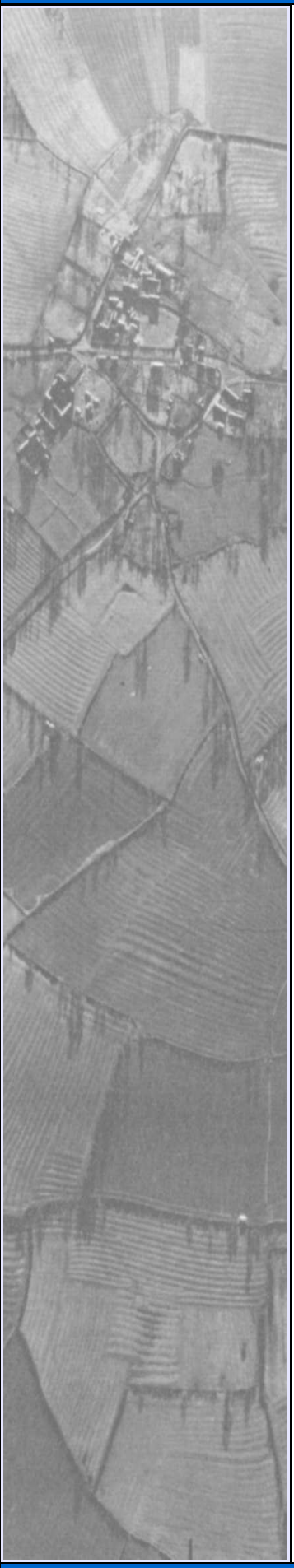

Land North and East of Barrow Farm
Chippenham
Wiltshire

MAGNETOMETER SURVEY REPORT

for

AMEC Environment & Infrastructure UK Ltd

David Sabin and Kerry Donaldson

April 2014

Ref. no. 534

ARCHAEOLOGICAL SURVEYS LTD

Land North and East of Barrow Farm
Chippenham
Wiltshire

Magnetometer Survey Report

for

AMEC Environment & Infrastructure UK Ltd

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

Survey dates – 26th March to 15th April 2014
Ordnance Survey Grid Reference – **ST 92350 75300**

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SUMMARY

Archaeological Surveys Ltd was commissioned by AMEC Environment & Infrastructure Ltd to undertake a magnetometer survey of an area of land to the north and east of Barrow Farm, Chippenham, Wiltshire. The site has been outlined for a proposed residential development. The survey located a number of positive linear and discrete anomalies within the site. The majority of the anomalies were very weak with many appearing fragmented and indistinct.

Although some anomalies corresponded to linear features identified within a RAF aerial photograph from 1949, many other features clearly visible within the photograph were not located in the survey. The site has been utilised for arable cultivation in recent decades and it is possible that the process of ploughing has truncated and eroded many features. It also appears that the underlying soils and geology may not produce significant magnetic contrast unless subject to intensive periods of occupation and/or industrial activity. There is also evidence of widespread introduction of ferrous and other magnetically thermoremnant objects into the topsoil, presumably through manuring or soil conditioning.

A number of positive anomalies and patches of magnetic debris are evident along the north eastern edge of the site (Area 2). These patches correspond to spreads of possible building material and medieval and post-medieval pottery scatters that were evident on the ground surface at the time of survey. These appear to relate to former dwellings and land plots. A possible associated boundary feature may also have been located.

Also close to the eastern edge of the site (Area 3), are a number of positive responses that may also have archaeological potential. Although their morphology is not clearly defined, they may relate to cut features or areas of burning and there appears to be associated magnetic debris in the vicinity. While it is possible that some of the magnetic debris is of modern origin, medieval and post-medieval pottery was visible on the ground surface and evidence for post-medieval kilns and a possible workshop are recorded in the area on the Wiltshire HER.

Within the western part of the site (Area 4) are a group of positive and negative anomalies. It is possible that they relate to earthwork features formerly visible on the ground within the site.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by AMEC Environment & Infrastructure Ltd to undertake a magnetometer survey of an area of land to the north and east of Barrow Farm, Chippenham, Wiltshire. The site has been outlined for a proposed residential development 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 (2014). The WSI was approved by Melanie Pomeroy-Kellinger, County Archaeologist for Wiltshire 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 to the north and east of Barrow Farm, on the northern edge of Chippenham, within the parish of Langley Burrell Without in Wiltshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 92350 75300, see Figures 01 and 02.

1.3.2 The geophysical survey covers approximately 44ha of arable land split between 7 separate survey areas. Area 1 lies at the north western edge of the site and is bordered to the west by Bird's Marsh woods. Area 2 lies in the north eastern part of the site and is bordered to the east by the B4069. Area 3 lies to the south of Areas 1 and 2, and Area 4, to the south west of Area 1, is also bordered by Bird's Marsh woods. Area 5 lies to the south of Area 3 in the central part of the site, with Areas 6 and 7 in the south eastern part of the site, also bordered to the east by the B4069.

1.3.3 Areas 1 to 5 contained a short arable crop during the course of the survey.

Areas 6 and 7 contained stubble and self-set crop growth. Almost all of the areas contained waterlogged and boggy ground that prevented survey across small zones within the site. Deeply rutted ground was also encountered, most notably in Area 6 where survey was very difficult along its western side. Manure heaps within Area 6 also prevented survey within small zones.

1.3.4 The ground conditions across the site were variable with some very poor zones but the majority of the site was favourable for the collection of magnetometry data. Weather conditions during the survey were variable but generally fine.

