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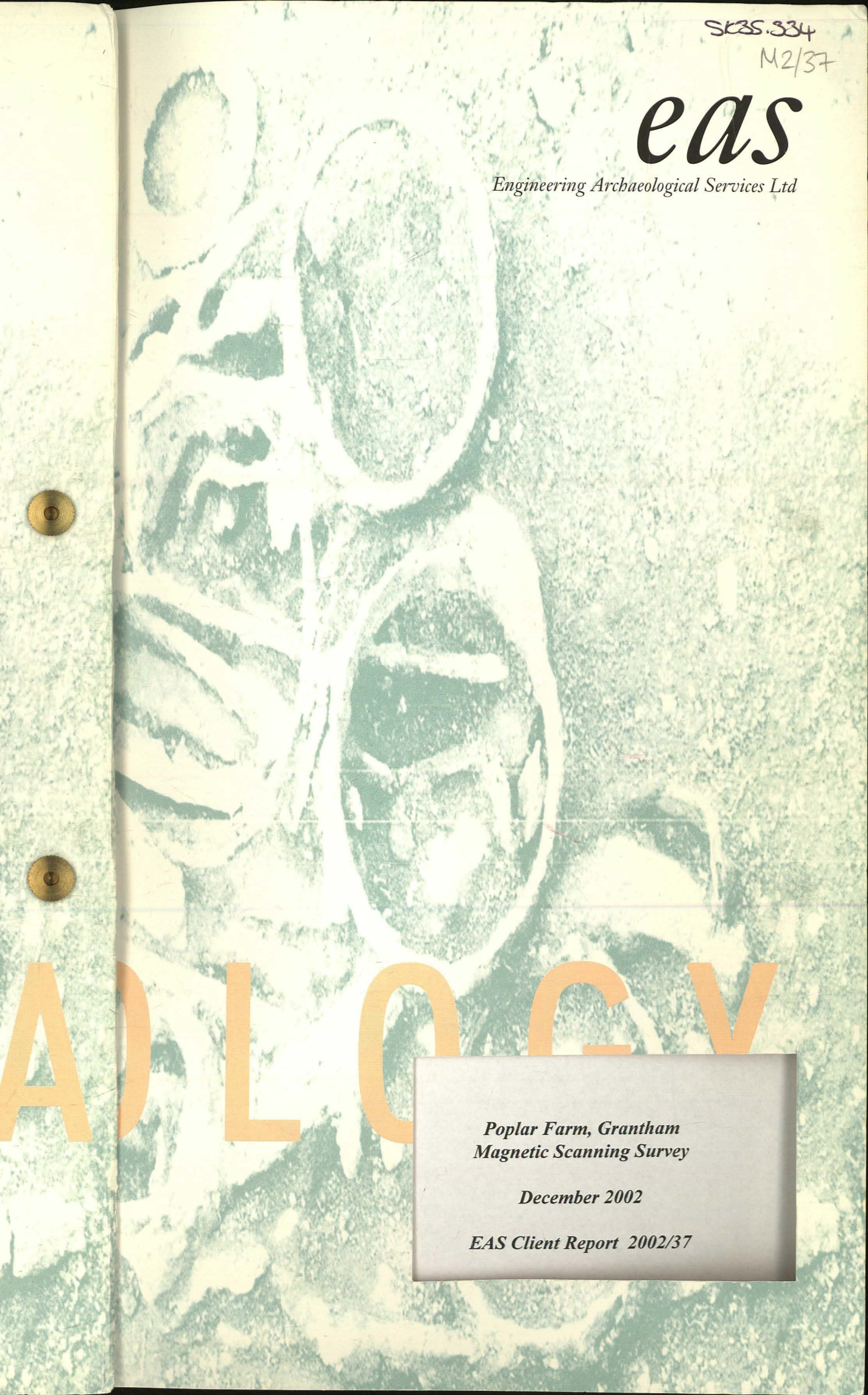
Engineering Archaeological Services Ltd



Poplar Farm, Grantham
Magnetic Scanning Survey

December 2002

EAS Client Report 2002/37

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Survey Commissioned
by
Archaeological Project Services

Surveyed
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registered in England
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Poplar Farm, Grantham, Geophysical Survey - Introduction:

NGR

Centred on SK 905367

Location and Topography (Figure 1)

The proposed development area consists of parts of what were originally four fields between Poplar Farm and Green Hill and the railway along Gonerby Hill Foot. Since the Ordnance Survey Map was drawn a new housing development has been built between the A52 and the site of Poplar Farm and this development marks the southern boundary of the survey area. The survey area forms a rough "L" shape, with the eastern field extending along the side of the new housing development and reaching the back gardens of the houses fronting onto Barrowby Road (A52). The northern edge of the survey area is marked by a major ditch or drain. None of the former field boundaries have been maintained and the survey area now presents an unified area.

