried out by Archaeological Surveys Ltd along a survey corridor on land to the north of Yatesbury, Wiltshire, ahead of construction of a gallops. In the northern part of the site, plantations of saplings prevented survey within the outlined corridor, so the survey was carried out along an adjacent strip. The majority of the anomalies relate to land drains, with modern burning and ground disturbance in the southern part of the site. In the northern part of the survey there are a small number of weak and short positive linear anomalies that lack a coherent morphology preventing confident interpretation.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Nicholas Pike of Equestrian Blueprint, on behalf of Mr Richard Simpson , to undertake a magnetometer survey of an area of land at Manor Farm in Yatesbury, Wiltshire. The site has been outlined for the proposed development of a gallops, and the survey was carried out in order to determine the archaeological potential along its course.

1.1.2 An approximately 20m wide corridor has been outlined along the edge of five separate land parcels, with the c3m wide gallops proposed to be situated in the centre of the corridor. However, much of the northern part of the site had been planted with saplings and could not be surveyed, so the the adjacent accessible area was surveyed. This was in order to determine if any anomalies potentially extended into the corridor, but also allowing some flexibility for the route of the gallops to avoid the saplings and trees.

1.2 Survey objectives and techniques

1.2.1 The objective of the survey was to use magnetometry to locate geophysical anomalies that may be archaeological in origin so that they may be assessed prior to the construction of the gallops. The methodology is considered an efficient and effective approach to archaeological prospection.

1.2.2 Geophysical survey can provide useful information on the archaeological potential of a site; however, the outcome of any survey relies on a number of factors and as a consequence results can vary. The success in meeting the aims and objectives of a survey is, therefore, often impossible to predetermine.

1.3 Standards, guidance and recommendations for the use of this report

1.3.1 The survey and report generally follow the recommendations set out by: European Archaeological Council (2015) *Guidelines for the Use of Geophysics in Archaeology;* Institute for Archaeologists (2002) *The use of Geophysical Techniques in Archaeological Evaluations.* The work has been carried out to the Chartered Institute for Archaeologists (2014) *Standard and Guidance for Archaeological Geophysical Survey.* Note: currently Historic England (2018) no longer support the guidelines set out in English Heritage (2008) *Geophysical survey in archaeological field evaluation* and there are currently no plans to update the document. As a consequence other sources of written guidance referring to this document may be out of date and/or contain unsupported information (e.g. Chartered Institute for Archaeologists, 2014).

1.3.2 Archaeological Surveys Ltd provide a detailed geophysical survey report and it is recommended that where possible the contents should be considered in full. The Summary provides a brief overview of the results with more detail available in the Discussion and/or Conclusion. The *List of anomalies* within the Results provides a detailed assessment of the anomalies within separate categories which can be useful in inferring a level of confidence to the interpretation. Quality and factors influencing the interpretation of anomalies is also set out within the results.

1.3.3 It is recommended that the full report should always be considered when using data and interpretation plots; where this is not possible, in the field for example, the abstraction and interpretation plots should retain their colour coding and be used with a corresponding legend.

1.3.4 If any further targeting of anomalies by excavation is to be carried out, care should be taken to place trenches over solid lines or features visible on the abstraction and interpretation plots. Archaeological Surveys abstraction and interpretation avoids the use of dashed or dotted line formats, and broken or fragmented lines used in interpretive plots may well correspond closely with truncation of archaeological features.

1.4 Site location, description and survey conditions

1.4.1 The site is located on land immediately east of Yatesbury Lane, to the north of Yatesbury, within the parish of Cherhill in Wiltshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) Su 06535 73035, see Figs 01 and 02.

1.4.2 The geophysical survey covers approximately 3ha within five separate land parcels labelled Areas 1 - 5. Areas 1 and 2 contained tall grass with wire netting protecting saplings and areas of wild flowers. Survey was carried out both inside and outside these protected areas where possible. Area 3 contained tall grass, and the survey corridor was shifted to the east of the previously defined area due to the presence of saplings and tall vegetation.

Area 4 is located at the north western end of a narrow ride enclosed by hedges. Area 5 is located in an area of saplings and tall vegetation; survey was only possible along narrow traverses immediately to the east of the previously defined area.

1.4.3 Area 1 in the southern part of the site contained a recent bonfire and evidence for ground disturbance. The site was generally surveyed with difficulty due to the height and density of vegetation. Tall wire net fencing and steel gateways were noted as sources of magnetic disturbance. Weather conditions during the survey were mainly fine.

Plate 1: Area 1 looking east

Plate 2: Area 3 showing saplings within outlined corridor and fencing to left and surveyable area to right

Plate 3: Area 5 showing saplings and more open areas

1.5 Site history and archaeological potential

1.5.1 The Wiltshire Historic Environment Record indicates that the site partly contains earthwork features associated with a former field system identified from LiDAR imagery (MWI73064). The earthworks have a probable prehistoric or Roman origin; however, some are likely to relate to medieval headlands or post medieval field boundaries. Within woodland to the west of the site are the findspots of a Neolithic flint scraper (SU07SE108) and five other flint tools located in Yatesbury Copse (SU07SE113), 175m west of the survey area. Further to the west are the site of a scheduled Bronze Age round barrow (Historic England list entry no. 1015808) (SE07SE606) and three unscheduled ring ditches (SU07SE601, 602 & 603) situated approximately 470m to the west.

1.5.2 The location of the possible field system indicates that there is a potential for the site to contain archaeological features; however, such field systems are generally represented by earthworks and do not have significant magnetic contrast for them to be visible as geophysical anomalies. Cut features associated with features such as former field boundaries may contain magnetically enhanced material.

1.6 Geology and soils

1.6.1 The underlying geology is Zig Zag chalk formation (BGS, 2017).

1.6.2 The overlying soil across the site is from the Blewbury association and is a typical brown calcareous earth. It consists of a well drained, calcareous, clayey and fine silty soil over argillaceous chalk (Soil Survey of England and Wales, 1983).

1.6.3 The underlying geology and soils are frequently associated with low magnetic contrast and low levels of magnetic susceptibility. However, cut features of archaeological potential may be located where human activity has altered the magnetic characteristics of the soil sufficiently. The underlying geology and soils are, therefore, considered acceptable for magnetic survey.

2 METHODOLOGY

2.1 Technical synopsis

2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic thermoremnance (also known as thermoremanence) are factors associated with the formation of localised fields.

2.1.2 Iron minerals within the soil may become altered by burning and the break down of biological material; effectively the magnetic susceptibility of the soil is increased, and the iron minerals become magnetic in the presence of the Earth's magnetic field. Accumulations of magnetically enhanced soils within features, such as pits and ditches, may produce magnetic anomalies that can be mapped by magnetic prospection.

2.1.3 Magnetic thermoremnance can occur when ferrous minerals have been heated to high temperatures such as in a kiln, hearth, oven etc. On cooling, a permanent magnetisation may be acquired due to the presence of the Earth's magnetic field. Certain natural processes associated with the formation of some igneous and metamorphic rock may also result in magnetic thermoremnance.

2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T). Additional details are set out in 2.2 below and within Appendix A.

2.2 Equipment configuration, data collection and survey detail

2.2.1 The detailed magnetic survey was carried out using a SENSYS MAGNETO®MXPDA 5 channel cart-based system. The instrument has 5 fluxgate gradiometers (FGM650) spaced 0.5m apart with readings recorded at 20Hz. The cart is pushed at walking speed and not towed. Each sensor is not zeroed in the field as the vertical axis alignment is precisely fixed leaving sensor offsets that are removed during data processing. The fixing of the vertical alignment ensures the sensors are not unduly influenced by localised magnetic fields and that the vertical component of a magnetic anomaly is measured. The gradiometers have a range of recording data between ±0.1nT and ±8000nT. They are linked to a Leica GS10 RTK GNSS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged PDA computer system.

