

South Cerney Trust

Hill View Farm

South Cerney, Gloucestershire

SU 045974

**Magnetometry & Resistivity Geophysical
Surveys**

October - November 2018

Magnetometry Survey at Hill View Farm, South Cerney

The Location of the Survey

The survey was carried out in a field, belonging to Hill View Farm, at the western edge of the village of South Cerney, Gloucestershire. South Cerney is located to the north west of Cricklade, close to the boundary between Gloucestershire and Wiltshire; Figure 1.

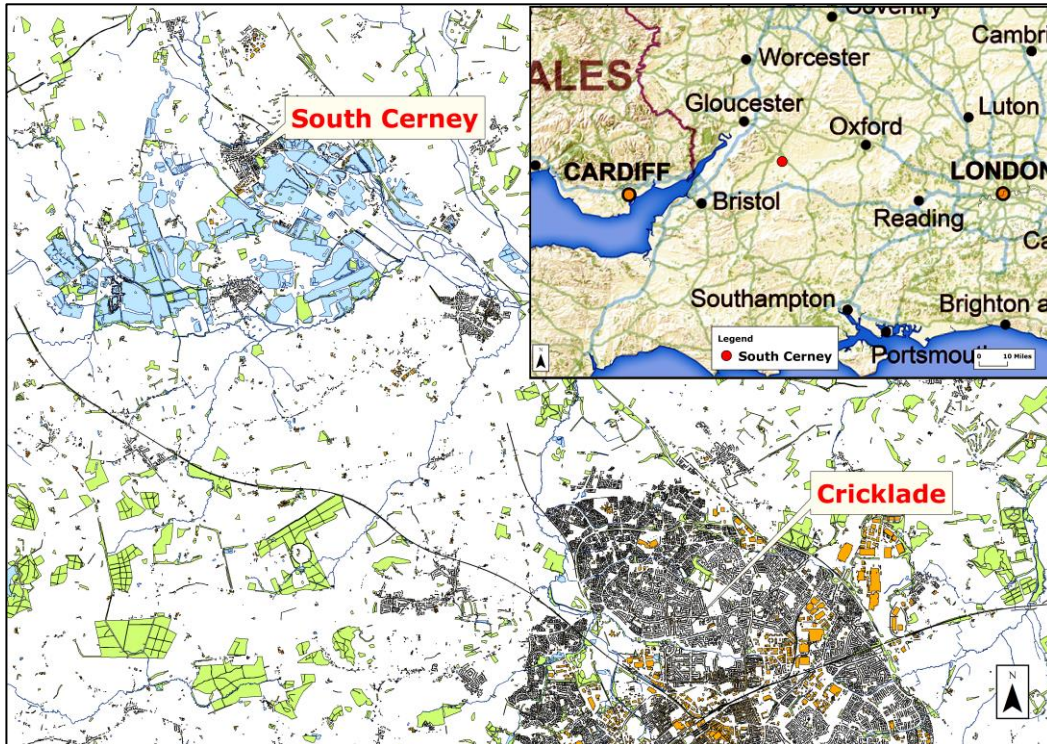


Figure 1: Location of South Cerney (Base Mapping: Ordnance Survey, Crown Copyright)

The survey field, see Figure 2, is used for pasture and is not known to have been ploughed in modern times. The underlying geology is Kellaways Sand Member - Sandstone and Siltstone, Interbedded (British Geological Survey).

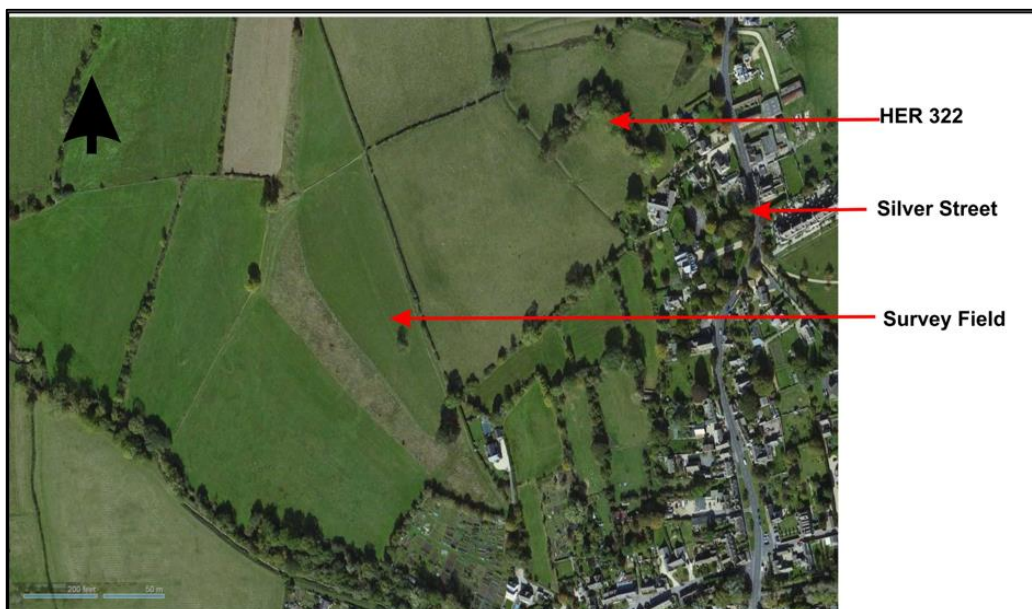


Figure 2: Location of Surveyed Field (Base Mapping: Bing Maps © 2018 Microsoft)

