

Little Rycote

Oxfordshire

Magnetometry and Earth Resistance Surveys

for

South Oxfordshire Landscape Project

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Carried out by

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# Little Rycote, Oxfordshire Report on Geophysical Surveys 2014

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11	Some reports will also contain a compact disc with digital copies of the report, pictures and data	

## **1 Summary**

A magnetometry survey was carried out on some 9.4 hectares to test earlier fieldwalking results which had found medieval pottery. This located a series of anomalies at the foot of the slope which could well be the remains of this deserted medieval village. A small earth resistance survey added little extra information

## **2 Introduction**

These surveys were carried out as part of the 'South Oxfordshire Landscape Project', an Oxford University project, funded by the Leverhulme Trust.

The site was located by R. Chambers who reported medieval pottery located during fieldwalking in South Midlands Archaeology 1987, p 89. The National Grid reference of his pottery concentration was at SP 6610 0410.

The site is in Great Hasely parish and the nearest postcode is OX9 2NZ.

The geology is, according to the British Geological Surveys' Geology of Britain viewer, Gault Clay to the southern part and Lower Greensand in the northern part of the field with some alluvium to the north western corner of the field.

The northern part of the field is fairly level and is some 20 metres lower than the southern part. The field was under short grass when surveyed.

## **3 Methods**

### **Surveying**

Magnetometry, or gradiometry, was used as it is a fairly rapid method and could have located areas of brick rubble and possibly ditches. The Bartlett Clark equipment was used which has 4 Bartington single axis gradiometers being carried by hand between lines of marked strings to give locational accuracy. Lines were 1 metre apart with 4 readings per metre. The bottom sensor was approx 30 cms above the ground surface. Please see appendix 10 for details of this method. An area to the east of the main field was surveyed with a Bartington Grad 601/2 gradiometer which is similar to the Bartlett Clark apparatus but only has 2 gradiometers.

Most of the fairly level part of the main field was surveyed as it was felt unlikely that people will have lived on the steep slope towards the southern side of the field and a crop of maize prevented further surveying at the top of the slope on the south eastern part of the field. The western part of the second field was surveyed to get the edge to the area of anomalies. A single grid in the main field was also surveyed with the Bartington gradiometer to assess whether the results from the two types of gradiometer were comparable and found little difference, apart from a difference in location of approximately 0.3 metres caused by variation in the gps location.

A single grid of the main magnetometry area was also surveyed using resistivity or earth resistance. A CIA/TR meter was used in a twin probe configuration with a 0.5 metre mobile probe spacing.

The surveys took place between 2nd February and 26 April 2014.

### **Survey Location**

All grids were located using a Trimble differentially corrected GPS which was only used when there were enough satellites to give an error of approx 0.2 metres.

### **Processing**

This was done using the Bartlett Clark specialist programmes and TerraSurveyor .

The main processes were:-

Magnetometry

Clip until readings are under 10nT; De-stripe; De-stagger in some areas. The illustrations have the readings clipped to +2.4 (black) and -2.2nT (white).