1.4 Site history and archaeological potential

1.4.1 A previous magnetometer survey undertaken within land immediately to the south west (Archaeological Surveys, 2008) located a number of anomalies within the site that related to ditches, pits and enclosures, possibly indicating a Romano-British farmstead. These were subsequently evaluated, revealing cultural material from the 2nd and 3rd centuries and a second area of activity from the medieval period was also identified (Cotswold Archaeology, 2009).

1.4.2 The survey area contains a number of findspots and sites identified from aerial photographs, fieldwalking and archaeological evaluation to the west of Barrow Farm. The majority of the recorded site and findspots within the survey area relate to the medieval period and include pottery sherds and metal artefacts, linear earthworks or former earthwork features, a probable kiln to the north of Pound House and the northern limit of a known area of medieval settlement to the west of Barrow Farm. A single flake of Palaeolithic date is also recorded to the north of Pound House and the possible location of a Bronze Age Barrow is recorded to the west of Barrow Farm. This area was subject to archaeological evaluation in 2009, which revealed an area of medieval occupation. The burial monument was not identified.

1.4.3 During the course of the survey, medieval pottery sherds were noted within the southern part of Area 1 in between a pond and a very boggy area that could not be surveyed. Fragments of stone were also noted in the vicinity. Along the eastern side of Area 2 medieval pottery and post-medieval pottery sherds were noted along with stone scatters. A third area of late medieval or post-medieval pottery sherds was noted along the eastern side of Area 3 to the north of Pound Cottage. It was also noted that earthworks in the south western part of Area 4 that were visible during the 2008 geophysical survey (see 1.4.1) could no longer be seen. It was considered likely that this may relate to an intensification of arable farming within more recent years.

1.4.4 An RAF aerial photograph taken on the 2nd February 1949 (RAF/541/222), shows the site containing a number of linear and curvilinear ditches, earthwork features, linear boundaries and ridge and furrow in each of the survey areas (see Figure 15). The vast majority of them appear to have been subsequently removed by more recent agricultural activity within the site.

1.4.5 The presence of a number of findspots and possible areas of occupation indicate that there is potential for the geophysical survey to locate anomalies that may relate to archaeological features. Former ditches, field boundaries and agricultural activity recorded in the 1949 RAF aerial photograph may also be located if they have survived subsequent ground disturbance and agricultural activity.

1.5 Geology and soils

1.5.1 The underlying solid geology across the site is sandstone from the Kellaways Sand Member (BGS, 2014).

1.5.2 The overlying soil across the survey area is from the Burlesdon association, which is a stagnogleyic, argillic brown earth. It consists of a deep, fine, loamy soil with slowly permeable subsoil and some seasonal waterlogging (Soil Survey of England and Wales, 1983). The site contained evidence of extensive and severe waterlogging caused by the exceptionally wet winter prior to the survey. Conditions improved rapidly through the survey period although some very poor areas remained as outlined in section 1.3.3 above. Besides the boggy areas, soils were frequently rilled and sand had been washed out and redeposited to a depth of several centimetres in places.

1.5.3 The magnetometer survey carried out on similar soils and geology on land immediately to the west, located a number of positive linear anomalies that relate to a possible Roman site (Archaeological Surveys, 2008). However, the survey did not locate cut features identified during evaluation as relating to medieval ditches, pits and gullies (Cotswold Archaeology, 2009). It is possible, therefore, that the magnetometer survey may not locate cut features with poor magnetic contrast between their fill and the material into which they were cut.

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.

2.3 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 ±10 nT to enhance low magnitude anomalies,
- zero median traverse at 1.5SD is applied in order to balance readings along each traverse.
- a high pass filter is applied to smooth data and remove spurious readings caused by uneven surfaces and agricultural tracks.

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 each survey area.

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 0.2m along each survey track. A GeoTIFF file (OSGB36) is produced by TerraSurveyor software.

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 a total of 7 survey areas covering approximately 44ha.

3.1.2 Magnetic anomalies located can be generally classified as positive linear and discrete positive responses of archaeological potential, positive and negative anomalies of an uncertain origin, anomalies relating to land management, linear anomalies of an agricultural origin, 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.

3.1.3 Anomalies located within each survey area 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. Soil noise is high but this in part is related to data collection with sensors mounted extremely close to the ground surface. The soils were considered likely to produce poor magnetic contrast and weak anomalies; using a very low sensor height optimises the strength of anomalies as there is a very rapid fall off in the strength of the vertical component of a magnetic field as measured by the fluxgate gradiometers.

3.2.2 The survey results tend to suggest generally poor magnetic contrast relating to the sandy soil although areas of intense activity along the eastern side of

the site have produced strong anomalies.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A 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 each survey area.

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 ARCHAEOLOGY AS-ABST MAG NEG ARCHAEOLOGY	Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, former land boundaries, etc. Negative anomalies may relate to former earthwork features or ditches filled with material with low magnetic susceptibility (eg sand).
Anomalies with an uncertain origin AS-ABST MAG POS LINEAR UNCERTAIN AS-ABST MAG NEG LINEAR UNCERTAIN AS-ABST MAG POS DISCRETE 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). 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 with an agricultural origin AS-ABST MAG AGRICULTURAL AS-ABST MAG RIDGE AND FURROW	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 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.
Anomalies with a natural origin AS-ABST MAG NATURAL FEATURES	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 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. Igneous and metamorphic activity can lead to anomalies within more solid geology.

