NORTON FARM, BROMSGROVE, WORCESTERSHIRE

Report on Archaeological Geophysical Survey 2011

A. Bartlett

Surveyed by:

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01865 200864

for:

CgMs Consulting
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Birmingham B2 5LS

Land at Norton Farm, Birmingham Road, Bromsgrove
Report on Archaeological Geophysical Survey, 2011

Summary

This geophysical survey forms part of an archaeological evaluation of a site to the north of Bromsgrove, Worcestershire. The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by the Birmingham office of CgMs Consulting. Fieldwork for the survey was done on 5-8 September 2011.

Site Location and Description

The site is centred at NGR SP 965723 at Norton Farm to the west of the A38 and 1km south of the M42. The evaluation area measures 17.5ha in total extent, and is currently pasture used for sheep grazing. It is mentioned in notes supplied to us by CgMs that the land undulates with levels varying from 130m AOD at the northern boundary to 114m AOD at the eastern boundary.

The site is on a bedrock of Triassic sandstone, and appears to be free of drift deposits. We are told there are no known previously recorded archaeological findings from the site, which appears to be of low archaeological potential. There is a possible burnt mound near watercourses on lower ground to the east of the site, together with a conjectured Roman road and medieval remains, also at some distance to the east. CgMs have supplied a sequence of historic maps (of dates 1577 – 2006) which record various alterations to field boundaries within the survey area. The maps also indicate that parts of the site have at different times been planted as orchards. (Extracts from two of the maps are inset in figure 4.)

Survey procedure

The method used for the geophysical survey was a full recorded magnetometer survey supplemented by background magnetic susceptibility testing.

Magnetometer survey

Readings for the magnetometer survey were collected using Bartington 1m fluxgate magnetometers, and are plotted at 25cm intervals along transects 1m apart. The results of the survey are shown as a grey scale plot at 1:2000 scale in figure 1, and as a graphical (x-y trace) plot two parts at 1:1250 in figures 2-3. The grey scale and graphical plots display the detected magnetic anomalies in plan and profile respectively. The x-y plots represent the readings after minimal pre-processing operations. These include adjustment for irregularities in line spacing caused by heading errors (direction sensitivity in the

instrument zero setting), and truncation of extreme values. The grey scale plots show a processed version after additional low pass filtering to control background noise levels.

The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. The readings are also strongly affected by ferrous and other debris of recent origin.

Magnetic susceptibility survey

We usually supplement a magnetometer survey with background magnetic susceptibility readings, which in this case were taken at 30m intervals, using a Bartington MS2 meter with a field detector loop. Susceptibility measurements can provide a broad indication of areas in which archaeological debris, and particularly burnt material associated with past human activity, has become dispersed in the soil. They are also affected by non-archaeological factors, including geology, past and present land use, and modern disturbances, and so provide evidence relating to soil and site conditions which can be of help in interpreting the magnetometer survey. The results are presented as a shaded plot of the initial readings inset in figure 4. A second plot shows the readings after treatment with a median filter, which emphasises broad trends in the data.

Presentation

An interpretation of the findings is shown superimposed on the graphical plots (figures 2-3), and is reproduced separately to provide a summary of the findings in figure 4. Features as marked include a small number findings of potential archaeological significance (in red). Broken lines are used to indicate features which may be visible in the grey scale plot, which are too weak or discontinuous to be outlined in detail.

Weak magnetic anomalies of probably natural or non-archaeological origin are outlined in light brown. Magnetic disturbances associated with tracks or boundaries which can be identified on historic maps are shown in grey. Probable recent or non-archaeological disturbances are indicated in a darker brown and ferrous debris in blue. Apparent cultivation effects are indicated in green.

Survey location

The survey was located by reference to a temporary site grid which was set out and tied to national grid co-ordinates by means of a differential GPS system. OS co-ordinates of map locations can be read from the AutoCAD 2007 version of the plans which can be supplied with this report.

Results

Conditions at the site appear to be favourable for a magnetic investigation of this kind, but the survey has produced only limited findings. The magnetic susceptibility readings are

relatively high (mean = 34 x 10^{-5} SI), and perhaps unusually so for a site on a sandstone bedrock. It would therefore be expected that any substantial features containing silted earth fill should be detectable, but few are identifiable in the survey plots.

