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A Report for

WARDELL ARMSTRONG

on a

Geophysical Survey

carried out at

Norton Bottoms Quarry, Lincolnshire

October 2001

Job Ref. No. 1617

REGISTERED IFA ORGANISATION

Author E J F Mercer BA MSc AIFA

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CONTENTS

1 SUMMARY OF RESULTS

The reconnaissance survey using magnetic susceptibility aided the positioning of areas of detailed magnetometry together with a known SMR site recorded as cropmarks. The detailed survey showed a number of feint anomalies in the form of areas of positive response and positive linears. Their origin is difficult to determine from the geophysical survey and requires investigation with trenching. A possible ditch and embankment feature was located which may belong to the remains of a boundary.

2 INTRODUCTION

2.1 Background synopsis

Stratascan were commissioned to undertake a geophysical survey of an area proposed for a sand and gravel quarry. The survey forms part of an archaeological investigation being undertaken by Wardell Armstrong.

2.2 Site location

The site is located to the southwest of Lincoln and to the northeast of Newark-on-Trent at OS ref. SK 87745845.

2.3 Description of site

In total the survey area comprises 20ha over two large fields with a strip of woodland along the west side of the area. The fields had been recently harvested and were laid down to stubble. The topography was fairly flat.

The underlying geology is Lower Lias (British Geological Survey South Sheet, Third Edition Solid, 1979). The overlying soils area known as Blackwood soils which are typical sandy gley soils. These consist of deep permeable sandy and course loamy soils (Soil Survey of England and Wales, Sheet 4 South West England).

2.4 Site history and archaeological potential

A cropmark site is recorded in the Lincolnshire Sites and Monuments Record at SK 878 586. The cause of this is not known.

2.5 Survey objectives

The objective of the survey was to locate any anomalies of possible archaeological significance in order that they may be targeted with trenching.

2.6 Survey methods

An initial reconnaissance survey was carried out over the whole site using magnetic susceptibility. From this areas, of detailed magnetometry were targeted totalling a twenty percent sample of the area. More information regarding these techniques are included in the Methodology section below.

3 METHODOLOGY

3.1 Date of fieldwork

The fieldwork was carried out over five days from Tuesday 23rd October 2001 to Thursday 25th October 2001 and Monday 29th October 2001 to Tuesday 30th October 2001 when the weather was variable.

3.2 Grid locations

The location of the magnetic susceptibility survey grid has been plotted in Figure 3 with the detailed survey grids and referencing having been plotted in Figure 5.

3.3 Description of techniques and equipment configurations

3.3.1 *Magnetic Susceptibility*

Alteration of iron minerals in topsoil through biological activity and burning can enhance the magnetic susceptibility (MS) of that soil. Measuring the MS of a soil can therefore give a measure of past human activity and can be used to target the more intensive and higher resolution techniques of Magnetometry and Resistivity. Measurements of MS were carried out using a field coil which provides a rapid scan and has the benefit of allowing "insitu" readings to be taken.

The equipment used on this contract was an MS2 Magnetic Susceptibility meter manufactured by Bartington Instruments Ltd. A field coil known as an MS2D was used to take field readings. This assessed the top 200mm or so of topsoil. To overcome the problem of ground contact all readings were taken 4 or 5 times and an average taken. All obvious localised "spikes" were ignored.

3.3.2 *Magnetometer*

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTesla (nT) in an overall field strength of 48,000nT, can be accurately detected using an appropriate instrument.

The mapping of the anomaly in a systematic manner will allow an estimate of the type of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects or by kilns or hearths. More subtle anomalies such as pits and ditches can be seen if they contain more humic material which is normally rich in magnetic iron oxides when compared with the subsoil.

To illustrate this point, the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material being accumulated in the trench compared to the undisturbed subsoil. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

The magnetic survey was carried out using an FM36 Fluxgate Gradiometer, manufactured by Geoscan Research. The instrument consists of two fluxgates mounted

0.5m vertically apart, and very accurately aligned to nullify the effects of the earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background.

3.4 Sampling interval, depth of scan, resolution and data capture

3.4.1 *Sampling interval*

Magnetic susceptibility
The magnetic susceptibility survey was carried out on a 20m grid with readings being taken at the node points.

Magnetometer
Readings were taken at 0.5m centres along traverses 1m apart. This equates to 800 sampling points in a full 20m x 20m grid. All traverses are surveyed in a "parallel" rather than "zigzag" mode to avoid heading error.

3.4.2 *Depth of scan and resolution*

Magnetic Susceptibility
The MS2D coil assesses the average MS of the soil within a hemisphere of radius 200mm. This equates to a volume of some $0.016m^3$ and maximum depth of 200mm. As readings are only at 20m centres this results in a very coarse resolution but adequate to pick up trends in MS variations.

Magnetometer
The FM36 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. The collection of data at 0.5m centres provides an optimum resolution for the technique.

3.4.3 *Data capture*

Magnetic susceptibility
The readings are logged manually on site, and then transferred to the office where they are entered into a computer and grey scale plots are produced.

Magnetometer
The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each job, data is transferred to the office for processing and presentation.

3.5 Processing, presentation of results and interpretation

3.5.1 *Processing*

Magnetic susceptibility
No processing of the data has been undertaken.

Magnetometer
Processing is performed using specialist software known as *Geoplot 3*. This can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. 'Despiking' is also performed to remove the anomalies resulting from small iron objects often found on agricultural land. Once the basic processing has flattened the background it is then possible to carry out further processing which may include low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies.

The following schedule shows the basic processing carried out on all processed magnetometer data used in this report:

Zero mean grid	*Threshold = 0.25 std. dev.*
Zero mean traverse	*Last mean square fit = off*
Despike	*X radius = 1 Y radius = 1*
	Threshold = 3 std. dev.
	Spike replacement = mean

3.5.2 *Presentation of results and interpretation*

Magnetic susceptibility
The presentation of the data for this site involves a grey scale plot of the field measurements overlain onto a site plan (see Figure 4).

Magnetometer
The presentation of the data for each site involves a print-out of the raw data both as grey scale and trace plot, together with a grey scale plot of the processed data. Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site.

4 RESULTS

4.1 Magnetic susceptibility survey

The results from the magnetic susceptibility survey can be seen in Figure 4. Most of the enhancement can be seen in the eastern field with lower levels in the western field. Generally, however, the levels of enhancement are quite low. Areas 1 and 4 have been positioned on an area of enhancement together with the approximate position of the cropmark. Area 8 was sited on an area of low susceptibility levels with Areas 6 and 7 lying across the division between the general area of low level enhancement and higher levels.

4.2 Detailed magnetometer survey

The results from the magnetometer survey reflect the readings from the magnetic susceptibility survey in that the raw data for each of the survey areas possesses a very narrow dynamic parameter range. In all of the areas surveyed, except for Areas 2, 3 and 6, areas of positive response have been abstracted. These are relatively small and may

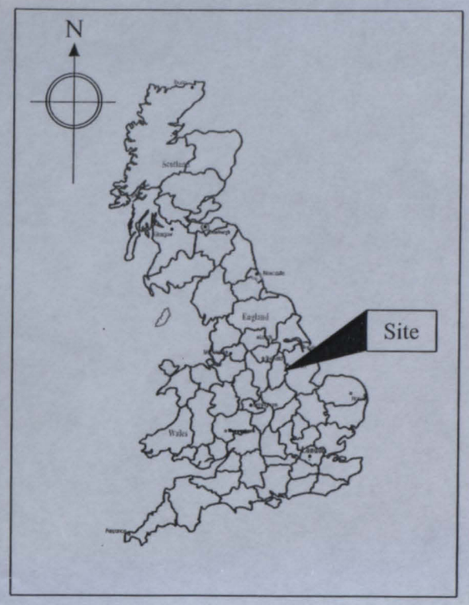
be due to pedological or geological effects. However, an archaeological origin cannot be ruled out and therefore their nature would need to be established through further investigation in the form of trenching.

Also abstracted from the majority of the areas surveyed are feint positive linear anomalies. In Area 8 (Figure 30) these anomalies have been interpreted as being of agricultural origin due to their discrete parallel appearance. However, in other areas there does not appear to be any recognisable pattern or form to suggest whether they are archaeological or agricultural in origin.

The only feature to be abstracted from the detailed magnetometer results showing any significance is in Area 3 (Figure 10). The positive linear anomaly banded by a negative linear anomaly is quite distinct in appearance and can be observed running beyond the southern limits of Area 3. This is reminiscent of a ditch and bank and may be the remains of a boundary feature and may therefore be associated with the cropmarks recorded in the Sites and Monuments Record. No other evidence of the cropmarks have been located elsewhere.

