Northamptonshire County Council

Northamptonshire Archaeology

A Geophysical Survey of

Nova MK1

Milton Keynes

Buckinghamshire

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13 March 2006

Report 06/45

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NORTHAMPTONSHIRE COUNTY COUNCIL

NORTHAMPTONSHIRE ARCHAEOLOGY

MARCH 2006

GEOPHYSICAL SURVEY

AT NOVA MK1, MILTON KEYNES

BUCKINGHAMSHIRE

FEBRUARY 2006

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QUALITY CONTROL

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Figures

OASIS REPORT FORM

PROJECT DETAILS		
Project name	Geophysical survey at Nova MK1, Milton Keynes Buckinghamshire February 2006	
Short description (250 words maximum)	Northamptonshire Archaeology conducted a geophysical survey, on behalf of John Samuels Archaeological Consultants (JSAC), on an area of land of approximately 26 ha proposed for development. Magnetic susceptibility survey revealed a great deal of disturbance caused by the remains of a former exhibition ground and an area of enhanced readings in a field to the south east. Detailed gradiometer survey in that field located a possible ditched extension to a field boundary together with numerous small features thought likely to represent tree planting pits. Fields to the west generally produced only disturbed data associated with modern roads and hard standing. A sub-rectangular enclosure and linear ditches were identified in the most northerly part of the development area.	
Project type	Evaluation	
Site status		
Previous work		
Current Land use	Arable & exhibition ground	
Future work		
Monument type/ period		
Significant finds		
PROJECT LOCATION		
County	Buckinghamshire	
Site address	Nova MK1	
Study area (esq. or ha)	26 ha	
OS Easting & Northing	491400 238600	
Height OD		
PROJECT CREATORS		
Organisation	Buckinghamshire County Council	
Project brief originator		
Project Design originator	Adam Yates (NA)	
Director/Supervisor	Adrian Butler	
Project Manager	Adam Yates	
Sponsor or funding body	John Samuels Archaeological Consultants (JSAC)	
PROJECT DATE		
Start date	February 2006	
End date	February 2006	
ARCHIVES	Location (Accession no.)	Content (e.g. pottery, animal bone etc)
Physical		
Paper		
Digital		
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (NA report)	
Title		
Serial title & volume		
Author(s)		

A GEOPHYSICAL SURVEY AT NOVA MK1

MILTON KEYNES, BUCKINGHAMSHIRE

FEBRUARY 2006

ABSTRACT

Northamptonshire Archaeology conducted a geophysical survey, on behalf of John Samuels Archaeological Consultants (JSAC), on an area of land of approximately 26 ha proposed for development. Magnetic susceptibility survey revealed a great deal of disturbance caused by the remains in a former exhibition ground and an area of enhanced readings in a field to the south east. Detailed gradiometer survey in that field located a possible ditched extension to a field boundary together with numerous small features thought likely to represent tree planting pits. Fields to the west generally produced only disturbed data associated with modern roads and hard standing. A sub-rectangular enclosure and linear ditches were identified in the most northerly part of the development area.

1 INTRODUCTION

Northamptonshire Archaeology conducted geophysical survey at the Nova MK1 site, Milton Keynes, on behalf of John Samuels Archaeological Consultants, in February 2006. The survey was targeted at an area of land with a total area of approximately 26ha proposed development (Centre: NGR SP 914 386 , Fig 1).

2 ARCHAEOLOGICAL BACKGROUND

Although the development area contains no known archaeological features, large numbers of Iron Age and Roman features have been identified to the north-west (JSAC 2006, 3).

3 GEOLOGY AND TOPOGRAPHY

The site lies to the east of Milton Keynes, on A421 Standing Way. The geology of the area comprises Glacial Till overlying Oxford Clay (JSAC 2006, 3).

Four fields were available for survey (Fig 1). Field 1 was flat land with maize stubble bisected by north-south drain. To the west of this Field 2 was short pasture containing sheep. Field 3 in the north-west of the site was a former exhibition ground with roadways and areas of hard standing. Much of this was in the process of mechanical excavation. The exhibition ground may have previously continued south into Field 2 and east into Field 4. Field 4 was pasture, characterised by extensive evidence of land drains (shallow linear ditches).

4 GEOPHYSICAL SURVEY

Methodology

Geophysical survey was carried out in accordance with English Heritage and the Institute of Field Archaeologists Guidelines (EH 1995 & Gaffney, Gater and Ovendon 2002).

Reconnaissance Survey

Initial extensive geophysical survey of the site was carried out by topsoil (volume specific) magnetic susceptibility (MS) survey. It is understood that where archaeological sites exist, feature fills may be ploughed up to the surface, thus increasing the MS of the ploughsoil in that area. The geophysicist is therefore studying MS contrasts across a site to indicate buried archaeology, and as an additional benefit, the results of other soil processes (Gaffney, Gater and Ovendon 2002).