2.2.2 Due to the fixed offsets within the fluxgate sensors, as a result of the manufacturing and tensioning process, the survey data do not provide a visually useful dataset until a zero median traverse algorithm is applied. It is recognised that this has the potential to affect some anomalies detrimentally by removing linear features orientated parallel to survey transects. However, this has not been noted as a particular problem with the system due to the high resolution data collection, generally long length of traverses and variability within the magnetic characteristics of a linear anomaly.

2.2.3 Data are collected along a series of parallel survey transects to achieve 100% coverage of the surveyable land. The length of each transect is variable and relates to the size of the survey area and other factors including ground conditions. A visual display allows accurate placing of transects and helps maintain the correct separation between adjacent traverses. Data are not collected within fixed grids and data points are considered to be random even though the data are collected in a systematic manner covering all accessible areas (Aspinall, Gaffney and Schmidt, 2009).

2.2.4 Fluxgate sensors are highly sensitive to temperature change and this manifests as drift during the course of a survey. This can be particularly noticeable during the morning as temperatures rise and the equipment warms or cools. Sensor drift within the course of a traverse will appear as a line trending from negative to positive after processing with a zero median traverse algorithm. To remove the potential for temperature drift, data were collected after a 20 minute stabilisation period and traverses were limited to a time of generally <60s.

2.3 Data processing and presentation

2.3.1 Magnetic data collected by the MAGNETO®MXPDA cart-based system are initially prepared using SENSYS MAGNETO®DLMGPS software. The software effectively allocates a geographic position for each data point and can compensate for fixed offsets present within the FGM650 sensors. The offsets are positive or negative values present on all fluxgate gradiometer sensors. Some systems use manual or electronic balancing to effectively zero the sensors; however, this is a short term measure that is prone to drift through temperature changes and vibration and can easily be incorrectly set due to localised magnetic fields. The FGM650 sensors are very accurately aligned to the vertical magnetic gradient and are highly stable showing negligible drift on long traverses. The offset values are removed using TerraSurveyor software.

2.3.2 Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display within TerraSurveyor. The removal of the offset values (compensation) of the sensors is also carried out in TerraSurveyor using a zero median traverse function. Data are then considered to be minimally processed. Note: without the zero median traverse function it is not possible to create a meaningful data plot as all sensors have a different offset value. Although a zero median traverse algorithm can remove anomalies aligned with the survey tracks, in practice this rarely occurs due to the use of long traverses, high resolution measurement and variability within the magnetic susceptibility of long linear features.

2.3.3 The minimally processed data are collected between limits of ±8000nT and clipped for display at ±3nT. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track.

2.3.4 Additional data processing has been carried out in each of the areas in the form of both low pass and high pass filtering. Low pass filtering effectively removes high frequency variation along a traverse that has been caused by uneven ground and associated vibration. High pass filtering effectively removes low frequency variation along a traverse that has been caused by large magnetic bodies, cultivation or rapid temperature change. Data treated to additional processing have been compared to unprocessed data to ensure that no significant anomalies have been removed.

2.3.5 Appendix C contains metadata concerning the survey and data attributes and is derived directly from TerraSurveyor. Reference should be made to Appendix B for further information on processing.

2.3.6 A TIF file is produced by TerraSurveyor software along with an associated world file (.TFW) that allows automatic georeferencing (OSGB36 datum) when using GIS or CAD software. The main form of data display used in the report is the minimally processed greyscale plot. With regard to the Sensys MXPDA, minimally processed data are considered by the manufacturer to be data that are compensated by SENSYS MAGNETO DLMGPS software, see 2.3.1 and 2.3.2. Note: traceplots are not considered to be appropriate as they do not provide an accurate or useful assessment of the magnetic anomalies due to the very high density of data collection. In addition, traceplots cannot be meaningfully plotted against base mapping and in areas of complexity traces may be lost or highly confused. Traceplots may be used to demonstrate characteristic magnetic profiles across discrete features where it is considered beneficial.

2.3.7 The raster images are combined with base mapping using ProgeCAD Professional 2016, creating DWG (2010) file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. The CAD plots are effectively georeferenced facilitating relocation of features using GNSS, resection method, etc.

2.3.8 An abstraction and interpretation is drawn and plotted for all geophysical anomalies located by the survey. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing. Appendix E sets out CAD layer names with colour and graphic content for each interpretation category, see 3.3.

2.3.9 A digital archive is produced with this report, see Appendix D below. The main archive is held at the offices of Archaeological Surveys Ltd.

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over a total of five survey areas covering approximately 3ha.

3.1.2 Magnetic anomalies located can be generally classified as positive linear anomalies of an uncertain origin, anomalies associated with land management, areas of magnetic debris and disturbance and strong discrete dipolar anomalies relating to ferrous objects.

3.2 Statement of data quality and factors influencing the interpretation of anomalies

3.2.1 Data are considered representative of the magnetic anomalies present within the site. There are no significant defects within the dataset.

3.2.2 Zones of magnetic disturbance were located adjacent to wire net fencing and steel gates. Although weak anomalies may be obscured by the disturbance, it is of limited extent and unlikely to obscure significant anomalies.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A general explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, see Table 1.

Interpretation category	Description and origin of anomalies
Anomalies with an uncertain origin	The category applies to a range of anomalies where there is not enough evidence to confidently suggest an origin. Anomalies in this category may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered. Morphology may be unclear or uncharacteristic and there may be a lack of additional supporting information. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies relating to land management	Land drains can appear in a classic herringbone pattern of interconnected multiple dipolar linear anomalies, or as parallel linear anomalies. The multiple dipolar response indicates ceramic land drains.
Anomalies associated with magnetic debris	Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. They often occur where there has been dumping or ground make-up and are related to magnetically thermoremnant materials such as brick or tile or other small fragments of ferrous material. This type of response is occasionally associated with kilns, furnace structures, hearths and nail spreads from former wooden structures or rooves and may, therefore, be archaeologically significant. It is also possible that the response may be caused by natural material such as certain gravels and fragments of igneous or metamorphic rock. Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc. Often a significant area around these features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.

Table 1: List and description of interpretation categories

3.4 Summary of results

3.4.1 Ceramic land drains are evident within all of the survey areas. Within the northern part of Area 3 there are a small number of short, weakly positive linear anomalies, but it is not possible to determine if they relate to cut features as they appear to be located at the junction between the two series of land drains where they change orientation from north east - south west to north - south and an association is, therefore, possible. Patches of magnetic debris have also been located within Area 1 in the southern part of the site, but these are associated with modern burning/dumping.

4 CONCLUSION

4.1.1 The geophysical survey located a number of anomalies that relate to buried land drains within each of the survey areas. In the northern part of the survey corridor are a small number of very short and indistinct positive linear anomalies that lack a coherent morphology preventing confident interpretation, although they could be associated with land drainage. Evidence for modern burning and ground disturbance has been located within the southern part of the site.

5 REFERENCES

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Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremnant material. Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field. Thermoremnant magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

Enhancement of magnetic susceptibility can occur in areas subject to burning and complex fermentation processes on biological material; these are frequently associated with human settlement. Thermoremnant features include ovens, hearths, and kilns. In addition thermoremnant material such as tile and brick may also be associated with human activity and settlement.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil can create an area of enhancement compared with surrounding soils and subsoils into which the feature is cut. Mapping enhanced areas will produce linear and discrete anomalies allowing an assessment and characterisation of hidden subsurface features.

It should be noted that areas of negative enhancement can be produced from material having lower magnetic properties compared to the topsoil. This is common for many sedimentary bedrocks and subsoils which were often used in the construction of banks and walls etc. Mapping these 'negative' anomalies may also reveal archaeological features.

