FLUXGATE GRADIOMETER SURVEY:
LAND AT HARPOLE, NORTHAMPTONSHIRE

Report prepared for Stephen Young,
on behalf of the Friends of The Upper Nene Archaeology Committee
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Contents

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Illustrations

Summary

- *A fluxgate gradiometer survey was undertaken on 1.65 hectares of land at Harpole, Northamptonshire*

- *The survey identified widespread magnetic variation, reflecting probable Romano-British settlement remains. The majority of anomalies observed resolve as a series of enclosures and possible building remains, including aspects of a villa complex which was already thought to occupy the site*

- *A series of regularly spaced linear anomalies probably indicate traces of later ridge and furrow ploughing*

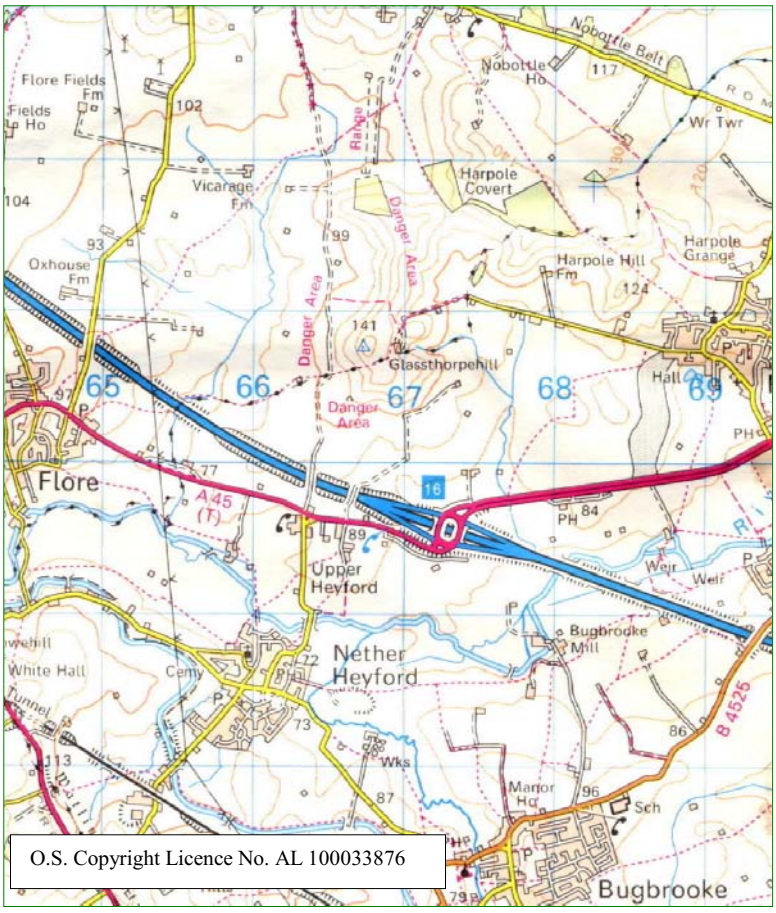


Fig.1: Location of site, scale 1:50,000

1.0 Introduction

Stephen Young, acting on behalf of the Friends of The Upper Nene Archaeology Committee, commissioned Pre-Construct Geophysics to undertake a gradiometer survey on land at Harpole in Northampton.

The survey methodology was based upon guidelines set out in the English Heritage document *'Geophysical Survey in Archaeological Field Evaluation'* (David, 1995).

2.0 Location and description

The site is located to the south-west of Harpole,

comprises sub-rectangular unit of pasture, c.3.9ha in extent, of which 1.65 ha was surveyed.

The drift geology of the area is comprised of Marlstone underlain by Middle Lias Silts and Clays and the site is situated on even ground at approximately 80m OD (B.G.S. 1980).

3.0 Archaeological and historical background

The site lies c.2.5km to the south of a known Roman Road that extends along a ridgeway from Duston to Whilton.

A mosaic pavement was exposed during the excavation of a Roman villa complex in 1846 and 1849 (VCH 1902, 197; RCHME 1982, 73-74). The extent of these excavations has not been established.

Prior to duelling of the A45, further investigation of the putative villa complex in 1966 exposed a stone cistern (4m x 6m in extent), and a 4th century 'structure' overlying robbed 2nd century walls (RCHAME, 1982). The exact location of this site is not known, but is believed to lie in the southwest corner of the survey area (Stephen Young *pers. comm*.).

