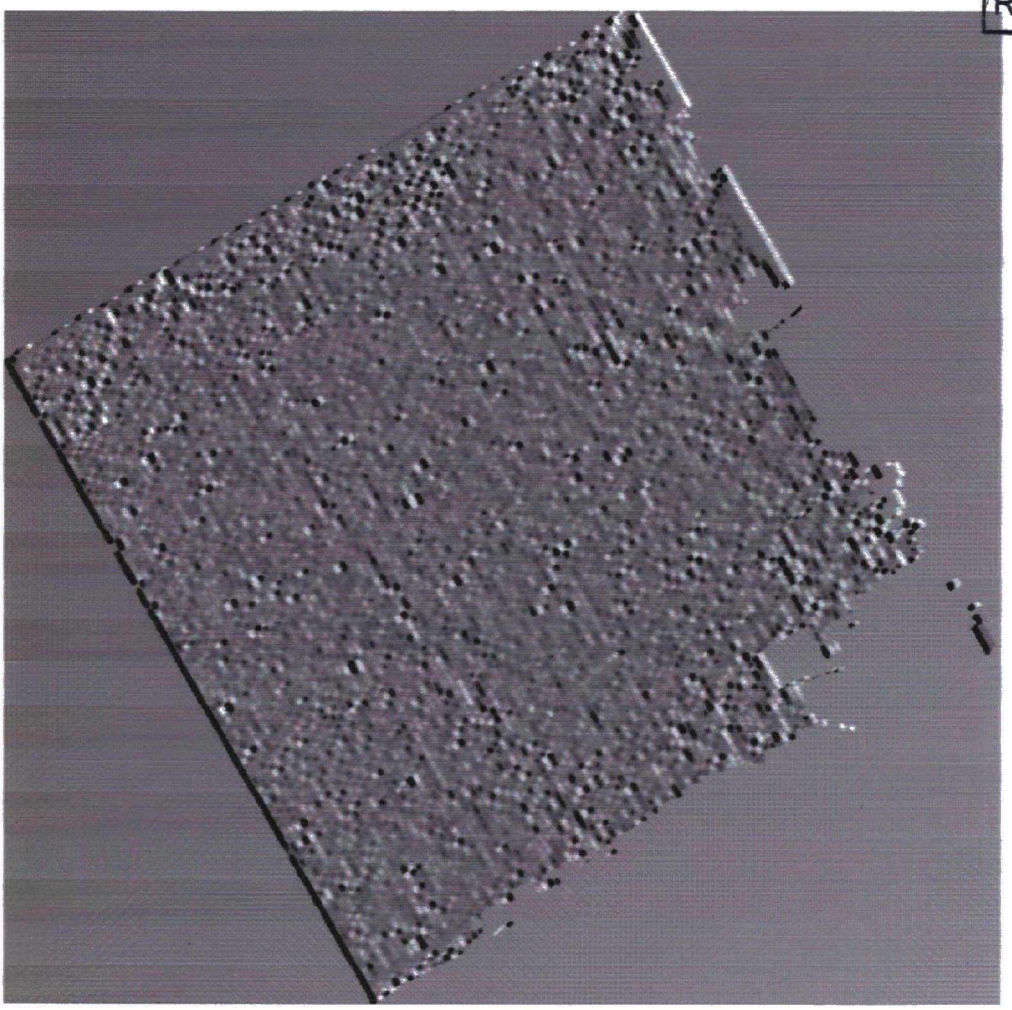
The Landscape Research Centre Ltd

Report on a

Fluxgate Gradiometer Survey



carried out at

Rillington Manor, North Yorkshire

on

15 December 2005

Summary

The Landscape Research Centre (LRC) carried out a fluxgate gradiometer survey on behalf of MAP Archaeological Consultants at Rillington Manor, Rillington, North Yorkshire, in the eastern half of a current horse paddock. The surveyed area is centred around National Grid Reference SE 85410/75012 The magnetic response of the site was average, with few anomalies of obvious archaeological origin detected, although ridge and furrow ploughing was evident across the site.

Methodology

The survey was conducted using a *Bartington Grad 601-2* fluxgate gradiometer. The zigzag traverse method of survey was used. The survey was conducted by taking readings every 25cm along the north-south axis and every metre along the east-west axis (thus 3600 readings for each 30m by 30m grid). The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla. The data has been processed and presented using the programs G-Sys (an in-house developed Geographic Database Management program which can also display, process and present digitised plans and images). This report was produced using Microsoft Word 2000 and Adobe Photoshop 6 for further image manipulation. The background map is from the Getmapping website.

