97/10

ARCHAEOLOGICAL EVALUATION FOR THE PROPOSED WESTERN EXTENSION OF WHISBY QUARRY, EAGLE AND SWINETHORPE, LINCOLNSHIRE (WJL97)

A P S

ARCHAEOLOGICAL PROJECT SERVICES

60755 - undated
60756 - p.med.

ARCHAEOLOGICAL EVALUATION FOR THE PROPOSED WESTERN EXTENSION OF WHISBY QUARRY, EAGLE AND SWINETHORPE, LINCOLNSHIRE (WJL97)

SK 89076652

Work Undertaken For
Redland Aggregates Ltd.

June 1997

Report Compiled by
Paul Cope-Faulkner

A.P.S. Report No. **22/97**

CONTENTS

Appendices

List of Figures

List of Plates

1. SUMMARY

An evaluation was undertaken on land adjacent to Job's Lane, Eagle and Swinethorpe, Lincolnshire. This was in response to a proposed mineral extraction at Whisby Quarry (west) by Redlands Aggregates Ltd. Prior to this investigation a desk-top assessment had identified the possibility of at least three Bronze Age (2250-800 BC) barrows surviving to the south of Job's Lane. A walk-over survey, conducted as part of the desk-top assessment, retrieved two flint flakes and two sherds of medieval pottery.

It was anticipated that, by virtue of these sites and findspots, the area could fall within a zone of a Bronze Age and medieval activity. The development could affect related deposits and, in consequence, a geophysical survey, fieldwalking and twenty four trenches or test pits were excavated to test for the presence and survival of archaeological remains.

Natural alluvial sands and gravels, deposited when the River Trent flowed through the Lincoln Gap prior to the last ice age, were the lowest levels encountered. Upon these 'natural' deposits, a pit and two small ditches represent undated features while a large north south ditch is of post-medieval date.

Archaeological investigation revealed no trace of the three Bronze Age barrows previously identified from aerial photographs. It is possible that these have been ploughed away.

Finds retrieved from this investigation included two flint artefacts, medieval and modern pottery, fragments of iron agricultural implements and a cauldron base.

2. INTRODUCTION

2.1 Background

Archaeological Project Services was commissioned by David Walker on behalf of Redlands Aggregates Ltd, to undertake an archaeological evaluation of land adjacent to Job's Lane, Eagle and Swinethorpe, North Kesteven District, Lincolnshire in order to determine the archaeological implications of proposed mineral extraction at the site. The archaeological evaluation was carried out in accordance with a specification prepared by Archaeological Project Services (Appendix 1).

2.2 Topography and Geology

Whisby Quarry's proposed western extension is situated 10km southwest of Lincoln and 30km north of Grantham in the civil parish of Eagle and Swinethorpe, North Kesteven District, Lincolnshire (Fig. 1).

The site is located between the villages of Whisby and Eagle and is centred on National Grid Reference ~~TF~~ SK 890 666. Encompassing some 60 hectares, the site lies on a north - south slope, the height varying between 13 and 15m OD (Fig. 2).

Local topography describes a small east to west stream valley running through the site with a gentle slope upwards to the north. This stream, the Pike Drain, subsequently flows into the River Witham 7km to the east at Bracebridge, south of Lincoln.

Local soils are of the Blackwood Association, typically deep sandy and coarse loamy soils developed in glaciofluvial drift (Hodge *et al.* 1984, 127). Soils encountered during the evaluation were predominantly brownish

grey silty sands. Beneath the soils is a drift geology of older river sand and gravel which in turn overlies a solid geology of Lower Lias clays and shales (B.G.S 1973).

2.3 Archaeological Setting

Records of archaeological sites and finds are held in the Lincolnshire County Sites and Monuments Record (SMR) and the files maintained by the Heritage Officer for North Kesteven District Council (NK).

Whisby Quarry is located in an area of known archaeological activity dating back to the Lower Palaeolithic (350,000-100,000 BP). This early activity is represented by two 'Clactonian' flaked tools found in gravel deposits near Whisby (May 1976, 16).

Two Neolithic (4200-2250 BC) stone axes, one polished and imported from the Lake district, have been found in Thorpe-on-the-Hill (NK64.1, 2).

A desk-top assessment of the proposed quarry extension identified three circular cropmarks located south of Job's Lane (A.P.S. 1994, 4). These were interpreted as Bronze Age barrows, together forming a small barrow cemetery. Other Bronze Age activity has been recorded *c.* 2km to the south and includes a probable barrow, an Early Bronze Age pot and a barbed and tanged arrowhead (NK64.3, 4 and 5).

No Iron Age or Romano-British finds have been recorded from the vicinity of the site, with the exception of an Iron Age beehive quern found in Eagle (SMR 60418) and the Fosse Way. This important Roman thoroughfare connecting Exeter and Lincoln lies within 2.8km of the investigation area (Margary 1973, 221). Two Anglo-Saxon crosses are recorded from All Saints' Church, Eagle and support place-name evidence of the area being settled in the Scandinavian era (9th-10th centuries AD).

3. AIMS

The aims of the investigations were as outlined in 2.1 of the specification document reproduced here as Appendix 1. The investigations sought '*to determine the precise location, character, chronology, function, contemporary environmental setting and current condition of the known archaeological resource and to determine the potential presence/absence and extent of prieviously unidentified archaeology*'.

4. METHODS

In order to achieve the above aims a range of techniques was applied to investigating the site.

Geophysical Survey (Appendix 2) in the form of a magnetometer scan was used as a prospecting tool in the area north of Job's Lane in order to detect any anomolies along a north-south transect. South of Job's Lane, in the vicinity of the cropmark ring-ditches, both magnetometry and resistivity were used in an effort to locate the presise position of the ring-ditches and enable accurate location of investigative trenches.

Fieldwalking was undertaken in available areas south of the farm track known as New Lane and south of Eagle Road, along the proposed Haul Route.

Gridded Box Excavation was undertaken on the low promontory in the vicinity of the ring-ditches. This work took the form of a series of 12 5m x 5m boxes set out on a 40m axially staggered grid. The purpose of this technique was to determine whether

the promontory was the site of earlier archaeological activity or of ritual or mortuary practise associated with interments beneath or within the barrows. A further five 5m x 5m test pits were excavated on a north-south transect corresponding to the magnetometer scan.

Linear Trenching was designed to extend into the putative former stream south of the Job's Lane promontory to test the extent of alluvial cover and north of the promontory to test for the presence of any colluvium. As a further means of locating the ring-ditches an extra linear trench was excavated in the general region of the cropmark. Another additional trench followed the course of a north-south linear ditch where cropmark evidence demonstrated that it bisected the barrows, thus providing a fixed location.

Limited Excavtion Trenches had been proposed on the precise line of the cropmark ring-ditches and on a vauge 'C'-shaped cropmark further into the field. Because the ring-ditches were not located this trenching could not be undertaken. Given the non-response of the magnetometry around the ring-ditches, the inhibiting nature of the mature cereal crop and the location of the 'C'-shaped cropmark in the centre of the field, no investigation of the feature was attempted.

