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Rowbury Farm Enclosure, Fullerton Down, Hampshire : Report on Geophysical Survey, February 2003

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Summary

A fluxgate magnetometer survey of a large sub-rectangular enclosure on Fullerton Down, was carried out ahead of research excavation by the Danebury Environs Roman programme. Although known from aerial photography and surface finds of Romano-British pottery, the enclosure had not previously been studied in detail. The magnetometer survey produced very clear results that considerably improve understanding of the form and layout of the site and the activity within. The data indicates a sub-rectangular enclosure approximately 2 hectares in extent defined by a substantial ditch up to 4m wide in places. Internal anomalies suggest the presence of extensive quarry features and pits. The enclosure is entered by track-ways defined by parallel ditches at the north-east and south-west and a possible second phase of smaller enclosures may be present aligned on the north-east track-way. The detailed information provided by the survey will contribute to the design of an excavation strategy which will form the basis of the subsequent excavation in August 2003.

Keywords

Geophysical Survey

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ROWBURY FARM ENCLOSURE, FULLERTON DOWN, HANTS

Report on Geophysical Survey, February 2003

Introduction

In February 2003 the Archaeometry Branch of the Centre for Archaeology carried out a fluxgate gradiometer survey over the plough-flattened site of an enclosed settlement of presumed Iron Age to Roman date under arable fields near Fullerton, Hampshire. The site (located at NGR SU 353400) has been known for some time as a cropmark mapped by aerial photography (see Palmer 1984, Fig. 32 and main map) and surface finds of Romano-British pottery, but little is known of the site beyond this. The aerial photographic evidence also indicates that the enclosure is joined by two track-ways bordered by parallel ditches approaching from the east and south and is located in an area rich in remains of "celtic" or co-axial field-systems. The soils in the area consist of shallow well-drained calcareous silty soils of the Andover 2 association, developed over Cretaceous upper chalk (Soil Survey of England and Wales 1983, Geological Survey of Great Britain 1949).

The geophysical survey reported on here was carried out for Professor B. W. Cunliffe in support and advance of research excavations programmed by the Danebury Roman Environs Project for the summer of 2003. Fluxgate gradiometer survey has previously proven particularly successful for mapping evidence of Iron Age settlements in the chalkland environment of the Danebury area (Payne 2000). This technique was therefore employed for the purpose of gaining a detailed and accurately located plan of the enclosure, including evidence of any internal features not visible from the air, and the adjacent track-ways anticipated from the aerial photographs.

Method

A grid of 30m squares was first set out over the site using a Trimble real-time kinematic differential GPS (Global Positioning System) with a roving receiver in stake-out mode (see Figure 1). The 30m grid-points and base station position were subsequently corrected to real Ordnance Survey National Grid coordinates using Trimble Geomatics Office software and imported into the 1:2500 OS map-tile in AutoCAD 2002 to produce a precisely geo-referenced survey location plan (Figure 1).

On the 30m grid, Geoscan FM36 fluxgate gradiometers were used to collect readings of the vertical magnetic field gradient at 0.25m intervals along 30m traverses spaced 1.0m apart. The data was recorded at the 0.1 nanotesla (nT) instrument sensitivity setting and was periodically downloaded in the field to portable computers for storage and verification. Subsequent data processing involved the reduction of extreme readings by range truncation and the removal of instrument

drift effects by baseline equalization. The resulting data is presented in greyscale form in Figures 2 and 4 and in trace-plot form in Figure 5. An interpretation is provided on Figure 3.

Results

The results present a striking picture of the effectiveness of magnetometry on the local substrates of the Danebury Environs. The boundary of the enclosure has been resolved as a substantial positive curvi-linear anomaly (up to 8 nT in strength but standing out clearly from the naturally quiet magnetic background of the chalk geology). The anomaly from the ditch suggests it was an impressive feature up to 4m wide in places. On the southern side of the enclosure, the ditch is more irregular in form and width than elsewhere suggesting re-cutting or quarrying of the original profile (or earlier features cut by the ditch). Two pairs of parallel linear anomalies approaching the enclosure from the east and south represent the ditches of the track-ways anticipated from the aerial photographic evidence. Immediately adjacent and parallel to the northern ditch of the eastern track-way, where it approaches the main enclosure, is a further ditch offset to the north by approximately 2m. This feature might represent another phase of track-way or may form part of an adjacent enclosure laid-out with respect to the track-way. Additional narrower linear positive anomalies within the main enclosure represent the ditches of other smaller enclosures.

