

ASUD 903

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ENY	830
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Parish	6064
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## **Rose Manor Hotel, Boroughbridge North Yorkshire**

### **geophysical survey**

*by*

Archaeological Services  
University of Durham

*On behalf of*

**CgMs Consulting**

**ASUD Report 903**  
March 2002

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## **1. Summary**

### ***The project***

- 1.1 This report presents the results of a geophysical survey conducted in advance of a proposed development at Rose Manor Hotel, Boroughbridge, North Yorkshire.
- 1.2 The works were commissioned by Mr Rob Bourn of CgMs Consulting, and conducted by Archaeological Services University of Durham.

### ***Results***

- 1.3 The survey has detected a series of pipes and drains traversing the site. These services were associated with former potting sheds and greenhouses.
- 1.4 The survey has not detected any features of likely archaeological significance.

## 2. Project background

### *Location* (Figure 1)

- 2.1 The study area is located in the gardens of the Rose Manor Hotel in Boroughbridge, North Yorkshire (NGR: SE 394 664). The survey area comprised a lawn measuring c.50m by 40m, to the south and west of the existing hotel complex.

### *Development proposal*

- 2.2 The proposal is to construct a two and three storey residential block as an extension to the existing hotel.

### *Objective*

- 2.3 The objective of the survey was to assess the nature, extent and potential significance of any surviving archaeological features within the proposed development area, so that an informed decision may be made regarding the nature, and scope of, any further scheme of archaeological works that may be required in advance of development.

### *Specification summary*

- 2.4 The surveys have been undertaken in accordance with a Methods Statement (below, Section 5) prepared by Archaeological Services University of Durham, and in accordance with English Heritage (1995) Research and Professional Services Guideline No.1, *Geophysical survey in archaeological field evaluation*; the Institute of Field Archaeologists (1991) Technical Paper No.9, *The use of geophysical techniques in archaeological evaluations*; and the Archaeology Data Service (2001) *Geophysical Data in Archaeology: A Guide to Good Practice*.

### *Dates*

- 2.5 Fieldwork was undertaken on the 21<sup>st</sup> March 2002. This report was prepared between 21<sup>st</sup> and 25<sup>th</sup> March 2002.

### *Personnel*

- 2.6 Fieldwork was conducted by Duncan Hale and Andy Platell. This report was prepared by Duncan Hale (the Project Manager), with illustrations by David Graham.

