

**ARCHAEOLOGICAL EVALUATION REPORT:
GEOPHYSICAL SURVEY BY MAGNETOMETRY ON LAND AT MANOR FARM, SHELTON,
NOTTINGHAMSHIRE**

Planning Reference: 21/00085/FUL
NGR: SK 77949 44419
AAL Site Code: SHMF 21
OASIS Reference Number: allenarc1-417179



Report prepared for Mr and Mrs Cassabois

By
Allen Archaeology Limited
Report Number AAL2021026

March 2021



Allenarchaeology



Contents

Executive Summary	1
1.0 Introduction.....	2
2.0 Site Location and Description.....	2
3.0 Planning Background	2
4.0 Archaeological and Historical Background	2
5.0 Methodology	3
Summary of Survey Parameters	3
Data Collection and Processing	3
6.0 Results	4
7.0 Discussion and Conclusions.....	5
8.0 Effectiveness of Methodology.....	6
9.0 Acknowledgements	6
10.0 References.....	6

List of Appendices

Appendix 1: Figures	7
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List of Figures

Figure 1: Site location outlined in red	7
Figure 2: Greyscale raw data and processed trace plot	8
Figure 3: Processed greyscale plot and interpretation	9
Figure 4: Processed greyscale location.....	10
Figure 5: Geophysical interpretation location.....	11
Figure 6: Geophysical interpretation superimposed over 1 st Edition OS map	12

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Cover image: View across site from northeast corner looking south-southwest

Executive Summary

- Mr and Mrs Cassabois commissioned Allen Archaeology Limited to undertake a geophysical survey using magnetometry on land at Manor Farm, Shelton, Nottinghamshire, prior to determination of a planning application for a new manege.
- The site lies within the former grounds of Shelton Manor, with a series of mounds to the northeast of the site indicating that Shelton was a larger settlement in the medieval period. A prehistoric ring ditch has been identified from aerial photographs within the area of the proposed manege.
- The survey has identified three linear positive features which may represent a former trackway, drainage features or former field boundaries. No features were revealed that correspond with the prehistoric ring ditch which had formerly been identified from aerial photographs. The large area of magnetic noise within the north-eastern part of the site likely represents buried hardcore material.

1.0 Introduction

- 1.1 Mr and Mrs Cassabois commissioned Allen Archaeology Limited (AAL) to undertake a geophysical survey using magnetometry on land at Manor Farm, Shelton, Nottinghamshire, prior to determination of a planning application for a new manege.
- 1.2 The site works and reporting conform to current national guidelines, as set out in 'EAC Guidelines for the Use of Geophysics in Archaeology' (EAC 2016), 'The Use of Geophysical Techniques in Archaeological Evaluations' (Gaffney *et al.* 2002), the Chartered Institute for Archaeologists 'Standard and guidance for archaeological geophysical survey' (CIfA 2020), and a specification by this company (AAL 2021).

2.0 Site Location and Description

- 2.1 Shelton is a village and civil parish in the Rushcliffe borough of Nottinghamshire, approximately 21km to the east-northeast of Nottingham. The proposed development area comprises a c.0.1ha rectangular block of land to the south of Shelton Manor House, within an agricultural field. The site centres on NGR SK 77949 44419.
- 2.2 The bedrock geology comprises Branscombe Mudstone Formation, with no superficial geological deposits recorded (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>). The bedrock of Branscombe Mudstone Formation is considered to give a variable response to magnetometry (English Heritage 2008).

3.0 Planning Background

- 3.1 A planning application has been submitted for the 'Erection of Equestrian Manege at 'Shelton Manor Farm, Main Road, Shelton Nottinghamshire' (21/00085/FUL). As part of pre-application discussions, the Local Planning Authority has advised the client that a geophysical survey be undertaken, in order to provide further information concerning the nature and extent of the archaeological resource, and to provide information to allow the Nottinghamshire County Council Community Archaeologist to make a reasoned decision as to whether any further intrusive investigations will be required to allow for the determination of the planning application, and to establish any mitigation measures that may be appropriate.
- 3.2 The approach adopted is consistent with the recommendations of the National Planning Policy Framework (NPPF), with the particular chapter of relevance being 'Section 16. Conserving and enhancing the historic environment' (Ministry of Housing, Communities and Local Government 2019).

4.0 Archaeological and Historical Background

- 4.1 A ring ditch has been noted as a cropmark on aerial photographs within the area of the proposed manege (Nottinghamshire Historic Environment Record (NHER) reference L1568), and is presumed to represent a former barrow of Bronze Age date, but this has not been tested by excavation.

- 4.2 The settlement is mentioned in the Domesday Survey of 1086 as *Sceltun(e)*, with three landowners mentioned; Roger of Bully, Ralph of Limésy and Ilbert of Lacy (<https://opendomesday.org/place/SK7844/shelton/>).
- 4.3 The site also lies within the former grounds of Shelton Manor (NHER reference MNT26835).
- 4.4 To the northeast of the site, a series of mounds in parkland have been identified as remains of former settlement, indicating Shelton was a larger settlement in the medieval period (NHER reference M5628).

