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**Land West of Nosterfield Quarry**  
**Nosterfield**  
**North Yorkshire**

*Geophysical Survey*

*January 2008*

*Report No. 1755*

CLIENT  
**Mike Griffiths and Associates Ltd**

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**Land west of Nosterfield Quarry**  
**Nosterfield**  
**North Yorkshire**  
**Geophysical Survey**

*Summary*

*A geophysical (magnetometer) survey covering approximately 6 hectares was carried out on agricultural land west of Nosterfield Quarry, Nosterfield in advance of a proposed quarry extension. The survey has identified anomalies that are caused by former field boundaries, ploughing and geological variation. No anomalies considered likely to have an archaeological cause have been identified. On the basis of the geophysical survey the site is considered to have a low archaeological potential.*



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**Report Information**

Client: Mike Griffiths and Associates Ltd, Consulting Archaeologists,  
1 St George's Place, York, YO24 1GN

Report Type: Geophysical survey

Location: Nosterfield

County: North Yorkshire

Grid Reference: SE 2730 8140

Period(s) of activity represented: Unknown

Report Number: 1755

Project Number: 3202

Site Code: NSR07

Planning Application No.: Pre-determination

Museum Accession No.: -

Date of fieldwork: December 2007

Date of report: January 2008

Project Management: Alistair Webb BA MIFA

Fieldwork: Sam Harrison BSc MSc AIFA  
James Gidman BSc  
Emma Watson BSc

Report: Sam Harrison BSc MSc AIFA

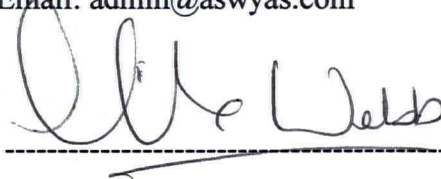
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Research: -

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## 1 Introduction and archaeological background

Archaeological Services WYAS was commissioned by Luigi Signorelli of Mike Griffiths and Associates Ltd. on behalf of their clients Tarmac Northern to carry out a geophysical (magnetic) survey on agricultural land west of the current sand and gravel quarry, approximately 1 kilometre north-west of Nosterfield, where it is proposed to expand the existing quarry (see Fig. 1).

The survey area comprised of 6 hectares of arable farmland and was bounded by a footpath to the west, a change of crop to the north-east and field boundaries to the north and south. In total an area of 5.8 hectares was surveyed. At the time of the fieldwork (between December 10<sup>th</sup> and December 13<sup>th</sup> 2007) the field was under a young cereal crop with 0.2 hectares unsuitable for survey (see Fig. 2) due to an area of overgrown set-a-side. No other problems were encountered during the survey.

The site is situated at 50m above Ordnance Datum (OD) rising steeply in the north-west corner of the site to 55m OD. The solid geology comprises Cadeby Formation (formerly Lower Magnesian Limestone) with a small strip of till drift down the middle of the survey area, a small pocket of glacial sands and gravels towards the north of the survey area and undifferentiated fluvio-glacial terrace deposits in the east that are overlain by soils classified in the Aberford association. These soils are described as shallow, well-drained, fine loams.

The site lies less than 0.5km to the south-east of the village of Well, which is associated to a Roman Bath House. The surrounding area is also associated with prehistoric activity, which has been explored by numerous archaeological investigations.

## 2 Methodology and presentation

The general aims of the survey were to obtain information that would contribute to an evaluation of the archaeological significance of the proposed quarry extension. This information would then enable further evaluation and/or mitigation measures to be designed in advance of the proposed extension.

More specifically the aims of the survey were to:-

- provide information about the nature and possible interpretation of any geophysical anomalies identified by the survey;
- determine the presence or absence of buried archaeological remains in the areas that would be affected by the proposed extension.

Detailed survey employs the use of a sample trigger to automatically take readings at predetermined points, typically at 0.25m intervals, on traverses 1m apart. These readings are stored in the memory of the instrument and are later downloaded to computer for processing and interpretation. Further details are given in Appendix 1. Detailed survey allows the

visualisation of weaker anomalies that may not have been readily identifiable by magnetic scanning.

