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SITE SUMMARY SHEET

94 / 63 Stockton Lane, York

NGR: SE 622 534

Location and topography

The site lies on the north eastern outskirts of York, to the north of Stockton Lane. The application area covers approximately 2.5 ha incorporating several narrow fields and orchards. The area available for gradiometer survey, 0.5 ha, lies in the east of the application area. Within this area the ground was level with varied ground cover.

Archaeology

No archaeological remains are known to exist at the site although it lies in an area rich in buried archaeology.

Aims of Survey

A gradiometer survey was carried out with the aim of identifying and accurately locating any anomalies of archaeological interest. The work forms part of a wider evaluation being carried out by **MAP Archaeological Consultancy Ltd** in advance of a proposed housing development.

Summary of Results *

Approximately 75% of the application area was unsuitable for survey because of trees, dense vegetation and the limited size of some of the fields. The remaining area was investigated using gradiometry and found to be magnetically noisy due to the presence of greenhouses, bonfires and modern ferrous debris in the topsoil. Several known land drains have been clearly detected. No anomalies of archaeological potential were located by the gradiometer survey.

*** It is essential that this summary is read in conjunction with the detailed results of the survey.**

SURVEY RESULTS

94 / 63 Stockton Road, York

1. Survey Area (Figure 1)

- 1.1 An area of approximately 0.5 ha was surveyed by gradiometry in the east of the application area. The location of the survey area is shown in Figure 1, at a scale of 1:1250.
- 1.2 The survey grids were set out by **Geophysical Surveys of Bradford** and detailed tie-in information has been lodged with the client.

2. Display

- 2.1 The results are displayed as X-Y traces, dot density plot and a greyscale image. These display formats are discussed in the *Technical Information* section, at the end of the text.
- 2.2 Data plots and a simplified interpretation diagram are produced at a scale of 1:500.

3. General Considerations - Complicating factors

- 3.1 Approximately 75% of the area could not be surveyed because of unsuitable ground conditions. Within the area surveyed a narrow strip was unavailable because of long vegetation.
- 3.2 The background level of response at the site was relatively high. This is almost certainly the result of modern use of the site and ferrous debris in the topsoil.

4. Results

- 4.1 The data are dominated by parallel linear responses representing known land drains. These run east west across the site. There is a faint suggestion of a further drain running approximately north-south along the western edge of the survey area.
- 4.2 A track along the eastern limit of the site shows clearly as a linear region of magnetic disturbance. Across the site there are several isolated ferrous responses which are almost certainly modern in origin. The most easterly ferrous anomaly (see interpretation diagram) represents a manhole visible on the surface.
- 4.3 Two isolated strong responses in the west of the survey are the result of recent bonfires.

- 4.4 No anomalies of archaeological interest have been located within the survey area. It is possible that the level of ferrous noise and disturbance across the site may have masked weaker anomalies of archaeological interest. However, any major ditches should have been detected.

5. Conclusions

- 5.1 The results from the small area available for survey are dominated by responses from land drains crossing the site. Other anomalies located appear to have a modern origin; ferrous and bonfires. No anomalies of archaeological potential have been located.

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Project Assistants: J Gater, L Harvey, N Nemcek and A Shields

TECHNICAL INFORMATION

The following is a description of the equipment and display formats used in **GEOPHYSICAL SURVEYS OF BRADFORD** reports. It should be emphasised that whilst all of the display options are regularly used, the diagrams produced in the final reports are the most suitable to illustrate the data from each site. The choice of diagrams results from the experience and knowledge of the staff of **GEOPHYSICAL SURVEYS OF BRADFORD**.

All survey reports are prepared and submitted on the basis that whilst they are based on a thorough survey of the site, no responsibility is accepted for any errors or omissions.

Magnetic readings are logged at 0.5m intervals along one axis in 1m traverses giving 800 readings per 20m x 20m grid, unless otherwise stated. Resistance readings are logged at 1m intervals giving 400 readings per 20m x 20m grid. The data are then transferred to portable computers and stored on 3.5" floppy discs. Field plots are produced on a portable Hewlett Packard Thinkjet. Further processing is carried out back at base on computers linked to appropriate printers and plotters.

