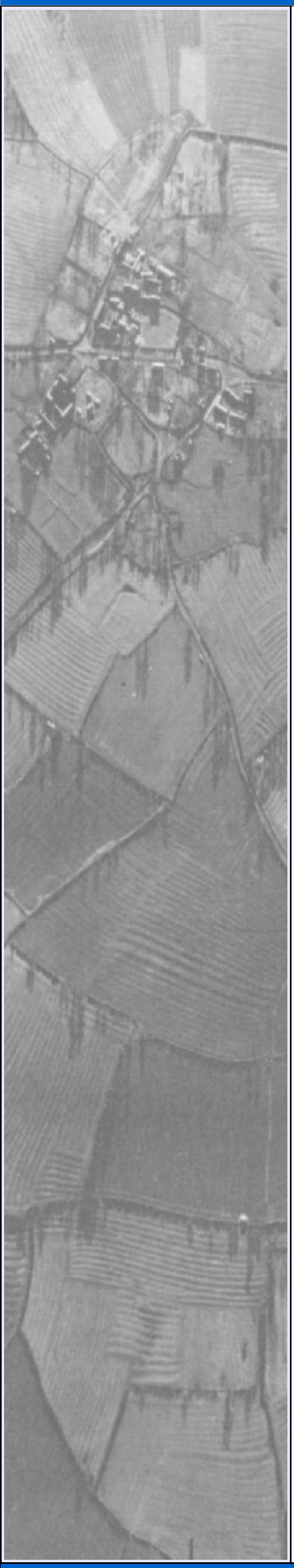

Bowden Lane Solar Park
Henstridge
Somerset

MAGNETOMETER SURVEY REPORT

for

British Solar Renewables Ltd

Kerry Donaldson & David Sabin

August 2015

Ref. no. 621

Somerset HER PRN 32922

ARCHAEOLOGICAL SURVEYS LTD

Bowden Lane Solar Park
Henstridge
Somerset

Magnetometer Survey Report

for

British Solar Renewables Ltd

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

Survey dates – 17th and 18th August 2015
Ordnance Survey Grid Reference – **ST 70015 20315**

Somerset HER PRN 32922

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SUMMARY

A detailed magnetometer survey was carried out over a single field off Bowden Lane, Henstridge, Somerset, ahead of a planning application for a solar park. The results indicate the presence of widespread anomalies associated with the underlying geology, possible land drains or land divisions, agricultural anomalies and at least two areas of quarrying. Two parallel linear anomalies extend across the southern part of the survey area and appear to have been truncated by quarrying. These east to west aligned anomalies may relate to cut, linear ditches. Other positive linear anomalies are also evident, with a fragmented linear feature in the north western corner of the site. Some linear anomalies of uncertain origin may relate to land drainage.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by British Solar Renewables Ltd, to undertake a magnetometer survey of an area of land at Bowden Lane, Henstridge in Somerset. The site has been outlined for a proposed development of a solar park, and the survey forms part of an archaeological assessment of the site.

1.1.2 The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2015) and approved by Steve Membery, Somerset County Archaeologist, prior to commencing the work. The survey was issued a Primary Record Number (PRN) by Somerset Historic Environment Record (HER), PRN 32922.

1.2 Survey objectives and techniques

1.2.1 The objectives of the survey were to use non-intrusive geophysical techniques to establish the presence/absence, extent, condition, character, quality and date of any archaeological deposits within the proposed development area.

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 Chartered Institute for Archaeologists (2014) *Standard and Guidance for Archaeological Geophysical Survey.*

1.3 Site location, description and survey conditions

1.3.1 The site is located to the north of Bowden Lane, approximately 2km west of the village of Henstridge, close to Henstridge Bowden, in south Somerset. It is

centred on Ordnance Survey National Grid Reference (OS NGR) ST 70015 20315, see Figures 01 and 02.

1.3.2 The geophysical survey covers approximately 8.5ha of arable land within one field. At the time of survey the ground cover consisted of stubble with an emerging root crop. Field boundaries are hedgerows with wire fencing along the eastern side. The site has a very gentle slope down towards the east.

Plate 1: Survey area looking north

1.3.3 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. Weather conditions during the survey were fine and sunny.

1.4 Site history and archaeological potential

1.4.1 An Archaeological and Heritage Assessment has been carried out for the site by The Environmental Dimension Partnership (EDP, 2015). It outlines that a watching brief over the course of a new pipeline which bounds the eastern edge of the site (PRN 28837) was carried out in 1991. No finds or features were located within the survey area at the time, but a number of Roman pottery finds were located in the field immediately south east of the survey area and Bowden Lane (PRN 55870) and an early medieval site was also recorded approximately 200m to the north of the survey area (PRN 55869). Further Roman artefacts have been recorded 750m to the south east (PRN 53960) and 750m to the north west (PRN 53959). The nearest scheduled monument is the promontory fort at Barrow Hill, Milbourne Wick, some 2.6km to the west (PRN 54262, SM 32183, HE list entry No. 1016738).

