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Engineering Archaeological Services Ltd.

Caernarfon Town Football Club Football Pitch:

Geophysical Survey

Commissioned by

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The Cymru Football Foundation

Analysis by

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Engineering Archaeological Services Ltd

EAS Client Report 2025/06

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NGR

Centred on: SH 48409 62136

EVENT PRN: 49232

NPRN: 415114

Location and Topography (Figures 1 and 2)

The survey area consisted of the football pitch at The Oval, the home grounds for the Caernarfon Town Football Club, Marcus Street, Caernarfon, Gwynedd, LL55 2HT. Although appearing roughly flat the pitch slopes down from north to south by approximately 2.6 m (P. Evans *pers. comm*.). It was under well maintained grass with bare, sandy, patches in the goal mouths. Unfortunately, the survey was undertaken during a period of warm, dry weather and the pitch surface was compacted, both of which were factors making it difficult to get good contact with the soil.

The fieldwork took place on 7/5/2025 and 10/5/2025.

Archaeological Background

In order to comply with European regulations Caernarfon Town Football Club wish to upgrade and re-build of the existing stadium pitch (Planning Ref. C25/0245/14/LL). The 1841 Tithe map (https://places.library.wales/browse/53.134/-4.267/16.4?location Name=Caernarfon%2C+Gwynedd) shows the location of the Oval as two meadows called Cae Pella and Cae Nina (Plots 1504 and 1505) (Figure 3). Both were occupied by John Griffiths and Richard Mathias Preece and owned by Thomas Assheton Smith.

The Oval has been used as a football ground since the late 1880's and although Caernarfon Athletic moved to the site in 1888 (https://coflein.gov.uk/en/site/415114/, https://www.caernarfontownfc.co.uk/en/information/club-history) the Ordnance Survey did not consider it an important enough site to map any specific features until the maps published in 1918 (revised in 1913) (Figures 4 and 5). Indeed the 1889 mapping, surveyed in 1887 still shows the site of the Oval divided into two fields (Figure 4).

By the Edwardian period, the ground had gained a pavilion and by 1937, the Oval had become the home ground of Caernarfon Town Football Club and it has remained in use ever since.

The site, however, sits within a landscape with a much older history, sited only 215 m from the Roman fortlet/supply depot of Hen Walia and 180 m from the 1st – 3rd century AD Roman fort of Segontium. The Ordnance Survey mapping Carnarvon - Carnarvonshire XV.4.19, published in 1889 and printed at 1:500 shows Roman walling, the site of a building and a furnace between Segontium, itself and the site of the, later, football pitch.

Aims of Survey

1. To record any geophysical anomalies within the survey area which may be related to archaeological activity.

SUMMARY OF RESULTS

A resistivity survey of the football pitch at The Oval, Caernarfon, the grounds of Caernarfon Town Football Club, was commissioned by Cymru Football Foundation from Engineering Archaeological Services Ltd. in advance of the upgrade and re-build of the existing stadium pitch (Planning Ref. C25/0245/14/LL). Conditions for the survey were not ideal; however, a limited number of anomalies were located, none of which appears to be obviously related to archaeological activity. The fieldwork took place on 7/5/2025 and 10/5/2025.

Comisiynwyd arolwg resistivity o gae pêl-droed yr Oval, Caernarfon, sef cae chwarae Clwb Pêl-droed Tref Caernarfon, gan Sefydliad Pêl-droed Cymru gan Engineering Archaeological Services Ltd. cyn uwchraddio ac ailadeiladu cae presennol y stadiwm (Cyf. Cynllunio C25/0245/14/LL). Nid oedd yr amodau ar gyfer yr arolwg yn ddelfrydol; fodd bynnag, daethpwyd o hyd i nifer gyfyngedig o anomaleddau, ac nid yw'n ymddangos bod yr un ohonynt yn gysylltiedig yn amlwg â gweithgaredd archaeolegol. Gwnaed y gwaith maes ar 7/5/2025 a 10/5/2025.

Methods

The survey was based on a series of fifteen, 20 x 20 m squares laid out as in Figure 2. Readings were taken with a Geoscan RM15 resistance meter with a MXP15 multiplexer, using a parallel twin probe setting resulting in a 0.5 m sample interval along transects 1 m apart. The surveys were downloaded onto a laptop, on site, and processed using Geoscan Research "Geoplot" v.4.00. The X - Y plots were produced by exporting the data and processing it using Golden Software "Surfer" v. 10.7.972.

