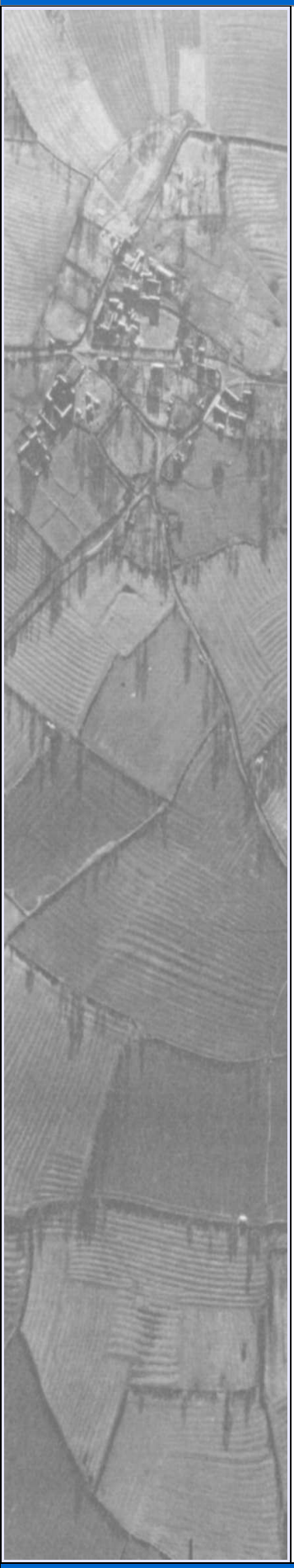

Gatcombe Farm
Long Ashton
North Somerset

MAGNETOMETER SURVEY REPORT

for

A & R Butler

Kerry Donaldson & David Sabin

April 2018

Ref. no. J749

ARCHAEOLOGICAL SURVEYS LTD

Gatcombe Farm
Long Ashton
North Somerset

Magnetometer Survey Report

for

A & R Butler

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 – 24th April 2018
Ordnance Survey Grid Reference – **ST 52290 70065**

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SUMMARY

A geophysical survey, comprising detailed magnetometry, was carried out within a single pasture field at Gatcombe Farm in North Somerset. The southern part of the field has been outlined for the construction of a cattle barn and hardstanding; however, the entire field was surveyed to place any anomalies within a wider context. The site lies adjacent to the scheduled area of Gatcombe Roman site and it is, therefore, possible that further archaeological features could extend beyond the scheduled area into the survey area. The results indicate the presence of a number of positive anomalies; however, their origin is uncertain. A broad, 6m wide, positive linear response could relate to a natural feature; however, an association with an infilled former trackway or holloway leading from the stream to the south of the site to the higher ground to the north is also possible. Other discrete and amorphous positive responses appear pit-like, but again it is difficult to determine if they are natural or archaeological features. Several positive linear and a rectilinear anomaly have also been located, although whether they relate to cut, ditch-like features, or infilled former rilling formed by water erosion is uncertain.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by David James & Partners, on behalf of Messrs A & R Butler, to undertake a magnetometer survey of an area of land at Gatcombe Farm, North Somerset. The site has been outlined for a proposed development of an agricultural building for livestock and area of hardstanding in the southern part of the survey area (see Fig 02) (North Somerset Planning Application no. 18/P/2076/FUL).

1.1.2 The geophysical survey was carried out in accordance with a Method Statement produced by Archaeological Surveys (2018) and approved by Cat Lodge, Archaeologist for North Somerset Council, prior to carrying out the fieldwork. The survey area lies immediately north west of scheduled Gatcombe Roman site, and although the development area only covers 0.3ha at the southern end of the field, it was agreed to survey the entire field in order to gain a better understanding of any anomalies that may be located within the development zone.

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 generally follow the recommendations set out by: English Heritage (2008) *Geophysical survey in archaeological field evaluation;* 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) *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 lines; broken or fragmented anomalies may well correspond closely with subsurface truncation.

1.4 Site location, description and survey conditions

1.4.1 The site is located at Gatcombe Farm, within the parish of Long Ashton in North Somerset. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 52290 70065, see Figs 01 and 02.

