



ARCHAEOLOGICAL  
SERVICES  
WYAS

**Hellifield Rural Environmental Centre**  
**Hellifield**  
**North Yorkshire**

*Geophysical Survey*

*August 2007*

*Report No. 1722*

CLIENT  
**Gordon Halton Homes**

# Hellifield Rural Environmental Centre

Hellifield

North Yorkshire

## Geophysical Survey

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ENY	3889
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### Summary

*A geophysical (magnetometer) survey, covering 5.7 hectares, was carried out at the proposed site of Hellifield Rural Environmental Centre. No anomalies have been identified on this site that are indicative of archaeological features although some small areas of enhancement are of unknown origin. Faint responses of extant ridge and furrow have been identified. On the basis of the geophysical survey the site is considered to have a low archaeological potential.*

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Archaeological Services WYAS

PO Box 30, Nepshaw Lane South, Morley, Leeds LS27 0UG

## **1. Introduction and Archaeological Background**

- 1.1 Archaeological Services WYAS was commissioned by David Hill, Chartered Surveyors, on behalf of their clients Gordon Halton Homes, to carry out a geophysical (magnetometer) survey at the proposed site of Hellifield Rural Environment Centre, North Yorkshire (see Fig.1).
- 1.2 The site consisted of three discrete locations covering areas to be developed for the construction of a hotel and a road to access a new environmental centre, (see Fig 2) The survey was centred at SD 846 570 and covered approximately 5.7 hectares. All locations comprised pasture fields surrounded by dry stone walls and fences. Between the development areas the ground falls away to an area of water-logged ground and a lake. A narrow tract of land running along the northern edge of the A65 had recently been planted with trees (see Fig 2).
- 1.3 The survey was carried out between August 6<sup>th</sup> and 13<sup>th</sup> 2007. No problems were encountered during the survey.
- 1.4 Topographically, the site is uneven and slopes down towards the lake and is situated approximately 150m above Ordnance Datum (OD). The underlying geology comprises carboniferous limestone overlain by soils classified in the Badsey 1 soil association. The soils are described as well drained calcareous fine loams over limestone gravel.
- 1.5 The site lies within an area of archaeological potential. To the north of the road corridor traces of ridge and furrow are visible. Extant archaeological features have been identified surviving as earthworks in the fields adjacent to the proposed development areas. Aerial photographic analysis has also revealed the possible remains of medieval, Roman and Prehistoric features in fields in the surrounding area, although not within the proposed development area itself.

## **2. Methodology and Presentation**

- 2.1 The general aim of the survey was to obtain information that would contribute further to an evaluation of the archaeological potential of the site by determining the presence or absence of buried archaeological remains in the proposed development area.
- 2.2 More specific objectives were to:-
- Provide information about the nature and possible interpretation of any magnetic anomalies identified by the survey.
  - Clarify the extent of any possible archaeological remains.
- 2.3 In order to achieve these aims it was proposed that detailed (recorded) magnetometer survey would be undertaken at the three locations of the proposed development (hotel, road corridor and environmental centre), an area of 5.7 hectares.
- 2.4 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.
- 2 5 A Bartington Grad601 magnetic gradiometer was used during the survey with readings being taken at 0.25m intervals on zigzag 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.
- 2 6 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)
- 2.7 A general site location plan, incorporating the 1:50000 Ordnance Survey mapping, is shown in Figure 1. Figure 2 shows the proposed development with the processed magnetometer data superimposed onto a digital map base at a scale of 1:4000. The processed (greyscale) and unprocessed (XY trace plot) data, together with accompanying interpretation diagrams, are presented in Figures 3-14 at a scale of 1:1000.
- 2 8 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.

### **3. Results and Discussion**

#### **3.1 General**

- 3 1 1 Numerous isolated dipolar ('iron spike') anomalies have been located across all of the survey areas. 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. The number and distribution of 'iron spikes' on this site is fairly typical of a field that has been under pasture for a period of years. Areas of magnetic disturbance are also common throughout the survey area. In general these anomalies are caused by the proximity of ferrous fences and gates.

#### **3.2 Environmental Centre**

- 3 2 1 A strong dipolar, linear anomaly runs across the proposed location of the environmental centre, aligned north-west/south-east in the western half of the survey area before changing direction to north/south to the east of the survey area. This anomaly is caused by a ferrous service pipe.
- 3 2 2 Heading in a west-north-west/east-south-east is a fragmented weak linear anomaly. This is most likely caused by ferrous material that has accumulated along the line of a former field boundary.
- 3 2 3 Along the southern survey boundary there is a disturbed linear anomaly that correlates with a footpath (see Fig. 2)

3.2.4 Four anomalies, characterised as small areas of magnetic enhancement, have been identified. The two most prominent, a horse-shoe shaped anomaly east of the service pipe and a strong magnetic discrete anomaly with a 'negative halo', could be archaeological in nature, perhaps being caused by a pit/s or areas of burning. However, given the lack of any other archaeological evidence a more prosaic explanation, infilled natural features or modern activity, could equally be the cause of the identified anomalies. The two small anomalies are considered most likely to have a geological cause.

### 3.3 Road Corridor

3.3.1 Two weak linear trends have been identified, aligned north/south, at the northern end of the road corridor (see Figs 6, 7 and 8). These anomalies are indicative of ridge and furrow ploughing which is evidenced by the slight earthworks still visible. The striped magnetic effect is due to the magnetic contrast between the partially infilled furrows and ridges.

## 4. Conclusions

4.1 No anomalies have been identified on this site that are considered to be definitely archaeological in nature. Archaeological potential for some of the identified anomalies is considered possible but the essentially random distribution of the discrete anomalies suggests that modern or natural causes for the observed anomalies are more likely.

4.2 It should also be noted that limestone geology is generally favourable for the ready identification of archaeological features by magnetometry, particularly enclosed settlement and field systems. Therefore the apparent absence of any anomalies indicative of such activity is considered to be a good indication of the low archaeological potential of this site, based on the results of the geophysical survey.

*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.*

*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.*

## ***Bibliography***

- David, A , 1995. *Geophysical Survey in Archaeological Field Evaluation Research and Professional Services Guidelines* No 1. English Heritage
- Gaffney, C , Gater, J and Ovenden, S. 2002 *The Use of Geophysical Techniques in Archaeological Evaluations*. IFA Technical Paper No. 6

## ***Acknowledgements***

### ***Project Management***

A. Webb BA MIFA

### ***Fieldwork***

T S Harrison BSc MSc PIFA

E. Heapy BSc

J Gidman BSc

### ***Report***

T. S. Harrison

### ***Graphics***

T. S Harrison

E Heapy

## ***Figures***

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## ***Appendices***

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*Appendix 2* Survey Location Information

*Appendix 3* Geophysical Archive