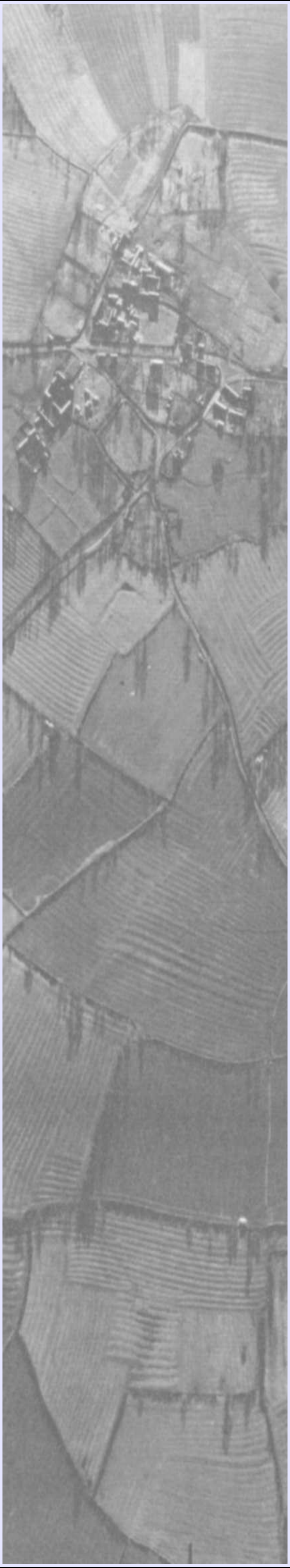
Archaeological Surveys Ltd



Land at Soho Farm
Leigh upon Mendip
Somerset

MAGNETOMETER SURVEY REPORT

for

AC Archaeology Ltd

David Sabin and Kerry Donaldson

April 2013

Ref. no. 473

ARCHAEOLOGICAL SURVEYS LTD

Land at Soho Farm Leigh upon Mendip Somerset

Magnetometer Survey Report

for

AC Archaeology Ltd

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

Survey dates – 15th & 17th April 2013
Ordnance Survey Grid Reference – **ST 69905 47983**

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SUMMARY

A detailed magnetometer survey was undertaken by Archaeological Surveys Ltd on land at Soho Farm, Leigh upon Mendip in Somerset. The results revealed a number of positive linear, rectilinear and discrete anomalies that may relate to natural features within the underlying Carboniferous limestone bedrock. The site also contained a cluster of strongly magnetic discrete anomalies surrounded by magnetic debris. Although these may be modern in origin, iron tap slag was noted on the field surface in the vicinity of these anomalies, and this may indicate early industrial activity.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys was commissioned by AC Archaeology, on behalf of Aardvark EM, to undertake a magnetometer survey of an area of land at Soho Farm, Leigh upon Mendip, Somerset. The site has been outlined for the proposed development of a solar array and the survey forms part of an archaeological assessment of the site.

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 at Soho Farm, north east of Leigh upon Mendip and immediately west of the Mells parish boundary in Somerset. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 69905 47983, see Figures 01 and 02.

1.3.2 The geophysical survey covers approximately 2.9ha of roughly ploughed arable land within a single field. The site slopes down gently towards the north.

1.3.3 The ground conditions across the site were generally poor due to the very uneven conditions caused by recent ploughing. A small zone at the southern end of the site was also waterlogged and unsurveyable. Weather conditions during the survey were dry but very windy

1.4 Site history and archaeological potential

1.4.1 An Historic Environment Assessment has been carried out for the site by AC Archaeology (2012). This outlines that the site was enclosed some time before 1682, and subdivided into two prior to 1839. This field boundary was removed by 1969. No sites or findspots exist within the site, although there are a limited number of them in the surrounding area. These include prehistoric worked flint 400m to the south, cropmarks of a possible Roman building 500m to the south and a possible field system 500m to the east. Two Roman coin hoards were found to the south, although the exact location is not known. The site lies immediately west of Mells Park, which was recorded as a Deer Park from the early 17th century. The nearest scheduled monument is 19th century Vobster Breach Colliery 750m to the north.

1.4.2 Linear and rectilinear cropmarks have been recorded from aerial photographs within the southern part of the site, although they may relate to geological, rather than archaeological features. The geophysical survey may locate archaeological anomalies should they exist within the site; however, the underlying geology is likely to result in anomalies that may be difficult to distinguish from cut features with an anthropogenic origin.

