A Geophysical Survey at Church Meadow, Soberton, Hampshire

November 6th & 7th 2014

Carried out by Liss Archaeological Group
on behalf of
The Saxons in the Meon Valley Project

By Carl Raven (Liss Archaeology)

(edited by Nick Stoodley)

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Introduction

Liss Archaeology were invited by the 'Friends of Corhampton Saxon Church' to lead a geophysical survey at Church Meadow, Soberton, as part of the ongoing 'Saxons in the Meon Valley' project (SITMV). The survey took place over the Thursday and Friday of the 6th and 7th November 2014 and included participants from the local community and history society as well as volunteers from the SITMV and Liss Archaeology.

An area of grassland immediately to the south of the church of St Peter's, Soberton (Fig. 1), was surveyed using resistivity and magnetometry. Throughout the duration of the survey the weather was fair with sunny spells and infrequent light showers, with a strong South to South westerly wind.

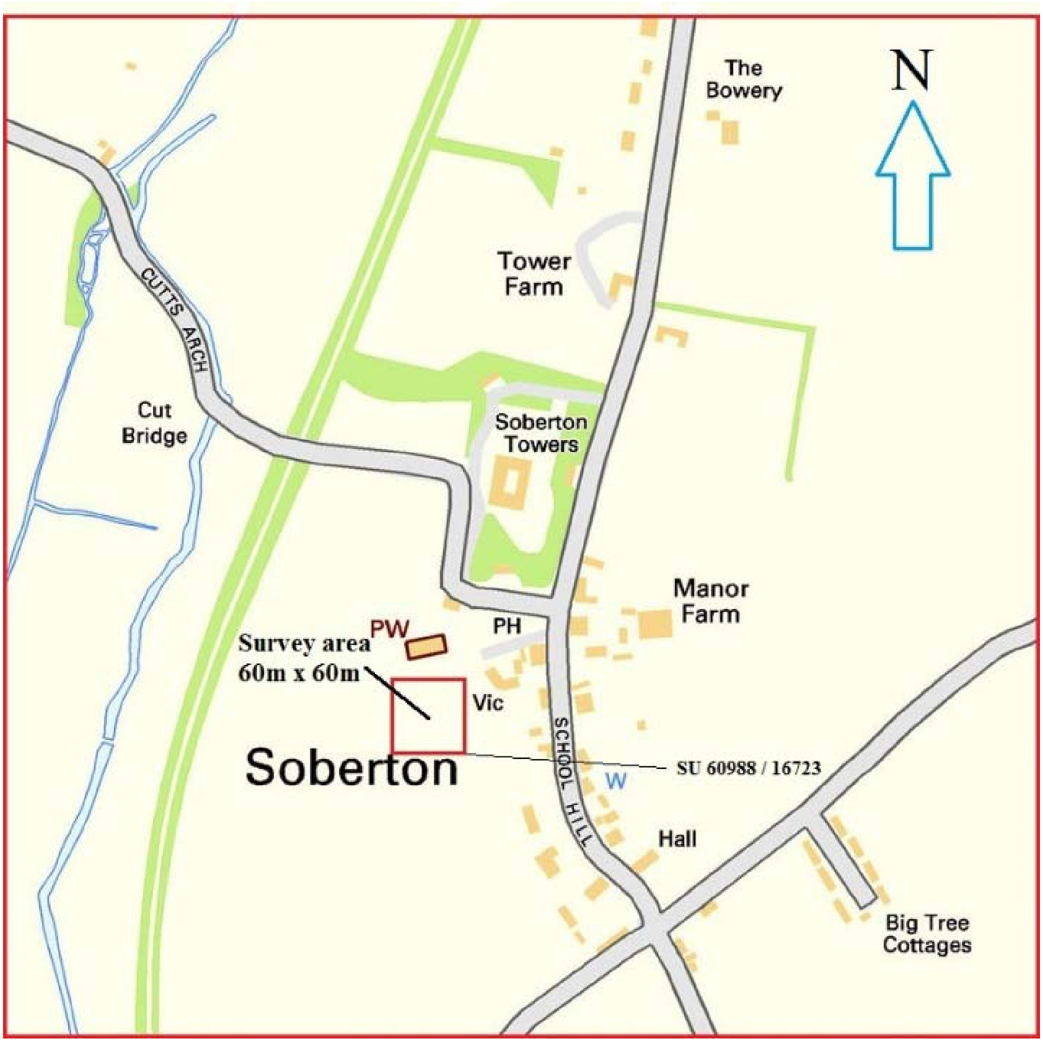

Fig. 1 Location of the survey (Contains Ordnance survey data © Crown Copyright and database right 2014)

The grid

A 60m x 60m area immediately to the south of the church was selected for the survey (Fig. 1). It was divided into nine 20m x 20m grid squares and was aligned on a North/South base line (grid origin SU 60988/16723) running along the Eastern edge of the survey field.

