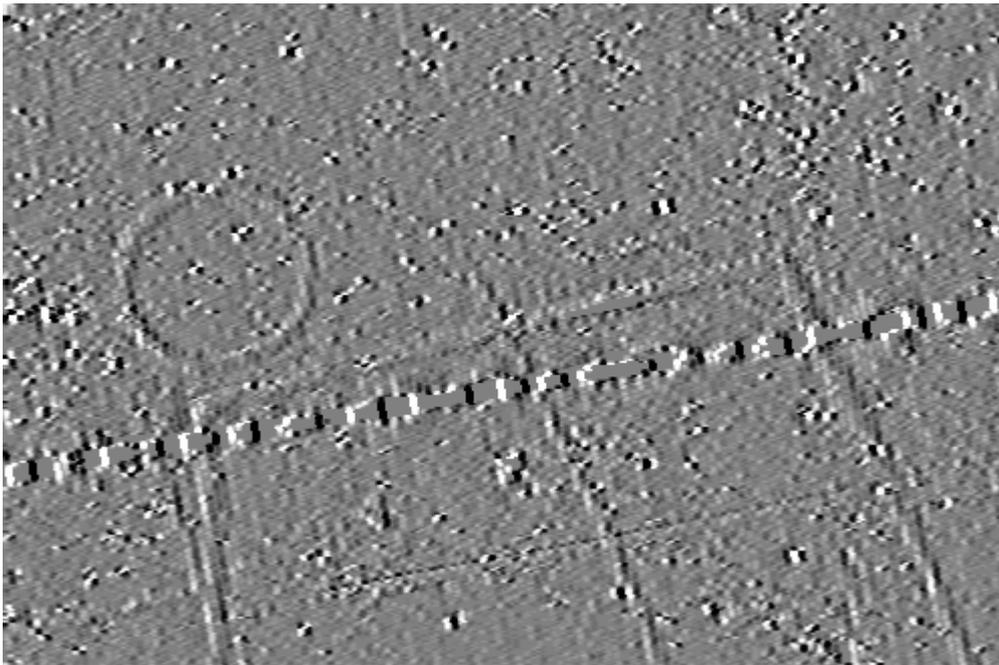




The Landscape Research Centre Ltd

Report on a

Fluxgate Gradiometer Survey



carried out at

West Farm, West Knapton, North Yorkshire

on

24th and 25th February 2003

A fluxgate gradiometer survey was carried out by the Landscape Research Centre (LRC) on behalf of the owner, D. Watson, in a field to the east of West Farm, North Yorkshire, centred on NGR SE 8981 7441. The location of the ring ditch of a Bronze Age round barrow was confirmed, and a number of linear anomalies were also detected.