The methodology had been designed to address a series of key questions concerning the known and potential archaeology of the site (Appendix 1, 2.2). These are referred to under Effectiveness of Techniques.

All trenches and test pits were opened by machine to the surface of undisturbed archaeological or natural layers and cleaned and excavated by hand. Each archaeological deposit or feature revealed within the trench was allocated a unique reference number (context number) with an individual written description. A photographic record was compiled and sections were drawn at a scale of 1:10 and plans at a scale of 1:20 or 1:50. Recording of deposits encountered during the evaluation was undertaken according to standard Archaeological Project Services practice. A stratigraphic matrix of all identified deposits was produced.

5. RESULTS

5.1 Geophysical Survey Results

Area 1, South of Job's Lane
The area surveyed was cropped with winter wheat up to 0.5m high and suffering drought conditions at the time of the survey.

A magnetometer scan of this area revealed low magnetic fluctuations. An area of higher readings (Appendix 2, Fig. 2) were caused by the close proximity of surveying equipment.

Following the magnetometer scan an area 30m by 90m was selected for detailed resistivity survey. This detected no archaeological features and a faint curvilinear feature is probably geological in origin.

Area 2, North of Pike Drain
An area, *c.* 200m by 20m was scanned with a magnetometer with no archaeological features identified during the survey.

A full report of the geophysical survey appears as Appendix 2 complete with diagrams.

5.2 Fieldwalking Results

Two areas were fieldwalked, the northern part of the Access Road and part of the only other field where this technique was possible (Fig. 3).

Previous unsystematic fieldwalking conducted as part of the Desktop Survey (A.P.S. 1994) and during an earlier reconnaissance for this work had yielded little in the way of surface artefacts. Indeed, the sparcity of surface finds was remarkable. Similar negative results were obtained during this phase of fieldwalking.

Field A (South of New Lane)
Altogether, *c.* 6ha was fieldwalked at the northern end of Field A, adjacent to New Lane. The method adopted was to walk in lines 10m apart. Finds were bagged and recorded in position using a Geodolite.

Despite the presence of a low crop of linseed (5-10cm tall) conditions were suitable for the technique of fieldwalking. Over 90% of the ground surface could be observed and the surface soil of sandy loam with moderately abundant pebbles was well weathered.

Only four artefacts were recovered

a) One natural pebble that had been subjected to intense heat

b) One possible flint core

c) One base/body junction of a Bourne 'B' ware pottery vessel (14th century)

d) One possible flint flake

The low density of finds indicates a lack of concentrated settlement within the area walked. Moreover, the paucity of finds would argue against the land having been subjected to manuring for arable use, a usual interpretation for scattered ceramic debris.

Field B (The Access Road)
Fieldwalking was conducted on the west of Field B, along the proposed route of the access road. Only the northernmost field on the access route was available for fieldwalking. The central area of the route is along an existing farm track bounded on the east by a ditch and on the west by a crop of mature cereal. The southern part of the route extends through a field on which a mature cereal crop prevents walking.

The northern field has a crop of sugar beet, the individual plants widely spaced enabling most of the field surface to be observed. The ground surface was well weathered. Two lengths were walked for a distance of 560m at a five metre interval. Not a single find was observed.

5.3 Evaluation Results

Finds recovered from those deposits excavated were examined and a period date assigned where possible. Records of the deposits and features recognised during the evaluation were also examined. A list of all contexts and interpretations appears as Appendix 3. Phasing was assigned based on artefact dating and the nature of the deposits and recognisable relationships between them. Four phases were identified.

Phase 1 - Natural deposits
Phase 2 - Undated deposits
Phase 3 - Post-medieval deposits
Phase 4 - Modern deposits

Archaeological contexts are described below. The number in brackets are the context numbers assigned in the field

Phase 1 Natural deposits

Natural deposits were encountered in the base of all the trenches at depths between 0.3m and 0.5m below the modern ground surface. Natural deposits usually comprise sand and gravel (e.g. 030, 032, 037, 039, 049, 053, 059, 060, 061, 068, 101 and 110), although sand often appeared on its own (016, 022, 035, 046, 055, 081, 087, 089 and 117). Also present were silty sand deposits (014, 018, 041, 051, 063, 071 and 077) and a single context of clayey silt (066).

Four excavated features turned out to be naturally formed. Often these were irregular or oval shaped cuts (058, 069, 092 and 113) often filled with grey sands and silts (057, 064, 091 and 112).

Phase 2 Undated deposits

Located in Trench E (Fig. 4) was a near circular pit (045) between 1.2m and 1.3m in diameter and 0.53m deep (Fig. 5, Section 16). It contained a single fill of dark greyish brown silty sand (044). No finds were retrieved from this feature but a sample taken for environmental analysis revealed degraded organic material, comprising both carbonised and uncarbonised plant remains as well as fragments of beetles (Appendix 5). A possible waste disposal function for this pit is envisaged.

Aligned north to south, a linear cut was uncovered in Trench G (010). Measuring 0.48m wide and 0.33m deep this had been recut at a later date to 0.92m wide (007). Fills were yellow and grey silt and sand deposits (006, 008 and 009). This feature most probably represents a small drainage ditch (Fig. 5, Section 2).

A second linear feature was recorded in Trench R (Fig. 5, Section 31), aligned north to south (075). Also a ditch, this was 1.27m wide and 0.42m deep and contained fills of grey brown and yellow brown sand (073 and 074).

Phase 3 Post-medieval deposits

Exposed in Trench I was a linear, north-south aligned feature (029). A primary fill of blueish grey clayey sand (028) was overlain by brown silty sand with gravel (027). This feature appeared to have been recut once (034) and filled naturally with silty sand and clayey sand deposits (024, 025, 026 and 033). A single piece of 20th century pottery was recovered from (026). This feature was believed to be the ditch that appears on aerial photographs of the site. Similar features in Trench G and Trench X are likely to be continuations of (026).

In Trench G, the ditch (005) was 3.57m wide and 0.5m deep, it contained only two fills (Fig. 7, Section 3), the upper of yellowish brown sand (003) and the lower of grey and yellow sand (004).

In Trench X (Fig. 6), a full profile of the ditch was obtained (Fig. 7, Section 38). This cut (097) was 2.4m wide and 0.8m deep and contained ten fills (Fig. 7, Section 38), predominantly sandy silt (095, 096, 102 -107). Basal fills were of sand with an organic content, which included fragments of Hawthorn twigs.

Phase 4 Recent deposits

Subsoil appears in Trenches F and G only and is a greyish brown sand and silt (002 and 020) and measuring between 0.3m and 0.35m thick.

Topsoil is present across the entire site and

exhibiting only minor variations (Fig. 8). Generally, north of Pike Drain the soil tends to be predominantly sand, whilst to the south, silty sand is most common. Colour tends to be grey or greyish brown. A distinction can be seen in the varying thicknesses of the soil, North of Pike Drain the thickness of topsoil varies between 0.36m and 0.41m, whilst to the south the range is broader, 0.27 in Trench W to 0.54 in Trench P.