Table 1: List and description of interpretation categories

3.4 List of anomalies - Area 1

Area centred on OS NGR 392350 175580, see Figures 05 & 06.

Anomalies with an uncertain origin

(1) – A positive curvilinear anomaly is located near the centre of the survey area. The response is generally less than 1nT; however, it is possible that this relates to a natural ditch/gully or boundary feature visible on the 1949 RAF aerial photograph.

(2) – Short positive linear anomaly located close to the south eastern corner, similar in form and magnitude to anomaly (1).

(3) – Positive linear anomalies located in the south western part of the survey area. The anomalies are very weak and indistinct and it is not possible to determine if they relate to cut features. Sherds of medieval pottery were visible on the ground in the vicinity.

(4) – The survey area contains a number of very weakly positive linear anomalies. The response is generally less than 0.5nT and they are very indistinct and fragmented. It is not possible to determine if they relate to cut features.

(5) – Two discrete positive anomalies have been located. With a response of 2nT they may relate to cut, pit-like features.

Anomalies associated with land management

(6) – The survey area contains evidence for three formerly mapped land boundaries. Only one can be seen as a positive linear response, mainly they have

a response associated with magnetic debris.

Anomalies with an agricultural origin

(7) – A series of parallel linear anomalies can be seen within the survey area. They relate to agricultural activity.

Anomalies associated with magnetic debris

(8) – Patches of magnetic debris are evident within the south western part of the survey area. Medieval pottery was visible on the ground surface in the vicinity during the survey.

(9) – A number of patches of magnetic debris can be seen in the northern part of the survey area. It is possible that they relate to material used to consolidate the ground or infill former field boundaries.

(10) – Strong, discrete, dipolar anomalies are a response to ferrous and other magnetically thermoremnant objects within the topsoil. All survey areas contain these numerous and widespread responses and it is likely that this material has been incorporated into the topsoil during the process of manuring.

Anomalies with a modern origin

(11) – Zones of magnetic disturbance are a response to electricity poles within the survey area.

3.5 List of anomalies - Area 2

Area centred on OS NGR 392660 175610, see Figures 07 & 08.

Anomalies of archaeological potential

(12) – Positive linear and discrete anomalies are associated with spreads of weakly magnetic debris along the eastern edge of the survey area. The anomalies have a response of generally between ±2-8nT, indicating a lack of strongly magnetic objects. The anomalies appear to be associated with former possible medieval dwellings and land plots.

(13) – An “L” shaped negative linear anomaly is flanked by positive responses. The anomaly extends west south westwards from the eastern boundary for approximately 90m where it then extends southwards for a further 50m. It appears to relate to a former boundary feature.

Anomalies with an uncertain origin

(14) – A weakly positive linear anomaly is located close to the southern end of anomaly (13). It is possible that it is a westward continuation of the feature.

(15) – The survey area contains a number of weakly positive and some negative linear anomalies. They are weak, fragmented and do not correspond to features visible within aerial photographs, although cut, ditch-like features should be considered.

(16) – A number of pit-like responses can be seen within the survey area. Some may relate to ground disturbance associated with agricultural activity.

(17) – Discrete positive responses in the north eastern part of the survey area are close to others with archaeological potential. However, these have a much stronger response (>30nT) than others associated with anomalies (12).

Anomalies associated with land management

(18) – Negative linear anomaly associated with a gully within the field, likely to represent a former boundary ditch.

Anomalies with an agricultural origin

(19) – Parallel linear anomalies may be a response to former ridge and furrow. Anomalies to the south may also relate to ridge and furrow, or may be more modern in origin.

Anomalies associated with magnetic debris

(20) – A patch of very strongly magnetic debris in the vicinity of anomalies (12) relates to ferrous material used to infill a pond.

(21) – Patches of strongly magnetic debris are evident along the western edge of the survey area.

3.6 List of anomalies - Area 3

Area centred on OS NGR 392525 175415, see Figures 05 to 10.

Anomalies of archaeological potential

(22) – A group of positive linear and discrete anomalies are located to the north west of the property boundary of Pound Cottage. It is possible that these are associated with cut features such as ditches and pits, or areas of burning.

(23) – A cluster of discrete positive responses are located close to two patches of

magnetic debris. Although it is possible that the magnetic debris is modern in origin, there is evidence for medieval and post medieval pottery on the ground surface and kilns are listed in the vicinity, therefore an archaeological origin should be considered.

Anomalies with an uncertain origin

(24) – A positive linear anomaly extends across the eastern part of the survey area and may relate to a former land boundary, although none have been mapped.

(25) – The survey area contains a number of positive and negative linear anomalies that do not correspond to features identified within the 1949 RAF aerial photograph. It is possible that they relate to cut features.

Anomalies associated with land management

(26) – Weakly positive linear and curvilinear anomalies may relate to a boundary feature visible on aerial photographs.

(27) – A negative linear anomaly in the eastern part of the survey area may relate to a former boundary feature or agricultural mark.

(28-30) – Positive linear anomaly (28) with a response of 2-4nT appears to relate to a linear depression seen within the 1949 aerial photograph. There is a gap in the response, but it does appear to extend southwards as anomaly (29). It may form a triangular boundary feature with anomaly (30) to the south east.

(31) – A positive linear anomaly may relate to a linear feature identified within the 1949 aerial photograph.