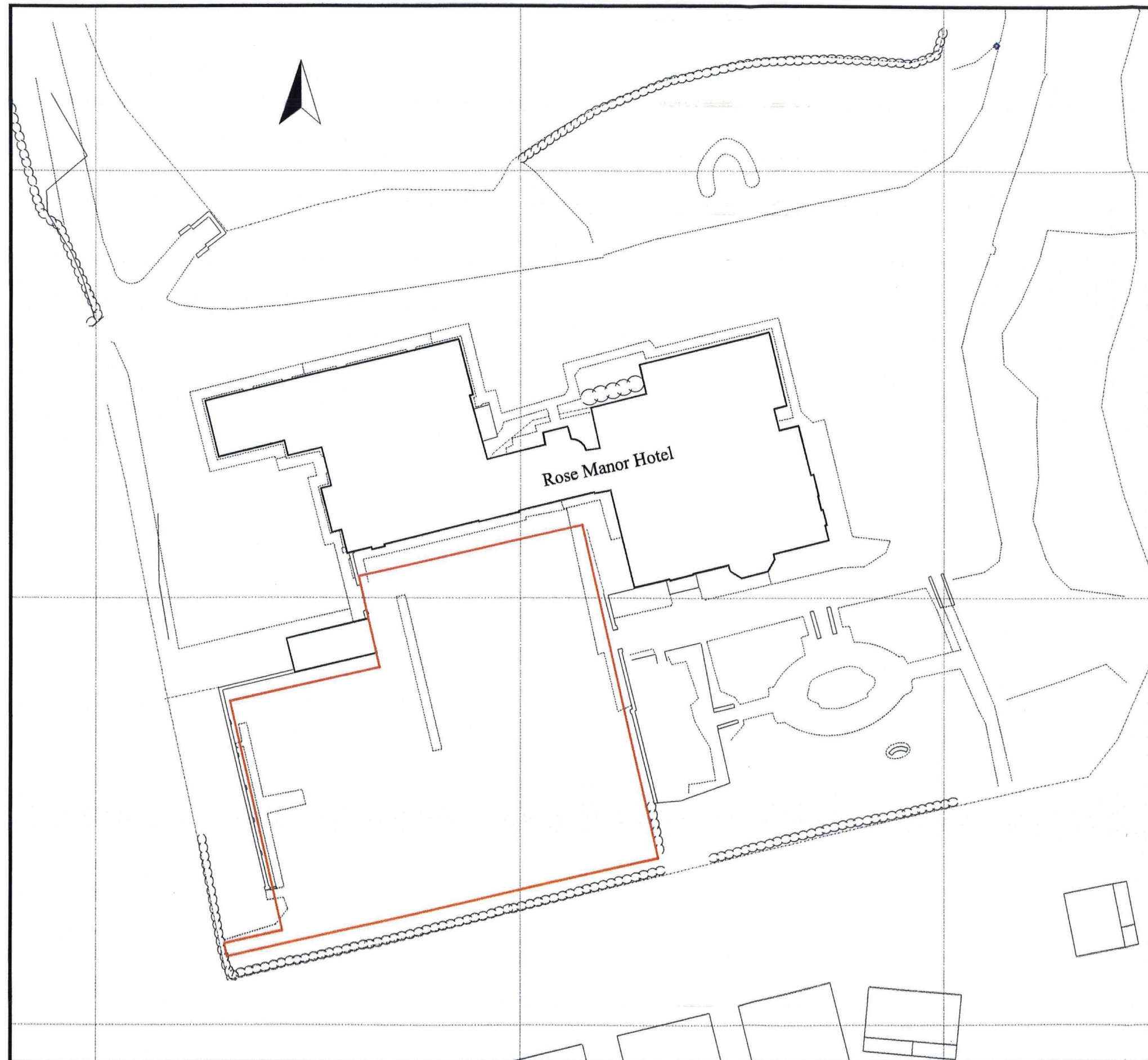
### *Archive*

- 2.7 The paper and data archive is currently held at Archaeological Services, University of Durham. It is anticipated that the data archive will be transferred to the Archaeology Data Service in due course.

## 3. Archaeological and historical background

- 3.1 A desk-based assessment of the archaeological potential of the site was undertaken by the client last year (CgMs 2001). The assessment established that the site lies in close proximity to the late Neolithic/early Bronze Age






**Rose Manor Hotel, Boroughbridge,  
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Figure 1  
*Location of the survey area*



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 area of survey



standing stone alignment called Devil's Arrows; evidence for ritual activity and/or settlement during this period may survive in the vicinity. An earlier evaluation of the field adjacent to the present site revealed remains of late Iron Age/Roman settlement and field systems. During the medieval and post-medieval periods the proposed development site appears to have been agricultural land. The desk-based assessment therefore concluded that the site has medium/high potential for Neolithic remains; medium/high potential for Iron Age/Roman remains; low potential for medieval remains and low potential for post-medieval remains.

#### **4. Landuse, topography and geology**

- 4.1 At the time of survey the proposed development area comprised a garden lawn, measuring c.50m east-west by 40m north-south. The area is walled on the east and west sides, with a hotel building along the north side and a hedge and fence along the southern side. Two areas of stone flagging, a gravel path and five drain covers were noted on the ground during the survey.
- 4.2 The survey area was level at a mean elevation of c.20m AOD.
- 4.3 The underlying solid geology of the area comprises Permian and Triassic sandstones, which are overlain by boulder clay.

#### **5. Geophysical survey**

##### ***Technique selection***

- 5.1 Geophysical surveying enables the relatively rapid and non-invasive identification of potential archaeological features within landscapes and can involve a variety of complementary techniques such as magnetometry, electrical resistivity, ground-penetrating radar and electromagnetic survey. Some techniques are more suitable than others in particular situations, depending on a variety of site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.
- 5.2 In this instance, based on the desk-based assessment and an evaluation in the field immediately west of the site, it was considered likely that cut features, such as ditches and pits, would be present on the site, and that other types of feature such as trackways, wall foundations and fired structures (for example kilns and hearths) might also be present. Given the shallowness of the targets and the non-igneous geological environment of the study area a geomagnetic technique, fluxgate gradiometry, was considered appropriate for detecting each of the types of feature mentioned above. This technique involves the use of a hand-held magnetometer to detect and record minute anomalies in the vertical component (gradient) of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation.

