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Oldbury Hillfort, Kent : Report on Geophysical Survey 2003

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Summary

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There is no clear correlation between magnetometer and susceptibility results, as would be expected if substantial ancient settlement remains were present within the area of the survey, but the possibility that some of the magnetometer findings could be of archaeological origin cannot be wholly excluded on the survey evidence alone.

Keywords

Geophysical Survey

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OLDBURY HILLFORT, KENT

Report on Geophysical Survey 2003

Abstract

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Oldbury Hillfort, near Igtham, Kent

Report on Geophysical Survey 2003

Introduction

The purpose of this survey was to test for the presence of archaeological features within the interior of the Oldbury Hillfort. The hillfort is a Scheduled Ancient Monument (No. 23018) located near Igtham at NGR TQ 583565. The survey was commissioned by the Archaeometry Branch of the English Heritage Centre for Archaeology, Portsmouth, and fieldwork for the survey was carried out on 4-5 March 2003.

Survey Procedure

The site was investigated by means of a magnetometer survey, supplemented by magnetic susceptibility measurements. The area specified for coverage is a strip of ground some 380m from north to south and 50m wide within the hillfort. This area is at present planted with lines of apple trees, and so magnetometer readings could be collected only along pairs of transects located in the gaps between the rows of trees. The transects within each pair are 1m apart, and the pairs are located at slightly varying separations (averaging about 5m) according to spacing of the trees. An intermittent survey of this kind is unlikely to be as informative as a fully recorded survey, and so we also surveyed a further 20m wide sample strip in an area of clear ground to the west of the orchard, as indicated on figure 1.

The survey followed standard magnetometer surveying procedures, with readings recorded at 25 cm intervals along lines 1m apart using fluxgate magnetometers. The x-y (graphical) plot represents the initial data after preliminary smoothing and correction for irregularities in line spacing caused by variations in the instrument zero setting. Only the additional detailed survey area is represented in the grey scale plot (figure 2). Additional 2D low pass filtering has been applied here to reduce background noise levels and emphasise the broader features which may be archaeologically significant. Outlines indicating the location of selected magnetic anomalies are shown superimposed on the x-y survey plot, and on a separate interpretative plan, figure 3.

The magnetometer survey was supplemented by magnetic susceptibility readings, which were taken at 12.5m intervals using a Bartington MS2 meter and field sensor loop. The results are presented as shaded plots together with the magnetometer survey interpretation in figure 3. Susceptibility measurements can provide a broad indication of areas in which archaeological debris, and particularly burnt material associated with past human activity, has become dispersed in the soil. They can provide useful supplementary evidence when interpreting a magnetometer survey,

but are also affected by non-archaeological factors, including geology, past and present land use, and modern disturbances.

The survey grid was set out and located at the required national grid co-ordinates by means of a sub-1m accuracy GPS system. Pegs marking the end points of a survey base line were also left in place at the field boundaries at positions x and y as indicated on figure 1.

Results

The survey plots show some potentially significant findings, but there is also a generally high level of background magnetic noise. This is particularly noticeable in the transects recorded between the fruit trees, as plotted on figure 1. Many of the transects show sharp narrow peaks, as typically caused by buried iron, and may be a result of wire or other metallic debris associated with fruit farming. There are similar disturbances in the continuously recorded survey area, but the observed level of background activity could also in part be a geological effect. The site is close to an area of the North Downs with widespread Clay-with-Flints deposits. It is our experience in previous surveys in similar conditions in North Kent that the soils often contain naturally magnetic stones, probably deriving from glacial drift, and that these can create a disturbed magnetic background. This creates difficulties for the interpretation of individual small magnetic anomalies, although larger features or those showing any continuity or regularity of plan can usually be recognised.

The features as outlined in red on figure 1 are magnetic anomalies which show some of the characteristics to be expected from archaeological features (in terms of size, strength and rounded profile), but in some cases they cannot be distinguished from the background activity with any great confidence. There are some possible linear features, particularly at A (as labelled on figure 3), but the grey scale plot (figure 2) does not suggest the presence of any clearly defined enclosures or boundaries which might be expected within an ancient settlement site. There is a strong magnetic anomaly (with a negative peak to its north) which could indicate a substantial pit at B, and a cluster of pit-like anomalies at C. Other features, including the strong cluster at D, are more erratic in plan or profile, and difficult to categorise.