(32) – A formerly mapped field boundary that separated the field into two is associated with magnetic debris.

Anomalies with an agricultural origin

(33) – Linear anomalies appear to relate to modern cultivation practices.

3.7 List of anomalies - Area 4

Area centred on OS NGR 392100 175345, see Figures 11 & 12.

Anomalies of archaeological potential

(34) – A negative anomaly flanked by positive responses is located close to the south western corner of the site. An earthwork feature is visible on aerial photographs and it is possible that it is associated.

Anomalies with an uncertain origin

(35) – Discrete positive responses are located to the south of anomaly (34). The response is over 30nT, which may indicate that it includes ferrous material; however, an association with anomaly (34) should also be considered.

(36) – The survey area contains a number of short or fragmented positive linear anomalies. They do not correspond to features visible on the aerial photograph from 1949, and it is not possible to determine their origin.

(37) – A number of discrete positive anomalies are located within the survey area. It is possible that they relate to pit-like features, although their origin is uncertain.

Anomalies associated with land management

(39) – Area 4 would have been three separate land parcels until relatively recently. The location of former field boundaries can be seen within the data as magnetic debris.

Anomalies with an agricultural origin

(40) – The survey area contains several series of linear anomalies which appear to relate to former ridge and furrow or divisions in strip field cultivation.

(41) – Parallel linear anomalies appear to relate to recent agricultural activity.

Anomalies with a modern origin

(42) – Magnetic disturbance has been caused by a buried service that extends along the southern edge of the survey area. It continues to the east of Barrow Farm within Area 6 (63).

3.8 List of anomalies - Area 5

Area centred on OS NGR 392450 175285, see Figures 09 & 10.

Anomalies with an uncertain origin

(43) – A short, positive linear anomaly oriented north to south may be associated with a linear feature seen on the 1949 aerial photograph.

(44) – The survey area contains a number of very weakly positive linear anomalies. It is possible that some may relate to agricultural activity, others do not appear to form any coherent pattern and their origin cannot be confidently interpreted.

Anomalies associated with land management

(45) – Magnetic debris and some positive magnetic response is associated with a formerly mapped field boundary.

Anomalies with an agricultural origin

(46) – Linear anomalies appear to be related to agricultural activity, possibly ridge and furrow.

Anomalies associated with magnetic debris

(47) – The survey area contains a number of patches of magnetic debris. It is possible that they are associated with ground consolidation.

3.9 List of anomalies - Areas 6 & 7

Area centred on OS NGR 392540 175100, see Figures 13 & 14.

Anomalies with an uncertain origin

(48) – A positive linear anomaly within the central part of Area 7. It extends towards the site of a former pond (58) and boundary (56) and is visible on the 1949 aerial photograph.

(49) – In the south eastern part of Area 6 are a number of positive linear, curvilinear and discrete responses. Although some are parallel with former ridge and furrow features visible on the 1949 aerial photograph, many are not and they may relate to cut features.

(50) – Area 6 contains a number of short or fragmented positive linear anomalies that do not generally relate to any features visible on the 1949 aerial photograph. They are very weak and indistinct and their origin cannot be confidently interpreted.

(51) – A positive linear anomaly is located in the central part of the survey area. It extends in a north north westerly direction and it is possible that it continues northwards as a negative linear anomaly.

(52) – A number of positive linear and discrete responses are located in the north eastern part of Area 6. Some of the responses may relate to former ridge and furrow.

(53) – Two negative linear anomalies are located in the northern part of the survey area. They are not parallel with any extant or former features and their origin is uncertain.

Anomalies associated with land management

(54) – Positive linear anomalies and patches of magnetic debris are associated with formerly mapped field boundaries.

(55) – Positive linear anomaly associated with the line of a former boundary features in the south eastern part of the site.

Anomalies relating to natural features

(56) – Positive anomalies located to the east of anomaly (55) are situated in the lowest part of the field and are likely to be associated with a former natural drainage channel.

Anomalies associated with agricultural activity

(57) – Positive linear anomalies relating to ridge and furrow or strip field divisions.

(58) – Parallel linear anomalies relate to the modern cultivation trend.

Anomalies associated with magnetic debris

(59) – Two patches of magnetic debris in the south eastern part of the survey areas are associated with material used to infill ponds.

(60) – A zone of magnetic debris in the north western corner of Area 6 is associated with a relatively recently removed farm building.

(61) – Patches of magnetic debris may relate to magnetically thermoremnant material that has been used in ground consolidation.

Anomalies with a modern origin

(62) – Zones of magnetic disturbance are a response to electricity poles within the site.

(63) – A strong, multiple dipolar linear anomaly extends across the survey area and is a response to a buried service.

4 DISCUSSION

4.1.1 Area 1 contains a curvilinear anomaly which is also evident on an RAF aerial photograph from 1949 (RAF/541/222) and this may relate to a former boundary feature or natural gully. Although the survey has located a number of weakly positive linear anomalies, the majority of these cannot be confidently interpreted and many do not correspond to features visible on the aerial

photograph. Evidence for agricultural activity can be seen throughout the survey area and it is possible that earlier agricultural features have been eroded by modern ploughing.

4.1.2 Along the eastern edge of Area 2 are a number of patches of weakly magnetic debris and associated positive and negative anomalies relating to former settlement and land plots. Scatters of stone, medieval and post-medieval pottery and possible early Saxo-Norman wares were visible on the ground surface at the time of survey. The Andrews and Drury Map of 1773 also depicts buildings in the area, with none mapped by 1886. An "L" shaped anomaly may relate to a former associated boundary feature. The land plots and boundary feature are visible on an aerial photograph from 1949.

