

ARCHAEOLOGICAL GEOPHYSICAL SURVEY

**LAND OFF BALSAM ROAD, LINTON
CAMBRIDGESHIRE**

SITE CENTRED AT NGR 507750 297660

OASIS REFERENCE: preconst2-296116

**REPORT PREPARED FOR
PEGASUS PLANNING GROUP
ON BEHALF OF GLADMAN DEVELOPMENTS LTD
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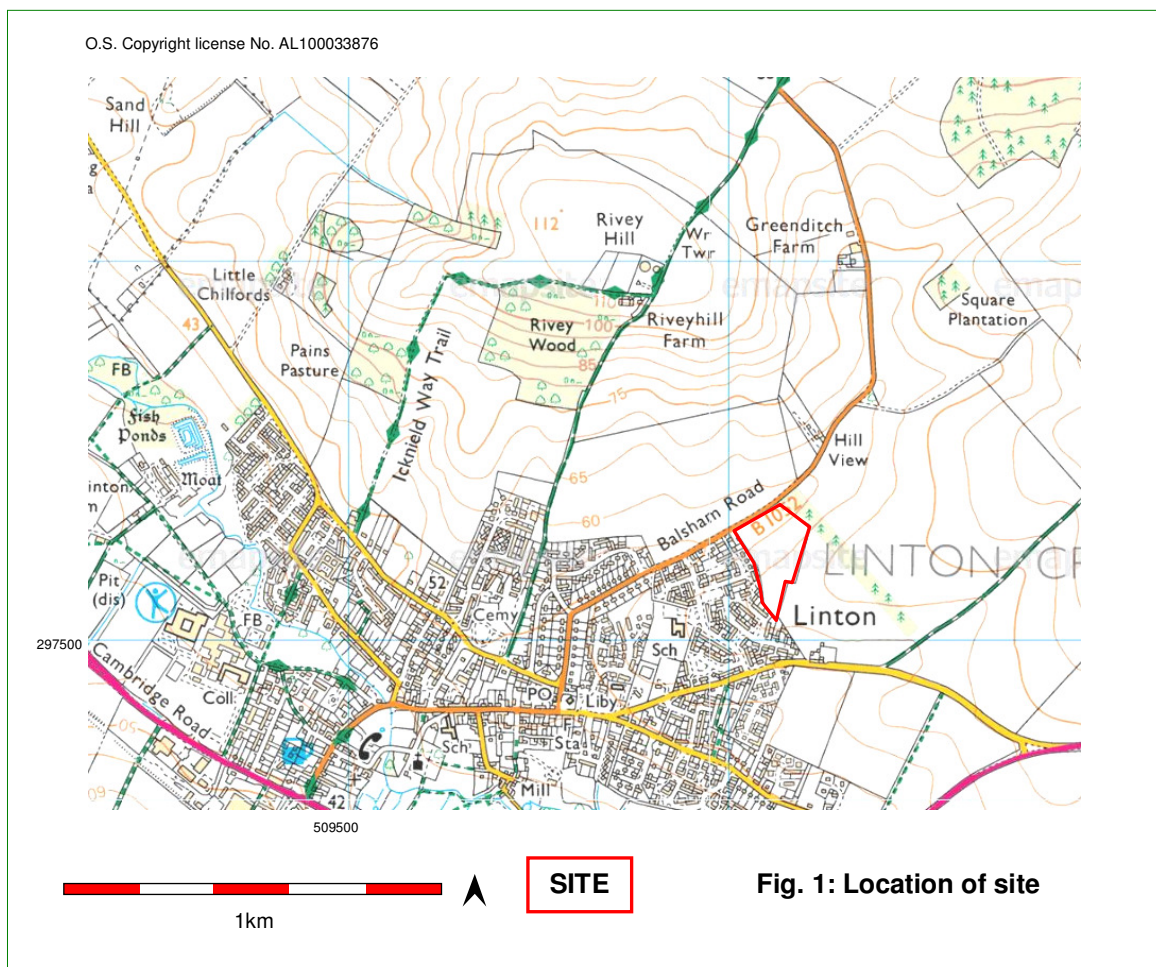
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Non technical summary

A fluxgate gradiometer survey of land off Balsham Road, Linton, Cambridgeshire has not recorded magnetic variation that is clearly indicative of potentially significant archaeological remains, although a small number of anomalies at the eastern edge of the site exhibit pit-type magnetic characteristics.