The magnetic susceptibility survey (figure 3) gave readings sufficiently high (mean = 16 SI) to suggest that conditions should be reasonably favourable for magnetometer surveying, but shows no clearly defined areas of enhanced response. The initial readings (inset on figure 3) vary erratically, and there is no localised increase in readings which would support an archaeological interpretation for features A, B and C. The median filtered plot (which emphasises broader trends in the data) shows an increase in response to the east and south east of the survey, where there are no clearly identifiable magnetic anomalies.

Conclusions

This site gave a disturbed magnetic response, which presents difficulties for the detailed interpretation of the findings. A number of magnetic anomalies which could perhaps indicate archaeological features were detected, but these lie outside the orchard, and their archaeological significance cannot be confirmed from the survey evidence alone.

Some of the transects recorded in the centre of the orchard are relatively unaffected by magnetic interference, and a few individual magnetic anomalies are marked in this area on the plots. These anomalies are, however, weak and widely dispersed, and do not provide any strong evidence for the presence of significant concentrations of archaeological features.

Report by:

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11 April 2003

P. Cottrell and D. Lewis carried out the fieldwork for this project.

Track

156500N

558300E

Oldbury Hill

X

Y

60 nT

magnetic anomalies

Rock Shelters

Pegs left in hedges at X and Y:

X 12.2m | Full survey 20m | Recorded transects 44m | Y 1.9m

Surveyed by Bartlett - Clark Consultancy (01865 200864) for English Heritage Ancient Monuments Laboratory

1:1250

0 50m

Oldbury Hillfort, Kent

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Figure 1: Magnetometer Survey (with interpretation)

1:1250

Track

156500N

558300E

Oldbury Hill

+ 2.8 nT

-2.6 nT

Rock Shelters

1:1250

0 50m

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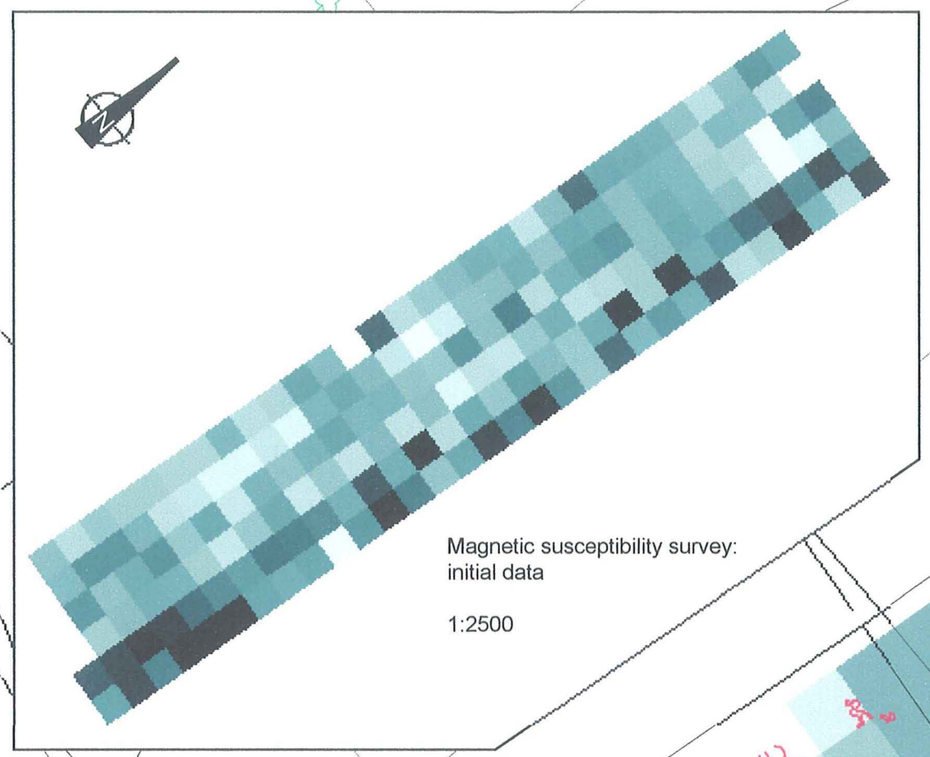
Figure 2: Magnetometer Survey (grey scale plot)

1:1250



Magnetic susceptibility survey:
initial data

1:2500

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

0

magnetic anomalies

Magnetic susceptibility survey:
data x median filter

Magnetic susceptibility surveyinitila data

1:1250

0 50m

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Figure 3: Magnetic Susceptibility Survey
(with magnetic anomalies)

1:1250