SWARKESTONE QUARRY, BARROW-UPON-TRENT, DERBYSHIRE
SUMMARY OF ARCHAEOLOGICAL WORK
1995-6

TRENT & PEAK
ARCHAEOLOGICAL TRUST

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SUMMARY OF ARCHAEOLOGICAL WORK, 1995-6

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CONTENTS

LIST OF TEXT FIGURES

1. Introduction

A summary is provided in this document of all archaeological work carried out in the financial year 1995-6 in the western extension of Swarkestone Quarry, Derbyshire. This work was funded by Redland Aggregates Ltd., to whom thanks are here expressed; particular thanks are extended to Mr. M. Leivers and Mr. T. Sporne for expediting this work, and to Mr. S. Childs for assisting with publicising the Open Day. Mr. D.L. Walker provided much helpful advice during the setting up and running of this project. Thanks are also extended to Dr. D. Barrett, Derbyshire County Archaeologist, for his advice during the course of this project, and to the farmer, Mr. W. Atkin, for facilitating access.

The boundaries of the sites to be preserved *in situ* were surveyed by S. Malone, based upon cropmark plots prepared by K. Challis. The watching brief was carried out jointly by L. Elliott and C. Abbott. Geophysical survey prior to the excavation of the ring-ditch at Fernello Sitch (SMR 3815) was carried out by Oxford Archaeotechnics under the direction of A.E. Johnson. The excavations of SMR 3815 were directed by DK, assisted by TM (Project Supervisor) and M. Southgate (Assistant Project Supervisor) and the following Field Assistants: J. Barnett, C. Bevan, P. Caldwell, L. Hunt, K. Edwards, J. Morden, J. Thomas and D. Walker; J. Schmidt and A. Morgan assisted as volunteer excavators. Geomorphological advice was provided by Dr. A.J. Howard and specialist information on soils by Dr. M. Canti. A. Reed assisted in the on-site conservation of one of the cremations. Dr. N. Debenham took on-site measurements for thermoluminescence dating of burnt stones. E. Appleton assisted in finds processing and in the preparation of the finds data base. 16720

2. Progress of Archaeological Work

Archaeological work was carried out in four stages, as follows:

2.1. Demarcation of Boundaries of Sites 16709a-c.

The boundaries of SMR Sites 16709a, 16709b and 16709c were demarcated on the ground in July, 1995 by wooden pegs placed at each corner of a square or rectangular area. The pegs were located by S. Malone, employing an EDM, and were each allocated ten-figure National Grid References. These areas were positioned so as to provide a 5m stand-off from the ditches demarcating SMR

16709a and 16709b and a 3m stand-off from the pit alignment SMR 16709c. The protected areas were subsequently fenced by the Company, in order that the archaeological remains be preserved *in situ*. A plan is enclosed of the digitised cropmark plots, detailing the grid co-ordinates of each of the protected areas (Fig.2).

2.2. Zone 1 Watching Brief.

A watching brief was carried out by L. Elliott and C. Abbott in September 1995 to establish whether archaeological deposits or features were disturbed by fence construction around the above sites. The opportunity was also taken to determine whether the north-south pit alignment which was recorded in the eastern part of Zone 1 continued north or south of the gravel island which it is known to have traversed, and in particular its relationship to alluvium; aerial photographs show the line of pits terminating at the interface with alluvium, thus raising the possibility of burial beneath this more recent deposit.

2.3. Geophysical Survey of SMR Site ~~3815~~. 16720

A geophysical survey was carried out of the ring-ditch and its immediate environs, with the aim of establishing, prior to the formulation of a detailed excavation design, whether other features could be detected in the immediate vicinity of the ring-ditch. This work was carried out by Oxford Archaeological Associates Ltd., and is described in an appendix to this report.

2.4. Excavations of SMR Site ~~3815~~. 16720

The main phase of excavation commenced in the week beginning 16th October, 1995, and ended on 23rd December, 1995. Adverse weather conditions in the final week prevented completion of all aspects of the fieldwork before Christmas, and several additional days were worked on site in the two weeks commencing 8th January, 1996. An Open Day was held on Sunday 10th December, attracting some 500 people, and provided a valuable opportunity to inform local communities and other interested members of the public of archaeological work in this area. Post-excavation work on this site is in progress, and in the final section a timetable for the completion of this work and for the preparation of a report to publication standards is submitted.

3. Summary of Results

3.1. Zone 1 Watching Brief. L. Elliott

Pit Alignment (SMR 16709c)

A foundation trench for the planned fencing posts, *c*.0.7m deep by 0.2m wide, was excavated by the contractors around the pit alignment. Despite the limited size of the post-trench and the dryness of parts of the exposed sections, two features were detected. On the north side, the post-trench exposed the upper fill of one of the pits of the alignment. The pit was up to 0.9m wide and was exposed to a depth of 0.30m in the north facing section of the post-trench. The pit was observed clearly in plan in the bottom of the trench, and did not extend to the south-facing section (see Fig. 2). The pit was filled with a very dark grey-brown sandy clay, contrasting with the orange-brown sandy clay loam into which the feature had been cut. The pit fill was obscured by a layer of orange-brown sandy loam, up to 0.1m thick, beneath *c*.0.2m of grey-brown sandy loam topsoil. The thin layer beneath the topsoil corresponds with a similar layer recorded during the archaeological evaluations of 1990, and may have been formed during medieval and later ploughing of the site.

No features were detected at the southern end of the pit alignment, implying either that the pit alignment had terminated here or that the narrow post-trench coincided with a gap between two pits.

The north-south post-trenches provided a useful geological section across the gravel island which was traversed by the pit alignment. The level of the underlying gravel rose gradually towards the centre of each section, but at either end the surface dipped towards zones of relict river channels (Fig.1). It was not possible, unfortunately, to establish whether the pits were sealed by alluvial deposits associated with these features. A feature containing a dark brown sandy clay fill was recorded in both faces of the post trench on the west side of the pit alignment. This feature was cut into orange-brown sandy clay loam, and was obscured by a thin layer of orange-brown sandy loam equivalent to that recorded above the fill of the northernmost pit of the pit alignment; it was *c*.1m wide at the top, narrowing towards the base to 0.2m,

and was visible in plan across the entire width of the trench. This feature could be related to a shallow L-shaped feature detected in the 1990 evaluation (Kinsley, 1992, 1: Trench 08), but further excavation would be required to test this. Unfortunately, work on the erection of the fence prevented any recording of this feature beyond a context description and photography.

Square Enclosures (16709a) and Double Ring-Ditch (16709b)

No archaeological features were recorded during topsoiling around these two sites or within their respective post-trenches. Some modern disturbance, including deposits of stone and brick, was found on the north-eastern side of the monument; this corresponds with an area known to have been disturbed by small-scale quarrying, and may represent backfilling of quarry hollows.

3.2. Geophysical Survey

The methodology and the results of this survey are described in detail in an appendix to this report, and are discussed where relevant in the following section.

3.3. Excavation of Ring-Ditch (SMR 16729 ~~3815~~)

Excavations within this Designated Area have revealed important evidence of settlement and burial in the later Neolithic, Bronze Age and Iron Age periods, and have added significantly to our knowledge of prehistoric land use in this stretch of the Trent Valley.

Excavations focussed upon a circular single-ditched enclosure ('ring-ditch') identified originally from air photographs. The ring-ditch was located precisely by gradiometer survey, and a 1x40m west-east trench was then excavated manually across the diameter of the enclosure to establish the quality of preservation and the recommended depth of machine-stripping. A 40m x 40m trench was subsequently excavated, centred upon the ring-ditch, with the aim of providing a complete plan of the monument and of other archaeological features in its immediate vicinity. All archaeological features which could

be identified within the ring-ditch were fully excavated or half-sectioned; sufficient sections were cut through the enclosing ditch to determine its character and its stratigraphic relationships with other features and to obtain artefactual evidence of date (Fig.3).

The ring-ditch enclosed an approximately circular area *c.*22m in diameter, and averaged *c.*0.5m deep by 1-2m wide. It appeared to have been dug once and then allowed to silt naturally, and enclosed an area preserving a minimum of two cremation pits datable to the later Neolithic or earlier Bronze Age. One of these pits yielded a collared urn containing cremated human remains, while the other contained an unaccompanied cremation. Charcoal associated with these burials may permit radiocarbon dating of the remains. Several other small pits within the ring ditch, some also yielding late Neolithic/ Early Bronze Age pottery and flintwork, might also represent the truncated remains of cremations. A linear gully which was recorded near the centre of the ring-ditch yielded an especially rich collection of pottery and flintwork of the later Neolithic/ early Bronze Age period. The function of this gully remains uncertain, but traces survived within it of possible post foundations, implying perhaps that it had originally held upright timbers. The burials may have been sealed by a mound, but the deep penetration of ridge and furrow across the enclosed area raises the possibility that the site had been defined solely by a ditch and perhaps also by an inner/outer bank - recalling thereby the better known Bronze Age ring-cairns of the Peak District.