Animal and plant activity was also recorded across the site and consisted of burrows (e.g. 012) or root disturbance (e.g. 048).

6. DISCUSSION

Natural deposits (Phase 1) of alluvial sand and gravels were encountered across the entire investigation area. These sands and gravels are derived from the former course of the River Trent when it passed through Lincoln Gap, some time before 80,000 years BP.

Phase 2 deposits include a pit and two ditches. The circular pit contained organic material and may suggest a possible waste disposal function. The two ditches are most likely derived from drainage or land parcelling. A former land boundary shown on Ordnance Survey plans may approximate to the ditch located in Trench R.

Post-medieval activity (Phase 3) is represented by a single north to south ditch running through Trenches G, I and X. Identified from aerial photographs, the first edition Ordnance Survey map depicts a stream corresponding approximately to this route. However, this feature most probably represents a canalised version of this watercourse and may explain the reason that this ditch is on a different orientation to other field boundaries.

Recent deposits are typified by subsoils, close to the Pike Drain and topsoils over the entire investigation area. Limited animal and plant disturbance has also occurred.

No trace of the Bronze Age barrows was obtained either by geophysical survey or subsequent excavation. It is possible that remains of these features have been entirely ploughed away. Cropmarks have also been known to form from features within the topsoil, as at Billingborough Fen (*pers. comm.* Tom Lane).

Few finds were made during fieldwalking and subsequent excavation. This is considered unusual as the common practise of manuring cultivated fields has been in existence from the Romano-British period, possibly earlier. Domestic waste including broken ceramic vessels was often incorporated into manure heaps and spread on fields, leaving a background scatter of sherds. This was not the case at Whisby suggesting that the investigation area was not cultivated until recently. Woodland covering the investigation area is one possibility. Eagle is derived from the Old English *ac-leah* meaning 'oak wood' (Ekwall 1974, 155) and the local name 'The Stocking' also appears in the vicinity on early Ordnance Survey maps and indicates former woodland (Lane 1995, 75). An alternative use of this area is also obtained from minor place names. The field name 'Carr' is recorded on plans of Whisby from 1838 and 1918 and suggests boggy or peaty ground (A.P.S. 1994, 3).

7. ASSESSMENT OF SIGNIFICANCE

For an assessment of archaeological significance the *Secretary of State's criteria for scheduling ancient monuments*

has been used (DoE 1990, Annex 4; see appendix 6). This uses a series of values to consider and/or score the importance of the site.

Period:
Features of Post-medieval date were located during the evaluation and were typified by gullies and ditches. As such, these are characteristic of rural farming practises during this period. An undated pit was also located.

No remains of the three Bronze Age barrows were found during the investigation. Therefore, only low period value can be given to the site.

Rarity:
Post-medieval ditches and gullies represent a very common feature found throughout Britain and can not be considered rare.

Documentation:
Records of archaeological sites and finds made in the Whisby quarry area are kept in the Lincolnshire County Sites and Monuments Record and in the relevant parish file of the North Kesteven District Heritage Officer.

Prior to this evaluation a site-specific summary of the archaeology and history of the proposed development site was produced.

Group value:
Low group value is conferred upon the site as only features of post-medieval ditches were known to have survived.

Survival/Condition:
Archaeological remains in the form of ring ditches of Bronze Age date had been tentatively identified within the investigation area but subsequent evaluation failed locate evidence of these ditches or associated deposits. It has been concluded that ditches and associated features of the Bronze Age may have largely been ploughed away or similarly destroyed.

Recent ditches and gullies have survived within the investigation area, probably due to the greater depth of these features.

Environmental assessment of the pit fill revealed that organic matter does survive but is highly degraded.

Fragility/Vulnerability:
The proposed quarry extension will impact all of the investigation area to a depth well into natural alluvial strata. Therefore, any and all archaeological deposits present on the site are extremely vulnerable.

Diversity:
Low period and functional diversity is ascertained for the site.

Potential:
Potential may still exist for remnants of the three Bronze Age barrows surviving in the area south of Job's lane.

Further potential exists for the ditches and gullies of a Post-medieval field landscape surviving across the investigation area.

Palaeoenvironmental material of geological age may survive within the natural deposits.

8. EFFECTIVENESS OF TECHNIQUES

Geophysical survey was hampered by factors, such as the height of wheat crop and conditions were below optimum for geophysical survey.

Fieldwalking of one particular field, in the north of the development area located four

finds. Conditions for the technique were good. The lack of either alluvium or colluvium recorded in the trenching suggests that the presence and density of artefacts on the surface is a reasonable reflection of the underlying archaeology.

The technique of 5m by 5m test pits set on a staggered grid affords good opportunities for locating features and determining site parameters. That only a single feature, a ditch, was found in the 12 test pits within an area of 16,000 square metres confirms the absence of well developed settlement or widespread funerary activity on the promontory in the vicinity of the ring-ditches (Key questions G and H in Appendix 1, 2.2).

No evidence was found of alluvium or colluvium within the long trenches.

9. CONCLUSIONS

Archaeological investigations on land adjacent to Job's Lane, Eagle and Swinethorpe were carried out to support a mineral extraction application. Investigations revealed a limited number of undated and dated features. However, no feature was recognised as being a part of a barrow, neither were circular ditches located during the geophysical survey. Recent ploughmarks were extensive in most of the trenches, and it is possible that severe plough damage has occurred to the barrow cemetery. However, this need not signify that the monuments have been totally destroyed for some cut features, such as the central burial, may survive at a depth where ploughing has not been reached.

Three Post-medieval ditches and gullies were uncovered and relate to past land division and drainage. A single pit to the north of Pike Drain, though undated, appears to be of some antiquity and is the only suggestion of ancient activity. No evidence for hillwash or former stream deposits was recorded.

Finds recovered were extremely limited and include two possible flint artefacts, a single sherd of medieval pottery, a single sherd of 20th century pot, an iron ploughshare, an iron harrow tine and the base of a cauldron. The range of finds are in keeping with those found during the walk-over survey of the initial desk-top assessment.

Environmental assessment of individual features has shown that charred plant matter has survived, although was largely unidentifiable. Uncarbonised organic matter was also recorded but was too degraded for positive identification with the exception of waterlogged Hawthorn twigs found in the base of the Post-medieval ditch.

The archaeological remains recorded here supplement previous discoveries in the vicinity. The paucity of finds across the site, unusual for an area of some 60 hectares, appears to reflect an absence of intense archaeological activity.

10. ACKNOWLEDGEMENTS

Archaeological Project Services would like to acknowledge the assistance of David Walker (Chartered Surveyor for Redlands Aggregates Ltd) and John Walker (Consultant Archaeologist). Access to the investigation area was given by Mr Neville and Mr Richardson. The work was coordinated by Gary Taylor and this report was edited by Tom Lane. Kate Orr, the Heritage Officer for North Kesteven District Council permitted examination of the relevant files. Mark Bennett allowed access to the County Sites and Monuments record. Hilary Healey, Steven Membery

and Gary Taylor examined the finds.