Numerous discrete positive anomalies scattered about the interior of the enclosure are likely to represent pits but some of them are sufficiently intense to indicate industrial activity or burnt features such as hearths and ovens. In the southernmost part of the enclosure, one group of pit-like anomalies forms a distinct alignment made up of around 10 separate pits. Larger more irregular but weaker positive magnetic anomalies - with a particular concentration in the northern and north-western areas of the enclosure - indicate the presence of silted up areas of quarrying (sometimes termed 'borrow-pits'). Similar features have previously been recorded at the excavated Late Iron Age and Roman Settlement on nearby Houghton Down (Cunliffe and Poole 2000). In the far central eastern part of the enclosure, a narrow annular weak positive magnetic anomaly 10m in radius may represent the gully surrounding a small circular structure. This is the single example of a possible building located within the settlement. In general the eastern half of the enclosure (particularly the south-east corner) is much emptier than the western half which is much more densely packed with features.

There is some evidence of activity outside the main enclosure boundary in the form of isolated pits and quarries. Immediately outside the north-eastern corner of the enclosure and north of the eastern track-way there are what appear to be two quarry features linked by a straight ditch. As elsewhere, the features in this group may not necessarily all be of the same phase.

The site is bisected by a modern field boundary (consisting of a hedgerow and barbed-wire fencing) and strong magnetic readings are associated with this feature. An intense alternately positive and negative magnetic anomaly visible in the western

part of the survey is the response to a water pipe linked to a reservoir for watering livestock immediately to the north of the site.

Conclusions

The magnetometer survey has mapped the site with great clarity providing for the first time a detailed plan of the enclosure that indicates the size and extent of the associated settlement and the range of features present. The enclosure is four-sided with rounded corners and sides of unequal length and is defined by a substantial ditch some 3-4m in width. This ditch is interrupted at two points where track-ways approach from the east and south. The line of the track-way approaching from the east appears to be projected into the main enclosure by a system of smaller enclosures on the same alignment. One of these smaller enclosures lies outside the boundary of the main enclosure immediately north of the track-way. Rather than representing sub-divisions of the main enclosure, these smaller enclosures running in a line into the enclosure may represent a distinctive phase in the development of the site. Elsewhere within the main enclosure there is plentiful evidence of pits, some in distinct alignments, others grouped in clusters, and larger areas of more substantial quarry-type pits. Most of these features appear to lie within the bounds of the main enclosure. There is no evidence for any buildings of masonry construction despite the presence of Roman pottery. The presence of a single ring-gully mapped by the survey in the eastern part of the enclosure may be a sign of domestic habitation of a more rudimentary form. The site is likely to represent a farmstead probably with origins in the Iron Age which continues in use into the Roman period but does not develop villa status with elaborate buildings fashioned from brick and masonry. Armed with this new understanding of the site, an effective excavation strategy for the settlement can now be developed.

Surveyed by :	P Cottrell A Payne	Dates :	10 -14 February 2003
Reported by :	A Payne	Date :	30 June 2003

Archaeometry Branch,
English Heritage, Centre for Archaeology.

