

GEOPHYSICAL SURVEY REPORT

MIRA South, Weddington Lane, Caldecote, Warwickshire

Client

ULAS

For

ERI MTP Limited

Survey Report

05341

OASIS Ref. No.

sumogeop1-503932

Date

20 January 2022



Survey Report 05341: MIRA South, Weddington Lane, Caldecote, Warwickshire

Survey dates 13 – 23 December 2022

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Report Date 20 January 2022

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3 SURVEY TECHNIQUE

- 3.1 Detailed magnetic survey (magnetometry) was chosen as the most efficient and effective method of locating the type of archaeological anomalies which might be expected at this site.

Bartington Grad 601-2

Traverse Interval 1.0m

Sample Interval 0.25m

The only processes performed on data are the following unless specifically stated otherwise:

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes instrument striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

4 SUMMARY OF RESULTS

- 4.1 A magnetometer survey of 53 ha of land off Weddington Lane, Caldecote has recorded a couple of magnetic responses of possible archaeological interest. Two circular anomalies have been tentatively interpreted as being ring-ditches; however, they could also be due to agricultural practices. Numerous uncertain responses have been detected and these are also likely to be a result of farming activity; however, it is possible that some of these anomalies could be of archaeological interest. Land drains, ridge and furrow ploughing, former field boundaries and a former track are all visible in the survey. The route of a service pipe has also been marked.

5 INTRODUCTION

- 5.1 **SUMO Geophysics Ltd** were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by **ULAS** on behalf of **ERI MTP Limited**.

- 5.2 Site Details

NGR / Postcode	SP 35946 95001 / CV10 0RY
Location	The site is located 3.5km north-west of Nuneaton and 4.5km south-east of Atherstone. The site is bounded to the north-east by the A5 and to the south-west by Weddington Lane (A444).
HER	Warwickshire
OASIS Ref. No.	sumogeop1-503932
District	North Warwickshire
Parish	Caldecote Civil Parish
Topography	Generally flat
Current Land Use	Arable Agriculture
Geology (BGS 2022)	Bedrock: Mercia Mudstone Group - Mudstone Superficial: Gunthorpe Member - Siltstone, Dolomitic Alluvium - Clay, Silt, Sand and Gravel Anker Sand and Gravel - Sand and Gravel
Soils (CU 2022)	Soilscape 8: Slightly acid loamy and clayey soils with impeded drainage

Archaeology (ULAS 2021)	An archaeological desk-based assessment has been prepared by University of Leicester Archaeological Services (ULAS) for the site. The Historic Environment Record for Warwickshire and the Historic Environment Record for Leicestershire and Rutland indicate that there are several known archaeological sites in the vicinity. The assessment area lies adjacent to the line of Watling Street, a Roman road. Roman remains have been revealed along the line of the road within the main MIRA site. There are also several findspots for prehistoric flint tools in the vicinity and a findspot for a medieval artefact within the boundary of the site itself, although the land lies outside the medieval core of Caldecote village. There is moderate to high potential for archaeological remains, particularly from the prehistoric and Roman periods, and low to moderate potential for medieval and post-medieval remains.
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	53 ha

5.3 ***Aims and Objectives***

- 5.3.1 To locate and characterise any anomalies of possible archaeological interest within the study area.

6 **RESULTS**

- 6.1 *The survey has been divided into four survey areas (Areas 1-4) and specific anomalies have been given numerical labels [1] [2] which appear in the text below, as well as on the Interpretation Figure(s).*

6.2 ***Possible Archaeology***

- 6.2.1 A discrete circular response [1] measuring 8m in diameter and a weaker circular trend [2] measuring 7m in diameter have been detected in Areas 2 and 3 which have been assigned to the category of *Possible Archaeology*. While these anomalies are isolated, they are tentatively interpreted as ring-ditches. However, they could also be a product of modern agricultural processes.

6.3 ***Uncertain***

- 6.3.1 Numerous *Uncertain* linear responses, curvilinear trends and discrete anomalies have been detected which is to be expected of a survey of this scale. A complex of curvilinear responses and discrete anomalies [3] have been recorded in the south of Area 4. While these could be of some archaeological interest the responses are not very well defined and appear 'washed out'. They are in close proximity to an area of increased magnetic responses which has likely been caused by the backfilling of a pond (see 6.8.1), the anomalies could be a product of modern landscaping.
- 6.3.2 Clusters and scattered linear and curvilinear, have been detected in Areas 1, 2 and 3 and have also been assigned to the category of *Uncertain*. In places it has been difficult to interpret the anomalies as they are partially obscured by land drains and green waste. The responses generally lack the defined morphology of anomalies that would normally be interpreted as being of archaeological interest; they could be due to modern agricultural processes.

6.4 **Former Field Boundary / Track – Corroborated**

- 6.4.1 A number of linear responses are visible in the magnetic data which correspond to the location of former field boundaries that are recorded on historic mapping (see Figure 14).
- 6.4.2 A linear band of increased magnetic response has been detected in Area 4. A former trackway is visible on 1999 Aerial imagery and in the LiDAR data plot (see Figure 15); the band of increased response is due to the former track.

6.5 **Agricultural – Ridge and Furrow / Land Drains**

- 6.5.1 Broad widely spaced and parallel linear anomalies have been detected in Areas 3 and 4 which are evidence of past ridge and furrow agricultural regimes.
- 6.5.2 Linear chains of relatively weak dipolar ferrous responses are visible throughout the dataset and mark the locations of land drains. In some cases, these linear responses are magnetically similar to the former field boundaries (see 6.4.1) and they could be uncorroborated former field boundaries.

6.6 **Green waste**

- 6.6.1 This can have a marked effect on the results from magnetic surveys and has been recognised as an issue for some time (Gerrard *et al* 2015). However, not all green waste is the same, so it is impossible to predict in advance any potentially detrimental effects; it depends on the quantity of inorganic contaminants, including batteries, pieces of metal cans and other ferrous items which result in spurious anomalies or 'noise'.
- 6.6.2 Unfortunately, the data in Area 1 are magnetically disturbed which is likely to have been caused by the spreading of green waste. However, it is also possible that this increased magnetic 'noise' is due to a spread of debris in connection development of the adjacent A5.