Magnetic survey or magnetometry can be carried out using a fluxgate gradiometer and may be referred to as gradiometry. The SENSYS gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 65cm apart. The instrument is carried about 10-20cm above the ground surface and the upper sensor measures the Earth's magnetic field as does the lower sensor but this is influenced to a greater degree by any localised buried magnetic field. The difference between the two sensors will relate to the strength of the magnetic field created by the buried feature.

There are a number of factors that may affect the magnetic survey and these include soil type, local geology and previous human activity. Situations arise where magnetic disturbance associated with modern services, metal fencing, dumped waste material etc., obscures low magnitude fields associated with archaeological features.

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Despike

Removal of data points that exceed the mean/median/threshold by selecting a window size of data points and replace by mean/median/threshold. Magnetic spikes can be caused iron objects on the surface or within the topsoil. Despike can improve the appearance of data and remove extreme readings that may affect further processing.

High Pass Filter

Removes low frequency anomalies within the data that are not considered to be archaeologically significant and may be natural in origin. A window passes over the data, the mean of all the data within the window is subtracted from the centre value. The size of the window is adjusted as is the weighting which may be uniform or Gaussian. The process is used to improve the visibility of anomalies of interest.

Low Pass Filter

Removes high frequency anomalies or 'noise' within datasets and provides a smoother output. A window passes over the data, the mean of all the data within the window is used to replace the centre value. The size of the window is adjusted as is the weighting. The process is used to improve the visibility of anomalies of interest.

Zero Median/Mean Traverse

The median (or mean) of data from each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise differences between the offset values of the gradiometer sensors. The process can remove archaeological features that run along a traverse but with the high resolution datasets created by the Sensys FGM650 sensors and the method of data collection this has not been a notable problem. In fact, the removal of offsets using software avoids carrying out a balancing procedure on site, which inevitably can never be done in magnetically clean conditions and results in improperly aligned fluxgate sensors and/or electronic adjustment values.

Appendix C – survey and data information

Area 1 minimally processed data

Filename: J792-mag-Area1-proc.xcp
Description: Imported as Composite from: J792-mag-Area1.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 406460.21, 172764.92 m
Southeast corner: 406727.36, 172546.07 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Source GPS Points: 461500
Dimensions
Composite Size (readings): 1781 x 1459
Survey Size (meters): 267 m x 219 m
Grid Size: 267 m x 219 m
X Interval: 0.15 m
Y Interval: 0.15 m
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.51
Mean: -0.01
Median: 0.02
Composite Area: 5.8466 ha
Surveyed Area: 1.3797 ha
PROGRAM
Name: TerraSurveyor
Version: 3.0.23.0
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT

Area 1 filtered data

Filename: J792-mag-Area1-proc-hpf-lpf.xcp
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.03
Mean: 0.00
Median: 0.00
GPS based Proce7
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Lo pass Uniform (median) filter: Window dia: 13
7 Clip from -3.00 to 3.00 nT

Area2 minimally processed data

Filename: J792-mag-Area2-proc.xcp
Description: Imported as Composite from: J792-mag-Area2.asc
Northwest corner: 406476.03, 172999.13 m
Southeast corner: 406553.43, 172769.78m
Source GPS Points: 263200
Dimensions
Composite Size (readings): 516 x 1529
Survey Size (meters): 77.4 m x 229 m
Grid Size: 77.4 m x 229 m
X Interval: 0.15 m
Y Interval: 0.15 m
Stats
Max: 3.18
Min: -3.29
Std Dev: 1.06
Mean: -0.01
Median: 0.00
Composite Area: 1.7752 ha
Surveyed Area: 0.72567 ha
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT

Area 2 filtered data

Filename: J792-mag-Area2-proc-hpf-lpf.xcp
Max: 3.32
Min: -3.30
Std Dev: 0.73
Mean: 0.00
Median: 0.00
GPS based Proce7
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Lo pass Uniform (median) filter: Window dia: 13
7 Clip from -3.00 to 3.00 nT

Area 3 minimally processed data

Filename: J792-mag-Area3-proc.xcp
Description: Imported as Composite from: J792-mag-Area3.asc
Northwest corner: 406516.22, 173325.00m
Southeast corner: 406634.12, 173003.40m
Source GPS Points: 240500
Dimensions
Composite Size (readings): 786 x 2144
Survey Size (meters): 118 m x 322 m
Grid Size: 118 m x 322 m
X Interval: 0.15 m
Y Interval: 0.15 m
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.87
Mean: 0.00
Median: 0.00
Composite Area: 3.7917 ha
Surveyed Area: 0.74066 ha
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT

Area 3 filtered data

Filename: J792-mag-Area3-proc-hpf-lpf.xcp
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.64
Mean: 0.01
Median: 0.00
GPS based Proce7
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Lo pass Uniform (median) filter: Window dia: 13
7 Clip from -3.00 to 3.00 nT

Area 4 minimally processed data

Filename: J792-mag-Area4-proc.xcp
Description: Imported as Composite from: J792-mag-Area4.asc
Northwest corner: 406617.53, 173348.98 m
Southeast corner: 406647.53, 173315.53 m
Source GPS Points: 16000
Dimensions
Composite Size (readings): 200 x 223
Survey Size (meters): 30 m x 33.5 m
Grid Size: 30 m x 33.5 m
X Interval: 0.15 m
Y Interval: 0.15 m
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.58
Mean: 0.02
Median: 0.00
Composite Area: 0.10035 ha
Surveyed Area: 0.043601 ha
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT

Area 4 filtered data

Filename: J792-mag-Area4-proc-hpf-lpf.xcp
Stats
Max: 3.28
Min: -2.57
Std Dev: 0.44
Mean: 0.03
Median: 0.00
GPS based Proce7
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Lo pass Uniform (median) filter: Window dia: 20
7 Clip from -3.00 to 3.00 nT

Area 5 minimally processed data

Filename: J792-mag-Area5-proc.xcp
Description: Imported as Composite from: J792-mag-Area5.asc
Northwest corner: 406642.48, 173466.04 m
Southeast corner: 406787.38, 173338.84 m
Source GPS Points: 73900
Dimensions
Composite Size (readings): 966 x 848
Survey Size (meters): 145 m x 127 m
Grid Size: 145 m x 127 m

X Interval: 0.15 m
Y Interval: 0.15 m
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.75
Mean: 0.06
Median: 0.01
Composite Area: 1.8431 ha
Surveyed Area: 0.20192 ha
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT

Area 5 filtered data

Filename: J792-mag-Area5-proc.xcp
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.72
Mean: 0.06
Median: 0.00
GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT
5 Lo pass Uniform (median) filter: Window dia: 13

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at their offices in Wiltshire. Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site.

A PDF copy will be supplied to the Wiltshire Historic Environment Record with printed copies on request. The greyscale images and CAD abstraction layers can also be made available to the HER on request. The report will also be uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS).

Archive contents:

File type	Naming scheme	Description
Data	J792-mag-**[area number/name]**.asc J792-mag-**[area number/name]**.xcp J792-mag-**[area number/name]**-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J792-mag-**[area number/name]**-proc.tif	Image in TIF format
Drawing	J792-**[version number]**.dwg	CAD file in 2010 dwg format
Report	J792 report.odt	Report text in Open Office odt format

Table 2: Archive metadata

Appendix E – CAD layers for abstraction and interpretation plots

The table below sets out Archaeological Surveys Ltd CAD layer names with associated colours and graphical content. Where CAD files are available layers may be extracted for further CAD/GIS use. Note: hatched polygon boundaries are contained within layers with the RGB colour code 254, 255, 255 (near white) in order to prevent their visibility.

