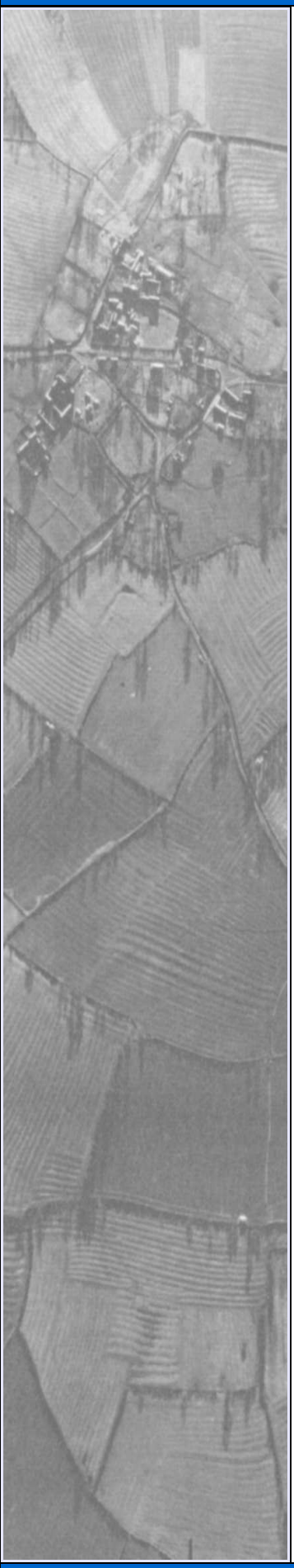

Land at Arnolds Way
Yatton, North Somerset
Phase II

MAGNETOMETER SURVEY REPORT

for

Bloor Homes

David Sabin and Kerry Donaldson

October 2014

Ref. no. 571

ARCHAEOLOGICAL SURVEYS LTD

Land at Arnolds Way
Yatton, North Somerset
Phase II

Magnetometer Survey Report

for

Bloor Homes

Fieldwork by David Sabin
Report by David Sabin BSc (Hons) MIFA and Kerry Donaldson BSc (Hons)

Survey dates – 2nd & 3rd October 2014
Ordnance Survey Grid Reference – **ST 41730 66890**

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SUMMARY

A detailed magnetometer survey was carried out by Archaeological Surveys Ltd on a second phase of works associated with land to the north of Arnolds Way, at Yatton in North Somerset. The results revealed a number of linear ditches that may indicate a trackway flanked by groups of pits and associated with further linear ditches and rectilinear enclosures within the eastern part of the site. The linear ditches are a continuation of features identified in a previous geophysical survey carried out by GSB Prospection in 2013 over land immediately to the south east. The enclosures and pits may be indicative of a settlement site that extends under the farm immediately to the north.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Bloor Homes, at the request of the Environmental Dimension Partnership (EDP), to undertake a magnetometer survey of an area of land at North End, Yatton in North Somerset. The site has been outlined for a proposed residential development. The survey forms part of an archaeological assessment of the site and was carried out as a second phase to the development, the first phase of which is within land immediately to the south east and south west and was previously surveyed by GSB Prospection (2013).

1.1.2 The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2014) and approved by Vince Russett, County Archaeologist for North Somerset Council, prior to commencing the fieldwork.

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 development of the site. The methodology is considered an efficient and effective approach to archaeological prospection.

1.2.2 The survey and report generally follow the recommendations set out by: English Heritage (2008) *Geophysical survey in archaeological field evaluation;* and Institute for Archaeologists (2002) *The use of Geophysical Techniques in Archaeological Evaluations*. The work has been carried out to the Institute for Archaeologists (2011) *Standard and Guidance for Archaeological Geophysical Survey.*

1.3 Site location, description and survey conditions

1.3.1 The site is located within agricultural land 300m north of Arnolds Way and bounded by Boxbush Farm at the north eastern edge, properties fronting the North End Road (B3133) to the east, agricultural land to the south east and the line of the former Clevedon Branch line to the west. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 41730 66890, see Figures 01 and 02.

1.3.2 The geophysical survey covers approximately 7ha within 3 land parcels. Area 1 covers the majority of the site and is pasture. Area 2 is separated from Area 1 by temporary electric fencing, but is actually part of the same field. It contained long grass and bales. Area 3 is in the north eastern part of the site and is a very small paddock area. The site is generally flat, although the farm and adjacent residential area may be on slightly higher ground. Along the northern boundary there is a deep drainage ditch.

1.3.3 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. However, haylage bales were present within Area 2 and prevented survey over some small parts of the field. In addition, a trailer was parked near the boundary between Areas 1 and 2 and this was avoided as a source of magnetic disturbance. Sources of disturbance were also noted adjacent to the farm at the northern end of the site. Weather conditions during the survey were fine and warm.

Plate 1: Survey area looking south from northern edge

1.4 Site history and archaeological potential

1.4.1 A desk-based Heritage Assessment (EDP, 2013) has been carried out for the

first phase of development involving land immediately adjacent, together with a geophysical survey undertaken by GSB Prospection (2013). There are a number of medieval and post-medieval sites and structures within the vicinity and the location of the former Yatton to Clevedon Branch Railway that bounds the western edge of the site. The previous geophysical survey located two or three positive linear anomalies that may relate to cut features with an archaeological origin. It also indicated that they may extend into the current survey area. Therefore there is a high potential for the survey to locate the extension of these and other anomalies.

