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GEOPHYSICAL AND FIELDWALKING SURVEY ON LAND AT WYGATE PARK, SPALDING, LINCOLNSHIRE (SWP01)

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ARCHAEOLOGICAL PROJECT SERVICES

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GEOPHYSICAL AND FIELDWALKING SURVEY ON LAND AT WYGATE PARK, SPALDING, LINCOLNSHIRE (SWP01)

planning ref??

Work undertaken for
Broadgate Homes Ltd.

January 2002

Report Compiled by
Tobin Rayner BSc, AIFA

National Grid Reference: TF 2370 2375

A.P.S. Report No. **21/02**

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1. SUMMARY

A geophysical and fieldwalking survey was undertaken to determine the archaeological implications of a proposed residential development on land at The Hayfields, Wygate Park, Spalding, Lincolnshire. A desk-based assessment had previously been undertaken of the site and this work formed the second part of a programme of archaeological investigations required to determine any planning application.

The site lay within an area of known archaeological activity dating from the Romano-British to modern periods.

The geophysical survey recorded two zones of enhanced susceptibility, one of which may reflect a former field boundary. Detailed Gradiometer survey revealed a plethora of probable natural responses although a short ditch-type anomaly was detected and several other linear ferrous and magnetic signals were recorded that may represent damaged pipes, service or field drains or former drainage ditches.

A total of 115 artefacts was recovered during fieldwalking of which pottery was by far the most abundant ranging in date from the prehistoric to early modern periods. The finds probably indicate that the proposed development site lies on the fringe of probable Iron Age to Romano-British settlement. However, there is no evidence of any Saxon activity and it is not until the medieval period that the land was re-utilised. The artefactual remains probably derived from manuring and suggest that the area was agricultural land on the edge of any settlement. A slight concentration of 12th - 14th century pottery was recorded in the southeast and may suggest the occupation lay to the south of this area. Furthermore, this situation appears to have been maintained until the early modern period.

2. INTRODUCTION

2.1 Background

The area is the site of a proposed residential development and has been subject to a desk-based assessment (Albone 2001). The Archaeological Officer, Lincolnshire County Council recommended that a further stage of non-intrusive archaeological evaluation, comprising geophysical and fieldwalking surveys, be carried out to provide information to assist the determination of any planning application.

The investigations were carried out in accordance with a specification prepared by APS and approved by the Archaeological Officer, Lincolnshire County Council (Appendix 1).

2.2 Topography and Geology

Spalding is situated 23km southwest of Boston and 30km southeast of Sleaford in the South Holland district of Lincolnshire (Figure 1, Plate 1 and 2). The proposed development site is located to the northwest of the town between existing residential areas to the south and east, and Vernatt's Drain to the north (Figure 2). It centres on NGR TF 2370 2375 and lies at a height of approximately 3m above OD on fairly level ground rising slightly to the west.

The site lies on coarse silty calcareous alluvial gley soils of the Wisbech series (Robson 1990).

2.3 Archaeological Setting

No evidence of prehistoric (pre 50 AD) archaeology has been recorded within the proposed development site. From the Neolithic through to the mid- to late Iron Age the area was subject to periods of marine incursions and consequently there

was little human use of the landscape during that time. By the Romano-British period (50 - 410 AD) a drop in sea level resulted in extensive settlement on the marine silts, with evidence of contemporary deposits further to the south and west being exposed. Furthermore, extensive cropmarks of Romano-British field systems and droveways have been recorded to the west (Figure 3). In addition, recent investigations in the centre of Spalding have also exposed Romano-British deposits sealed by later silts (Cope-Faulkner forthcoming).Subsequent marine incursions late in the period, probably during the 4th century, resulted in the abandonment of these sites and the masking of Romano-British ground levels and deposits by alluvial silts.

Historically the proposed development site lay within Pinchbeck parish. Pinchbeck is first referred to as *Pincebec* in the Domesday Survey of 1086. The place-name refers to the stream associated with either the minnow or the linnet (Cameron 1998, 97).

At the time of the Domesday Survey, land at Pinchbeck was held by Ivo Tallboys and Guy of Craon. Included among Ivo Tallboy's holdings were 4 fisheries producing 1500 eels (Morris 1986).

Although historical sources provide information about the development of Pinchbeck village during the medieval period, the outlying rural parts of the parish are less well documented. As the proposed development site is located in such an area its history is difficult to ascertain.

A sparse scatter of pottery of medieval date (1066 - 1500 AD), has been identified during a walkover survey of a site 500m to the south of the proposed development area (Figure 2, No.1). It is likely that this represented an agricultural manuring scatter (Albone 2000, 8).

The 17th century was the great period of fen drainage. Vernatt's Drain, which forms the northwest boundary of the site, was constructed in the 1630s as part of the drainage of Deeping Fen (Wheeler 1896, 318). However, the post-medieval period (1500 - 1900 AD) is represented only by a manuring scatter of pottery (Albone 2000, 8) recorded to the south of the proposed development area (Figure 2, No.1).

During the early 20th century the boundary of Spalding Urban District was extended. Previously it had lain 500m south of the site, but was moved north to the course of Vernatt's Drain moving the site from Pinchbeck parish into Spalding.

Cartographic evidence from the 1st edition Ordnance Survey map of 1815 shows the proposed development segmented into three fields, however, by 1906 this was reduced to two and finally by at least 1973 the site had been consolidated to form a single larger unit.

3. AIMS

The aims of the combined field walking and geophysical surveys were to gather information on the presence or absence of archaeology within the application area to enable the archaeological curator to formulate a scheme for the management of any such remains. Whilst the objectives were to establish the form, spatial arrangement, density and date range of any archaeological features present on the site.

4. METHODS

Geophysical

The entire field was subject to volume-

specific magnetic susceptibility survey using a Bartington field coil. Subsequently, 2ha of gradiometer survey in two areas (Areas A and B) were undertaken. Area A was positioned to encompass a topographic feature/earthwork. Whilst Area B was positioned to investigate the more credible anomalies in the susceptibility data.

Fieldwalking
Field walking was undertaken of the area on transects at approximate 10m intervals, using plough and drill furrows as a directional guide. Surface artefacts were collected, bagged and assigned a unique reference number. Each of these finds were accurately plotted using a Geodolite Total Station, placed within a site-specific grid. During the fieldwalking the surface of the field was inspected for evidence of earthwork and soil-mark features (Figure 4).

5. RESULTS

Geophysical
The full detailed geophysical report appears as Appendix 3 whilst the results are reproduced as Figure 6.

Fieldwalking
Fieldwalking took place on the 9th January 2002. Field conditions were changeable with emergent crop, drilled and deeply ploughed areas (Figure 5 and 7) making visibility variable across the site.

A total of 115 items was recovered during fieldwalking of which pottery was by far the most abundant ranging in date from the prehistoric to early modern periods (Figure 7 - 10, Appendix 2).

A single, small, prehistoric sherd of probable Iron Age date was found by the southern boundary of the investigation area, toward the western corner of the site. Similarly, a very few (4) fragments of Roman pottery were retrieved. Three of these were found in the western half of the site, in proximity to Vernatt's Drain whilst the fourth was found by the southern boundary of the site, toward the southeast corner of the area.

The earliest post-Roman material found at the site is Stamford ware of Late Saxon-early medieval date. Only two fragments of this fairly local, but widely traded, pottery type were recovered and one of these is of the developed type of 11th-12th century date. This material provides the earliest pieces of the large medieval component, almost 40 pieces, of the fieldwalking assemblage. Most of the medieval assemblage is provided by ceramics made at Bourne, only 15km to the west, though a few pieces from further afield, including Toynton All Saints at the southern end of the Lincolnshire Wolds and Lincoln or Nottingham, were also found. The medieval material has a distinct distributional bias, with the great majority of material of this date found in the southeastern part of the site, an area extending 250m west and 150m north from the southeastern corner of the investigation area.

Post-medieval artefacts provide the largest component of the assemblage, with almost 50 fragments of this period recovered. The date range of these artefacts indicate that they continue directly on from the medieval pieces, with no evidence of a break in deposition of material. Local products, including items made in Bourne, are present though regional imports, particularly from Staffordshire and other parts of the Midlands, are common. The distribution of the post-medieval artefacts largely reflects that of the medieval, though is more extensive and more dispersed, and there is an additional loose cluster in the southwest

corner of the site.

Artefacts of early modern date occur thinly distributed throughout the area, and probably reflect casual discard or manuring scatter.

6. DISCUSSION

The probable Iron Age and Roman pottery retrieved from the site was likely brought to the surface during dyke cutting and cleaning of the field ditch that previously formed the southern limit of the area and Vernatt's Drain to the north. Furthermore, the Roman pottery came from a higher part of the site, on the west side (Figure 4), and probably indicates the existence of an extinct saltmarsh creek (rodden).

Taken together, the probable prehistoric and Roman material may indicate that remains of Iron Age to Romano-British date occur in the proximity, but at depth. However, the small quantities involved would perhaps suggest that the remains are of field systems or settlement fringe; previous archaeological investigations on the Pennygate Drain to the southwest revealed an apparent Roman settlement ditch which yielded a large quantity of pottery from an exposed section, without any invasive investigation (Herbert 1996).

There is no Early or Middle Saxon material from the investigation and although pottery of this date is scarce the absence of artefacts of this period is almost certainly genuine and reflects changes to the environment, with large parts of this area suffering flooding in the late and post-Roman periods.

The quantities of medieval to early-modern artefacts, with a slight concentration of 12th - 14th century pottery recorded in the southeast, suggest that this material probably reflects manuring scatter of agricultural land and probably derives from settlement or occupation to the southeast of the proposed development area.

Geophysical results revealed numerous amorphous responses attributed to natural causes. However, a number of linear trends were discerned and may represent previous boundary or drainage ditches. Interestingly, early maps of the proposed development area depict the land parcelled into smaller units and several of these anomalies represent these features and therefore confirming an agricultural land use.

7. ASSESSMENT OF SIGNIFICANCE

For assessment of significance the *Secretary of State's criteria for scheduling ancient monuments* has been used (DoE 1990, Annex 4; See Appendix 4).

Period
Activity dateable from the probable Iron Age to the early modern periods has been recognised within the assessment area. However, the absence of earlier prehistoric remains can probably be attributed to contemporary environmental conditions.

Rarity
The medieval and later dated artefactual remains identified at the proposed development site are characteristic of manuring scatters indicating an agricultural setting on the edge of settlement and as such is quite common. However, finds of probable Iron Age and Roman date are less common and suggest settlement either within or adjacent to the area.

Documentation
Records of archaeological sites and finds made in the assessment area are kept in the

Lincolnshire Sites and Monuments Record and parish files at Heritage Lincolnshire. A number of previous assessments have been carried out in the vicinity (Albone 2000), including one specifically related to the site (Albone 2001).

Group value
The sparse nature of the archaeological evidence from the assessment area does not present any temporal or spatial groupings apart from the slight concentration of medieval pottery to the southeast. The scatter of artefacts generally represent manuring of arable land on the fringe of settlement during those periods.

Survival/Condition
All pre-medieval archaeological remains potentially existing within the assessment area survive only as buried remains. It is possible that remains of these periods are sealed beneath later silt deposits. Romano-British pottery was recently found below 2m of later silt deposits on Pinchbeck Road to the east of the proposed development site. Any such buried archaeological remains are likely to be comparatively well preserved.

Any shallow buried archaeological remains which may exist at the site are likely to have been damaged by ploughing activity.

Fragility/Vulnerability
As already discussed, any near-surface archaeological remains which may exist at the site have probably been damaged by agricultural activity. These remains would be very susceptible to further erosion, both from ploughing and groundworks associated with development. Archaeological remains sealed below silt deposits would be under some threat from any deeper groundworks associated with the proposed development

Diversity
Moderate period diversity is represented by evidence of probable Iron Age, Roman, medieval, Post-medieval and early-modern remains. The small artefact assemblage from each period, is generally too low to attribute function, although it is suggested that the medieval and later dated material has arrived on site through manuring.

Potential
Due to the contemporary environmental conditions suggested for the site area during the prehistoric period, the potential for unidentified remains of this age is low.

Although only a few sherds of probable Iron Age and Romano-British pottery was identified within the assessment area, it is highly likely that remains of this period are buried beneath later alluvial deposits. The presence of Romano-British settlement remains, recorded at depth, to the west, south and east suggest a moderate potential for archaeological remains of this period to be present at the site. In view of this it is possible that any Romano-British remains at the proposed development site may lie at a depth of *c.*1.0 - 1.5m below the present ground level. However, the presence and depth of these deposits could only be confirmed by augering or trial excavation.

No evidence of Anglo-Saxon date was identified at, or near, the proposed development site and the potential for remains of this period to be present at the site appears to be low.

The medieval to early-modern artefacts identified during the fieldwalking survey appears to have derived through manuring of the area and suggests an arable land-use throughout these periods. Furthermore, the geophysical survey results suggest the likelihood of further associated remains, such as former boundary/drainage ditches, will exist at the site.

8. EFFECTIVENESS OF TECHNIQUES

The techniques employed during the archaeological investigation were effective. Volume-specific magnetic susceptibility survey enabled a rapid evaluation of the whole area. Whilst subsequent gradiometer survey in two areas was positioned to encompass a topographic feature/earthwork and the more credible anomalies from the susceptibility data.

Fieldwalking also enabled rapid investigation in order to identify possible archaeological sites and to achieve an overview of the general nature of the archaeological.

9. CONCLUSIONS

A geophysical and fieldwalking survey was undertaken as part of an evaluation process to assess the archaeological potential of land at Wygate Park, Spalding, Lincolnshire, prior to determination of any planning application.

The geophysical survey recorded two zones of enhanced susceptibility, one of which may reflect a former field boundary. Detailed Gradiometer survey revealed a plethora of probable natural responses although a short ditch-type anomaly was detected. Several other linear ferrous and magnetic signals were recorded and may represent damaged pipes, service or field drains or former drainage ditches.

The finds from the fieldwalking probably indicates that the proposed development site lies on the fringe of probable Iron Age to Romano-British settlement, the remains probably situated at depth or beyond the western side of the site. Interestingly, the Roman pottery came from a higher part of the site probably indicating an extinct saltmarsh creek (rodden). There is no evidence of any Saxon activity at the site and use of the area probably resumed in the medieval period, probably about the time of the Norman Conquest. The artefactual remains probably derived from manuring, with a slight concentration of medieval pottery being recorded in the southeast corner, suggesting that the area was agricultural land on the edge of any settlement. This situation was maintained until the early modern period.

10. ACKNOWLEDGEMENTS

Archaeological Project Services would like to acknowledge the assistance of Broadgate Homes Ltd who commissioned this report. The work was coordinated by Tom Lane who also edited this report. Access to the County Sites and Monuments Record was kindly provided by Mark Bennet and Sarah Grundy of the Archaeology Section, Lincolnshire County Council. Thanks are also due to the staff of the Lincolnshire Archives Office and Lincoln Central Library.