Traces of potential ridge and furrow cultivation were registered in the eastern part of the site.



1.0 Introduction

Acting for Gladman Developments Ltd, Pegasus Planning Group Ltd commissioned a fluxgate gradiometer survey of land off Balsham Road, Linton, Cambridgeshire.

The objective of the survey was to detect and precisely locate any potential buried archaeological features using non-intrusive techniques.

2.0 Location and description (Figs. 1 & 2)

The site encompasses a c.3ha arable field that lies to the immediate south of Balsham Road at the north-eastern edge of the village of Linton (NGR c.507750 297660).

The site is bordered to the north by a small area of woodland, to the east by agricultural land and to the south by a mixture of agricultural land and modern residential development.

3.0 Geology and topography

The solid geology comprises chalk (New Pit Chalk Formation and Chalk Rock Member) - sedimentary bedrock formed approximately 89 to 94 million years ago during the Cretaceous Period in a local environment previously dominated by warm chalk seas (BGS. 2017). Superficial deposits are not recorded.

The magnetic response of archaeological features within chalk is generally good (English Heritage, 2008).

The site occupies a north-west facing slope at a height generally between the 60m AOD and 65m AOD contours, with the highest point in excess of 65m AOD in the south-eastern region.

4.0 Archaeological Context

Extract of the conclusions of a Heritage Desk-Based Assessment prepared by Pegasus Group (Gilbey, R., 2017):

No prehistoric or Roman finds or features are recorded within the site. The study area contains many recorded archaeological remains, including evidence of activity of prehistoric, Romano-British, Saxon and medieval date. A Neolithic cursus, previously considered to be a field drain, and a Bronze Age round barrow are recorded c.285m south-west of the site and a possible barrow cemetery lies c. 500m west of the site at a broadly similar elevation. However, the majority of features are located in the vicinity of the River Granta, over c. 500m south of the site. A Roman villa, located south of the river, was first recorded in the early 19th century, and multiple excavations have revealed an L-shaped structure with painted wall plaster and hypocausts.

The site was historically located within the parish of Linton and formed part of the agricultural hinterland to this settlement from at least the medieval period. No early medieval or medieval finds or features are recorded within the site or in the immediate vicinity. A Saxon sunken floor dwelling, known as a 'Grubenhau', is also located c.565m south of the site, as is a potential Anglo-Saxon cemetery and Saxon findspots. There is no evidence to suggest that medieval finds or features are located within the site.

5.0 Methodology

The survey methodology is based on guidelines set out in the documents 'Geophysical Survey in Archaeological Field Evaluation' (English Heritage. 2008) and 'Standard and Guidance for Archaeological Geophysical Survey' (Chartered Institute for Archaeologists, 2014). A Written Scheme for Investigation was submitted to the office of the Planning Archaeologist for Cambridgeshire County Council (Bunn, 2017).

5.1 Fluxgate Gradiometry is a non-intrusive scientific prospecting tool that is used to determine the presence/absence of some classes of sub-surface archaeological features (e.g. pits, ditches, kilns, and occasionally stone walls).

The use of magnetic surveys to locate sub-surface ceramic materials and areas of burning, as well as magnetically weaker features, is well established, particularly on large green field sites. The detection of anomalies requires the use of highly sensitive instruments; in this instance the Bartington 601 Dual Fluxgate Gradiometer. This is accurately calibrated to the mean magnetic value of each survey area. Two sensors mounted vertically and separated by 1m measure slight, localised distortions of the earth's magnetic field, which are recorded via a data logger.