Magnetometry Survey at Hill View Farm, South Cerney

The Reason for the Survey

The survey was carried out at the request of the Committee of the South Cerney Trust to investigate a possible site for the castle which is recorded in the Acts of Stephen. The castle site is currently recorded in the Gloucestershire HER as monument Number 322 located at SU 0470 9767, alongside Silver Street, South Cerney; Figure 2. A number of excavations have been carried at this site and the latest, 2017, would indicate that the earthworks includes a complex of fish ponds, rather than a moat, associated with a later medieval building. Michael Oakeshott, in *Fertile Fields and Small Settlements; A history of South Cerney and Cerney Wick* (2001) suggests that the castle site was on the ridge of high ground to the west of the modern village centre.

At the northern end of the surveyed field the Gloucestershire HER records a possible single ditch enclosure, of unknown date, (monument number 26832; SU 0442 9757), which has been identified from Aerial Photography.

Lidar imagery of the field appears to reveal ridge and furrow extending into the field in a roughly NE - SW direction, ending at an earlier field boundary crossing the site in a NNW - SSE direction: Figure 3.

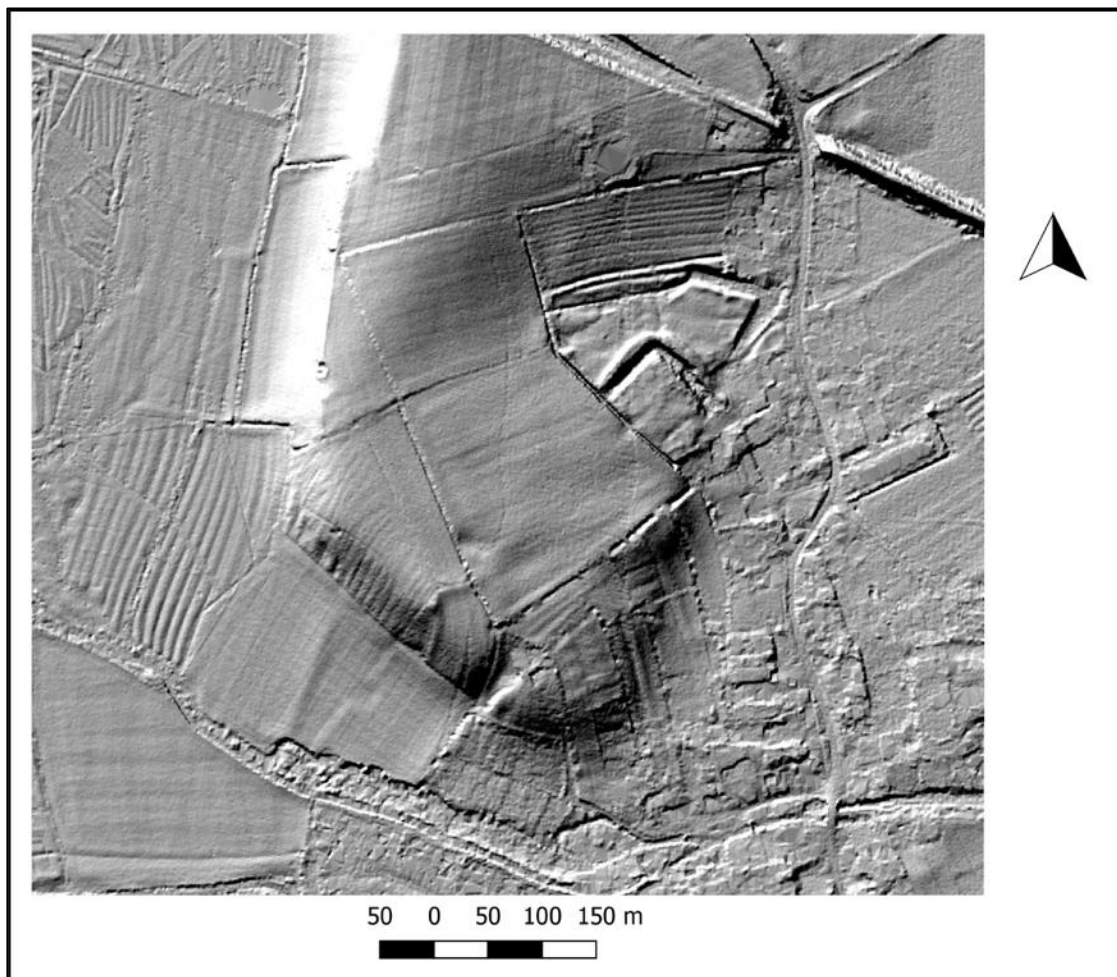


Figure 3: Lidar Image (contains Survey Open Data)

Magnetometry Survey at Hill View Farm, South Cerney

The Aim of the Survey

The aim was to establish any evidence of activity in the field which may relate to the 12th century by carrying out a Geophysical survey, using magnetometry and resistivity.

Permission for the survey to be carried out was given by the land owner, Will Seymour.

Carrying out the Survey

The survey was carried out in on 3 separate days on the 26th October, the 15th November and the 26th November 2018. The surveys were primarily carried out by Mike McQueen and John Samways, with assistance for the resistivity surveys from James Hill, Penny Hill, Katharine Isles, Will Seymour and Chris Snowden.