1.4.2 The 1839 tithe map of Henstridge shows that the field was once subdivided into three, with a field boundary extending across the northern part of the site, and a rectangular boundary in the south east corner. The boundaries were removed by the 1890s with the field incorporated into a larger area and subsequently the eastern boundary inserted by the 1960s.

1.4.3 The surface conditions within the site were suitable for the observation of cultural material during the course of the survey. No significant scatters were noted. A widespread very low density scatter of post medieval pottery sherds and tile was visible, although this was considered likely to be associated with manuring. Several very low banks trending south west to north east were also noted.

1.5 Geology and soils

1.5.1 The underlying solid geology across the site is from the Forest Marble Formation with mudstone recorded in the west and limestone in the east (BGS, 2015). Flat fossiliferous stone typical of Forest Marble was observed during the course of the survey. Some concentrated areas of stone may be indicative of former quarrying.

1.5.2 The overlying soil across the survey area is from the Evesham 1 association and is a typical calcareous pelosol. It consists of a slowly permeable, calcareous, clayey soil associated with shallow, well drained, brashy, calcareous soils over limestone (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. However, the underlying rock can be associated with both discrete and linear anomalies of natural origin due to the presence of fissures and irregularities in the soil/geology interface.

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 20Hz. The gradiometers have a range of recording data between 0.1nT and 10,000nT. The system is linked to a Leica GS10 RTK GPS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged computer.

2.2.2 Data are collected along a series of parallel survey tracks wherever possible. The length of each track is variable and relates to the size of the survey area and other factors including ground conditions. A visual display aids accurate placing of tracks and their separation.

2.2.3 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).

2.3 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. Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display using TerraSurveyor.

2.3.2 The data are collected between limits of ±10000nT and clipped for display. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track. A zero median traverse function is required in order to remove fixed offset values present within the sensors which do not undergo a zeroing procedure in the field. The approach ensures that the gradiometer sensors are very accurately aligned and fixed to the vertical magnetic field and are not influenced by localised magnetic fields or disturbed by vibration. 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 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 any processes, such as clipping, carried out on the data. A filtered image is also displayed in Fig 04 where a high pass filter is applied to smooth data and remove slight variations along survey tracks.

2.3.4 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.

2.3.5 The raster images are combined with base mapping using ProgeCAD Professional 2014, 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 GPS, resection method, etc.

2.3.6 An abstraction and interpretation is also 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.

2.3.7 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 survey area.

2.3.8 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 approximately 8.5ha within a single arable field.

3.1.2 Magnetic anomalies located can be generally classified as positive and negative anomalies of an uncertain origin, anomalies associated with land management, linear anomalies of an agricultural origin, anomalies associated with quarrying, anomalies with a natural origin, areas of magnetic debris and disturbance, strong discrete dipolar anomalies relating to ferrous objects and strong multiple dipolar linear anomalies relating to buried services or pipelines.

3.2 Statement of data quality

3.2.1 Data are considered representative of the magnetic anomalies present within the site. There are no significant defects within the dataset. Some weak linear responses, probably caused by rapid temperature changes within the sensors, are visible in data from the southern part of the field. These were effectively removed using a high pass filter. Both filtered and unfiltered data were analysed and the additional processing has not removed or altered any anomalies of anthropogenic origin. Unfiltered and filtered data are shown within Figures 03 and 04 respectively.

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 for the survey area.

Report sub-heading CAD layer names and plot colour	**Description and origin of anomalies**
Anomalies with an uncertain origin AS-ABST MAG POS LINEAR UNCERTAIN AS-ABST MAG NEG LINEAR UNCERTAIN AS-ABST MAG POS DISCRETE UNCERTAIN AS-ABST MAG POS 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 AS-ABST MAG LAND DRAIN	Anomalies are mainly linear and may be indicative of the magnetically enhanced fill of cut features (i.e. ditches). 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. 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 a ceramic land drain.
Anomalies with an agricultural origin AS-ABST MAG AGRICULTURAL	The anomalies are often linear and form a series of parallel responses or are parallel to extant land boundaries. Where the response is broad, former ridge and furrow is likely; narrow response is often related to modern ploughing.
Anomalies associated with ground disturbance/quarrying AS-ABST MAG QUARRYING	Magnetically variable anomalies, which may be negative, indicating a response to geology/drift deposits and/or positive indicating an increased depth of topsoil. Very strongly magnetic anomalies are a response to highly magnetic material which can be used to infill a depression. A negative response may be a response to a band of rock near the surface, or at the edge of a depression.
Anomalies with a natural origin	Naturally formed magnetic anomalies are are caused by localised variability in the magnetic susceptibility of soils, subsoils and other drift

AS-ABST MAG NATURAL FEATURES	or solid geologies. Anomalies may be amorphous, linear or curvilinear and may appear 'fluvial' or discrete; the latter are almost impossible to distinguished from pit-like anomalies with an anthropogenic origin. Fluvial, glacial and periglacial processes may be responsible for their formation within drift material and subsoil. Cracks and joints within geologies such as limestone can result in linear and rectilinear features, with an increased depth of topsoil within the cracks.
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 AS-ABST MAG SERVICE 	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. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 370015 120315, see Figures 03 - 05.