5 CONCLUSIONS AND RECOMMENDATIONS

A magnetic susceptibility survey was carried out over the whole of the area proposed for development. From the results eight areas of detailed survey were targeted on areas of both enhanced and low levels of susceptibility. Two of the areas also targeted a known SMR site recorded as cropmarks. Generally the levels from the magnetic susceptibility were relatively low. This was reflected in the detailed magnetometer survey which showed very few anomalies. A number of feint linear anomalies were seen which could be cut features of either agricultural or archaeological origin. In addition areas of positive response were observed that may be archaeological. However, these require trenching to determine their origin as there is a possibility that they are from either pedological or geological effects. A feature has been abstracted from Area 3 which is reminiscent of a boundary and may be associated with the cropmarks.



Site centred on NGR SK 8774 5845			
Figure No. 1	Job no. 1617	Date Oct. 2001	Drawn EJFM / Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
GENERAL LOCATION PLAN

Scale 1:50 000

0m 1km 2km

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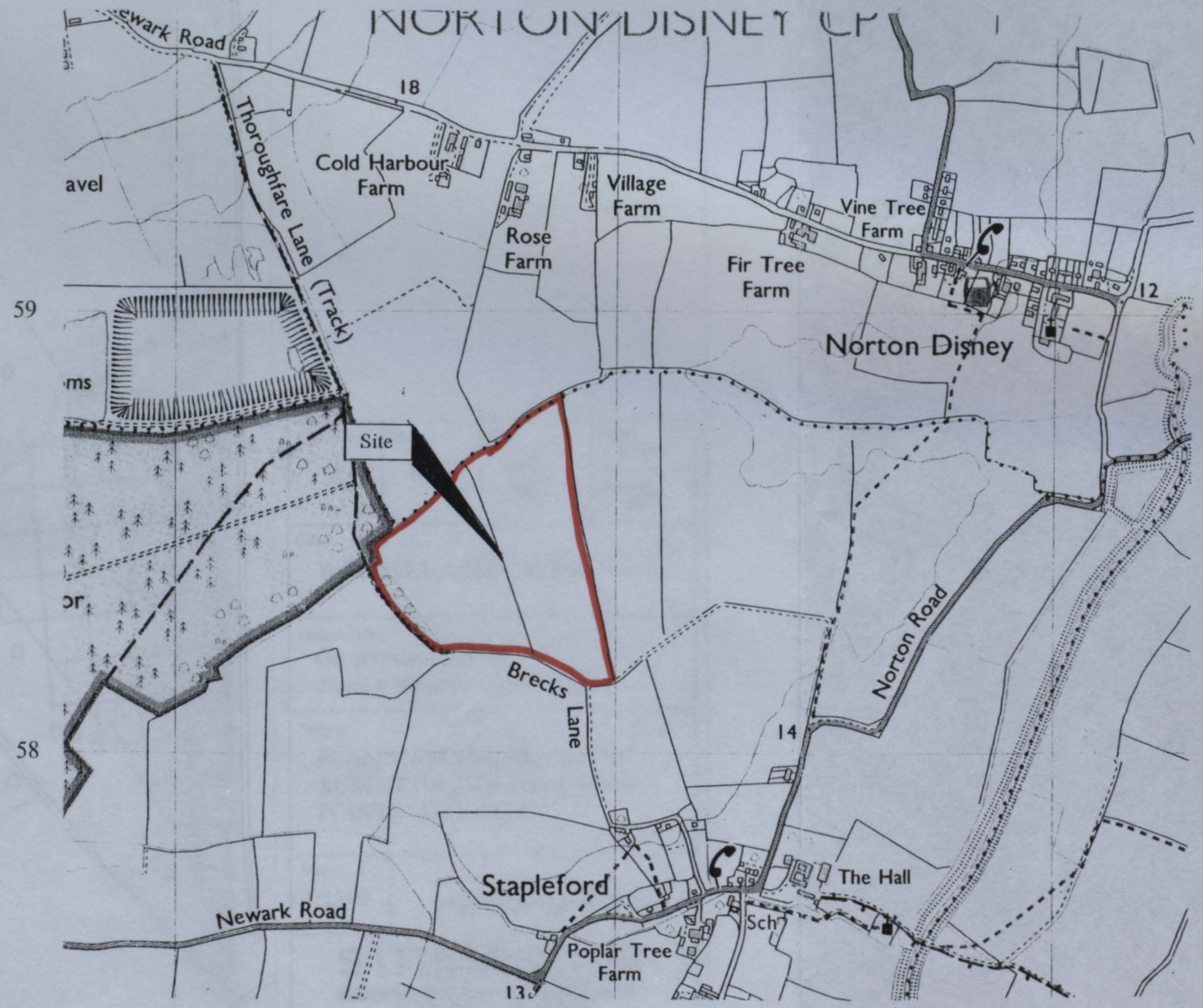

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Site centred on NGR SK 8774 5845			
Figure No. 2	Job no. 1617	Date Oct. 2001	Drawn EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
DETAILED LOCATION PLAN

Scale 1:12 500

0m 100 200 300 400 500m

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Figure No.	Job no.	Date	Drawn
3	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLAN SHOWING MAGNETIC SUSCEPTIBILTY GRID NODE POINTS SURVEYED

Scale
1:2500

0m 10 20 30 40 50m

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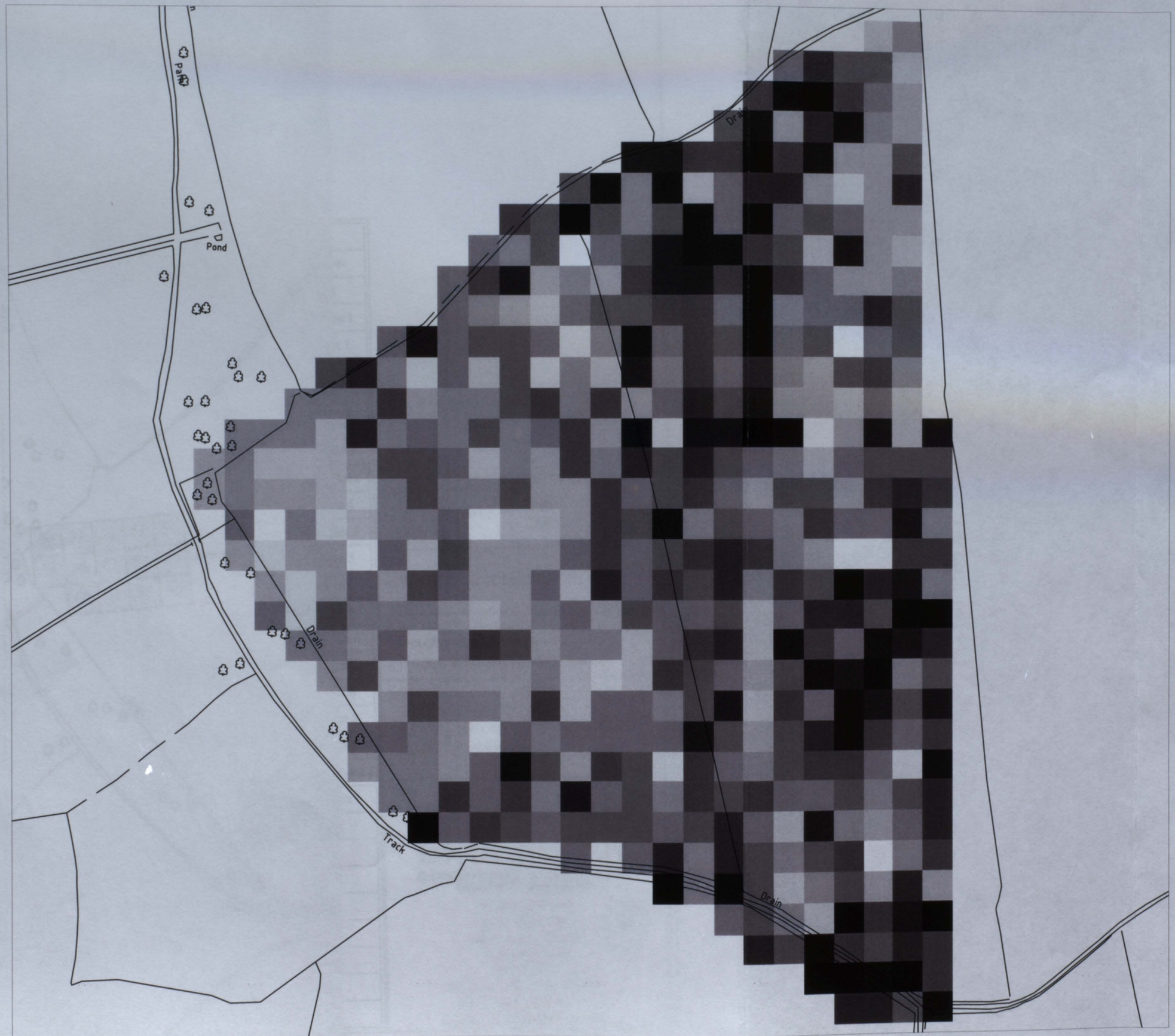

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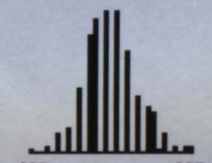
Plotting parameters;

