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**SLADE FARM, HEDGERLEY,
BUCKINGHAMSHIRE**

A GEOPHYSICAL SURVEY

Authors: Matthew Baker, Sam Egan & John Summers (Fieldwork & Report)	
NGR: NGR SP 966 883	Report No: 4713
District: South Bucks	Site Code: n/a
Approved: Claire Halpin MfA	Project No: 4355
Signed:	Date: 6 November 2014

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OASIS SUMMARY SHEET

Project details			
Project name	<i>Slade Farm, Hedgerley, Buckinghamshire</i>		
<i>In October 2014 Archaeological Solutions Limited (AS) conducted a geophysical survey of land at Slade Farm, Hedgerley, Buckinghamshire (NGR SP 966 883). The evaluation was commissioned by Ingrebourne Valley Ltd in advance of the proposed mineral extraction and backfilling of the site with inert material, and it was required by the Local Planning Authority, based on advice from Buckinghamshire County Archaeological Service (BCAS), prior to the determination of the planning application.</i>			
<i>The survey identified 13 positive small circular anomalies which most likely represent small pits and could be of archaeological origin. A tight cluster of five positive anomalies are situated in the south-eastern field and could tentatively interpreted as a pit cluster. The remaining eight are broadly scattered in the southern area of the western field. It also identified four large weak dipolar ovoid anomalies which are most likely related to disturbance from post-medieval quarrying, outlined in the desk based assessment (Thompson, 2011).</i>			
<i>The conducive geology and presence of possible archaeological anomalies suggests that the survey has been successful. The remaining anomalies are of modern origin, relating to agricultural activity and ferrous objects.</i>			
Project dates (fieldwork)	<i>October 2014</i>		
Previous work (Y/N/?)	<i>DBA</i>	Site Code	<i>N/a</i>
P. number	<i>P4355</i>		
Type of project	<i>Geophysical survey</i>		
Site status	<i>none</i>		
Current land use	<i>Agriculture</i>		
Planned development	<i>Extraction</i>		
Main features (+dates)	<i>Anomalies indicative of possible ring ditches, a rectangular structure, a rectangular enclosure, ditches and pits.</i>		
Significant finds (+dates)	<i>N/a</i>		
Project location			
County/ District/ Parish	<i>Buckinghamshire</i>	<i>South Bucks</i>	<i>Hedgerley</i>
HER/ SMR for area	<i>Buckinghamshire HER</i>		
Post code (if known)			
Area of site	<i>19 Hectares</i>		
NGR	<i>SP 966 883</i>		
Height AOD (max/ min)	<i>c.90n AOD</i>		
Project creators			
Brief issued by	<i>Advice from BCAS</i>		
Project supervisor/s (PO)	<i>Matthew Baker and John Summers</i>		
Funded by	<i>Ingrebourne Valley Ltd</i>		
Full title	<i>Slade Farm, Hedgerley, Buckinghamshire. A Geophysical Survey.</i>		
Authors	<i>Baker, M., & Summers, J.</i>		
Report no.	<i>4713</i>		
Date (of report)	<i>6 November 2014</i>		

SLADE FARM, HEDGERLEY, BUCKINGHAMSHIRE A GEOPHYSICAL SURVEY

SUMMARY OF RESULTS

In October 2014 Archaeological Solutions Limited (AS) conducted a geophysical survey of land at Slade Farm, Hedgerley, Buckinghamshire (NGR SP 966 883). The evaluation was commissioned by Ingrebourne Valley Ltd in advance of the proposed mineral extraction and backfilling of the site with inert material, and it was required by the Local Planning Authority, based on advice from Buckinghamshire County Archaeological Service (BCAS), prior to the determination of the planning application.

The survey identified 13 positive small circular anomalies which most likely represent small pits and could be of archaeological origin. A tight cluster of five positive anomalies are situated in the south-eastern field and could tentatively interpreted as a pit cluster. The remaining eight are broadly scattered in the southern area of the western field. It also identified four large weak dipolar ovoid anomalies which are most likely related to disturbance from post-medieval quarrying, outlined in the desk based assessment (Thompson, 2011).

The conducive geology and presence of possible archaeological anomalies suggests that the survey has been successful. The remaining anomalies are of modern origin, relating to agricultural activity and ferrous objects.

1 INTRODUCTION

1.1 In October 2014 Archaeological Solutions Limited (AS) conducted a geophysical survey of land at Slade Farm, Hedgerley, Buckinghamshire (NGR SP 966 883; Figs. 1 - 2). The evaluation was commissioned by Ingrebourne Valley Ltd in advance of the proposed mineral extraction and backfilling of the site with inert material, and it was required by the Local Planning Authority, based on advice from Buckinghamshire County Archaeological Service (BCAS), prior to the determination of the planning application.

1.2 The evaluation was conducted in accordance with a generic brief prepared by BCAS, and a specification compiled by AS (dated 24th July 2014). The geophysical survey was carried out in accordance with the English Heritage document *Geophysical Survey in Archaeological Field Evaluation*, 2008, and IFA Paper 6: *The use of Geophysical Techniques in Archaeological Evaluations*. It also adhered to Gurney (2003) *Standards for Field Archaeology in the East of England*.

1.3 The field evaluation aimed to gather sufficient information to generate a reliable predictive model of the extent, character, date, state of preservation and depth of burial of important archaeological remains, if present, within the study area.

Objectives

1.4 The project objectives were:

- To collate, verify and assess all information relevant to presence, survival and character of archaeological remains/structures within the study area.
- To provide a reliable predictive model of the sub-surface deposits likely to be present on the site and assess their archaeological significance.

Planning policy context

1.5 The National Planning Policy Framework (NPPF 2012) states that those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest are heritage assets. The NPPF aims to deliver sustainable development by ensuring that policies and decisions that concern the historic environment recognise that heritage assets are a non-renewable resource, take account of the wider social, cultural, economic and environmental benefits of heritage conservation, and recognise that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. The NPPF requires applications to describe the significance of any heritage asset, including its setting that may be affected in proportion to the asset's importance and the potential impact of the proposal.

1.6 The NPPF aims to conserve England's heritage assets in a manner appropriate to their significance, with substantial harm to designated heritage assets (i.e. listed buildings, scheduled monuments) only permitted in exceptional circumstances when the public benefit of a proposal outweighs the conservation of the asset. The effect of proposals on non-designated heritage assets must be balanced against the scale of loss and significance of the asset, but non-designated heritage assets of demonstrably equivalent significance may be considered subject to the same policies as those that are designated. The NPPF states that opportunities to capture evidence from the historic environment, to record and advance the understanding of heritage assets and to make this publicly available is a requirement of development management. This opportunity should be taken in a manner proportionate to the significance of a heritage asset and to impact of the proposal, particularly where a heritage asset is to be lost.