1.5 Geology and soils

1.5.1 The underlying geology Mudstone and Halite-stone from the Mercia Mudstone Group with overlying head deposits (BGS, 2013).

1.5.2 The overlying soil across the survey area is from the Whimple 1 association and is a stagnogleyic argillic brown earth. It consists of reddish, fine, loamy over clayey soil with a slowly permeable subsoils (Soil Survey of England and Wales, 1983).

1.5.3 Magnetometry carried out over similar geology and soil has produced good results. The site is, therefore, considered suitable 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 are factors associated with the formation of localised fields. Additional details are set out below and within Appendix A.

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).

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 spaced 0.5m apart with readings recorded at 20 Hz. The gradiometers have a range of recording data between 0.1nT and 10,000nT. They are linked to a Leica GS10 RTK GPS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged PDA computer system.

2.2.2 Data are collected along a series of parallel survey transects wherever possible. 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.

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. Georeferenced data are then exported in ASCII format for compensation (destriping), interpolation and clipping using TerraSurveyor. Greyscale images are also produced using TerraSurveyor.

2.3.2 Appendix C contains specific information concerning the survey and data attributes and is derived directly from TerraSurveyor; this should be used in conjunction with information provided by Figure 02.

2.3.3 Only minimal processing is carried out in order to enhance the results of the survey for display. Raw data are always analysed, as processing can modify anomalies. The following schedule sets out the data and image processing used in this survey for the SENSYS MAGNETO data:

- clipping of processed data at ±20 nT or ±60nT to enhance low magnitude anomalies,
- zero median traverse is applied in order to balance readings along each traverse,

2.3.4 An abstraction and interpretation is offered for all geophysical anomalies located by the survey. A brief summary of each anomaly, with an appropriate reference number, is set out in list form within the results (Section 3) to allow a rapid and objective assessment of features within the site.

2.3.5 Reference should be made to Appendix B for further information on the specific processes carried out on the data. Appendix C metadata includes details on the processing sequence used for each survey area.

2.3.6 The main form of data display prepared for this report is the 'processed' greyscale plot followed by an abstraction and interpretation plot. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing.

2.3.7 Data captured with the SENSYS MAGNETO cart-based system are resampled to a resolution of effectively 0.5m between tracks and 0.15m along each survey track. A TIFF file (OSGB36) is produced by TerraSurveyor software along with an associated world file (.TFW) that allows automatic georeferencing when using GIS or CAD software.

2.3.8 The raster images are combined with base mapping using ProgeCAD Professional 2014 and AutoCAD LT 2007, creating DWG file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. Quality can be compromised by rotation of graphics in order to allow the data to be orientated with respect to grid north; this is considered acceptable as the survey results are effectively georeferenced allowing relocation of features using GPS, resection method, etc.

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 three survey areas covering approximately 7ha. The results of the survey are considered as a whole in the assessment below.

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

3.1.3 Anomalies have been numbered and are described below with subsequent discussion in Section 4.

3.2 Statement of data quality

3.2.1 Data are considered representative of the magnetic anomalies present within the site. Magnetic disturbance has prevented survey immediately adjacent to steel-framed barns and other agricultural objects at the northern end of the site. Track compensation (destriping) is unlikely to have removed anomalies, and no filtering has been used in order to preserve several anomalies of archaeological potential that run parallel with the survey tracks.

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 basic explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, a basic key is indicated to allow cross referencing to the abstraction and interpretation plot. CAD layer names are included to aid reference to associated digital files (.dwg/.dxf). Sub-headings are then used to group anomalies with similar characteristics within the site.

Report sub-heading CAD layer names and plot colour	**Description and origin of anomalies**
Anomalies with archaeological potential AS-ABST MAG POS LINEAR ARCHAEOLOGY AS-ABST MAG POS DISCRETE ARCHAEOLOGY AS-ABST MAG POS ENCLOSURE DITCH	Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, etc..
Anomalies with an uncertain origin AS-ABST MAG POS LINEAR UNCERTAIN AS-ABST MAG POS DISCRETE UNCERTAIN AS-ABST MAG POS UNCERTAIN AS-ABST MAG NEG UNCERTAIN	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. 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 AS-ABST MAG BOUNDARY	Anomalies are mainly linear and may be indicative of the magnetically enhanced fill of cut features (i.e. ditches), but can be negative responses or associated with zones of magnetic debris or strong dipolar anomalies. The anomalies may be long and/or form rectilinear elements and they may relate to topographic features or be visible on early mapping. Associated agricultural anomalies (e.g. headlands, plough marks and former ridge and furrow) may support the interpretation.
Anomalies associated with magnetic debris AS-ABST MAG DEBRIS AS-ABST MAG STRONG DIPOLAR	Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. It often occurs where there has been dumping or ground make-up and is 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, or hearths 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 AS-ABST MAG DISTURBANCE	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 such 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 and with hysteresis adjacent to strong magnetic sources.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 341730 166890, see Figures 03 – 08.