6.7 **Service Pipe**

- 6.7.1 A strong linear dipolar ferrous response has been detected in the east of Area 4 and marks the route of a service pipe.

6.8 **Ferrous / Magnetic Disturbance**

- 6.8.1 A number of former ponds are recorded on historic mapping in Areas 1 and 4 (see Figure 14). Areas of magnetic disturbance correspond with the locations of these ponds, and it is likely that the backfill material has caused the magnetic response.
- 6.8.2 Ferrous responses close to boundaries are due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil; they are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

7 **DATA APPRAISAL & CONFIDENCE ASSESSMENT**

- 7.1 Historic England guidelines (EH 2008) Table 4 states that the typical magnetic response on the local soils / geology is generally variable. The results from this survey indicate the presence of anomalies of possible archaeological interest plus ridge and furrow ploughing; as a consequence, there is no *a priori* reason why archaeological features would not have been detected. However, the green waste and concentrations of land drains could have masked any weaker archaeological anomalies, if present.

8 CONCLUSION

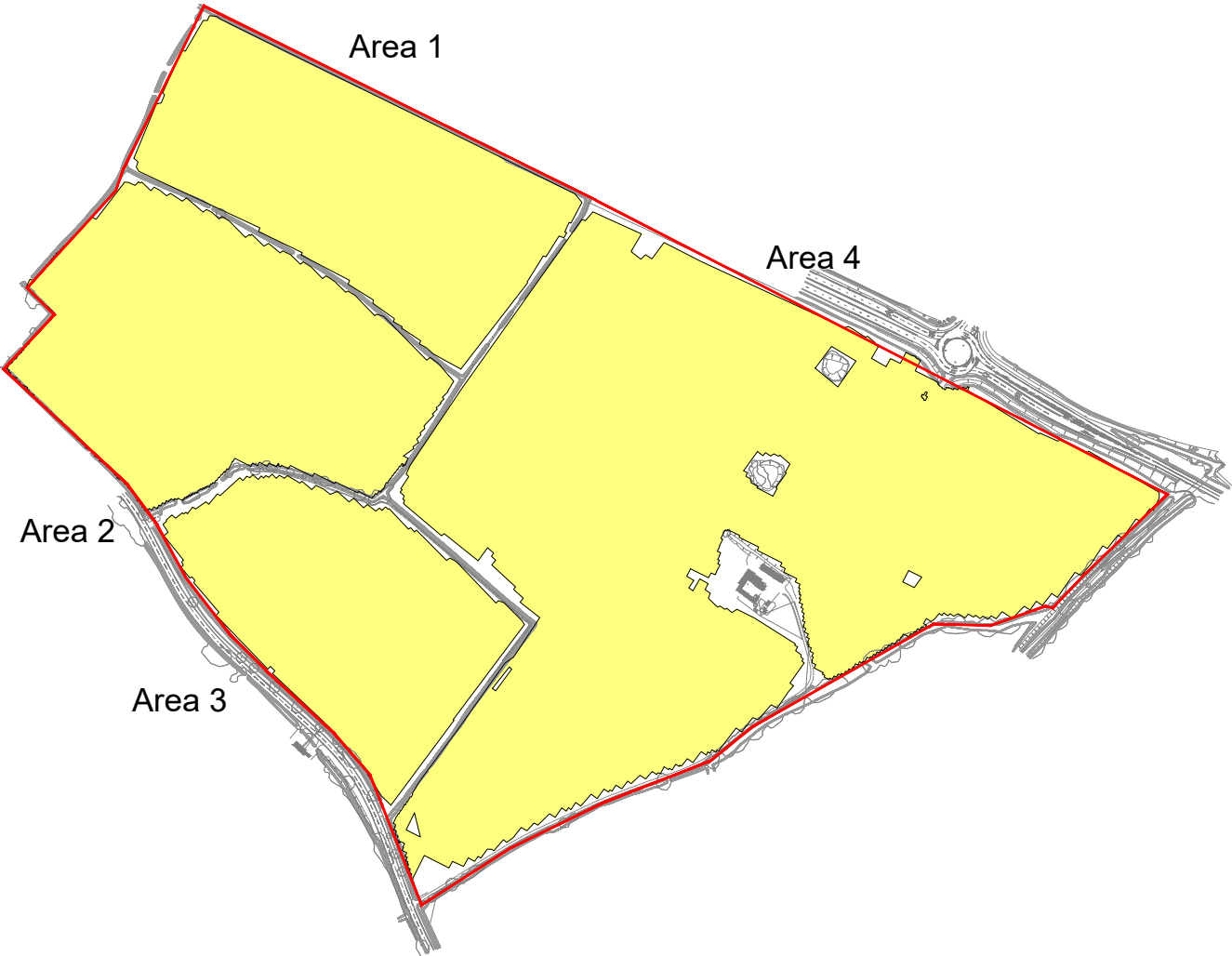
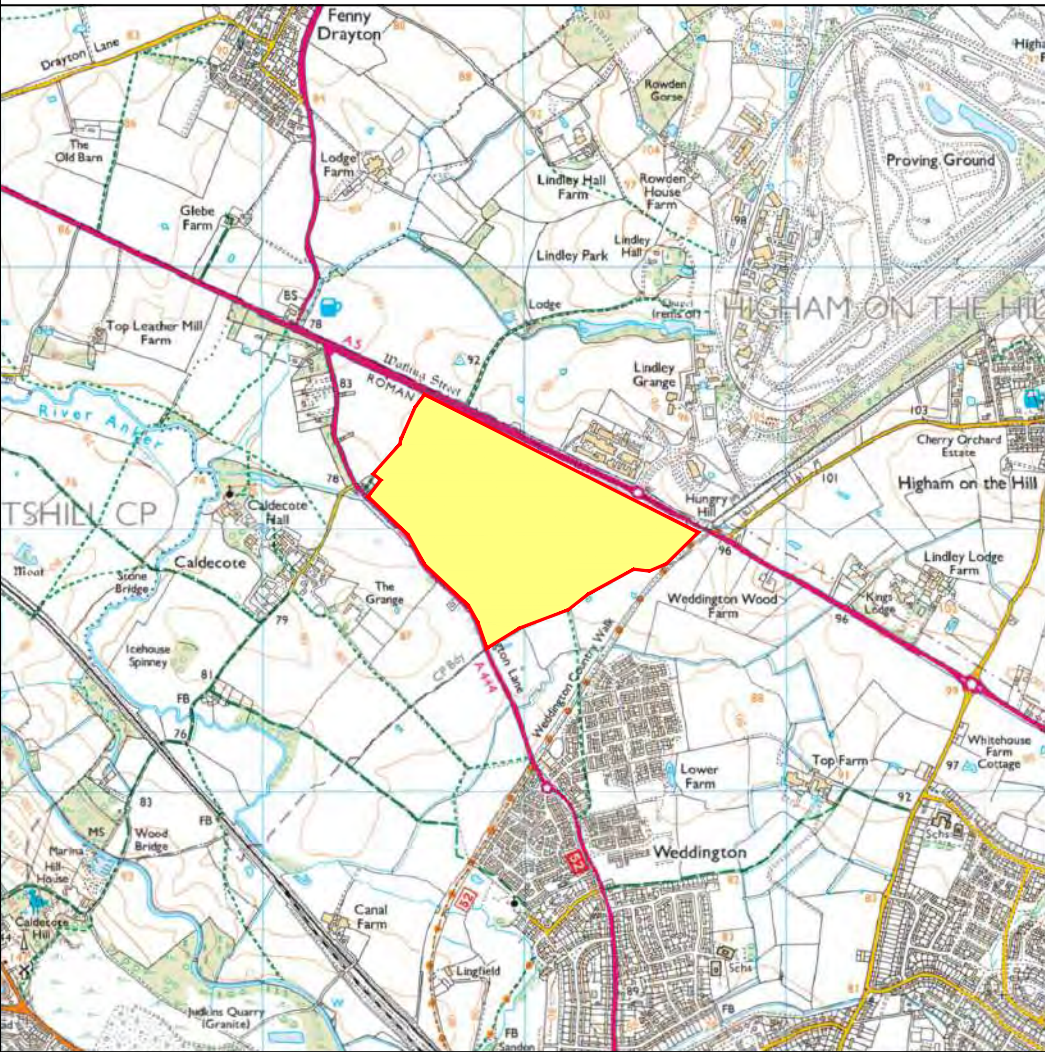
- 8.1 The magnetometer survey has recorded a couple responses that have been interpreted as being of possible archaeological interest. Two circular anomalies indicate possible ring-ditches; however, they could also be due to agricultural processes. Numerous anomalies have been assigned to the category of uncertain. While the majority of these are also likely to be a product of farming practices, it is possible that some of the responses could be of archaeological origin.
- 8.2 The dataset is dominated by anomalies of an agricultural nature including land drains plus ridge and furrow ploughing. The locations of several former field boundaries have been identified which are also visible on historic mapping. A former trackway and infilled ponds are visible in the dataset in the form of magnetic disturbance. The route of a service pipe has also been marked.

