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A GEOPHYSICAL SURVEY AT

BUGBROOKE

NORTHAMPTONSHIRE

2002-2003

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ABSTRACT

Geophysical survey was undertaken on land with a combined area of approximately 2.4 ha at Bugbrooke, Northamptonshire between July 2002 and October 2003. Gradiometer survey was carried out and revealed a series of curvilinear and rectilinear enclosures from at least two phases of activity potentially of Iron Age and Roman date. Furrows of former ridge and furrow cultivation were also detected.

1 INTRODUCTION

Northamptonshire Archaeology conducted geophysical survey on an area of land with a combined area of approximately 2.4 ha at Bugbrooke, Northamptonshire (NGR ... Fig 1). The work (supported by the Heritage Lottery Fund) was undertaken on behalf of Stephen Young of University College Northampton. The aim of the work was to identify the nature of any buried archaeological remains.

2 TOPOGRAPHY AND GEOLOGY

The parish of Bugbrooke covers 910 ha of land on the south side of the river Nene that forms its short north boundary (RCHM 1982). The solid geology of Bugbrooke is mainly Clay (British Geological Survey, England and Wales Sheet 202, 1969). The site is flat and at the time of survey was used for arable agriculture. Area 1 had been rolled, and Area 2 was set-aside.

3 ARCHAEOLOGICAL BACKGROUND

In Bugbrook archaeological remains of prehistoric through to medieval date have been discovered. Prehistoric artefacts include a polished stone axe of group VI, a quartzite pebble with an hourglass perforation-possibly a mace, and a large saddle quern (Moore 1978). Enclosures and ditches have also been found in the south of the parish. A Roman settlement is documented in the south of the parish by a scatter of pottery, fragments of roof tile and building stone. Fishponds in the north of the parish and ridge and furrow across the whole parish are evidence for activity in the medieval period (RCHM 1982).

4 METHOD

All fieldwork was in accordance with English Heritage Guidelines (EH 1995).

GRADIOMETER SURVEY

The gradiometer survey was undertaken using a Geoscan Research FM36 Fluxgate Gradiometer. A total of 36 separate 20m x 20m (Area 1) and 12 separate 30m x 30m (Area 2) grid-squares were surveyed in detail. Each grid-square was traversed at rapid walking pace via parallel (Area 1) and zigzag (Area 2) traverses spaced at 1m intervals. A sample trigger recorded readings every 0.25m along the traverse. At the end of each grid the sensor alignment was checked and a tilt error of below $\pm/2nT$ per $\pm/2^{\circ}$ tilt was maintained.

The data were analysed using Geoplot 3.0 software. Low (negative) magnetism is shown as white and high (positive) magnetism as black in the resultant greyscale plots. The data were processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings sometimes caused by stray iron fragments and spurious effects due to the inherent magnetism of soils. The 'Zero Mean Traverse' algorithm was used in order to remove the variation between adjacent traverses. The data from area 2 was adjusted to remove stagger in the data along occasional traverses. No other processing functions were employed. The processed data is presented here in the form of greyscale plots (Figs 2 and 3).

5 SURVEY RESULTS

The gradiometer survey identified numerous positive magnetic anomalies. In Area 1 the majority of the anomalies would appear to reflect buried ditches forming a series of approximately twelve rectangular and curvilinear enclosures. These evidently intercut and represent at least two phases of development. For ease of reference in Figure 3, these enclosures have been colour divided into rectilinear (blue) and curvilinear (red) enclosures and linear features (yellow). A further possible circular enclosure has been detected on the south-eastern edge of the survey area. Linear positive anomalies, probably ditches, have also been detected to the south of the survey area. Parallel positive magnetic bands across the survey area probably reflect medieval furrows.

The survey in Area 2 identified 2 curvi-linear anomalies that represent buried ditches. The survey also identified probable ridge and furrow cultivation.

6 CONCLUSION

Fluxgate gradiometer survey of a 2.4ha area located large number magnetic anomalies that are likely to represent buried ditched enclosures. The enclosures appear to intercut. Morphologically they appear likely to represent former Iron Age or Roman settlement and represent at least two phases of development. Several linear anomalies reflecting former ditches have also been discovered possibly relating to the enclosures or represent further enclosures extending southwards. Relict furrows of former ridge and furrow ploughing were detected over the entire site, suggesting a possible high degree of truncation in earlier archaeological features.

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Magnetic Scale -3nT - +3nT white black

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Fig 2 Gradiometer Survey Results

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Fig 3 Gradiometer Survey Results with Interpretation