

Ancient Monuments Laboratory
Report 5/93

REPORT ON GEOPHYSICAL SURVEY AT
EYNSHAM ABBEY, OXFORDSHIRE

Mark Cole BSc

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Summary

Geophysical survey was undertaken at Eynsham Abbey, Oxon in response to a request from the Oxford Archaeological Unit. Its aim was to investigate the abbey precinct as part of the ongoing Eynsham Abbey Project. The results indicate that buried foundations of walls and buildings are present in the area investigated. Although the response to resistivity, in particular, was good, the definition of any precise structural pattern is hampered by natural ground effects across the site.

Author's address :-

Mark Cole BSc

Ancient Monuments Laboratory
Fortress House
23 Savile Row
London
W1X 2HE

EYNESHAM ABBEY, OXFORDSHIRE

Report on geophysical survey, 1992

Introduction

This survey was requested by the Oxford Archaeological Unit. Its aim was to investigate the abbey precinct as part of the ongoing Eynsham Abbey Project. Excavations within the neighbouring churchyards (for location see plan B) revealed sustained activity dating back to the Bronze Age, including the remains of two successive abbeys. Geophysical survey was requested in an attempt to determine the layout of these and any other associated buildings within the scheduled area (see location plan).

The site is located near the confluence of the rivers Thames and Evenlode and is on the second (Summertown-Radley) terrace. This is underlain by Oxford Clay.

Method

A grid of 30m squares was established within the scheduled area running approximately N-S (see location plan). Each of these squares was then surveyed using a Geoscan RM15 resistivity meter using the Twin Electrode probe configuration. Measurements were taken using a mobile probe separation of 0.5m and a reading interval of 1.0m, along N-S traverses 1m apart. The resulting data is illustrated using both grey-tone and graphical trace plots.

The same grid was then surveyed with a Geoscan FM36 fluxgate gradiometer. Measurements were taken at 0.25m intervals along N-S traverses 1.0m apart. This data is also represented using grey-tone and graphical trace plots.

Topsoil samples, of approximately 100g, were taken at 15m intervals along a N-S traverse (see location plan) in order to measure magnetic susceptibility (MS). The samples were measured in the laboratory using a MS1 meter and a MS2B sensor. This data is represented as a bar chart (figure 1).

Results

Resistivity survey

Despite the broad changes in background apparent resistivity over the site (due to variations in underlying geology, topsoil thickness, soil moisture content, and the slope of the land) the survey has detected considerable evidence for buried stonework. In order to clarify visual recognition of significant anomalies, the raw data has been statistically enhanced (see plot 2 on plan A). Buried features are indicated by alignments of high resistance, as well as broader more amorphous areas of disturbance.

Most readily apparent on the plots is a rectilinear arrangement of anomalies centred on the middle of the survey

cont/

area. These comprise a complex and discontinuous pattern strongly suggestive of wall alignments. Significantly, this pattern appears broadly to share the principal axes of the excavated abbey structures (Graham Keevil 1992, *pers comm*).

Adjacent to the above rectilinear arrangement (in grid squares 1 & 3 and 4 & 5) are further areas of high resistance which - although without any clearly recognizable pattern - are also indicative of buildings. Especially obvious is the area of disturbance in grid squares 1 and 3 where stonework may be better preserved, or shallower, than elsewhere.

Magnetometer survey

The magnetometer survey was greatly hampered by the presence of modern ferrous fencing, along the edges, as well as extraneous iron. It is difficult to discern any obvious pattern in the data; however, there is a linear anomaly running E-W in grid squares 4 and 5 for which there is strong correlation within the resistivity data. There are other anomalies in grid squares 4 and 7, and elsewhere throughout the survey area, any of which could well be significant. The lack of any distinct pattern is disappointing, but the latter anomalies may represent isolated features such as pits or fireplaces.

The results of the MS survey (see figure 1) reveal a consistently high level of magnetic enhancement across the survey area. This suggests a sustained period of activity in the past.

Conclusions

The survey has successfully demonstrated the presence of buried structures within the scheduled area. The trends visible in the data, especially in the resistivity survey, appear broadly to share the principle axes of the excavated abbey structures to the west. It may be suggested that a cloister and other associated buildings are represented, although it is not possible to determine an exact pattern.