9 REFERENCES

- BGS 2022 British Geological Survey, Geology of Britain viewer [accessed 18/01/2022] *website*: (<http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps>)
- ClfA 2014 *Standard and Guidance for Archaeological Geophysical Survey*. Amended 2016. ClfA Guidance note. Chartered Institute for Archaeologists, Reading
http://www.archaeologists.net/sites/default/files/ClfAS%26GGeophysics_2.pdf
- CU 2022 The Soils Guide. Available: www.landis.org.uk. Cranfield University, UK. [accessed 18/01/2022] *website*: <http://mapapps2.bgs.ac.uk/ukso/home.html>
- EAC 2016 *EAC Guidelines for the Use of Geophysics in Archaeology*, European Archaeological Council, Guidelines 2.
- EH 2008 *Geophysical Survey in Archaeological Field Evaluation*. English Heritage, Swindon
<https://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf/>
- 2015 Gerrard *Green Waste and Archaeological Geophysics*, Gerrard, James; Caldwell, Liz and Kennedy, Alisa, *Journal of Archaeological Prospection*, 22, 139 –142 (Wiley)
- ULAS 2021 *An archaeological desk-based assessment for MIRA South, Weddington Lane, Caldecote, Warwickshire (SP 35846 95142)*, ULAS, Leicester

10 ARCHIVE

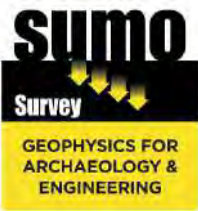
- 10.1 The minimally processed data, data images, XY traces and a copy of this report are stored in **SUMO Geophysics Ltd.**'s digital archive, on an internal RAID configured NAS drive in the Midland's Office. These data are also backed up to the Cloud for off-site storage.
- 10.2 The Grey Literature will be archived with OASIS and the relevant HER within a period of 12 months