The base line was aligned using a Francis Barker M88 prismatic compass and measured with surveying tapes, the subsequent grid squares were then generated from this base line by applying Pythagoras Theorem before measuring the hypotenuse (opposite corner to corner) with surveying tapes. A yellow pole marker was used to mark the corner of each grid square (Fig. 2)

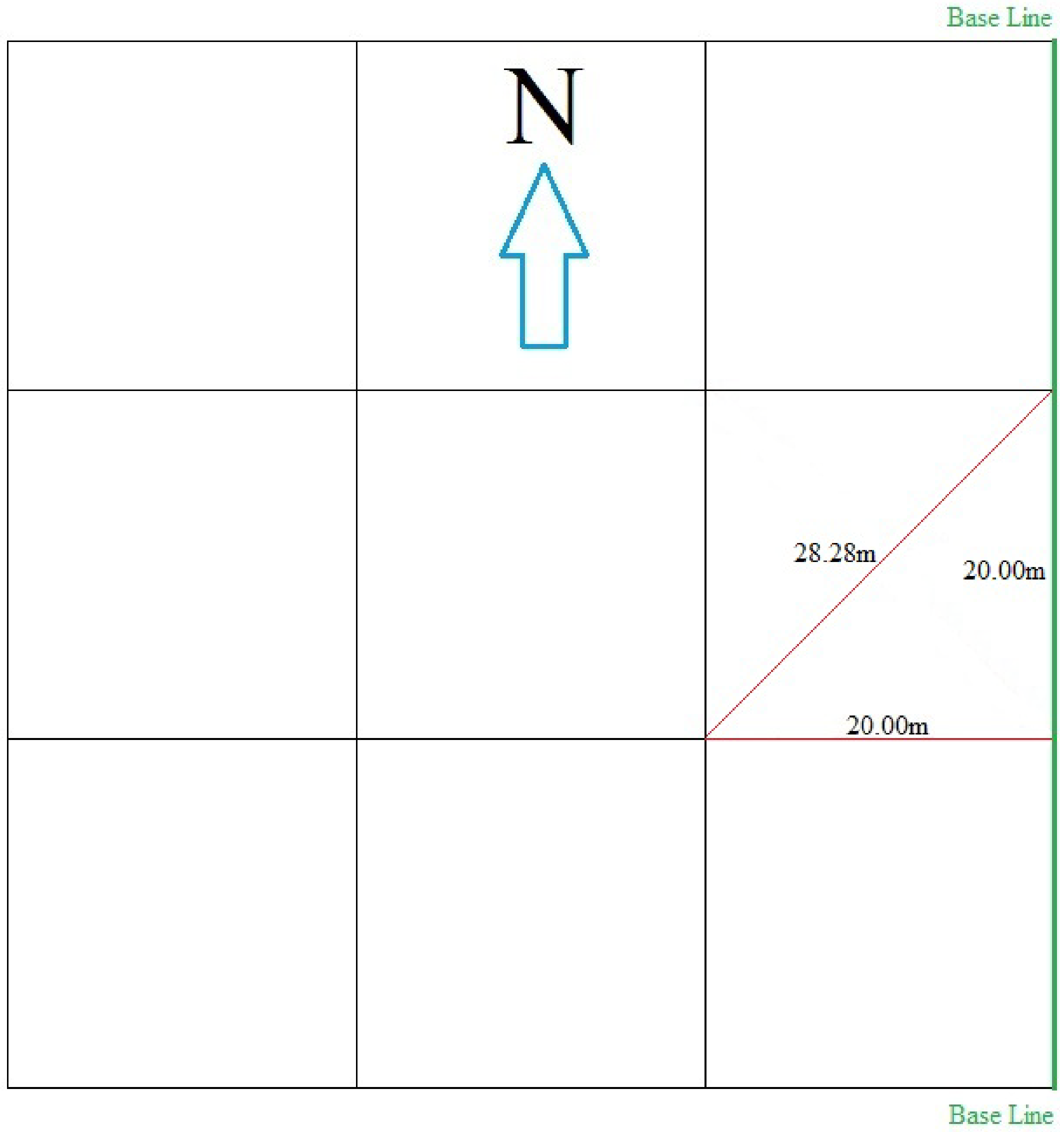

Fig. 2 Establishing the grid from the base line

Methods

A Geoscan Research RM-85 resistance meter and a Geoscan Research FM-256 fluxgate magnetometer were used for the survey. Both resistivity and magnetometry were employed because when combined and the results cross referenced the chances of detecting sub surface features are substantially increased. Earth resistance detects small variations in ground moisture content by transmitting an electrical current into the soil and then measuring the electrical resistance of the surrounding soil in Ω ohms. The electrical resistance of the soil is affected by features such as pits and ditches that have a higher moisture content, as well as buried walls and floors, which show as drier lines or patches; the latter is the same process which creates crop marks during long dry spells.

The magnetometer detects minute variations in the earth's magnetic field, which result from changes to the soil caused by human activity. For example, areas that have been heated to a high temperature will result in changes to the earth's magnetic field which can be detected, such as kilns, ovens and furnaces as well as metal working areas. Similarly, concentrations of fired clay (bricks, tiles and pottery for example) can also be detected due to the firing process altering the magnetic properties of the clay. The magnetometer is also sensitive to ferrous metal and can be used to detect iron objects.

Resistivity

A high resolution resistance survey was undertaken: a reading was taken every 0.5m in both the North/South direction (interval) as well as in the East/West direction (traverse), i.e. four readings per square metre. A total of six complete 20m x 20m grid squares were surveyed totalling 9,600 separate readings.

Magnetometry

A high resolution magnetic survey was also performed, resulting in four readings per square metre. However these were taken as four readings per metre (every 0.25m) in the North/South direction (interval) but only one reading per metre in the East/West direction (traverse). A total of eight complete 20m x 20m grid squares were surveyed totalling 12,800 separate readings.

