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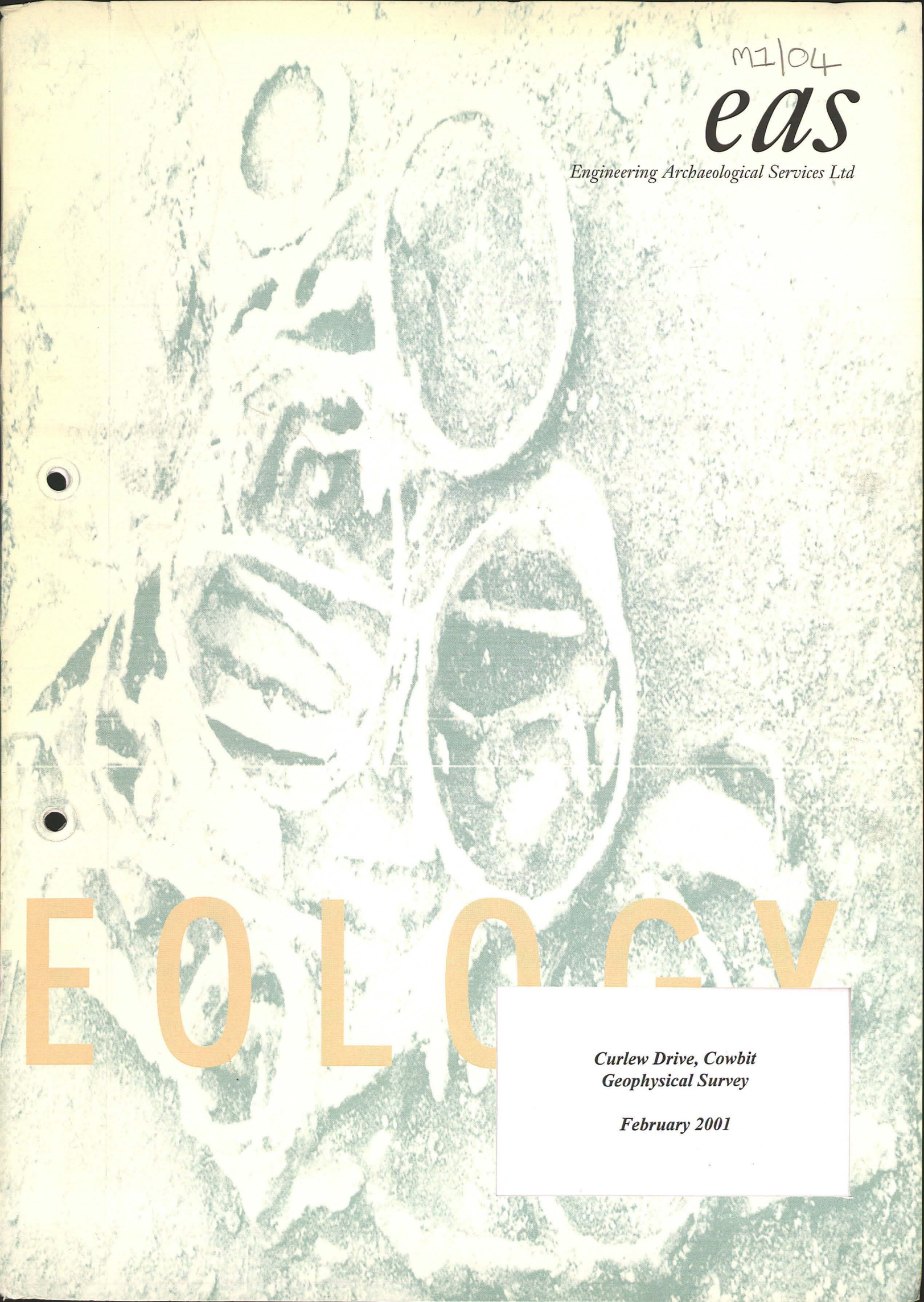
Engineering Archaeological Services Ltd



Curlew Drive, Cowbit
Geophysical Survey

February 2001

EVENT L11717
SOURCE L16485
HON L181606
23686

Survey Commissioned
by
Archaeological Project Services.