4.1.3 Within Area 3, in the central part of the site, a number of weakly positive and negative linear anomalies can be seen within the results; however, they are very weak, fragmented and indistinct. While some correspond to linear features seen within the 1949 aerial photograph, others are not represented in the photo. Likewise, several clearly defined features within the photograph do not have a corresponding geophysical anomaly. Two groups of positive responses and patches of magnetic debris are located close to the eastern edge of the survey area. Medieval pottery and post-medieval was evident on the ground surface and the Wiltshire HER lists the site of post-medieval kilns and a workshop in the vicinity; it is possible that these anomalies are associated with the former industrial activity.

4.1.4 Area 4 is located in the south western part of the site. Several weakly positive linear anomalies and a negative response appear to relate to an earthwork feature identifiable within aerial photographs and visible on the ground in 2008. A number intercutting ditches, pits and gullies were located through evaluation in this part of the site (Cotswold Archaeology, 2009) and some appear to correspond to this feature .The majority of the other features seen within the 1949 aerial photograph are not visible within the data. However, there are several short or fragmented positive linear anomalies within the site, as well as evidence for possible ridge and furrow and more modern cultivation. Magnetic debris is associated with recently infilled field boundaries.

4.1.5 Within Area 5, in the central part of the site,are a number of weakly positive linear anomalies. The majority of these do not correspond to any linear features identified on aerial photographs. Patches of magnetic debris are also evident, with one zone associated with a former field boundary. Other patches are located close to ponds and Barrow Farm and it is likely that they are responses to magnetically thermoremnant material used for ground consolidation.

4.1.6 Areas 6 and 7 form the southern part of the site. There is evidence for recently removed field boundaries and infilled ponds. Some linear anomalies are likely to relate to a linear boundary and agricultural features seen on the 1949 aerial photograph. Many other positive and negative linear anomalies

have also been located. These are generally weak and fragmented and they do not appear to relate to any features identifiable on aerial photographs. Their weak response and indistinct form make it difficult to accurately determine their origin.

5 CONCLUSION

5.1.1 The detailed magnetometer survey located a number of positive and negative anomalies throughout the site. Some relate to boundary and agricultural features that are visible on a 1949 RAF aerial photograph, while many others do not. Although the magnetometer survey has located a number of linear anomalies, they are generally all weak, fragmented and indistinct and cannot be confidently interpreted. The site also contains widespread and numerous strong, discrete dipolar anomalies which appears to indicate that ferrous and other magnetically thermoremnant material has become incorporated into the topsoil.

5.1.2 The site appears to have undergone an increase in the intensity of arable cultivation in recent years, as evidenced by removed field boundaries, ground make-up and levelling. High intensity rainfall within recent winters also appears to have moved and eroded significant amounts of the sandy soil and produced soft ground susceptible to severe rutting by agricultural vehicles. It is considered possible, therefore, that the archaeological resource has been and is subject to truncation and erosion by agricultural cultivation exacerbated by climatic conditions.

5.1.3 Along the north eastern edge of the site, within Area 2, are a number of positive responses and areas of magnetic debris which appear to relate to former buildings and their associated plots. Evidence for medieval and post-medieval pottery, along with stone scatters, was also observed on the ground surface in the vicinity at the time of survey. A possible associated boundary feature has also been located. To the south of these building plots are two small zones containing positive responses and/or magnetic debris within Area 3. They are located close to an area where a post-medieval kiln and workshop have been recorded on the Wiltshire HER, and it is possible that these anomalies are associated with this former industrial activity.

5.1.4 Towards the south western corner of the site, within Area 4, positive and negative linear anomalies appear to form a rectilinear feature. This may be associated with an earthwork previously observed during a geophysical survey carried out in 2008. The earthwork was not observed during the current survey.

6 REFERENCES

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National Monument Record, English Heritage: Vertical Photograph

Sortie Number	Library number	Frame number	Date
RAF/541/222	1720	4103	2nd Feb 1949

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 0.65m 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 ±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.

High Pass Filtering

A mathematical process used to remove low frequency anomalies relating to survey tracks, spurious readings caused by uneven ground surface and modern agricultural features.

Appendix C – survey and data information

Area 1

COMPOSITE
Filename: J543-mag-Area 1.xcp
Description: Imported as Composite from: J543-mag-Area 1.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 392125.723111233, 175734.32988055 m
Southeast corner: 392542.423111233, 175399.70988055 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 2935000

Dimensions
Composite Size (readings): 2315 x 1859
Survey Size (meters): 417 m x 335 m
Grid Size: 417 m x 335 m
X Interval: 0.18 m
Y Interval: 0.18 m

Stats
Max: 10.00
Min: -10.00
Std Dev: 2.98
Mean: 0.04
Median: 0.00
Composite Area: 13.944 ha
Surveyed Area: 10.286 ha

Processes: 2
1 Base Layer
2 Clip from -10.00 to 10.00 nT

GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 nT
5 High pass Uniform (median) filter: Window dia: 300

Area 2

COMPOSITE
Filename: J534-mag-Area 2-proc.xcp
Description: Imported as Composite from: J534-mag-Area 2.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 392544.777296508, 175719.801530785 m
Southeast corner: 392770.677296508, 175498.401530785 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 1103000

