

**Griffins Farm Quarry
Stockton
Warwickshire
Additional Survey**

MAGNETOMETER SURVEY REPORT

for

Cotswold Archaeology

Kerry Donaldson & David Sabin

September 2016

Ref. no. J681

ARCHAEOLOGICAL SURVEYS LTD

**Griffins Farm Quarry
Stockton
Warwickshire
Additional Survey**

Magnetometer Survey Report

for

Cotswold Archaeology

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Primary archive location - Archaeological Surveys Ltd, Yatesbury, Wiltshire

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Ordnance Survey Grid Reference – **SP 42470 63115**



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SUMMARY

Magnetometry was carried out over a single field at Griffins Farm Quarry, Stockton, Warwickshire by Archaeological Surveys Ltd. The survey infilled an area previously unsurveyable during a larger magnetometry survey of the surrounding area which has been identified for a proposed quarry extension. The results indicate an area covering 0.75ha that contains a series of enclosures with at least five ring ditches and a sixth sub-circular feature or ring ditch to the east of the enclosures. There are phases of development, with two ring ditches overlying each other, and also at least one ring ditch contains a large number of pits. Evaluation by Cotswold Archaeology has dated several of these features to the Iron Age and the morphology of the anomalies supports this; however, the evaluation also recorded some Anglo-Saxon pottery within cut features within one trench, but is not possible to determine how many of the geophysical anomalies are associated. Beyond the core of the archaeological features are only a small number of isolated pit-like responses, but it is not possible to determine their archaeological potential. Ridge and furrow is also evident and it has partly truncated many of the earlier cut features.

1 INTRODUCTION

1.1 *Survey background*

- 1.1.1 Archaeological Surveys Ltd was commissioned by Cotswold Archaeology, on behalf of CEMEX UK, to undertake a magnetometer survey of an area of land at Griffins Farm, Stockton, Warwickshire. The surrounding area has been subject to previous geophysical surveys (Archaeological Surveys, 2015b & 2015c) and the current survey area is within a single field which could not be surveyed at the same time in 2015 due to ploughing resulting in a very uneven ground surface.
- 1.1.2 The results of the former surveys are plotted with this report for context and to show the overall layout of the site (see Figs 03 & 04), but only the results of the present survey area will be reported on. The entire site is being considered by CEMEX UK as a quarry extension.
- 1.1.3 The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2015a) for the first survey in the northern part of the site and issued to Anna Stocks, Planning Archaeologist for Warwickshire County Council.

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 The survey and report generally follow the recommendations set out by: English Heritage (2008) *Geophysical survey in archaeological field evaluation*; and 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) *Standard and Guidance for Archaeological Geophysical Survey*.

1.3 Site location, description and survey conditions

- 1.3.1 The site is located at Griffins Farm between Southam and Stockton in Warwickshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) SP 42470 63115, see Figs 01 and 02.
- 1.3.2 The geophysical survey covers approximately 5.2ha within a single arable field that contained stubble at the time of survey.
- 1.3.3 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. Weather conditions during the survey were fine.

1.4 Site history and archaeological potential

- 1.4.1 Previous geophysical surveys within the immediate surrounding area located a number of enclosures, linear ditches, ring ditches and pits, including evidence for an Iron Age 'banjo' enclosure and Iron Age/Roman period settlement (Archaeological Surveys, 2015b & 2015c). Subsequent evaluation by Cotswold Archaeology (2016) dated the 'banjo' enclosure and a rectilinear enclosure to the Middle/Late Iron Age, and identified a crouched burial of probably Iron Age date and deposits containing ironworking debris. Four Anglo-Saxon burials, dated by glass and amber beads to the late 6th/early 7th century were located in the southern corner of the rectilinear Iron Age enclosure.
- 1.4.2 A total of 19 evaluation trenches were excavated within the present survey area and a concentration of archaeological finds in the central eastern part of it revealed a number of Iron Age ditches and pits, with evidence for Anglo-Saxon pottery dating from the 5th to 8th centuries within ditches in trench 78.