Survey Results:

Area

0.6 Ha

Display

The results are displayed as a grey scale image (Figures 6) and as a X-Y trace plot (Figure 7). The interpretation plot is shown as Figures 8 and the survey, as a whole, is summarised on Figure 9.

Results (Figure 8)

Only a limited number of resistance anomalies were located within the survey area, even fewer which appear to, obviously, have an archaeological origin. Two linear anomalies (Anomalies A and B, Figure 8) can be seen as the response to the pitch markings. The paint used for the marking appears to have increased the moisture of the underlying soil giving rise to the anomalies.

There are three areas of enhanced resistance occur in the southern sector of the survey. Two of these (Anomalies C and D) appear to relate to the pitch marking, whilst Anomaly E covers a much larger area (30 x 13 m), but cannot be directly related to any modern feature. It would seem likely that this anomaly may be related to variability within the underlying till deposits (https://geologyviewer.bgs.ac.uk/), or possible material dumped to raise this corner of the pitch. There are also three areas of reduced resistance within the survey. Anomaly F runs

along the southern touchline and becomes wider around the goal mouth. This anomaly is probably related to the wear of the touchline, particularly in the goal mouth and its relationship to the maintenance of the pitch.

A large area of reduce resistance occupies the central area of the survey (Anomaly H) which may be related to an, adjacent area of mixed responses (Anomaly I). Anomaly H covered an area of 37 x 16 m, whilst Anomaly I was 25 x 23 m in size. The origins of these anomalies are unknown.

There are two anomalies that appear to have more consistent appearances. Anomaly J is an area of high resistance along the western side of the survey, covering an area of 14.5 x 2 m. The full extent of this anomaly is not known as it extends beyond the area of the survey. Anomaly K is a feint, linear anomaly, running in a NE – SW direction. It is probable that this a drain crossing the pitch. Reports from the ground staff suggests there is at least one drain constructed of stone walls capped with slate slabs within the stadium.

Conclusions (Figure 9)

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 dry weather and compact nature of the pitch at The Oval means that the resistivity survey was not undertaken in ideal conditions (Clark 1996, 124). Even so it is somewhat surprising that the technique managed to define the effect of the line paint as reduced resistance anomalies. Also, probably an effect of the current use of the pitch are the reduced resistance anomaly in the goal mouth (Anomaly F) and the enhanced resistance anomalies (Anomalies C and D in the southern goal area.

Whilst it is difficult to assess because of the housing estate that surrounds, two sides of, the stadium, it would appear that the current pitch has been partly dug into the hillside along the eastern side, although it is less clear that the western side may be built up, particularly at its southern end. This would, if true, account for the enhanced resistance anomaly (Anomaly E). The low and mixed response anomalies (Anomalies I and H), however, are of unknown origins, but may reflect variability in the underlying sub soil.

Only Anomalies I and J probably are the responses to man-made features with Anomaly I probably marking the position of a drain. Anomaly J, however, is of unknow origin, but may be related to the stand and boundary wall which are near this point.

References

Clark, A. 1996. *Seeing beneath the soil prospecting methods in archaeology.* Routledge, London

Acknowledgements

This survey was commissioned by Mark Hughes for the Cymru Football Foundation. Thanks are due to P. Evans and the staff at Caernarfon Town Football Club for their support and discussion during the fieldwork. The work was monitored by J. Emmett for the Planning Section of Heneb.

Techniques of Geophysical Survey:

Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remanence 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 pseudo-section 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 FM256

2. Resistance Meter - Geoscan RM15

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 between 0.25m and 1m intervals along traverses 1m apart. Resistance meter readings are logged at 0.5m or 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.