1.4.3 During the course of the survey, several flint implements were observed on the field surface. They appeared widespread across the field with no particular concentrations. The implements consisted mainly of various retouched scrapers and blades. In addition, the northern half of the field was observed to contain tap slag from iron smelting. The material appeared dense and may be indicative of early iron working in the vicinity.

1.5 Geology and soils

1.5.1 The underlying geology in the southern half of the site is Carboniferous Clifton Down Limestone Formation with Oxwich Head Limestone Formation in the northern half (BGS, 2013).

1.5.2 The overlying soils across the site are from the Crwbin association which are brown rankers. These consist of very shallow and shallow, well-drained, loamy soils over Carboniferous limestone (Soil Survey of England and Wales, 1983).

1.5.3 The geophysical survey is likely to result in linear, discrete and rectilinear anomalies that are associated with joints, fissures and cracks in the underlying geology.

1.5.4 Field observations during the course of the survey noted the presence of a large number of weathered stones on the field surface, most particularly in the southern half of the field. The stone was clearly Carboniferous limestone and many pieces appeared chemically weathered possibly indicating that they may have previously been part of an exposed limestone bench or pavement (natural karst landform). A concentration of stone was observed to lie along a slight linear bank observed to extend beyond the field boundary to the west. It is likely that this topographic feature marks the joint between limestone beds having different hardnesses and, therefore, different rates of erosion.

1.5.5 The surface stone had clearly been ploughed up recently and many pieces were over 0.3m in diameter and liable to cause damage to agricultural machinery. Many pieces had been moved and dumped the western boundary. There was no clear evidence that any of the stone had been displaced from structural remains.

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 Bartington Grad 601-2 gradiometers. The instruments effectively measure a magnetic gradient between two fluxgate sensors mounted vertically 1m apart. Two sets of sensors are mounted on a single frame 1m apart horizontally.

2.2.2 The instruments are extremely sensitive and are able to measure magnetic variation to 0.01nanoTesla (nT), with an effective resolution of 0.03nT. The data are limited to ±100nT when surveying with the highest sensitivity. All readings are saved to an integral data logger for analysis and presentation.

2.2.3 The instruments are operated according to the manufacturer's instructions with consideration given to the local conditions. An adjustment procedure is required, prior to collection of data, in order to balance the sensors and remove the effects of the Earth's magnetic field; further adjustment is required during the survey due to instrument drift often associated with temperature change.

2.2.4 It can be very difficult to obtain optimum balance for the sensors due to localised magnetic vectors that may be associated with large ferrous objects, geological/pedological features, 'magnetic debris' within the topsoil and natural temperature fluctuations. Imperfect balance results in a heading error often visible as striping within the data; this can be effectively removed by software processing and generally has little effect on the data unless extreme.

2.2.5 The Bartington gradiometers undergo regular servicing and calibration by the manufacturer. A current assessment of the instruments is shown in Table 1 below.

Sensor type and serial numbers	Bartington Grad - 01 – 1000 Nos. 084, 085, 242 and 396
Date of certified calibration/service	Sensors 084 and 085 - 17th August 2012 (due Aug 2014) Sensors 242 and 396 - 14th October 2011 (due Oct 2013)
Bandwidth	12Hz (100nT range) both sensors
Noise	<100pT peak to peak
Adjustable errors	<2nT

Table 1: Bartington fluxgate gradiometer sensor calibration results

The instruments were considered to be in good working order prior to the survey, with no known faults or defects. However, during the initial set up and adjustment sensor 396 failed and no data were collected with it or with 242.

2.2.6 Data were collected at 0.25m centres along traverses 1m apart. The survey area was separated into 40m by 40m grids (1600m²) giving 6400 measurements per grid. This sampling interval is very effective at locating archaeological features and is the recommended methodology for archaeological prospection (English Heritage, 2008).

2.2.7 The survey grids were set out to the Ordnance Survey OSGB36 datum using a Leica GS10 RTK GPS. The GPS is used in conjunction with Leica's SmartNet service, where positional corrections are sent via a mobile telephone link. Positional accuracy of around 10 – 20mm is possible using the system. The instrument is regularly checked against the ETRS89 reference framework using Ordnance Survey ground marker C1ST7784 (Horton).

