SURVEY REPORT

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Land off Bower Lane, Eaton Bray, Bedfordshire

Client
CgMs Heritage (part of RPS)

Survey Report
12681

Date
May 2018

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GEOPHYSICAL SURVEY REPORT

Project name:
Land off Bower Lane, Eaton Bray, Bedfordshire

SUMO Job reference:
12681

Client:
CgMs Heritage (part of RPS)

Survey date:
19-20 April 2018

Report date:
10 May 2018

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1 SUMMARY OF RESULTS

A combined magnetometer and aerial photogrammetry survey was conducted on land off Bower Lane at Eaton Bray, Bedfordshire. No definite archaeological responses have been identified, however linear anomalies of uncertain origin have been detected in both the magnetic and photogrammetry results. Evidence of ridge and furrow and former field boundaries indicate that the site has a largely agricultural past. An underground service has been mapped, and disturbance from nearby ferrous metal objects are present in the magnetometer data.

2 INTRODUCTION

2.1 Background synopsis

SUMO Geophysics Ltd were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by **CgMs Heritage (part of RPS)**.

2.2 Site details

NGR / Postcode	SP 978 202 / LU6 1RB
Location	The site is located to the south-east of Eaton Bray, Bedfordshire. Bower Lane forms the northern boundary of the site, with open agricultural land to the south-east and residential property and gardens to the south-west and west.
HER/SMR	Bedfordshire
Unitary Authority	Central Bedfordshire
Parish	Eaton Bray CP
Topography	Gradually sloping down from north-east to south-west
Current Land Use	Pasture
Geology	Solid: West Melbury Marly Chalk Formation - chalk. Superficial: None recorded (BGS 2018).
Soils	Grove Association (512d) - fine loamy calcareous soils over chalky gravel (SSEW 1983).
Archaeology	Information from Bedfordshire HER (2018) indicates that earthwork remains of ridge and furrow (HER. 20557) are present across the site, and are aligned north-west to south-east. In the northern extent of the site, earthworks of a rectilinear ditch (HER. 20558) are recorded. The ditch lies immediately east of Yew Tree Close, with another ditch to the north-east running parallel to Bower Lane. To the west of the site lies the historic core of the medieval settlement of Eaton Bray (HER. 16884). To the north of the site, scatters of Late Pre-Roman Iron Age pottery sherds (HER. 15831) have been discovered, and are thought to indicate Iron Age / Romano-British settlement in the area. To the south-west of the site, east of Doolittle Lane, a late Iron Age to Romano-British settlement (HER. 15842) has been identified through fieldwalking. Scatters of coarse-ware sherds and tile fragments were discovered. A subsequent watching brief produced evidence of two ditches and a possible piece of a hearth stone.
Survey Methods	Magnetometer survey (fluxgate gradiometer)

Study Area	Magnetometer - 6.2 ha Aerial - 12 ha

2.3 Aims and Objectives

To locate and characterise any anomalies of possible archaeological interest within the study area.

3 METHODS, PROCESSING & PRESENTATION

3.1 Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (EH 2008) (then English Heritage), the Chartered Institute for Archaeologists (CIfA 2014) and the European Archaeological Council (EAC 2016).

3.2 Survey methods

Detailed magnetic survey was chosen as an efficient and effective method of locating archaeological anomalies.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1.0m	0.25m
Photogrammetry	UAV with gimbal mounted camera	N/A	1.88cm/pix

More information regarding the magnetometer technique is included in Appendices A and B.

3.3 Data Processing

3.3.1 *Magnetometer*

The following basic processing steps have been carried out on the data used in this report:

De-stripe; de-stagger; interpolate

3.3.2 *Photogrammetry*

The data images are processed in photogrammetry software to generate point cloud, mesh and textured models of the ground surface.

The DEM files are processed further using relief visualisation tools or geographical information system software.

A detailed processing report with further technical information for this technique is included in Appendix C.

3.4 Presentation of results and interpretation

3.4.1 *Magnetometer*

The presentation of the results includes a 'minimally processed data' and a 'processed data' greyscale plot. Magnetic anomalies are identified, interpreted and plotted onto the 'Interpretation' drawings.

When interpreting the results, several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as: *Abbey Wall* or *Roman Road*. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: *Probable*, or *Possible Archaeology*. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *Possible*.

3.4.2 *Photogrammetry*

Output files are generated in the form of georeferenced digital elevation models (Figure 06) and an orthophotograph (Figure 07).

4 RESULTS

The survey has been divided into four survey areas (Areas A-D).

4.1 Magnetometer

4.1.1 *Probable / Possible Archaeology*

No magnetic responses have been recorded that could be interpreted as being of archaeological interest.

4.1.2 *Uncertain*

Two positive linear anomalies and small curved linear response are present in Area B, and are of uncertain origin. It is possible that they are related to ditches of archaeological provenance, though they could equally be of modern origin given that they appear to terminate within an area of strong magnetic disturbance.

4.1.3 *Former Field Boundary*

Areas of magnetic disturbance on a linear alignment in Area B lie in the same location as a former field boundary, visible on historic OS mapping.

A further linear anomaly in the south-west of Area B is likely to be related to a former boundary or possible drain, but there is no evidence of such a feature on historic mapping.

4.1.4 *Agricultural – Ridge and Furrow*

Weak, widely spaced parallel linear responses are visible in the east of the site (Areas C and D). These are indicative of ridge and furrow cultivation.

