

**LAND EAST OF CARTERTON
OXFORDSHIRE**

Report on Archaeological Geophysical Survey 2013

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OA Job No. 5592

Land East of Carterton, Oxfordshire Report on Archaeological Geophysical Survey 2013

Introduction

This report describes the results from a geophysical survey which is to form part of an archaeological evaluation of proposed development site at Carterton, Oxfordshire.

The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by Oxford Archaeology on behalf of Savills and Bloor Homes. Fieldwork for the survey was done between 27 August and 5 September 2013. Data plots showing the findings were subsequently supplied to Oxford Archaeology, and are now included in this report.

The Site

The location and topography of the site are described in the Cultural Heritage Desk Based Assessment (DBA) for the project, as prepared by Oxford Archaeology [1]. The following notes are summarised in part from this document.

Location and topography

The site is located in an area of arable land proposed for residential development on the north east side of Carterton. The present investigation covers Area A as indicated on the location plan inset in figure 1. The survey area (as cross hatched) amounts to 46.3ha, and is centred approximately at NGR SU 292078.

The site is on a bedrock of Cornbrash limestone, and appears to be free of drift deposits. The DBA also mentions alluvial deposits near to the stream to the east of the site, but the stream is in Area B (as shown on the location plan), and outside the present survey area. Soils on Jurassic limestone (as here) usually respond strongly to magnetic surveys, as was confirmed by magnetic susceptibility readings taken during the survey. High readings (c. $50-80 \times 10^{-5}$ SI) were obtained from each of the fields within the survey area. This suggests that earth-filled archaeological features should be readily detectable in the survey, but also that minor irregularities or variations in the depth of topsoil could give rise to detectable magnetic anomalies. The elevation of the site is reasonably uniform with no strong gradients. It falls from c. 93m AOD in the north west of Area A to 83m at the south of the survey area.

Archaeological background

Previously identified archaeological findings within the site and a surrounding study area are shown on the map extract (from DBA figure 2) shown inset in figure 9. Findings which are noted in the DBA include a cropmark ring ditch (OA25), probably

representing a Bronze Age barrow ditch. There is no direct evidence for Roman occupation within the survey area, although the presumed line of a Roman road intersects the southern part of the site (OA30), and pottery has been found 300m from the southern site boundary. The road may be indicated by a linear stone spread seen during the site walkover survey.

A Saxon burial (OA1) has been found within the wider study area, but is some distance from the evaluation site. Medieval ridge and furrow remains visible within Area B to the east of the site (OA53), and appears in an aerial photograph near to the northern site boundary (OA29). There is also likely to have been medieval stone quarrying near to the site, mainly to the north (OA6). An additional former quarry (OA17) is shown on the 1st edition OS map of 1880 (DBA figure 4 as inset in figure 9), and there are enclosures (OA18) nearby. A building (OA19) to the west of the site appears to have been removed by the construction of the modern Monahan Road. A further large stone pit (OA20) is shown to the south west of the site on the 2nd edition OS map of 1899 (DBA figure 5: not reproduced here), but it lies outside the survey area.

Other findings noted in the DBA include a section of stone wall visible in a hedge (OA27), and an additional circular AP feature (OA28) towards the south west of the survey area.

Survey Procedure

The site was investigated by means of a recorded magnetometer survey. 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 at 1:2000 scale as a grey scale plot (shown in sections as figures 2-4), and as a graphical (x-y trace) plot at 1:1500 (figures 5-8). Comparison 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 figures 5-8 (which permits the interpreted outlines to be compared with the underlying data), and is reproduced separately to provide a summary of the findings (figure 9).

The graphical plots show the magnetometer readings after minimal pre-processing which includes 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.

The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. It is also strongly affected by ferrous and other debris of recent origin.

Colour coding has been used in the interpretation to distinguish different effects.

Magnetic anomalies which show some of the characteristics to be expected from features of potential archaeological interest are outlined in red.

Background magnetic anomalies which may be of natural or non-archaeological origin are outlined in brown, and stronger (probably recent) disturbances in a blue/purple. Possible traces of ridge and furrow are marked by green broken lines, and weak linear cultivation effects are shown in a lighter green. Some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are marked in light blue. Probable land drains are shown in blue.