The weather was generally dry and partly sunny on the survey days and the ground was fairly firm.

Survey Grids

Full and partial 20m x 20m survey grids were laid out as shown in the following map using a MobileMapper 300 and Pocket GIS Software. The MobileMapper 300 was fully RTK corrected to give an accuracy to 0.002m – 0.010m.



Figure 4: Survey Grids (contains Ordnance Survey data)

The grids, assembled into blocks to reflect the layout of the field, and the direction of the 1st traverse are shown in Figure 4 above.

Magnetometry Survey at Hill View Farm, South Cerney

Magnetometry Survey.

The magnetometry survey was carried out using a Bartington Grad601-2 Dual Sensor Gradiometer set up as follows:

Units:	nT
Surveyed:	26 th October 2018
Collection Method:	Zigzag
Sensors:	2 @ 1.0m spacing.
Readings / Sampling	1 per 1m / 4 per 1m
Dummy Value	32000
Direction of 1st traverse	See Figure 4
Palette	Greyscale

The survey was processed in the following way:

- De-strip: Median Traverse All Grids
- Clip: 3.0 Standard Deviations
- De-Stager: 60cm All Grids
- Clip: 3.0 Standard Deviations

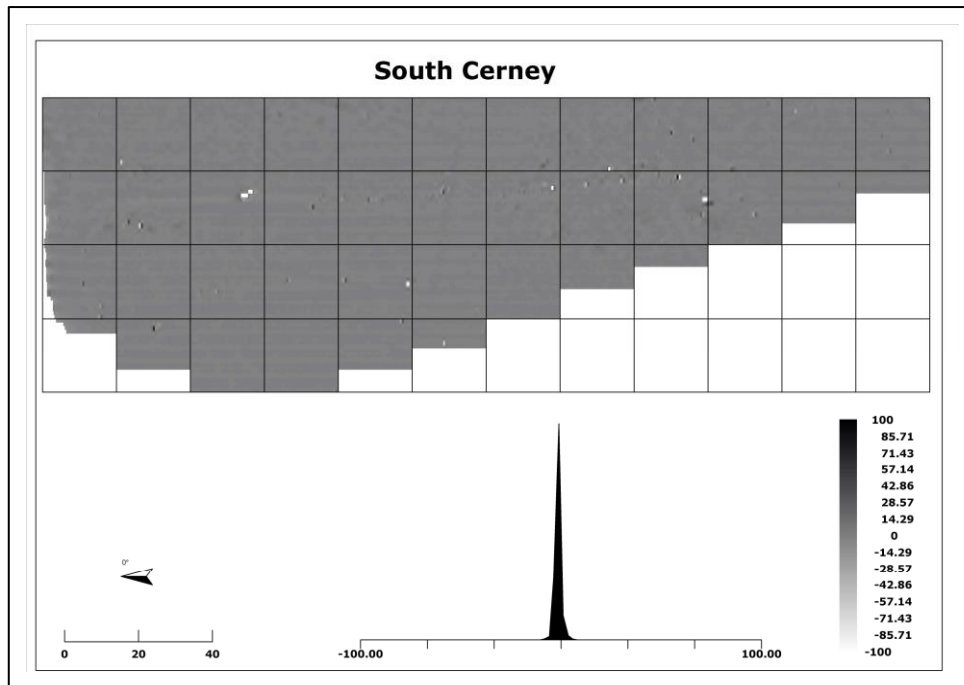


Figure 5: Unmodified Magnetometer Survey

Minimum	-100.00	Maximum	100.00
Mean	-1.50	Medium	-1.55
Standard Deviation	2.689741		