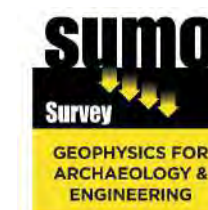
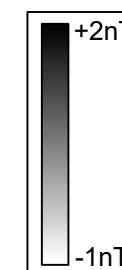
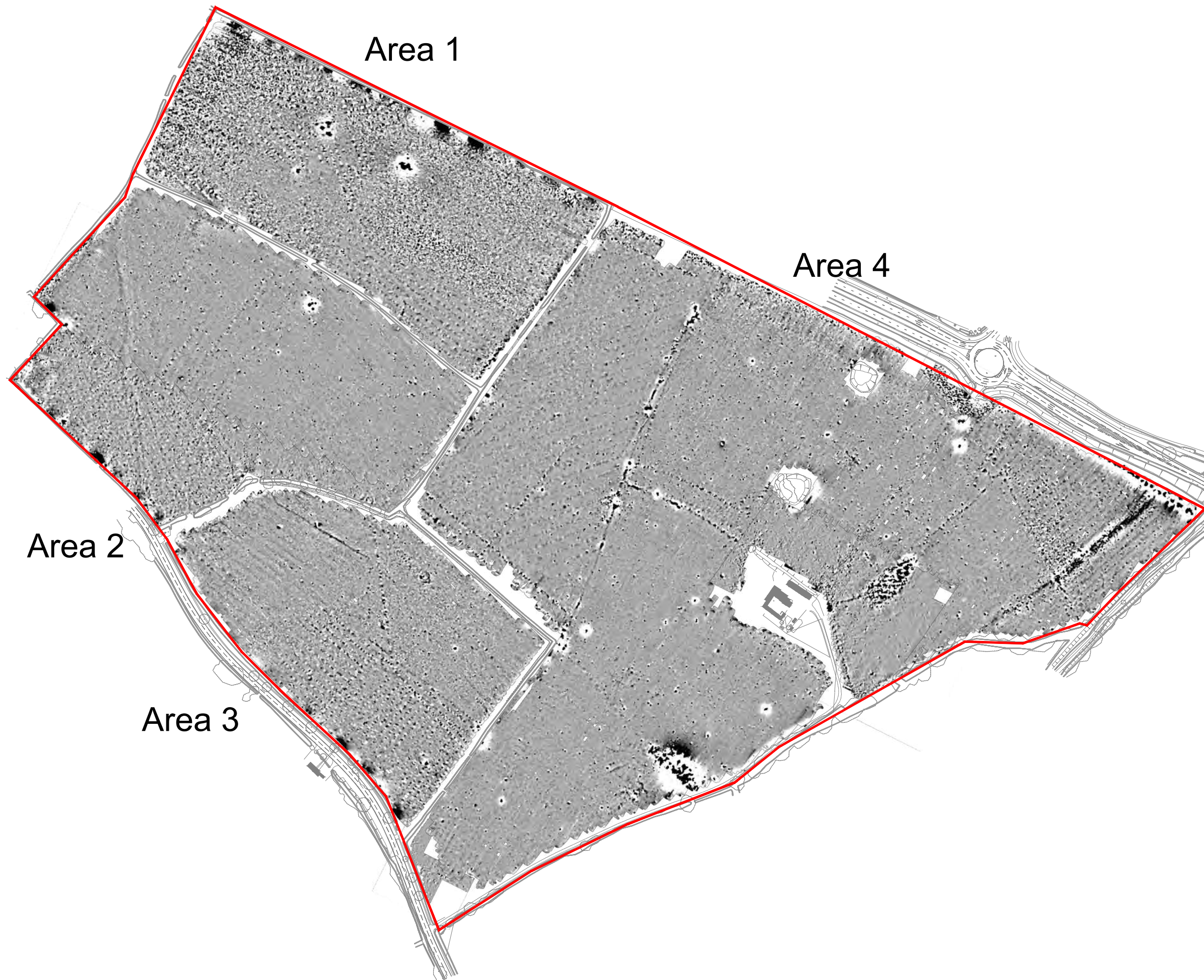
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 Survey Areas





Title: Site Location	
Client: ULAS	
Project: 05341 - MIRA South, Weddington Lane, Caldecote, Warwickshire	
Scale: NOT TO SCALE	Fig No: 01



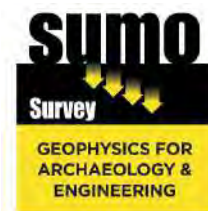
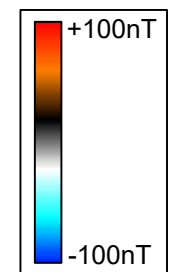
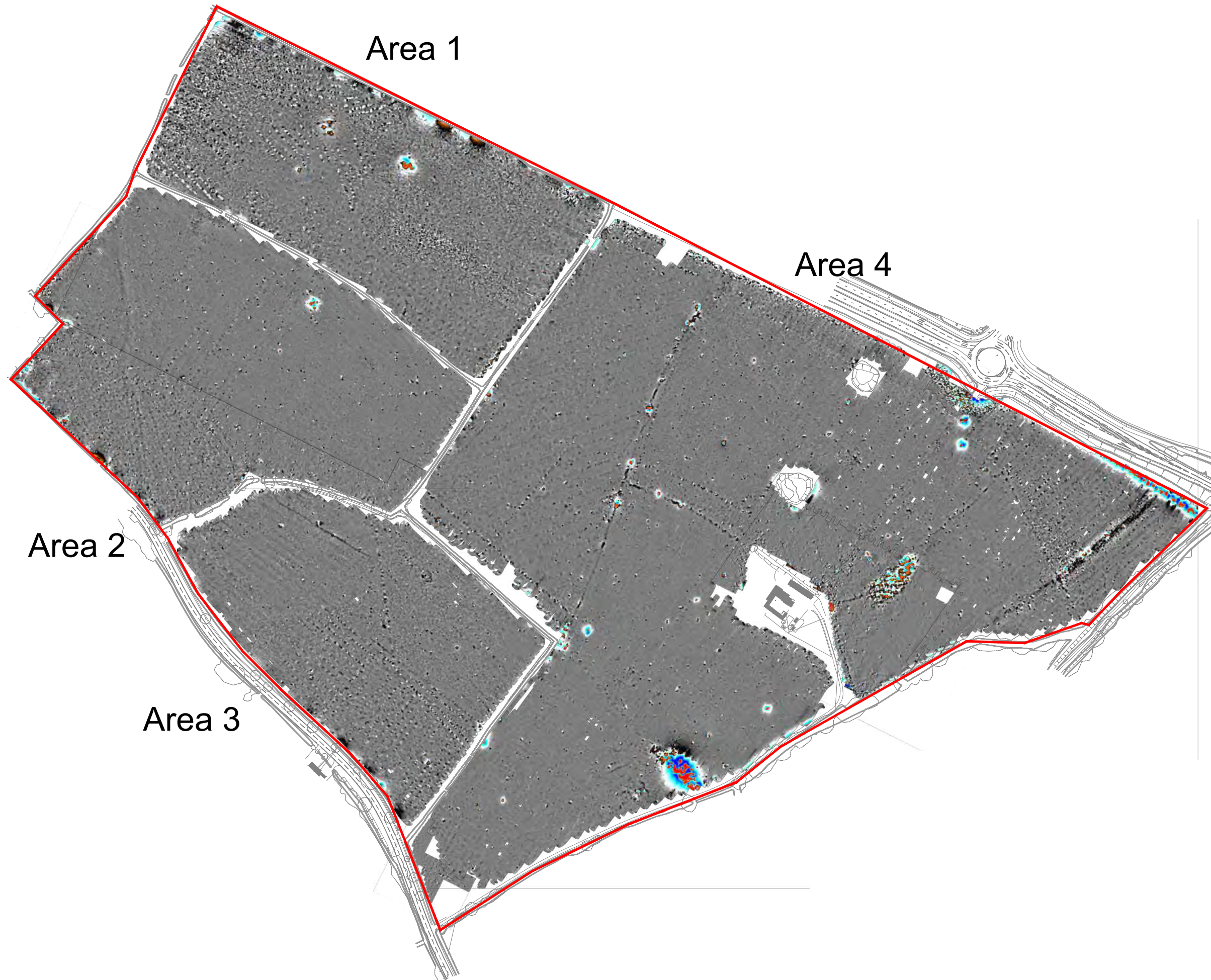
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Magnetometer Survey - Greyscale Plots