In 2000, an intensive fieldwalking survey of the site recovered a considerable quantity of material that extended over a 2ha area. The assemblage comprised some 4970 sherds of Roman pottery, 1422 tesserae, 221 kilograms of tile and 4 Roman coins.

4.0 Methodology

Gradiometry is a non-intrusive scientific prospecting technique that is used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological remains.

The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.

The area survey was conducted using a Bartington Grad – 01 – 1000 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data was processed using *Geoplot* version 3.0. It was clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal on the site. The results are plotted as greyscale and trace images (Fig. 3).

Instrument	Bartington Grad-01
Grid size	30m x30m
Sample interval	0.25
Traverse interval	1.0m
Traverse method	Zigzag
Sensitivity	0.1nT
Processing software	Geoplot (*v. 3.0*)
Weather conditions	Sunny, occasionally warm
Area surveyed	1.65ha
Date of survey	22/7/03
Survey personnel	Peter Masters
Central National Grid Reference	

Table 1: Summary of survey parameters

5.0 Analysis and Interpretation of Results

The survey recorded a complex network of linear and curvilinear anomalies, which appear to relate to at least two distinct periods of activity. A series of east-west aligned linear anomalies probably represent traces of medieval ridge and furrow ploughing (Fig 3: 1). Their westernmost extent lies close to a north-south aligned linear anomaly (2), which could represent a headland.

The ridge and furrow appears to traverse and fragment underlying linear and curvilinear features. The latter almost certainly represent traces of Romano-British occupation of the area, and for the most part, appear to resolve as enclosures of varying size. Generally, the linears align either north to south or east to west. Exceptions to this trend include linear (3). The largest enclosure (4) extends across most of the survey area and probably originally continued across land now occupied by the A45. Linear 5 could represent its westernmost edge, although it is more likely to be one of a series of internal division of the larger enclosure, which extends beyond the western edge of the survey area. The Roman villa remains are thought to lie in the

south-west corner of the survey area (*pers. comm*., Stephen Young) and may have been defined by the large enclosure). A concentration of linear and discrete anomalies in this area (6, boxed in green) may reflect traces of the villa complex, including robber trenches (which would resolve magnetically as ditch-type features) and possible pits/areas of burning (trace plot, examples circled in red). It is tentatively suggested that a similar group of anomalies in the northern part of the site could also indicate structural remains (7, boxed in green).

A number of linear anomalies extend northwards from enclosure 4 (examples, 8). Some probably reflect components of a former field system; others may be evidence of more intensive occupation of the area (see above).

6.0 Conclusions

The survey has identified an extensive array of linear and rectilinear anomalies. It is likely that most of these represent traces of Romano-British activity, including small enclosures and possible villa remains situated within a larger (sub-divided) enclosure.

There are traces of later ridge and furrow ploughing.

7.0 Acknowledgements

Pre-Construct Geophysics would like to thank Stephen Young for this commission.

8.0 References

B.G.S. 1980*, Sheet 185.Northampton Solid and Drift Edition*. 1:50,000 Series. Keyworth, British Geological Survey.

Clark, A. J. 1990 *Seeing Beneath the Soil*. London, Batsford.

David, A. 1995 *Geophysical Survey in Archaeological Field Evaluation*. London, English Heritage: Research & Professional Guidelines No.**1**.