11. PERSONNEL

Project co-ordinator: Tom Lane
Field staff: Rachel Hall
Tobin Rayner
Post-fieldwork Analyst: Tobin Rayner

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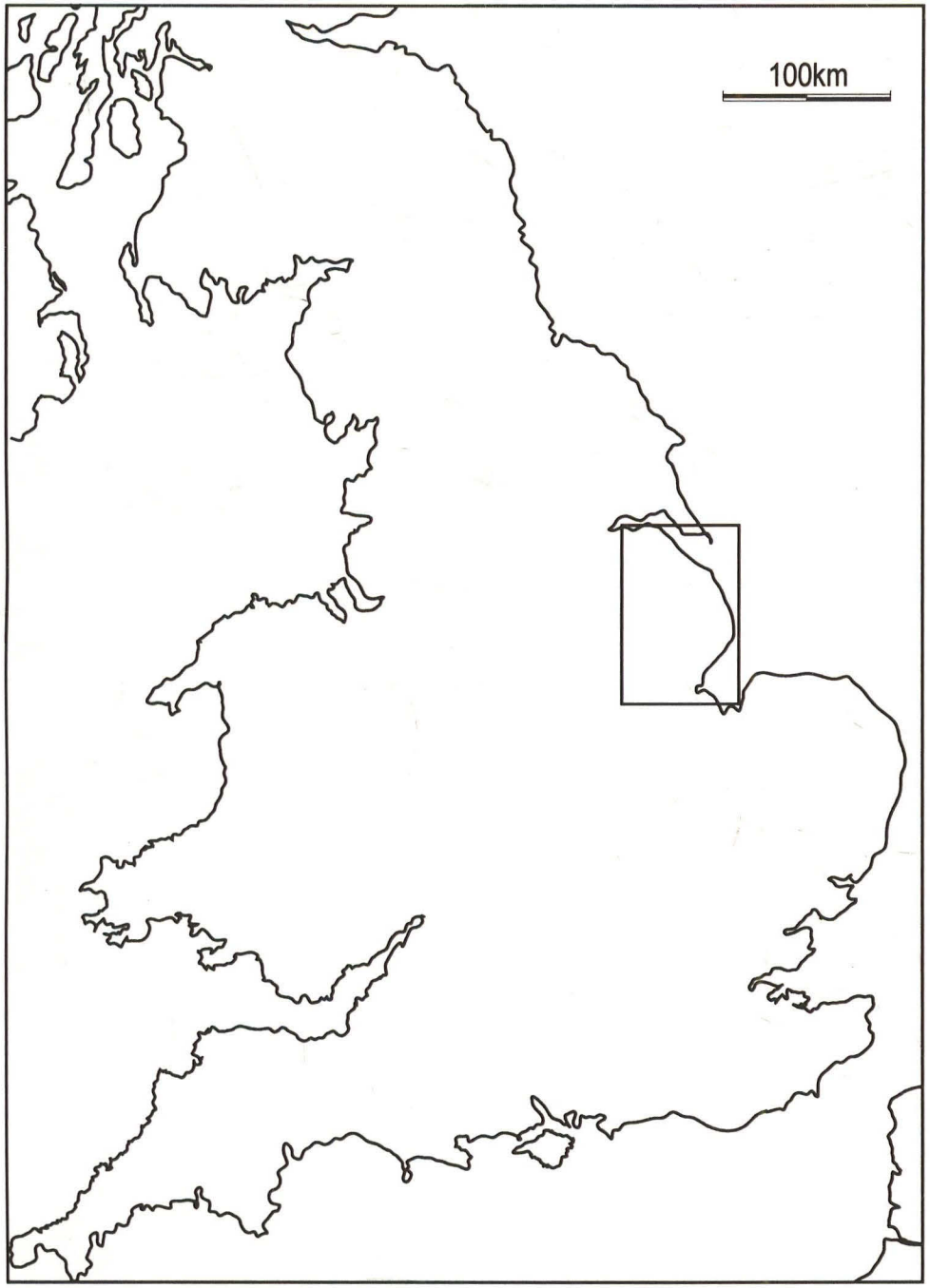
13. ABBREVIATIONS

APS	Archaeological Project Services
DoE	Department of the Environment
HMSO	Her Majesties' Stationery Office
IFA	Institute of Field Archaeologists
LAO	Lincolnshire Archives Office
SMR	Sites and Monuments Record Office



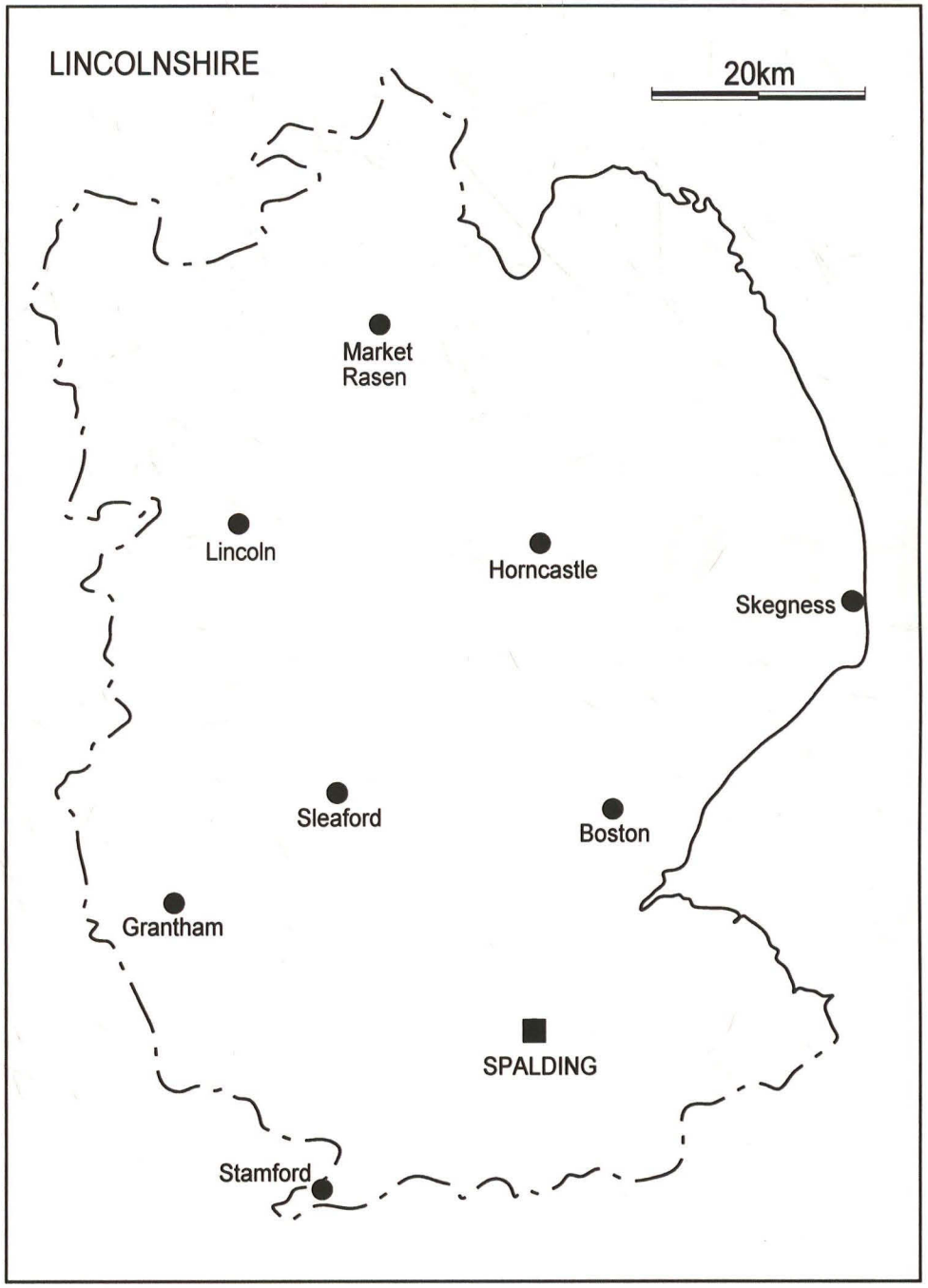


Figure 1: General Location Plan

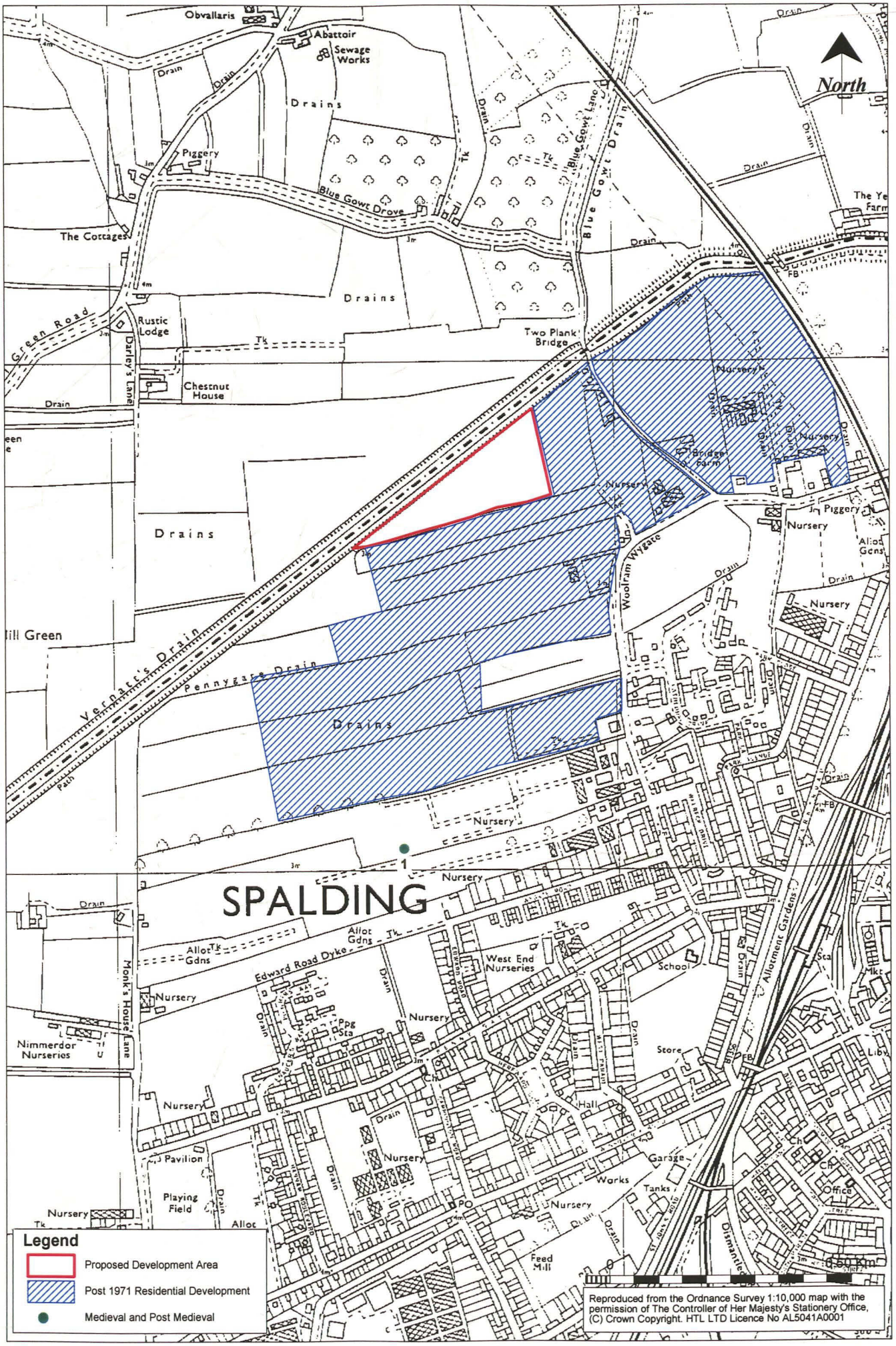


Figure 2: Location Plan and Archaeological Setting

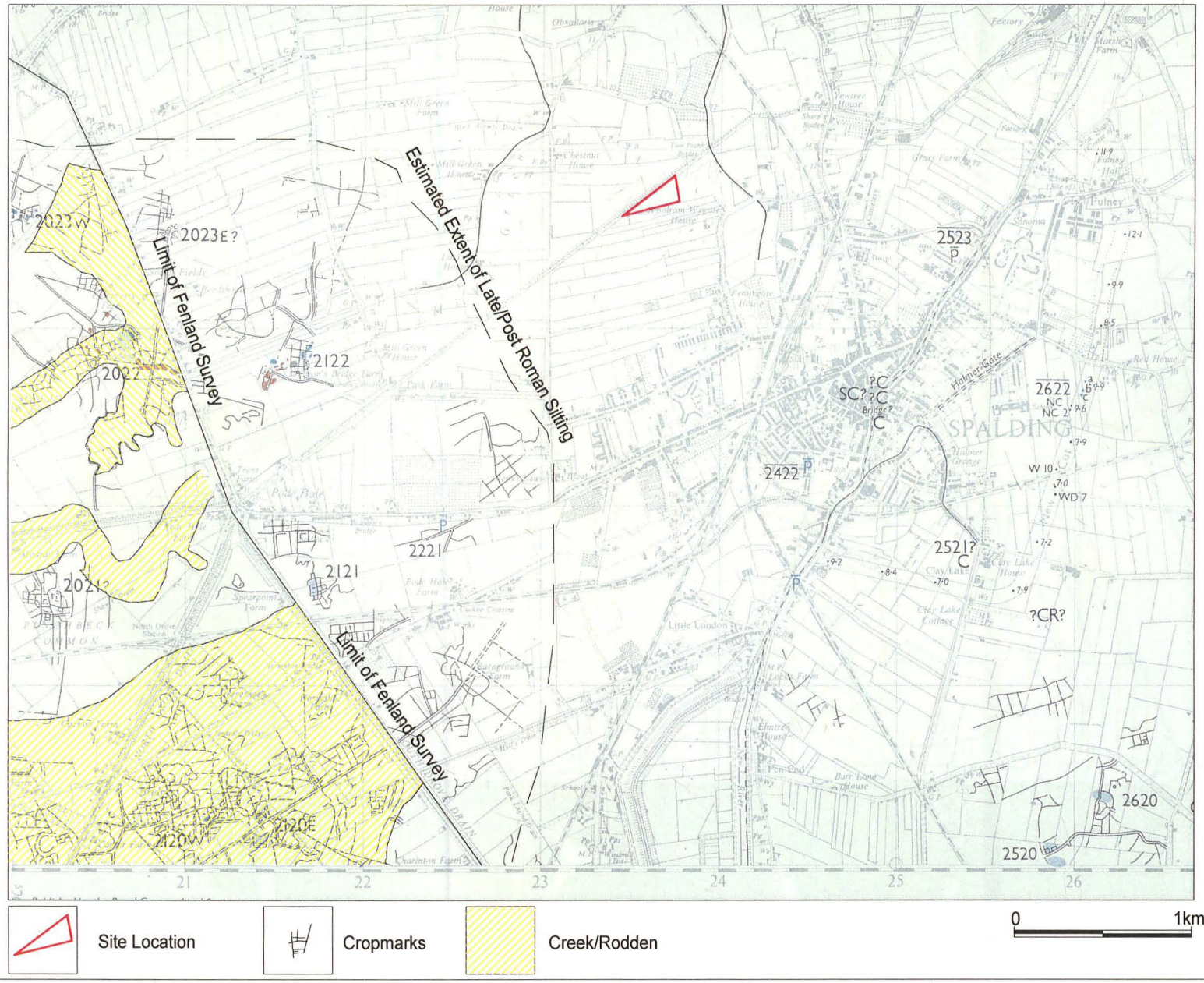


Figure 3: The Roman Landscape (Hallam 1970, Map 4)