Instrumentation

(a) Fluxgate Gradiometer - Geoscan FM36

This instrument comprises of two fluxgates mounted vertically apart, at a distance of 500mm. The gradiometer is carried by hand, with the bottom sensor approximately 100-300mm from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is conventionally measured in nanoTesla (nT) or gamma. The fluxgate gradiometer suppresses any diurnal or regional effects. Generally features up to one metre deep may be detected by this method.

(b) Resistance Meter - Geoscan RM4 or RM15

This measures the electrical resistance of the earth, using a system of four electrodes (two current and two potential.) Depending on the arrangement of these electrodes an exact measurement of a specific volume of earth may be acquired. This resistance value may then be used to calculate the earth resistivity. The "Twin Probe" arrangement involves the pairing of electrodes (one current and one potential) with one pair remaining in a fixed position, whilst the other measures the resistance variations across a fixed grid. The resistance is measured in Ohms and the calculated resistivity is in Ohm-metres. The resistance method as used for area survey has a depth resolution of approximately 0.75m, although the nature of the overburden and underlying geology will cause variations in this generality. The technique can be adapted to sample greater depths of earth and can therefore be used to produce vertical "pseudo sections".

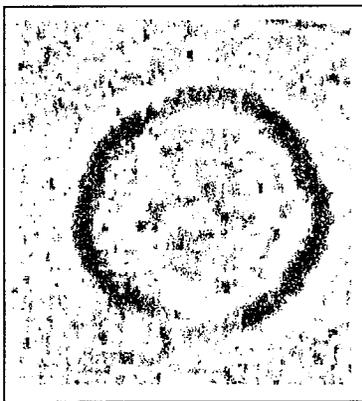
(c) Magnetic Susceptibility

Variations in the magnetic susceptibility of subsoils and topsoils occur naturally, but greater enhanced susceptibility can also be a product of increased human/anthropogenic activity. This phenomenon of susceptibility enhancement can therefore be used to provide information about the "level of archaeological activity" associated with a site. It can also be used in a predictive manner to ascertain the suitability of a site for a magnetic survey. The instrument employed for measuring this phenomenon is either a field coil or a laboratory based susceptibility bridge. For the latter 50g soil samples are collected in the field.

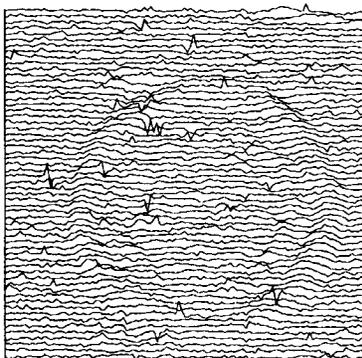
Display Options

The following is a description of the display options used. Unless specifically mentioned in the text, it may be assumed that no filtering or smoothing has been used to enhance the data. For any particular report a limited number of display modes may be used.

(a) Dot-Density



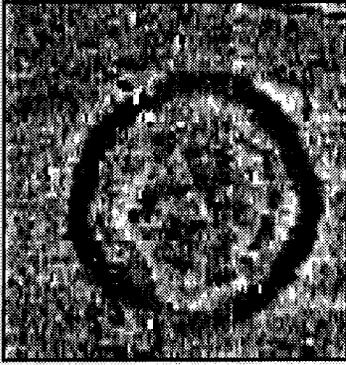
In this display, minimum and maximum cut-off levels are chosen. Any value that is below the minimum cut-off value will appear white, whilst any value above the maximum cut-off value will appear black. Any value that lies between these two cut-off levels will have a specified number of dots depending on the relative position between the two levels. The focus of the display may be changed using different levels and a contrast factor (C.F.). Usually the C.F. = 1, producing a linear scale between the cut-off levels. Assessing a lower than normal reading involves the use of an inverse plot. This plot simply reverses the minimum and maximum values, resulting in the lower values being presented by more dots. In either representation, each reading is allocated a unique area dependent on its position on the survey grid, within which numbers of dots are randomly placed. The main limitation of this display method is that multiple plots have to be produced in order to view the whole range of the data. It is also difficult to gauge the true strength of any anomaly without looking at the raw data values. This display is much favoured for producing plans of sites, where positioning of the anomalies and features is important.