Surveyed by: Mark Cole
Stephen Fear

Date of survey: 2-5 June 1992

Reported by: Mark Cole

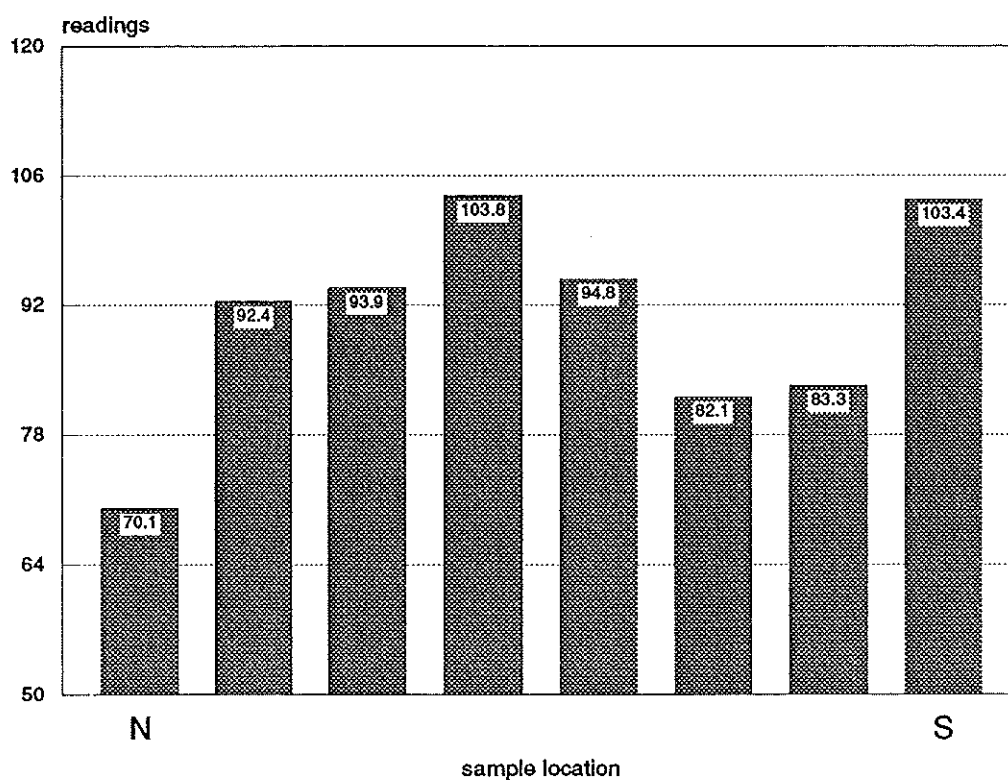
Date of report: 8th Jan 1993

Archaeometry Branch,
Ancient Monuments Laboratory,
Science and Conservation Services, TSG

EYNESHAM ABBEY, OXON

Geophysical Survey, Sept 1992

Figure 1: Magnetic Susceptibility Results.



All results calibrated to SI x 10⁻⁸/kg

EYNESHAM ABBEY, OXON

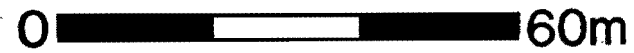
Geophysical Survey, Sept 1992

Plan A: Resistivity Survey.