The most conspicuous findings are strong disturbances corresponding to former field boundaries in the eastern half of the site. The linear features A and B (as labelled on figure 4) correspond to boundaries visible on maps dated 1840-1980, and probably represent ditches filled with rubble or other modern debris. The similarly strong feature C is a former trackway still visible in 1980. A further track (D) extending to the western boundary disappears from maps after 1972, and is less clearly marked. This was perhaps an earth or gravel farm track lacking a hardcore surface. Two areas of disturbed ground at E and F correspond to structures shown on a 1971 1:2500 map (although only F is visible in the 1972 map inset in figure 4).

Pipes (blue) appear to approach each building (E and F). Another pipe extends across the NE side of the site at G. This is marked by a continuous magnetic anomaly probably indicating a steel-reinforced concrete sewer pipe. Other pipes are marked by intermittent magnetic anomalies characteristic of sections of iron water pipe.

Other findings include strong recent magnetic disturbances which are commonly found near field boundaries and entrances, and which are most concentrated at the east of the site in the vicinity of Norton Farm. This part of the site also gave high magnetic susceptibility readings (as seen particularly in the median filtered plot; figure 4). Ferrous anomalies (blue) are also rather more numerous in this area. They are otherwise dispersed across the site, with no concentrations to suggest the site has been subject to any substantial recent disturbance.

It is not impossible that an ancient burnt mound (if present) could contribute to the magnetic activity around Norton Farm, but any such effect would be difficult to distinguish from more recent disturbances. Some of the more active areas at the east of the site (as at H) could perhaps be investigated with this possibility in mind, but it remains probable that most of the magnetic disturbances are recent.

Green lines in figure 4 indicate the orientation of weak linear markings visible in the grey scale plot. These may relate to past cultivation. Trees were present in different fields at various dates (as seen in the 1928 and 1972 maps inset in figure 4), but they do not appear to correspond to any clearly identifiable magnetic disturbances.

A few features which could be interpreted as isolated silted pits or ditches (and which in an appropriate context could be of archaeological interest) are outlined in red. Some are located within an area of slightly enhanced magnetic activity towards the NW of the survey at J (where there is also a small susceptibility anomaly, as visible in the raw data plot in figure 4). Most of the magnetic anomalies here are weak and could be natural (as indicated in light brown), but a few stronger ones could represent silted pits. There are also rather ill-defined short ditch-like features at K and L. These features are all weak and isolated, and of uncertain significance.

Conclusions

Soils at the site appear to be magnetically responsive, but there are few distinct findings other than features which can be identified with historic field boundaries, or other recent disturbances.

A few magnetic anomalies which could indicate pits or ditches of potential archaeological interest are indicated (in red on figure 4), but they are weak and isolated, and not necessarily of archaeological origin. Burnt mounds are often detectable in a magnetometer survey, but any which are present here are likely to be on the lower ground in the eastern part of the site, where they will be difficult to distinguish from more recent disturbances around Norton Farm.

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The fieldwork and data processing for this project were done by P. Cottrell and F. Prince.