A dense pattern of pits, post-holes, ditches and gullies was recorded to the south and east of the ring-ditch. Most of these yielded no datable artefacts, but discoveries in some of rare Iron Age or Romano-British sherds may imply later activity in the immediate vicinity of the monument. These features included two probable cooking pits, implying domestic activity, but although settlement is implied it seems likely, given the likelihood of extensive winter flooding, that any occupation had been of a seasonal nature - perhaps associated with the movement of stock to the summer pastures of the floodplain. The most significant discovery away from the ring-ditch was of a double pit alignment in the south-east corner of the trench. This comprised two parallel lines of pits, the southernmost of which had been cut by two chronologically successive parallel gullies. The pit alignments are unlikely to have been contemporary, and suggest a major territorial boundary which had

taken a variety of forms over time. The pit alignments cannot be closely dated, but a first millennium BC date, broadly contemporary perhaps with the pit alignment investigated during the Zone 1 Watching Brief (Site 16709c), seems likely. It is hoped that the proposed watching brief during gravel extraction in Zone 2 will permit further investigation of the course and date of the pit alignment.

The excavation yielded a valuable collection of late Neolithic/ Early Bronze Age pottery and flintwork, together with a large quantity of fire-cracked pebbles (many probably related to cooking activity) and miscellaneous lithic artefacts (including a skerry slab utilised probably as a whetstone). Samples were taken for charred plant remains, while samples have also been retrieved for radiocarbon dating (most notably from the cremations) and for thermoluminescence dating (fire-cracked pebbles from two possible cooking pits). Other environmental remains were not preserved within the excavated features.

4. Current and Projected Expenditure

The sum agreed for the excavation and post-excavation of SMR 16720 3815, totalling £41,916.56, together with £2,590 to cover the costs of preliminary site visits, survey of fenced areas around Designated Areas 16709a-c and the Watching Brief in Zone 1, has been paid by the Company; these sums include an adjustment for changes in the RPI (3.6%) since 14.10.94. Total expenditure to 30.3.96 was £36,240.91. It is estimated that all of the remaining funds will be required for the completion of specialist analyses of the artefacts and environmental remains, the publication report (for submission to *Derbyshire Archaeological Journal*) and final editing of the archive (the latter now completed, apart from final editing prior to submission to Derby Museum). The Company will be kept fully informed of any changes in these estimates.

5. Post-Excavation Timetable

The processed site archive has been completed (context descriptions; lists of finds, samples, photographs and drawings), together with an initial flotation of samples collected for the investigation of preserved charred plant remains. The final site report can only be prepared after the completion of specialist analyses of the finds and environmental samples, radiocarbon dating and thermoluminescence dating. These specialist analyses should be completed by the end of July, 1997, and the final report, for submission to *Derbys. Arch Journal* should be completed by March, 1998. This timetable reflects the need to accommodate work within the timetables of other specialists, and for the final report to be submitted to academic referees and for their comments to be incorporated in the text.

A Gantt chart, summarising the proposed timetable, is enclosed below (Fig.4).

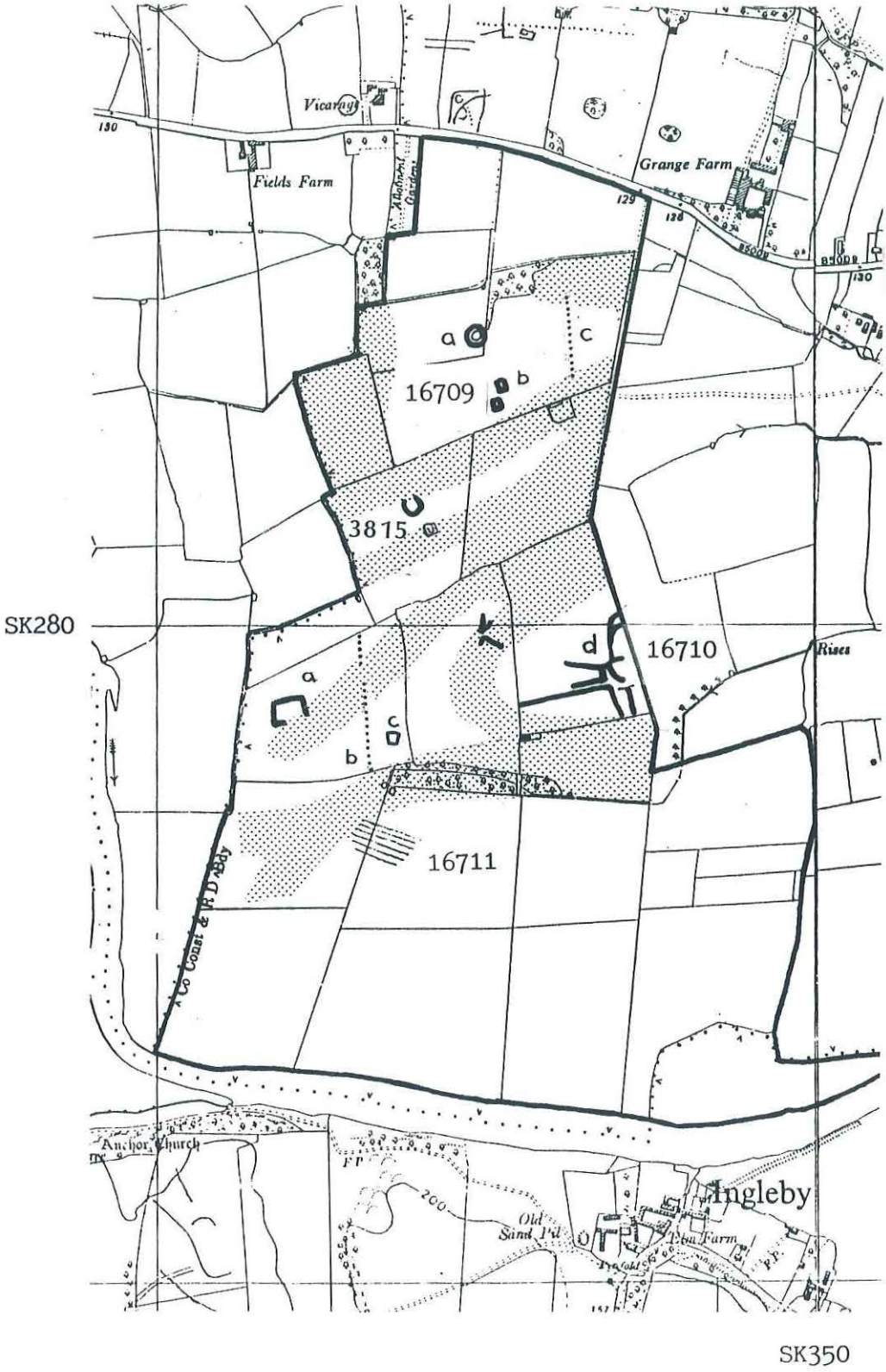
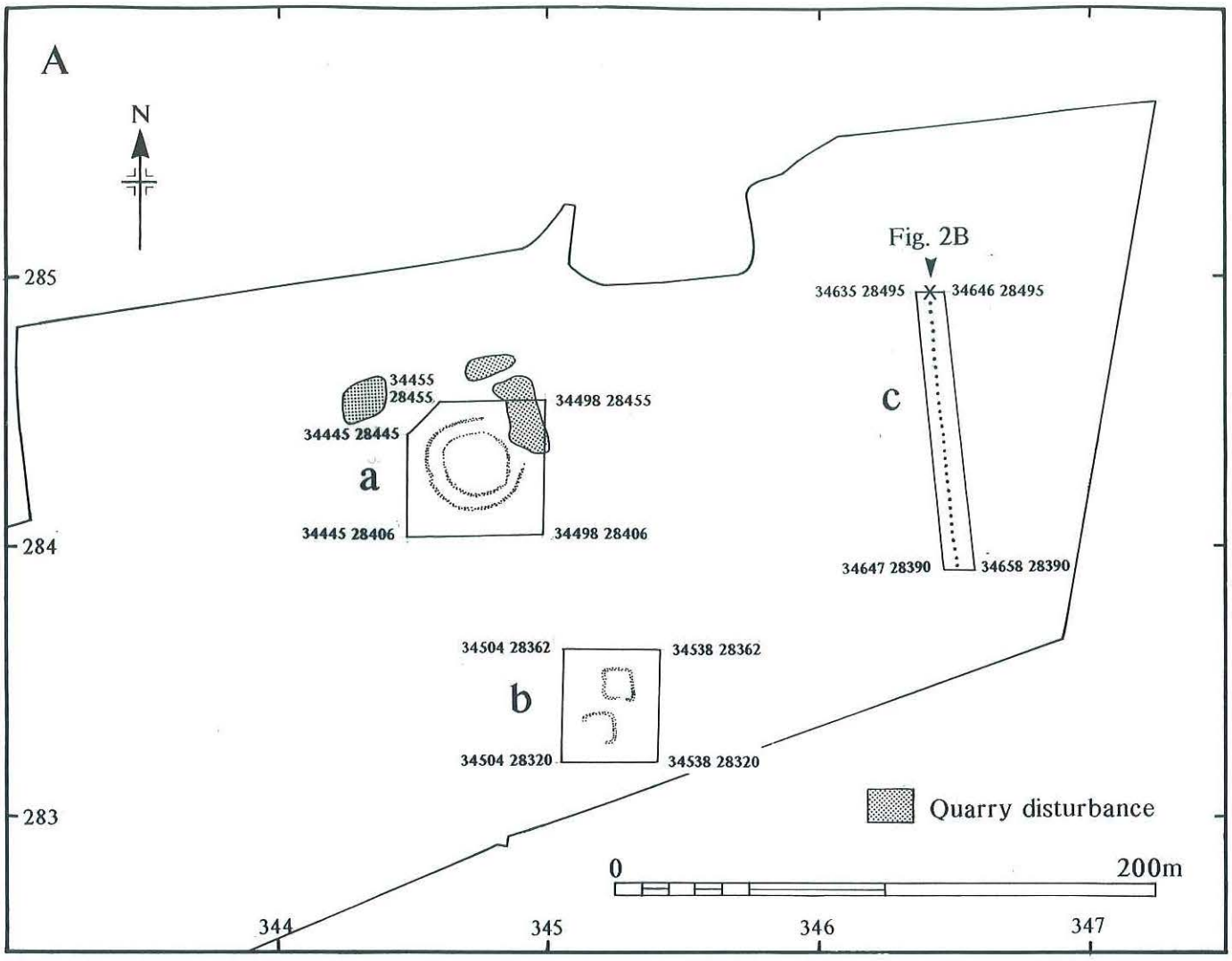