4.1.5 *Ferrous / Magnetic Disturbance*

An area of magnetic disturbance is visible across the majority of Area A, with smaller areas of disturbance in Areas B and D. These are indicative of ferrous debris / rubbish within the topsoil, and are likely to be of modern origin.

A strong bipolar linear response is visible in Area B and is typical of the response of an underground service, such as a pipe or cable.

Ferrous responses close to boundaries are due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil; they are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

4.2 Photogrammetry

4.2.1 Earthworks (banked / cut features)

A small number of cut features and a banked earthwork are visible in the west of the site. The banked feature is likely to be associated with the former field boundary (see below), while the cut features are of uncertain origin.

4.2.1 Agriculture

A rectilinear feature and further linear cut features are present in the north and north-west of the area. The rectilinear feature appears to have an associated bank on its eastern side. These are a result of former field boundaries, and are visible on the 1849 Eaton Bray Tithe Map.

A linear earthwork feature in the south-west of the area corresponds with the location of a former field boundary, corroborated on historic maps. This also tallies with an anomaly located in the magnetometer data in this area.

Parallel, curving linear earthworks are present across much of the site, varying in orientation. They are most prominent in the east and south-west of the site, and are indicative of ridge and furrow cultivation.

5 DATA APPRAISAL & CONFIDENCE ASSESSMENT

5.1 Historic England guidelines (EH 2008) Table 4 states that the average magnetic response on chalk is generally good. The results from this survey indicate the presence of linear anomalies of uncertain origin and weak evidence of ridge and furrow; as a consequence, the technique is likely to have detected any archaeological features, if present. It may be possible that the underlying geology is not fully conducive to magnetic survey, while areas of magnetic debris and disturbance across the site may mask weaker archaeological responses.

5.2 The conditions for the photogrammetry survey were adequate, with stable, mild conditions with some sunshine and moderate visibility. Several earthworks have been detected, including known former field boundaries and ridge and furrow, demonstrating that the technique has been effective.

6 CONCLUSION

6.1 The survey at Eaton Bray has not revealed any anomalies of archaeological interest. Linear anomalies of uncertain origin have been identified; these could have archaeological or modern origins. Evidence of ridge and furrow has been identified across much of the site in the photogrammetry, though only weak evidence of the cultivation is visible in the geophysical data. Former field boundaries are visible in both data sets, while an underground service and areas of magnetic disturbance have been detected in the magnetometer survey. The disturbance from ferrous objects may have the potential to mask weaker archaeological responses.

7 REFERENCES

Bedfordshire HER 2018 The Historic Environment Record for Bedfordshire [Accessed 19/04/2018] *website: www.heritagegateway.org.uk*

BGS 2018 British Geological Survey, Geology of Britain viewer [Accessed 08/05/2018] *website*: (http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps)

CIfA 2014 *Standard and Guidance for Archaeological Geophysical Survey.* Amended 2016. CIfA Guidance note. Chartered Institute for Archaeologists, Reading http://www.archaeologists.net/sites/default/files/CIfAS%26GGeophysics_2.pdf

EAC 2016 *EAC Guidelines for the Use of Geophysics in Archaeology,* European Archaeological Council, Guidelines 2.

EH 2008 *Geophysical Survey in Archaeological Field Evaluation.* English Heritage, Swindon https://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf/

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

Appendix A - Technical Information: Magnetometer Survey Method

Grid Positioning
For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. This results in an accuracy of around 0.01m.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1m	0.25m

Instrumentation: Bartington *Grad* 601-2
Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted vertically, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths. The Bartington instrument can collect two lines of data per traverse with gradiometer units mounted laterally with a separation of 1.0m. The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

Data Processing

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

Display

Greyscale/ Colourscale Plot	This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.

Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall,* etc.) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

Archaeology / Probable Archaeology	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
Possible Archaeology	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
Industrial / Burnt-Fired	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
Former Field Boundary (probable & possible)	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
Ridge & Furrow	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
Agriculture (ploughing)	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
Land Drain	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
Natural	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
Magnetic Disturbance	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present. They are presumed to be modern.
Service	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
Ferrous	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
Uncertain Origin	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of *Possible Archaeology* / *Natural* or (in the case of linear responses) *Possible Archaeology* / *Agriculture*; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical Information: Magnetic Theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried feature. The difference between the two sensors will relate to the strength of a magnetic field created by this feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services.