Surveyed
by
I.P. Brooks
Engineering Archaeological Services Ltd.

registered in England
Nº 2869678

? site code
appl #

Curlew Drive, Cowbit
Geophysical Survey

February 2001

CONTENTS

Curlew Drive, Cowbit Geophysical Survey - Introduction:

NGR

Centred on TF 26516 17710

Location and Topography

The survey area was behind houses on Backgate, Cowbit and abutted Curlew Drive. It was immediately south of a previous geophysical survey carried out in January 2001 (Brooks 2001). The survey area was a flat field bounded on two sides by dykes and on the third side by houses. It was under rough grass.

Archaeological Background

Recent work by Archaeological Project Services has demonstrated the presence of Romano-British activity within a short distance of the survey area. The previous geophysical survey, carried out by Engineering Archaeological Services Ltd, also suggested intense archaeological activity in the fields immediately to the north of the survey area The work was commissioned by Allison Homes as part of an investigation of the site in advance of a an application for planning permission.

Aims of Survey

To evaluate, by detailed survey, the archaeological potential of the proposed development.

SUMMARY OF RESULTS

Whilst conditions were not ideal for magnetometry a few anomalies of probably archaeological nature were located. Two of these extended the line of anomalies noted in the previous survey. The other two were large discrete anomalies.

Various agricultural features and areas of modern disturbance were also located.

Curlew Drive, Cowbit Geophysical Survey -Results:

Survey Results:

Area

A trapezoidal block of land, approximately 70 m wide and between 80 and 110m long was surveyed in a single block (Figure 1). It was not possible to carry out a survey in the area immediately adjacent to Curlew Drive as this already contained the developers 'portacabins' and piles of debris.

Working conditions were good, however there was some modern rubbish and bonfire sites towards the eastern end of the survey area.

Display

The results are displayed as Grey Scale Image and as X-Y Trace Plots. (Figures 2 and 3)

Results:

Detailed Survey:

Ten 30 x 30 m grids were investigated in a single block. (Figure 5)

A number of areas of modern disturbance were recorded. Many of these are along the fence lines of the houses to the east of the survey area and relate to the accumulation of rubbish along these boundaries. The disturbance on Grids 2 and 5 is the site of a modern bonfire. These disturbances are shown in blue on Figure 5

The modern drainage pattern for the fields is a prominent feature of the plots and is shown in green on Figure 5

Four anomalies of possible archaeological nature were located. Two of these, in Grids 2 and 3, continue the line of anomalies noted in the previous survey (Figures 4 and 6) and presumably relate to the archaeological activity in that survey. The anomalies in Grids 5 and 6, however, are of a different character. They are large, up to 10 x 10 m, and discrete with positive centres surrounded by a negative zone.

The anomalies of possible archaeological nature are shown in red on Figure 5

Magnetic Susceptibility

Soil samples were taken from the area of detailed survey in order to assess the magnetic susceptibility of the soils. It was not possible to obtain a subsoil sample from the immediate survey area for comparison, however a subsoil sample was available from the survey which took place to the north.

Sample	Volume susceptibility χ_v	Mass susceptibility χ_m
Grid 1	48	43.6
Grid 3	21	18.8
Grid 5	29	27.1
Grid 7	20	17.9
Subsoil	12	9.0

The susceptibilities as measured are consistently low with little difference between top soil and subsoil values suggesting that conditions are not ideal for magnetic survey. The slightly enhanced reading for Grid 1 is probably related to its proximity to the modern house, although this grid is also closer to intense archaeological activity recorded in the previous survey

Curlew Drive, Cowbit 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.

A limited number of anomalies of possible archaeological origins were located. These partly continue the pattern noted in the previous survey (Brooks 2001), however in general the apparent level of activity would appear to be less in this survey area. Two large discrete anomalies were located in the southern half of the survey area would appear to be archaeological in nature.