Fig.1. Distribution of known archaeological sites in the western extension to Swarkestone Quarry (limits shown by heavy line); probable relict river-channels are indicated by stipple. Scale 1:10,000



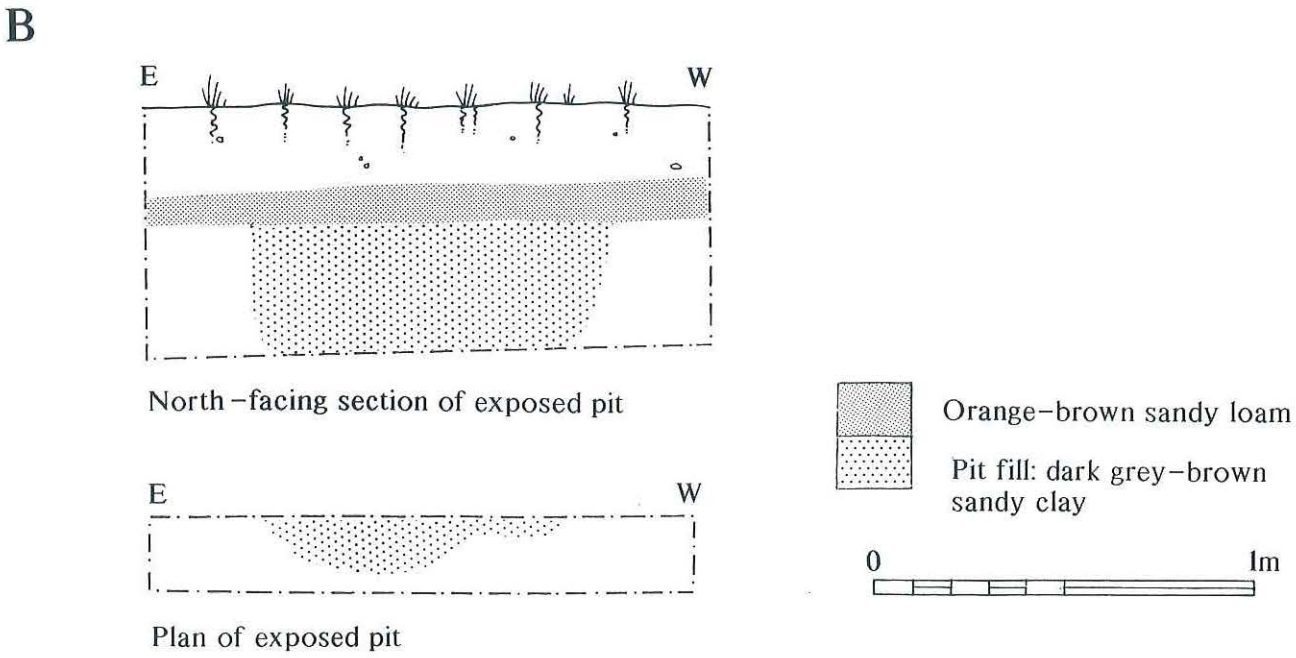
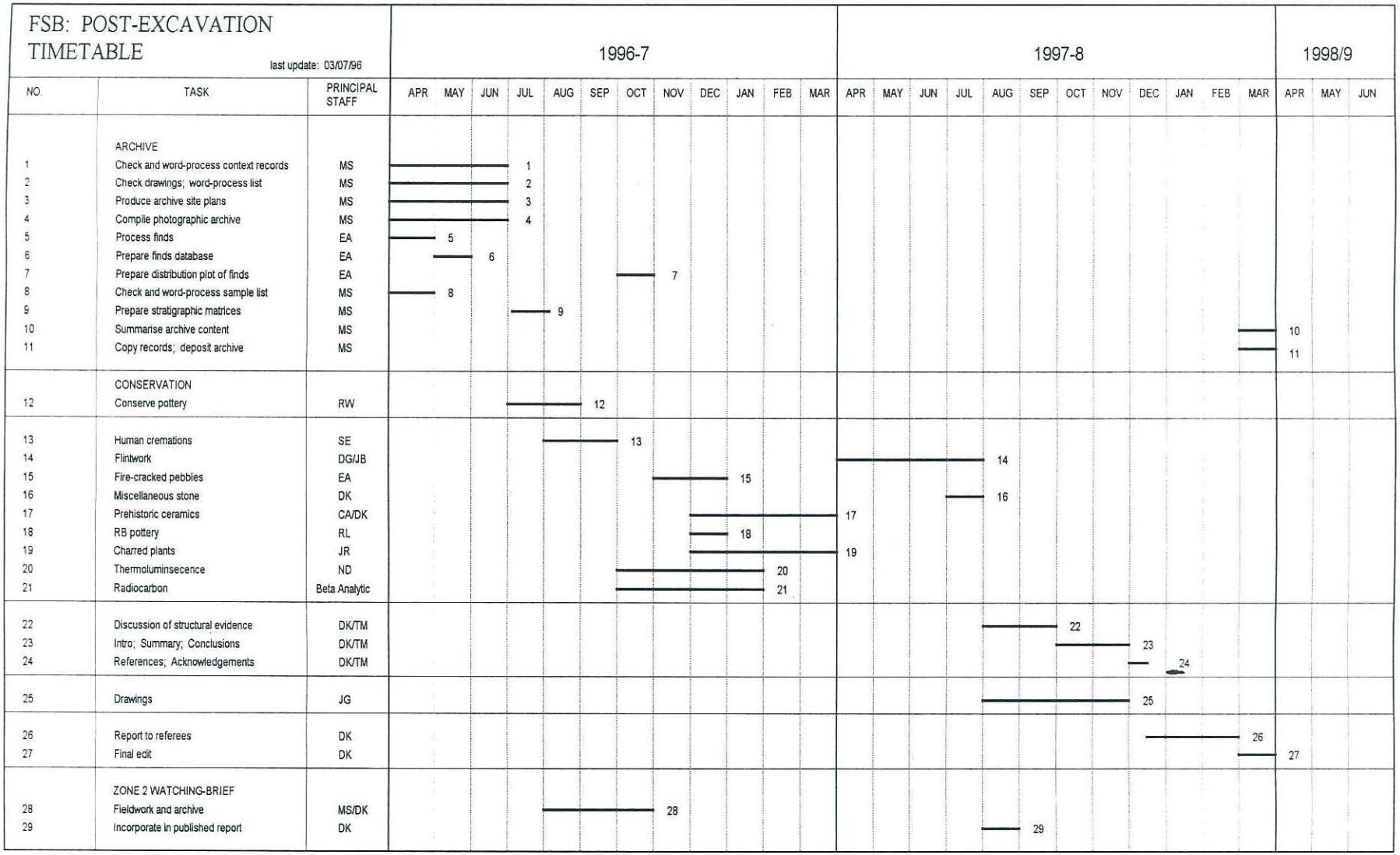


Fig.2. Features revealed during watching brief of Site 16709c and location of fences demarcating Sites 16709a-c. Scale 1:2,500

Fig.3. Plan of Site 3815 after excavation. Scale 1:100



Principal staff: CA: Dr. Carol Allen; EA: Eileen Appleton; JB: Jenny Brown; ND: Dr. Nick Debenham; SE: Sue Ensor; DG: Daryl Garton; JG: Jane Goddard; RL: Ruth Leary; TM: Tony Morris; JR: Dr. James Rackham; MS: Mark Southgate; RW: Robert White

Fig.4. Gantt chart: programme of post-excavation work for Site 3815, 1996-8

APPENDIX

TOPSOIL MAGNETIC SUSCEPTIBILITY AND GRADIOMETER SURVEY

A.E. JOHNSON (OXFORD ARCHAEOTECHNICS)

SUMMARY

A geophysical evaluation programme comprising topsoil magnetic susceptibility mapping and magnetometer survey was carried out within an area of proposed mineral extraction on the north bank of the River Trent, less than 1 km southwest of the village of Barrow on Trent, Derbyshire (centred at SK 3439 2818). The cropmark of a ring form, together with several indistinct linear and curvilinear marks have been observed from air photographs within the survey area.

