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Ancient Monuments Laboratory
Report 123/93

CAWOOD CASTLE GARTH, N. YORKS
REPORT ON GEOPHYSICAL SURVEY
MARCH 1993

Andrew Payne BSc PIFA

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Summary

A moated enclosure in the north-eastern part of Cawood Castle Garth, thought to have enclosed a 17th century garden layout, was the subject of a geophysical survey in March 1993. The survey was aimed at assisting the interpretation and management of an historic landscape presumed to represent the outer court of Cawood Castle - the former residence of the Medieval Archbishops of York. In addition to detecting features already visible in the form of earthworks and modern paths, the survey results contain some limited evidence of previously unrecorded buried linear and other features. However, these do not clearly comprise recognisable elements of a formal garden arrangement. Existing pathways across the site do not appear to impinge upon the features detected.

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CAWOOD, CASTLE GARTH, NORTH YORKSHIRE

Report on Geophysical Survey, March 1993.

INTRODUCTION

The Castle Garth is an area of open land containing earthworks located at NGR SE 574376 in the centre of the village of Cawood. The Garth is the presumed site of the outer court and gardens of one of the palaces of the Medieval archbishops of York. The remains of the archbishops' residence (known as Cawood Castle) lie to the north of the Garth, but are now largely buried below the existing settlement, apart from a gatehouse and banqueting hall. The site occupies low-lying land south of the River Ouse on clay and sand at between 7 and 8 metres O.D. Topographical features in the Castle Garth were mapped in 1989 by the RCHME and discussed in terms of the landscape history of the area in (N. K. Blood and C. C. Taylor 1992).

A geophysical survey of part of the Castle Garth was undertaken at the request of the Cawood Parish Council and North Yorkshire County Council in order to assist the development of a management plan for the scheduled area. The survey was conducted within an area defined by a dry moat which is thought to have enclosed a formal garden dating from the 17th century or earlier. The aim of the survey was to test the area for buried traces of former garden features such as paths, walls, borders, bedding plots and ditches by obtaining an electrical image of the sub-surface. It was also possible that the geophysical data would help to identify the extent to which modern pathways were in conflict with the preservation of archaeological features.

METHOD

Overall resistivity survey coverage was selected as the most appropriate technique given a previous record of several successful surveys on historic garden sites. The magnetic response from the site was also tested with a sample magnetometer survey. The instrument readings were based on a grid of 30m squares, measured in to field boundaries and the banqueting hall (see location plan).

i) Resistivity

Over each square, readings of the earth resistance within the range of 0-200 Ohms were recorded at 1m intervals along successive traverses placed 1m apart. A Geoscan RM15 Resistivity Meter was employed, connected in the Twin Electrode configuration with a mobile probe separation of 0.5m. The data was logged in the internal memory of the RM15 and periodically transferred to diskette in the field on to a portable micro-computer for storage and display purposes.

ii) Magnetometry

A 60m by 60m area consisting of grid squares 2-5 (see location plan) was surveyed using a Geoscan FM36 Fluxgate Gradiometer, which recorded the vertical magnetic field gradient at intervals of 25cm along successive parallel 30m long traverses placed 1m apart. Readings were recorded at 0.1 nanotesla (nT) sensitivity

and the traverses were orientated approximately north-south and walked in zig-zag fashion. The data was captured in the internal memory of the FM36 and processed in the field in a similar manner as the resistivity data.

The data obtained by both techniques was subsequently transferred in the laboratory to a Tektronics XD88 workstation where data assembly and advanced processing was carried out using a range of display options and mathematical enhancement routines. Selected interpolated grey-scale plots of the resulting data are provided on the enclosed plans.

RESULTS

The alphabetical references in this section refer to the survey interpretation at the back of the report (see Plan 5).

i) Resistivity (see plan 3)

Background resistance values are low and their contrasts are subdued over much of the site. This implies that the underlying geological and hydrological conditions are relatively uniform. The most distinct features of archaeological origin which have been detected are those already apparent as negative earthworks: these include the large ditch around the south and west edges of the survey (**a**), a silted former rectangular pond (**b**) and a trapezoidal-shaped ditch alignment (**c**). Somewhat less clear are the wider ill-defined anomalies (**d**) in the north-west quarter of the survey derived from modern pathways cutting across the site. It is not obvious from the results whether these paths are interfering with underlying archaeological structures.

