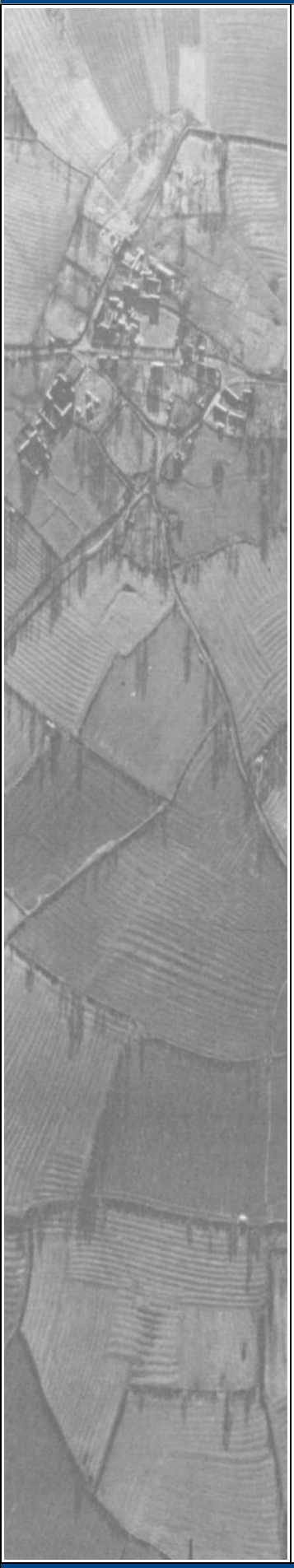

Proposed Gospel Hall
Broad Blunsdon
Swindon

MAGNETOMETER SURVEY REPORT

for

Foundations Archaeology

Kerry Donaldson & David Sabin

June 2019

Ref. no. J793

ARCHAEOLOGICAL SURVEYS LTD

Proposed Gospel Hall

MAGNETOMETER SURVEY REPORT

for

Foundations Archaeology

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

Survey date – 18th June 2019
Ordnance Survey Grid Reference – **SU 15747 90065**

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SUMMARY

A geophysical survey, comprising detailed magnetometry, was carried out by Archaeological Surveys Ltd within a single pasture field to the south of the B4019, south of Broad Blunsdon in Swindon. The survey located a number of discrete positive responses in the north western corner of the site that appear to relate to pits with archaeological potential. Other discrete positive responses locate nearby and elsewhere within the site are much weaker, and it is not clear if they relate to cut features. A recently removed field boundary, agricultural activity and magnetic debris are also associated with geophysical anomalies.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Foundations Archaeology to undertake a magnetometer survey of an area of land at Broad Blunsdon, Swindon. The site has been outlined for a proposed development of a new Gospel Hall and residential dwellings. The survey forms part of an archaeological assessment.

1.1.2 The geophysical survey was carried out in accordance with a Magnetometry Method Statement produced by Archaeological Surveys and issued to Melanie Pomeroy-Kellinger, County Archaeologist for Wiltshire Council.

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

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

1.3.1 The survey and report generally follow the recommendations set out by: European Archaeological Council (2015) *Guidelines for the Use of Geophysics in Archaeology;* Institute for Archaeologists (2002) *The use of Geophysical Techniques in Archaeological Evaluations.* The work has been carried out to the Chartered Institute for Archaeologists (2014) *Standard and Guidance for Archaeological Geophysical Survey.* Note: currently Historic

England (2018) no longer support the guidelines set out in English Heritage (2008) *Geophysical survey in archaeological field evaluation* and there are currently no plans to update the document. As a consequence other sources of written guidance referring to this document may be out of date and/or contain unsupported information (e.g. Chartered Institute for Archaeologists, 2014).

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

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

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

1.4 Site location, description and survey conditions

1.4.1 The site is located on land to the south of the B4019 and to the south of Broad Blunsdon in Swindon. It is centred on Ordnance Survey National Grid Reference (OS NGR) SU 15247 90065, see Figs 01 and 02.

1.4.2 The geophysical survey covers approximately 3ha within a single pasture field that contained long grass at the time of survey. A number of mature trees are also located in the field and field boundaries are also formed by screens of tall trees, with the exception of a much lower hedgerow forming the northern boundary. The south eastern part of the field contained a small sheep pen bounded by wire netting. The area is generally flat with a very slight slope down towards the south.

