Land East of Bloxham Road, Banbury, Oxfordshire

Report on Archaeological Geophysical Survey 2011

Surveyed by:

Bartlett-Clark Consultancy
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North Leigh,
Oxfordshire OX29 6PW
01865 200864

for:

The Environmental Dimension Partnership
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Whiteway Farmhouse,
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Introduction

This geophysical survey represents the initial stage of an archaeological field evaluation of a proposed development site at Easington near Banbury. The survey was commissioned from Bartlett-Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by EDP of Cirencester on behalf of Barwood Development Securities Ltd. Fieldwork for the survey was done on 18-21 November 2011.

The Site

The site is an arable field of c. 6ha located (at NGR SU 959826) to the south east of the junction of Bloxham Road (A361), and south of the east-west track known as the Salt Way.

The site is described in the Archaeological Desk Based Assessment (DBA) prepared and supplied to us by EDP (report reference EDP963_02, October 2011). This report identifies previously recorded archaeological sites and findings in the surrounding area. Some of the findings as listed in the DBA were noted also in the Written Scheme of Investigation for this project (WSI submitted by BCC to EDP on 17 November 2011). The following notes are reproduced in part from these previous documents.

Geology and topography

The underlying geology of the site is early Jurassic Lias composed of limestone and mudstone. The site appears to be free of drift deposits. Sites on Jurassic bedrock usually respond well to magnetometer surveys, and previous surveys on Lias have often provided clear evidence for the presence of archaeological features.

Archaeology

It is noted in the DBA that the site contains no previously identified or designated archaeological features or remains, but various findings have been recorded within a surrounding study area. These include a Neolithic causewayed enclosure some distance to the south east, a Roman villa in Wykham Park about 1km to the south, and earthwork remains of a medieval village, also in Wykham Park. The site lay within a medieval and later open field system, and its boundaries have remained unchanged since enclosure. A distinct N-S pattern of ridge and furrow is visible in a 1947 aerial photograph reproduced in the DBA.

It is concluded in the DBA that the site has only low a potential to contain archaeological remains.

The purpose of the survey was therefore to test for the presence of any unknown or unexpected archaeological findings.

Survey Procedure

The methods used for this geophysical investigation were recorded magnetometer surveying, supplemented by background magnetic susceptibility testing. Procedures for both techniques were as described in the Written Scheme of Investigation for the project.

Magnetometer survey

The magnetometer readings were collected along transects 1m apart using Bartington 1m fluxgate gradiometers, and are plotted at 25cm intervals along each transect. The results of the survey are presented as a grey scale plot (figure 1), and as a graphical (x-y trace) plot at 1:1250 scale in figure 2. Inclusion of these alternative presentations allows the detected magnetic anomalies to be examined in plan and profile respectively. An interpretation of the findings is shown superimposed on figure 2 (which permits the interpreted outlines to be compared with the underlying data), and is reproduced separately to provide a summary of the findings (figure 3).

The survey plots show the magnetometer readings after standard treatments which include adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plot to reduce background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. Features are indicated by coloured outlines, or broken lines.

Magnetic anomalies of possibly archaeological origin are outlined in red. Features of uncertain, but probably natural, origin are shown in a light brown. Strong magnetic anomalies which are likely to be of recent origin are shown in dark brown. Other linear markings representing cultivation effects are indicated by green outlines or broken green lines. Strong magnetic anomalies which appear to represent iron objects are in blue.

Magnetic susceptibility tests

The magnetometer survey was supplemented by a background magnetic susceptibility survey based on readings taken at 30m intervals with a Bartington MS2 meter. Susceptibility readings can (sometimes) be used to provide a broad indication of previously occupied or disturbed areas in which burning associated with past human occupation has enhanced the magnetic susceptibility of the topsoil, although the readings are usually affected also by non-archaeological factors, including geology and land use. A background survey of the kind done here is unlikely to provide any direct evidence for the presence or otherwise of archaeological features, but is undertaken to test the (largely) geologically determined magnetic properties of the soil. This information provides an indication of the strength of magnetic response to be expected from the site, and can be

of help when interpreting the magnetometer survey**.** Susceptibility readings are shown on a plot inset in figure 3.

Survey location

The survey grid was set out and tied to the OS grid using a differential GPS system (with Omnistar correction to give accuracy of c. 10cm). The plans are therefore geo-referenced, and OS co-ordinates of map locations can be read from the AutoCAD version of the plans which can be supplied with this report.

Results

The survey plots (figures 1 and 2) indicate that the site, as expected, is strongly responsive to a magnetometer survey. This is confirmed by the clearly defined ridge and furrow which is visible across most of the survey (as seen also in the 1947 AP in the DBA).

A number of other findings, some of which are of clear archaeological significance, were also detected. The most conspicuous of these is represented by three sides of a square enclosure adjacent to the eastern field boundary, and which contains a central circular structure (as labelled A on figure 3). These features are intersected by the ridge and furrow, but remain clearly visible. A few additional magnetic anomalies, which may be silted pits or similar features, are visible within and near to the square enclosure (as outlined in red), but there are perhaps fewer of them than would usually be expected at a possible occupation site. The square enclosure appears to be located within at least two other enclosures defined by weaker but distinct ditch-like features (B, C).

Other findings include an apparent trackway starting in the NW corner and extending into the centre of the field (D), and ditch-like linear features towards the south of the field (E, F). The magnetic response from E is intermittent, probably because the feature is cut through by the ridge and furrow.