The circular low resistance anomalies (**e**) that occur in the northern part of the site correspond with patterns in the vegetation and may, in turn, reflect the presence of former garden features such as flowerbeds or patterns of tree planting. A concentrated scatter of individual low resitance anomalies to the north of these, in square 07, perhaps pits or other earth-filled features, are similarly enigmatic.

The results that are perhaps of most interest were those obtained in the north-east sector of the survey. Within this area, several rectilinear patterns of low resistance (**f**) are visible, representing features filled with moist soil such as silted former trenches or drains perhaps compatible with the existance of a former garden layout. Some of these features coincide with topographical variations recorded in the earthwork survey. A further low resistance anomaly (**g**) running diagonally across squares 10, 11, 07 and 08 is probably derived from a drain or pipe of unknown age associated with the existing pond (see below).

In addition to the insubstantial low resistance anomalies discussed above, an extensive zone of high resistance (**h**) is present in the south western corner of the moated enclosure. It is uncertain whether this results from a geological or an artificial source (perhaps an in-filled pond?), but it lacks internal pattern and appears to be cut by the moat.

cont/

ii) Magnetometry (see Plan 4)

The background magnetic response from the site is unexceptional and is liberally scattered with responses from items of iron ?litter. A probable pipe or drain detected by the resistivity survey (see above) has registered as a weak linear magnetic anomaly.

CONCLUSIONS

The survey has been successful in detecting a limited number of buried features. Unfortunately, however, it has not been possible to interpret their exact nature or to say whether they relate to a previous garden complex. It is also possible that surviving traces of previous gardens are present, but too superficial for clear definition by geophysical methods. As far as these results are able to be definitive, it appears that the present system of pathways does not significantly interfere with underlying remains.

Surveyed by : P. Cottrell
A. Payne March 1993

Reported by : A. Payne June 1993

Archaeometry Branch,
Ancient Monuments Laboratory.

ACKNOWLEDGEMENTS

We would like to express our thanks to the management committee of Cawood Castle Garth for their co-operation and helpfulness on site.

REFERENCES

Blood, N K and Taylor, C C, 1992 Cawood : An Archiepiscopal Landscape, *Yorkshire Archaeological Journal*, **64**, 83-102

