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Engineering Archaeological Services Ltd

Poplar Farm, Grantham, Phase 2
Magnetic Scanning Survey

December 2003

EAS Client Report 2003/33

ELI 10502, SU 13072/3.

Survey Commissioned
by
Archaeological Project Services

Surveyed
by
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№ 2869678

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Grantham Poplar Farm, Geophysical Survey - Introduction:

NGR

Centred on SK 89752 36463

Location and Topography (Figure 1)

The survey site was adjacent to the A 52 Barrowby Road immediately west of the "Muddle Go Nowhere" public house. The survey area was bounded by the A 52 to the south, the "Muddle Go Nowhere" public house to the east and by open fields to the other two sides. There was a slight plateau running along the southern side of the survey area, the land then sloped down towards the north. This slope tended to be slightly steeper at the eastern end of the field.

At the time of survey the field was under set-a-side.

Archaeological Background

This survey forms the latest phase of archaeological assessment prior to the construction of a housing development. Previous phases of magnetic scanning looked at the area to the east (Brooks and Laws 2002) and to the north (Brooks 2000) of the current survey area.

The proposed development is within an area of known archaeological potential with a series of flint scatters of Neolithic and Bronze Age date, possibly associated with a pit alignment known from aerial photographs. A scatter of Mesolithic flint have also been reported from Stubbock Hill to the north west.

Iron Age and Roman activity is also known from the area with a large scatter of pottery, stone and tile to the west of the proposed development. Another Roman site has been located to the south of the A 52 (Barrowby Road). Slightly further afield, close to Rectory Farm, to the north west, there is evidence for Roman Iron-smelting.

Aims of Survey

To gather sufficient information to establish the location and extent of any archaeological features within the development area and, if possible, to characterise the archaeology located.

SUMMARY OF RESULTS

A broad area of slight magnetic disturbance was defined on the plateau area along the southern side of the survey area. Within this a few discrete anomalies were located. These form no clear pattern, except that they tend to concentrate on the plateau.

Grantham Poplar Farm, Geophysical Survey -Results:

Methods

The Fluxgate Gradiometer scanning survey was undertaken along parallel transects 10 m apart as shown in Figure 2 . Anomalies ±2 nT from the background were sketch plotted on a 1:2500 scale plan of the proposed development site. The survey was carried out using a Geoscan FM 36 Fluxgate Gradiometer.

Survey Results:

Area

The development area covers approximately 4.9 Ha, however a small area of approximately 0.08 Ha in the south west corner of the field was over grown and contained the remains of a building. This area was excluded from the survey and is shown in green on Figure 2.

Results:

The plateau along the southern side of the survey area was slightly variable in its magnetic response (Figure 3, Anomaly A). Values varied by ±3 nT from the general background. It was not possible, however, to generally define specific anomalies within this general area of disturbance.

A few discrete anomalies were defined, however, both within and outside the area of general magnetic variability. Anomaly B (Figure 3) was a broad band, running parallel with the boundary with the "Muddle Go Nowhere" public house. It was approximately 10 m wide and ran for approximately 40 m and had readings ±8 nT from the general background.

A series of small, discrete anomalies were also recorded. Four discrete anomalies were recorded within the general area of magnetic disturbance (Anomalies C, Figure 3). They were similar in character, each being approximately 5 m in diameter and having readings ±5 nT from the general background.

Two further discrete anomalies (Anomalies D) were also located outside the general area of magnetic disturbance. Whilst these were of a similar size they tended to be slightly more magnetically active with values ±7 nT above the background.

The survey was bordered by an area of magnetic disturbance relating to the modern field boundaries (Anomaly E). This was particularly marked near to the "Muddle Go Nowhere" public house and along the A 52, Barrowby Road. There was also an area of magnetic disturbance associated with the disused and collapsed building in the south west corner of the field.

Magnetic Susceptibility

A single magnetic susceptibility sample was taken to evaluate the suitability of the area for magnetic survey. It was not possible, however to take a subsoil sample for comparison.

Sample	Volume susceptibility χ_v	Mass susceptibility χ_m
Sample	161	137.6

The value of the sample taken would suggest the area is suitable for magnetic survey.