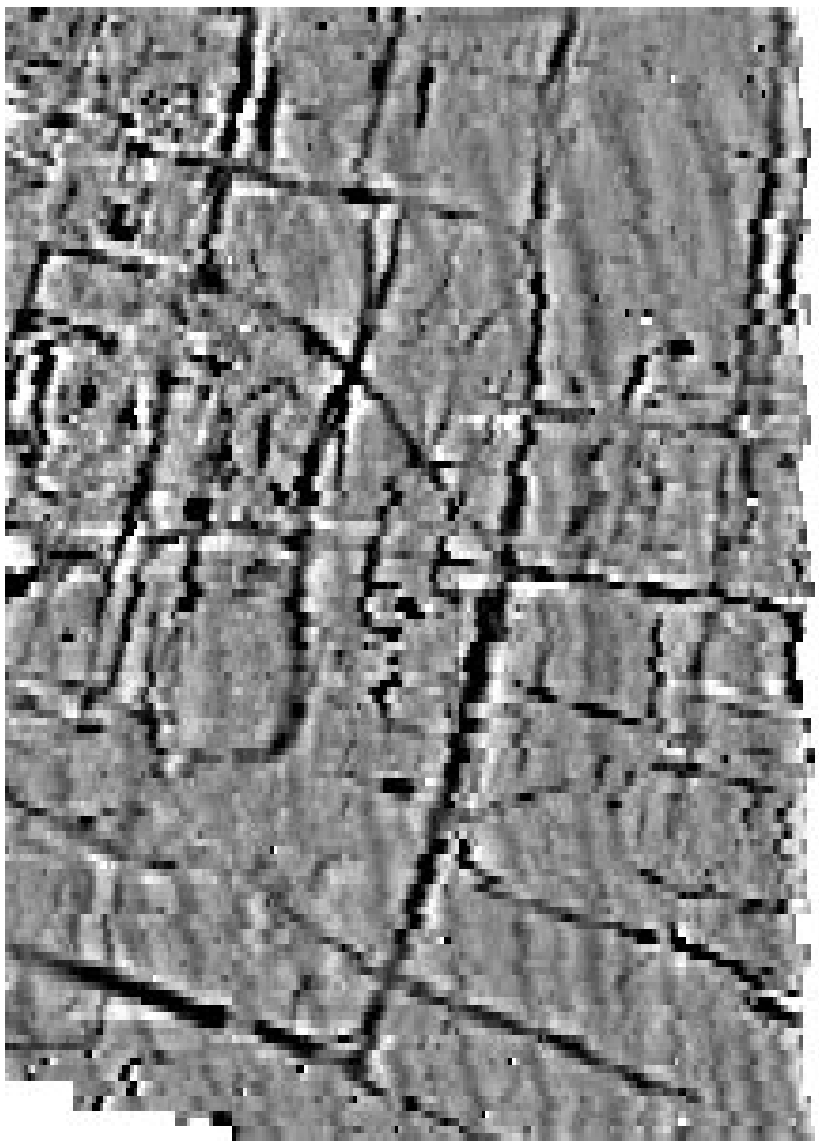
Gaffney, C., Gater, J. & Ovendon, S. 1991 *The Use of Geophysical Techniques in Archaeological Field Evaluation.* London, English Heritage: Technical Paper No. **9.**

RCHME 1982 Royal Commission on Historical Monuments for England, *An Inventory of Archaeological Sites in South-West Northamptonshire*

