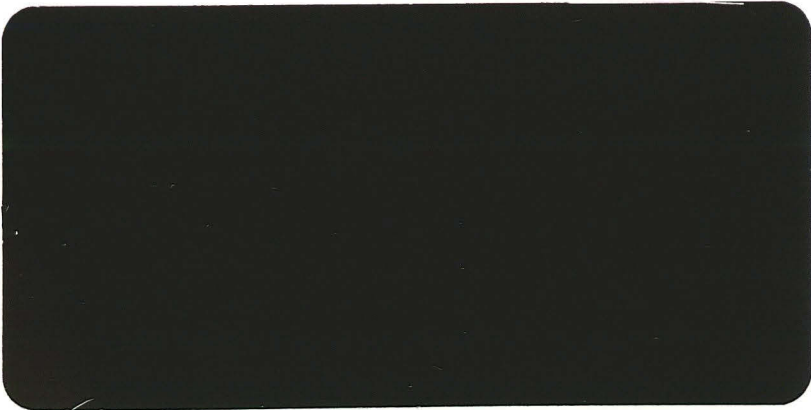


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**FLUXGATE GRADIOMETER SURVEY REPORT**  
**LAND SITUATED BETWEEN ROYAL OAK LANE AND**  
**CHAPEL LANE, AUBOURN, LINCOLNSHIRE**



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**FLUXGATE GRADIOMETER SURVEY REPORT**  
**LAND SITUATED BETWEEN ROYAL OAK LANE AND**  
**CHAPEL LANE, AUBOURN, LINCOLNSHIRE**

Report prepared for Pre-Construct Archaeology (Lincoln) on behalf of Claude Bingley  
Developments Ltd.  
by James Snee

June 1999

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## Summary

- A fluxgate gradiometer survey was undertaken to evaluate the archaeological potential of land between Royal Oak Lane and Chapel Lane, Aubourn, Lincolnshire.
- The survey detected 18 magnetic anomalies, some of which are probably the result of relatively modern disturbance and demolition, and may be of limited archaeological potential.
- Two zones of strong magnetic anomalies were detected and it is suggested that these may be associated with building remains that are indicated on early maps of the area.
- It is possible that earlier archaeological activity has been masked by the strong magnetic anomalies referred to above