11. PERSONNEL

Project Coordinator: Gary Taylor
Supervisor: Paul Cope-Faulkner
Surveying: Neil Herbert
Site Assistants: Robert Ashford, Dave Bower, Mike Garrett
Finds Processing: Denise Buckley
Illustration: Paul Matthew, Sue Unsworth
Post-excavation Analyst: Paul Cope-Faulkner

12. BIBLIOGRAPHY

A.P.S., 1994, *Desk-top Assessment for the Proposed Western Extension of Whisby Quarry, Eagle and Swinethorpe, Lincolnshire* Unpublished Report

B.G.S., 1973, *Lincoln, Solid and Drift edition* Sheet **114**

DoE, 1990, *Archaeology and Planning*, Planning Policy Guidance note **16**

Ekwall, E., 1974, *The Concise Oxford Dictionary of English Place-Names* (4th edition)

H.T.L., 1993, *Desk Top Assessment for the Proposed Eastern Extension of Whisby Quarry, Thorp-on-the-Hill, Lincolnshire* Unpublished report

Hodge, C.A.H., Burton, R.G.O., Corbett, W.M., Evans, and Seale, R.S., 1984, *Soils and their Use in Eastern England,* Soil Survey of England and Wales **13**

Lane, T.W., 1995, *The Archaeology and Developing Landscape of Ropsley and Humby, Lincolnshire*, Lincolnshire Archaeology and Heritage Reports No. **2**