1.5 Geology and soils

- 1.5.1 The underlying geology is interbedded mudstone and limestone from the Rugby Limestone Member (Blue Lias) (BGS, 2016).
- 1.5.2 The overlying soil across the survey area is from the Evesham 2 association and is a typical calcareous pelosol. It consists of a slowly permeable, calcareous, clayey soil (Soil Survey of England and Wales, 1983).

- 1.5.3 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 are factors associated with the formation of localised fields. Additional details are set out below and within Appendix A.
- 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).

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 spaced 0.5m apart with readings recorded at 20Hz. The gradiometers have a range of recording data between 0.1nT and 10,000nT. The sensors are not zeroed in the field, as the vertical axis alignment is fixed using a tension band system. In order to produce visible, useful greyscale images a zero median traverse process is undertaken in TerraSurveyor. The system is linked to a Leica GS10 RTK GPS with data recorded by SENSYS MAGNETO@MXPDA software on a rugged computer.
- 2.2.2 Data are collected along a series of parallel survey tracks wherever possible. The length of each track is variable and relates to the size of the survey area and other factors including ground conditions. A visual display aids accurate placing of tracks and their separation.
- 2.2.3 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).

2.3 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. Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display using TerraSurveyor.
- 2.3.2 The data are collected between limits of ± 10000 nT and clipped for display at ± 3 nT. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track. A zero median traverse function is required in order to remove fixed offset values present within the sensors which do not undergo a zeroing procedure in the field. The approach ensures that the gradiometer sensors are very accurately aligned and fixed to the vertical magnetic field and are not influenced by localised magnetic fields or disturbed by vibration. 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 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 any processes, such as clipping, carried out on the data.
- 2.3.4 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.
- 2.3.5 The raster images are combined with base mapping using ProgeCAD Professional 2014, creating DWG (2010) 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 GPS, resection method, etc.
- 2.3.6 An abstraction and interpretation is also 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.
- 2.3.7 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.
- 2.3.8 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 within a single survey area covering approximately 5.2ha.
- 3.1.2 Magnetic anomalies located can be generally classified as positive responses of archaeological potential, positive anomalies of an uncertain origin, linear anomalies of an agricultural origin, areas of magnetic debris and disturbance and strong discrete dipolar anomalies relating to ferrous objects. Anomalies located within each survey area have been numbered and are described in 3.4 below.

3.2 Statement of data quality

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

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 basic explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, a basic key is indicated to allow cross referencing to the abstraction and interpretation plot. CAD layer names are included to aid reference to associated digital files (.dwg/.dxf). Sub-headings are then used to group anomalies with similar characteristics within the survey area.

Report sub-heading CAD layer names and plot colour	Description and origin of anomalies
<p>Anomalies with archaeological potential</p> <p>AS-ABST MAG POS LINEAR ARCHAEOLOGY </p> <p>AS-ABST MAG POS DISCRETE ARCHAEOLOGY </p> <p>AS-ABST MAG POS CURVILINEAR RING DITCH </p> <p>AS-ABST MAG ENCLOSURE DITCH </p>	<p>Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, etc..</p>
<p>Anomalies with an uncertain origin</p> <p>AS-ABST MAG POS LINEAR UNCERTAIN </p> <p>AS-ABST MAG POS DISCRETE UNCERTAIN </p>	<p>The category applies to a range of anomalies where <u>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.</u> 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.</p>




<p>Anomalies with an agricultural origin</p> <p>AS-ABST MAG RIDGE AND FURROW</p> 	<p>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.</p>
<p>Anomalies associated with magnetic debris</p> <p>AS-ABST MAG DEBRIS AS-ABST MAG STRONG DIPOLAR</p> 	<p>Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. It often occurs where there has been dumping or ground make-up and is related to magnetically thermoremanent materials such as brick or tile or other small fragments of ferrous material. This type of response is occasionally associated with kilns, furnace structures, or hearths and <u>may therefore be archaeologically significant</u>. 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.</p>
<p>Anomalies with a modern origin</p> <p>AS-ABST MAG DISTURBANCE AS-ABST MAG EVAL TRENCH</p> 	<p>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 such 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 and with hysteresis adjacent to strong magnetic sources. Where evaluation trenches are known to have been, there can be a very weakly positive and/or negative response to the backfilled material.</p>

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 442470 263115, see Figs 05 & 06.