Maximum 18.8 10^{-3} SI (black)
Minimum 7.9 10^{-3} SI (white)



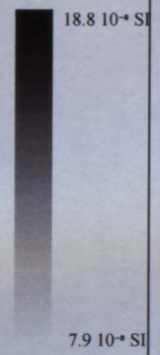


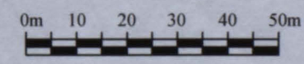
Figure No.	Job no.	Date	Drawn
4	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF MAGNETIC SUSCEPTIBILITY DATA

Scale
1:2500



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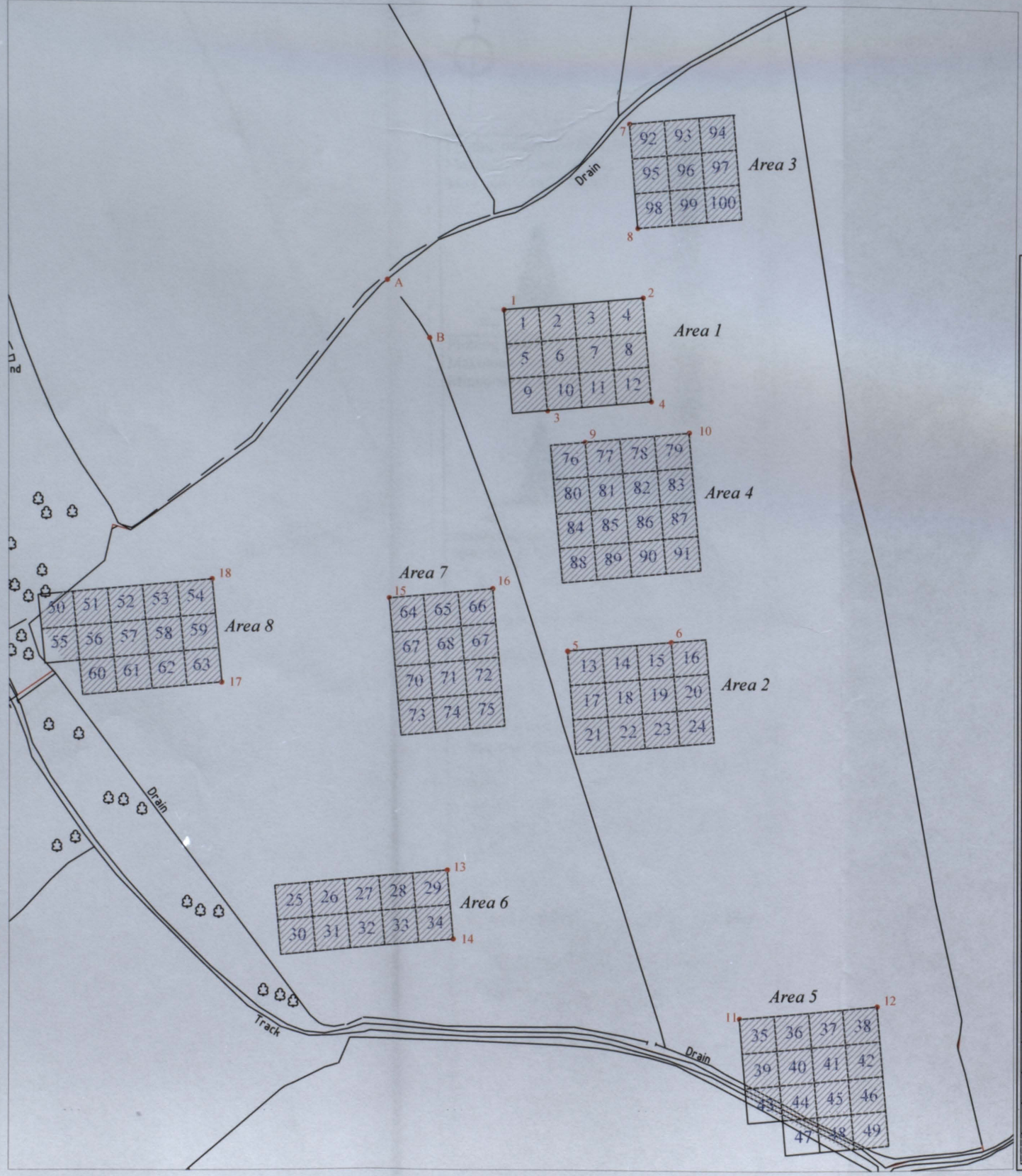

REFERENCING MEASUREMENTS			
POINT	DISTANCE	ANGLE	DESCRIPTION
B-A	41.48m	00°00'00"	Backsight
B-1	45.53m	105°17'45"	NW - Area 1
B-2	124.50m	115°28'50"	NE - Area 1
B-3	79.66m	158°00'00"	Grid peg - Area 1
B-4	132.58m	142°16'05"	SE - Area 1
B-7	167.52m	79°01'05"	NW - Area 3
B-8	134.66m	98°15'50"	SW - Area 3
B-9	107.83m	160°07'55"	Grid peg - Area 4
B-10	159.04m	146°19'45"	NE - Area 4
B-11	432.55m	191°38'25"	NW - Area 5
B-12	536.84m	186°24'55	NE - Area 5
B-13	308.41m	213°55'35"	NE - Area 6
B-14	356.04m	223°12'30"	SE - Area 6
B-15	152.25m	224°52'45"	NW - Area 7
B-16	149.68m	202°00'05"	NE - Area 7
B-17	232.38m	246°59'50"	SE - Area 8
B-18	187.07m	257°52'35"	NE - Area 8
3-5	140m		NE - Area 2
4-6	140m		Grid peg - Area 8

5&6 (Area 2) Aligned on same grid as Area 1

REFERENCING INFORMATION	
A&B	Pegs left in on boundary
A	Extended intersection of fencelines
B	Referencing point on fenceline and benchmark

GRID INFORMATION	
Areas 1 and 2 - initial trial areas	
2	Grids surveyed
	Area surveyed within grid

Figure No.	Job no.	Date	Drawn
5	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
SITE PLAN SHOWING
LOCATION OF SURVEY GRIDS
AND REFERENCING

Scale
1:2500

0m 10 20 30 40 50m

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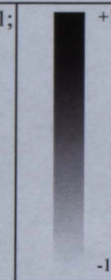
Area 3

Area 1

Plotting parameters for Area 1;
Maximum +1.3nT (black)
Minimum -1.6nT (white)



Plotting parameters for Area 3;
Maximum +1.5nT (black)
Minimum -2.3nT (white)

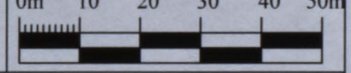
Figure No.	Job no.	Date	Drawn
6	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF RAW MAGNETOMETER DATA FOR AREAS 1 AND 3

Scale
1:1000



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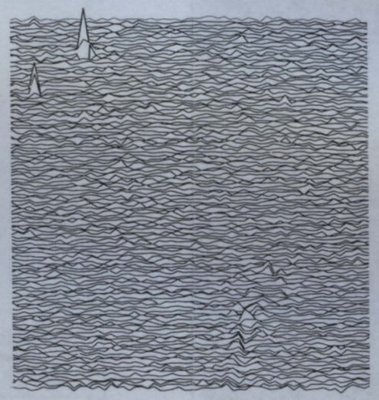
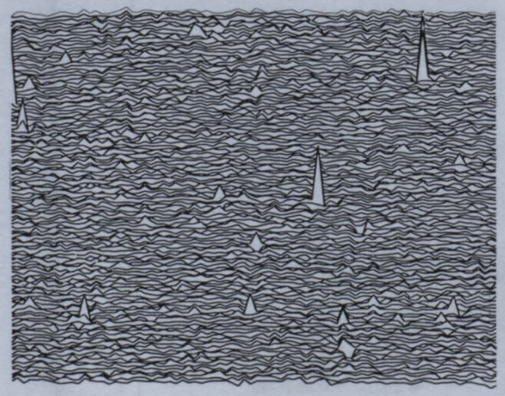


Area 3

Drain



Area 1

N

Plotting parameters;

20nT/cm

(Positive values displace above the trace line. Hidden values have not been plotted)

100nT
80nT
60nT
40nT
20nT
0nT

Figure No.	Job no.	Date	Drawn
7	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF MAGNETOMETER DATA SHOWING POSITIVE VALUES FOR AREAS 1 AND 3

Scale 1:1000

0m 10 20 30 40 50m

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N

Plotting parameters;

-20nT/cm

(Negative values displace above the trace line. Hidden values have not been plotted)

-100nT
-80nT
-60nT
-40nT
-20nT
0nT

Figure No.	Job no.	Date	Drawn
8	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF
MAGNETOMETER DATA
SHOWING NEGATIVE VALUES
SHOWING AREAS 1 AND 3