Anomalies of archaeological potential

(1 & 2) – Two positive linear anomalies extend north westwards and then northwards within the south eastern part of the survey area. The westernmost linear (1), appears to be partly realigned along the central section and it has a response of generally 3-8nT. The eastern linear anomaly (2) also has a similar response, but peaks in places at over 15nT. It is possible that these anomalies relate to a former trackway.

(3) – Within the confines of anomalies (1) and (2) are two parallel linear anomalies that change direction as they extend northwards, and cannot be clearly identified in places. The response ranges from 3-5nT in the south to less than 1nT in the north.

(4) – At the north eastern edge of anomaly (2) are a number of fragmented positive linear and discrete responses. These also appear to relate to cut features with an association with (2).

(5) – Located at the northern end of anomaly (1) is a group of positive linear anomalies. It is possible that they relate to a rectangular enclosure, although it is not certain if anomaly (1) forms the western edge or if it extends westwards and is associated with a group of pit-like responses. It is is also possible that the eastern edge is associated with a continuation of the western linear anomaly (3). There also appears to be some complexity to the northern edge.

(6) – A number of positive rectilinear anomalies are located immediately west and north west of anomaly (1) and relate to rectangular and/or square enclosure ditches. They contain a number of internal linear, rectilinear and discrete anomalies and appear that they would have continued eastwards into the area of the adjacent farm.

(7) – Located on the 'external' sides of anomalies (1) and (2) are distinct clusters of discrete positive responses. These are primarily seen in the southern part of the site and most of the groups are fairly evenly spaced 14m apart. They appear to relate to groups of pits, or possibly large post-holes, that respect the adjacent linear ditches.

Anomalies with an uncertain origin

(8) – A weakly positive rectilinear anomaly appears to extend from anomaly (1) to the west. The response is very weak (<1nT) and indistinct; however, it is possible that it has some association with anomaly (1).

(9) – The western part of the survey area contains a number of weakly positive broad linear responses. These are generally oriented parallel with extant and recently removed field boundaries and it is possible that they relate to agricultural activity or possibly former land division.

(10) – A number of similar responses to anomalies (9) are oriented perpendicular to them. It is possible that these are associated but their origin is uncertain.

(11) – A group of weakly positive responses are located west of the southern part of anomaly (1). Due to their weak (<1nT) and indistinct response, it is not possible to determine their origin, but their proximity to linear ditches (1) and pits (7) may also indicate that they relate to cut features.

(12) – Located in the northern part of the survey area is a positive linear anomaly. Other short, weakly positive linear anomalies can be seen to the north west and possibly as a continuation to the north east within Area 3. Due to their short and fragmented nature their origin is uncertain, but it is possible that they relate to cut features.

(13) – A group of positive linear anomalies, flanking broad negative responses, appear to converge close to the northern edge of the survey area. A sewer pipe extends along the northern edge of the survey area and most of the anomalies are likely to be associated with it.

(14) – A positive linear anomaly can be seen extending within the north eastern part of the site (Area 3). Although this type of response may indicate a cut, ditch-like feature, it does appear to correspond to the line of a footpath.

(15) – The survey area contains a number of discrete positive responses. Some are in groups but most are isolated. It is not possible to determine if these relate to pits with an archaeological origin.

(16) – A small number of short and weakly positive linear anomalies can be seen within the survey area and their origin is uncertain.

Anomalies relating to land management

(17 – 19) – A number of former linear field boundaries are evident within the survey results. Anomalies (17) and (18) can be seen as negative linear anomalies and relate to field boundaries mapped in 1885. Anomaly (17) also contains evidence for possible former fence posts and was removed by 1973. Anomaly (18) was removed by 1931 with anomaly (19) inserted prior to 1903 but removed by 1973. This anomaly is also associated with a broad band of magnetic debris.

Anomalies associated with magnetic debris

(20) – Small patches of magnetic debris are evident within the survey area and relate to ferrous and other magnetically thermoremnant material.

(21) – The site contains widespread and numerous strong, discrete, dipolar anomalies which are a response to ferrous and other magnetically thermoremnant objects within the topsoil.

Anomalies with a modern origin

(22) – A zone of magnetic disturbance in the northern part of the survey area is a response to an inspection chamber cover associated with a buried sewer pipe.

(23) – Magnetic disturbance along the edges and within the survey area are a response to ferrous material and fencing.

4 DISCUSSION

4.1.1 The eastern part of the site contains a complex group of linear and discrete anomalies. The main features are a pair of positive linear anomalies that relate to ditches generally 1-2.5m wide, but extending to 4m in places. The anomalies although generally parallel, tend to mirror each other, ranging from 26m apart at the southern edge, narrowing to 18m apart for 80m, then flaring outwards to 35m apart, before narrowing slightly towards the north to 30m. These features continue for 200m and are a continuation of linear features seen immediately to the south east in the 2013 survey by GSB. Within the confines of the two linear ditches are two further linear features that extend first to the north west, then cannot be seen in the data for 36m, then extend to the north. Other fragmented linear ditches are evident on the north eastern side of the main linear features and groups of pits are clustered just beyond their external edges.