2.2.8 The fixed orientation of survey grids based on the OSGB36 datum was considered appropriate given that the orientation of land boundaries was variable and consequently partial survey grids were unavoidable. In addition, there is an optimum north – south traverse direction for magnetic survey (English Heritage, 2008). Survey in this direction can produce anomalies with a higher contrast when compared to other orientations; this is a function of their presence within the Earth's magnetic field. A fixed grid across the site also simplifies its relocation should that be required.

2.3 Data processing and presentation

2.3.1 Magnetometry data downloaded from the Grad 601-2 data logger are analysed and processed in specialist software known as ArcheoSurveyor. The software allows greyscale and trace plots to be produced for presentation and display. Survey grids are assembled to form an overall composite of data (composite file) creating a dataset of the complete survey area. Appendix C contains specific information concerning the survey and data attributes and is derived directly from ArcheoSurveyor; this should be used in conjunction with information provided by Figure 02.

2.3.2 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:

- clipping of the raw data at ±30nT to improve greyscale resolution,
- clipping of processed data at ±3nT to enhance low magnitude anomalies,
- de-stagger is used to enhance linear anomalies,
- zero median/mean traverse is applied in order to balance readings along each traverse.

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.

2.3.3 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 survey area.

2.3.4 The main form of data display prepared for this report is the greyscale plot. Both 'raw' and 'processed' data have been shown 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.

2.3.5 Graphic raster images in bitmap format (.BMP) are initially prepared in

ArcheoSurveyor. Regardless of survey orientation, data captured along each traverse are displayed and processed by ArcheoSurveyor from left to right; this corresponds to a direction of south to north in the field. Prior to displaying against base mapping, raster graphics require a rotation of 90° anticlockwise to restore north to the top of the image upon insertion into AutoCAD.

2.3.6 The raster images are combined with base mapping using ProgeCAD Professional 2009 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.

2.3.7 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 2.9ha within one arable field.

3.1.2 Magnetic anomalies located can be generally classified as positive anomalies of an uncertain origin, anomalies associated with natural features, areas of magnetic debris and strong discrete dipolar anomalies.

3.2 Statement of data quality

3.2.1 Data are considered representative of the magnetic anomalies present within the site. Slight positional errors were corrected for in a small number of grids, and these are likely to have been caused by the rough ground conditions due to recent ploughing. The uneven surface may also have added slight noise to the data due to additional movement of the sensors and variability in the height and density of the soil relating to the deeply ploughed furrows.

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.

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 AREA 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 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 natural origin AS-ABST MAG NATURAL FEATURES AS-ABST MAG NATURAL LINEARS	Naturally formed magnetic anomalies are are caused by localised variability in the magnetic susceptibility of soils, subsoils and other drift or solid geologies. Anomalies may be amorphous, linear or curvilinear 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. Within solid geology differential material fills within natural joints and cracks and shallow soils can also result in anomalies.

Table 2: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 369905 147983, see Figures 04 & 05.

Anomalies with an uncertain origin

(1) – A discrete positive anomaly with a negative response and very strong magnitude (90nT) may indicate a ferrous object within the topsoil. However, it is in the vicinity of other magnetically enhanced anomalies (2) and patches of magnetic debris (7). While it is possible that it has a modern origin, it may relate to an area of intense burning.

(2) – Positive and dipolar anomalies in the vicinity of anomaly (1) have a response of up to 30nT. Their magnitude indicates that ferrous or other magnetically

thermoremnant material may be present and they may indicate pits or areas of burning.

(3) – Weakly positive linear anomalies located in the northern part of the survey area may be natural in origin, although many do not conform to the general overall pattern of other natural anomalies (5) within the site.

Anomalies possibly associated with natural features

(4) – A broad, positive anomaly crosses the site from east to west. Although located a little to the south of the mapped junction between the Clifton Down Limestone in the south and the Oxwich Head Limestone in the north, this anomaly is likely to be associated with this junction. The field surface contained a band of weathered limestone in the vicinity of this anomaly and there appears to be a low linear bank, possibly resulting from different hardnesses between the two limestone bands and, as a consequence, different rates of weathering and erosion.