The site and the surrounding area slopes down to the east and north falling from approximately 95 m OD to c. 65 m OD. The eastern field (OS Field Number 7259) has a slight shelf approximately half way down the slope.

At the time of the survey (17th - 18th December AD 2002) the fields were under stubble and the lower areas were extremely wet and boggy, particularly in the north eastern corner of the survey.

Archaeological Background

It is intended to extend the new housing development onto the area of the survey. The proposed development is within an area of known archaeological potential. To the west and south west are a series of worked flint scatters of Neolithic and Bronze Age date, possibly associated with a pit alignment known from aerial photographs. A scatter of Mesolithic flints have been reported from Stubbock Hill. A single ring ditch is also known from the northern part of the general area.

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 Barrowby Road, directly south of the proposed development. Close to Rectory Farm, to the west of the development, there is evidence for Roman iron-smelting.

A former post-medieval limestone quarry can be seen as a depression along the southern boundary of the proposed development.

Aims of Survey

To gather sufficient information to establish the location and extent of any archaeological features within the development area.

SUMMARY OF RESULTS

Very few magnetic anomalies were located. Two broad areas of magnetic disturbance were defined within OS Field Number 7259. One of these corresponded to a slight shelf on the hillside. The other may be associated with the post medieval limestone quarry at the southern edge of the survey area.

Poplar Farm, Grantham, Geophysical Survey - Results:

Methods

The proposed development was scanned with a Geoscan FM 36 Fluxgate Gradiometer. Transects were walked at approximately 10 m intervals across the fields and magnetic anomalies ± 2 nT were sketch plotted onto 1:2500 maps of the development area. The pattern of magnetic scanning is shown on Figure 2.

The recent nature of the existing housing development meant that the extent of the survey area and modern disturbances also had to be sketch plotted onto the 1:2500 maps.

Survey Results:

Area

The development area covers approximately 20 Ha. Within former OS Field Number 4875, however, an area of approximately 100 x 150 m was being used as a builder's storage area. The north eastern corner of the survey area had also been disturbed with the construction of a dry lagoon which had a large drainage pipe under a bund along its western edge.

The western edge of the proposed development was also disturbed by a pond.

Results:

Magnetic Scanning (Figure 3)

Only a limited number of areas of magnetic disturbance were located within the proposed development area. These can be divided into two broad groupings.

At the western end of the development four small anomalies were located (A - D). Anomaly A was the result of modern dumping from the northern boundary road of the new housing development and is therefore not of archaeological import. Anomaly B was a short length of linear anomaly pointing towards the pond in the corner of the field and therefore probably marks the line of modern drainage. Anomalies C and D were each approximately 3 - 4 m in diameter and were approximately 20 nT above the background magnetic field. The lack of other anomalies makes the interpretation difficult. It is possible that Anomalies C and D are little more than the locations of relatively modern bonfires, although an archaeological origin for these anomalies cannot be ruled out.

The anomalies located within OS Field Number 7529, however, were of a different character. There was a broad band of slight magnetic disturbance crossing the middle of the field (Anomaly E) This corresponded with the slight shelf in the hillside. Whilst the general background varied by only 2 or 3 nT above the background a number of small, discrete anomalies of up to 25 nT above the background were detected. Whist it was not possible to define specific anomalies within this general area of variability by scanning it is possible that the readings reflect some form of activity on the shelf. It is also possible that the readings were geological in origins with material being deposited on the shelf through soil movements.

Another broad area of magnetic disturbance was located towards the southern end of OS Field Number 7259. Anomaly F marks the post-medieval quarry which can be seen as a depression in the field. To the east of this was a broad area (Anomaly G) with slight magnetic variability (± 3 nT) and the occasional discrete anomaly up to 20 nT above the background. Two discrete anomalies (H), which were 7 nT above the background may be outliers from Anomaly G. It would seem likely that this group of anomalies is related to the limestone quarry, although geological or other origins cannot be ruled out.