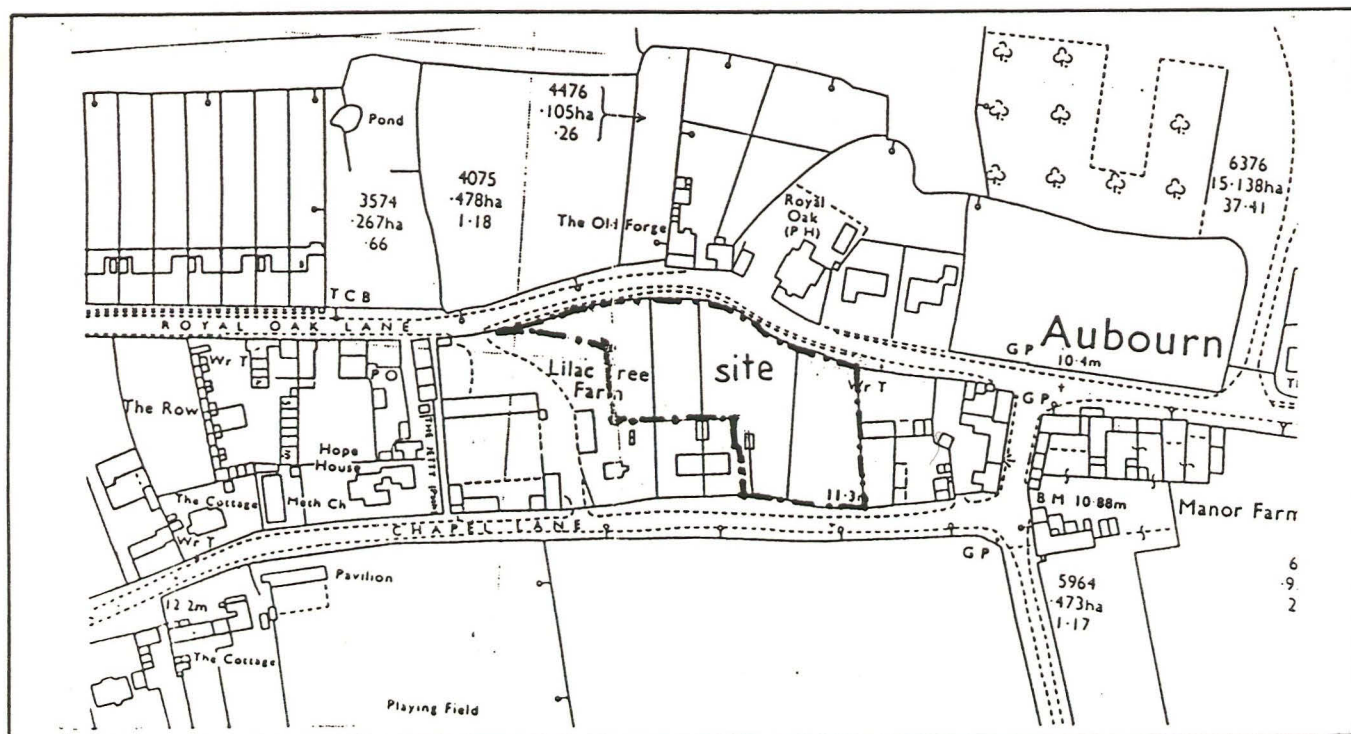


Fig. 1 Site location. Scale 1: 2500

## 1.0 Introduction

A fluxgate gradiometer survey was commissioned by Pre-Construct Archaeology (Lincoln), on behalf of Claude Bingley Associates Ltd., as part of an archaeological field evaluation on land between Royal Oak Lane and Chapel Lane, Aubourn, Lincolnshire. These works are being undertaken as a requirement of planning in advance of residential development.

This survey was carried out in accordance with the guidelines set out in the Lincolnshire County Council Archaeology Section publication '*Lincolnshire Archaeological Handbook; A Manual of Archaeological Practice*', 1998, and in accordance with a specification prepared by Pre-Construct Archaeology, dated May 1999. It also followed the guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*', 1995.

## 2.0 Location and description

Aubourn is approximately 9km south-west of Lincoln, south of the River Witham and east of the Foss Way. The proposed development site, an irregular unit measuring approximately 0.5 hectares, is in the core of the village and centres on NGR TF 4925 3627.

SK 925627

The area of the proposed development is predominantly pasture, with an area of modern building remains to the east of the site. The site was bounded by short hedges and wooden fences. The interior of the boundary was lined with an inactive electric fence. Within the pasture were an number of trees and a shelter for sheep. There were a number of low indistinct earthworks, mainly concentrated in two areas; one at the east end, the other at the west end of the site.

The land lies at an altitude approximately 13m OD.

The purpose of the survey was to identify and interpret magnetic anomalies of potential archaeological significance and present this data in a way that would assist with the general evaluation on the site, which lies close to the core of a medieval village.

## 3.0 Methodology

Detailed area survey using a fluxgate gradiometer is a non-intrusive means of evaluating the archaeological potential of a site. The fluxgate gradiometer detects magnetic anomalies caused by areas of high or low magnetic susceptibility. These areas are caused by changes in the composition of the subsoil or the underlying geology. Archaeological features are the result of man-made changes in the composition of the soil and the introduction of intrusive materials such as brick and stone. These features will create detectable magnetic anomalies. In addition, activities

which involve heating and burning will create magnetic anomalies as will the presence of ferrous metal objects. By examining the anomalies detected by a fluxgate gradiometer survey, geophysicists can often translate the data into archaeological interpretation.