Client:
ULAS

Project:
05341 - MIRA South, Weddington Lane,
Caldecote, Warwickshire

Scale:
0 metres 200
1:4000 @ A3

Fig No:
02



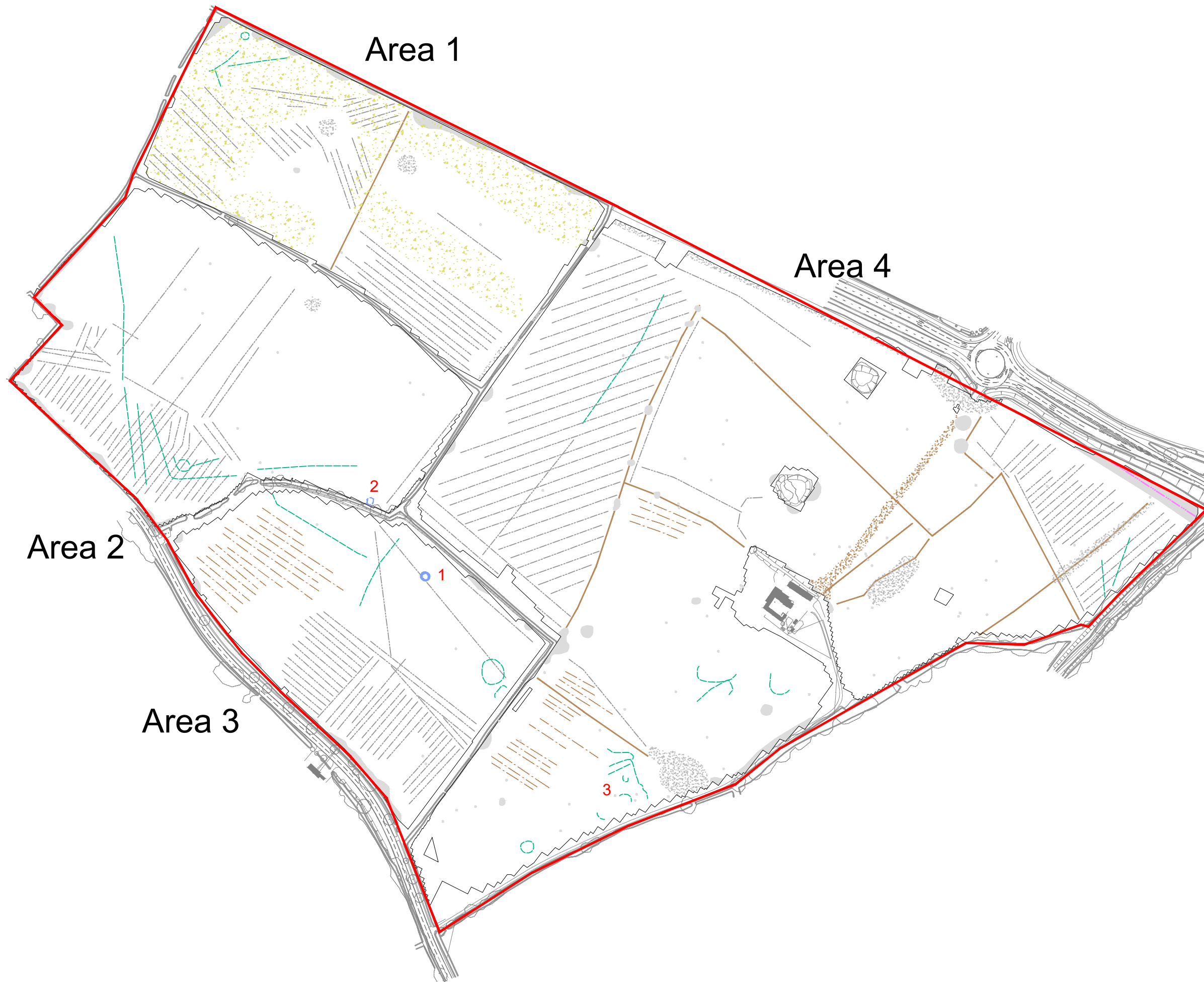
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Client: ULAS