1.4.2 The geophysical survey covers approximately 2.7ha within a single pasture field. The development area covers c0.3ha and is situated in the southern part of the survey area.

1.4.3 At the time of survey the majority of the field contained tall grass, the southern end of the field contained several haylage bales, an agricultural implement, steel tank and steel cattle feeder. There was also evidence of ground

consolidation adjacent to the southern gateway into the field.

1.4.4 The land slopes down towards the south west with the north eastern part of the field located in an elevated position below a steep, tree covered hillside. Western and southern boundaries are hedgerows beyond which a narrow lane lies within a hollow that deepens towards the north west. The eastern field boundary is a post and wire fence.

1.4.5 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. Weather conditions during the survey were mainly fine but with some periods of light drizzle.

Plate 1: Survey area looking north

1.5 Site history and archaeological potential

1.5.1 The site lies immediately north west of the scheduled monument of the *Roman settlement, part of an associated field system and earlier Iron Age settlement remains at Gatcombe Farm*, (Historic England List Entry no 1011978) (commonly known as Gatcombe Roman site). This covers 34.9ha of land to the south east and east within Gatcombe Farm and comprises an Iron Age settlement, which was Romanised in c50-80AD and which became a commercial agricultural centre during the Roman period. A wall up to 5m thick was constructed in the late 3rd or early 4th century, enclosing an area of 7ha, the western side of which is located 150m to the east of the survey area. Evidence for at least 19 building foundations have been identified within the walled area. Previous geophysical survey on land 400m to the east located evidence for enclosures and industrial activity (Archaeological Surveys, 2012) which were dated through evaluation to the late Iron Age and Roman periods (Cotswold Archaeology, 2013). Evidence for Iron working was also found

during earlier excavations within the walled settlement (Cunliffe, 1967)

1.5.2 Also in the vicinity are the site of medieval Gatcombe Mill, which is located approximately 150m north west of the development area, and the site for the former leat to Gatcombe Mill which is located just to the west, beyond Gatcombe Lane. The medieval site of Gatcombe Court is also located 200m to the south east.

1.6 Geology and soils

1.6.1 The underlying geology within the majority of the survey area is mudstone and halite stone from the Mercia Mudstone Group. The north eastern corner is Carboniferous limestone from the Oxwich Head Limestone Formation (BGS, 2017).

1.6.2 The overlying soil across the site is from the Whimple 1 association and is a stagnogleyic argillic brown earth. It consists of a reddish, fine, loamy over clayey soil with slowly permeable subsoil 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 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 (FGM650) spaced 0.5m apart with readings recorded at 20 Hz. 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 range of recording data between ±0.1nT and ±10,000nT. They are linked to a Leica GS10 RTK GPS 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 is manifest 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 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 ±10000nT 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.

2.3.6 The raster images are combined with base mapping using ProgeCAD Professional 2016, 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.

2.3.7 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.

2.3.9 The abstraction and interpretation procedure has been supported by analysis of a digital terrain model and/or contour plot derived from GNSS height data automatically logged during the survey. The GNSS heights are converted from the ETRS89 ellipsoid using the National Geoid Model OSGM02 to obtain ODN (Ordnance Datum Newlyn) + the GNSS antenna height (approximately 1.5M).

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 approximately 2.7ha within a single pasture field.

3.1.2 Magnetic anomalies located can be generally classified as positive anomalies of an uncertain origin, anomalies with a natural origin, areas of magnetic debris 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 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 Very small zones of magnetic disturbance around the perimeter of the survey area are associated with modern ferrous material and are unlikely to obscure more significant anomalies. Close to the southern corner of the site several large steel objects were avoided due to high levels of magnetic disturbance. Magnetic debris within this part of the site has been caused by ferrous and magnetically thermoremnant objects within material used for ground consolidation near the field entrance.

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, 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 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. 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.
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 distinguished 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 centred on OS NGR 352290 170065, see Figs 03 & 04.

Anomalies with an uncertain origin

(1) - A broad, positive linear response extends through the south eastern part of the site. This type of anomaly indicates the response to an infilled linear feature; however, it is not possible to determine if it relates to water erosion from the higher ground to the north, although topographically this seems unlikely, or if it relates to a former track or holloway leading from the higher ground to the north to the brook to the south of the site.