(b) X-Y Plot

This involves a line representation of the data. Each successive row of data is equally incremented in the Y axis, to produce a stacked profile effect. This display may incorporate a hidden-line removal algorithm, which blocks out lines behind the major peaks and can aid interpretation. Advantages of this type of display are that it allows the full range of the data to be viewed and shows the shape of the individual anomalies. Results are produced on a flatbed plotter.

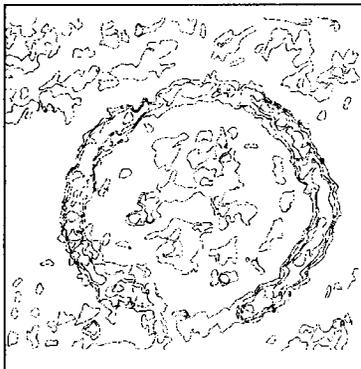
Display Options cont'd



(c) Grey-Scale

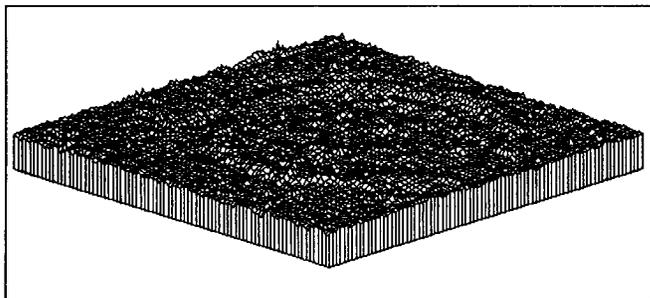
This format divides a given range of readings into a set number of classes. These classes have a predefined arrangement of dots or shade of grey, the intensity increasing with value. This gives an appearance of a toned or grey scale.

Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. While colour plots can look impressive and can be used to highlight certain anomalies, grey-scales tend to be more informative.



(d) Contour

This display format is commonly used in cartographic displays. Data points of equal value are joined by a contour line. Closely packed contours indicate a sharp gradient. The contours therefore highlight an anomalous region. The range of contours and contour interval are selected manually and the display is then generated on the computer screen or plotted directly on a flat bed plotter / inkjet printer.

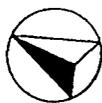


(e) 3-D Mesh

This display joins the data values in both the X and Y axis. The display may be changed by altering the horizontal viewing angle and the angle above the plane. The output may be either colour or black and white. A hidden line option is occasionally used (see (b) above).

