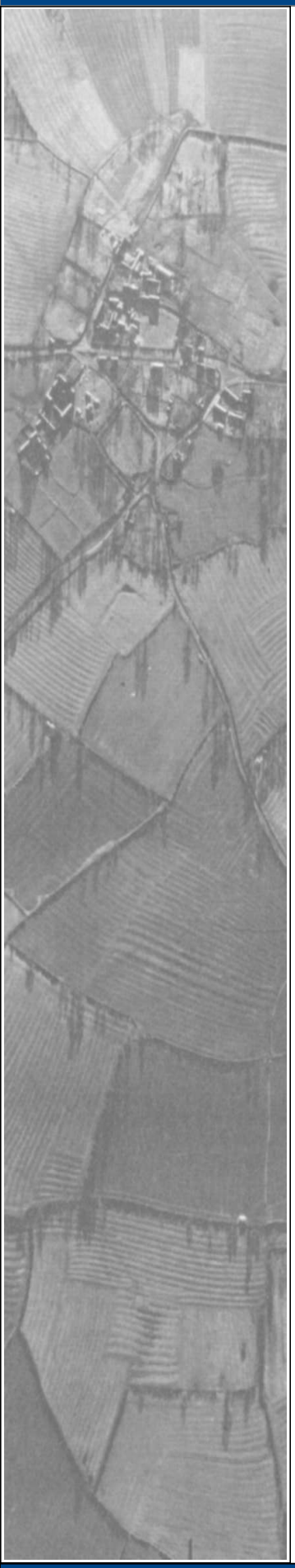


Land west of Alveston
South Gloucestershire

MAGNETOMETER SURVEY REPORT

for

Cotswold Archaeology

Kerry Donaldson & David Sabin

November 2021

Ref. no. J878

ARCHAEOLOGICAL SURVEYS LTD

Land west of Alveston
South Gloucestershire

MAGNETOMETER SURVEY REPORT

for

Cotswold Archaeology

Fieldwork by David Sabin BSc (Hons) MCIfA
Report by Kerry Donaldson BSc (Hons)
Report checked by David Sabin
Primary archive location - Archaeological Surveys Ltd, Yatesbury, Wiltshire

Survey dates – 27th to 29th October & 1st & 2nd November 2021
Ordnance Survey Grid Reference – **ST 62460 88240**

Archaeological Surveys Ltd
1 West Nolands, Nolands Road, Yatesbury, Calne, Wiltshire, SN11 8YD
Tel: 01249 814231 Fax: 0871 661 8804
Email: info@archaeological-surveys.co.uk
Web: www.archaeological-surveys.co.uk

CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY

Detailed magnetometry was carried out by Archaeological Surveys Ltd on land to the west of Alveston in South Gloucestershire. The eastern part of the site contains the remains of a scheduled round barrow, later used as a moot in the medieval period, and the survey located associated anomalies. These included a slightly oval-shaped ring ditch that appears to have been truncated and eroded by agricultural activity. Internally there appears to be some magnetic enhancement and a negative curvilinear response. To the west the survey has located responses associated with an oval enclosure with a restricted, west-facing entrance leading onto other features and its morphology is consistent with an Iron Age banjo enclosure. Much of the site contains numerous responses which appear to relate to naturally formed features within the underlying geology. In the south western part of the site there are a number of very weakly positive responses, but their weak response, lack of coherent morphology and overlying widespread magnetic debris has resulted in poorly defined anomalies that cannot be confidently interpreted.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Cotswold Archaeology to undertake a magnetometer survey of an area of land to the west of Alveston in South Gloucestershire. The site has been outlined for a proposed residential development and the survey forms part of an archaeological assessment.

1.1.2 The eastern part of the site includes the location of a Scheduled Bronze Age barrow, (List entry no: 1004805), *Bowl barrow re-used as a moot, 205m SSE of Chelwood,* and a licence under Section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983), was issued by Historic England to Archaeological Surveys prior to commencing the fieldwork. The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2021).

1.2 Survey objectives and techniques

1.2.1 The objective of the survey was to use magnetometry to locate geophysical anomalies that may be archaeological in origin so that they may be assessed prior to development of the site. The methodology is considered an efficient and effective approach to archaeological prospection.

1.2.2 Geophysical survey can provide useful information on the archaeological potential of a site; however, the outcome of any survey relies on a number of factors and as a consequence results can vary. The success in meeting the aims and objectives of a survey is, therefore, often impossible to

predetermine.

1.3 Standards, guidance and recommendations for the use of this report

1.3.1 The survey and report follow the recommendations set out by: European Archaeological Council (2015) *Guidelines for the Use of Geophysics in Archaeology;* Institute for Archaeologists (2002) *The use of Geophysical Techniques in Archaeological Evaluations.* The work has been carried out to the Chartered Institute for Archaeologists (2014) (updated 2020) *Standard and Guidance for Archaeological Geophysical Survey.*

1.3.2 Archaeological Surveys Ltd provide a detailed geophysical survey report and it is recommended that where possible the contents should be considered in full. The Summary provides a brief overview of the results with more detail available in the Discussion and/or Conclusion. The *List of anomalies* within the Results provides a detailed assessment of the anomalies within separate categories which can be useful in inferring a level of confidence to the interpretation. Quality and factors influencing the interpretation of anomalies is also set out within the results.

1.3.3 It is recommended that the full report should always be considered when using data and interpretation plots; where this is not possible, in the field for example, the abstraction and interpretation plots should retain their colour coding and be used with a corresponding legend.

1.3.4 Where targeting of anomalies by excavation is to be carried out, care should be taken to place trenches over solid lines or features visible on the abstraction and interpretation plots. Archaeological Surveys abstraction and interpretation avoids the use of dashed or dotted line formats, and broken or fragmented lines used in interpretive plots may well correspond closely with truncation of archaeological features.

1.4 Site location, description and survey conditions

1.4.1 The site lies between Vattingstone Lane and Strode Common on Alveston Down on the western edge of Alveston, but within the parish of Olveston, in South Gloucestershire. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 62460 88240, see Figs 01 and 02.

1.4.2 The geophysical survey covers approximately 17ha within two arable fields. The ground cover consisted of crop regrowth and/or a green manure. The larger arable field, Area 1 forming the north eastern portion of the site, is approximately 12.5ha and contains the scheduled barrow on an elevated area of around 95m ODN in the eastern part of the field. The land slopes down gently towards the north west to approximately 88m ODN, although a small zone in the southern part of the field tends to slope down towards the south. Residential dwellings are located immediately to the south east with the B4461 Vattingstone Lane bounding the northern and north eastern sides. Area

2 is a separate field forming the south western part of the site, it is bounded by hedgerows with the lane to Olveston located immediately to the south. The area slopes down slightly towards the south.

1.4.3 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. However, traversing was often difficult due to tall vegetative cover in places and large patches of stone. Weather conditions during the survey were mainly fine.

1.5 Site history and archaeological potential

1.5.1 A Heritage Assessment has been prepared by Cotswold Archaeology (2021). It outlines that the scheduled bowl barrow (*Bowl barrow re-used as a moot, 205m SSE of Chelwood,* List entry no: 1004805) is located within the eastern part of the site. This was re-used during the early medieval period as a moot. It was excavated in c1890 and deposits of ash and burnt bone were discovered to be covered by sand and an outer casing of stones. LiDAR imagery has suggested that there may be further archaeological features immediately east of the barrow. Cropmarks have also been identified approximately 450m west of the barrow which may also indicate further archaeological features. Within the south western part of the site (Area 2) there is a record of an extensive spread of Romano-British pottery along with slag and furnace bricks. A further scheduled monument consisting of an Oval Enclosure on Strode Common Olveston (List Entry no: 1004528) partially survives as earthworks 350m to the south of the site and is believed to relate to an Iron Age banjo enclosure, although it does not appears to have the narrow entranceway characteristic expected.

1.5.2 The Alveston and Olveston tithe map shows the site divided into seven land parcels, the majority being agricultural and one containing an outfarm in the north eastern corner of the south western field (Area 2). By 1886 the fields have been amalgamated into three larger parcels as well as a larger and additional plot next to the outfarm which is indicated to contain an orchard. These were all removed during the 20th century.