PLANS ENCLOSED

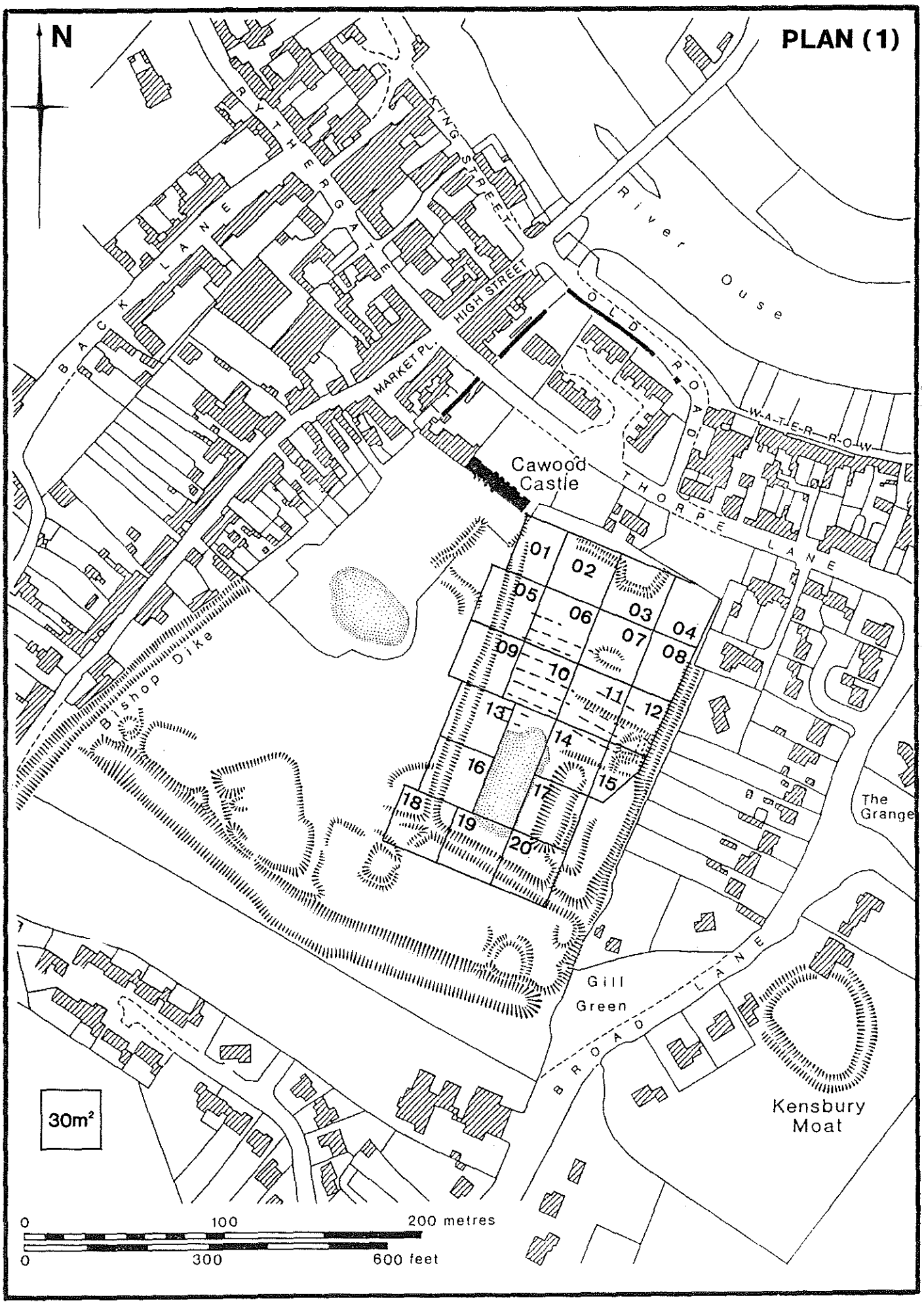
i) Location of survey grid at 1:2500 scale