(2 & 3) - Located in the southern part of the site are a number of weakly positive amorphous responses (2) and also more discrete positive responses (3). Such responses can relate to former pit-like features; however, it is not clear if they relate to naturally formed features, or if they relate to pit-like features with an archaeological origin.

(4) - A weakly positive "L" shaped response of uncertain origin, with the long axis parallel with anomaly (1) (north north east to south south west). A zone of what appears to be naturally formed magnetic enhancement (7) is located close by.

(5) - A short positive linear anomaly is located in the southern part of the survey area. A similar response can also be seen towards the north western corner of the site. Although this type of response can indicate a ditch-like feature, it is possible that it relates to former rilling caused by water erosion.

Anomalies with a natural origin

(6) - Located in the north eastern part of the site is a zone of magnetically variable responses that appear to relate to naturally formed features. These correspond to a change from the Mercia Mudstone geology to the Oxwich Limestone geology, although whether it is a direct response to shallow underlying geology, or has been caused by soil erosion and deposition, is uncertain.

(7) - An amorphous zone of magnetic enhancement is likely to be of natural origin.

Anomalies associated with magnetic debris

(8) - A zone of magnetic debris at the very southern edge of the survey area is a response to dumped magnetically thermoremnant material, such as brick/tile, that has been used for ground consolidation near the field entrance.

(9) - The entire site contains widespread and numerous strong, discrete, dipolar responses which relate to buried ferrous and other magnetically thermoremnant objects within the topsoil.

4 CONCLUSION

4.1.1 The detailed magnetometry survey located several positive anomalies that cannot be clearly characterised. These include a broad, positive linear response that could relate to a former trackway or holloway; however, a naturally formed feature should also be considered. Other anomalies appear more pit-like and these are situated in the southern part of the site, closest to the scheduled area of Gatcombe Roman site. While such anomalies can relate to natural features, it is possible that they relate to pits with an archaeological origin. Other short, positive linear and a rectilinear anomaly have also been located and again while a natural origin, such as rilling caused by water erosion, is possible they could relate to cut features and an archaeological origin should be considered.

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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. It has been found that clipping data to ranges between ±5nT and ±3nT 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, modern agricultural features and other large magnetic bodies within or adjacent to survey areas.

Low Pass Filtering

A mathematical process used to remove high frequency anomalies relating to uneven ground, vibration, etc.

Appendix C – survey and data information

Minimally processed data

Filename: J749-mag-proc.xcp
Description: Imported as Composite from: J749-mag.asc
Instrument Type: Sensys DLMGPS
Units: nT
UTM Zone: 30U
Survey corner coordinates (X/Y): OSGB36
Northwest corner: 352210.403213933, 170205.107713941 m
Southeast corner: 352367.903213933, 169917.732713941 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Source GPS Points: 908600
Dimensions
Composite Size (readings): 1260 x 2299
Survey Size (meters): 158 m x 287 m
Grid Size: 158 m x 287 m
X Interval: 0.125 m
Y Interval: 0.125 m

Stats
Max: 5.53
Min: -5.50
Std Dev: 1.62
Mean: 0.06
Median: 0.01
Composite Area: 4.5262 ha
Surveyed Area: 2.7068 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 -5.00 to 5.00 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.

A PDF copy will be supplied to the North Somerset Historic Environment Record. 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	J749-mag-**[area number/name]**.asc J749-mag-**[area number/name]**.xcp J749-mag-**[area number/name]**-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J749-mag-**[area number/name]**-proc.tif	Image in TIF format
Drawing	J749-**[version number]**.dwg	CAD file in 2010 dwg format
Report	J749 report.odt	Report text in Open Office 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 POS UNCERTAIN		255,127,0	Polygon (cross hatched ANSI37)
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 (cross hatched ANSI37)

