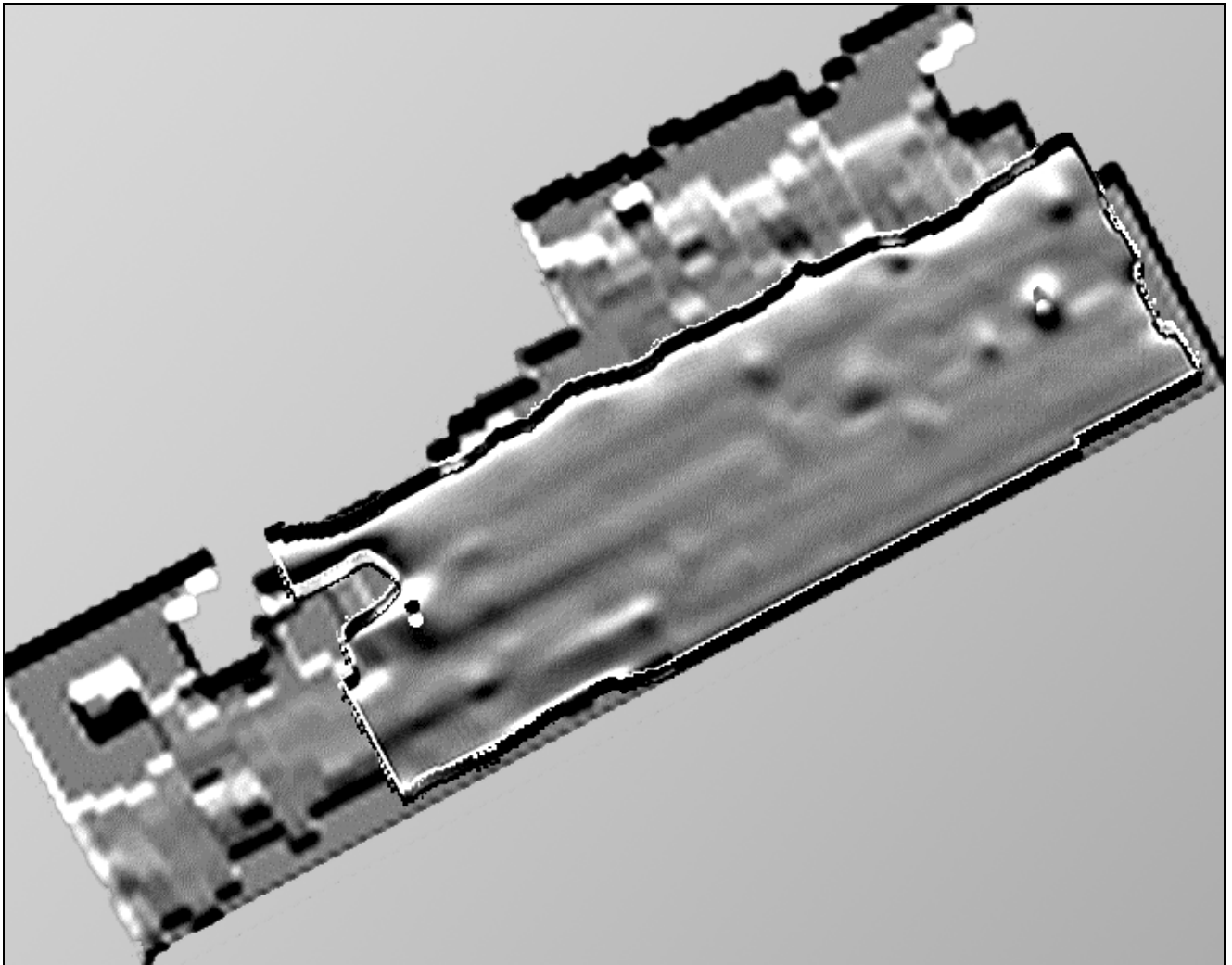


The Landscape Research Centre

A fluxgate gradiometer survey report



carried out over

an area to the south of the Fleece Inn, Rillington,
North Yorkshire

On behalf of MAP Archaeological Consultancy Ltd.