This technique only records magnetic variation in relation to natural background levels, established by careful selection of magnetically 'quiet' zones where instrument sensors are calibrated to 0nT. As such, the magnetic response of archaeological remains will vary according to geology/pedology, with a possibility that buried features could remain undetected should their magnetic susceptibility closely match that of the surrounding soils. Additionally, some remains may be buried beyond the effective 1m - 2m range of the instrumentation; for example beneath alluvium. Back-filled shallow pits or ditches might also exhibit minimal variation.

5.2 The survey was undertaken on and the 5th of September 2017 by George Bunn and Gareth Ward Stevens. The zigzag traverse methodology was employed, with readings taken at 0.25m intervals along 1.0m wide traverses.

The survey grid was established by Global Positioning Satellite using a Leica GS015 RTX, to an accuracy of +/- 0.1m.

The data were processed by using *Terrasurveyor V3*.

The raw data are presented as greyscale image on Fig. 4 (clipped to +/-10nT to enhance resolution).

A 'Despike' function was applied to reduce the effect of extreme readings induced by metal objects, and 'Destripe' to eliminate striping introduced by zigzag traversing. The data were clipped to +/- 20nT on the trace (xy) plot (Fig. 5) and +/-3nT on the greyscale image of the processed data (Fig. 2).

Anomalies in excess of +/-10nT are highlighted pink and blue on the interpretive figure (Fig. 3). These are characterised magnetically as dipolar 'iron spikes', often displaying strong positive and/or negative responses, which reflect ferrous-rich objects (particularly apparent on stacked trace plots). Examples include those formed/deposited along current or former boundaries (e.g. wire fencing), services and random scatters of horseshoes, ploughshares etc across open areas. Fired (ferro-enhanced) material, such as brick/tile fragments (often where the latter are introduced during manuring or land drain construction) usually induce a similar though predominately weaker response, closer to +/-5nT (highlighted in pink/blue on the interpretive image). Collectively, concentrations of such anomalies typically indicate probable rubble spreads, such as backfilled ponds/ditches and demolished buildings. On a cautionary note, fired clay associated with early activity has the same magnetic characteristics as modern brick/tile rubble. As such, the interpretation of such variation must consider the context in which it occurs.

It should be noted that this technique only records magnetic variation (relative to natural background levels). As such, the magnetic response of archaeological remains will vary according to geology/pedology. Additionally, remains may be buried beyond the effective 1 - 2m range of the instrumentation.

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6.0 Results and discussion (Figs. 2 – 5)

The survey recorded traces of predominately NW-SE aligned probable ridge and furrow cultivation in the eastern side of the site (Fig.3: dotted orange lines), with N-S linear anomalies probably indicative of recent cultivation (dashed orange lines). With that in mind, it is also possible that linear trends in the results in the south-east corner might, alternatively, be of natural origin.

Whilst the majority of magnetically weaker discrete anomalies conceivably signify natural features (greenscale), such as soil filled depressions within the upper geology, a small number of responses at the eastern edge of the site have been highlighted as potential pits (red dots).

Stronger (for the most part dipolar, pink and blue) responses are of likely modern origin, such as miscellaneous ferrous-rich debris (e.g. plough shares, horseshoes, etc) contained within the plough soil and/or in proximity to field boundaries. Strong responses were also induced by components of recent boreholes (**BH**).

7.0 Conclusions

The survey has not recorded magnetic variation that is clearly indicative of potentially significant archaeological remains, although a small number of anomalies at the eastern edge of the site exhibit pit-type magnetic characteristics.

Traces of potential ridge and furrow cultivation were registered in the eastern part of the site.

8.0 Acknowledgements

Pre-Construct Geophysics would like to thank Pegasus Planning Group Ltd for this commission.