Magnetometry Survey at Hill View Farm, South Cerney

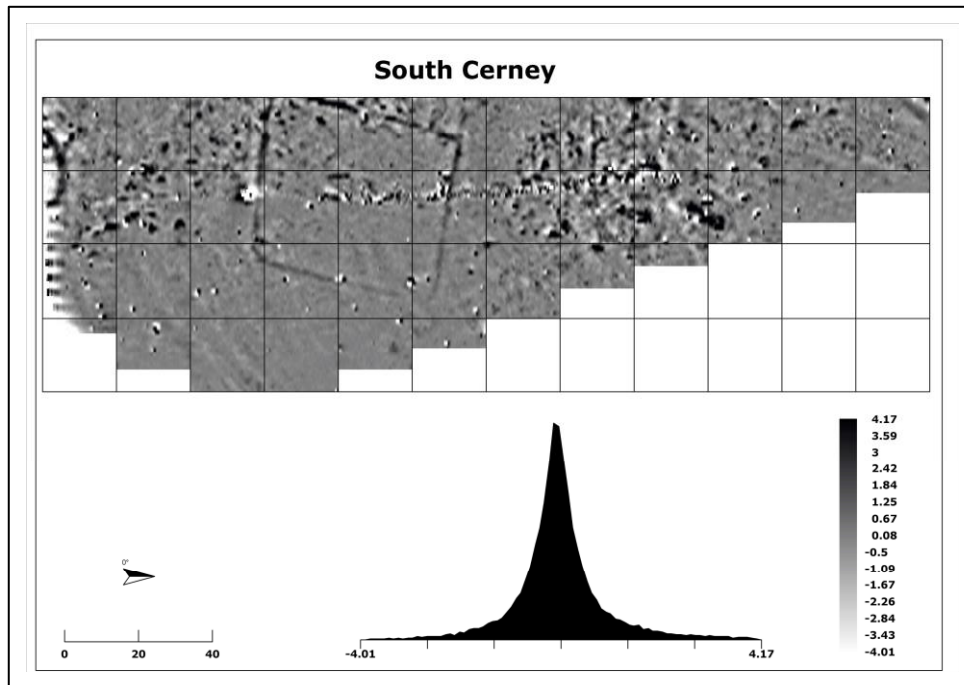


Figure 6: Modified Magnetometer Survey

Minimum	-4.01	Maximum	4.17
Mean	-0.07	Medium	-0.00
Standard Deviation	1.13044		

Resistivity Surveys

The resistivity grid survey was carried out using RM Frobisher TAR3 resistance meters set up as follows:

Units:	Ohms
Surveyed:	15 th November 2018
Collection Method:	Zigzag
Sensors:	1 @ 0.5m spacing.
Readings	1 per 1m / traverse 2 per 1m
Dummy Value	0000
Direction of 1st traverse	See Figure 4
Palette	Greyscale

Pseudo-section profiles using RM Frobisher TAR3 resistance meter were set up as follows:-

Units:	Ohms
Surveyed:	26 th November 2018
Collection Method:	2 x 31m lines
Sensors:	At 1m spacing.
Readings	Line 1 between 1 and 5 probes Line 2 between 1 and 6 probes
Dummy Value	0000
Palette	Greyscale

The location of the profile lines is shown in Figure 7.

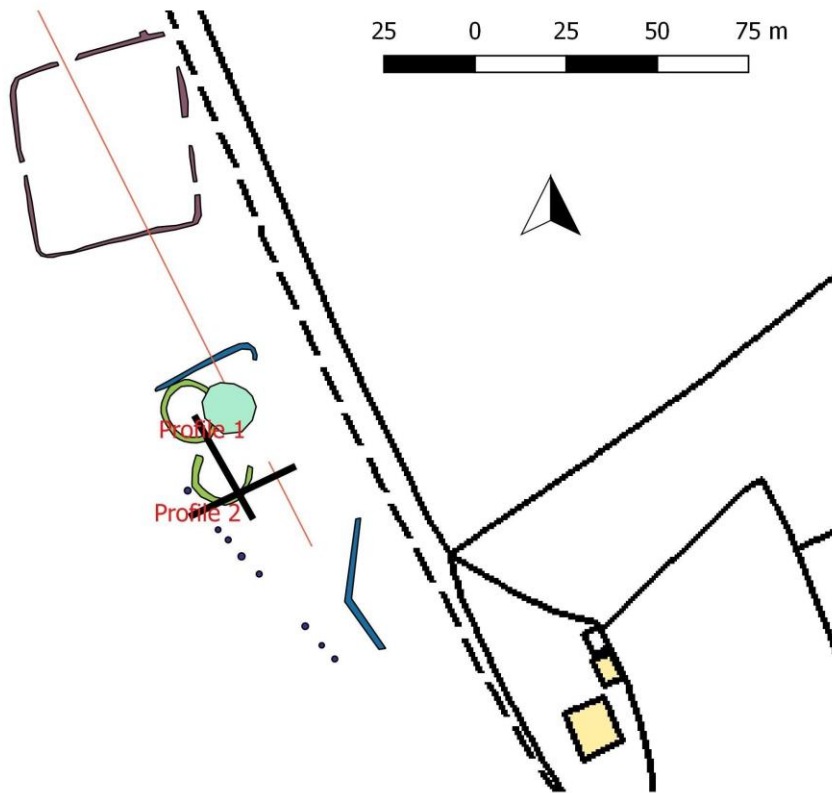


Figure 7 - Location of pseudo-section profiles (contains Ordnance Survey data)

The heights of the probes were recorded using a dumpy level, with the first probe in line 1 taken as 0. Readings started at North end for Line 1 and West end for Line 2. Line positions determined by hand-held GPS with accuracy +/- 6m.

Data Processing

The data collected in the magnetometer and grid resistivity surveys was processed using TerraSurveyor 3.0.25 software. The survey was processed in the following way:

- Clip: 2.0 Standard Deviations

Magnetometry Survey at Hill View Farm, South Cerney

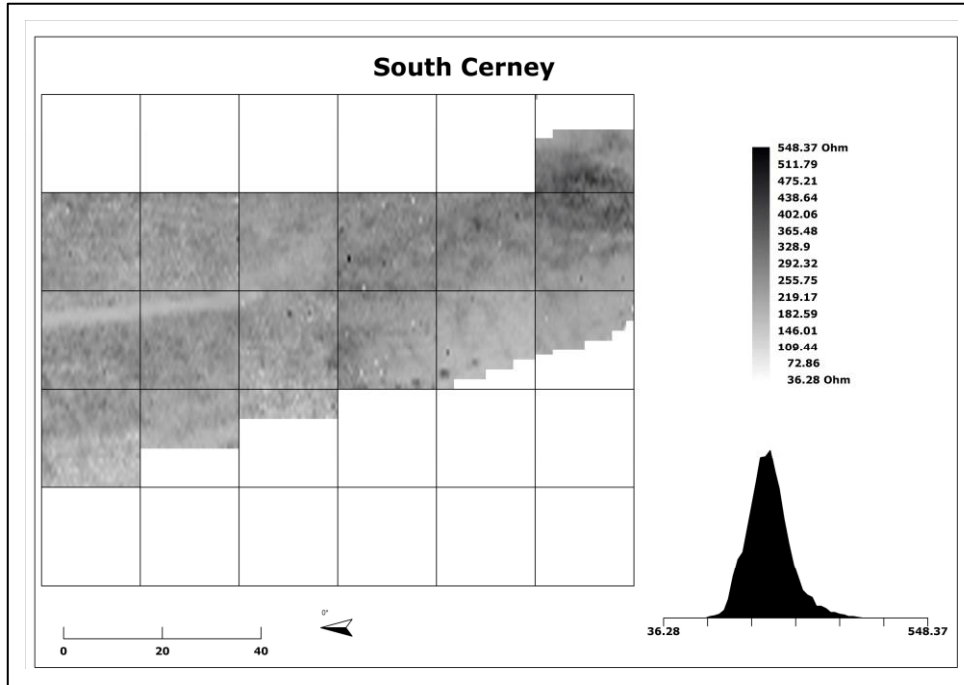


Figure 8: Unmodified Resistivity Survey

Minimum	36.28	Maximum	548.37
Mean	249.34	Medium	237.83
Standard Deviation	41.84199		

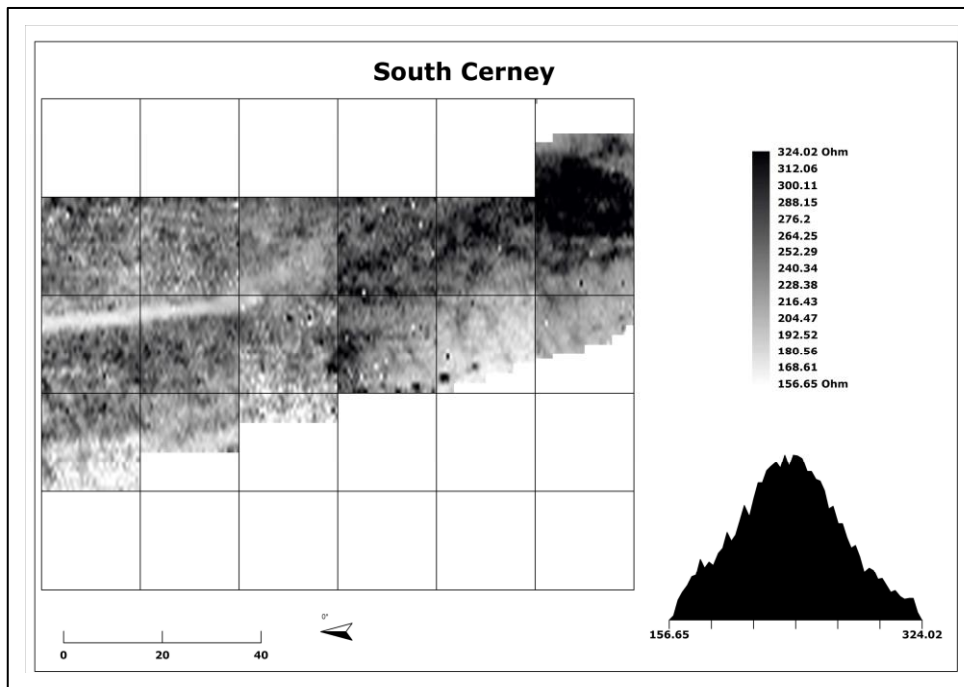


Figure 9: Modified Resistivity Survey

Minimum	156.65	Maximum	324.02
Mean	239.36	Medium	237.83
Standard Deviation	38.52195		

Magnetometry Survey at Hill View Farm, South Cerney

The pseudo-section profiles were processed using RES2DIV 3.59 software. Data was processed using least square inversion with linear vertical scale applied. Due to high surface readings the probe widths were reduced. In line 2 a number of bad (very low and very high) data points were removed.

Results and Interpretation

The geophysical survey results are shown in the following maps:

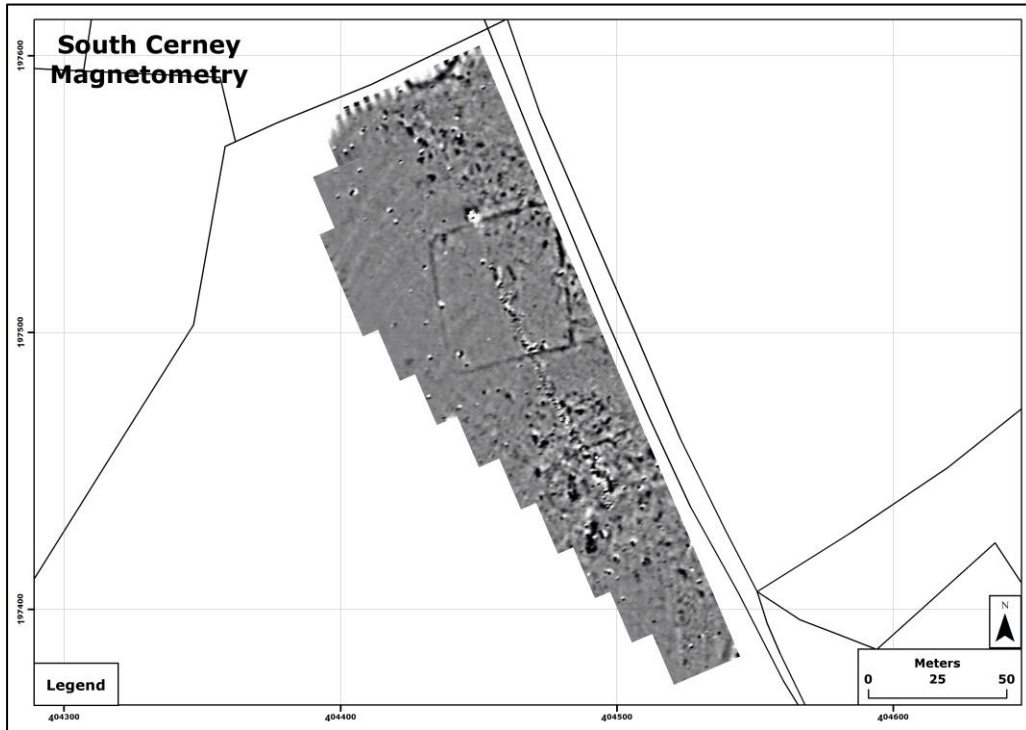


Figure 10: Magnetometer results (contains Ordnance Survey data)

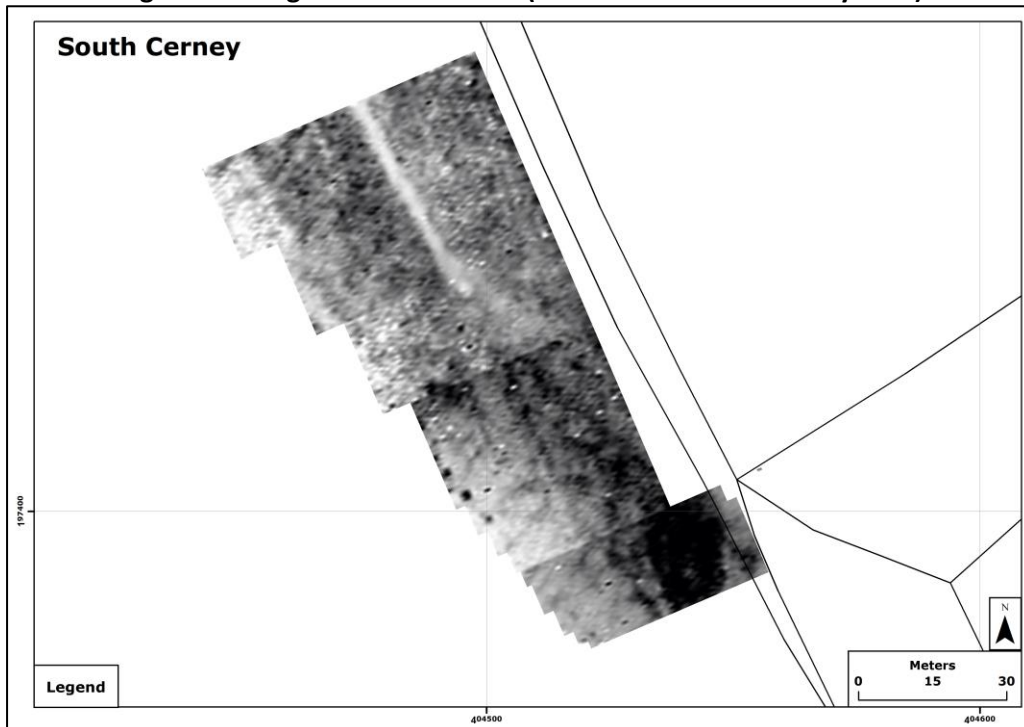


Figure 11: Resistivity Survey Results (contains Ordnance Survey data)