5.0 Methodology

- 5.1 The geophysical survey consisted of a detailed gradiometer survey of approximately 1 hectare extending from the proposed location of the ménage and into the field. The survey was undertaken in a series of 30m grids across the site.

Summary of Survey Parameters

5.2 Fluxgate Magnetometer

Instrument:	Bartington Grad601-2 Dual Fluxgate Gradiometer
Sample Interval:	0.25m
Traverse Interval:	1.00m
Traverse Separation:	1.00m
Traverse Method:	Zigzag
Resolution:	0.01nT
Processing Software:	3.0.37.3
Surface Conditions:	Very short grass
Area Surveyed:	0.91 hectares
Date Surveyed:	Tuesday 9 th March 2021
Surveyor:	Robert Evershed BSc (Hons)
Data Interpretation:	Robert Evershed BSc (Hons)

Data Collection and Processing

- 5.3 The grids were marked using pre-programmed grids on the Leica GS08 Net rover. Magnetic data was collected on a north-northwest to south-southeast alignment due to orientation of the field. A traverse pattern close to north-south is preferable as the fluxgate gradiometer is set up and balanced with respect to the cardinal points. Since the data is plotted as north-south traverses there is considerable merit sampling the north-south response of a magnetic anomaly with as many data points as is possible, this is accomplished as the density collected along the traverse line is greater than that between traverses (Aspinall *et al.* 2008).
- 5.4 The data collected from the survey has been analysed using Terrasurveyor 3.0.37.3. The resulting data set plots are presented with positive nT/m values and high resistance as black and negative nT/m values and low resistance as white.

The data sets have been subjected to processing using the following filters:

- De-stripping

- Clipping
 - De-staggering
- 5.5 The de-stripe process is used to equalise underlying differences between grids or traverses. Differences are most often caused by directional effects inherent to magnetic surveying instruments, instrument drift, instrument orientation (for example off-axis surveying or heading errors) and delays between surveying adjacent grids. The de-stripe process is used with care as it can sometimes have an adverse effect on linear features that run parallel to the orientation of the process.
 - 5.6 The clipping process is used to remove extreme data point values which can mask fine detail in the data set. Excluding these values allows the details to show through.
 - 5.7 The de-staggering process compensates for data correction errors caused by the operator commencing the recording of each traverse too soon or too late. It shifts each traverse either forward or backwards by a specified number of intervals.
 - 5.8 Plots of the data are presented in processed linear greyscale (smoothed) with any corrections to the measured values or filtering processes noted, and as separate simplified graphical interpretations of the main anomalies detected.

6.0 Results

- 6.1 For the purposes of interpreting the anomalies, the survey data has been processed to the values of -3 to 3 nT/m (Figure 3). This enhances faint anomalies that may otherwise not be noted in the data, with a number of anomalies identified across the data set. These are discussed in turn and noted as single- or double-digit numbers in square brackets.
- 6.2 The area of magnetic noise within the north-eastern corner of the site [1], -100 to 100 nT/m, may represent an area of buried hardcore in this location (Mr Cassabois pers. comm.).
- 6.3 Along the eastern edge of the site there are small areas of magnetic noise [2], -20 to 20 nT/m with some higher spikes. The ditch along the eastern field boundary had recently been cleaned out and material from this was lying within the survey area and may contribute to this noise, along with possible build-up of modern waste along the field edge.



Plate 1: Material from the cleaned ditch within the survey area, looking southeast

- 6.4 The positive linear feature [3], 1 to 2 nT/m, corresponds with a cropmark seen on historic images on Google Earth, and represents a former trackway identified on historic mapping (Figure 6).
- 6.5 The parallel positive linear features running northwest – southeast, [4] and [5], 2 to 3 nT/m, may represent drainage features or former field boundaries which predate 19th century historic mapping. The linear feature [4] may have changed to a south-southeastern direction at its southern end.
- 6.6 The small amorphous positive feature [6], 8 nT/m, could represent a pit, soil-filled hollow or former pond.
- 6.7 Scattered randomly throughout the field (and throughout the entire site) are several weak and strong dipolar responses, examples of which are highlighted as [7]. The characteristic dipolar response of pairs of positive and negative ‘spikes’ suggest near-surface ferrous metal or other highly fired material in the topsoil, which could represent small pieces of metal such as nails, horseshoes or parts of a tractor. The density of dipolar spikes increases markedly towards the northeast corner of the site and this corresponded with more modern material, CBM and other building waste visible within the topsoil while surveying.

7.0 Discussion and Conclusions

- 7.1 The geophysical survey has identified three linear positive features which represent a former track and probable drainage features or former field boundaries. The survey did not identify any features that appear to relate to the prehistoric ring ditch identified from aerial photos. No corresponding features were seen within the area while surveying either.
- 7.2 The large area of magnetic noise at the northeastern end of the site likely represents buried hardcore material. The small amorphous positive feature may represent a pit, soil-filled hollow or former pond.