Anomalies of archaeological potential

(1) - A partially curving, "L" shaped, positive linear anomaly joins anomaly (2) to form an enclosure ditch. It is a direct continuation of a linear feature located immediately to the south west by a previous survey. It contains at least 5 ring ditches (5 to 8) and a number of pits. The response is strongest at the southern end (13-23nT) and much weaker (2nT) as it extends northwards. Evaluation trench 82 identified the feature as three parallel ditches indicating phases and containing Iron Age pottery.

(2) - Curvilinear anomaly forms the northern part of the enclosure with anomaly (1) and also joins enclosure (3). The response is strongest towards the south west (20nT), becoming weaker as it extends northwards towards (3) (1.5nT). Internally there are a number of discrete positive responses and linear or possible curvilinear anomalies which are likely to relate to associated cut features. This was evaluated in trench (81) where it contained four fills and material dating to the Middle Iron Age including pottery and a piece of antler.

- (3) - Sub-rectangular enclosure appears to contain a number of groups of pits and possible linear anomalies. The response is strongest along the eastern edge (15nT) and is very weak towards the north western corner (1nT).
- (4) - Rectilinear enclosure with evidence of possible phases of development. It is located at the south western end of anomaly (2), forming an enclosure 22m long by up to 17m wide. The evaluation recorded Middle Iron Age pottery in the upper fill of the ditch. There is evidence for internal pits or magnetic enhancement within the interior.
- (5) - A ring ditch feature 12m in diameter containing a large number of pits or post-holes or areas of burning with others located on the western side.
- (6) - The remains of two overlaying ring ditches, although the sequencing is uncertain. The western ring ditch appears more complete, but it is possible that the eastern one overlies it. They both have a diameter of approximately 10.5m.
- (7) - Positive curvilinear anomalies appear to form an irregularly shaped ring ditch feature with a diameter of 11m and evidence of internal and external pits, possibly forming a linear arrangement.
- (8) - A ring ditch feature is located at the southern edge of anomaly (4), adjacent to further rectilinear features. It has a 10m diameter and evidence for several internal pits.
- (9) - A fragmented curvilinear anomaly appears to relate to a ring ditch or sub-circular enclosure feature with a diameter of up to 17m. It is located south east of the enclosures (1-3) and is larger and less circular than the other ring ditches. Evaluation trench 83 extends through the feature, finding a number of ditches with recuts and Iron Age pottery relating to the southern part of the feature. The trench does not record any features relating to the northern part of the ring ditch, but this corresponds to a lack of response in the data.
- (10) - A "C" shaped curvilinear anomaly with a pit-like response to the south west relates to a cut feature. During the evaluation several ditches and pits were located which contained Anglo-Saxon pottery dating to between the 5th and 8th centuries.

Anomalies with an uncertain origin

- (11) - To the south west of the archaeological features are a number of positive linear and discrete responses. It is possible that they relate to further archaeology; however, due to the widespread magnetic debris immediately to the west (14), it is not possible to determine their origin, and an association with the magnetic debris is possible.
- (12) - The survey area contains a small number of isolated weakly positive discrete anomalies. They appear to relate to pit-like features, but it is not possible to determine their origin.

Anomalies with an agricultural origin

(13) - The survey area contains a series of parallel linear anomalies relating to ridge and furrow.

Anomalies associated with magnetic debris

(14) - A zone of magnetic debris is evident in the central southern edge of the survey area and relates to waste material adjacent to the farm. To the north east is another linear zone, which is likely to be related to material associated with a recently removed field boundary.

Anomalies with a modern origin

(15) - A number of the backfilled archaeological evaluation trenches can be seen as weak anomalies within the data.

4 CONCLUSION

- 4.1.1 The results of the detailed magnetometer survey reveal a series of sub-rectilinear enclosures containing at least five ring ditches, with a sixth ring ditch or sub-circular enclosure to the south east. Together the archaeology covers 0.75ha within the field, and can be seen as a direct continuation of features from the field immediately to the south, surveyed in 2015 and appearing to relate to Iron Age settlement.
- 4.1.2 The ring ditches within the enclosures have diameters of between 10m and 12m and contain evidence for internal pits or post-holes or areas of burning. There is also evidence for two phases of construction, with two overlying ring ditches. The external, irregularly shaped ring ditch is up to 17m in diameter.
- 4.1.3 Away from the zone of archaeological features there are a small number of isolated, discrete, weakly positive responses of uncertain origin. Ridge and furrow, magnetic debris and backfilled archaeological evaluation trenches have also been located.

