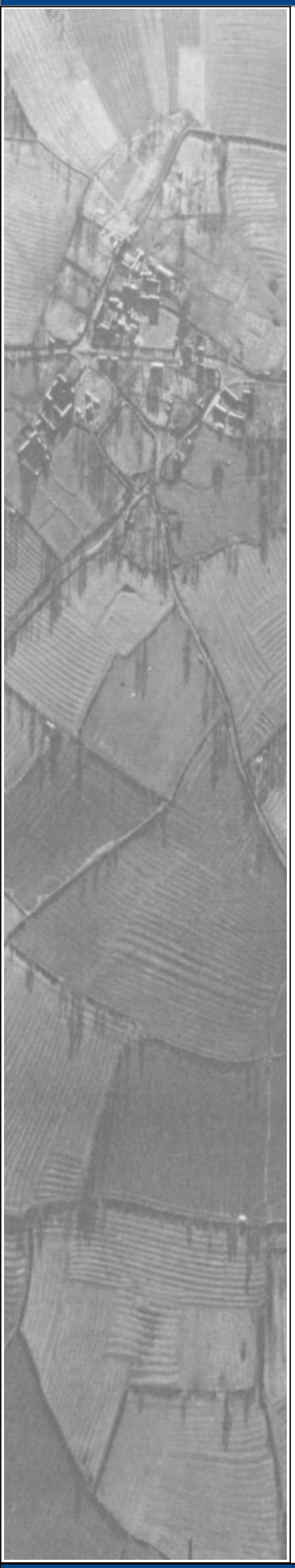

Weston Spring Farm
Charlcombe
Bath & North East Somerset

MAGNETOMETER SURVEY REPORT

for

Forest of Avon Trust

Kerry Donaldson & David Sabin

December 2021

Ref. no. J893

ARCHAEOLOGICAL SURVEYS LTD

Weston Spring Farm
Charlcombe
Bath & North East Somerset

MAGNETOMETER SURVEY REPORT

for

Forest of Avon Trust

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 date – 19th November 2021
Ordnance Survey Grid Reference – **ST 371600 67712**

BaNES HER PRN: 68532

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SUMMARY

Detailed magnetometry was carried out by Archaeological Surveys Ltd ahead of an orchard planting scheme at Weston Spring Farm near Bath. The results of the survey indicate the presence of a group of anomalies within the south western corner of the site which correspond to a low, circular mound situated in the field. Although the mound may be suggestive of a Bronze Age round barrow, this type of monument is generally associated with an external ring ditch. The geophysical data do not show a ring ditch, but instead the results indicate a negative zone, with associated discrete negative responses to the south and magnetic enhancement to the west. The negative zone could be consistent with scraping of the soil, subsoil and stone to form a mound, with the discrete negative responses associated with stones, and the magnetic enhancement associated with anthropogenic activity. However, it is not possible to provide a confident interpretation on the geophysical results alone. The survey also located several linear or rectilinear anomalies that may indicate former boundary ditches.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by the Forest of Avon Trust, to undertake a magnetometer survey of an area of land at Weston Spring Farm, within the parish of Charlcombe in Bath & North East Somerset (BaNES). The site has been outlined for a proposed planting of an orchard and the survey forms part of an archaeological assessment.

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 tree planting taking place. 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.

1.4 Site location, description and survey conditions

1.4.1 The site is located at Weston Spring Farm, Charlcombe to the north west of Bath. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 71600 67712, see Figs 01 and 02.

1.4.2 The geophysical survey covers approximately 3ha of pasture split between two fields. The southern field is located on elevated ground between two narrow combes, the area slopes up towards the north west with an increasing gradient which tends to become less steep towards the north western boundary. Towards the western side of the field there is a low mound of uncertain origin. The south eastern part of the field was not surveyed and is used for cultivation of vegetables. Survey within the northern field is mainly along the steep north west facing slope of a combe, although a narrow strip along the north western side of the area is located close to the base of the combe. Survey was not possible across some very small areas within the field due to the presence of brambles, thorns and exposed rock on the steepest parts of the slope, and a small patch of very boggy ground at the north western end of the base of the combe.

1.4.3 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. Traversing was difficult within the northern field due to the steep gradient. Weather conditions during the survey were fine.