Appendix C - Photogrammetry: Processing Report

E-Bray-DEM-rpt

Processing Report
24 April 2018

Survey Data

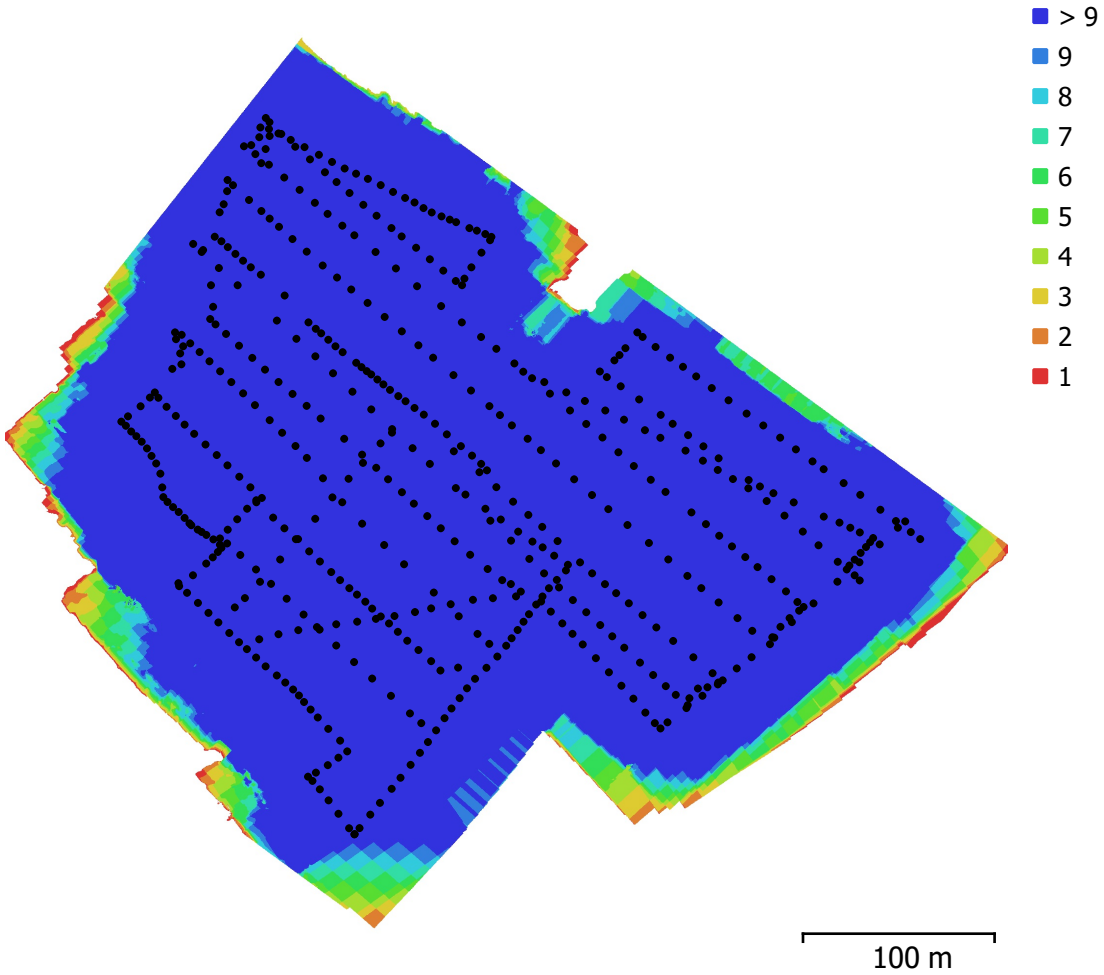


Fig. 1. Camera locations and image overlap.

Number of images:	528	Camera stations:	528
Flying altitude:	75.1 m	Tie points:	149,143
Ground resolution:	1.88 cm/pix	Projections:	1,790,458
Coverage area:	0.128 km²	Reprojection error:	0.892 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6510 (8.8mm)	4856 x 3640	8.8 mm	2.61 x 2.61 µm	No

Table 1. Cameras.

Camera Calibration

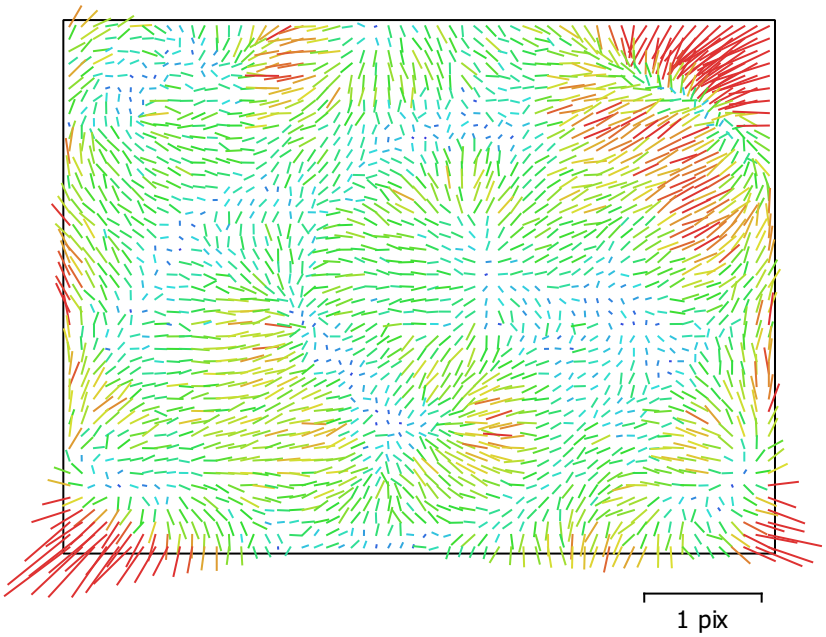


Fig. 2. Image residuals for FC6510 (8.8mm).