Grantham Poplar Farm, Geophysical Survey - Conclusions:

Conclusions

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

The broad area of magnetic disturbance on the plateau along the southern edge of the survey area could be geological in origins, however, it is equally likely that it may have some archaeological component. This view may be strengthened by the few discrete anomalies which were also located within the survey area. It is therefore recommended that a limited programme of detailed Fluxgate Gradiometer survey be commissioned to test the area of general magnetic disturbance and to try and define any subtle anomalies which may be within this area.

References

Brooks, I.P. (2000) Grantham, Gonerby Hillfoot Magnetic Scanning Survey. Unpublished report for Archaeological Project Services

Brooks, I.P. And Laws K. 2002 Poplar Farm. Grantham. Magnetic Scanning Survey. EAS Client Report 2002/37. Unpublished report for Archaeological Project Services.

Grantham Poplar Farm, Geophysical Survey - Technical Information:

Techniques of Geophysical Survey:

Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remenance which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

Resistivity:

This relies on variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than Magnetometry this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

Resistance Tomography

Builds up a vertical profile or pseudosection through deposits by taking resistivity readings along a transect using a range of different probe spacings

Magnetic Susceptibility:

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

Instrumentation:

1. Fluxgate Gradiometer - Geoscan FM36

2. Resistance Meter - Geoscan RM4/DL10

3. Magnetic Susceptibility Meter - Bartington MS2

4. Geopulse Imager 25 - Campus

Methodology:

For Gradiometer and Resistivity Survey 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged at either 0.5m or 1m intervals along traverses 1m apart. Resistance meter readings are logged at 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For scanning transects are laid out at 10m intervals. Any anomalies noticed are where possible traced and recorded on the location plan.

For Magnetic Susceptibility survey a large grid is laid out and readings logged at 20m intervals along traverses 20m apart, data is again configured and analysed on a laptop computer.

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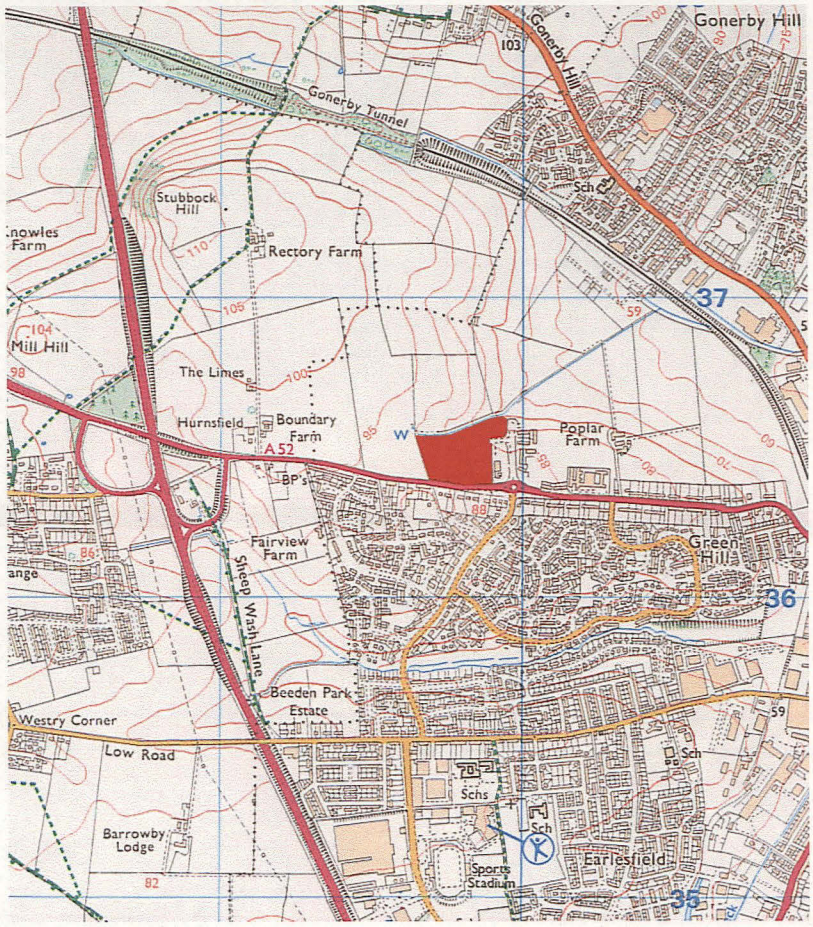