Anomalies with an uncertain origin

(1 & 2) - Two parallel positive linear anomalies extend across the southern part of the survey area. In the east, anomaly (1) is very weak (1.5nT) and indistinct and only 6m apart where it appears as a double linear feature. In the west, anomaly (2) is stronger in places (4nT), but fragmented and 11-12m apart, with a third parallel linear anomaly on the northern side. Anomalies (1) and (2) appear to have been truncated by quarrying (12). Despite the differences in distance between the pairs of parallel linear features, it is possible that they are a continuation of each other and an archaeological origin should be considered.

(3) - Extending across the north western corner of the site is a fragmented positive linear anomaly. It appears to head south westwards and there is some complexity to the feature, with additional linear anomalies parallel with it and extending from it. It appears to relate to a cut, ditch-like feature.

(4) - A group of negative linear anomalies are situated on the eastern edge of a former quarry (13). While the location within the quarried area and the type of

response may indicate that it is directly associated with the quarry, there are very regular linear and rectilinear elements, rather than the more random and amorphous responses elsewhere.

(5) - A fragmented positive linear anomaly and broad positive anomaly may relate to a cut feature, but land drainage is possible.

(6) - The survey area contains a number of positive linear anomalies with no coherent pattern. It is possible that some relate to land drainage.

(7) - A discrete positive response is located to the north of anomaly (1). It is possible that it is associated with quarrying but this is not certain.

Anomalies associated with land management

(8) - A weakly positive linear anomaly extends across part of the northern half of the survey area. This corresponds to a linear boundary mapped in 1839 but removed by 1888. Only part of the boundary feature is visible in the data.

(9) - A series of parallel, fragmented linear anomalies extend across the eastern part of the survey area. They appear to relate to some form of land drainage or land division, but they have an unusual response due to the underlying geology.

(10) - A number of parallel, weakly linear anomalies are visible in the western and south eastern part of the site. These appear to relate to land drainage.

Anomalies with an agricultural origin

(11) - A large number of parallel linear anomalies are visible primarily in the eastern part of the survey area. They appear to extend towards the lines of regular linear anomalies (9) located perpendicular to them. The regular nature of these responses indicates that they may relate to deep ploughing.

Anomalies associated with quarrying

(12 & 13) - Two zones of magnetically variable responses are evident within the data. This type of response indicates quarrying, with anomaly (12) appearing to truncate anomalies (1) and (2), but with other features including former field boundary (8) still visible within (13).

Anomalies with a natural origin

(14) - Zones of magnetically variable anomalies with linear and irregularly shaped elements indicate a response to differing depths of topsoil within the cracks and joints of the underlying Forest Marble geology.

Anomalies associated with magnetic debris

(15) - Three small patches of magnetic debris are located in the south eastern part

of the site. This may relate to dumped material but their origin is uncertain.

(16) - Strong, discrete, dipolar anomalies are a response to ferrous and other magnetically thermoremnant objects within the topsoil.

Anomalies with a modern origin

(17) - Magnetic disturbance along the eastern edge of the survey area is a response to the water pipeline, constructed in 1991.

4 CONCLUSION

4.1.1 The detailed magnetometer survey located parallel positive linear anomalies, extending east to west in the southern part of the site. In the east they are 6m apart, in the west 12m and they appear to have been truncated by former quarrying. They are not parallel with other anomalies within the site, or extant land boundaries. It is possible that they relate to cut, linear ditches.

4.1.2 Other positive linear anomalies have been located within the site. Along the north western corner is a fragmented positive linear anomaly, and although it is possible that it relates to a cut, ditch-like feature, there is some evidence for it being parallel with other features that may be associated with land drainage. There is also some complexity at the southern end of the anomaly.

4.1.3 Features associated with the underlying geology, agricultural activity, land drainage and also quarrying are evident within the site.

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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.

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 ±20nT 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 (destripe) 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 differences between the baseline value of gradiometer sensors.