The survey was based upon the principle that past human activity and its associated debris usually creates slight but persistent changes in the local magnetic environment which can be sensed from the surface (using magnetic susceptibility measurement and magnetometry).

In the present case, mapping of topsoil magnetic susceptibility provided evidence for probable former landuse patterns and indicated the broad trend of the geological substrate (sands & gravels with alluviated channels). In addition a number of distinct foci suggest areas of anthropogenic modification of the topsoil indicative of underlying archaeological activity (date unknown); this includes the known ring form and the strong focus of a former pond. Magnetometer survey revealed a number of weak linear and curvilinear features including a possible ring form, together with a number of pits or hollows.

1. INTRODUCTION

1.1 Geophysical evaluation was commissioned by Trent & Peak Archaeological Trust within an area of proposed mineral extraction on the north bank of the River Trent, less than 1 km southwest of the village of Barrow on Trent, Derbyshire. The location of the survey area is shown on Fig. 1.

1.2 The survey area lies within OS Field No. 3815 A ring form is known as a cropmark from air photographs (centred at SK 3439 2818) apparently situated upon a narrow gravel ridge/island which crosses the field on a roughly northeast-southwest line (visible as a slightly raised topographic feature) and is abutted on the north and south sides by alluvial deposits of probable relict river channels. Traces of further (indistinct) cropmarks, both linear and curvilinear, are reported in the vicinity of the ring, although none could be accurately plotted.

1.3 Geophysical survey work comprised a combination of topsoil magnetic susceptibility field sensing and magnetometry. An explanation of the techniques used, and the rationale behind their selection, is included in an Appendix to the present report.

1.4 The fieldwork was carried out in October 1995.

2. MAGNETIC SURVEY DESIGN

2.1 Survey control was established to the National Grid by EDM Total Station.

2.2 The equipment used for the direct topsoil magnetic susceptibility survey was a Bartington Instruments MS2 meter with an 18.5 cm loop.

2.3 *In situ* magnetic susceptibility readings were taken on a 10 metre grid, an interval proven to give a high probability of intersection with the magnetic signal from a wide range of archaeological sites, particularly occupation sites of the later prehistoric, Roman or Medieval periods. However, under favourable conditions the survey technique is equally capable of locating earlier prehistoric features, such as soils dispersed by agriculture from ring ditches or spreads of less clearly defined occupation material. The 10 m grid configuration also favours the detection of ploughed-out earthwork banks, which can occasionally be located as areas of more weakly magnetic soils.

2.4 A 10 m resolution, although perfectly satisfactory for defining general areas of activity, will inevitably intersect locally with soils showing marked magnetic contrasts. It is more important to pay attention to the general trend/pattern than to concentrate upon specific magnetically enhanced 'hotspots', even though many of the latter may eventually prove to relate to the positions of underlying archaeological features.

2.5 Areas showing significant magnetic enhancement were examined with a Geoscan Research FM 36 Fluxgate Gradiometer, both by detailed grids (sampling 4 readings per metre at 1 metre traverse intervals in the 0.1 nT range) and by scanning. The nanotesla (nT) is the standard unit of magnetic

flux (expressed as the current density), here used to indicate positive and negative deviations from the Earth's normal magnetic field. Routine scanning by gradiometer was also undertaken at 25 m traverse intervals in order to check for any major concentrations of underlying archaeological features whose presence may not have been detected by the topsoil susceptibility survey.

2.6 Field data were stored to 3.5-inch disks, and processed using Geoscan Research Geoplot and Oxford Archaeotechnics Geomath software.

2.7 The topsoil magnetic susceptibility colour shade plot (Fig. 2) shows contours at 2 SI intervals; the plots are interpolated to 5 m, but are otherwise unprocessed. Magnetometer data have been presented as grey scale and stacked trace plots, with an additional dot density plot.

3. SURVEY RESULTS

TOPSOIL MAGNETIC SUSCEPTIBILITY SURVEY (Figs. 2, 3 & 10),

3.1 A total of 399 *in situ* magnetic susceptibility readings was recorded. Susceptibility is reported in SI:volume susceptibility units (x 10^{-5}), a dimensionless measure of the relative ease with which a sample can be magnetized in a given magnetic field; the lack of dimensions is an algebraic artefact (the actual units of measurement cancelling each other out in the formula for volume susceptibility) and in no way indicates subjectivity or lack of precision in the result.

3.2 The magnetic susceptibility range showed relatively low contrasts. *In situ* topsoil magnetic susceptibility measurements generally ranged between 8 and 39 (x 10^{-5}) SI units; the mean for the survey was 14.7 SI units and the standard deviation calculated against the mean was 3.1 SI units.

3.3 Topsoil magnetic susceptibility mapping revealed a pattern showing several distinct elements.

3.4 Broad bands of alternately magnetically weaker and stronger soils, aligned almost east-west, reflect the contrasts between alluvial soils formed within relict river channels (less than 14 SI, blue on Fig. 2) and more enhanced soils apparently formed over gravel bodies which lie closer to the surface (above 14 SI, green-brown on Fig. 2). The axis of the principal band of enhancement, up to c.50 m in width, lies close to the 28180 N gridline. Within this band lies a zone of more enhanced soils (18 - 20 SI) extending over an area of some 30 x 15 m, at a location where air photographs indicate a cropmark ring form.

3.5 A similar band of enhanced soils (30 - 40 m in width) runs parallel to the south, separated by a 20 - 30 m wide zone of less magnetic soils.

3.6 Readings of over 30 SI were recorded in the vicinity of an infilled pond (mapped in the late 19th century).

3.7 Both the northeastern and southwestern corners of the field show increasing topsoil magnetic susceptibility. This is partly attributable to modern gateways at these locations, but both areas of enhancement are too broad and diffuse to be explained solely by the location of gates. The increasingly susceptible soils to the northeast seem to relate to the proximity to a known cropmark site (consisting of two small adjacent rectilinear enclosures), situated some 50 m further north, where a number of random topsoil magnetic susceptibility readings taken within the protected (fenced) area above the known archaeological site produced readings in excess of 50 SI. The more enhanced soils to the southwest include several point foci of over 22 SI, and recent disturbance is suspected here, particularly as the map evidence shows successive modifications to the field boundaries in this area.

3.8 In addition to the geological patterning, and the location of the probable ring ditch and infilled pond, the topsoil magnetic susceptibility map also shows some patterning on both southwest - northeast and northwest - southeast trends which may relate to former landuse; there are indications from gradiometer survey of linears on a similar, but not precise, alignment.

MAGNETOMETER (GRADIOMETER) SURVEY

3.9 Detailed and gridded gradiometer survey was carried out over the principal areas of enhanced topsoil magnetic susceptibility and gradiometer scanning anomalies. Eighteen 30 x 30 m grids were surveyed within the central and northern parts of the field (Figs. 5 - 8), with a single 30 x 30 m grid over a topsoil magnetic susceptibility focus within the southwestern part of the field (Fig.9). A total area of 1.72 ha was investigated by detailed gradiometry. The location of the gradiometer survey areas is shown on Fig. 4.

3.10 Few anomalies exceeded +2 nT; the majority were recorded in the range -0.5 to +0.5 nT.

3.11 The relatively low magnetic susceptibility of the survey area produced extremely weak gradiometer plots. However, a number of anomalies were located, some of them indicative of underlying 'cut' features. These comprise mostly linear agricultural features, with several curvilinear features (including the probable ring form identified from air photography), and a number of relatively strong features (generally between +1.5 and +4 nT), measuring up to 5 or 6 m in diameter, which may be either substantial pits or natural hollows infilled with marginally more magnetically susceptible soils. There is a general litter of ferrous material across the survey area, with a particular concentration around and within the infilling of a former pond.

3.12 The grey shade plot (Fig. 5) shows extremely weak but subtle detail, a summary of which is shown on Fig. 7. Whilst the majority of the ferrous material has been indicated, there will nevertheless be some ambiguity between what may be deeply buried ferrous material and possible smaller pit forms.

3.13 More continuous linears, principally aligned northwest-southeast and up to 3 m wide, in places appear as magnetically weaker soils and plot as negative features, suggesting the presence of relatively clean silted deposits, perhaps ploughed-down bank material.

3.14 Fig. 8 records the raw data stack trace plot, which is dominated by the infilled pond and other concentrations of ferrous (and probably includes brick) material.

3.15 A single 30 x 30 m grid was surveyed to check the pocket of enhanced soils in the extreme southwest angle of the field (Fig. 9). No obvious archaeological features were recorded. The area again has a high proportion of ferrous material included in the topsoil, and it seems that this corner of the field has been disturbed in relatively recent times, a suggestion partly supported by the change in the alignment of the hedgeline at this location (see 3.7 above).