### ***Field methods***

- 5.3 A 20m grid was established across the survey area and tied-in to known, mapped Ordnance Survey points.
- 5.4 Measurements of vertical geomagnetic field gradient were determined using a Geoscan FM36 fluxgate gradiometer fitted with an ST1 sample trigger to enable automatic logging of the data. A zig-zag traverse scheme was employed and data were logged in 20m grid units. The instrument sensitivity was set to 0.1nT, the sample interval to 0.5m and the traverse interval to 1.0m, thus providing 800 sample measurements per 20m grid unit.
- 5.5 Data were downloaded on-site into a RM NoteBook computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

### ***Data processing***

- 5.6 InSite v.3 software was used to process the geophysical data and to produce a continuous tone greyscale image of the raw data. The results are shown in Figure 2, where the image has been imported into a digital plan supplied by the client. In Figure 2, positive magnetic anomalies are displayed as dark grey and negative magnetic anomalies as light grey. A palette bar relates the greyscale intensities to anomaly values in nanoTesla.
- 5.7 The following basic processing steps have been applied to the gradiometer data:

*DeSpike* replaces isolated spikes in the data with the mean of near-neighbours. Such spikes typically arise due to the presence of near-surface ferrous litter

*Match* adjusts for differences in mean data level between adjacent grids

*Merge* interpolates and combines grid data to form one array of regularly-spaced data at 0.125 x 0.125m intervals

### ***Interpretation: anomaly types***

- 5.8 A colour-coded geophysical interpretation plan is provided in Figure 3. The only type of geomagnetic anomaly detected within this small survey area is:

<i>dipolar magnetic</i>	paired positive-negative magnetic anomalies, which typically reflect ferrous and/or fired materials, including drains and other services.
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### ***Interpretation: features***

- 5.9 An interpretation plan is provided in Figure 4. The survey area is characterised by both concentrations and chains of intense dipolar magnetic anomalies, as well as discrete dipolar anomalies. A number of small, blank areas in the greyscale image indicate particularly high values, beyond the range of the instrument settings. Several of the linear anomalies are perpendicular to one