(5) – Positive linear, rectilinear and discrete anomalies, primarily located within the southern half of the survey area appear to relate to ditch-like and pit-like features with a response of 3-5nT. However, the underlying Carboniferous limestone is known to contain joints, cracks, hollows and fissures and it is likely that these anomalies are associated with these natural features. The regular features are generally located within the Clifton Down Limestone Formation in the southern half of the site, with the more irregular features within the Oxwich Head Limestone Formation in the north

(6) – Positive anomalies located to the north of anomaly (4) may also indicate natural features. However, some of the anomalies are in the location of a former field boundary which contained a number of mature trees along its length and was removed prior to 1969, and it is therefore possible that they are associated.

Anomalies associated with magnetic debris

(7) – Small patches of magnetic debris can be seen clustered around anomalies (1) and (2). Although it is possible that these relate to spreads of magnetically thermoremnant or ferrous material that has been brought to site in relatively recent times, an in situ industrial process, cannot be ruled out. Iron tap slag was observed on the field surface within the vicinity of these anomalies.

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

4 CONCLUSION

4.1.1 The results of the detailed magnetometer survey indicate that the site contains numerous and widespread positive linear, rectilinear and discrete anomalies. Although there is some regularity to the morphology of many of these anomalies, the majority probably relate to natural features in the underlying geology. The site lies on the junction between two Carboniferous limestone formations, with Clifton Down Limestone in the south, apparently causing the rectilinear and linear anomalies, and Oxwich Head Limestone in the north, associated with more irregular and amorphous anomalies.

4.1.2 A small number of discrete anomalies with a strongly magnetic response may indicate pit-like features or areas of burning. They appear to be associated with weakly magnetic debris, which may relate to magnetically thermoremnant material. While it is possible for these anomalies to have a modern origin, the potential for some industrial activity cannot be ruled out. Iron tap slag was observed across a wide area in the vicinity of the anomalies.

5 REFERENCES

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British Geological Survey, 2013. *Geology of Britain viewer, 1:50 000 scale [online]* available from http://mapapps.bgs.ac.uk/geologyofbritain/home.html [accessed 18/4/2013].

English Heritage, 2008. *Geophysical survey in archaeological field evaluation. Research and Professional Service Guideline No.1.* 2nd ed. Swindon: English Heritage.

Institute for Archaeologists, 2002. *The use of Geophysical Techniques in Archaeological Evaluations*. IfA Paper No. 6. IfA, University of Reading.

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Soil Survey of England and Wales, 1983. *Soils of England and Wales, Sheet 5 South West England.*

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 gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 1m apart. The instrument is carried about 30cm 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 ±5nT and ±1nT 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.

De-stagger

Compensates for small positional errors within data collection by shifting the position of the readings along each traverse by a specified amount. Data lost at the end of each traverse are extrapolated from adjacent value in the same row.

Deslope

Corrects for striping and distortion caused by metal objects/services etc.. The process calculates a curve based on a polynomial best fit mathematical function for each traverse. This curve is then subtracted from the actual data.

Edge Match

Calculates the mean of the 2 lines (rows or columns) of data either side of the edge to match. It then subtracts the difference between the means from all datapoints in the selected area.

FFT (Fast Fourier Transform) spectral filtering

A mathematical process used to determine the frequency components of a traverse. Repetitive features, such as plough marks, produce characteristic spectral zones that can be suppressed allowing greyscale images to appear clearer.

Appendix C – survey and data information

Raw magnetometer data

COMPOSITE
Filename: J473-mag-raw.xcp
Instrument Type: Bartington (Gradiometer)
Units: nT
Surveyed by: on 17/04/2013
Assembled by: on 17/04/2013
Direction of 1st Traverse: 90 deg
Collection Method: ZigZag
Sensors: 2 @ 1.00 m spacing.
Dummy Value: 32702

Dimensions
Composite Size (readings): 800 x 160
Survey Size (meters): 200 m x 160 m
Grid Size: 40 m x 40 m
X Interval: 0.25 m
Y Interval: 1 m

Stats
Max: 30.00
Min: -30.00
Std Dev: 2.27
Mean: -0.72
Median: -0.86
Composite Area: 3.2 ha
Surveyed Area: 2.8921 ha

