Survey Commissioned
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Surveyed
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Hen Ysgol Hendre
Geophysical Survey

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EAS Client Report 2015/05

CONTENTS

NGR

Centred on

Area 1:	***SH 48603 62064***
Area 2:	***SH 48688 62037***

Location and Topography (Figures 1 and 2)

Two areas within the grounds of the disused Ysgol Hendre, Ffordd Eryri, Caernarfon were surveyed. Area 1 was a relatively small area to the west of the site of the old school buildings; whilst Area 2 was the site of the school playing fields. These formed a rough triangle to the south of the site. Both areas were flat and were covered by relatively short vegetation derived from their original use as playing fields.

Archaeological Background

The survey areas lie within an area of high archaeological potential. The Roman legionary fort of Segontium lies only 250 m NNE from the disused school. The area is known to have a high level of Roman activity with a vicus and possible cemetery. Indeed Roman burials have been reported to have been discovered in the modern cemetery on the opposite side of Ffordd Eryri from the school (http://www.cofiadurcahcymru.org.uk/arch/query/page.php?prn=GAT3092).

The site is also within the medieval township of Llanbeblig, being only 200 m SW of the medieval church of St. Peblig .

Aims of Survey

To investigate the archaeological potential of two areas within the grounds of the disused school of Ysgol Hendre and to locate any modern services crossing the survey areas.

SUMMARY OF RESULTS

Two highly magnetic linear anomalies were located which are assumed to be the result of modern services crossing the survey areas. A limited number of other high magnetic anomalies were also defined relating to modern activity on the site.

Four, very feint, linear anomalies may be related to archaeological activity on the site.

Methods

The Fluxgate Gradiometer survey was undertaken using parts of eighteen 20 x 20 m grid squares laid out as in Figure 2. Readings were taken at 0.5 m intervals along transects 1 m apart. These transects were walked in a zigzag pattern.

The survey was carried out using a Geoscan FM 36 Fluxgate Gradiometer with a ST 1 sample trigger. Grey Scale and X - Y Plots were produced using Geoscan Research "Geoplot" v.3.00v and X - Y plots using Golden Software "Surfer" v. 10.7.973.

Survey Results:

Area

The total area of survey was approximately 5452 m^2. This consist of two blocks, Area 1 consisting of approximately 1096 m^2 and Area 2 of 4356 m^2.

Display

The results are displayed as Grey Scale Image and as X-Y Trace Plots (Figures 3, 4, 6 and 7). An interpretation is shown on Figures 5 and 8 and the results are summarised on Figure 9

Results:

Area 1

The grey scale plot of Area 1 (Figure 3) is dominated by a highly magnetic anomaly (Anomaly A, Figure 5) which crosses the survey area in a north-south direction. This is likely to be the result of a modern service, possibly a metal pipe or electricity supply. The presence of metal fencing around three sides of the survey area has led to a broad band of magnetic disturbance (Anomaly B).

Area 2

Area 2 also contains a number of highly magnetic anomalies. Anomaly C (Figure 8) runs from the southern corner of the site to the corner of the hardstand surrounding the now demolished buildings. The character of this anomaly would suggest that it is a modern service, possibly with a metal pipe. At its northern end there is an area of high magnetic disturbance, at least 16 x 10 m in size which may be the result of a manhole or other inspection pit.

Anomaly D consists of two areas of high magnetic disturbance each approximately 2 m in diameter and 5.3 m apart. These are likely to mark metal supports for goal posts within the playing fields. Anomaly E, however has no clear interpretation; it is an area 3.5 m in diameter with readings up to 50 nT. Whilst this may be the result of an archaeological feature with a burnt deposit, such as a hearth, it is more likely to be the result of a metal object within the topsoil.

The metal fences around three sides of the survey area have also had an effect on the plots giving a broad band of magnetic disturbance shown as Anomaly F on Figure 8.

A limited number of very feint linear anomalies have also been recorded which are more likely to be the result of archaeological activity. Anomaly G is a small arc, approximately 6 m in diameter, the response for which is cut by that of Anomaly C. It is not known if Anomaly G originally formed a complete circle. Another curvilinear anomaly (Anomaly H) defines a much bigger area (approximately 17 x 14 m), although its function is unknown. Two straight linear anomalies (Anomalies I and J) appear to relate to each other forming a rough right angle. The alignment of these anomalies does not conform to the current site layout and therefore may relate to a previous land division.