Project: 05341 - MIRA South, Weddington Lane, Caldecote, Warwickshire

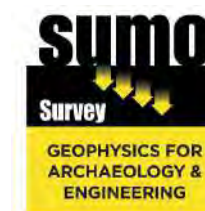
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Fig No: 03



KEY

	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (trend)
	Former field boundary (corroborated)
	Former track
	Agriculture (ridge and furrow)
	Land drain
	Green waste
	Magnetic disturbance
	Service
	Ferrous



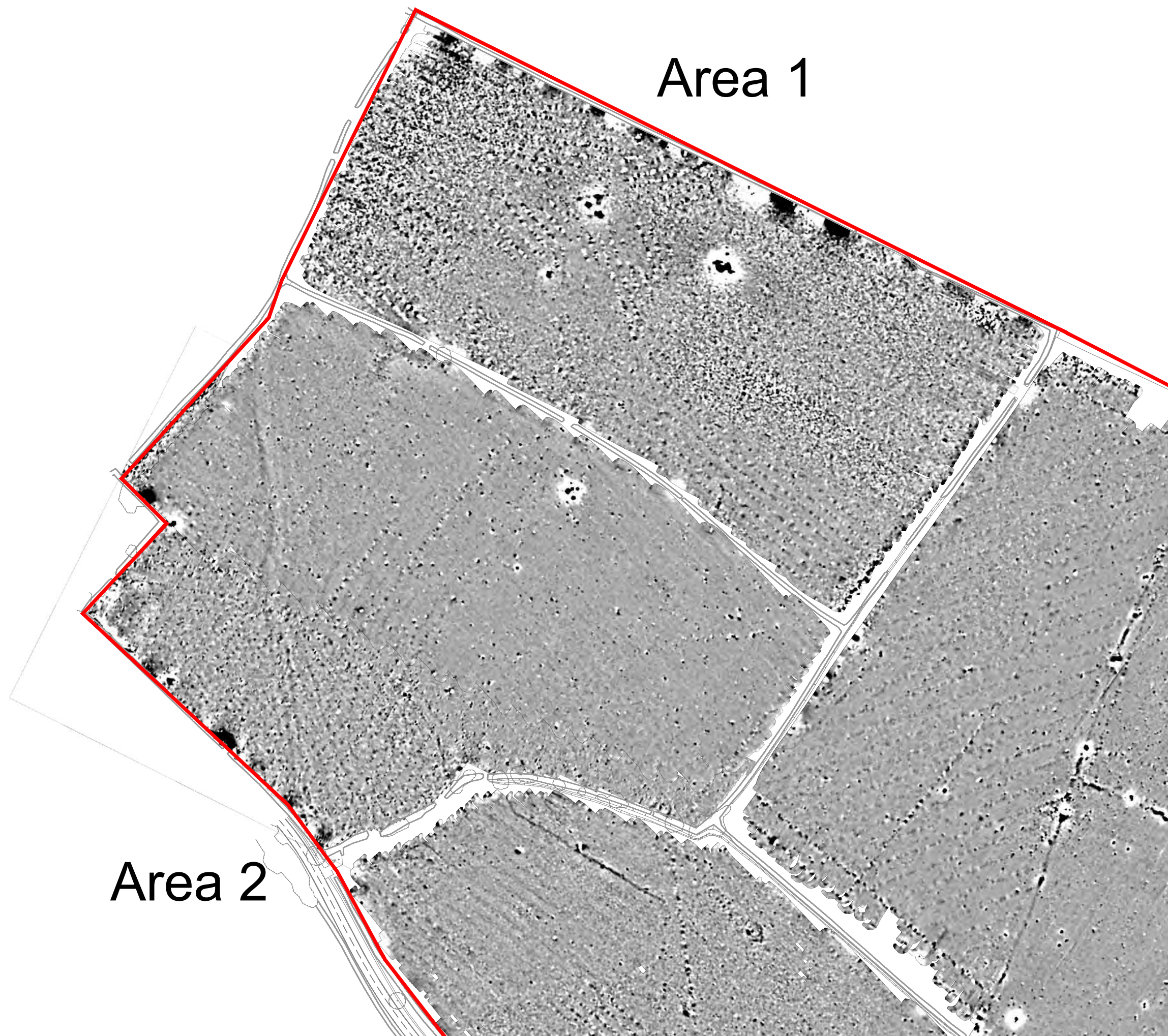
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Client: ULAS

Project: 05341 - MIRA South, Weddington Lane, Caldecote, Warwickshire

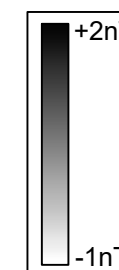
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Fig No: 04