Results

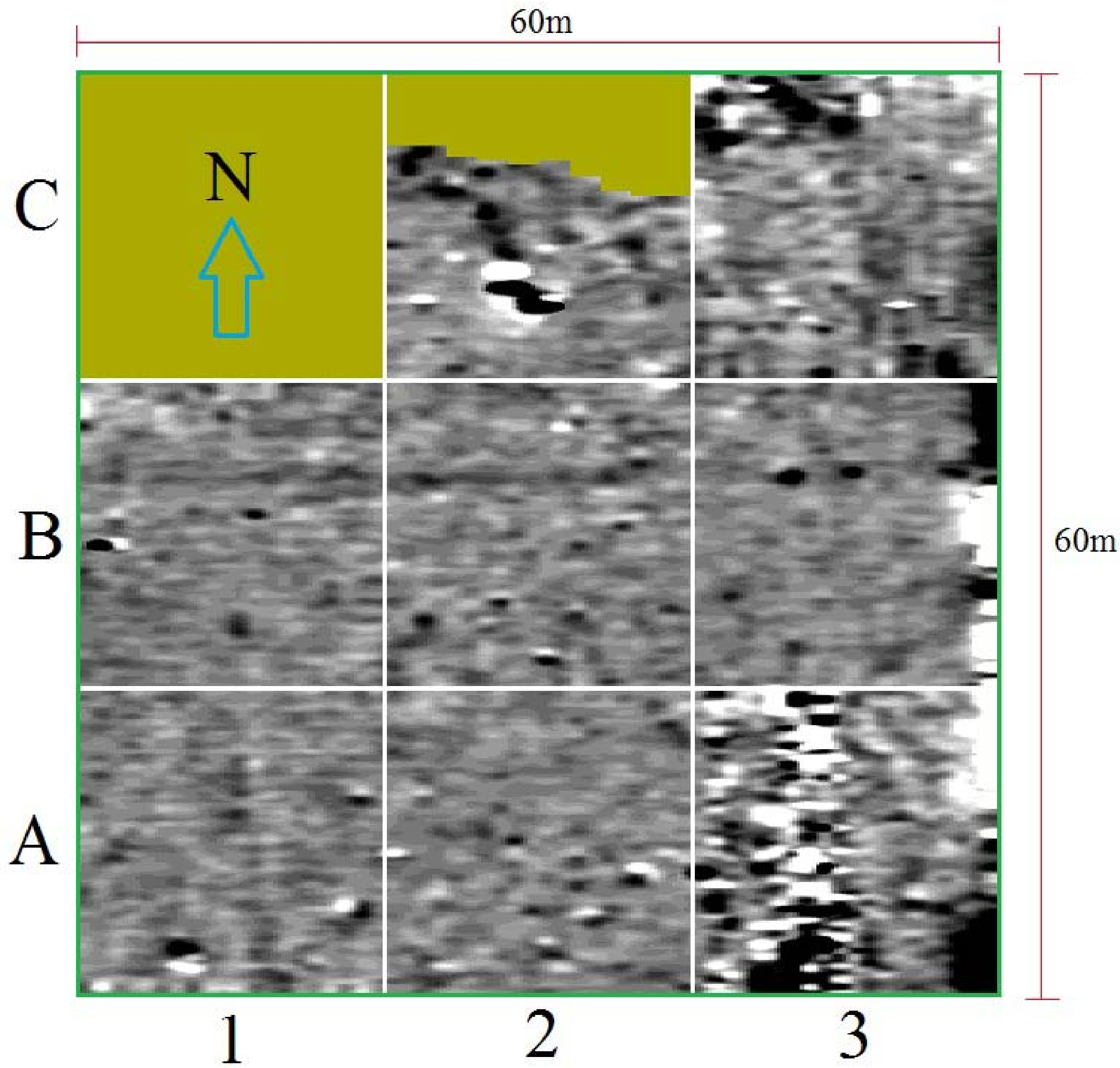

Fig. 3 Results of the magnetometry survey

The magnetometry data was downloaded to a desktop computer before being processed in a geophysical data processing programme 'Snuffler.' The results of the processed and filtered data are presented in Linear plot format (Fig. 3 & Appendix Fig. 8).