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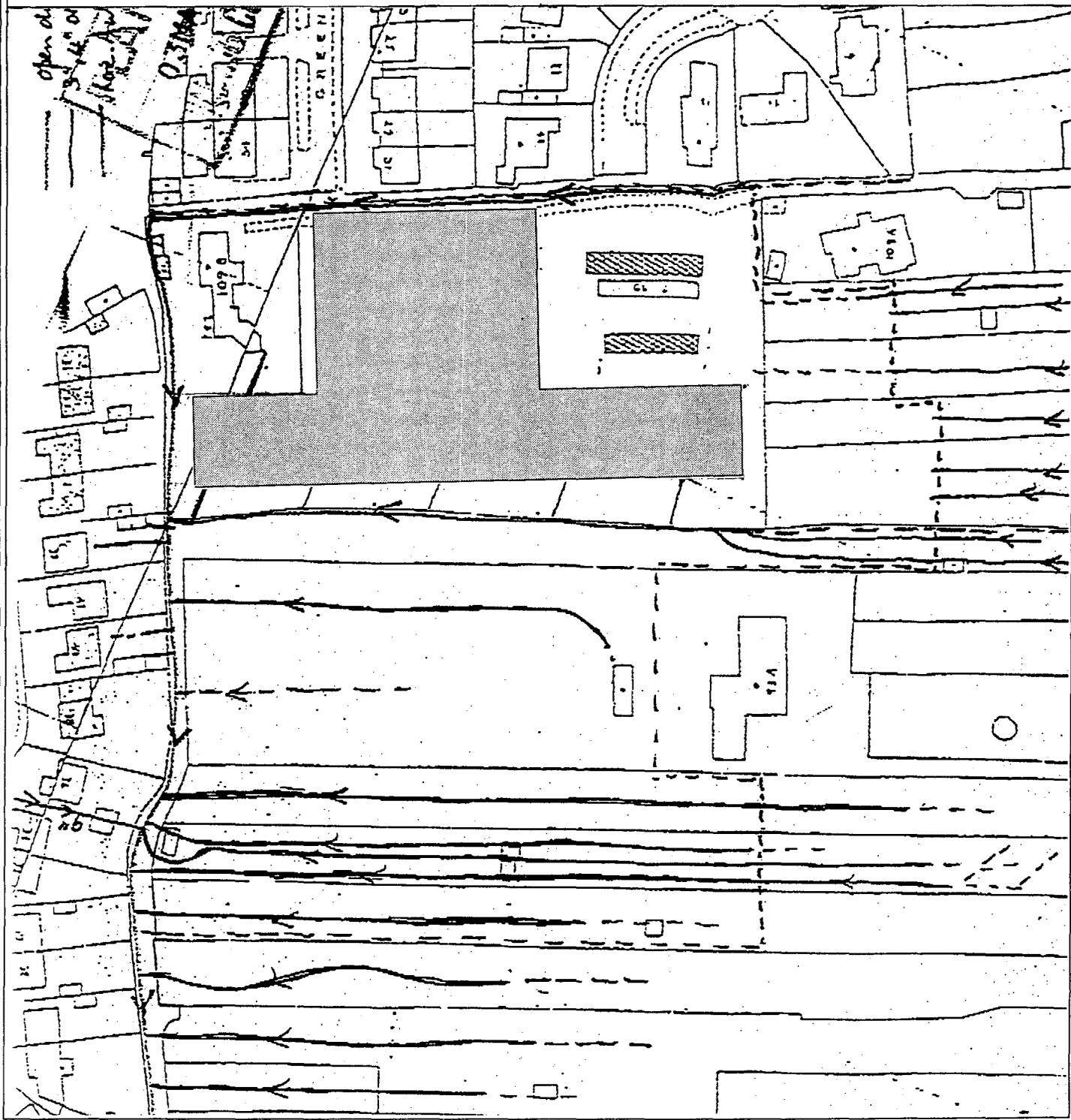
 Survey Area