Area 1

Area 2



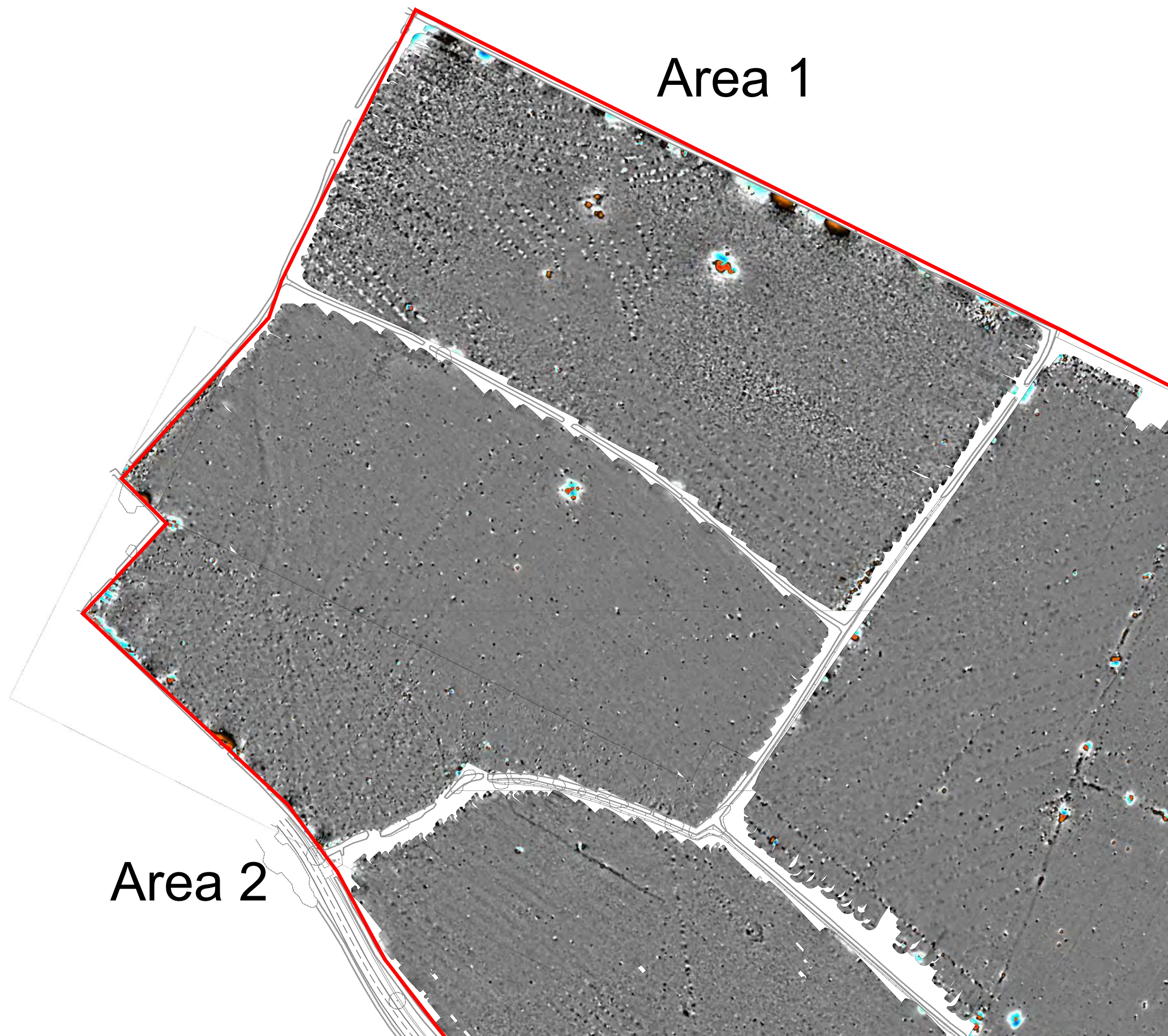
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[Areas 1 and 2]

Client: ULAS

Project: 05341 - MIRA South, Weddington Lane,
Caldecote, Warwickshire

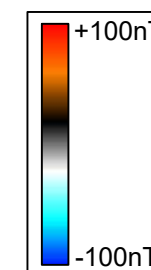
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Fig No: 05



Area 1

Area 2



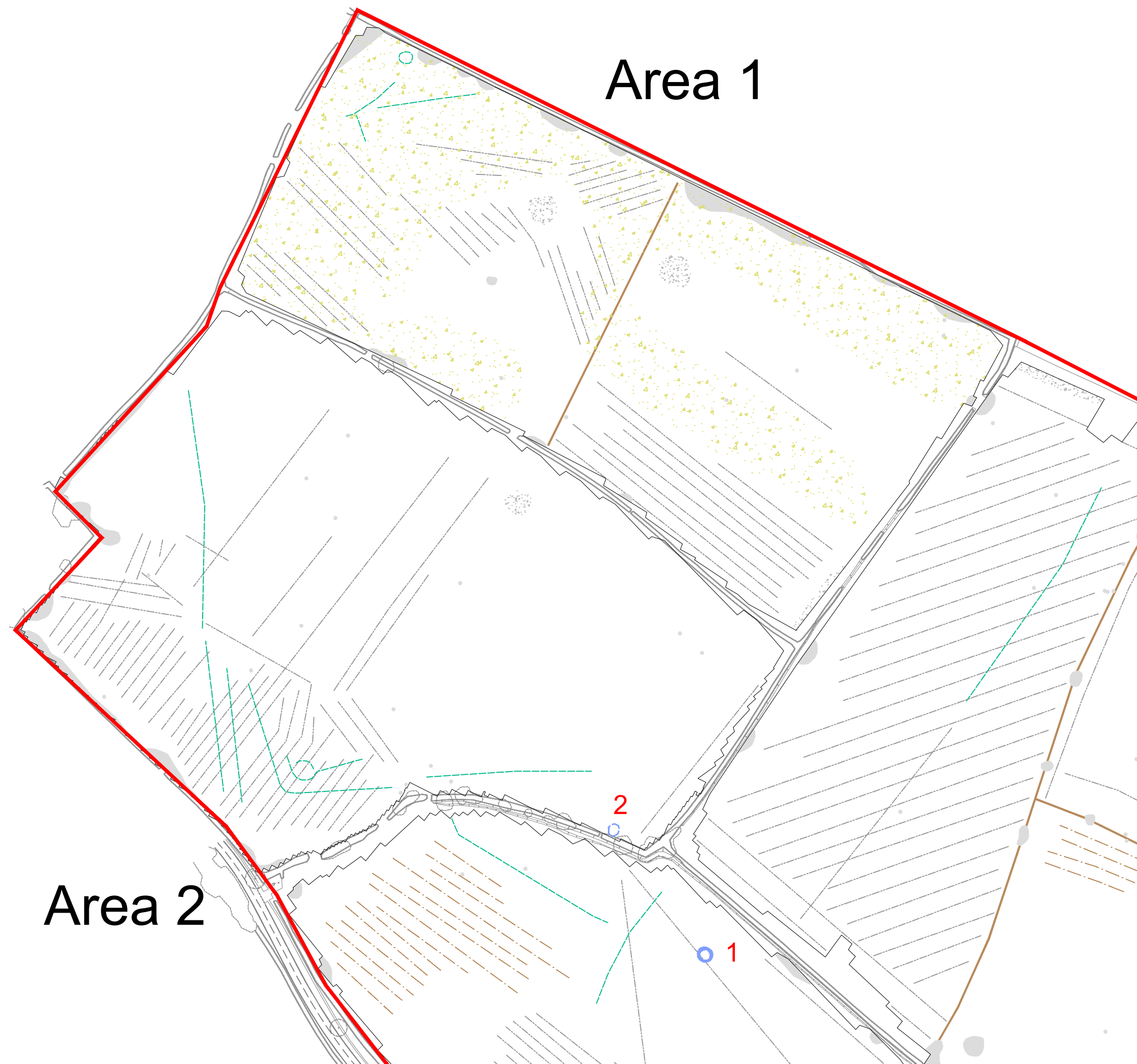
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[Areas 1 and 2]