Plate 1: Southern field looking west towards low mound (centre left)

Plate 2: Northern field looking north west

1.5 Site history and archaeological potential

1.5.1 No designated or undesignated heritage assets are recorded within the survey area; however, it has not be subject to previous archaeological investigations. It lies 400m north of the Roman road between Bath and Bitton (BaNES HER PRN: 60148) and 50m south of the possible Roman road between Bath and Sea Mills (67023). Medieval lynchets are situated on the hill slopes 200m south (68369) and 675m west (61368).

1.5.2 Old mapping shows that the site boundaries have remained unchanged since the 1840s and LiDAR imagery indicates that the south western corner of the

survey area contains a circular mound, with a similar feature located 100m to the west (Fig 05). Although this type of response could relate to a prehistoric round barrow, there is no record of these as features on the Historic Environment record and their origin is uncertain. The presence of the mound within the southern field was noted during the survey (Plate 1).

1.6 Geology and soils

1.6.1 The underlying geology is sandstone from the Bridport Sandstone Formation (BGS, 2017). Rock was exposed on steeply sloping ground within the northern field. It was uncertain whether this is a small natural exposure, possibly associated with erosion by cattle, or whether it is related to a small zone of localised quarrying.

1.6.2 The overlying soil across the site is from the Curtisden association and is a stagnogleyic argillic brown earth. It consists of a silty soil with slowly permeable subsoils and slight seasonal waterlogging (Soil Survey of England and Wales, 1983).

1.6.3 Magnetometry carried out over similar geology and soil has produced good results. The site is, therefore, considered suitable 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 the 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 The abstraction and interpretation procedure has been supported by analysis of a digital terrain model plot derived from the Environment Agency's LiDAR data. Shaded relief plots and contours are created using Surfer 15 (Azimuth:240, Altitude:150, Z factor:5), (Fig 05).

2.3.10 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 3.1ha within two land parcels.

3.1.2 Magnetic anomalies located can be generally classified as positive and negative anomalies of an uncertain origin, anomalies with a natural origin, linear anomalies of an agricultural origin, areas of magnetic 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 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 site does not contain any significant magnetic debris or disturbance. A small zone of magnetic disturbance adjacent to wire fencing is unlikely to obscure more significant anomalies.

3.2.3 The survey located a small number of former ditch-like features and several

demonstrate useful magnetic contrast. Linear anomalies associated with cultivation also infer the formation of useful magnetic contrast between the topsoil and underlying subsoil or solid geology.

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 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 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.
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	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.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 371600 167712, see Figs 03 & 04.

Anomalies with an uncertain origin

(1) – A negative zone, with adjacent discrete negative responses to the south and positive responses to the west, is situated in the south western part of the survey area. The anomalies correspond to the position of a low, circular mound seen within the site (see Fig 05 & Plate 1). It is possible that the mound relates to a Bronze Age round barrow; however, there is no record on the HER and there is no associated response to an outer ring ditch usually associated with a barrow.

(2) – Positive linear and rectilinear anomalies can be seen in the central western part of the survey area. They appear to relate to cut, ditch-like features.

(3) – The survey area contains a number of weakly positive linear anomalies which lack a coherent morphology and cannot be confidently interpreted.

Anomalies with a natural origin

(4) – A magnetically variable response can be seen in the south western corner of the site. This corresponds to the top of a south east facing slope and is likely to be associated with a band within the geology.

(5) – The northern part of the site contains magnetically variable responses which relate to variations in the soil and/or underlying geology.

Anomalies with an agricultural origin

(6) – Parallel linear anomalies are a response to cultivation. Only the trend has been shown and not all anomalies have been abstracted.

Anomalies associated with magnetic debris

(7) – Strong, discrete, dipolar anomalies are a response to ferrous and other magnetically thermoremnant objects within the topsoil.

Anomalies with a modern origin

(8) – Magnetic disturbance from a barbed-wire fence that separates the northern and southern parts of the site.