Resistivity

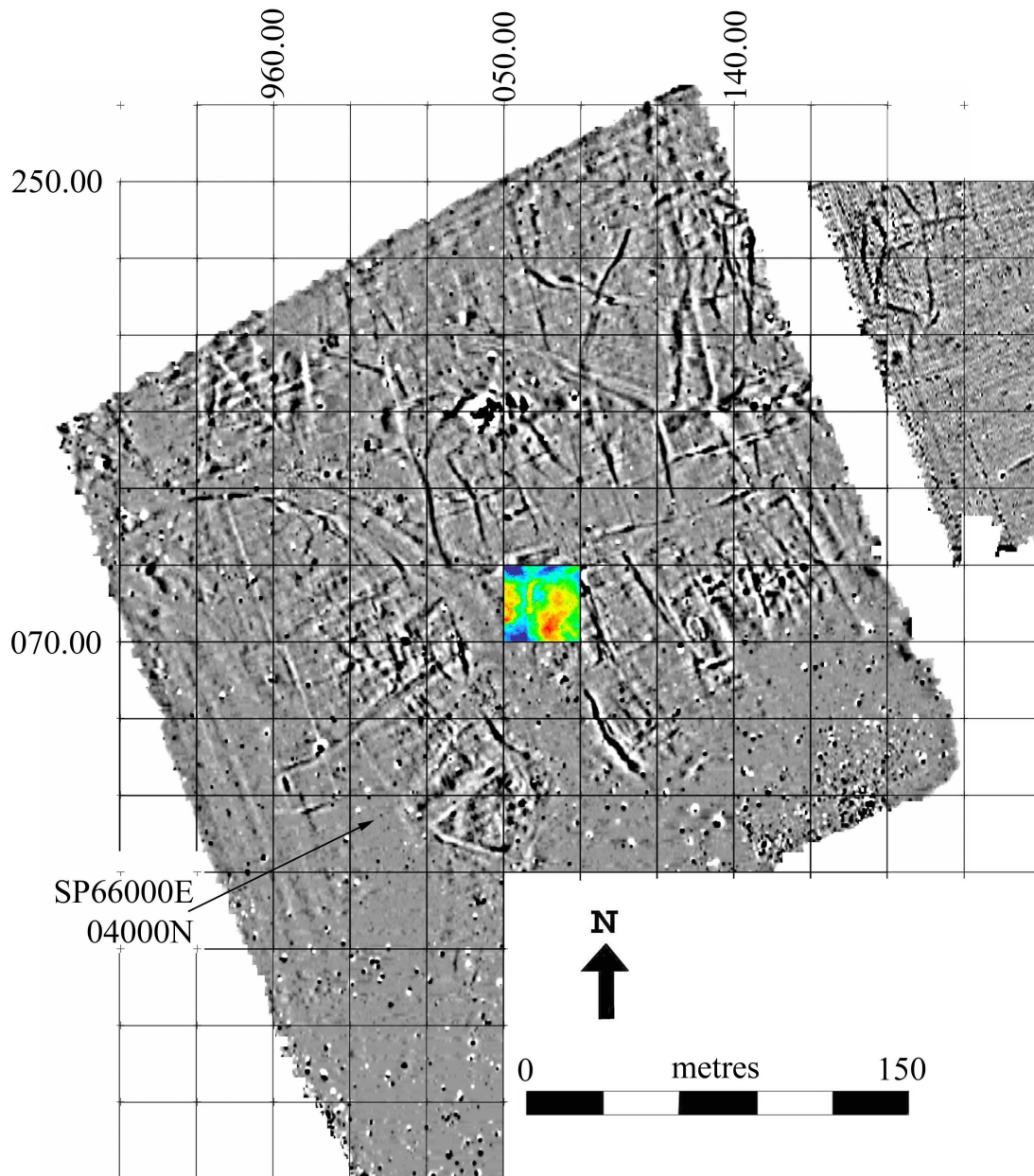
De-spike, clip.