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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 thermoremanent 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.

Thermoremanent 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. Thermoremanent features include ovens, hearths, and kilns. In addition thermoremanent 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 field. The difference between the two sensors will relate to the strength 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. It has been found that clipping data to ranges between $\pm 5\text{nT}$ and $\pm 3\text{nT}$ often improves the appearance of features associated with archaeology. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Zero (destripe) Median/Mean Traverse

The median (or mean) of 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 baseline value of gradiometer sensors.

High Pass Filtering

A mathematical process used to remove low frequency anomalies relating to survey tracks and modern agricultural features.

Appendix C – survey and data information

Minimally processed data

COMPOSITE
Filename: J681-mag-Area4.xcp
Description: Imported as Composite from: J681-mag-Area4.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y): OSGB36
Northwest corner: 442267.45245631, 263257.739934965 m
Southeast corner: 442687.30245631, 262989.839934965 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702

Source GPS Points: 1774500

Dimensions
Composite Size (readings): 2799 x 1786
Survey Size (meters): 420 m x 268 m
Grid Size: 420 m x 268 m
X Interval: 0.15 m
Y Interval: 0.15 m

Stats
Max: 3.32
Min: -3.30
Std Dev: 1.14
Mean: 0.05
Median: 0.03
Composite Area: 11.248 ha
Surveyed Area: 5.1239 ha

PROGRAM
Name: TerraSurveyor
Version: 3.0.23.0

Processes: 1
1 Base Layer

GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to OSGB36).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00 nT

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.

Three printed copies of the report and a PDF copy will be supplied to the Warwickshire Historic Environment Record. The report will also be uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS). A summary of the survey will also be supplied to *West Midlands Archaeology*.

Archive contents:

Geophysical data - path: J681 Stockton 3\Data\				
Path and Filename	Software	Description	Date	Creator
stockton10\MX\ .prm .dgb .disp	Sensys MXPDA	Proprietary data formats representing magnetometer survey traverses logged to a PDA.	22/08/16	D.J.Sabin
stockton10\MX\J681-mag-Area4.asc	Sensys DLMGPS	ASCII CSV (tab) file representing survey Area 4 in eastings, northings (UTM Z30N), magnetic measurement, traverse file and sensor number.	24/08/16	K.T.Donaldson
Area4\comps\J681-mag-Area4.xcp	TerraSurveyor 3.0.23.0	Composite data file derived from ASCII CSV.	24/08/16	K.T.Donaldson
Area4\comps\J681-mag-Area4.xcp	TerraSurveyor 3.0.23.0	Processed composite data file (zmt and clipping to $\pm 3nT$).	24/08/16	K.T.Donaldson
Graphic data - path: J681 Stockton 3\Data\				
Area4\graphics\ J681-mag-Area4-proc.tif	TerraSurveyor 3.0.23.0	TIF file showing a minimally processed greyscale plot clipped to $\pm 3nT$.	24/08/16	K.T.Donaldson
Area4\graphics\ J681-mag-Area4-proc.tfw	TerraSurveyor 3.0.23.0	World file for georeferencing TIF to OSGB36.	24/08/16	K.T.Donaldson
Area4\graphics\ J681-mag-Area4-proc-10nT.tif	TerraSurveyor 3.0.23.0	TIF file showing a minimally processed greyscale plot clipped to $\pm 10nT$.	01/09/16	K.T.Donaldson
Area4\graphics\ J681-mag-Area4-proc-10nT.tfw	TerraSurveyor 3.0.23.0	World file for georeferencing TIF to OSGB36.	01/09/16	K.T.Donaldson
CAD data - path: J681 Stockton 3\CAD\				
J681 version 1.dwg	ProgeCAD 2016	CAD file for creating plots of greyscales, abstraction, interpretation and mapping. Grid coordinates as OSGB. AutoCAD 2010 format.	24/08/16	K.T.Donaldson
Text data - path: J681 Stockton 3\Documentation\				
J681 report.odt	OpenOffice.org 3.0.1 Writer	Report text as an Open Office document.	05/09/16	K.T.Donaldson