FC6510 (8.8mm)

528 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4856 x 3640**	**8.8 mm**	**2.61 x 2.61 µm**

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	P1	P2
F	**3626.26**	1.5	1.00	-0.13	0.42	0.24	-0.01	-0.29	0.29	-0.26	-0.04	-0.51
Cx	**-10.9415**	0.1		1.00	-0.06	0.29	-0.45	0.03	-0.03	0.03	0.18	0.11
Cy	**-1.69154**	0.11			1.00	0.47	0.29	-0.12	0.12	-0.11	-0.01	-0.14
B1	**-0.227838**	0.0043				1.00	-0.03	-0.05	0.03	-0.01	-0.07	-0.09
B2	**-0.320757**	0.0042					1.00	0.01	-0.01	0.01	-0.02	-0.02
K1	**-0.00458254**	2.2e-05						1.00	-0.96	0.91	0.00	0.14
K2	**0.0153845**	7.3e-05							1.00	-0.99	-0.01	-0.14
K3	**-0.00927184**	7.3e-05								1.00	0.01	0.12
P1	**-0.000442872**	1.4e-06									1.00	0.03
P2	**-0.00196071**	1.5e-06										1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

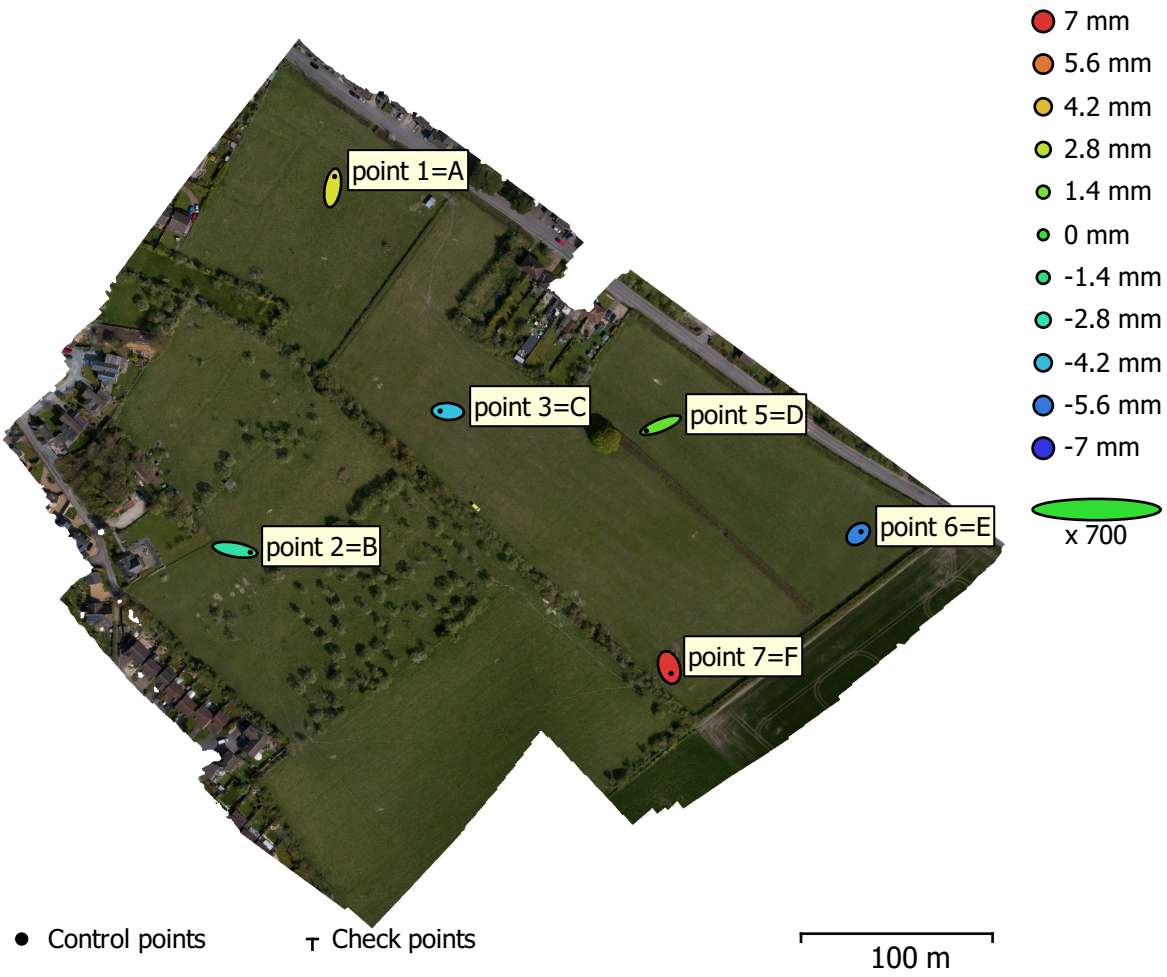


Fig. 3. GCP locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
6	1.37371	0.881442	0.43034	1.63218	1.68796

Table 3. Control points RMSE.
X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
point 1=A	0.291445	1.7007	0.344794	1.7596	0.010 (33)
point 2=B	2.27328	-0.398204	-0.223238	2.31867	0.018 (50)
point 3=C	-1.13159	0.070271	-0.409212	1.20536	0.018 (30)
point 5=D	-2.13034	-0.840993	0.103977	2.29269	0.011 (26)
point 6=E	0.417558	0.350655	-0.534192	0.763331	0.010 (28)
point 7=F	0.276541	-0.880651	0.691961	1.15362	0.011 (32)
Total	**1.37371**	**0.881442**	**0.43034**	**1.68796**	**0.014**

Table 4. Control points.