4. CONCLUSIONS

4.1 Topsoil magnetic susceptibility levels were generally low, and the soils therefore were not the most conducive to gradiometer survey. Despite the relatively low magnetic susceptibility of the soils, there is nevertheless significant patterning visible, which generally conforms well with the known geological and archaeological evidence. This includes the interface between the alluvium and gravel rises.

4.2 Topsoils in the vicinity of both the area of the cropmark ring within the survey area and the protected archaeological area to the north showed enhanced topsoil magnetic susceptibility, and it is likely therefore that had any further similar archaeological foci have been present, that they would have been visible to this technique.

4.3 There may, however, be some significance in other subtle variations recorded on the topsoil magnetic susceptibility plot, notably the northwest-southeast and northeast-southwest trends, which in some locations may relate to soils dispersed from specific underlying archaeological horizons.

4.4 It must be stressed however, that whilst there are reasonable indications of the boundaries between the alluvial soils and those lying over the gravel rises it is unknown to what extent the alluvial material may be masking underlying archaeological deposits. The date of the alluvium is unknown. However, it may be significant that a number of continuous linears cross both gravel rises and alluvial contexts.

4.5 Despite the extremely weak nature of the features suggested by gradiometer survey, there is a reasonable correspondence between aerial photographs,

topographic elements, and topsoil magnetic susceptibility mapping to suggest that the combined magnetic surveys are capable of indicating the locations of material with archaeological potential.

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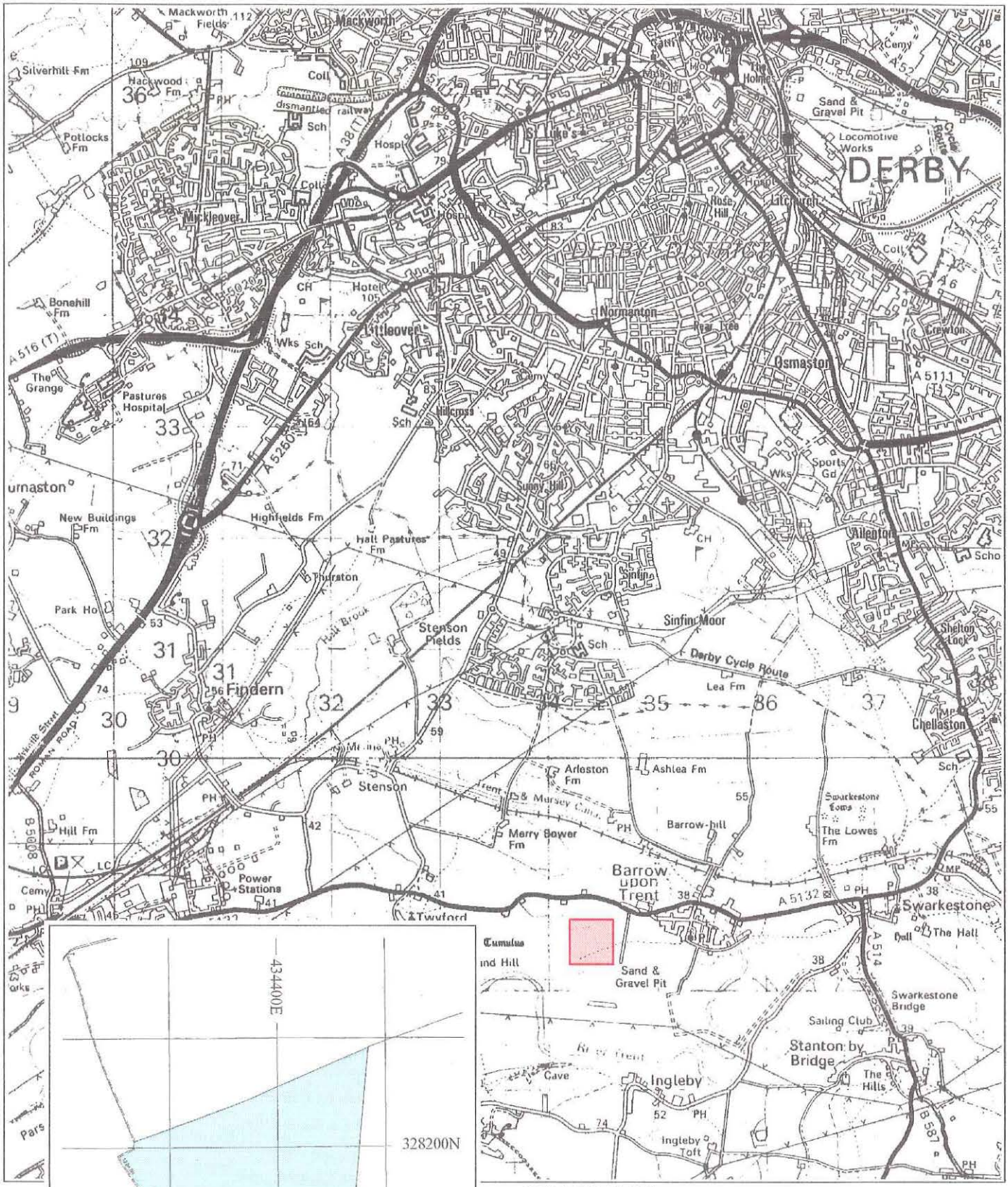
Topsoil magnetic susceptibility and magnetometer survey by Oxford Archaeotechnics Limited under the direction of A.E. Johnson *BA(Hons)*, with: A. Denniss *BSc(Hons) MSc* , C. Jenner *BSc(Hons) MSc* & P. Seaman *BSc(Hons) MSc*.

BARROW ON TRENT, DERBYSHIRE

TOPSOIL MAGNETIC SUSCEPTIBILITY AND GRADIOMETER SURVEY



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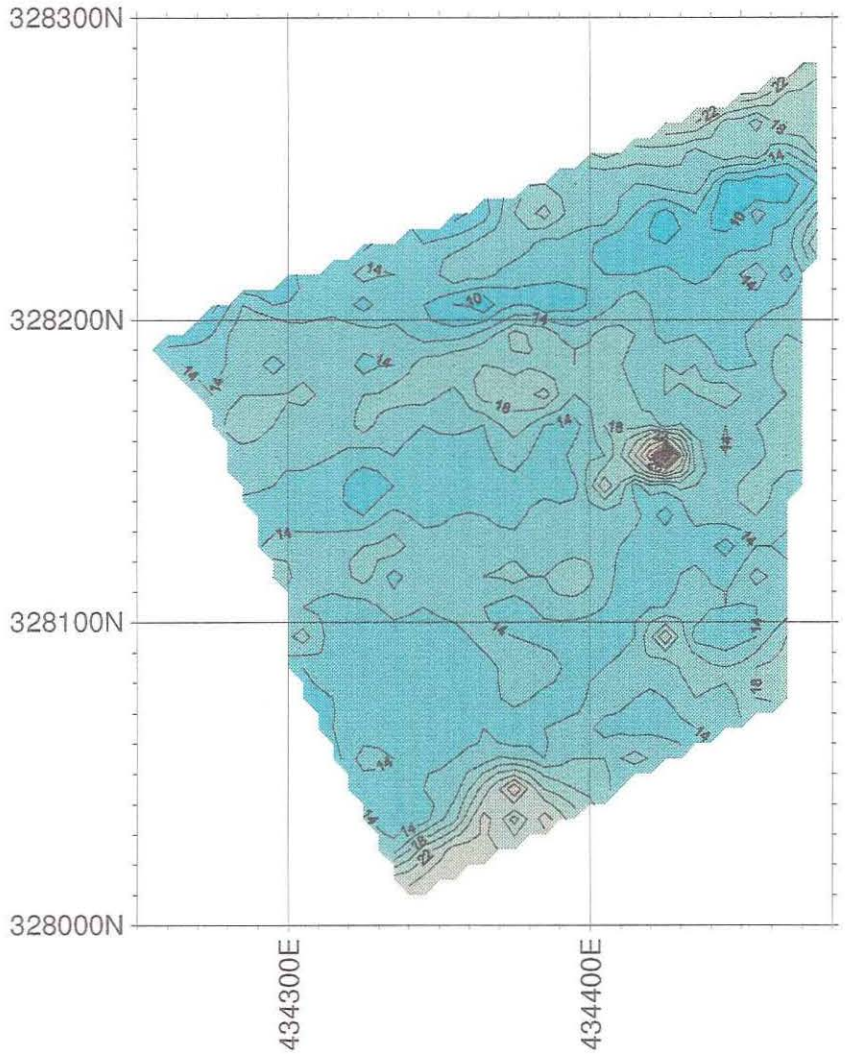
LOCATION