19th May 2008

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Report information

Client	MAP Archaeological Consultancy Ltd
Report type	Fluxgate gradiometer survey
Parish	Rillington
County	North Yorkshire
Central grid reference	SE 8530517 7425267
Report number	LRC 101
Site code	466
Date of Fieldwork	19/05/2008
Date of report	20/08/2008
Fieldwork personnel	James Lyall MA (Hons), MSc
Report by	James Lyall MA (Hons), MSc
Produced by	The Landscape Research Centre Ltd

Summary

The Landscape Research Centre Ltd (LRC) carried out a fluxgate gradiometer survey on behalf of MAP Archaeological Consultancy Ltd, over a small area to the south of the Fleece Inn, Rillington, North Yorkshire. Modern iron and steel objects such as a rabbit fence along the southern, western and eastern boundaries and an iron trailer on the northern boundary meant that the ability of magnetic surveying devices to detect archaeological anomalies was severely impaired.

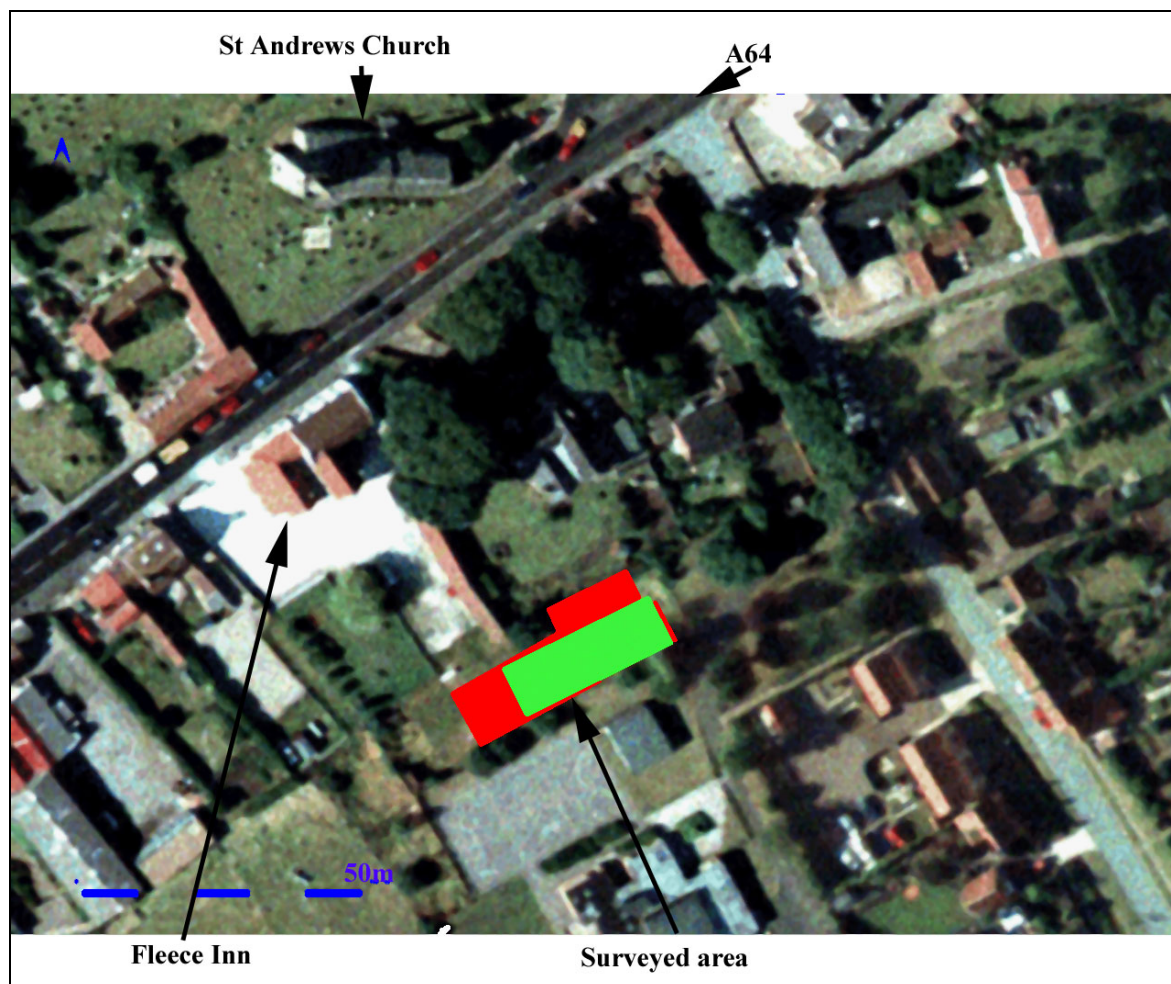


Figure 1 The extent of the area covered by the geophysical survey (in red) with resurveyed area in green

Methodology

The survey was conducted using a *Bartington Grad 601-2* fluxgate gradiometer. The zigzag traverse method of survey was used. The survey was carried out by taking readings every 25cm along the traverse (walking) axis and every metre along the grid 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 (nT). Part of the area along the southern boundary was also surveyed using a *Foerster Ferex 4.032 DLG* fluxgate gradiometer array. This machine allows a higher resolution of data collection, and takes readings every 10cm along the traverse axis and every 50cm along the grid axis (thus taking 18000 readings in an equivalent 30m grid). This machine collects samples at 0.2 nT sensitivity.

The data from both machines has been processed and presented using 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 field surveyed is currently a small paddock, and has been given a site number of 466 in the LRC numbering system. There were no obstacles encountered in the southern part of the site. An iron trailer on the northern boundary meant that this area could not be surveyed at this time. The surveyor was James Lyall. The area surveyed had a maximum length and width of 40m by 15m, with 0.0535 Ha surveyed using the Bartington instrument and 0.03 Ha resurveyed using the Foerster magnetometer.

Gradiometer results and interpretation

The results of the survey are displayed as a greyscale images (see Figure 2 and Figure 3). An interpretative plan has not been included as there is no certainty that any anomalies of archaeological significance were detected. The survey data indicates both positive and negative magnetic anomalies (lighter and darker areas in the greyscale image). The black and white areas in the greyscale images are dipoles (iron spikes), which indicate the presence of iron objects. These are generally found in the topsoil, 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.