Conclusions

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

The plots from Ysgol Hendre have relatively high standard deviations suggesting a level of magnetic variability across the site, probably related to the use of the survey areas as playing fields and the potential for modern disturbance. The presence of metal fences and highly magnetic anomalies have also added to the wide spread of readings recorded. The two highly magnetic anomalies are likely to be modern services, each probably with an iron pipe and Anomaly D is probably the site of the goal posts.

It has been possible, however to define a limited number of feint anomalies which probably reflect archaeological activity on the site. The function of these are unknown, however they appear to relate to a different orientation to the current layout. One possibility is that the curvilinear anomalies (Anomalies G and H) may relate to cemetery feature. Whilst no possible graves have been detected, these features are notoriously difficult it detect, even in ideal condition. Given the record of Roman burial from the modern cemetery opposite, the potential for Roman burial within the survey area cannot be discounted

Acknowledgements

The work was commissioned by Elfyn G. Jones for Gwynedd County Council.

Techniques of Geophysical Survey:

Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remenance which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

Resistivity:

This relies on variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than Magnetometry this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

Resistance Tomography

Builds up a vertical profile or pseudosection through deposits by taking resistivity readings along a transect using a range of different probe spacings

Magnetic Susceptibility:

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

Instrumentation:

1. Fluxgate Gradiometer - Geoscan FM36

2. Resistance Meter - Geoscan RM4/DL10

3. Magnetic Susceptibility Meter - Bartington MS2

4. Geopulse Imager 25 - Campus

Methodology:

For Gradiometer and Resistivity Survey 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged at either 0.5m or 1m intervals along traverses 1m apart. Resistance meter readings are logged at 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For scanning transects are laid out at 10m intervals. Any anomalies noticed are where possible traced and recorded on the location plan.

For Magnetic Susceptibility survey a large grid is laid out and readings logged at 20m intervals along traverses 20m apart, data is again configured and analysed on a laptop computer.

Copyright:

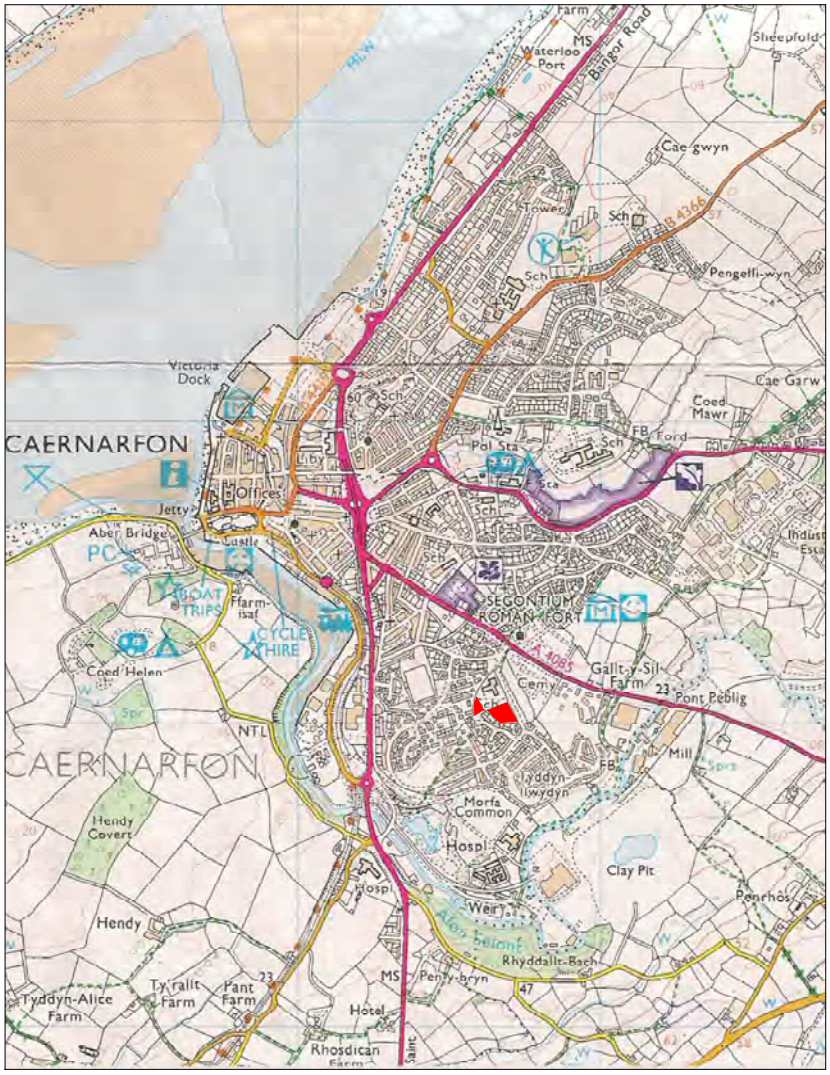


Figure 1: Location
Scale 1:25,000

Figure 2: Location of Survey Areas