Dimensions
Composite Size (readings): 1255 x 1230
Survey Size (meters): 226 m x 221 m
Grid Size: 226 m x 221 m
X Interval: 0.18 m
Y Interval: 0.18 m

Stats
Max: 11.05
Min: -11.00
Std Dev: 3.54
Mean: 0.10
Median: 0.04
Composite Area: 5.0014 ha
Surveyed Area: 3.3852 ha

Processes: 1
1 Base Layer

GPS based Proce6
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Clip from -10.00 to 10.00 nT

Area 3

COMPOSITE
Filename: J534-mag-Area3-proc.xcp
Description: Imported as Composite from: J534-mag-Area3.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 392271.20153334, 175519.814488902 m
Southeast corner: 392799.86153334, 175319.114488902 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 1928500

Dimensions
Composite Size (readings): 2937 x 1115
Survey Size (meters): 529 m x 201 m
Grid Size: 529 m x 201 m
X Interval: 0.18 m
Y Interval: 0.18 m

Stats
Max: 10.00
Min: -10.00
Std Dev: 2.50
Mean: 0.05
Median: 0.02
Composite Area: 10.61 ha
Surveyed Area: 6.5796 ha

Processes: 2
1 Base Layer
2 Clip from -10.00 to 10.00 nT

GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 nT
5 High pass Uniform (median) filter: Window dia: 300

Area 4

COMPOSITE
Filename: J543-mag-Area 4.xcp
Description: Imported as Composite from: J543-mag-Area 4.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 391904.730557632, 175480.983393907 m
Southeast corner: 392277.030557632, 175187.283393907 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 2261300

Dimensions
Composite Size (readings): 2482 x 1958
Survey Size (meters): 372 m x 294 m
Grid Size: 372 m x 294 m
X Interval: 0.15 m
Y Interval: 0.15 m

Stats
Max: 10.00
Min: -10.00
Std Dev: 2.60
Mean: 0.06
Median: 0.03
Composite Area: 10.934 ha
Surveyed Area: 6.4608 ha

Processes: 2
1 Base Layer
2 Clip from -10.00 to 10.00 nT

GPS based Proce5

1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 nT
5 High pass Uniform (median) filter: Window dia: 300

Area 5

COMPOSITE
Filename: J534-mag-Area5-proc.xcp
Description: Imported as Composite from: J534-mag-Area5.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 392273.52091859, 175343.043026929 m
Southeast corner: 392614.96091859, 175221.283026929 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 1008400

Dimensions
Composite Size (readings): 2134 x 761
Survey Size (meters): 341 m x 122 m
Grid Size: 341 m x 122 m
X Interval: 0.16 m
Y Interval: 0.16 m

Stats
Max: 11.05
Min: -11.00
Std Dev: 3.34
Mean: 0.08
Median: 0.04
Composite Area: 4.1574 ha
Surveyed Area: 3.1339 ha

Processes: 1
1 Base Layer

GPS based Proce7
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 nT
5 High pass Uniform (median) filter: Window dia: 300
6 Clip from -10.00 to 10.00 nT
7 Clip from -10.00 to 10.00 nT

Area 6

COMPOSITE
Filename: J524-mag-Area 6.xcp
Description: Imported as Composite from: J524-mag-Area 6.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 392312.178582072, 175247.416998682 m
Southeast corner: 392730.378582072, 174964.666998682 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 2911700

Dimensions
Composite Size (readings): 2788 x 1885
Survey Size (meters): 418 m x 283 m
Grid Size: 418 m x 283 m
X Interval: 0.15 m
Y Interval: 0.15 m

Stats
Max: 10.00
Min: -10.00
Std Dev: 3.04
Mean: 0.09
Median: 0.02
Composite Area: 11.825 ha
Surveyed Area: 8.3779 ha

Processes: 2
1 Base Layer
2 Clip from -10.00 to 10.00 nT

GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 nT
5 High pass Uniform (median) filter: Window dia: 300

Area 7

COMPOSITE
Filename: J534-mag-Area 7.xcp
Description: Imported as Composite from: J534-mag-Area 7.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):
Northwest corner: 392486.478191007, 175098.485647857 m
Southeast corner: 392753.178191007, 174879.335647857 m
Direction of 1st Traverse: 90 deg
Collection Method: Parallel
Sensors: 1
Dummy Value: 32702

Source GPS Points: 531200

Dimensions
Composite Size (readings): 1778 x 1461
Survey Size (meters): 267 m x 219 m
Grid Size: 267 m x 219 m
X Interval: 0.15 m
Y Interval: 0.15 m

Stats
Max: 11.05
Min: -11.00
Std Dev: 4.02
Mean: -0.01
Median: 0.00
Composite Area: 5.8447 ha
Surveyed Area: 1.4813 ha

Processes: 1
1 Base Layer

GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse: Threshold: 1.5 SDs
4 Clip from -10.00 to 10.00 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). A copy of the report will be deposited with the Wiltshire HER.

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.