1.5.3 Several site observations were noted during the course of the survey but in general the surface conditions were only poorly visible. A large stone was noted on the barrow mound, although it is unclear whether this had been disturbed from the mound or if it had been moved from an adjacent area to avoid damage to agricultural equipment. The land surrounding the mound has a very dense cover of natural flaggy and irregularly shaped stone, whereas the barrow mound appeared mostly devoid of stone. It is also likely that the shape of the mound has been altered by years of cultivation. Within the north eastern part of Area 2 a dense scatter of large stones and some brick mark the location of the outfarm referred to in 1.5.2. In the south western part of Area 2, a separate stone scatter was observed approximately 60m east of the dwelling located immediately to the west of the field. The scatter included some flaggy pieces of reddish sandstone probably of local origin (Cromhall

Sandstone Formation) but mainly pale limestone similar to natural material in Area 1 (Gully Oolite Formation). The limited extent of the scatter and variable nature of the stone types may well indicate the location of a former building; however, no cultural material was observed in the vicinity.

1.6 Geology and soils

1.6.1 The underlying solid geology across the northern part of the site is limestone and in the central part of the site Dolostone, both from the Black Rock Limestone Subgroup. To the south east is limestone from the Gully Oolite Formation and in the south west, mudstone from the Penarth Group and a very small area of mudstone from the Blue Anchor Formation along the south western edge (BGS, 2017). The more elevated parts of survey Area 1 were covered with a dense scatter of natural stones considered likely to be derived from the Gully Oolite Formation and indicative of very shallow soil.

1.6.2 The overlying soil across the survey area is from the Crwbin association and is a brown ranker. It consists of a very shallow and shallow, well drained, loamy soil over limestone (Soil Survey of England and Wales, 1983).

1.6.3 Magnetometry survey carried out across similar soils has produced good results, although cut features of anthropogenic origin can sometimes be difficult to distinguish from soil-filled cracks, joints and fissures within the underlying geology. The underlying geology and soils are, therefore, considered acceptable for magnetic survey.

2 METHODOLOGY

2.1 Technical synopsis

2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic thermoremnance (also known as thermoremanence) are factors associated with the formation of localised fields.

2.1.2 Iron minerals within the soil may become altered by burning and the break down of biological material; effectively the magnetic susceptibility of the soil is increased, and the iron minerals become magnetic in the presence of the Earth's magnetic field. Accumulations of magnetically enhanced soils within features, such as pits and ditches, may produce magnetic anomalies that can be mapped by magnetic prospection.

2.1.3 Magnetic thermoremnance can occur when ferrous minerals have been heated to high temperatures such as in a kiln, hearth, oven etc. On cooling, a permanent magnetisation may be acquired due to the presence of the Earth's magnetic field. Certain natural processes associated with the formation of some igneous and

metamorphic rock may also result in magnetic thermoremnance.

2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T). Additional details are set out in 2.2 below and within Appendix A.

2.2 Equipment configuration, data collection and survey detail

2.2.1 The detailed magnetic survey was carried out using a SENSYS MAGNETO®MXPDA 5 channel cart-based system. The instrument has 5 fluxgate gradiometers (FGM650) spaced 0.5m apart with readings recorded at 20Hz. The cart is pushed at walking speed and not towed. Each sensor is not zeroed in the field as the vertical axis alignment is precisely fixed leaving sensor offsets that are removed during data processing. The fixing of the vertical alignment ensures the sensors are not unduly influenced by localised magnetic fields and that the vertical component of a magnetic anomaly is measured. The gradiometers have a measurement range of ±8000nT, although the recorded range is ±3000nT, and resolution is around 0.1nT. They are linked to a Leica GS10 RTK GNSS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged PDA computer system.

2.2.2 Due to the fixed offsets within the fluxgate sensors, as a result of the manufacturing and tensioning process, the survey data do not provide a visually useful dataset until a zero median traverse algorithm is applied. It is recognised that this has the potential to affect some anomalies detrimentally by removing linear features orientated parallel to survey transects. However, this has not been noted as a particular problem with the system due to the high resolution data collection, generally long length of traverses and variability within the magnetic characteristics of a linear anomaly.

2.2.3 Data are collected along a series of parallel survey transects to achieve 100% coverage of the surveyable land. The length of each transect is variable and relates to the size of the survey area and other factors including ground conditions. A visual display allows accurate placing of transects and helps maintain the correct separation between adjacent traverses. Data are not collected within fixed grids and data points are considered to be random even though the data are collected in a systematic manner covering all accessible areas (Aspinall, Gaffney and Schmidt, 2009).

2.2.4 Fluxgate sensors are highly sensitive to temperature change and this manifests as drift during the course of a survey. This can be particularly noticeable during the morning as temperatures rise and the equipment warms or cools. Sensor drift within the course of a traverse will appear as a line trending from negative to positive after processing with a zero median traverse algorithm. To remove the potential for temperature drift, data were collected after a 20 minute stabilisation period and traverses were limited to a time of generally <100s.

2.3 Data processing and presentation

2.3.1 Magnetic data collected by the MAGNETO®MXPDA cart-based system are initially prepared using SENSYS MAGNETO®DLMGPS software. The software effectively allocates a geographic position for each data point and can compensate for fixed offsets present within the FGM650 sensors. The offsets are positive or negative values present on all fluxgate gradiometer sensors. Some systems use manual or electronic balancing to effectively zero the sensors; however, this is a short term measure that is prone to drift through temperature changes and vibration and can easily be incorrectly set due to localised magnetic fields. The FGM650 sensors are very accurately aligned to the vertical magnetic gradient and are highly stable showing negligible drift on long traverses. The offset values are removed using TerraSurveyor software.

2.3.2 Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display within TerraSurveyor. The removal of the offset values (compensation) of the sensors is also carried out in TerraSurveyor using a zero median traverse function. Data are then considered to be minimally processed. Note: without the zero median traverse function it is not possible to create a meaningful data plot as all sensors have a different offset value. Although a zero median traverse algorithm can remove anomalies aligned with the survey tracks, in practice this rarely occurs due to the use of long traverses, high resolution measurement and variability within the magnetic susceptibility of long linear features.

2.3.3 The minimally processed data are collected between limits of ±3000nT and clipped for display at ±5nT. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track.

2.3.4 Appendix C contains metadata concerning the survey and data attributes and is derived directly from TerraSurveyor. Reference should be made to Appendix B for further information on processing.

2.3.5 A TIF file is produced by TerraSurveyor software along with an associated world file (.TFW) that allows automatic georeferencing (OSGB36 datum) when using GIS or CAD software. The main form of data display used in the report is the minimally processed greyscale plot. With regard to the Sensys MXPDA, minimally processed data are considered by the manufacturer to be data that are compensated by SENSYS MAGNETO DLMGPS software, see 2.3.1 and 2.3.2. Note: traceplots are not considered to be appropriate as they do not provide an accurate or useful assessment of the magnetic anomalies due to the very high density of data collection. In addition, traceplots cannot be meaningfully plotted against base mapping and in areas of complexity traces may be lost or highly confused. Traceplots may be used to demonstrate characteristic magnetic profiles across discrete features where it is considered beneficial.

2.3.6 The raster images are combined with base mapping using ProgeCAD

Professional 2021, creating DWG (2018) file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. The CAD plots are effectively georeferenced facilitating relocation of features using GNSS, resection method, etc.

2.3.7 An abstraction and interpretation is drawn and plotted for all geophysical anomalies located by the survey. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing. Appendix E sets out CAD layer names with colour and graphic content for each interpretation category, see 3.3.

2.3.8 A brief summary of each anomaly, with an appropriate reference number, is set out in list form within the results (Section 3) to allow a rapid and objective assessment of features within each survey area. Where further interpretation is possible, or where a number of possible origins should be considered, more subjective discussion is set out in Section 4.

2.3.9 A digital archive is produced with this report, see Appendix D below. The main archive is held at the offices of Archaeological Surveys Ltd.

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over a total of two survey areas covering approximately 17ha.

3.1.2 Magnetic anomalies located can be generally classified as positive linear and discrete positive responses of archaeological potential, positive and negative anomalies of an uncertain origin, anomalies associated with land management, linear anomalies of an agricultural origin, anomalies with a natural origin, areas of magnetic debris and disturbance and strong discrete dipolar anomalies relating to ferrous objects.

3.1.3 Anomalies located within each survey area have been numbered and are described in 3.4 and 3.5 below with subsequent discussion in Section 4.

3.2 Statement of data quality and factors influencing the interpretation of anomalies

3.2.1 Data are considered representative of the magnetic anomalies present within the site. There are no significant defects within the dataset.

3.2.2 The results infer the presence of useful magnetic contrast between the fill of former cut features and the surrounding natural material. However, soil-filled, naturally formed linear features such as cracks and joints or other erosional features have created anomalies that are frequently impossible to separate

from those with an anthropogenic origin. Linear anomalies that are sinuous and/or show a similar trend with regard to orientation have been interpreted as naturally formed where they fail to form a coherent feature, some anomalies of uncertain origin may also relate to natural features.