Report sub-heading and associated CAD layer names	Colour with RGB index		Layer content
Anomalies with an uncertain origin			
AS-ABST MAG POS LINEAR UNCERTAIN		255,127,0	Line, polyline or polygon (solid)
Anomalies relating to land management			
AS-ABST MAG LAND DRAIN		Cyan 0,255,255	Line or polyline
Anomalies associated with magnetic debris			
AS-ABST MAG DEBRIS		132, 132, 132	Polygon (cross hatched ANSI37)
AS-ABST MAG STRONG DIPOLAR		132, 132, 132	Solid donut, point or polygon (solid)
Anomalies with a modern origin			
AS-ABST MAG DISTURBANCE		132, 132, 132	Polygon (hatched ANSI31)

Table 3: CAD layering

Appendix F – copyright and intellectual property

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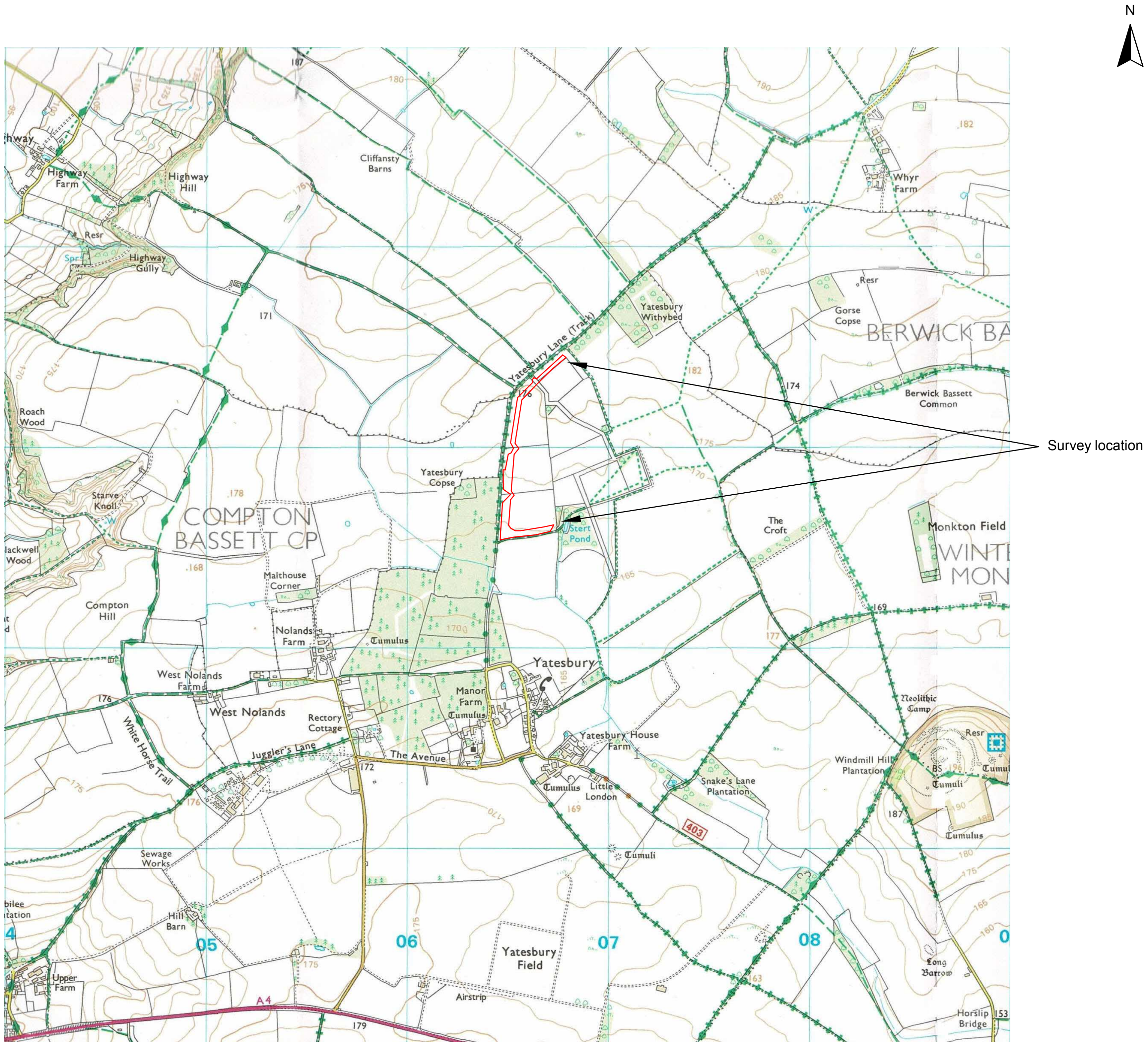
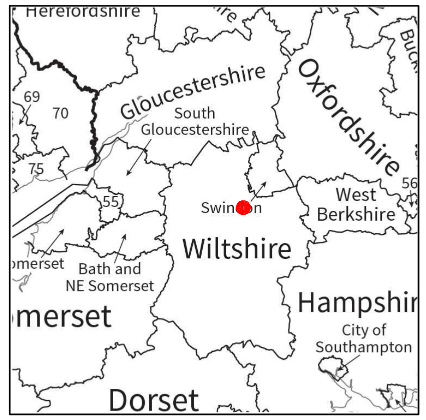
Map of survey area