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

Minimally processed data

COMPOSITE
Path: C:\Business\Jobs\J621 Henstridge\Data\Mag\comps\
Filename: J621-mag-proc.xcp
Description: Imported as Composite from: J621-mag.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 369859.697956676, 120557.790931065 m
Southeast corner: 370183.397956676, 120154.590931065 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702

Source GPS Points: 2622200

Dimensions
Composite Size (readings): 2158 x 2688
Survey Size (meters): 324 m x 403 m
Grid Size: 324 m x 403 m
X Interval: 0.15 m
Y Interval: 0.15 m

Stats
Max: 3.00
Min: -3.00
Std Dev: 1.28
Mean: 0.08
Median: 0.01
Composite Area: 13.052 ha
Surveyed Area: 8.2002 ha

PROGRAM
Name: TerraSurveyor
Version: 3.0.23.0

Processes: 2
1 Base Layer
2 Clip from -3.00 to 3.00 nT

GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -5.00 to 5.00 nT

Filtered magnetometer data

COMPOSITE
Path: C:\Business\Jobs\J621 Henstridge\Data\Mag\comps\
Filename: J621-mag-proc-hpf.xcp
Description: Imported as Composite from: J621-mag.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y): OSGB36
Northwest corner: 369859.697956676, 120557.790931065 m
Southeast corner: 370183.397956676, 120154.590931065 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702

Source GPS Points: 2622200

Dimensions
Composite Size (readings): 2158 x 2688
Survey Size (meters): 324 m x 403 m
Grid Size: 324 m x 403 m
X Interval: 0.15 m
Y Interval: 0.15 m

Stats
Max: 3.00
Min: -3.00
Std Dev: 1.19
Mean: 0.08
Median: 0.00
Composite Area: 13.052 ha
Surveyed Area: 8.2002 ha

Processes: 2
1 Base Layer
2 Clip from -3.00 to 3.00 nT

GPS based Proce6
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -5.00 to 5.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Clip from -5.00 to 5.00 nT

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 printed copy of the report and a PDF copy will be supplied to the Somerset Historic Environment Record. The report will also be uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS).

Archive contents:

Geophysical data - path: J621 Henstridge\Data				
Path and Filename	**Software**	**Description**	**Date**	**Creator**
hens1\MX\ .prm .dgb .disp	Sensys MXPDA	Proprietary data formats representing magnetometer survey traverses logged to a PDA.	17/08/15	D.J.Sabin
hens1\MX\J612-mag.asc	Sensys DLMGPS	ASCII CSV (tab) file representing survey Area 1 in eastings, northings (UTM Z30N), magnetic measurement, traverse file and sensor number.	18/08/15	D.J.Sabin
Mag\comps\J621-mag.xcp	TerraSurveyor 3.0.23.0	Composite data file derived from ASCII CSV.	18/08/15	D.J.Sabin
Mag\comps\J621-mag-proc.xcp	TerraSurveyor 3.0.23.0	Processed composite data file (zmt and clipping to ±3nT).	18/08/15	D.J.Sabin
Mag\comps\J621-mag-proc-hpf.xcp	TerraSurveyor 3.0.23.0	Processed composite data file (zmt, high pass filter and clipping to ±3nT).	18/08/15	D.J.Sabin
Graphic data - path: J621 Henstridge\Data				
Mag\graphics\ J621-mag-proc.tif	TerraSurveyor 3.0.23.0	TIF file showing a minimally processed greyscale plot clipped to ±3nT.	18/08/15	D.J.Sabin
Mag\graphics\ J621mag-proc.tfw	TerraSurveyor 3.0.23.0	World file for georeferencing TIF to OSGB36.	18/08/15	D.J.Sabin
Mag\graphics\ J621-mag-proc-hpf.tif	TerraSurveyor 3.0.23.0	TIF file showing a processed greyscale plot clipped to ±3nT.	18/08/15	D.J.Sabin
Mag\graphics\ J621mag-proc-hpf.tfw	TerraSurveyor 3.0.23.0	World file for georeferencing TIF to OSGB36.	18/08/15	D.J.Sabin
CAD data - path: J621 Henstridge\CAD				
J621 version 1.dwg	ProgeCAD 2014	CAD file for creating plots of greyscales, abstraction, interpretation and mapping. Grid coordinates as OSGB. AutoCAD 2010 format.	18/08/15	K.T.Donaldson
Text data - path: J621 Henstridge\Documentation				
J621 report.odt	OpenOffice.org 3.0.1 Writer	Report text as an Open Office document.	18/08/15	K.T.Donaldson