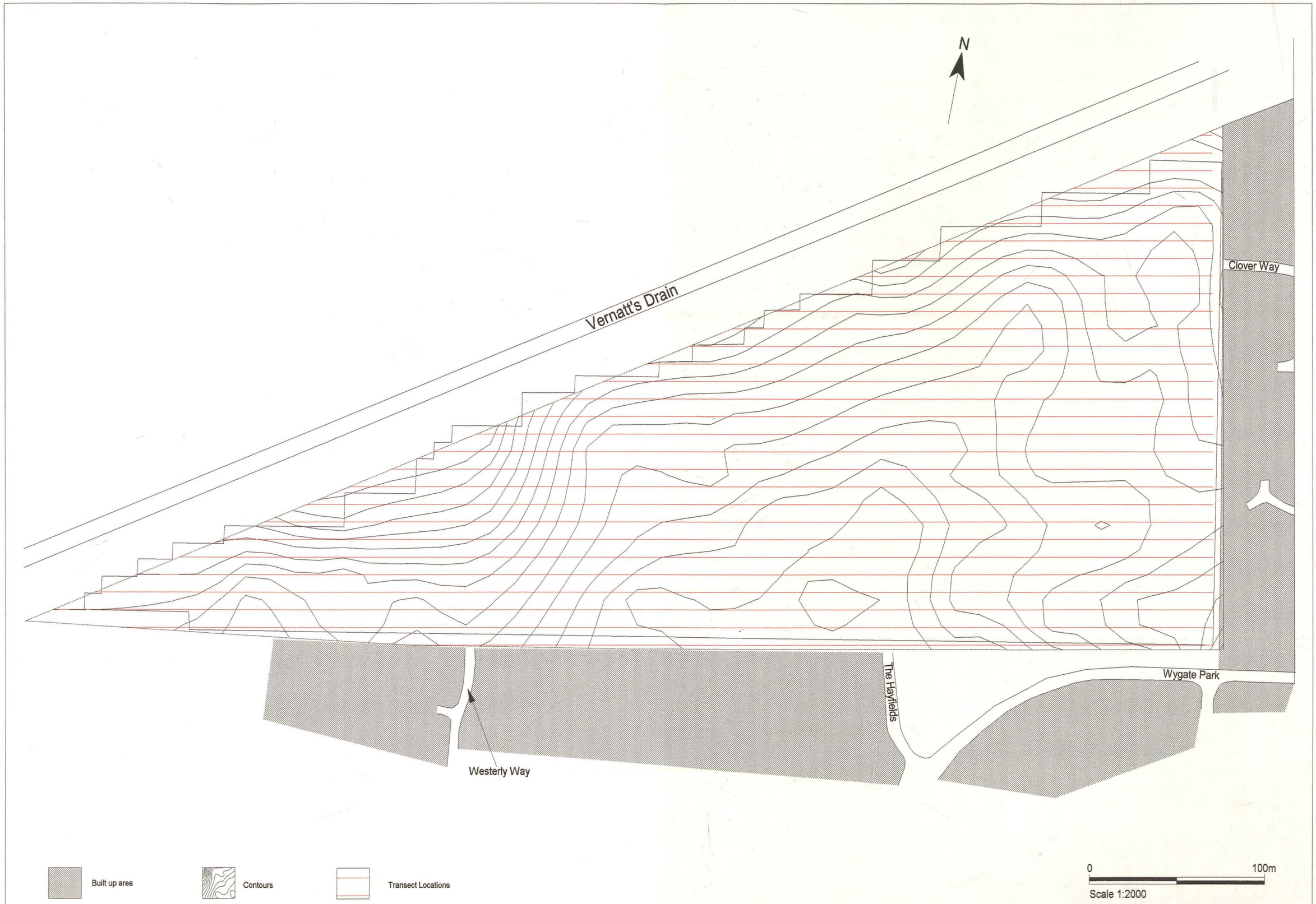


Figure 4: Field Contour Survey and Transect Locations

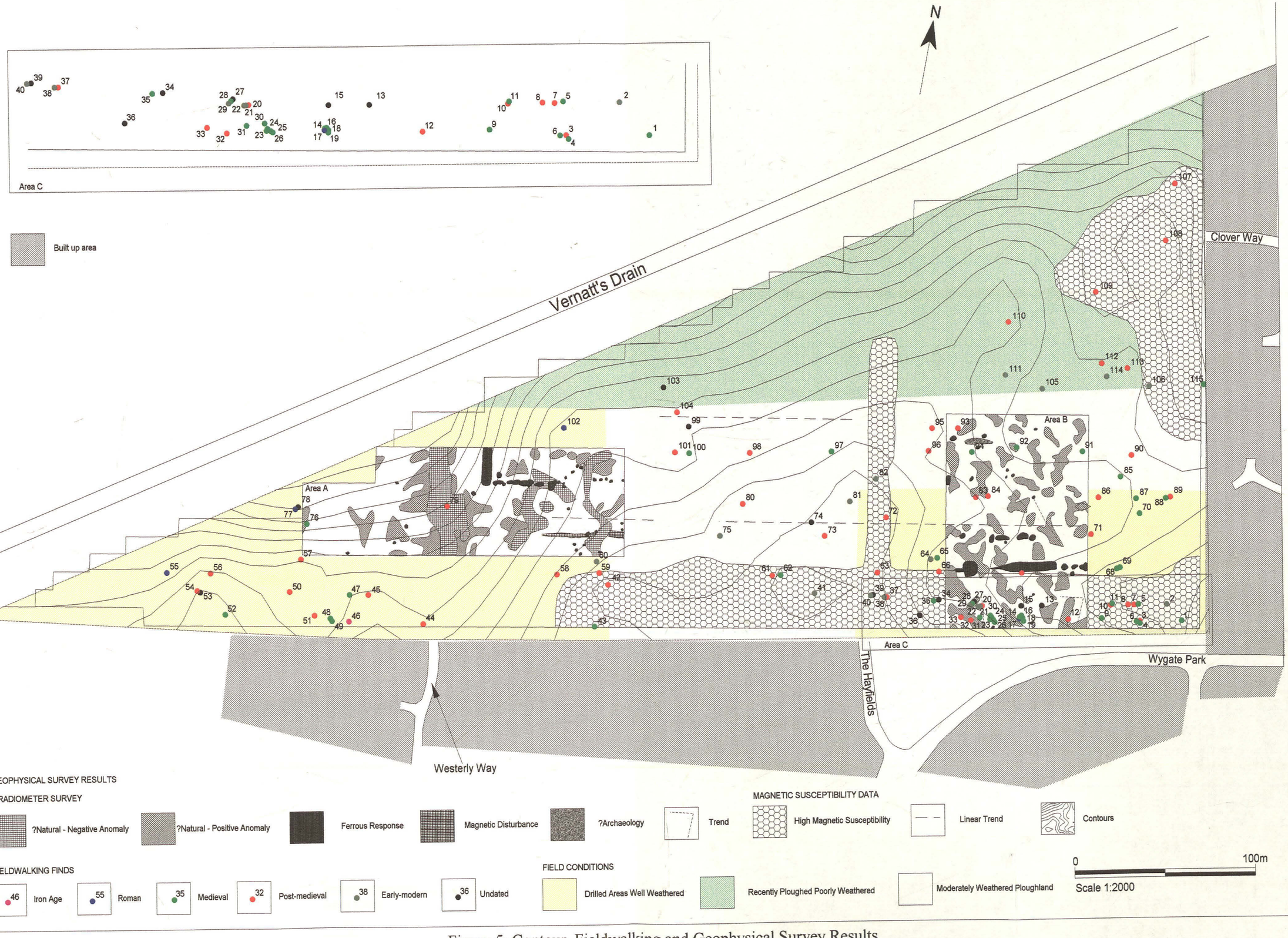


Figure 5: Contour, Fieldwalking and Geophysical Survey Results

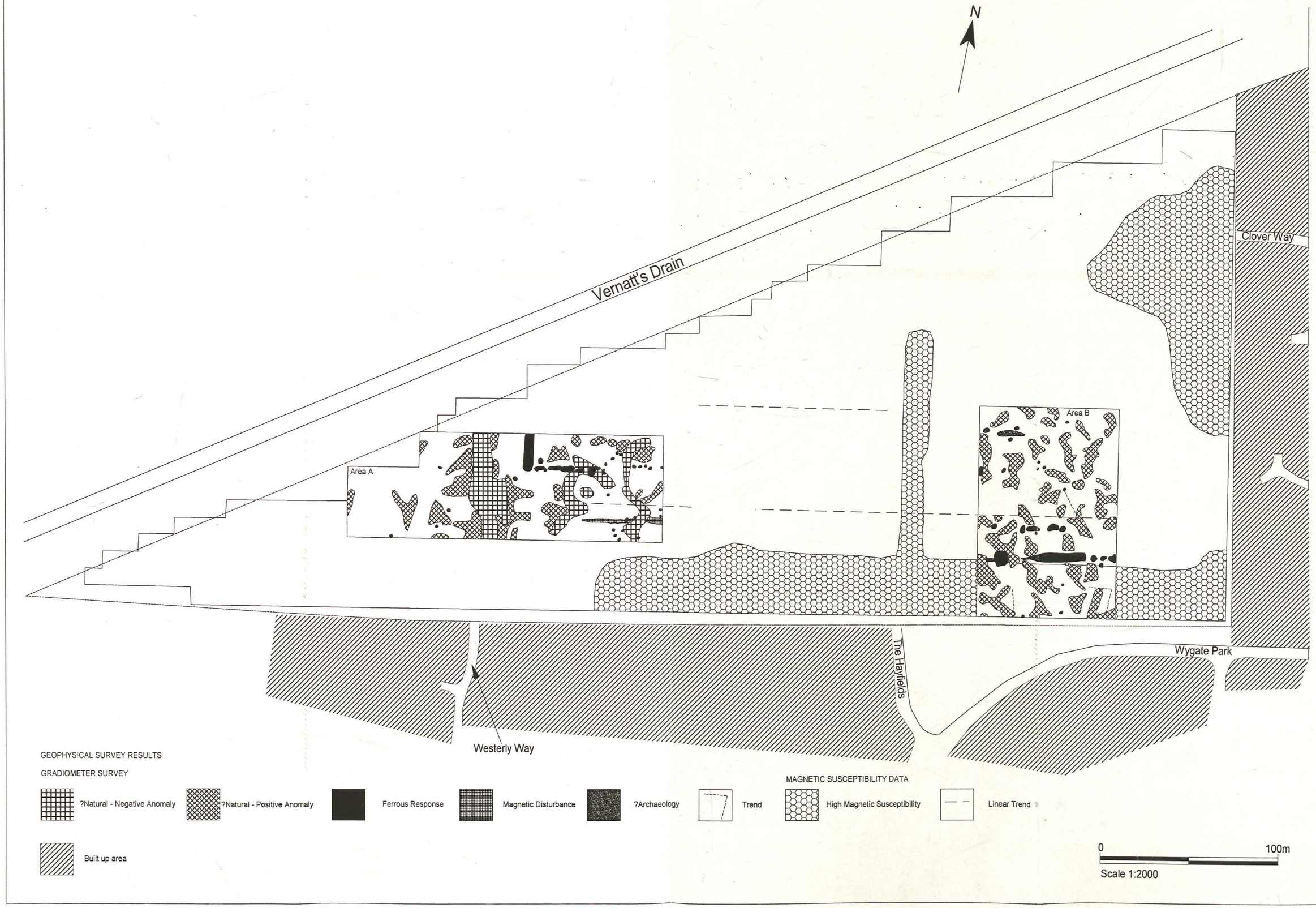


Figure 6: Geophysical Results

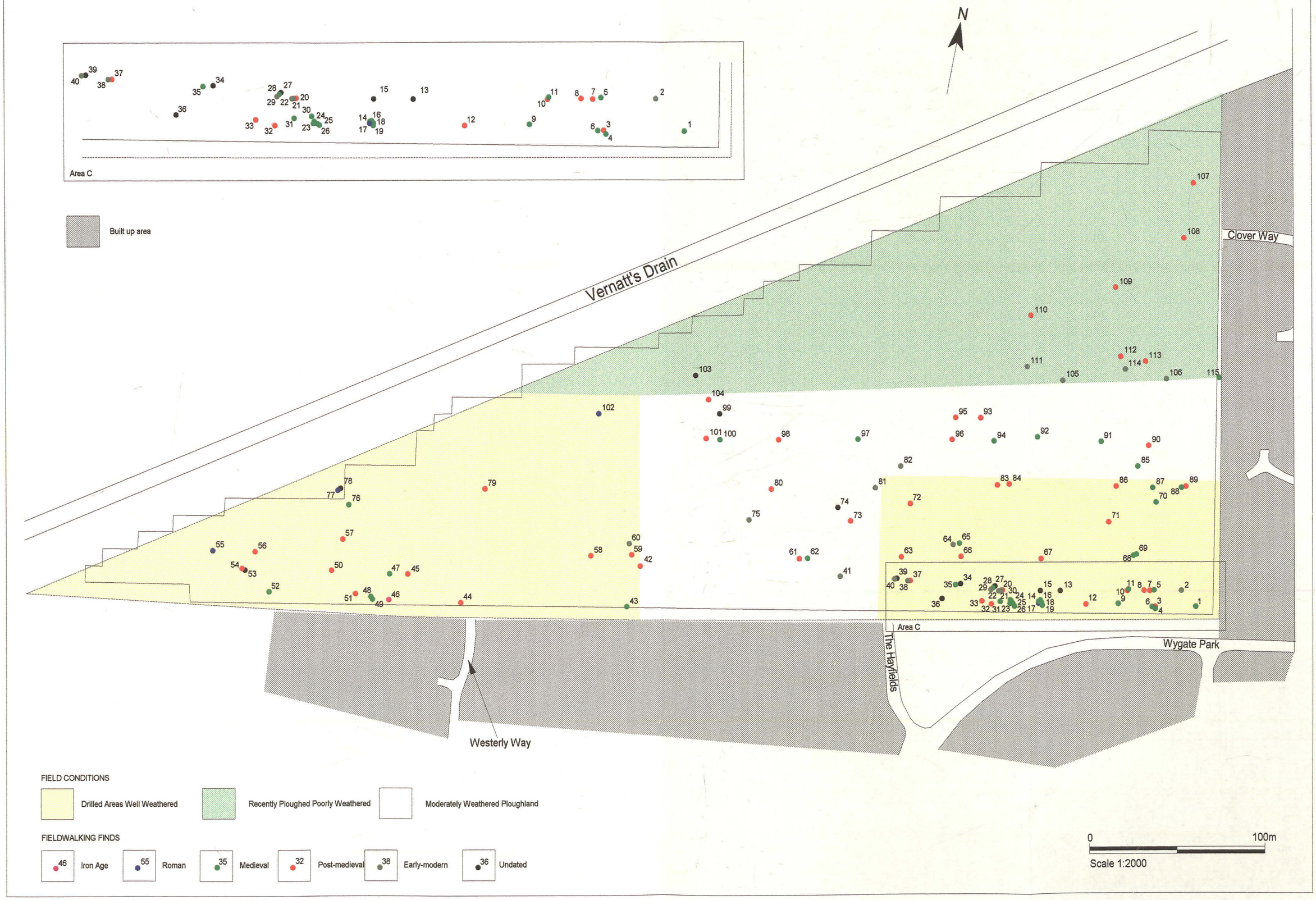


Figure 7: Full Fieldwalking Results

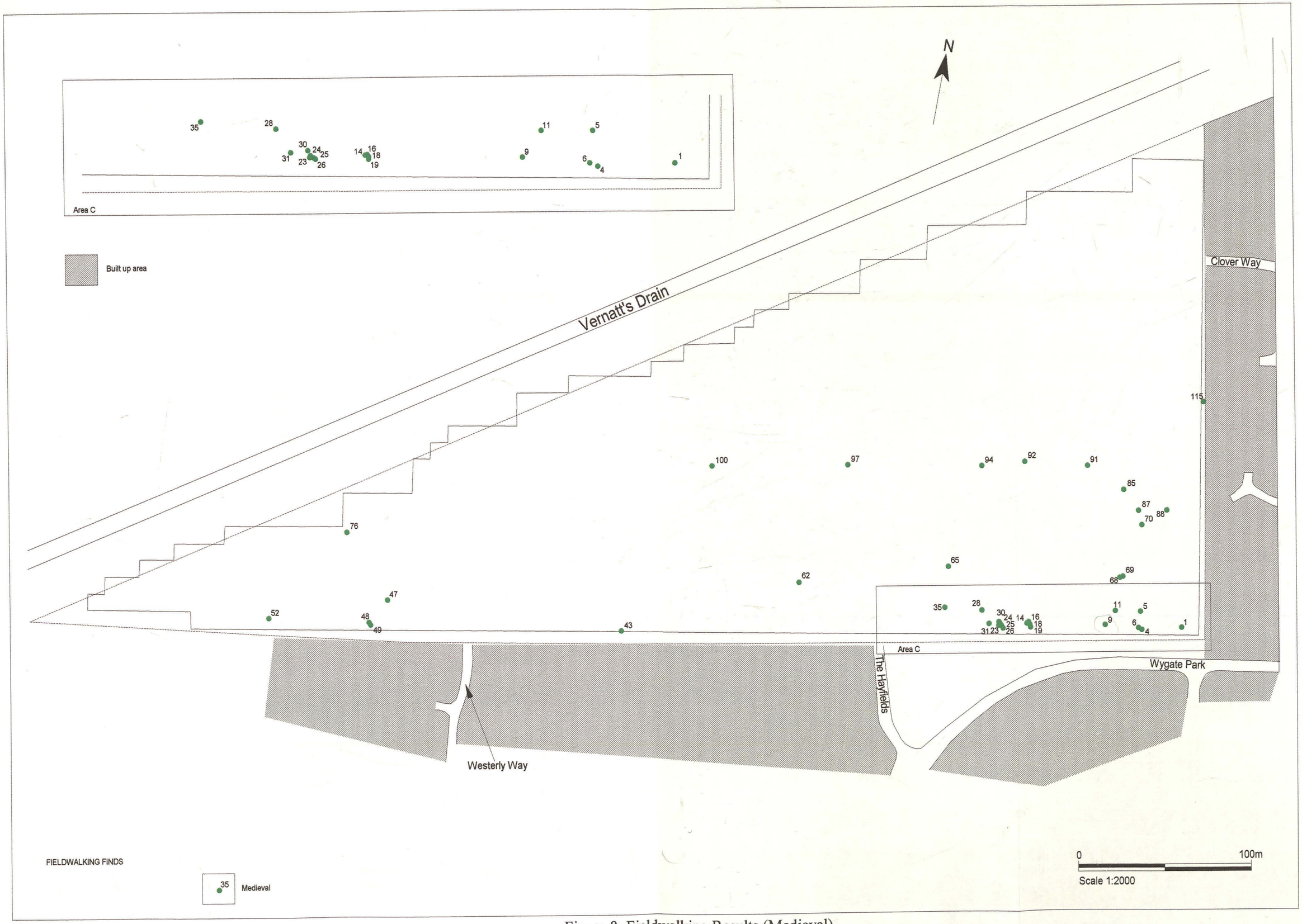


Figure 8: Fieldwalking Results (Medieval)