Poplar Farm, Grantham, 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.

Very few magnetic anomalies were detected over the majority of the survey area. This, in part is because of the physical character of the site. Relatively steep slopes give way to damp and slightly boggy ground. Thus the anomalies located in the western half of the area probably relate to modern activity.

Within OS Field Number 7259, however, two broad areas of magnetic disturbance were defined. The southern area would appear to relate to the disused post-medieval quarry on the southern boundary of the survey area. The area in the middle of the field corresponds to a slight shelf on the hillside and may mark archaeological activity on this shelf. It may, also, be the result of geological processes.

Recommendations

1. *A limited programme of detailed geophysical survey be commissioned to sample and define the character of the two broad areas of magnetic disturbance within OS Field Number 7259.*

Poplar Farm, Grantham, 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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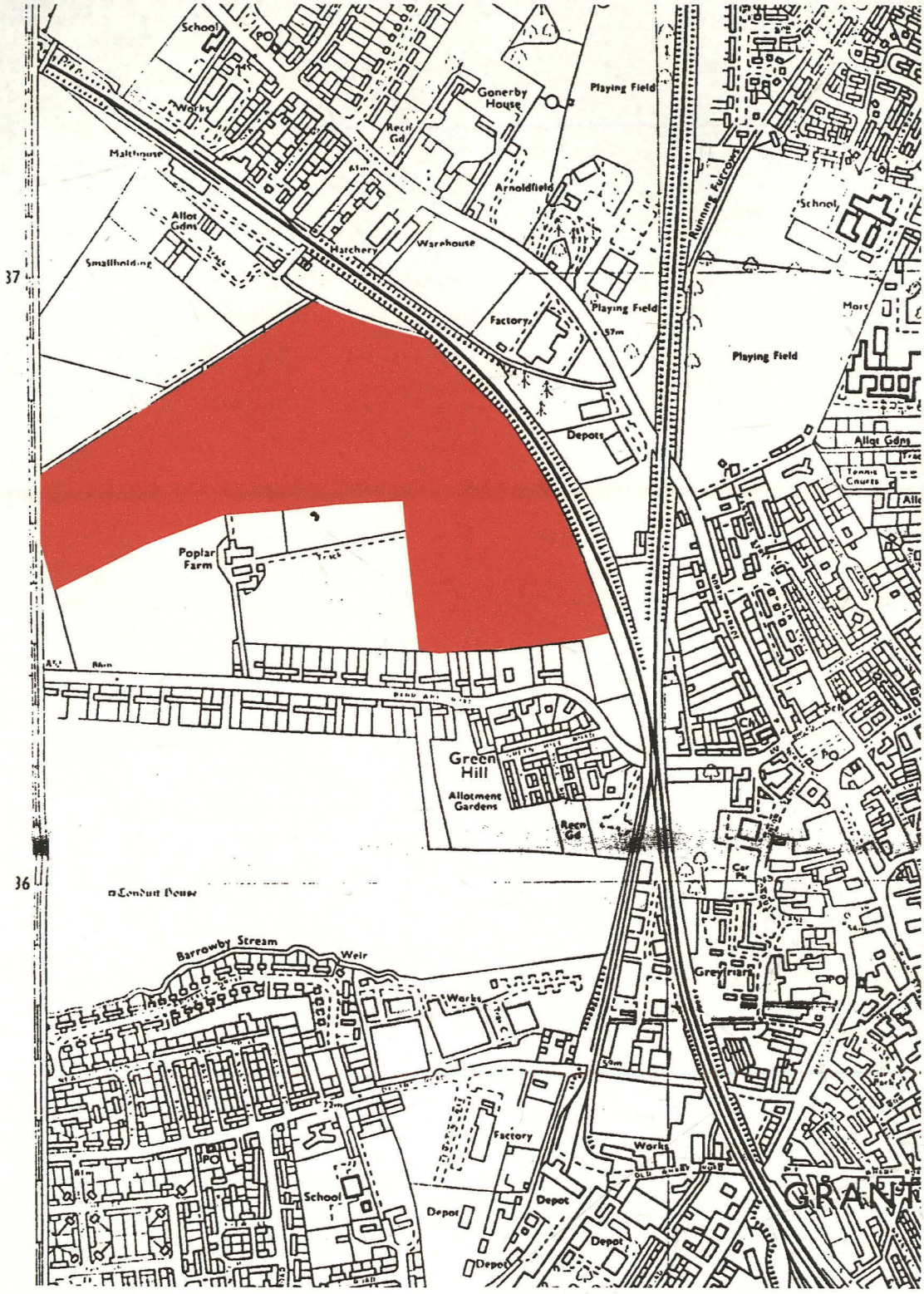

