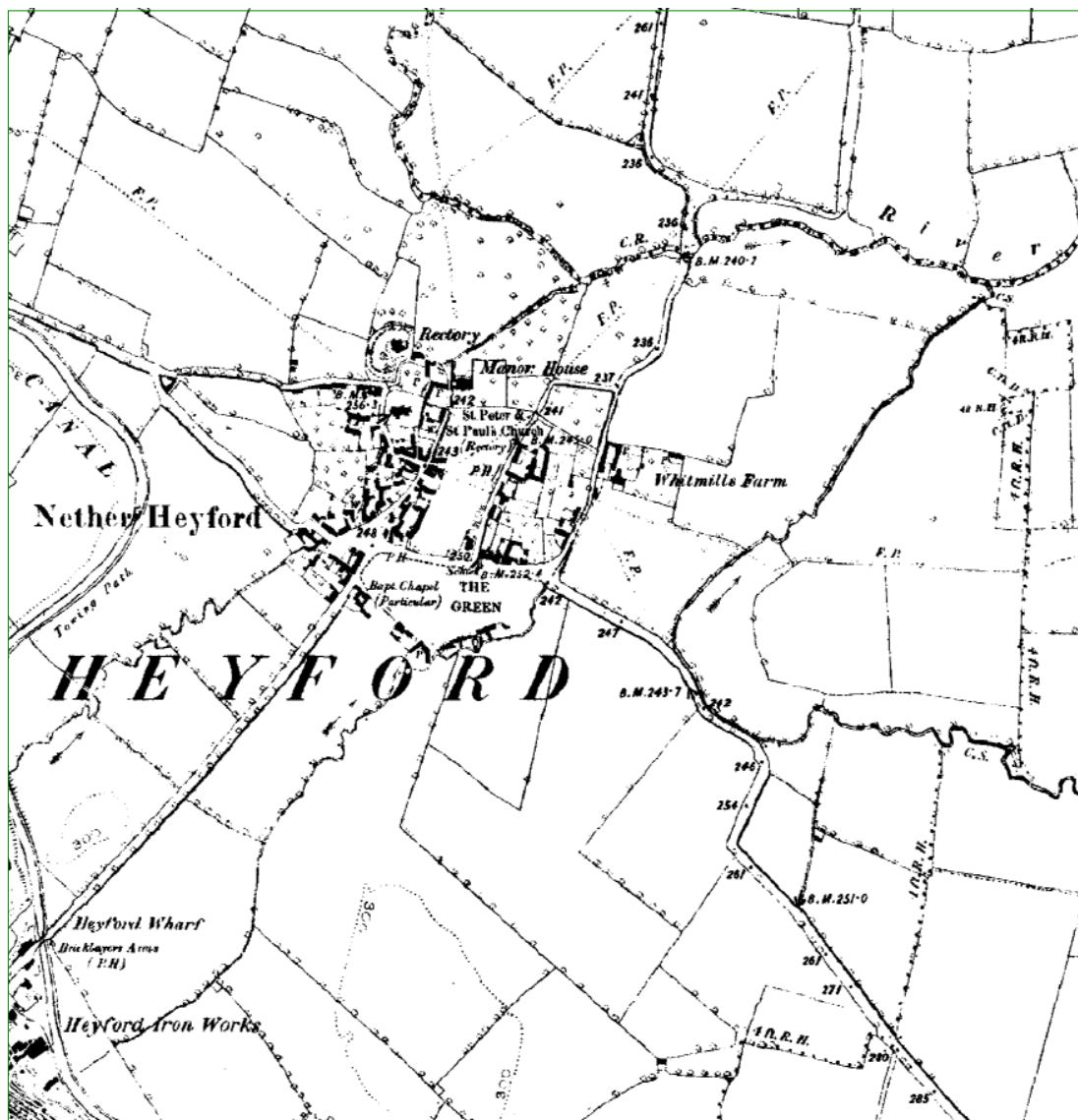


**GEOPHYSICAL SURVEY AT HORSTONE BROOK,  
NETHER HEYFORD, NORTHANTS**



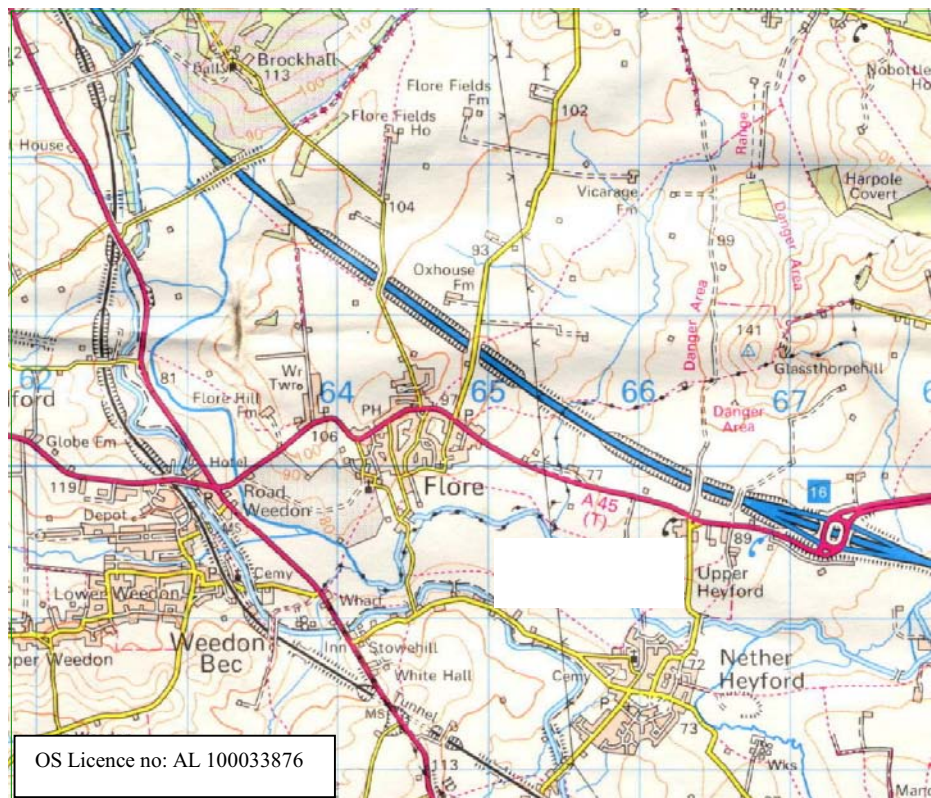
**REPORT PREPARED FOR CLASP**

**BY PETER MASTERS**

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## Summary

- A fluxgate gradiometer survey was undertaken on c.3 hectares of land at Horestone Brook, Nether Heyford, Northamptonshire
- The survey identified the outline remains of the partially excavated Roman Villa; along with probable associated Roman settlement remains.
- A series of regularly spaced linear anomalies aligned north to south indicate traces of medieval ridge and furrow ploughing.
- Traces of former quarrying activity were detected in Area 2.



**Fig.1: Location of site, scale 1:50,000**

## **1.0 Introduction**

Stephen Young, acting on behalf of the Community Landscape and Archaeology Survey Project (CLASP), commissioned Pre-Construct Geophysics to undertake a gradiometer survey on land at Horestone Brook, Nether Heyford, Northamptonshire.

The survey methodology described in this report was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (David, 1995).

## **2.0 Location and description**

The site lies in a flat field at c. 73mOD and is currently under arable cultivation. The geology of the area is comprised of glacial Sands and Gravels overlain by Alluvium close to Horestone Brook (British Geological Survey sheet 185, Northampton, published 1974).

## **3.0 Archaeological and historical background**

The landscape surrounding Nether Heyford is prolific in Roman remains. To the west of the village lies Whitehall Farm Roman villa where extensive coverage by gradiometry has been undertaken as well as subsequent excavation (Masters 1999 & 2000; Whitehall Roman Villa web site). The site is situated c.2km to the north of Watling Street Roman Road (Fig.2).

The site was fieldwalked in 1987 and again in 2000. Over 1000 sherds of Roman pottery, nearly 3000 tesserae and 42 kg of roof tile were recovered. Trial trenching and limited area stripping took place between 1988 and 1990. A roundhouse and elements of a main range, corridor, porch and pavilions were identified.

The earliest remains are associated with a 9m diameter circular stone building erected in the early 2<sup>nd</sup> century AD. The building had two major phases of use, initially for domestic purposes during the 2<sup>nd</sup> to early 3<sup>rd</sup> centuries, and a later phase reflecting an agricultural/industrial function in the mid 3<sup>rd</sup> century AD.