Scale
1:1000

0m 10 20 30 40 50m

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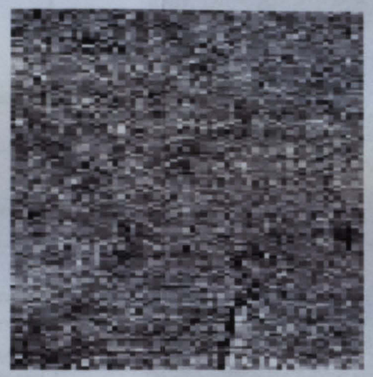
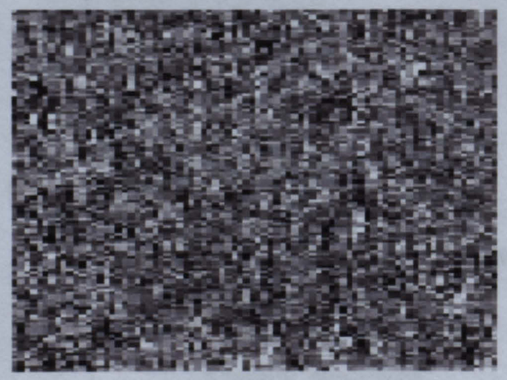


Area 3

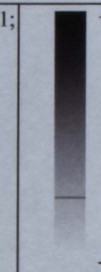


Area 1

Drain

N

Plotting parameters for Area 1;
Maximum +1.1nT (black)
Minimum -1.1nT (white)



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Minimum -1.3nT (white)

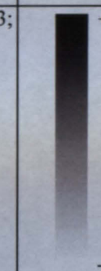


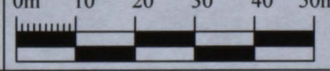
Figure No.	Job no.	Date	Drawn
9	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF PROCESSED MAGNETOMETER DATA FOR AREAS 1 AND 3

Scale
1:1000



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N

	Positive linear anomaly - possibly relating to boundary ditch
	Negative linear anomaly - possibly relating to embankment of boundary
	Feint positive linear anomaly - possible archaeological/agricultural origin
	Discrete positive response with negative return - ferrous objects

Figure No.	Job no.	Date	Drawn
10	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
ABSTRACTION AND INTERPRETATION OF MAGNETOMETER ANOMALIES FOR AREAS 1 AND 3

Scale 1:1000

0m 10 20 30 40 50m

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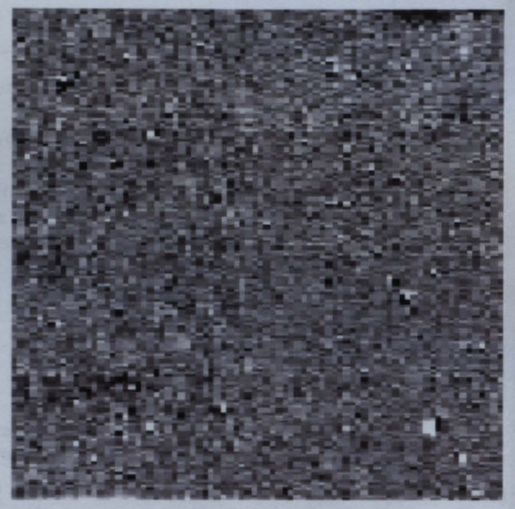
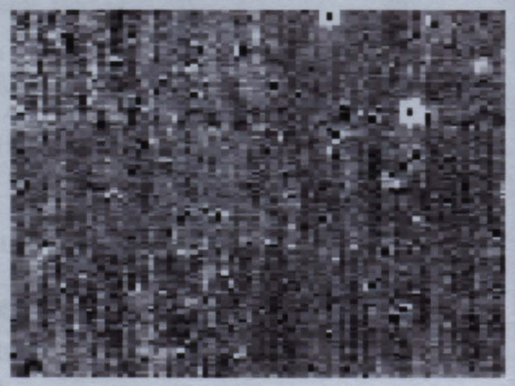


Area 4



Area 2

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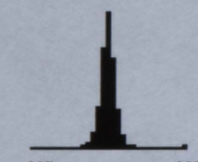
Minimum -0.5nT (white)



Plotting parameters for Area 4;
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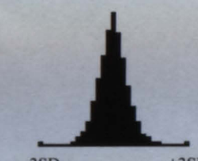
Minimum -1.6nT (white)



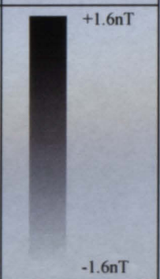


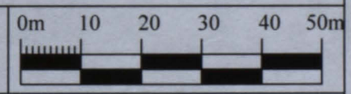
Figure No.	Job no.	Date	Drawn
11	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF RAW MAGNETOMETER DATA FOR AREAS 2 AND 4

Scale
1:1000



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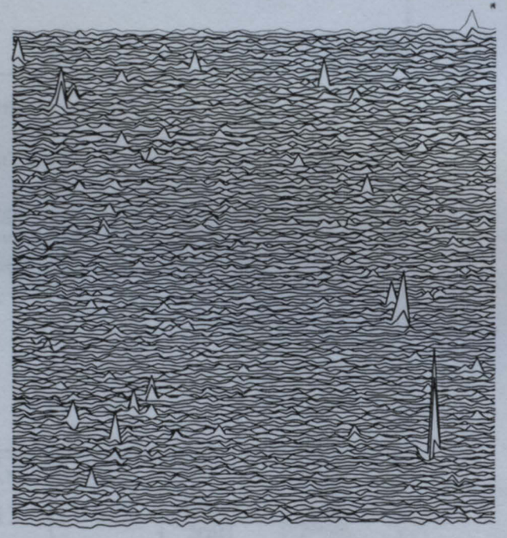
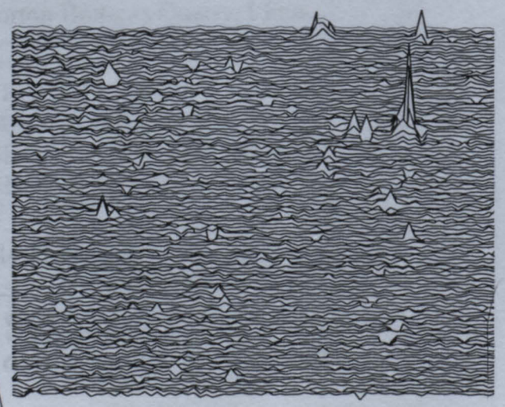


Area 4



Area 2

N

Plotting parameters;

20nT/cm

(Positive values displace above the trace line. Hidden values have not been plotted)

100nT
80nT
60nT
40nT
20nT
0nT

Figure No.	Job no.	Date	Drawn
12	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF MAGNETOMETER DATA SHOWING POSITIVE VALUES FOR AREAS 2 AND 4

Scale 1:1000

0m 10 20 30 40 50m

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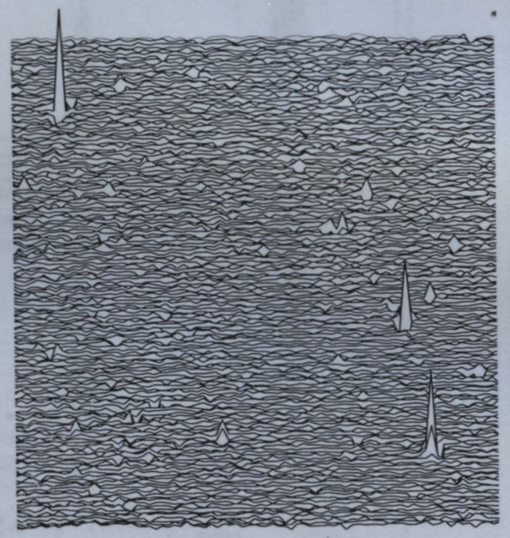
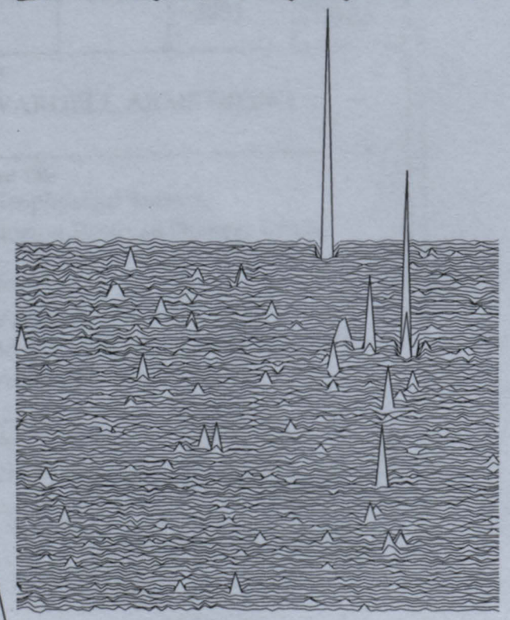


Area 4



Area 2

N

Plotting parameters;

-20nT/cm

(Negative values displace above the trace line. Hidden values have not been plotted)

-100nT
-80nT
-60nT
-40nT
-20nT
0nT

Figure No.	Job no.	Date	Drawn
13	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF
MAGNETOMETER DATA
SHOWING NEGATIVE VALUES
SHOWING AREAS 2 AND 4