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Figure 1 Location of the magnetometer survey, showing the position of the 30m survey grid in relation to the 1:2500 Ordnance Survey plan of the site

Figure 2 Greyscale plot of the enhanced magnetometer data in relation to the 1:2500 Ordnance Survey plan of the site

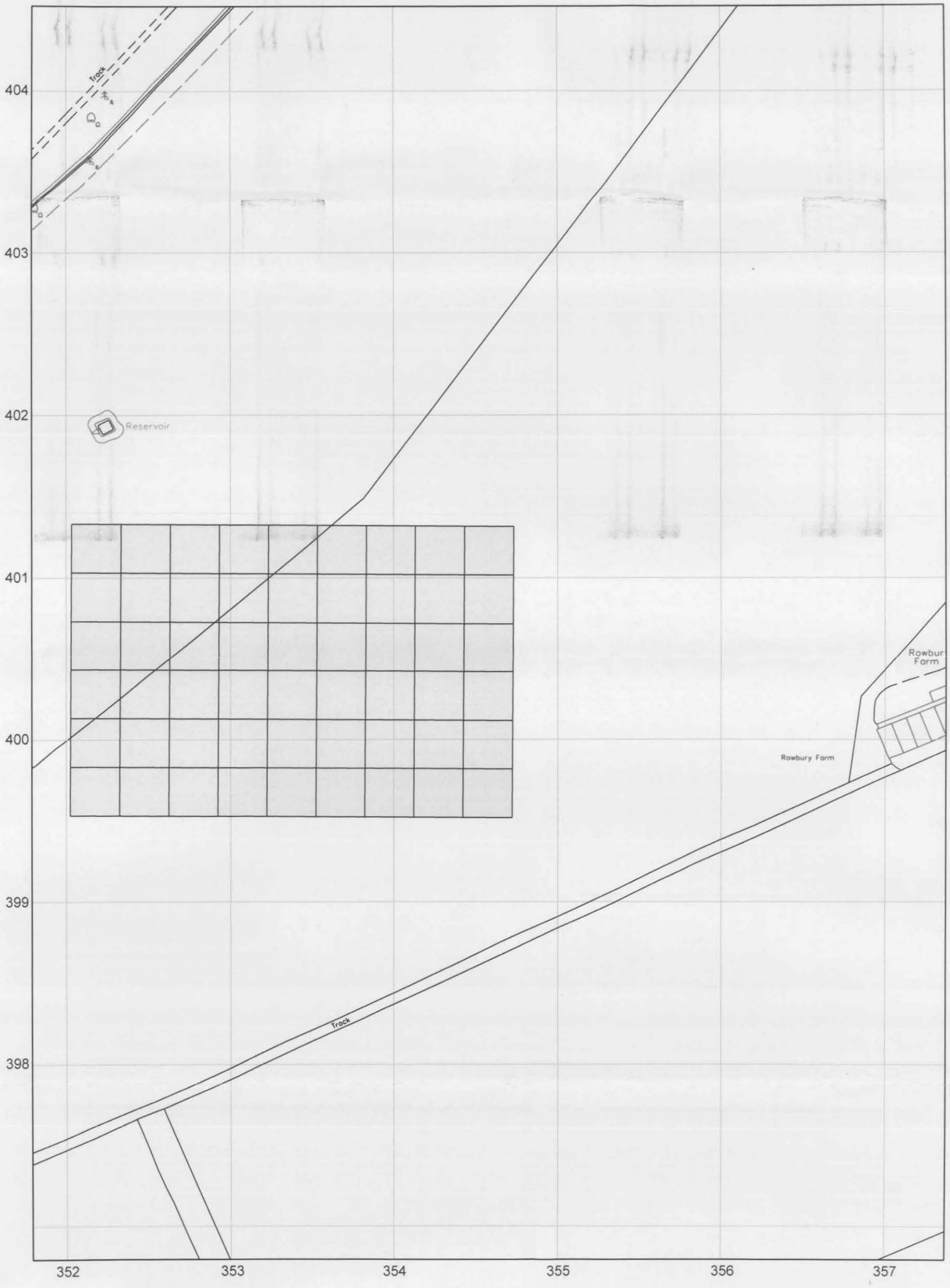
Figure 3 Interpretation of the magnetometer data in relation to the 1:2500 Ordnance Survey plan of the site

Figure 4 Greyscale plot of the drift corrected magnetometer data (1:1000 scale)

Figure 5 Traceplot of the drift corrected magnetometer data (1:1000 scale)