During the mid-3<sup>rd</sup> century, the settlement underwent major redevelopment with the construction of a winged corridor villa complex. There were at least three phases of villa range developments and enhancements, two of which incorporated the round house structure in the overall villa design before that structure was demolished some time in the 4<sup>th</sup> century. A corndrier was inserted into the north-east pavilion along with other evidence, suggests activity continued on the site well into the 5<sup>th</sup> century AD. Finds such as wrist clasps and a brooch clearly supports this chronology.

#### 4.0 Methodology

Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological remains.

The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.

The area survey was conducted using a Bartington Grad – 01 – 1000 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data was processed using *Archeosurveyor v.1*. It was clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal on the site. The results are plotted as greyscale and trace plot images (Fig. 3).

Instrument	Bartington Grad-601
Grid size	30m x 30m
Sample interval	0.25
Traverse interval	1.0m
Traverse method	Zigzag
Sensitivity	0.1nT
Processing software	Archeosurveyor v.1
Weather conditions	Cloudy/rain
Area surveyed	2.6ha
Date of survey	10/09/04
Survey personnel	Peter Masters
Central National Grid Reference	

**Table 1: Summary of survey parameters**

## **5.0 Results (Figs. 3-4)**

Two areas were surveyed: Area 1, located immediately to the southeast of Horestone Brook over the Roman Villa remains, and Area 2, positioned immediately to the south of Area 1 in order to investigate the extent of former quarrying activity and survival of archaeological remains (Fig. 3).

Evidence of truncated ridge and furrow was detected in both areas. The furrows appear as a series of parallel linear anomalies (orange lines) running in a north to south direction, which appear to traverse a number of underlying archaeological features.

Other anomalies detected in Areas 1 and 2 of an isolated nature (circled pink) indicate modern ferrous-like remains such as horseshoes and other modern debris (a number lie close to the modern field boundary where an existing footpath runs parallel to it).

### **Area 1**

The survey covered the partially excavated remains of Horestone Roman Villa, and the results produced an exceptional response, showing the outline of wall foundations as negative anomalies (also known as a 'depleted' magnetic field) (Fig. 4, 1). A negative response to the walls of building remains is due to the low magnetic susceptibility of surviving limestone footings.

Within the broader structural outlines, individual rooms are discernible within the resultant plot. This floor plan reflects a typical Roman winged- corridor villa: a long passage with rooms opening off from it. At its north end is a circular shaped anomaly similar to that excavated at the southern end (Figs 3 & 4, 2). This denotes the remains of a roundhouse predating the villa (Stephen Young pers comm.), which later became incorporated into the main building complex. Traces of the excavation are shown in the resultant plot as an anomalous zone of magnetic variation that gives no discernible underlying pattern (Fig. 4, 3).

The gradiometer survey has not clearly located the corndrier, which was excavated in the northeast pavilion. This area contains a magnetic anomaly (Fig. 4, 4); the magnetic signature of which does not resemble a typical double peak denoting such a feature.

To the south of the villa remains, a number of magnetic anomalies were detected: principally, what appears to be an east-west aligned possible Roman settlement, comprised of a series of linear anomalies with conjoined sub-rectangular and rectilinear shaped anomalies (Fig. 4, 5). These can be interpreted as enclosures and adjoining trackways some of which appear to contain internal features such as pit-like anomalies (Fig. 4, 6 - red circle).

The wide space between the enclosures in Areas 1 and 2 contains a series of linear anomalies (Fig. 4, 7), which possibly represent lengths of roadside ditches.

The putative trackways and adjoining enclosures probably form more than one phase of settlement activity. The fragmented nature of the anomalies appears to indicate this to be the case, especially given the wide space between them.

Two parallel diffuse linear anomalies (green lines) spaced approximately 10m apart possibly indicate the remains of a headland, although they could just be modern plough marks.

## **Area 2**

This area was situated to the south of Area 1. It was surveyed to determine the extent of former quarrying activity and to assess the survival of any archaeological remains.

Two distinct zones of strong magnetic variation in Area 2 (yellow outline) denote the extent of former quarrying activity.

Continuation of the settlement remains can be distinguished in the plot as a series of fragmented linear and rectilinear ditch-like anomalies that probably form parts of enclosure ditches and possible trackways between them. It appears that these ditch-like features straddle the existing modern hedgeline, suggesting a shifting settlement pattern.