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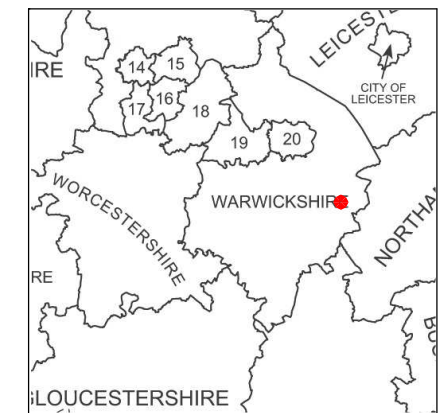
**Geophysical Survey
Griffins Farm Quarry
Stockton
Warwickshire
Additional Survey**

Map of survey area

Reproduced from OS Explorer map no.222 1:25 000 by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100043739.



Survey location



● Survey location

Site centred on OS NGR
SP 42470 63115

SCALE 1:25 000



SCALE TRUE AT A3

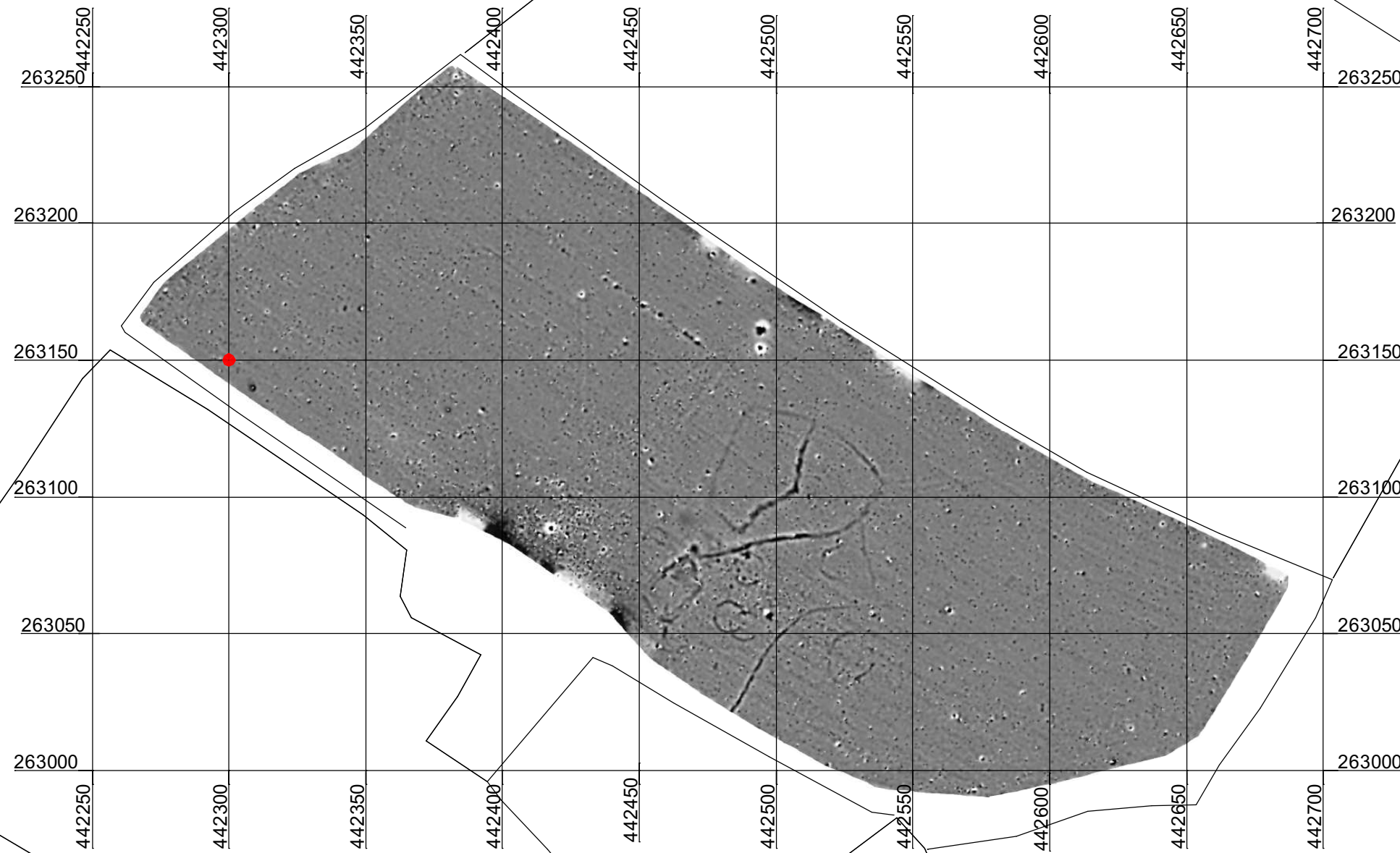
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Referencing information