4 DISCUSSION

4.1.1 The south western part of the site contains a low circular mound. It is not clear if it is of anthropogenic or natural origin. The survey has located anomalies with weakly positive and negative responses, the positive responses probably indicative of slightly enhanced soil, the negative being suggestive of material such as subsoil/stone. The magnitude of the anomalies does not indicate the presence of highly magnetic material associated with modern dumped material. Although the morphology of the mound within the field is similar to a Bronze Age round barrow, no feature is recorded on the Historic Environment Record. Such funerary monuments are usually constructed from an outer ditch producing the material for an internal mound; however, there is no response to the fill of a ring ditch within the results. The general negative response (1) could indicate that the mound has been constructed by scraping the land to form a feature c30m in diameter. The discrete

negative responses on the southern flank of the mound could relate to large stones, and the positive response to the west could relate to magnetically enhanced material also associated with a barrow mound. It is not possible to confidently determine if this does relate to a round barrow without intrusive investigation.

4.1.2 The site also contains evidence for possible linear and rectilinear ditch-like features (2). It is possible that some relate to former field boundaries, although none are recorded on the tithe map or any Ordnance Survey mapping.

5 CONCLUSION

5.1.1 The geophysical survey located a circular negative zone in the south western part of the site with a number of discrete negative responses to the south and magnetic enhancement to the west. They correspond to a low, circular mound seen within the field and its morphology could be consistent with a Bronze Age round barrow, although this is uncertain and a natural origin or later anthropogenic origin is also possible. Although generally such prehistoric funerary monuments are associated with external ring ditches, none can be seen in the data, instead, the response could relate to a zone of scraped material used to construct a barrow mound. Discrete negative responses could also relate to large stones and an area of magnetic enhancement may indicate possible associated anthropogenic activity. To the north are a number of positive linear and rectilinear anomalies that appear to relate to ditch-like features; however, their date and origin are uncertain.

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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

Filename: J883-mag-proc.xcp
Description: Imported as Composite from: J883-mag.asc
Instrument Type: Sensys DLMGPS
Units:
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 371464.10, 167860.00 m
Southeast corner: 371738.30, 167572.30 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Dimensions
Survey Size (meters): 274 m x 288 m
X&Y Interval: 0.15 m
Source GPS Points: Active: 1021890, Recorded: 1021890
Stats
Max: 5.53
Min: -5.50
Std Dev: 1.46
Mean: 0.04
Median: -0.01
Composite Area: 7.8887 ha
Surveyed Area: 3.1131 ha
PROGRAM
Name: TerraSurveyorPre
Version: 3.0.36.24
Processes: 1
1 Base Layer
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

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 BaNES 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	J893-mag-**[area number/name]**.asc J893-mag-**[area number/name]**.xcp J893-mag-**[area number/name]**-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J893-mag-**[area number/name]**-proc.tif	Image in TIF format
Drawing	J893-**[version number]**.dwg	CAD file in 2018 dwg format
Report	J893 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 an uncertain origin			
AS-ABST MAG POS LINEAR UNCERTAIN		255,127,0	Line, polyline or polygon (solid)
AS-ABST MAG POS DISCRETE UNCERTAIN		255,127,0	Solid donut, point or polygon (solid)
AS-ABST MAG NEG DISCRETE UNCERTAIN		Blue 0,0,255	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 with an agricultural origin			
AS-ABST MAG AGRICULTURAL		Green 0,255,0	Line or polyline
AS-ABST MAG RIDGE AND FURROW		0,127,63	Line, polyline or polygon (cross hatched ANSI37)

Anomalies associated with magnetic debris			
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