X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

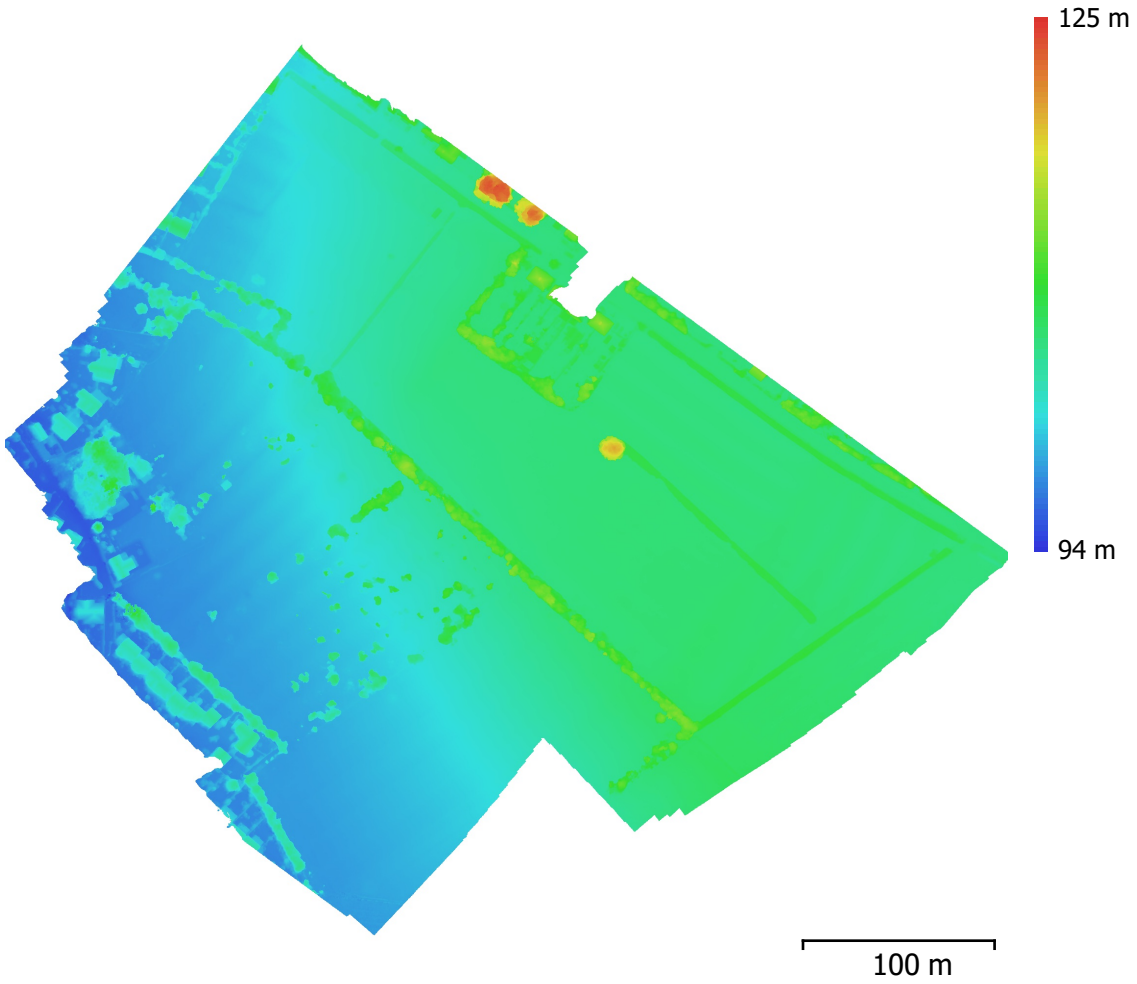


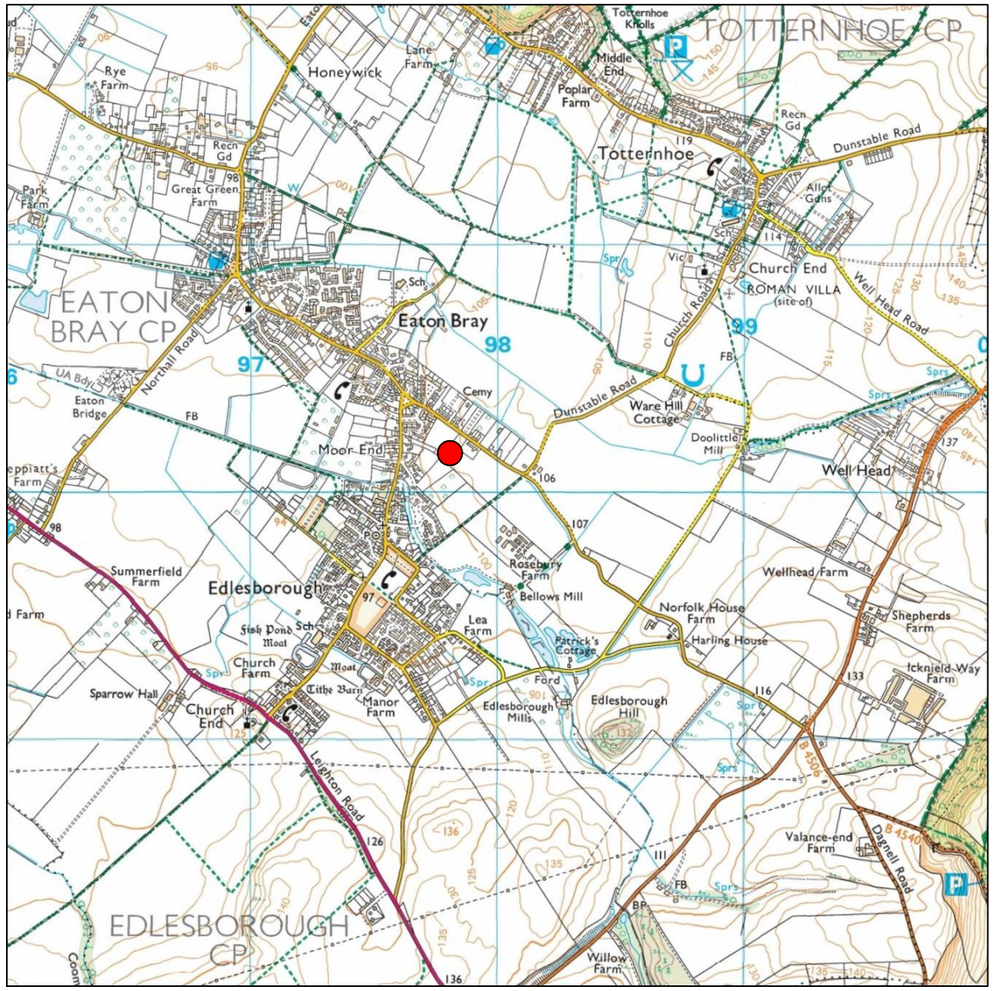
Fig. 4. Reconstructed digital elevation model.

