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Engineering Archaeological Services Ltd

E O L O G Y

*Clampgate Road, Fishtoft
Geophysical Survey*

February 2003

EAS Client Report 2003/07

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	13653	UNDATED
	13654	MEDIEVAL
	13653	MIDDLE SAXON
	13652	BRONZE AGE

*Survey Commissioned
by
Archaeological Project Services*

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

*registered in England
No 2869678*

*Clamgate Road, Fishtoft
Geophysical Survey*

February 2003

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CONTENTS

Introduction:

NGR

Location and Topography

Archaeological Background

Aims of Survey

SUMMARY

Methodology:

Survey Results:

Area

Display

Results

Magnetic Susceptibility

Conclusions

List of Illustrations

Figure 1: Location

Figure 2: Location of Survey

Figure 3: Grey Scale Plot

Figure 4: X - Y Plot

Figure 5: Interpretation

Figure 6: Summary

Technical Information:

***Techniques of
Geophysical Survey***

Instrumentation

Methodology

Copyright

Clampgate Road, Fishtoft, Geophysical Survey - Introduction:

NGR

along Clampgate Road, slightly to the north of the development area frontage to the street.

Centred on TF 36291 42456

Location and Topography (Figure 1)

The proposed housing development forms an irregular "T" shape fronting onto Clampgate Road, Fishtoft, Lincolnshire between the properties known as Millhayes and Manorgate House. It extends behind the properties on Clampgate Road to The Graft Drain, which mark the eastern edge of the playing fields and play ground.

At the time of survey the area was under rough scrubby vegetation which had been flattened by the developer. This left piles of vegetation, restricting the area available for study. This was particularly marked in the centre of the survey area where a rough bank runs parallel with The Graft. The survey area was further restricted by trees and metal objects (including a cement mixer) along the southern side of the survey area.

The area was generally flat with slight undulations which were difficult to define. The bank running SW - NE through the middle of the area stood up to 0.5 m above the general field level. It was rather irregular in form and was possibly the result of modern activity.

Archaeological Background

Fishtoft is recorded in The Domesday Book, when it had a church and a mill. The parish church of St Guthlac is approximately 150 m to the north east. It is mainly 12th Century AD in construction, although it does contain some Norman elements. The survey area is therefore within the historic core of the village.

Prehistoric and Roman activity within the area has been demonstrated by the recovery of a polished axe fragment and Roman pottery sherds from the village.

More immediately, one or two east-west aligned, undated, ditches were recorded in a pipe trench

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

The survey area was slightly disturbed. Only two clear linear anomalies were located, however a broad zone of magnetic disturbance may be the result of archaeological activity. It is more likely, however that this area is the result of natural (geological) variability.

Areas of modern magnetic disturbance were also located together with a series of feint, parallel, linear anomalies which probably reflect the modern drainage system in the field.

Clampgate Road, Fishtoft, Geophysical Survey -Results:

Methods

The Fluxgate Gradiometer survey was undertaken using eleven 30 x 30 m grid squares laid out as in Figure 2. Readings were taken at 0.5 m intervals along transects 1 m apart. These transects were walked in a zigzag pattern.

The survey was carried out using a Geoscan FM 36 Fluxgate Gradiometer with a ST 1 sample trigger. Grey Scale and X - Y Plots were produced using Geoscan Research "Geoplot" v. 3.00e.

Survey Results:

Area

The development area covers approximately 1.25 Ha, of which approximately 0.85 Ha was available for study.

Display

The results are displayed as Grey Scale Image and as X-Y Trace Plots. Figures 3 and 4.

Results:

The flattening of the vegetation prior to the survey had resulted in several piles of material left within the proposed survey area. These areas were excluded from the survey and are shown in cyan on Figures 5 and 6.

Only two linear anomalies (Anomalies A and B on Figure 5) do not appear to relate to the modern field pattern and therefore are probably of archaeological origins. Anomaly A is a slightly curving linear running from near to the street frontage towards the corner of the back garden of Manor gate House. Whilst this anomaly is rather faint it does not follow a course suggesting it is related to the modern land use. Anomaly B, is straighter and runs approximately NE - SW toward The Graft. It may, therefore by part of the modern drainage pattern, however it would appear at a different alignment to other possible

drainage features recorded. These anomalies are shown in red on Figures 5 and 6.

A series of five, sub-parallel linear anomalies (C) are particularly marked in the western half of the survey area. It is assumed that these mark the modern drainage for the field and are shown in green on Figures 5 and 6.

The central area of the survey is characterised by a broad band of slight magnetic disturbance. This band is somewhat diffuse in character although it is approximately 30 m wide. Although it is possible that this band is archaeological in origins it is likely that these responses are because of natural (geological) processes. This area is shown in green on Figures 5 and 6.