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Survey location

N

Archaeological Surveys

Specialist Geophysical Surveyors

Geophysical Survey
Weston Spring Farm
Bath
Bath & North East Somerset

Map of survey area

Survey location

Site centred on OS NGR
ST 71600 67712

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

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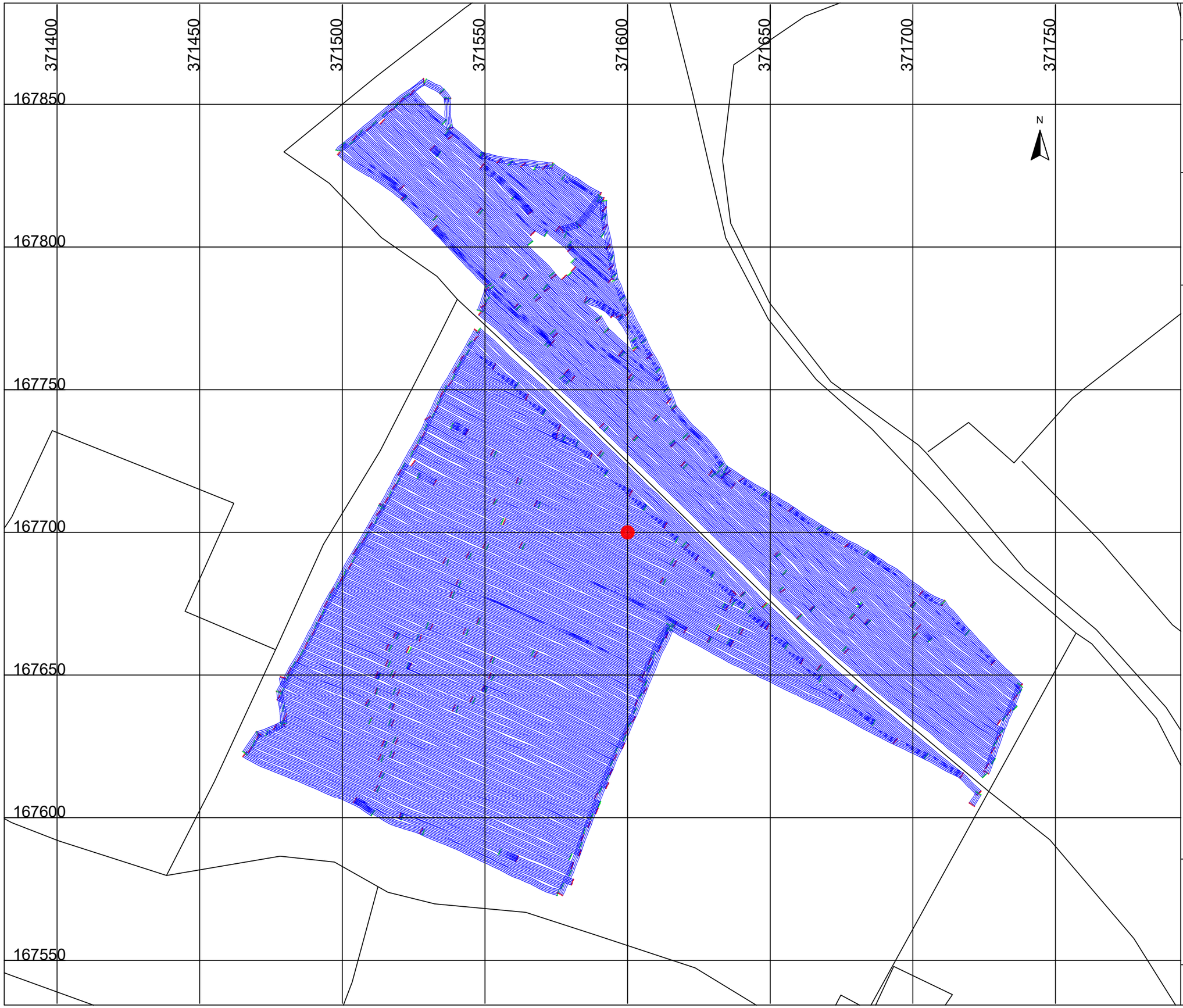
KTD	DJS	FIG 01



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Referencing information

Referencing grid to OSGB36 datum at 50m intervals

371600 167700

Survey tracks

Survey track start

Survey track stop

SCALE 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 02

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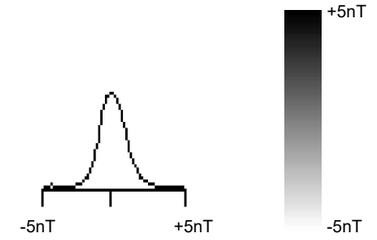
Greyscale plot of minimally processed magnetometer data



SCALE 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 03

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Abstraction and interpretation of magnetic anomalies

N

5
2
6
3
1
4
3
7
7
8

- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Discrete positive response - possible pit-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Positive anomaly - magnetically enhanced material
- Negative anomaly - material of low magnetic susceptibility
- Variable magnetic response - of natural origin
- Magnetic disturbance from ferrous material
- Strong dipolar anomaly - ferrous object