Bibliography

Brooks, I.P. (2001) Backgate, Cowbit. Geophysical Survey. Unpublished report for Archaeological Project Services

Curlew Drive, Cowbit 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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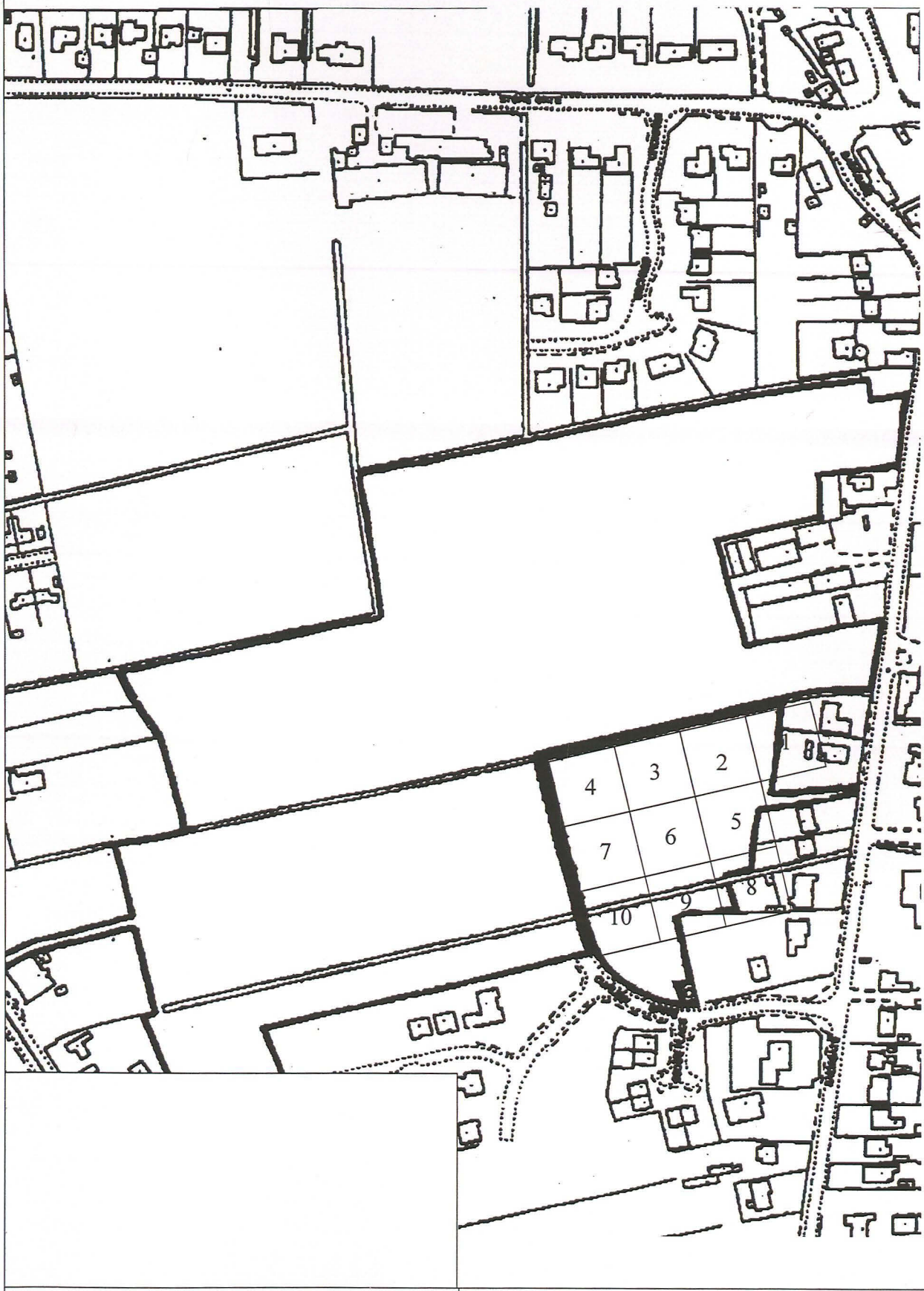
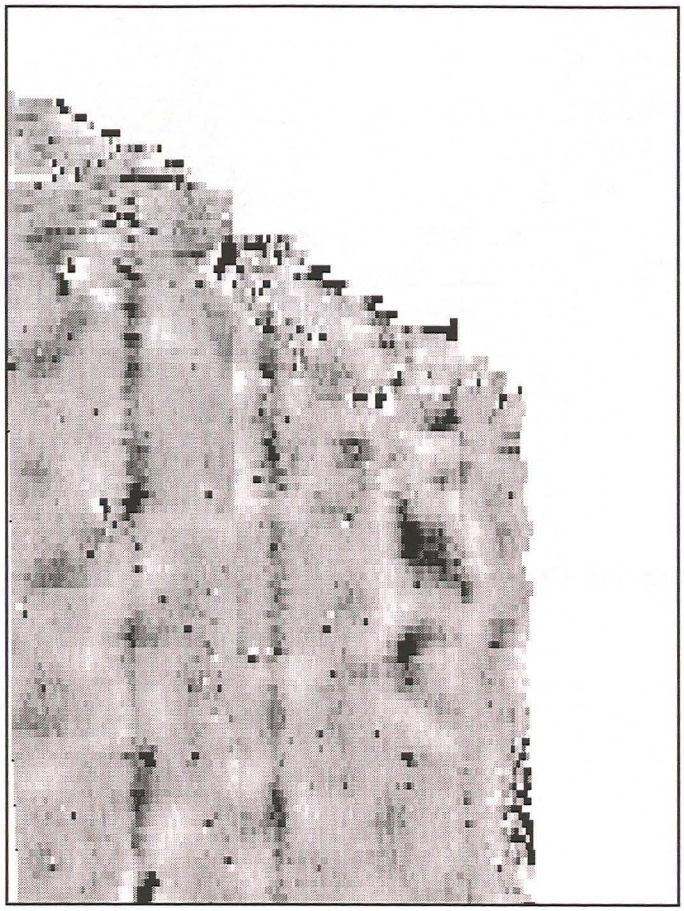