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Figure 1: Location
Scale 1:25,000

Based on Drawing 3335-SL-DR-010-LP-R00 by Sports Labs

Figure 2: Location of the Survey
Scale 1:1,000

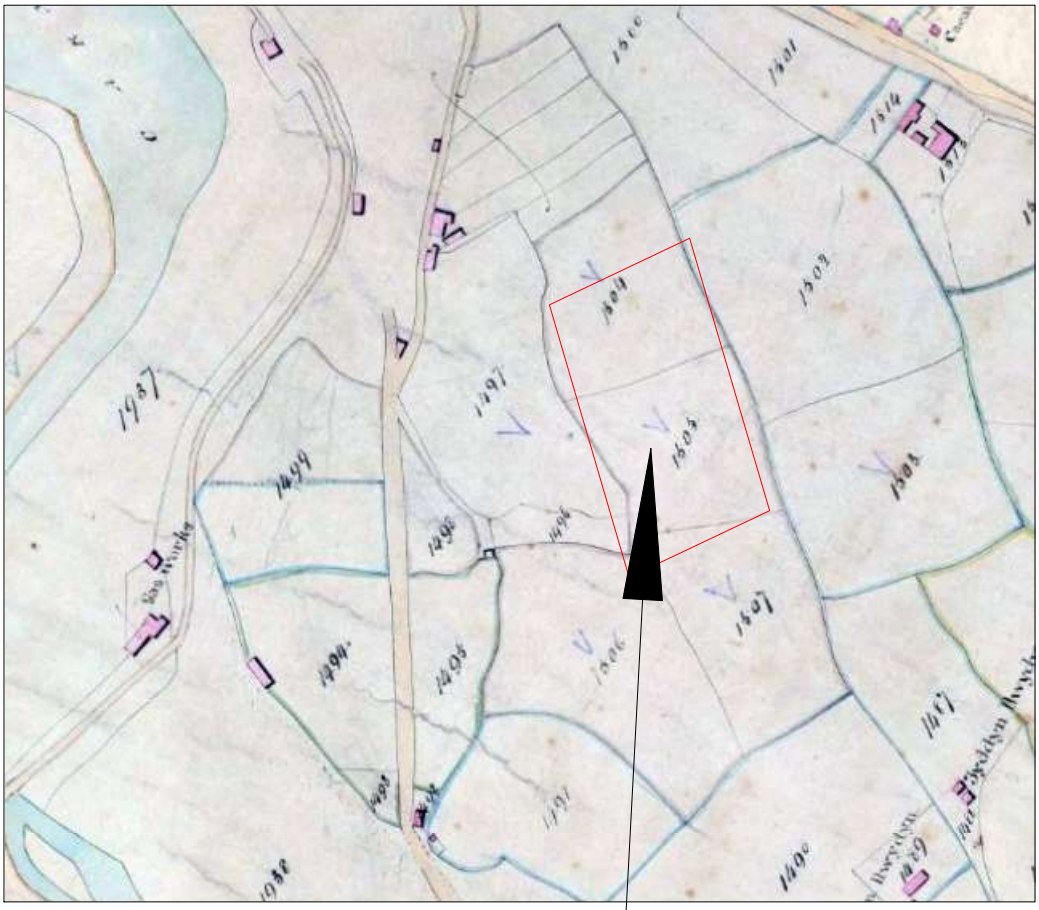
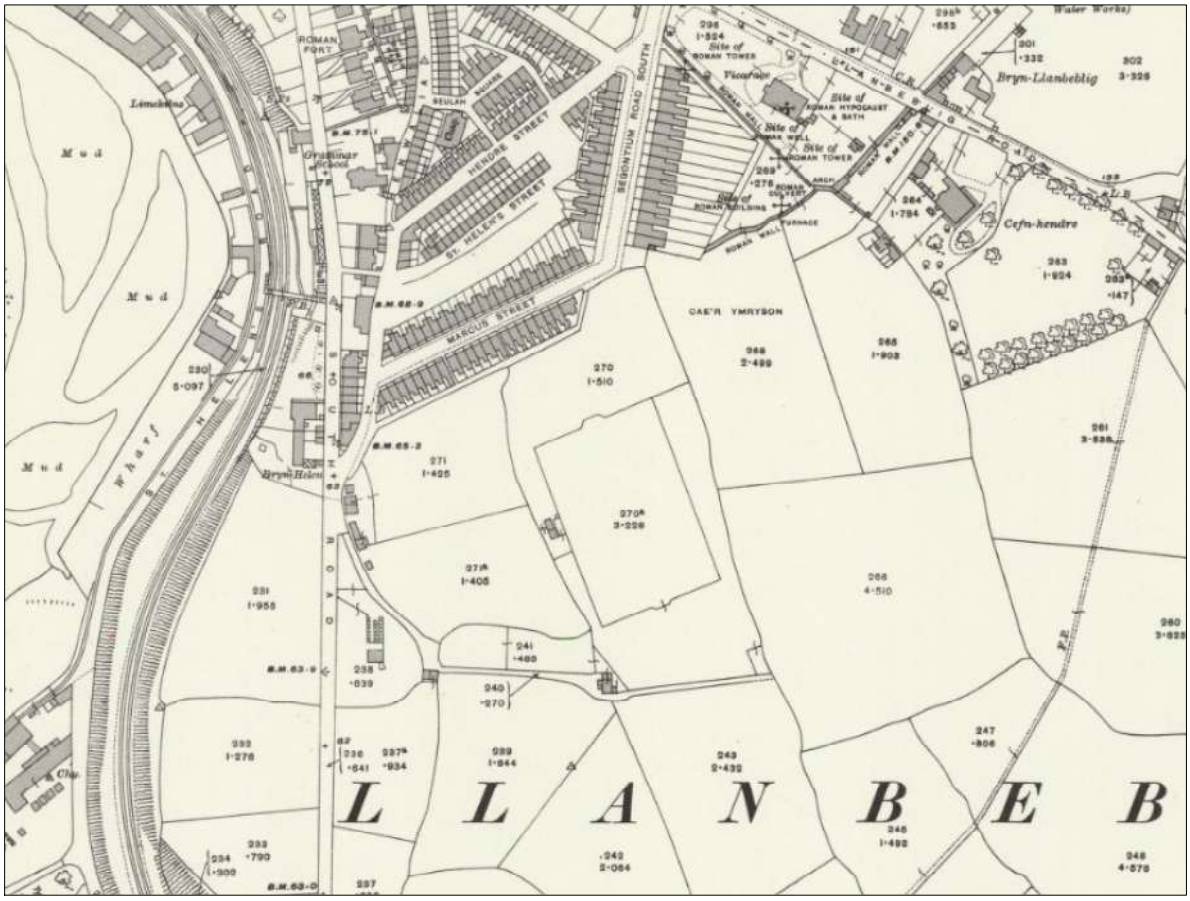
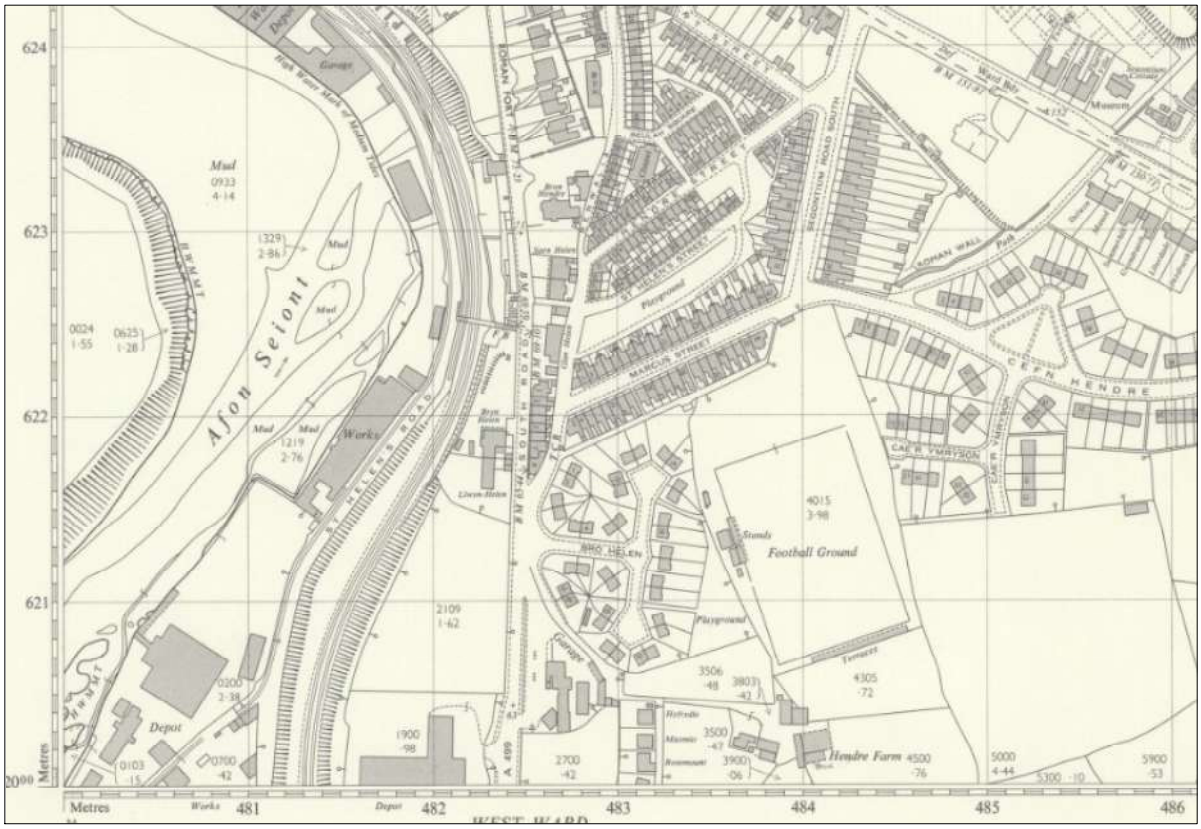