The survey was carried out on 15th December, 2005. The field surveyed was totally given over to pasture. The only obstacle was a small muck heap in the south-east quadrant of the field. The surveyors were Chris Fern and Will Hynchcliffe. The total area surveyed was 1.074 hectares. The south-western corner of the surveyed area was 103 metres from the south-eastern field boundary. Plastic pegs or pin flags have been left in the south-western and south-eastern corners of the surveyed area to facilitate the location of trial trenches, should these prove necessary. The NGR for the south-west corner of the surveyed area is SE 8539225/7494149.

The survey data has been geo-referenced, to allow a correlation of the geophysical anomalies with any archaeological features detected. This was done by tying in the north-east and south-eastern corners of the survey with the nearest field boundaries.

Gradiometer Results and Interpretation

The survey results will be discussed using anomaly numbers. The results of the survey are displayed in two ways, both as a greyscale image and as an interpretive plan. All greyscale images use –12.8 and +12.8 nanoTesla as their cut-off points (thus anything less than –12.8 nT will be black, and anything more than +12.8nT will be white in the images). The plan indicates both positive and negative magnetic anomalies (lighter and darker areas in the greyscale image). A destaggering routine was used to correct for a small zigzag offset. The small black and white areas in the image are iron spikes, which indicate the presence of iron objects. These are generally found in the ploughsoil, and although they could indicate the presence of archaeological objects, it is much more likely that they relate to more modern detritus, such as broken ploughshares, iron horseshoes, shotgun cartridges etc. The front cover shows an image with the ridge and furrow removed using a linear destriping algorithm.

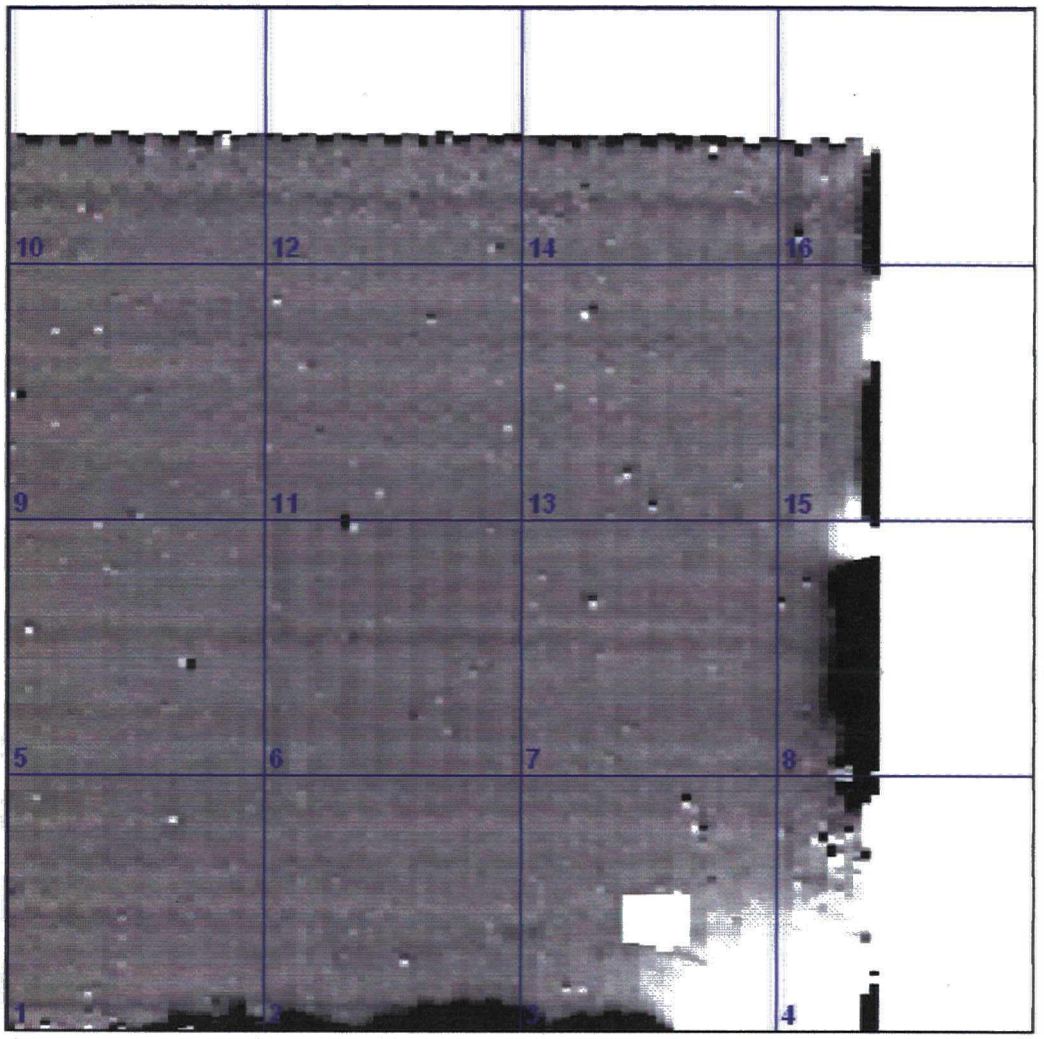


Figure 1 A greyscale image of the raw magnetic data, with 30 metre grids superimposed.