Figure 1: Poplar Farm, Grantham
Location
Scale 1:25,000

Figure 2: Poplar Farm, Grantham
Pattern of Transects
Scale 1:2500

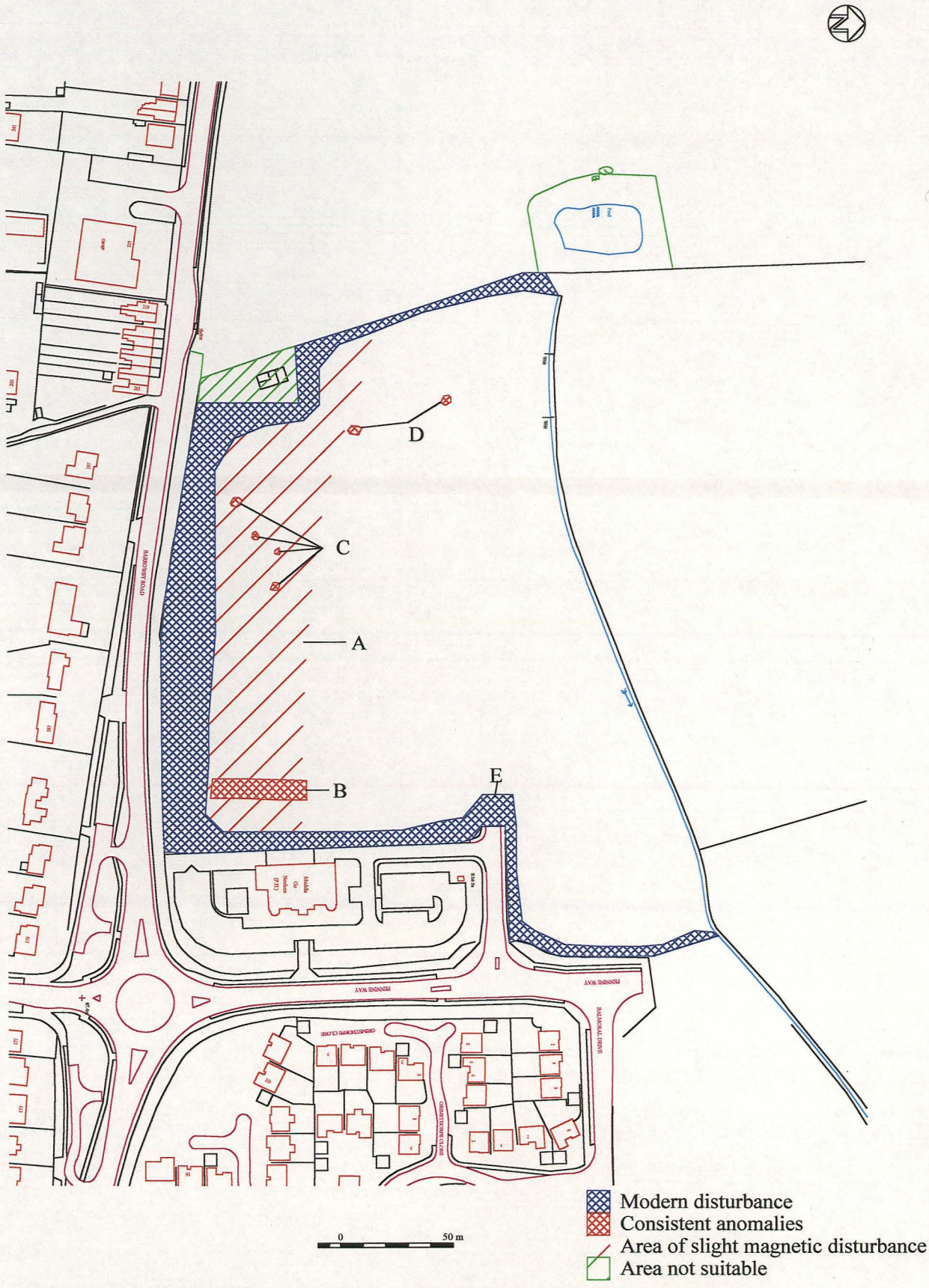

Figure 3: Poplar Farm, Grantham
Results
Scale 1:2500