Figure 3: Extract from the 1841 Tithe Map
Not to Scale

Figure 4: Extracts from the Caernarvonshire XV.4.19 and XV.4.24 Maps Published in 1889
Not to Scale



Caernarvon XV.4 Map Published in 1918



SH4862-SH4962 - AA Map Published in 1965

Figure 5: Extracts from the Caernarvonshire XV 4 Map Published in 1918
and SH4862-SH4962 – AA Map Published in 1965
Not to Scale

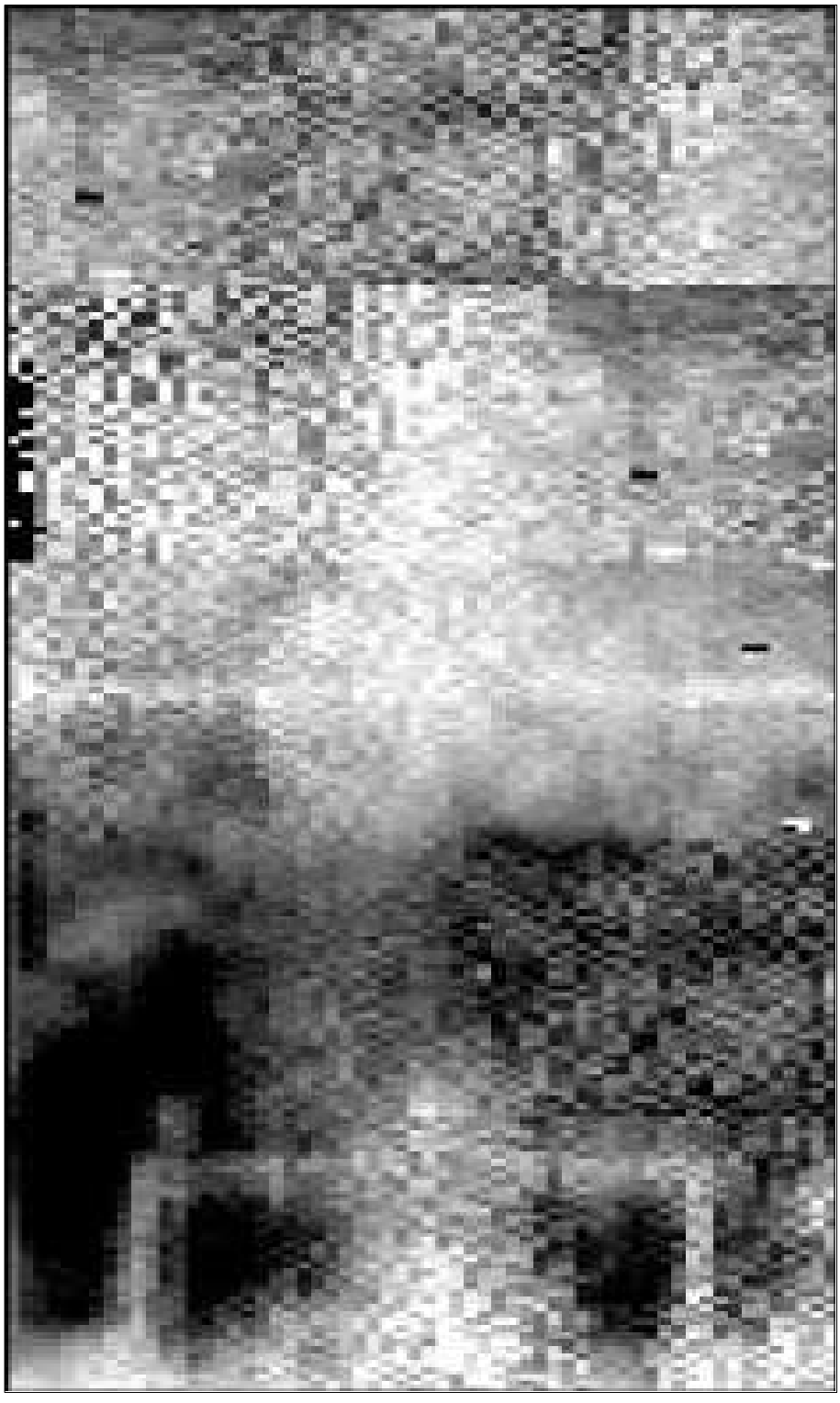


Figure 6: Grey Scale Plot
Scale 1:500

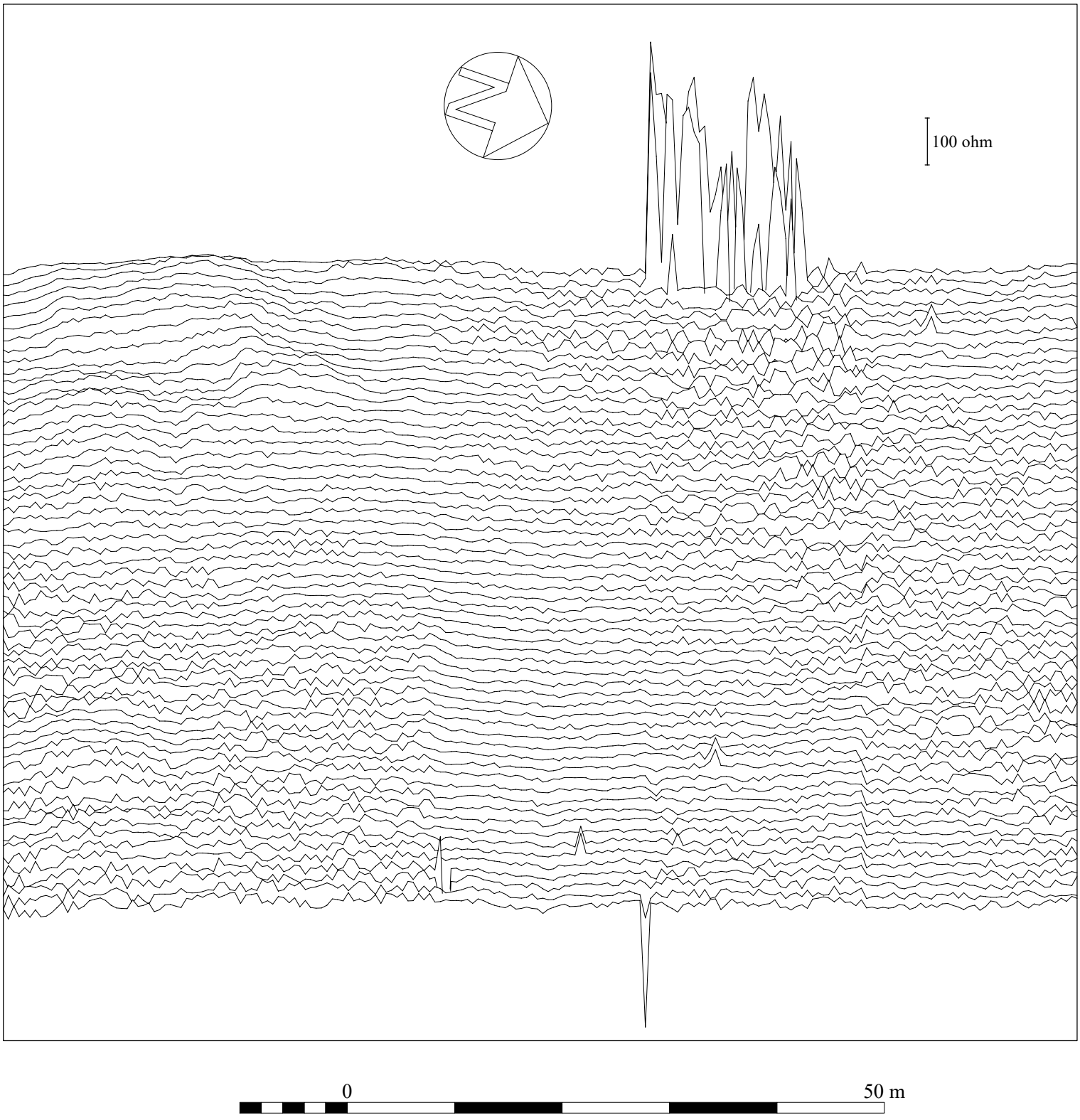


Figure 7: X-Y Plot
