LAND OFF KENNINGTON ROAD KENNINGTON, OXFORDSHIRE

Archaeological Geophysical Survey 2014

Report by:

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21 November 2014

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Abstract

This geophysical survey forms part of an archaeological evaluation of a proposed development site to the south of Kennington, Oxfordshire. It has produced a complex and detailed magnetic response indicating the presence of subsurface features and disturbances of varying origin. The findings suggest the field contains traces of an ancient field system, and trackways, together with an area of settlement activity adjacent to the eastern field boundary.

These results would be consistent with the presence in part of the evaluation area of archaeological findings similar to those of Bronze Age to Roman date previously identified in adjacent fields.

1. Introduction

The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by Phoenix Consulting Archaeology Ltd on behalf of Redrow Homes South Midlands. Fieldwork for the survey was done on 29-31 October 2014. A plan showing the survey findings has previously been supplied to Phoenix Consulting, and is now included in this report.

The proposed development area is a single 11ha arable field located (at NGR SP526008) to the south of existing housing in Kennington, and about 5km south of central Oxford. The field was surveyed in full except for small overgrown areas in in the north eastern and south western corners.

2. Objectives of the Survey

The aim of the geophysical survey was to identify the extent and character of any archaeological remains capable of producing a magnetic response. 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.

3. Topography and Geology

Information on the location and condition of the site, and the archaeological background to the investigation, is included in the report on the Desk Based Assessment (DBA) for the project, as supplied to us by Phoenix Consulting [1]. The following notes are summarised briefly from this report.

The site is a single arable field between Kennington Road and the railway, with a wooded copse and Sandford Lane to the north, and a hedge and drain to the south. The elevation varies from 70m OD in the centre of the field to c. 55m OD near the northern and southern boundaries. There appears to be a natural hollow or depression towards the east.

The varying elevation may relate in part to the geology, which includes a band of limestone (Corallian Group limestone and mudstone) in the central area of the field. There is sandstone at the northern end of the site, and Ampthill and Kimmeridge clays to the south. Soils on Jurassic bedrock (as found here), and particularly on limestone, are usually highly responsive to magnetic surveys. Archaeological features should therefore be readily detectable, but it is possible also that minor non-archaeological or natural ground disturbances will also give rise to observable magnetic anomalies. The survey plots in fact show a broad band of increased background magnetic activity across the centre of the field, and this is likely to correspond to the presence of near-surface limestone bedrock on the higher ground in this part of the field.

4. Archaeological Background

Only one previously identified archaeological finding is recorded in the Oxfordshire county Historic Environment Record from within the proposed development area (PDA), but there is considerable evidence for late prehistoric and Roman activity in the surrounding area. The DBA lists flint flakes which were found at location 1 (as labelled on the HER map inset in figure 1), but other nearby HER entries include Romano British pottery sherds found in a garden in Sandford Lane immediately north of the PDA [22 on map], and several findings of occupation material from a pipeline investigation to the south. Findings from the gas pipeline evaluation include a Bronze Age pit group [to the south west at 8], and a Bronze Age, Iron Age and Roman occupation site to the south [9]. There are also records of cropmarks and Roman pottery across the railway to the south east [19].

The oldest detailed historic map of the site is the 1877 1st edition OS map (inset in figure 4). This shows a (still extant) footpath across the site, and farm buildings (which were no longer visible by 1936) in the south eastern corner.

It is concluded from this evidence in the DBA that there is moderate potential for the presence of archaeological remains within the DBA.

5. 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 survey data is shown at 1:2000 scale as a grey scale plot (figure 1), and as a graphical (x-y trace) plot at 1:1250 in figures 2-3. Comparison of these alternative presentations allows the detected magnetic anomalies to be examined in plan and profile respectively. An interpretation of the findings is also shown superimposed on figures 2-3 (which permits the interpreted outlines to be compared with the underlying data). A further interpreted summary of findings is presented in figure 4.

The graphical plot in figures 2-3 shows the magnetometer readings after minimal pre-processing [of the kind permitted by English Heritage (2008) *Geophysical Survey in Archaeological Field Evaluation* Section 4.8]. This includes adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and truncation of extreme values. Additional weak 2D low pass filtering has been applied to the grey scale plot to adjust background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. The interpretation is intended to categorize most of the identifiable magnetic anomalies, but cannot reproduce the detail of the grey scale plots.

Magnetic anomalies which may show 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 indicated in light brown, and some stronger disturbances in a darker yellow or brown. Probable recent disturbances are in grey. Possible cultivation effects are indicated by green lines, and some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are marked in light blue.

