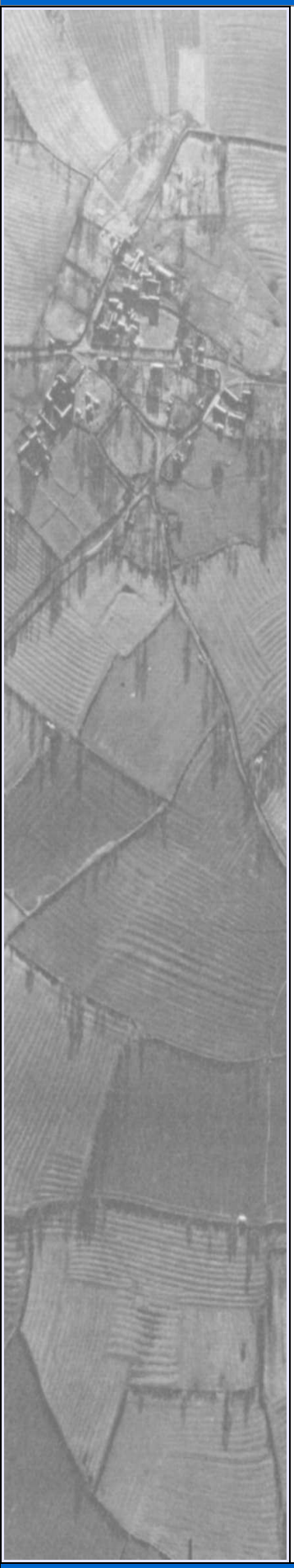

Land north of Bagbury Park
Lydiard Green
Wiltshire

MAGNETOMETER SURVEY REPORT

for

Cotswold Archaeology

Kerry Donaldson & David Sabin

September 2017

Ref. no. J729

ARCHAEOLOGICAL SURVEYS LTD

Land north of Bagbury Park
Lydiard Green
Wiltshire

Magnetometer Survey Report

for

Cotswold 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 – 11th September 2017
Ordnance Survey Grid Reference – **SU 08550 86150**

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SUMMARY

Detailed magnetometry was carried out within a single pasture field at Lydiard Green within the parish of Lydiard Millicent in Wiltshire. The results of the survey indicate a negative linear and parallel positive response that correspond to an extant shallow linear depression which crosses the site from north-west to south-east. Several other weakly positive linear and negative linear anomalies have also been located but their morphology is not coherent and their origin cannot be determined. There is evidence for drainage extending northwards from the southern edge of the survey area which appears to have been truncated by the shallow linear depression. A series of ridge and furrow can be seen in the south-western corner of the site.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Cotswold Archaeology to undertake a magnetometer survey of an area of land to the north of Bagbury Park, Lydiard Green in Wiltshire. The site has been outlined for the development of a new industrial unit, parking and surface water storage pond. Although this development only covers the south-eastern part of a small field, the entire field was surveyed in order to place any anomalies located in context.

1.1.2 The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2017) and 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;* 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.*

1.3 Site location, description and survey conditions

1.3.1 The site is located to the north of the industrial units at Bagbury Park and west of Bagbury Lane at Lydiard Green within the parish of Lydiard Millicent in north Wiltshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) SU 08550 86150, see Figs 01 and 02.

1.3.2 The geophysical survey covers approximately 1ha of recently mown pasture land. Tall steel railings, industrial units and vehicles are located immediately to the south of the area, and at the time of survey were considered likely sources of high magnitude magnetic disturbance. Boundaries to the east, west and north are hedgerows. Some dumped soil and nettles were also located adjacent to parts of the southern boundary.

1.3.3 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. The field is mainly flat although a shallow ditch-like depression crosses the area with a north-west to south-east orientation, and there is evidence for low ridge and furrow earthworks in the south western part. Weather conditions during the survey were fine.