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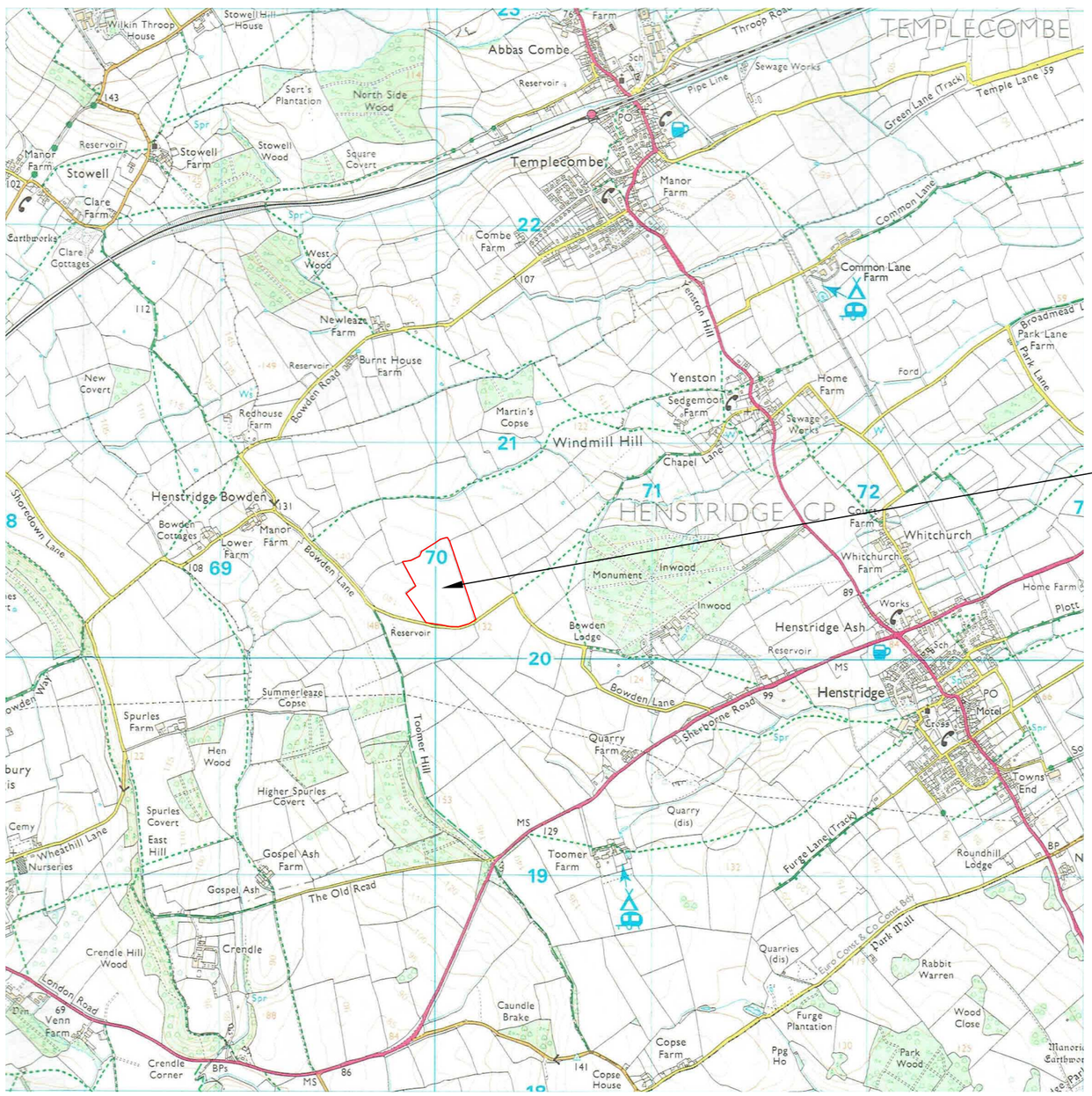
Henstridge
Somerset

