

Barnsdale bar Project File
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A Geophysical Survey at Kirk Smeaton Quarry Barnsdale Bar Phase II

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(WYAS RA22)



West Yorkshire
Archaeology Service

A Geophysical Survey at Kirk Smeaton Quarry, Barnsdale Bar Phase II

Introduction

Over a period of five days, two officers of the West Yorkshire Archaeology Service (WYAS) undertook a geophysical survey on the proposed quarry extension site at Barnsdale Bar (see previous reports), for Drinkwater Saby. The survey was conducted in December 1989 and January 1990.

The original survey detected a ditch system and subsequent trial excavation confirmed the existence of this, as well as revealing a crouched inhumation, probably of prehistoric origin. As a

result of this work, it was decided that further geophysical prospection should be undertaken on the remaining area of the proposed quarry extension. The original survey area of 1.08 hectares was extended by 1.62 hectares so that a total area of 2.7 hectares was surveyed (Fig. 1).

The job specification prepared by the Archaeology Unit of North Yorkshire County Council included a provision for high resolution surveying in those areas where the normal survey indicated anomalies of special interest. An additional 800 square metres were surveyed under these conditions (see Results below).



Fig. 1: The position of the proposed quarry site, and the survey area. The hatched area had topsoil removed prior to the survey.

Method

As with the previous survey, a grid was constructed over the survey area and readings were taken at one or half metre intervals, as required, using a parallel traverse.

Apparatus

The apparatus did not differ from that used in the previous survey, and readers are referred to the relevant report for this information. However, for the high resolution survey the gradiometer was programmed for 1nT at half metre intervals with

Results

The grey scales print-out on Figure 2 shows the total survey area, and a summary of the main results is produced below:

The extent of the field system has been enlarged so that the ditches which are attached to the major east-west spinal ditch (A) can be seen to continue beyond the edge of the survey area.

An additional feature is situated at the north-western corner of the survey. Two sides of a possible enclosure (B) are clearly visible, and could represent a free-standing feature, without any physical association with the field system described above.

In the eastern and central sector of the survey a series of faint parallel lines (C) may have an association with the field system, but the possibility of medieval ridge and furrow should also be considered.

A discrete group of high readings (D) in the south-east sector of the survey would at first appear to represent a spike, caused by surface metal. The readings, however, which reach a maximum of 18nT, are distributed within an area of three square metres which is too widespread for a small metallic object.

In Figure 3 the area of high resolution surveying is shown. Two 20m grid squares were selected from the main survey area close to the position of the crouched inhumation found during trial excavations.

The increased resolution of the survey clarified the presence of a sub-circular anomaly (E) to the south of the survey area, with a possible ditch (F) running northwards from it.

Fifteen metres to the east of this, the linear anomaly of a field boundary ditch (G) was enhanced by the survey. The ditch appears to be cut at its northern end by a dark line (H), approximately 20m long and curving northwards to the edge of the survey.

Discussion

By enlarging the survey area it is clear that a more complete picture of the field system has emerged. The ditches which are attached to the major east-west ditch continue beyond the edge of the survey area. Separate from these, however, is the corner of a possible enclosure in the north-west sector of the survey. High resolution surveying in this area was not possible due to a shortage of time.

In the south-east corner, the square of high readings (D) could be caused by buried metal, but sub-surface burning (e.g. a hearth, oven or kiln) could create a similar anomaly.