Scale
1:1000

0m 10 20 30 40 50m

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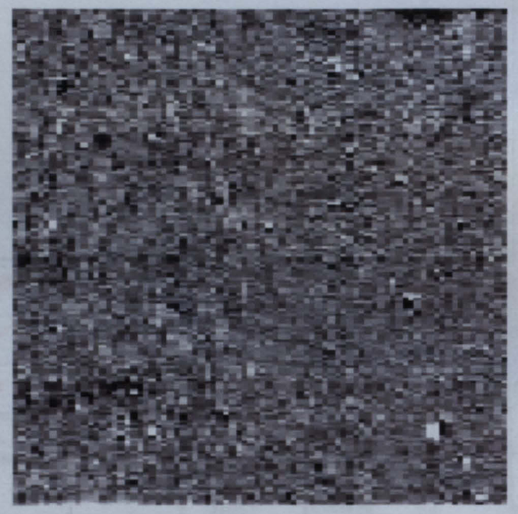
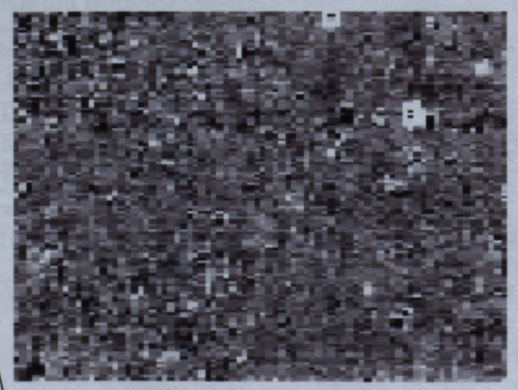


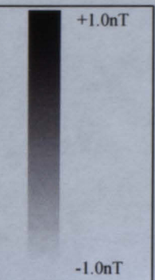
Area 4



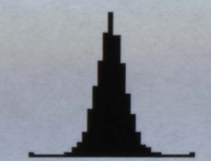
Area 2

N

Plotting parameters for Area 2;
Maximum +1.0nT (black)
Minimum -1.0nT (white)



Plotting parameters for Area 4;
Maximum +1.4nT (black)
Minimum -1.4nT (white)



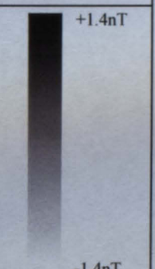


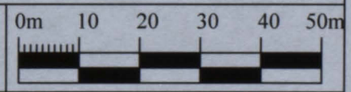
Figure No.	Job no.	Date	Drawn
14	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF PROCESSED MAGNETOMETER DATA FOR AREAS 2 AND 4

Scale
1:1000



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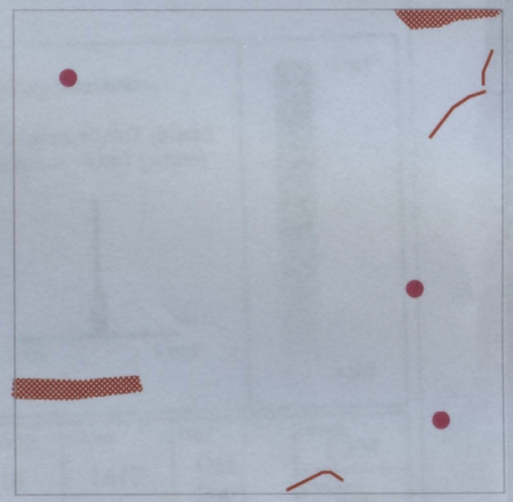
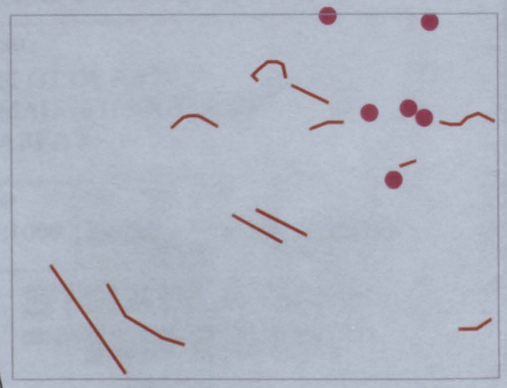


Area 4



Area 2

	Area of positive response - possible archaeological feature
	Feint positive linear anomaly - possible archaeological/agricultural origin
	Discrete positive response with negative return - ferrous objects

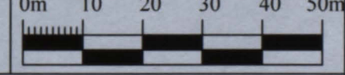
Figure No.	Job no.	Date	Drawn
15	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
ABSTRACTION AND INTERPRETATION OF MAGNETOMETER ANOMALIES FOR AREAS 2 AND 4

Scale 1:1000



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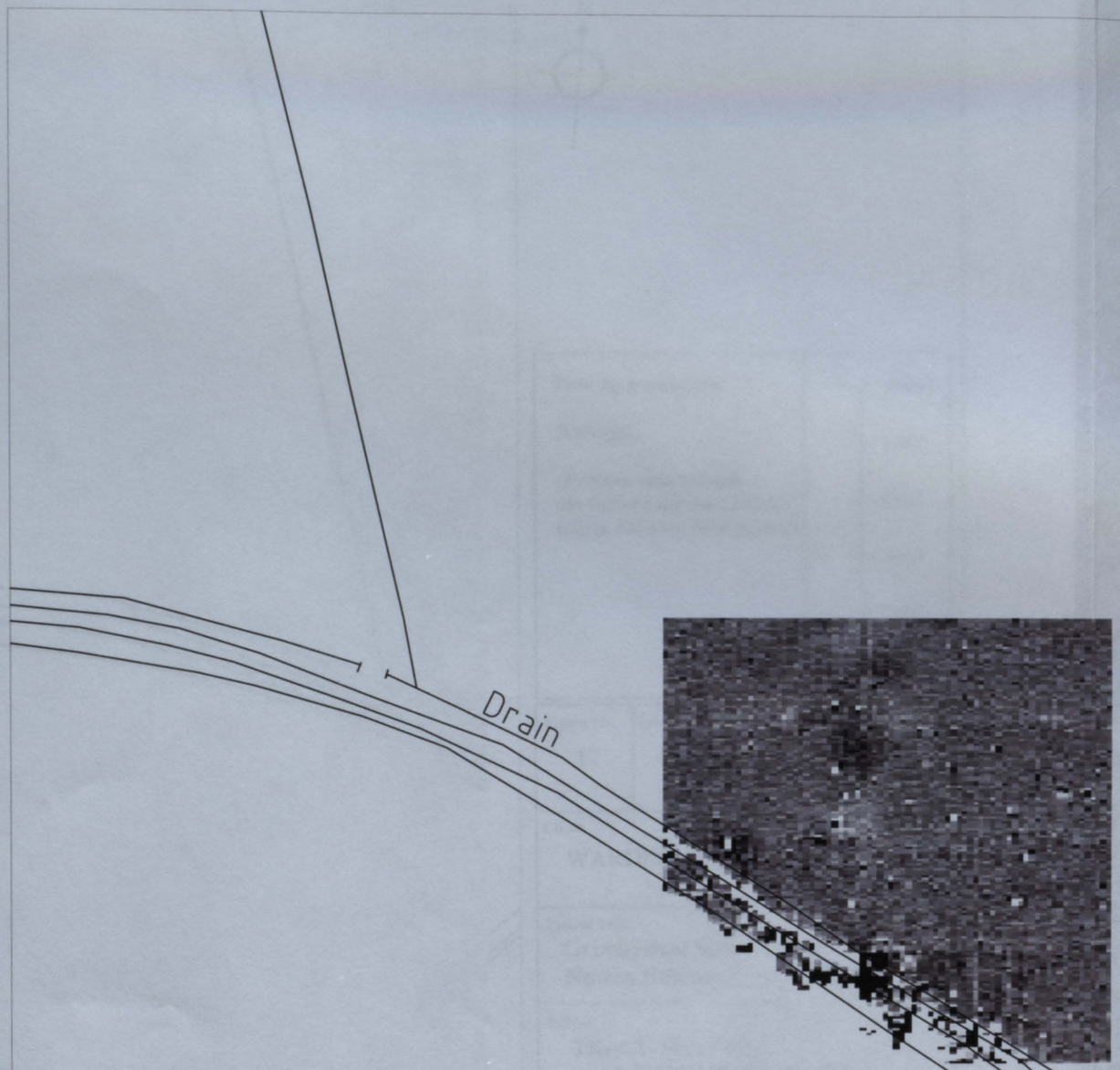


Area 5

N

Plotting parameters;

Maximum +2.9nT (black)
Minimum -3.0nT (white)

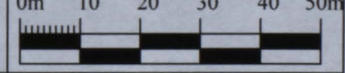
Figure No.	Job no.	Date	Drawn
16	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF RAW MAGNETOMETER DATA FOR AREA 5

