

GEOPHYSICAL SURVEY REPORT

Land at Ambrosden, Cherwell, Oxfordshire

Client

Savills UK Ltd

For

Obsidian Strategic

Survey Report

07119

OASIS Ref. No.

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Date

12 April 2022



Survey Report 07119: Land at Ambrosden, Cherwell, Oxfordshire

Survey dates	17 - 19 March 2022
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Report Date	12 April 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 approximately 6 hectares of ground west of Ambrosden has located a range of anomalies which are of archaeological interest. The main area of importance is thought to reflect formal gardens associated with Ambrosden Hall; other less probable interpretations are the site of Ambrosden Manor House is reflected in the anomalies or they indicate a small Romano-British double-ditched enclosure. Assuming that gardens have been identified, further elements of the formal landscape could be present in the data, along with a former track / field division. A large curvilinear anomaly plus other linears, curving trends and pit-like responses of uncertain origin. Ridge and furrow ploughing has also been recorded.

5 INTRODUCTION

- 5.1 **SUMO Geophysics Ltd** were commissioned to undertake a geophysical survey of an area outlined for residential development. This survey forms part of an archaeological investigation being undertaken by **Savills UK Ltd** on behalf of **Obsidian Strategic**.

5.2 Site Details

NGR / Postcode	SP 59831 19382 / OX25 2ND
Location	The site is located 3.5km south of Bicester and 12km north-east of Kidlington. The survey area is bounded to the south by a railway line, to east by houses off Laburnum Close and Rowan Close.
HER	Oxfordshire HER
OASIS Ref. No.	sumogeop1-505971
District	Cherwell District
Parish	Ambrosden Civil parish
Topography	Undulating
Land Use	Arable agriculture
Geology (BGS 2022)	Bedrock: Peterborough Member - Mudstone Kellaways Clay Member - Mudstone Kellaways Sand Member - Sandstone and Siltstone, Interbedded Cornbrash Formation - Limestone Superficial: Alluvium - Clay, Silt, Sand and Gravel
Soils (CU 2022)	Soilscape 18: Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	6.3 ha

5.3 *Archaeological Background*

- 5.3.1 A heritage and archaeological appraisal has been carried out by Savills UK Ltd (SA 2022) in relation to potential residential development on land at Ambrosden,
- 5.4 There are no Listed Buildings or Scheduled Monuments within the Site, and the Site does not lie within or adjacent to any Conservation Areas.
- 5.4.1 Undated ditches and Neolithic – Bronze Age flint artefacts were recorded during pipeline excavations at the eastern end of the Site. There is therefore a moderate to high potential for heritage assets of prehistoric date to survive within the Site. That said, the ditches were undated and could be from any period, and the flint artefacts are suggestive of transient activity within the vicinity of the Site rather than settlement activity. Recent archaeological work 600m to the south-west of Site have recorded a series of Iron Age roundhouses and Romano-British and

Anglo-Saxon ditches, and Romano-British boundary ditches have been recorded to the east of the Site. It is therefore considered that there is a moderate potential for archaeological remains dating to these periods to be present within the Site

- 5.4.2 During the medieval and post-medieval periods, the Site lay in the agricultural hinterland of the village, and from the 18th century the Site lay within the grounds of Ambrosden Park. In addition, the site of the medieval Ambrosden Manor and the later Ambrosden Hall are thought to have lain within the eastern part of the Site. The exact location of the Manor House is unknown and it is therefore possible that aspects of this Manor could be disturbed by development within the Site. It is therefore considered that there is a moderate to high potential for the Site to contain remains of medieval and post-medieval date that may relate to agricultural practices, the former parkland, and settlement activity.

5.5 ***Aims and Objectives***

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

6 **RESULTS**

- 6.1 *The survey has been divided into two survey areas (Areas 1-2) 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 ***Probable / Possible Archaeology***

- 6.2.1 A cluster of very clear magnetic anomalies comprise a rectangular feature which measures approximately 25m E-W and 27m N-S with a break on the eastern side. There is a negative magnetic band, some 6m wide, surrounding the inner feature and beyond this there are lengths of parallel positive anomalies, all following the same regular pattern. Based on the magnetic evidence it might be tempting, given the background archaeological study, to interpret the results as indicating a possible Romano-British double-ditched enclosure. However, the DBA also refers to the site of Ambrosden Manor being located somewhere to the east of the development site. Evaluation trenches (TVAS 2005) revealed “various deposits and structures of later post-medieval date and confirmed their nature and location on the site. No finds or deposits of earlier periods, such as representing the presence of a late medieval manor house, were revealed”. However, the Ordnance Survey (OS) map of 1892-1914 shows a plan of the later Ambrosden Hall (see Figures 06 and 07). When the magnetic results are compared to the mapping the alignment and location would seem to indicate that the geophysical data are reflecting a formal garden / courtyard lying immediately west of the Hall. The positive magnetic responses could indicate ditches (perhaps wall foundation ditches) or garden beds, while the negative magnetic band might indicate a courtyard path. There is of course a third possible interpretation, that the magnetic results are reflecting the ‘lost’ Manor itself, but given that is reported as being demolished, a greater level of magnetic disturbance might be expected. Unfortunately, the existence of a sewer pipeline has cut through the features to the east and is masking any surviving features.
- 6.2.2 Approximately 40m to the north of these presumed ‘gardens’ is another ditch length which follows the same layout. Numerous pit-like responses are visible in the data, plus some large ferrous anomalies. In this context the pits and iron objects could relate to ‘garden’ features.
- 6.2.3 To the south of the ‘gardens’ and where the survey areas narrow in the south-east, there are several poorly defined linear responses that have been highlighted as being of possible interest. They are located approximately 44m away and also share the same formal plan.

6.2.4 Shadowing the northern boundary of Area 2 is a broad band of responses extending across the E-W width of the field; the western 180m coincides with a linear feature visible on LiDAR and aerial imagery. As such the two / three magnetic linears are deemed to indicate a trackway / boundary crossing the field; the ridge and furrow ploughing (see 6.4) respects this division.

6.3 ***Uncertain***

6.3.1 A large curving linear response forms a partial oval feature which measures approximately 90m E-W. While this could be archaeological in origin, there is no obvious context for such an 'enclosure'. The response could be agricultural or a result of landscaping. Hence the uncertain categorisation, which also applies to several other linear and curvilinear trends and possible pit-like anomalies visible in the dataset.

6.4 ***Agricultural – Ridge and Furrow***

6.4.1 Broad parallel linear anomalies have been recorded in both survey areas and are evidence of historic ridge and furrow agricultural regimes. The magnetic responses in the eastern half of Area 2 are much stronger and may reflect increased night soiling closer to the historic settlement or perhaps earlier magnetically enhanced responses being brought closer to the surface. It is interesting to note the direction of ploughing in the area closest to the 'gardens' (see 6.2.1) follows the same layout.