1. Grey-tone of raw data.
2. Grey-tone of enhanced data.
3. Trace-plot of raw data.

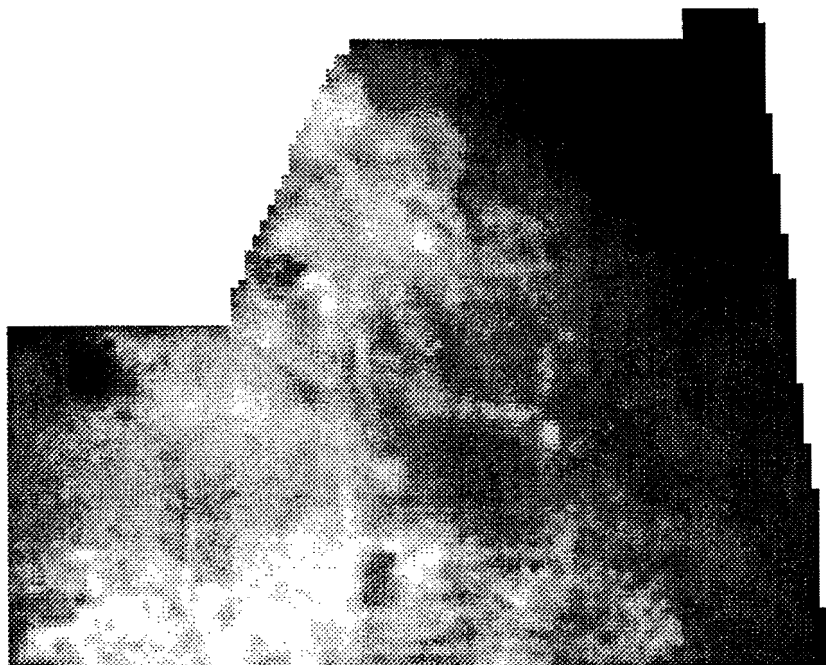


Scale 1:1000



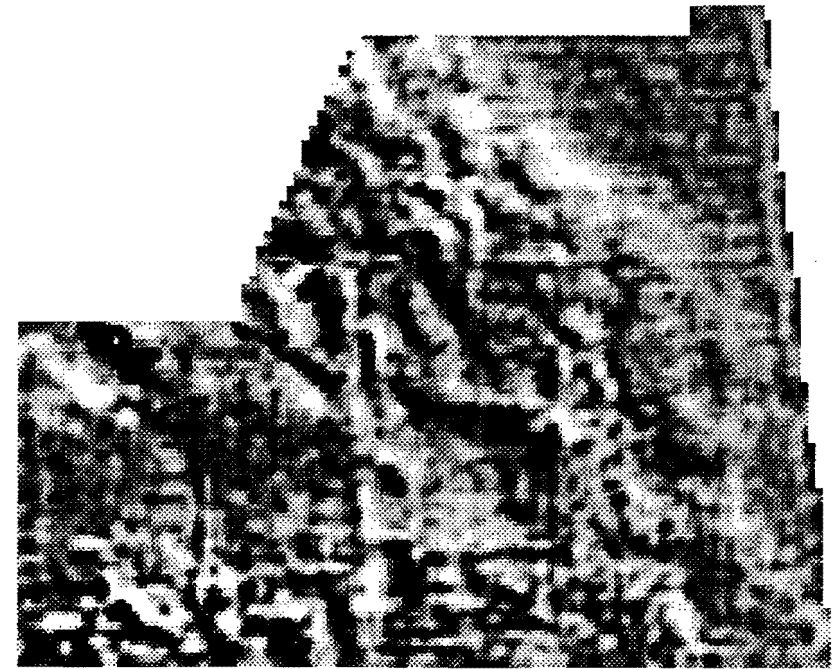
1.

- high
- △ high
- ▼ low
- low



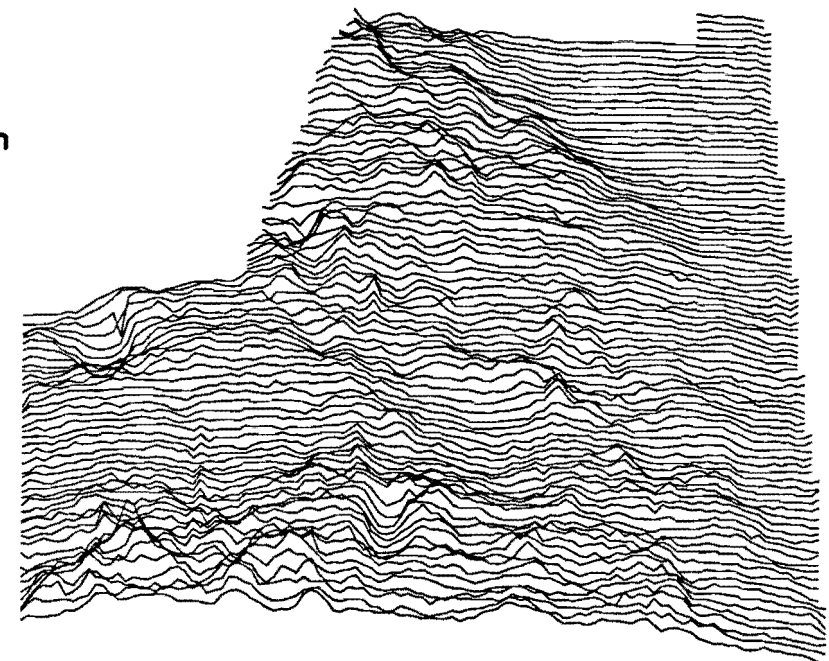
2.