## **4 Results**

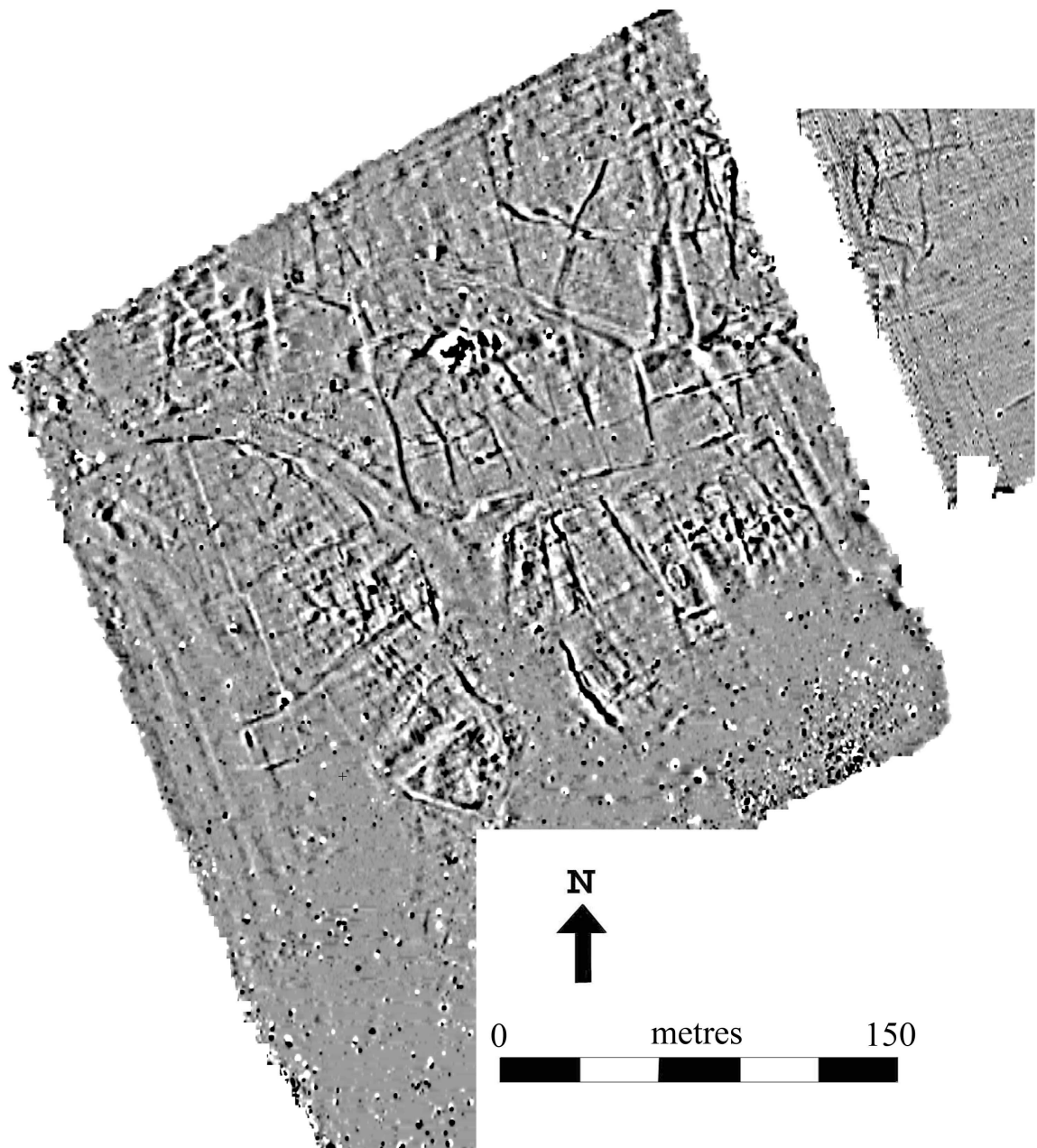
**Location of survey area.**



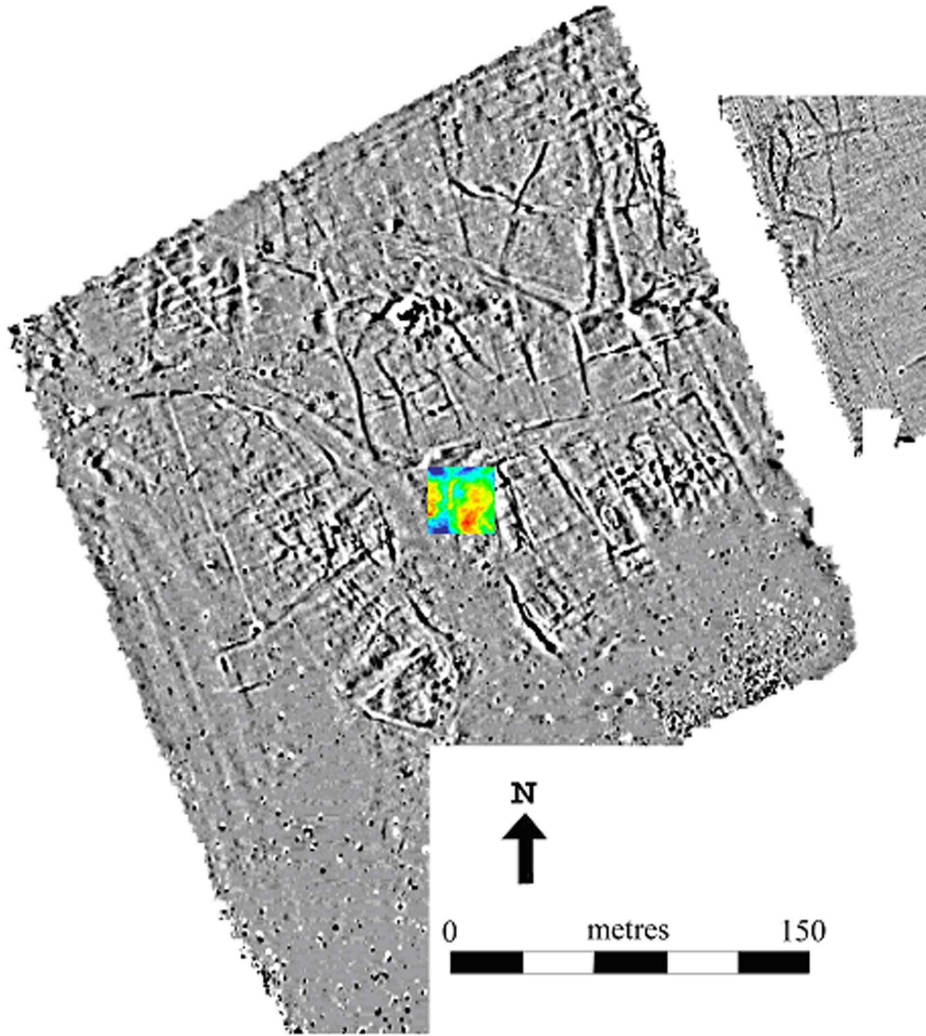
**Survey approximately located on Google earth air photo.**