Map of survey area



Survey location

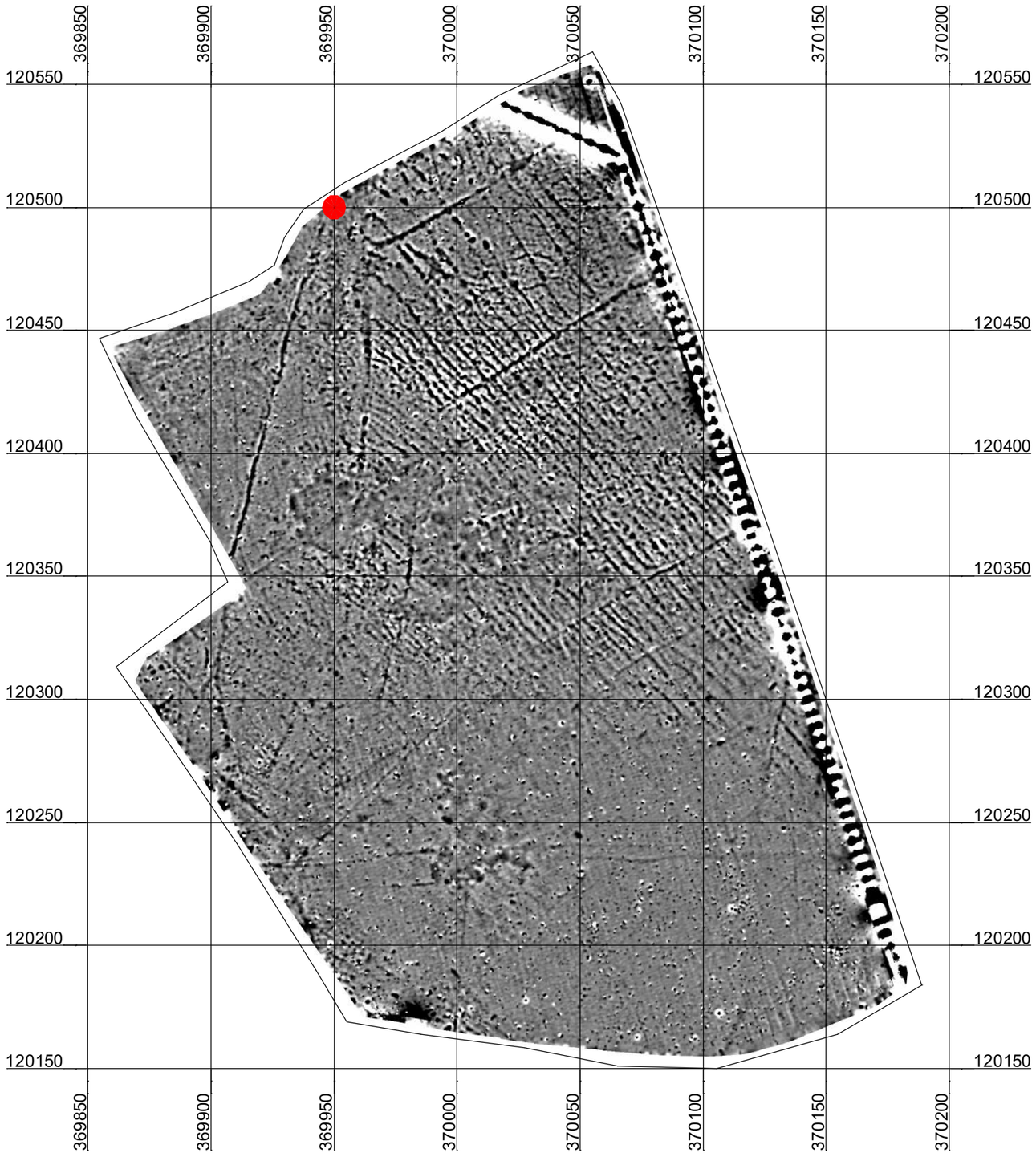
Site centred on OS NGR
ST 70015 20315

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

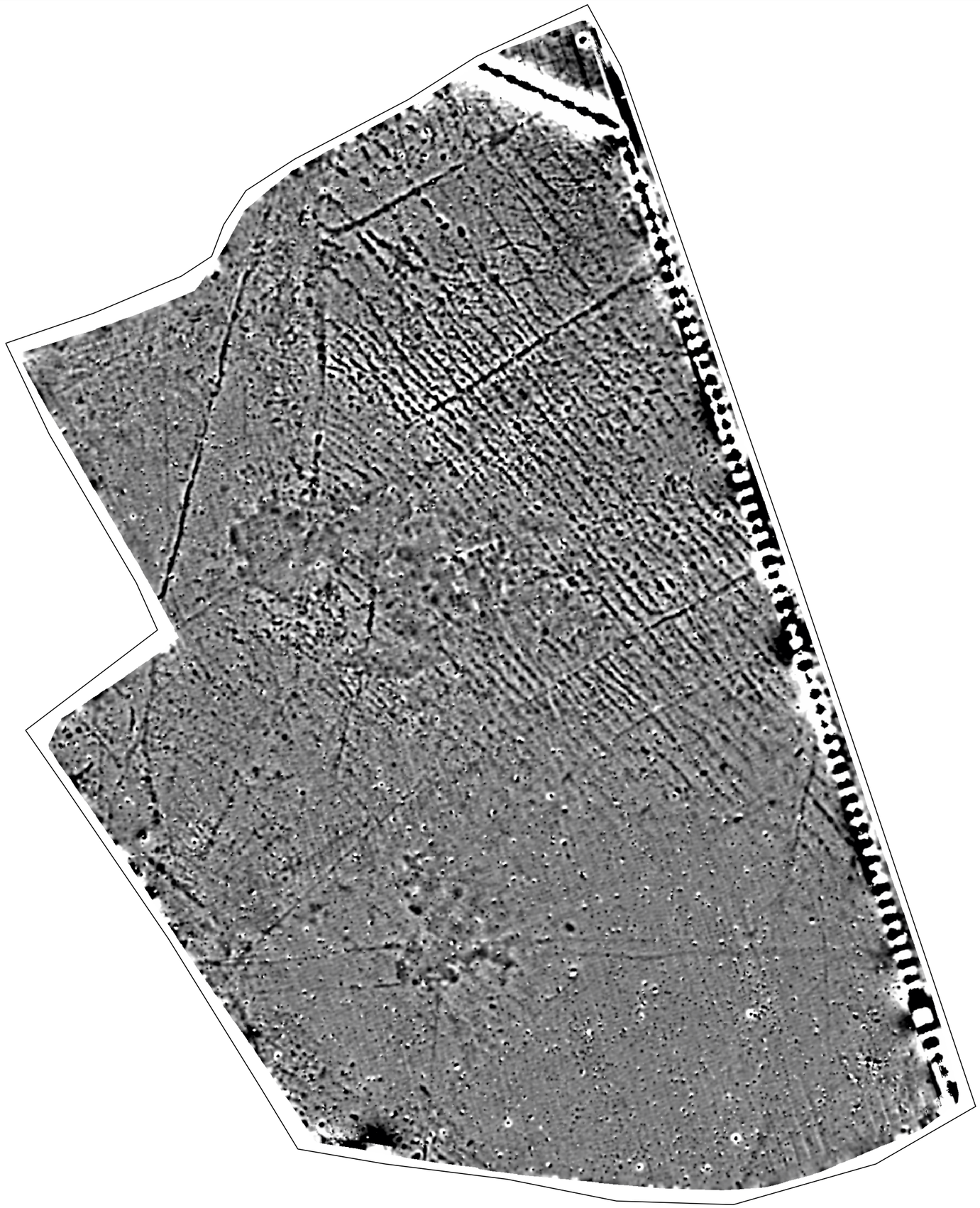
● 369950 120500

SCALE 1:2000

0m 20 40 60 80 100m

SCALE TRUE AT A3

FIG 02