## **6.0 Conclusions**

The survey has revealed the floor plan of the previously known winged-corridor Roman Villa of Horestone Brook, excavated in 1988 and 1990. A Roman settlement plan has been revealed by gradiometer, which was detected to the immediate south of the Roman villa remains. This suggests that these remains may have been contemporary or may pre-date the villa remains. In addition, the settlement appears to be of more than one phase, especially given the nature of what appears to be a shifting roadway between the northern enclosures and the southern examples in Area 2.

No distinct magnetic signature was detected to indicate the remains of the corndrier excavated in the northeast pavilion. The reason for this may be due to its total excavation.

The remains that have been detected by this survey appear to fit well into the organised Roman pattern of settlement in this area. The excavated remains of Whitehall Roman Villa is located c.2km to the west, and the Roman road Watling Street lies just over 2km to the south-west.

The remains of medieval ridge and furrow were detected running in a north-south direction, along with later evidence of quarrying activity detected in Area 2 to the south.

## **7.0 Acknowledgements**

Pre-Construct Geophysics would like to thank Stephen Young for this commission.

## 8.0 References

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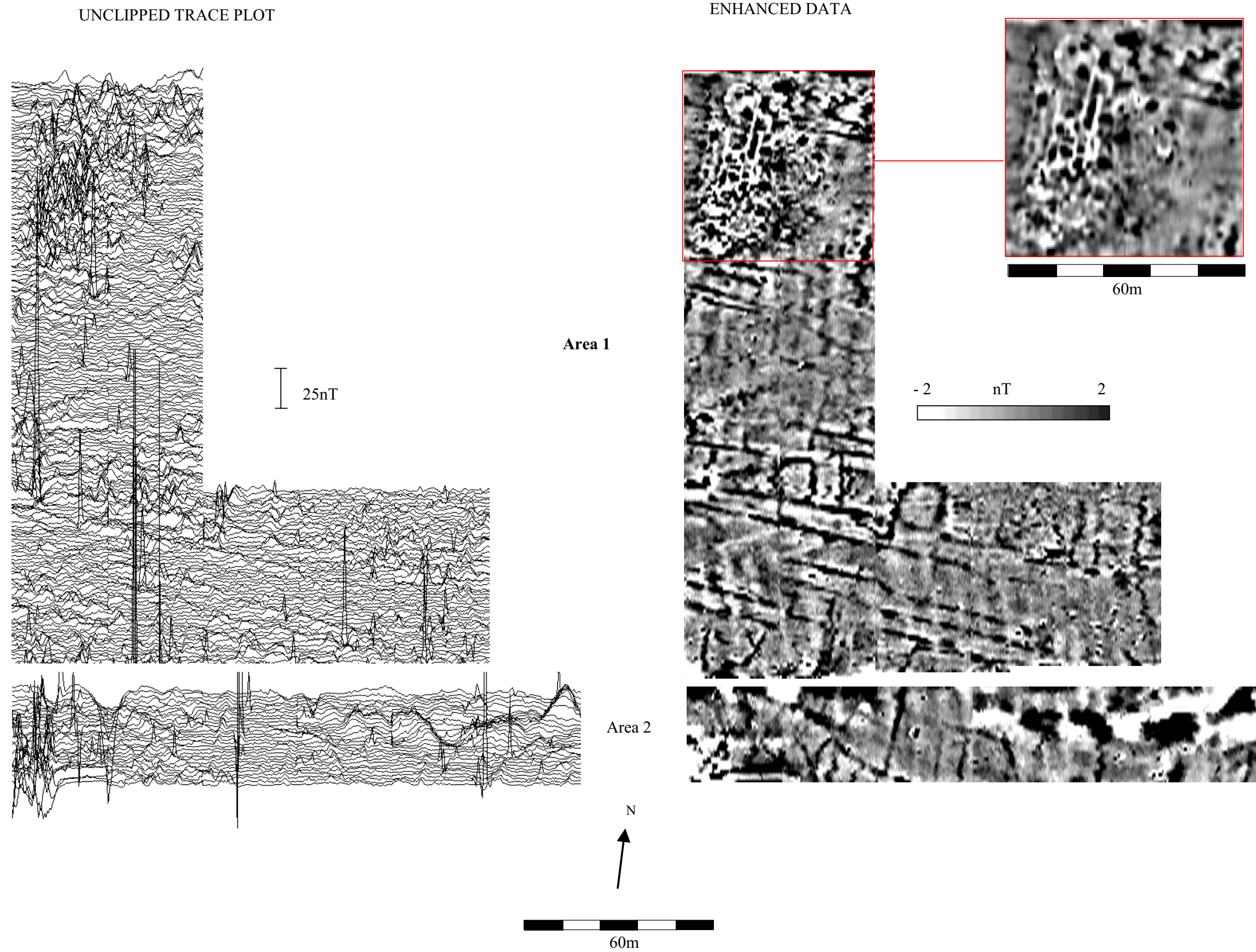