Several areas of ferromagnetic disturbance were also recorded. Many of these are the response to the surrounding boundaries or metal objects within the plough zone. Anomaly E, in the southern corner of the survey area, for example, is partly the response to several metal objects including a cement mixer, and piles of bricks just outside the area.

Magnetic Susceptibility

It was possible to take soil samples in order to assess the magnetic susceptibility of the soils. It was also possible to obtain a subsoil sample for comparison.

Sample	Volume susceptibility χ_v	Mass susceptibility χ_m
Grid 1	32	39.5
Grid 3	35	38.5
Grid 5	41	40.2
Grid 7	40	37.4
Grid 9	54	52.9
Grid 11	34	33.7
Subsoil	12	11.4

Clampgate Road, Fishtoft, Geophysical Survey - Conclusions:

The susceptibilities, as measured, are moderately low, however, there is a difference between the subsoil and topsoil samples suggesting that whilst not ideal the magnetic conditions were suitable.

The slightly increased value gained for Grid 9 would suggest an increased level of activity within this area of the survey. This would accord with the results of the survey.

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 a limit number of anomalies which could be suggested to be of archaeological origins were located. These consisted of two linear anomalies which form no obvious pattern. A broad band of magnetic disturbance through the middle of the survey area may be the result of archaeological activity, but its appearance would suggest a natural (geological origins).

The only other anomalies located are assumed to be relatively modern, either the result of the drainage pattern for the field or the direct response to modern rubbish and disturbance.

Clampgate Road, Fishtoft, 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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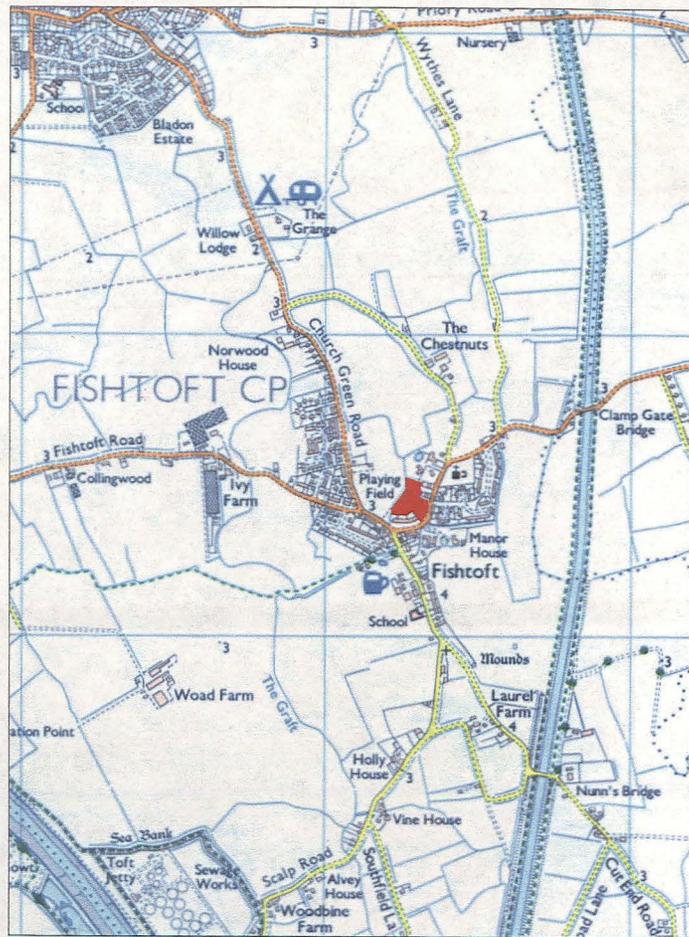


