GSB Survey Report No. 2012/44

Dearne Hall Road, Low Barugh
Barnsley

Contents

Page 1	Background Project Details Aims Summary of Results
Page 2	Method Data Processing Interpretation General Considerations
Page 3	Survey Results – Magnetometer Survey
Page 4	Conclusions References
Appendix	Technical Information

List of Figures (Printed and on CD)

Figure 1	Site Location Diagram	1:50000
Figure 2	Location of Survey Areas	1:2000
Figure 3	Magnetometer Survey - Greyscale Plot	1:2000
Figure 4	Magnetometer Survey - Interpretation	1:2000

List of Archive Figures (on CD only)

Figure A1	Magnetic Data - Area 1: XY Trace Plot & Greyscale Plot	1:500
Figure A2	Magnetic Data - Area 2: XY Trace Plot	1:500
Figure A3	Magnetic Data - Area 2: Greyscale Image	1:500
Figure T1	Tie-in Diagram	1:2000

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Dates

Fieldwork: 28 August 2012
Report: 4 September 2012

Report Approved: Dr John Gater MIfA FSA

Background Project Details

NGR	SE 318 088
Location	Fields in Low Barugh, almost 4km north west of Barnsley town centre. The site is bound by properties along the A637 to the west and south and by the B6428 Dearne Hall Road to the north. A railway forms the eastern limit of the application area.
HER/SMR	South Yorkshire
District	Barnsley
Topography	Flat
Current Land Use	Arable
Soils	Largely unclassified ("Urban") but on the boundary of Dale (712a) and Conway (811b) associations, both of which are a combination of silty and clayey soils (SSEW 1983).
Geology	Bedrock is predominantly sandstone of the Haigh Moor Rock formation; no superficial deposits are recorded (BGS 2012).
Archaeology	Crop marks suggest a D-shaped enclosure, possibly Iron Age / Romano-British in date; a former railway branch ran across the southern edge of the survey area, whilst a canal and leat are known to cross the northernmost field (Oliver Cooper, *pers comm.*).
Survey Methods	Detailed magnetometer survey (fluxgate gradiometer)

Aims

To locate and characterise any anomalies of possible archaeological interest within the study area. The work forms part of a wider archaeological assessment being carried out by **Northern Archaeological Associates** on behalf of **Hallam Land Management / Commercial Estates Project.**

Summary of Results

The D-shaped enclosure identified from cropmark evidence has proved to be just part of a complex of enclosures and boundary ditches. It has been difficult to definitively interpret features within many of the enclosures due to, presumably later, ridge and furrow. There is some evidence that there may have been industrial activity in antiquity given the strength of response from some of the ditches. A zone of increased magnetic response, delimited by a ditch-like anomaly, is suspected to have an anthropogenic connection but whether this is simply differing agricultural practices or small scale industrial activity remains unclear. Interpretation in the northern field was limited to defining a known roadway, canal and leat owing to the strength and extent of ferrous disturbance associated with them. Within the 'noise' a rectilinear arrangement of responses may indicate a small structure contemporary with the road and waterways whilst anything pre-dating these will have been masked.

Method

All survey grid positioning was carried out using Trimble R8 Real Time Kinematic (RTK) VRS Now dGPS equipment. The geophysical survey areas are georeferenced relative to the Ordnance Survey National Grid by tying in to local detail and corrected to the 1:10,000 scale OS raster image provided by the client. These tie-ins are presented in Figure T1. Please refer to this diagram when re-establishing the grid or positioning trenches.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1m	0.25m

Data Processing

Data processing was performed as appropriate using both in-house and commercial software packages (Geoplot) as outlined below.

Magnetic Data
Zero Mean Traverse, Step Correction (De-stagger) and Interpolation (on the Y axis).

Interpretation

When interpreting the results several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to very specific known features documented in other sources, this is done so (for example: *Abbey Wall*, *Roman Road*). For the generic categories levels of confidence are indicated, for example: *Archaeology – ?Archaeology*. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *?Archaeology*. Details of the data plot formats and interpretation categories used are given in the Appendix: Technical Information at the end of the report.

General Considerations

Site conditions were very good for the most part, although some areas were overgrown and very boggy. Survey was conducted as far into these areas as physically possible whilst still allowing for safe and effective data collection. At the client's request, a strip across the southern half of the site was not surveyed as this is known to have been the route of a former railway line and would therefore be magnetically disturbed to such a degree that no meaningful data could be collected.

1.0 Survey Results - Magnetometer Survey

Area 1

1.1 At first glance the data from this area appear to have been completely swamped by ferrous disturbance, even when plotted across a very broad range (see inset, Figure 3). The noise can be divided into three bands of magnetic disturbance relating to (from north to south) a former roadway, a mill leat and a canal, all shown on first edition 1854/5 Ordnance Survey mapping (OS 2012) with less intense disturbance between them. The latter disturbance is probably a result of works to fill in the waterways. A potential rectilinear shape [**1**] in the noise may be evidence of a small structure relating to the leat or former roadway, but given the levels of disturbance this interpretation is somewhat speculative. There is also a broad magnetic 'halo' from a large electricity pylon in the south west corner of the field.