Survey location

The survey grid was set out and tied to the OS grid using a Trimble ProXRT GPS system (with Omnistar satellite correction to give accuracy of 0.1m). 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

Fields within the survey area have been numbered (1-5 from north to south) for reference in this report.

Field 1

The survey has detected a number of subsurface features and disturbances in the northern part of the field, but much of the remainder is dominated by a pattern of closely spaced linear sequences of magnetic anomalies. These are indicated schematically by broken blue lines in figure 9. Effects of this kind commonly indicate land drains, which here appear to be unusually responsive and closely spaced. The presence of numerous small disturbances along each line suggests the presence of clay pipes, each of which creates a magnetic anomaly. A similar drainage pattern is visible in field 2 and (rather less distinctly) in field 3.

Other findings include disturbances corresponding to the former quarry (OA17). A strong magnetic anomaly at A (as labelled on figure 9) could represent a large item of magnetic debris within the filling of the quarry pit. Another group of disturbances at B must indicate a further pit filled with rubble or similar debris. Two adjacent features (C, D) are defined by linear ditch-like features, but their plan appears to be irregular or incomplete, and they do not clearly represent enclosures of a kind which could typically represent an ancient settlement or field system.

The features A, B, C may partly intersect or obscure a further ditched enclosure which is visible in the grey scale plot, and is defined by curved linear features at E. Their curving and tapered plan could suggest the entrance to an Iron Age (banjo ?) enclosure, although this resemblance may be fortuitous. The remainder of the enclosure (if present) could have been damaged by quarrying around A and B.

Other findings in field 1 include a scatter of individual magnetic anomalies (as outlined in brown). These are among the more distinct of the numerous magnetic anomalies present, many of which are associated with the drains. It is likely, given the highly responsive soil conditions at the site, that most of these features are minor disturbances of natural or non-archaeological origin. A few particularly distinct magnetic anomalies which may indicate silted pits are outlined in red, but the identification of these features is perhaps rather arbitrary, given the disturbed context. Their sparse distribution suggests there are unlikely to be any dense concentrations of detectable archaeological features in the field, other than the findings identified above.

There are no disturbances near the eastern field boundary to suggest the presence of a structure associated with the stone wall (OA27). Stone wall footings themselves will probably not respond to the survey, but there will usually be detectable disturbances in the vicinity of a former building.

The orientation of a number of faint north-south linear markings is indicated by green broken lines in the interpretation. These could be cultivation effects (possibly including traces of ridge and furrow), but are heavily eroded by the drains.

Field 2

Findings here include a continuation of the east-west pattern of land drains, and some further possible cultivation effects (green). These form a curving pattern in the eastern half of the field (around F), where they could possibly indicate surviving traces of ridge and furrow. The widespread distribution of individual magnetic anomalies (brown) again suggests most are likely to be natural or non-archaeological. There are no strong disturbances to correspond to the former quarry (OA26). This (with the building OA19) perhaps lies outside the survey area.

Field 3

Findings here (other than drains) include linear markings perhaps indicating traces of a rectilinear enclosure (G) in the north east corner of the field, and a distinct ditch-like linear feature parallel to the field boundary at H. An extended linear sequence of rather diffuse disturbances at J corresponds to a footpath shown on the 1880 and 1899 OS maps. It continues into field 3, but is not visible in field 1 (where the path is shown on the 1880 map, but the 1899 edition).

There is an unusually dense cluster of individual magnetic anomalies, some of which could represent silted pits, to the east of the field around K. They do not appear to be associated with ditches or enclosures of a kind which would indicate an ancient settlement site.

Field 4

There are possible faint traces of ridge and furrow (green), but the field is also filled by

narrow linear markings which align with the western boundary (light green). These are continuous markings which do not resemble the sequences of small magnetic anomalies representing drains as noted previously (which here are visible only near the north and south field boundaries), and could simply be an effect of recent ploughing. The plough marks, if so, are unusually distinct because of the highly responsive soil conditions at the site.