6.5 ***Service***

6.5.1 Strong dipolar linear ferrous responses are visible in the east of Area 2 and mark the routes of a service / sewer pipe.

6.6 ***Ferrous / Magnetic Disturbance***

6.6.1 Ferrous responses close to boundaries are due to adjacent houses, 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 variable. The results from this survey indicate the presence of a range of magnetic anomalies; as such the technique is deemed to have worked successfully.

8 **CONCLUSION**

8.1 The magnetometer survey has identified an area of magnetic responses which are thought on balance to indicate formal gardens originally associated with Ambrosden Hall; the latter is believed to have stood east of the survey area. More speculative interpretations are that the responses could be a double-ditched Romano-British enclosure or the site of Ambrosden Manor. Other magnetic responses to the south and north are interpreted as being further elements of the landscaped gardens. A trackway and old boundary runs east-west through the northern margins of Area 2 and ridge and furrow ploughing is visible across most of the site. A few uncertain responses are present including a large curvilinear anomaly. A water pipe runs along the eastern limits.

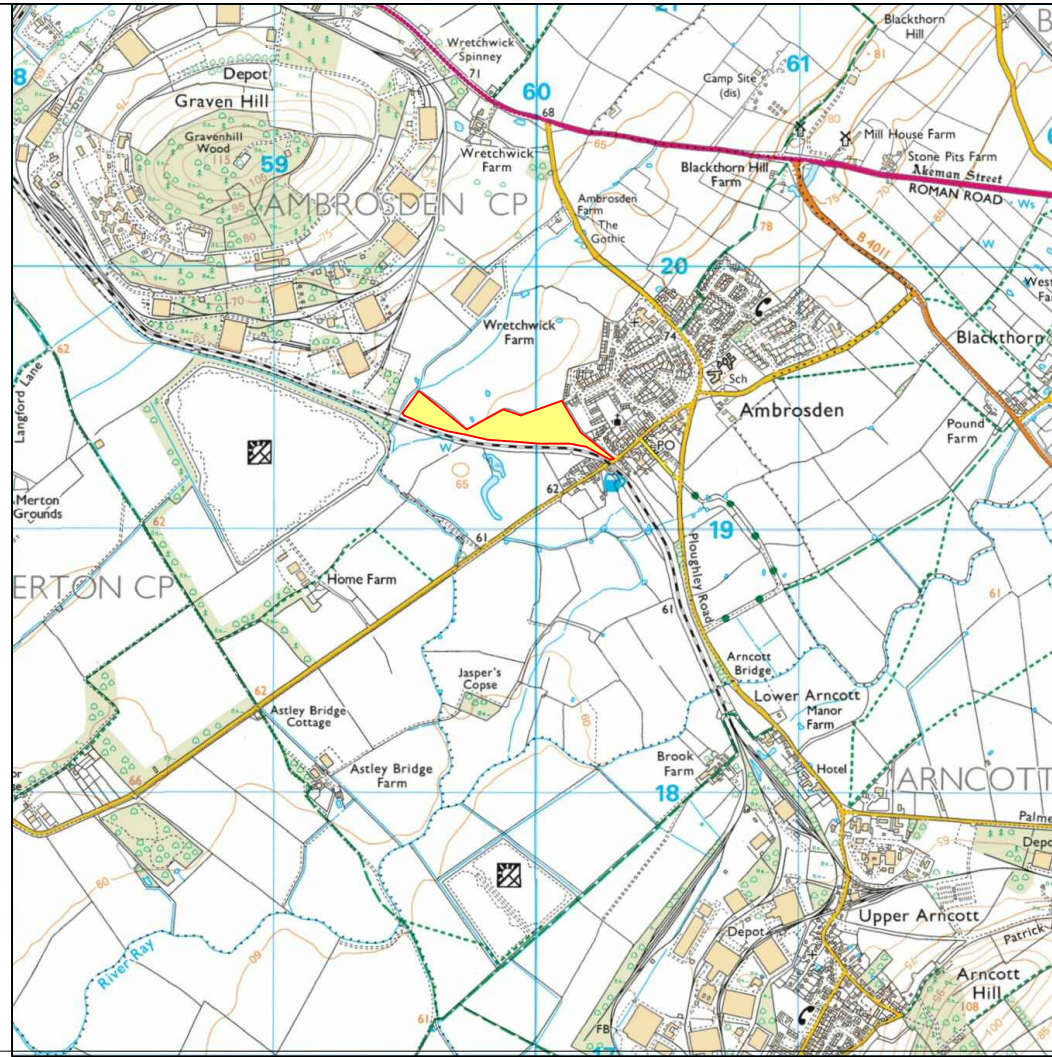
9 REFERENCES

- BGS 2022 British Geological Survey, Geology of Britain viewer [accessed 08/04/2022] *website:* (<http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps>)
- ClfA 2014 *Standard and Guidance for Archaeological Geophysical Survey*. Amended 2016.
Amended 2020 ClfA Guidance note. Chartered Institute for Archaeologists, Reading
https://www.archaeologists.net/sites/default/files/ClfAS%26GGeophysics_3.pdf
- CU 2022 The Soils Guide. Available: www.landis.org.uk. Cranfield University, UK. [accessed 08/04/2022] *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 (now withdrawn, but used for evaluating suitability of soil types)
- SA 2022 *Land at Ambrosden, Cherwell, Oxfordshire – Heritage and Archaeology Appraisal*. Savills UK Ltd, Bournemouth
- TVAS 2005 *Land off Laburnum Close, Ambrosden near Bicester, Oxfordshire*, An Archaeological Evaluation, Thames Valley Archaeological Services, unpublished.

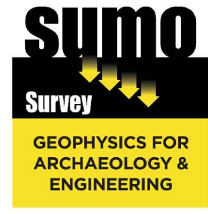
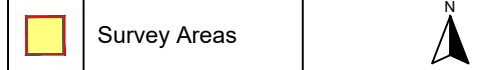
10 ARCHIVE

- 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 Midlands 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.