Margary, I.D., 1973, *Roman Roads in Britain*

May, J., 1976, *Prehistoric Lincolnshire*, History of Lincolnshire **1**

13. ABBREVIATIONS

A.P.S. Archaeological Project Services

B.G.S. British Geological Survey

DoE Department of the Environment

H.T.L Heritage Trust of Lincolnshire

Figure 1 - General Location Plan

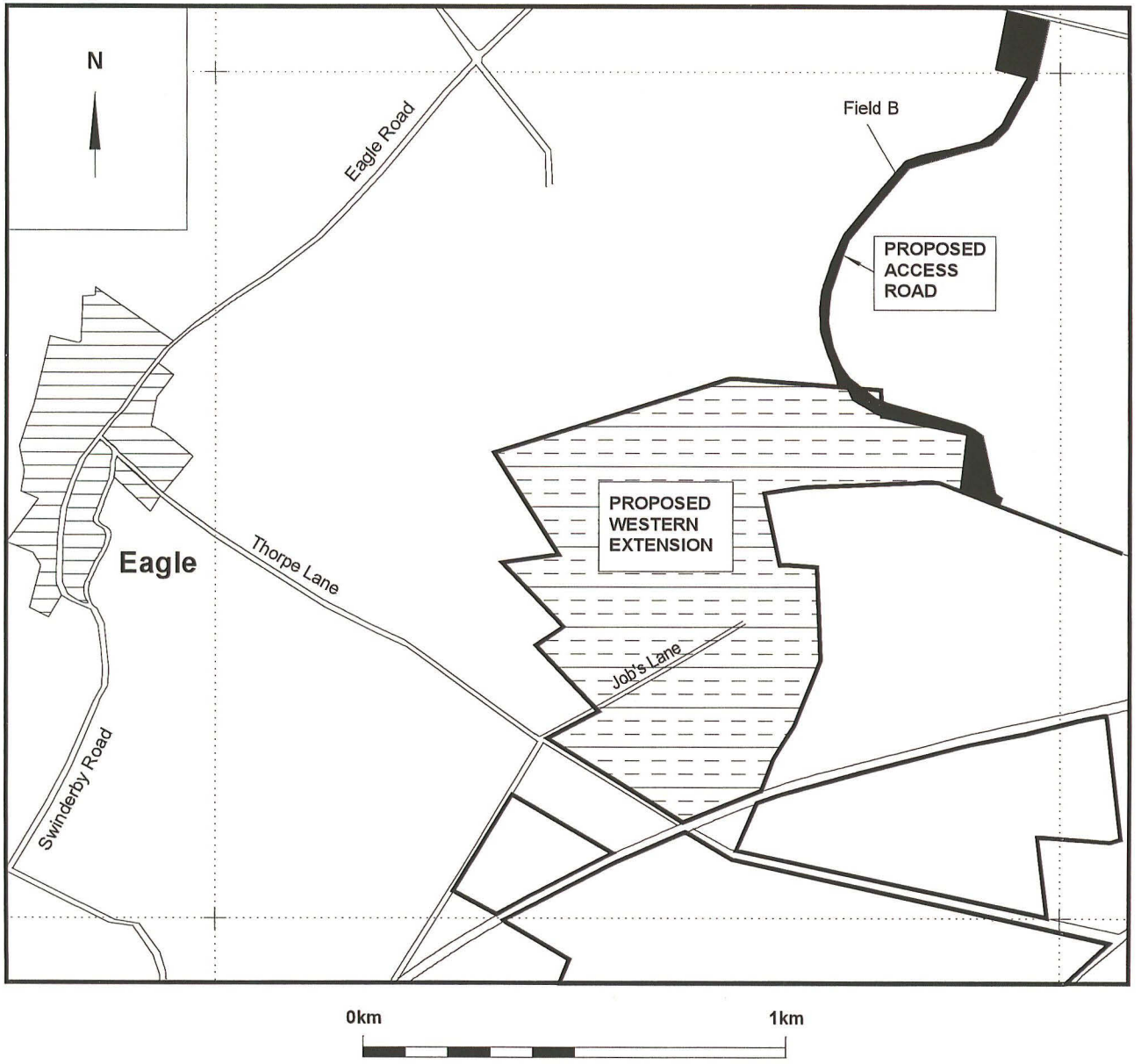


Figure 2 - Site Location Plan

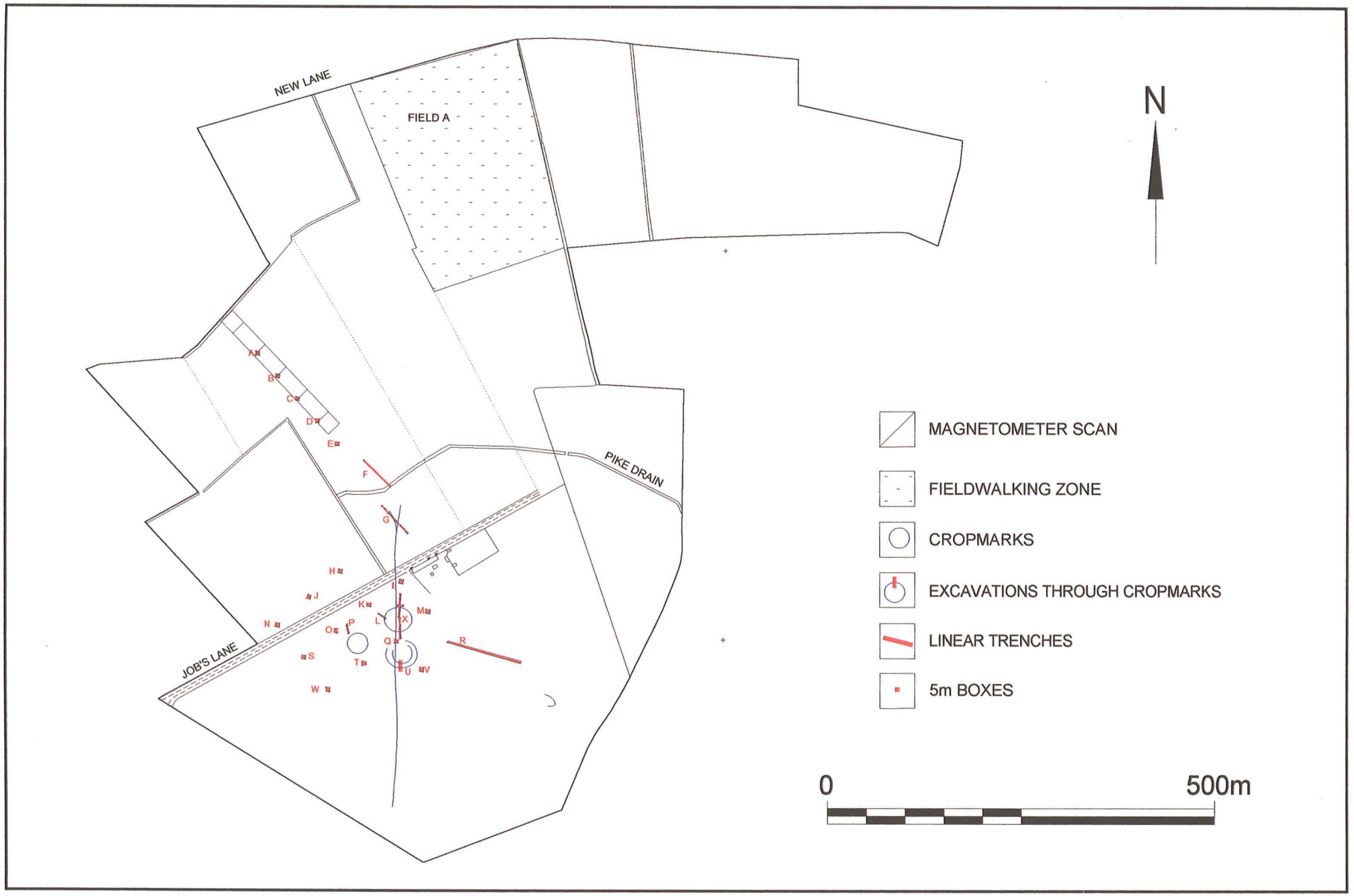


Figure 3 - Whisby Quarry, Investigation Area

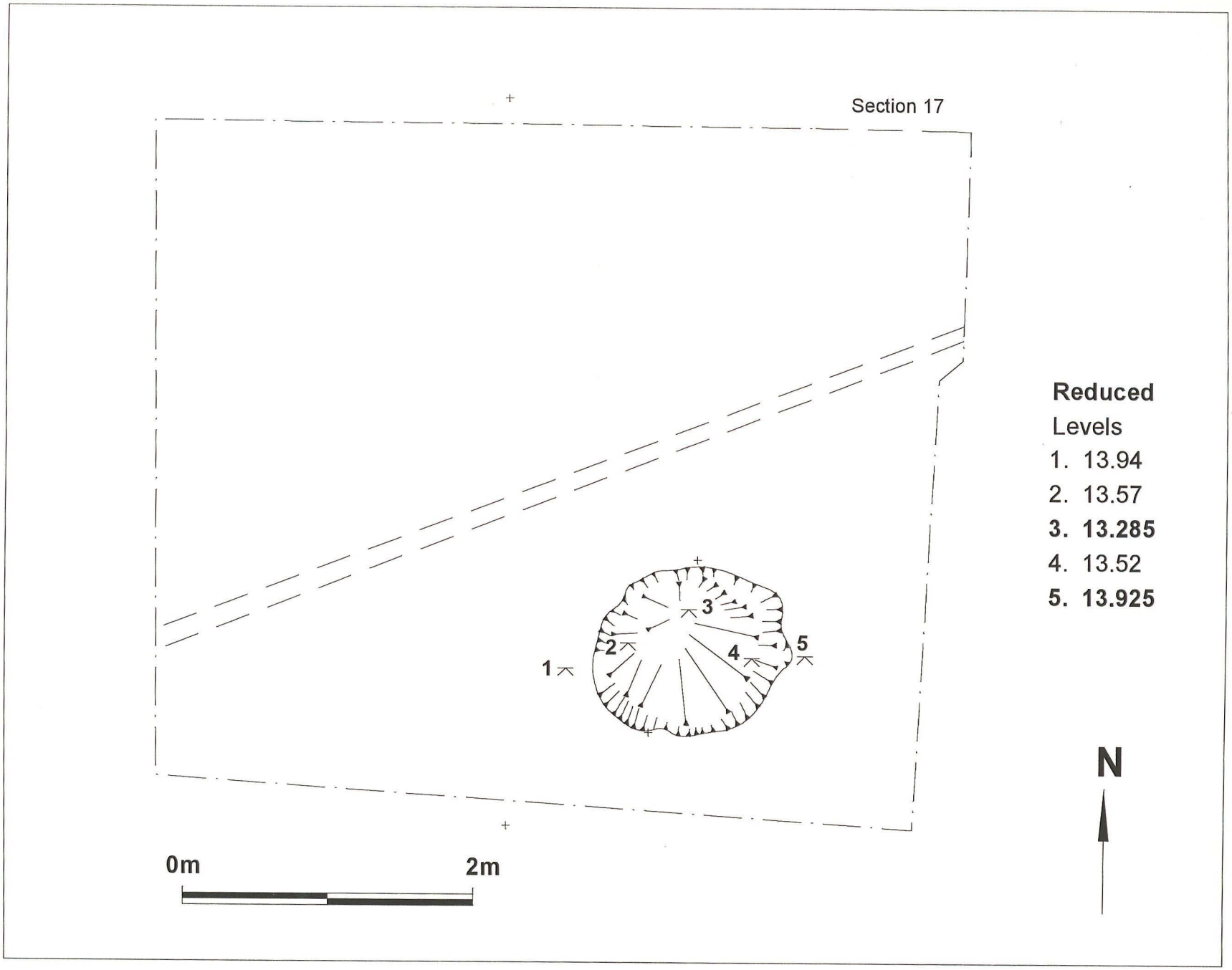
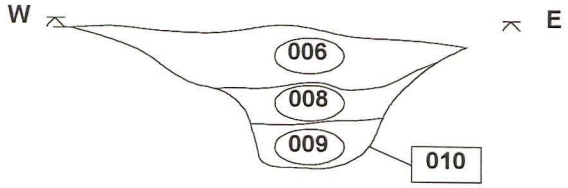