The area survey was conducted using a *Geoscan Research* fluxgate gradiometer (model FM36) with an electronic sample trigger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The base line was established by measuring out from the southern and western field boundaries. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data from the survey was processed using *Geoplot* version 3.0. The data was desloped (a means of compensating for sensor drift during the survey by subjecting the data to a mathematical bias sloping in the opposite direction of the bias created by sensor drift). The data was clipped to reduce the distorting effect of extremely high or low readings caused by ferrous metals on the site, and the result was plotted as a greyscale image (smoothed on Fig. 2, unsmoothed on Fig. 3).

The survey was carried out by Mr D Bunn and the writer, on the 26<sup>th</sup> May 1999. The weather was changeable with patchy cloud, occasional sunny spells, and a slight easterly wind. The area surveyed was approximately 0.5 hectares and was restricted to the area of pasture (a scan of the area of modern building showed that it was unsuitable for geophysical survey).

## 4.0 Results

### 4.1 Strong macula anomalies

The survey detected a number of strong amorphous magnetic anomalies (Fig. 4, 1 to 11). These were probably caused by localised modern disturbance or the presence of ferrous (iron rich) rubbish. Anomaly 2, for example, was caused by the presence of a shelter for sheep. It is unlikely that any of these anomalies reflect the presence of important archaeological features.

Anomaly 1 coincided with a large void (a hazard to the archaeologist conducting the survey). This void contained a substantial amount of ferrous rubbish, producing a strong magnetic signal (a large ashlar stone block was observed amongst its contents).

In the area around the council houses in the south-central area of the survey, a large localised anomaly was detected (Fig. 4, 18). This was probably caused by building material from the construction of the houses themselves (ie it is almost certainly modern).

## 4.2 Strong diffuse anomalies

Five strong diffuse anomalies were detected (Fig. 4, 12 to 16). These were concentrated in two groups, in the east and west of the survey.

At the west of the site was a very large anomaly (12) which covered most of the north-west corner. This was probably caused by rubble and the remains of demolished buildings. Linear anomaly (13) to the east of this may be a ditch that was filled in with rubble at the same time. The area between these anomalies shows a large amount of magnetic variation that is probably due to rubble from anomaly 12 being spread throughout the topsoil.

At the east of the site were two strong diffuse linear anomalies (14 & 15) these were probably caused by ditches that were filled with building debris, although it is possible that they are the remains of some form of trackway (or hard standing). It is unusual to find diffuse anomalies in such a coherent linear form. East of these linear anomalies was a diffuse sub-rectangular anomaly (16) which was probably caused by the remains of a building.

A much stronger, less diffuse anomaly was also present in the south-west corner of the survey area (17). This was caused by modern building remains which were visible at the surface.

## 5.0 Conclusions

The east and west sides of this site are dominated by large diffuse anomalies probably caused by buried building debris (probably brick). There is cartographic evidence (supplied by the client and believed to be an extract from the 2<sup>nd</sup> edition Ordnance Survey) showing the presence of buildings on the east and west sides of the site early in this century. The anomalies detected could relate to these buildings and their demolition.

The central part of the site contains a few strong localised anomalies but it is possible that it contains few remains of archaeological significance.

The strong response of the rubble spreads on the east and west sides will have masked any underlying features, should these exist.

## 6.0 Acknowledgements

Pre-Construct Geophysics would like to thank Claude Bingley Developments Ltd. for this commission. PCG would also like to thank Mr James Lyall for his advice and his assistance with the digital georeference plot.