Magnetometry Survey at Hill View Farm, South Cerney

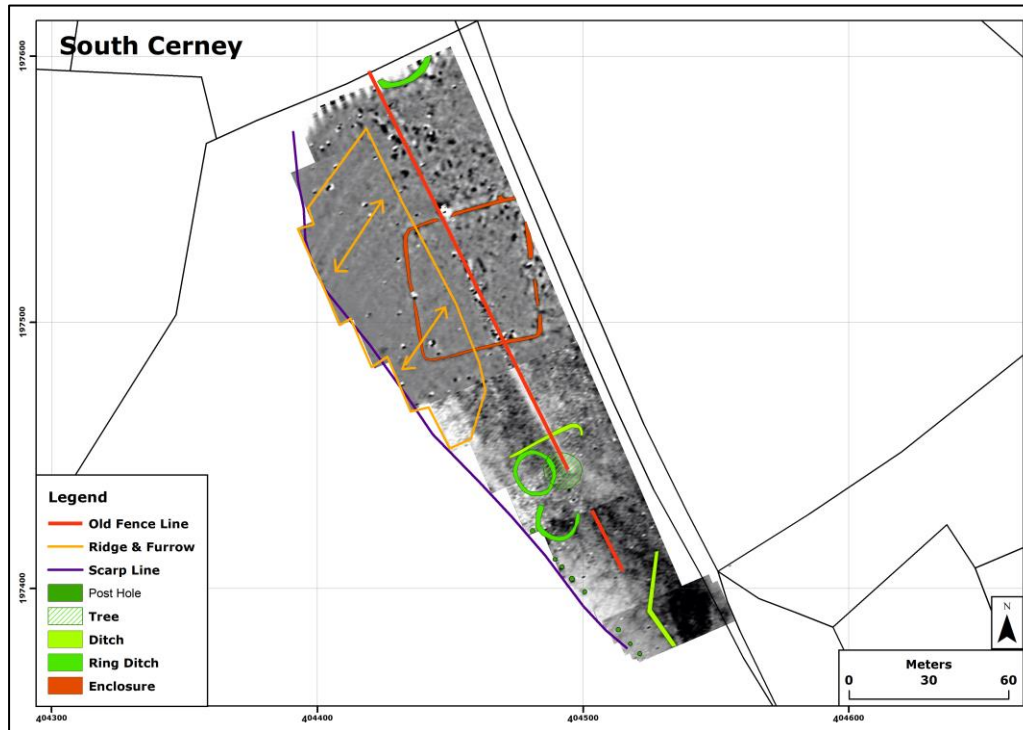


Figure 12: Magnetometry and Resistivity Interpretation (contains Ordnance Survey data)

The Magnetometry reveals the ridge and furrow and an earlier central field boundary, both of which can be seen in the Lidar image; Figure 3. A large rectangular enclosure is revealed in the centre of the field, and appears to underlie the ridge and furrow and central boundary line; Figure 12. A pre-medieval date is suggested for this enclosure.

Three ring ditches are revealed in the magnetometry - one complete and two partials. The partial ring ditch in the northern part of the field, cut by the present field boundary, is in close proximity to the feature identified in the Gloucestershire HER; monument number 26832. These features may be of Bronze Age date.

Two undated linear ditches are shown in the southern part of the field.

The resistivity results show a series of post holes or pits along the ridge of the scarp, on the south western side of the survey field. It is possible that these holes may form a palisade for a wooden castle in this part of the field.

Magnetometry Survey at Hill View Farm, South Cerney

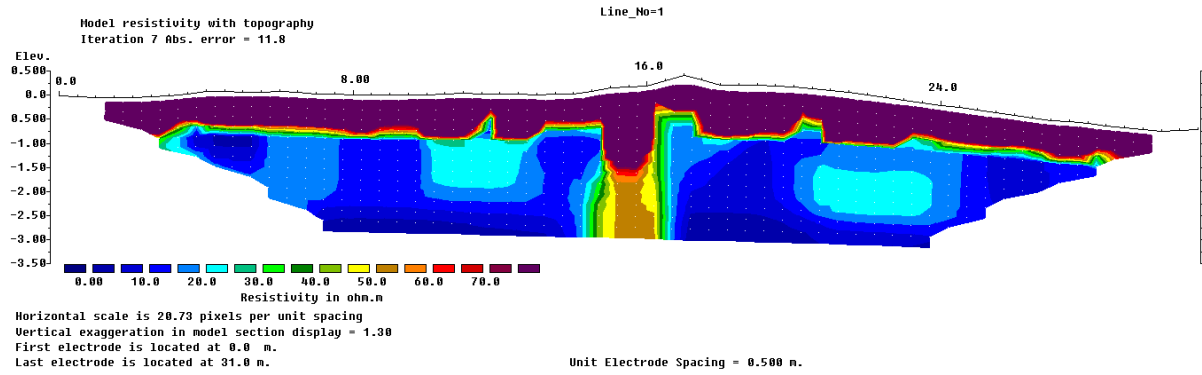


Figure 13 - Pseudo-section profile - Line 1
Horizontal scale readings every 5 ohms

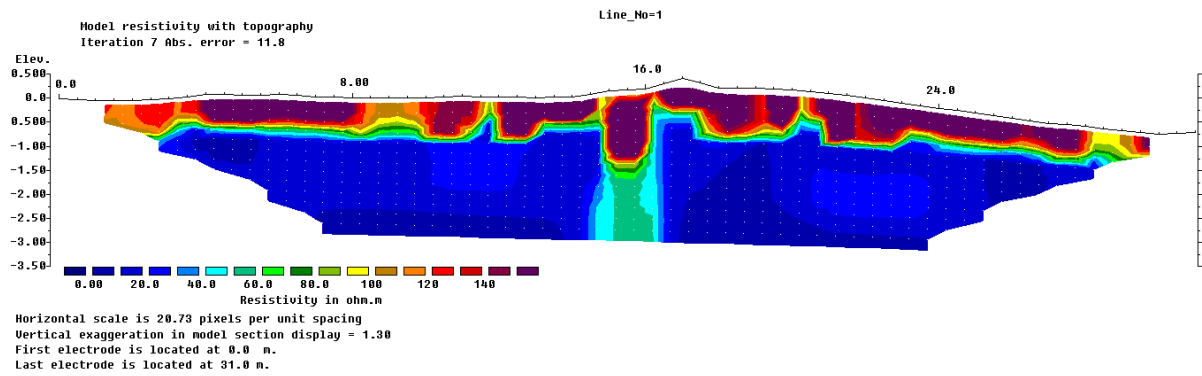


Figure 14 - Pseudo-section profile - Line 1
Horizontal scale readings every 10 ohms