Scale
1:1000



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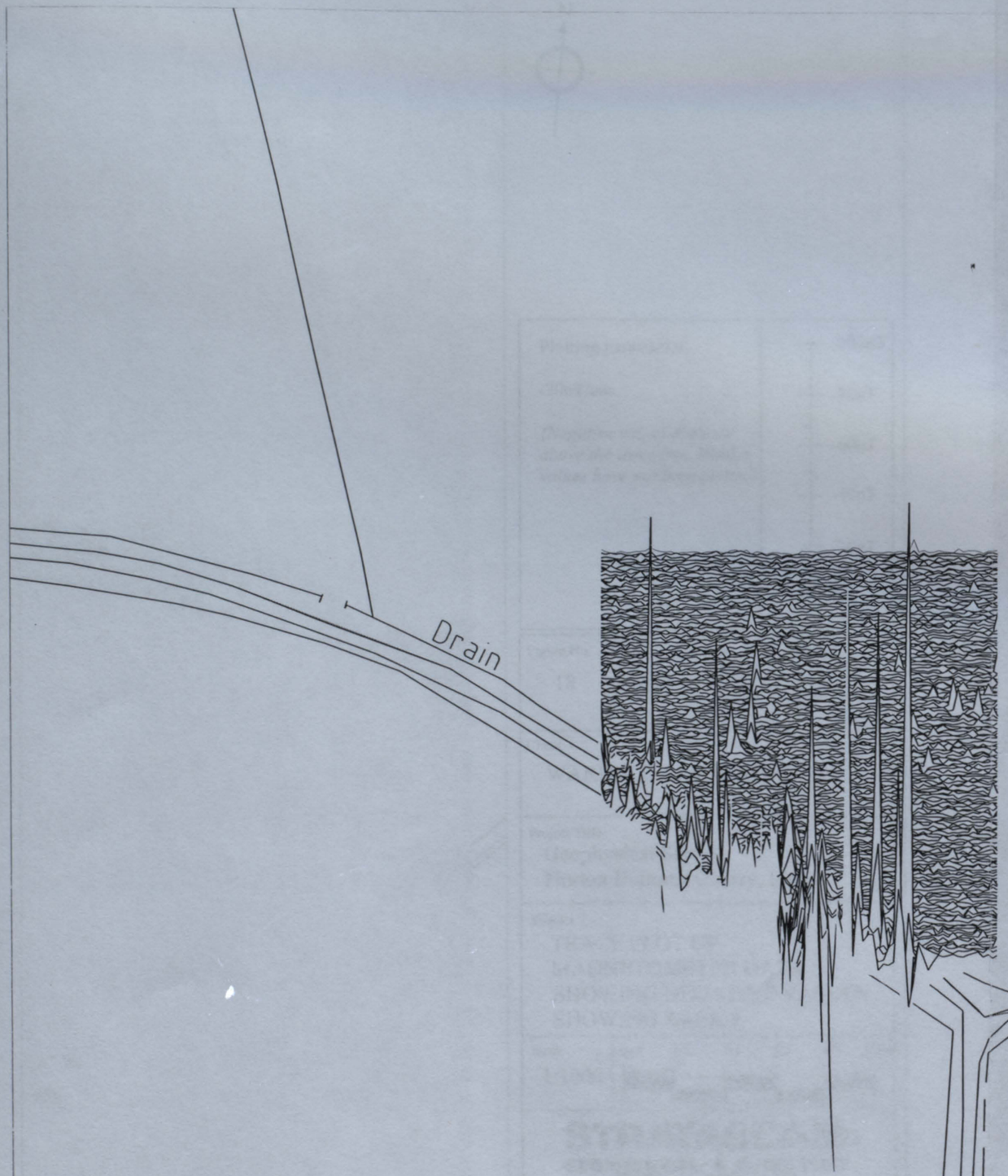

N

Plotting parameters;

20nT/cm

(Positive values displace above the trace line. Hidden values have not been plotted)

100nT
80nT
60nT
40nT
20nT
0nT

Figure No.	Job no.	Date	Drawn
17	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF MAGNETOMETER DATA SHOWING POSITIVE VALUES FOR AREA 5

Scale
1:1000

0m 10 20 30 40 50m

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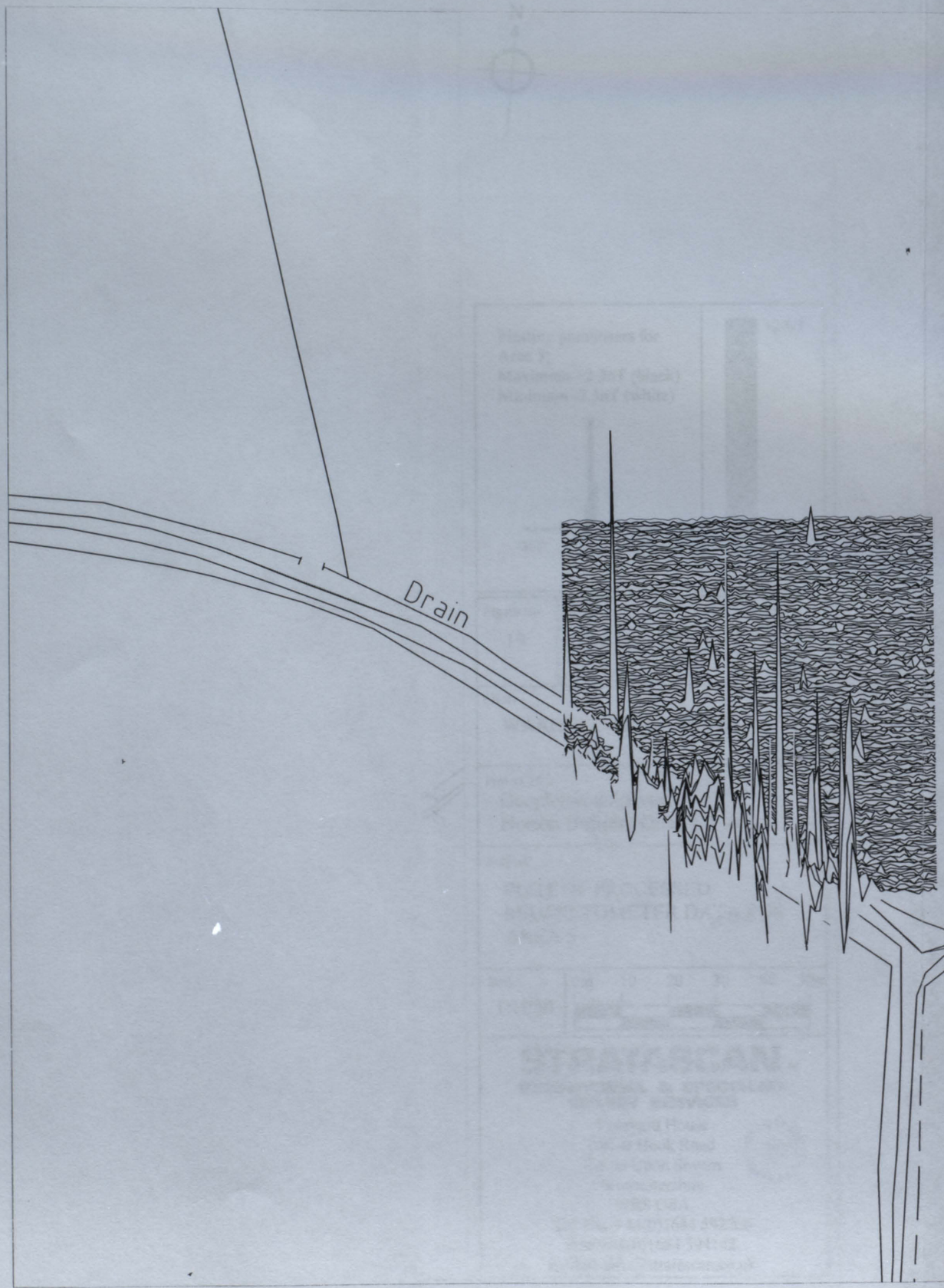

N

Plotting parameters;

-20nT/cm

(Negative values displace above the trace line. Hidden values have not been plotted)

-100nT
-80nT
-60nT
-40nT
-20nT
0nT

Figure No.	Job no.	Date	Drawn
18	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF
MAGNETOMETER DATA
SHOWING NEGATIVE VALUES
SHOWING AREA 5

Scale
1:1000

0m 10 20 30 40 50m

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N

Plotting parameters for
Area 5;
Maximum +2.3nT (black)
Minimum -2.5nT (white)

-3SD +3SD

+2.3nT

-2.5nT

Figure No.	Job no.	Date	Drawn
19	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF PROCESSED MAGNETOMETER DATA FOR AREA 5

Scale
1:1000

0m 10 20 30 40 50m

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N

	Area of positive response - possible archaeological feature
	Area of magnetic disturbance associated with field boundary
	Discrete positive response with negative return - ferrous objects