Survey Area



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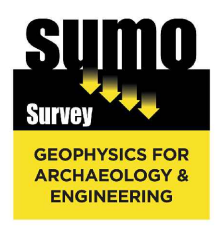
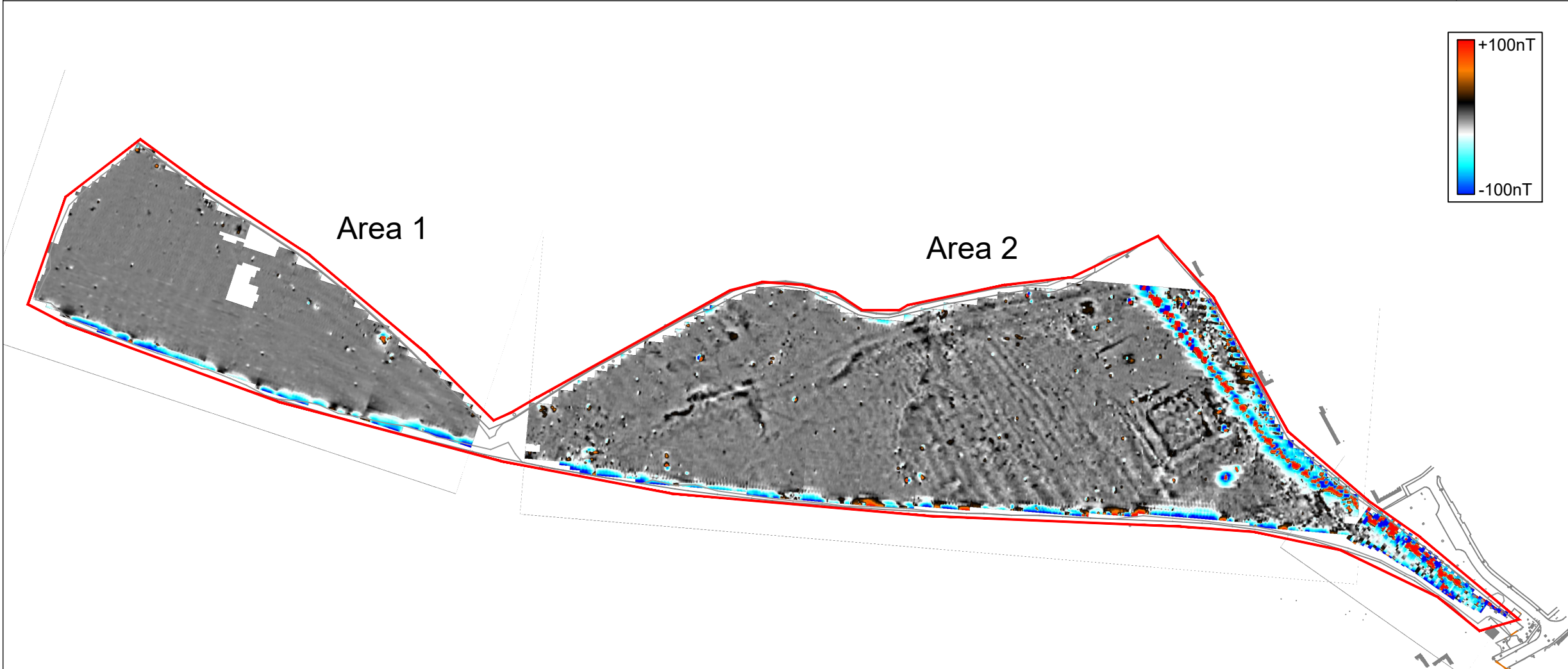
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Client: Savills UK Ltd

Project: 07119 - Land at Ambrosden, Cherwell, Oxfordshire

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Fig No: 01



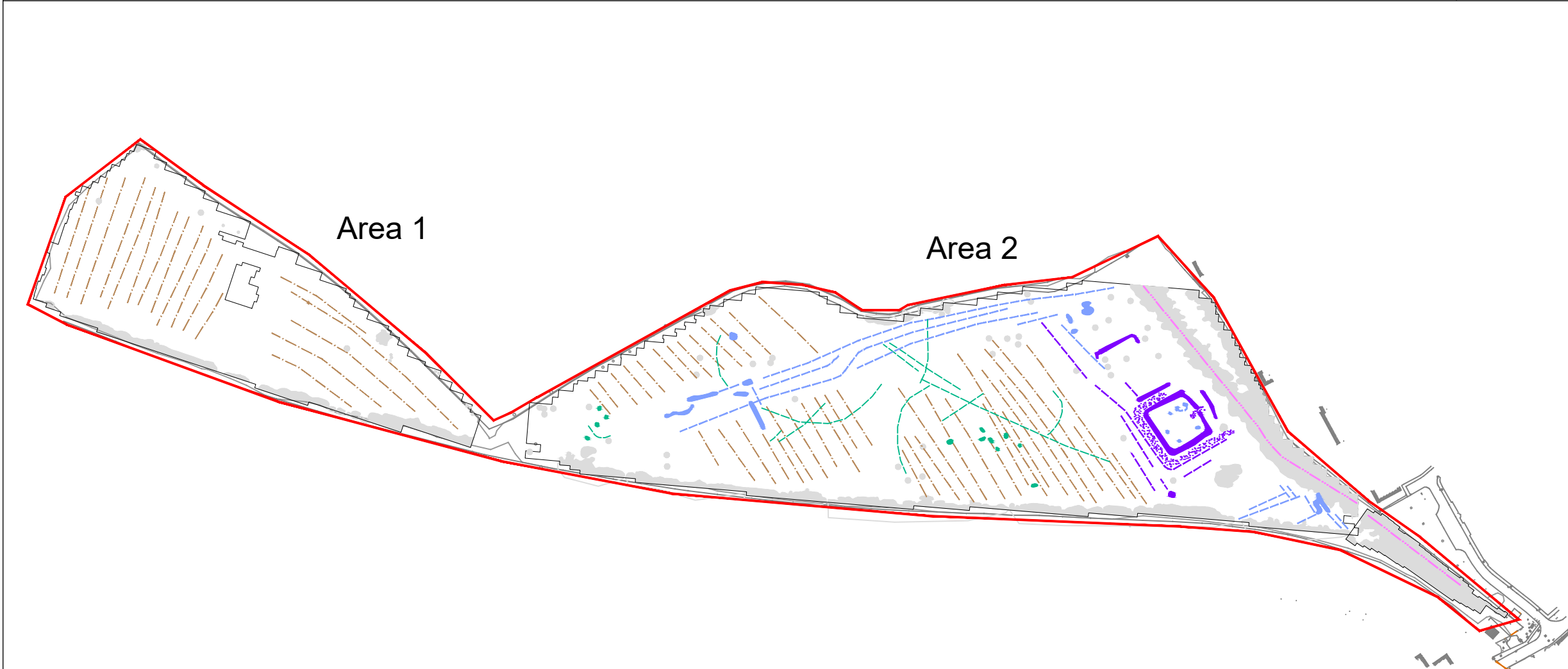
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Client: Savills UK Ltd