## 7.0 Appendices

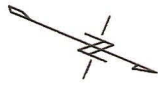
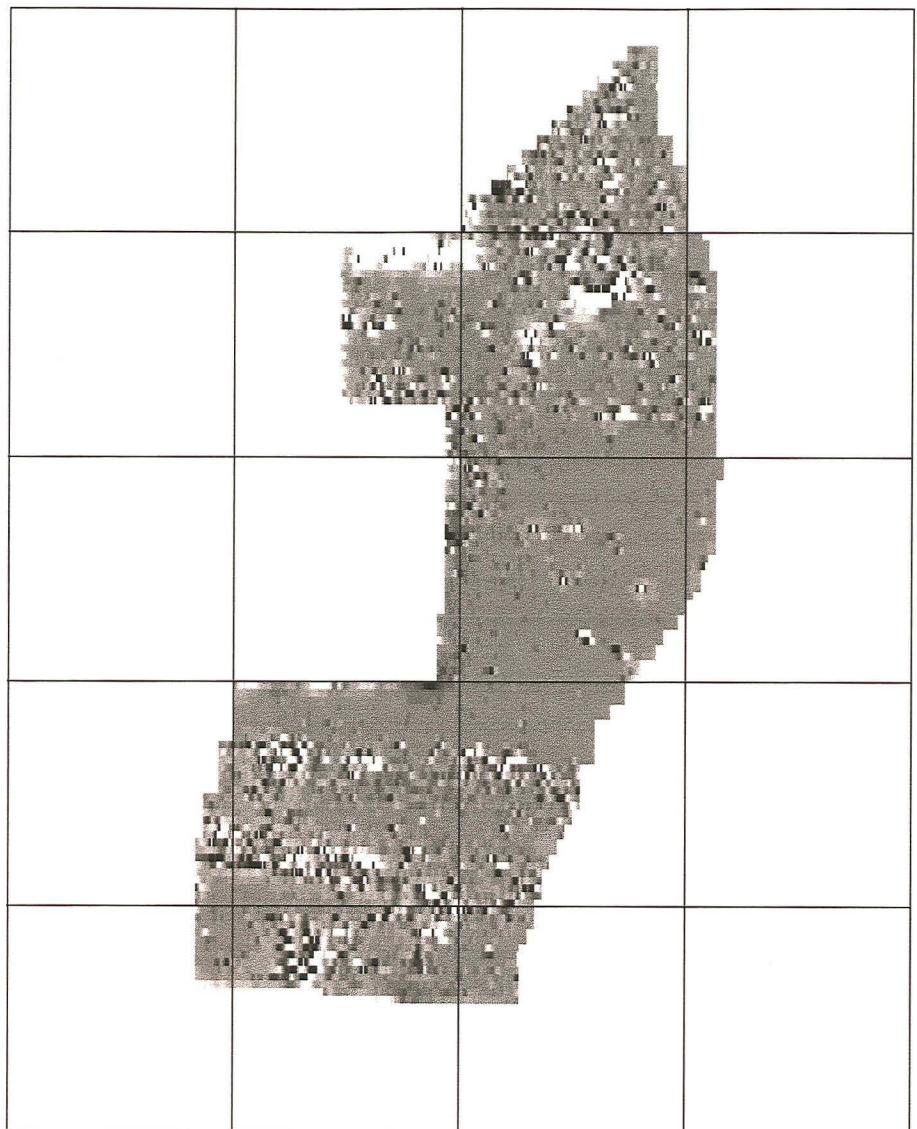
### 7.1 References

- Clark, AJ 1990 '*Seeing beneath the soil.*'
- David, A 1995 *Research & Professional Services Guidelines No 1; 'Geophysical Survey in Archaeological Field Evaluation.'*
- Gaffney, C, Gater, J & Ovenden, S 1991 *IFA Technical Paper No 9; 'The use of Geophysical techniques in archaeological evaluations.'*
- Palmer-Brown, CPH 1999 *Specification for an archaeological field evaluation; 'Land off Holt Lane / Banovallum Gardens, Horncastle, Lincolnshire.'*

### 7.2 Summary of survey parameters

Instrument:	Geoscan Research Fluxgate Gradiometer FM 36 with Sample Trigger ST1.
Resolution:	0.1 nT
Grid size:	30m x 30m
Sample interval:	0.25m
Traverse interval:	1m
Traverse method:	Zig-Zag

7.3 Shade plot of raw data.





Fluxgate Gradiometer Survey by Pre-Construct Geophysics  
Site to the north of Chapel Lane, Aubourn, Lincolnshire  
Scale 1:400