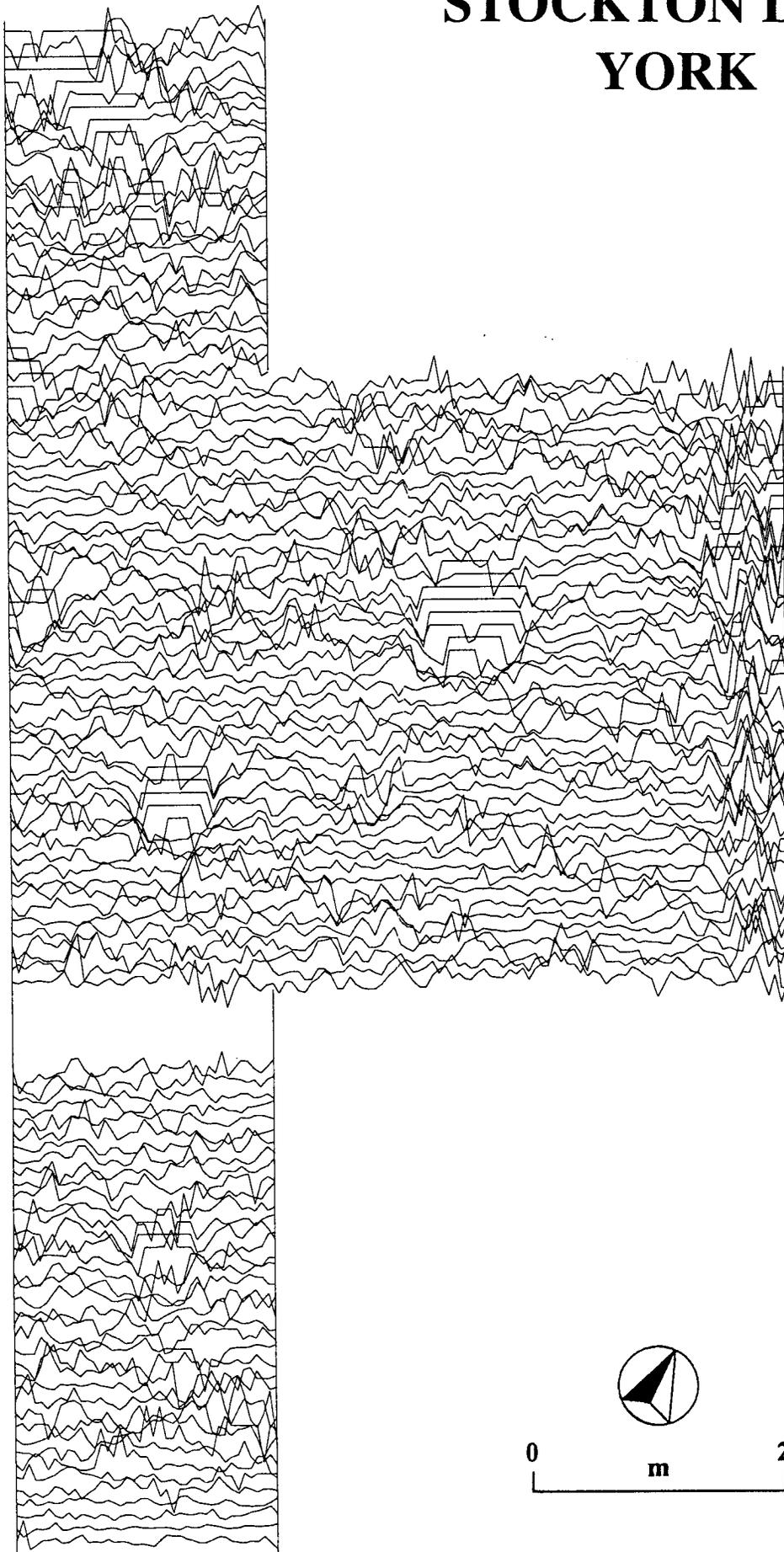
1:1250

Based Upon The Ordnance
Survey Map With The Permission
Of The Controller Of HMSO
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Figure 1



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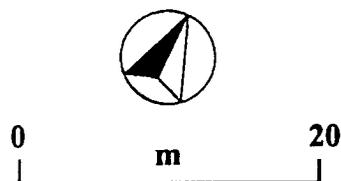