Figure 9: Fieldwalking Results (Post-medieval)

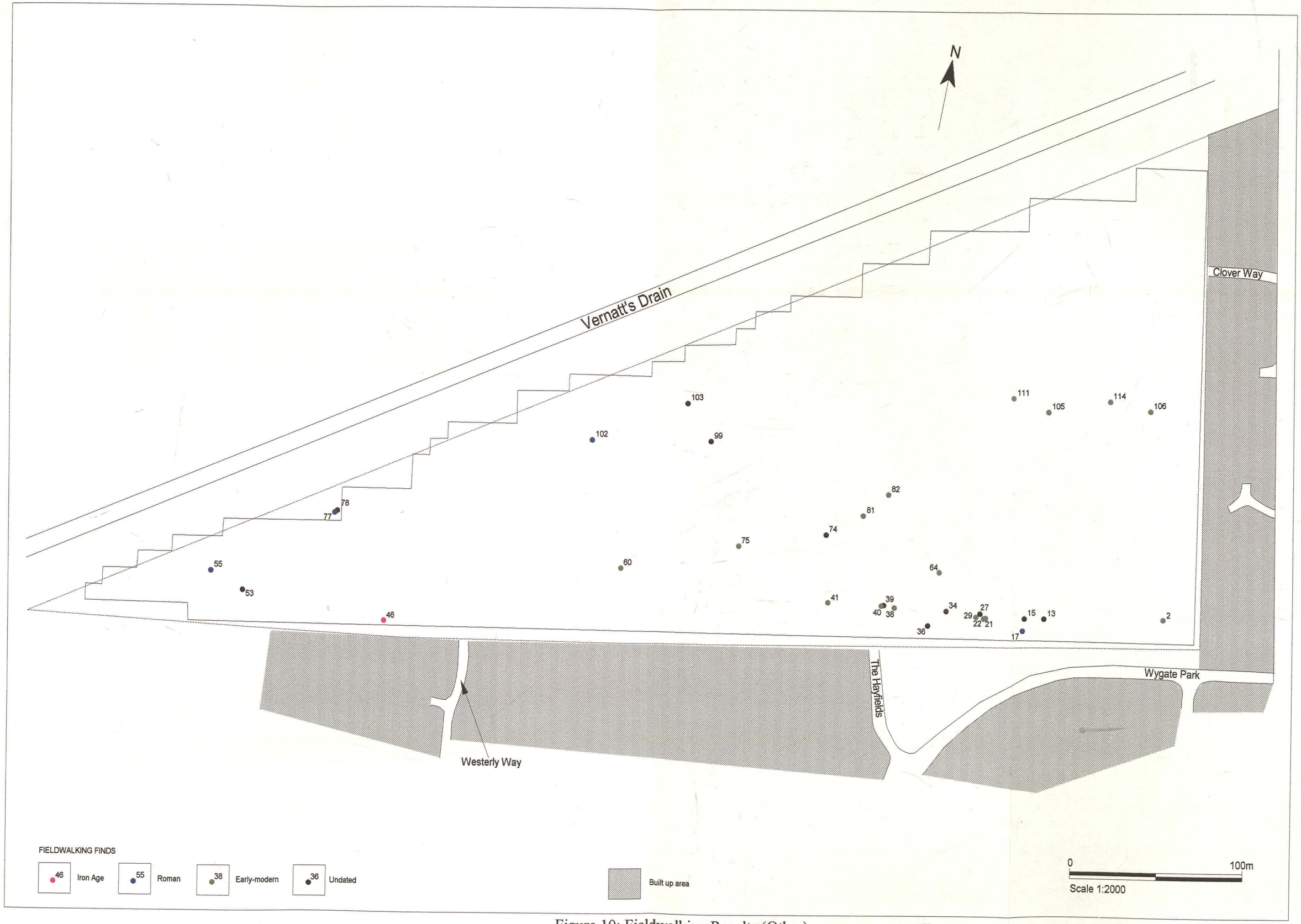


Figure 10: Fieldwalking Results (Other)

Plate 1: General view of the proposed development area, looking southwest. Photograph taken in August 2001.

Plate 2: General view of the proposed development area, looking east. Photograph taken in August 2001.

Appendix 1

Specification for Geophysical and Fieldwalking Survey on Land off The Hayfields, Wygate Park, Spalding, Lincolnshire.

1 SUMMARY

1.1 An archaeological evaluation is required on land proposed for residential development off The Hayfields, Wygate Park, Spalding, Lincolnshire. A desk-based assessment has been undertaken and further non-intrusive evaluation, comprising fieldwalking survey and geophysical survey, of the site is now required.

1.2 The desk-based assessment noted the presence of post-medieval and medieval artefacts at the site. Although no known archaeological sites were identified within the proposed development Romano-British remains have been recorded in the vicinity, buried below later alluvial deposits.

1.3 Fieldwalking will be undertaken, on all fields in a suitable condition. Surface artefacts will be collected, assigned a unique reference number and accurately plotted.

1.4 The application area will be subject to soil susceptibility mapping in order to identify areas of enhanced magnetic activity and allow a decision to be made on any further detailed survey. An allowance has been made for detailed magnetometry to be carried out over 20% of the area, based on the results of the soil mapping.

1.5 On completion of the fieldwork the geophysical results will be analysed by computer. A report giving a summary of results will be produced. This will include plans of the location of the survey and computer-generated plots of the survey results. Additionally, an interpretive diagram of the results will be included in the report.

1.6 Artefacts recovered during fieldwalking will be identified and plots produced showing the location of different dates and classes of artefact. Plans showing a summary of the results of both elements of the survey will also be produced.

2 INTRODUCTION

2.1 This document comprises a specification for geophysical and fieldwalking survey on land off The Hayfields, Wygate Park, Spalding, Lincolnshire. The site is located at national grid reference TF 2370 2375 (centre).

2.2 This document contains the following parts:

2.2.1 Overview

2.2.2 Aims and objectives

2.2.3 Stages of work and methodologies

2.2.4 List of specialists

2.2.5 Programme of works and staffing structure of the project

3 SITE LOCATION

3.1 Spalding is situated 23km southwest of Boston and 30km southeast of Sleaford in the administrative district of South Holland. The site is located to the northwest of the town between existing residential areas, to the south and east, and Vernatt's Drain to the north (Fig. 1).

3.2 The site is a triangular block of land covering an area of approximately 10ha. Currently part of the site is ploughed and part is under winter cereal.

4 PLANNING BACKGROUND

4.1 The site of the proposed residential development has been subject to a desk-based assessment collating existing information on the known or potential archaeological resource (APS 2001). The Archaeological Officer, Lincolnshire County Council has recommended that a further stage of non-intrusive archaeological evaluation, comprising geophysical and fieldwalking surveys, be carried out to provide information to assist the determination of any planning application.

5 SOILS AND TOPOGRAPHY

5.1 The site lies on level ground, at about 3m OD. Local soils are coarse silty calcareous alluvial gley soils of the Wisbech series.

6 THE ARCHAEOLOGY

6.1 The site has been subject to a desk-based assessment (APS 2001) which identified evidence relating to medieval, post-medieval and modern activity. No evidence of prehistoric archaeology was identified in the assessment area.

6.2 No evidence of Romano-British has been identified within the proposed development site, however, evidence dating to this period has been recorded in the surrounding area. Romano-British remains in the vicinity, particularly to the south and west of the site, have been identified buried beneath later alluvial deposits, at approximately 1m - 1.5m below present ground surface. If Romano-British remains are present on the site it is likely that they lie beneath similar alluvial deposits.

6.3 Evidence of Anglo-Saxon occupation has not been recorded in the area, although remains of this period, if present, may also be sealed by alluvial deposits.

6.4 Finds of medieval and post-medieval date were noted on the site, probably manuring scatters associated with agriculture. Map evidence indicated a former field system, comprising elongated ditched fields, predating Vernatt's Drain which was constructed in the 17th century.

7 AIMS AND OBJECTIVES

7.1 The aims of the fieldwalking and geophysical surveys will be:

7.1.1 to gather information on the presence or absence of archaeology within the application area to enable the archaeological curator to formulate a scheme for the management of any such remains.

7.2 The objectives will be to establish:

7.2.1 the form of the archaeological features present within the site;

7.2.2 the spatial arrangements of the archaeological features present on the site;

7.2.3 the density of archaeological features present in the investigation area

7.2.4 the date range of archaeological activity on the site

8 GEOPHYSICAL SURVEY

8.1 <u>Reasoning for this technique</u>

8.1.1 The geophysical survey of the site will comprise a programme of magnetic susceptibility mapping and detailed magnetometry using a fluxgate gradiometer. This technique enables large areas to be investigated and the results facilitate the identification of the likely archaeological potential of the site.

8.1.2 The effectiveness of the techniques is limited by background magnetic susceptibility and the ground cover which ideally should be minimal.

8.2 Methodology

8.2.1 The entire area of the site will be subject to magnetic susceptibility mapping by an experienced operator in order to identify variations in the magnetic susceptibility of the topsoil. Readings will be taken at 10m intervals.

8.2.2 Based on the results of the magnetic susceptibility mapping areas will be selected for detailed magnetometry. 20% of the application area will be subject to magnetometry, carried out by an experienced operator, to identify areas of enhanced magnetic activity. The survey areas will be divided into 20m squares and 800 readings will be logged per square.

8.3 Report

8.3.1 A report will be prepared on completion of the survey detailing the methodologies used and the results of the work. The areas of enhanced magnetic activity will be shown on a series of computer generated plots allowing the identification of areas which might require further detailed survey. The report will be prepared in accordance with the English Heritage (1995) document *Geophysical Survey in Archaeological Field Evaluations*, Research and Professional Services Guideline **1**.

9 FIELDWALKING

9.1 Fieldwalking will be undertaken on areas in a suitable condition on transects at approximate 10m intervals, using plough or drill furrows as a directional guide.

9.1.1 Surface artefacts will be collected, bagged and assigned a unique reference number.

9.1.2 Each of these finds will be accurately plotted using a Geodolite Total Station, placed within a site-specific grid.

9.2 During fieldwalking the surface of the fields will also be inspected for evidence of earthwork or soil-mark features.

9.3 The report will include specialist description of artefacts recovered and plots showing the position of transects and the location of the different periods and classes of artefacts. Plans showing detailed and summary interpretations of the results of the fieldwalking and the geophysical survey will be produced.

10 REPORT DEPOSITION

10.1 Copies of the fieldwalking and geophysical survey report will be sent to: the Client; the Archaeology Officer, Lincolnshire County Council; and the Lincolnshire County Sites and Monuments Record.

11 PUBLICATION

11.1 A report of the results of the geophysical and fieldwalking survey will be published in Heritage Lincolnshire's annual report and an article of appropriate content will be submitted for inclusion in the journal of the Society for Lincolnshire History and Archaeology.

12 CURATORIAL MONITORING

12.1 Curatorial responsibility for the project lies with the Archaeology Officer, Lincolnshire County Council. Seven days notice in writing will be given to the archaeological curator prior to the commencement of the project to enable them to make appropriate monitoring arrangements.

13 VARIATIONS TO THE PROPOSED SCHEME OF WORKS

13.1 Variations to the scheme of works will only be made following written confirmation from the archaeological curator that such alterations are acceptable.

13.2 Should the archaeological curator require any additional investigation beyond the scope of the brief for works, or this specification, then the cost and duration of those supplementary examinations will be negotiated between the client and the contractor.

14 SPECIALISTS TO BE USED DURING THE PROJECT

Task	Body to be undertaking the work
Geophysical survey	GSB Prospection
Pottery Analysis	Prehistoric: Dr D Knight, Trent and Peak Archaeological Trust
	Roman: B Precious, Independent Specialist
	Anglo-Saxon: J Young, Independent Specialist.
	Medieval and later: H Healey, independent archaeologist and G Taylor, Archaeological Project Services
Other Artefacts	J Cowgill, Independent Specialist

15 PROGRAMME OF WORKS

15.1 The geophysical survey will be undertaken by a geophysics specialist. The fieldwork is expected to take about 5 days to complete. The fieldwork will be followed by analysis and report preparation and is expected to take about 5-7 days depending on the quantity and complexity of the information gathered in the survey.

15.2 The fieldwalking survey will be undertaken by a supervisor and 2 assistants experienced in this type of work. The fieldwork is expected to take one day to complete. The fieldwork will be followed by processing, analysis and report production, expected to take 3-4 days depending on the quantity of artefacts recovered. Time has been allocated for specialist assessment of the artefacts.

16 INSURANCES

16.1 Archaeological Project Services, as part of the Heritage Trust of Lincolnshire, maintains Employers Liability Insurance of £10,000,000, together with Public and Products Liability insurances, each with indemnity of £5,000,000. Copies of insurance documentation can be supplied on request.

17 COPYRIGHT

17.1 Archaeological Project Services shall retain full copyright of any commissioned reports under the *Copyright, Designs and Patents Act* 1988 with all rights reserved; excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in the Project Specification.

17.2 Licence will also be given to the archaeological curators to use the documentary archive for educational, public and research purposes.

17.3 In the case of non-satisfactory settlement of account then copyright will remain fully and exclusively with Archaeological Project Services. In these circumstances it will be an infringement under the *Copyright, Designs and Patents Act* 1988 for the client to pass any report,

partial report, or copy of same, to any third party. Reports submitted in good faith by Archaeological Project Services to any Planning Authority or archaeological curator will be removed from said planning Authority and/or archaeological curator. The Planning Authority and/or archaeological curator will be notified by Archaeological Project Services that the use of any such information previously supplied constitutes an infringement under the *Copyright, Designs and Patents Act* 1988 and may result in legal action.

17.4 The author of any report or specialist contribution to a report shall retain intellectual copyright of their work and may make use of their work for educational or research purposes or for further publication.

18 BIBLIOGRAPHY

Archaeological Project Services, 2001 *Desk-based assessment of land off The Hayfields, Wygate Park, Spalding, Lincolnshire (SWP01),* APS Report No **112/01** unpublished report

Appendix 2

The Finds

by Hilary Healey, Tom Lane and Gary Taylor

A total of 115 items was recovered during fieldwalking of land at Wygate Park, Spalding. Pottery was by far the most abundant material retrieved and these artefacts ranged in date from the prehistoric to early modern periods.

A single, small, prehistoric sherd of probable Iron Age date was found by the southern boundary of the investigation area, toward the western corner of the site. It seems likely that this was brought to the surface during dyke cleaning, probably the field ditch that previously formed the southern limit of the area, or possibly Vernatt's Drain, which lies 100m away. Similarly, a very few (4) fragments of Roman pottery were retrieved. Three of these were all found in the western half of the site, in proximity to Vernatt's Drain. It is highly likely that these were brought to the surface during cleaning of the drain. The fourth fragment was found by the southern boundary of the site, toward the southeast corner of the area. It is probable that this was brought to the surface during cleaning of the adjacent field dyke. Taken together, the prehistoric and Roman material may indicate that remains of Iron Age to Romano-British date occur in the proximity, but at depth. However, the small quantities involved would perhaps suggest that the remains are of field systems or settlement fringe; previous archaeological reconnaissance nearby on the Pennygate Drain revealed an apparent settlement ditch which yielded a large quantity, 68 fragments probably representing 30 separate vessels, of Roman pottery from an exposed section, without any invasive investigation (Herbert 1996).