9.0 References

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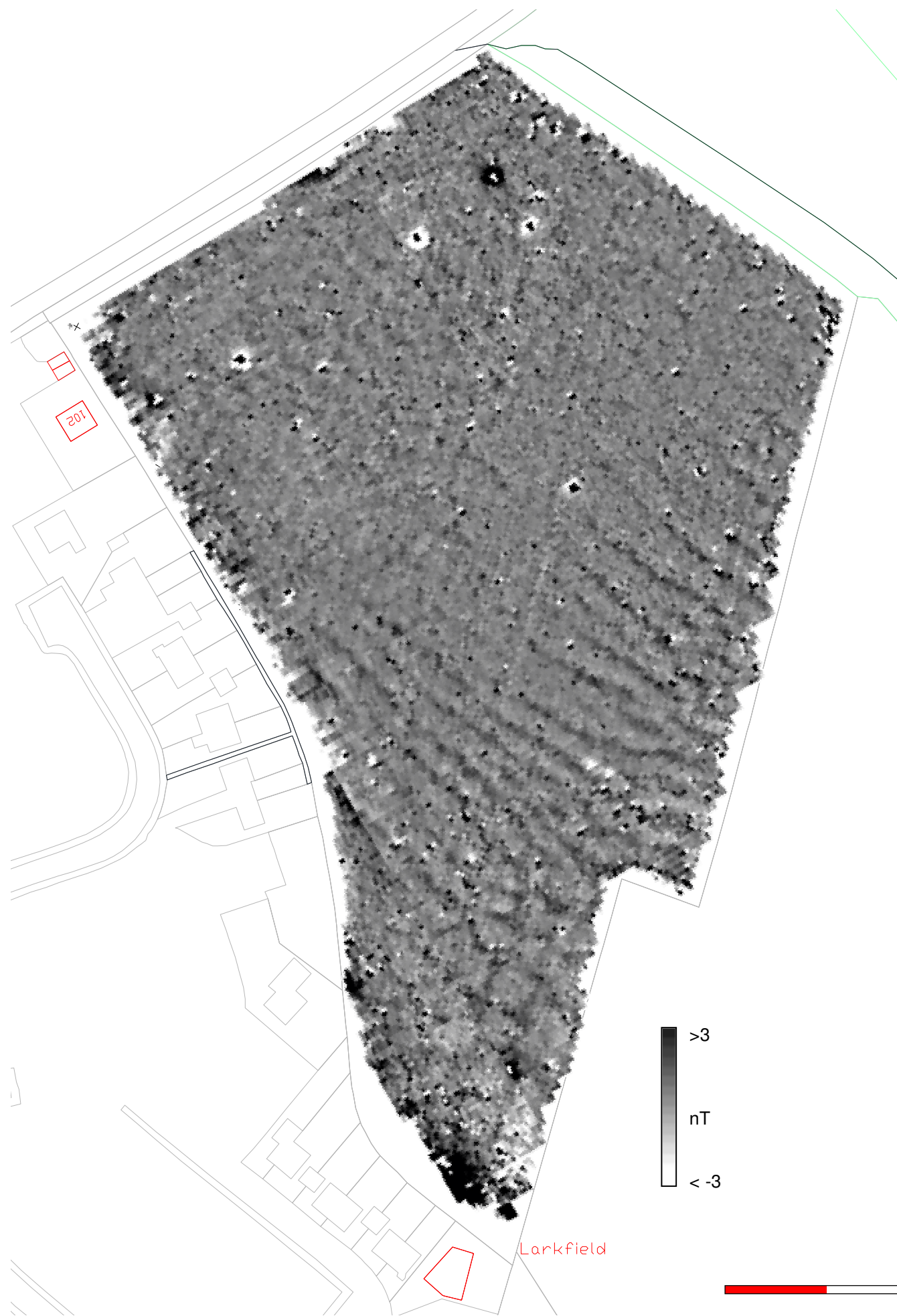


Fig. 2: Greyscale image of processed data

█ >Predominantly modern (rubble, metal objects/fencing etc)
█ Predominantly natural, although archaeological remains typically produce weak magnetic anomalies within this range (e.g. ditches/pits). Exceptions include fired material (e.g. tile/pottery, kilns, hearths and other sites subject to intense heat).
█ < Predominantly modern (rubble, metal objects/fencing etc)