Plate 1: Southern part of survey area looking east

1.4 Site history and archaeological potential

1.4.1 The site does not contain any designated or undesignated heritage assets. The Wiltshire Historic Environment Record indicates that the majority of the archaeological sites within the vicinity relate to a number of 19th century farmsteads and a number of Second World War defence features. This includes several pillboxes and gun emplacements 200m south-west and 250m

north-east (MWI31532, MWI31533, MWI31534, MWI 31812 & MWI31813) which were part of the GHQ Line Red that extended across this part of north Wiltshire. A heavy anti aircraft battery is also recorded at Restrop, 400m to the north (MWI32016). The landowner also indicated that a Second World War anti-tank ditch had been filled in within the field (Mr S Griffin, 11/09/2017, pers.comm.) but the exact location is not known. Constructed during 1940 due to the threat of invading German troops, the GHQ Line Red extended eastwards from a junction with GHQ Line Green at Great Somerford, through Lydiard Green towards Cricklade to the north-east, and a series of pillboxes, anti-tank gun emplacements, anti-tank trenches and other obstacles were constructed along the GHQ lines.

1.4.2 An undated field system, possibly medieval, is listed to the south-west of the site (MWI9298). Amorphous cropmarks have also been recorded from aerial photographs some 260m north-east of the survey area (MWI9301). The nearest Scheduled Monument (SM28992) is the Iron Age hillfort at Ringsbury Camp (MWI9253), 1km to the north-west, in which was also found a small Neolithic flint assemblage (MWI9252).

1.4.3 The indication by the landowner that an anti-tank ditch has been infilled within the site indicates that there is potential that the geophysical survey could locate associated anomalies. However, analysis of Google Earth aerial images failed to confidently identify the feature, although a possible linear mark with a north-east to south-west orientation was identified in the field to the east. A projection of this feature may indicate that it passes through the extreme south-eastern corner of the site and into the area of industrial units.

1.4.4 The surface conditions within the site were not suitable for the observation of cultural material during the course of the survey. A shallow ditch-like feature and ridge and furrow earthworks have been noted in 1.3.3 above.

1.5 Geology and soils

1.5.1 The underlying solid geology across the site is from the Ampthill Clay Formation and Kimmeridge Clay Formation (BGS, 2017).

1.5.2 The overlying soil across the survey area is from the Evesham 1 association and is a typical calcareous pelosol. This consists of a slowly permeable, calcareous, clayey soil (Soil Survey of England and Wales, 1983).

1.5.3 Magnetometry carried out over similar geology and soil has produced variable results. The underlying geology and soils are frequently associated with low magnetic contrast and low levels of magnetic susceptibility. However, cut features of archaeological potential may be located where human activity has altered the magnetic characteristics of the soil sufficiently. The underlying geology and soils are therefore considered acceptable for magnetic survey.

2 METHODOLOGY

2.1 Technical synopsis

2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic thermoremnance are factors associated with the formation of localised fields. Additional details are set out below and within Appendix A.

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

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

2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T).

2.2 Equipment configuration, data collection and survey detail

2.2.1 The detailed magnetic survey was carried out using a SENSYS MAGNETO®MXPDA 5 channel cart-based system. The instrument has 5 fluxgate gradiometers (FGM650) spaced 0.5m apart with readings recorded at 20 Hz. 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 ±10,000nT. They are linked to a Leica GS10 RTK GPS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged PDA computer system.

2.2.2 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 is manifest 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 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 ±10000nT 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 Additional data processing has been carried out in the form of high pass filtering. This effectively removes low frequency variation along a traverse that has been caused by large magnetic bodies, cultivation, rapid temperature change. Low pass filtering has also been applied and this removes high frequency variation along a traverse that has been caused by uneven ground and associated vibration. Data treated to additional processing has been compared to unprocessed data to ensure that no significant anomalies have been removed.

2.3.5 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.

2.3.6 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 is considered by the manufacturer to be data that is 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 very high density of data collection.

2.3.7 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 GPS, resection method, etc.