Client: ULAS

Project: 05341 - MIRA South, Weddington Lane,
Caldecote, Warwickshire

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Fig No: 06



Area 1

Area 2

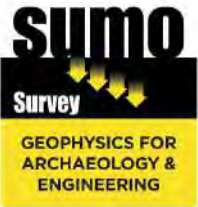
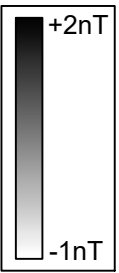
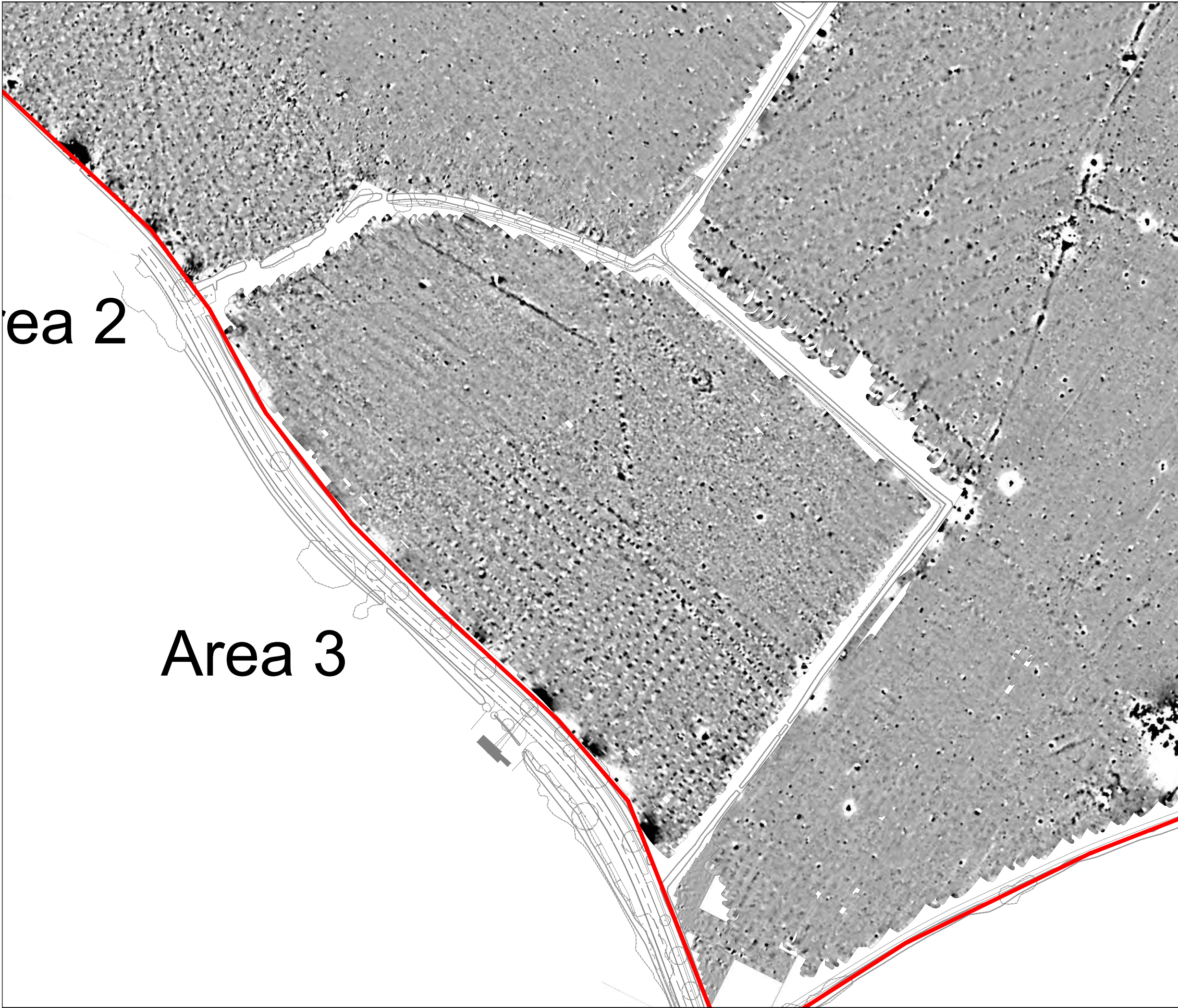


KEY

	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (trend)
	Former field boundary (corroborated)
	Former track
	Agriculture (ridge and furrow)
	Land drain
	Green waste
	Magnetic disturbance
	Service
	Ferrous



Title: Magnetometer Survey - Interpretation [Areas 1 and 2]	
Client: ULAS	
Project: 05341 - MIRA South, Weddington Lane, Caldecote, Warwickshire	
Scale: 0 125 metres 1:2500 @ A3	Fig No: 07



Title: Magnetometer Survey - Greyscale Plot
[Area 3]

Client: ULAS

Project: 05341 - MIRA South, Weddington Lane,
Caldecote, Warwickshire

Scale: 0 metres 100
1:2000 @ A3

Fig No: 08