Table 3: CAD layering

Appendix F – copyright and intellectual property

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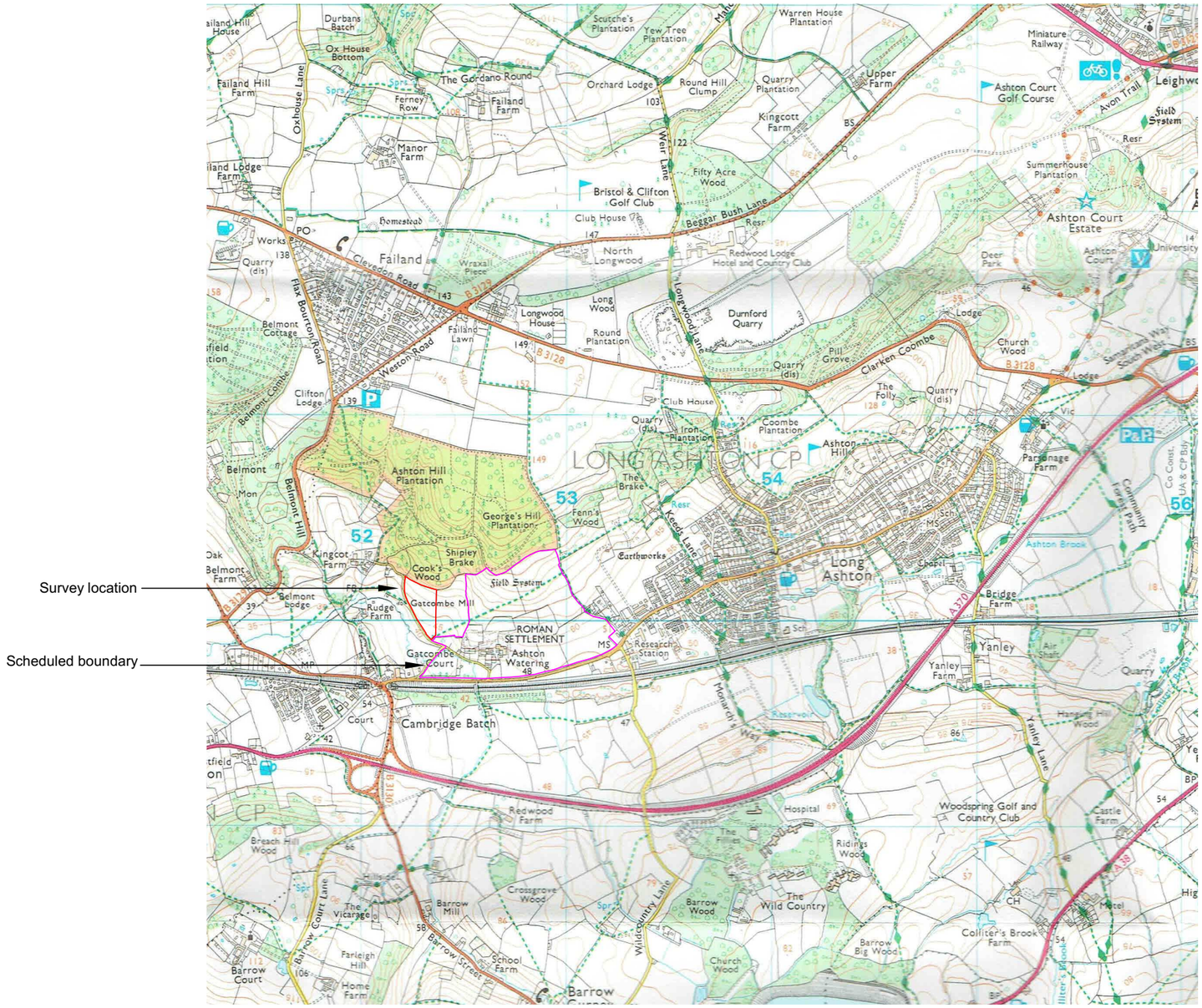