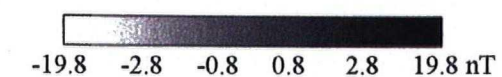


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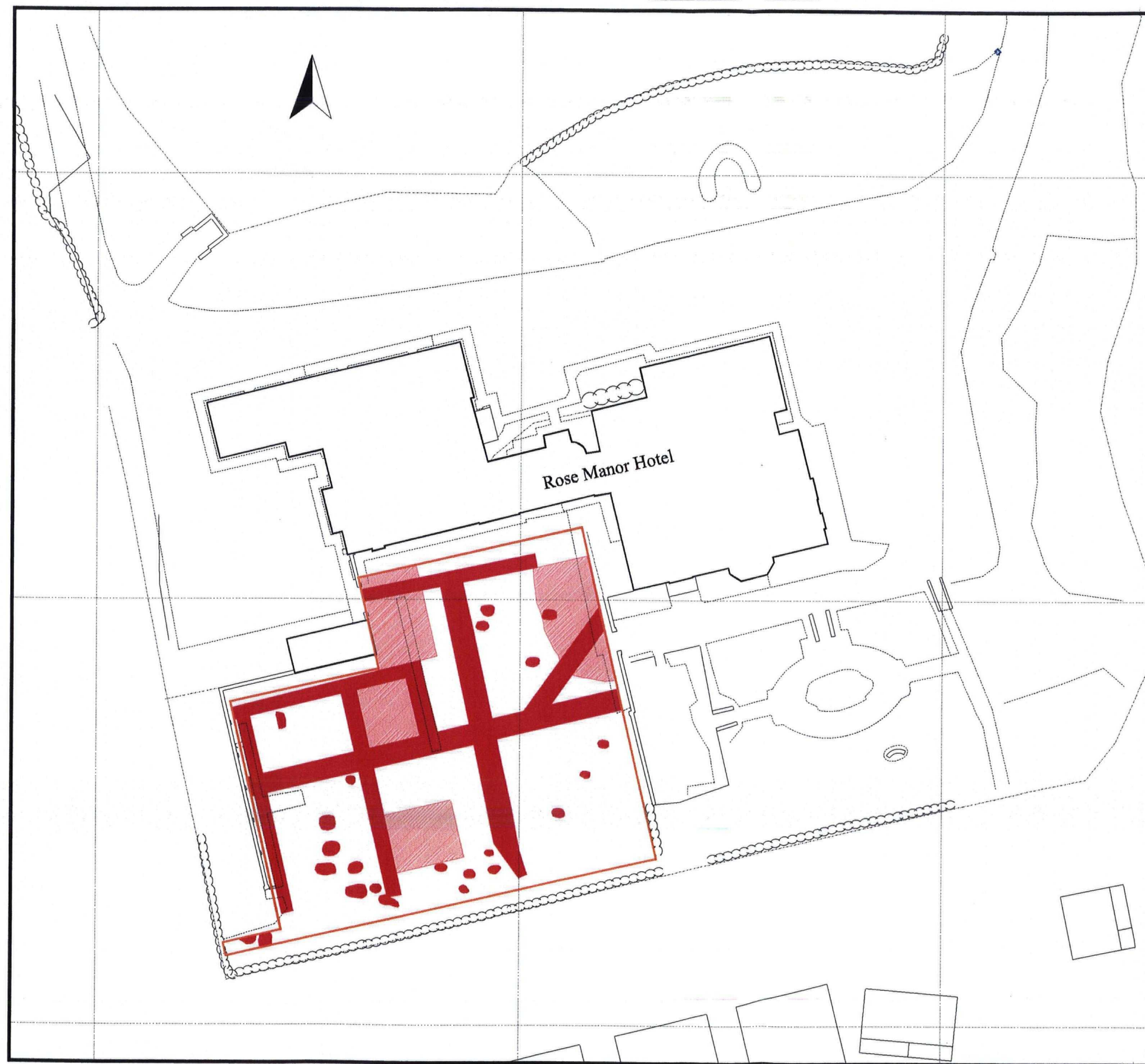
**Figure 2**  
*Gradiometer data displayed as a greyscale  
image*



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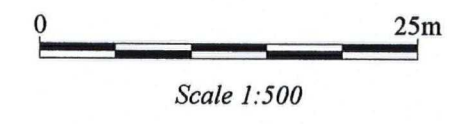



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Figure 3  
*Geophysical interpretation of the  
gradiometer data*