● Potential pit
⋯ Potential R & F
— Probable modern cultivation
 BH Bore hole

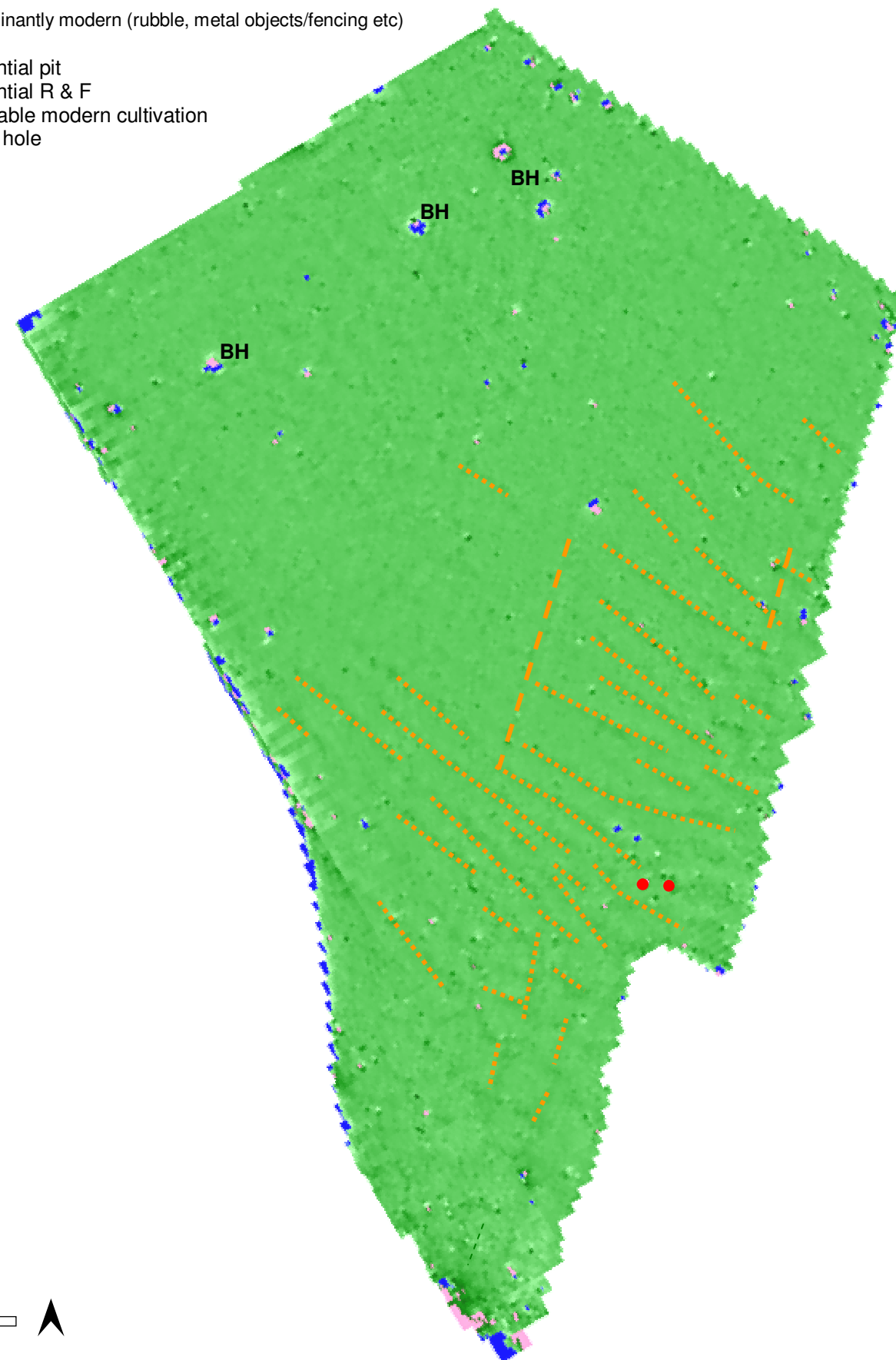


Fig.3: Interpretation