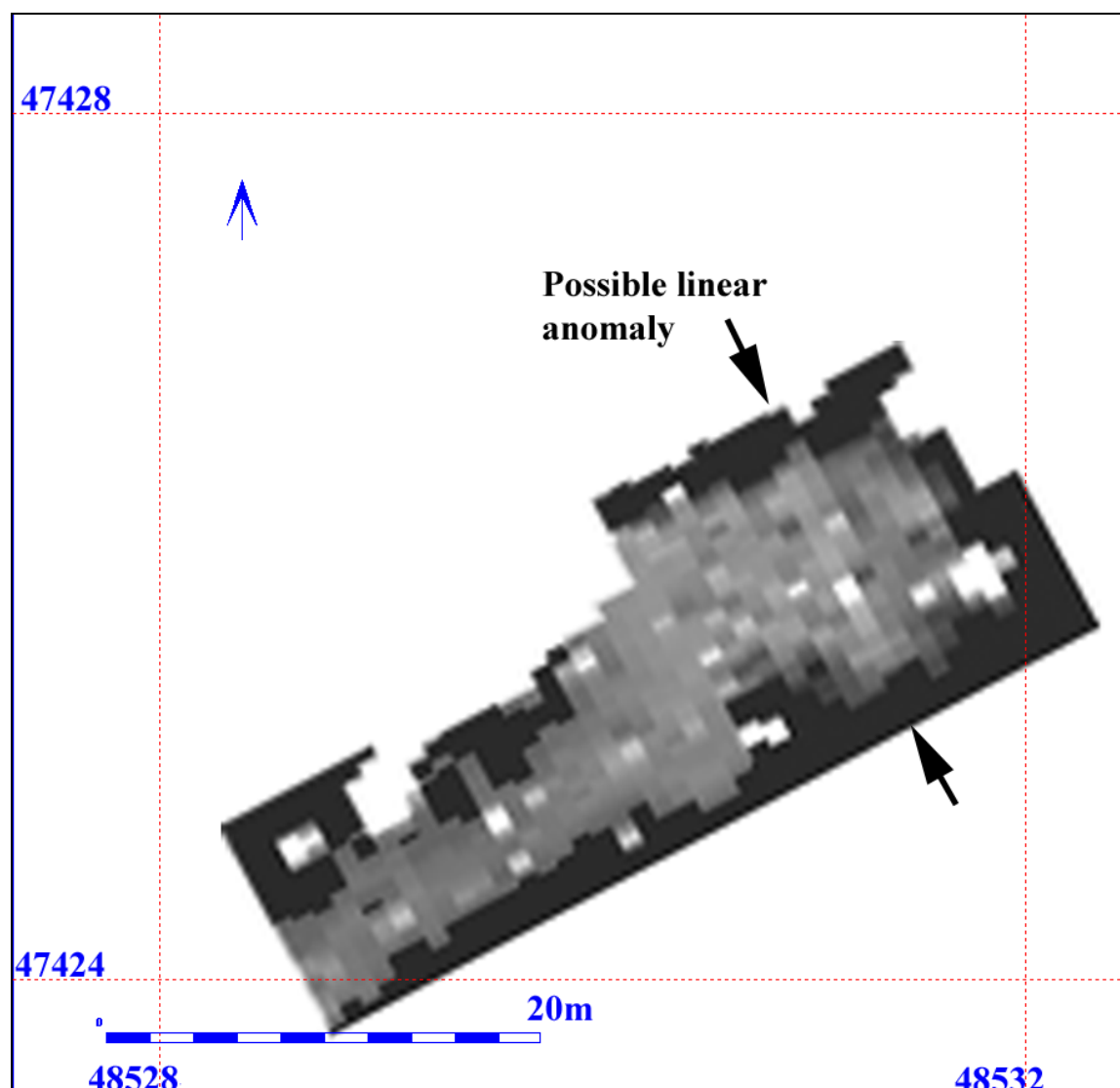


Figure 2 A greyscale image of the magnetic data from the Bartington survey

Because of the presence of so much modern magnetic material, the data has had to be processed with a much wider nT range than is usual in archaeological feature prospection. For example, most archaeological features have a magnetic range of between -7 and $+7$ nT (there are many exceptions, but

the majority of features are to be found in this range). However, this dataset proved difficult to deal with, and required the eastern and western halves to be processed separately, with the eastern half processed with a range of ± 25 nT, and the western half processed with a range of ± 200 nT. Most of the anomalies which can be seen in Figure 2 can be attributed to either iron detritus in the topsoil or the effects of the metal fence and trailer. The location of one possible linear anomaly is indicated on Figure 2, but the confidence level of this interpretation must be classified as extremely low, as the anomaly could relate to the presence of a large piece of iron which is influencing the magnetic detectors for a short period after they have passed over the anomaly.

Since the area was so small, it was felt prudent to survey the area in both directions, thus avoiding the possibility of missing weak linear anomalies because of directional sampling issues. For this reason, the Foerster survey was carried out in an east-west orientation. There is no sign of the previously noted linear anomaly in the Foerster dataset, reducing its credibility as a real feature.