There is no Early or Middle Saxon material from the investigation and although pottery of this date is scarce the absence of artefacts of this period is almost certainly genuine and reflects changes to the environment, with large parts of this area suffering flooding in the late and post-Roman periods.

The earliest post-Roman material found at the site is Stamford ware of Late Saxon-early medieval date. Only two fragments of this fairly local, but widely traded, pottery type were recovered and one of these is of the developed type of 11th-12th century date. This material provides the earliest pieces of the large medieval component, almost 40 pieces, of the fieldwalking assemblage. Most of the medieval assemblage is provided by ceramics made at Bourne, only 15km to the west, though a few pieces from further afield, including Toynton All Saints at the southern end of the Lincolnshire Wolds and Lincoln or Nottingham, were also found. The medieval material has a distinct distributional bias, with the great majority of material of this date found in the southeastern part of the site, an area extending 250m west and 150m north from the southeastern corner of the investigation area. However, the quantities involved, and the lack of major concentrations, suggest that this material probably reflects manuring scatter from settlement/occupation to the southeast of the site.

Post-medieval artefacts provide the largest component of the assemblage, with almost 50 fragments of this period recovered. The date range of these artefacts indicate that they continue directly on from the medieval pieces, with no evidence of a break in deposition of material. Local products, including items made in Bourne, are present though regional imports, particularly from Staffordshire and other parts of the Midlands, are common. The distribution of the post-medieval artefacts largely reflects that of the medieval, though is more extensive and more dispersed, and there is an additional loose cluster in the southwest corner of the site. As with the medieval material, the post-medieval artefacts probably derive from manuring scatter from occupation to

the southeast of the investigation site.

Artefacts of early modern date occur thinly distributed throughout the area, and probably reflect casual discard or manuring scatter.

In summary, the fieldwalking collection probably indicates that there is evidence of Iron Age to Romano-British settlement fringe remains at depth at or beyond the western side of the site. There is no evidence of any Saxon activity at the site and use of the area probably resumed in the medieval period, probably about the time of the Norman Conquest, with the artefacts suggesting the area was agricultural land on the settlement fringe, a situation that was maintained until the early modern period.

Reference

Herbert, N.A., 1996 *Archaeological Watching Brief at Pennygate Drain, Spalding, Lincolnshire (SPG96)*, APS Report No. **38/96**

Plot	Material	Date	Period
1	Bourne A/B ware	12th-14th century	med
2	green bottle glass	19th-early 20th century	early modern
3	red earthenware, black glazed	18th century	post-med
4	Bourne A/B ware	12th-14th century	med
5	Toynton All Saints-type ware	13th-15th century	med
6	Bourne A ware	12th-14th century	med
7	brick	post-med	post-med
8	?Staffordshire slipware	18th century	post-med
9	Developed Stamford ware	11th-12th century	med
10	Nottingham salt-glazed stoneware	18th century	post-med
11	unidentified green-glazed earthenware	14th-16th century	med-post-med
12	Midland Purple-type ware	17th century	post-med
13	sheep tooth		
14	?Bourne A/B ware	12th-14th century	med
15	clinker		
16	Bourne A/B ware	12th-14th century	med
17	grey ware	2nd-3rd century	Rom
18	??Bourne A/B ware	12th-14th century	med
19	Bourne A/B ware	12th-14th century	med
20	salt-glazed stoneware	17th-18th century	post-med
21	tar/bituman?		early modern
22	stoneware	19th-early 20th century	early modern
23	Bourne A/B ware	12th-14th century	med
24	Bourne A/B ware	12th-14th century	med
25	Bourne A/B ware	12th-14th century	med
26	?Bourne A/B ware	12th-14th century	med
27	brick/burnt clay		
28	Bourne A ware	12th-14th century	med
29	colourless glass bottle	19th-early 20th century	early modern
30	Bourne B ware	12th-14th century	med
31	Bourne A/B ware	12th-14th century	med
32	Bourne D ware	16th-17th century	post-med
33	Bourne A/B ware	12th-14th century	med
34	mortar?		
35	Toynton All Saints ware	13th-15th century	med
36	animal bone		
37	red earthenware, brown glazed	18th century	post-med
38	stoneware	19th-early 20th century	early modern
39	stone roof tile, slightly burnt		
40	white earthenware, burnt	19th century	early modern
41	coin, brass 3d 1941	1941	early modern
42	Swithland slate	post-med	post-med
43	Bourne A/B ware	12th-14th century	med
44	unidentified green-glazed earthenware	14th-17th century	post-med
45	salt-glazed stoneware	18th century	post-med
46	prehistoric ware	Iron Age	prehistoric
47	Bourne A/B ware	12th-14th century	med
48	Bourne A/B ware	12th-14th century	med
49	Bourne A/B ware	12th-14th century	med
50	salt-glazed stoneware	18th century	post-med
51	salt-glazed stoneware	17th-18th century	post-med
52	Lincoln/Nottingham ware	13th-14th century	med
53	stone roof tile		
54	black basalt ware	18th century	post-med
55	Nene Valley greyware	3rd century	Rom
56	red earthenware, mottled	18th century	post-med
57	Nottingham salt-glazed stoneware	18th century	post-med
58	red earthenware, black glazed	18th century	post-med
59	red earthenware, black glazed	18th century	post-med
60	glass bottle, hexagonal	19th century	early modern
61	Blackware	18th century	post-med
62	Bourne A/B ware	12th-14th century	med

63	Staffordshire mottled ware	18th century	post-med
64	stoneware	19th century	early modern
65	Stamford ware	9th-12th century	med
66	red earthenware, brown glazed	17th-18th century	post-med
67	red earthenware, black glazed	18th-19th century	post-med
68	Bourne A/B ware	12th-14th century	med
69	Bourne A/B ware	12th-14th century	med
70	??Bourne A/B ware	12th-14th century	med
71	Staffordshire glazed earthenware	18th century	post-med
72	salt-glazed stoneware	18th century	post-med
73	?white salt-glazed stoneware, burnt	18th century	post-med
74	animal bone		
75	plant pot	19th-early 20th century	early modern
76	Toynton All Saints-type ware	13th-15th century	med
77	grey ware	2nd-3rd century	Rom
78	cow tooth		
79	red earthenware, black glazed	18th century	post-med
80	Bourne D ware	16th-17th century	post-med
81	white earthenware, very burnt	?19th century	early modern
82	glazed earthenware	19th century	early modern
83	salt-glazed stoneware	18th century	post-med
84	red earthenware	18th century	post-med
85	Bourne A/B ware	12th-14th century	med
86	red earthenware, black glazed	18th century	post-med
87	Bourne A/B ware	12th-14th century	med
88	Bourne A/B ware	12th-14th century	med
89	salt-glazed stoneware	18th century	post-med
90	roof tile	post-med	post-med
91	Toynton All Saints-type ware	13th-15th century	med
92	Bourne A/B ware	12th-14th century	med
93	?Bourne D ware	16th-17th century	post-med
94	Bourne A/B ware	12th-14th century	med
95	?tin glazed earthenware	18th century	post-med
96	roof tile	post-med	post-med
97	Bourne A/B ware	12th-14th century	med
98	salt-glazed stoneware	17th-18th century	post-med
99	?tile		
100	Bourne A/B ware	12th-14th century	med
101	red earthenware, black glazed	17th-18th century	post-med
102	?greyware with Dales ware rim form	3rd century	Rom
103	burnt clay		
104	red earthenware, brown glazed	18th century	post-med
105	stoneware	19th-early 20th century	early modern
106	stoneware	19th-early 20th century	early modern
107	red earthenware, black glazed	18th century	post-med
108	salt-glazed stoneware	18th century	post-med
109	Bourne D ware	16th-17th century	post-med
110	red earthenware, black glazed	17th-18th century	post-med
111	drain	19th century	early modern
112	Staffordshire mottled ware	18th century	post-med
113	red earthenware, black glazed	18th century	post-med
114	drain	19th century	early modern
115	Bourne A/B ware	12th-14th century	med

Plot	Material	Date	Period
46	prehistoric ware	Iron Age	prehistoric
17	grey ware	2nd-3rd century	Rom
77	grey ware	2nd-3rd century	Rom
55	Nene Valley greyware	3rd century	Rom
102	?greyware with Dales ware rim form	3rd century	Rom
65	Stamford ware	9th-12th century	med
9	Developed Stamford ware	11th-12th century	med
1	Bourne A/B ware	12th-14th century	med
4	Bourne A/B ware	12th-14th century	med
6	Bourne A ware	12th-14th century	med
14	?Bourne A/B ware	12th-14th century	med
16	Bourne A/B ware	12th-14th century	med
18	??Bourne A/B ware	12th-14th century	med
19	Bourne A/B ware	12th-14th century	med
23	Bourne A/B ware	12th-14th century	med
24	Bourne A/B ware	12th-14th century	med
25	Bourne A/B ware	12th-14th century	med
26	?Bourne A/B ware	12th-14th century	med
28	Bourne A ware	12th-14th century	med
30	Bourne B ware	12th-14th century	med
31	Bourne A/B ware	12th-14th century	med
33	Bourne A/B ware	12th-14th century	med
43	Bourne A/B ware	12th-14th century	med
47	Bourne A/B ware	12th-14th century	med
48	Bourne A/B ware	12th-14th century	med
49	Bourne A/B ware	12th-14th century	med
62	Bourne A/B ware	12th-14th century	med
68	Bourne A/B ware	12th-14th century	med
69	Bourne A/B ware	12th-14th century	med
70	??Bourne A/B ware	12th-14th century	med
85	Bourne A/B ware	12th-14th century	med
87	Bourne A/B ware	12th-14th century	med
88	Bourne A/B ware	12th-14th century	med
92	Bourne A/B ware	12th-14th century	med
94	Bourne A/B ware	12th-14th century	med
97	Bourne A/B ware	12th-14th century	med
100	Bourne A/B ware	12th-14th century	med
115	Bourne A/B ware	12th-14th century	med
52	Lincoln/Nottingham ware	13th-14th century	med
5	Toynton All Saints-type ware	13th-15th century	med
35	Toynton All Saints ware	13th-15th century	med
76	Toynton All Saints-type ware	13th-15th century	med
91	Toynton All Saints-type ware	13th-15th century	med
11	unidentified green-glazed earthenware	14th-16th century	med-post-med
44	unidentified green-glazed earthenware	14th-17th century	post-med
32	Bourne D ware	16th-17th century	post-med
80	Bourne D ware	16th-17th century	post-med
93	?Bourne D ware	16th-17th century	post-med
109	Bourne D ware	16th-17th century	post-med
12	Midland Purple-type ware	17th century	post-med
20	salt-glazed stoneware	17th-18th century	post-med
51	salt-glazed stoneware	17th-18th century	post-med
66	red earthenware, brown glazed	17th-18th century	post-med
98	salt-glazed stoneware	17th-18th century	post-med
101	red earthenware, black glazed	17th-18th century	post-med
110	red earthenware, black glazed	17th-18th century	post-med
3	red earthenware, black glazed	18th century	post-med
8	?Staffordshire slipware	18th century	post-med
10	Nottingham salt-glazed stoneware	18th century	post-med
37	red earthenware, brown glazed	18th century	post-med
45	salt-glazed stoneware	18th century	post-med
50	salt-glazed stoneware	18th century	post-med

54	black basalt ware	18th century	post-med
56	red earthenware, mottled	18th century	post-med
57	Nottingham salt-glazed stoneware	18th century	post-med
58	red earthenware, black glazed	18th century	post-med
59	red earthenware, black glazed	18th century	post-med
61	Blackware	18th century	post-med
63	Staffordshire mottled ware	18th century	post-med
71	Staffordshire glazed earthenware	18th century	post-med
72	salt-glazed stoneware	18th century	post-med
73	?white salt-glazed stoneware, burnt	18th century	post-med
79	red earthenware, black glazed	18th century	post-med
83	salt-glazed stoneware	18th century	post-med
84	red earthenware	18th century	post-med
86	red earthenware, black glazed	18th century	post-med
89	salt-glazed stoneware	18th century	post-med
95	?tin glazed earthenware	18th century	post-med
104	red earthenware, brown glazed	18th century	post-med
107	red earthenware, black glazed	18th century	post-med
108	salt-glazed stoneware	18th century	post-med
112	Staffordshire mottled ware	18th century	post-med
113	red earthenware, black glazed	18th century	post-med
67	red earthenware, black glazed	18th-19th century	post-med
7	brick	post-med	post-med
42	Swithland slate	post-med	post-med
90	roof tile	post-med	post-med
96	roof tile	post-med	post-med
81	white earthenware, very burnt	?19th century	early modern
40	white earthenware, burnt	19th century	early modern
60	glass bottle, hexagonal	19th century	early modern
64	stoneware	19th century	early modern
82	glazed earthenware	19th century	early modern
111	drain	19th century	early modern
114	drain	19th century	early modern
2	green bottle glass	19th-early 20th century	early modern
22	stoneware	19th-early 20th century	early modern
29	colourless glass bottle	19th-early 20th century	early modern
38	stoneware	19th-early 20th century	early modern
75	plant pot	19th-early 20th century	early modern
105	stoneware	19th-early 20th century	early modern
106	stoneware	19th-early 20th century	early modern
41	coin, brass 3d 1941	1941	early modern
21	tar/bituman?		early modern
13	sheep tooth		undated
15	clinker		undated
27	brick/burnt clay		undated
34	mortar?		undated
36	animal bone		undated
39	stone roof tile, slightly burnt		undated
53	stone roof tile		undated
74	animal bone		undated
78	cow tooth		undated
99	?tile		undated
103	burnt clay		undated

Appendix 3

Geophysical Survey Report
by GSB Prospection

SITE SUMMARY SHEET

2002 / 01 Wygate Park, Spalding

NGR: TF 237 236 (approximate centre)

Location, topography and geology

The area of interest occupies a field on the north-western outskirts of Spalding, Lincolnshire. The triangular field is bounded to the south and east by recent housing development and to the north-west by Vernatt's Drain. At the time of survey, part of the field was under emergent cereal crop with other portions having been ploughed. The topography is flat with a slightly elevated area in the south-western corner. The soils are alluvial gleys comprising deep silty loams formed from a parent of marine and river alluvium (SSEW, 1983).

Archaeology

A topographical eminence in the south-west of the survey area is noted as a previously unidentified earthwork in a desk-based assessment by APS (APS, 2001). No other archaeological information for the site has been supplied.

Aims of Survey

Magnetic susceptibility mapping was undertaken over the entire area. Gradiometer survey sampled 20% of the area and was positioned on the basis of the susceptibility data and to encompass the possible earthwork feature. The aim was to locate any detectable anomalies of archaeological potential. This work forms part of a wider investigation by **Archaeological Project Services (APS).**

Summary of Results *

The magnetic susceptibility data show the most elevated values to be along the southern and eastern edges of the field. Those close to the eastern margin of the field lack form and probably reflect modern contamination, however, the possibility that they represent plough-damaged archaeological deposits cannot be wholly dismissed. Along the southern margin of the field, the high susceptibility values form a band and are thought to represent a former field. Other trends may be due to agricultural practice.

The gradiometer data are dominated by magnetically strong natural responses, which are attributed to pedological and palaeo-environmental features. Given their strong magnetic signal, an archaeological origin cannot be wholly excluded. Also, these dominant responses may obscure any lesser archaeological anomalies. A single response of archaeological potential has been recorded but its interpretation is cautious. Several linear ferrous anomalies have been detected and these are thought to reflect plough damaged drains or pipes. There is also the possibility that some or all of them represent magnetic debris within backfilled drainage ditches.

*** It is essential that this summary is read in conjunction with the detailed results of the survey.**

SURVEY RESULTS

2002 / 01 Wygate Park, Spalding

1. Survey Areas

1.1 The entire field, covering over 10ha, was subject to volume-specific magnetic susceptibility survey using a Bartington field coil. Subsequently, 2ha of gradiometer survey in two areas (Areas A and B) were undertaken. Area A was positioned to encompass a topographic feature / earthwork. Area B was positioned to investigate the more credible anomalies in the susceptibility data. The location of survey is shown in Figure 1 at a scale of 1:2500.