VCH 1902 *Victoria County Histories* Vol 1

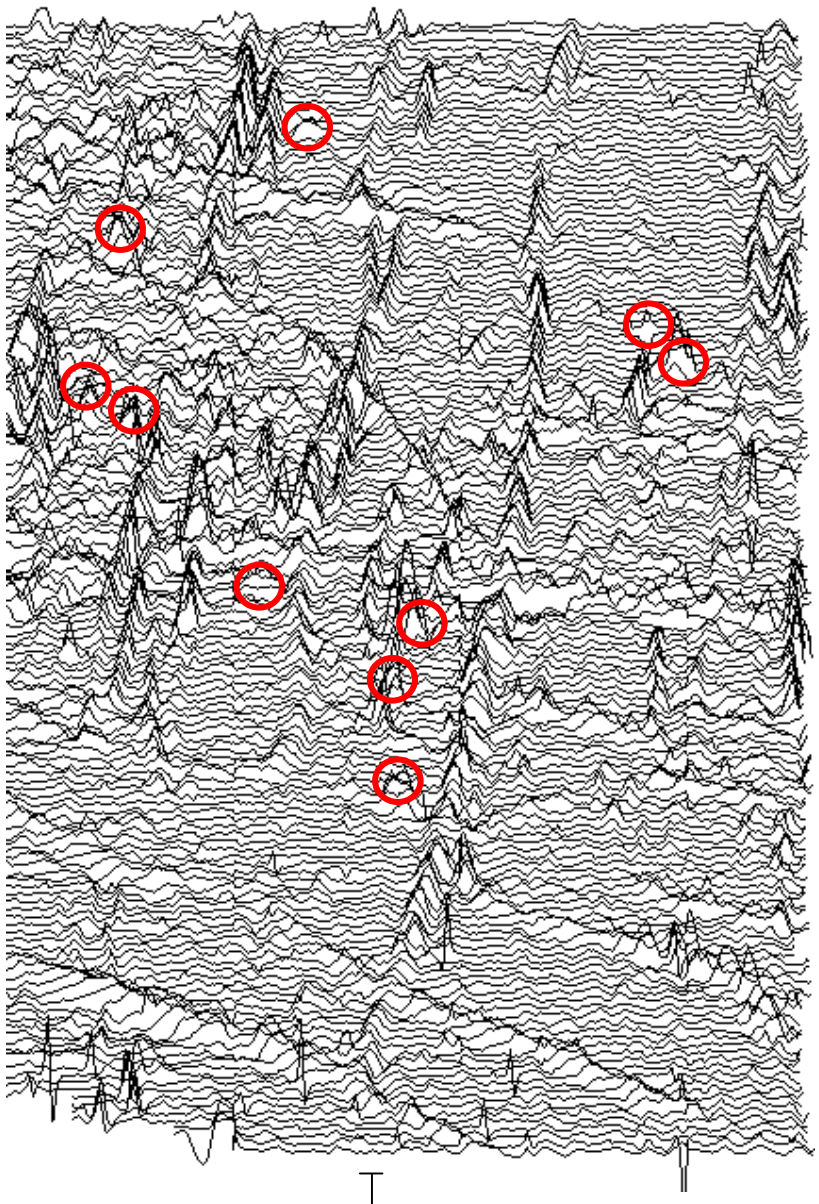
Fig.2: Location of survey 1:2500

UNCLIPPED DATA



- 8.71 nT 14.69

TRACE PLOT OF
UNCLIPPED DATA

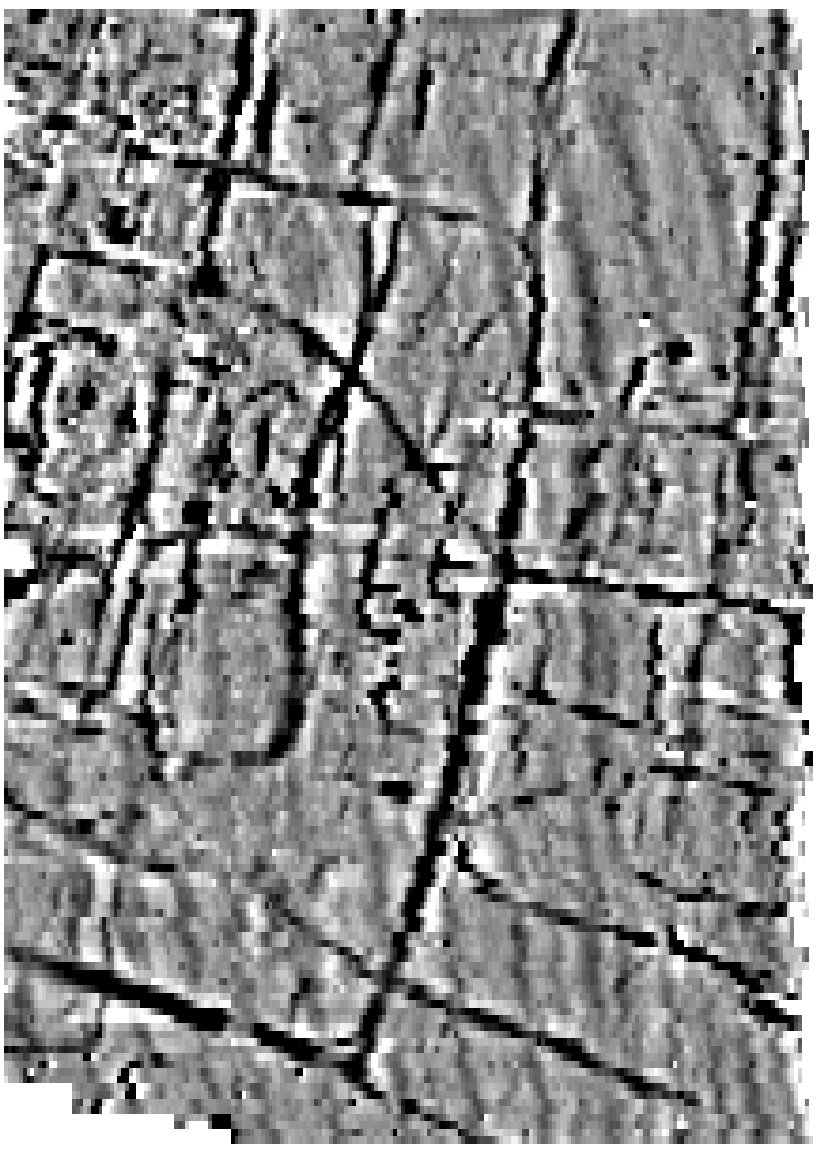