Scale 1:1000

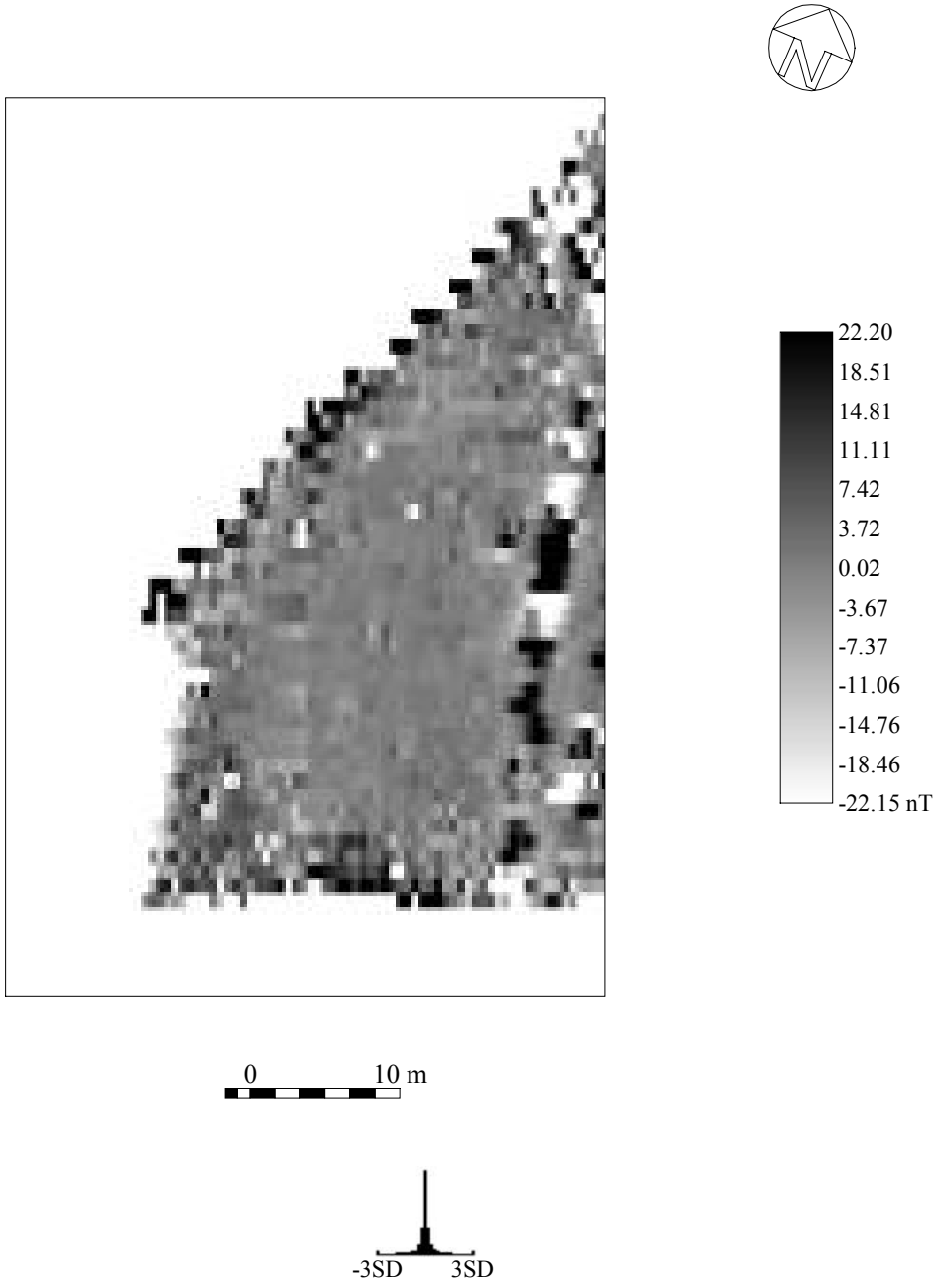


Figure 3: Area 1, Grey Scale Plot