2 DESCRIPTION OF THE SITE

2.1 The Slade Farm site is approximately 2km west of the edge of Gerrards Cross and 3 km south-east of Beaconsfield in south Buckinghamshire. The site comprises a group of fields with two small areas of woodland included in the westernmost field. The north and north-east side of the site is bordered by Hedgerley Lane, which also runs parallel with the M40 along the northern edge of the site. The south-eastern side of the site is defined by Village Lane which runs from Hedgerley Lane. The southern part of the site running east to west is defined by a track leading to Slade Farm. The boundary then leaves the track to dog-leg around Slade Farm, and resumes its westerly course via a field boundary to Andrew Hill Lane. The western side of the site is demarcated by the edge of Hillmotte Wood with Andrew-Hill Lane just beyond.

3 TOPOGRAPHY, GEOLOGY AND SOILS

3.1 The site is at 90m AOD on a hill overlooking the valley of the Alder Bourne to the south, a tributary of the River Colne which in turn runs into the Thames. The majority of the site is fairly flat but it slopes gradually to the south and east becoming steeper towards the edges. The immediate slope to the south-east is caused by another small valley or depression running eastwards from Slade Farm and then south to the Alder Bourne.

3.2 The soil is mixed formed from the Sonning 2 and Essendon Series and is essentially rich loam and gravel with a chalky subsoil (Page 1925). The subsoil may be clay enriched and slowly permeable. The underlying geology is formed of Woolwich-Reading beds of the Palaeogene comprising interbedded sand and clay laid down in estuarine or brackish water.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 An archaeological desk-based assessment has been prepared (Thompson 2011). In summary:

Archaeological Background

Prehistoric

The area location on gravel terraces along rivers would probably have been favourable to prehistoric settlement, and a relatively large number of prehistoric flint scatters have been recovered from the area. They are mainly chance finds grouped around wooded areas, and this distribution may partly be due to the relatively undisturbed nature of those environments. There are however, few scatters recorded from

within 1km of the assessment site, although the closest comprising Mesolithic to Bronze Age flint scrapers were excavated at the Hedgerley Kiln site immediately to the north-east of the site (BHER 0152310000). A fragment of Neolithic fired clay with a grain impression also came from there (BHER 0152310001). A Neolithic scraper and five flint flakes were found near Court Farm 800m to the south (BHER 0011400000). No Iron Age remains have been recovered although the large hillfort and Scheduled Ancient Monument of Bulstrode Camp is located just over 2km to the east.

Romano-British

In the Romano-British period Hedgerley formed part of an important local pottery manufacturing region. The Hedgerley Kiln site is located immediately to the north-east of the assessment site (BHER 0152300000, 015231000, 0152302000). A Roman Road (BHER 0439902000) is inferred running parallel with Hedgerley Lane on the northern edge of the assessment site linking the kilns with others further to the east. Crop Marks noted on the southern edge of the assessment site have been suggested as representing another Romano-British kiln site (BHER 0256900000). However, no pottery or other evidence to support this has been found, and it is possible that the features are a natural phenomenon such as tree rooting.

Anglo-Saxon

There are no Anglo-Saxon remains from within 1km of the site.

Medieval

The location of Bulstrode Temple, a preceptory of the Templar Knights, is located at Moat Farm 550m north-east of the assessment site and is a Scheduled Ancient Monument (BHER 0052502000). However, no medieval remains including ridge and furrow have been reported closer than this to the assessment site.

Post-medieval

Slade Farm is a Grade II listed farmhouse and outbuildings. A post-medieval pit is recorded on the west side of the site on the 1925 OS map (BHER 0841200000), and other quarry pits are located just outside the assessment site. The site of a small hospital is located on the western edge of the site, and there have been changes in the post-medieval field boundaries. A post-medieval enclosure or boundary ditch is located south of Hillmotts Furze 400m south-west of the assessment site (BHER 0628700000)

Conclusion

Flint scatters and a possible fragment of Neolithic fired clay were

recovered during excavations immediately to the northeast of the assessment site (BHER 0152310000 and 0152310001). In the same area Romano-British pottery kiln sites were excavated (BHER 0152300000, 0152310000, 0152302000) with others located further to the east. A possible kiln site is also located on the assessment site (BHER 0256900000) and the line of a Roman Road bordered the northern perimeter running parallel with Hedgerley Lane (BHER 0439902000). At Moat Farm a Scheduled Ancient Monument (BHER 0052502000) is probably the site of the Templar Manor of Temple Bulstrode, and building remains excavated there date from the early 14th century. Slade Farmhouse and its ancillary buildings (BHER 1226500000 and 1226600000), located immediately south of the assessment site, are Grade II listed buildings with medieval stonework incorporated. Remains of a small Isolation Hospital and a post-medieval quarry pit are located on the assessment site (BHER 084120000). Redundant post-medieval field boundaries shown on the historic maps are also likely to survive.

5 METHOD OF WORK

5.1 The magnetic survey was performed using a dual sensor Grad601-2 Magnetic gradiometer manufactured by Bartington instruments Ltd. The gradiometer measures differences in local magnetic anomalies compared to the difference in the general magnetic background. These machines are extremely sensitive and can detect changes as weak as 0.1 nanoTesla (nT)

5.2 Grid method and location- 30m x 30m grids were set out across the entirety of the survey area forming a network. The grids were located using a Leica Total station. Gradiometers were carried along 1m spaced traverses through each grid square; the gradiometer was triggered to take measurements at 0.25m intervals along the traverses. A total of 3600 measurements were taken per grid square. All fieldwork methods complied with the guidelines issued by English Heritage and by the Institute for Archaeologists (EH 2008 and IfA 2011) and with the method statement for the project (Archaeological Solutions dated 24th July 2014)

5.3 The survey data was processed using Terrasurveyor LITE software. Basic processing of the data can enhance possible archaeological features and eliminate natural/modern features. The general processes are as follows:

Destripe- The destripe function removes the striping effects caused by discrepancies between different sensors and walking directions.

Destagger- The Destagger function is used to correct for displacement of anomalies caused by alternate zig-zag traverses. These displacements are often observable in gradiometer data (collected with

zig-zag traverses) if sample interval is less than 1m. Destagger can operate on alternate lines or pairs of lines, in the X direction only. It can operate on all the grids, individual grids or individual lines within a grid. (Geoscan 2014)

Zero means traverse- The Zero Mean Traverse function sets the background mean of each traverse within a grid to zero. It is useful for removing striping effects in the traverse direction which can occur in gradiometer data. This also has the effect of removing grid edge discontinuities at the same time. It operates over the whole of the data set. (Geoscan 2014)

Clip -The Clip function can be used to clip, or limit, data to specified maximum and minimum values. This can improve graphical presentation and also forms a useful pre-process procedure for many other functions. It can operate over the whole of the data set, or any inclusive or exclusive block. (Geoscan 2014)

6 RESULTS

The following list of numbered anomalies refers to numerical labels on the interpretation plots (Fig. 6)

Probable Archaeology

1: Thirteen positive small circular anomalies which most likely represent small pits and could be of archaeological origin were located within the survey. A tight cluster of five positive anomalies are situated in the south-eastern field and could tentatively interpreted as a pit cluster. The remaining eight are broadly scattered in the southern area of the western field.

Probable geological, post-medieval, and modern ferrous features

The majority of the magnetic survey results across site fall into two categories, dipolar (paired positive/negative) ferrous based anomalies, and weakly positive irregular ovoid and linear magnetic anomalies which could represent geological features.