Survey location

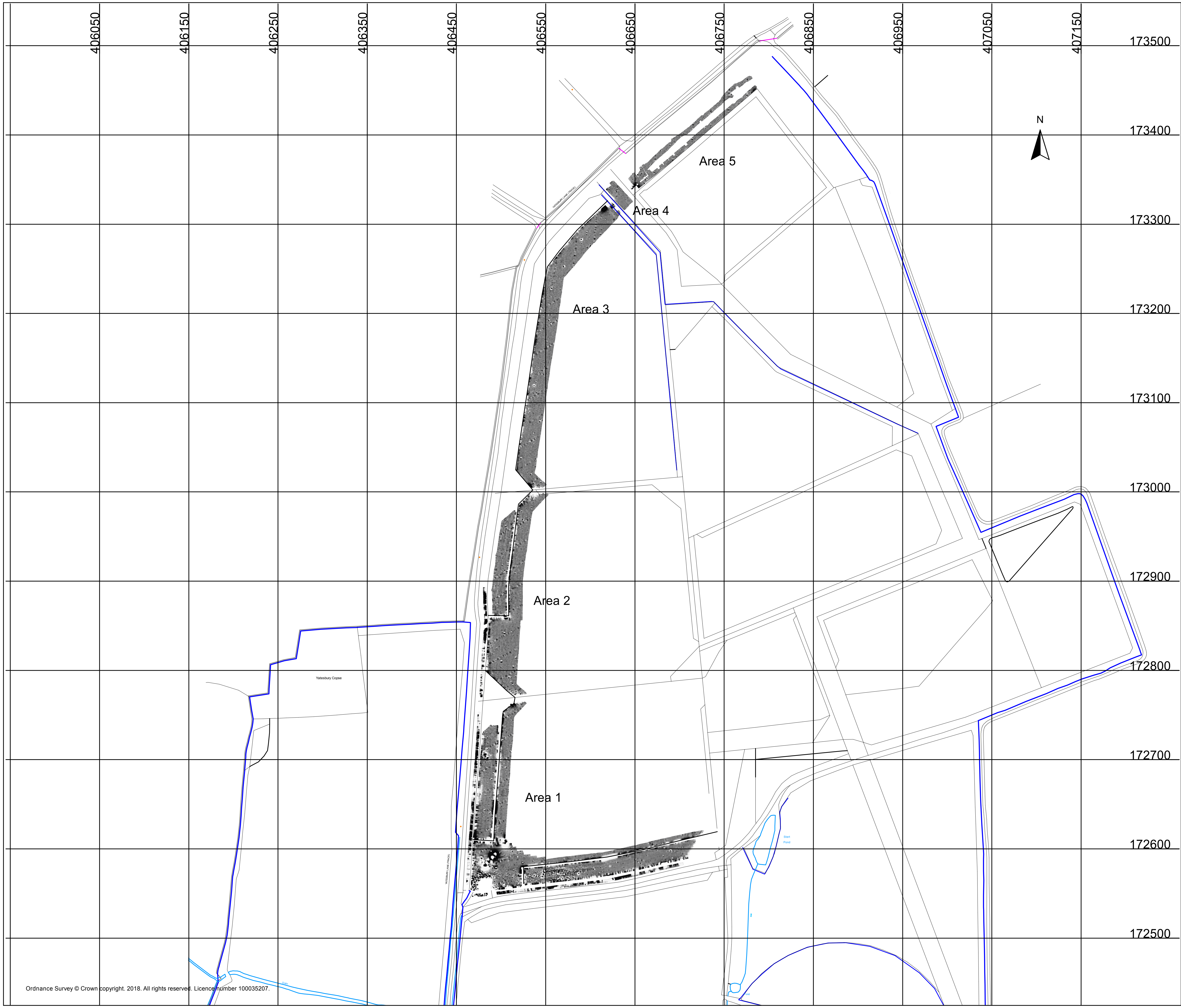
Site centred on OS NGR
SU 06535 73035

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 01



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Referencing information

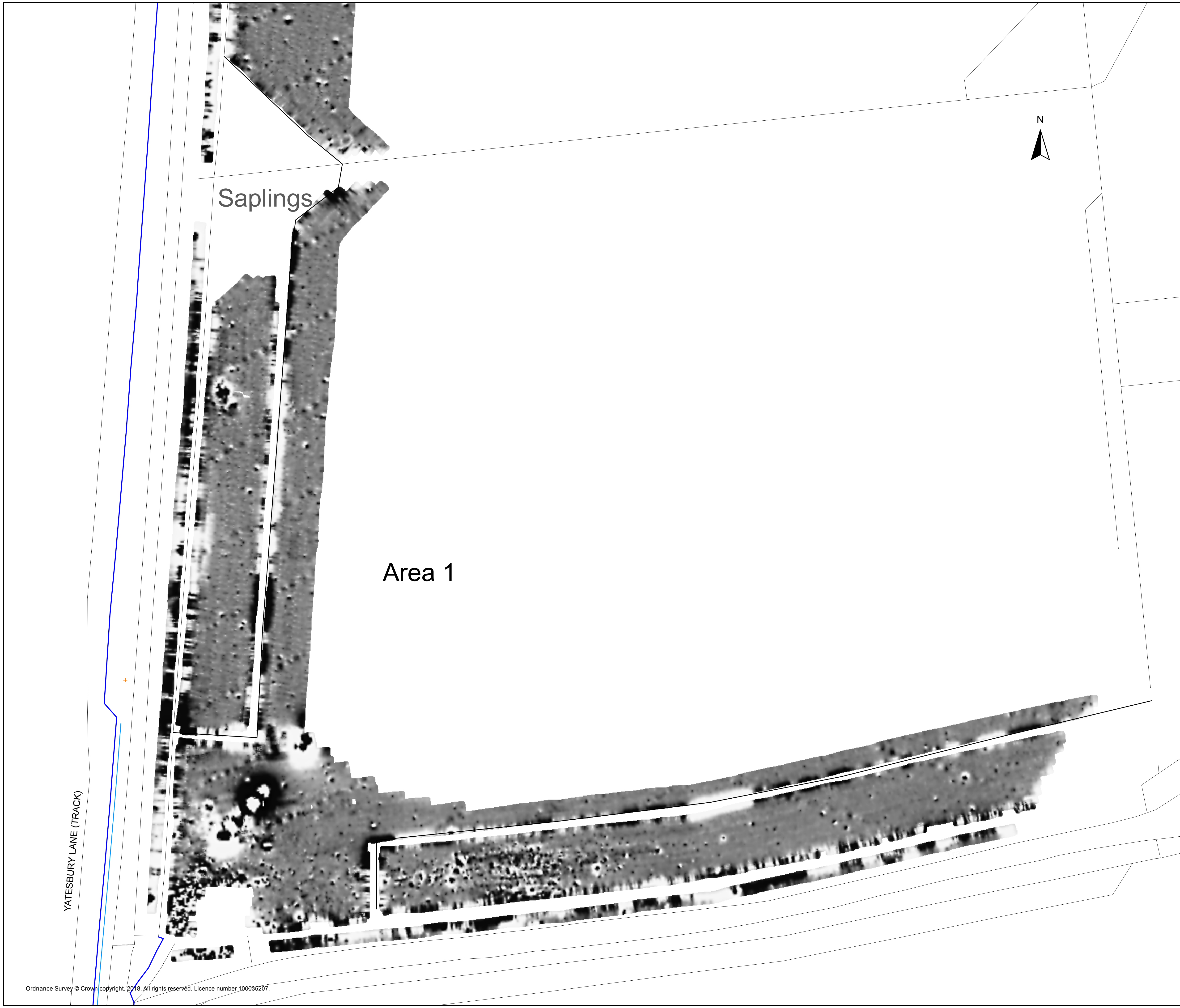
Referencing grid to OSGB36 datum at 100m intervals

SCALE 1:4000

0m 40 80 120 160 200m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 02



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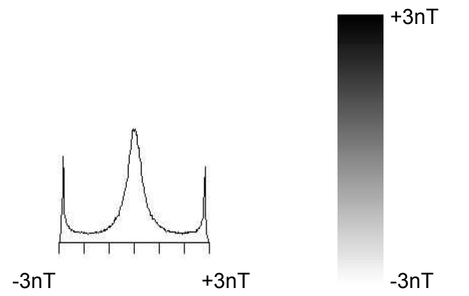
Greyscale plot of minimally processed magnetometer data - Area 1



SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 03

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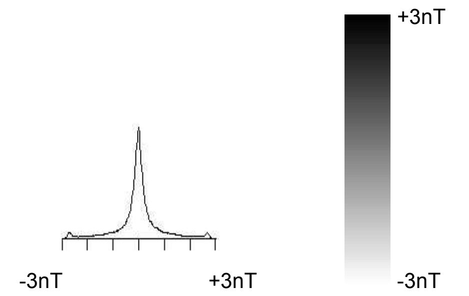
Greyscale plot of filtered magnetometer data - Area 1