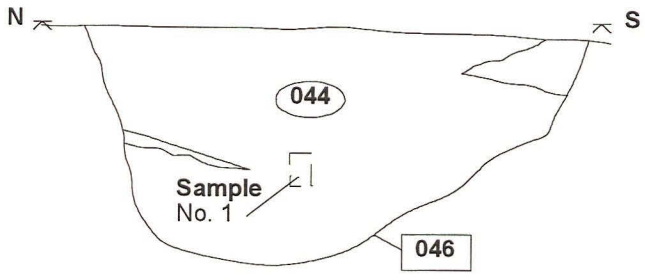
Figure 4 - Plan, Trench E



Section 2

Datum height 14.03m OD

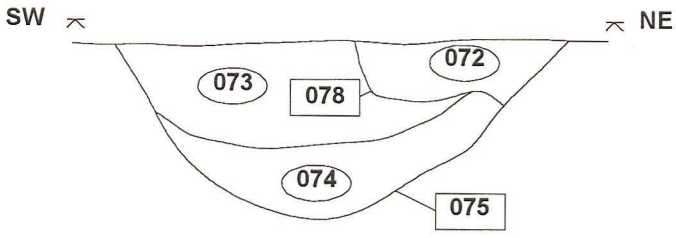
Section through ditch, Trench G



Section 16

Datum height 14m OD

Section through Pit, Trench E



Section 31

Datum height 14.25m OD

Section through ditch, Trench R

Figure 5 - Sections of Undated Features

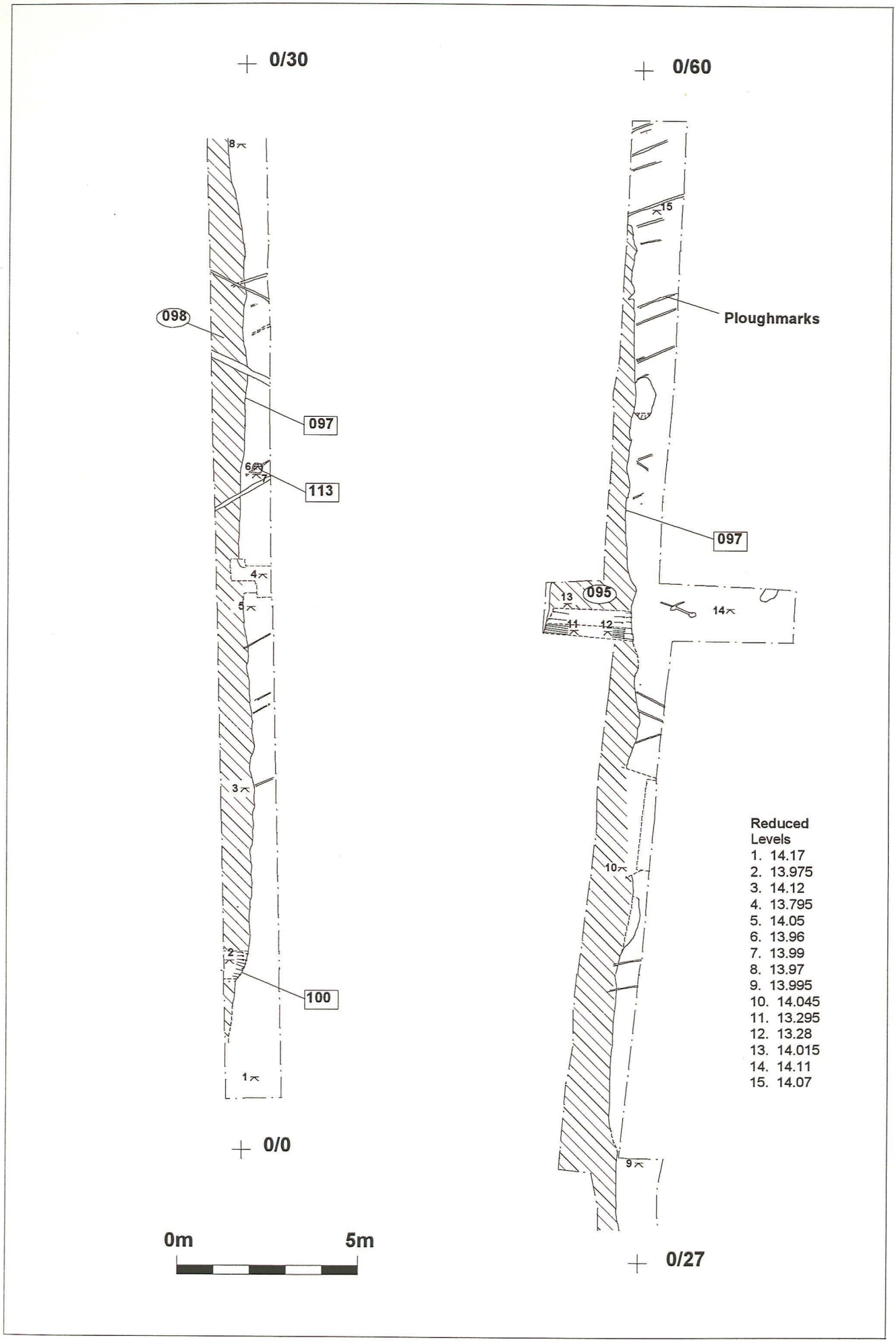


Figure 6 - Plan, Trench X

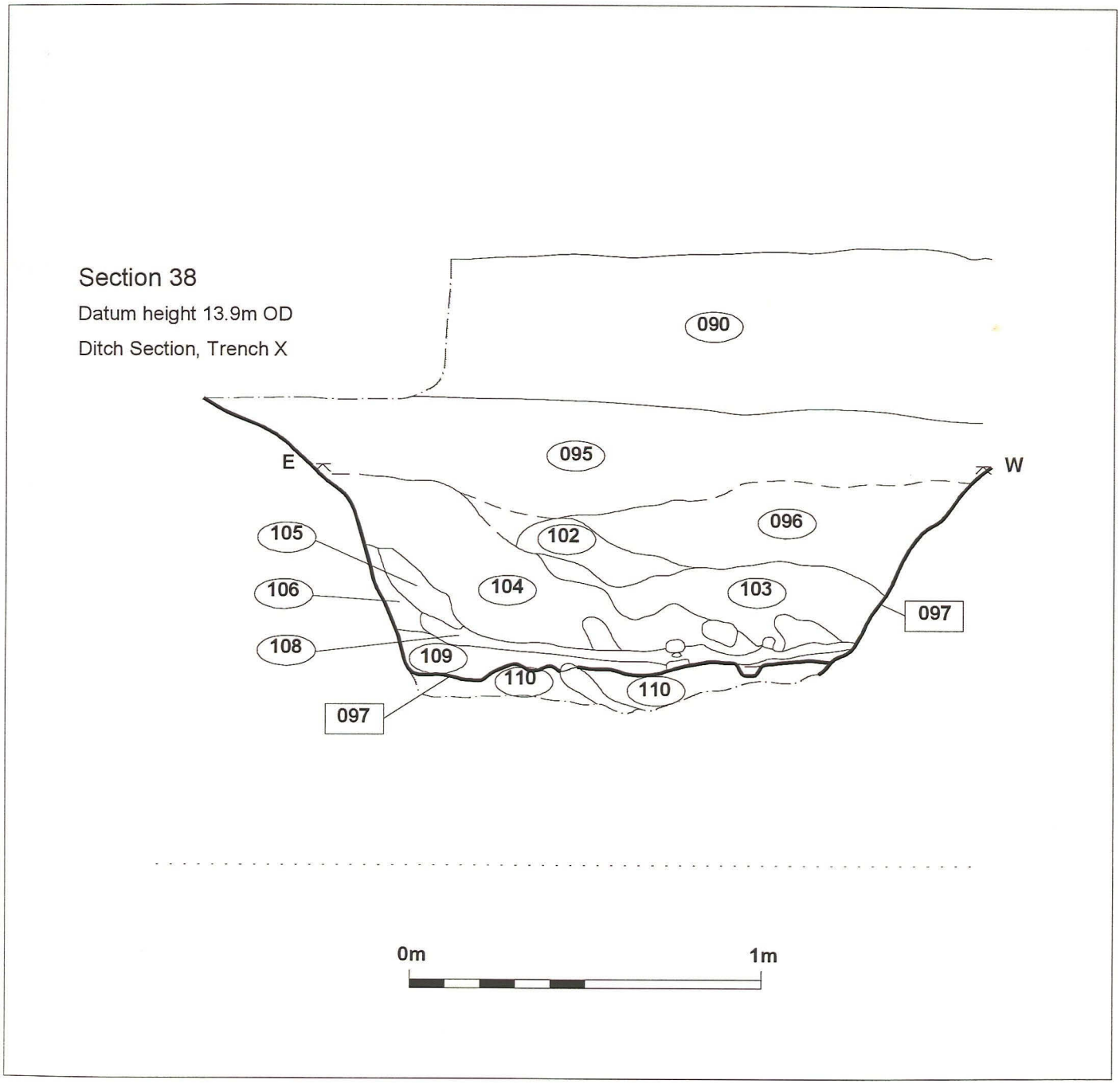


Figure 7 - Section through Post-medieval ditch

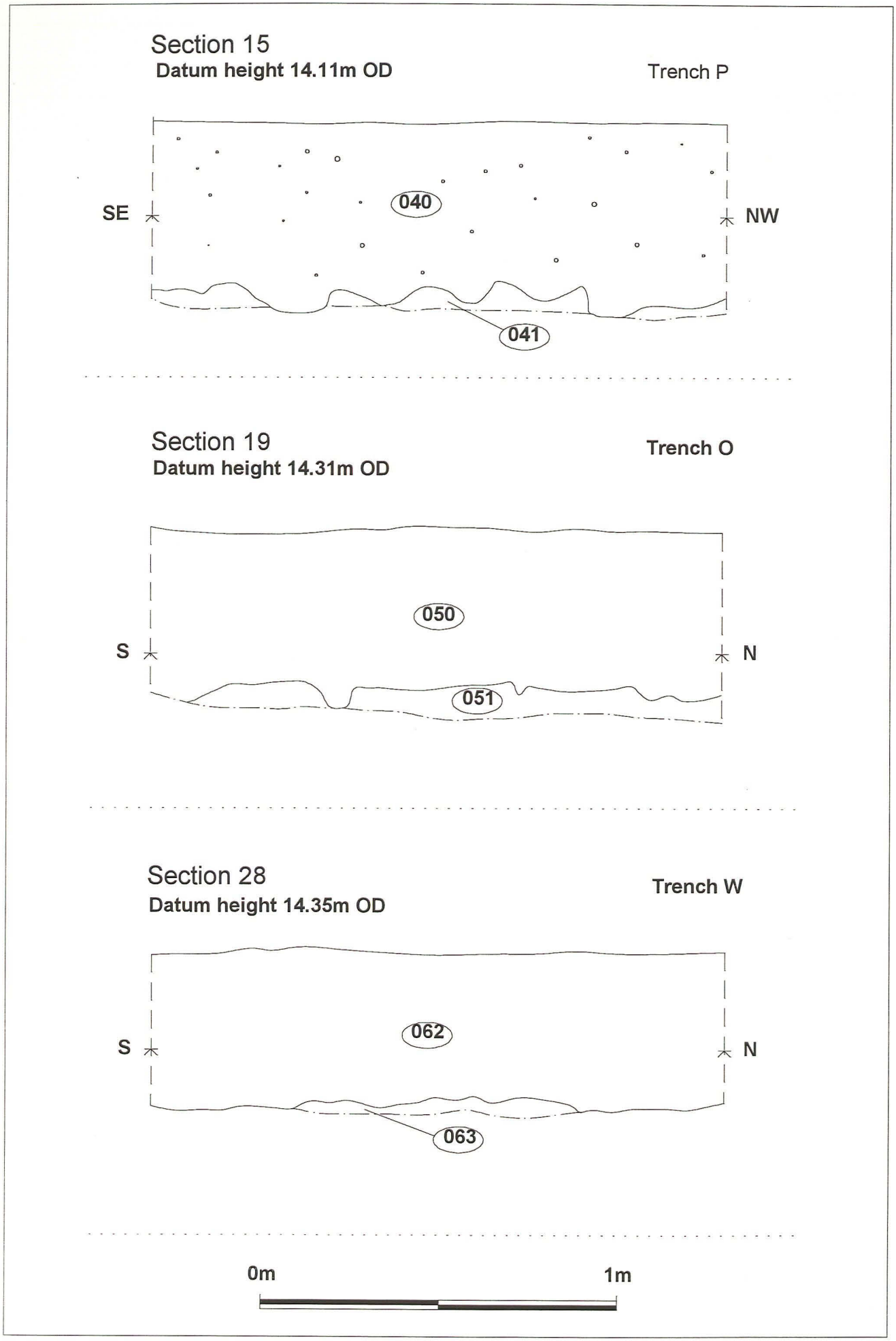


Figure 8 - Sections showing variations in Topsoil

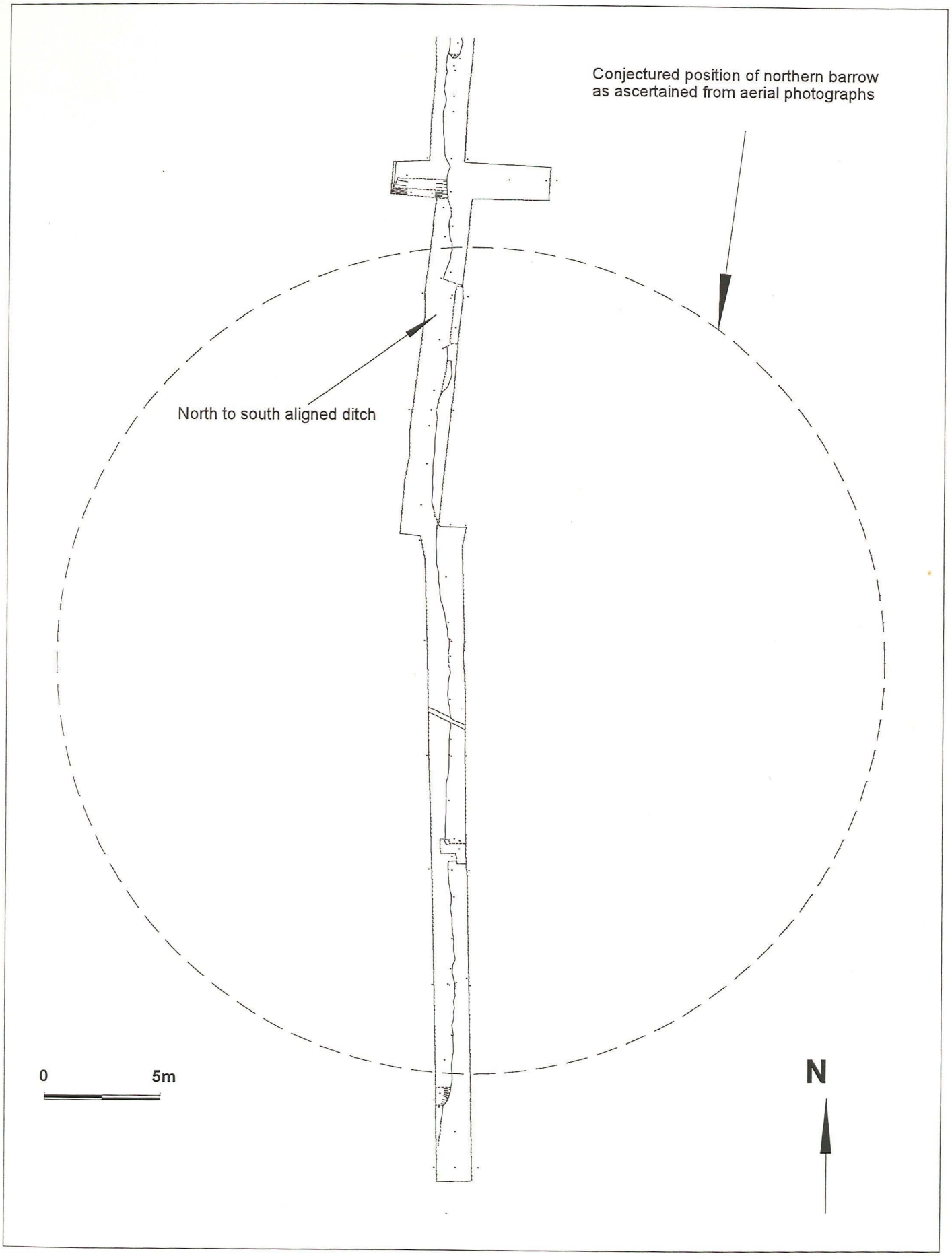


Figure 9 - Plan of Trench X, showing conjectured position of barrow

Plate 1 - General view of the proposed development area looking south.

Plate 2 - Undated Pit, Trench E.

Plate 3 - Post-medieval ditch, Trench I.

Appendix 1

WHISBY QUARRY EXTENSION
ARCHAEOLOGICAL PROVISION FOR MAIN BODY OF WORKS

SUMMARY

This document proposes a strategy for archaeological investigation in advance of mineral extraction at Whisby Quarry Western Extension. The proposal includes programmes of geophysical survey, fieldwalking, targeted trenching and gridded box excavations.

1 INTRODUCTION

1.1 The site, encompassing some 60ha, is situated southeast of the village of Eagle, some 10km southwest of Lincoln. Little archaeological activity is known in the area and a walkover survey, conducted as part of a Desk Top Assessment of the site revealed only two flint flakes and an equal number of medieval pottery sherds (APS 1994).