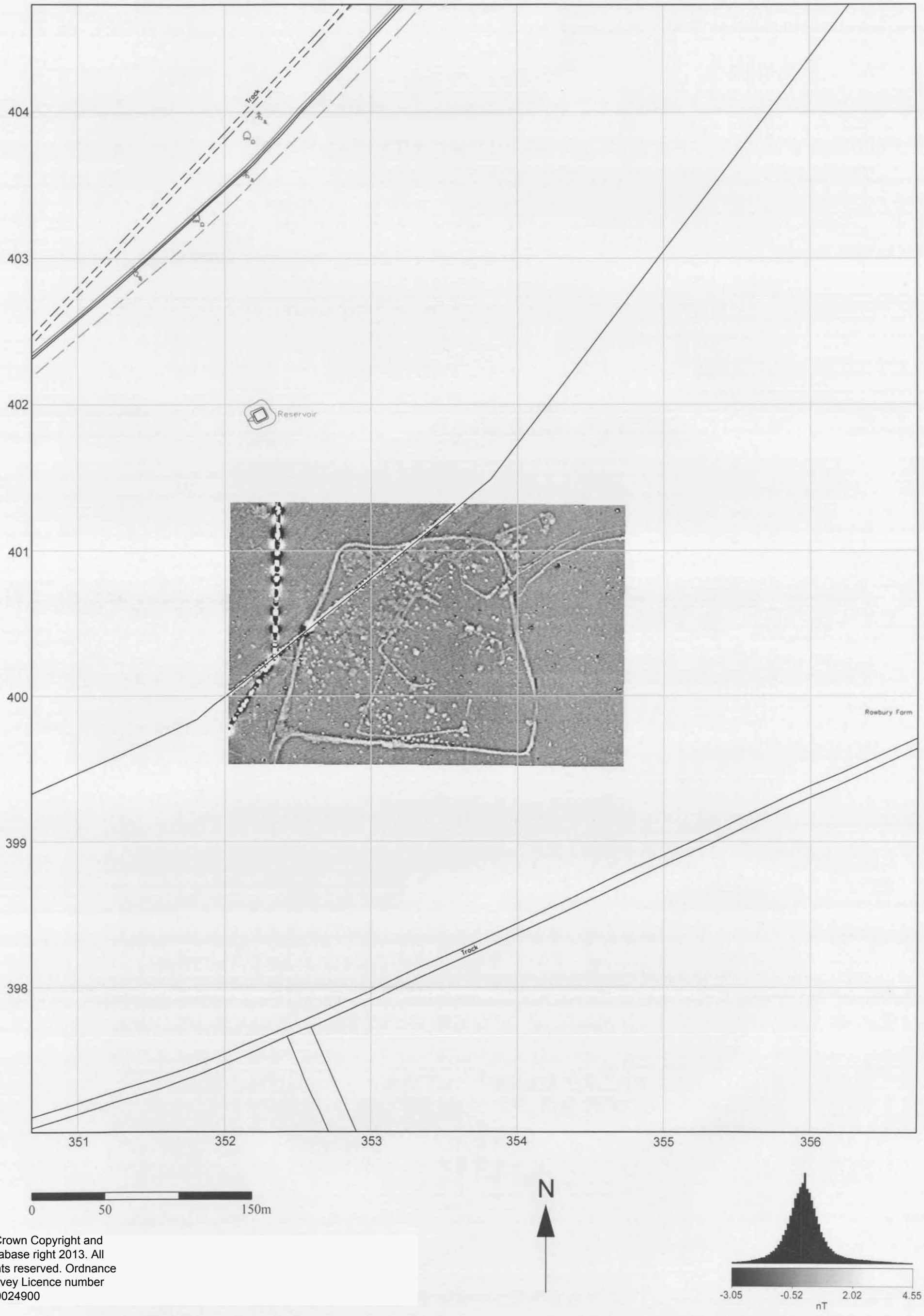
ROWBURY FARM, FULLERTON, HANTS Magnetometer Survey, February 2003