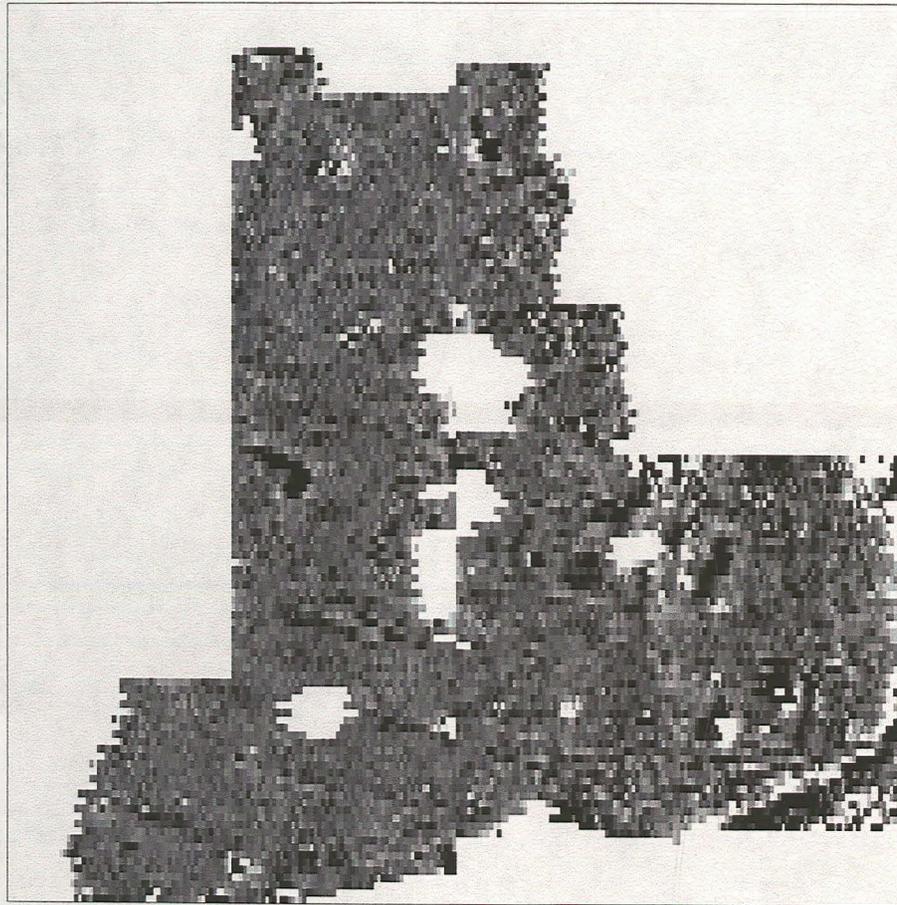
Figure 1: Clampgate Road, Fishtoft
Location
Scale 1:25,000

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Figure 2: Clamgate Road, Fishtoft
 Location of Survey
 Scale 1:2,500

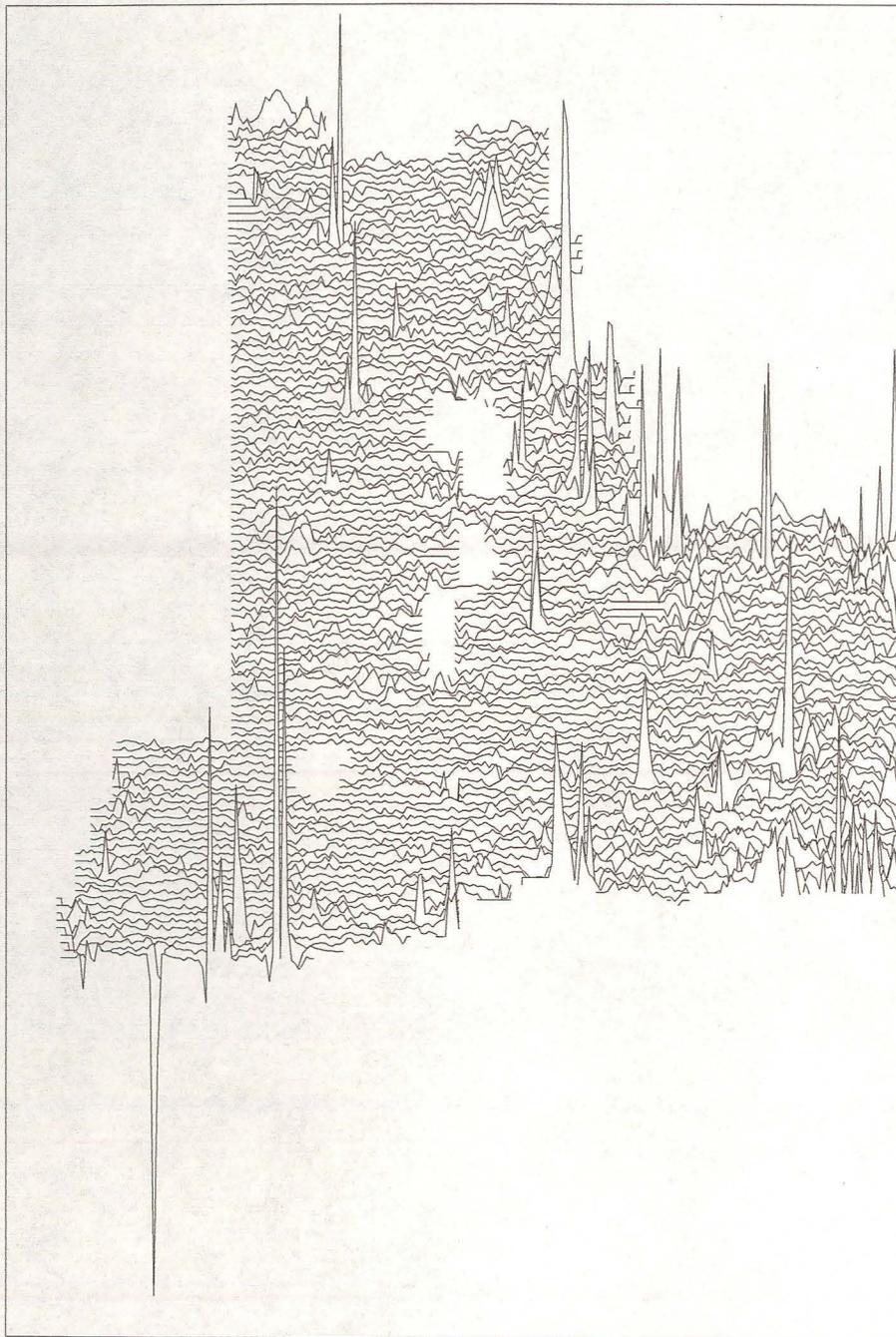
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6.07
5.03
3.99
2.95
1.91
0.88
-0.16
-1.20
-2.24
-3.27
-4.31
-5.35
-6.39
nT