Fig 4: Greyscale and trace plots of raw and enhanced data, scale - 1:1250



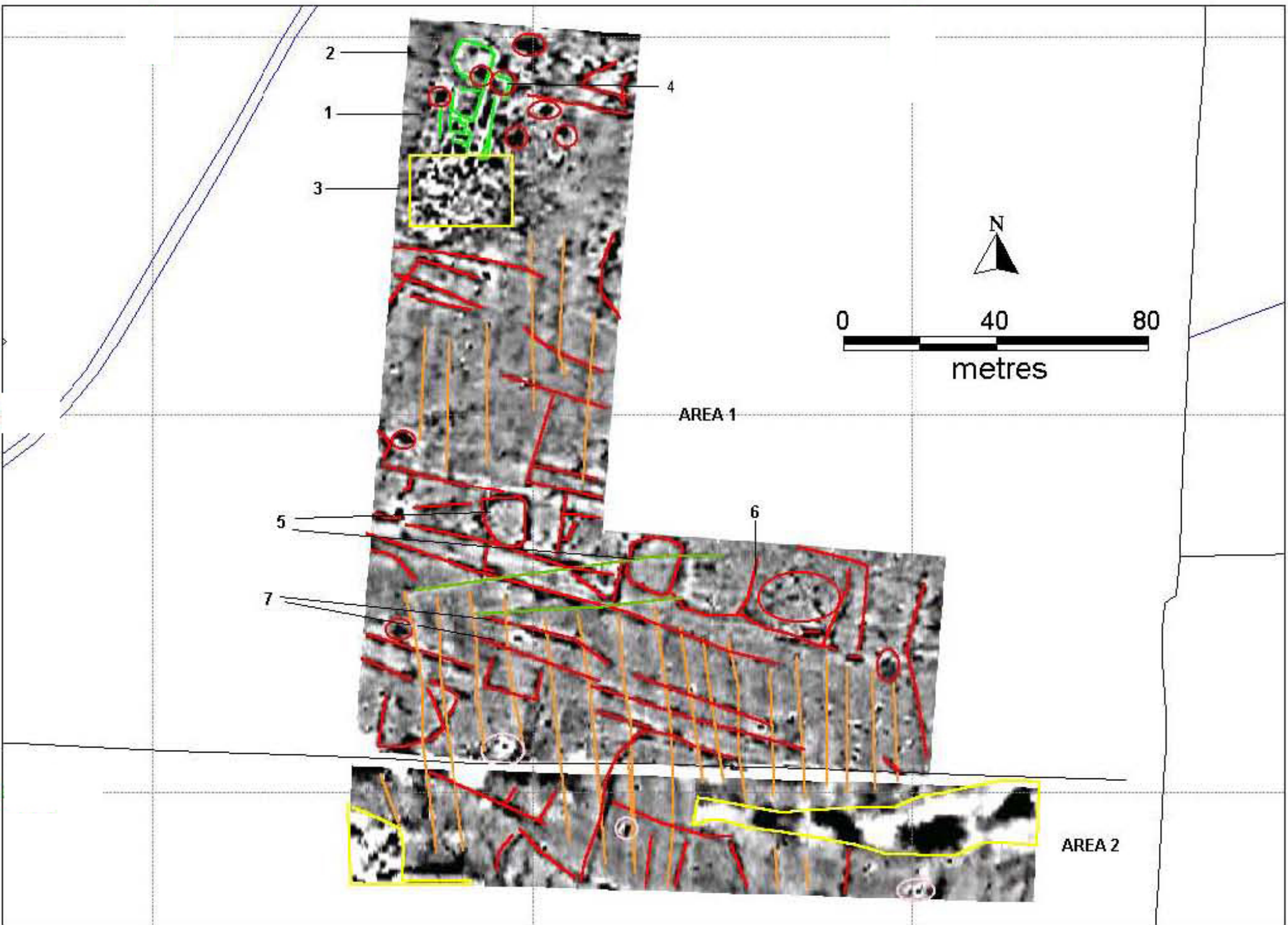