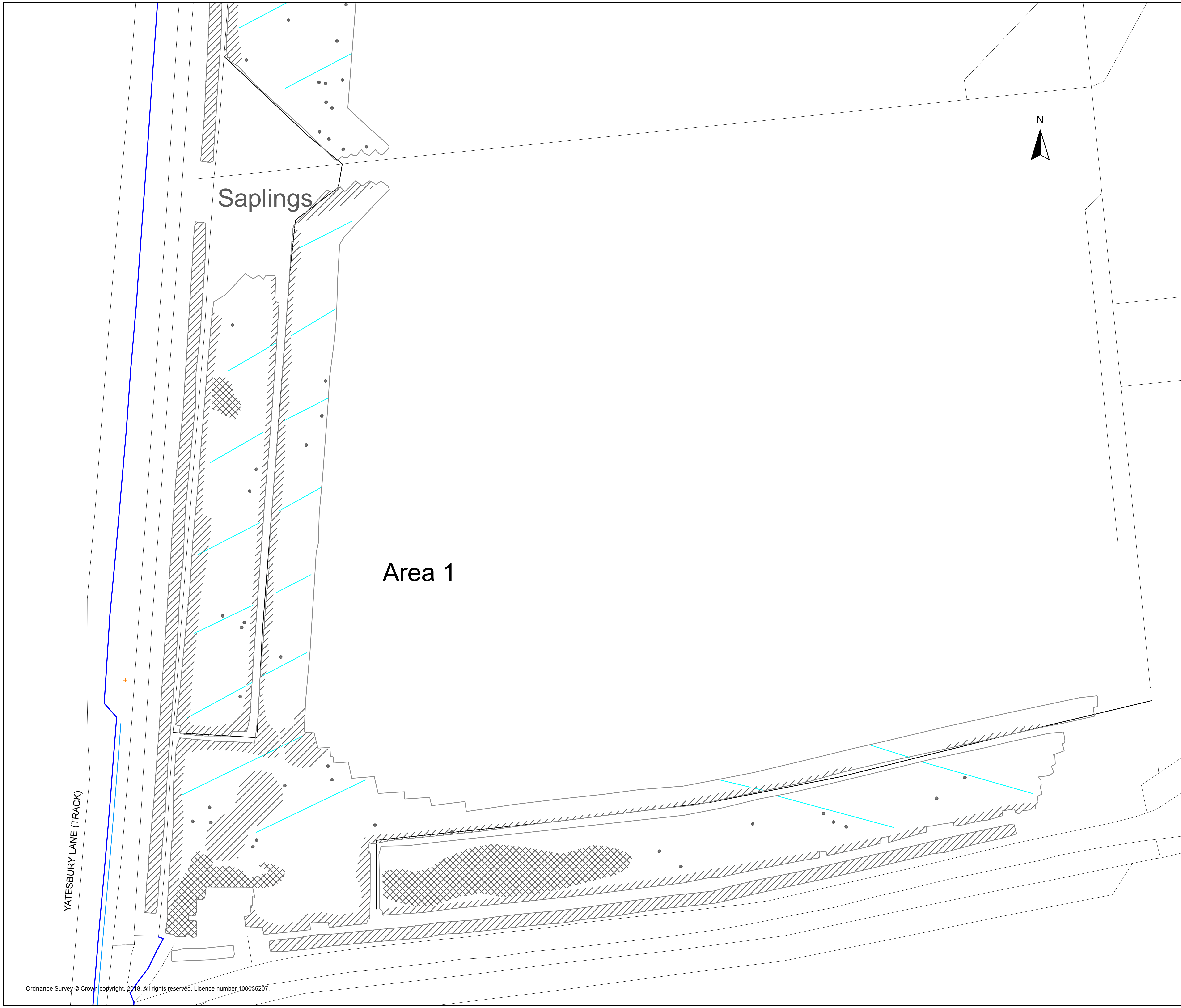


SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 04



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Abstraction and interpretation of magnetic anomalies - Area 1

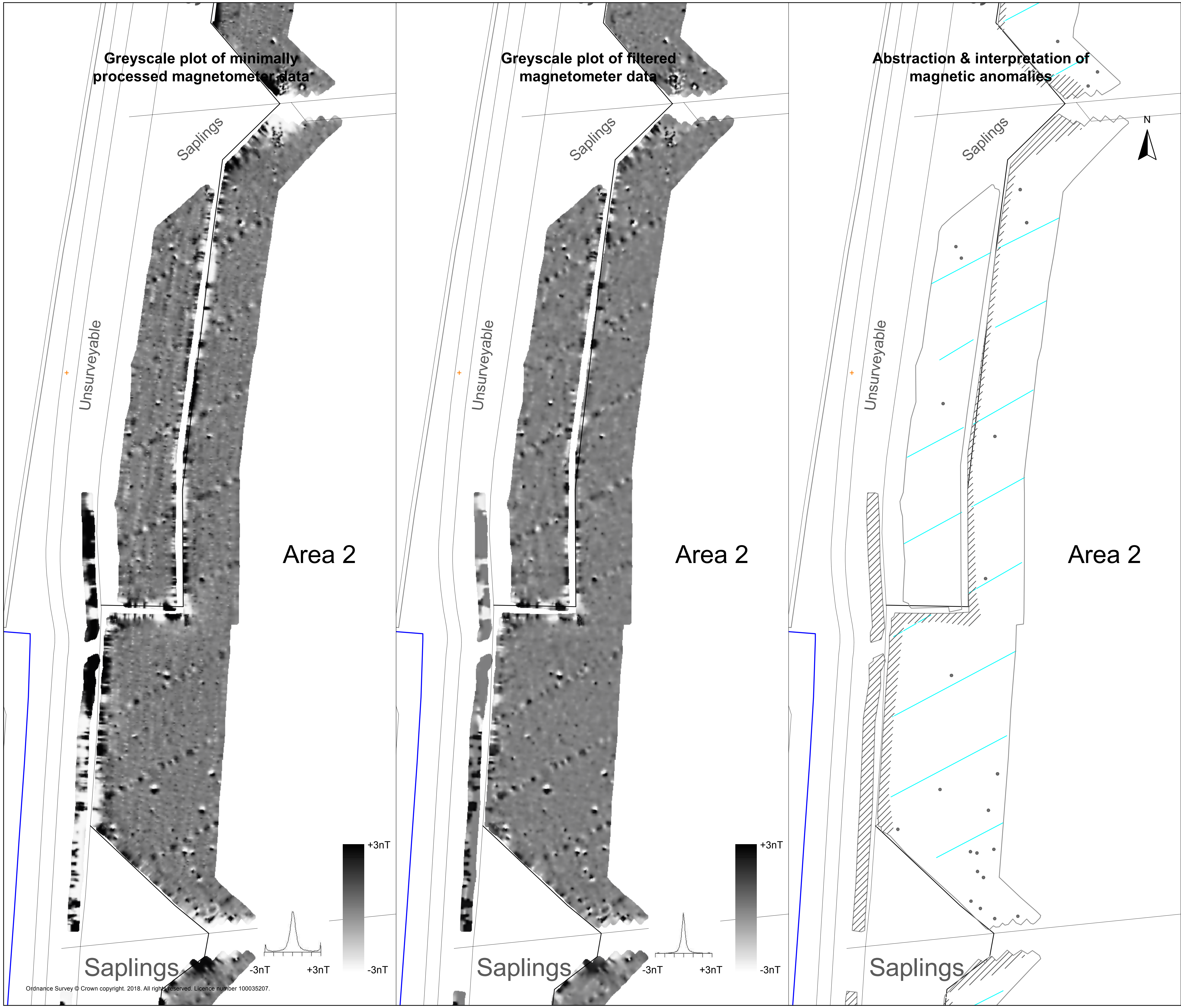
- Weak multiple dipolar linear anomaly - land drain
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 05



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Greyscale plots of magnetometer data & abstraction & interpretation of magnetic anomalies - Area 2