Scale 1:500

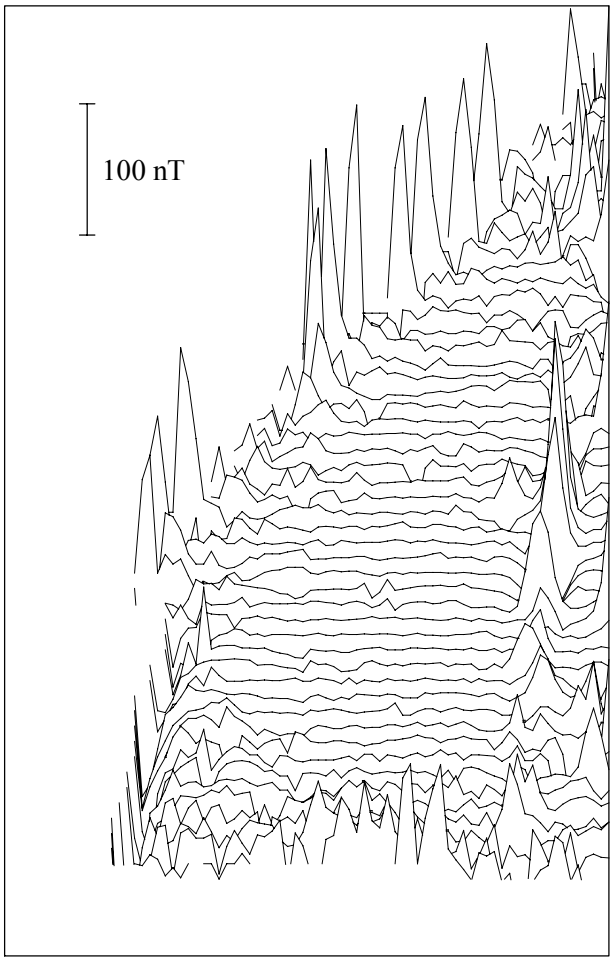
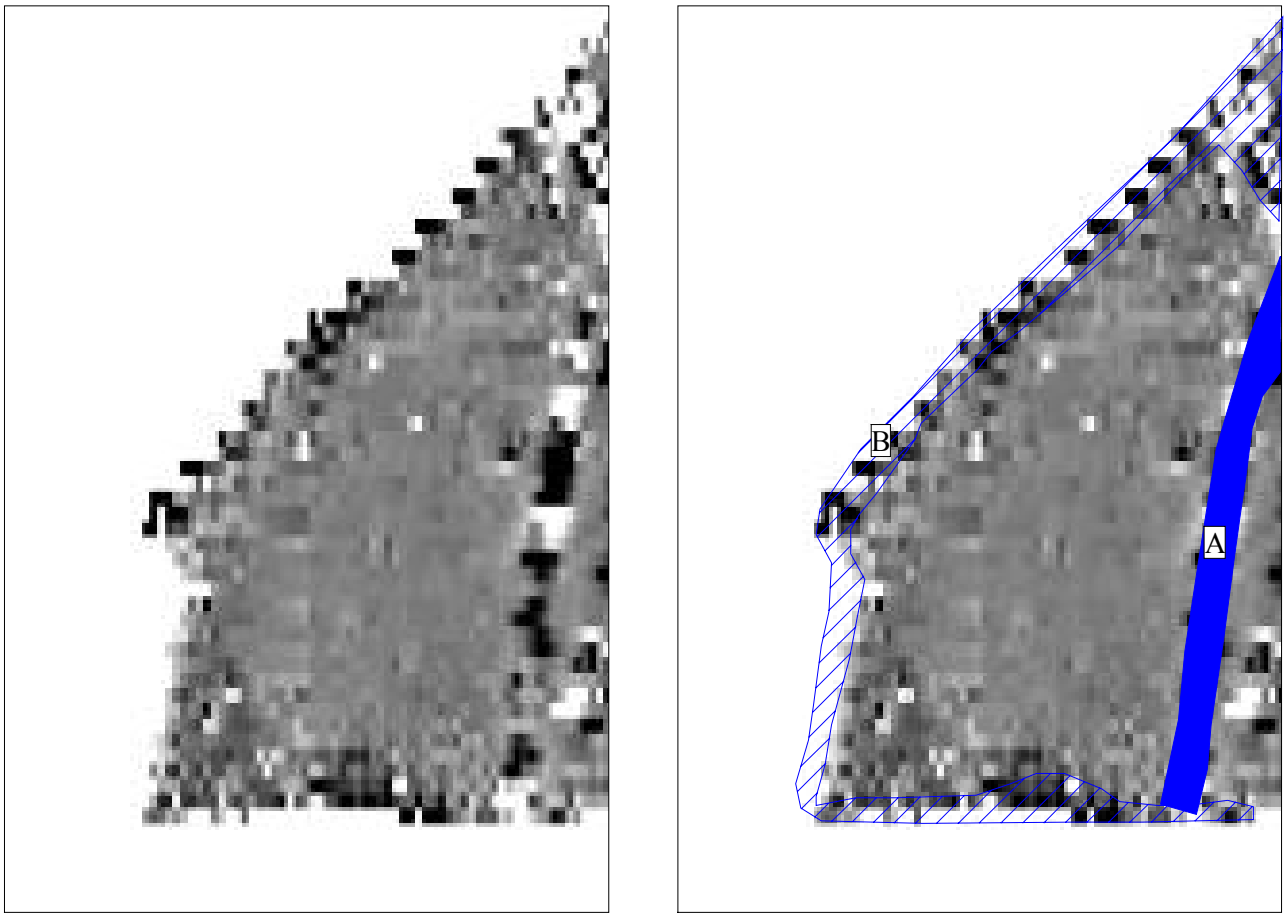