Project: 07119 - Land at Ambrosden, Cherwell, Oxfordshire

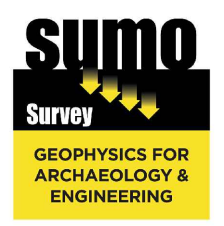
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Fig No: 02



KEY

	Probable archaeology (discrete anomaly / trend / negative response)
	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (discrete anomaly / trend)
	Agriculture (ridge and furrow)
	Service
	Ferrous



Title: Magnetometer Survey - Greyscale Plots / Interpretation

Client: Savills UK Ltd

Project: 07119 - Land at Ambrosden, Cherwell, Oxfordshire

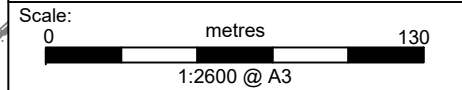
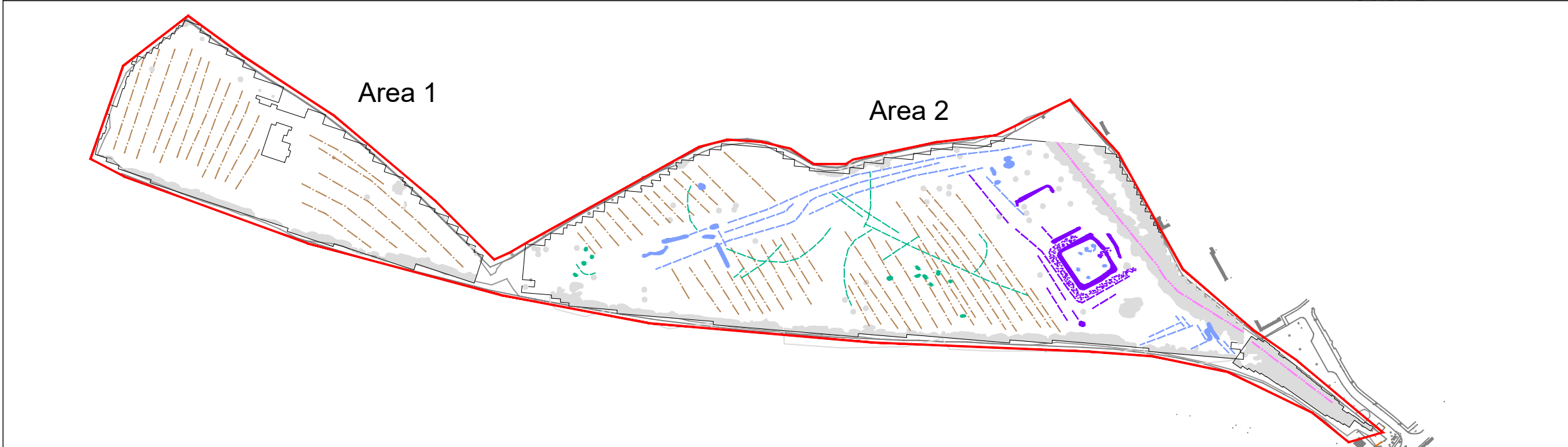
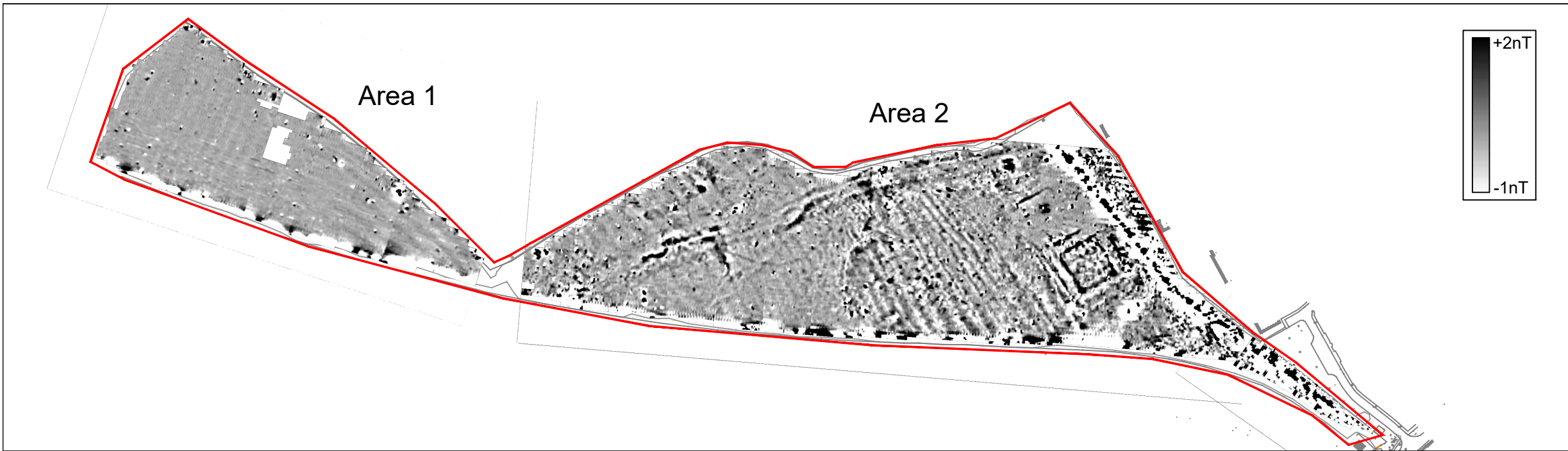
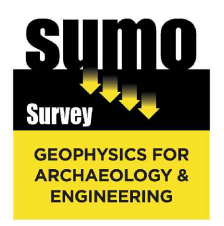
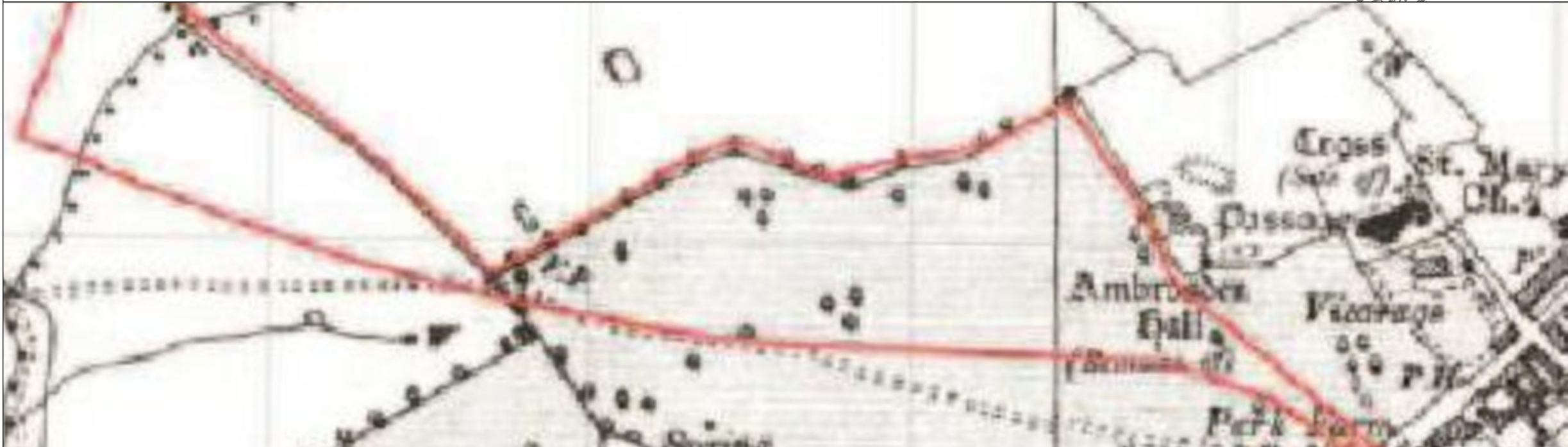