Weak multiple dipolar linear anomaly - land drain

Magnetic disturbance from ferrous material

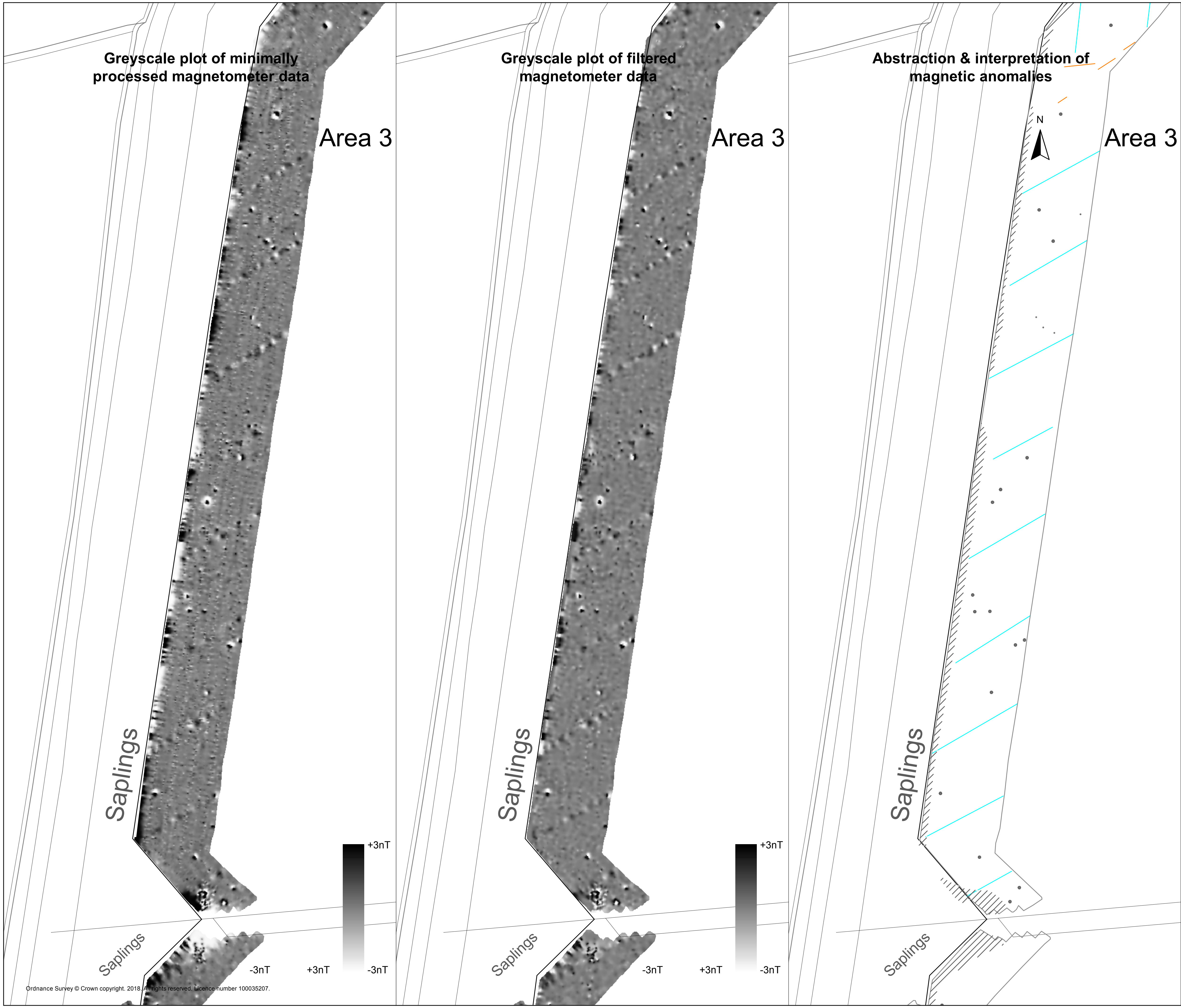
Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 06



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Greyscale plots of magnetometer data & abstraction & interpretation of magnetic anomalies - Area 3 south

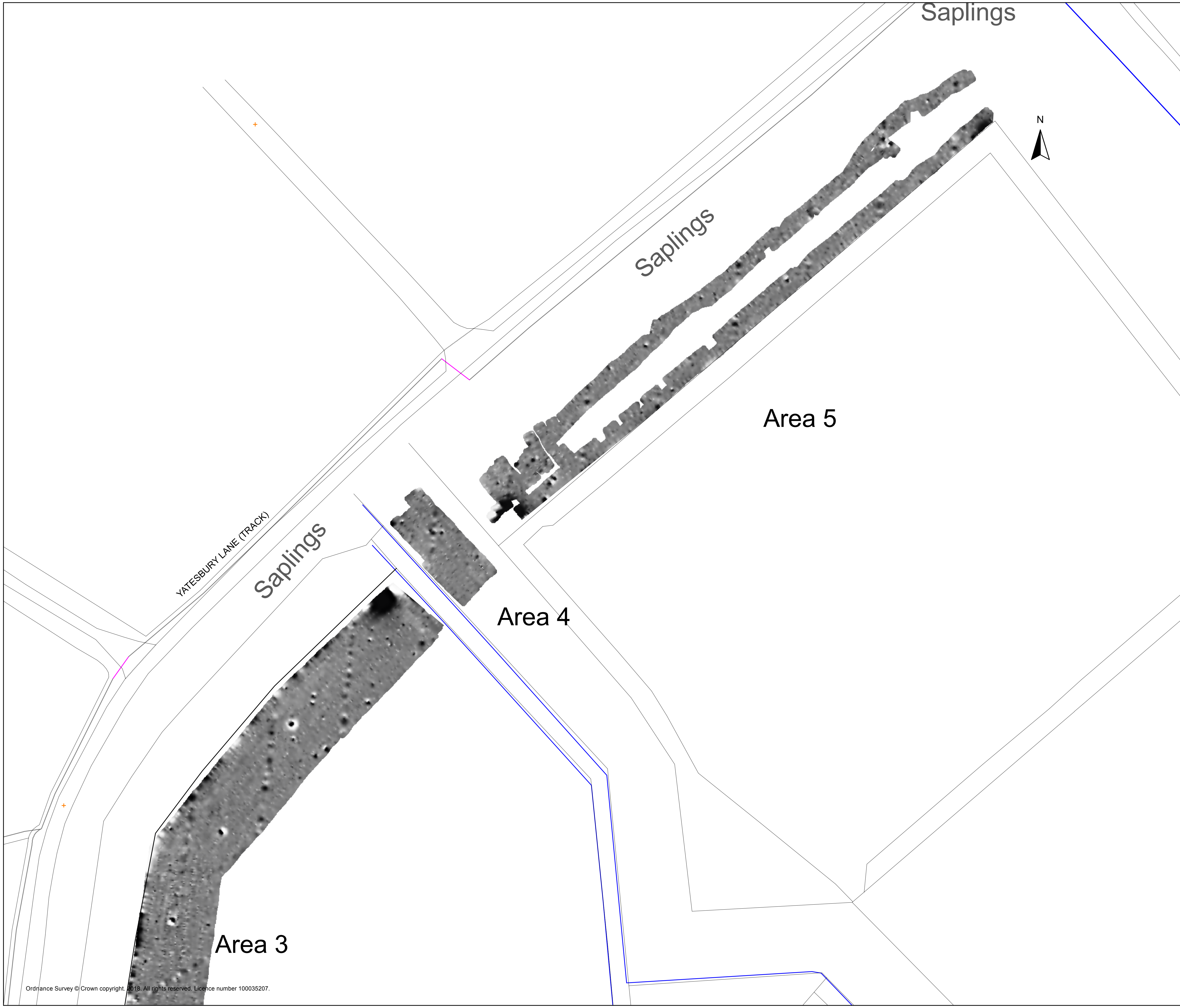
- Positive linear anomaly - of uncertain origin
- Weak multiple dipolar linear anomaly - land drain
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 07



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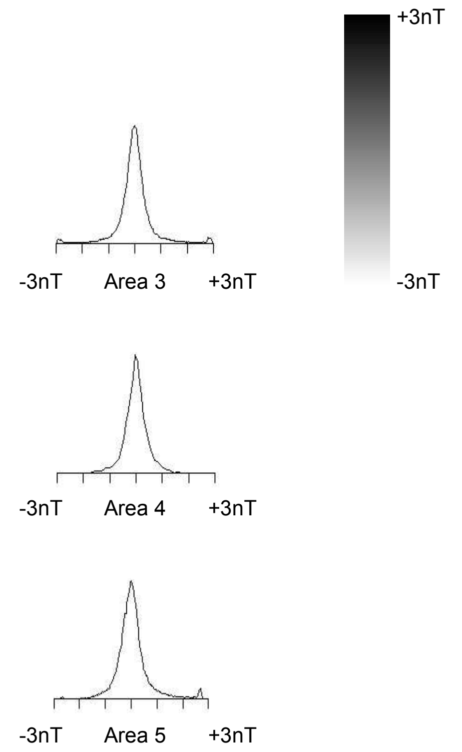
Greyscale plot of minimally processed magnetometer data - Area 3 north, Area 4 & Area 5