8.0 Effectiveness of Methodology

8.1 The non-intrusive evaluation methodology employed is appropriate to the scale and nature of the site to be surveyed. Magnetometry was the prospection technique best suited to the identification of archaeological remains on the site; no trace of the putative ring ditch was noted although other non-natural anomalies were identified. Other techniques would have required further justification and may have proved too time consuming or cost-prohibitive.

9.0 Acknowledgements

9.1 Allen Archaeology Limited would like to thank Grace Machin Planning and Property, and their clients Mr and Mrs Cassabois for this commission.

10.0 References

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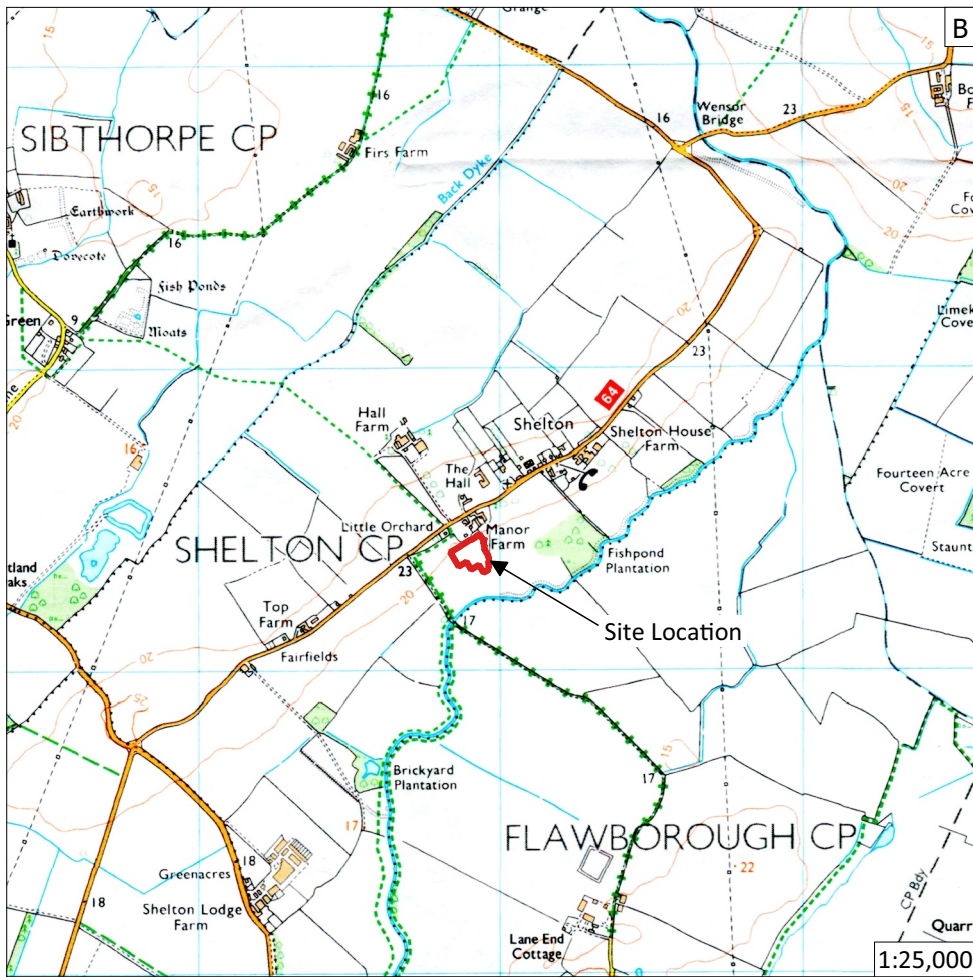
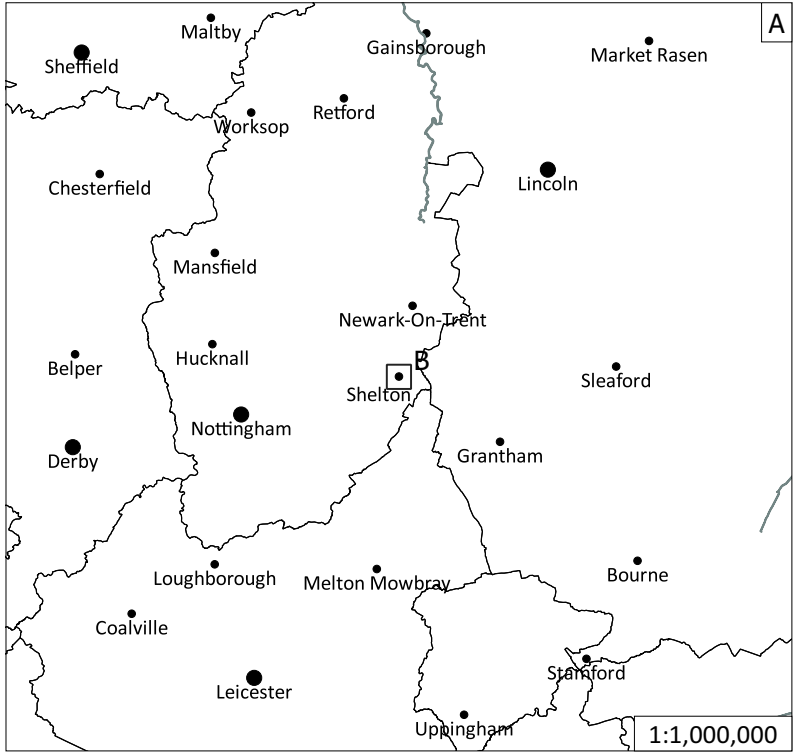
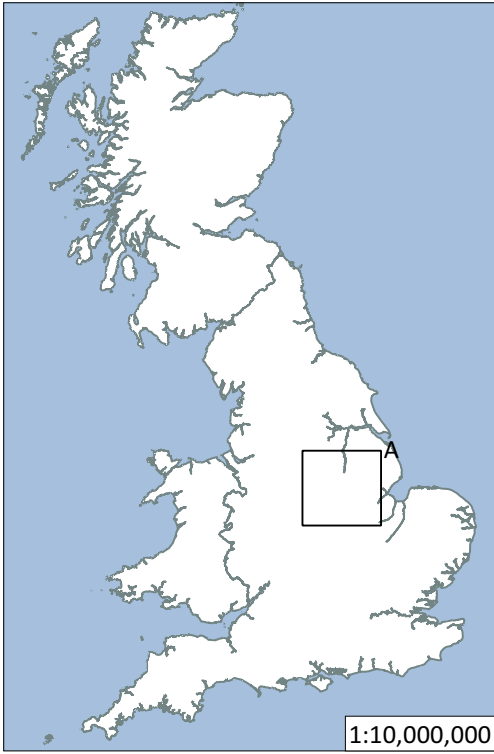