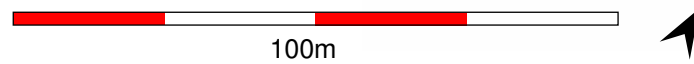
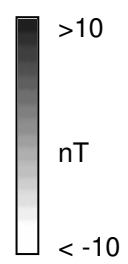
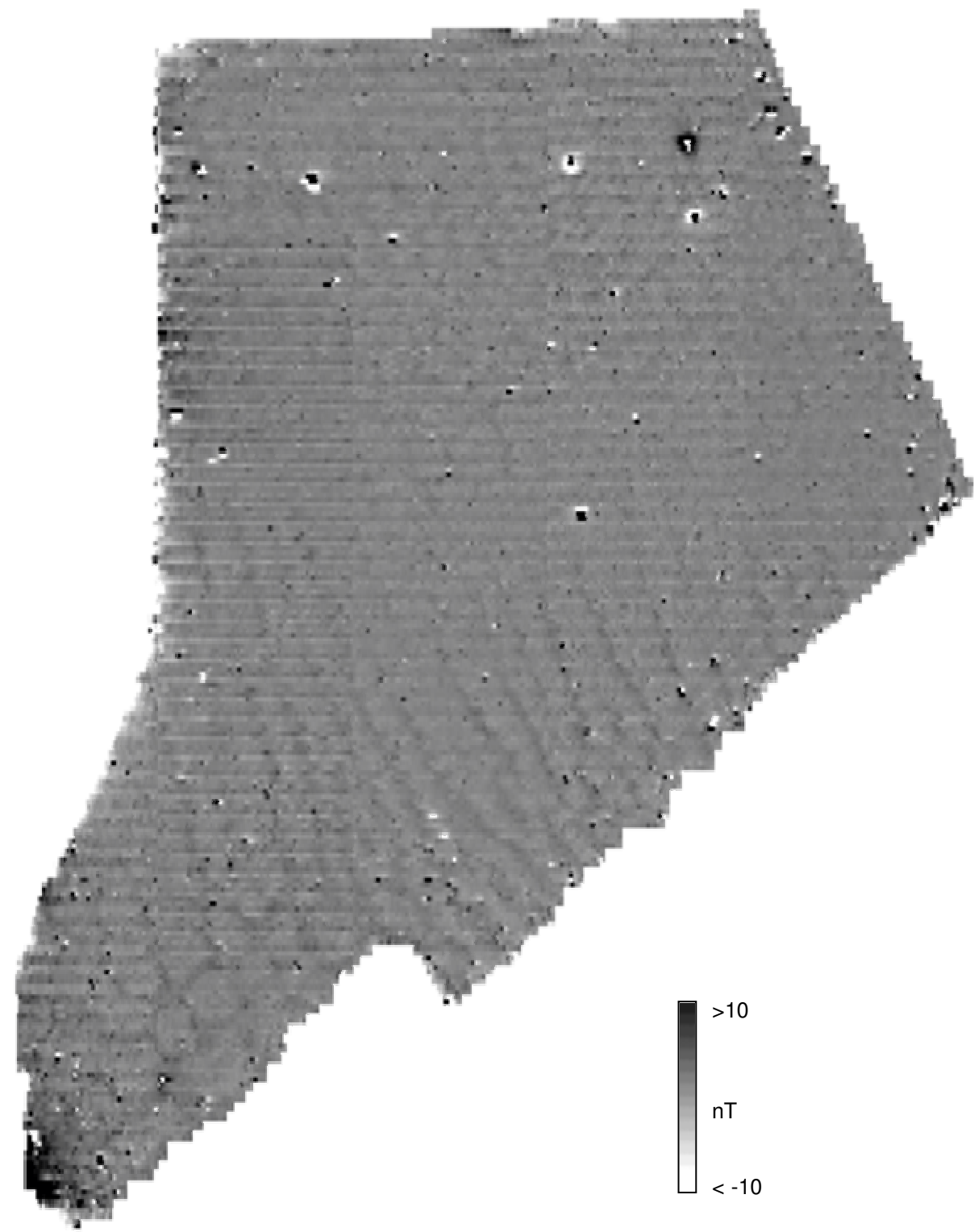