PROGRAM
Name: ArcheoSurveyor
Version: 2.5.19.3

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

Source Grids: 20
1 Col:0 Row:0 grids\01.xgd
2 Col:0 Row:1 grids\02.xgd
3 Col:0 Row:2 grids\03.xgd
4 Col:0 Row:3 grids\20.xgd
5 Col:1 Row:0 grids\04.xgd
6 Col:1 Row:1 grids\05.xgd
7 Col:1 Row:2 grids\06.xgd
8 Col:1 Row:3 grids\19.xgd
9 Col:2 Row:0 grids\07.xgd
10 Col:2 Row:1 grids\08.xgd
11 Col:2 Row:2 grids\09.xgd
12 Col:2 Row:3 grids\18.xgd
13 Col:3 Row:0 grids\10.xgd
14 Col:3 Row:1 grids\11.xgd
15 Col:3 Row:2 grids\12.xgd
16 Col:3 Row:3 grids\17.xgd
17 Col:4 Row:0 grids\13.xgd
18 Col:4 Row:1 grids\14.xgd
19 Col:4 Row:2 grids\15.xgd
20 Col:4 Row:3 grids\16.xgd

Processed magnetometer data

COMPOSITE
Filename: J473-mag-proc.xcp

Stats
Max: 3.00
Min: -3.00
Std Dev: 1.38
Mean: 0.08
Median: 0.00
Composite Area: 3.2 ha
Surveyed Area: 2.892 ha

Processes: 13
1 Base Layer
2 DeStripe Median Sensors: All
3 Clip from -3.00 to 3.00 nT
4 De Stagger: Grids: 01.xgd Mode: Both By: -1 intervals
5 De Stagger: Grids: 02.xgd Mode: Both By: -1 intervals
6 De Stagger: Grids: 03.xgd Mode: Both By: -1 intervals
7 De Stagger: Grids: 04.xgd Mode: Both By: -1 intervals
8 De Stagger: Grids: 05.xgd Mode: Both By: -1 intervals
9 De Stagger: Grids: 06.xgd Mode: Both By: -1 intervals
10 De Stagger: Grids: 07.xgd Mode: Both By: -1 intervals
11 De Stagger: Grids: 08.xgd Mode: Both By: -1 intervals
12 De Stagger: Grids: 09.xgd Mode: Both By: -1 intervals
13 Clip from -3.00 to 3.00 nT

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). The distribution of both hardcopy report and digital data is considered the responsibility of the Client unless explicitly stated in the survey Brief, Written Scheme of Investigation or other contractual agreement.

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

- ArcheoSurveyor version 2.5.19.3 (geophysical data analysis),
- ProgeCAD Professional 2009 (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:

- ArcheoSurveyor 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,
- photographic record in JPEG format.