3.2.3 Very dense scatters of large stones relating to the Gully Oolite Formation on the more elevated parts of Area 1 could potentially obscure archaeological features where they form the majority of the fill of former cut features as there is unlikely to be magnetic contrast. Similarly, no magnetic contrast is likely to have been formed by structural remains if any are present within the stony zone.

3.2.4 The survey areas demonstrate the presence of a moderate degree of magnetic debris within the soil, and it is considered likely that this relates to relatively modern 'soil improvers' or the inclusion of magnetic material with manure etc.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A general explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, see Table 1.

Interpretation category	Description and origin of anomalies
Anomalies with archaeological potential	Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, etc. The category is used where there is a high level of confidence which may be due to additional supporting information where morphology is unclear or uncharacteristic.
Anomalies with an uncertain origin	The category applies to a range of anomalies where there is not enough evidence to confidently suggest an origin. Anomalies in this category may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered. Morphology may be unclear or uncharacteristic and there may be a lack of additional supporting information. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies relating to land management	Anomalies are mainly linear and may be indicative of the magnetically enhanced fill of cut features (i.e. ditches). The anomalies may be long and/or form rectilinear elements and they may relate to topographic features or be visible on early mapping. Associated agricultural anomalies (e.g. headlands, plough marks and former ridge and furrow) may support the interpretation. Land drains can appear in a classic herringbone pattern of interconnected multiple dipolar linear anomalies, or as parallel linear anomalies. The multiple dipolar response indicates ceramic land drains.
Anomalies with an agricultural origin	The anomalies are often linear and form a series of parallel responses or are parallel to extant land boundaries. Where the response is broad, former ridge and furrow is likely; narrow response is often related to modern ploughing. This category does not include agricultural features of early date or considered to be of archaeological potential (e.g. animal stockades, enclosures, farmsteads, etc).
Anomalies associated with magnetic debris	Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. They often occur where there has been dumping or ground make-up and are related to magnetically thermoremnant materials such as brick or tile or other small fragments of ferrous material. This type of response is occasionally associated with kilns, furnace structures, hearths and nail spreads from former wooden structures or rooves and may, therefore, be archaeologically significant. It is also possible that the response may be caused by natural material such as certain gravels and fragments of igneous or metamorphic

	rock. Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc. Often a significant area around these features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.
Anomalies with a natural origin	Naturally formed magnetic anomalies are caused by localised variability in the magnetic susceptibility of soils, subsoils and other drift or solid geologies. Anomalies may be amorphous, linear or curvilinear and may appear 'fluvial' or discrete; the latter are almost impossible to distinguish from pit-like anomalies with an anthropogenic origin. Fluvial, glacial and periglacial processes may be responsible for their formation within drift material and subsoil. Igneous and metamorphic activity can lead to anomalies within more solid geology.

Table 1: List and description of interpretation categories

3.4 List of anomalies - Area 1

Area centred on OS NGR 362465 188310, see Figs 05 – 10.

Anomalies of archaeological potential

(1) – Situated in the eastern part of the survey area is a positive curvilinear anomaly relating to a ring ditch associated with the Scheduled round barrow. It is slightly oval in shape and appears to have an associated negative response around the northern side. However, there has been soil erosion and redistribution through ploughing and so the response is variable. Excavation during the late 19th century is also likely to have disturbed the feature. The dimensions are 32-34m by 29m and it appears to contain a negative curvilinear and positive linear response that are likely to be associated.

(2) – In the south western corner of Area 1 are a group of anomalies that form a series of conjoined enclosures, one oval joining a more triangular enclosure which leads in turn to a rectilinear enclosure. The morphology of the oval enclosure with an antenna-like entrance to the west suggests that this could be an Iron Age banjo enclosure. There appears to be two pits in the northern part of the oval enclosure and further linear anomalies to the west. where the morphology becomes slightly more complex, with possible evidence of re-cutting. At the western end there appears to be a rectilinear enclosure, although the western side of this is not clearly defined (see anomaly (3)).

Anomalies with an uncertain origin

(3) – A positive linear anomaly could relate to the western end of the rectilinear enclosure associated with (2), but it is possible that it relates to agricultural activity or a natural feature.

(4) – A broad, positive response extends through the southern part of Area 1, but cannot be clearly seen to extend into Area 2 to the west. Narrow, positive linear anomalies are situated either side of it. It appears to correspond to the northern

edge of a low linear earthwork in the field, but it is not clear if this is of natural or anthropogenic origin.

(5) – A linear group of pit-like anomalies can be seen in the southern part of Area 1, with others further west. It is likely that these relate to either naturally formed soil-filled depressions or those caused by displacement of stones during ploughing.

(6) – A number of discrete, positive responses have been located within the survey area, mainly in the southern half. They have a response of 13-18nT, with some peaking at over 40nT. While it is possible for the responses to have a natural origin, these would tend to be of a lower magnitude (3-4nT) and less well defined. The magnetic enhancement within anomalies (6) could indicate that they have an association with pits or areas of burning and an archaeological origin is possible.

(7 & 8) – In the northern part of the site there are a number of anomalies with linear and rectilinear morphologies. Anomaly (7) appears as a positive rectilinear feature with some associated negative responses and while it could relate to a feature with archaeological potential, it could relate to a natural feature within the underlying geology. Anomalies (8) relate to a possible rectilinear and a linear anomaly, with the linear anomaly parallel with the long axis of (7), but again a natural origin is possible.

Anomalies associated with land management

(9 & 10) – A positive linear and rectilinear anomaly relate to two formerly mapped field boundaries. Anomaly (9) is mapped on the 1840 tithe map, but has been removed by the 1886 First Edition Ordnance Survey map, while anomaly (10) has been partially removed by the 1903 Second Edition OS map. Anomaly (10) appears to have partially truncated the earlier oval enclosure (2).

Anomalies with an agricultural origin

(11) – Parallel linear anomalies relate to the cultivation trend.

Anomalies with a natural origin

(12) – Area 1 contains numerous and widespread linear, discrete, amorphous and broad sinuous responses that are likely to relate to naturally formed features within the underlying geology. There is no general pattern or orientation but many are oriented north west to south east.

Anomalies associated with magnetic debris

(13) – A small patch of magnetic debris is situated in the south eastern part of Area 1. The response is generally weak and not generally consistent with dumped material or that used for ground make-up. Its origin is, therefore, uncertain.

3.5 List of anomalies - Area 2

Area centred on OS NGR 362425 188065, see Figs 11 & 12.

Anomalies with uncertain origin

(14) – A positive linear anomaly extends south eastwards from the northern edge of Area 2. The complex of enclosures (2) is situated just to the north; however, it is not possible to determine if this is associated or if it relates to a feature associated with the small land parcels outlined on the 19th and early 20th century OS maps.

(15) – Area 2 contains a number of very weakly positive linear, discrete and broad linear responses of generally <1nT. The weak response, lack of coherent morphology and very widespread magnetic debris across the entire survey area means that the anomalies cannot be confidently interpreted. The HER records Romano-British pottery, slag and furnace bricks within the centre of this area, and so an association has to be considered despite the lack of a coherent morphology.

Anomalies associated with magnetic debris

(16) – The entire survey area is covered with magnetic debris, with only the more concentrated areas abstracted in order not to obscure the weaker anomalies. This type of response is usually associated with magnetically contaminated spreads of green waste or manure.

(17) – Situated in the north eastern corner of the survey area are a number of concentrations of magnetic debris. These are associated with a formerly mapped infilled pond to the south west and a former building to the south east.

(18) – Both survey areas contain numerous and widespread strong, discrete, dipolar anomalies relating to ferrous and other magnetically thermoremnant objects, such as brick/tile within the topsoil. The widespread distribution would normally be associated with the process of manuring often incorporating magnetically contaminated material.

4 DISCUSSION

4.1.1 The eastern part of the site contains the scheduled round barrow which is recorded as being used as a moot in the medieval period and which exists as a rectangular area of uncultivated land containing a low mound. The geophysical survey has located a ring ditch (1) that relates to the barrow ditch, with an associated negative response on the northern side. LiDAR imagery shows that the low mound is sited to the north of the southern part of the ring ditch, but it overlies the northern part. There is evidence for erosion through agricultural activity around the margins on all sides, and it appears that the mound has been re-distributed, likely as a result of ploughing, but also

possible former excavation in c1890 and other activity. During the excavation, deposits of ash and burnt bones were covered by sand and an outer casing of stones. Situated inside the outer barrow ditch is a positive linear anomaly which could relate to deposits of ash and a negative curvilinear anomaly which could be consistent with the response to a casing of stones.