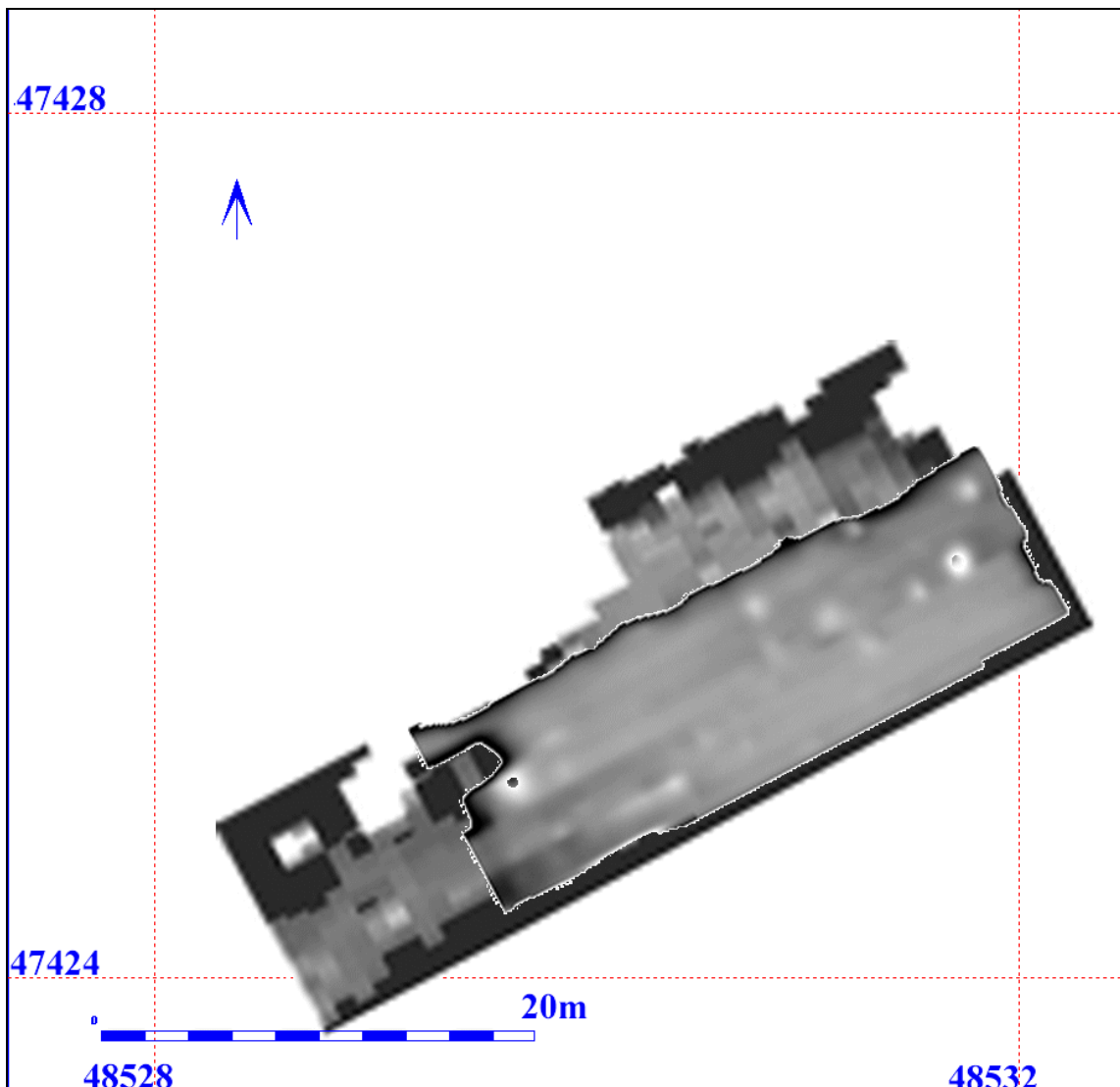


Figure 3 Greyscale plot of the Foerster data superimposed onto the Bartington data.

The Foerster data also hints at the possibility of linear anomalies, but as these are only to be found in the direction of the walking traverse, it is likely that they are caused by the presence of strong magnetic anomalies (iron objects) influencing the sensors for a distance after they pass over the main anomaly. The discrete lighter areas in Figure 3 can probably be attributed to either metal objects or brick rubble below the surface.

Conclusions

In conclusion, it can be stated that because of the presence of so much modern iron near the surface and edges of the surveyed area, the ability of magnetic geophysical instruments to detect archaeological anomalies was severely restricted, and no anomalies of archaeological origin were detected.

Additional information

In a short discussion with the landlady of the Fleece Inn, it was discovered that aerial photographs of the area (not seen by the author) existed which showed that farm buildings had been present on the surveyed area. She also said that when turning over the vegetable plot immediately to the west of the surveyed area, a great amount of brick and rubble had been encountered.

Survey report by James Lyall MA (Hons), MSc

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20th May 2008

Appendix One

Although the area surveyed did not produce results which could be interpreted as being archaeological in origin, previous surveys amounting to over 50 Ha conducted by the LRC to the east, south-west and west of the area in question indicate that the locale is rich in archaeological remains. Two trackways both head in the direction of site 466 (see Figure 4 for the possible lines of these trackways), although it is always possible that they may change direction slightly, just missing the area.