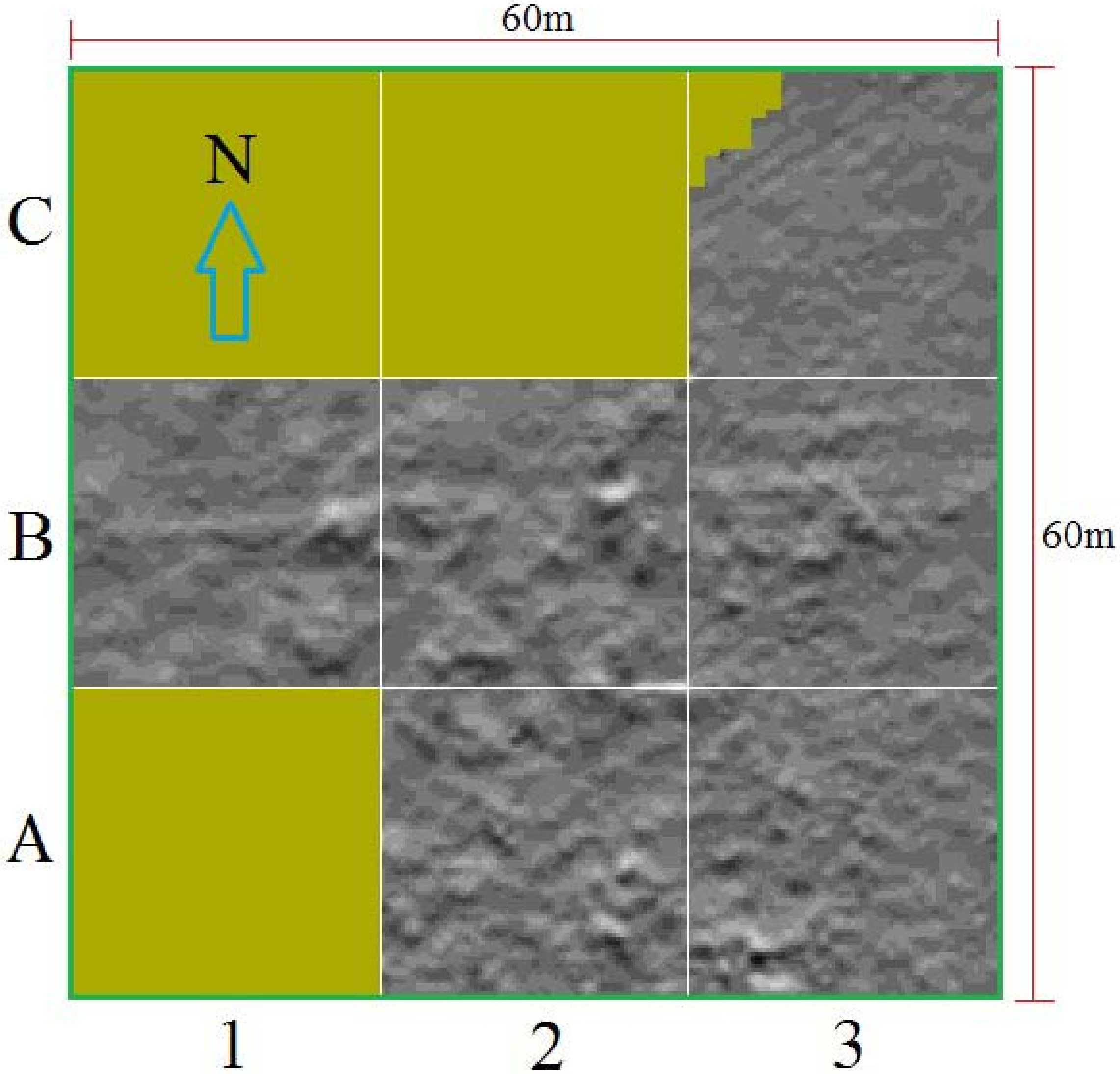

Fig. 4 Results of the resistivity survey

The resistivity data was downloaded to a desktop computer before being processed in a geophysical data processing programme 'Snuffler.' The results of the processed and filtered data are presented in Relief plot format (Fig. 4 and Appendix Fig. 9).

For a comparison of the resistivity and magnetometry results see Appendix (Fig. 7).

