GEOPHYSICAL SURVEY REPORT

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Land at Bretforton Road, Badsey, Evesham, Worcestershire

Client
Orion Heritage

Survey Report
12279

Date
January 2018

HER Event Number
WSM 69875

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and

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GEOPHYSICAL SURVEY REPORT

Project name:
Land at Bretforton, Badsey, Evesham, Worcestershire

SUMO Job reference:
12279

Client:
Orion Heritage

Survey date:
10 January 2018

Report date:
19 January 2018

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LIST OF FIGURES

DIGITAL CONTENT (Archive Data CD/DVD)

- Minimally Processed Greyscale Images and XY Trace Plots in DWG format
- Digital Copies of Report Text and Figures (both PDF and native formats)

1 SUMMARY OF RESULTS

A detailed magnetometer survey was conducted over approximately 2.5 ha of rough pasture at Bretforton Road, Badsey, Worcestershire. No definite archaeological responses have been detected. Some weak linear and discrete anomalies are of uncertain origin. Evidence of ridge and furrow dominates the results, while the remaining responses are due to nearby ferrous metal objects.

2 INTRODUCTION

2.1 Background synopsis

SUMO Services Ltd were commissioned to undertake a geophysical survey of an area outlined for residential development. This survey forms part of an archaeological investigation being undertaken by **Orion Heritage**.

2.2 Site details

NGR / Postcode	SP 070 439 / WR11 7SF
Location	The site is located to the north of Bretforton Road, Badsey, approximately 5km east of Evesham, Worcestershire. Residential properties of Pack Close and Horsebridge Avenue bound the site to the west, with open grassland / scrub to the north and east.
HER/SMR	Worcestershire
District	Wychavon
Parish	Badsey CP
Topography	Mostly level
Current Land Use	Rough pasture
Weather	Misty, dry
Geology	Solid: Blue Lias Formation and Charmouth Mudstone Formation (undifferentiated) - mudstone. Superficial: None recorded (BGS 2018).
Soils	Evesham 2 Association (411b) - slowly permeable calcareous clayey soils (SSEW 1983).
Archaeology	The proposal site is located in an area believed to contain Romano-British settlement evidence, while the field system on the site appears to demonstrate strip farming associated with the medieval period (Edwards, J 2017).
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	3.2 ha - approximately 0.7 ha could not be surveyed due to trees, scrub and other vegetation reducing the total area surveyed to *c*. 2.5 ha.

2.3 Aims and Objectives

To locate and characterise any anomalies of possible archaeological interest within the study area.

3 METHODS, PROCESSING & PRESENTATION

3.1 Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (EH 2008) (then English Heritage), the Chartered Institute for Archaeologists (CIfA 2014) and the European Archaeological Council (EAC 2016).

3.2 Survey methods

Detailed magnetic survey was chosen as an efficient and effective method of locating archaeological anomalies.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1.0m	0.25m

More information regarding this technique is included in Appendix A.

3.3 Data Processing

The following basic processing steps have been carried out on the data used in this report:

De-stripe; de-stagger; interpolate

3.4 Presentation of results and interpretation

The presentation of the results for each site involves a grey-scale plot of processed data. Magnetic anomalies are identified, interpreted and plotted onto the 'Interpretation' drawings. The minimally processed data are provided as a greyscale image in the Archive Data Folder with an XY trace plot in CAD format. A free viewer is available: https://viewer.autodesk.com

When interpreting the results, several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as: *Abbey Wall* or *Roman Road*. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: *Probable*, or *Possible Archaeology*. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *Possible*.

4 RESULTS

The survey has been divided into three survey areas (Areas 1-3).

4.1 *Probable / Possible Archaeology*

4.1.1 No magnetic responses have been recorded that could be interpreted as being of archaeological interest.

4.2 *Uncertain*

4.2.1 A small number of weak linear trends and discrete responses in Area 2 have been categorised as being of uncertain origin. It is possible that they are of archaeological origin, though their interpretation as such is tentative. It is more likely that they are natural, or associated with the ridge and furrow present across the site.

4.3 *Agricultural – Ridge and Furrow*

4.3.1 Widely spaced, slightly curved, parallel linear responses dominate the results, and are clearly a result of medieval ridge and furrow cultivation.

4.4 *Ferrous / Magnetic Disturbance*

4.4.1 Ferrous responses close to boundaries are due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and their form is best illustrated in the XY trace plots. These responses are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil and are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

5 DATA APPRAISAL & CONFIDENCE ASSESSMENT

5.1 Historic England guidelines (EH 2008) Table 4 states that the average magnetic response on mudstone is poor, though response over Charmouth Mudstone can be variable. The strong responses associated with the ridge and furrow may have the potential to mask weaker, more ephemeral features. However, weak discrete and linear responses of uncertain origin have still been detected, suggesting that the technique has been effective.

6 CONCLUSION

6.1 The survey at Badsey has not identified any responses of definite archaeological origin. A small number of weak linear and discrete responses may be archaeological, though they are more probably of natural or agricultural origin. Evidence of ridge and furrow cultivation is present across the area, with areas of magnetic disturbance due to nearby fences and buildings visible at field edges.

7 REFERENCES

BGS 2018 British Geological Survey, Geology of Britain viewer [Accessed 18/01/2018] *website*: (http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps)

CIfA 2014 *Standard and Guidance for Archaeological Geophysical Survey.* Amended 2016. CIfA Guidance note. Chartered Institute for Archaeologists, Reading http://www.archaeologists.net/sites/default/files/CIfAS%26GGeophysics_2.pdf

EAC 2016 *EAC Guidelines for the Use of Geophysics in Archaeology,* European Archaeological Council, Guidelines 2.

Edwards, J,. 2017 *Decision Information - Delegated Report. Application Number: 17/01687/OUT. The Neuk, 3 Bretforton Road, Badsey, Evesham, WR11 7XG*

EH 2008 *Geophysical Survey in Archaeological Field Evaluation.* English Heritage, Swindon https://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf/

SSEW 1983 *Soils of England and Wales. Sheet 3, Midland and Western England*. Soil Survey of England and Wales, Harpenden.

Survey Area - showing 30m grid

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Location of Survey Areas

Client:
Orion Heritage

Project:
12279 - Land at Bretforton Road, Badsey, Evesham, Worcestershire

Scale:
0 metres 50
1:1000 @ A3

Fig No:
02

N

+2nT

-1nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots

Client:
Orion Heritage

Project:
12279 - Land at Bretforton Road, Badsey, Evesham, Worcestershire

Scale:
0 metres 50
1:1000 @ A3

Fig No:
03

N

KEY

	Uncertain Origin (discrete anomaly / trend)
	Agriculture (ridge and furrow)
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

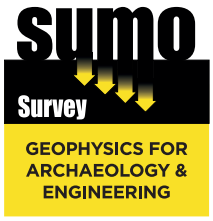
Title:
Magnetometer Survey - Interpretation

Client:
Orion Heritage

Project:
12279 - Land at Bretforton Road, Badsey, Evesham, Worcestershire

Scale:
0 metres 50
1:1000 @ A3

Fig No:
04



- Archaeological
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