Figure 2

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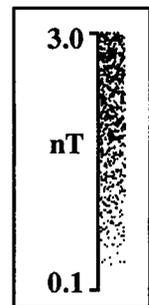
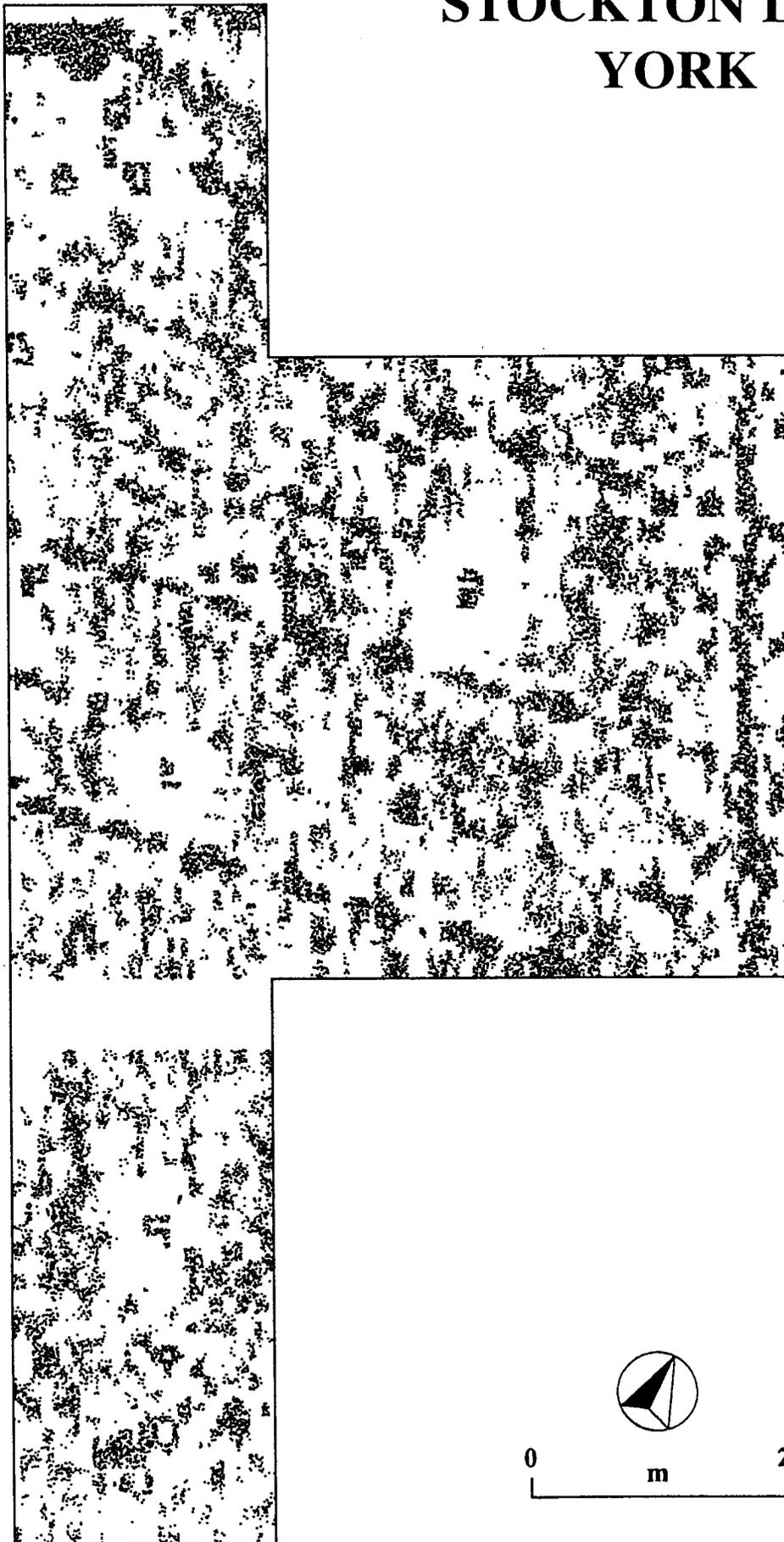