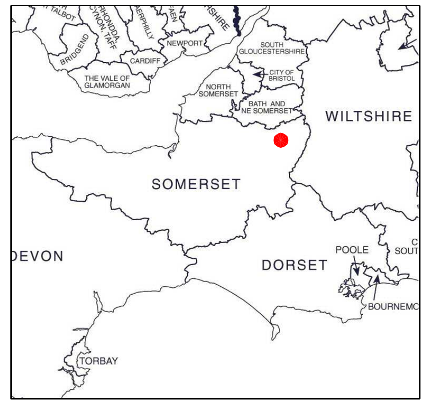
Archaeological Surveys Ltd

Geophysical Survey
Land at Soho Farm
Leigh upon Mendip
Somerset

Survey location

N

Map of survey area



● Survey location

Site centred on OS NGR
ST 69905 47983

SCALE 1:25 000

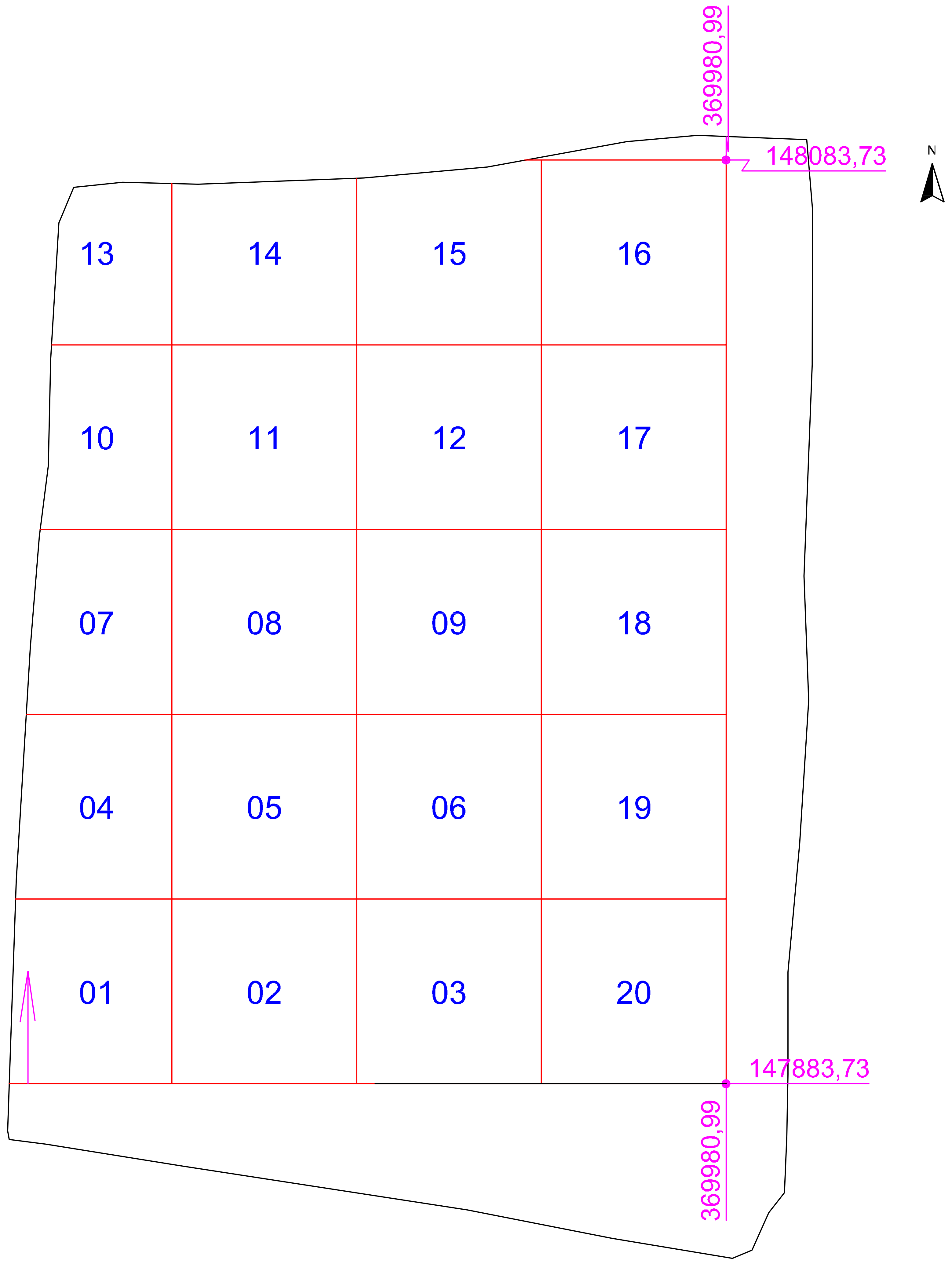
0m 500m 1000m

SCALE TRUE AT A3

FIG 01

Archaeological Surveys Ltd

Geophysical Survey
Land at Soho Farm
Leigh upon Mendip
Somerset



Referencing information

Grid coordinates based on Ordnance Survey OSGB36 datum

Grids set out using RTK GPS with Leica SmartNet correction data RTCMv2 format OSTN02 transformation