Scale 1:500

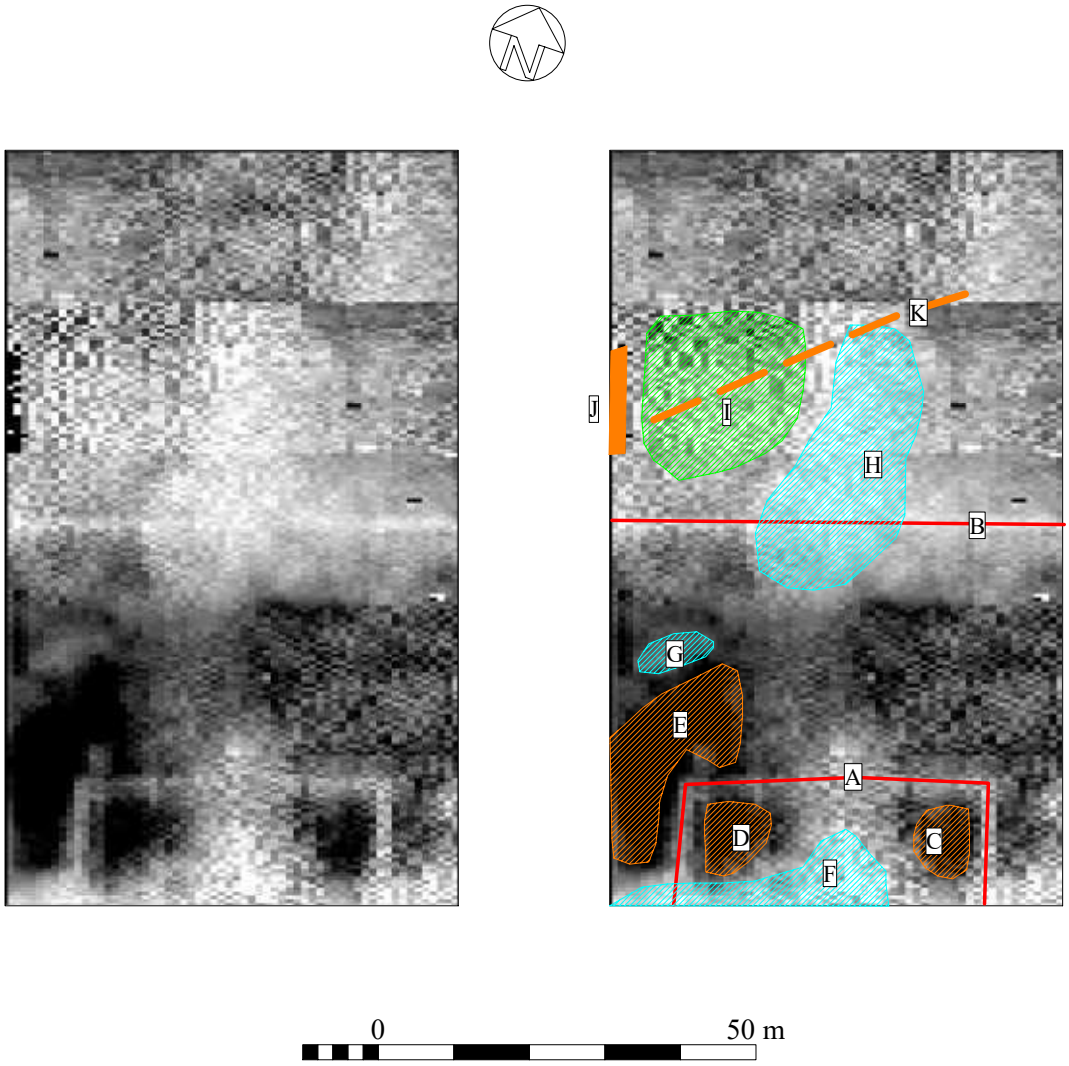


Figure 8: Interpretation
Scale 1:1,000

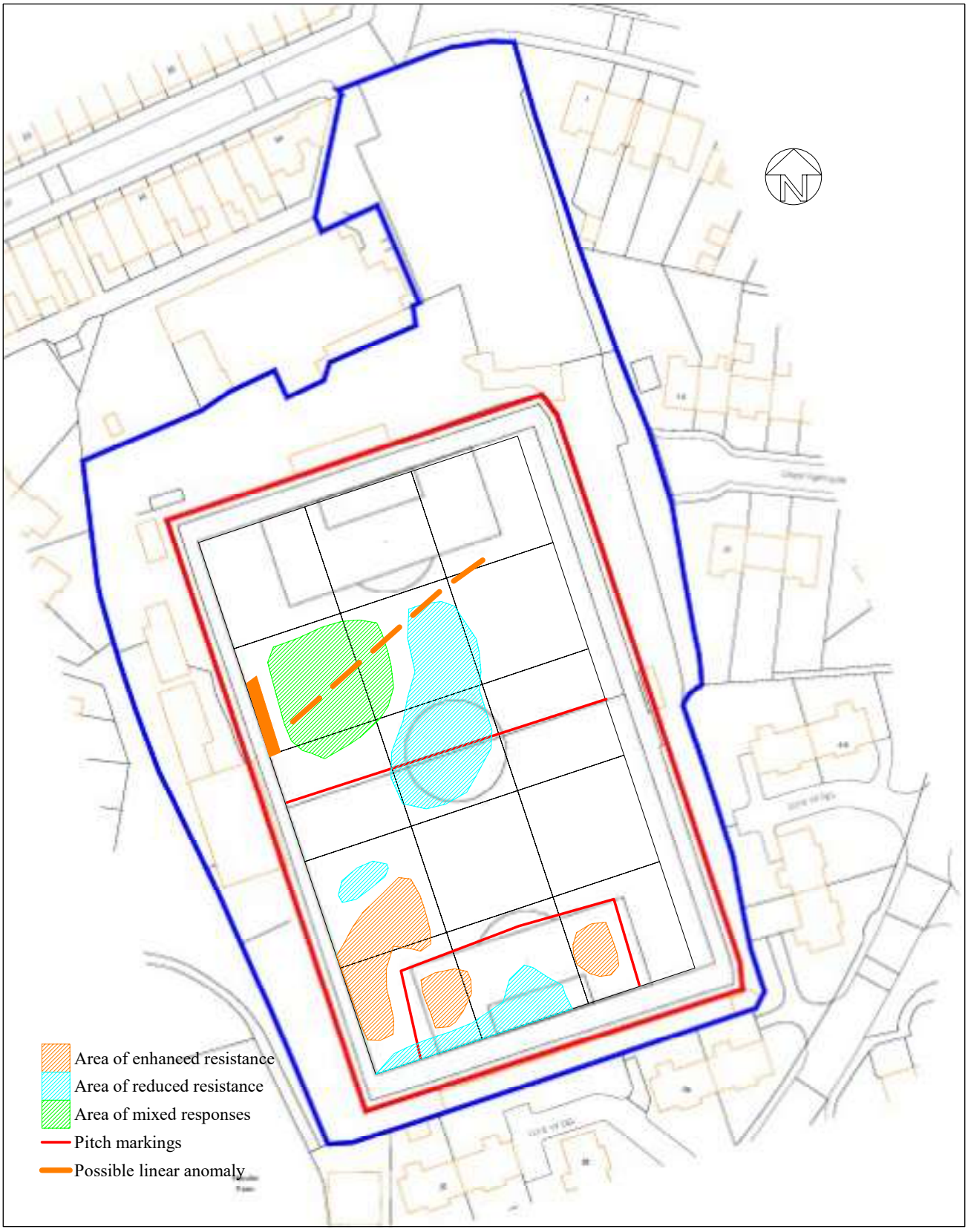


Figure 9: Summary
Scale 1:1,000