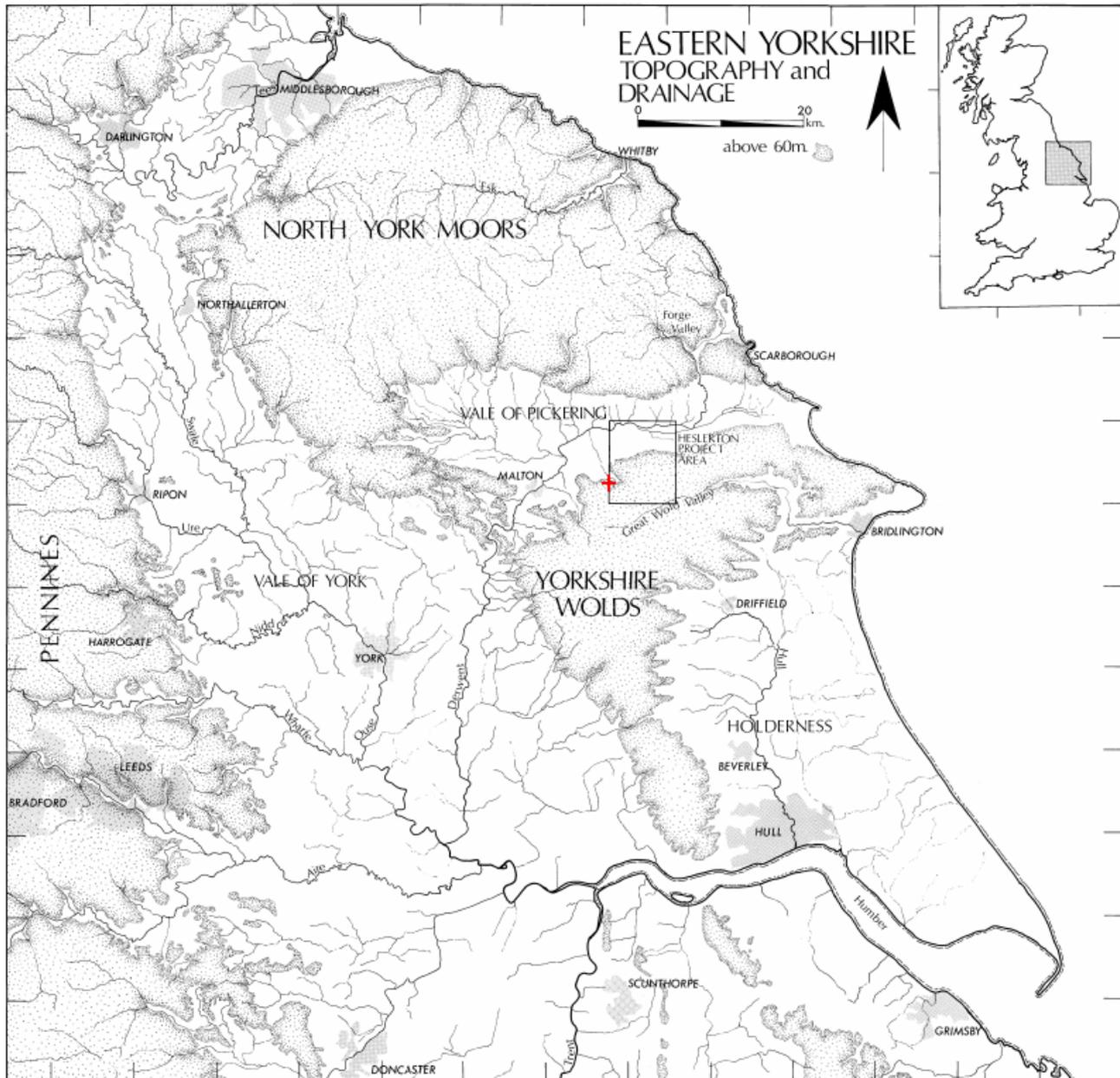


Figure 1 Showing the location of the gradiometer survey (marked by a red cross)

Methodology

The subject of this report is the interpretation and discussion of the results of a fluxgate gradiometer survey carried out in a field to the east of West Farm, North Yorkshire, carried out by the LRC on behalf of the owner, D. Watson. The survey was conducted using two *Geoscan Research* fluxgate gradiometers (model FM36). 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 grid). The sensitivity of the machines was set to detect magnetic variation in the order of 0.1 nanoTesla. The data has been processed and presented using the program G-System (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 5 for further image manipulation.

The underlying geology was the Wolds chalk, a magnetically neutral substrate against which any cut features filled with slightly enhanced magnetic material can be easily identified.

The survey was conducted on the 24th and the morning of the 25th February, 2003. The surveyors were James Lyall, Maria Beck and David Stott. Although the area to be surveyed (defined to the north east and west by current field boundaries and to the south by a line of electric poles) was 2.54 hectares, the actual area surveyed was 2.76 hectares, slightly enlarged to the south in order to clarify the location of two linear cropmarks.