Survey grid size = 40m

Survey start and traverse direction

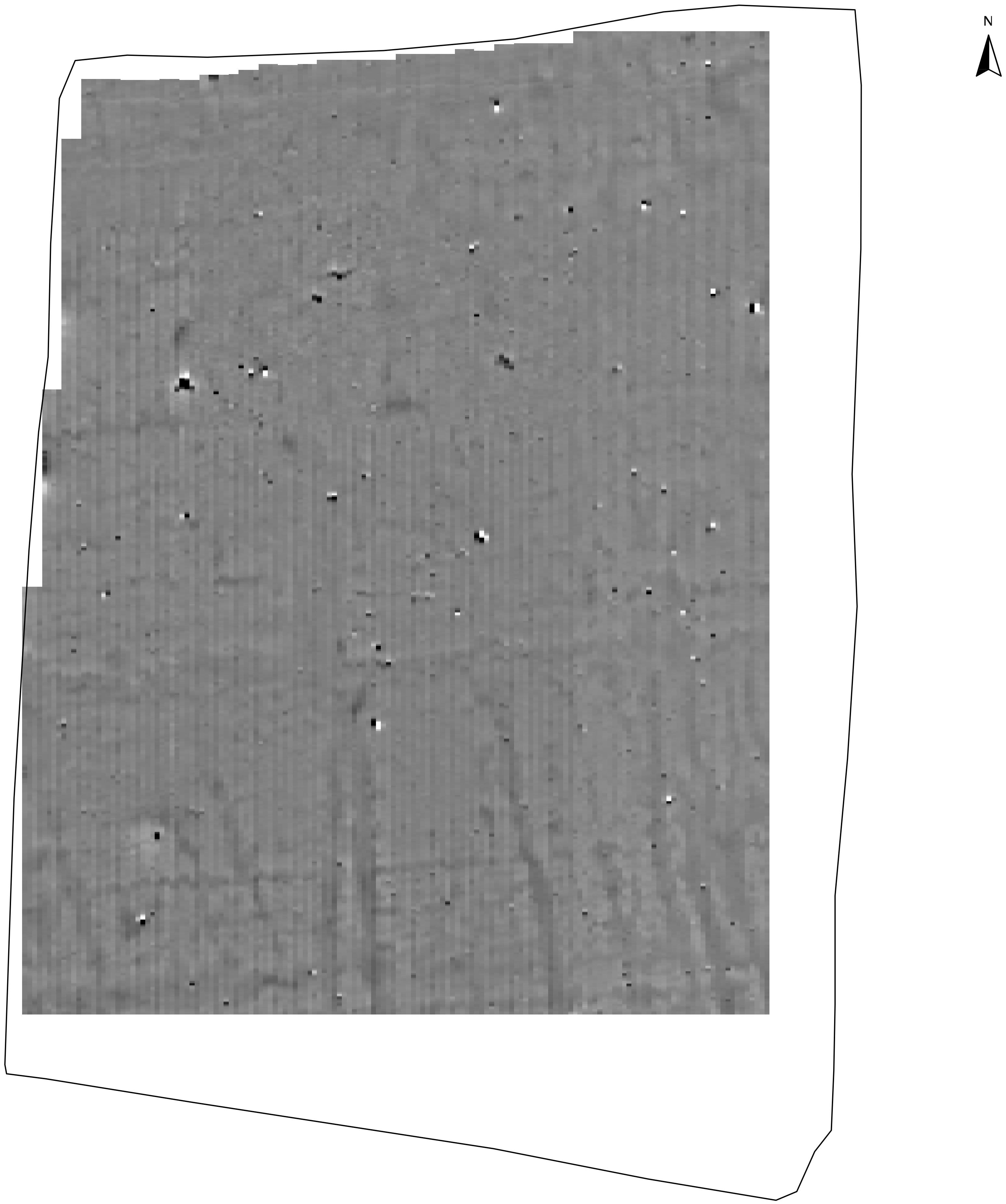
01 Grid reference number and filename

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 02



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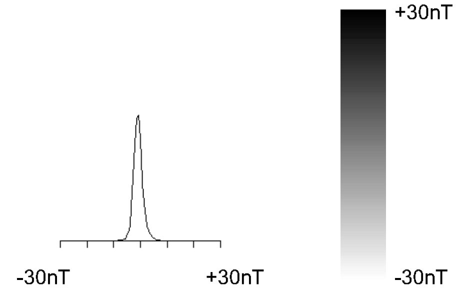
Geophysical Survey
Land at Soho Farm
Leigh upon Mendip
Somerset