4.1.2 At the north western end of the linear ditches are a number of rectilinear anomalies, some of which abut up to the westernmost ditch forming rectangular enclosures. Further linear ditches and pits have also been located within and close to these enclosures, and a continuation of these features northwards within Boxbush Farm is likely.

4.1.3 The anomalies located in the western half of the survey area are very weak (<1nT) and poorly defined. There are some linear elements that may indicate former agricultural activity or land division, but their origin cannot be confidently interpreted. Several isolated discrete positive responses and positive linear responses have also been located in this part of the site, and although it is possible that they relate to cut features, they are weak and lack a coherent morphology preventing confident interpretation.

5 CONCLUSION

5.1.1 The detailed magnetometer survey located a series of positive linear anomalies in the south eastern part of the site that relate to linear ditches. It is possible that these are associated with a former trackway and they are a continuation of features located by a previous survey immediately to the south east. Other linear features have been located adjacent to the linear ditches and clusters of pits also appear to be associated.

5.1.2 To the north west of the linear ditches are a group of rectangular enclosures, with associated linear ditches and pits, that may indicate a former settlement likely to continue beneath the adjacent farmyard.

5.1.3 Within the majority of the western half of the site the magnetic contrast is so weak and indistinct that it is not possible to confidently interpret anomalies. It is possible that some relate to cut features, others may relate to agricultural activity or former land division parallel with modern boundaries.

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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 field. The difference between the two sensors will relate to the strength the magnetic field created by the buried feature. If no enhanced feature is present the field measured by both sensors will be similar and the difference close to zero.

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. It has been found that clipping data to ranges between ±60nT and ±10nT often improves the appearance of features associated with archaeology. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Zero Median/Mean Traverse

The median (or mean) of 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 slight differences between the set-up and stability of gradiometer sensors and can remove striping. The process can remove archaeological features that run along a traverse so data analysis is also carried out prior its application.

High Pass Filtering

A mathematical process used to remove low frequency anomalies relating to survey tracks and modern agricultural features.

Appendix C – survey and data information

Area 1

COMPOSITE
Path: D:\Business\Jobs\J571 Yatton\Data\Area 1\comps\
Filename: J571-mag-Area1-proc.xcp
Description: Imported as Composite from: J571-mag-Area1.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 341577.264134024, 167075.558420633 m
Southeast corner: 341901.024134024, 166760.678420633 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 1763500

Dimensions
Composite Size (readings): 2698 x 2624
Survey Size (meters): 324 m x 315 m
Grid Size: 324 m x 315 m
X Interval: 0.12 m
Y Interval: 0.12 m

Stats
Max: 30.00
Min: -30.00
Std Dev: 8.57
Mean: 0.23
Median: -0.11
Composite Area: 10.195 ha
Surveyed Area: 5.6709 ha

Processes: 2
1 Base Layer
2 Clip from -30.00 to 30.00 nT

GPS based Proce3
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 Sds

Area 2

COMPOSITE
Path: D:\Business\Jobs\J571 Yatton\Data\Area 2\comps\
Filename: J571-mag-Area2-proc.xcp
Description: Imported as Composite from: J571-mag-Area2.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 341708.553707617, 166879.861215656 m
Southeast corner: 341923.233707617, 166661.821215656 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 284800

Dimensions
Composite Size (readings): 1789 x 1817
Survey Size (meters): 215 m x 218 m
Grid Size: 215 m x 218 m
X Interval: 0.12 m
Y Interval: 0.12 m

Stats
Max: 30.00
Min: -30.00
Std Dev: 9.04
Mean: 0.09
Median: -0.04
Composite Area: 4.6809 ha
Surveyed Area: 0.81637 ha

Processes: 2
1 Base Layer
2 Clip from -30.00 to 30.00 nT

GPS based Proce3
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 Sds

Area 3

COMPOSITE
Path: D:\Business\Jobs\J571 Yatton\Data\Area 3\comps\
Filename: J571-mag-Area3-proc.xcp
Description: Imported as Composite from: J571-mag-Area3.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 341657.677838671, 167117.315858153 m
Southeast corner: 341699.077838671, 167071.235858153 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 34700

Dimensions
Composite Size (readings): 345 x 384
Survey Size (meters): 41.4 m x 46.1 m
Grid Size: 41.4 m x 46.1 m
X Interval: 0.12 m
Y Interval: 0.12 m

Stats
Max: 60.00
Min: -60.00
Std Dev: 30.55
Mean: -0.81
Median: 0.62
Composite Area: 0.19077 ha
Surveyed Area: 0.10327 ha

Processes: 2
1 Base Layer
2 Clip from -60.00 to 60.00 nT

GPS based Proce3
1 Base Layer.
2 Unit Conversion Layer (to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at their offices in Wiltshire (see inside cover for address). 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.

Surveys are reported on in hardcopy (recycled paper) using A4 for text and A3 for plots (all plots are scaled for A3). A copy of the report will be issued to the North Somerset Council HER and uploaded to Oasis upon instruction by the client.