Resolution:	7.54 cm/pix
Point density:	176 points/m²

Processing Parameters

General	
Cameras	528
Aligned cameras	528
Markers	6
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	149,143 of 182,539
Point colors	3 bands, uint8
RMS reprojection error	0.14934 (0.892221 pix)
Max reprojection error	0.564187 (44.7338 pix)
Mean key point size	5.52721 pix
Effective overlap	13.2852
Alignment parameters	
Accuracy	Medium
Generic preselection	Yes
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	5 minutes 43 seconds
Alignment time	3 minutes 31 seconds
Optimization parameters	
Parameters	f, b1, b2, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	15 seconds
Depth Maps	
Count	528
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	34 minutes 40 seconds
Dense Point Cloud	
Points	28,342,424
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	34 minutes 40 seconds
Dense cloud generation time	27 minutes 26 seconds
Model	
Faces	4,999,999
Vertices	2,505,130
Vertex colors	3 bands, uint8
Texture	8,192 x 8,192, 4 bands, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	Medium
Depth filtering	Aggressive
Face count	5,000,000
Processing time	16 minutes 10 seconds
Texturing parameters	
Mapping mode	Generic

Blending mode	Mosaic
Texture size	8,192 x 8,192
Enable hole filling	Yes
Enable ghosting filter	No
UV mapping time	1 minutes 22 seconds
Blending time	7 minutes 36 seconds
DEM	
Size	7,716 x 7,433
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	51 seconds
Orthomosaic	
Size	27,772 x 25,100
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Processing time	10 minutes 51 seconds
Software	
Version	1.4.1 build 5925
Platform	Windows 64



