STRATASCAN

Geophysical Survey Report

Kings Langley Priory
Hertfordshire

for

Wessex Archaeology

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J2236

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1 SUMMARY OF RESULTS

A resistivity survey was carried out over 1.12ha within the Scheduled Ancient Monument of Kings Langley Priory. Strong evidence for structural remains has been identified in the centre of the southern survey area. A buttress wall can be seen running east to west across the survey, suggesting the presence of further structural remains outside the survey area. Further areas of high resistance have been identified throughout the survey area; these represent possible areas of structural debris and ground disturbance.

2 INTRODUCTION

2.1 Background synopsis

Stratascan were commissioned by Wessex Archaeology to undertake a geophysical survey of an area outlined for proposed development. This survey forms part of an archaeological investigation being undertaken by Wessex Archaeology.

2.2 Site location

The site is located to the west of the existing Priory building (Scheduled Ancient Monument number HT85), in the village of Kings Langley, south of Hemel Hempstead at OS ref. TL 064 026.

2.3 Description of site

The survey area is approximately 1.12ha consisting of two grass covered fields bounded by Chipperfield Road to the north and Langley Hill Road to the east. Situated in the west of the northern field are a number of allotments, areas of thick vegetation are also present across the survey area. The underlying geology is Chalk (British Geological Survey South Sheet, Fourth Edition Solid, 2001). The overlying soils are known as Hornbeam 2 soils which are stagnogleyic paleo-argillic brown earths. These consist of deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (Soil Survey of England and Wales, Sheet 4 Eastern England).

2.4 Site history and archaeological potential

The survey area is situated within the precinct of the remains of Kings Langley Dominican Priory and close to the site of the Royal Palace and is a Scheduled Ancient Monument (SAM). The potential for medieval structural remains is high.

2.5 Survey objectives

The objective of the survey was to locate any anomalies that may be of archaeological significance so that they may be assessed prior to further archaeological investigation.

2.6 Survey methods

Resistivity was chosen due to its ability to identify structural remains and areas of archaeological activity. More information regarding these techniques is included in the Methodology section below.

3 METHODOLOGY

3.1 Date of fieldwork

The fieldwork was carried out over 2 days from the 13-14th November 2006 when the weather was overcast and occasionally wet.

3.2 Grid locations

The location of the survey grids has been plotted in Figure 2 together with the referencing information.

3.3 Description of techniques and equipment configurations

Resistance survey relies on the relative inability of soils (and objects within the soil) to conduct an electrical current which is passed through them. As resistance is linked to moisture content, and therefore porosity, hard dense features such as rock will give a relatively high resistance response, while features such as a ditch which retains moisture give a relatively low response.

The resistance meter used was an RM15 manufactured by Geoscan Research incorporating a mobile Twin Probe Array in conjunction with MPX15 multiplexer, allowing the collection of two lines of data along one traverse. The Twin Probes are separated by 0.5m and the associated remote probes were positioned approximately 15m outside the grid. The instrument uses an automatic data logger which permits the data to be recorded as the survey progresses for later downloading to a computer for processing and presentation.

Though the values being logged are actually resistances in ohms they are directly proportional to resistivity (ohm-metres) as the same probe configuration was used through-out.

3.4 Sampling interval, depth of scan, resolution and data capture

3.4.1 *Sampling interval*

Readings were taken at 0.5m centres along traverses 0.5m apart. This equates to 3600 sampling points in a full 30m x 30m grid. All traverses were surveyed in a "zigzag" mode.

3.4.2 *Depth of scan and resolution*

The 0.5m probe spacing of a twin probe array has a typical depth of penetration of 0.5m to 1.0m The collection of data at 1m centres with a 0.5m probe spacing provides an optimum resolution for the technique.

3.4.3 *Data capture*

The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each job, data is transferred to the office for processing and presentation.

3.5 Processing, presentation of results and interpretation

3.5.1 *Processing*

The processing was carried out using specialist software known as *Geoplot 3* and involved the 'despiking' of high contact resistance readings and the passing of the data though a high pass filter. This has the effect of removing the larger variations in the data often associated with geological features. The nett effect is aimed at enhancing the archaeological or man-made anomalies contained in the data.

The following schedule shows the processing carried out on the processed resistance plots.

Despike	*X radius = 1*
	Y radius = 1
	Spike replacement
High pass filter	*X radius = 10*
	Y radius = 10
	Weighting = Gaussian

A low pass filter (X radius = 10, Y radius 1, Weighting = Gaussian) was carried out and subtracted from the processed data to remove the traversal variations caused by the MPX15 multiplexer.

3.5.2 *Presentation of results and interpretation*

The presentation of the data for the site involves a print-out of the raw data as a grey scale plot (Figure 3), together with a grey scale plot of the processed data (Figure 4). Anomalies have been identified and plotted onto the ‘Abstraction and Interpretation of Anomalies’ drawing (Figure 5).

4 RESULTS

The resistivity survey has been successful in identifying structural remains of archaeological origin. The anomalies have been identified and separated into the following categories:

- High resistance area anomaly – structural remains
- High resistance area anomalies – possible structural debris or ground disturbance
- Moderate high resistance area anomalies – possible compacted ground or ground disturbance
- Low resistance area anomaly – possible cut feature or area of disturbed ground
- Area of mottled response – possible geological/pedological origin

High resistance area anomaly – structural remains
Strong evidence for structural remains has been identified in the centre of Area 2. A probable wall with a series of buttress supports situated on the northern side of the wall can be seen in an east to west orientation (**1**). Any associated structural remains have not been identified within the survey area. The buttress supports situated on the northern, and therefore outer, side of the wall suggests the presence of additional structural remains to the south of the survey area.

High resistance area anomalies – possible structural debris or ground disturbance
A large area of high resistance has been identified in the eastern side of Area 1 (**2**). This area anomaly may represent possible structural debris or a large area of ground disturbance. Additional areas of high resistance situated throughout the survey areas may represent further areas of debris or ground disturbance (**3, 4** and **5**).

Moderate high resistance area anomalies – possible compacted ground or ground disturbance
Areas of moderate high resistance can also be seen throughout the survey area (**6** and **7**). These area anomalies may represent areas of compacted ground or ground disturbance. Area anomaly **7** runs parallel with anomaly **1** and may be associated with the structural remains.

Low resistance area anomaly – possible cut feature or area of disturbed ground
Running perpendicular to the identified structural remains is a wide band of low resistance (**8**). This anomaly has well defined edges and may represent a cut feature or area of disturbed ground of archaeological origin, possible associated with the structural remains.

Area of mottled response – possible geological/pedological origin
A large area of faint mottled response can be seen towards the south of Area 1 (**9**). This area anomaly may be of pedological or geological origin.

5 CONCLUSION

Strong evidence for structural remains has been identified across the centre of Area 2 in the form of a high resistance area anomaly. This indicates a wall orientated east to west with a series of buttress supports situated to the north of the wall, which suggests that associated structural remains may be situated to the south of the survey area. Further areas of high resistance situated across the survey area may suggest the presence of structural debris or ground disturbance.