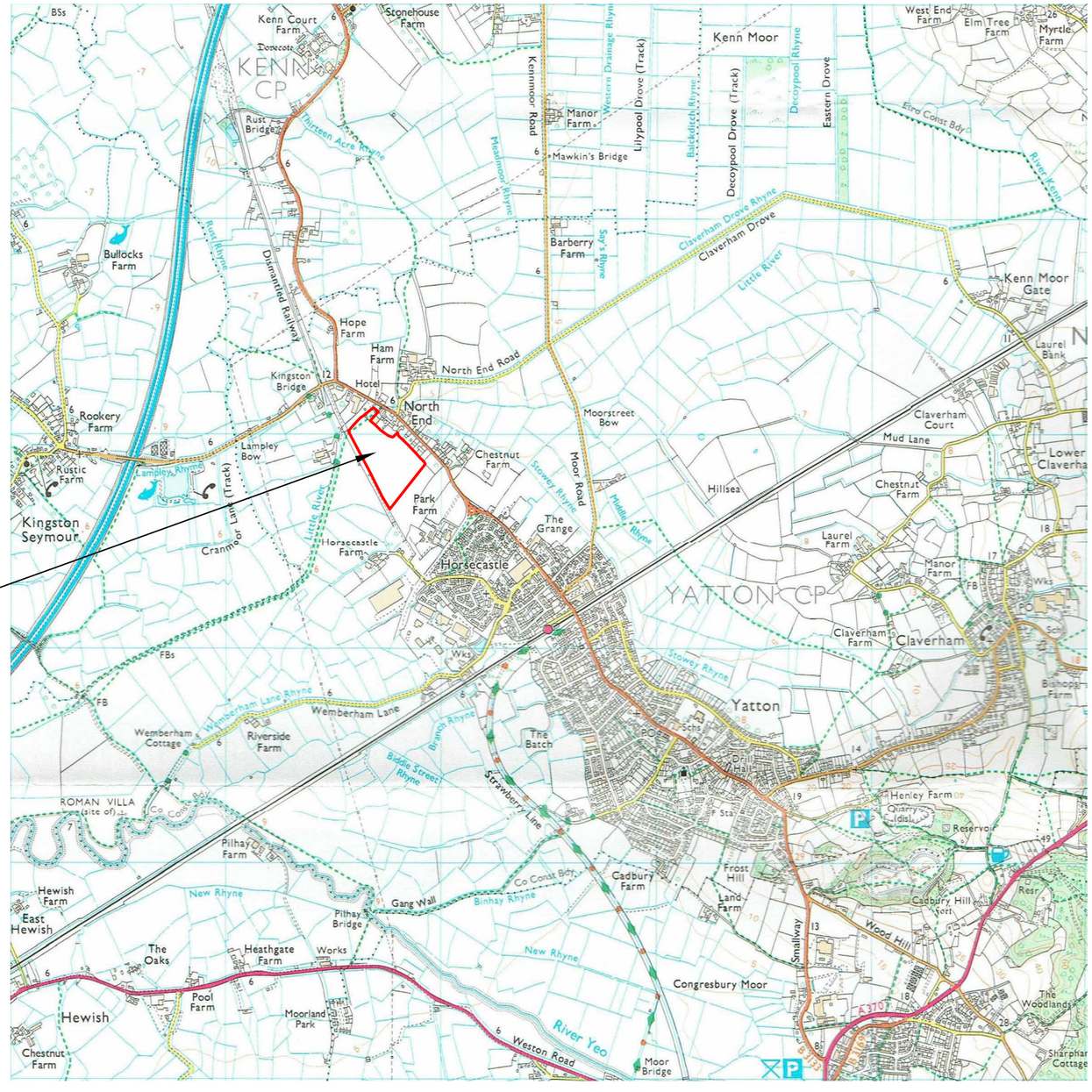
This report has been prepared using the following software on a Windows XP platform:

- TerraSurveyor version 3.0.23.0 (geophysical data analysis),
- SENSYS MAGNETO®ARCH version 1.00-04(geophysical data analysis),
- ProgeCAD Professional 2014 (report graphics),
- AutoCAD LT 2007 (report figures),
- OpenOffice.org 3.0.1 Writer (document text),
- PDF Creator version 0.9 (PDF archive).

Digital data produced by the survey and report include the following files:

- TerraSurveyor grid and composite files for all geophysical data,
- CSV files for raw and processed composites,
- geophysical composite file graphics as Bitmap images,
- AutoCAD DWG files in 2000 and 2007 versions,
- report text as OpenOffice.org ODT file,
- report text as Word 2000 doc file,
- report text as rich text format (RTF),
- report text as PDF,
- PDFs of all figures.