1.2 The survey grids were set out and tied in by **GSB Prospection** using an EDM system. Stakes have been left *in situ* to facilitate the re-establishment of the grid.

2. Display

2.1 Figure 2 presents the susceptibility data as two greyscales, of the raw and interpolated data, at the scale of 1:4000. This is accompanied by an interpretation at the same scale (Figure 3).

2.2 Figure 4 is a summary greyscale of the gradiometer data for Areas A and B at the scale of 1:1000, with an interpretation (Figure 5) at the same scale.

2.3 Figures 6 to 9 present the gradiometer data as XY traces and dot density plots with interpretations at the scale of 1:625.

2.4 Numbers in parentheses in the text refer to specific anomalies noted on the interpretation diagrams.

2.5 These display formats and the interpretation categories employed are discussed in the *Technical Information* section at the end of the report.

3. General Considerations - Complicating Factors

3.1 Parts of the field had been recently ploughed which, along with extensive waterlogging, made it very difficult to walk at an even pace with the gradiometer. This has introduced a degree of noise to the data.

3.2 Several isolated ferrous type responses are apparent in the gradiometer datasets. These are presumed to reflect modern debris in the topsoil, although, given their context, they may reflect objects of greater antiquity. Only the most prominent of these are highlighted on the interpretation diagram and are not referred to in the text unless considered relevant.

4. Results of Magnetic Susceptibility Survey

4.1 The susceptibility survey noted a few zones of elevated readings which may be of possible interest. The mean value is 15SI and the standard deviation is 8SI. The values range from 6SI to 169SI, although once this outlying value is excluded the range is 6SI to 55SI and the standard deviation narrows to 6SI. The single reading of 169SI was not a spurious reading but coincides with a patch of charcoal and metal debris.

4.2 A band of elevated susceptibilities (1) along part of the southern margin of the study area may be of interest. It has a fairly distinct northern edge, which reflects a marked change in the levels of susceptibility. It is possible that this zone of enhanced susceptibilities respects a former field boundary. Old OS maps provided by the client show the study area, now a single large field, to have been previously subdivided by boundary ditches. The gradiometry data may also provide corroboration for this interpretation (see paragraph 5.5).

4.3 A more amorphous zone of increased topsoil susceptibility (2) has been recorded at the north-eastern edge of the study area. This coincides with a gateway and the susceptibilities are probably due to modern topsoil contamination, although an archaeological cause cannot be wholly dismissed.

4.4 Two narrow lines, running north-south, of high susceptibility readings (3) and (4) have been recorded. These may be archaeological, however, gradiometry survey, which investigated (3), provides no support for this. Faint edges or trends (5) and (6) can also be discerned within the data. Given that they are parallel with (1), they may reflect former field boundaries or past agricultural practice. There is no corresponding trend within the gradiometer data.

5. Results of Gradiometer Survey

Area A

This area was positioned to cover a topographical feature and not on the basis of the susceptibility data.

5.1 No anomalies of obvious archaeological potential coincident with the topographical feature, have been recorded. The data are dominated by a plethora of amorphous anomalies which, though their form is characteristic of natural features, the strength of the responses is less so. For this latter reason, an archaeological origin cannot be excluded for all these putative natural anomalies. Three negative responses, (7), (8) and (9) have also been noted on the basis of their form. These are believed to be natural, (7) and (9) may be palaeochannels, although the sub-circular form of (8) may indicate an archaeological cause but this is highly tentative.

5.2 Several linear ferrous anomalies and areas of magnetic disturbance have been recorded. These are thought to reflect pipe/services or tile drains and appear to have suffered a degree of plough damage. A more speculative suggestion is that they represent magnetic debris within the backfill of former drainage ditches.

Area B

This area was positioned to investigate anomalies (1) and (3) and the two trends (5) and (6) noted in the susceptibility survey.

5.3 Again, the data are dominated by numerous amorphous responses attributed to natural causes. However, as in Area A, these are magnetically strong and may obscure any lesser archaeological anomalies. A single short ditch-type anomaly (10) has been recorded which may be of archaeological interest. Its lack of context, however, weighs against such an interpretation.

5.4 A number of trends can be discerned within the data. These are at the limits of detection and any interpretation would be speculative.

5.5 Several linear ferrous anomalies have been detected. These are thought to represent pipe/services or tile drains damaged by ploughing; again, they may reflect backfilled drainage ditches. The most prominent of these (11) broadly coincides with the northern edge of anomaly (1) noted in the magnetic susceptibility survey. Viewing the two data sources together, anomaly (11) may represent the boundary ditch to the field suggested by anomaly (1). On a

more pessimistic note, as anomaly (10) shares a similar orientation to these ferrous responses, it may share a similar cause.

6. Conclusions

6.1 The mapping of topsoil susceptibility over the whole study area recorded two zones of enhanced susceptibility. One is thought to reflect a former field division, whereas the second is more probably due to modern contamination. Neither corresponded to a topographic feature / possible earthwork noted in the desktop survey (APS, 2001). Other anomalies and trends have been noted for which any explanation would be tentative, although the most credible cause is recent agricultural practice.

6.2 Gradiometer survey, which sampled 20% of the total study area, was conducted in two areas: one over the possible earthwork feature, and another investigated several of the anomalies noted in the susceptibility survey. The data are dominated by a plethora of amorphous responses which are thought to be natural in origin, although an archaeological explanation might apply to some. These pronounced anomalies may also obscure any lesser archaeological responses.

6.3 A single short ditch-type anomaly of archaeological potential has been detected but its lack of context militates against such an interpretation. Numerous trends can also be discerned in the data and whilst they may be archaeological, any interpretation would be conjecture.

6.4 Several linear ferrous anomalies and areas of magnetic disturbance have been recorded. These are thought to represent damaged pipe/services or field drains. Some or all of them may also reflect magnetic debris used to backfill former drainage ditches.

Project Co-ordinator: Dr D Weston
Project Assistants: J Leigh & F Robertson

Date of Survey: 7th to 9th January, 2002
Date of Report: 15th January, 2002

References:

APS, 2001 Archaeological Assessment of Wygate Park, Spalding, Lincolnshire (APS 112/01)

SSEW, 1983. *Soils of England and Wales. Sheet 4, Eastern England.* Soil Survey of England & Wales.

TECHNICAL INFORMATION

The following is a description of the equipment and display formats used in **GSB Prospection (GSB)** reports. It should be emphasised that whilst all of the display options are regularly used, the diagrams produced in the final reports are the most suitable to illustrate the data from each site. The choice of diagrams results from the experience and knowledge of the staff of **GSB.**

All survey reports are prepared and submitted on the basis that whilst they are based on a thorough survey of the site, no responsibility is accepted for any errors or omissions.

Instrumentation

(a) Fluxgate Gradiometer - Geoscan FM36

This instrument comprises of two fluxgates mounted vertically apart, at a distance of 500mm. The gradiometer is carried by hand, with the bottom sensor approximately 100-300mm from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is conventionally measured in nanoTesla (nT), or gamma. The fluxgate gradiometer suppresses any diurnal or regional effects. Generally features up to one metre deep may be detected by this method. Readings are normally logged at 0.5m intervals along traverses 1.0m apart.

(b) Resistance Meter - Geoscan RM15

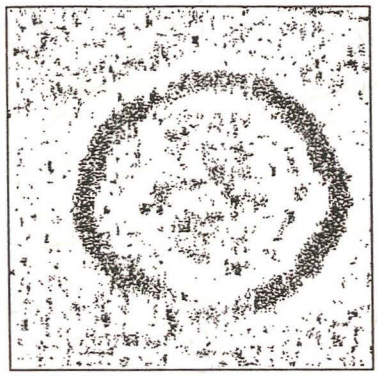
This measures the electrical resistance of the earth, using a system of four electrodes (two current and two potential.) Depending on the arrangement of these electrodes an exact measurement of a specific volume of earth may be acquired. This resistance value may then be used to calculate the earth resistivity. The "Twin Probe" arrangement involves the paring of electrodes (one current and one potential) with one pair remaining in a fixed position, whilst the other measures the resistance variations across a fixed grid. The resistance is measured in Ohms and the calculated resistivity is in Ohm-metres. The resistance method as used for area survey has a depth resolution of approximately 0.75m, although the nature of the overburden and underlying geology will cause variations in this generality. The technique can be adapted to sample greater depths of earth and can therefore be used to produce vertical "pseudo sections". In area survey readings are typically logged at 1.0m x 1.0m intervals.

(c) Magnetic Susceptibility

Variations in the magnetic susceptibility of subsoils and topsoils occur naturally, but greater enhanced susceptibility can also be a product of increased human/anthropogenic activity. This phenomenon of susceptibility enhancement can therefore be used to provide information about the "level of archaeological activity" associated with a site. It can also be used in a predictive manner to ascertain the suitability of a site for a magnetic survey. Sampling intervals vary widely but are often at the 10m or 20m level. The instrument employed for measuring this phenomenon is either a field coil or a laboratory based susceptibility bridge. The field coil measures the susceptibility of a volume of soil. The laboratory procedure determines the susceptibility of a specific mass of soil. For the latter 50g soil samples are collected in the field. These are then air-dried, ground down and sieved to exclude the coarse earth (>2mm) fraction. Readings are made using an AC-coil and susceptibility bridge, with results being expressed either as SI/kg x 10^{-8} or m^3/kg.

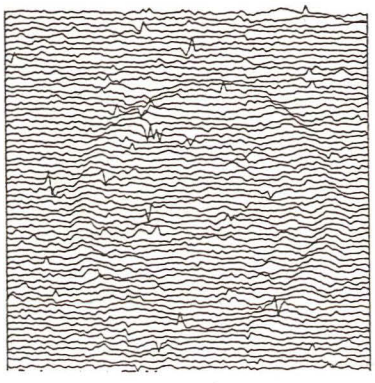
Display Options

The following is a description of the display options used. Unless specifically mentioned in the text, it may be assumed that no filtering or smoothing has been used to enhance the data. For any particular report a limited number of display modes may be used.



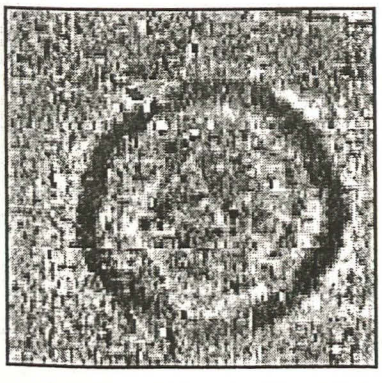
(a) Dot Density

In this display minimum and maximum cut-off levels are chosen. Any value that is below the minimum will appear white, whilst any value above the maximum will be black. Values that lie between these two cut-off levels are depicted with a specified number of dots depending on their relative position between the two levels. Assessing a lower than normal reading involves the use of an inverse plot that reverses the minimum and maximum values, resulting in the lower values being presented by more dots. In either representation, each reading is allocated a unique area dependent on its position on the survey grid, within which numbers of dots are randomly placed. The main limitation of this display method is that multiple plots have to be produced in order to view the whole range of the data. It is also difficult to gauge the true strength of any anomaly without looking at the raw data values. However, this display is favoured for producing plans of sites, where positioning of the anomalies and features is important.



(b) XY Plot

This involves a line representation of the data. Each successive row of data is equally incremented in the Y axis, to produce a stacked profile effect. This display may incorporate a hidden-line removal algorithm, which blocks out lines behind the major peaks and can aid interpretation. The advantages of this type of display are that it allows the full range of the data to be viewed and shows the shape of the individual anomalies. The display may also be changed by altering the horizontal viewing angle and the angle above the plane. The output may be either colour or black and white.



(c) Greyscale

This format divides a given range of readings into a set number of classes. These classes have a predefined arrangement of dots or shade of grey, the intensity increasing with value. This gives an appearance of a toned or grey-scale. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. While colour plots can look impressive and can be used to highlight certain anomalies, greyscales tend to be more informative.

Terms commonly used in the graphical interpretation of gradiometer data

Ditch / Pit
This category is used only when other evidence is available that supports a clear archaeological interpretation e.g. cropmarks or excavation.

Archaeology
This term is used when the form, nature and pattern of the response is clearly or very probably archaeological but where no supporting evidence exists. These anomalies, whilst considered anthropogenic, could be of any age. If a more precise archaeological interpretation is possible then it will be indicated in the accompanying text.

? Archaeology
The interpretation of such anomalies is often tentative, with the anomalies exhibiting either weak signal strength or forming incomplete archaeological patterns. They may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.

Areas of Increased Magnetic Response
These responses show no visual indications on the ground surface and are considered to have some archaeological potential.

Industrial
Strong magnetic anomalies, that due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.

Natural
These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions e.g. palaeochannels or magnetic gravels.

? Natural
These are anomalies that are likely to be natural in origin i.e geological or pedological.

Ridge and Furrow
These are regular and broad linear anomalies that are presumed to be the result of ancient cultivation. In some cases the response may be the result of modern activity.

Ploughing Trend
These are isolated or grouped linear responses. They are normally narrow and are presumed modern when aligned to current field boundaries or following present ploughing.

Trend
This is usually an ill-defined, weak or isolated linear anomaly of unknown cause or date.

Areas of Magnetic Disturbance
These responses are commonly found in places where modern ferrous or fired materials are present e.g. brick rubble. They are presumed to be modern.

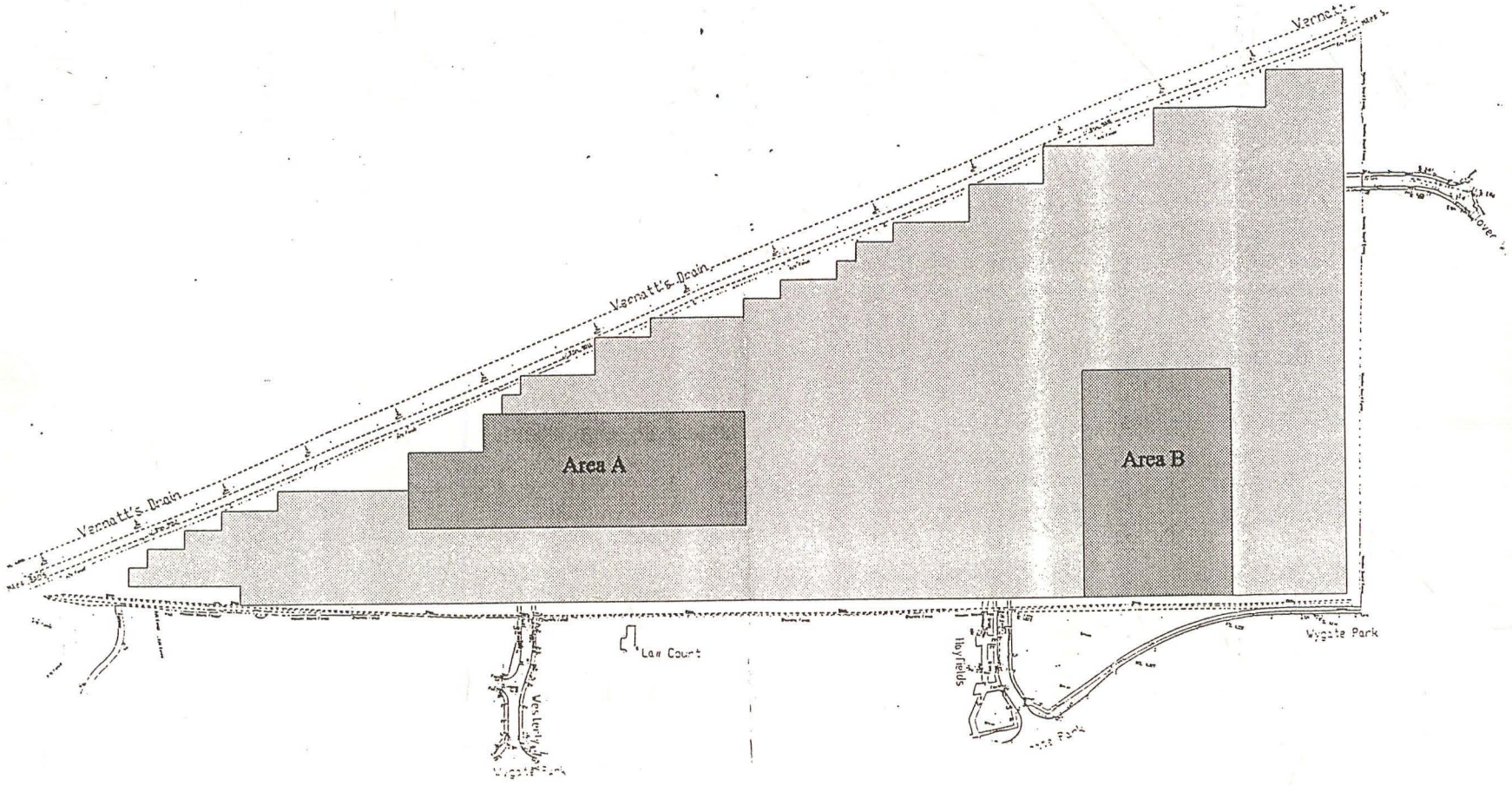
Ferrous Response
This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes or above ground features such as fencelines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.

