ARCHAEOLOGICAL
SERVICES
WYAS

Land at Willerby Brow
Staxton
North Yorkshire

Geophysical Survey

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Report No. 1734

CLIENT
Ian Pick Associates

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Staxton

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Contents

Summary

A geophysical evaluation covering 0.4 hectares, comprising both magnetometer and earth resistance survey, was carried out on land south of Staxton in advance of a proposed development. Both survey techniques have identified linear anomalies that may be caused by archaeological features, perhaps associated with the earthwork immediately to the north of the survey area. However, a geological origin for these anomalies cannot be discounted.

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1. Introduction and Archaeological Background

1.1 Archaeological Services WYAS was commissioned by Ian Pick of Ian Pick Associates on behalf of their clients Broachdale Birds Limited to carry out a geophysical survey (magnetometer and earth resistance) on land approximately 1.3km south-west of Staxton, North Yorkshire (see Fig. 1) in advance of the determination of a planning application (No. 07/00753/OUT) for the construction of a free-range poultry house.

1.2 The site is centred at National Grid Reference TA 0075 7800 approximately 250m north-west of the B1249 on Staxton Hill (see Fig. 2). The survey covered an area of 0.4 hectares block, centred on the footprint of the proposed building, in an area known as Willerby Brow.

1.3 At the time of the survey (October 19th 2007) the site was under permanent pasture. No problems were encountered although the south-western extent of the proposed development area could not be surveyed due to the steep gradient.

1.4 Topographically, the site was undulating sloping down towards the north-west and south-west being situated at approximately 130m above Ordnance Datum (OD). The underlying solid geology comprises chalk, including Lower Cretaceous Red Chalk. The soils are classified in the Upton 1 association being described as well drained calcareous silts over chalk.

1.5 Immediately to the north of the survey area a linear dyke crosses Willerby Brow. This monument survives as an upstanding earthwork feature directly to the north of the survey area and to the east as a cropmark where it has been degraded by modern agriculture. Further east the earthwork is classed as a Scheduled Ancient Monument. In the surrounding landscape a number of linear boundaries, dykes, round barrows, enclosures and field systems have been identified.

2. Methodology and Presentation

2.1 The work was carried out in line with recommendations from Gail Falkingham, Historic Environment Team Leader of the Heritage and Environment Section at North Yorkshire County Council, and a project design prepared by ASWYAS on behalf of the client. The general aim of the survey was to obtain information that would contribute further to an evaluation of the archaeological potential of the site by determining the presence or absence of buried archaeological remains in the proposed development area.

2.2 In order to achieve this aim both magnetometer and resistance surveys were carried out across the whole of the proposed development footprint, an area of approximately 0.4 hectares.

2.3 A Bartington Grad601 magnetic gradiometer was used for the magnetometer survey with readings being taken at 0.25m intervals on zig-zag traverses 1m apart within 20m by 20m grids. The readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation using Geoplot 3 software.

2.4 A Geoscan RM15 resistance meter was used during the earth resistance survey, with the instrument logging each reading automatically at 1m intervals on traverses 1m apart. The mobile probe spacing was 0.5m with the remote probes 15m apart and at least 15m away from the grid under survey. This mobile probe spacing gives an approximate depth of penetration of 1m for most archaeological features.

2.5 The standard archaeological technique for resistance surveys uses a *twin probe* configuration. One current and one potential electrode (the *remote* or *static probes*) are fixed firmly in the ground a set distance away from the area being surveyed. The other current and potential electrodes (the *mobile probes*) are mounted on a frame and are moved from one survey point to the next. Each time the mobile probes make a good contact with the ground an electrical circuit is formed between the current electrodes and the potential gradient between the mobile and remote probes is measured and stored in the memory of the instrument.

2.6 The survey methodology, report and any recommendations comply with guidelines outlined by English Heritage (David 1995) and by the IFA (Gaffney *et al* 2002). All figures reproduced from Ordnance Survey mapping are done so with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

2.7 A general site location plan, incorporating the 1:50000 Ordnance Survey mapping, is shown in Figure 1. Figure 2 shows the processed magnetometer data superimposed onto an Ordnance Survey map base at a scale of 1:2000. The processed (greyscale) and unprocessed (XY trace plot) data of both surveys, together with accompanying interpretation figures, are presented in Figures 3 to 8 inclusive at a scale of 1:1000.

2.8 Technical information on the equipment used, data processing and survey methodologies are given in Appendix 1 and Appendix 2. Appendix 3 details the survey location information and Appendix 4 describes the composition and location of the site archive.

The figures in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All figures are presented to most suitably display and interpret the data from this site based on the experience and knowledge of Archaeological Services staff.

3. Results and Discussion (Figs 3 to 8 inclusive)

3.1 Two pairs of converging linear magnetic anomalies have been identifed. To the west of the survey area the anomalies are aligned north-west/south-east whilst to the east, where the responses are stronger, these are aligned north-east/south-west. Neither pair of anomalies align with any current field boundaries.

3.2 The resistance data is much less clear but broad areas of low resistance correlate with the location and alignment of the magnetic anomalies. The magnetic anomalies are possibly indicative of infilled ditches and the proximity of the earthwork dyke, only 20m to the north, would tend to support an archaeological interpretation, perhaps trackways or field boundaries leading

to/from the earthwork. However the landscape is fairly undulating and it may be that the anomalies identified by both techniques are a consequence of subtle changes in slope and soil depth or fissures in the bedrock.

4. Conclusion

4.1 Linear anomalies, perhaps indicative of archaeological features, have been identified, most notably by the magnetometer survey. Whilst the close proximity of the upstanding earthwork lends credence to an archaeological interpretation a natural/geological explanation cannot be ruled out.

The results and subsequent interpretation of data from geophysical surveys should not be treated as an absolute representation of the underlying archaeological and non-archaeological remains. Confirmation of the presence or absence of archaeological remains can only be achieved by direct investigation of sub-surface deposits.

Bibliography

David, A., 1995. *Geophysical Survey in Archaeological Field Evaluation: Research and Professional Services Guidelines* No. 1. English Heritage

Gaffney, C., Gater, J. and Ovenden, S. 2002. *The Use of Geophysical Techniques in Archaeological Evaluations*. IFA Technical Paper No. 6

Acknowledgements

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Appendices