Interpretation

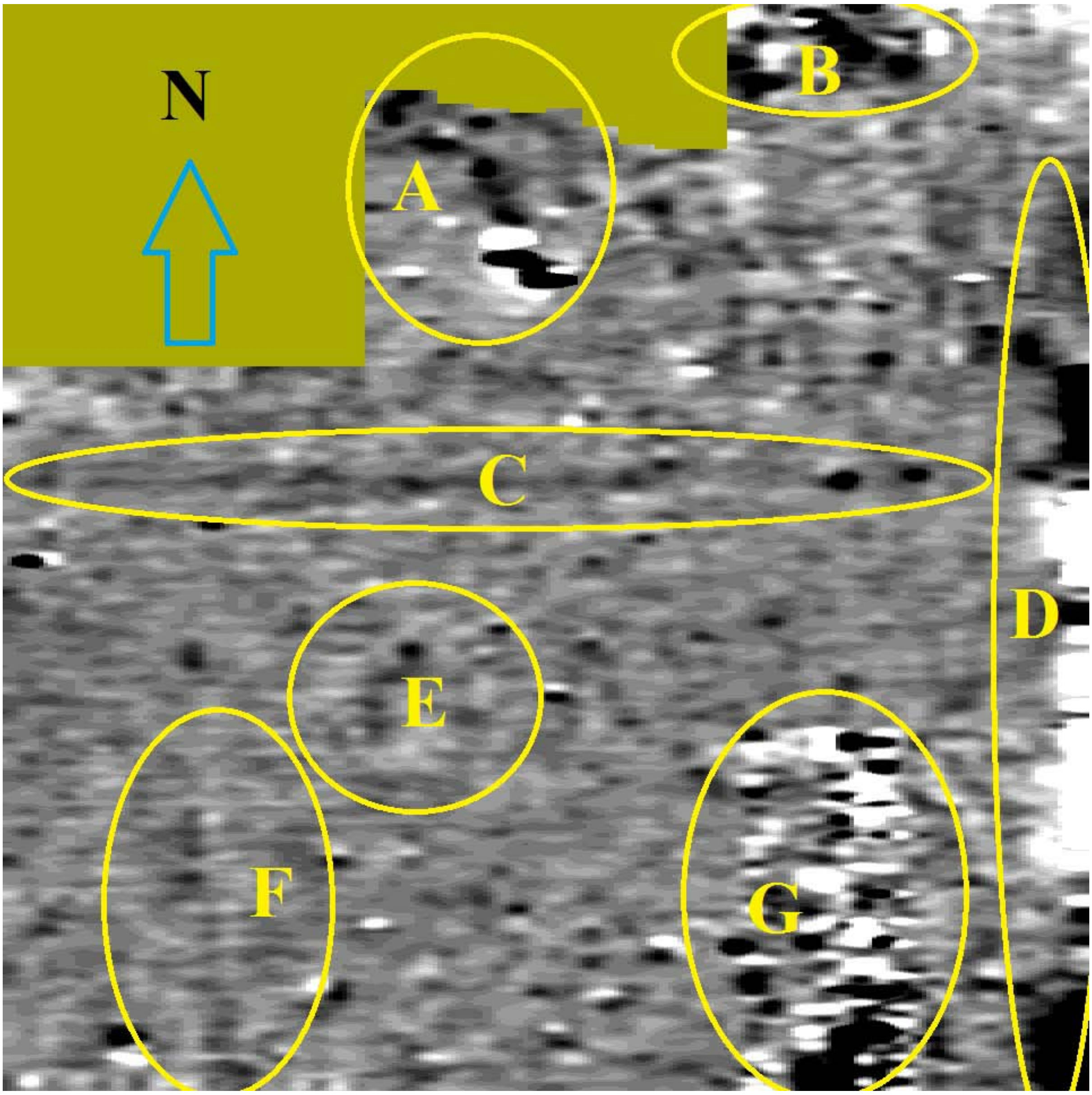

Fig. 5 Interpretation of the results from the magnetometry survey

Fig 5 shows the magnetic data presented in linear plot format with the visible anomalies circled and indexed in yellow.

A. Large ferrous object with a line of lesser or deeper ferrous material heading off in a North West direction, possibly a buried metal drain cover or tap fitting with associated feed pipe for a water trough.

B. Spread of ferrous objects possibly close to the surface and hidden within the area of scrubland close to the churchyard boundary wall.

C. Linear anomaly aligned East / West spanning the entire survey area which is at least 60m in length. This feature also shows on the resistance plot (Fig. 6).

D. Long linear North /South ferrous disturbance caused by the metal boundary fence of the property which abuts the Eastern edge of the survey area closest to the base line.

E. Circular anomaly roughly 8m in diameter which also shows on the resistance plot (Fig. 6).

F. Faint linear feature roughly 20m long aligned slightly off North / South.

G. Metallic interference probably caused by a small metal object carried by the operator during the first half of grid square A3.