Figure 1: Site location outlined in red

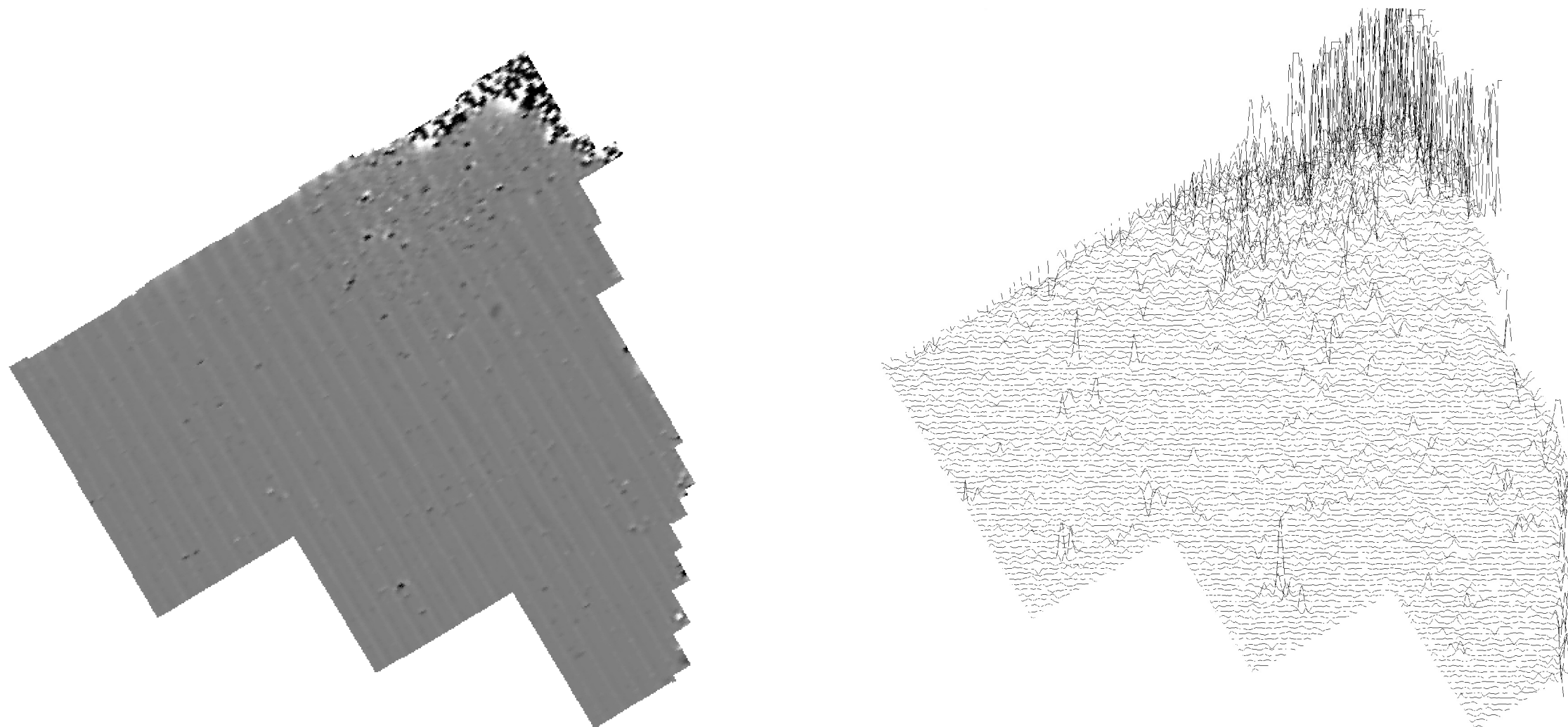
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Drawn by	R Evershed
Date	11/03/2021