Figure 1 : Location of magnetometer survey



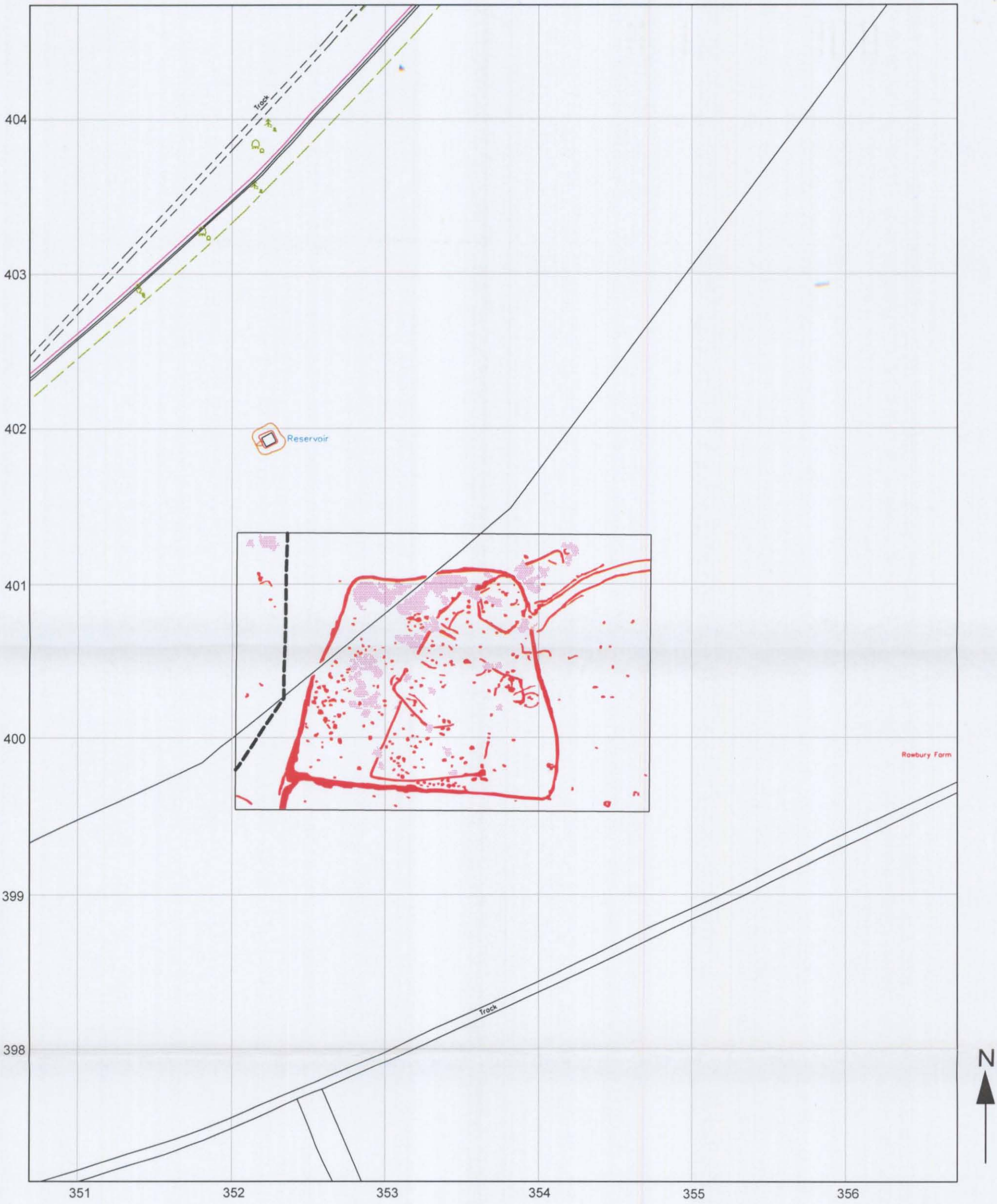
ROWBURY FARM, FULLERTON, HANTS Magnetometer Survey, February 2003