N

Site Location

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

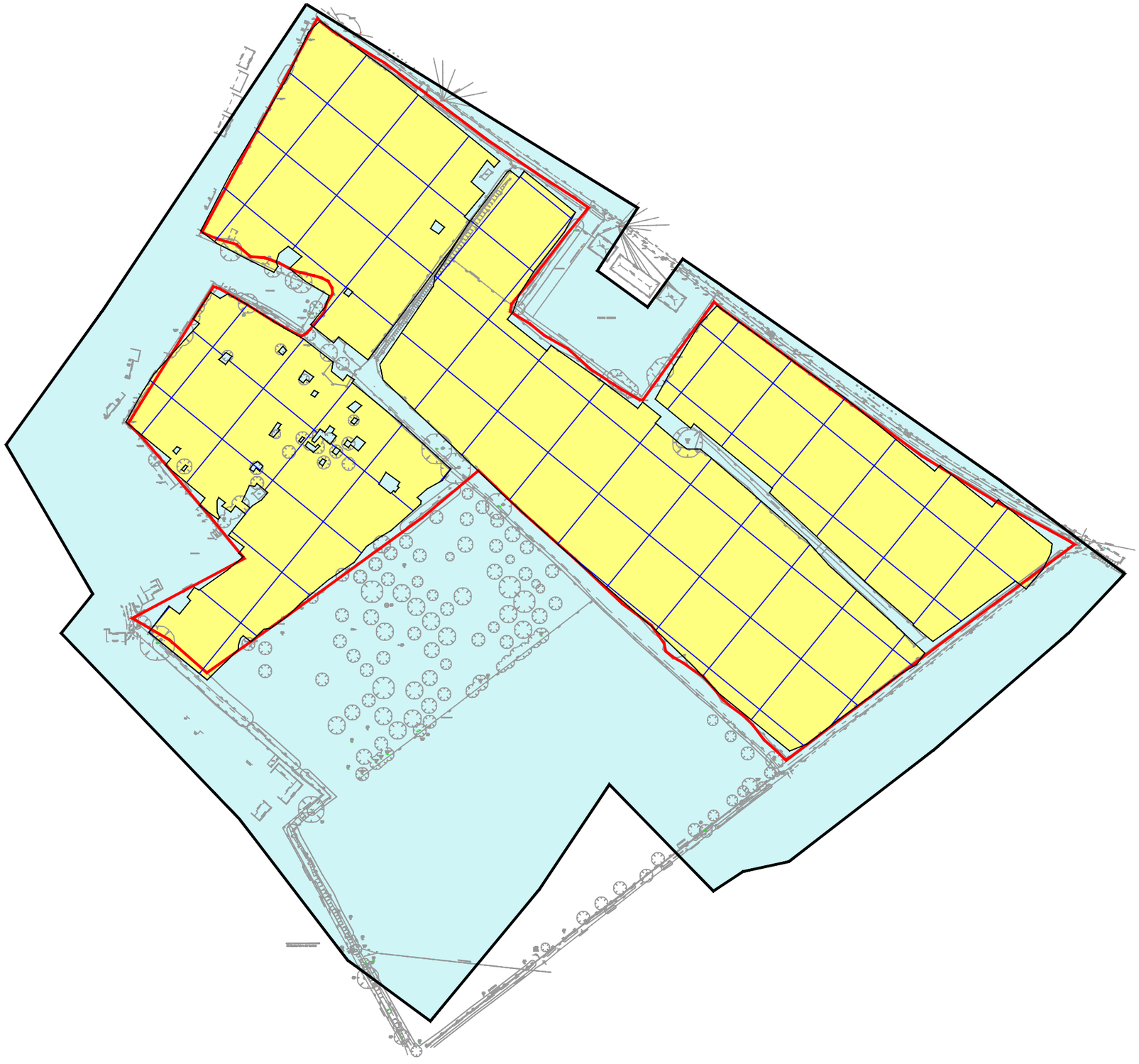
Title:
Site Location Diagram

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 1000
1:25000 @ A3

Fig No:
01



N

Aerial Survey Area

Magnetometer Survey Area - showing 30m grid

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

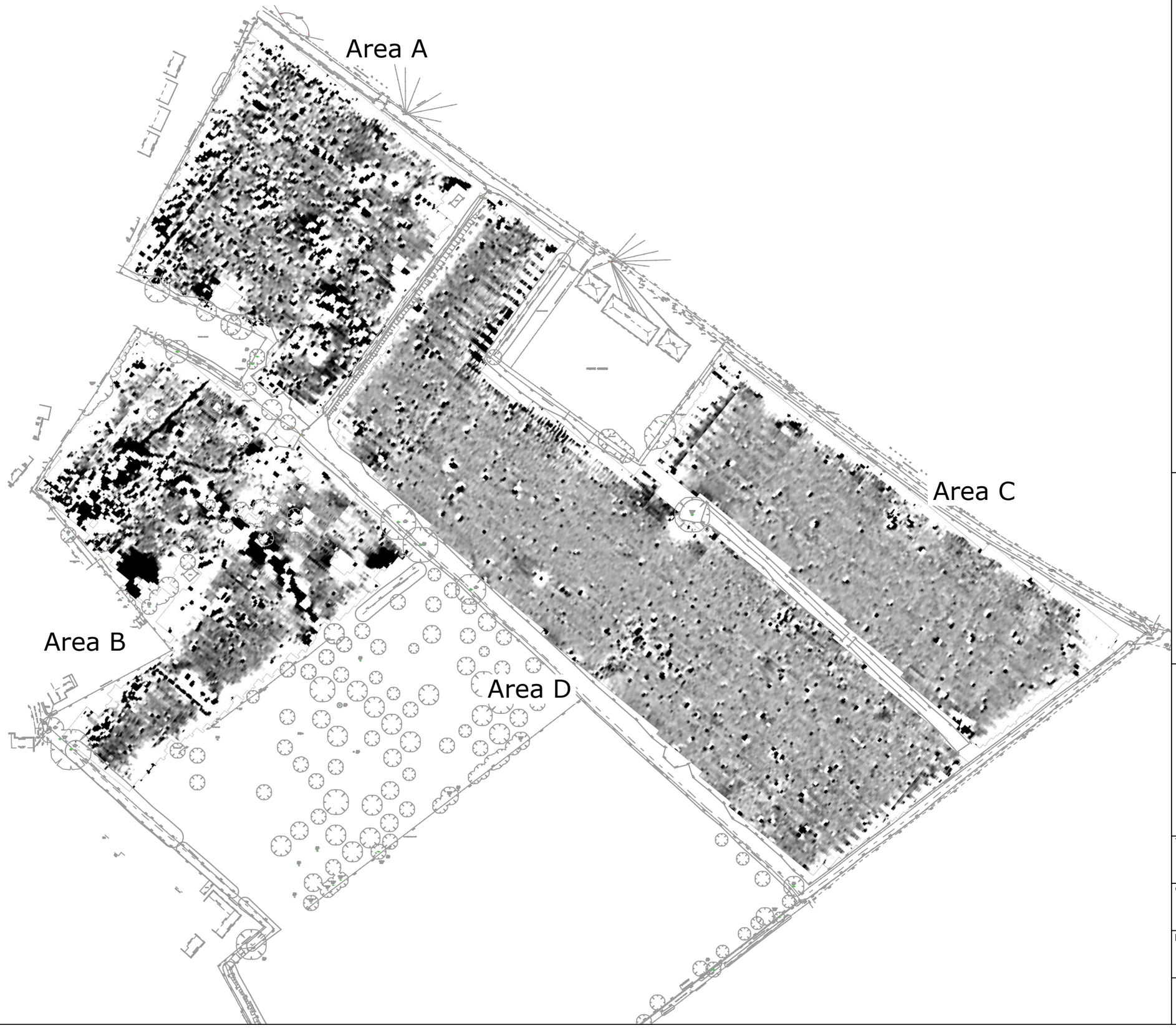
Title:
Location of Survey Areas

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 100
1:2000 @ A3

Fig No:
02



N

+2nT

-1nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 75
1:1500 @ A3

Fig No:
03

N

KEY

	Uncertain Origin (discrete anomaly / trend)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 75
1:1500 @ A3