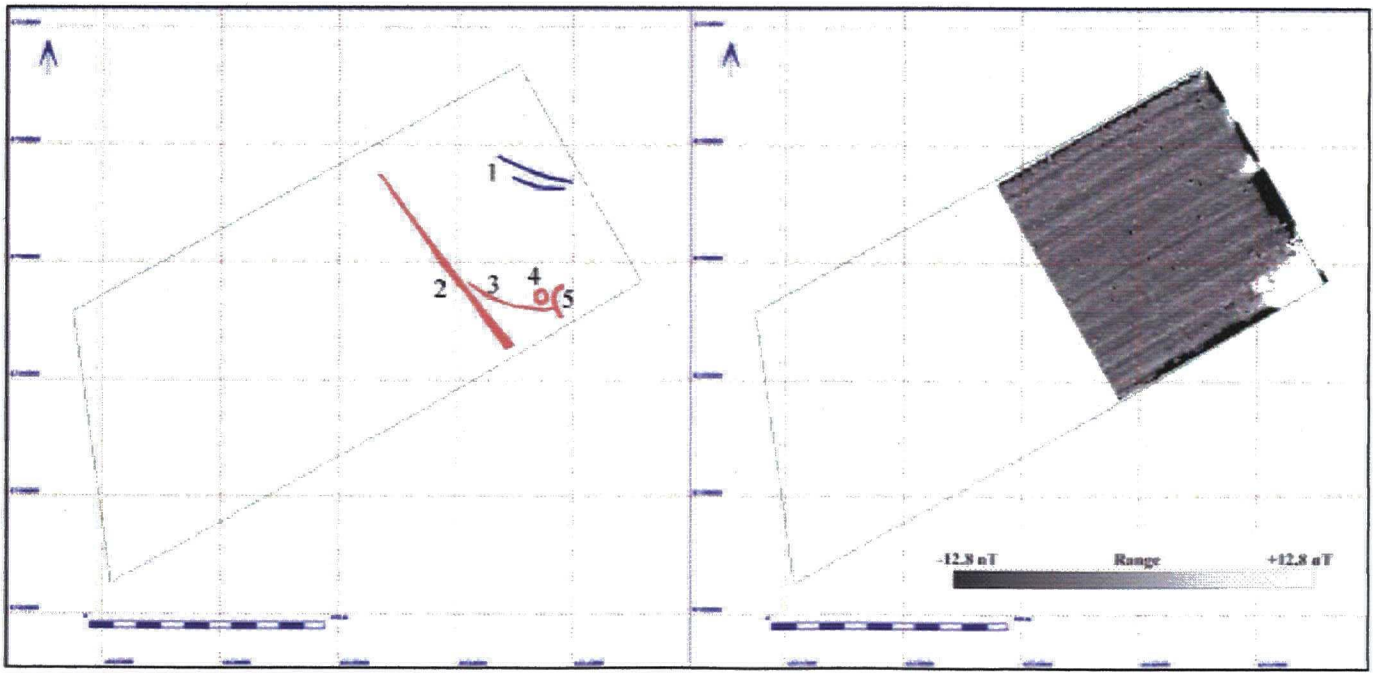


Figure 2 A greyscale image and interpretive plan (without ridge and furrow) of the survey data

The most obvious features of the survey are the parallel lines running across the surveyed area, in line with

indicate that the field alignment has been stable from at least that date. Only six potentially archaeological anomalies were detected, all of them magnetically much weaker and thus more difficult to see in the survey data. The two faintly negative (darker) magnetic anomalies (marked **1** in Figure 2) indicated in blue may be a trackway, although they could also relate to modern activity (note the faint continuation of a line seen in the aerial photograph from the Getmapping data in Figure 3).