Survey location



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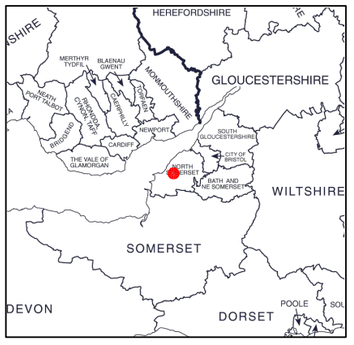
Map of survey area



● Survey location

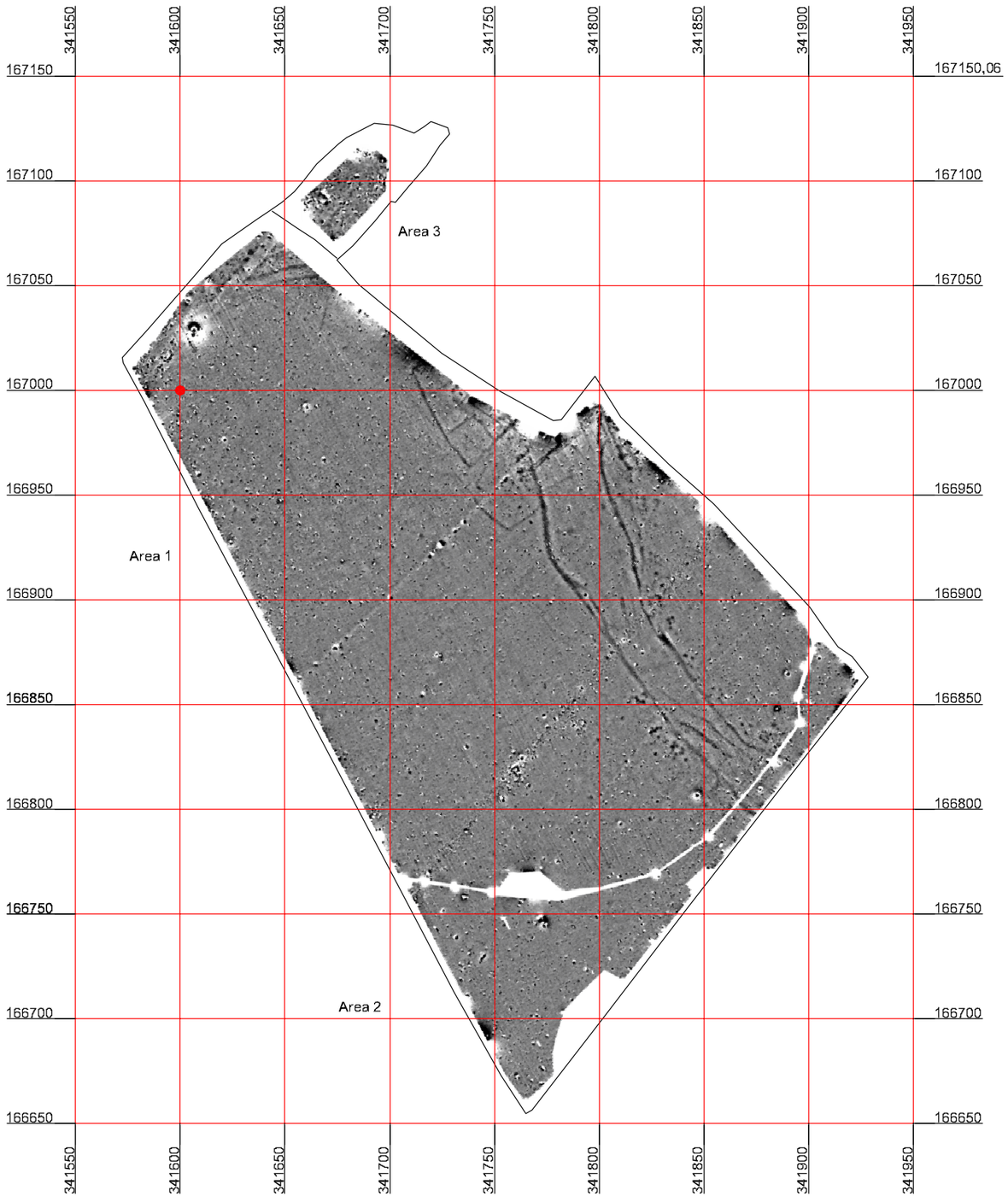
Site centred on OS NGR
ST 41730 66890

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

FIG 01



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Referencing information

Referencing grid to OSGB36 datum at 50m intervals

Data collected at 20Hz and georeferenced to ETRS89 zone 30 with conversion to OSGB36 using OSTN02