396100E
396200E
396300E
396400E
396500E
396600E
396700E
396800E

272500N
272400N
272300N
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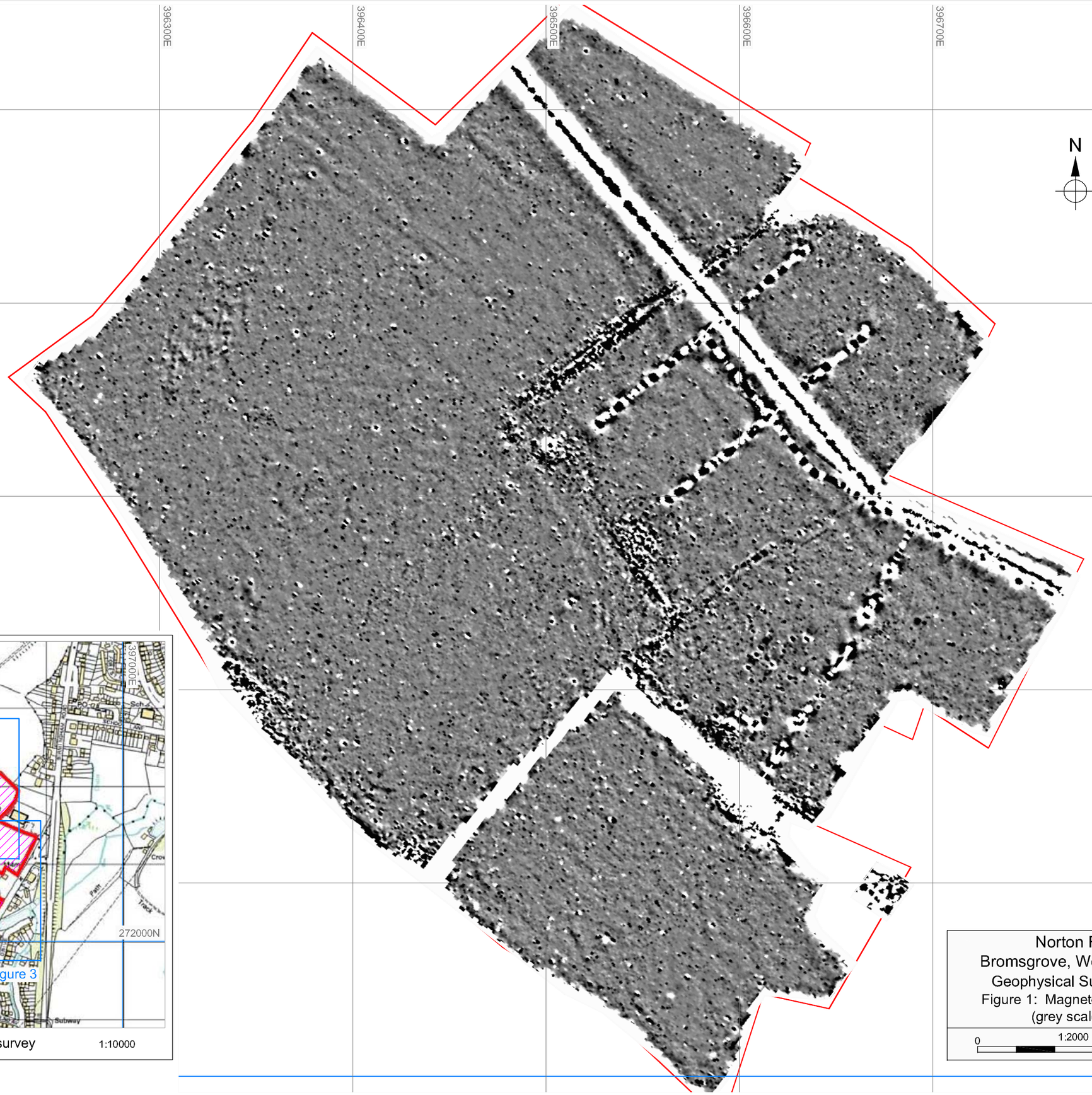
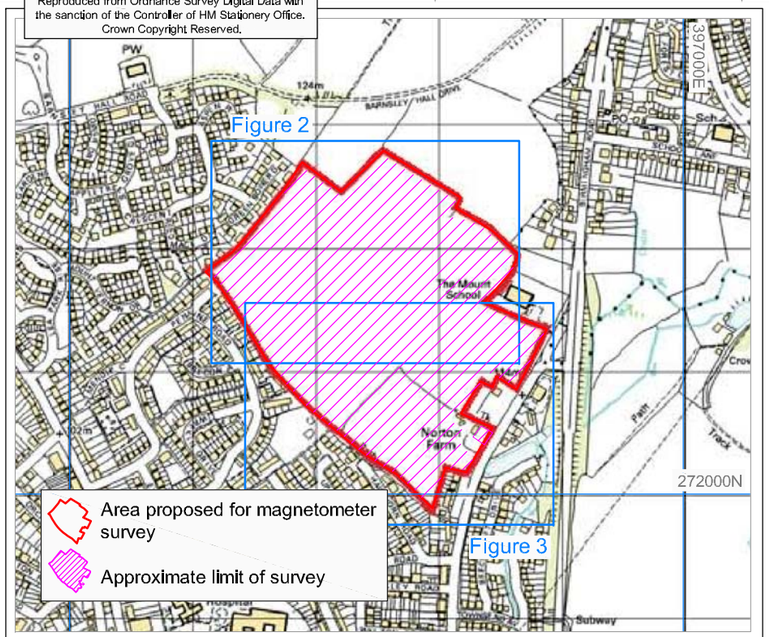
272000N