2: Four large weak dipolar ovoid anomalies which are most likely related to disturbance from post-medieval quarrying, as described in the desk based assessment (There are a number of small quarry pits dotted around the site where sand and gravel has been extracted. Only one is recorded on the assessment site (BHER 0841200000) with others close to the edges (BHER 0891500000, 0841100000) (Thompson, 2011).

3: A sweeping spread of weak positive and negative anomalies were located in the western field. The anomalies are both curvilinear and amorphous in shape. These are indicative of geological features.

4: A large roughly ovoid area in the eastern field contains a series of weak positive responses also indicative of geological features.

5: Two strong dipolar anomalies were found in the western field, and one in the south eastern field. These most likely represent modern ferrous objects.

6: Magnetic spikes consisting of a single positive anomaly with a negative response are randomly extend across the survey area and are most likely caused by small ferrous objects.

7: Three areas produced high dipolar responses which are likely to represent modern fencing,

7 CONCLUSION

7.1 The survey identified

1: Thirteen positive small circular anomalies which most likely represent small pits and could be of archaeological origin were located within the survey. A tight cluster of five positive anomalies are situated in the south eastern field and could tentatively interpreted as a pit cluster. The remaining eight are broadly scattered in the southern area of the western field.

2: Four large weak dipolar ovoid anomalies which are most likely related to disturbance from post-medieval quarrying, outlined in the desk based assessment (Thompson, 2011).

7.2 The conducive geology and presence of possible archaeological anomalies suggests that the survey has been successful. The remaining anomalies are of modern origin, relating to agricultural activity and ferrous objects.

ACKNOWLEDGEMENTS

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AS would also like to thank Mr Phillip Markham, Buckinghamshire Historic Environment Officer.

BIBLIOGRAPHY

British Geological Survey South Sheet, 1977. Geological Survey Ten Mile Map, South Sheet First Edition (Quaternary). Institute of Geological Sciences.

British Geological Survey, 2001. Geological Survey Ten Mile Map, South Sheet, Fourth Edition (Solid).

British Geological Society. British Geological Survey, n.d., website: (<http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps>) Geology of Britain viewer.

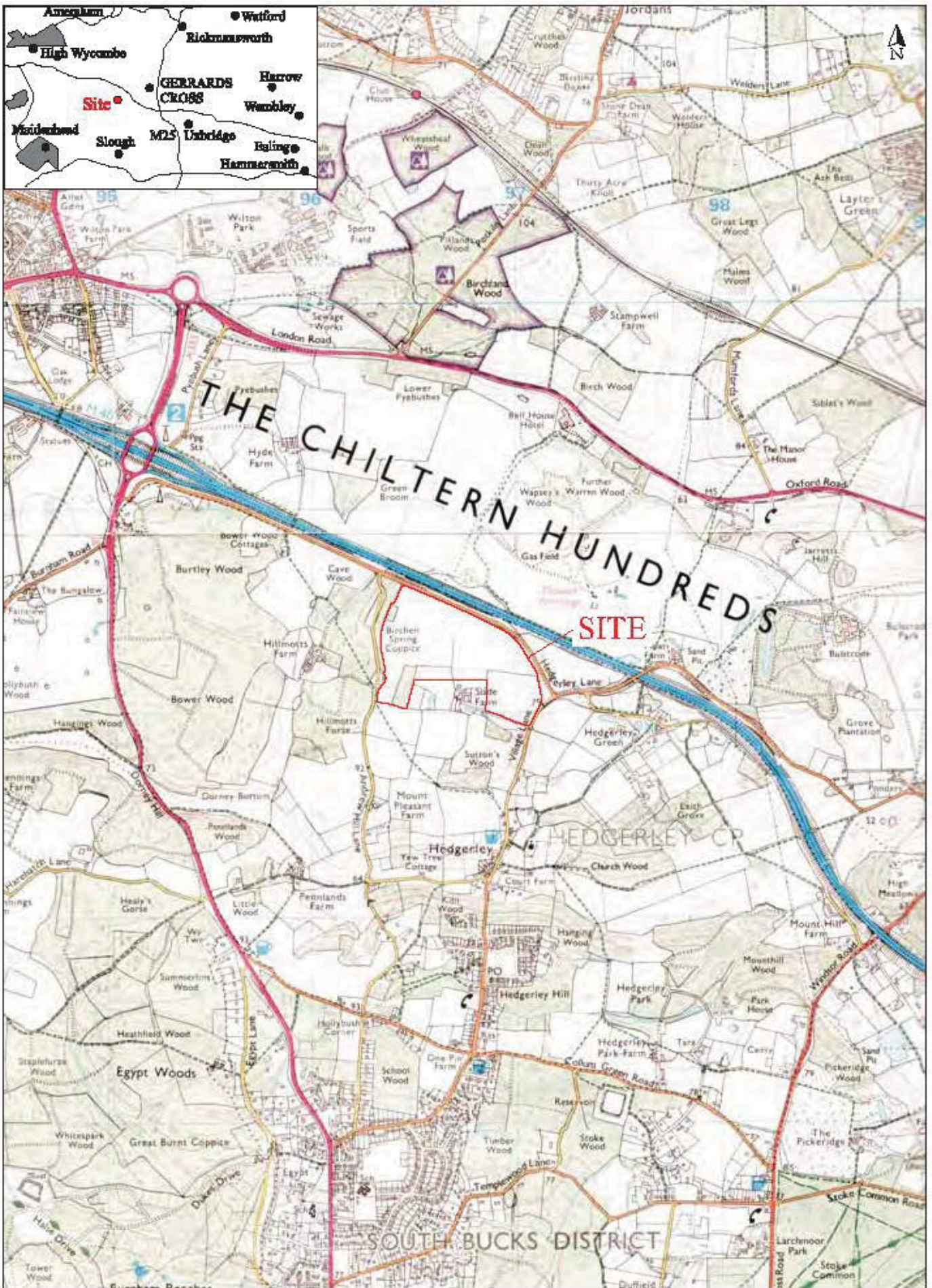
Soil Survey of England and Wales, 1983. Soils of England and Wales, Sheet 4 Eastern England England.

English Heritage, 2008. Geophysical Survey in Archaeological Field Evaluation.