● 341600 167000

SCALE 1:2500

0m 50 100m

SCALE TRUE AT A3

FIG 02

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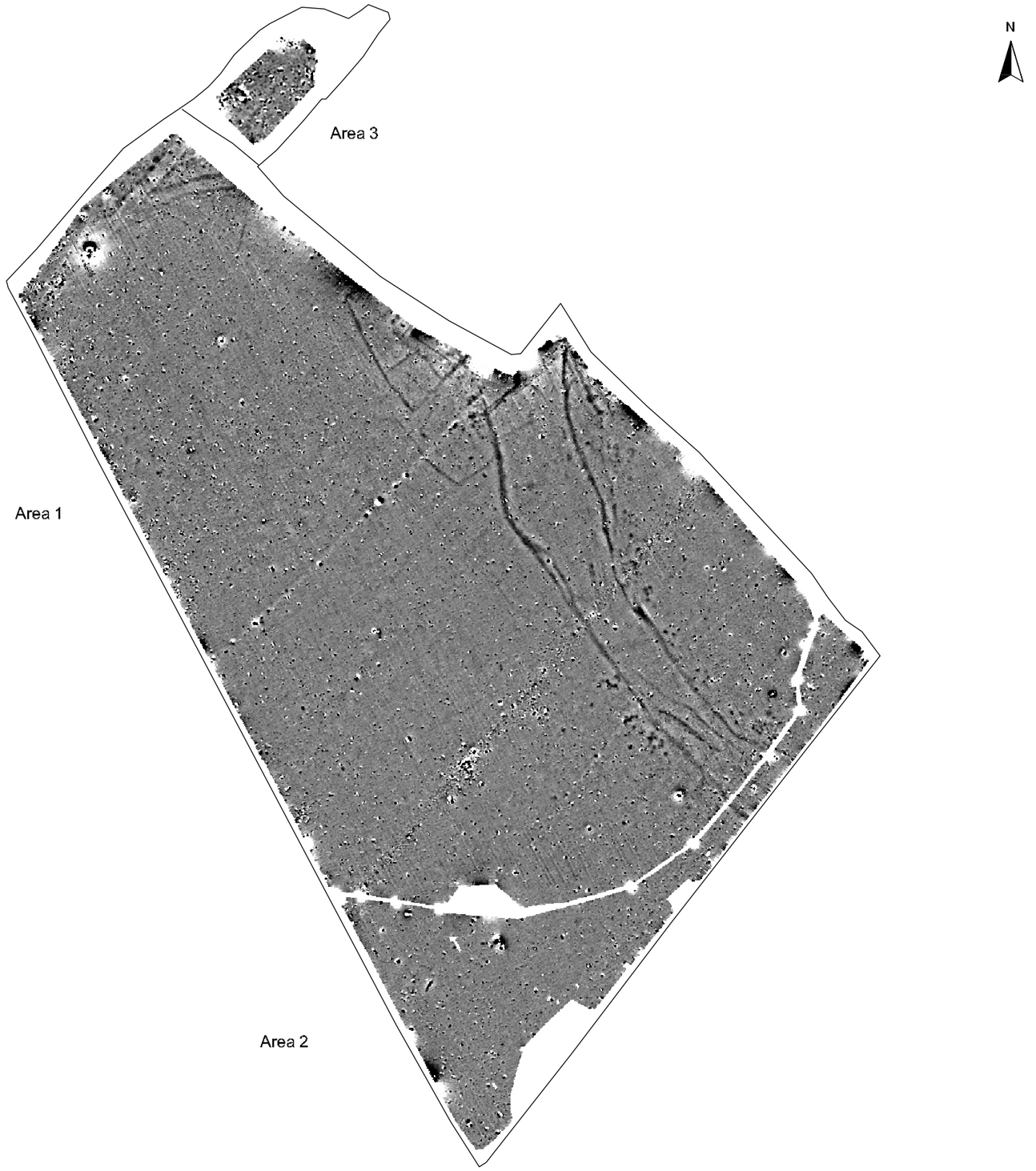
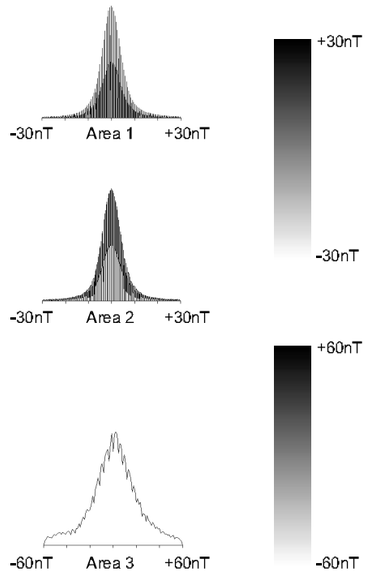


Greyscale plot of processed magnetometer data



SCALE 1:2000

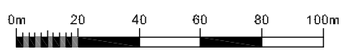


FIG 03

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Abstraction and interpretation of magnetometer anomalies