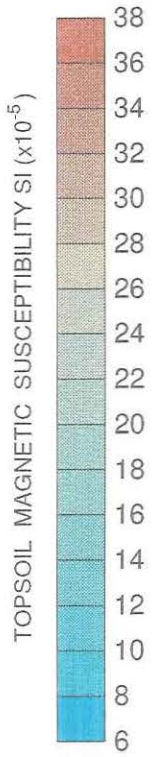
OXFORD ARCHAEOTECHNICS

FIG. 1

BARROW ON TRENT, DERBYSHIRE

TOPSOIL MAGNETIC SUSCEPTIBILITY SURVEY





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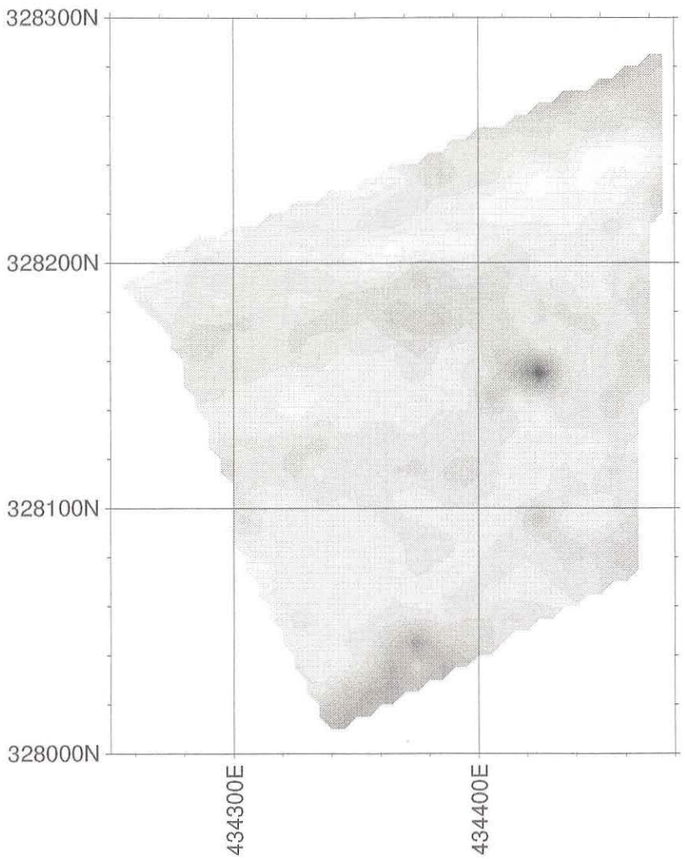
OXFORD ARCHAEOTECHNICS

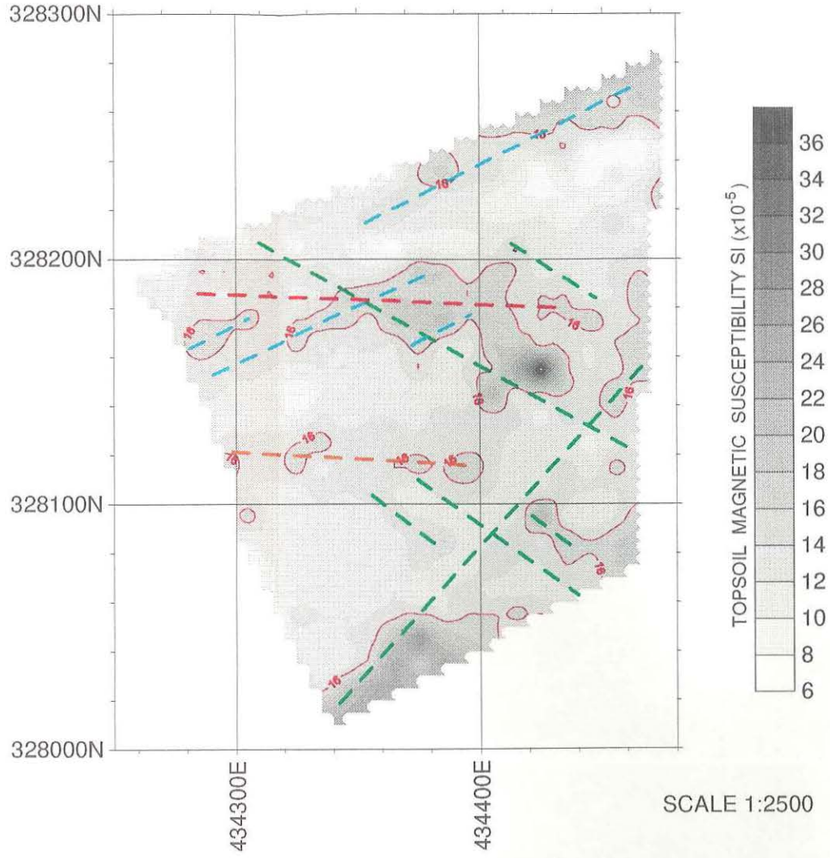
FIG. 2

BARROW ON TRENT, DERBYSHIRE

TOPSOIL MAGNETIC SUSCEPTIBILITY SURVEY

Principal topsoil magnetic susceptibility trends suggesting both natural and anthropogenic patterning together with local zones of enhancement (mostly anthropogenic)





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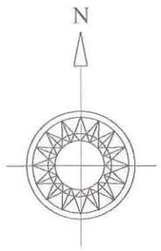

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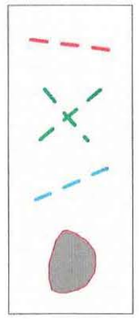


Axis of patterning likely to be of natural origin: the topographic and aerial photographic evidence suggests proximity to the surface of the underlying gravel body

Possible former land use patterns; similar alignments are confirmed by gradiometer survey

Probable post Medieval agricultural patterning

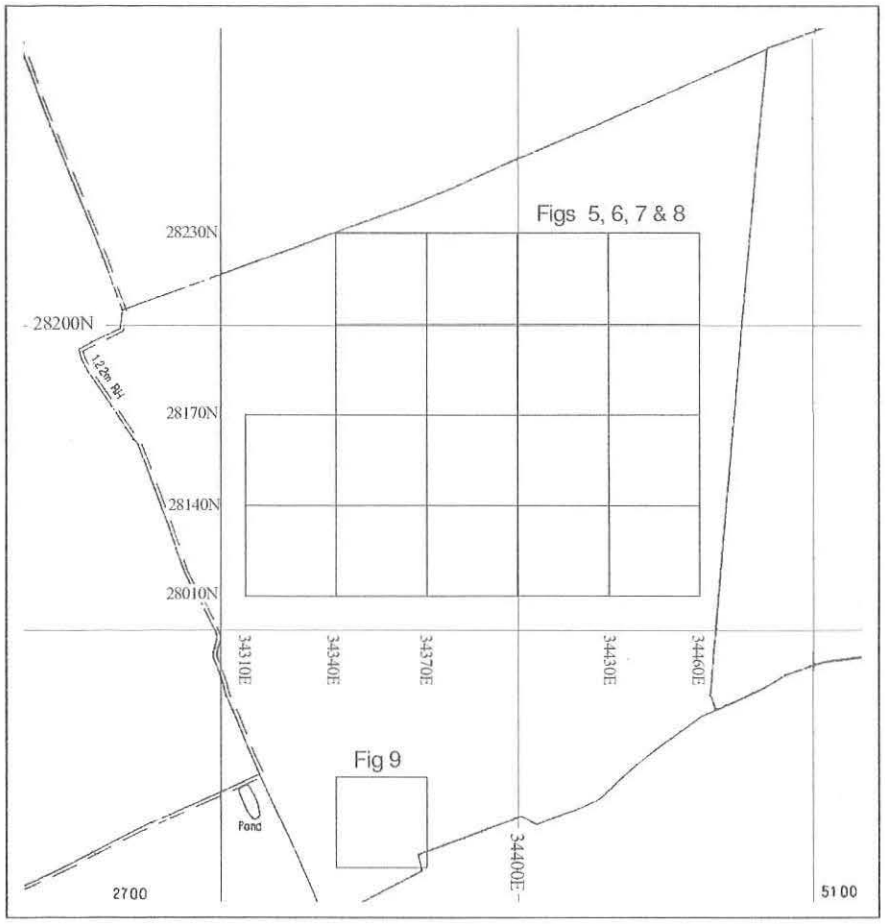
Areas where relatively strong local enhancement may suggest potential archaeological features (including post Medieval features confirmed by cartographic evidence)