Institute For Archaeologists. *Standard and Guidance for Archaeological Geophysical Survey.*

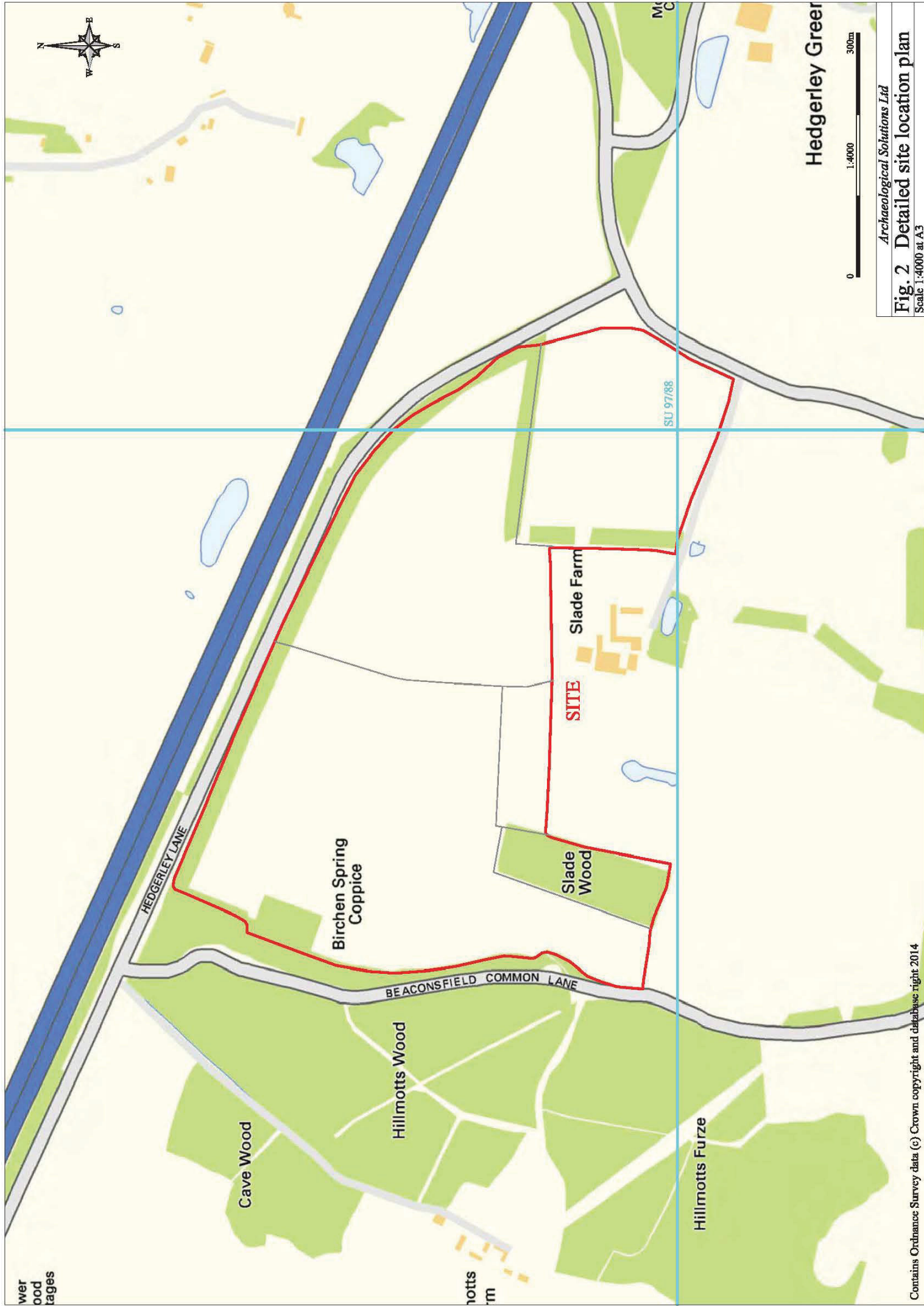
<http://www.archaeologists.net/sites/default/files/nodefiles/Geophysics2010.pdf>

Thompson, P, 2011, *Slade Farm, Hedgerley, Buckinghamshire. An Archaeological Desk-based Assessment*, AS Report 3817

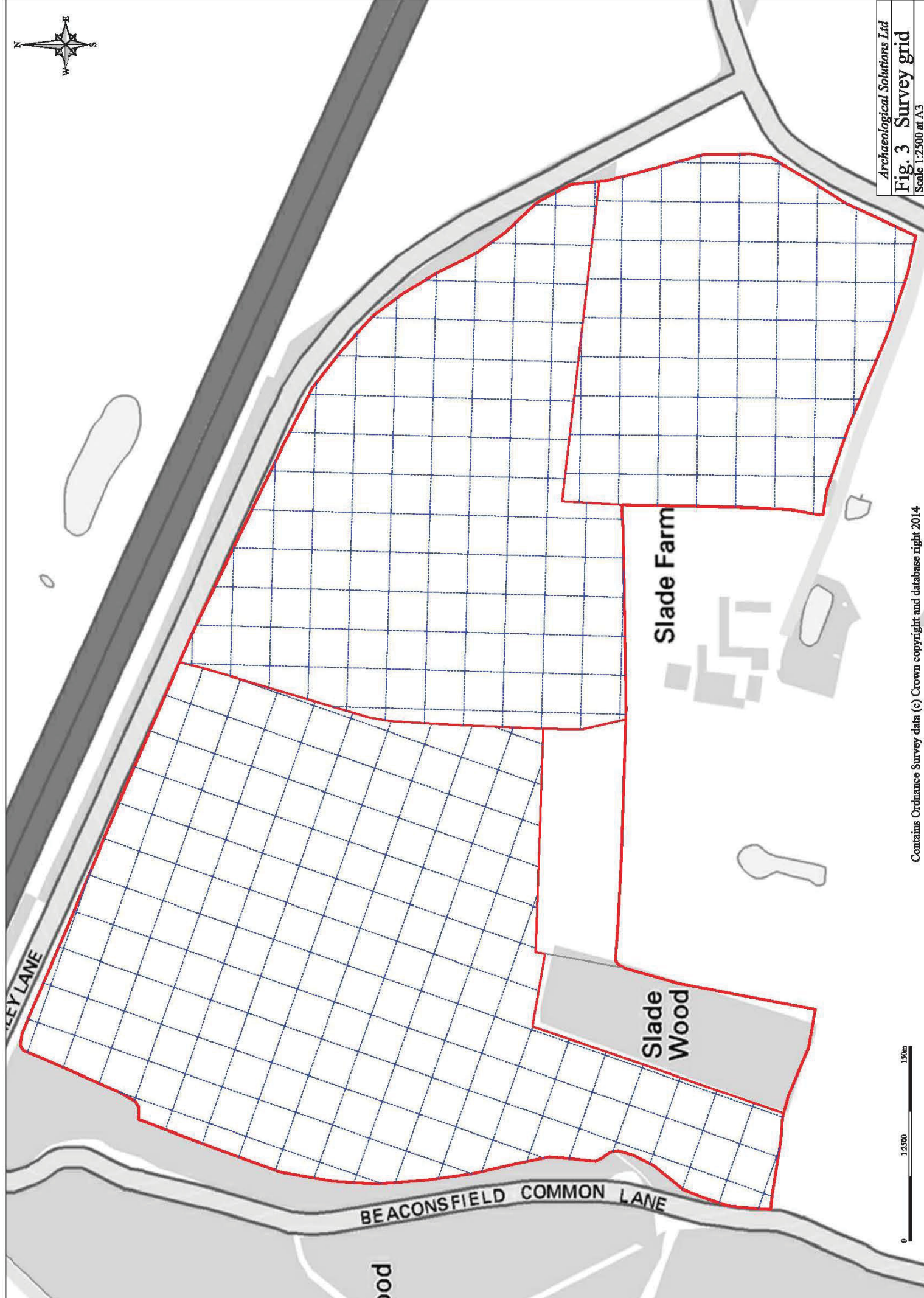
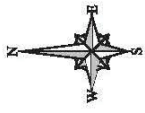