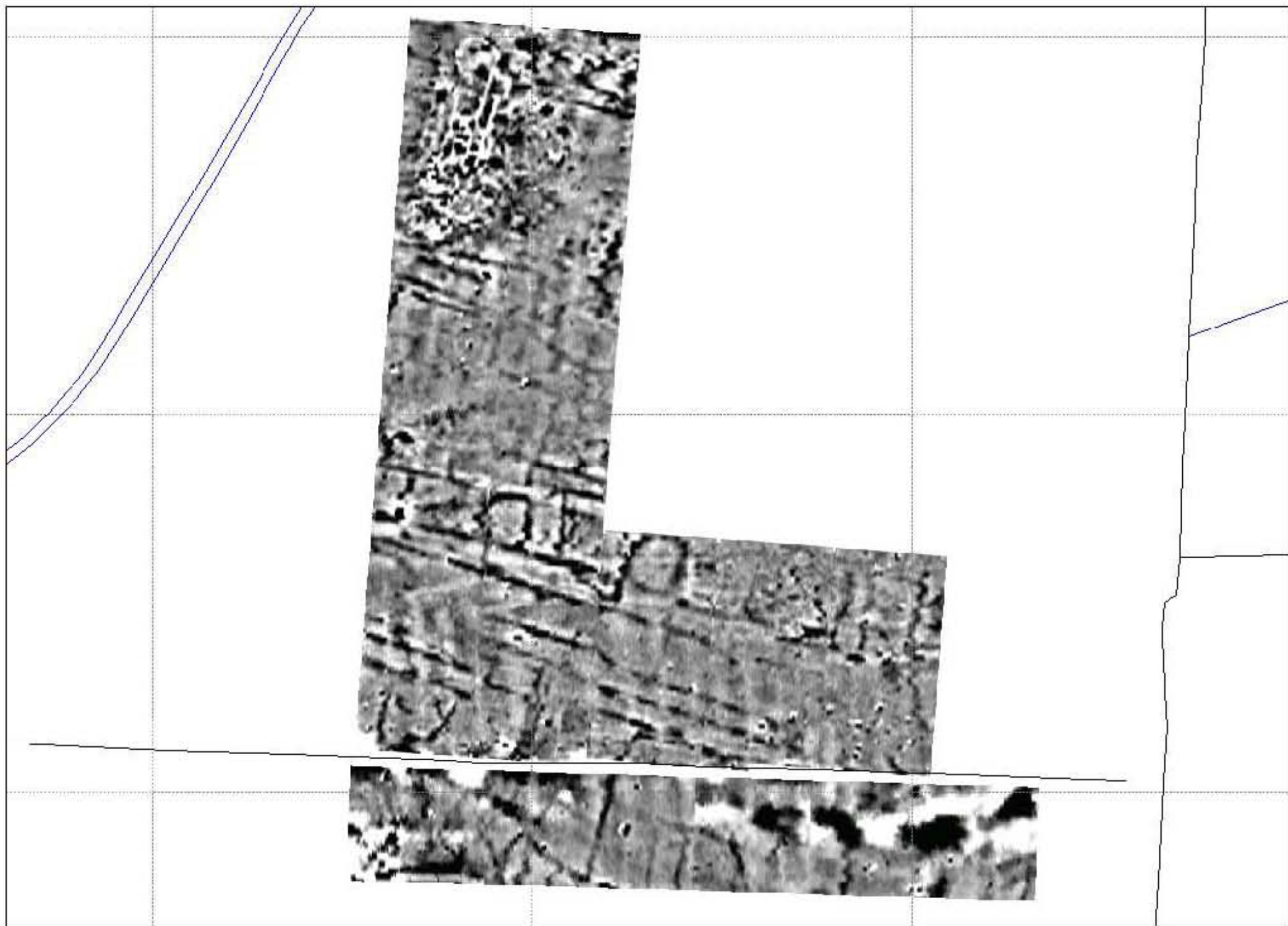


Fig. 5 - Enhanced greyscale plot and interpretation plan, scale 1:1250