56nT

N

60m

GREYSCALE IMAGE
OF ENHANCED
DATA



- 5.80 nT 7.06

INTERPRETIVE
IMAGE

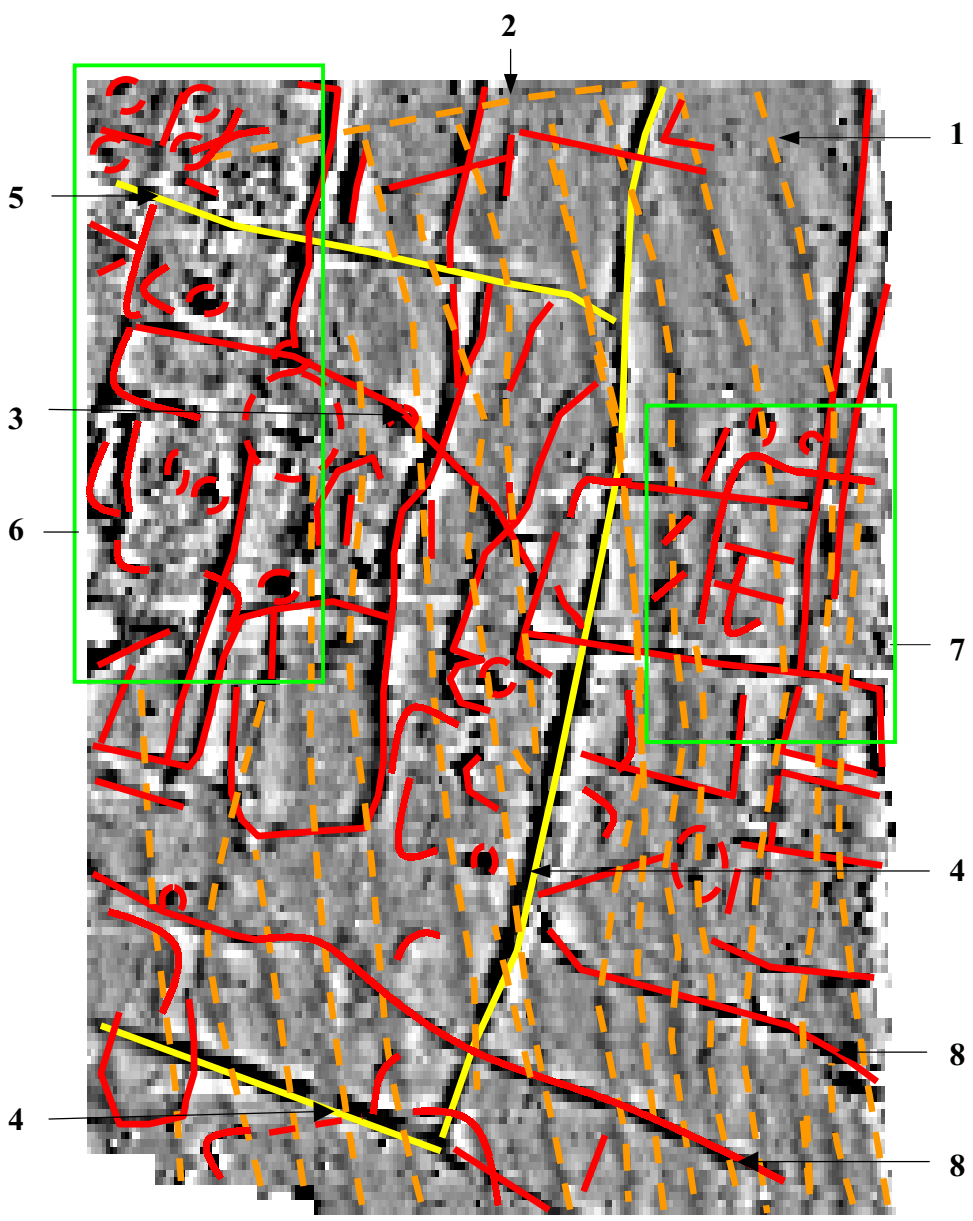


Fig 3 : Greyscale and trace plots of raw and enhanced data with interpretive plan 1:1250