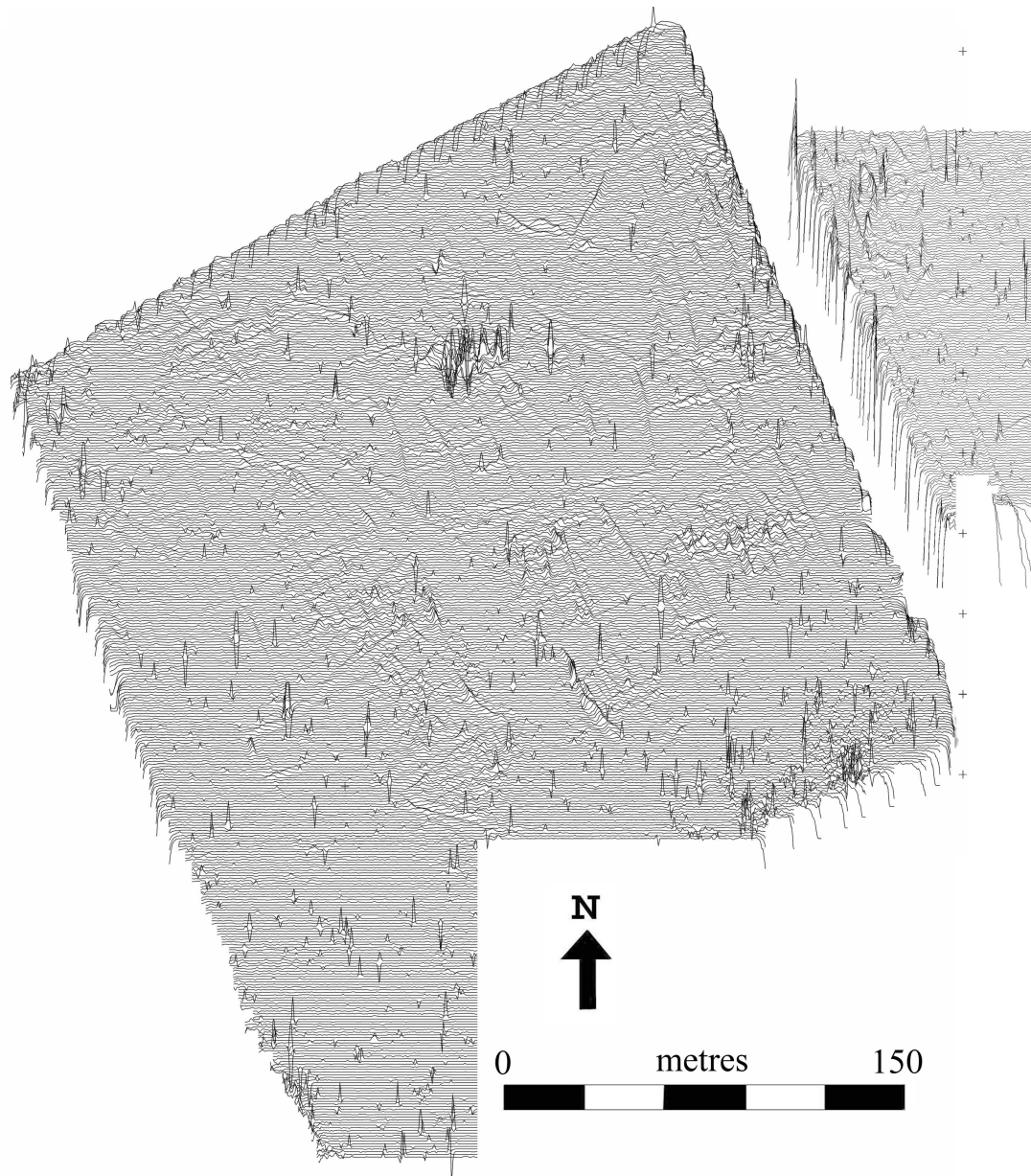
**Detail of survey location**



**Greyscale magnetometry survey**

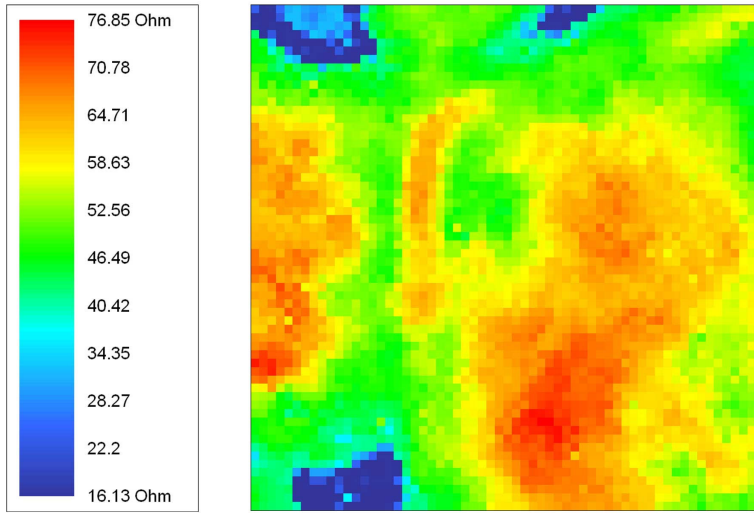


**Magnetometry survey with resistivity overlain.**

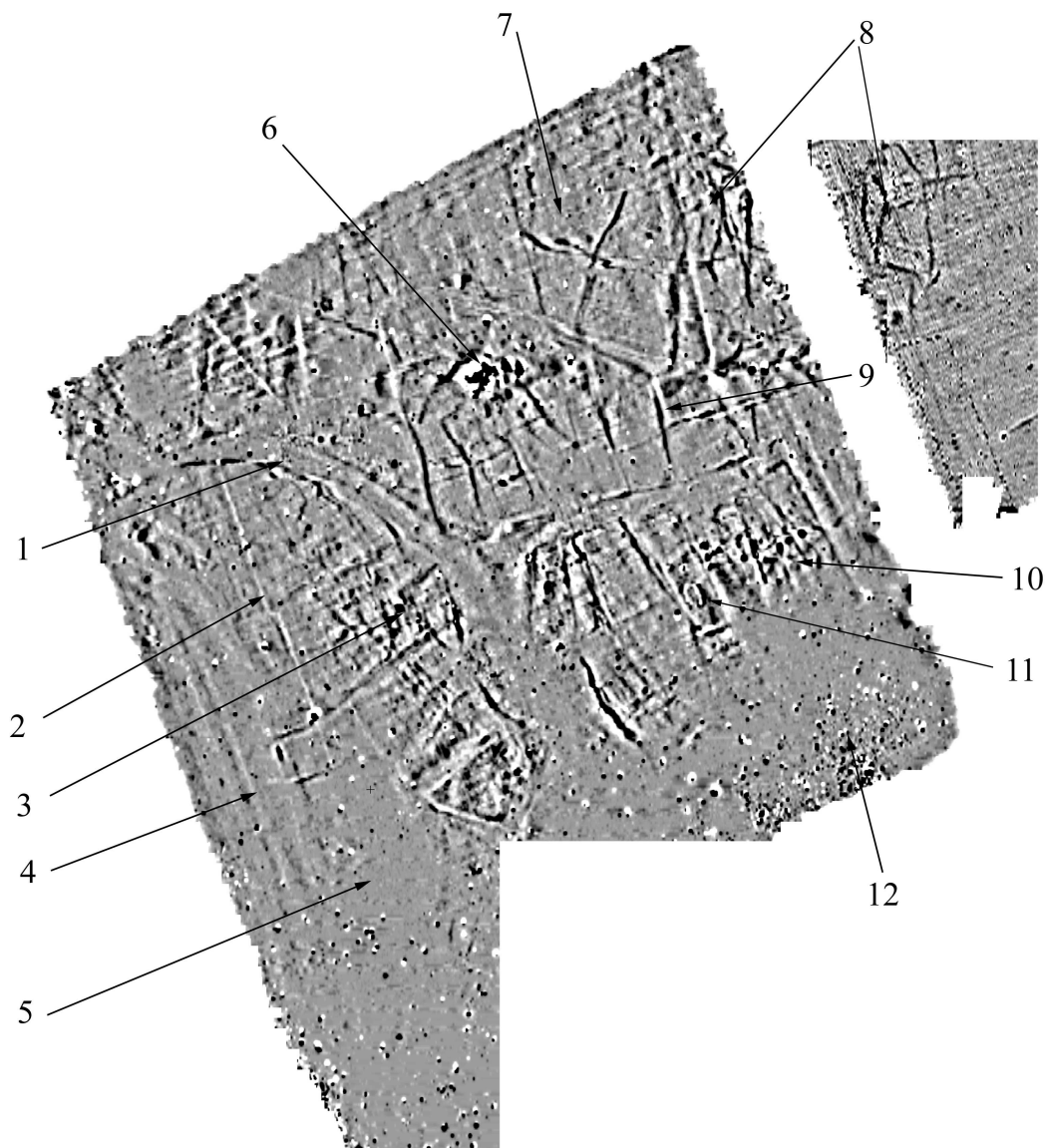


**Trace plot of magnetometry survey.**





**Resistivity survey.**



### Interpretation of magnetometry survey.

1 Curving presumed trackway. One ditch of this is visible on some air photos. The magnetic fills of one ditch are stronger than the other and, as this enhancement appears to be away from the settlement, it may indicate a prehistoric origin for this ditch which may curve back again to the south, making a semi-circle. The northern part of the ditch may have been respected by a later trackway.

2 Straight negative anomaly. These are often the fills of trenches containing plastic or concrete pipes. However here there are two right angled kinks in the anomaly, possibly avoiding a small rectangular negative anomaly, so its origin is uncertain.

- 3 An area of small ditch-like anomalies. These could indicate the location of houses and similar buildings. The buildings themselves are unlikely to be detected by magnetometry.
- 4 Linear anomalies which could be the remnants of ridge and furrow. There are similar anomalies on the eastern side of the field and some running E-W near the NW corner of the field.
- 5 A fairly blank area which should, if the geology there is Lower Greensand, have shown features if there were any. This indicates that the settlement does not extend this far south – west.