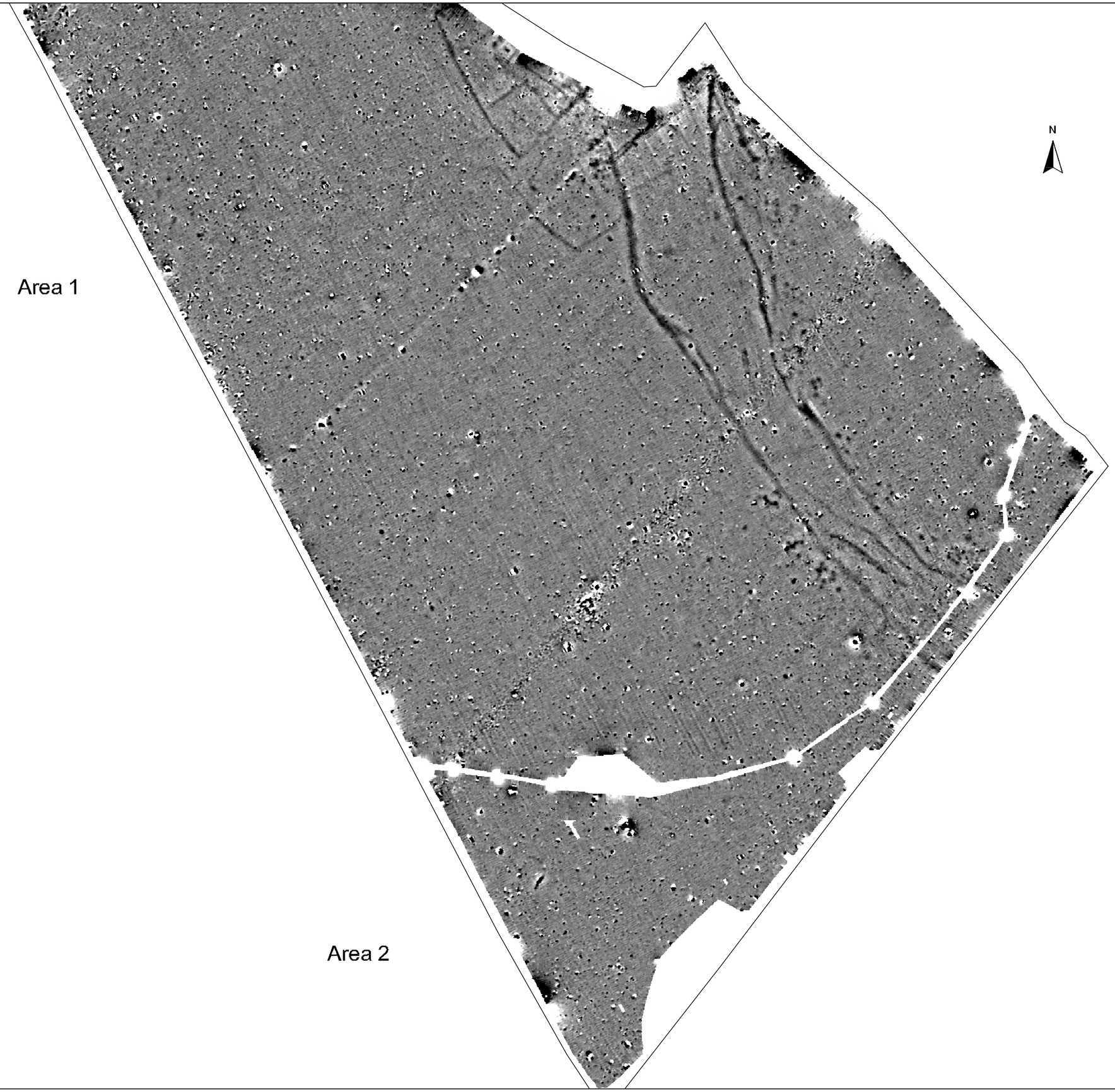
- Positive linear anomaly - cut feature of archaeological potential
- Positive rectilinear anomaly - enclosure ditch of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Negative/positive linear anomaly - former field boundary
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material of low magnetic susceptibility
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:2000

0m 20 40 60 80 100m

SCALE TRUE AT A3

FIG 04



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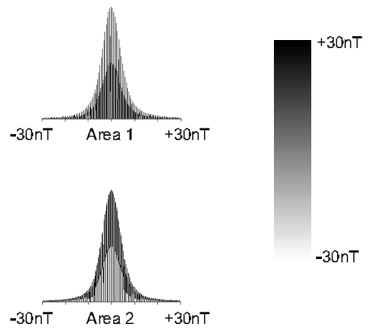
Greyscale plot of processed magnetometer data - south



SCALE 1:1250

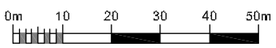


FIG 05

Area 1

Area 2

N

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Abstraction and interpretation of magnetometer anomalies - south

- Positive linear anomaly - cut feature of archaeological potential
- Positive rectilinear anomaly - enclosure ditch of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Negative/positive linear anomaly - former field boundary
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material of low magnetic susceptibility
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 06

Area 3

Area 1

N

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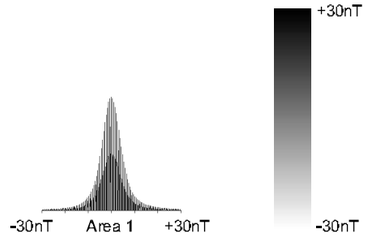
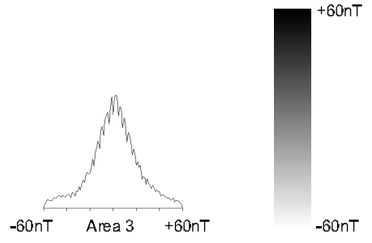
Greyscale plot of processed magnetometer data - north





SCALE 1:1250

0m 10 20 30 40 50m

FIG 07

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Phase II

Abstraction and interpretation of magnetometer anomalies - north

- Positive linear anomaly - cut feature of archaeological potential
- Positive rectilinear anomaly - enclosure ditch of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Negative/positive linear anomaly - former field boundary
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material of low magnetic susceptibility
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 08

Area 1

Area 3

N