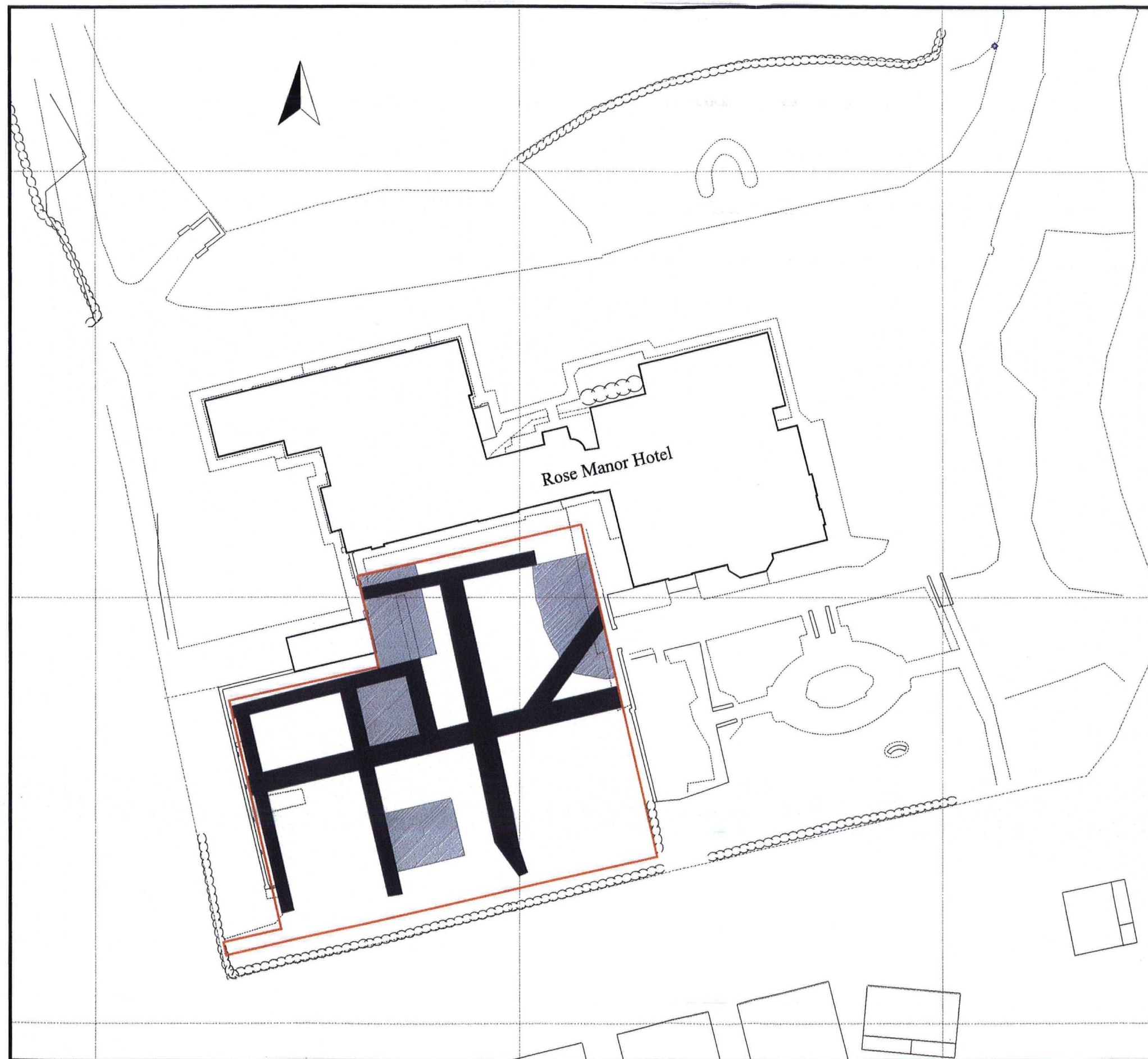


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 dipolar geomagnetic  
anomaly





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**Figure 4**  
*Interpretation of the gradiometer data*




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Scale 1:500

 pipes, drains and possible  
glasshouse foundations



another and may be linked. This type of anomaly typically reflects ferrous pipes. Up to seven such pipes or drains have been detected within the garden.

- 5.10 Small areas of intense magnetisation reflect the presence of ferrous drain covers and discrete ferrous items within the soil.

## **6. Conclusions**

- 6.1 A geomagnetic survey has been undertaken in the gardens of Rose Manor Hotel, Boroughbridge, in order to map any features of likely archaeological significance prior to proposed redevelopment of the area.
- 6.2 No features of likely archaeological significance have been detected by the survey. Upon completion of the survey the hotel proprietor informed the survey team that the area had previously housed several large potting sheds and greenhouses, which had water supplies and drains associated with them. It appears that the digging of trenches and the laying of pipes and drains may have destroyed most of any archaeological features that may otherwise have been present.

## **7. References**

- Archaeology Data Service (2001) *Geophysical Data in Archaeology: A Guide to Good Practice*. Arts and Humanities Data Service.
- CgMs (2001) *Archaeological desk-based assessment: Rose Manor Hotel, Boroughbridge, North Yorkshire*. Unpublished report, CgMs Consulting, London.
- English Heritage (1995) Research and Professional Services Guideline No.1, *Geophysical survey in archaeological field evaluation*. London.
- Institute of Field Archaeologists (1991) Technical Paper No.9, *The use of geophysical techniques in archaeological evaluations*. Birmingham.