- high
- △ high
- ▼ low
- low



3.

50Ωm



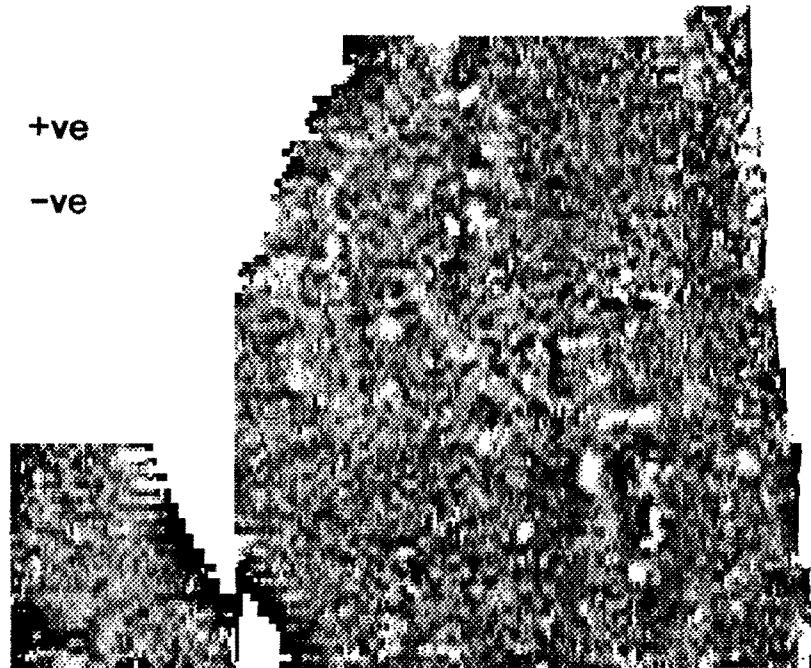
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PLAN B.