2.3.8 An abstraction and interpretation is also drawn and plotted for all geophysical anomalies located by the survey. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing.

2.3.9 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.

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

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over approximately 1ha within a single land parcel.

3.1.2 Magnetic anomalies located can be generally classified as positive and negative anomalies of an uncertain origin, linear anomalies of an agricultural origin, areas of magnetic debris and disturbance and strong discrete dipolar anomalies relating to ferrous objects. Anomalies located have been numbered and are described in 3.4 below.

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. High magnitude magnetic disturbance associated with ferrous objects was encountered at both the northern and southern ends of the site. Weak magnetic features in the vicinity of the disturbance may be obscured and some striping of data after application of a zero mean traverse algorithm, required to balance the sensors, has also occurred in the vicinity of the highest magnetic fields.

3.2.2 High pass filtering of data has effectively removed striping and improved clarity along the southern boundary adjacent to the industrial site. Both filtered and unfiltered data have been analysed to allow the abstraction and interpretation of anomalies as filtering may remove some anomalies. No detrimental effects were noted and data appear improved by the filtering.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A basic explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, a basic key is indicated to allow cross referencing to the abstraction and interpretation plot. CAD layer names are included to aid reference to associated digital files (.dwg/.dxf). Sub-headings are then used to group anomalies with similar characteristics within the survey area.

Report sub-heading CAD layer names and plot colour	**Description and origin of anomalies**
Anomalies with an uncertain origin AS-ABST MAG POS LINEAR UNCERTAIN AS-ABST MAG NEG LINEAR UNCERTAIN AS-ABST MAG POS DISCRETE UNCERTAIN 	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, but can also be a response to an extant ditch.
Anomalies associated with land management AS-ABST MAG LAND DRAIN 	Land drains can be weakly positive, negative or weakly multiple dipolar anomalies. They are generally interconnected, often in a

	herringbone pattern or with parallel linear anomalies feeding into a main axis.
Anomalies with an agricultural origin 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	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc.. Often a significant area around such features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically and with hysteresis adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 408500 186150, see Fig 03.

Anomalies with an uncertain origin

(1) - A negative linear anomaly, with a parallel positive linear anomaly to the south, extends across the site with a south-east to north-west orientation. It corresponds to a narrow extant linear depression visible in the ground surface which appears to cut anomaly (6). The proposed location of the surface water pond overlies the south-eastern part of this feature.

(2) - Weakly positive and some corresponding negative linear anomalies with no coherent morphological pattern. This type of response may be caused by agricultural activity.

(3) - A small number of negative linear anomalies extend through parts of the survey area. They may relate to land drainage or other agricultural features.

(4) - Two strongly positive linear anomalies can be seen at the southern edge of the survey area. It is not clear what has caused this response, but a modern origin is

likely.

(5) - A small number of discrete positive responses are located within the survey area. Although they appear pit-like, their origin is uncertain.

Anomalies associated with land management

(6) – Negative linear anomalies appear to be associated with drainage.

Anomalies with an agricultural origin

(7) - A series of ridge and furrow is located in the south-western part of the site.

Anomalies associated with magnetic debris

(8) - Patches of very strongly magnetic debris can be seen in the southern part of the site and relate to dumped material.

(9) - Strong, discrete, dipolar anomalies are a response to ferrous objects within the topsoil.

Anomalies with a modern origin

(10) - Magnetic disturbance within the southern part of the site is a response to adjacent steel buildings, fences and vehicles.

4 CONCLUSION

4.1.1 The detailed magnetometer survey has located a number of positive and negative linear anomalies of uncertain origin. One of these extends across the site and is oriented north-west to south-east corresponding to a linear depression within the ground surface. Negative linear anomalies extending north to south within the centre of the site relate to drainage which appears to have been cut by the extant north-west to south-east linear depression. A series of ridge and furrow is located in the south-western corner of the site.

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Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremnant material.

Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field.

Thermoremnant magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

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

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

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

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

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

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. It has been found that clipping data to ranges between ±5nT and ±3nT often improves the appearance of features associated with archaeology. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Zero (destripe) Median/Mean Traverse

The median (or mean) of each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise differences between the baseline value of gradiometer sensors.

High Pass Filtering

A mathematical process used to remove low frequency anomalies relating to survey tracks, modern agricultural features and other large magnetic bodies within or adjacent to survey areas.

Low Pass Filtering

A mathematical process used to remove high frequency anomalies relating to uneven ground, vibration, etc.

Appendix C – survey and data information

Minimally processed magnetometer data

Filename: J729-mag-proc.xcp
Description: Imported as Composite from: J729-mag.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 408452.308865051, 186221.080452469 m
Southeast corner: 408546.358865051, 186081.730452469 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Source GPS Points: 293200
Dimensions
Composite Size (readings): 627 x 929
Survey Size (meters): 94.1 m x 139 m
Grid Size: 94.1 m x 139 m
X Interval: 0.15 m
Y Interval: 0.15 m
Stats
Max: 5.53
Min: -5.50
Std Dev: 1.82
Mean: -0.05
Median: 0.01
Composite Area: 1.3106 ha
Surveyed Area: 0.86837 ha
PROGRAM
Name: TerraSurveyor
Version: 3.0.23.0
Processes: 1
1 Base Layer
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -5.00 to 5.00 nT

Filtered magnetometer data

Filename: J729-mag-proc-hpf-lpf.xcp
Description: Imported as Composite from: J729-mag.asc
Stats
Max: 3.32
Min: -3.30
Std Dev: 0.86
Mean: 0.00
Median: 0.00
Composite Area: 1.3106 ha
Surveyed Area: 0.86837 ha
Processes: 2
1 Base Layer
2 Clip from -3.30 to 3.32 nT
GPS based Proce8
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -5.00 to 5.00 nT
5 High pass Uniform (median) filter: Window dia: 150
6 Clip from -3.00 to 3.00 nT
7 Lo pass Uniform (median) filter: Window dia: 13
8 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 printed copy of the report and a PDF copy will be supplied to the Wiltshire Historic Environment Record. The report will also be uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS).

Archive contents:

Geophysical data - path: J729 Lydiard Green\Data				
Path and Filename	**Software**	**Description**	**Date**	**Creator**
lydiard1\MX\ .prm .dgb .disp	Sensys MXPDA	Proprietary data formats representing magnetometer survey traverses logged to a PDA.	11/09/17	D.J.Sabin
lydiard1\MX\J729-mag.asc	Sensys DLMGPS	ASCII CSV (tab) file representing survey Area 1 in eastings, northings (UTM Z30N), magnetic measurement, traverse file and sensor number.	11/09/17	D.J.Sabin
Mag\comps\J729-mag.xcp	TerraSurveyor 3.0.23.0	Composite data file derived from ASCII CSV.	11/09/17	D.J.Sabin
Mag\comps\J729-mag-proc.xcp	TerraSurveyor 3.0.23.0	Processed composite data file (zmt and clipping to ±5nT).	11/09/17	D.J.Sabin
Mag\comps\J729-mag-proc-hpf-lpf.xcp	TerraSurveyor 3.0.23.0	Processed composite data file (zmt, high pass and low pass filtered and clipping to ±3nT).	11/09/17	D.J.Sabin
Graphic data - path: J729 Lydiard Green\\Data				
Mag\graphics\ J729-mag-proc.tif	TerraSurveyor 3.0.23.0	TIF file showing a minimally processed greyscale plot clipped to ±5nT.	11/09/17	D.J.Sabin
Mag\graphics\ J729-mag-proc.tfw	TerraSurveyor 3.0.23.0	World file for georeferencing TIF to OSGB36.	11/09/17	D.J.Sabin
Mag\graphics\ J729-mag-proc-hpf-lpf.tif	TerraSurveyor 3.0.23.0	TIF file showing a filtered greyscale plot clipped to ±3nT.	11/09/17	D.J.Sabin
Mag\graphics\ J729-mag-proc-hpf-lpf..tfw	TerraSurveyor 3.0.23.0	World file for georeferencing TIF to OSGB36.	11/09/17	D.J.Sabin
CAD data - path: J729 Lydiard Green\x\CAD				
J729 version 1.dwg	ProgeCAD 2016	CAD file for creating plots of greyscales, abstraction, interpretation and mapping. Grid coordinates as OSGB. AutoCAD 2010 format.	18/09/17	K.T.Donaldson
Text data - path: J729 Lydiard Green\\Documentation				
J729 report.odt	OpenOffice.org 3.0.1 Writer	Report text as an Open Office document.	07/09/17	K.T.Donaldson