Figure 1: Poplar Farm, Grantham
Location
Scale 1:10,000

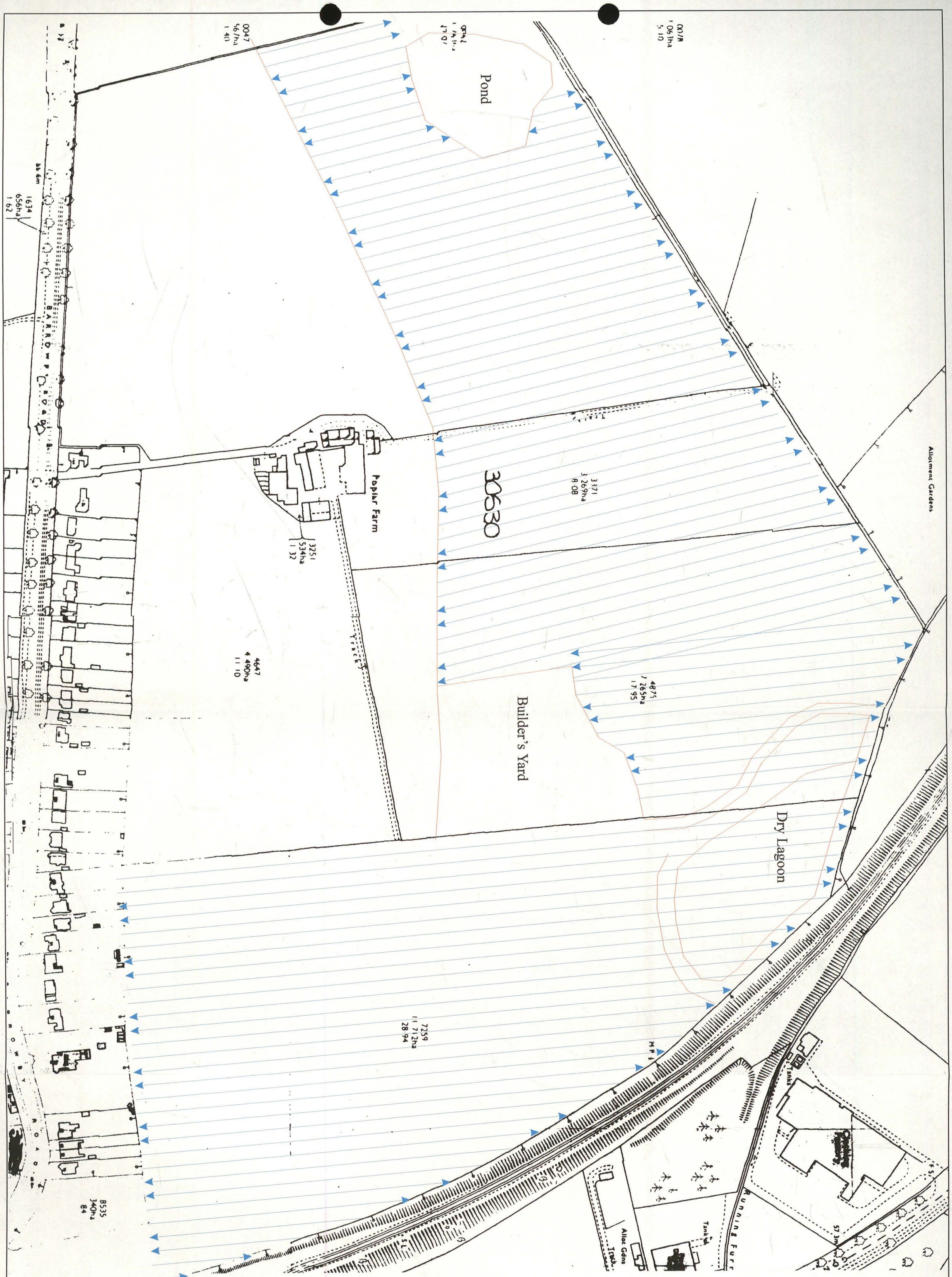

Figure 2: Poplar Farm, Grantham