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Fig. 1 Site location plan
 Scale 1:25,000 at A4

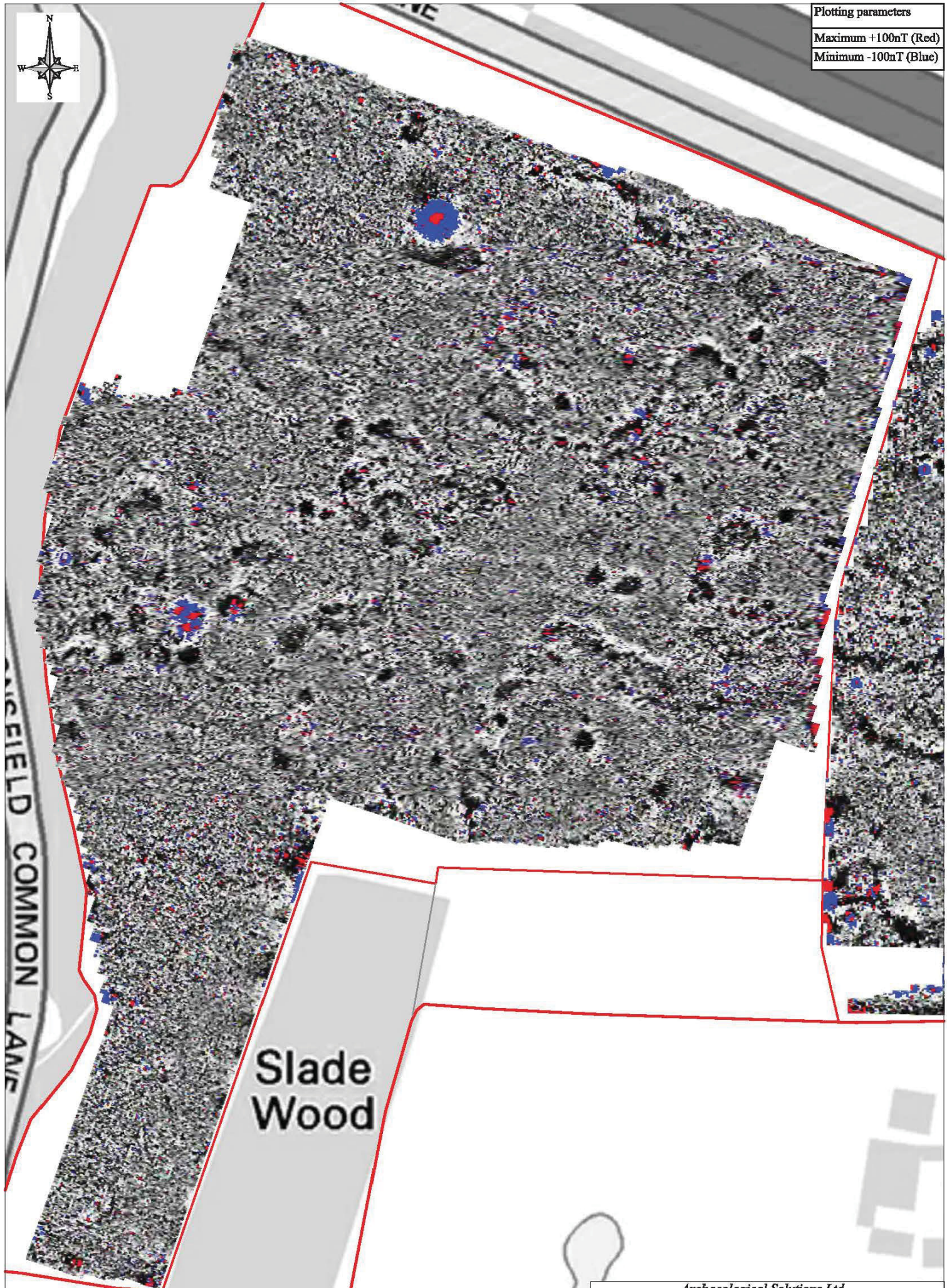


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Fig. 2 Detailed site location plan
 Scale 1:4000 at A3





Plotting parameters
Maximum +100nT (Red)
Minimum -100nT (Blue)



Slade Wood

Slade Wood

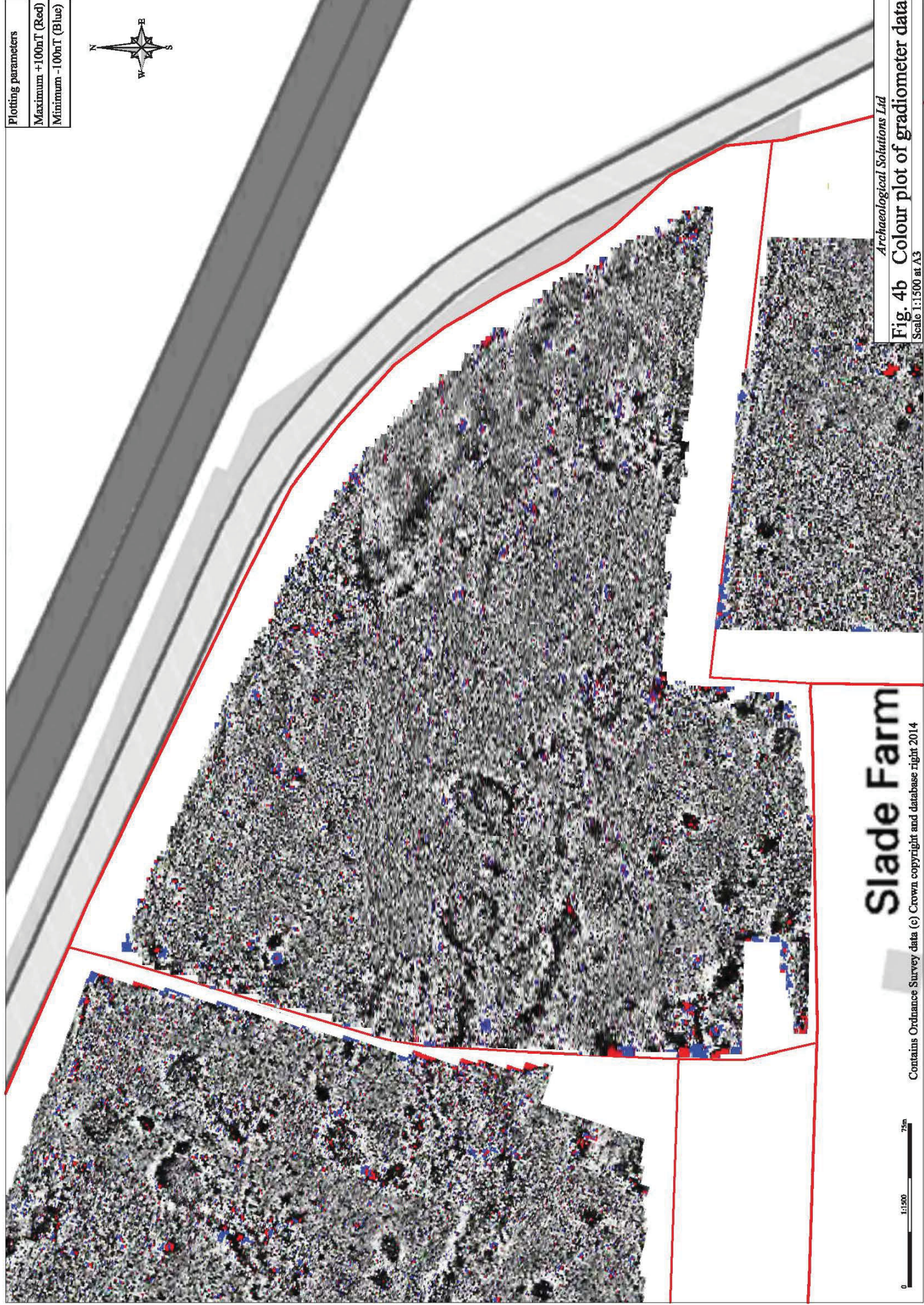
Slade Wood

0 1:1500 75m

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Fig. 4a Colour plot of gradiometer data
Scale 1:1500 at A3