Appendix E – copyright and intellectual property

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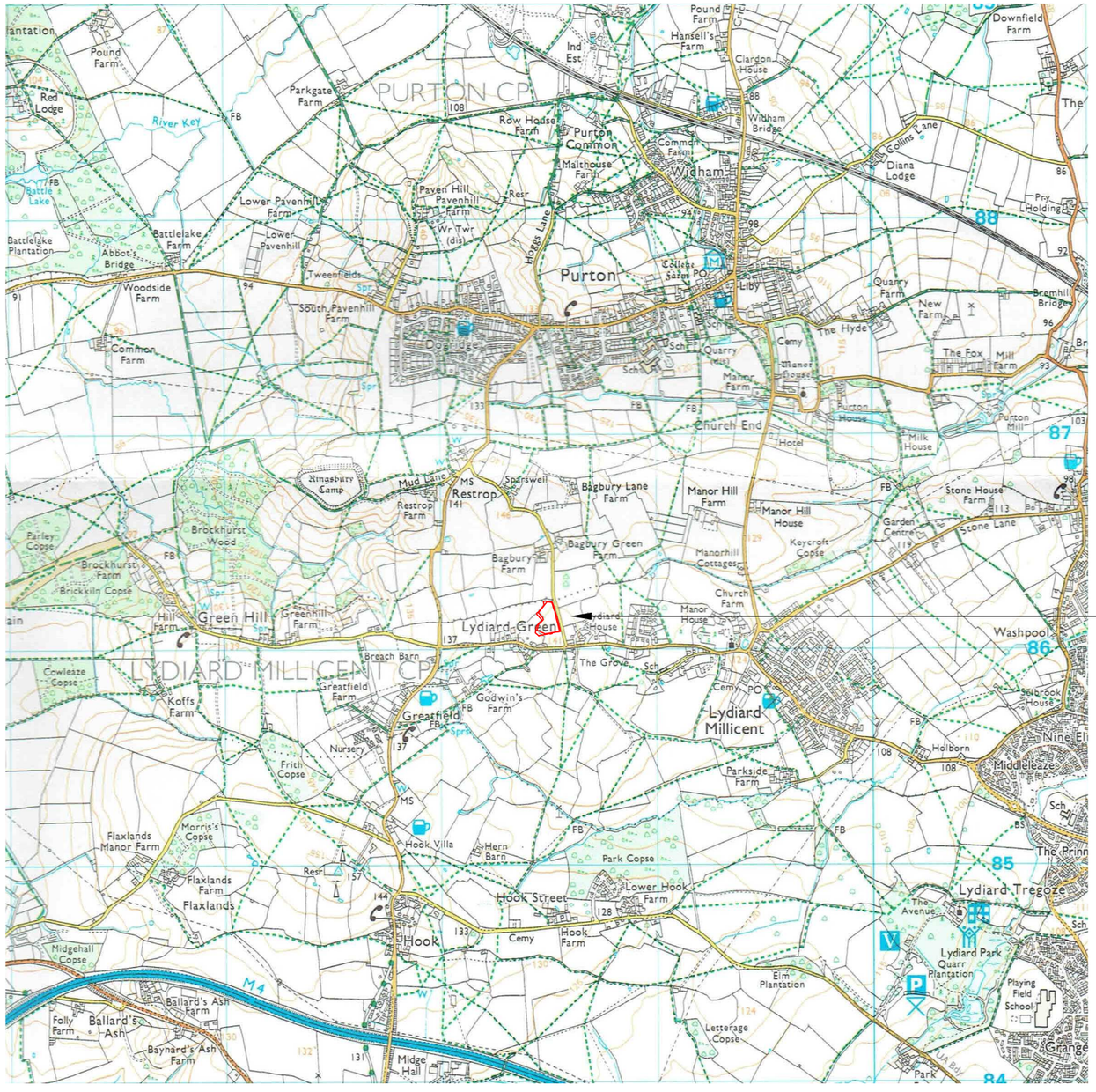
Geophysical Survey
Land north of Bagbury Park
Lydiard Green
Wiltshire