A Bartington Grad601 magnetic gradiometer was used during the survey with readings being taken at 0.25m intervals on zig-zag traverses 1m apart within 20m by 20m grids. The readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation using Geoplot 3 software.

The survey methodology, report and any recommendations comply with guidelines outlined by English Heritage (David 1995) and by the IFA (Gaffney, Gater and Ovenden 2002). All figures reproduced from Ordnance Survey mapping are done so with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

A general site location plan, incorporating the 1:50000 Ordnance Survey mapping, is shown in Figure 1. Figure 2 shows the processed magnetometer data superimposed onto an Ordnance Survey map base at a scale of 1:5000. An inset shows the field boundaries within the site as shown on the first edition Ordnance Survey map. The processed (greyscale) and unprocessed (XY trace plot) data, together with accompanying interpretation diagrams, are presented in Figures 3 to 8 inclusive at a scale of 1:1000. The site has been split into two parts (northern sector and southern sector) to facilitate in the displaying of the data at the required scale of 1:1000.

Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the site archive.

*The figures in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All figures are presented to most suitably display and interpret the data from this site based on the experience and knowledge of Archaeological Services staff.*

### **3 Results and discussion**

The anomalies identified during the survey can be divided into several categories and are discussed below.

#### **Ferrous material/magnetic disturbance**

A number of ferrous ('iron spike') anomalies have been located within the site. These anomalies are indicative of ferrous objects or other magnetic material in the topsoil/subsoil and, although archaeological artefacts may cause them, they are more often caused by modern cultural debris that has been introduced into the topsoil, often as a consequence of manuring, public access or modern infilling. A small area of disturbance along the southern boundary is due to the proximity of a barbed wire fence.



### **Linear trends**

Numerous linear trends in the data have been identified across all parts of the site. To the east of the site a relatively strong anomaly extending from the north of the site through to the southern boundary on a north-west/south-east alignment can be seen to correlate with a former field boundary and tree line shown on the first edition mapping (see Fig. 2).

Perpendicular to this former boundary to the east are two other shorter linear anomalies aligned south-west/north-east, one to the northern end of the site and the other at the extreme southern end; these two anomalies are also caused by infilled boundary ditches shown on the first edition mapping. In the southern sector of the site an inverted L-shaped anomaly again locates part of a former field boundary.

Numerous other linear trend anomalies parallel with the existing and removed boundaries aligned north-west/south-east are caused by former ploughing regimes.

### **Geological Boundary**

Although not visible as a 'real' anomaly a difference in the magnetic background (soil noise) between the western and eastern halves of the site can be discerned with a much less variable background to the east of the site relative to that in the west. This variation is most noticeable on the XY trace plots where the individual traces are much flatter to the east of the site. The approximate boundary between the two zones has been shown on the interpretation plots as a dashed blue line, this boundary marking the change from the limestone solid geology to the west of the boundary line to the till and fluvo-glacial terrace superficial deposits to the east.

### **Geological Anomalies**

Several broad anomalies defined as areas of magnetic enhancement have also been identified. Perhaps the most prominent is in the north-western corner of the site where a curvilinear sub-circular anomaly can be clearly seen. Other smaller areas of enhancement can also be seen in the immediate vicinity including one in the centre of the curvilinear anomaly. This larger anomaly correlates with a small rise on the ground (see Plate 1). Whilst it might be tempting to interpret the upstanding feature and magnetic anomalies as indicative of an archaeological feature (a barrow? with an encircling ditch and central pit) it is considered more likely that the feature is natural in origin. Close examination of the geological map shows a very small area of glacial sand and gravel at this location and the feature is therefore interpreted as a deposit of moraine. The other areas of enhancement do not correlate with upstanding features but are also considered to be due to localised deposits of magnetic sands and gravels.

## **4 Conclusions**



The magnetometer survey has not identified any anomalies that are considered likely to be caused by sub-surface archaeological features or deposits although anomalies due to former field boundaries, ploughing and geological variation have been identified.

On the basis of the geophysical survey the site is considered to have a low archaeological potential.