Area 2

1.2 The data from the larger field are more complex; the D-shaped cropmark relates to the south western enclosure [**2**] which has now been revealed as just part of a network of enclosures and boundary ditches, with evidence for extensive ridge and furrow cultivation. A second enclosure [**3**] appends the southern side of [**2**] with a faint impression that this, in turn, abuts another strong set of responses [**4**]; these may well form another enclosure however the majority of it lies beneath the line of the former railway. Internal detail of [**2**] is somewhat masked by the presence of what appears to be ridge and furrow cultivation. The linear bands run through the enclosure and also possibly part of the next one, leaving a question mark over the origin of anomalies within and adjacent to [**3**], especially near [**5**]. In this latter area, the ridge and furrow is less pronounced and there is a hint of a small enclosure, but this could simply be a facet of the patterning produced by the, presumably later, cultivation. Similar difficulties are experienced within and around the putative enclosure formed by anomalies at [**4**].

1.3 North east of the D-shaped enclosure [**2**], are further ditch type anomalies that appear to form rectilinear parcels of land, potentially on the opposite side of a trackway of some description [**6**]. A very strong linear anomaly [**7**] seems to cut across the rectilinear enclosures, including the poorly defined linear responses [**8**]. The very strong nature of [**7**] implies that it has a highly magnetic fill, possibly waste product from some form of industrial process.

1.4 Moving east, another set of ditch-like responses [9] seem to coincide, potentially forming the end of a trapezoidal enclosure. To the north, parallel linear anomalies, associated with ridge and furrow cultivation, become increasingly strong and their alignment may be hiding enclosure divisions. For example, it is unclear whether linear response [10] is a land division or a particularly enhanced cultivation furrow. The magnetic strength of the furrows may indicate that they were cut through existing archaeological deposits, thus producing a more enhanced effect compared with those examples in the east of the data set. However, this could also be an indication of the relative antiquity of the cultivation – those in the west may pre-date those in the east, for example; either way there is a marked difference between the two sets of furrow lines.

1.5 The ridge and furrow in the north of the area seems to be bound by the linear anomaly [**11**], potentially having been cut at a later date by the *Old Field Boundary* [**12**] which is shown on early Ordnance Survey mapping (OS 2012) of the site (other linear anomalies correlating with this map evidence have been categorised accordingly). That said, some or all of these boundaries may respect land divisions of some antiquity, and indeed further south along [**12**] the line doubles, perhaps indicate a former trackway. The cause of the increased response around the boundary at [**13**] is unclear.

1.6 A large zone of increased magnetic response [**14**] is bound by linear anomaly [**15**] suggesting that the enhancement is not merely natural; it may indicate a different agricultural regime at some point in antiquity or that some low level industrial activity took place in this region. It should be noted that the large ferrous anomaly [**16**] is coincident with an electricity pole.

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1.7 There are a number of anomalies that are difficult to define, with their response character straddling the definitions of archaeological and natural type features (i.e. pits versus natural soil variation) or archaeological and ferrous features (e.g. small industrial features versus deeply buried modern metallic debris). For the most part, those in close proximity to other clearer archaeological features have been categorised as *?Archaeology* whereas more isolated or particularly borderline cases have been interpreted as *Uncertain Origin.*

1.8 Ferrous responses adjacent to boundaries are due to metal fences. Smaller scale ferrous anomalies ("iron spikes") are present in the data, their form best illustrated in the XY trace plot; these responses are characteristic of small pieces of ferrous debris in the topsoil and are commonly assigned a modern origin. The most prominent of these are highlighted on the interpretation diagram.

2.0 Conclusions

2.1 The D-shaped enclosure identified from cropmark evidence has proved to be just part of a complex of enclosures, boundary ditches and ridge and furrow spanning much of the site. There certainly seems to be more than one phase of activity and the ridge and furrow is particularly enhanced along the eastern half of the survey area suggesting that it may be cutting through earlier deposits. In places the ridge and furrow has complicated the identification and interpretation of any features within the recorded enclosures. The origin of a zone of increased magnetic response in the southern field is unclear, but given that its limits are defined by a ditch-like anomaly, it is suspected that some form of anthropogenic activity is the cause.

2.2 The data from the northern field are dominated by magnetic noise associated with a roadway in the north and, south of this, a leat and canal. Ferrous responses spread between them are likely to be a result of the work to back-fill the latter two features. Within this 'noise' a rectilinear arrangement of response may indicate a small structure contemporary with the road and waterways. Responses from anything pre-dating these will have been lost in the magnetic disturbance.

References

BGS 2012	British Geological Survey, Geology of Britain Viewer http://mapapps.bgs.ac.uk/geologyofbritain/home.html 1:50,000 scale geology, centred on Low Barugh, Barnsley.
OS 2012	http://www.old-maps.co.uk 1854-1855, 1:10,560, Yorkshire, centred on 431700, 408690. Accessed 30/08/2012.
SSEW 1983	*Soils of England and Wales. Sheet 1, Northern England*. Soil Survey of England and Wales. 1983.