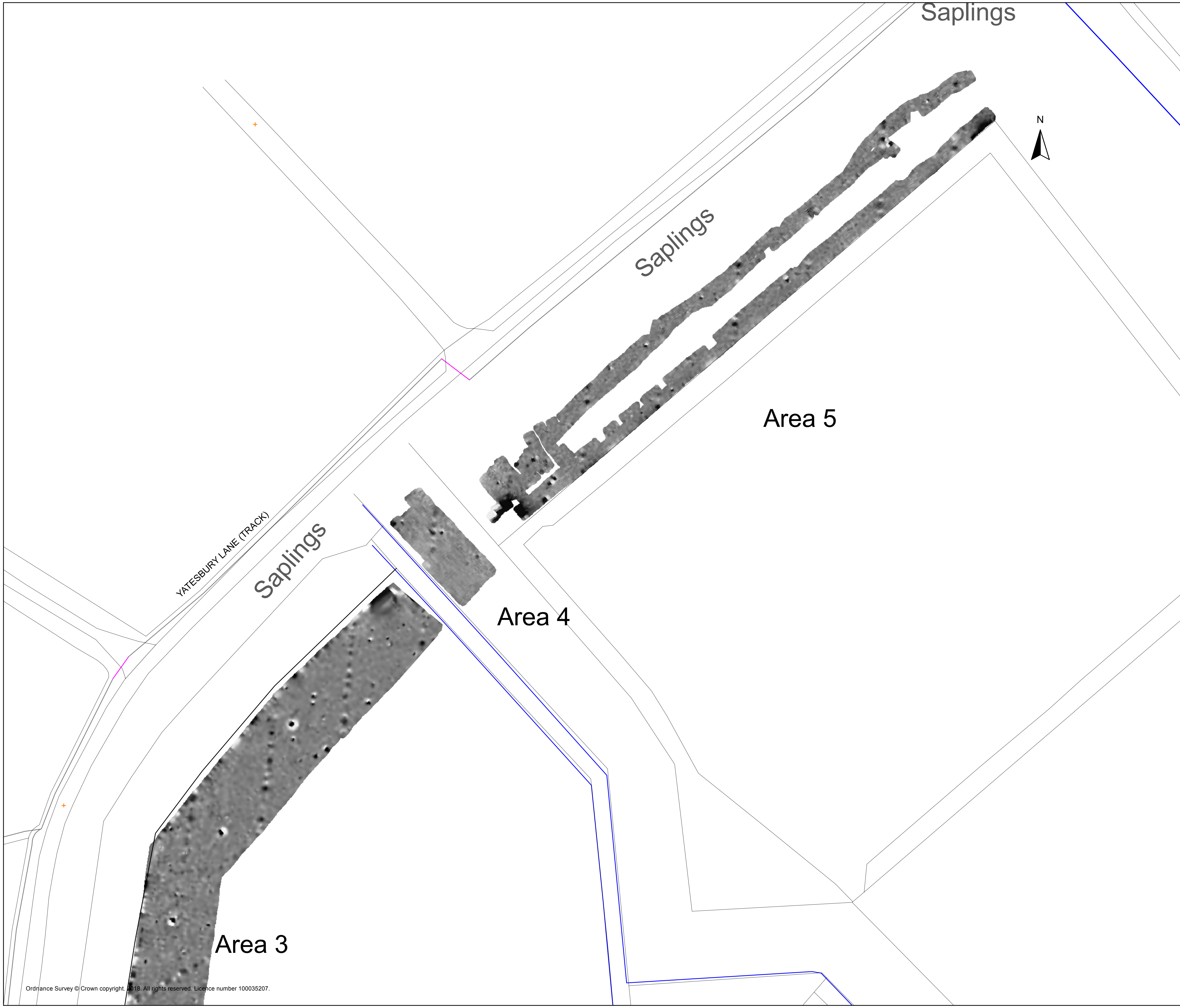


SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 08



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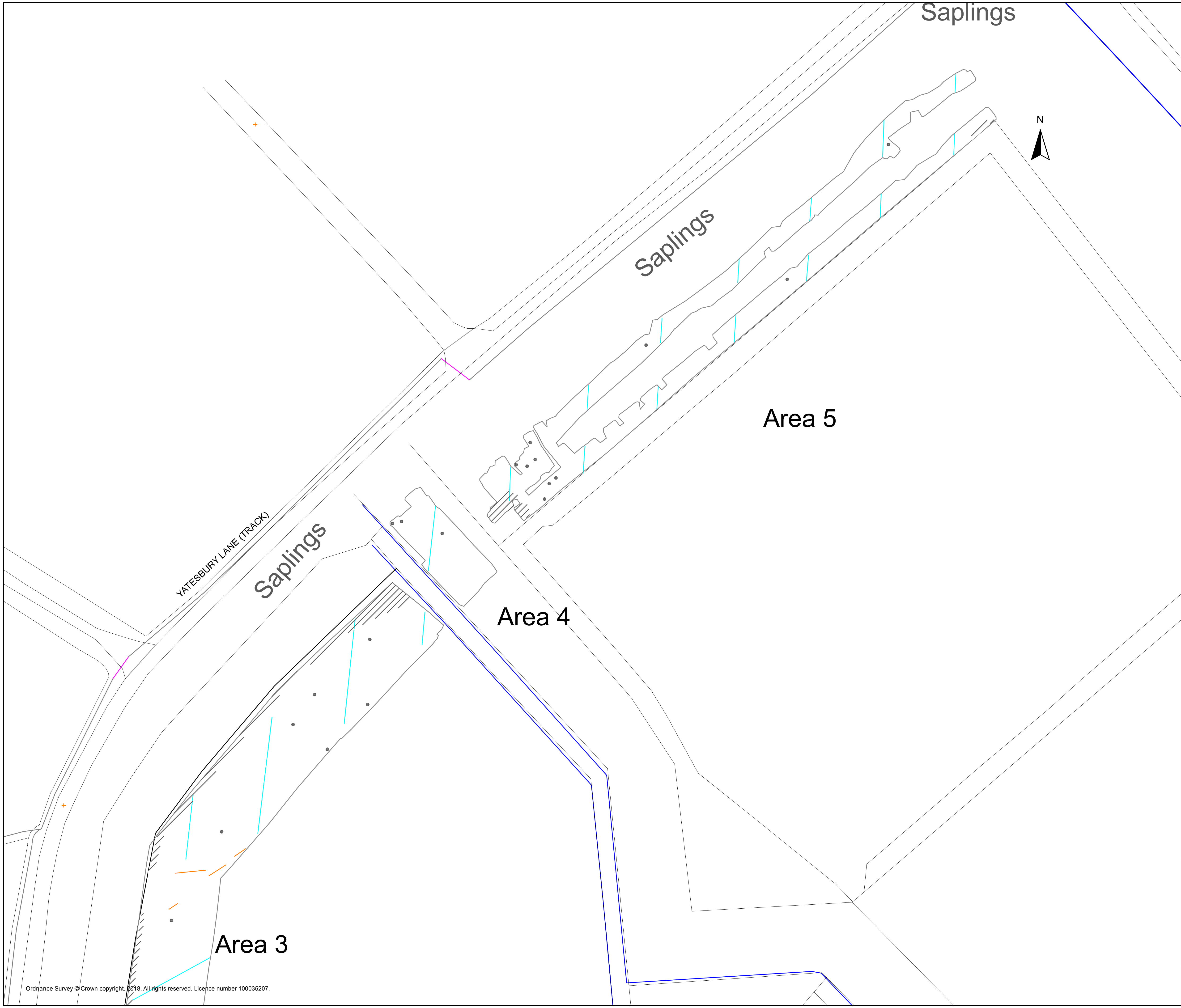
Greyscale plot of filtered magnetometer data - Area 3 north, Area 4 & Area 5

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 09



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Abstraction and interpretation of magnetic anomalies - Area 3 north, Area 4 & Area 5

Positive linear anomaly - of uncertain origin

Weak multiple dipolar linear anomaly - land drain

Magnetic disturbance from ferrous material

Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 10