***The results and subsequent interpretation of data from geophysical surveys should not be treated as an absolute representation of the underlying archaeological and non-archaeological remains. Confirmation of the presence or absence of archaeological remains can only be achieved by direct investigation of sub-surface deposits.***



Plate 1. View of site, looking south-east, with low mound in left foreground

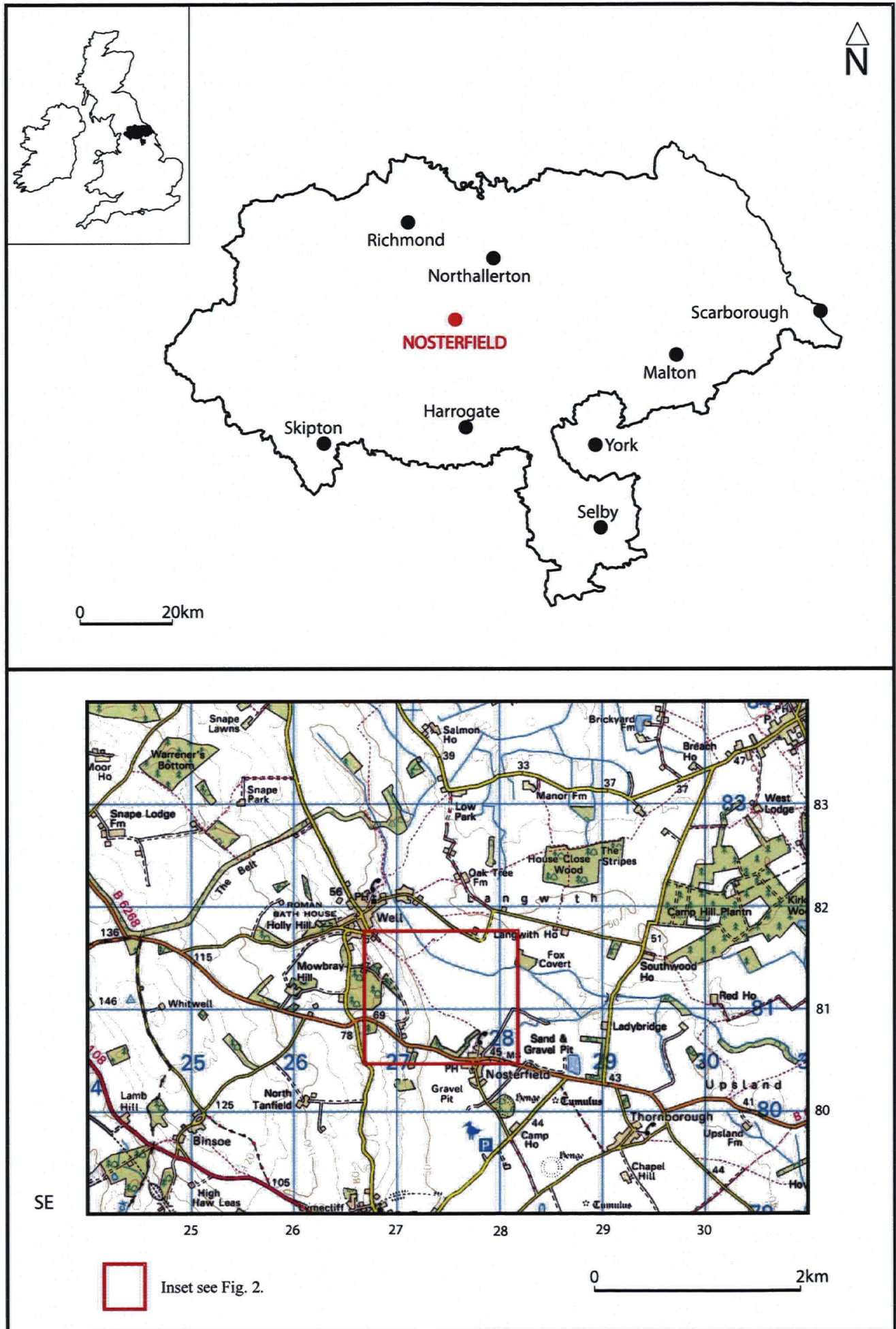


Fig. 1. Site location