

Land at Twigworth, Gloucestershire
Report on Archaeological Geophysical Survey 2013

Report by:

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Introduction

This report describes a geophysical survey carried out as part of an archaeological field evaluation of a proposed development site at Twigworth near Gloucester. The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, on behalf CgMs Consulting Ltd of Cheltenham, who are to undertake and co-ordinate the evaluation on behalf of Robert Hitchins Ltd and their successors in title to the land. Fieldwork for the survey was done between May 13-22 2013.

The Site

The site is described in an Archaeological Desk Based Assessment (DBA), which was prepared and supplied to us by CgMs [1]. This documents lists and describes previously recorded archaeological sites and findings from the evaluation site, and from the surrounding area. We previously included a summary of the more relevant archaeological findings as noted in the DBA in the Method Statement (prepared by BCC and submitted to CgMs) at the start of this project [2]. The following notes are reproduced in part from this earlier summary.

Topography and geology

The study site is an area of agricultural land approximately 29.5ha in area, and centred at NGR 384904, 221952. It is being considered for a mixed use development. The proposed development area occupies mainly arable land with horse paddocks in the western part of the site. The site is located on the east side of the A38 south of Twigworth and north of Gloucester. The topography is generally level at c. 12.6m AOD, but falls slightly towards the Hatherley Brook, which forms its southern boundary.

The solid geology of the site is early Jurassic Lias (mudstone and limestone of the Rugby Limestone Member). This is overlain in parts of the site (northern and some of the central area) by sand and gravel drift deposits, and there are localised clay, sand and silt deposits adjacent to the Hatherley Brook.

Sites both on Jurassic bedrock and on river terrace gravels usually provide favourable conditions for magnetometer surveying, although it is often the case that naturally magnetic stones in gravel give rise to small background magnetic anomalies. These need to be distinguished from potential archaeological features (which are usually larger or more continuous) when interpreting the survey. Positive archaeological findings have previously been obtained in surveys at sites with similar ground conditions to those at Twigworth, as has

been seen in surveys at various locations near Cheltenham, and elsewhere.

Archaeological background

No previous archaeological fieldwork has been carried out within the study site itself, but it is mentioned in the DBA that land to the south and south-east on the opposing side of the Hatherley Brook has been the subject of previous desk based studies and subsequent field evaluations (HER 21147, 27915, 30922, 30932, 32295), as has land further to the south and to the north-east of Longford (HER 27039). These studies have recorded limited evidence of occasional Mesolithic and Neolithic activity, with more intensive occupation and settlement (of a kind which might give rise to geophysically detectable remains) occurring in the Late Iron Age, and extending through the Roman period. There is little evidence of continued occupation activity at these locations in Saxon/Medieval periods.

A number of archaeological watching briefs and evaluations to the north of the site have further recorded evidence of a Roman settlement, interpreted as the site of a possible former villa and associated activity north of Court Farm and north-west of Hatherley Manor Hotel.

Various cropmark or earthwork sites are noted in both the HER and NMR for the study site and the wider study area. Of these, the NMR records a possible cropmark enclosure (NMR 115718) to be present within the study site itself (at the west of field 1), together with areas of ridge and furrow cultivation.

Previous field studies conducted on cropmark sites to the south of the study site (HER 27039, 30922 and 30932) have demonstrated these to represent evidence of former Late Iron Age/Roman period farmsteads and settlements. A Roman road running north from Gloucester to Worcester/Birmingham is identified immediately to the west of the study site (HER 7164 and 8090), although its actual course remains uncertain,

Historic map evidence illustrates that the study site has remained predominantly in agricultural use, either as cultivated or pasture land, throughout the Post-Medieval and Modern period to the present day.

Survey Procedure

The site was investigated by means of a recorded magnetometer survey. Readings were collected along transects 1m apart using Bartington 1m fluxgate gradiometers, and are plotted at 25cm intervals along each transect. The results of the survey are presented at 1:2000 scale as a grey scale plot (figures 2-3), and as in sections as a graphical (x-y trace) plot (figures 4-7). Comparison of these alternative presentations allows the detected magnetic anomalies to be examined in plan and profile respectively. An interpretation of the findings is shown superimposed on figures 4-7 (which permits the interpreted outlines to be compared with the underlying data), and is reproduced separately to provide a summary of the findings (figure 8).

The graphical plots show the magnetometer readings after minimal pre-processing which includes adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plots to reduce background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. The interpretation is intended to be schematic and illustrative, and not to reproduce the detail of the grey scale plots.

Features as marked include magnetic anomalies which show characteristics to be expected from features of potential archaeological significance (in red). Strong disturbances of probably recent origin are indicated in brown, and cultivation markings in green. Pipes and drains are shown in shades of blue, and some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are outlined in light blue. Small background magnetic anomalies of probably geological origin are outlined faintly in light brown.