4.1.2 Situated 110m west south west of the barrow is a complex of anomalies that appears to relate to a banjo enclosure (2). An oval enclosure at the eastern end appears to contain a small number of pits or areas of burning, and also appears to have truncated an L-shaped anomaly. In turn, the oval enclosure has been truncated by a post medieval land boundary (10). The oval enclosure narrows to a constricted linear opening in the west and appears to be associated with a more triangular shaped enclosure to the west. It does not appear to extend directly southwards into Area 2 although anomalies within this part of the site are partly obscured by magnetic debris from a small outfarm building and former small land parcels including an orchard. It is situated 630m directly north of a scheduled oval enclosure which relates to a possible banjo enclosure.

4.1.3 Within Area 1, the HER records a number of regular cropmarks in the northern part of the survey area (PRN 1464) while the Heritage Assessment (Cotswold Archaeology, 2021) also indicates possible archaeological features to the east of the barrow identified from LiDAR imagery. The results of the geophysical survey, however, do not reveal clearly corresponding anomalies. Much of the site contains numerous anomalies (12) which appear to relate to the underlying geology, which is Gully Oolite limestone in the south east, with Dolostone from the Black Rock Limestone subgroup in the centre, upon which the barrow is sited and limestone from the Black Rock Limestone subgroup in the north. The oval enclosure (2) is sited on the junction of the Dolostone and also the Triassic mudstone of the Penarth Group to the south west. The naturally formed anomalies (12) may relate to natural joints and cracks within the underlying geology; however, several long, sinuous anomalies appear to extend between the different geologies and the morphology of the responses as well as their widespread distribution could indicate that these soil-filled fissures were created through later erosion or fracturing of the geological surfaces. While many of the anomalies (12) appear similar to linear, ditch-like features or rectilinear features, there is not an overall consistent or regular pattern.

4.1.4 In Area 2 the HER indicates a spread of Roman material which includes pottery, slag and furnace bricks (PRN 1465). This part of the site contains widespread magnetic debris which could be associated with such material, and while there are a number of concentrations, the widespread distribution cannot be clearly attributed to actual features. Also within the area are a number of very weakly positive linear and discrete responses, partially obscured by the magnetic debris, and while these could relate to naturally formed features, the location of the spreads of Roman material may indicate that they have some archaeological potential. During the course of the survey the soil surface was visible to a varying degree through the ground cover;

however, no cultural material was noted with the exception of stone and a small amount of brick associated with the outfarm in the north eastern part of the field, and a scatter of stone possibly indicative of a former structure in the south western part.

5 CONCLUSION

5.1.1 The geophysical survey has located anomalies associated with a scheduled round barrow within the eastern part of the site. The barrow exists as a low, slightly rectangular mound in the field and the results reveal an oval shaped ring ditch, that is partially overlain by the mound on the northern side. The response has been affected by agricultural activity and also possible earlier excavation, but it does appear to contain internal elements or structures that could be consistent with burnt material and a ring of stones.

5.1.2 In the western part of the site there are anomalies that relate to a possible Iron Age banjo enclosure. This contains a small number of pits or areas of burning, and leads towards other enclosures to the west. Elsewhere the majority of the anomalies appear to relate to naturally formed features that extend across the site. In the south west, there are several weakly positive anomalies and widespread magnetic debris; however, it is not possible to confidently determine the origin of these anomalies.

6 REFERENCES

Archaeological Surveys, 2021. *Land west of Alveston, South Gloucestershire, Geophysical Survey Written Scheme of Investigation.* Unpublished typescript document.

Aspinall, A., Gaffney, C. and Schmidt, A. 2009. *Magnetometry for Archaeologists*. Lanham (US), AltaMira Press.

British Geological Survey, 2017. *Geology of Britain 3D (Beta version), 1:50 000 scale [online]* available from http://mapapps.bgs.ac.uk/geologyofbritain3d/index.html? [accessed 13/9/2021].

Chartered Institute for Archaeologists, 2014 (updated 2020). *Standard and Guidance for archaeological geophysical survey*. CIfA, University of Reading.

Cotswold Archaeology, 2021. *Land East of Alveston, South Gloucestershire, Heritage Assessment.* Report ref: CR0750_1. Unpublished typescript document.

European Archaeological Council, 2015. *EAC Guidelines for the Use of Geophysics in Archaeology: Questions to Ask and Points to Consider.* Europae Archaeologia Consilium and Association Internationale sans But Lucratif, Belgium.

Historic England, 2018. Geophysical Survey Advice [online] available from https://historicengland.org.uk/advice/technical-advice/archaeological-science/geophysics/ [accessed July 2018].

Institute for Archaeologists, 2002. *The use of Geophysical Techniques in Archaeological Evaluations*. IfA Paper No. 6. IfA, University of Reading.

Schmidt, A., 2013. *Geophysical Data in Archaeology: A Guide to Good Practice.* Oxbow Books.

Soil Survey of England and Wales, 1983. *Soils of England and Wales, Sheet 5 South West England.*

Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremnant material. Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field. Thermoremnant magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

Enhancement of magnetic susceptibility can occur in areas subject to burning and complex fermentation processes on biological material; these are frequently associated with human settlement. Thermoremnant features include ovens, hearths, and kilns. In addition thermoremnant material such as tile and brick may also be associated with human activity and settlement.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil can create an area of enhancement compared with surrounding soils and subsoils into which the feature is cut. Mapping enhanced areas will produce linear and discrete anomalies allowing an assessment and characterisation of hidden subsurface features.

It should be noted that areas of negative enhancement can be produced from material having lower magnetic properties compared to the topsoil. This is common for many sedimentary bedrocks and subsoils which were often used in the construction of banks and walls etc. Mapping these 'negative' anomalies may also reveal archaeological features.

Magnetic survey or magnetometry can be carried out using a fluxgate gradiometer and may be referred to as gradiometry. The SENSYS gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 65cm apart. The instrument is carried about 10-20cm above the ground surface and the upper sensor measures the Earth's magnetic field as does the lower sensor but this is influenced to a greater degree by any localised buried magnetic field. The difference between the two sensors will relate to the strength of the magnetic field created by the buried feature.

There are a number of factors that may affect the magnetic survey and these include soil type, local geology and previous human activity. Situations arise where magnetic disturbance associated with modern services, metal fencing, dumped waste material etc., obscures low magnitude fields associated with archaeological features.

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Zero Median/Mean Traverse

The median (or mean) of data from each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise differences between the offset values of the gradiometer sensors. The process can remove archaeological features that run along a traverse but with the high resolution datasets created by the Sensys FGM650 sensors and the method of data collection this has not been a notable problem. In fact, the removal of offsets using software avoids carrying out a balancing procedure on site, which inevitably can never be done in magnetically clean conditions and results in improperly aligned fluxgate sensors and/or electronic adjustment values.

Appendix C – survey and data information

Area 1

Filename: J878-mag-Area1-proc.xcp
Instrument Type: Sensys DLMGPS
Units:
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 362191.70406303, 188450.586818906 m
Southeast corner: 362763.05406303, 188044.986818906 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Dimensions
Survey Size (meters): 571 m x 406 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 3853360, Recorded: 3853360
Stats
Max: 5.53
Min: -5.50
Std Dev: 1.85
Mean: 0.06
Median: 0.00
Composite Area: 23.174 ha
Surveyed Area: 12.311 ha
PROGRAM
Name: TerraSurveyorPre
Version: 3.0.36.24
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Clip from -5.00 to 5.00

Area 2

Filename: J878-mag-Area2-proc.xcp
Northwest corner: 362263.35, 188195.00 m
Southeast corner: 362584.35, 187937.00 m
Dimensions
Survey Size (meters): 321 m x 258 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 1259597, Recorded: 1262557
Stats
Max: 3.32
Min: -3.30
Std Dev: 1.37
Mean: 0.01
Median: 0.01
Composite Area: 8.2818 ha
Surveyed Area: 4.1827 ha
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at their offices in Wiltshire. Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site.

A PDF copy will be supplied to the South Gloucestershire Historic Environment Record with greyscale images and abstraction layers made available on request. The report will also be uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS).