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Map of survey area

● Survey location

Site centred on OS NGR
ST 92350 75300

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

FIG 01

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

Referencing information

Referencing grid to OSGB36 datum at 100m intervals

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

SCALE 1:5000

0m 100 200m

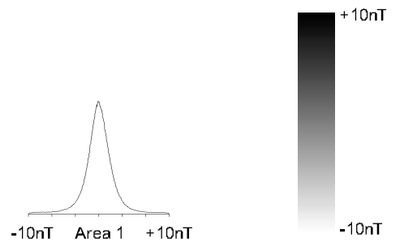
SCALE TRUE AT A3

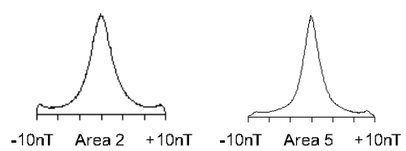
FIG 02

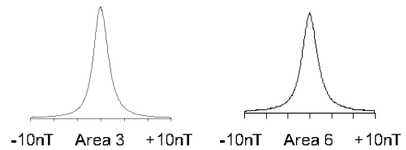
Archaeological Surveys Ltd

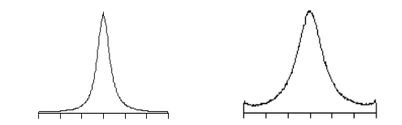
Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

Greyscale plot of processed magnetometer data









SCALE 1:3000

0m 20 40 60 80 100m

SCALE TRUE AT A3

FIG 03

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Abstraction and interpretation of magnetometer anomalies

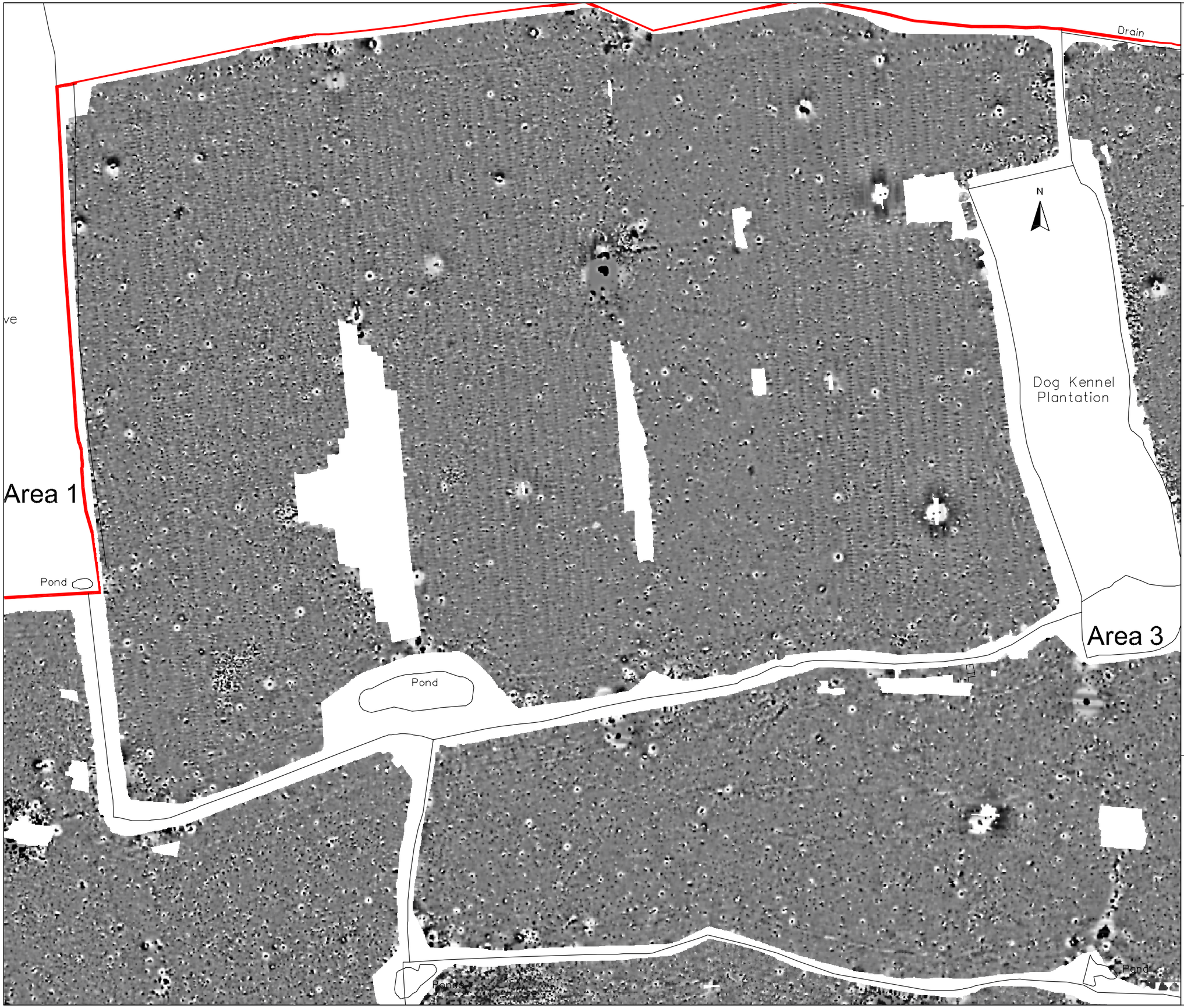
- Positive linear anomaly -cut feature of archaeologial potential
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - ridge and furrow/strip field
- Positive linear anomaly - possible former field boundary/drainage ditch
- Negative linear anomaly - material of low magnetic susceptibility
- Positive linear anomaly - former channel
- Discrete positive response - possible pit-like feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material of archaeological potential
- Negative anomaly - material of low magnetic susceptibility of archaeological potential
- 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 1:3000