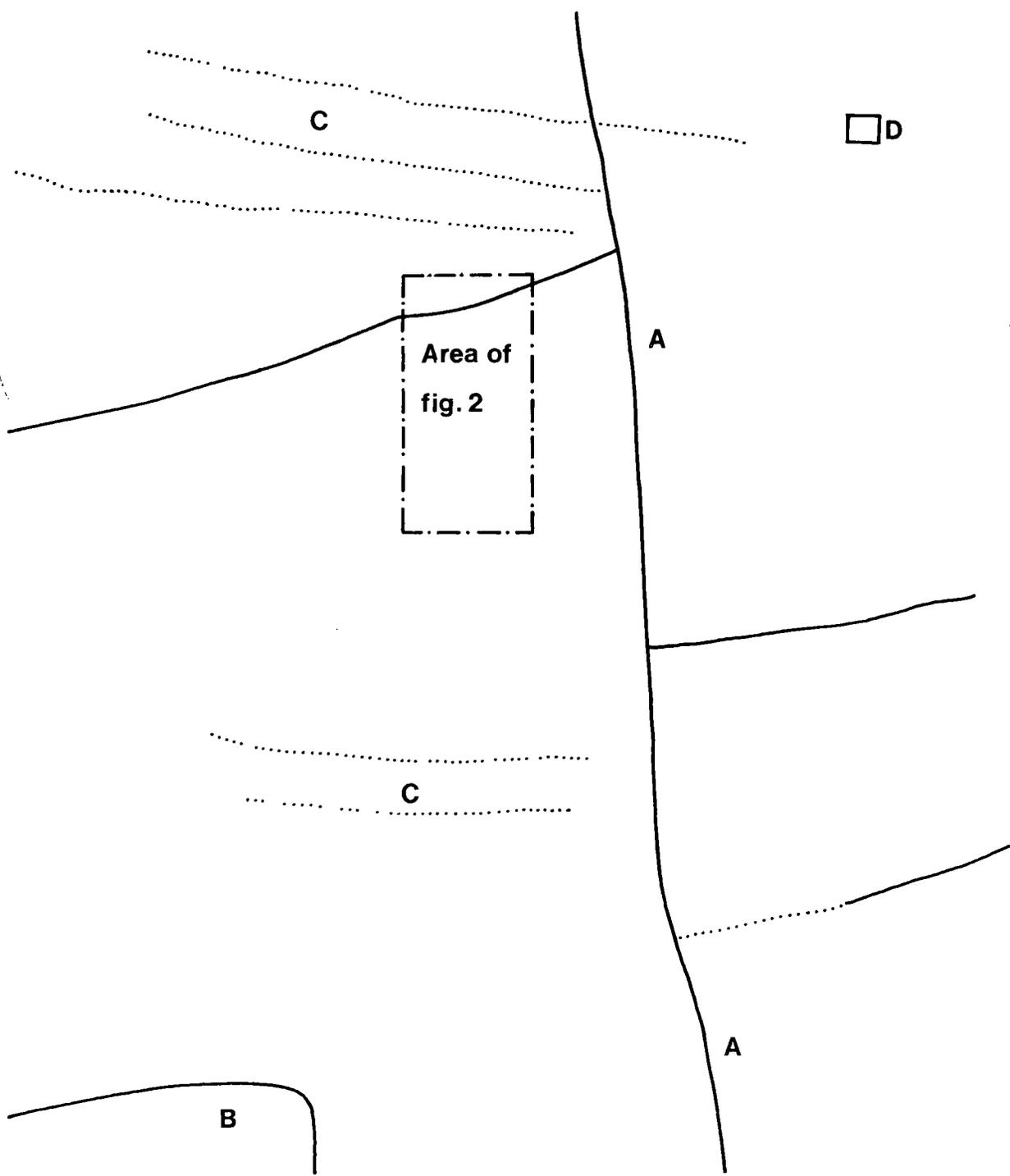
In the area where high resolution surveying was conducted, however, the enhancement of anomalies has enabled a clarification of otherwise indeterminate features. The sub-circular feature (E), which appeared as an indistinct anomaly on the first survey, resolved into a stronger feature which may be related to burial activity. The crouched inhumation found during trial trenching was situated only 15 metres to the south of this anomaly.

The ditch running diagonally across the eastern sector of the survey (G) again appears as a stronger feature, and the serrated effect could be a result of plough damage to the lip of the ditch.

A feature which did not appear on the first survey is suggested by a thin dark straight line (H) which curves towards the northern edge of the survey area. Close examination shows that where this intercepts the diagonally aligned ditch, the dark line obscures the ditch. It is possible that this darker line of low value readings is a stone wall which overlies the ditch.

Only anomalies whose signal strength and/or shape suggest that they are of archaeological significance have been discussed above. Other features of an archaeological nature may be present, but have remained undetected by the gradiometer. The apparently low magnetic susceptibility of the soil is not conducive to the detection of small, shallow features.