NB This is by no means an exhaustive list and other categories may be used as necesssary.

List of Figures

WYGATE PARK, SPALDING

Location Diagram



Based on a plan supplied by the client

Gradiometer Survey

1:2500

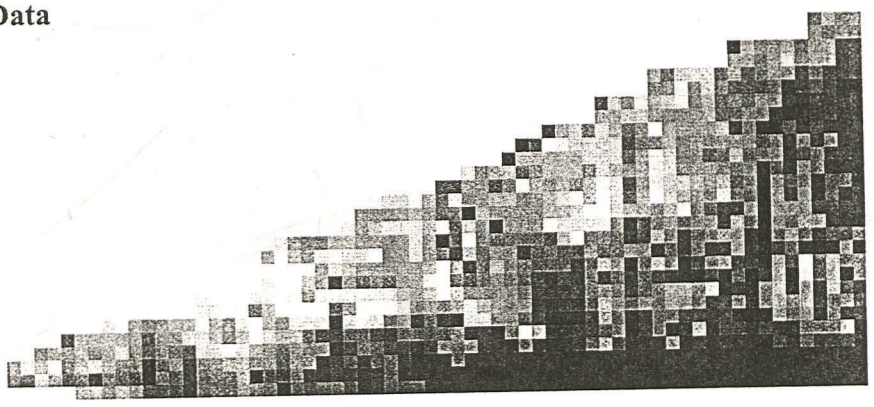
Magnetic Susceptibility Survey

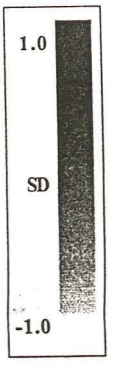
GSB Prospection 2002/01

Figure 1

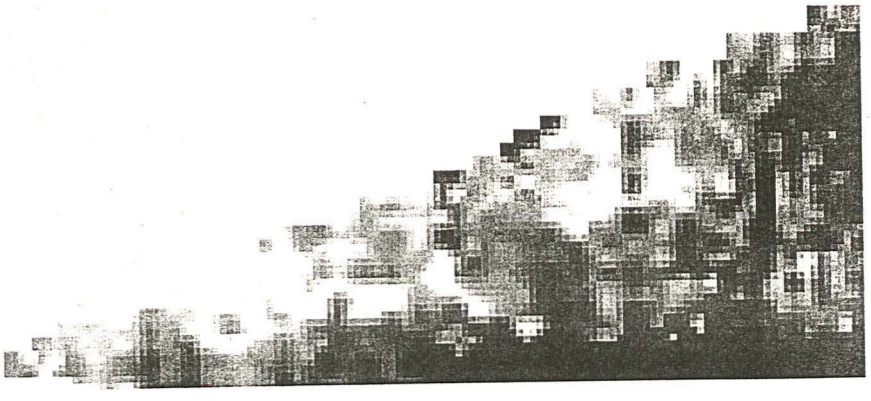
WYGATE PARK, SPALDING
Magnetic Susceptibility Data

Raw Data





Despiked and Interpolated



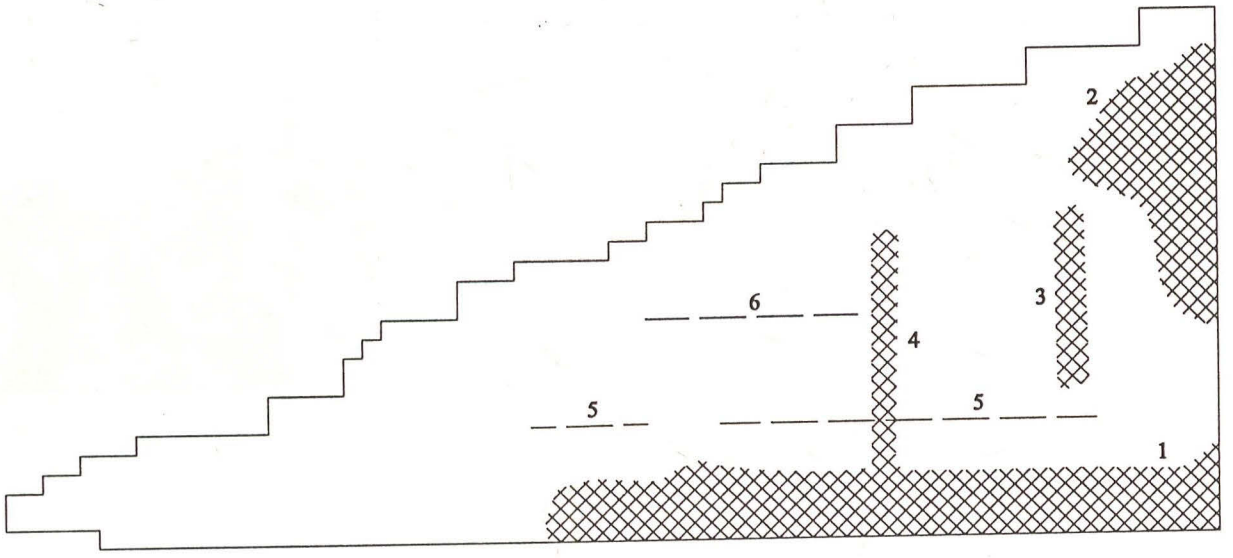
0 160

m

GSB Prospection 2002/01

Figure 2

WYGATE PARK, SPALDING
Magnetic Susceptibility Data



High Magnetic Susceptibility

Trend

0 metres 160

GSB Prospection 2002/01

Figure 3

WYGATE PARK, SPALDING
Gradiometer Data

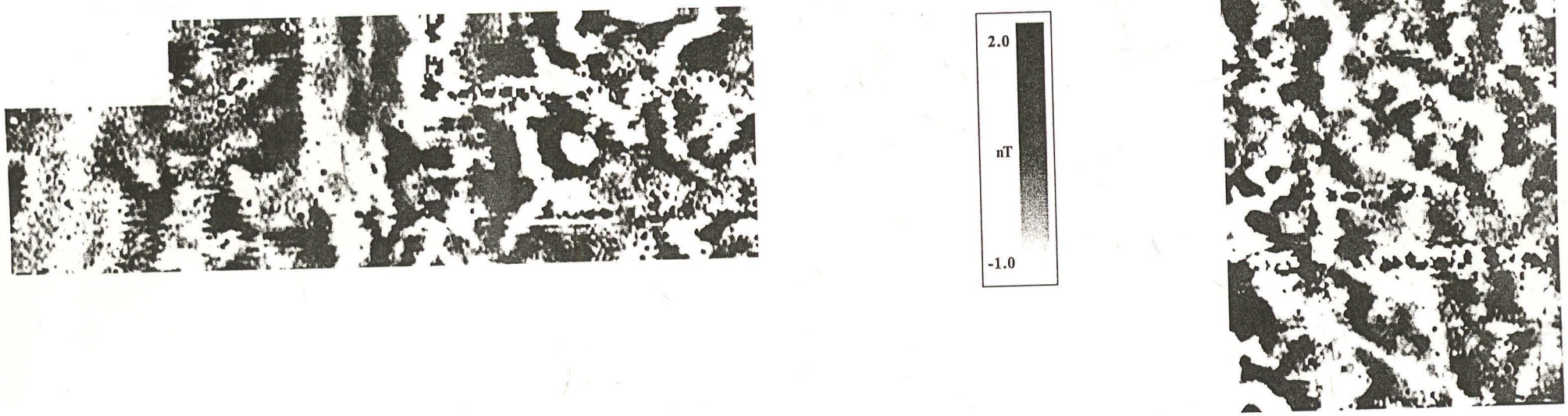
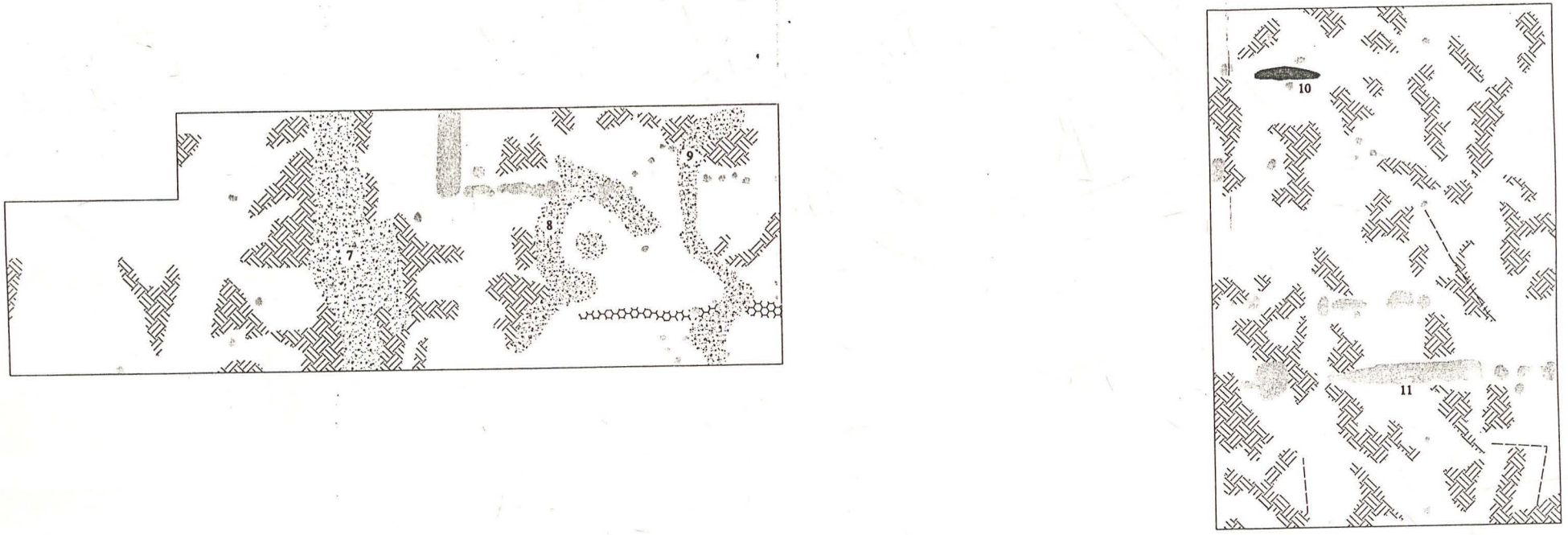


Figure 4

WYGATE PARK, SPALDING
Gradiometer Data



?Archaeology

Trend

?Natural (Positive/Negative)

Area of Magnetic Disturbance

Ferrous Response

0 metres 40

Figure 5

GSB Prospection 2002/01

WYGATE PARK, SPALDING
Gradiometry Survey: Area A

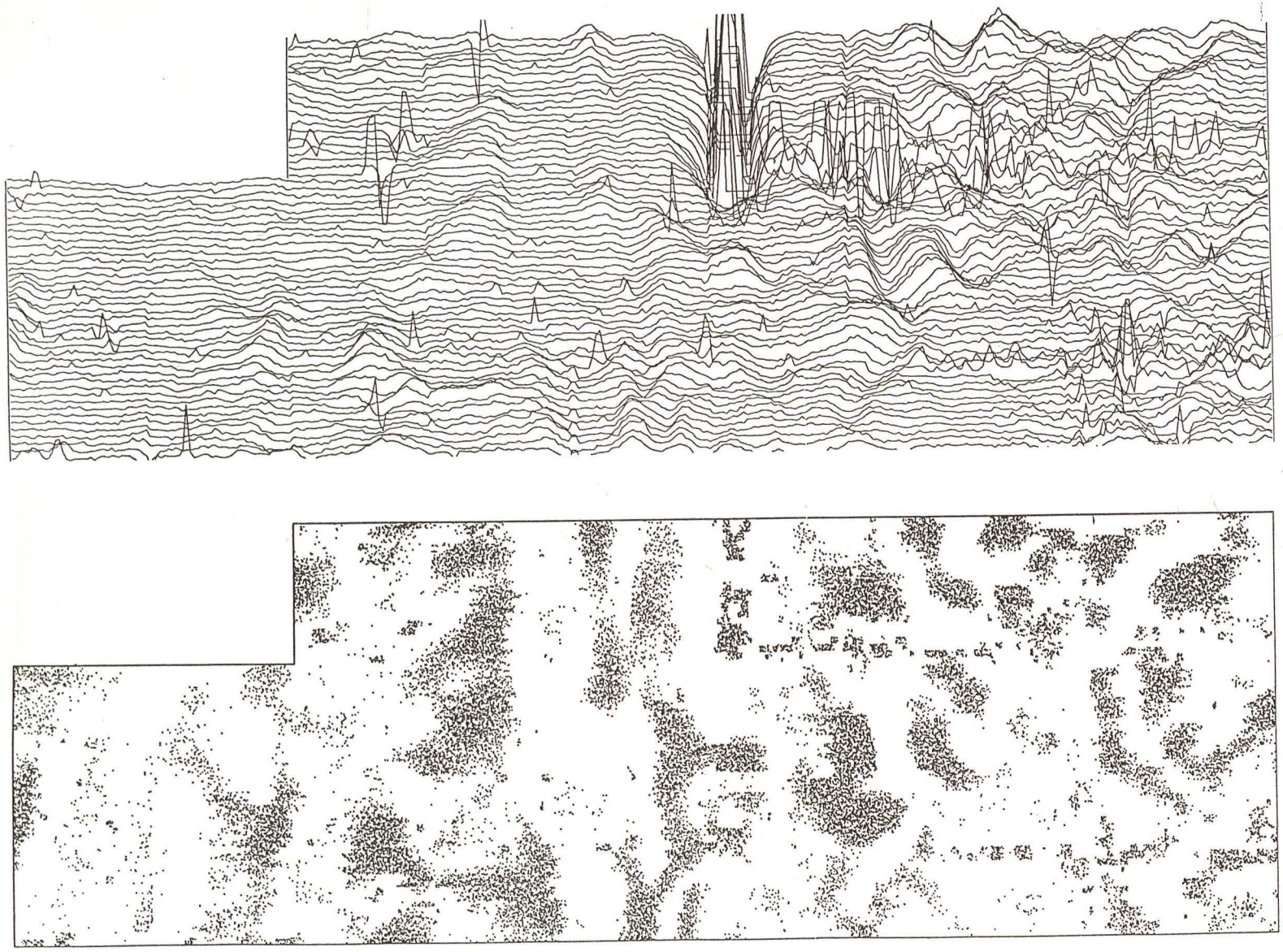
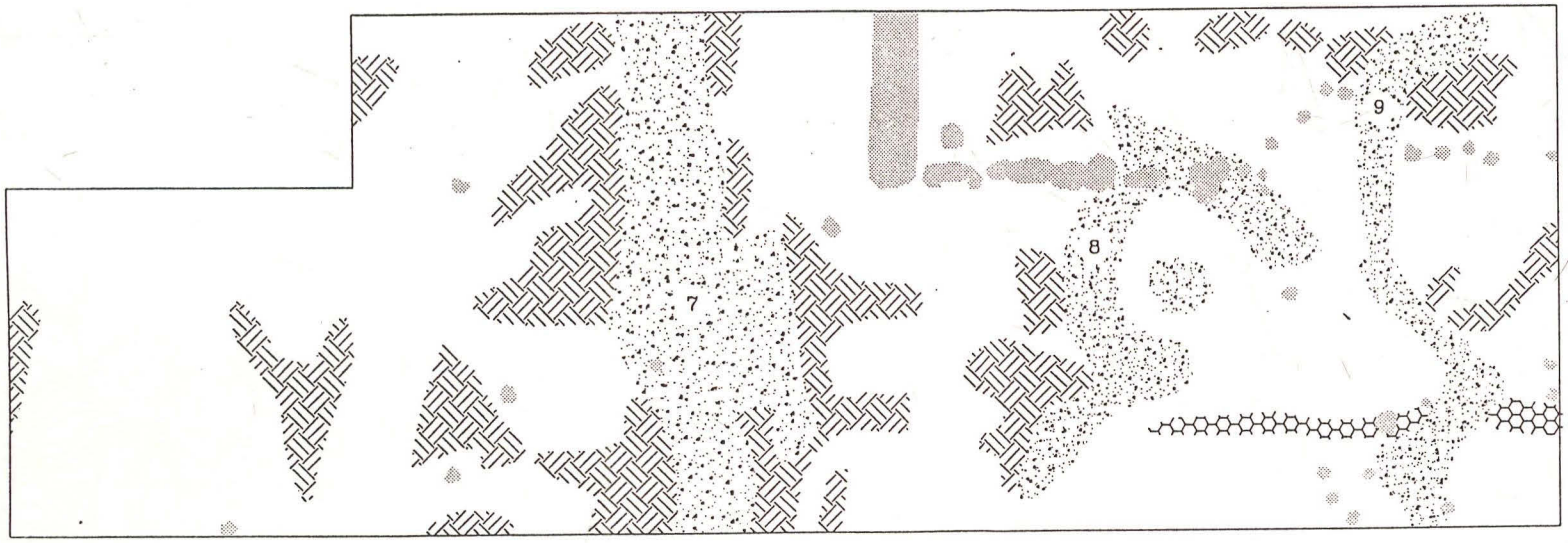


