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Engineering Archaeological Services Ltd

E O L O G Y

*Land at Delaine Meadows, Bourne
Geophysical Survey*

July 2001

Conservation
Services

13 AUG 2001

Highways & Planning
Directorate

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SOURCE L17040
PMS L182431
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*Survey Commissioned
by
Archaeological Project Services.*

*Surveyed
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*registered in England
Nº 2869678*

*Land at Delaine Meadows, Bourne
Geophysical Survey*

July 2001

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NGR

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Copyright

Delaine Meadow, Bourne Geophysical Survey - Introduction:

NGR

Centred on TF 1037420075

Location and Topography

The survey area was adjacent to Spalding Road on the eastern side of Bourne, Lincolnshire. The northern side of the survey area was bounded by a series of warehouses, facing onto Manning Road and on the west by two cottages and Delaine Motors garage. The field was, recently cut, rough pasture and was generally flat. The northern boundary of the survey area was marked by a series of dumps of building debris which made part of the proposed survey area unavailable.

Archaeological Background

The survey area is within 100 m of Car Dyke in an area of Bourne known to have a series of Medieval pottery and tile kilns. The survey is part of the archaeological evaluation in advance of the development of this field.

Aims of Survey

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

SUMMARY OF RESULTS

Only one linear anomaly was located within the survey area. There were also a few areas of intense ferromagnetic response which area probably the related modern disturbance

Various agricultural features were also located.

Delaine Meadow, Bourne Geophysical Survey -Results:

Survey Results:

Area

The survey was roughly triangular , approximately 135 m long and up to 80 m wide covering an area of approximately 0.4 Ha (Figure 1). The area was somewhat restricted by the dumping of modern builders rubble along the northern boundary of the field, leaving a strip up to 25 m wide where the grass had not been cut and survey was not possible. Similarly the grass had not been cut adjacent to the boundary with the cottages in the south west corner of the survey and the remains of a caravan was also within this area.

Display

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

Results:

Detailed Survey:

Eleven 30 x 30 m grids were investigated in a single block. (Figure 1)

A number of areas of modern disturbance were recorded. Those along the southern field boundary are probably related to the dumping of rubbish along the boundary. One area, in Grid 6, is distinct in shape and character and may be archaeological in origins, although it may also be the response from an iron object. These disturbances are shown in blue on Figure 4

The modern drainage pattern is shown in green on Figure 4.

Only one, broad, linear anomaly was located. This crossed between Spalding Road and the corner of the cottage gardens.

The anomaly of possible archaeological nature is 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.

Sample	Volume susceptibility χ_v	Mass susceptibility χ_m
Grid 1	14	10.1
Grid 3	26	34.7
Grid 5	23	27.4
Grid 9	16	21.3

The susceptibilities as measured are consistently low suggesting that conditions are not ideal for magnetic survey. The slightly reduced reading for Grid 1 reflects a slightly higher quantity of the underlying gravel within the topsoil at this point.

Delaine Meadow, Bourne 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.

Only one linear anomaly of possible archaeological origins was located in the south west corner of the survey. The only other anomaly which may be archaeological is a distinctive response in Grid 6, however this may also be the response from an iron object

Delaine Meadow, Bourne Geophysical Survey - Technical Information:

Techniques of Geophysical Survey:

Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remanence 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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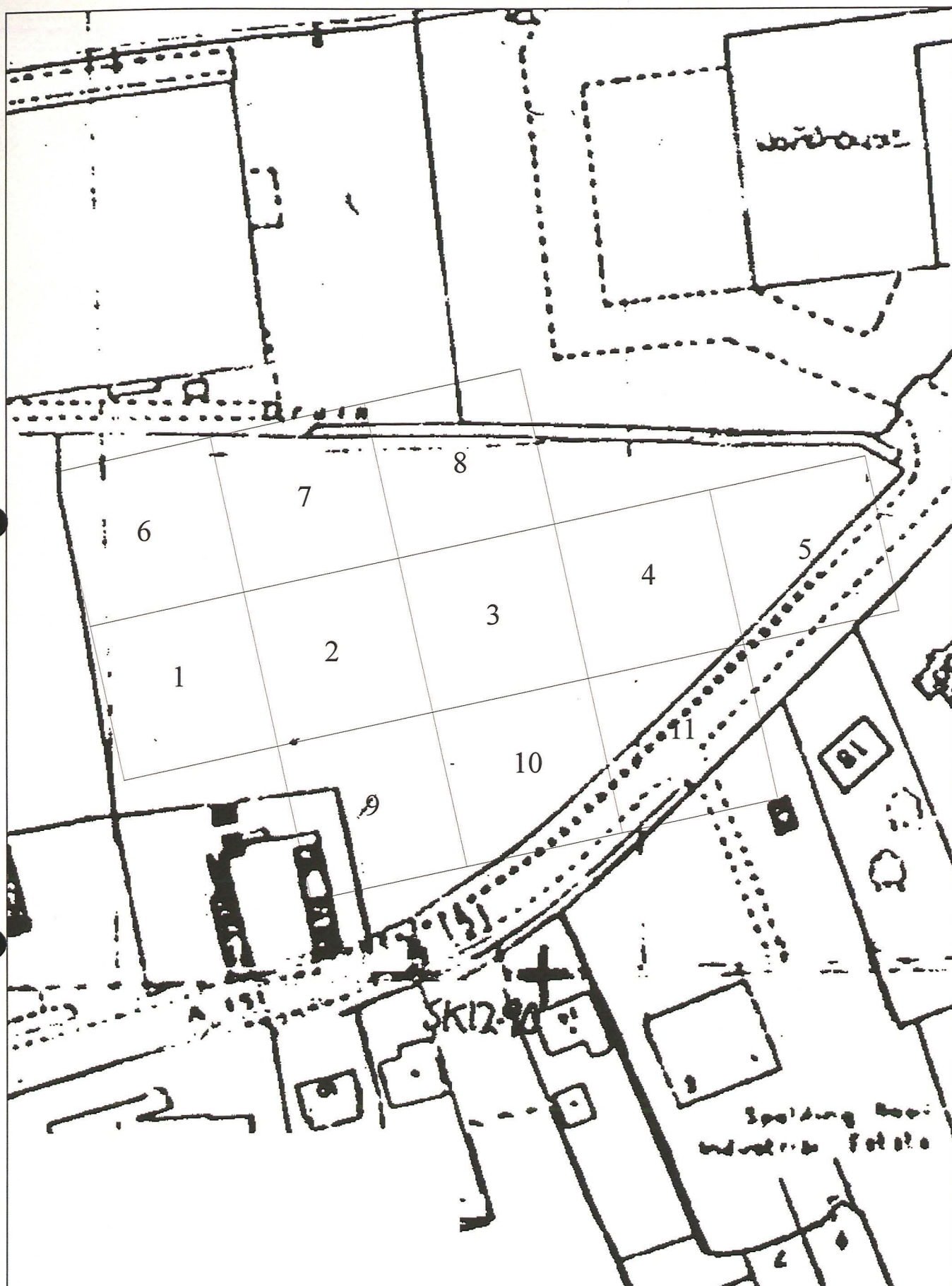


Figure 1: Delaine Meadows, Bourne
Location
Scale 1:1000

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3.33
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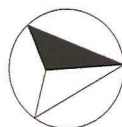
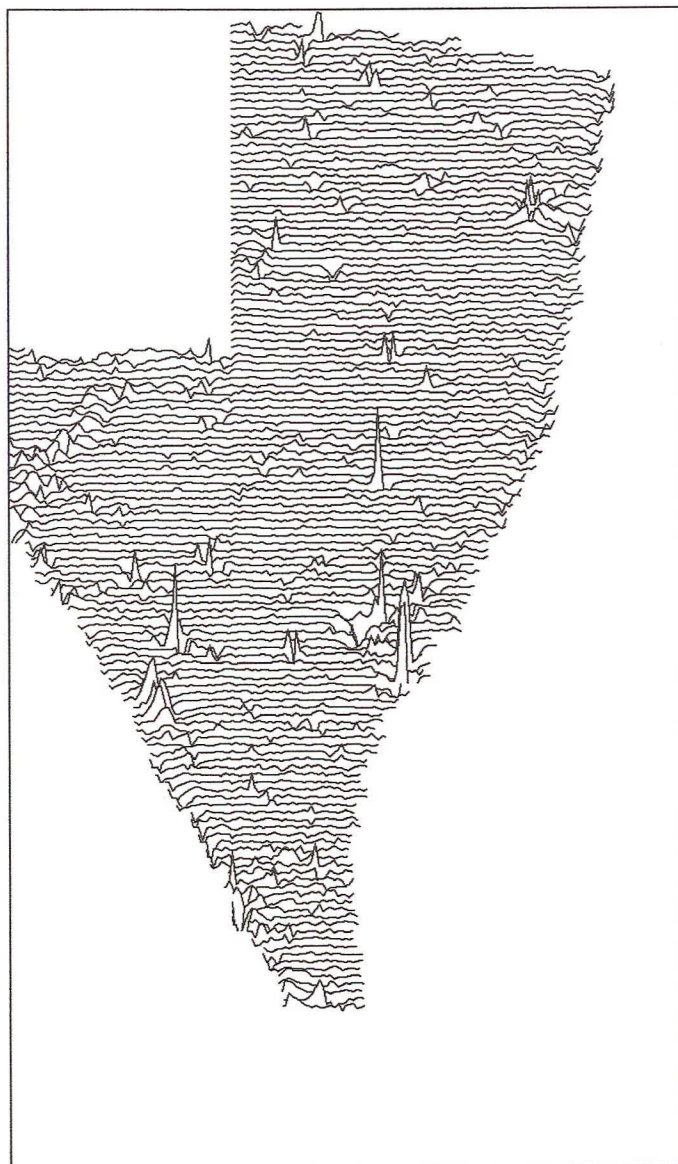


Figure 2: Delaine Meadows, Bourne
Grey Scale Plot
Scale 1:1000



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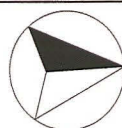


Figure 3: Delaine Meadows, Bourne
X - Y Plot
Scale 1:1000



Figure 4: Delaine Meadows, Bourne
Interpretation
Scale 1:1000

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