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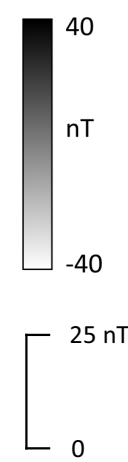
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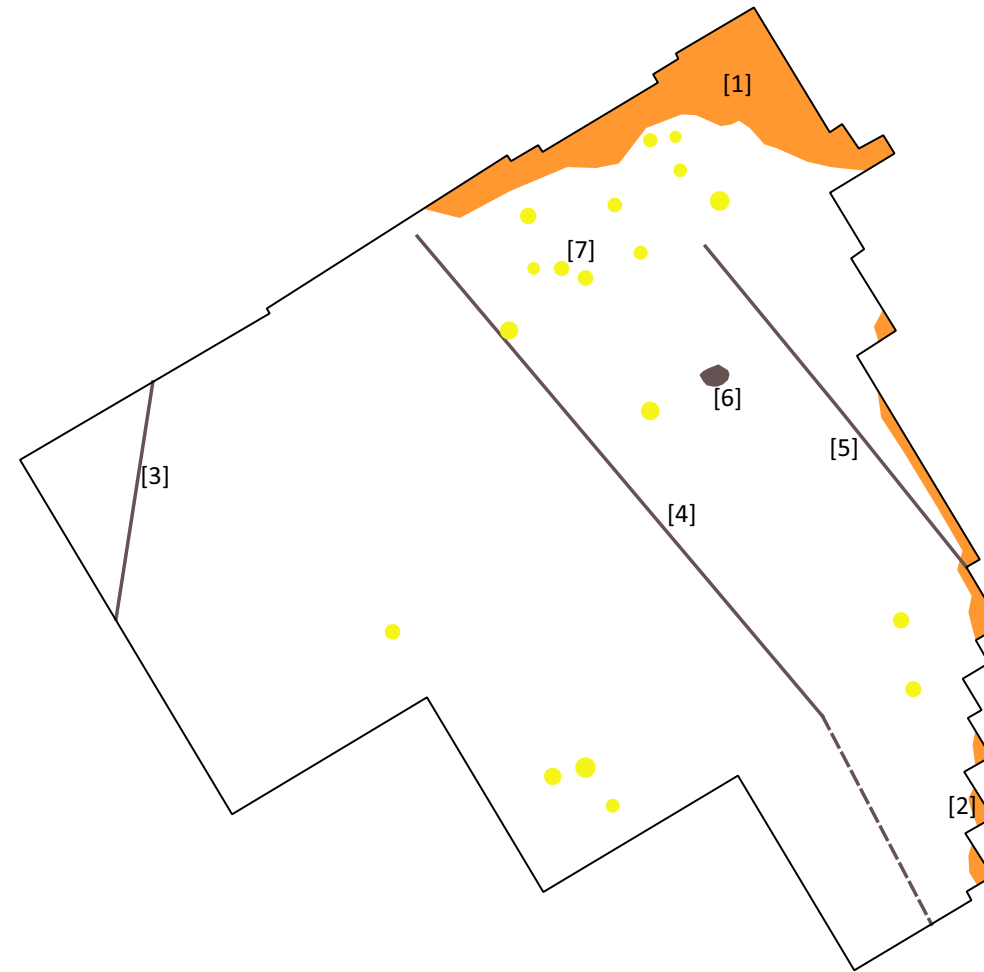
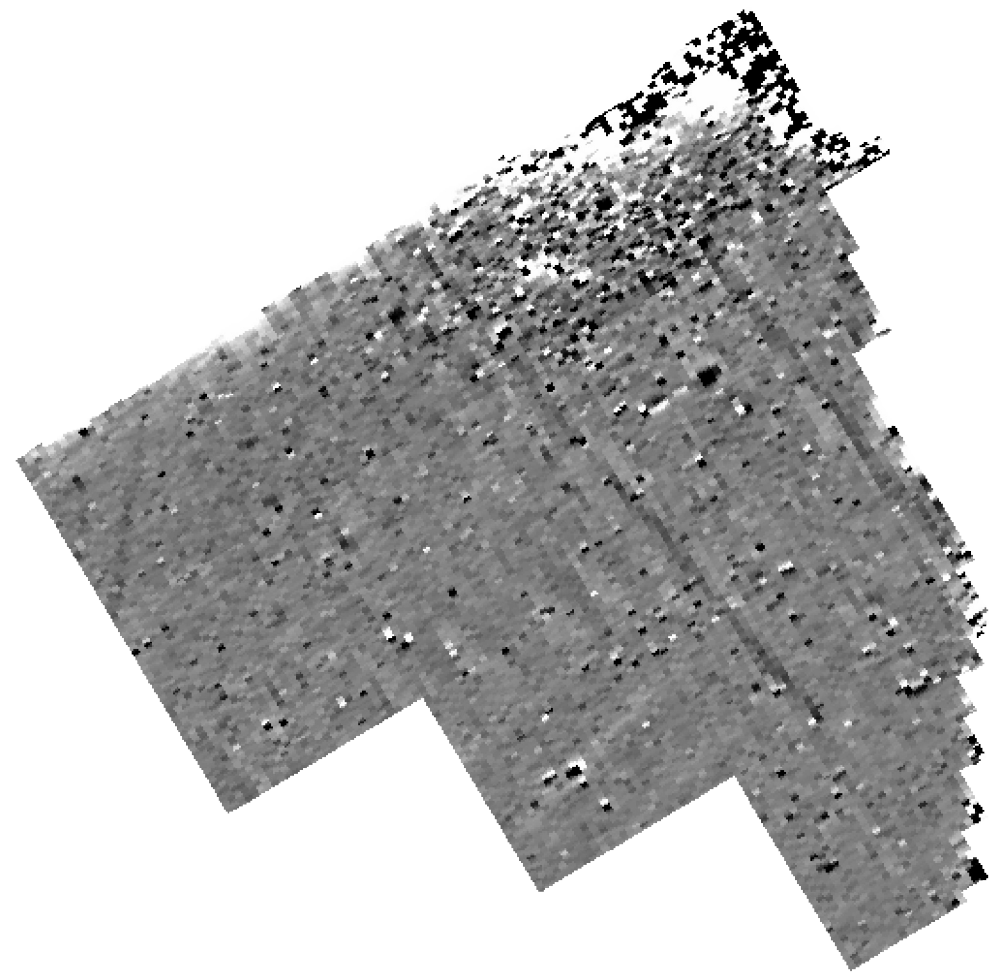
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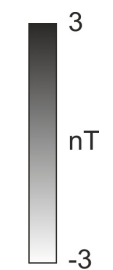
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Figure 2: Greyscale raw data and processed trace plot