Fig No: 03



KEY

	Probable archaeology (discrete anomaly / trend / negative response)
	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (discrete anomaly / trend)
	Agriculture (ridge and furrow)
	Service
	Ferrous



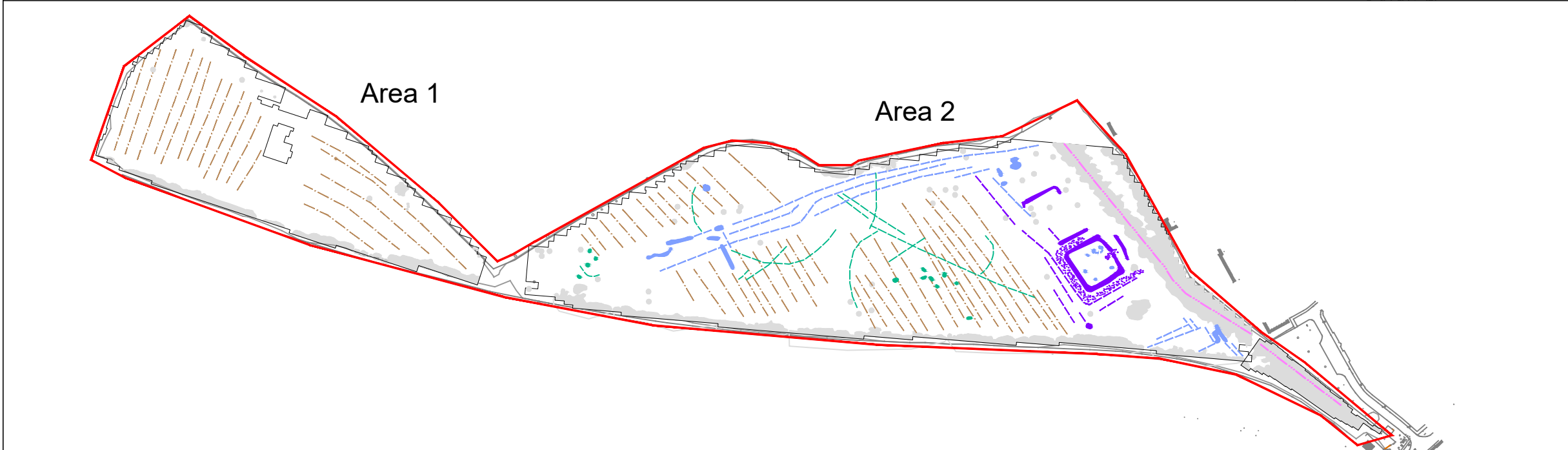
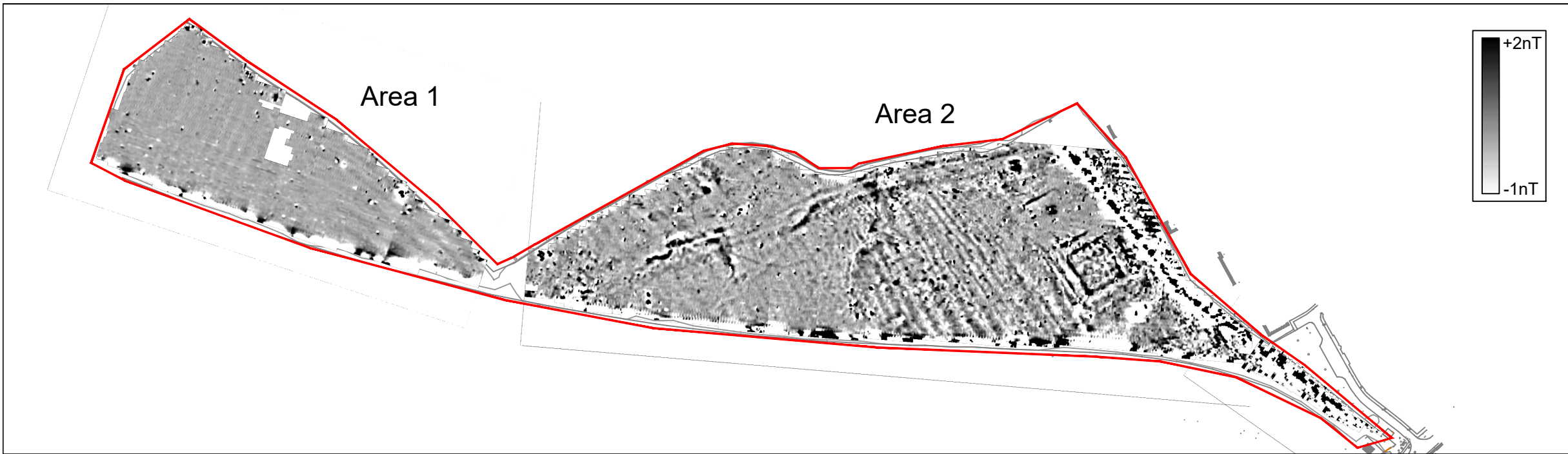
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Client: Savills UK Ltd

Project: 07119 - Land at Ambrosden, Cherwell, Oxfordshire

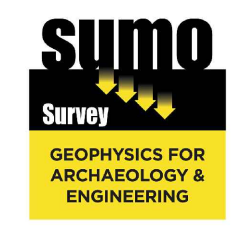
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Fig No: 05