N

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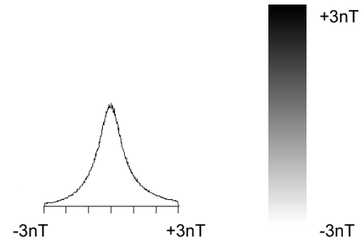
Greyscale plot of minimally processed magnetometer data



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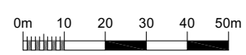
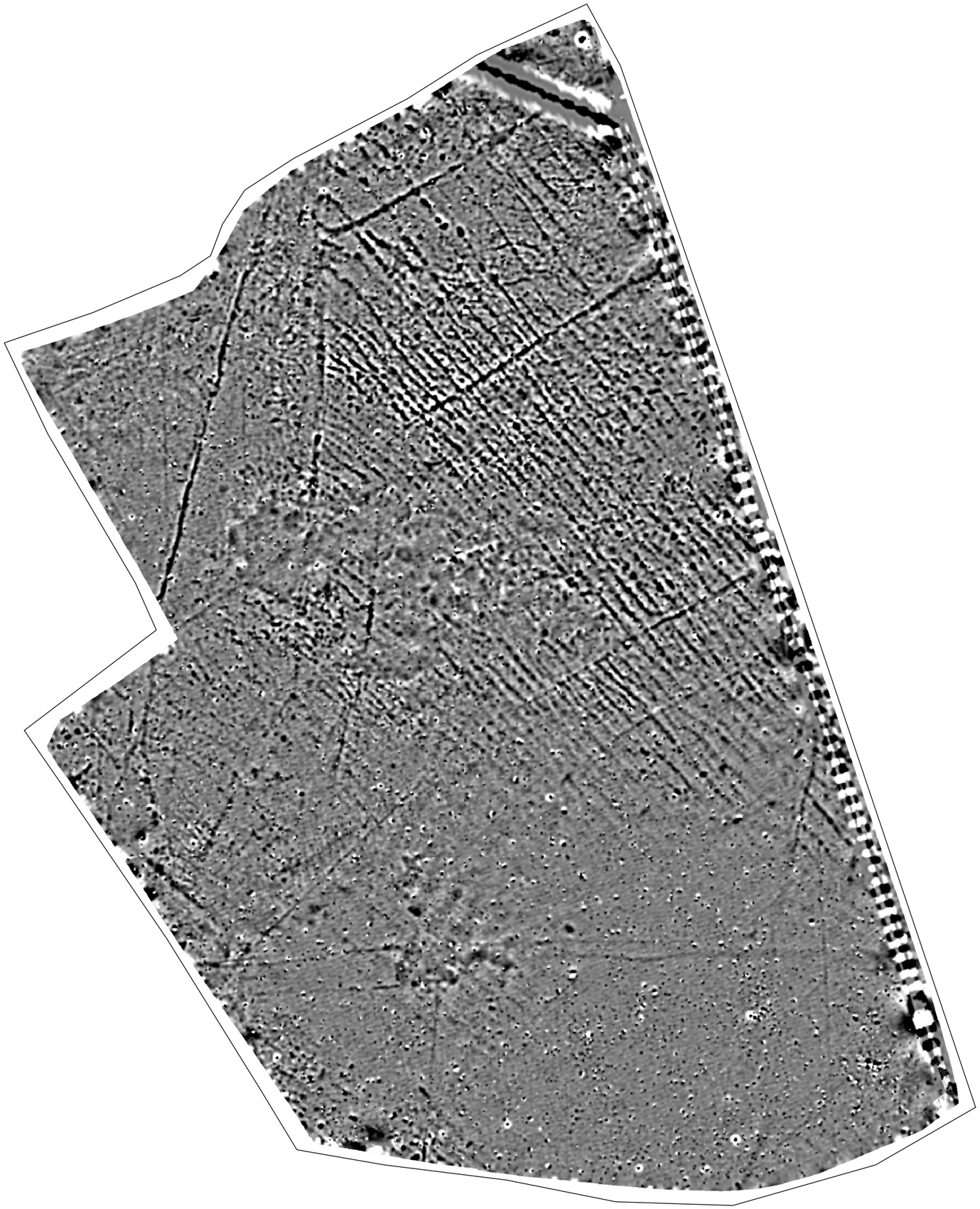