A number of other magnetic anomalies which are of suitable size and strength to represent silted pits are indicated in red in the southern part of the field, but it is not in all cases clear that they are of archaeological origin. Some of them (e.g. G – L) are strong enough (when examined in profile in figure 2) perhaps to represent pits containing magnetically enhanced fill, but others are less clearly distinguishable from the background magnetic activity, which is stronger here than in the remainder of the field. Magnetic susceptibility values rise towards the south of the field (as indicated by black shading on the plot inset in figure 3), and there is a corresponding increase in the density of small background magnetic anomalies (shown as light brown outlines). These effects may be caused by a near-surface outcrop of magnetically responsive bedrock in the south of the field. Slight variations in the depth of topsoil cover in these conditions are liable to create strong but irregularly distributed magnetic anomalies. It is possible in this case that the magnetic disturbances towards the south of the field may include some archaeological features, as is suggested by the ditches at E and F, but not all the magnetic activity is clearly distinguishable from

natural background variations.

The ridge and furrow is less well defined in the south of the field than elsewhere, which would be consistent with a reduced soil depth in this area. The remaining traces of ridge and furrow appear to be intersected by an E-W linear pattern (also indicated by broken green lines in figure 3), which may result from recent ploughing.

Conclusions

The enclosures and circular feature in the NE corner of the field (A-C) are of clear archaeological interest, but findings elsewhere in the field are rather more difficult to assess. There is probably a former trackway (D) in the centre of the field, and traces of ditches or enclosures (E-F) towards the south. Some of the remaining pit-like magnetic anomalies (G-L) may be of archaeological origin, but such features are difficult to identify with confidence against a background of increased natural magnetic activity probably caused by minor variations in soil depth above a shallow bedrock.

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30 November 2011

The fieldwork for this project was done by P. Cottrell and F. Prince.

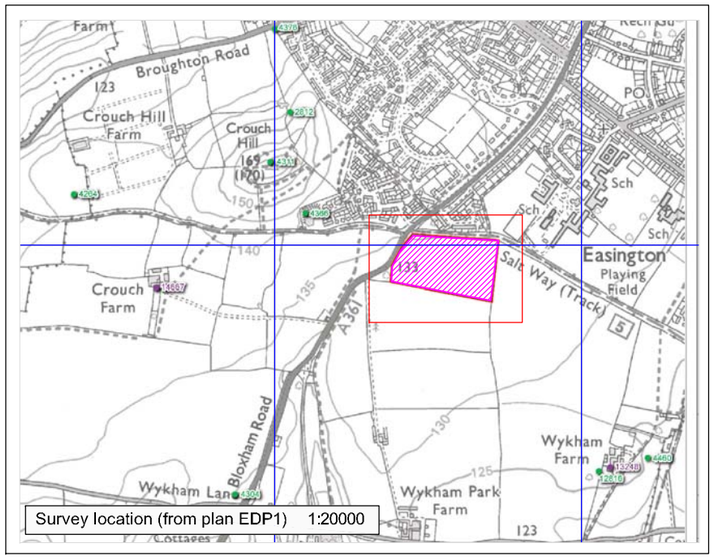
Based on site plan by Global Surveys,
7 Park View, Northampton, NN3 7TP

444400E
444500E
444600E
444700E

239000N
238900N
238800N

N

3.6 nT
-3.4



Survey location (from plan EDP1) 1:20000

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for The Environmental Dimension Partnership (EDP)

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Geophysical Survey 2011
Figure 1: Magnetometer survey
(grey scale plot)

0 1:1250 50m

Based on site plan by Global Surveys,
7 Park View, Northampton, NN3 7TP

444400E
444500E
444600E
444700E

N

239000N
238900N
238800N

80 nT

magnetic anomalies (archaeological ?)

magnetic disturbances
(recent / non-archaeological)

background magnetic activity
(natural / non-archaeological ?)

cultivation ?

strong (ferrous) magnetic anomalies

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Figure 2: Magnetometer survey
(with interpretation)

0 1:1250 50m

Based on site plan by Global Surveys,
7 Park View, Northampton, NN3 7TP

444400E
444500E
444600E
444700E

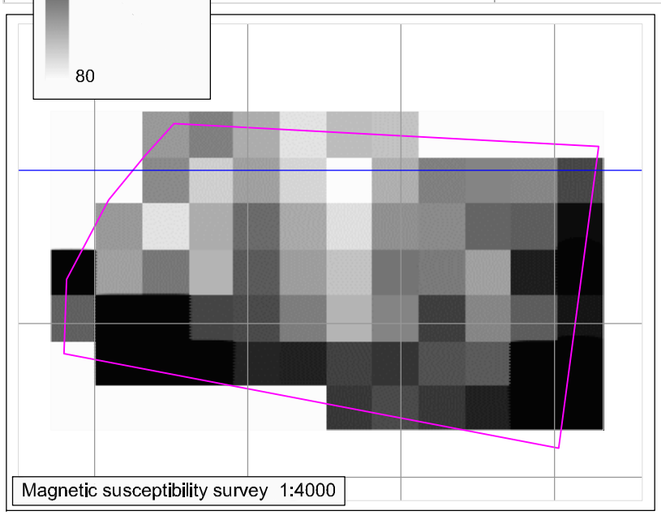
239000N
238900N
238800N

N

A
B
C
D
E
F
G
H
J
K
L

160 x 10^{-5}SI
(volume susceptibility readings)

80



Magnetic susceptibility survey 1:4000

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magnetic anomalies (archaeological ?)

magnetic disturbances
(recent / non-archaeological)

background magnetic activity
(natural / non-archaeological ?)

cultivation ?

strong (ferrous) magnetic anomalies

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Figure 3: Summary of findings

0 1:1250 50m