Key

- Positive anomaly
- Dipolar anomaly
- Magnetic noise
- Survey boundary



Site Code	SHMF 21
Scale	1:1,000 @A3
Drawn by	R Evershed
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Figure 3: Processed greyscale plot and interpretation

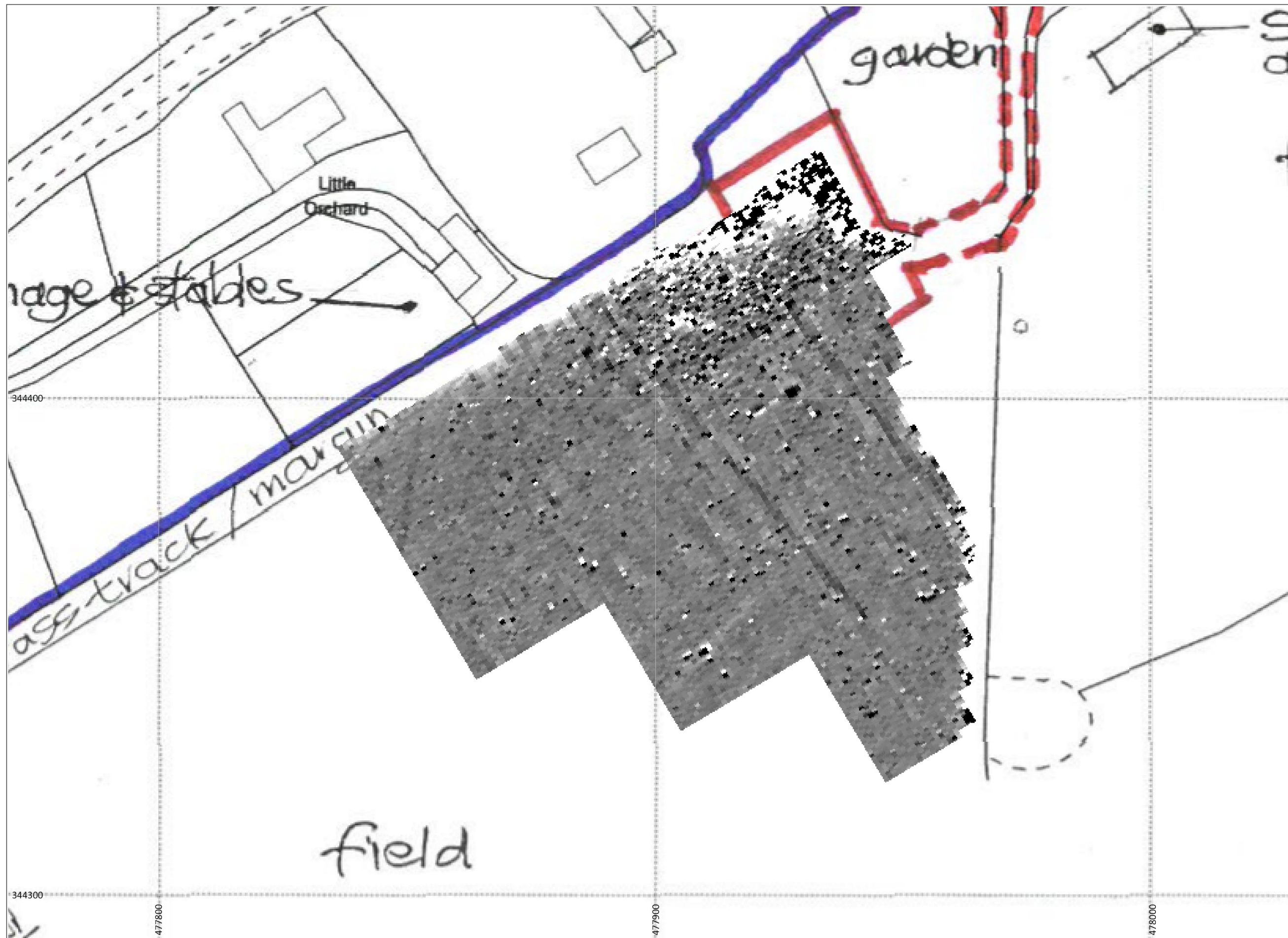
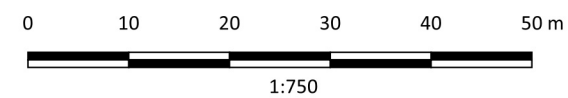