Figure 4: Area 1, X-Y Plot
Scale 1:500



Ferromagnetic response to metal fences

Ferromagnetic responses

Figure 5: Area 1, Interpretation
Scale 1:500

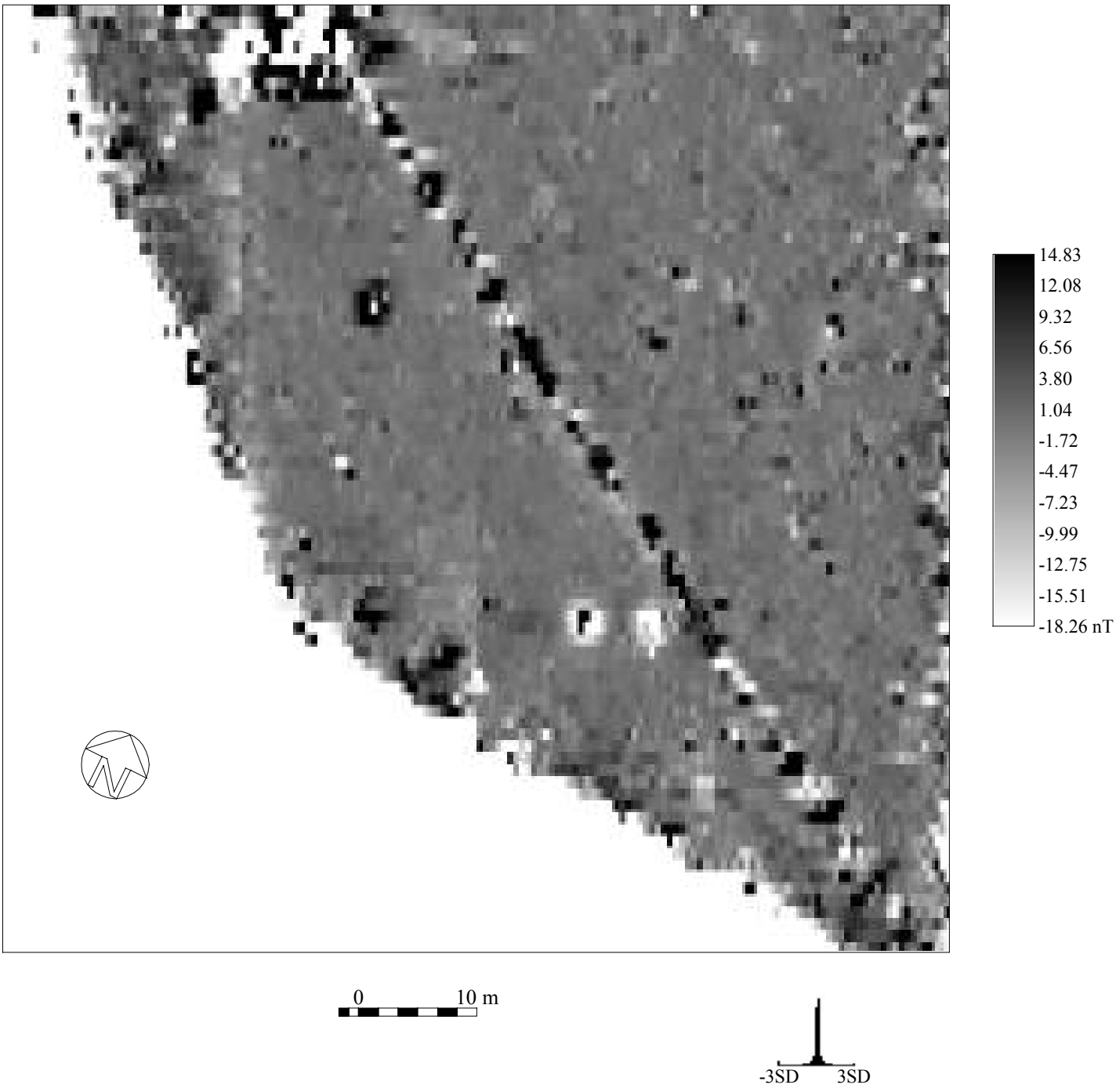


Figure 6: Area 2, Grey Scale Plot
Scale 1:500

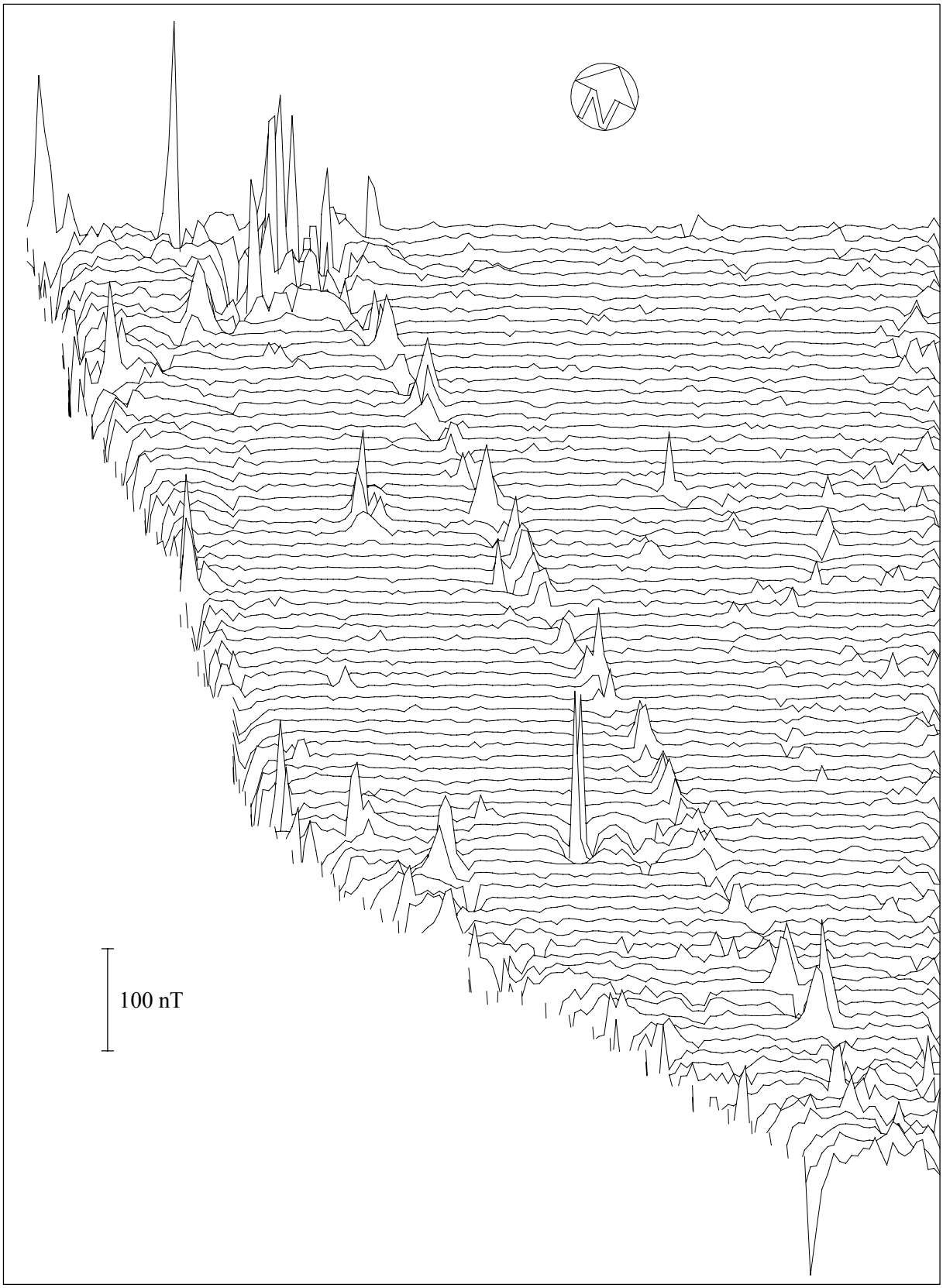


Figure 7: Area 2, X-Y Plot