Pattern of Scanning
Scale 1:2500

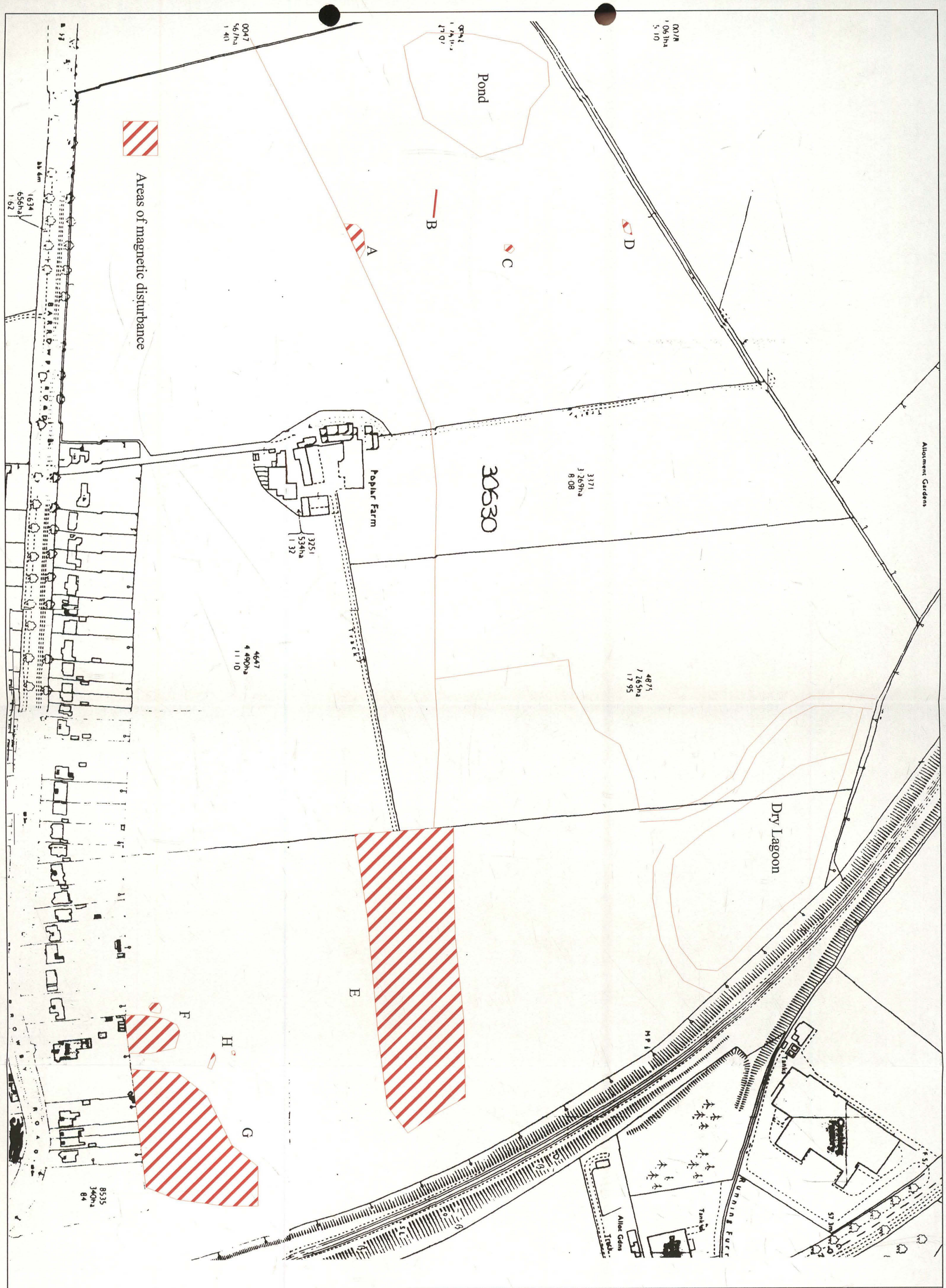

Figure 3: Poplar Farm, Grantham
Results
Scale 1:2500