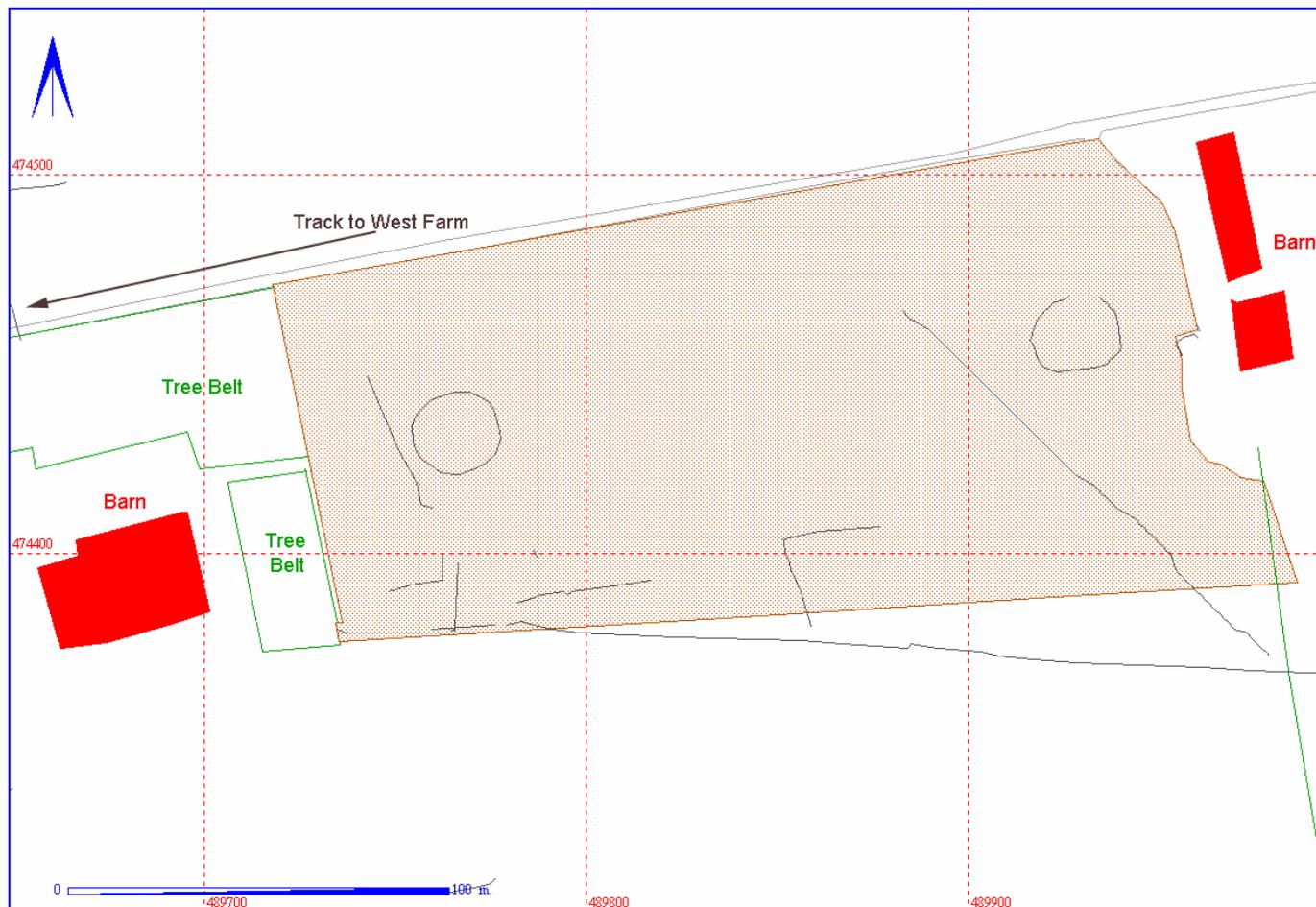


Figure 2 Plan showing both definite and possible features from cropmark plots

The cropmarks indicated that two ring ditches could be present, (with the eastern ring ditch thought less likely to be real), as well as a number of linear features. The geophysical data confirmed the presence of the western ring ditch, but could find no evidence for the eastern ring. In addition, the survey confirmed the location of most of the linear cropmarks, although demonstrating that the cropmarks give only a partial picture, as well as conflating genuine archaeological features with features of a probable geological origin.

Walking conditions were generally good, a short stubble in the north and a low crop in the south-east, and the owner kindly moved the only two obstructions in the field prior to the start of the survey.