The survey utilised a Bartington MS2D MS meter and field coil. Readings were obtained on a 20m x 20m grid over the site. The data was subsequently entered into Geoplot v.3.00s software and georeferenced in MapInfo v.6 GIS to be displayed as a continuous grey tone plot, in which higher MS levels are shown as darker shades (Fig 2). An interpretative diagram has been assembled overlying the grey tone plot in Figure 3.

Gradiometer Survey

All detailed magnetometer survey was undertaken using Bartington Grad601-2 fluxgate gradiometers. The Grad601-2 is constructed as a dual-sensor instrument with two vertical gradiometers separated on a yoke to enable two lines of survey to be recorded in tandem.

A total of 97 separate 30m x 30m grid-squares, totalling *c* 9ha, were surveyed in detail. Each grid square was traversed at rapid walking pace in zigzag (alternate north-south/south-north) traverses spaced at 1m intervals with data recorded every 0.25m along these.

The data was analysed using Geoplot 3.00s software. Low (negative) magnetism is shown as white and high (positive) magnetism as black in the resultant greyscale plots. The following processing functions were carried out on the data. The ‘Zero Mean Traverse’ function was applied in order to bring the average level of each line of data into a balanced zero. Small-scale extreme readings were excised and replaced with the local mean.

The processed data is presented here in the form of a greyscale highlighting the magnetic

anomalies (-2nT / +2nT scale, Fig 4) and interpretive plot (Fig 5) and are referred to directly in the following Survey Results section.

Results

Reconnaissance Survey

Results of the reconnaissance (Fig 2) showed an average level of *c*22.5 x10^{-5} SI units across the site. MS levels were, not surprisingly, increased over the areas of the exhibition ground (Field 3) that included imported gravel, trackways and disturbed ground (Fig 3). Field 2 was of relatively constant MS (*c*10 x10^{-5} SI units). Other high MS anomalies (especially in the Field 1) often corresponded with deposits of magnetised ceramic material (brick/tile) on the surface. Field 1 also produced a large, 200m diameter, area of MS enhancement (mean 15 x10^{-5} SI units). This zone may have been derived from archaeological features, or previous agricultural improvements. Alternatively the zone may simply indicate a change in soil types.

Detailed Survey

The intensive gradiometry was targetted based upon the results of the MS survey (Figs 4 & 5).

Field 1

A linear positive anomaly was identified in the eastern half of the field and extended on a north-east to south-west alignment through the centre of the field (Fig 5). It probably forms a continuation of the eastern side of the Fox Covert boundary to the north-east and suggests that Field 1 was previously divided into two separate land parcels. A scatter of discrete positive anomalies was also identified in the eastern half of Field 1. The majority of these anomalies were only weakly magnetic which may suggest that they may have had a agricultural or arboricultural origin, perhaps forming tree-planting holes for an originally larger Fox Covert. Other linear anomalies probably represent land drains though a short length of ditch was identified in the south-west corner of the survey area. The area of enhanced magnetic susceptibility was detected primarily to the south of the main ditch boundary, perhaps denoting differential agricultural land-use between the two former land parcels.

The western half of the field contained evidence of ridge and furrow agriculture, orientated north-east to south-west. Regions of varied magnetic anomalies in the same area indicate dumps of ceramic material such as brick hardcore which could be seen on the field surface.

Field 2

Two parallel linear anomalies were located east-west orientated in Field 2. Ground observation showed that these were likely to be tracks created of hardcore, now covered by turf. A third track was detected impinging on the south-east corner of the area. The existence of the tracks suggest that the Exhibition Ground was once larger than at present.

Field 3

Only a small area of the main exhibition field was surveyed because the remainder was compromised by recent concrete foundations, rubble and trackways. The selected area was surveyed between two roads in the south-east of the field. Unfortunately the results showed that this area had also been disturbed by mixed rubble dumping.

Field 4

Survey of the north-eastern field at the Nova Site was chosen to examine an area apparently untouched by the exhibition ground. A highly magnetic linear anomaly detected through the centre of the area was likely to reflect a buried iron pipe extending the drain seen in Field 1 (Fig 4).

A complex of positive linear anomalies was detected in the north-eastern half of the survey. They appear to represent central sub-rectangular ditched enclosure surrounded on three sides by ditches which shared a similar orientation (Fig 5). The survey also identified ridge and furrow which shared the same alignment to that in Field 1. In addition seven intense, ferrous, magnetic anomalies, each up to 5m diameter were detected east of the ditch features which probably denotes modern disturbance while several ceramic field drains were identified in the south of the field.

5 CONCLUSION

Geophysical survey with Field 4 may have identified a sub rectangular enclosure and related ditches. The work also suggests that the present Fox Covert originally extended into Field 1 where a continuation of its eastern boundary was also revealed. Elsewhere in Fields 1 and 4 there was traces of ridge and furrow from former open field agriculture. The western part of the survey showed that there was considerable modern disturbance associated with the former exhibition ground within Fields 2 and 3.

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