Survey location

The survey grid was set out and tied to the OS grid using a Trimble ProXRT GPS system (with differential correction). 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.

6. Results

The survey plots show a complex pattern of findings, some of which are clearly of archaeological relevance, but the survey has also detected others which are more difficult to categorise.

One conspicuous finding is a curving double-ditched north-south trackway extending along the length of the field (labelled A in figure 4). The western part of the field (between the track A and Kennington Road) is relatively unproductive, but contains dense scatters of small background magnetic anomalies (outlined in light brown), as are often seen on limestone bedrock. A number of relatively large and irregular pit-like features (as outlined in a stronger yellow-brown) are also visible. Some of the stronger examples (red) could be pits of archaeological origin, but others are likely to be naturally silted or clay-filled hollows. (The DBA mentions calcareous clay soils to the east of the site, and natural pit-like magnetic anomalies are often seen on clay.)

A group of strong magnetic disturbances (B) could be a pit or hollow infilled with recent

debris. There appears to be a pipe along the western field boundary just outside the survey area. This causes a strong negative displacement of nearby readings, as seen in the graphical plots (figures 2-3).

Findings to the east of the ditched trackway (A) include a number of curved and rectilinear ditch-like features, most of which do not appear to align with or relate to the modern field plan. This suggests that at least some of them (in addition to A) could represent traces of an ancient field system, possibly including superimposed features of different periods. One ditch (C) coincides in part with the existing footpath, but diverges from the path and continues to the north as a distinct ditch-like feature, D. it also appears to intersect a rectilinear enclosure, E.

The main focus of archaeological activity is probably to the east of the natural hollow mentioned in the DBA towards the east of the field. Two distinct circular features (F and G) suggest the presence here of hut circles, with perhaps a third at H. A dense cluster of strong pit-like features (red) could represent other settlement features or remains. These are particularly concentrated between G and H, but others may be scattered more widely.

Other findings include strong magnetic disturbances at J in the south east corner of the field. These correspond well to the farm buildings (probably field barns) shown on the 1877 map (inset in figure 4). A map of 1905 shows an east-west boundary in the northern half of the field. This has not been detected, and was probably insubstantial.

The grey scale plot additionally shows various linear markings probably caused by cultivation. The orientation of a narrow overall north-south parallel pattern is indicated by broken lines marked in light green. These are likely to reflect current or recent cultivation. Broader NW - SE linear markings are visible in parts of the field (and are indicated in green, as at K, L). These do not respect the modern field boundaries, and could represent traces of earlier ridge and furrow cultivation. A final dense pattern of NE-SW linear markings is visible between ditch-like enclosure boundaries, and is indicated in brown around M. These features are difficult to interpret conclusively. They could perhaps indicate natural striations or stratification in the surface of the shallow limestone bedrock, or they could perhaps be cultivation effects contemporary with an earlier field system.

7. Conclusions

The survey plots show a complex pattern of findings, not all of which can be assigned confidently to a single interpretative category. The overall picture suggests the presence of ancient fields and enclosures bounded in part to the west by a curving north-south trackway (A). A number of pit-like features of potential archaeological origin may be scattered across the site, but these are not in all cases readily distinguishable from similar natural features. The main focus of archaeological activity appears to lie close to the eastern field boundary, where there is a dense cluster of pit-like features (as is characteristic of ancient settlement sites), together with probable hut circles. These findings suggest the presence here of a settlement site of the kind also identified in the HER in fields immediately to the south.

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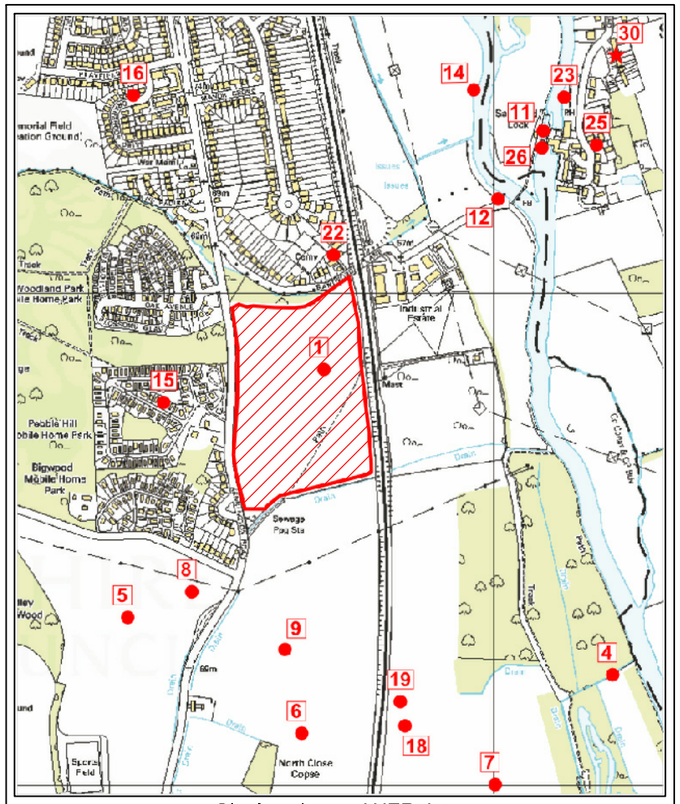
The fieldwork for this project was done by P. Cottrell, N. Dawson and M. Berry.