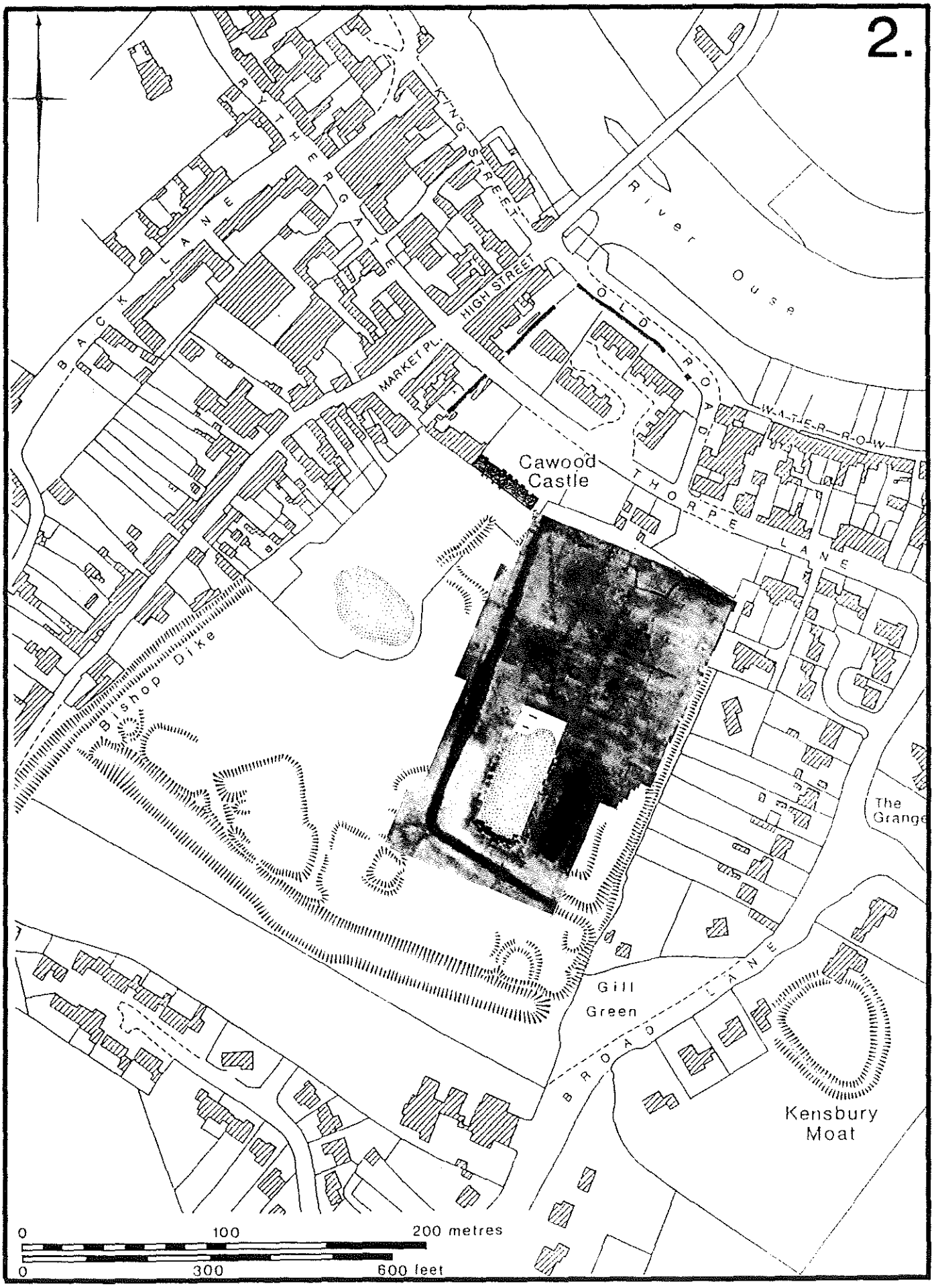
ii) Grey-scale plot of resistivity data (interpolated and despiked) in locational setting (1:2500 scale).

iii) Grey-scale plots (at 1:1000 scale) of raw and enhanced resistivity data after preliminary despiking. The grey-scale for the raw data is allocated by histogram equalisation, and the enhanced data is plotted using a linear grey-scale Both plots are generated from interpolated data.