SCALE TRUE AT A3

FIG 03



N

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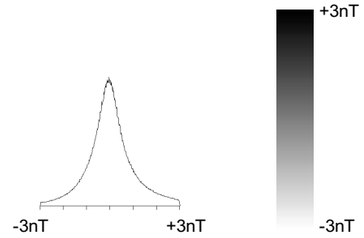
Greyscale plot of filtered magnetometer data



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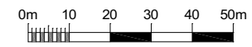

SCALE TRUE AT A3

FIG 04

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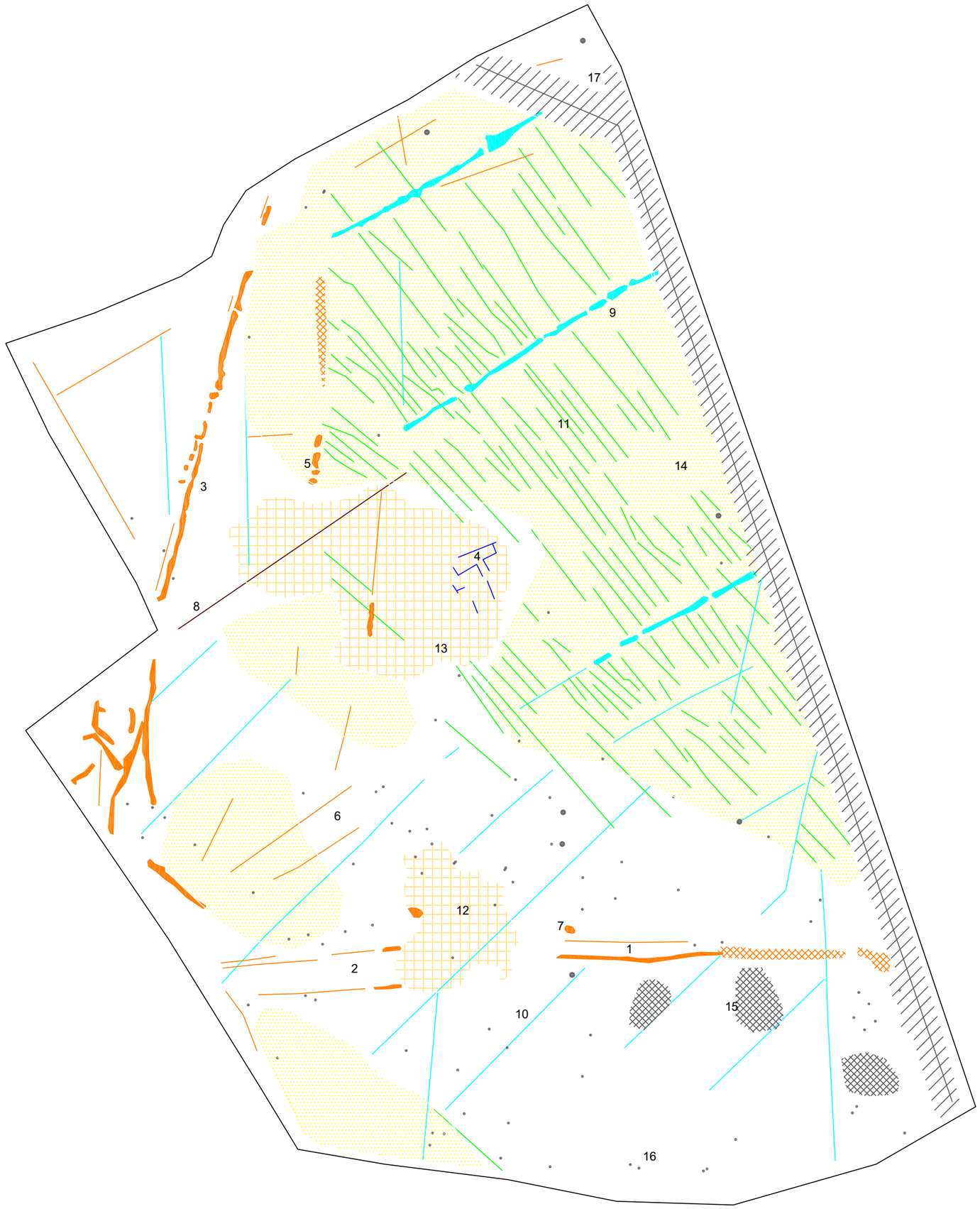

Abstraction and interpretation of magnetometer anomalies

- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - possible land drain
- Positive linear anomaly - possible former field boundary
- Negative linear anomaly - material of low magnetic susceptibility
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Variable magnetic response - of natural origin
- Variable magnetic response - quarrying
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 05