Fig. 4: Greyscale image of unprocessed data

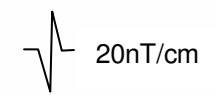
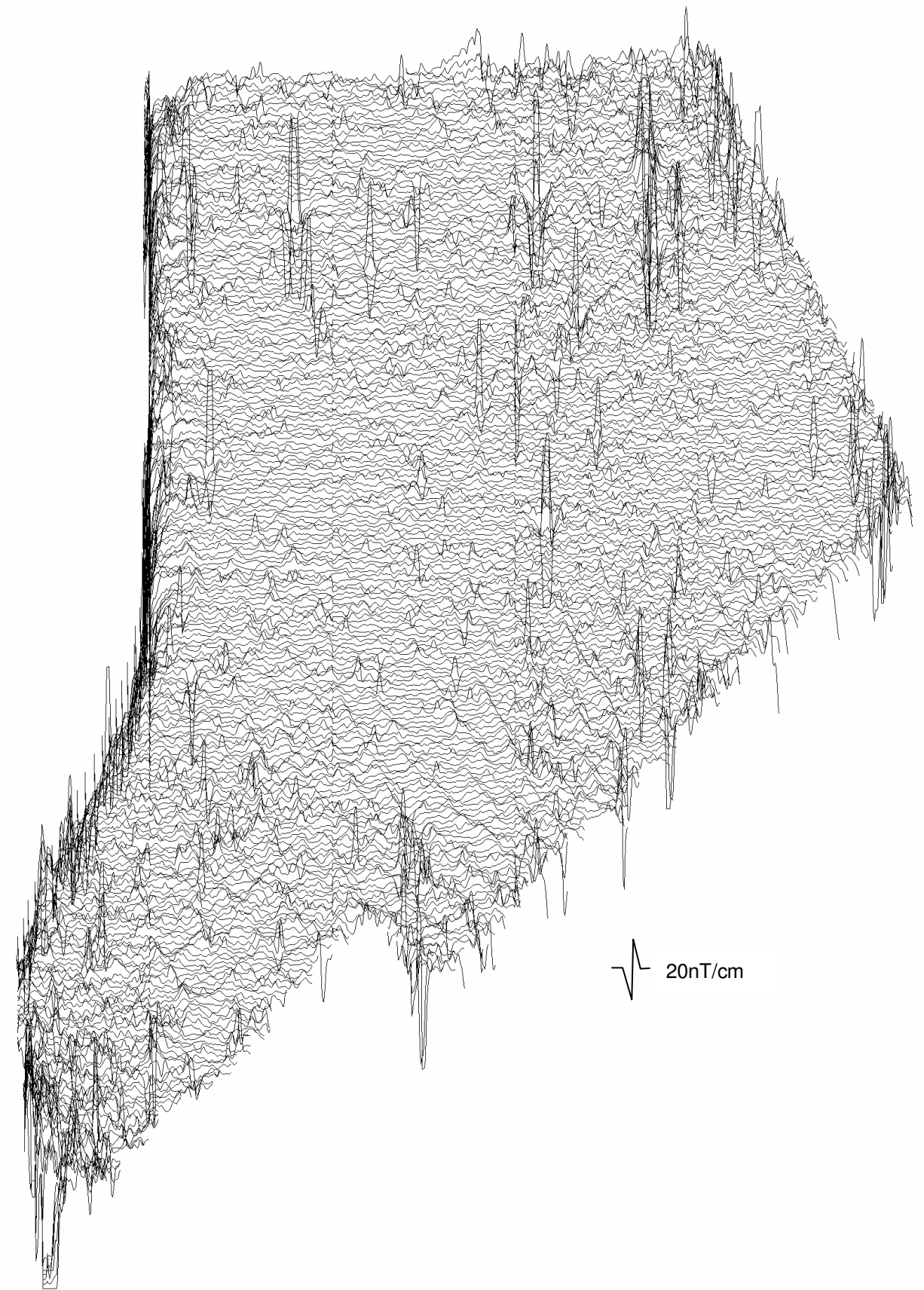


Fig. 5: Trace plot image