Various pit-like magnetic anomalies are marked (particularly in the south west corner around L), but these features again do not appear to represent an interpretable plan of an archaeological site. There are no findings to confirm the presence of a circular cropmark feature at OA28.

Field 5

The main finding here is the cropmark ring ditch (OA25), which is clearly visible at M. The survey has otherwise detected a north-south linear cultivation pattern as in field 4, and possible fragmentary indications of ridge and furrow (green). The former path continues from field 3 (J). Linear magnetic anomalies N, O, P could indicate traces of possible ditches or former field boundaries in the south east corner of the field. Strong magnetic anomalies as outlined along the eastern field boundary are caused by the adjacent modern buildings.

There are no identifiable findings to suggest or confirm the presence of a Roman road (OA30) across fields 4 and 5. Stone road metalling of the kind reported in the walkover survey would not respond directly to a magnetometer survey, but side ditches or other roadside features or enclosures are often detectable. These appear to be absent, unless the ditch-like features at O and P indicate traces of enclosure ditches at right angles to the line of the Roman road.

Conclusions

The site is on a strongly magnetic soil, and so it is possible that some of the magnetic anomalies identified in the survey represent only minor or superficial soil disturbances. The one known archaeological feature (ring ditch OA25) responded clearly to the survey, which suggests it is unlikely that other comparable features have gone undetected elsewhere.

The other main group of findings is at the north of the survey area around the former quarry (OA17 / magnetic anomaly A). Magnetic anomalies here could indicate a possibly incompletely detected ditched enclosure at E, and other enclosure-like features at C and D. Other enclosures or ditch-like features were seen at G and H in field 3, and at N, O, P in field 5. Disturbances are visible on the line of the former footpath at J. Groups of magnetic anomalies at K and L in fields 3 and 4 cannot confidently be interpreted as of archaeological origin. Cultivation effects and a dense system of land drains have been detected in most parts of the site, together perhaps with some heavily eroded traces of ridge and furrow. There are no findings to indicate features directly

associated with a Roman road in the southern part of the survey area, although the road itself might not be detectable.

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The fieldwork for this project was done by C. Oatley, N. Paveley and P. Heykoop.

Reference

[1] *Land East of Carterton, Oxfordshire: Cultural Heritage Desk Based Assessment*. OA Job No. 5592. Prepared by Oxford Archaeology for Savills and Bloor Homes. April 2013.

Land East of Carterton: Geophysical Survey
Appendix : Inventory of Selected Findings

This list notes the more significant findings from the magnetometer survey of this site. The grading (1-4) given alongside each entry refers primarily to the reliability of the geophysical evidence, but the potential archaeological relevance of detected features is also taken into account in the definitions of grades 3 and 4.

- Grade 1: Distinct magnetic anomalies of probable archaeological origin.
- Grade 2: Weaker or more isolated magnetic anomalies which could in part be archaeologically significant.
- Grade 3: Distinct magnetic anomalies, but probably recent or natural, or of other non-archaeological origin.
- Grade 4: Weaker or more isolated magnetic anomalies of probably non-archaeological origin.
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This summary list includes only selected magnetic findings, particularly those which may be of potential archaeological interest. Magnetic disturbances which may be mentioned in the text or indicated on plans are not necessarily included if they appear to be of natural or non-archaeological origin.

Feature		Grade
A	Magnetic anomaly corresponds (exactly) to quarry pit on 1880 OS map.	3
B	Disturbances probably indicating fill of another pit or pond.	3
C, D	Irregularly shaped ditched enclosures ?	2-3
E	Curving ditch-like features: perhaps entrance to a (partially obscured) enclosure.	1 ?
F	Weak linear curving pattern suggests traces of ridge and furrow.	2
G, H	Ditch-like linear features.	2
J	Magnetic disturbances on line of 19 th C footpath.	3
K,L	Clusters of magnetic anomalies (including pit-like features), but no associated ditches or enclosures to suggest settlement or other archaeological activity.	2-3

M	Circular magnetic anomaly corresponds to cropmark ring ditch (OA25).	1
N, O, P	Possible traces of ditched enclosures or former field boundaries.	2