Figure 1: Curlew Drive, Cowbit
Location
Scale 1:2500



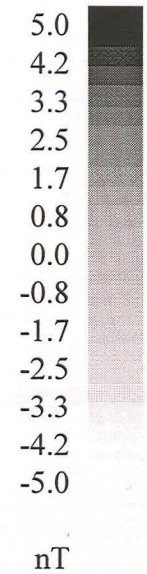


Figure 2: Curlew Drive, Cowbit
Grey Scale Plot
1:1000

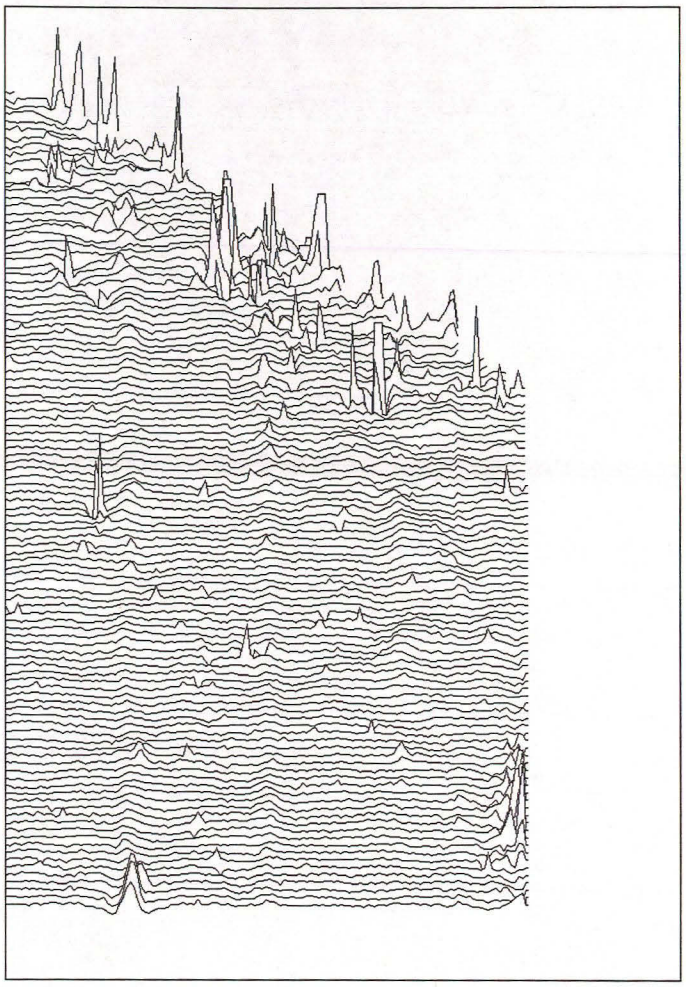


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Figure 3: Curlew Drive, Cowbit
X - Y Plot
1:1000