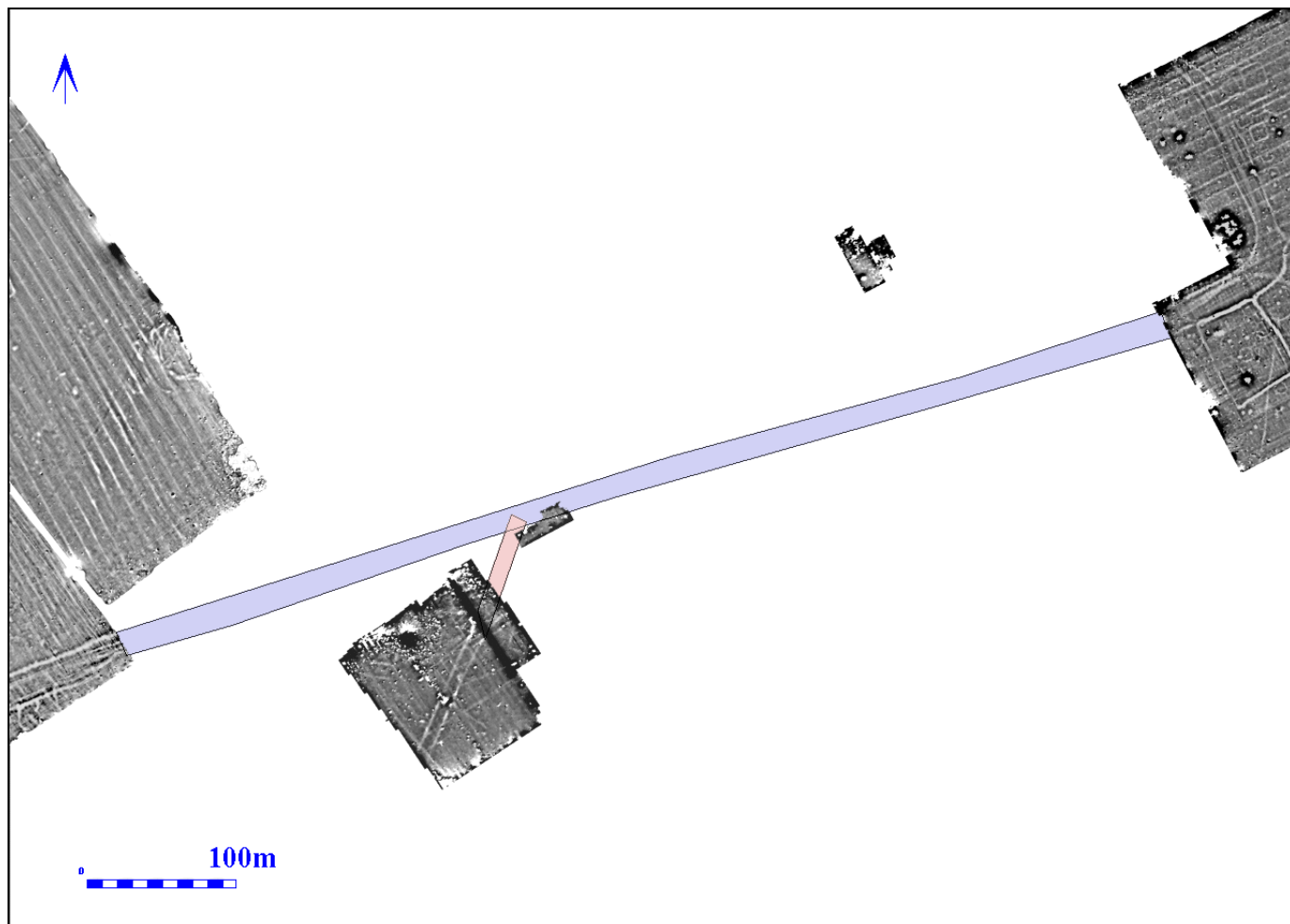


Figure 4 Possible lines of trackways based on previous geophysical surveys by the LRC