Plotting parameters
Maximum +100nT (Red)
Minimum -100nT (Blue)



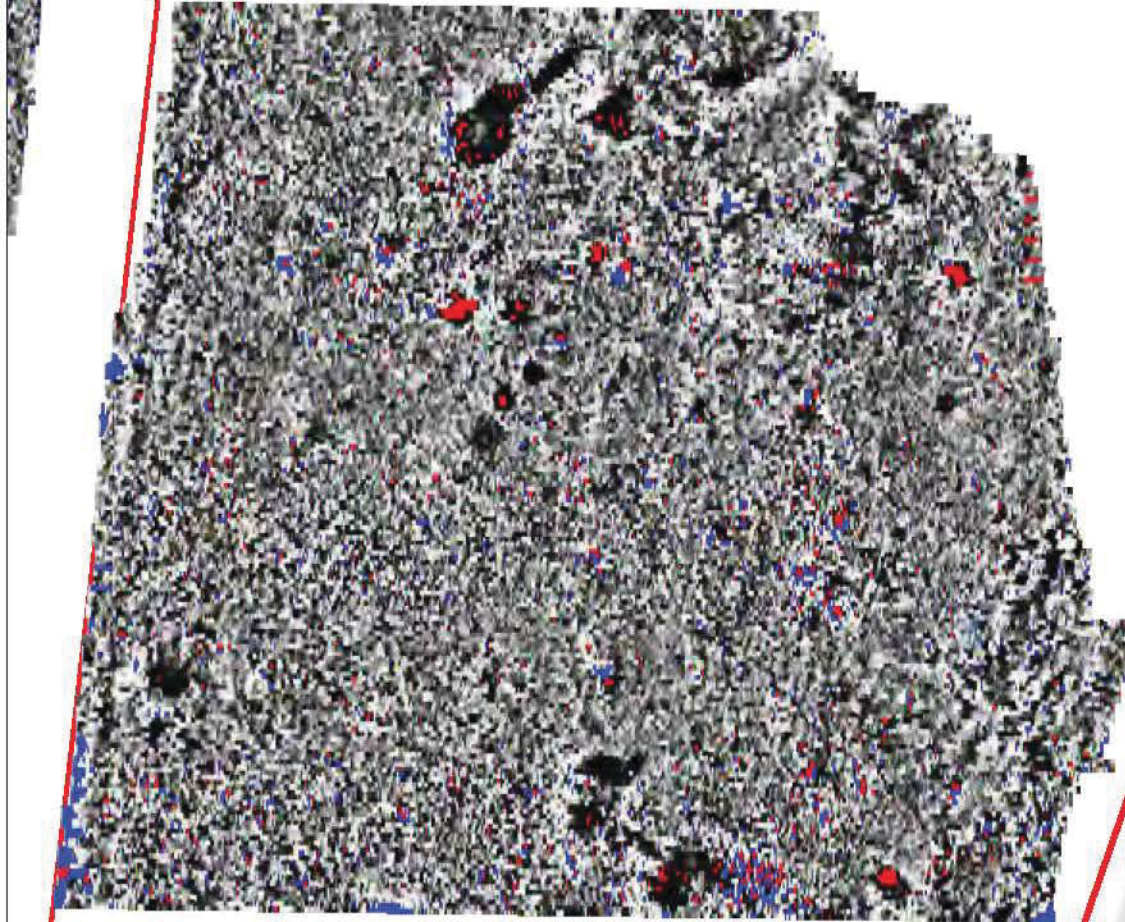
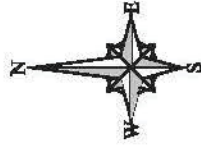
Slade Farm

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Fig. 4b Colour plot of gradiometer data
Scale 1:1500 at A3

Plotting parameters
Maximum +100nT (Red)
Minimum -100nT (Blue)