Fig. 2 Smoothed greyscale image



362700

Royal Oak Lane

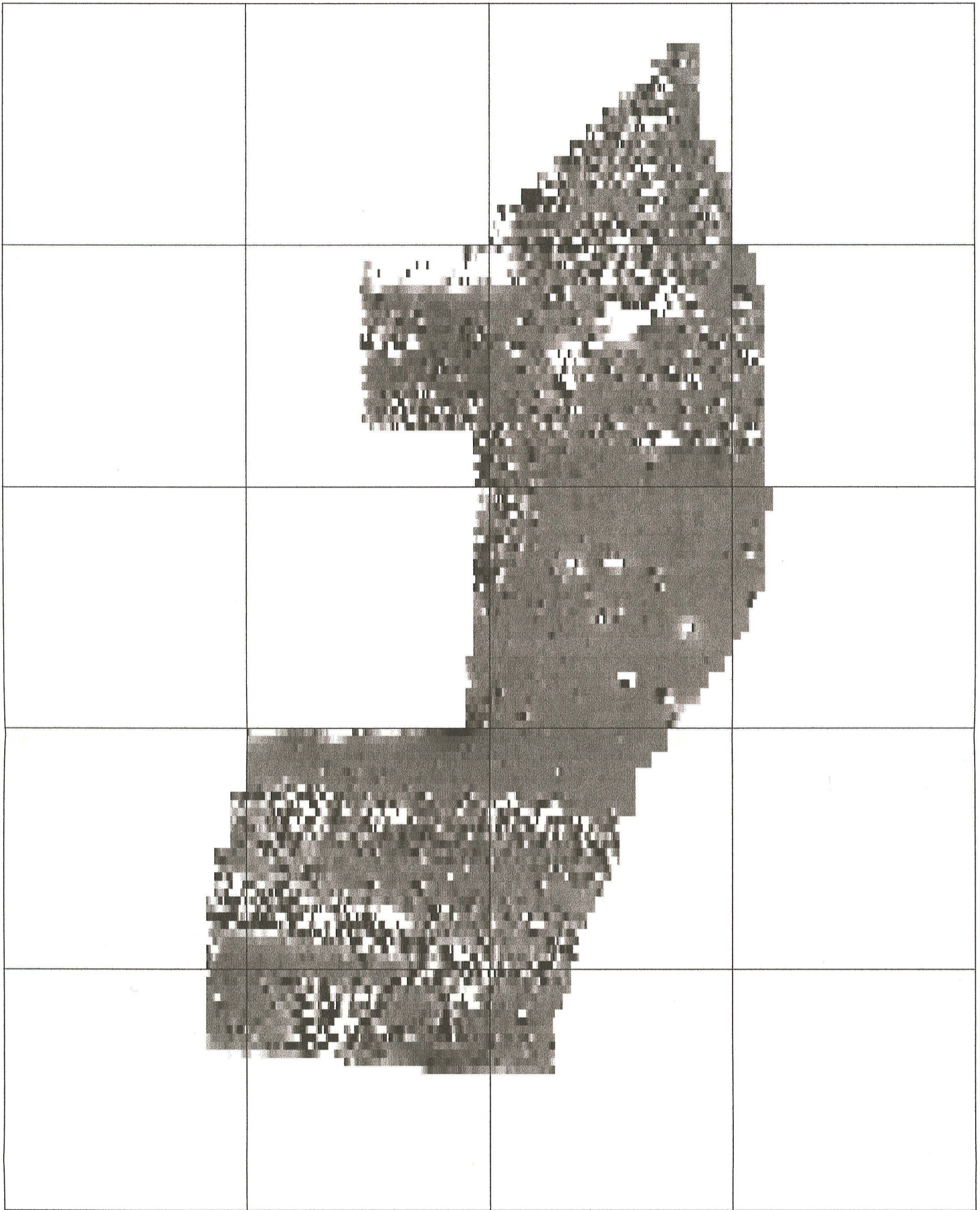
Chapel Lane

0 25 m.

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492500

Fig.3 Shade plot of processed data.



-43.08      63.48 nT

20m

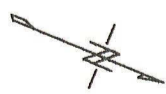


Fig. 4 Plan showing interpretation of anomalies. Scale 1:500