Archive contents:

File type	Naming scheme	Description
Data	J878-mag-**[area number/name]**.asc J878-mag-**[area number/name]**.xcp J878-mag-**[area number/name]**-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J878-mag-**[area number/name]**-proc.tif	Image in TIF format
Drawing	J878-**[version number]**.dwg	CAD file in 2018 dwg format
Report	J878 report.odt	Report text in LibreOffice odt format

Table 2: Archive metadata

Appendix E – CAD layers for abstraction and interpretation plots

The table below sets out Archaeological Surveys Ltd CAD layer names with associated colours and graphical content. Where CAD files are available layers may be extracted for further CAD/GIS use. Note: hatched polygon boundaries are contained within layers with the RGB colour code 254, 255, 255 (near white) in order to prevent their visibility.

Report sub-heading and associated CAD layer names	Colour with RGB index		Layer content
Anomalies with archaeological potential			
AS-ABST MAG POS DISCRETE ARCHAEOLOGY		Red 255,0,0	Solid donut, point or polygon (solid)
AS-ABST MAG POS LINEAR ARCHAEOLOGY		Red 255,0,0	Polyline or polygon (solid)

AS-ABST MAG POS CURVILINEAR RING DITCH	Magenta 255,0,255	Polyline or polygon (solid)
AS-ABST MAG NEG LINEAR ARCHAEOLOGY	127,0,255	Line, polyline or polygon (solid)
AS-ABST MAG POS ENCLOSURE DITCH	127,0,255	Line, polyline or polygon (solid)
Anomalies with an uncertain origin		
AS-ABST MAG POS LINEAR UNCERTAIN	255,127,0	Line, polyline or polygon (solid)
AS-ABST MAG NEG LINEAR UNCERTAIN	Blue 0,0,255	Line, polyline or polygon (solid)
AS-ABST MAG POS DISCRETE UNCERTAIN	255,127,0	Solid donut, point or polygon (solid)
AS-ABST MAG POS UNCERTAIN	255,127,0	Polygon (cross hatched ANSI37)
AS-ABST MAG NEG UNCERTAIN	Blue 0,0,255	Polygon (cross hatched ANSI37)
Anomalies relating to land management		
AS-ABST MAG BOUNDARY	127,0,0	Line, polyline or polygon (solid or cross hatched ANSI37)
Anomalies with an agricultural origin		
AS-ABST MAG AGRICULTURAL	Green 0,255,0	Line or polyline
Anomalies associated with magnetic debris		
AS-ABST MAG DEBRIS	132, 132, 132	Polygon (cross hatched ANSI37)
AS-ABST MAG STRONG DIPOLAR	132, 132, 132	Solid donut, point or polygon (solid)
Anomalies with a modern origin		
AS-ABST MAG DISTURBANCE	132, 132, 132	Polygon (hatched ANSI31)
Anomalies with a natural origin		
AS-ABST MAG NATURAL FEATURES	Yellow 255,255,0	Polygon (Dots)

Table 3: CAD layering

Appendix F – copyright and intellectual property

This report may contain material that is non-Archaeological Surveys Ltd copyright (eg Ordnance Survey, Crown Copyright) or the intellectual property of third parties, which we are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Archaeological Surveys Ltd. Users remain bound by the conditions of the Copyright, Design and Patents Act 1988 with regard to multiple copying and electronic dissemination of this report.

Archaeological Surveys Ltd shall retain intellectual property rights for the materials and records created as part of this project. A non-exclusive, transferable, sub-licensable, perpetual and royalty-free licence shall be granted to the client on full payment of works in order for them to use, reproduce and enhance the reports, documentation, graphics and illustrations produced as part of this project for the purpose for which they were commissioned. Copyright licence will also be granted to the local authority for planning use and within in the Historic Environment Record for public dissemination upon payment by the client. Any document produced to meet planning requirements may be freely copied for planning, development control, research and outreach purposes without recourse to the originator, subject to all due and appropriate acknowledgements being provided and to the terms of the original contract with the client. Archaeological Surveys Ltd shall retain the right to be identified as the author and originator of the material.

The report, data and any associated material produced by Archaeological Surveys Ltd cannot be freely used for any commercial activity other than those set out above. Any unauthorised use will be considered to be in breach of copyright.

Title of Goods remains with Archaeological Surveys Ltd until payment has cleared. Late payment may jeopardise any planning decision as there will be no transfer of title, licensing or any other right of copy or use of this report. Archaeological Surveys Ltd do not give permission for use of the report and associated data in cases of late payment. Any such use will be considered to be in breach of copyright. Late payment may also incur interest at 8% over the Bank of England base rate. Non-payment will be pursued by legal action.

Appendix G – Historic England Geophysical Survey Summary Questionnaire

Survey Details

Name of Site: Land west of Alveston

County: South Gloucestershire

NGR Grid Reference (Centre of survey to nearest 100m): ST 62460 88240

Start Date: 27/10/21 End Date:2/11/21

Geology at site (Drift and Solid): Carboniferous Limestone/Dolostone (Black Rock Limestone/Dolostone, Gully Oolite), Permo-Triassic Mudstone (Penarth Group)

Known archaeological Sites/Monuments covered by the survey
(Scheduled Monument No. or National Archaeological Record No. if known)

Bowl Barrow re-used as a moot 250m SSE of Chelwood, Alveston, South Gloucestershire (List entry no: 1004085)

Archaeological Sites/Monument types detected by survey
(Type and Period if known. "?" where any doubt).

Bronze Age round barrow
Iron Age banjo enclosure

Surveyor (Organisation, if applicable, otherwise individual responsible for the survey): David Sabin

Name of Client, if any: Cotswold Archaeology

Purpose of Survey:

To identify anomalies of archaeological potential within scheduled area

Location of:

a) Primary archive, i.e. raw data, electronic archive etc: Archaeological Surveys Ltd, 1 West Nolands, Nolands Road, Yatesbury, Calne, SN11 8YD

b) Full Report: As above

Technical Details

Type of Survey: Magnetometry

Area Surveyed, if applicable (In hectares to one decimal place): 17ha

Traverse Separation, if regular: 0.5m **Reading/Sample Interval:** 20Hz

Type, Make and model of Instrumentation: SENSYS Magneto MXPDA

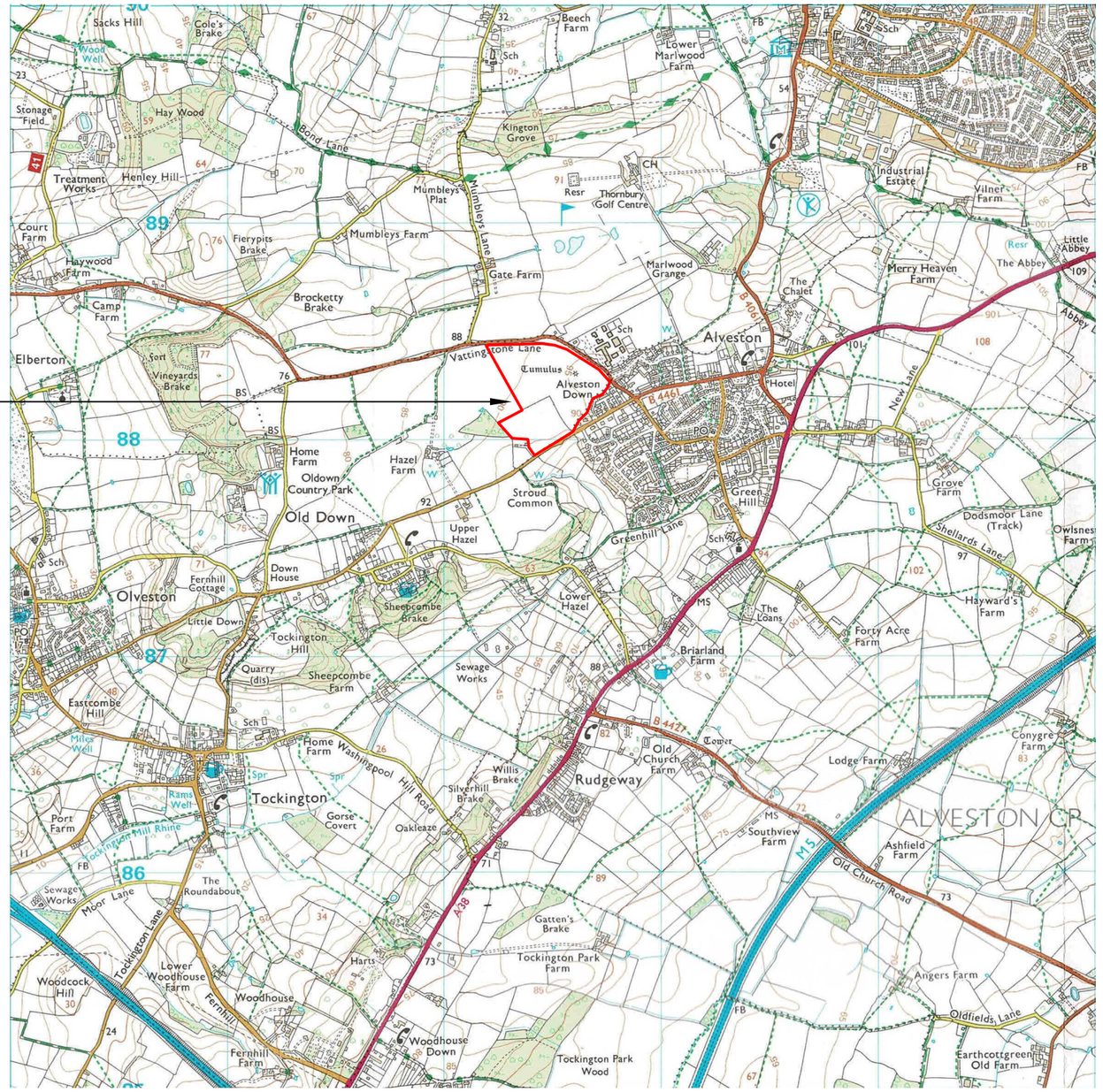
Land use at the time of the survey (Use term/terms from the attached list or specify other): Arable