Map of survey area



Survey location

Survey location

Site centred on OS NGR
SU 08500 86150

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

FIG 01

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Wiltshire

Referencing information

Referencing grid to OSGB36 datum at 50m intervals

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

● 408500 186100

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 02

408450 408500 408550

186250 186200 186150 186100 186050

N

1.22m RH

1.22m RH

Proposed surface water storage pond

Proposed new unit and car parking

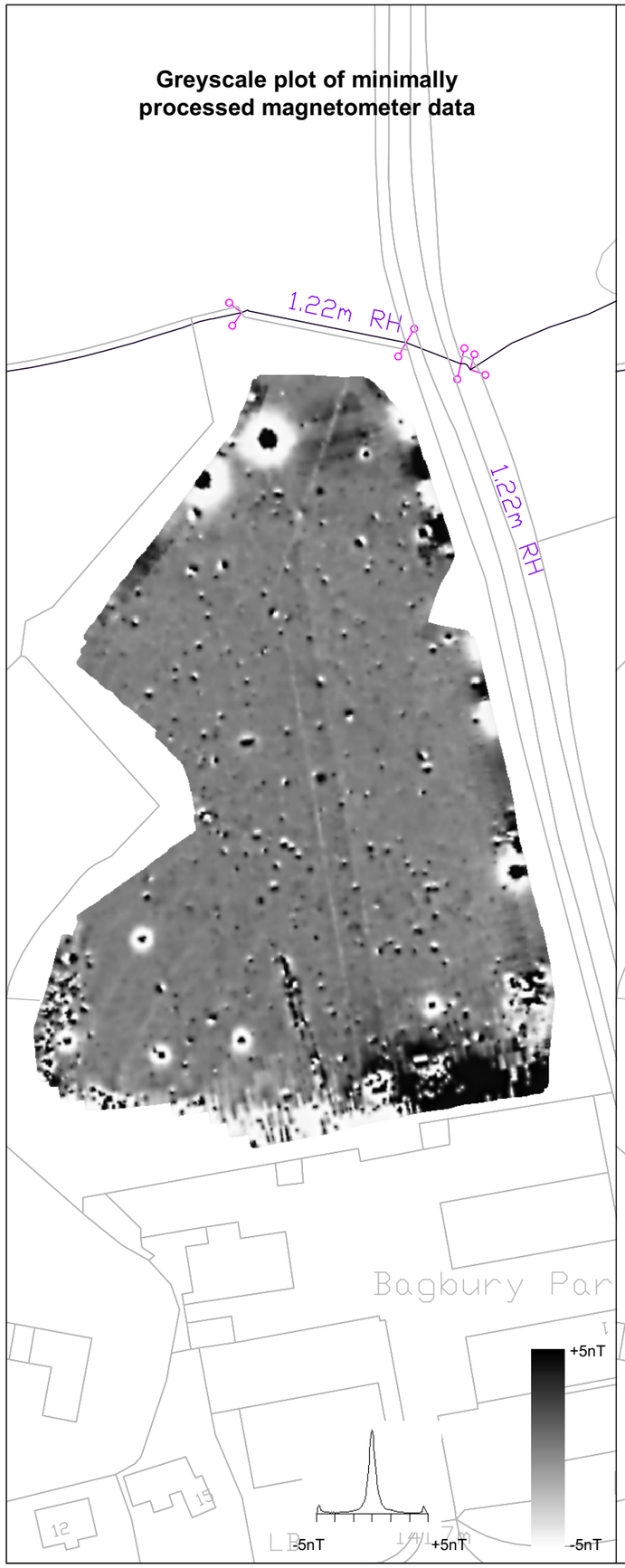
Bagbury Park

Lydiard Green

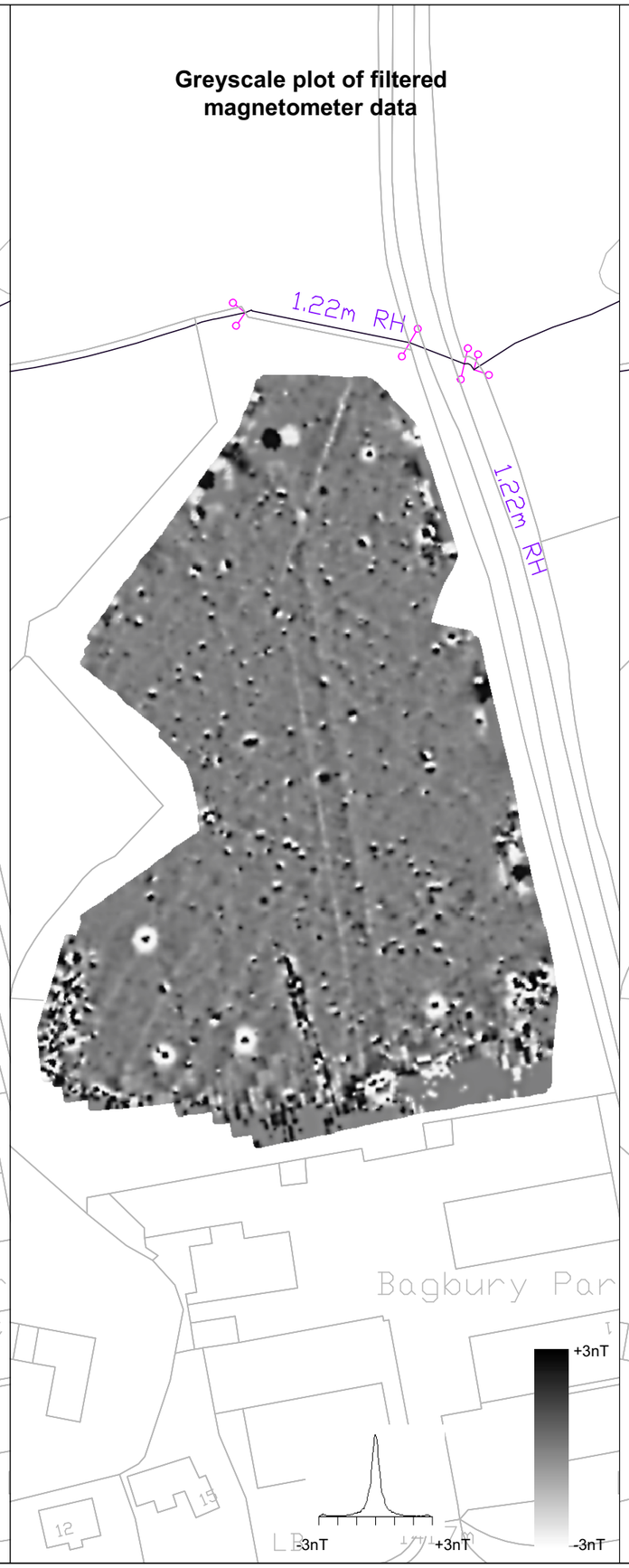
12 13 5

LB 141.7m

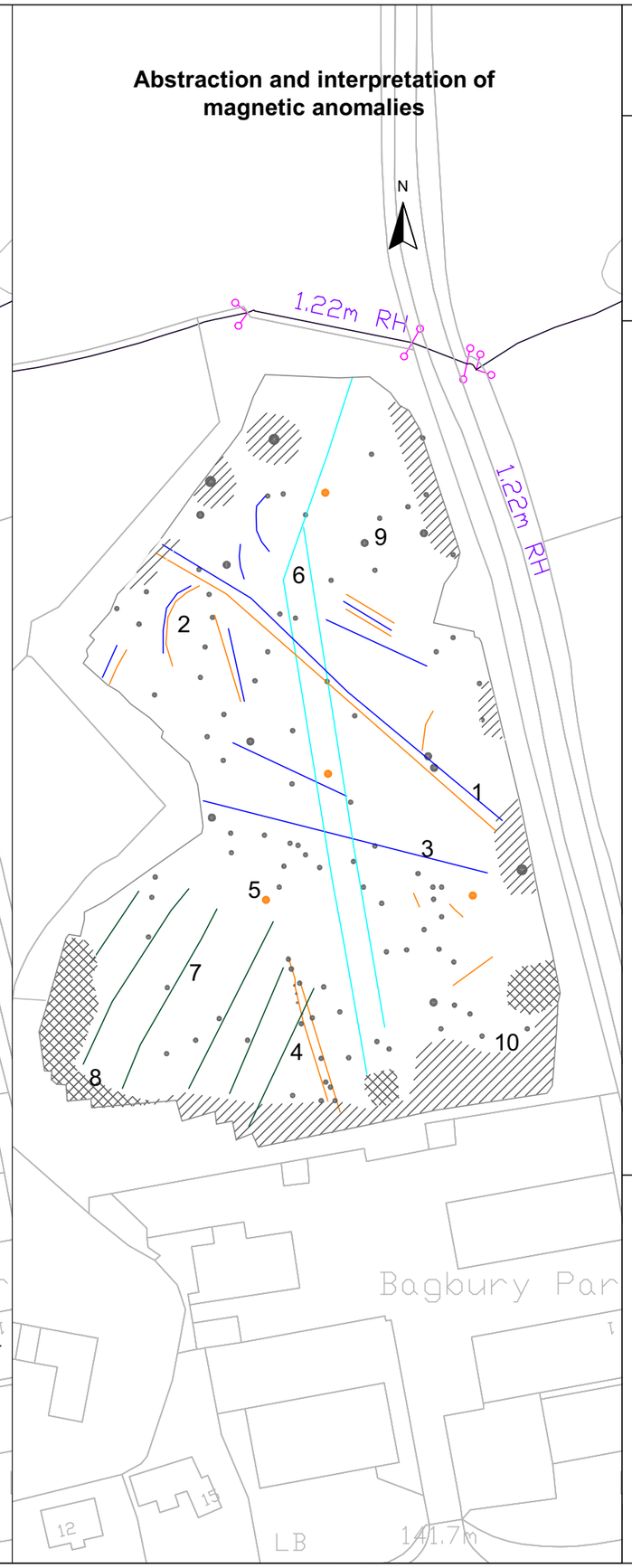
Greyscale plot of minimally processed magnetometer data



Greyscale plot of filtered magnetometer data



Abstraction and interpretation of magnetic anomalies



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Lydiard Green
Wiltshire

Greyscale plots of minimally processed and filtered magnetometer data and abstraction and interpretation of magnetic anomalies

- Positive linear anomaly - possible ditch-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Linear anomaly - ridge and furrow
- Negative linear anomaly - possible land drain
- 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 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 03