le Farm

Archaeological Solutions Ltd

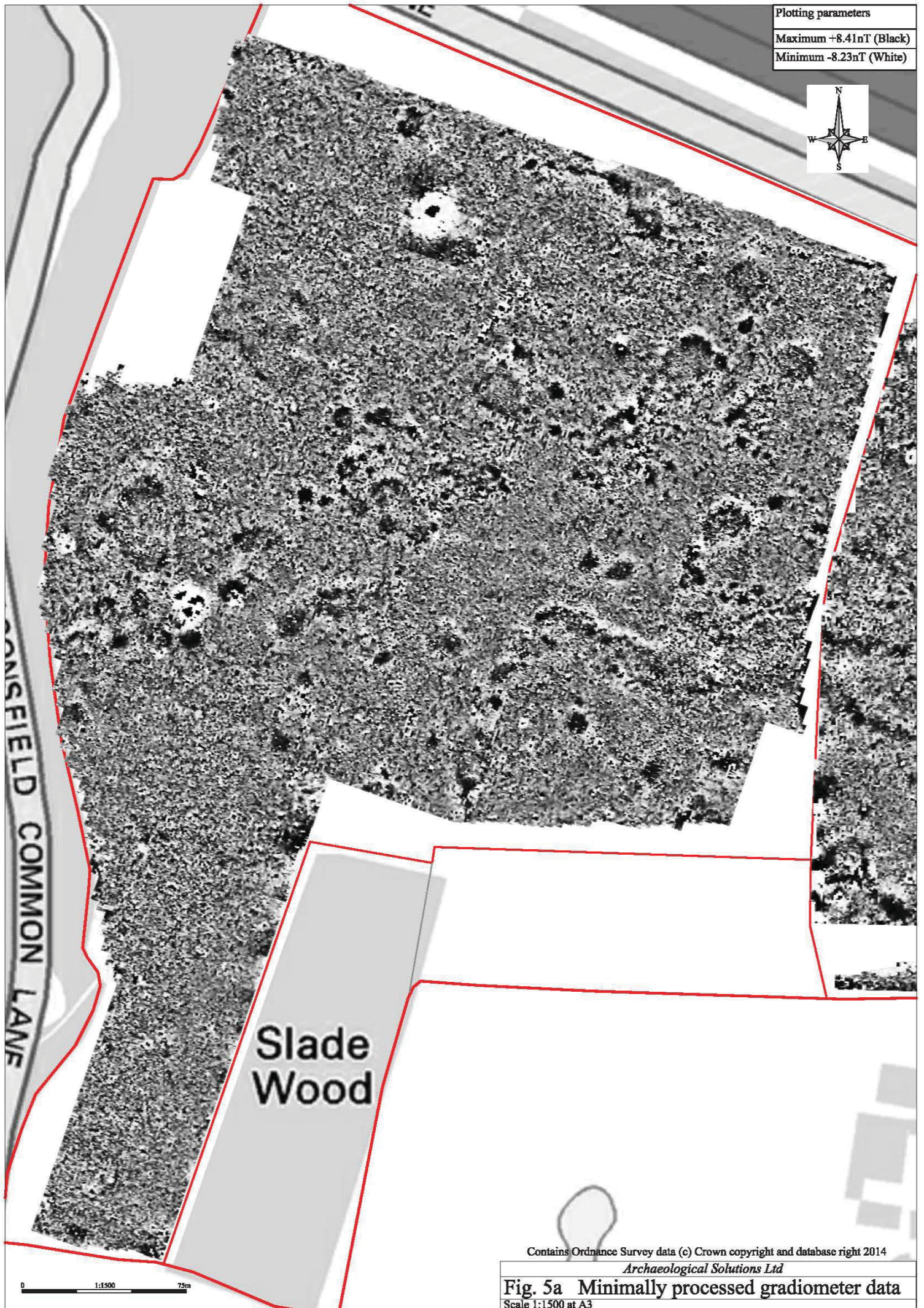
Fig. 4c Colour plot of gradiometer data

Scale 1:1500 at A4

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0 1:1500 75m

Plotting parameters
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Minimum -8.23nT (White)

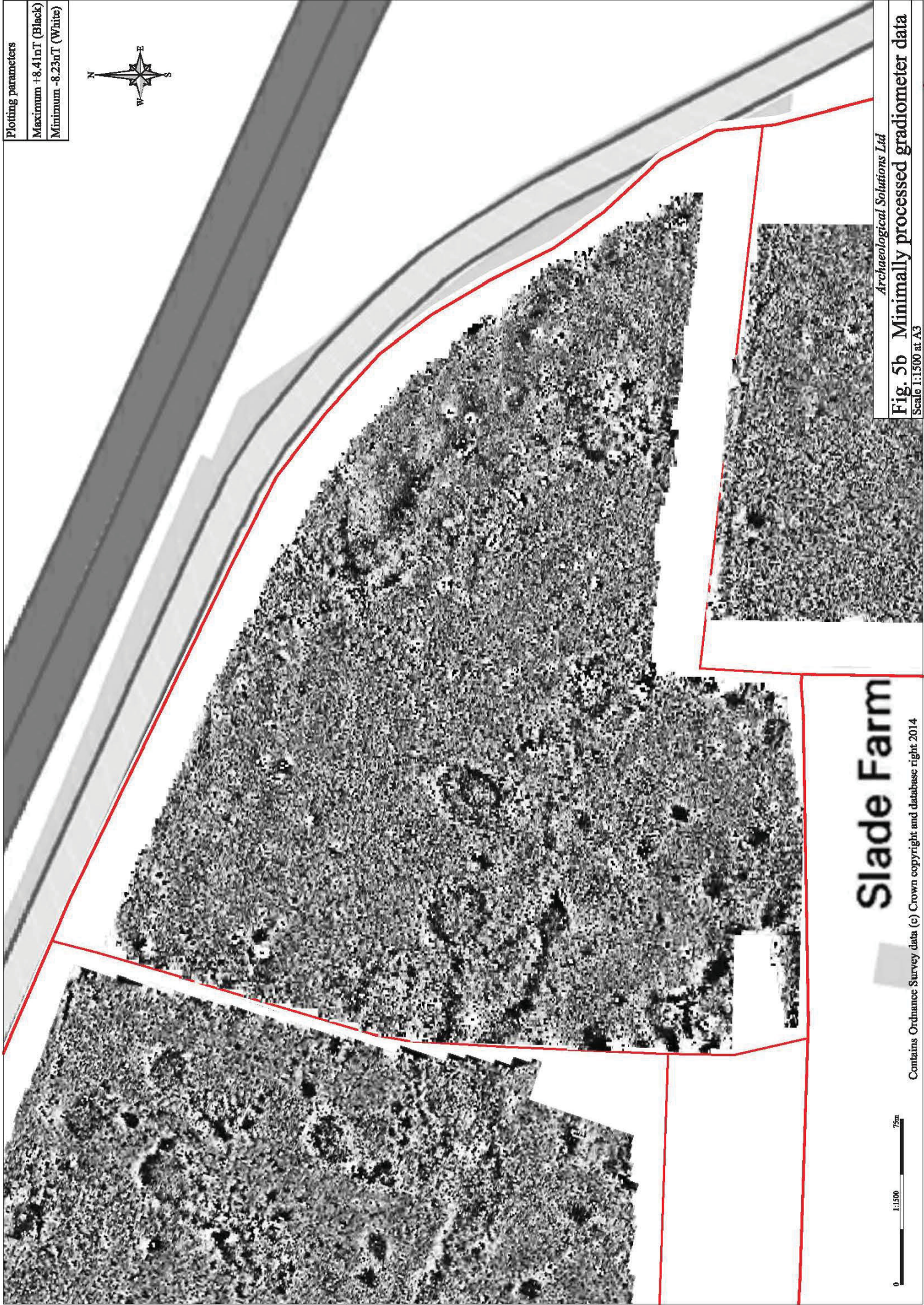
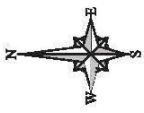


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Fig. 5a Minimally processed gradiometer data
Scale 1:1500 at A3

Plotting parameters
Maximum +8.41mT (Black)
Minimum -8.23mT (White)