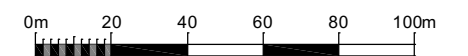
Referencing grid to OSGB36 datum at 50m intervals

Data collected at 20Hz and georeferenced to ETRS89 zone 30 with conversion to OSGB36 using OSTN02

● 442300 263150



SCALE 1:2000



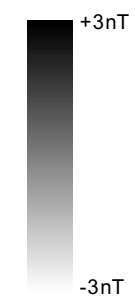
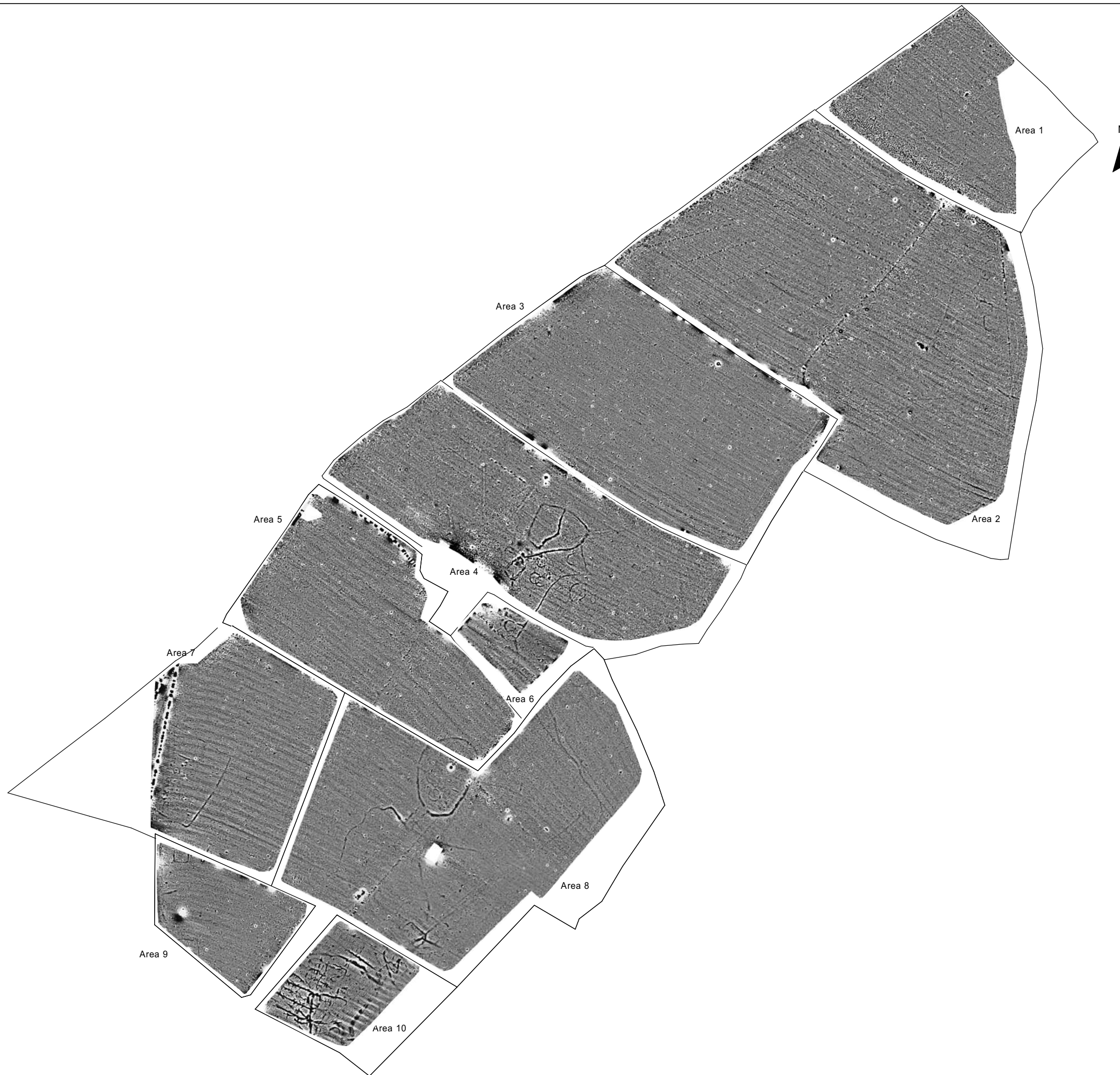
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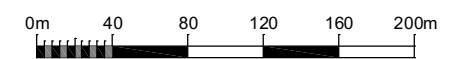
**Greyscale plot of minimally
processed magnetometer data -
entire site**