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

Plate 1: Survey area looking south west

1.5 Site history and archaeological potential

1.5.1 A number of archaeological investigations have taken place in the near and surrounding vicinity. These include a geophysical survey on land just to the north west of the B4019 which identified anomalies associated with agricultural activity (Archaeological Surveys, 2007) and another immediately west of that which only identified anomalies associated with modern magnetic disturbance (TVAS, 2019). Prior to construction of a new water pipeline, a small number of positive linear anomalies were located c100m south of the site, although it was not clear if they related to cut features (Archaeological Surveys, 2015). In the wider vicinity, a geophysical survey revealed a number of pit-like anomalies (Archaeological Surveys, 2018), which upon excavation were identified as part of a Roman cremation cemetery (Cotswold Archaeology, 2018). The site lies less and 300m east of Ermin Street Roman road. The nearest scheduled monument is the Iron Age hillfort of Castle Hill, situated 1km to the north east.

1.5.2 Although there are no known archaeological sites or findspots within the site, it lies within an area that contains widespread archaeology from the prehistoric and Roman periods. There is always potential for the geophysical survey to locate buried archaeological features should they exist within the site.

1.6 Geology and soils

1.6.1 The underlying geology is limestone from the Stanford Formation (Corallian Group) (BGS, 2017).

1.6.2 The overlying soil across the site is from the Sherborne association and is a Brown Rendzina. It consists of a shallow, well drained, brashy, calcareous, clayey soil over limestone (Soil Survey of England and Wales, 1983).

1.6.3 Magnetometry carried out over similar geology and soil has produced good results. The site is, therefore, considered suitable for magnetic survey.

2 METHODOLOGY

2.1 Technical synopsis

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

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

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

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

2.2 Equipment configuration, data collection and survey detail

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

2.2.2 Due to the fixed offsets within the fluxgate sensors, as a result of the manufacturing and tensioning process, the survey data do not provide a visually useful dataset

until a zero median traverse algorithm is applied. It is recognised that this has the potential to affect some anomalies detrimentally by removing linear features orientated parallel to survey transects. However, this has not been noted as a particular problem with the system due to the high resolution data collection, generally long length of traverses and variability within the magnetic characteristics of a linear anomaly.

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

2.2.4 Fluxgate sensors are highly sensitive to temperature change and this manifests as drift during the course of a survey. This can be particularly noticeable during the morning as temperatures rise and the equipment warms or cools. Sensor drift within the course of a traverse will appear as a line trending from negative to positive after processing with a zero median traverse algorithm. To remove the potential for temperature drift, data were collected after a 20 minute stabilisation period and traverses were limited to a time of generally <100s.

2.3 Data processing and presentation

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

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

the magnetic susceptibility of long linear features.

2.3.3 The minimally processed data are collected between limits of ±8000nT and clipped for display at ±5nT. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track.

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

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

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

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

2.3.8 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.

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

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over a total of 3ha within a single pasture field.

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

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

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

3.2.2 The field contains numerous positive and negative linear anomalies relating to agricultural activity, and these probably confirm a useful degree of magnetic contrast between the topsoil and underlying geology.

3.3 Data interpretation

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

Interpretation category	Description and origin of anomalies
Anomalies with archaeological potential	Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, etc. The category is used where there is a high level of confidence which may be due to additional supporting information where morphology is unclear or uncharacteristic.
Anomalies with an uncertain origin	The category applies to a range of anomalies where there is not enough evidence to confidently suggest an origin. Anomalies in this category may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered. Morphology may be unclear or uncharacteristic and there may be a lack of additional supporting information. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies relating to land management	Anomalies are mainly linear and may be indicative of the magnetically enhanced fill of cut features (i.e. ditches). The anomalies may be long and/or form rectilinear elements and they may relate to topographic features or be visible on early mapping. Associated agricultural anomalies

	(e.g. headlands, plough marks and former ridge and furrow) may support the interpretation. Land drains can appear in a classic herringbone pattern of interconnected multiple dipolar linear anomalies, or as parallel linear anomalies. The multiple dipolar response indicates ceramic land drains.
Anomalies with an agricultural origin	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. This category does not include agricultural features of early date or considered to be of archaeological potential (e.g. animal stockades, enclosures, farmsteads, etc).
Anomalies associated with magnetic debris	Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc. Often a significant area around these features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 415247 190065, see Figs 03 & 04.

Anomalies of archaeological potential

(1) - Located in the north western corner of the survey area are at least 28 discrete positive anomalies that appear to relate to pits. They generally have a response of 10-15nT, indicating that they are associated with magnetically enhanced soil fills contrasting strongly with the surrounding geology that will have a low magnetic susceptibility.