www.archaeological-surveys.co.uk
info@archaeological-surveys.co.uk
Tel: 01249 814 231

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Map of survey area



Survey location

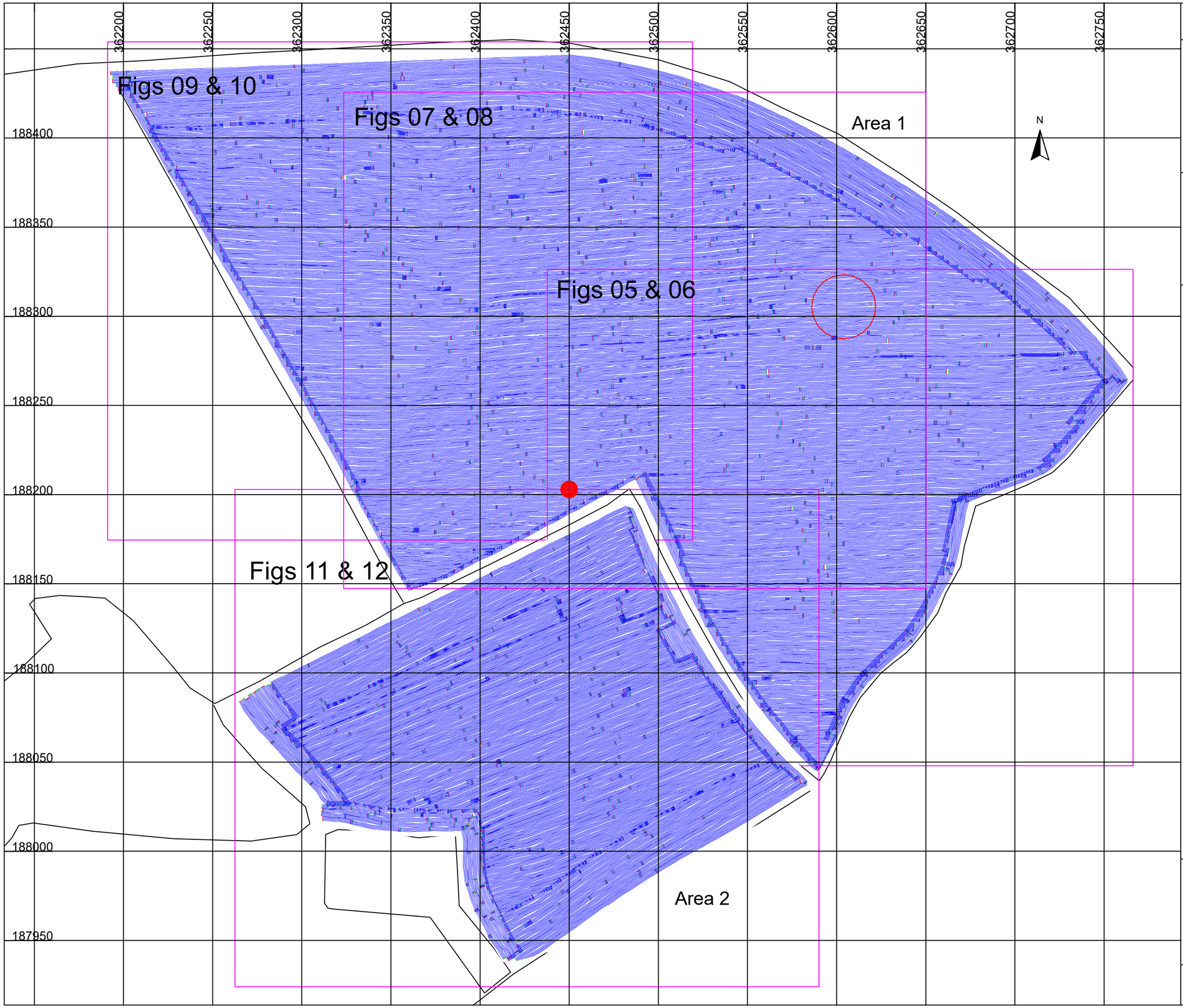
Site centred on OS NGR
ST 62455 88250

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 01



Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Referencing information

Referencing grid to OSGB36 datum at 50m intervals

362450 188200

Survey tracks

Survey track start

Survey track stop

Scheduled monument 1004805

SCALE 1:2000

0m 20 40 60 80 100m

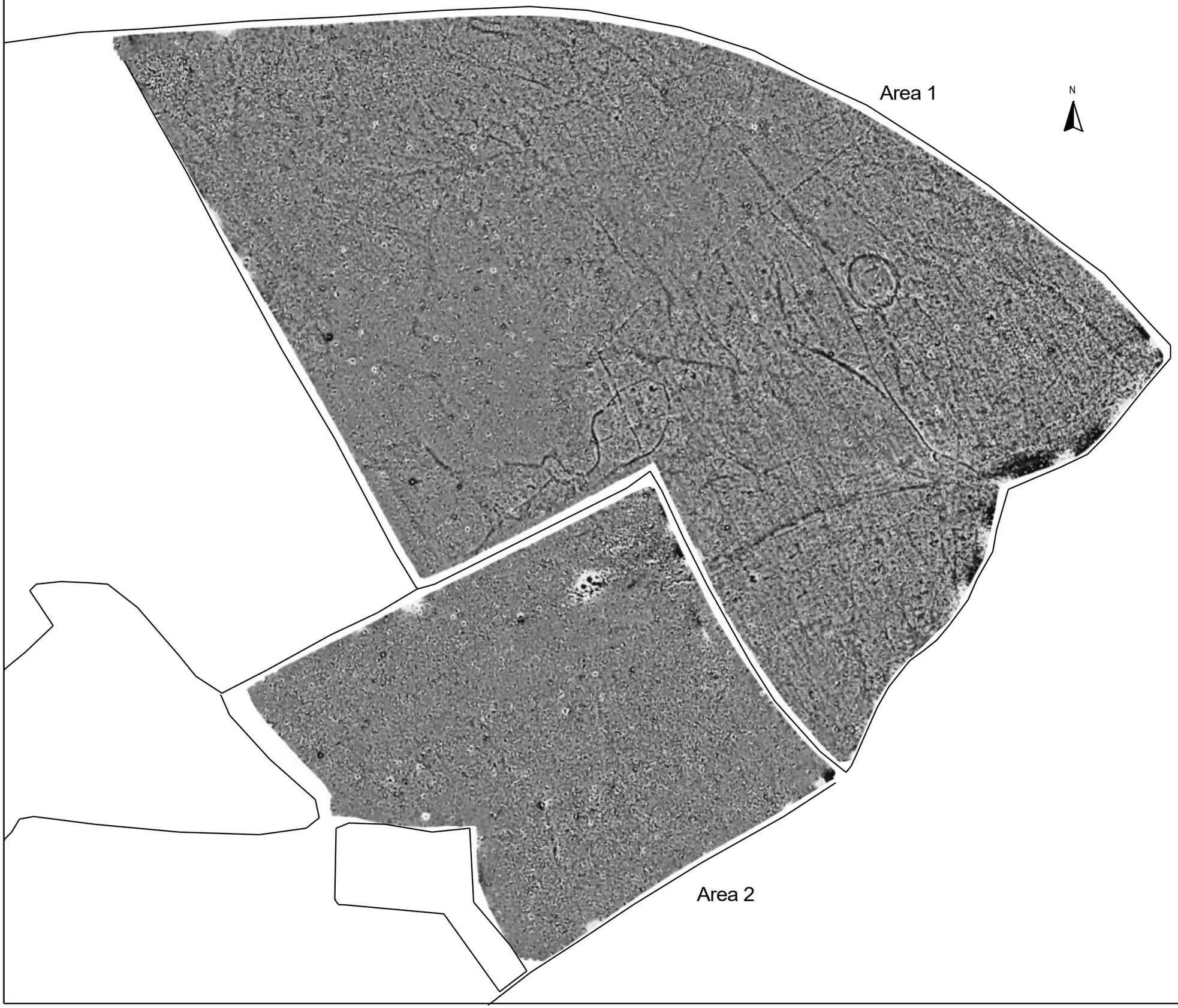
SCALE TRUE AT A3

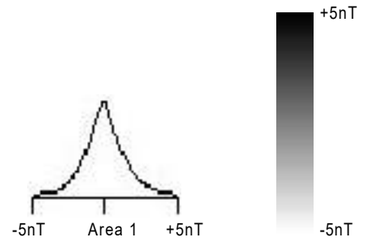
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 02