Figure 2 : Greyscale plot of magnetometer data inserted on OS plan



ROWBURY FARM, FULLERTON, HANTS Magnetometer Survey, February 2003

Figure 3 : Interpretation of magnetometer data inserted on OS plan



ROWBURY FARM, FULLERTON, HANTS

Figure 4 : Greyscale plot of drift corrected magnetometer data

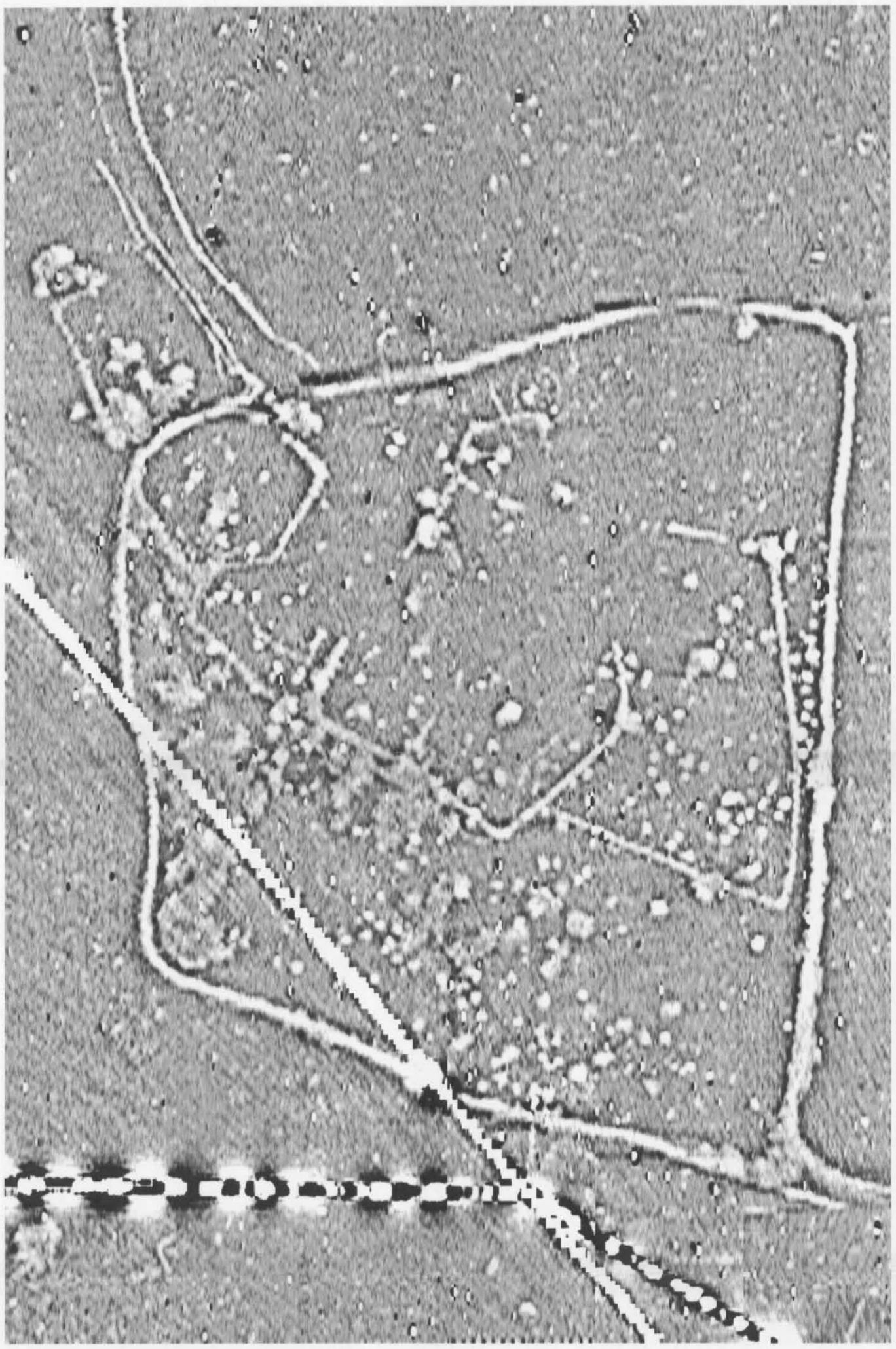


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Figure 5 : Traceplot of drift corrected magnetometer data

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