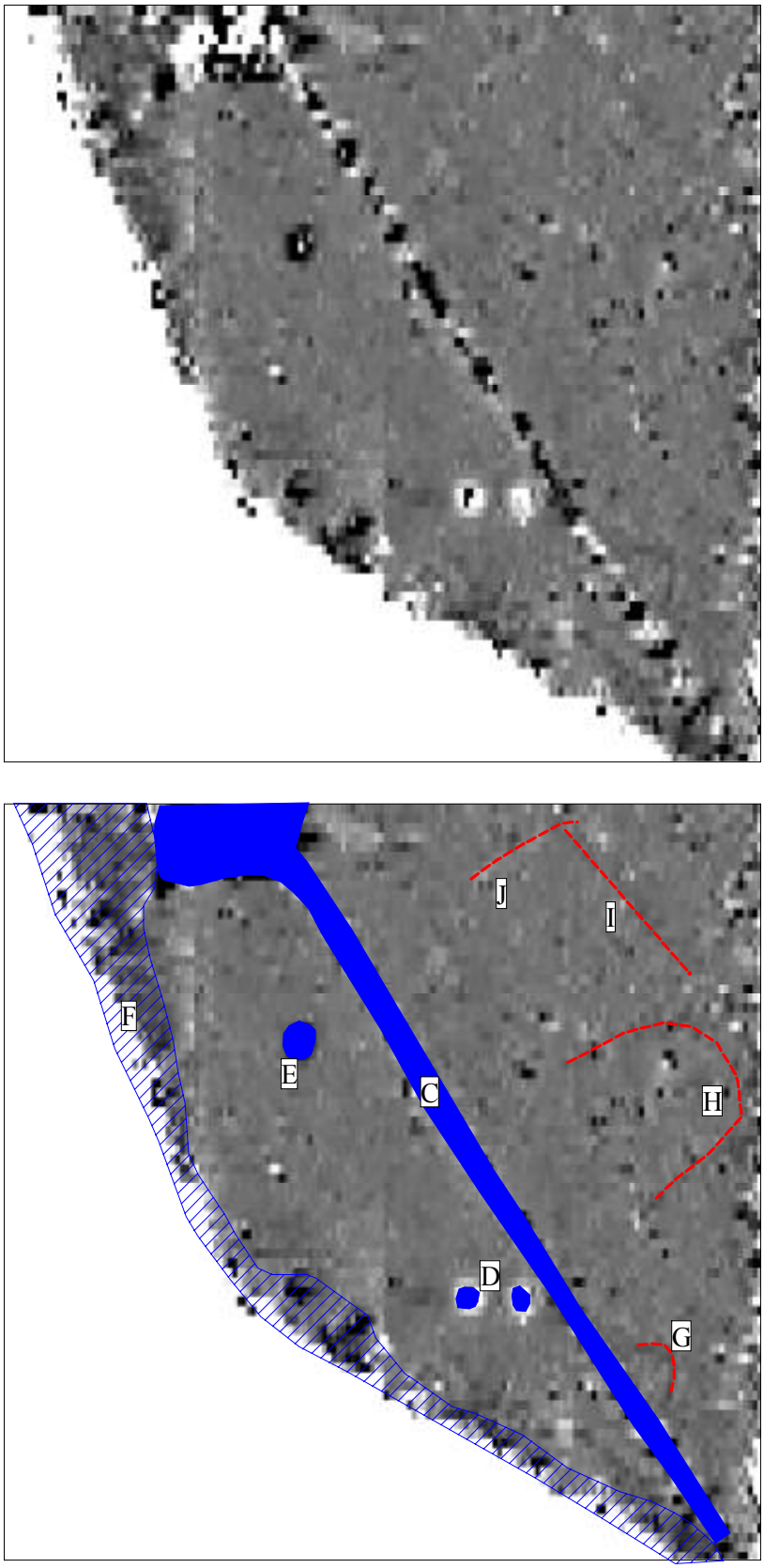


Figure 8: Area 2, Interpretation
Scale 1:750

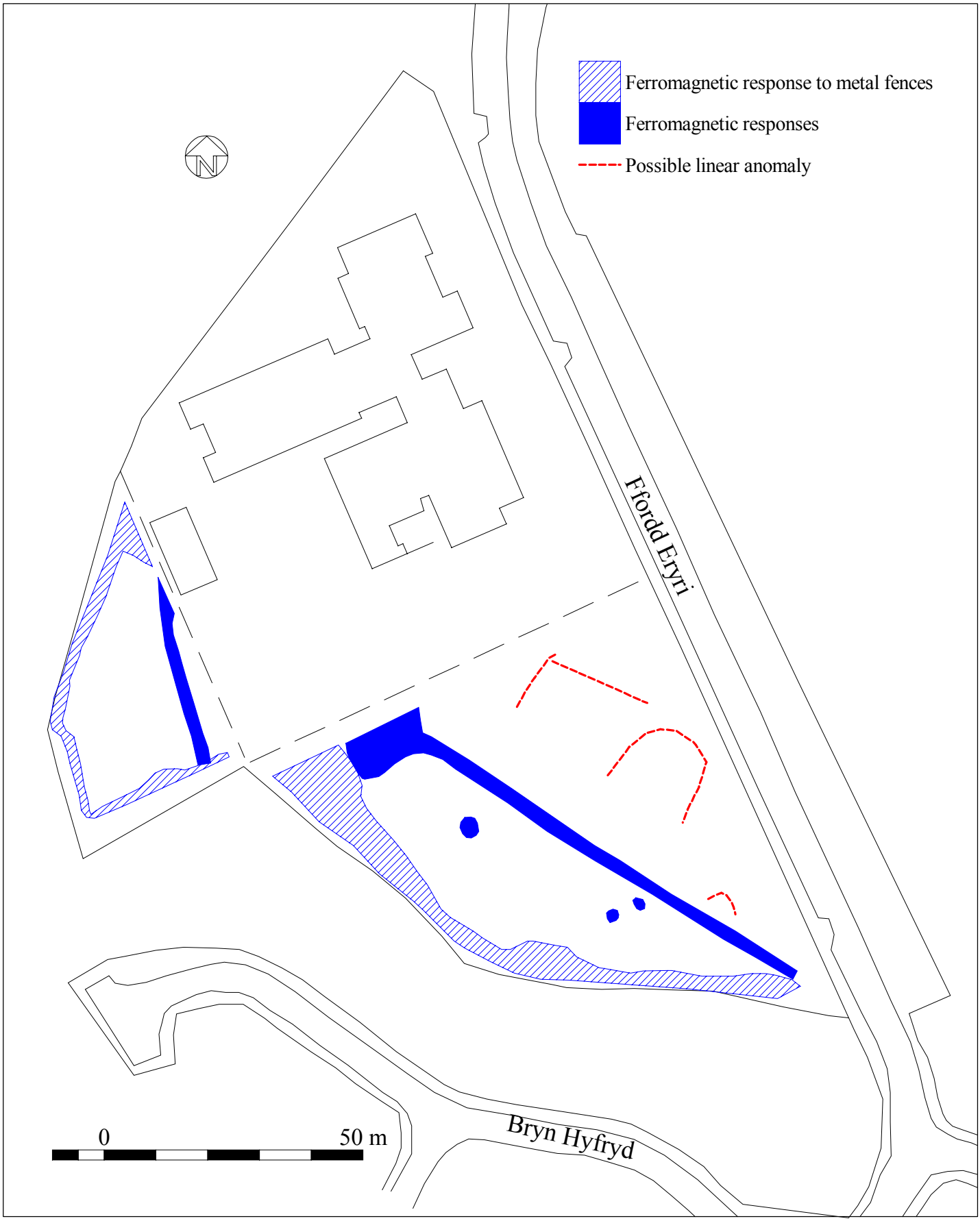


Figure 9: Summary
Scale 1:1000