iv) X-Y traceplot and grey-scale plot (1:1000 scale) of raw magnetometer data. The grey-scale employed is linear.

CAWOOD CASTLE GARTH : Location of Geophysical Survey, March 1993





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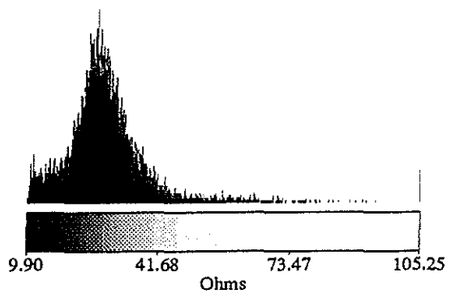
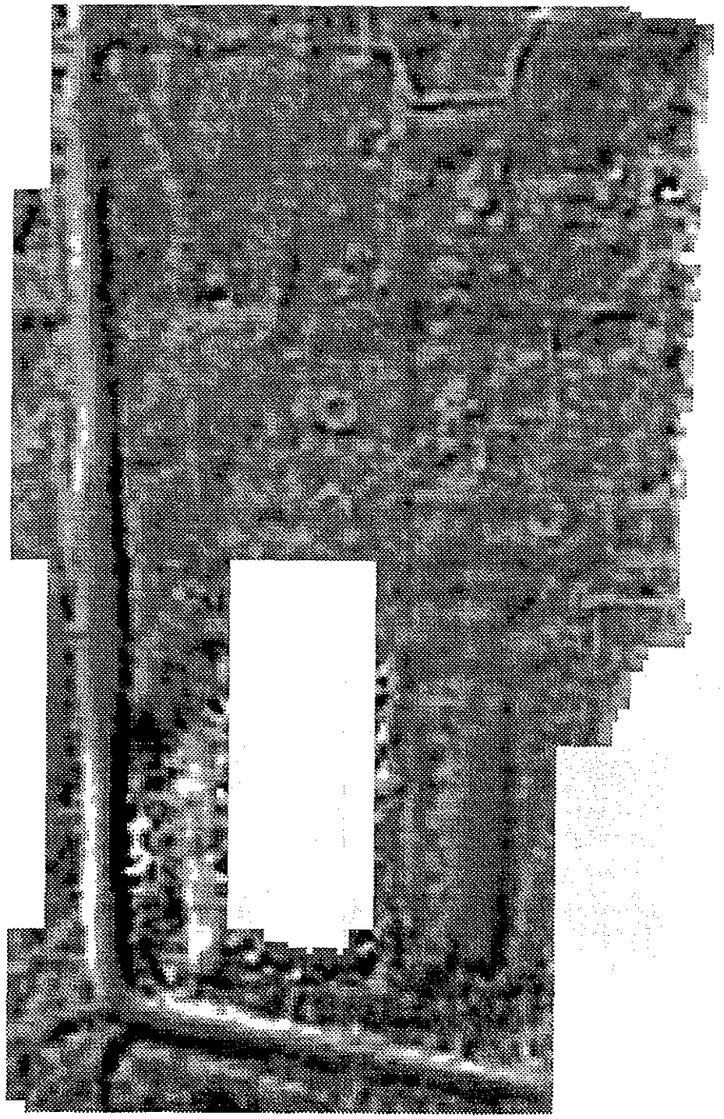
Resistivity Survey 1993