Fig No:
04

N

+2nT

-1nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

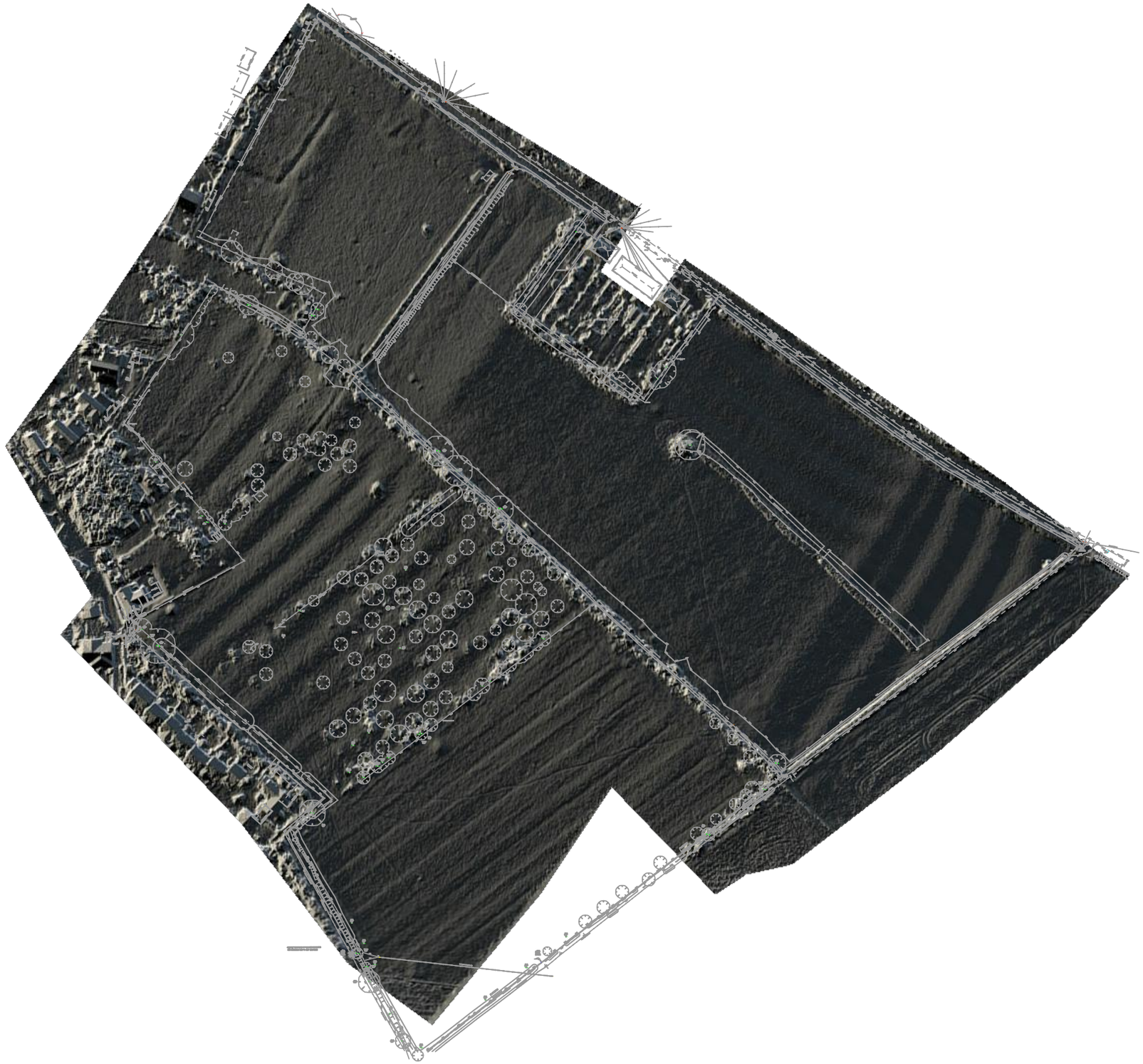
Title:
Magnetometer Survey - Minimally Processed Greyscale Plots

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 75
1:1500 @ A3

Fig No:
05



N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Aerial Survey - Digital Elevation Model

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 100
1:2000 @ A3

Fig No:
06

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Aerial Survey - Orthophotograph

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 100
1:2000 @ A3

Fig No:
07

N

KEY

	Cut feature
	Banked feature
	Former field boundary (corroborated)
	Agricultural
	Aerial Survey Area
	Magnetometer Survey Area

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GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

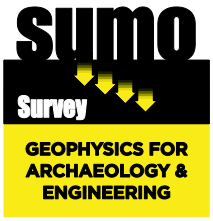
Title:
Aerial Survey - Interpretation

Client:
CgMs Heritage (part of RPS)

Project:
12681 - Land off Bower Lane, Eaton Bray, Bedfordshire

Scale:
0 metres 100
1:2000 @ A3

Fig No:
08



- Archaeological
- Geophysical
- Laser Scanning
- Measured Building
- Topographic
- Utility Mapping

SUMO Services Ltd, incorporated under the laws of England and Wales,
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