Figure 4: Processed greyscale location



Key

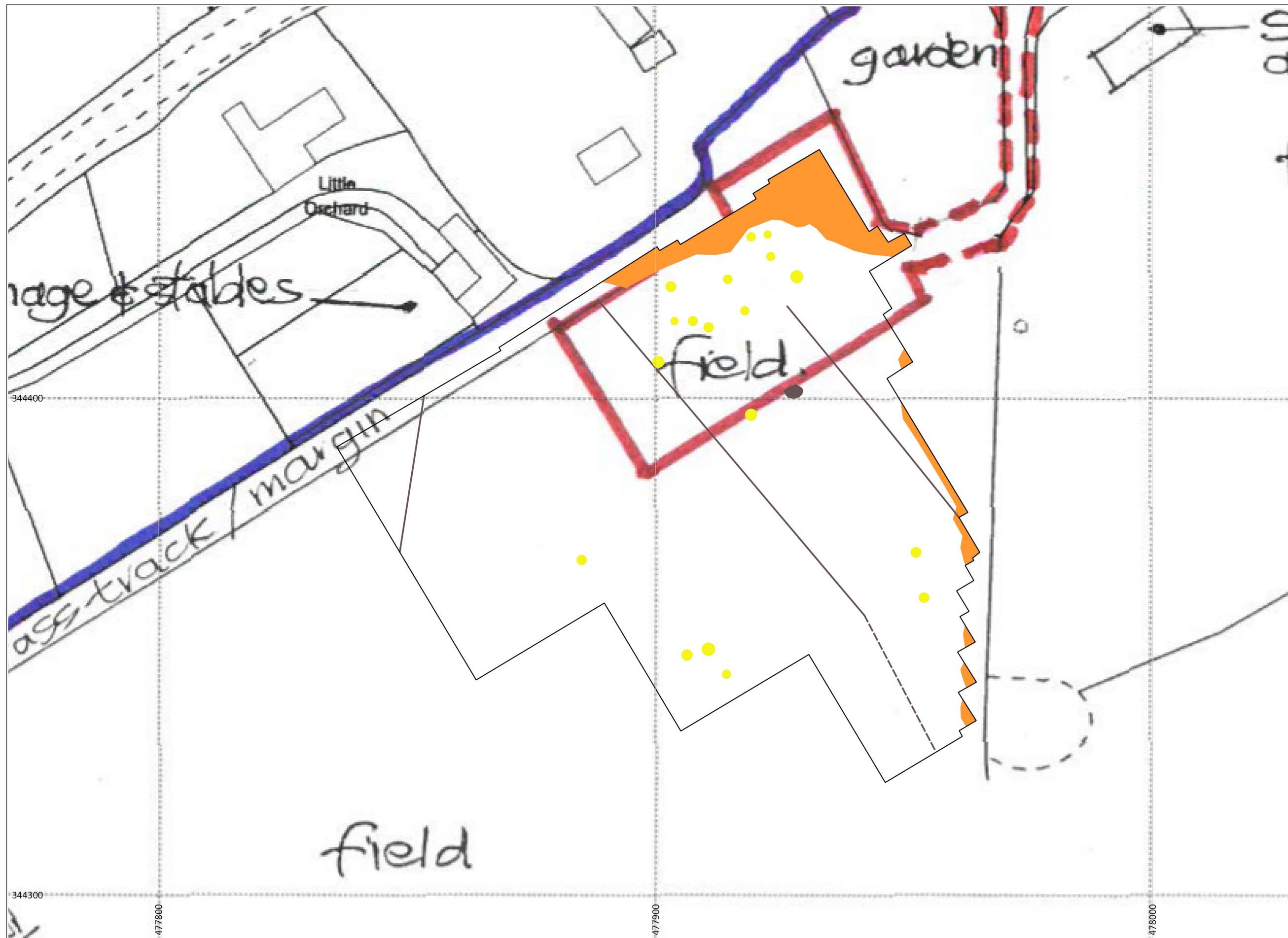
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Site Code	SHMF 21
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- Key**
- Positive anomaly
 - Dipolar anomaly
 - Magnetic noise
 - Survey boundary