Figure 6

WYGATE PARK, SPALDING
Gradiometry Survey: Area A



?Natural - Postive Anomaly/Negative Anomaly

Area of Magnetic Disturbance

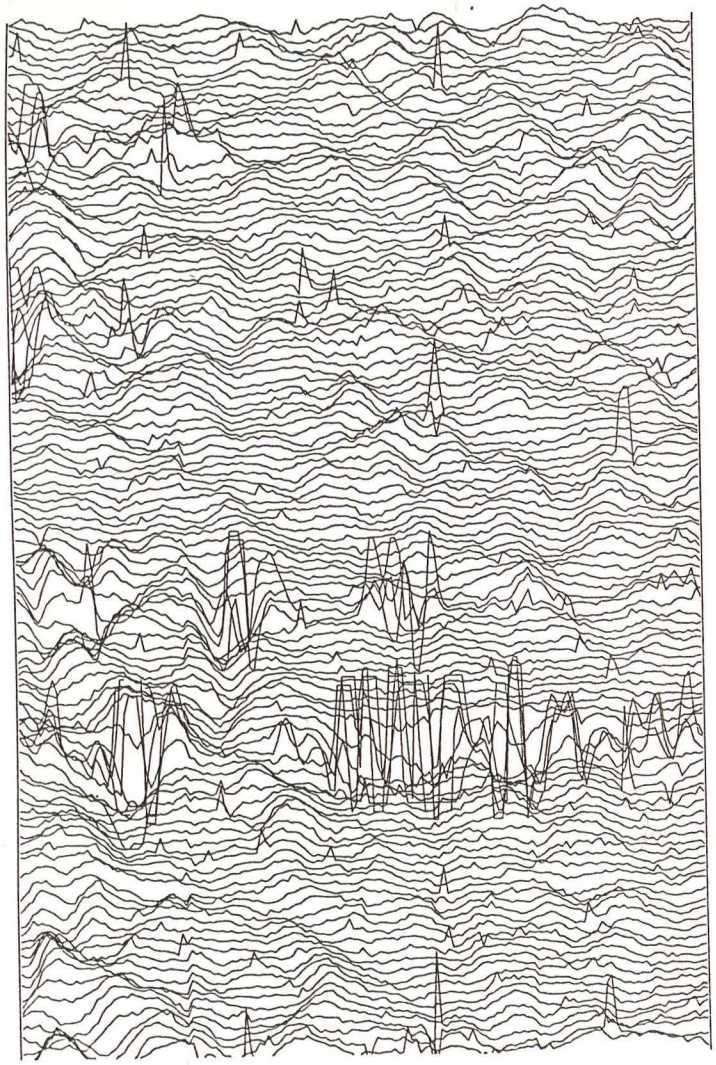
Ferrous Response

0 m 20

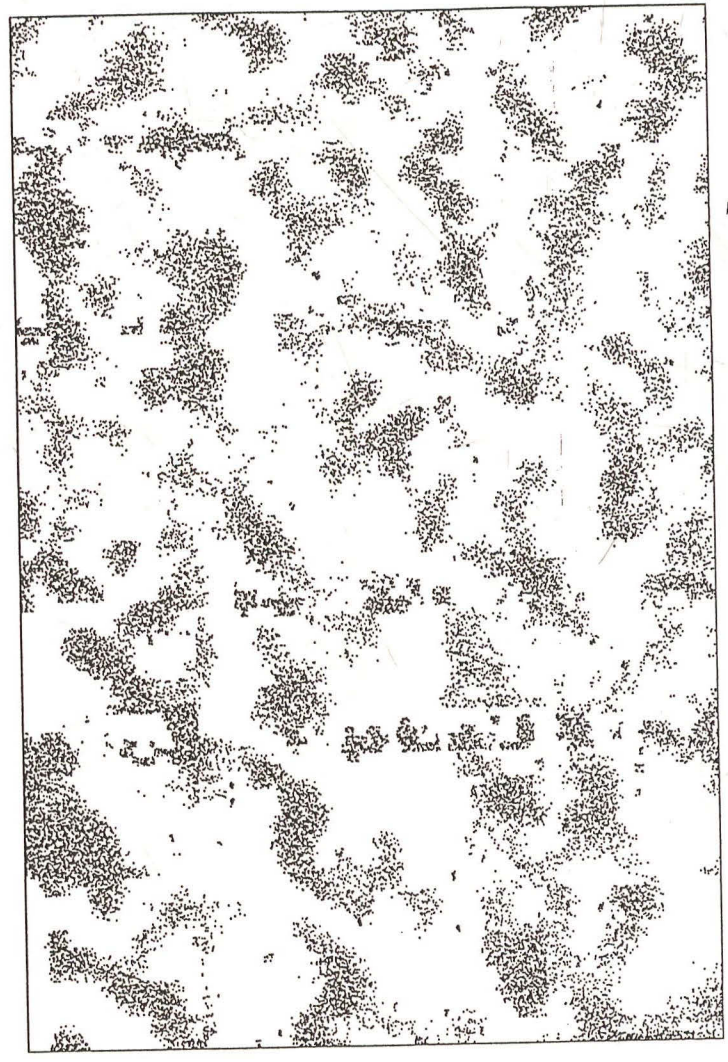
GSB Prospection 2002/01

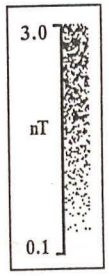
Figure 7

WYGATE PARK, SPALDING
Gradiometry Survey: Area B



15 nT





0 m 20

Figure 8

WYGATE PARK, SPALDING
Gradiometer Survey: Area B

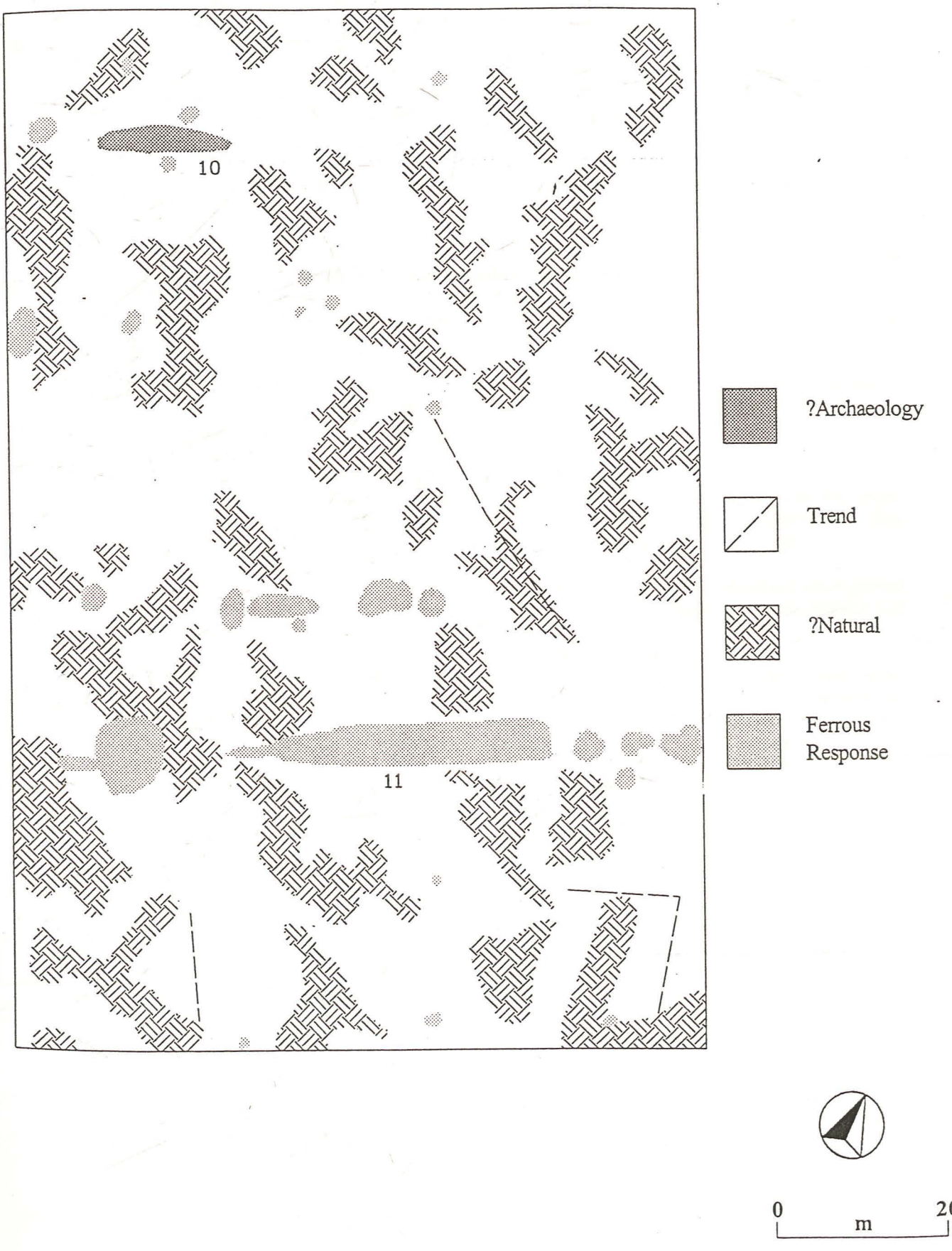


Figure 9

Appendix 4

SECRETARY OF STATE'S CRITERIA FOR SCHEDULING ANCIENT MONUMENTS - extract from *Archaeology and Planning* DOE Planning Policy Guidance note 16, November 1990

The following criteria (which are not in any order of ranking), are used for assessing the national importance of an ancient monument and considering whether scheduling is appropriate. The criteria should not however be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case.

i *Period*: all types of monuments that characterise a category or period should be considered for preservation.

ii *Rarity*: there are some monument categories which in certain periods are so scarce that all surviving examples which retain some archaeological potential should be preserved. In general, however, a selection must be made which portrays the typical and commonplace as well as the rare. This process should take account of all aspects of the distribution of a particular class of monument, both in a national and regional context.

iii *Documentation*: the significance of a monument may be enhanced by the existence of records of previous investigation or, in the case of more recent monuments, by the supporting evidence of contemporary written records.

iv *Group value*: the value of a single monument (such as a field system) may be greatly enhanced by its association with related contemporary monuments (such as a settlement or cemetery) or with monuments of different periods. In some cases, it is preferable to protect the complete group of monuments, including associated and adjacent land, rather than to protect isolated monuments within the group.

v *Survival/Condition*: the survival of a monument's archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features.

vi *Fragility/Vulnerability*: highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment; vulnerable monuments of this nature would particularly benefit from the statutory protection that scheduling confers. There are also existing standing structures of particular form or complexity whose value can again be severely reduced by neglect or careless treatment and which are similarly well suited by scheduled monument protection, even if these structures are already listed buildings.

vii *Diversity*: some monuments may be selected for scheduling because they possess a combination of high quality features, others because of a single important attribute.

viii *Potential*: on occasion, the nature of the evidence cannot be specified precisely but it may still be possible to document reasons anticipating its existence and importance and so to demonstrate the justification for scheduling. This is usually confined to sites rather than upstanding monuments.

Appendix 5

Glossary

Alluvium	Deposits laid down by water. Marine alluvium is deposited by the sea, and fresh water alluvium is laid down by rivers and in lakes.
Anglo-Saxon	Pertaining to the period when Britain was occupied by peoples from northern Germany, Denmark and adjacent areas. The period dates from approximately AD 450-1066.
Crop mark	A mark that is produced by the effect of underlying archaeological or geological features influencing the growth of a particular crop.
Domesday Survey	A survey of property ownership in England compiled on the instruction of William I for taxation purposes in 1086 AD.
Geophysical Survey	Essentially non-invasive methods of examining below the ground surface by measuring deviations in the physical properties and characteristics of the earth. Techniques include magnetometry and resistivity survey.
Iron Age	A period characterised by the introduction of Iron into the country for tools, between 800 BC and AD 50.
Layer	A layer is a term used to describe an accumulation of soil or other material that is not contained within a cut.
Medieval	The Middle Ages, dating from approximately AD 1066-1500.
Natural	Undisturbed deposit(s) of soil or rock which have accumulated without the influence of human activity
Neolithic	The 'New Stone Age' period, part of the prehistoric era, dating from approximately 4500-2250 BC.
Post-medieval	The period following the Middle Ages, dating from approximately AD 1500-1800.
Prehistoric	The period of human history prior to the introduction of writing. In Britain the prehistoric period lasts from the first evidence of human occupation about 500,000 BC, until the Roman invasion in the middle of the 1st century AD.
Romano-British	Pertaining to the period dating from AD 43-410 when the Romans occupied Britain.
Saxon	Pertaining to the period dating from AD 410-1066 when England was largely settled by tribes from northern Germany

Appendix 6

The Archive

The archive consists of:

This document
1 Box of finds

All primary records and finds are currently kept at:

Archaeological Project Services
The Old School
Cameron Street
Heckington
Sleaford
Lincolnshire
NG34 9RW

The ultimate destination of the project archive is:

Lincolnshire City and County Museum
12 Friars Lane
Lincoln
LN2 1HQ

The archive will be deposited in accordance with the document titled *Conditions for the Acceptance of Project Archives*, produced by the Lincolnshire City and County Museum.

Lincolnshire City and County Council Museum Accession Number:	2001.456
Archaeological Project Services Site Code:	SWP01

The discussion and comments provided in this report are based on the archaeology revealed during the site investigations. Other archaeological finds and features may exist on the development site but away from the areas exposed during the course of this fieldwork. *Archaeological Project Services* cannot confirm that those areas unexposed are free from archaeology nor that any archaeology present there is of a similar character to that revealed during the current investigation.

A P S
ARCHAEOLOGICAL
PROJECT
SERVICES

Project Design

Desk-top Assessments

Evaluations

Excavations

Watching Briefs

Project Management

Building Surveys

Presentation

Interpretation

Jim Bonnor
Archaeology Section
Highways and Planning Directorate
Lincolnshire County Council
3rd Floor
City Hall
Lincoln
LN1 1DN

1st April 2003

Our ref: J1181/DD

Dear Jim

Re: Land at Woolram Wygate, Spalding

Please find enclosed a copy of the report on the archaeological evaluation at the above-named site.

I trust that you find the report satisfactory. If you have any queries or comments please do not hesitate to contact us.

Yours sincerely

Denise Drury
Project Manager

enc.

Archaeological Project Services
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