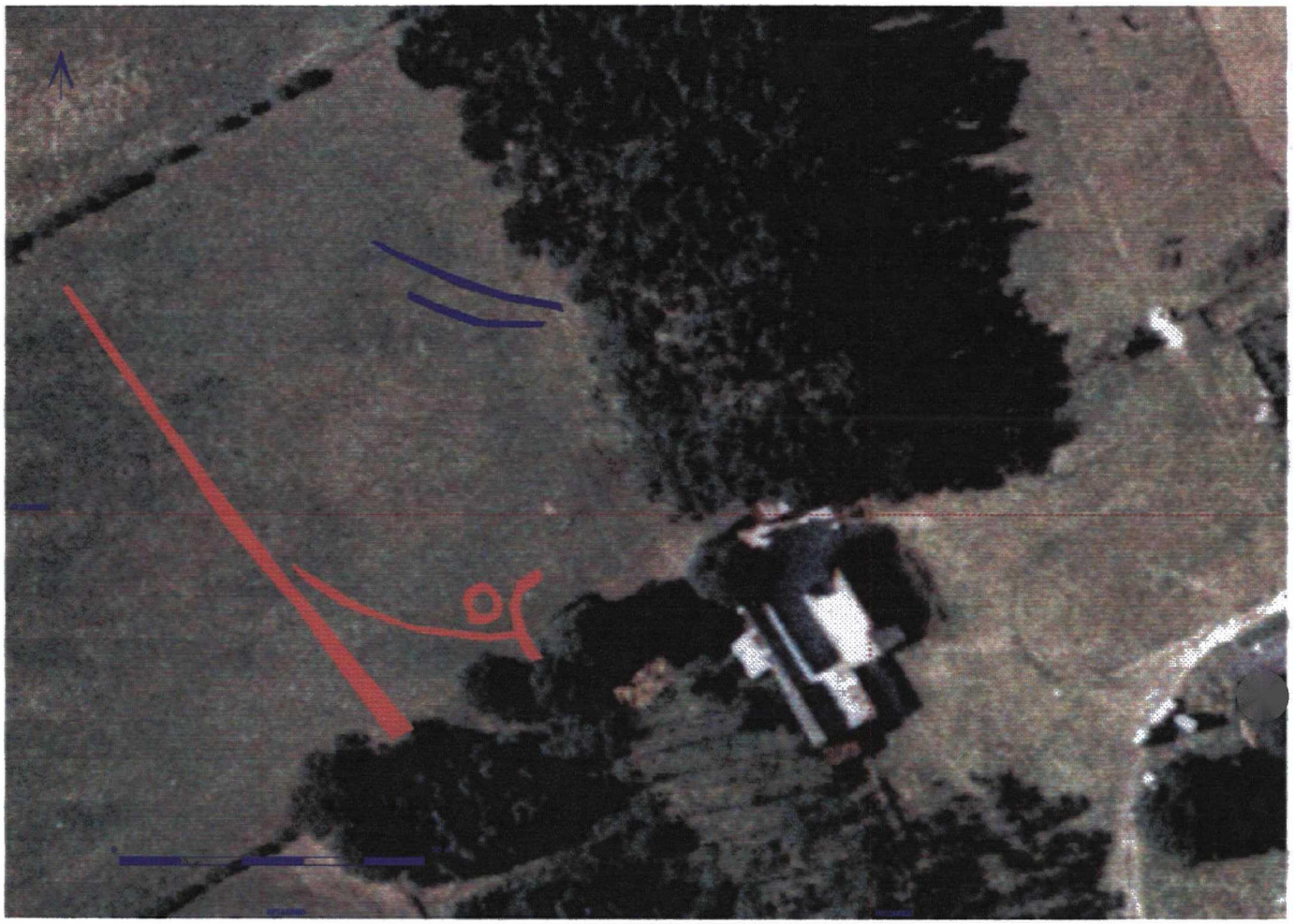


Figure 3 Interpretive plan of the survey data, on a Getmapping aerial photographic background

The linear anomaly running NNW-SSE (**2**) could be either a ditch, or part of an earlier division of the field. The slightly curving linear anomaly (**3**) is very faint, and could be part of an enclosure ditch. Potentially the two most interesting anomalies are those numbered **4** and **5**. Number **4** is a small circular anomaly roughly five metres in diameter, and is similar in morphology to a feature type known as barrowlets, which are later Iron Age in date. This being said, these features normally occur in groups, and are usually found to the south of ladder settlement trackways. Anomaly **5** is a curving, weakly positive feature. Unfortunately, it occurs in an area adjacent to a silage heap which could not be surveyed, and is also in close proximity to the south-east corner of the surveyed area which was severely affected by the presence of metal objects (gates and fences)

Conclusions

In conclusion, it can be stated that although ridge and furrow plough marks were well defined, the remainder of the potentially archaeological anomalies were magnetically weak and difficult to characterise.

Figure 4 Surveyed area at a scale of 1:750 on page 4 below