Figure 3: Clampgate Road, Fishtoft
Grey Scale Plot

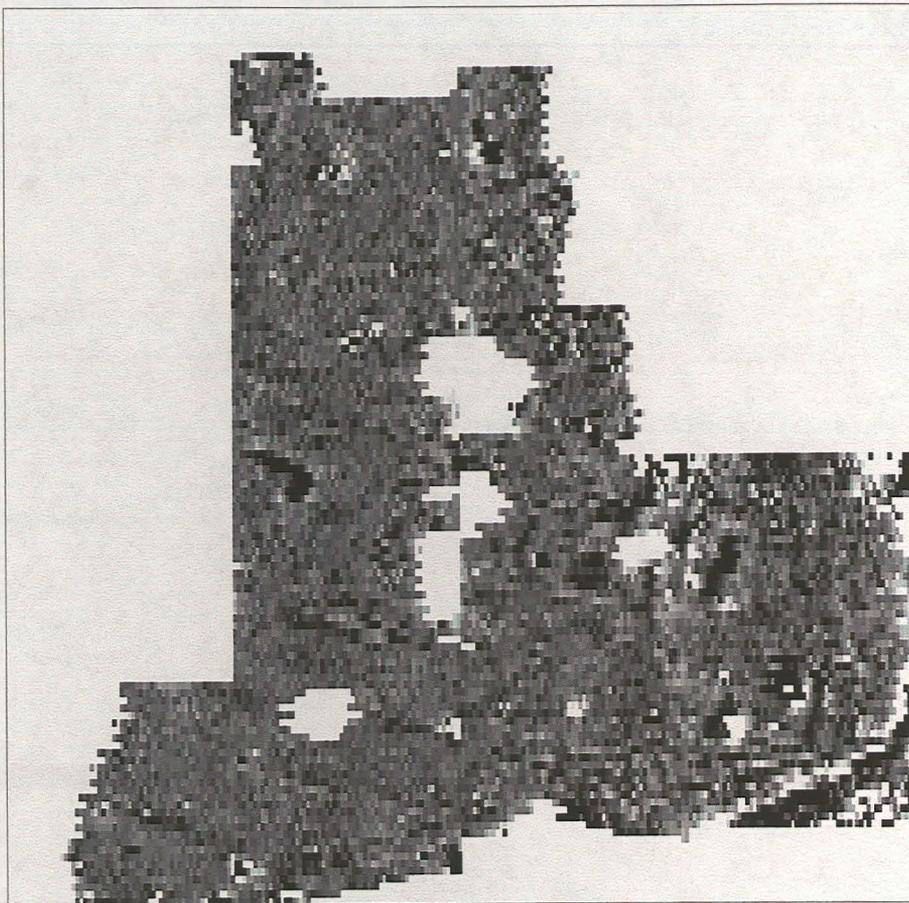
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Figure 4: Clampgate Road, Fishtoft
X - Y Plot

Scale 1:1000



- Area not available
- Ferromagnetic response
- Area of magnetic disturbance possibly geological
- Possible archaeology
- Possible drainage

Figure 5: Clampgate Road, Fishtoft Interpretation

Scale 1:1000