Figure No.	Job no.	Date	Drawn
20	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
ABSTRACTION AND INTERPRETATION OF MAGNETOMETER ANOMALIES FOR AREA 5

Scale
1:1000

0m 10 20 30 40 50m

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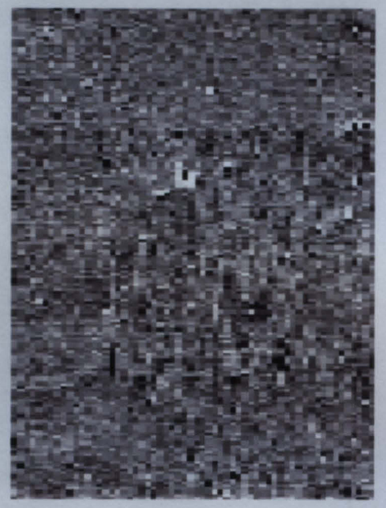
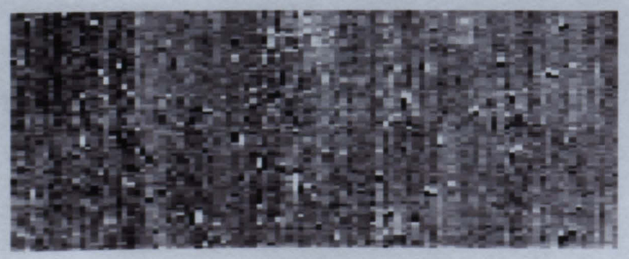
Area 7

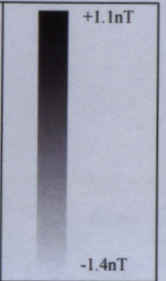




Area 6

N

Plotting parameters for Area 6;
Maximum +1.1nT (black)
Minimum -1.4nT (white)



Plotting parameters for Area 7;
Maximum +1.3nT (black)
Minimum -1.3nT (white)

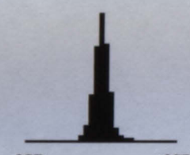


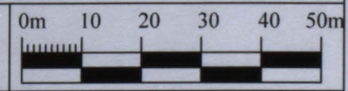
Figure No.	Job no.	Date	Drawn
21	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF RAW MAGNETOMETER DATA FOR AREAS 6 AND 7

Scale
1:1000



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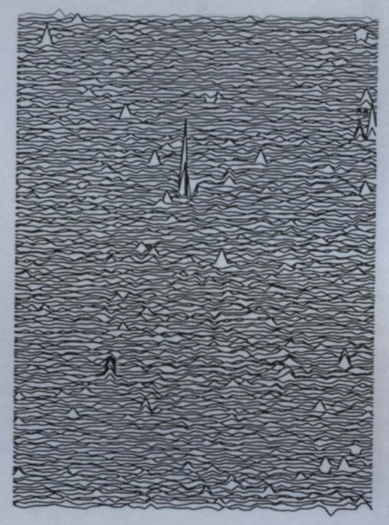
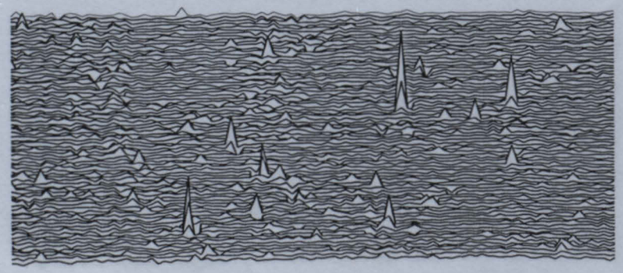
Area 7





Area 6

N

Plotting parameters;

20nT/cm

(Positive values displace above the trace line. Hidden values have not been plotted)

100nT
80nT
60nT
40nT
20nT
0nT

Figure No.	Job no.	Date	Drawn
22	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF
MAGNETOMETER DATA
SHOWING POSITIVE VALUES
FOR AREAS 6 AND 7

Scale 1:1000

0m 10 20 30 40 50m

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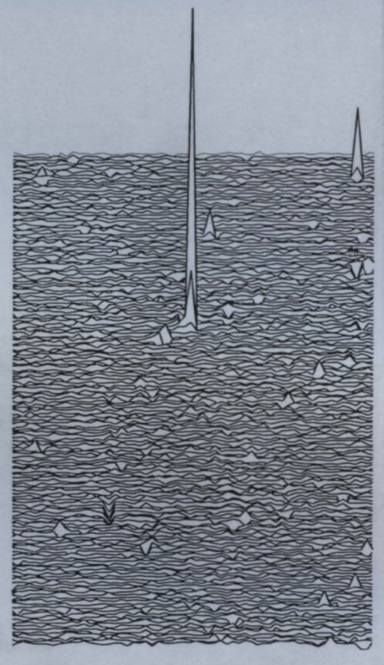
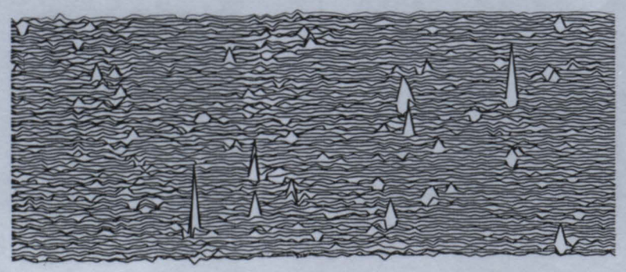


Area 7



Area 6

N

Plotting parameters;

-20nT/cm

(Negative values displace above the trace line. Hidden values have not been plotted)

-100nT
-80nT
-60nT
-40nT
-20nT
0nT

Figure No.	Job no.	Date	Drawn	Checked
23	1617	Oct. 2001	EJFM	PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF
MAGNETOMETER DATA
SHOWING NEGATIVE VALUES
SHOWING AREAS 6 AND 7

Scale 1:1000

0m 10 20 30 40 50m

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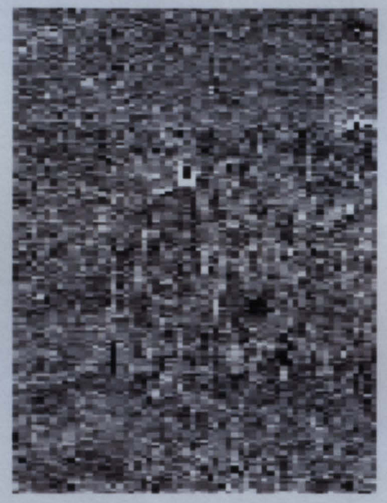
REGISTERED IFA ORGANISATION

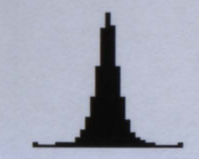
Area 7



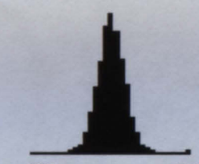
Area 6

N

Plotting parameters for Area 6;
Maximum +0.9nT (black)
Minimum -0.9nT (white)



Plotting parameters for Area 7;
Maximum +1.1nT (black)
Minimum -1.1nT (white)



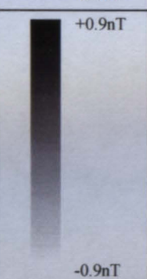


Figure No.	Job no.	Date	Drawn
24	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF PROCESSED MAGNETOMETER DATA FOR AREAS 6 AND 7

Scale
1:1000

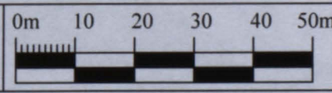


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Figure No.	Job no.	Date	Drawn
25	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
ABSTRACTION AND INTERPRETATION OF MAGNETOMETER ANOMALIES FOR AREAS 6 AND 7

Scale 1:1000

0m 10 20 30 40 50m

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E-Mail info@stratascan.co.uk

Area 8

N

Plotting parameters;

Maximum +1.2nT (black)
Minimum -3.2nT (white)

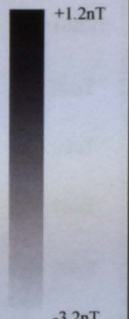


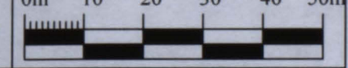
Figure No.	Job no.	Date	Drawn
26	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF RAW
MAGNETOMETER DATA FOR
AREA 8