KEY

	Probable archaeology (discrete anomaly / trend / negative response)
	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (discrete anomaly / trend)
	Agriculture (ridge and furrow)
	Service
	Ferrous



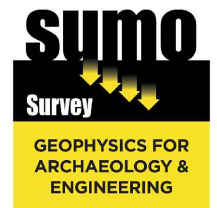
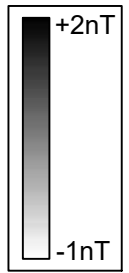
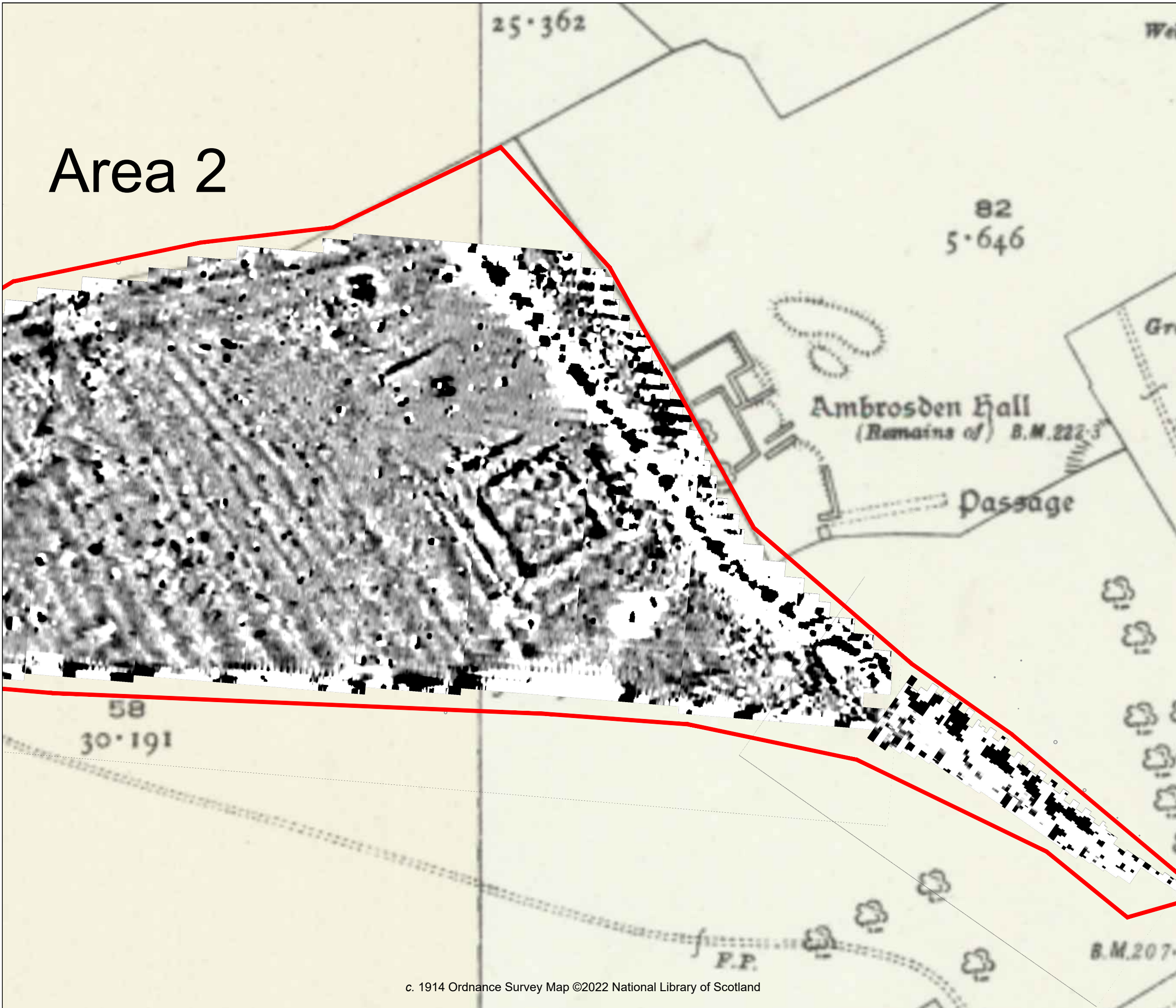
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Area 2



Title: Magnetometer Survey - Greyscale Plot / 1914 Ordnance Survey Mapping

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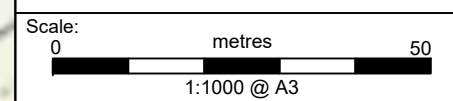
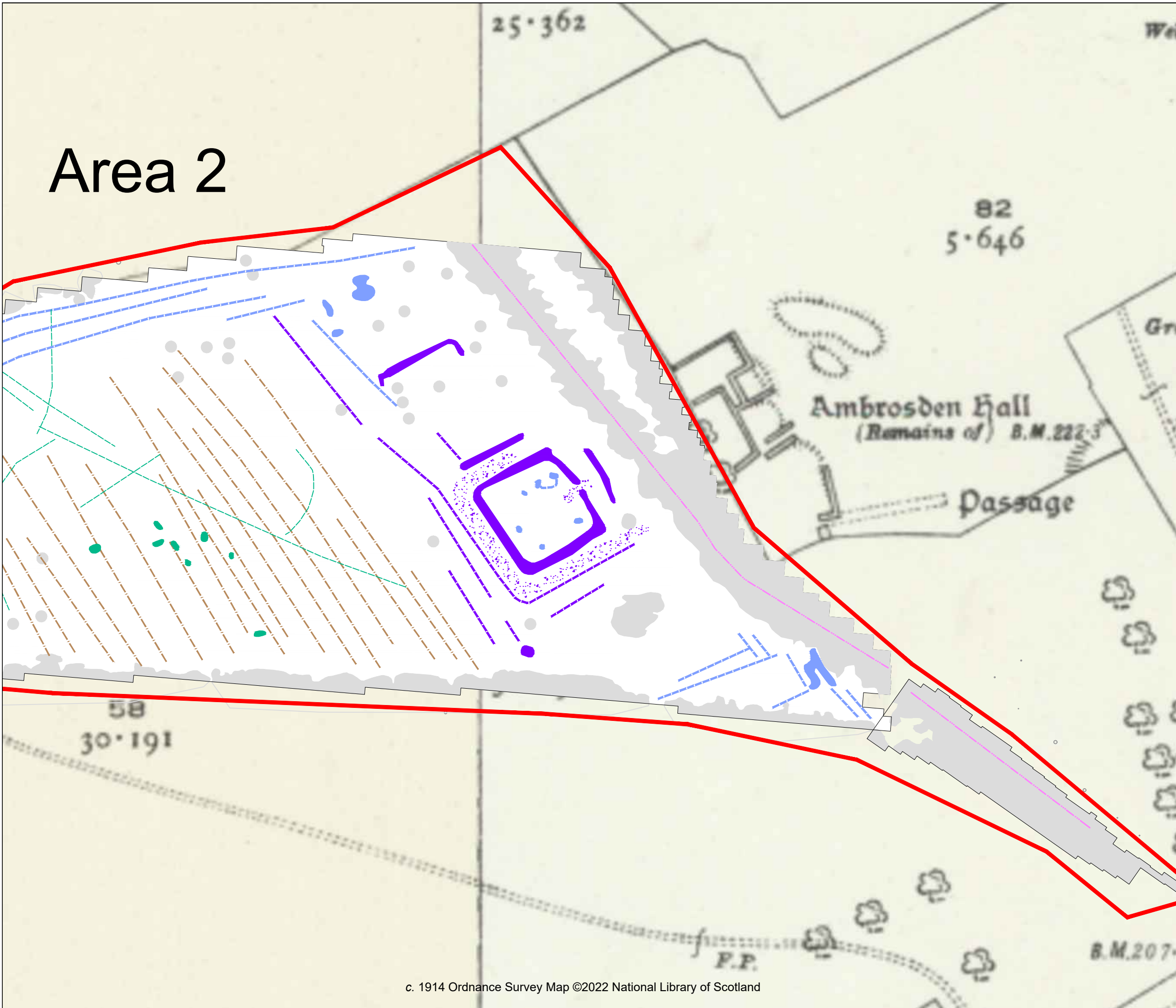