P. Abramson
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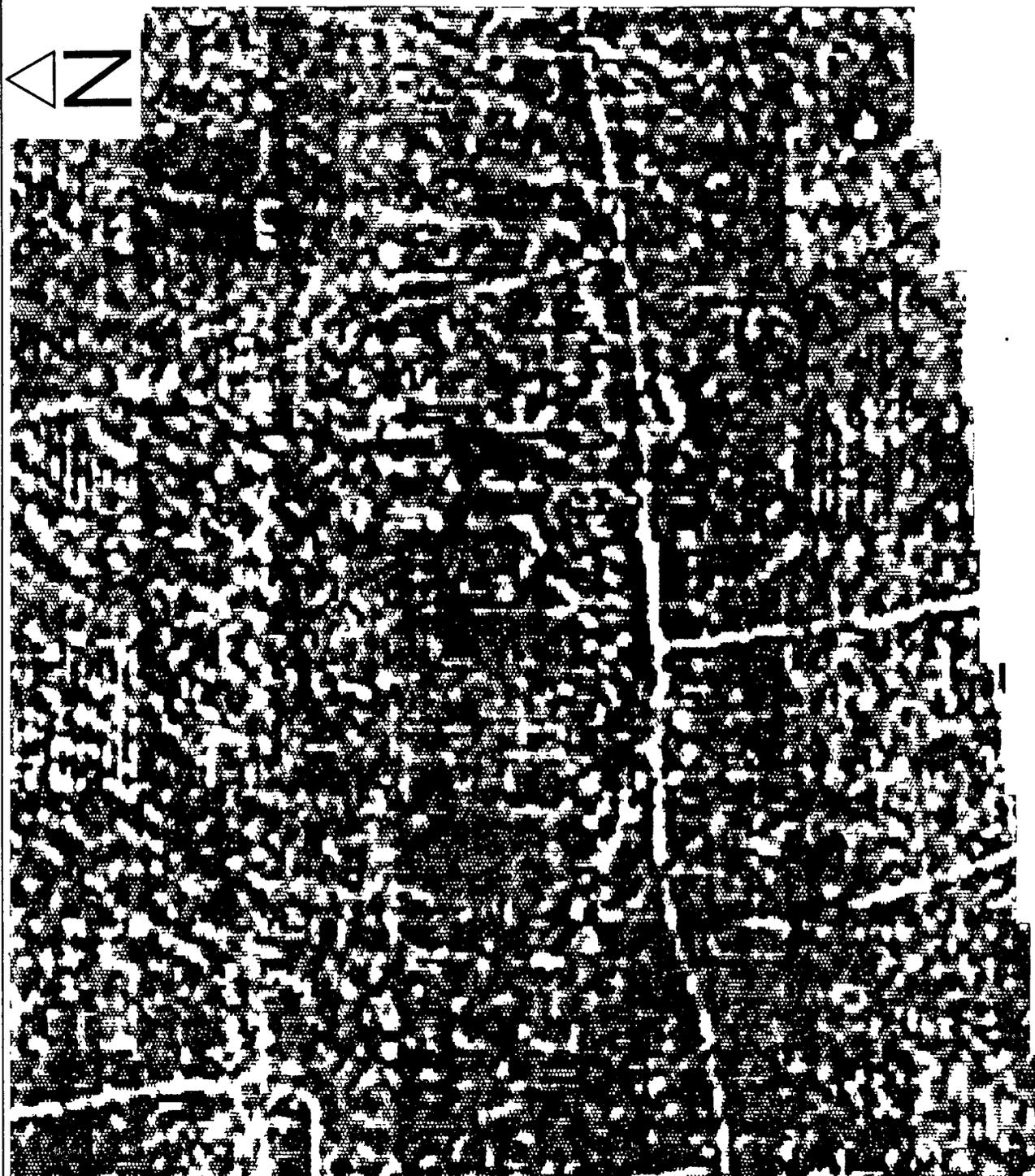


Fig. 2: The total survey area with major anomalies superimposed. (Scale 1: 950)

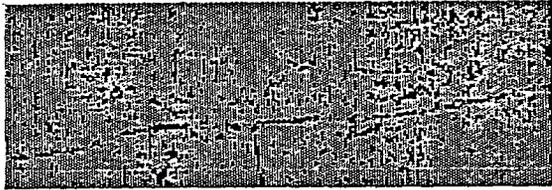


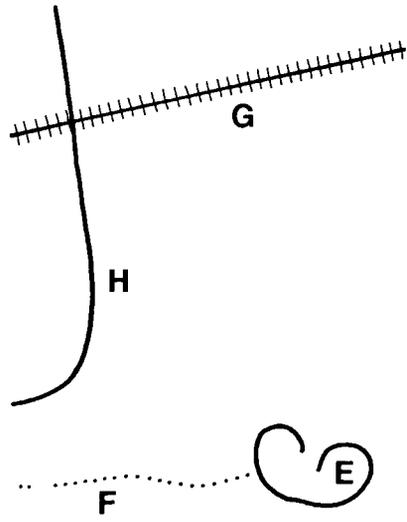
Fig. 2a. A dot density print-out of the data.



Fig. 2b A grey scale print-out of the data



Fig . 2c. An enlarged grey scale print-out of the data shown in Fig 2b. The interpretation of the data is given in the results section.



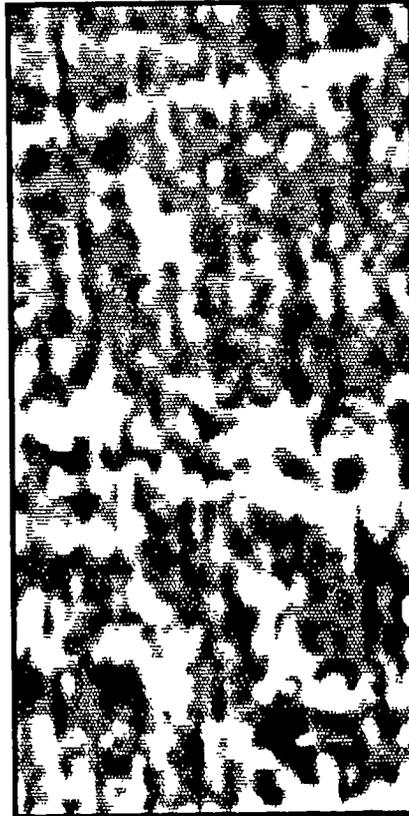


Fig. 3: The area of high resolution surveying with major anomalies superimposed. (Scale 1: 375)