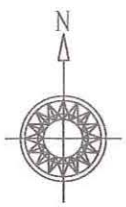
OXFORD ARCHAEOTECHNICS

FIG. 3

BARROW ON TRENT, DERBYSHIRE

GRADIOMETER SURVEY, LOCATION





SCALE 1:2500 GRID SIZE = 30m

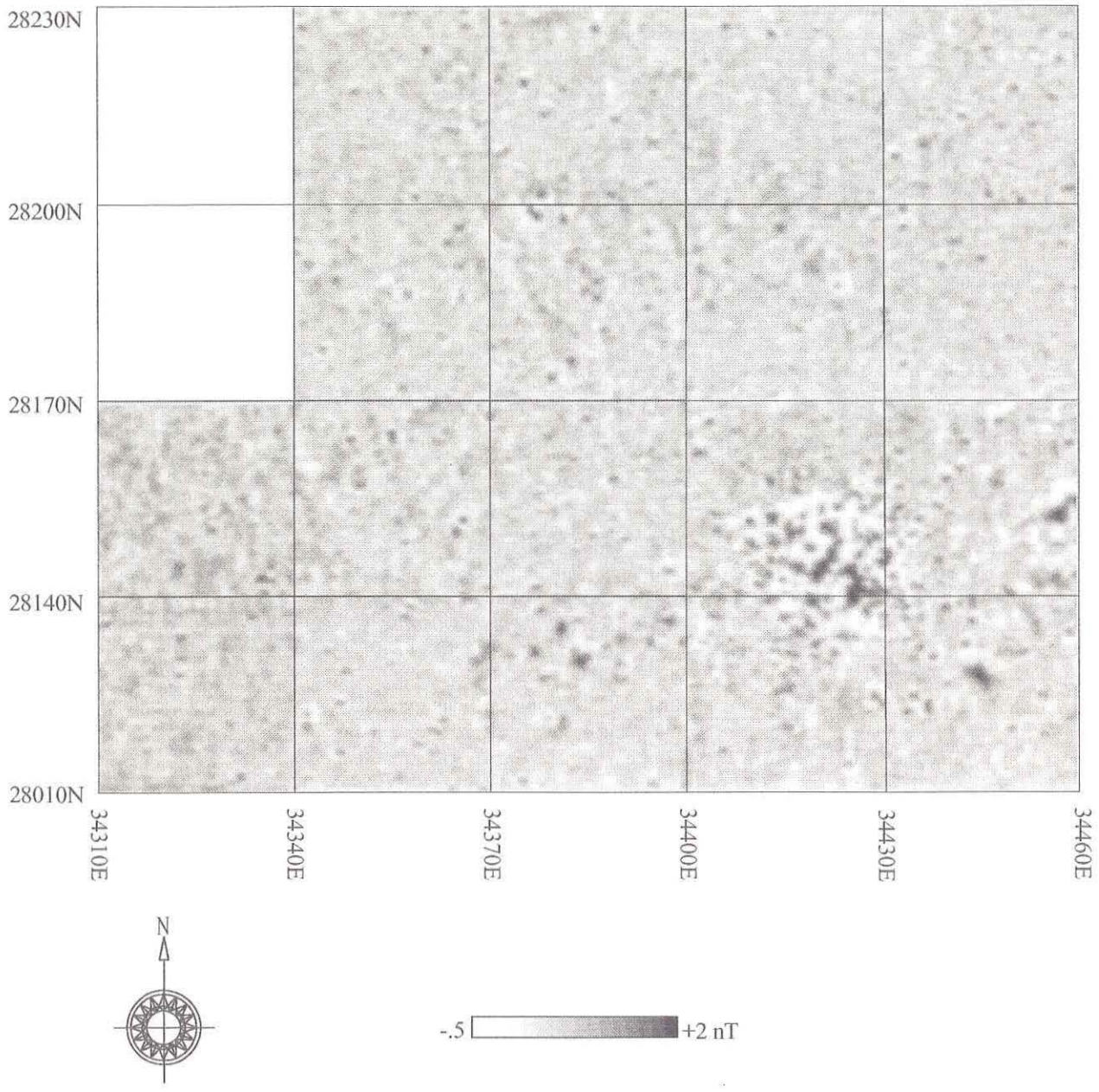
OXFORD ARCHAEOTECHNICS

FIG.4

BARROW ON TRENT, DERBYSHIRE

GRADIOMETER SURVEY

Grey Shade Plot



SCALE 1:1000

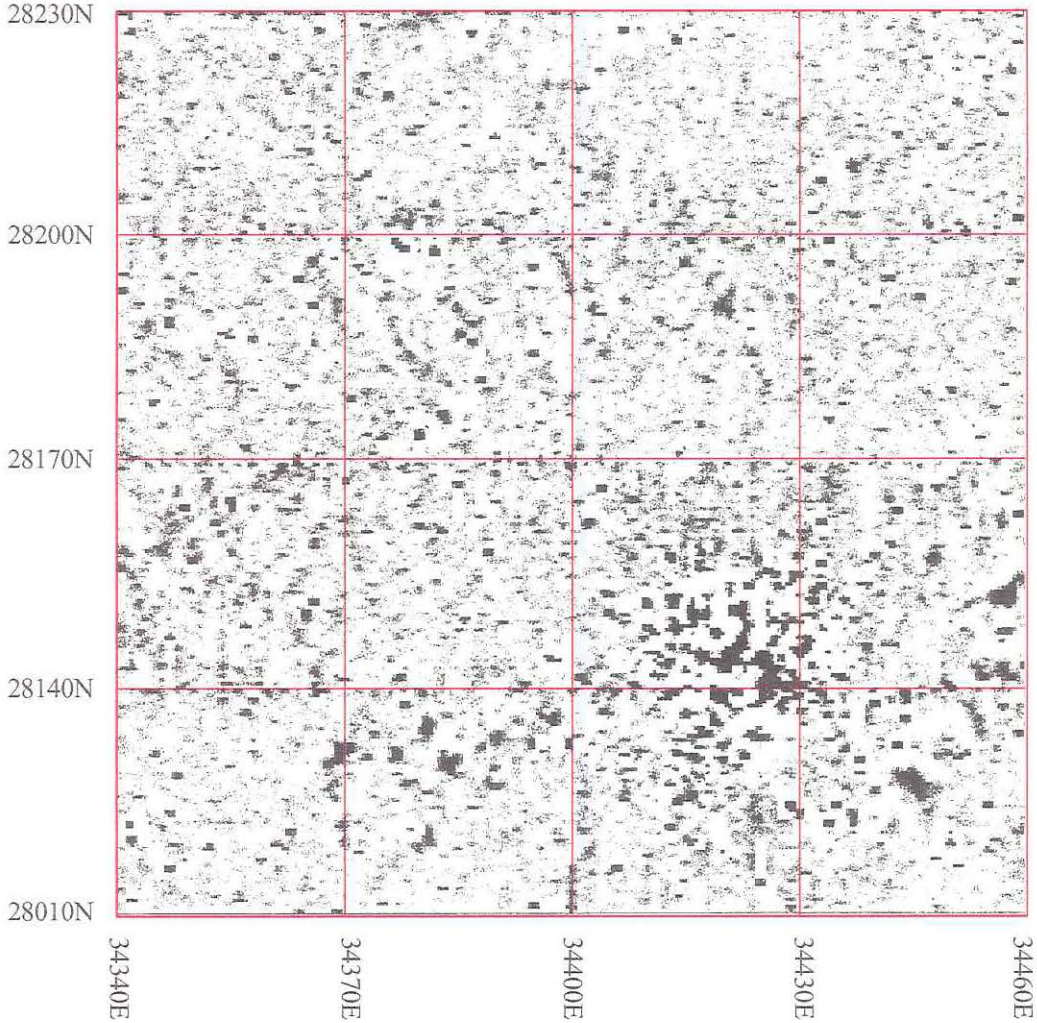
OXFORD ARCHAEOTECHNICS

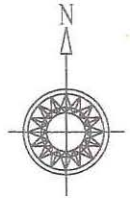
FIG. 5

BARROW ON TRENT, DERBYSHIRE

GRADIOMETER SURVEY

Pond and Probable Ring Ditch Area Dot Density Plot





SCALE 1:1000

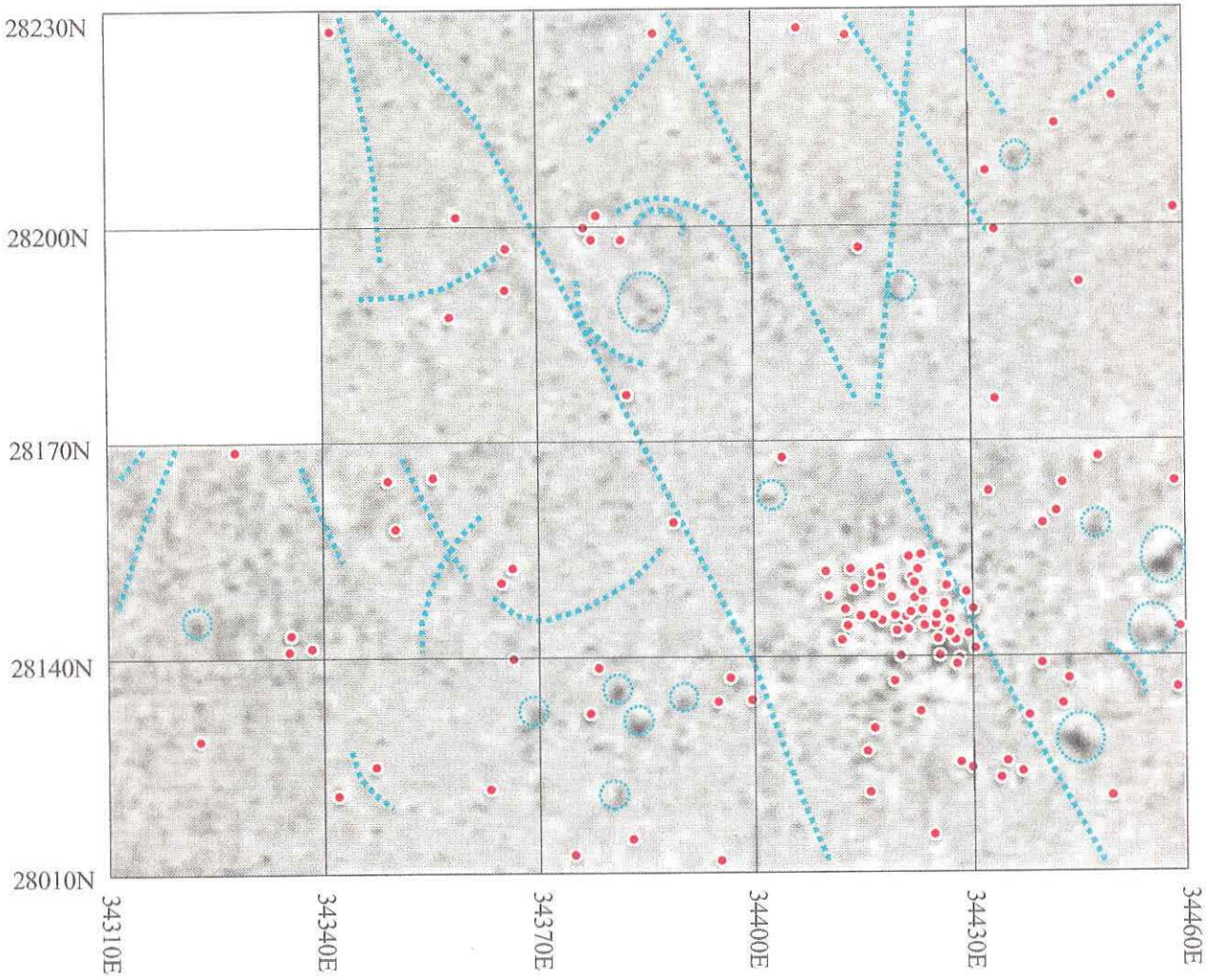
+1.5 -.5 nT

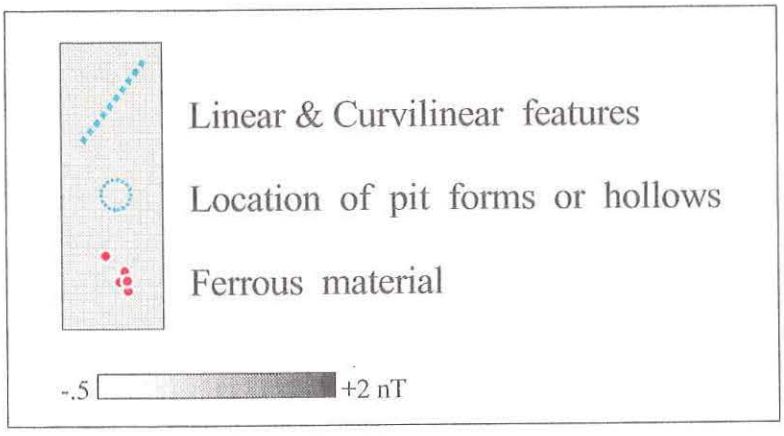
OXFORD ARCHAEOTECHNICS

FIG. 6

BARROW ON TRENT, DERBYSHIRE

GRADIOMETER SURVEY
SUMMARY





SCALE 1:1000

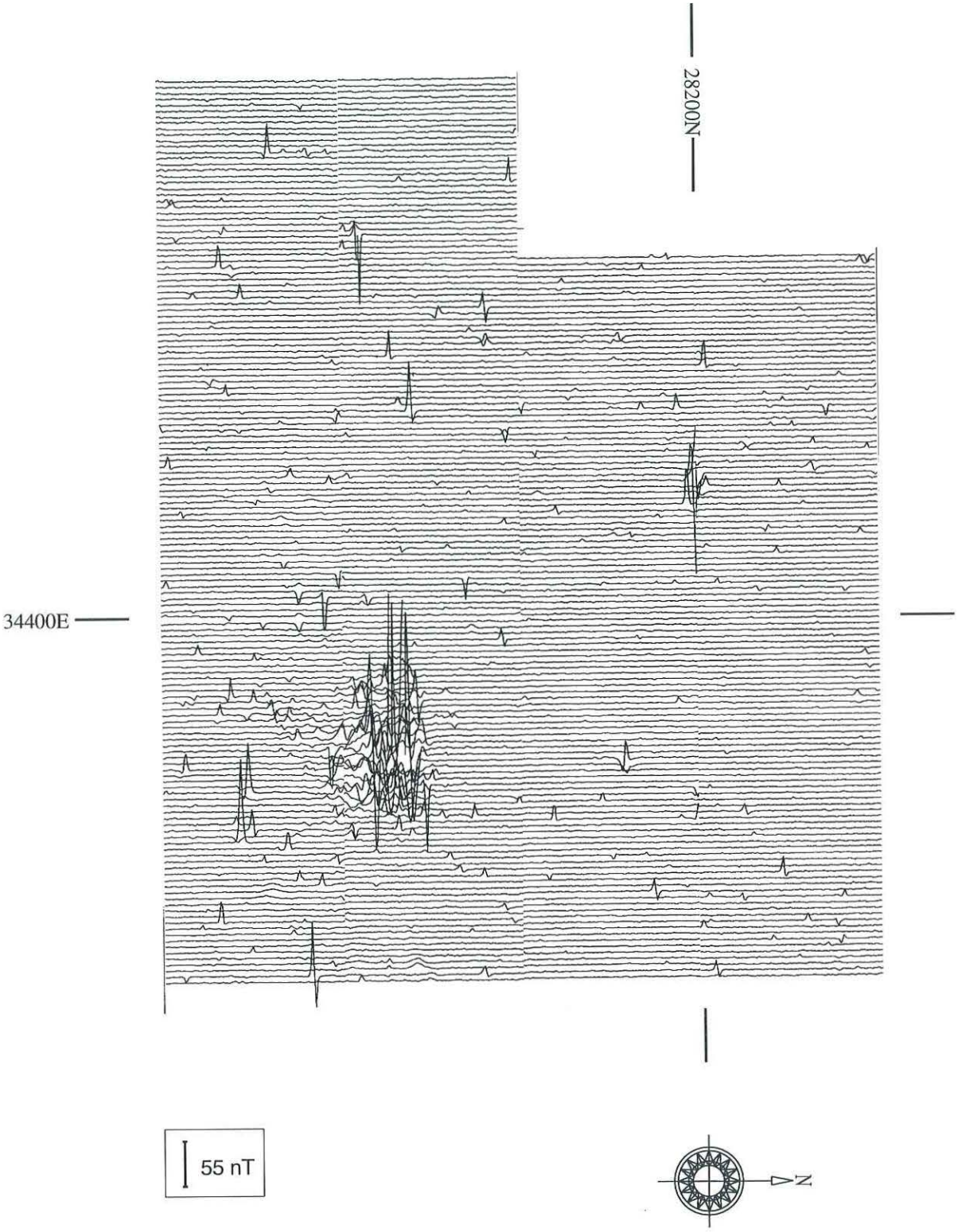