0m 20 40 60 80 100m

SCALE TRUE AT A3

FIG 04



Archaeological Surveys Ltd

Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

Greyscale plot of processed magnetometer data -
Area 1 & Area 3 west

+10nT

-10nT +10nT

-10nT

-10nT Area 3 +10nT

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A0

FIG 05

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Abstraction and interpretation of magnetometer anomalies - Area 1 & Area 3 west

- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Positive linear anomaly - possible former field boundary
- Discrete positive response - possible pit-like feature
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 06

Area 1

Area 3

Dog Kennel Plantation

Drain

ETL

Pond

Pond

Ponds

Pond

N

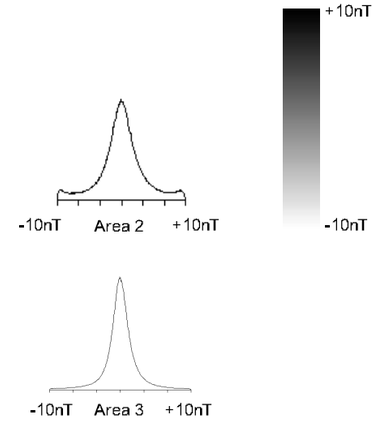
ve

1 2 3 4 5 6 7 8 9 9 10 11 15 18 21 25 25 25 28 29 30 31 32 33 36 39 40 40 40 46

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Greyscale plot of processed magnetometer data - Area 2 & Area 3 east



SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 07

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Abstraction and interpretation of magnetometer anomalies - Area 2

- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - ridge and furrow/strip field
- Positive linear anomaly - possible former field boundary/drainage ditch
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material of archaeological potential
- Negative anomaly - material with low magnetic susceptibility of archaeological potential
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 08

Area 2

Area 3

Dog Kennel Plantation

Drain

Drain

ETL

Pound

Pound Cottage

Old School House

72.2m

71.3m

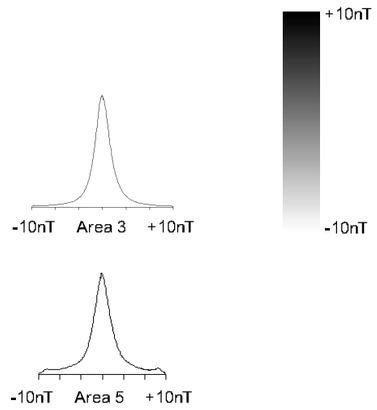
Pond

N

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

Greyscale plot of processed magnetometer data - Areas 3 & 5



Area 3
Area 5
Area 6
Pond
Drain
Pound Cottage
Path
N
11
13
19

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 09

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Abstraction and interpretation of magnetometer anomalies - Areas 3 & 5

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

SCALE 1:1500

0m 10 20 30 40 50m

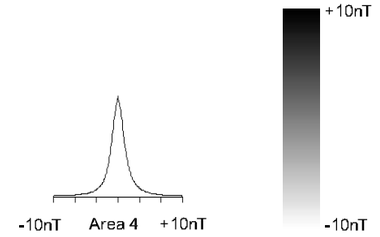
SCALE TRUE AT A3

FIG 10

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

Greyscale plot of processed magnetometer data - Area 4



Area 1

Area 4

Pond

Pond

Pond

Barrow Farm

Pond

Ditch

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 11

Area 1

Area 4

Pond

Pond

Pond

Ponds

Barrow Farm

Pond

N

8

3

10

40

39

31

40

25

36

36

38

47

37

41

34

35

42

54

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Abstraction and interpretation of magnetometer anomalies - Area 4

- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - ridge and furrow/strip field
- Positive linear anomaly - possible former field boundary
- Negative linear anomaly - material of low magnetic susceptibility
- Discrete positive response - possible pit-like feature
- Negative anomaly - material of low magnetic susceptibility of archaeological potential
- 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

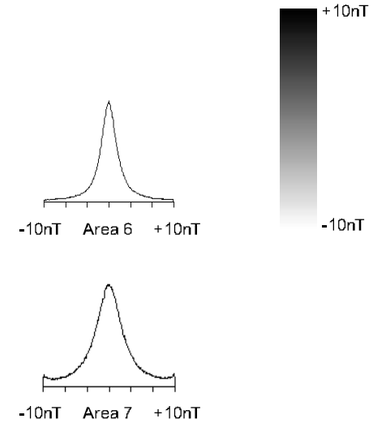
SCALE TRUE AT A3

FIG 12

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

Greyscale plot of processed magnetometer data - Areas 6 & 7



Area 5

Area 6

Area 7

N

Pond

Drain

Farm

B 4069

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 13

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of Barrow Farm
Chippenham
Wiltshire

Abstraction and interpretation of magnetometer anomalies - Areas 6 & 7

- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Positive/negative linear anomaly - possible former field boundary/drainage ditch
- Negative linear anomaly - material of low magnetic susceptibility
- Positive linear anomaly - fluvial feature/former channel
- Discrete positive response - possible pit-like feature
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

Area 5

Area 6

Area 7

N

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 14

Archaeological Surveys Ltd

Geophysical Survey
Land North and East of
Barrow Farm
Chippenham
Wiltshire

1949 RAF aerial photograph

Reproduced from aerial photograph held by the National Monuments Record, English Heritage RAF/541/222. Library no.1720. Frame 4103. Taken 2nd February 1949

SCALE 1:3000

0m 20 40 60 80 100m

SCALE TRUE AT A0

FIG 15