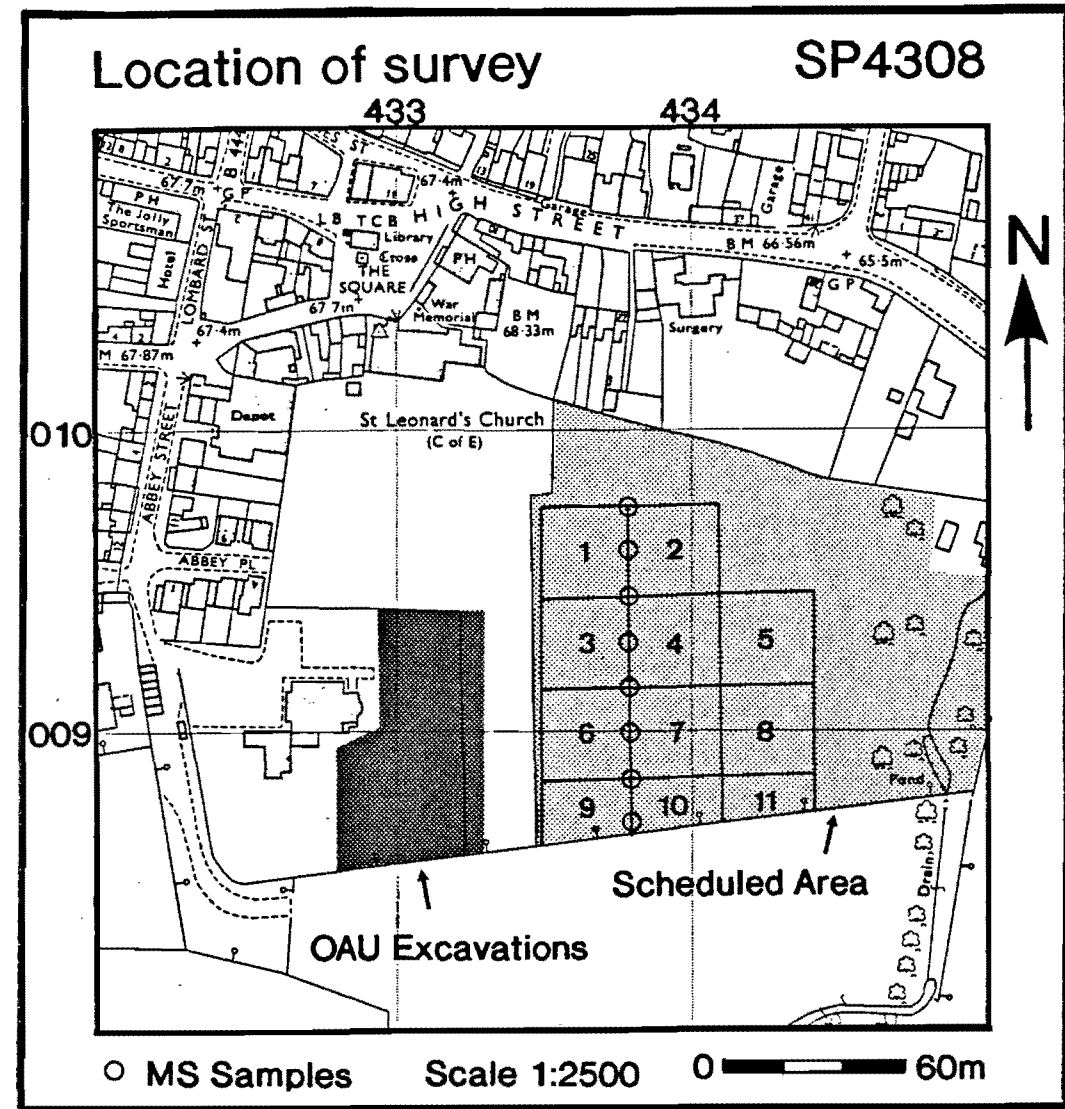
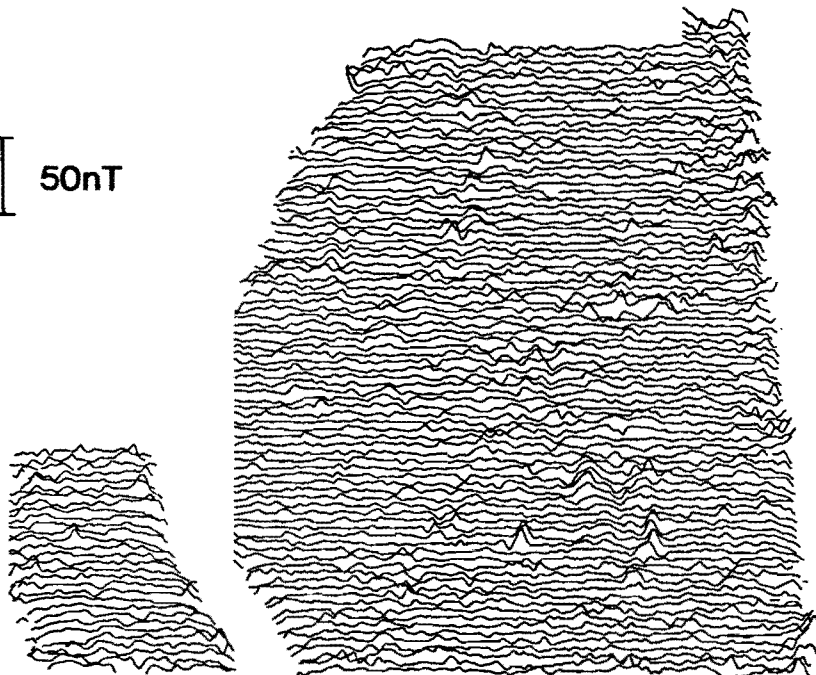
1.

- +ve
- △ -ve
- -ve



2.

50nT



Plan B: Magnetometer Survey.

1. Grey-tone of raw data.
2. Trace-plot of smoothed data.

Scale 1:1000 0 60m

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