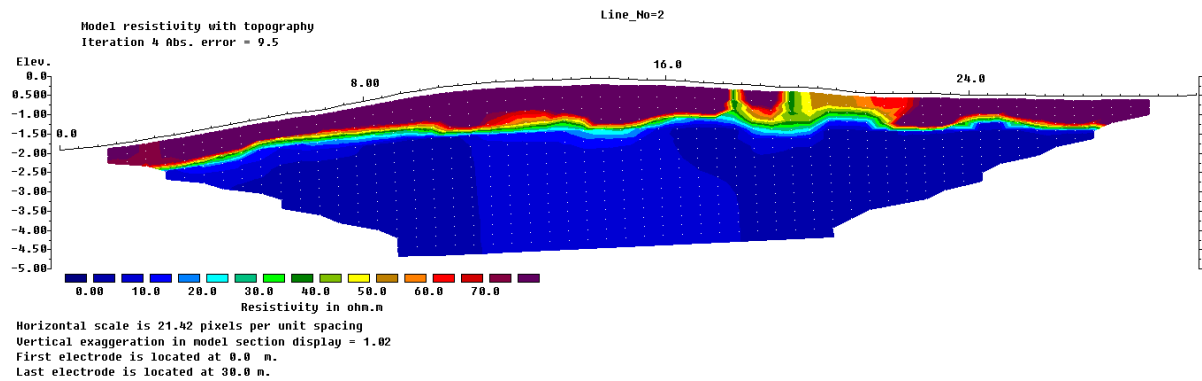
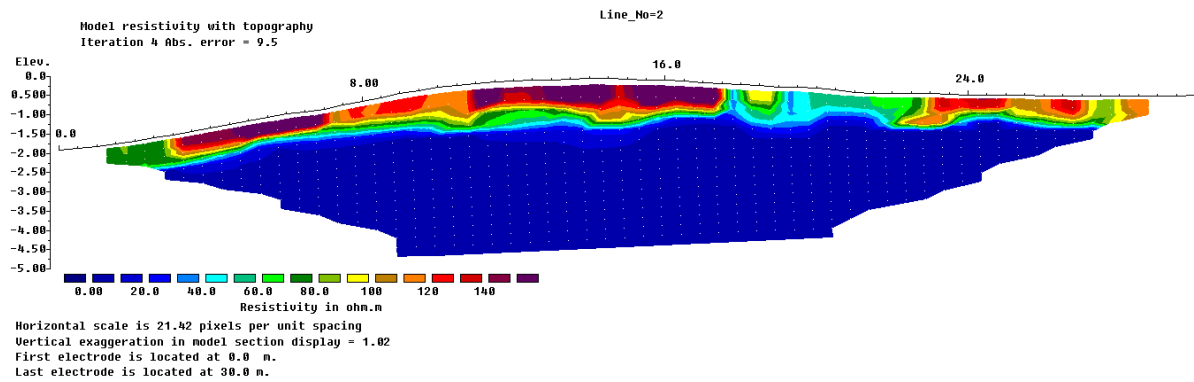


Figure 15 - Pseudo-section profile - Line 2
Horizontal scale readings every 5 ohms

Magnetometry Survey at Hill View Farm, South Cerney



**Figure 16 - Pseudo-section profile - Line 2
Horizontal scale readings every 10 ohms**

In Line 1, the ditch of the ploughed out complete ring ditch close to the tree can be seen as a low resistance feature between 4 and 6m along the line at a depth of 1m to 1.5m; Figure 13. The ditch of the southern partial ring ditch can just be seen at a depth of 1.25m to 2m between 25.5m and 27m along the line. There is clearly a lot of sub-soil disturbance in the middle of this partial ring ditch which will require further investigation, particularly at 11m and 22m, with a deep vertical feature at 15m to 16m .

The southern ditch is at 18m to 19m along Line 2; Figure 15 & 16. The old central field boundary line is at 26m to 27m along this line; Figure 16. Badger activity is visible on the surface of the western slope of the partial ring ditch feature.

Conclusion

The surveys have identified a number of features in the field of which only one is currently recorded on the Gloucestershire HER. The most significant new feature is the rectangular enclosure. As this enclosure appears to lie under Medieval ridge and furrow it could be dated to the prehistoric period but this could only be proven if an excavation is carried out and dating evidence is found.

There are no obvious signs of the Anarchy castle but the line of potential pits/post holes along the south west edge of the survey area suggests it could possibly be located in this area. Again excavation of the features in this area would need to be carried out to try and prove if this is the case.

Magnetometry Survey at Hill View Farm, South Cerney

Bibliography

Base Mapping: © Crown Copyright and Database Right 2016. Ordnance Survey (Digimap Licence);
Figures 3 .4, 7, 10, 11 & 12.

© 2018 Microsoft; Figure 2

Survey Open Data provided by the Environment Agency; Figure 3. 1m DTM source
data downloaded from [http://www.geostore.com/environment-
agency/survey.html#/survey?grid=SU09](http://www.geostore.com/environment-agency/survey.html#/survey?grid=SU09).

Michael Oakeshott, 2001, Fertile fields and small settlements; A history of South Cerney and Cerney
Wick. South Cerney Trust.

The Acts of Stephen in Forester, T (Translated and Edited). 1853, The Chronicle of Henry of
Huntingdon, published by Henry G Bohn, London.