Scale
1:1000



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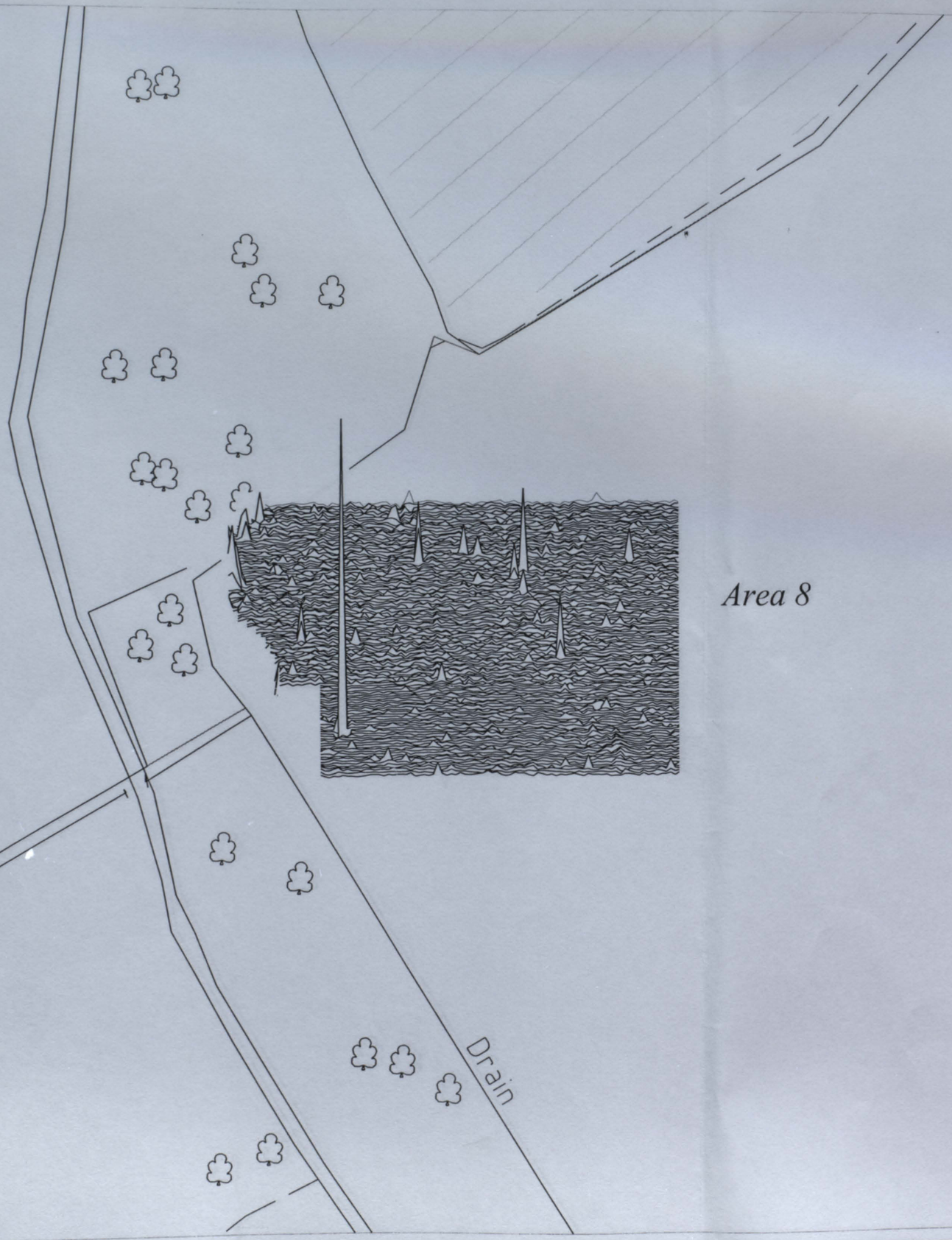

Area 8

N

Plotting parameters;

20nT/cm

(Positive values displace above the trace line. Hidden values have not been plotted)

100nT
80nT
60nT
40nT
20nT
0nT

Figure No.	Job no.	Date	Drawn
27	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF MAGNETOMETER DATA SHOWING POSITIVE VALUES FOR AREA 8

Scale 1:1000

0m 10 20 30 40 50m

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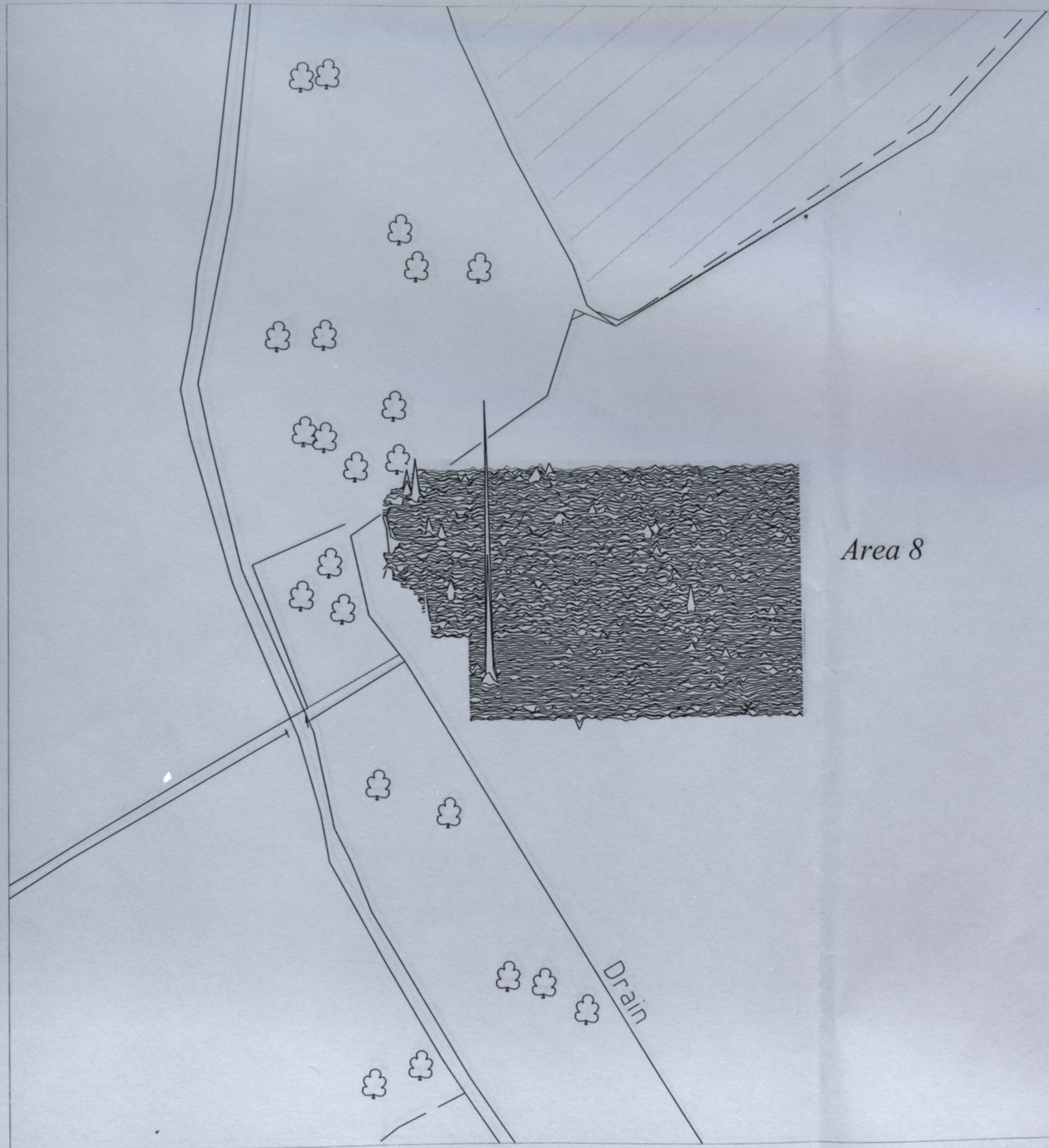
REGISTERED IFA ORGANISATION



Area 8

N

Plotting parameters;

-20nT/cm

(Negative values displace above the trace line. Hidden values have not been plotted)

-100nT
-80nT
-60nT
-40nT
-20nT
0nT

Figure No.	Job no.	Date	Drawn
28	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
TRACE PLOT OF
MAGNETOMETER DATA
SHOWING NEGATIVE VALUES
SHOWING AREA 8

Scale
1:1000

0m 10 20 30 40 50m

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N

Plotting parameters;

Maximum +1.6nT (black)
Minimum -1.6nT (white)

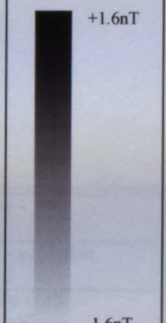


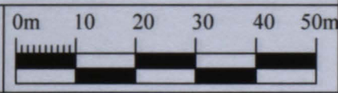
Figure No.	Job no.	Date	Drawn
29	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
PLOT OF PROCESSED MAGNETOMETER DATA FOR AREA 8

Scale
1:1000



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Area 8

N

	Area of positive response - ?archaeological
	Positive linear anomaly - probable agricultural mark
	Discrete positive response with negative return - ferrous objects

Figure No.	Job no.	Date	Drawn
30	1617	Oct. 2001	EJFM
			Checked PPB

Client
WARDELL ARMSTRONG

Project Title
Geophysical Survey,
Norton Bottoms Quarry, Lincs.

Subject
ABSTRACTION AND INTERPRETATION OF MAGNETOMETER ANOMALIES FOR AREA 8

Scale 1:1000

0m 10 20 30 40 50m

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