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Long Ashton
North Somerset

Map of survey area

● Survey location

Site centred on OS NGR
ST 52290 70065

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

FIG 01

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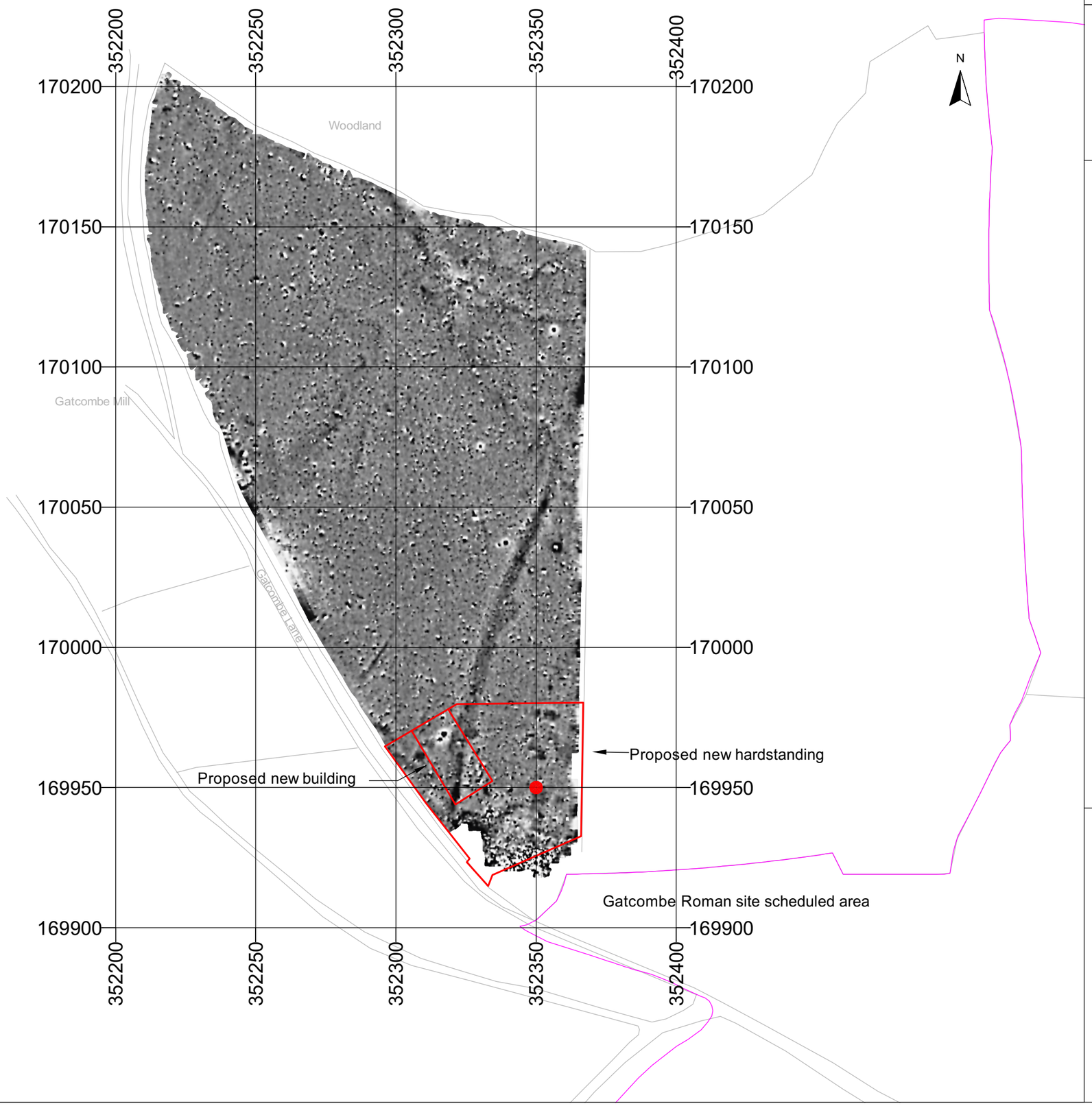
Referencing information



Referencing grid to OSGB36 datum at 50m intervals

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

352350 169950

Development boundary

SCALE 1:1500

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 02

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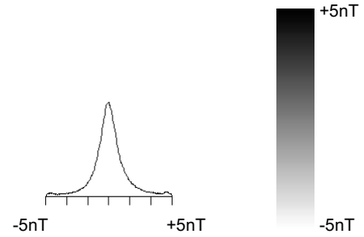
North Somerset

Greyscale plot of minimally processed magnetometer data



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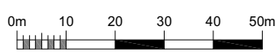

SCALE TRUE AT A3

FIG 03

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North Somerset

Abstraction and interpretation of magnetic anomalies

- Positive linear anomaly - possible ditch-like feature
- 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 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 04