Greyscale plot of raw magnetometer data

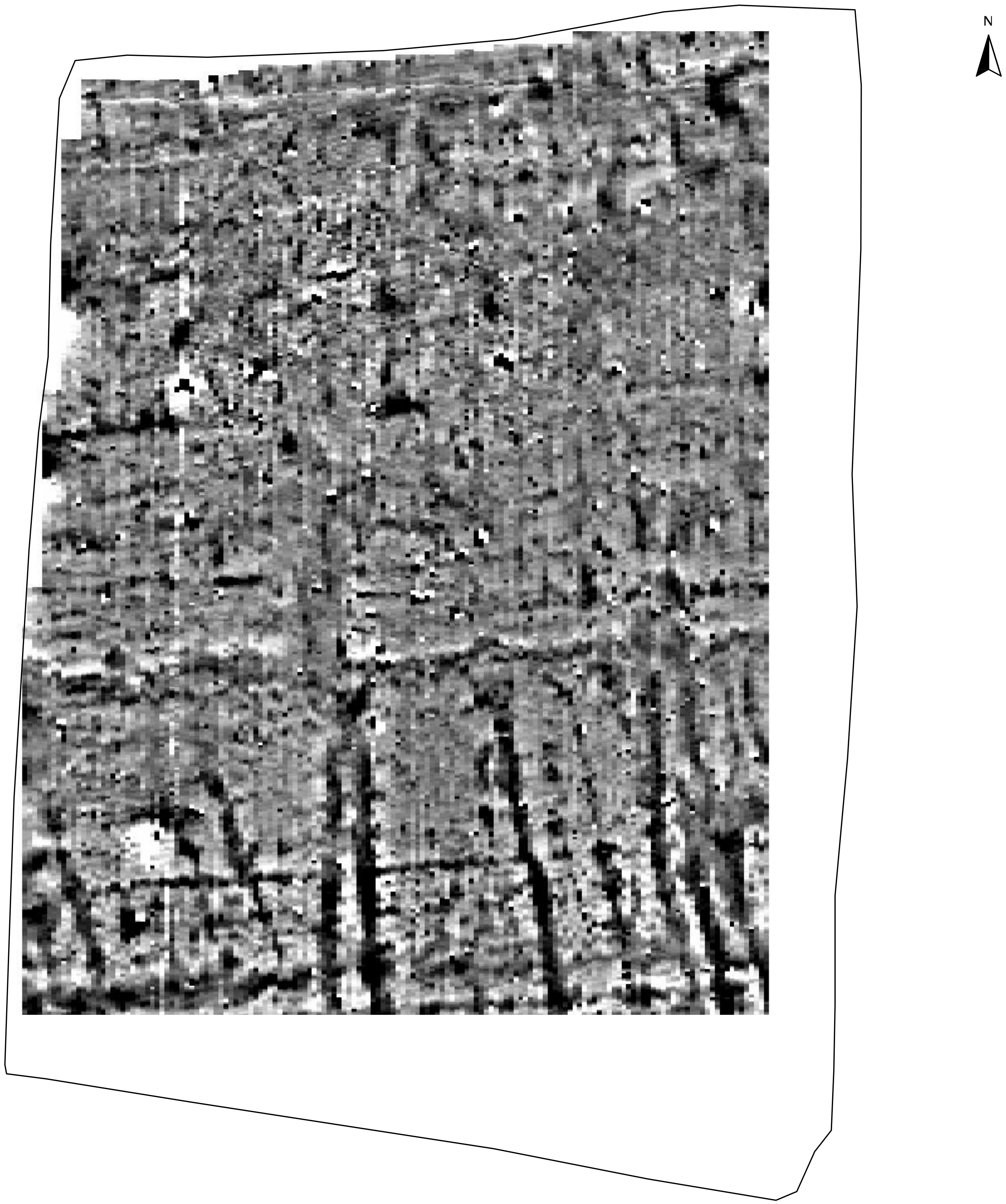


SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 03



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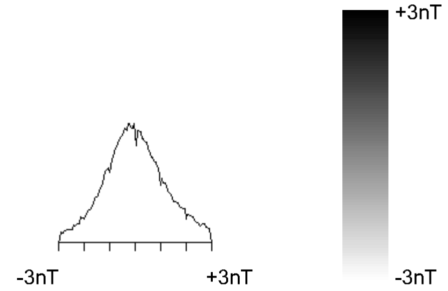
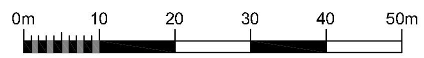
Greyscale plot of processed magnetometer data



SCALE 1:1000



SCALE TRUE AT A3

FIG 04

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Abstraction and interpretation of magnetometer anomalies

- Positive linear anomaly - possible ditch-like feature
- Discrete positive response - possible pit-like feature
- Variable magnetic response - of possible natural origin
- Positive linear anomaly - of possible natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 05