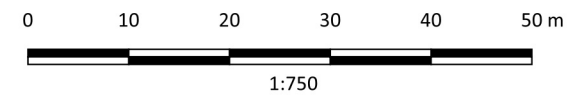
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Figure 5: Geophysical interpretation location



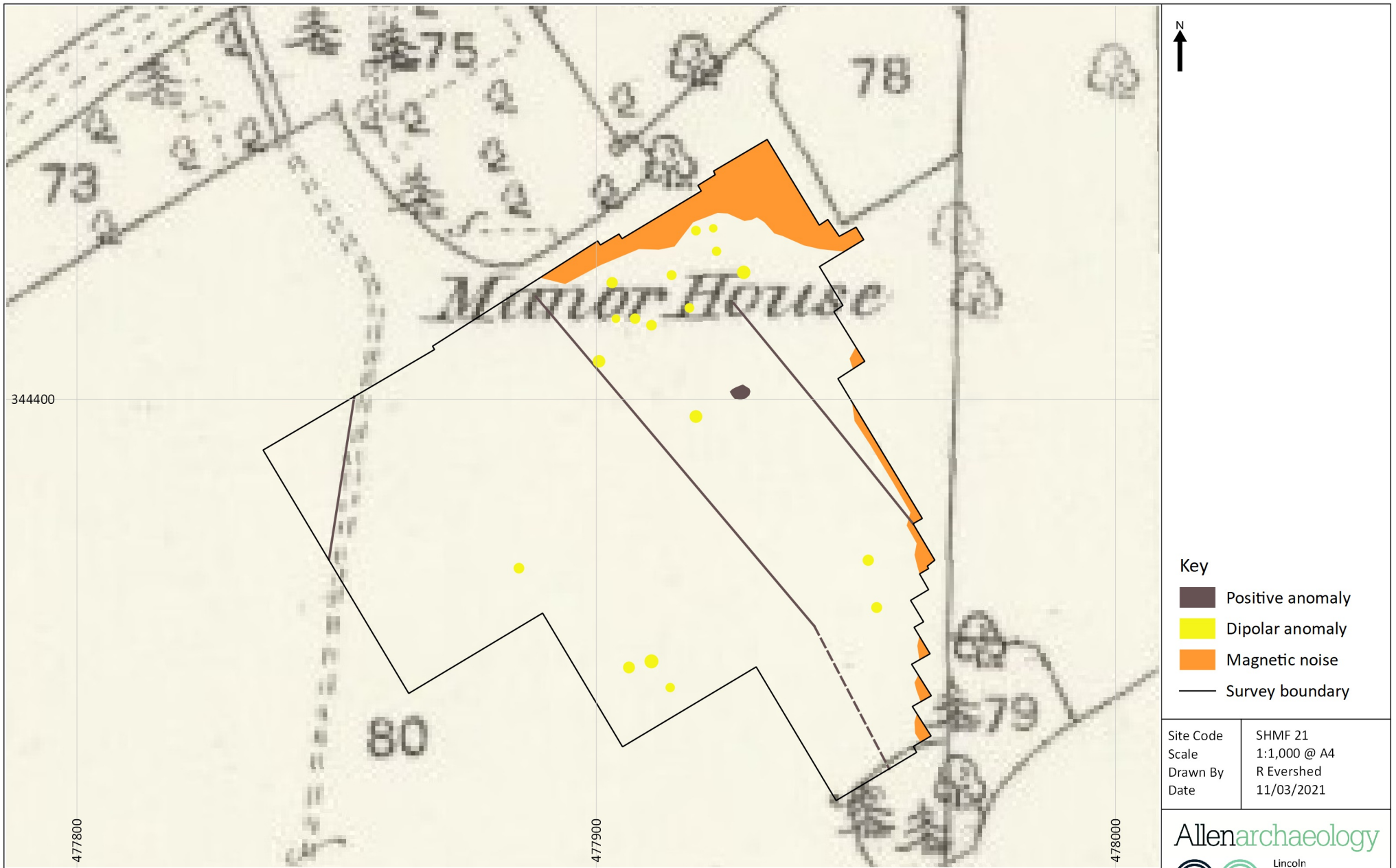


Figure 6: Geophysical interpretation superimposed over 1st Edition OS map

Key

- Positive anomaly
- Dipolar anomaly
- Magnetic noise
- Survey boundary

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