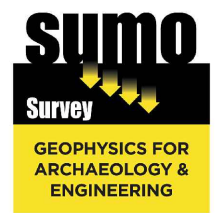
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Area 2



KEY

	Probable archaeology (discrete anomaly / trend / negative response)
	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (discrete anomaly / trend)
	Agriculture (ridge and furrow)
	Service
	Ferrous



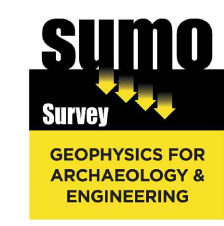
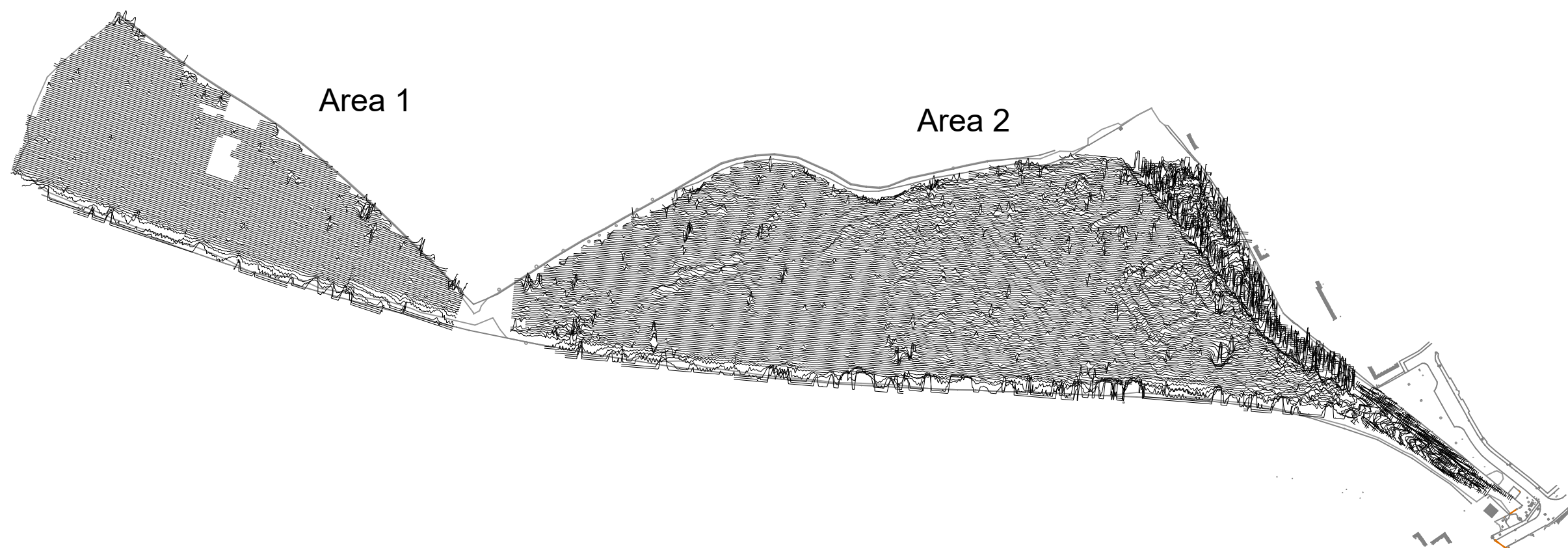
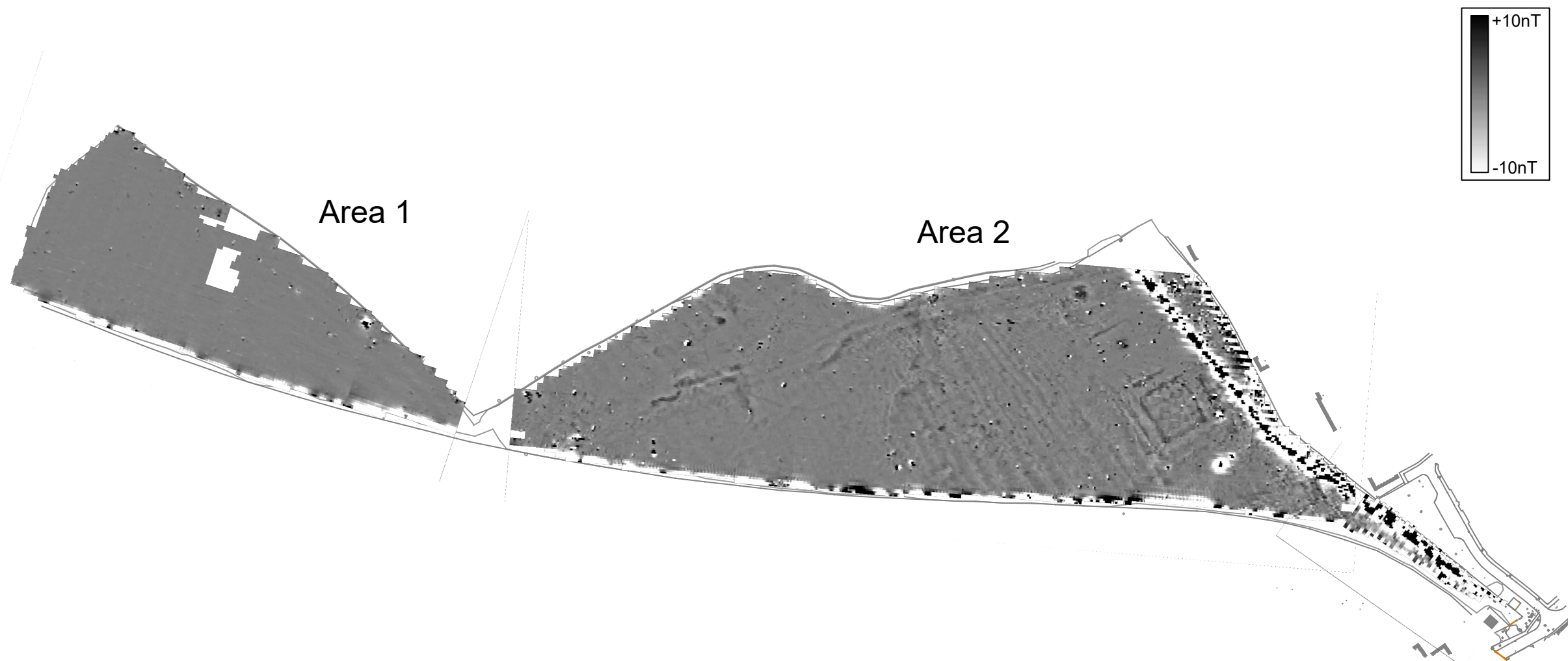
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Client: Savills UK Ltd