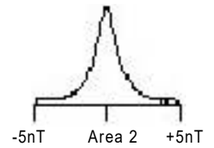
Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

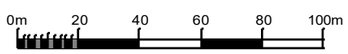
Greyscale plot of minimally processed magnetometer data







SCALE 1:2000



KTD	DJS	FIG 03

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Abstraction and interpretation of magnetic anomalies

Area 1

Area 2

N

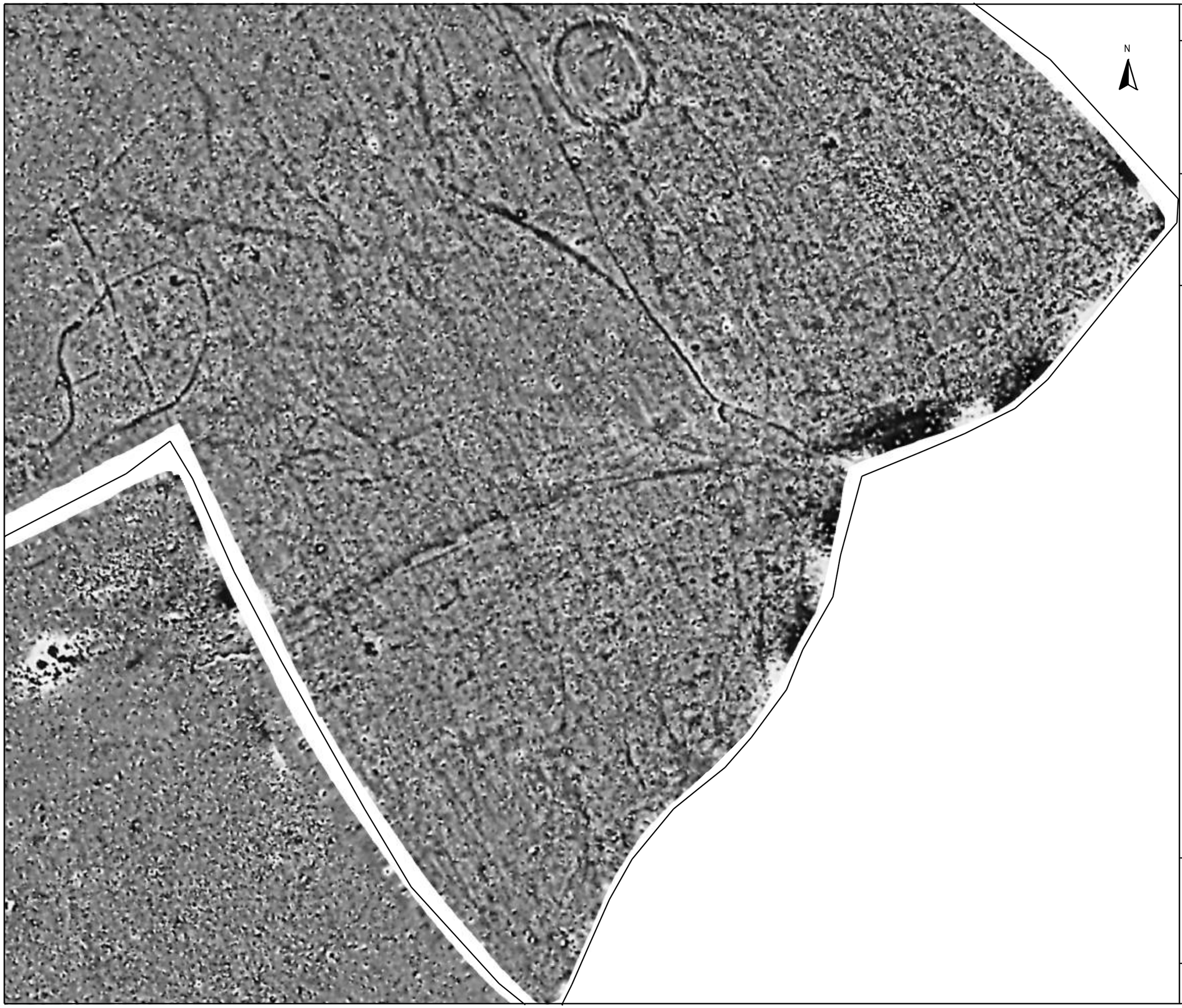
- Positive curvilinear anomaly - ring ditch
- Negative linear anomaly - of archaeological potential
- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - former field boundary
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Variable magnetic response - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material of low magnetic susceptibility
- Variable magnetic response - of natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:2000

0m 20 40 60 80 100m

SCALE TRUE AT A3

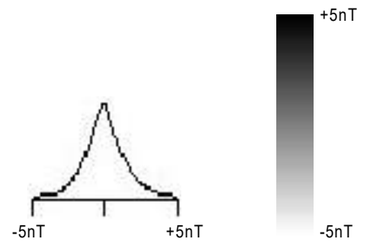
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 04



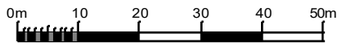
Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Greyscale plot of minimally processed magnetometer data - Area 1 south east



SCALE 1:1000



KTD	DJS	FIG 05

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Abstraction and interpretation of magnetic anomalies - Area 1 south east

N

1
2
4
5
6
6
11
13
14
17

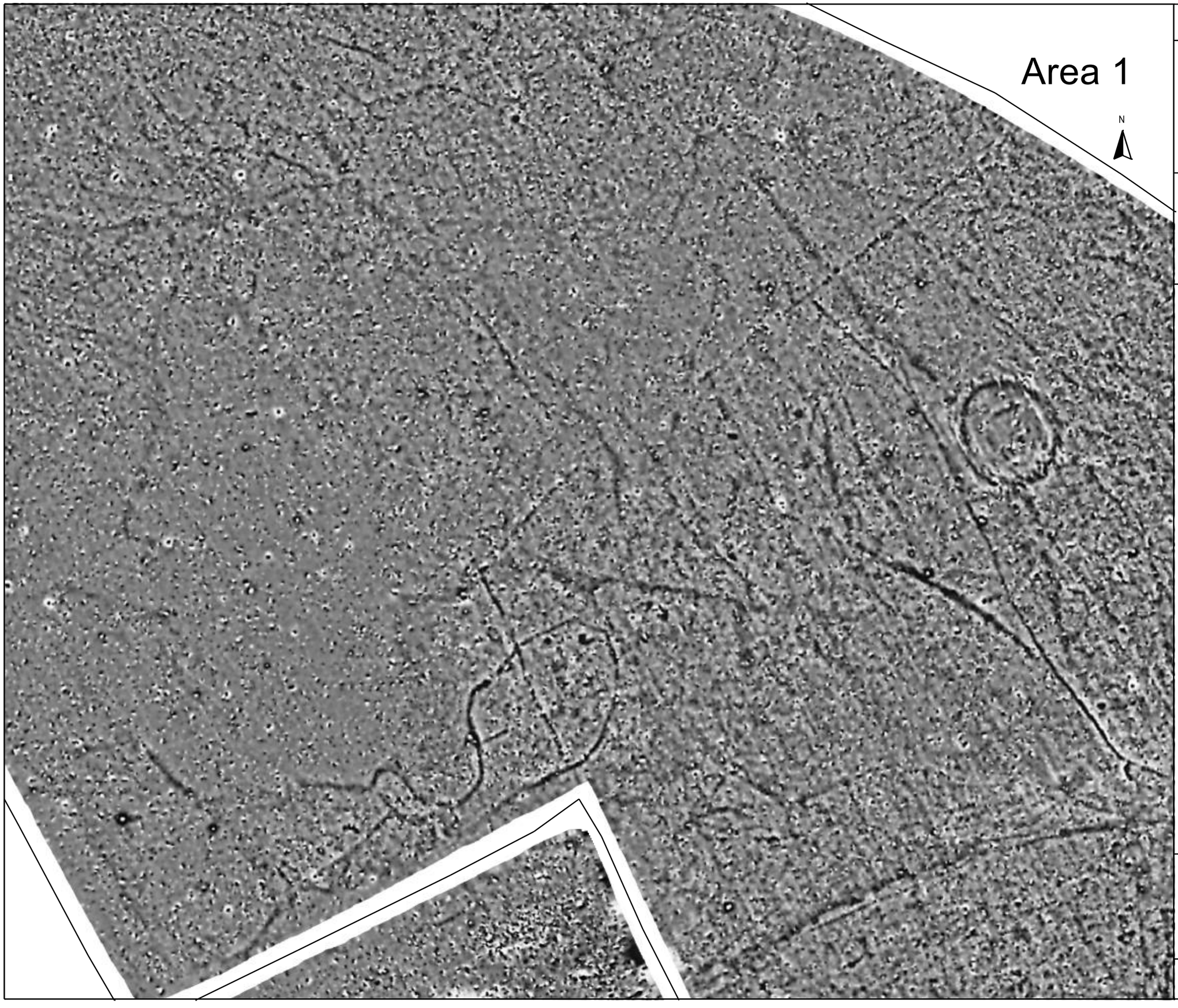
- Positive curvilinear anomaly - ring ditch
- Negative linear anomaly - of archaeological potential
- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - former field boundary
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Variable magnetic response - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Variable magnetic response - of natural origin
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