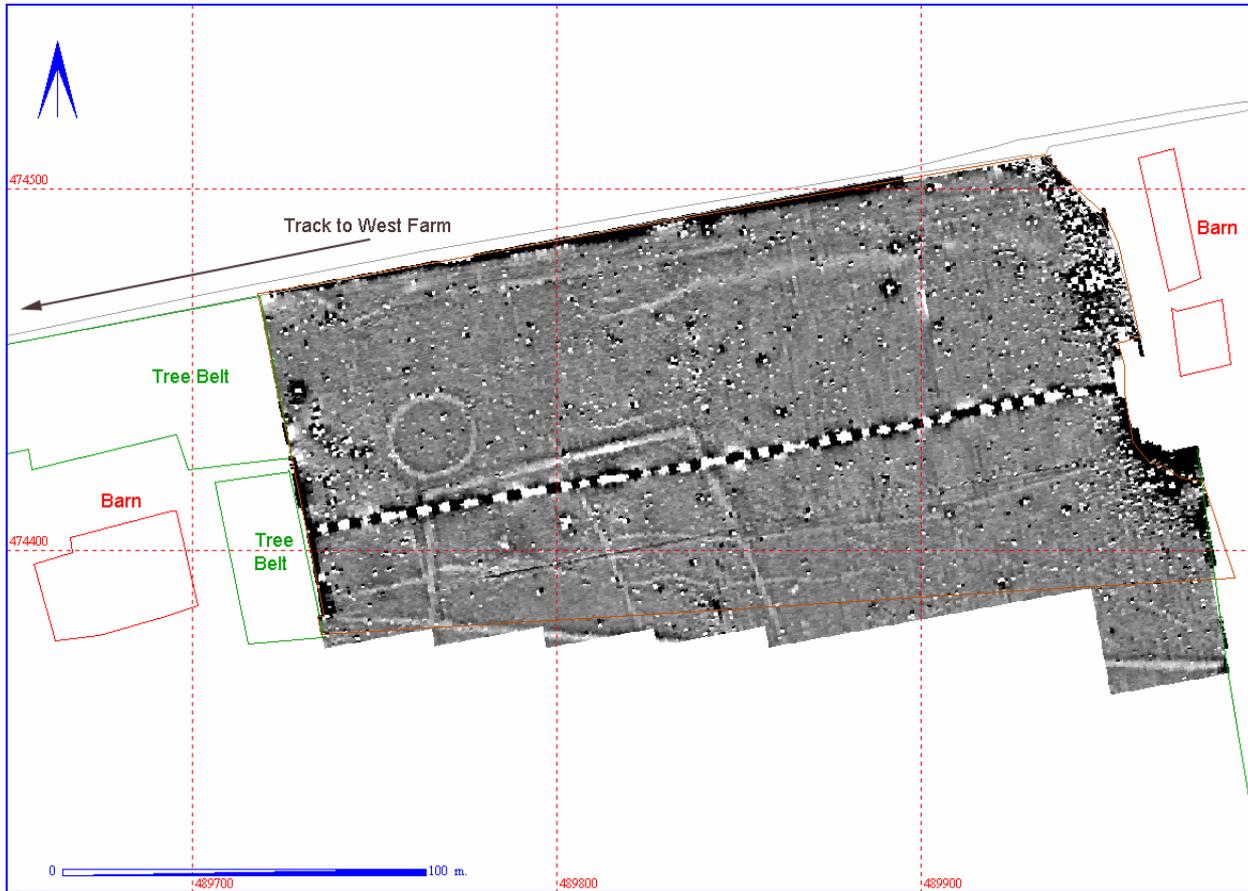


Figure 3 Survey data displayed as a greyscale image

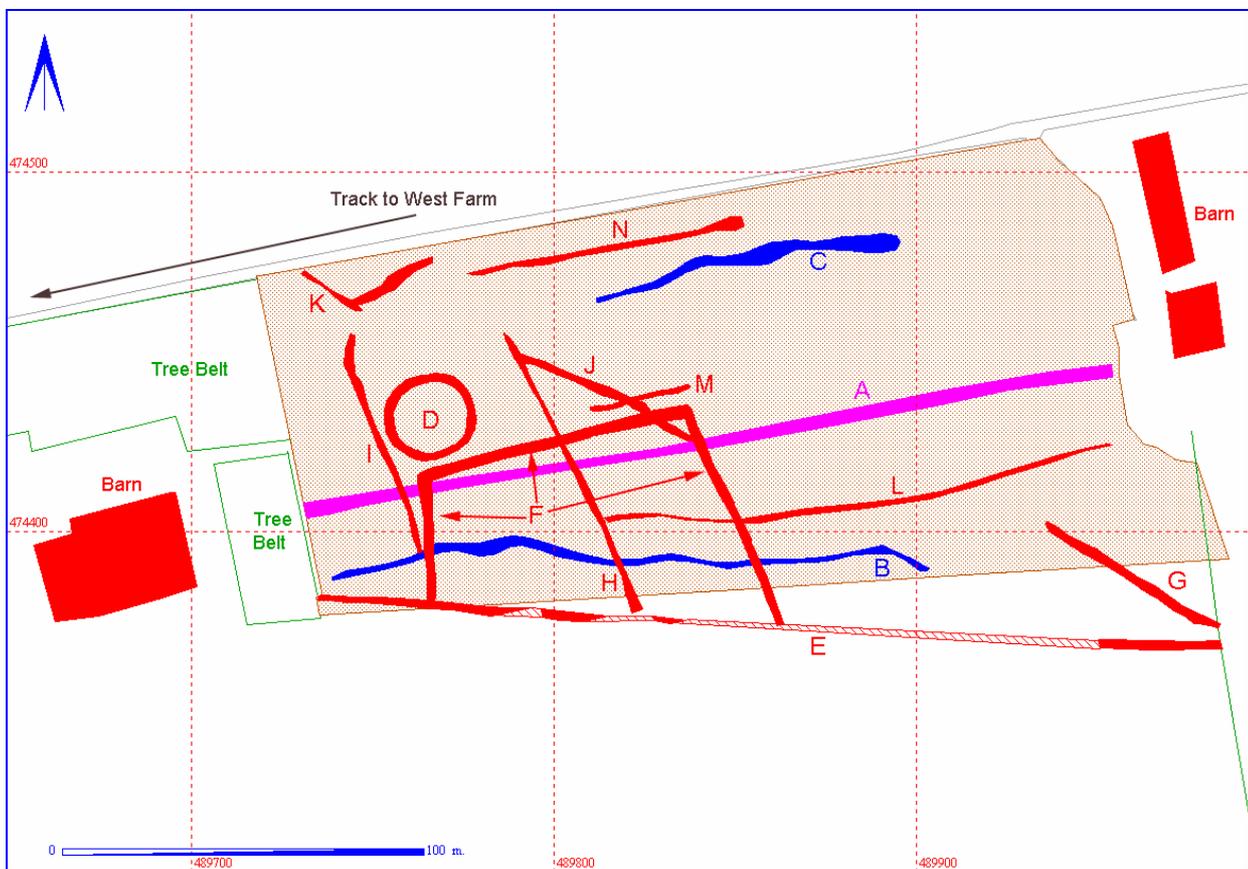


Figure 4 Digitised interpretation of the survey data

Gradiometer Results and Interpretation

In all 14 anomalies, numbered A to N on Figure 4, were detected and digitised. There were a small number of more ephemeral anomalies present, but these could not be digitised with any great degree of confidence. As usual, a number of dipoles (the small black and white dots in the greyscale image) were also found. These indicate the presence of iron and steel, and can usually be attributed to the normal detritus found in any field, such as broken ploughshares, old horse shoes and the like.

The most obvious anomaly is the strong east-west aligned black and white signal (digitised in purple, Anomaly A) which can be attributed to the presence of an iron water pipe. Anomalies B and C, (digitised in blue), roughly east-west aligned, are characteristic of the fissures common in the Wolds chalk, which were subsequently filled with a magnetically susceptible material. The same could apply to east-west aligned anomalies M, N and L, although anomaly L has a more coherent linear shape, and appears to butt onto the north-south aligned anomaly H.

Anomalies K and J may be part of the same NW/SE aligned anomaly, perhaps a partner to anomaly G, although these are only faintly positive anomalies, difficult to detect for any length.

Anomalies H and I are both NNW/SSE aligned, and may form part of an earlier enclosure, both appearing to fade out to the north.

Linear anomaly E (surveyed parts in red, presumed continuation in red stripes) appears as a cropmark on aerial photographs, and is believed to be part of the Wold Entrenchments.

Anomaly F is particularly interesting, as it appears to be three sides of an unusually shaped (trapezoidal?) enclosure, abutting onto anomaly E. Although the limits of the geophysical survey area do not quite reach where the two anomalies would join, cropmark plots indicate that this is the case.

The barrow (Anomaly D, SMR number 0349502300), has been noted in a number of aerial photographs of the area. The feature is 22.5 to 23 metres in diameter. There were no obvious grave pits within the circle, but this is not surprising given that grave cuts are generally almost always immediately infilled with material which came out of them, and are thus magnetically similar to the parent material around them.

Conclusions

In conclusion, the magnetic response of the surveyed area was good, with the chalk substrate providing a neutral magnetic background. This allowed the magnetically enhanced fills of the cut features to be clearly defined. A number of features of archaeological origin were detected, as well as both modern and geological features.