Slade Farm

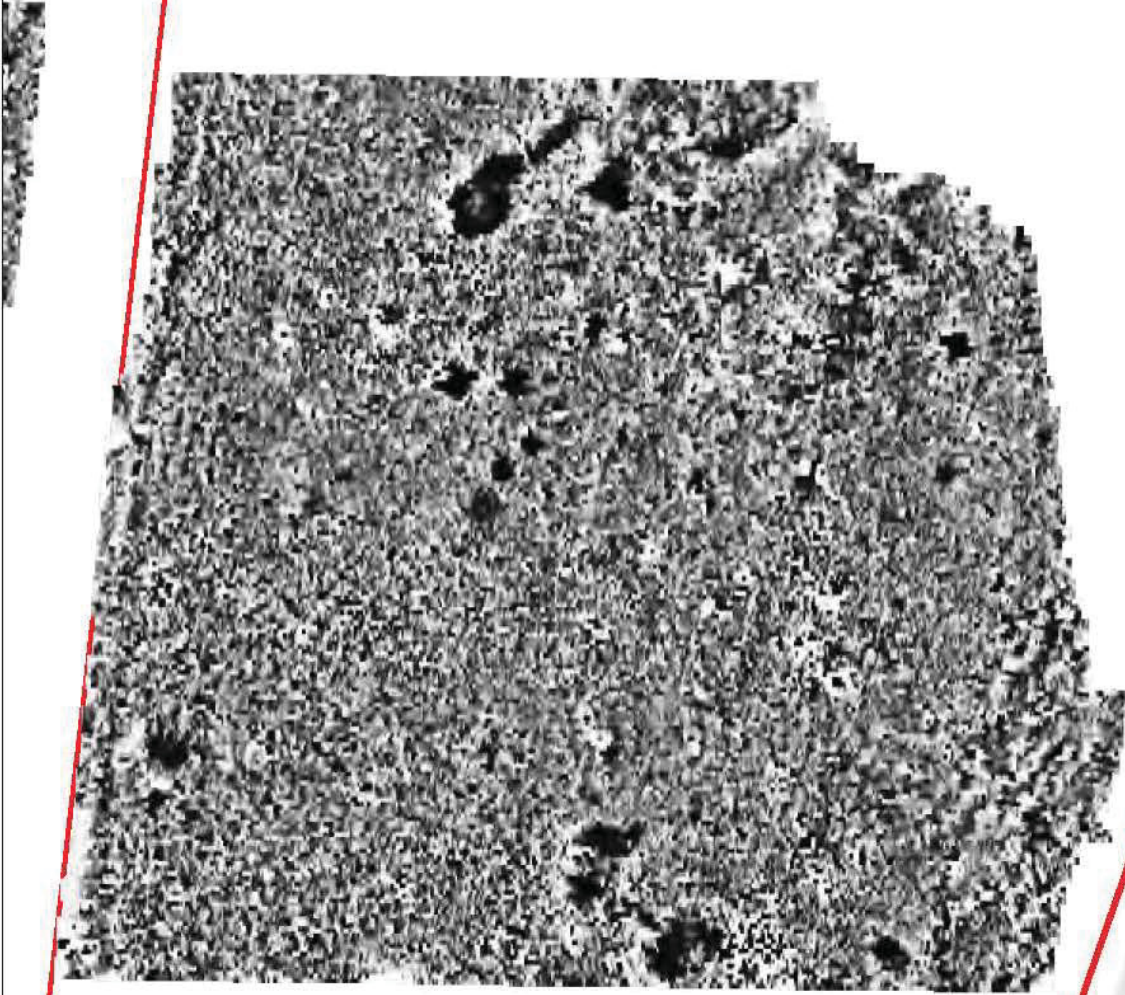
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0 1:1500 75m

Archaeological Solutions Ltd

Fig. 5b Minimally processed gradiometer data
Scale 1:1500 at A3

Plotting parameters
Maximum +8.41nT (Black)
Minimum -8.23nT (White)



le Farm







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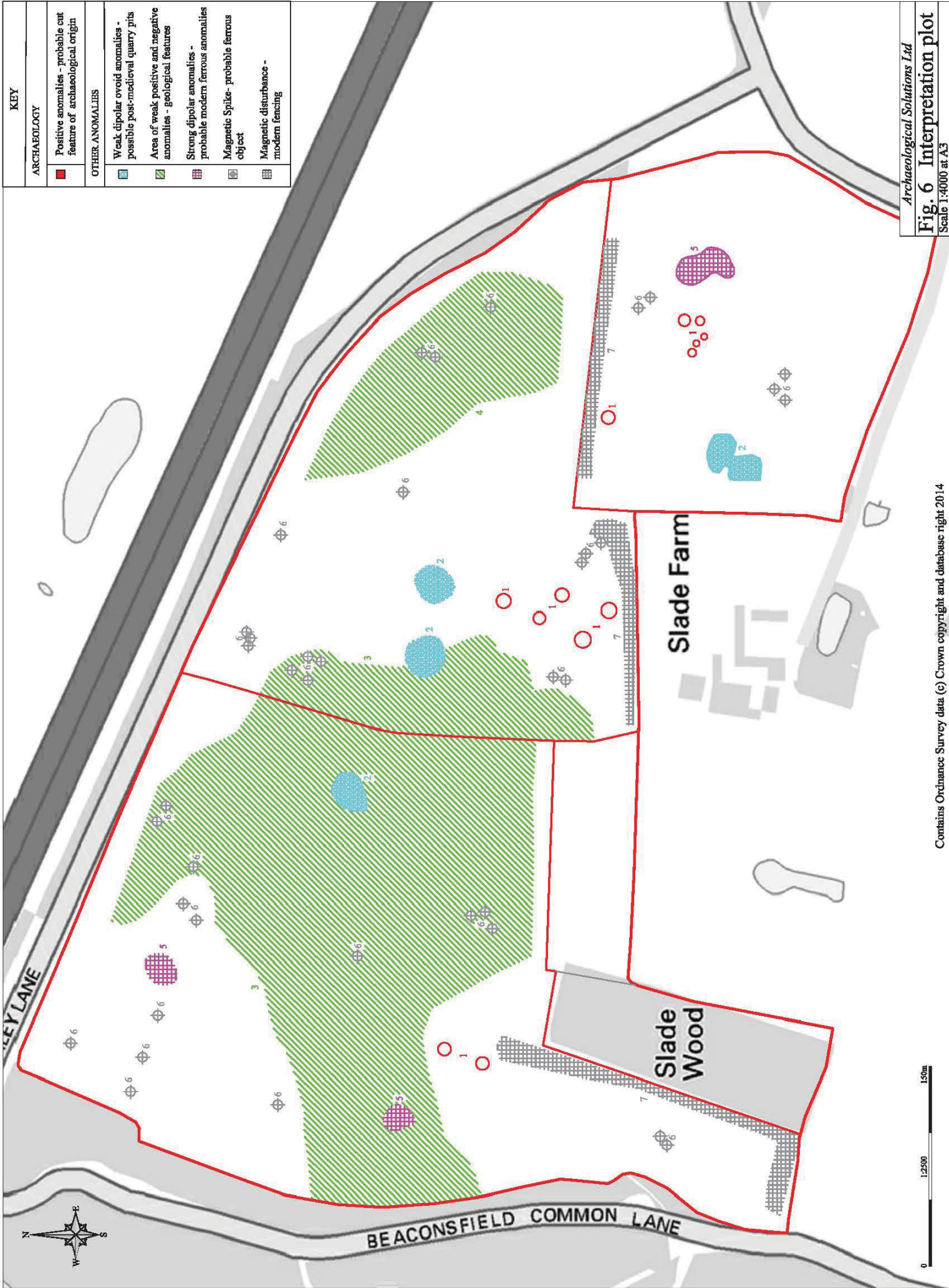
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Fig. 5c Minimally processed gradiometer data

Scale 1:1500 at A4



KEY	
ARCHAEOLOGY	
	Positive anomalies - probable cut feature of archaeological origin
OTHER ANOMALIES	
	Weak dipolar ovoid anomalies - possible post-medieval quarry pits
	Area of weak positive and negative anomalies - geological features
	Strong dipolar anomalies - probable modern ferrous anomalies
	Magnetic Spike- probable ferrous object
	Magnetic disturbance - modern fencing



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Fig. 6 Interpretation plot
 Scale 1:4000 at A3