OXFORD ARCHAEOTECHNICS

FIG. 7

BARROW ON TRENT, DERBYSHIRE

GRADIOMETER SURVEY

STACKED TRACE PLOT, RAW DATA



SCALE 1:1000

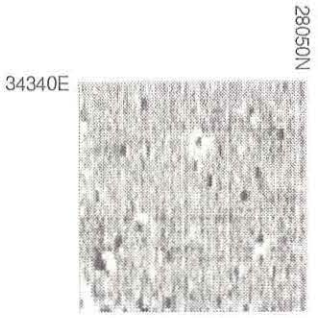
OXFORD ARCHAEOTECHNICS

FIG. 8

BARROW ON TRENT, DERBYSHIRE

GRADIOMETER SURVEY

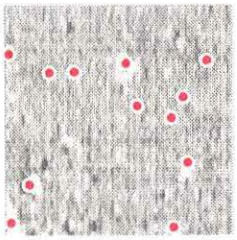
GREY SHADE PLOT

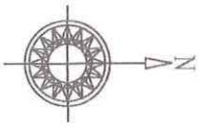


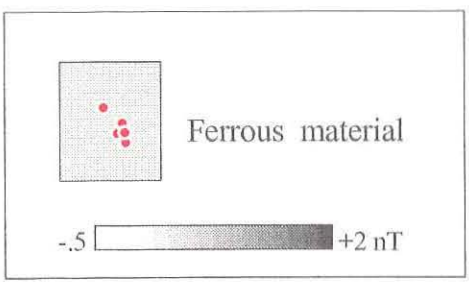
STACKED TRACE PLOT, RAW DATA

55 nT

SUMMARY







SCALE 1:1000

OXFORD ARCHAEOTECHNICS

FIG. 9

328300N

328200N

328100N

328000N

434300E

434400E

SCALE 1:1000

N

BARROW ON TRENT, DERBYSHIRE

TOPSOIL MAGNETIC SUSCEPTIBILITY SURVEY

Data set with 20m grid, red contour represents appox 1 std. deviation above the mean, contour interval 2 SI

OXFORD ARCHAEOTECHNICS

FIG. 10