1.2 Two groups of faint cropmarks were located in the southernmost field. These lay either side of a sinuous linear soilmark which occupies the lowest point on the site and is probably a former stream course. To the north, on a slight promontory, are traces of three circular cropmarks (one a double circle), interpreted as likely ring ditches surrounding barrows. South of the stream course lies a single 'C' shaped cropmark.

1.3 The former stream channel is hardly recognisable as a depression within the field and it may have been long extinct and not necessarily deep during it's active period. Similarly, the putative 'barrows' are not recognisable as raised mounds, if indeed they ever had been. Early and severe erosion of mounds through weathering processes on light sandy soils is common.

2 AIMS OF THE PROJECT

2.1 The aim of the project is to determine the precise location, character, chronology, function, contemporary environmental setting and current condition of the known archaeological resource and to determine the potential presence/absence and extent of previously unidentified archaeology.

2.2 Key questions that will be addressed include

a) does the apparent absence of finds over much of the site reflect an absence of archaeology

b) are colluvial deposits present to the north of the Job's Lane promontory and if so do they retain environmental evidence pertinent to the barrows

c) what is the character of the stream to the south of the barrows, how did it infill (windblown ?) and what level of archaeologically related environmental evidence does it retain

d) is the 'C'-shaped cropmark all that shows of a circular ditch (barrow)

e) are structural features discernable within the three barrows

f) does a palaeosol survive beneath the ploughed mounds or beneath any colluvium

g) are the barrows the final expression of earlier ritual activity on the promontory