Anomalies with an uncertain origin

(2) - A number of discrete positive responses of less than 2nT are also located in the vicinity of anomalies (1). It is possible that these also relate to cut features with archaeological potential, but such anomalies can relate to naturally formed features.

(3) - Situated on the south western edge of the survey area are two discrete positive responses. It is possible that they relate to cut pit-like features.

(4) - The survey area contains a number of discrete positive responses, some appear to have a linear formation, others are clustered and others isolated. It is not clear if they relate to pits with an anthropogenic origin or if they relate to natural features.

(5) - Located in the north western part of the survey area are a group of positive

linear and possible curvilinear anomalies. The response is weak (<1nT) and indistinct and it is not clear if they relate to cut features or if there is some association with agricultural activity or naturally formed features.

Anomalies associated with land management

(6) - A negative and adjacent positive linear anomaly are associated with the line of a recently removed field boundary.

Anomalies with an agricultural origin

(7) - The site contains agricultural anomalies, with a main north west to south east trend, but also an east north east to west south west trend.

Anomalies associated with magnetic debris

(8) - In the northern part of the site are a cluster of strong, discrete, dipolar responses. They do not appear to relate to indiscriminately distributed objects, unlike the majority of the remaining strong dipolar responses which are spread throughout the site, but appear to indicate a former placed square structure or objects. It is likely that they are modern, possibly of agricultural origin.

4 CONCLUSION

4.1.1 The magnetometry survey located a number of discrete positive responses in the north western part of the site that appear to relate to pits with archaeological potential. There are a number of weaker pit-like responses in the vicinity and elsewhere within the site, but it is not clear if these relate to cut features. A recently removed field boundary and agricultural activity are also indicated by the data.

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Appendix A – basic principles of magnetic survey

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

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

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

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

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

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

Appendix B – data processing notes

Clipping

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

Despike

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

High Pass Filter

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

Low Pass Filter

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

Zero Median/Mean Traverse

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

Appendix C – survey and data information

Filename: J793-mag-proc.xcp
Description: Imported as Composite from: J793-mag.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 415132.49, 190165.03m
Southeast corner: 415365.23, 189955.51m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Source GPS Points: 905700
Dimensions
Composite Size (readings): 1293 x 1164
Survey Size (meters): 233 m x 210 m
Grid Size: 233 m x 210 m
X Interval: 0.18 m
Y Interval: 0.18 m
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.90
Mean: 0.02
Median: 0.01
Composite Area: 4.8764 ha
Surveyed Area: 2.8939 ha
PROGRAM
Name: TerraSurveyor
Version: 3.0.23.0
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse:
4 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. Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site.

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

Archive contents:

File type	Naming scheme	Description
Data	J793-mag.asc J793-mag.xcp J793-mag-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J793-mag-proc.tif	Image in TIF format
Drawing	J793-**[version number**.dwg	CAD file in 2010 dwg format
Report	J793 report.odt	Report text in Open Office odt format

Table 2: Archive metadata

Appendix E – CAD layers for abstraction and interpretation plots

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

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

Table 3: CAD layering

Appendix F – copyright and intellectual property

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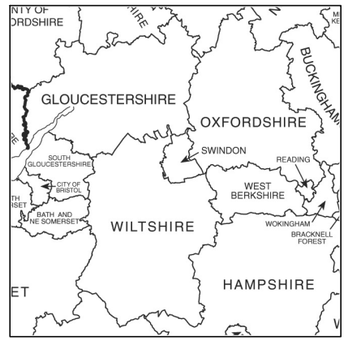
Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Proposed Gospel Hall
Broad Blunsdon
Swindon

Map of survey area



● Survey location

Site centred on OS NGR
SU 15247 90065

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

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KTD	DJS	FIG 01

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Referencing information

415100 415150 415200 415250 415300 415350 415400

190150 190100 190050 190000 189950

N

Tree Tree Tree Tree Tree

Trees Trees Trees Trees

Referencing grid to OSGB36 datum at 50m intervals

- 415200 190000
- Survey tracks
- Survey track start
- Survey track stop

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 02

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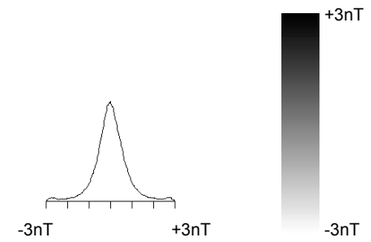
Greyscale plot of minimally processed magnetometer data



SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 03

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Abstraction and interpretation of magnetic anomalies

- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - recently removed field boundary
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 04