Areas 1 to 3 and 5 to 10 surveyed in 2015

Area 4 surveyed 2016



SCALE 1:4000



















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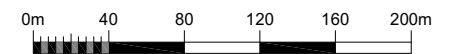
FIG 03

**Geophysical Survey
Griffins Farm Quarry
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Warwickshire
Additonal Survey**

**Abstraction and interpretation of
magnetometer anomalies -
entire site**

-  Positive linear anomaly - cut feature of archaeological potential
-  Positive rectilinear/curvilinear anomaly - enclosure ditch
-  Positive curvilinear anomaly - ring ditch
-  Positive linear anomaly - possible ditch-like feature
-  Linear anomaly - of agricultural origin
-  Linear anomaly - ridge and furrow
-  Positive linear anomaly - possible land drain
-  Positive linear anomaly - former field boundary
-  Discrete positive response - cut feature of archaeological potential
-  Discrete positive response - possible pit-like feature
-  Positive anomaly - magnetically enhanced material
-  Magnetic debris - spread of magnetically thermoremnant/ferrous material
-  Strong dipolar anomaly - ferrous object
-  Magnetic disturbance from ferrous material
-  Evaluation trench
-  Strong multiple dipolar linear anomaly - pipeline / cable / service

SCALE 1:4000



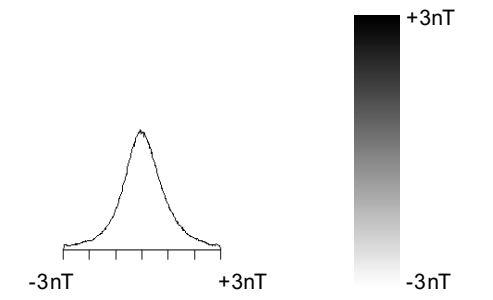
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FIG 04

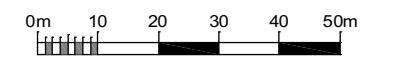


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Additional Survey**

Greyscale plot of minimally processed magnetometer data














SCALE 1:1250



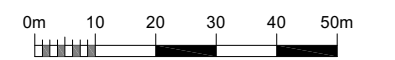
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Warwickshire
Additional Survey**

**Abstraction and interpretation of
magnetometer anomalies**

-  Positive linear anomaly - cut feature of archaeological potential
-  Positive rectilinear/curvilinear anomaly - enclosure ditch
-  Positive curvilinear anomaly - ring ditch
-  Positive linear anomaly - possible ditch-like feature
-  Linear anomaly - ridge and furrow
-  Discrete positive response - cut feature of archaeological potential
-  Discrete positive response - possible pit-like feature
-  Magnetic debris - spread of magnetically thermoremanent/ferrous material
-  Strong dipolar anomaly - ferrous object
-  Magnetic disturbance from ferrous material
-  Evaluation trench

SCALE 1:1250



SCALE TRUE AT A3