Survey location

The survey grid was set out and tied to the OS grid using a differential GPS system (with Omnistar satellite correction to give accuracy to c. 10cm). The plans are therefore georeferenced, and OS co-ordinates of map locations can be read from the AutoCAD version of the plans, which can be supplied with this report.

Results

Fields within the site have been numbered in an arbitrary sequence (1-8, as indicated on the survey plans) for reference in this report.

The survey has recorded magnetic activity from a variety of sources, including some which are of clear archaeological relevance. The main finding is a group of features (as outlined in red around A in figure 8) in the centre of field 1. These are seen against a background of small-scale magnetic noise caused by the gravel soil, but remain distinguishable. It is possible that the features have been eroded in part by cultivation, but their plan indicates the presence of a number of ditched enclosures, together with hut circles and other features. These findings suggest a settlement site of late prehistoric or Roman date of the kind seen in previous evaluations to the south, as noted in the DBA.

These findings are centred about 100m to the north east of the cropmark enclosure which is identified in the DBA (and marked on the plan inset in figure 8), but the cropmark itself does not appear to have been detected by the survey.

The density of natural background magnetic anomalies (light brown) increases towards the north of the site (where gravel soils are noted in the DBA), but similar activity is present throughout the survey. Linear cultivation effects (probably indicating traces of ridge and furrow, and marked on figure 8 in green) are also clearly visible towards the north of the site

(around B in field 2 and C in field 1), but only faint traces were detected elsewhere. It is possible, therefore, that much of the ridge and furrow shown on the cropmark plan has been eroded by modern cultivation. A possible medieval or later trench shown on the cropmark plan in field 6 was also not detected by the survey.

Findings, other than the main group of settlement features in field 1, are very limited. They include fragmented linear markings of a kind which are likely to represent land drains, particularly to the south of the site in fields 5 and 6. A north-south linear disturbance at D in field 3 could be a drain or former boundary. Possible cultivation effects are more clearly visible to the east of this line than to the west.

Part of a further drain or boundary could be visible at E in field 1, but other former boundaries shown on historic maps in field 1 were not clearly detected (and so were likely to be defined by hedges rather than ditches). Only a few magnetic anomalies with broad or rounded profiles of a kind which could represent silted pits (of potential archaeological interest) can be identified in the graphical plots. The most distinct of these are at F in field 2, but they are isolated and do not suggest the presence of a concentration of archaeological features. The significance of a larger pit-like disturbance at G in field 1 is unclear.

Other features visible in the survey plots include a north-south pipe (blue) in fields 1 and 7, and various strong (and probably modern) disturbances near field boundaries and entrances (brown). These are most concentrated in the paddocks to the west of the site (field 8).

Conclusions

The survey has produced clear evidence for a group of enclosures and related features indicating a settlement site in the centre of field 1, but there is no evidence for any other comparable findings elsewhere within the survey area. Findings of potential archaeological relevance from the remainder of the survey are limited to a few isolated pit-like features, and occasional traces of ridge and furrow cultivation.

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The fieldwork for the survey was done by C. Oatley and N. Paveley.

References

- [1] Archaeological Desk Based Assessment; Land at Twigworth, Gloucestershire, Gloucestershire. S. Weaver, CgMs. March 2013 (CgMs ref: WB/15126).
- [2] Land at Twigworth, Gloucestershire: Method Statement for Archaeological Geophysical Survey. Document submitted by Bartlett Clark Consultancy to CgMs; 7 May 2013.

Land at Twigworth, Gloucestershire: Geophysical Survey

Appendix : Inventory of Selected Findings

This list notes the more significant findings from the magnetometer survey of this site. The grading (1-4) given alongside each entry refers primarily to the reliability of the geophysical evidence, but the potential archaeological relevance of detected features is also taken into account in the definitions of grades 3 and 4.

- Grade 1: Distinct magnetic anomalies of probable archaeological origin.
- Grade 2: Weaker or more isolated magnetic anomalies which could in part be archaeologically significant.
- Grade 3: Distinct magnetic anomalies, but probably recent or natural, or of other non-archaeological origin.
- Grade 4: Weaker or more isolated magnetic anomalies of probably non-archaeological origin.
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This summary list includes only selected magnetic findings, particularly those which may be of potential archaeological interest. Magnetic disturbances which may be mentioned in the text or indicated on plans are not necessarily included if they appear to be of natural or non-archaeological origin.

Field	Feature		Grade
1	A	Group of ditched enclosures indicating (perhaps partly eroded) remains of settlement site.	1
2	B	Ridge and furrow (visible also in cropmark plan).	1
1	C	Ridge and furrow (not seen in cropmark plan).	1
3	D	Former boundary (or perhaps land drain)	2
1	E	Disturbance or drain corresponds to part of a former boundary (as marked on maps until 1970).	2
2	F	Distinct but isolated pit-like features.	2
1	G	Large (possible recent ?) pit-like disturbance.	3