2.6nT
-2.4

N





Area proposed for magnetometer survey

Approximate limit of survey

Location of magnetometer survey 1:10000

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Figure 1: Magnetometer survey (grey scale plot)

0 1:2000 100m

magnetic anomalies (archaeological ?)

magnetic anomolies (non-archaeological / natural?)

magnetic anomalies (recent ?)

former tracks / boundaries

linear magnetic anomalies (cultivation ?)

strong magnetic anomalies (ferrous ?)

pipe (and associated magnetic disturbance)

N

60 nT

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Figure 2: Magnetometer survey (with interpretation)

0 1:1250 50m

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N

60 nT

magnetic anomalies (archaeological ?)

magnetic anomolies (non-archaeological / natural?)

magnetic anomalies (recent ?)

former tracks / boundaries

linear magnetic anomalies (cultivation ?)

strong magnetic anomalies (ferrous ?)

pipe (and associated magnetic disturbance)

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Figure 3: Magnetometer survey (with interpretation)

0 1:1250 50m

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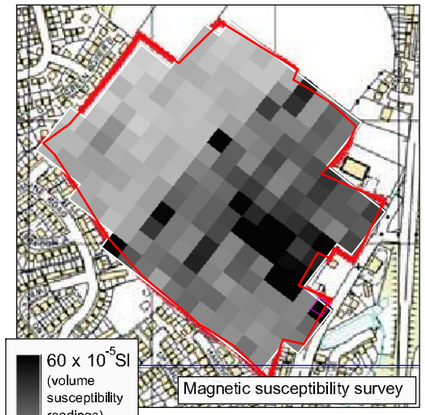

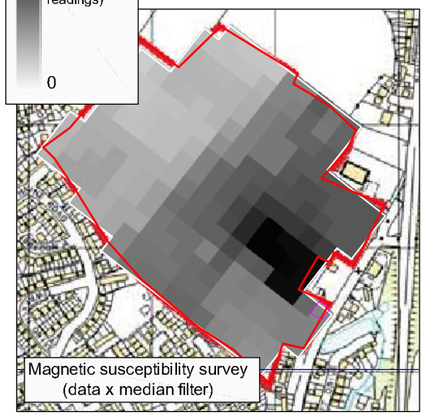

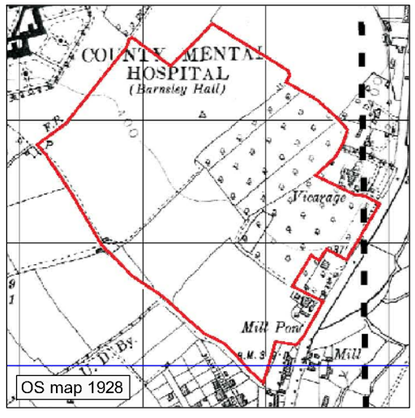

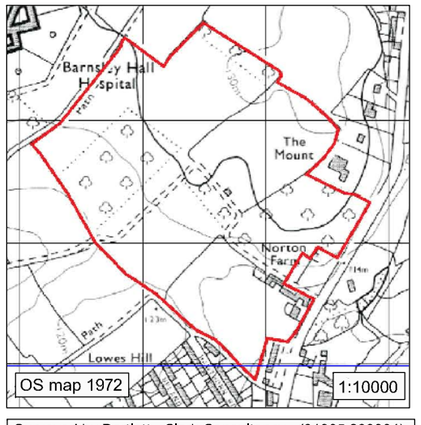

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396200E 396300E 396400E 396500E 396600E 396700E 396800E

272500N 272400N 272300N 272200N 272100N

N

A B C D E F G H J K L

magnetic anomalies (archaeological ?)

magnetic anomolies (non-archaeological / natural?)

magnetic anomalies (recent ?)

former tracks / boundaries

linear magnetic anomalies (cultivation ?)

strong magnetic anomalies (ferrous ?)

pipe (and associated magnetic disturbance)

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Figure 4: Summary of findings

0 1:2000 100m