Figure 4: Curlew Drive, Cowbit
Combined Grey Scale Plot
Scale 1:2500

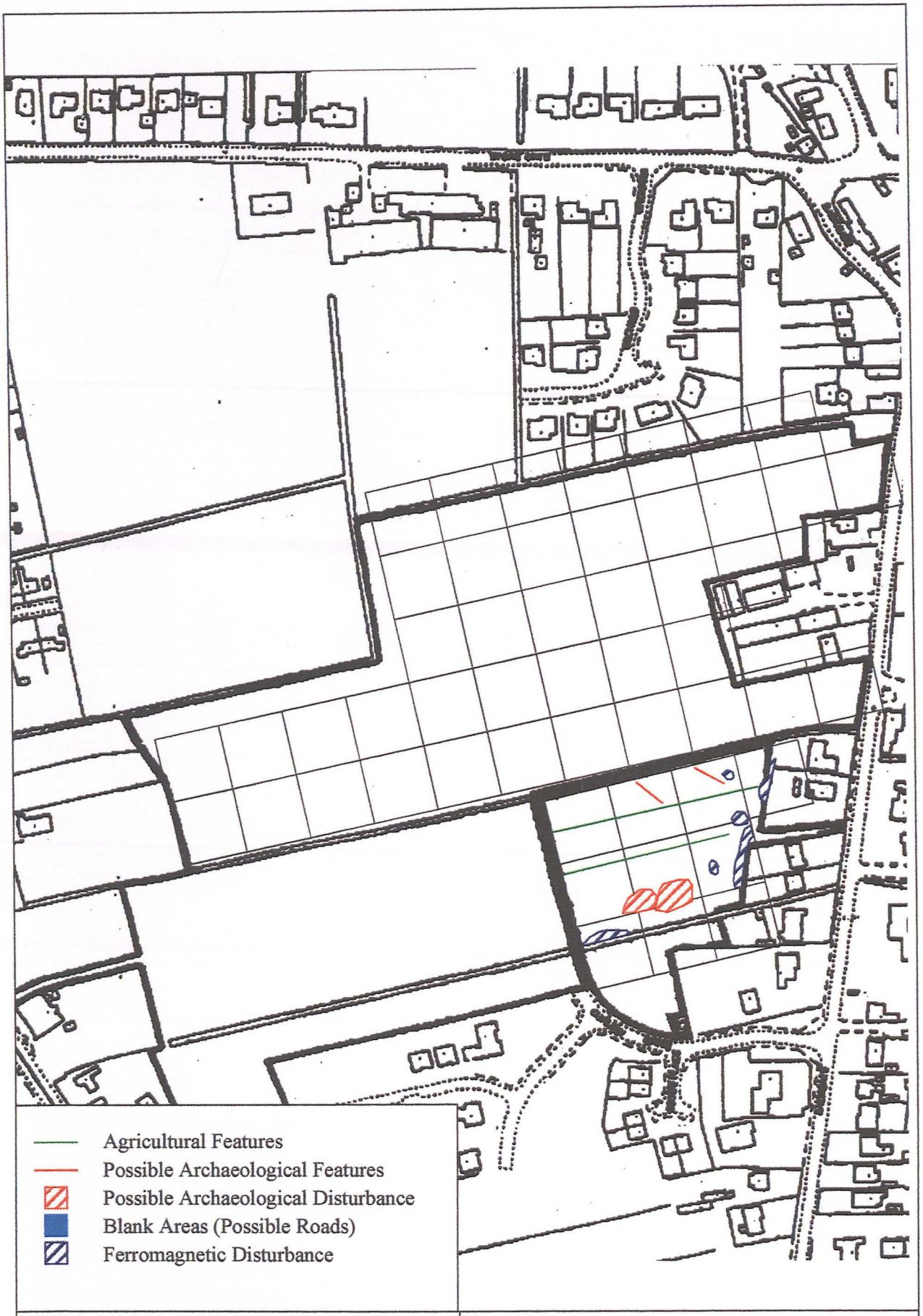

Figure 5: Curlew Drive, Cowbit