Project: 07119 - Land at Ambrosden, Cherwell, Oxfordshire

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Fig No: 07



Title: Minimally Processed Data - Greyscale Plots / XY Trace Plots (clipped at +/-15nT)

Client: Savills UK Ltd

Project: 07119 - Land at Ambrosden, Cherwell, Oxfordshire

Scale: 0 metres 130
1:2600 @ A3

Fig No: 08

Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (EH 2008) (then English Heritage), the Chartered Institute for Archaeologists (CIfA 2014) and the European Archaeological Council (EAC 2016).

Grid Positioning

For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. This results in an accuracy of around 0.01m.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1m	0.25m

Instrumentation: **Bartington Grad 601-2**

Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted vertically, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths. The Bartington instrument can collect two lines of data per traverse with gradiometer units mounted laterally with a separation of 1.0m. The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

Data Processing

Zero Mean	This process sets the background mean of each traverse within each grid to zero.
Traverse	The operation removes 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.

Display

Greyscale/ Colourscale Plot	This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.
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Presentation of results and interpretation

The presentation of the results includes a 'minimally processed data' and a 'processed data' greyscale plot. Magnetic anomalies are identified, interpreted and plotted onto the 'Interpretation' drawings.

When interpreting the results, several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as: Abbey Wall or Roman Road. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: Probable, or Possible Archaeology. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification Possible.

Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall, etc.*) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

<i>Archaeology / Probable Archaeology</i>	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
<i>Possible Archaeology</i>	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
<i>Industrial / Burnt-Fired</i>	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
<i>Former Field Boundary (probable & possible)</i>	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
<i>Ridge & Furrow</i>	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
<i>Agriculture (ploughing)</i>	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
<i>Land Drain</i>	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
<i>Natural</i>	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
<i>Magnetic Disturbance</i>	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present.
<i>Service</i>	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
<i>Ferrous</i>	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
<i>Uncertain Origin</i>	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of <i>Possible Archaeology / Natural</i> or (in the case of linear responses) <i>Possible Archaeology / Agriculture</i> ; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical Information: Magnetic Theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

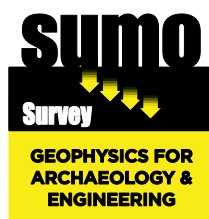
Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried feature. The difference between the two sensors will relate to the strength of a magnetic field created by this feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services.

Summary for sumogeop1-505971

OASIS ID (UID)	sumogeop1-505971
Project Name	Geophysical Survey at Land at Ambrosden, Cherwell, Oxfordshire
Sitename	
Activity type	Geophysical Survey, MAGNETOMETRY SURVEY
Project Identifier(s)	07119
Planning Id	
Reason For Investigation	Planning requirement
Organisation Responsible for work	SUMO Geophysics Ltd.
Project Dates	17-Mar-2022 - 18-Mar-2022
Location	Land at Ambrosden, Cherwell, Oxfordshire NGR : SP 59889 19394 LL : 51.8699176514509, -1.1315737574704 12 Fig : 459889,219394
Administrative Areas	Country : England County : Oxfordshire District : Cherwell Parish : Ambrosden
Project Methodology	A temporary grid system was established over the site and marked out using canes. The location of the grid will be set out using an RTK GPS system theoretically accurate to some 0.01m and referenced to OS co-ordinates. Hand Held: Data will be collected using a Bartington Grad 601-2. The instrument consists of two paired sensors (see below) and readings are logged at 0.25m centres along traverses 1.0m apart across 30m grids. The collection of data at 0.25m centres provides an appropriate methodology balancing cost and time with resolution as per Historic England guidelines. Two sensors mounted 1m horizontally apart and very accurately aligned to nullify the effects of the earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background.
Project Results	A magnetometer survey of approximately 6 hectares of ground west of Ambrosden has located a range of anomalies which are of archaeological interest. The main area of importance is thought to reflect formal gardens associated with Ambrosden Hall; other less probable interpretations are the site of Ambrosden Manor House is reflected in the anomalies or they indicate a small Romano-British double-ditched enclosure. Assuming that gardens have been identified, further elements of the formal landscape could be present in the data, along with a former track / field division. A large curvilinear anomaly plus other linears, curving trends and pit-like responses of uncertain origin. Ridge and furrow ploughing has also been recorded.
Keywords	Ridge And Furrow - MEDIEVAL - FISH Thesaurus of Monument Types Gardens Parks And Urban Spaces - POST MEDIEVAL - FISH Thesaurus of Monument Types Ditch - UNCERTAIN - FISH Thesaurus of Monument Types Pit - UNCERTAIN - FISH Thesaurus of Monument Types
Funder	
HER	Oxfordshire HER - unRev - STANDARD

Person Responsible for work	Thomas, Cockcroft, John, Gater
HER Identifiers	
Archives	



- Archaeological
- Geophysical
- Laser Scanning
- Measured Building
- Topographic
- Utility Mapping

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