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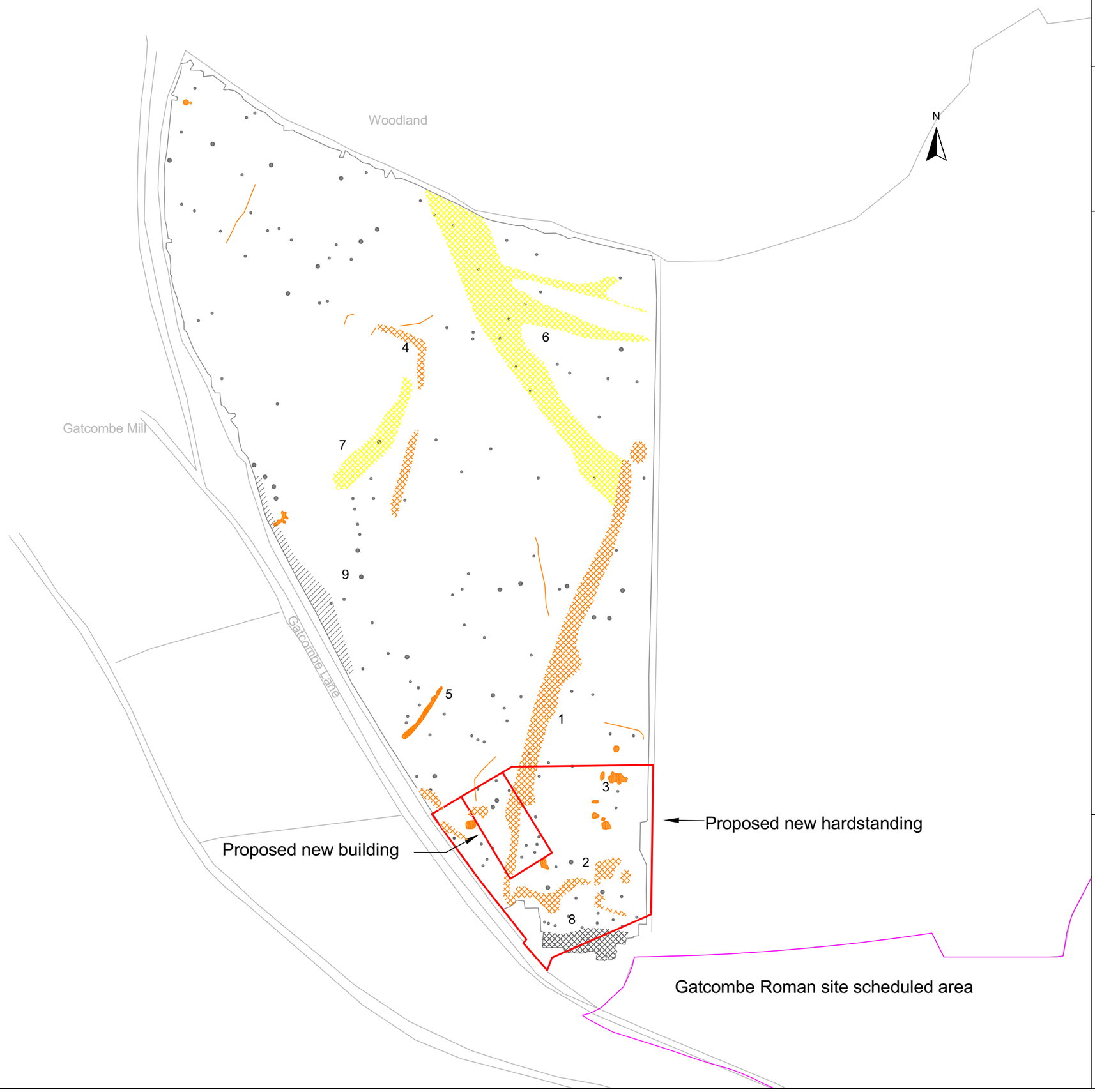
Abstraction and interpretation of magnetic anomalies with development area



- Positive linear anomaly - possible ditch-like feature
- 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 1:1250

0m 10 20 30 40 50m

SCALE TRUE AT A3

FIG 05