Interpretation
Scale 1:2500

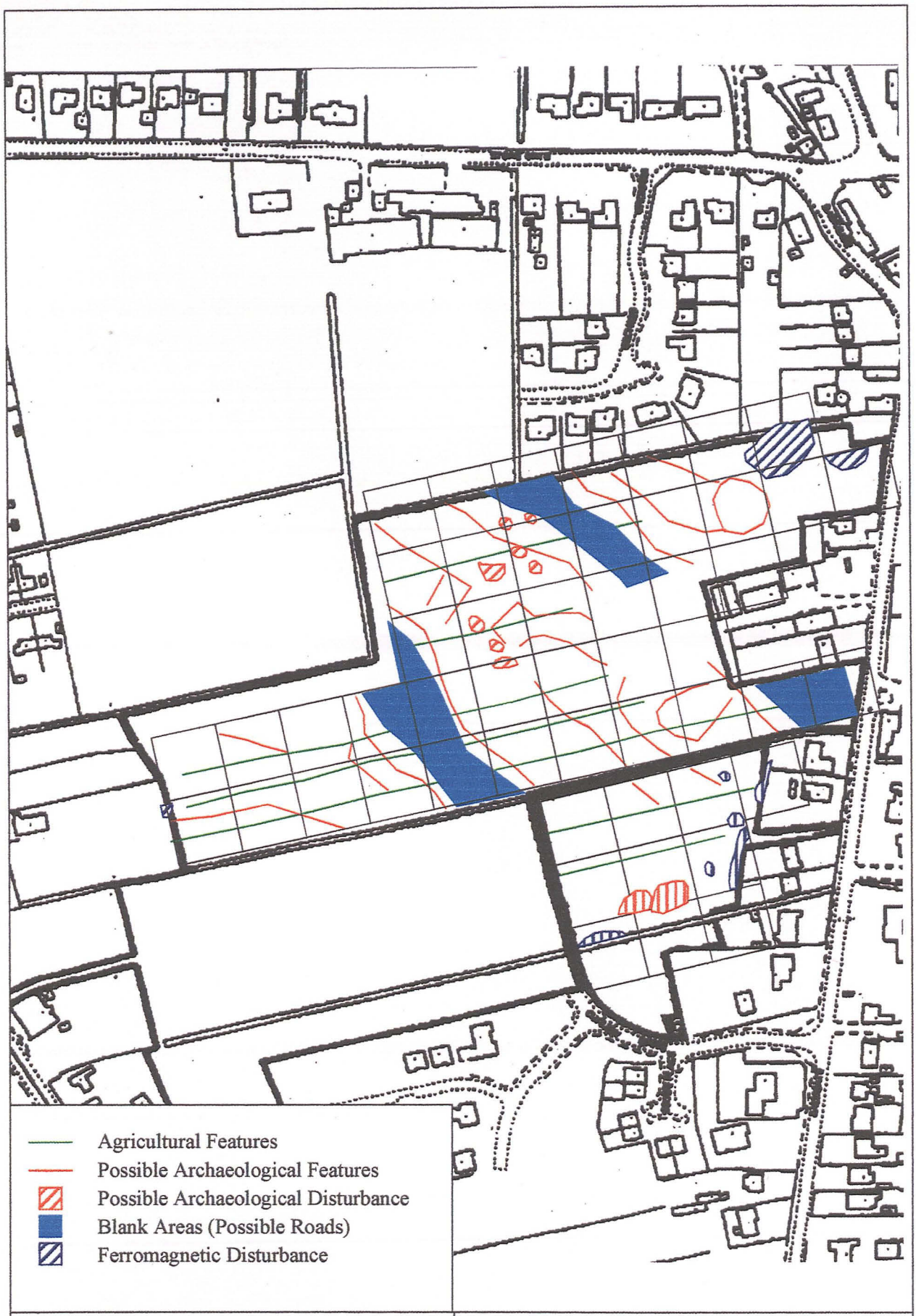

Figure 6: Curlew Drive, Cowbit
Interpretation of both surveys
Scale 1:2500