Figure 3

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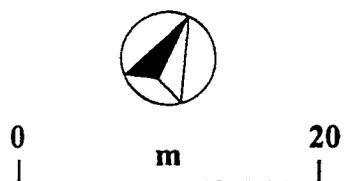
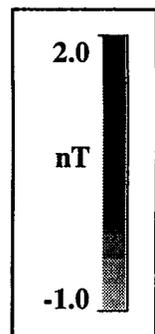
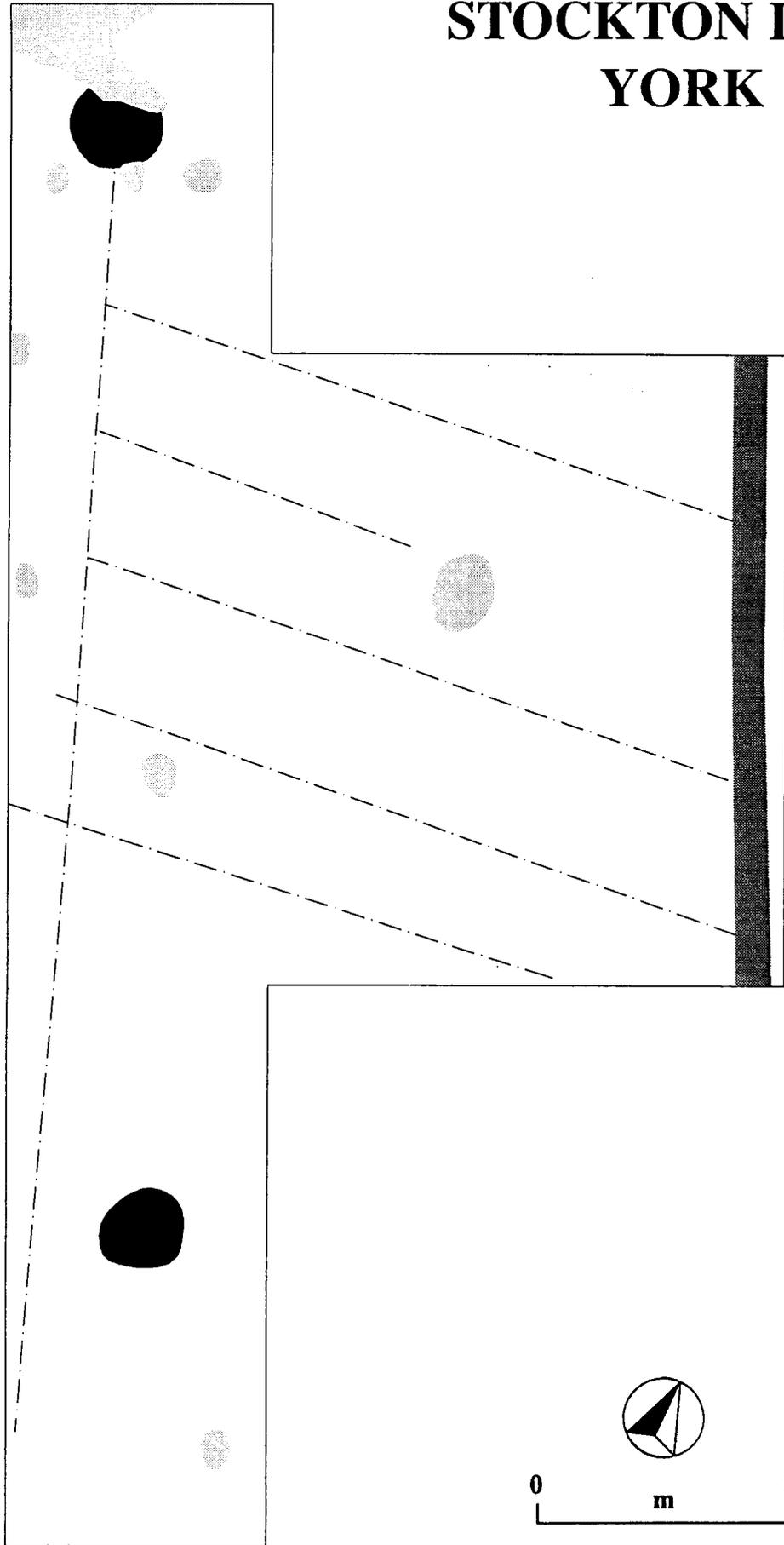
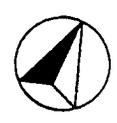


Figure 4

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-  Land Drains
-  Bonfire
-  Track
-  Ferrous



0 m 20

Figure 5