Reference

[1] *Land off Kennington Road, Kennington, Oxfordshire: Archaeological desk-based assessment.* Report on behalf of Redrow Homes South Midlands by G. Coates; Phoenix Consulting Archaeology Ltd. Document reference PC418a. 20 April 2014.



Site location and HER data
(from DBA figure 2)

1:12500

Area proposed for geophysical coverage

Background mapping based on topographical survey by RPS Group, Milton Keynes

452600E

200800N

2.2 nT

-1.8

N

figure 2

figure 3

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Figure 1: Magnetometer survey (grey scale plot)

Scale 1:2000 @ A3

0 100m

Background mapping based on topographical survey by RPS Group, Milton Keynes

N

magnetic anomalies (archaeological ?)

cultivation (ridge and furrow ?)

possible cultivation (or geological ?)

cultivation (recent ?)

broad / weak magnetic anomalies (geological / natural ?)

small background magnetic anomalies (mainly natural ?)

recent magnetic disturbances ?

pipe

strong (ferrous) magnetic anomalies

80nT

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Figure 2: Magnetometer survey (with interpretation)

0 Scale 1:1250 @ A3 50m

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Background mapping based on topographical survey by RPS Group, Milton Keynes

- magnetic anomalies (archaeological ?)
- cultivation (ridge and furrow ?)
- possible cultivation (or geological ?)
- cultivation (recent ?)
- broad / weak magnetic anomalies (geological / natural ?)
- small background magnetic anomalies (mainly natural ?)
- recent magnetic disturbances ?
- pipe
- strong (ferrous) magnetic anomalies

N

80nT

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Figure 3: Magnetometer survey (with interpretation)

0 Scale 1:1250 @ A3 50m

Surveyed by: Bartlett-Clark Consultancy 01865 200864
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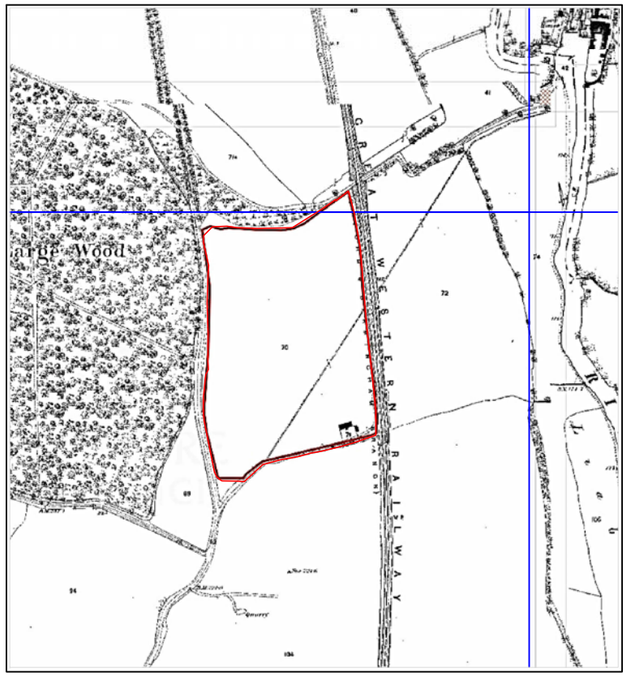

OS map 1877 (from DBA figure 3) 1:10000

Background mapping based on topographical survey by RPS Group, Milton Keynes

452600E

200800N

N

figure 2

figure 3

magnetic anomalies (archaeological ?)

cultivation (ridge and furrow ?)

possible cultivation (or geological ?)

cultivation (recent ?)

broad / weak magnetic anomalies (geological / natural ?)

small background magnetic anomalies (mainly natural ?)

recent magnetic disturbances ?

pipe

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Figure 4: Magnetometer survey (grey scale plot)

Scale 1:2000 @ A3

0 100m