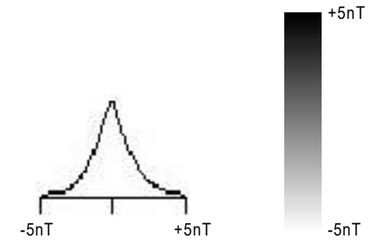
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 06



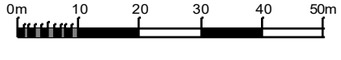
Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Greyscale plot of minimally processed magnetometer data - Area 1 north east



SCALE 1:1000



KTD	DJS	FIG 07

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Abstraction and interpretation of magnetic anomalies - Area 1 north east

Area 1

N

8
12
10
9
1
6
2
3
14
17
4
5

- Positive curvilinear anomaly - ring ditch
- Negative linear anomaly - of archaeological potential
- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - former field boundary
- Positive linear anomaly - possible ditch-like feature
- Variable magnetic response - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Variable magnetic response - of natural origin
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

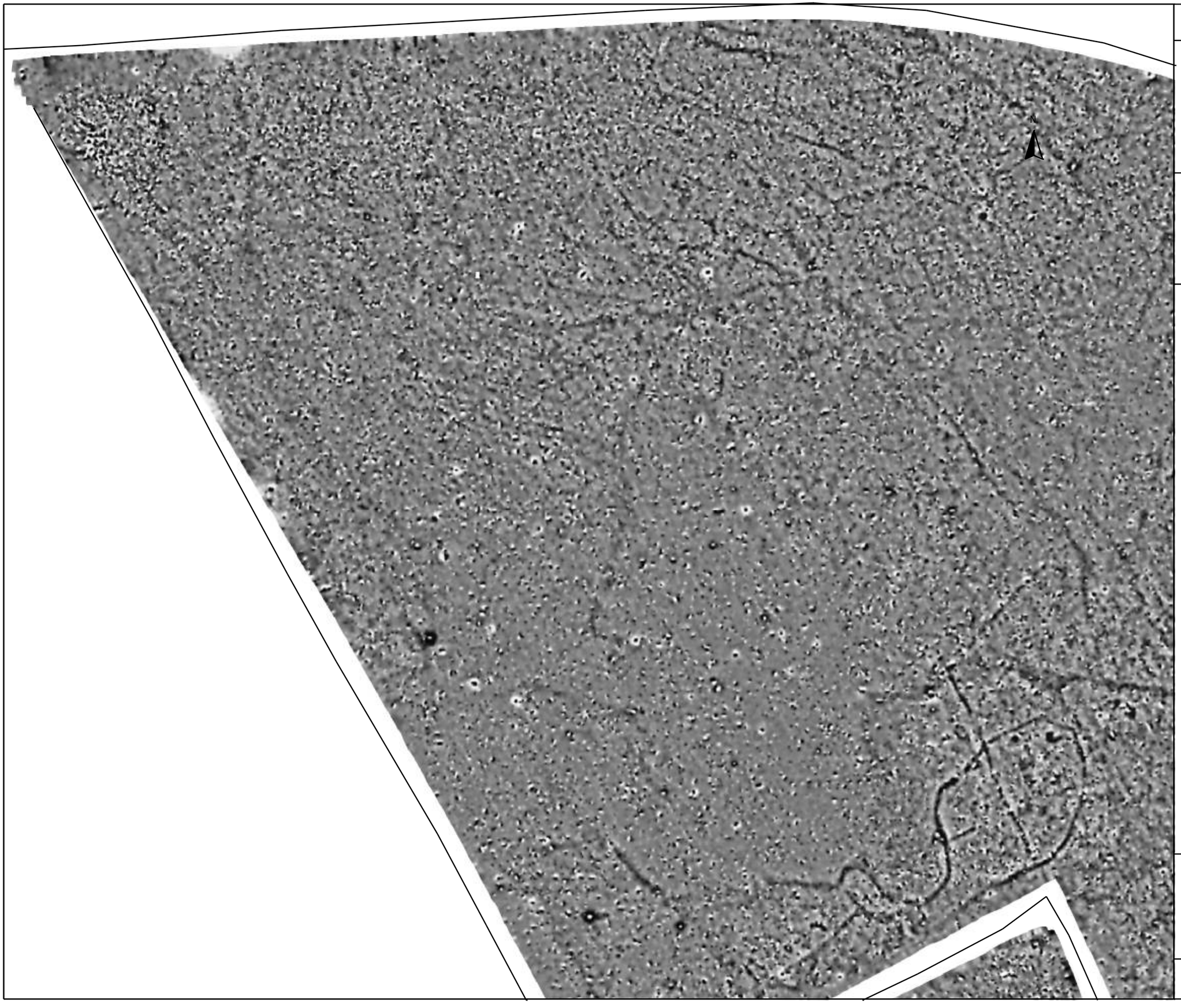
SCALE TRUE AT A3

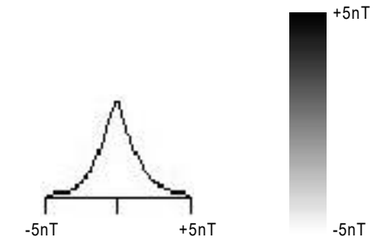
DRAWN BY	CHECKED BY	
KTD	DJS	FIG 08

Archaeological Surveys
Specialist Geophysical Surveyors

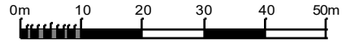
Geophysical Survey
Land west of Alveston
South Gloucestershire

Greyscale plot of minimally processed magnetometer data - Area 1 north west





SCALE 1:1000



KTD	DJS	FIG 09

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Abstraction and interpretation of magnetic anomalies - Area 1 north east

N

7
8
12
6
2
3
14

- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - cut feature of archaeological potential
- Positive linear anomaly - possible ditch-like feature
- Positive linear anomaly - former field boundary
- Variable magnetic response - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material of low magnetic susceptibility
- Variable magnetic response - of natural origin
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

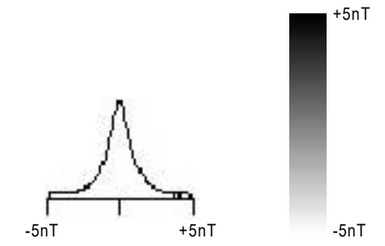
SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 10

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Greyscale plot of minimally processed magnetometer data - Area 2



SCALE 1:1000

0m 10 20 30 40 50m

KTD	DJS	FIG 11

Archaeological Surveys
Specialist Geophysical Surveyors

Geophysical Survey
Land west of Alveston
South Gloucestershire

Abstraction and interpretation of magnetic anomalies - Area 2

3
14
17
4
18
15
16
Area 2
N

- Positive linear anomaly - possible ditch-like feature
- Discrete positive response - possible pit-like feature
- Positive anomaly - magnetically enhanced material
- Magnetic debris - spread of magnetically thermoremnant/ferrous material
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 12