01	02	03	04
05	06	07	08
09	10	11	12
13		14	15
16		17	
18	19	20	





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(a) Raw data

0 10 30 90
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(b) Enhanced data

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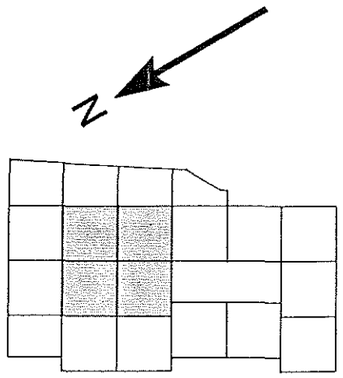
PLAN 4

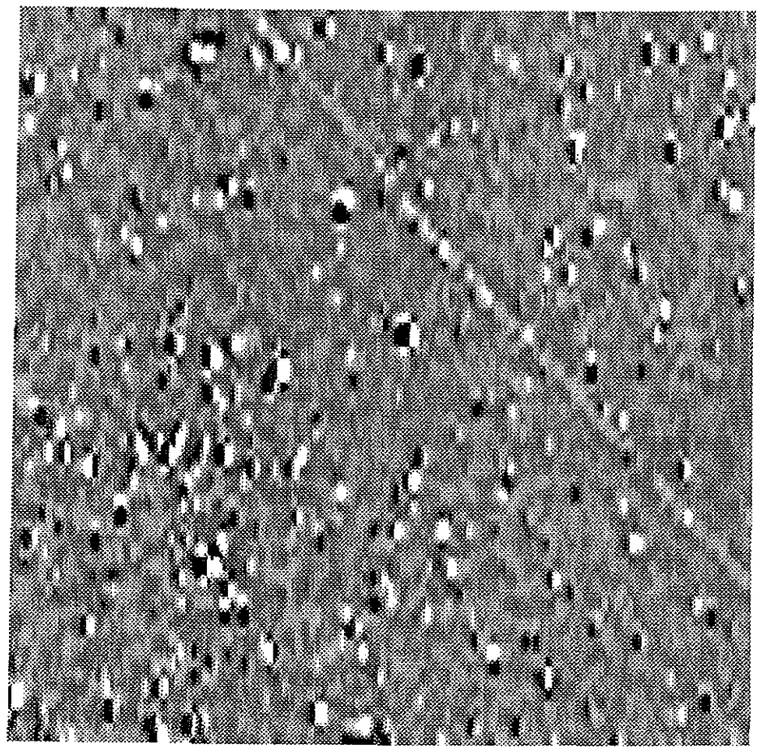
Magnetometer survey March 1993

Pilot survey

(a) Grey-tone raw data



(b) Trace plot raw data



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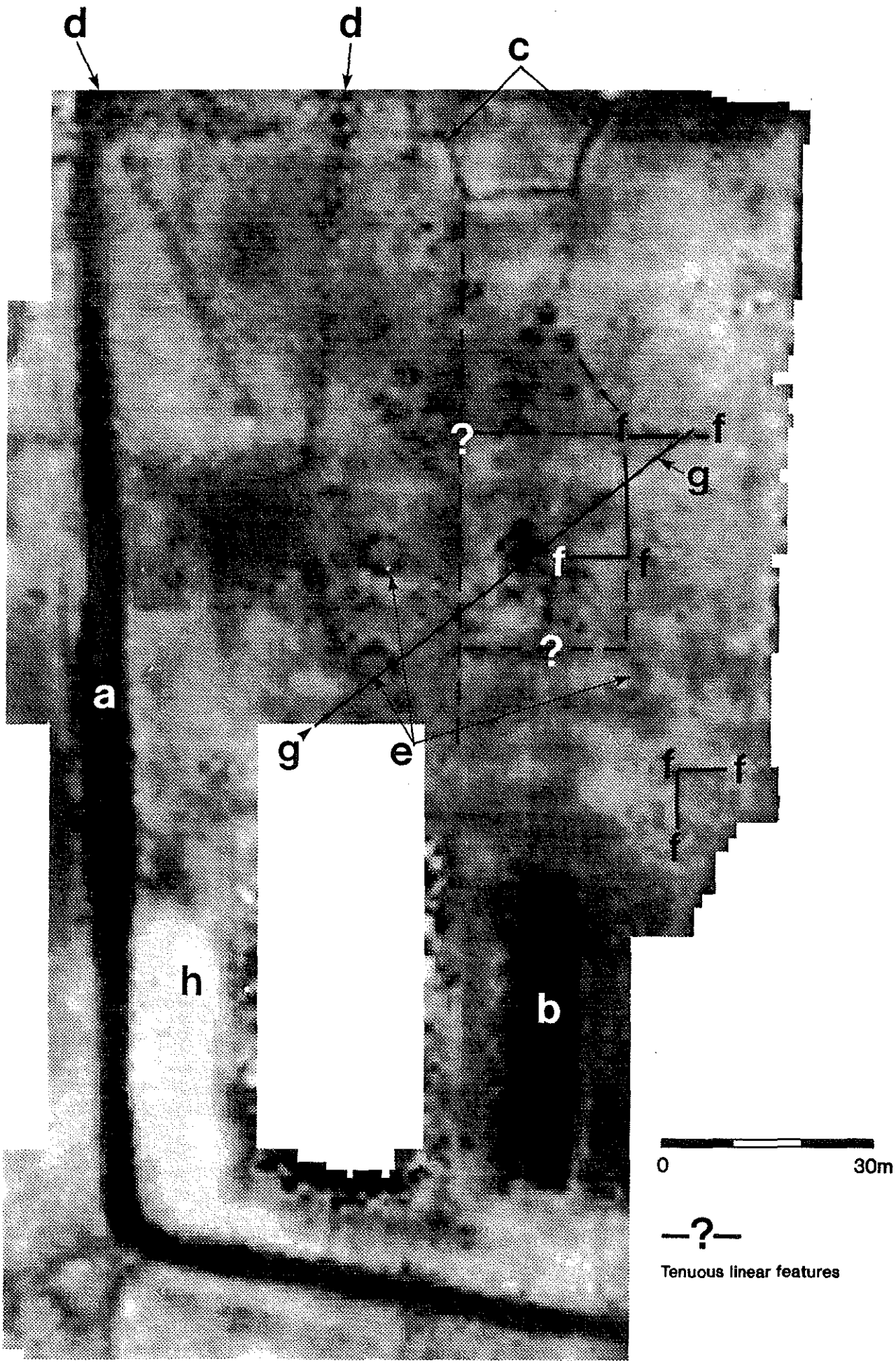
Ancient Monuments Laboratory 1993



5. CAWOOD RESISTIVITY SURVEY : Interpretation Guide