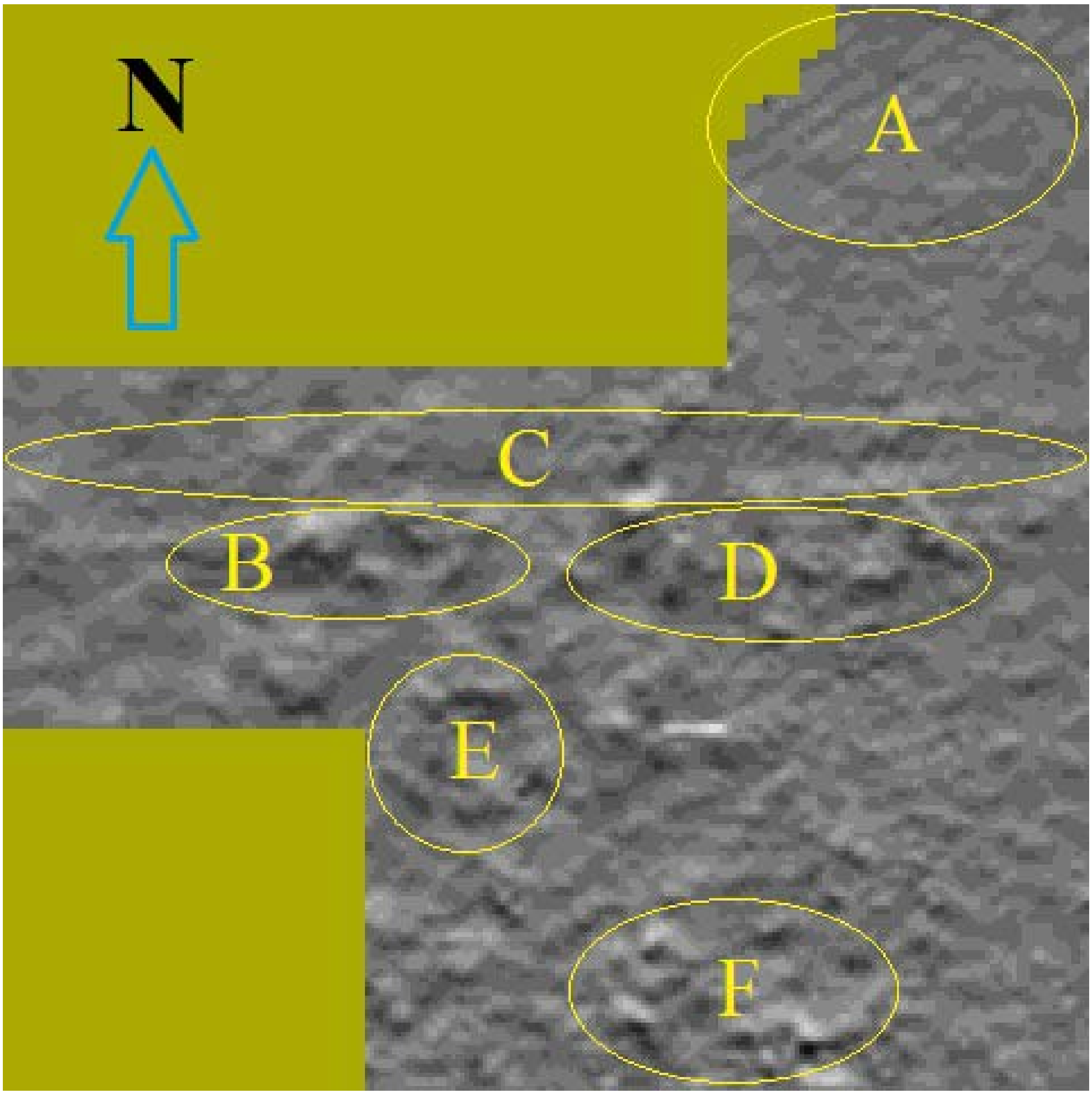

Fig. 6 Interpretation of the results from the resistivity survey

Fig. 6 shows the resistance data presented in relief plot format with the visible anomalies circled and indexed in yellow, two of which (C and E) correspond with anomalies identified in the magnetic data (Fig. 5).

A. Linear lines caused by Plough action.
B. Area of disturbance roughly 17m x 6m slightly South of the linear feature C.
C. Linear anomaly aligned East / West running at least 60m across the survey area which also appears within the magnetometry plot (Fig. 5).
D. Area of disturbance South of linear feature C. Similar to anomaly B but slightly larger, roughly 20m x 8m.
E. Circular anomaly roughly 8m in diameter which also shows within the magnetic plot (Fig. 5)
F. Area of disturbance roughly 15m x 8m at the Southern limit of the survey area.

Conclusion

The results from the survey show a number of interesting anomalies that may be contemporary with earlier usage of the land, in particular anomalies C and E, which were identified in both surveys, are of particular interest. If time permitted it would have been interesting to expand the survey over a wider area certainly further to the South as well as to the West with the intention of locating the point at which anomaly C terminated or changed direction.

Acknowledgements

Special thanks are extended to The South Downs National Park Authority for financial assistance and English Heritage for the loan of equipment. We are grateful to the landowner for allowing the survey to take place and the volunteers from Soberton and its local history society. Thanks also go to Nick Stoodley for organising the event and to Guy Liardet and the SITMV for inviting us to survey on their behalf. Lastly thanks go out to the volunteers from Liss Archaeology: Juliet Smith, Chris Wilkins, Dave Butcher, Jane Godden, Helen Banham and Ray Bulman who gave their time and expertise.