SCALE 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

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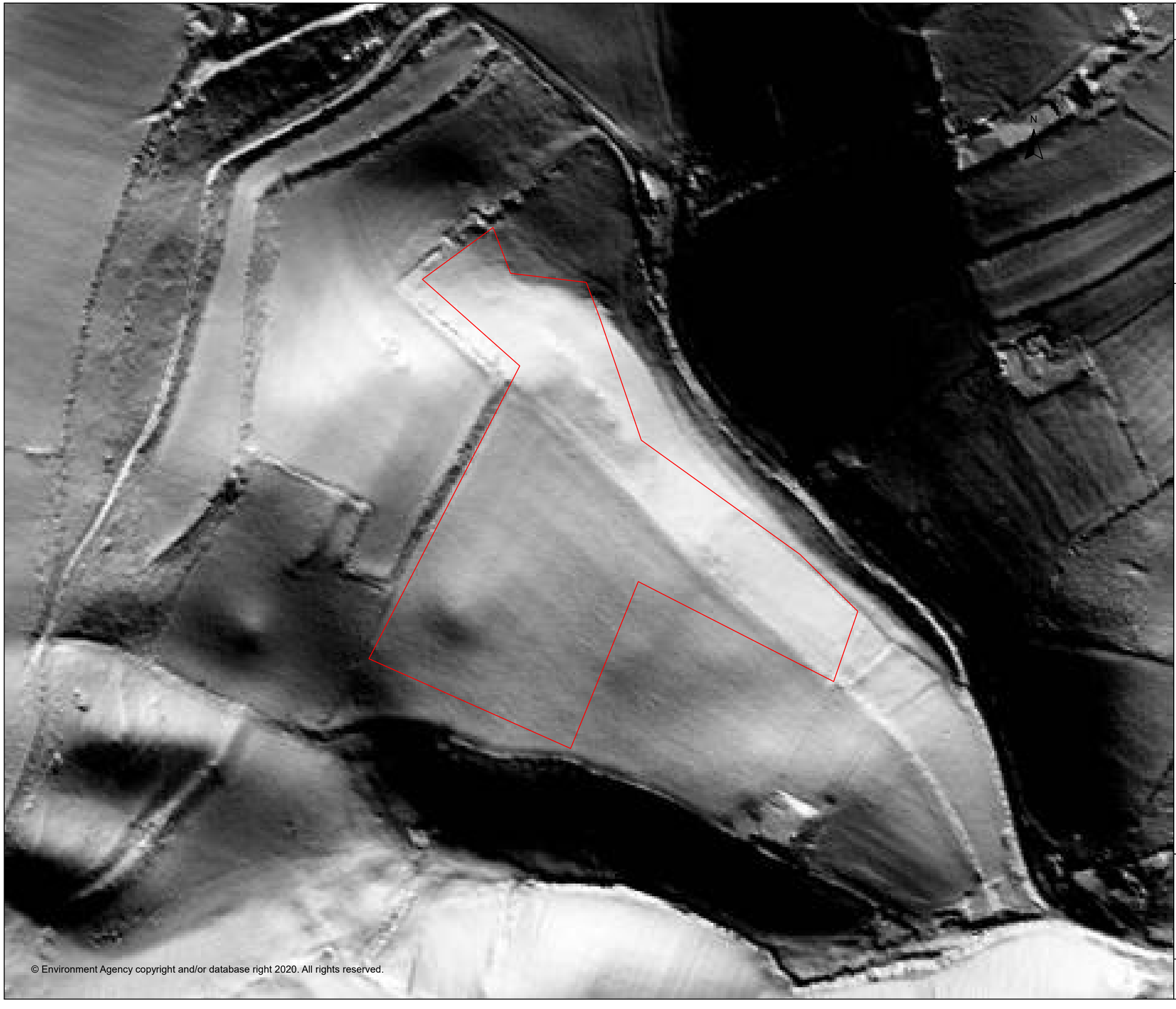
KTD	DJS	FIG 04



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Digital Terrain Model

Derived from Environment Agency's LiDAR data 1m resolution

SCALE 1:2000

0m 20 40 60 80 100m

SCALE TRUE AT A3

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KTD	DJS	FIG 05