- 6 A mass of iron or burning. This is in the same location as the small pond shown on an Ordnance Survey map of the area and may represent large pieces of iron rubbish which were thrown into the pond before it was filled.
- 7 Small enclosure –like anomalies which indicate that the buildings do not extend this far north.
- 8 Several irregular ditch – like anomalies. These are not clearly indicative of any period but could be prehistoric as well as of medieval date.
- 9 Rectangular enclosure or similar of high ditch-like anomalies. Purpose and date unknown.
- 10 A mass of anomalies which could be the remains of settlement. Buildings made of timber are unlikely to be detected magnetically. The rear part of houses may show better magnetically than the front as the hearths and ovens to the rear of the houses will have enhanced the magnetic characteristics of the ditches near them whilst features at the front will not have the same amount of magnetically enhanced soil in their fills.
- 11 An elliptical feature of low magnetic response. Whilst a low response could be a limestone structure, it can also be caused by the gradiometer sensors being further from the soil surface. Thus the area around hay feeder for cattle can have the soil eroded by the cattle giving rise to this type of anomaly.
- 12 An area of small ferrous-like responses. It could be several things such as where there have been many shotgun cartridges left to decay in the field.

The resistivity survey added little to the magnetometry results. This may be because resistivity is dependant on the dampness of the soil which varies continuously and conditions may have been a bit damp when the survey took place. It appears show the curve, possibly of a track, as being drier than the immediately adjoining area. At Cumnor Hurst we had similarly poor resistivity results on Lower Greensand geology.

## **5 Conclusions**

This area appears to have many anomalies on the Lower Greensand geology. As geophysics cannot itself give the date or period of any remains, there is the difficulty of ascertaining which are medieval and which are from other periods.

The survey, and the single piece of flint-tempered medieval pottery seen whilst surveying, indicate the most likely location of the village houses.

The results from the Lower Greensand appear to be quite good. The alluvium to the north-west corner of the site also does not appear to have obscured remains. The Gault clay to the south was not surveyed as it was on a steep slope. That geology is generally poor for magnetometry results so there could be remains on that geology which are not detectable by magnetometry.

## **6 Statement of Indemnity**

Many features cannot be detected with magnetometry or resistivity. The fact that something has not been located should not be taken to imply that it is not there.

## **7 Acknowledgements**

We would like to thank Dr Stephen Miles for asking us to carry out these surveys. We also wish to thank Alister Bartlett for the loan of his equipment and Sarah Taylor for permitting access.

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Roger Ainslie