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ENGLISH HERITAGE

Appendix

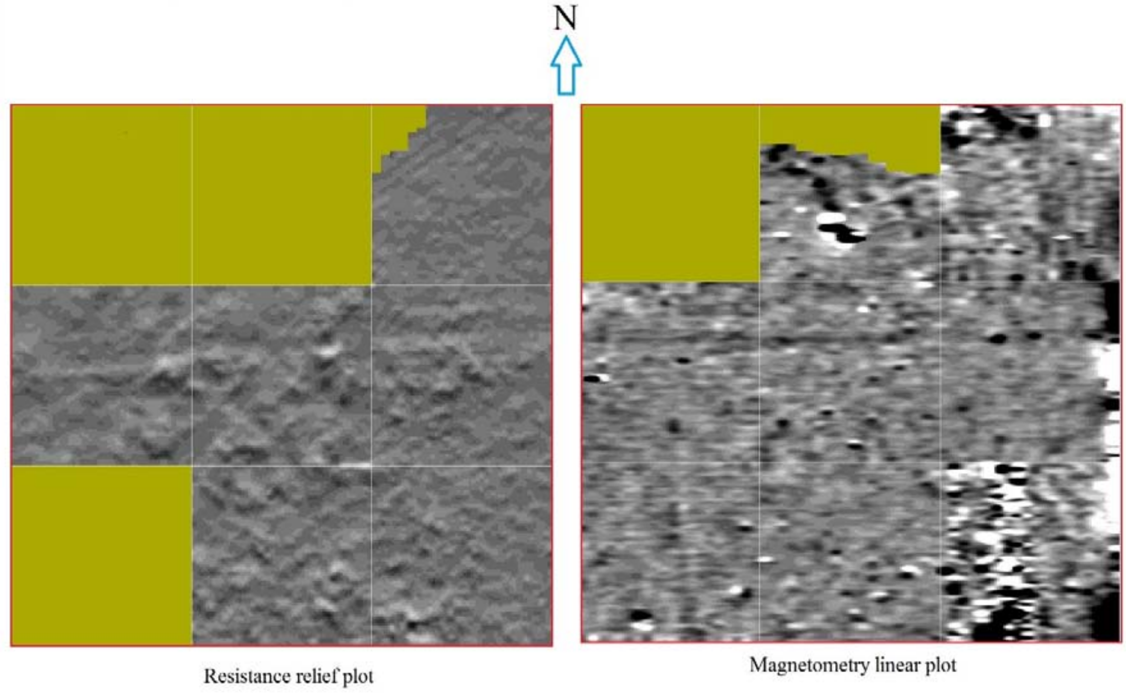

Fig. 7 Resistance and magnetic results compared

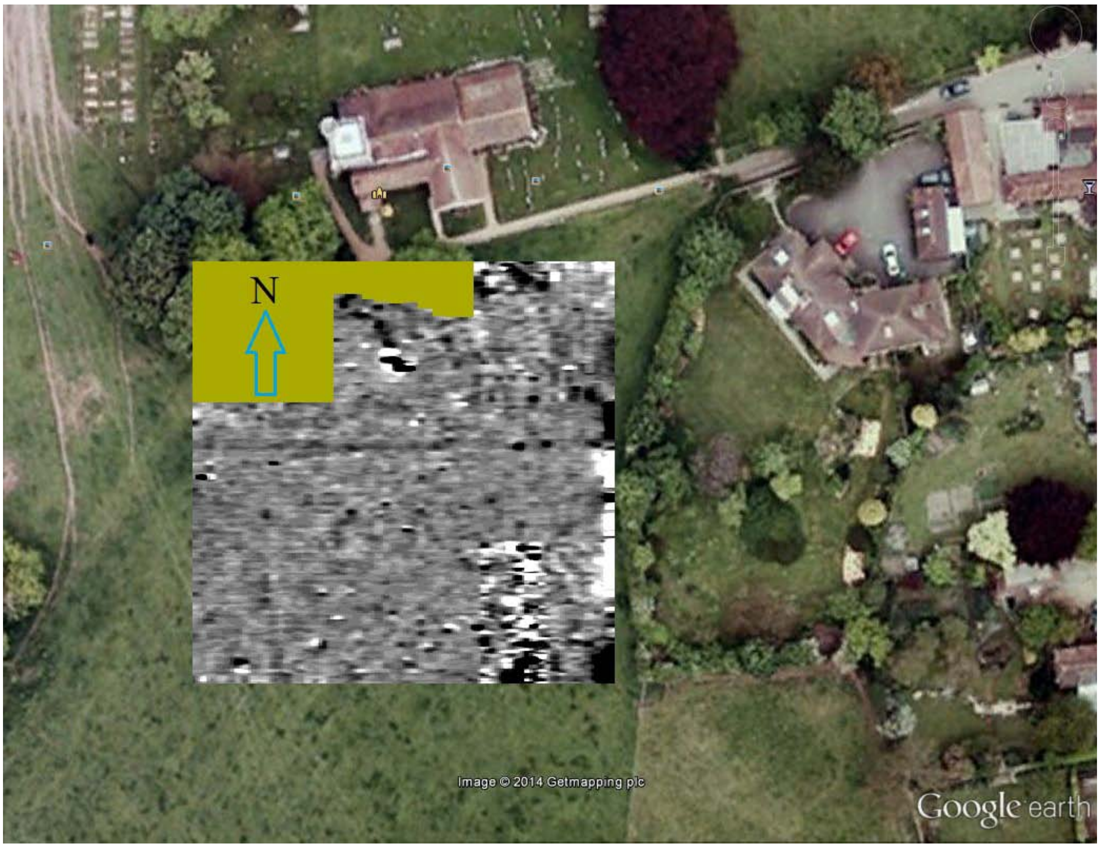

Fig. 8 Magnetometry plot overlaid onto an aerial view of the survey area

Fig. 9 Resistivity plot overlaid onto an aerial view of the survey area