h) do the settlements of the barrow builders also occupy the promontory

i) is there potential for early prehistoric settlement sealed beneath deposits at the side of the extinct streams

j) is there potential for settlement along a break in slope 'terrace' near the northern limit of the proposed fieldwalking zone

3 METHODOLOGY

3.1 To attain the aim it is proposed that five investigative techniques are employed

a) Geophysical survey
b) Fieldwalking
c) Limited excavation of known cropmarks
d) Excavation of five metre square Boxes in targeted areas
e) Linear Trenching

3.2 *Geophysical Survey*
This will be undertaken in two areas.

1) The circular cropmarks.
Scanning by magnetometry will be used to locate the circular cropmarks south of Job's Lane. Once the general area is defined, detailed magnetometry or resistivity survey will be used to locate precisely the ring ditches. Moreover, the application of this technique may provide some indication of the structure and internal features of the monument. The same method will be used to locate the 'C'-shaped cropmark.

2) The stubble field north of Job's Lane
Scanning will be undertaken over a 200m long by 20m wide transect. Significant anomalies will be subjected to more detailed magnetometer survey

3.3 *Fieldwalking*
It is proposed to fieldwalk one field from the northern extent of the site downslope for a distance of 350m (see Figure). Fieldwalking will be undertaken in lines 10m apart. All finds will be individually plotted using a total station theodolite.

3.4 *Limited Excavation*
Sub-surface investigations of the three barrows will take the form of a single trench per monument through the surrounding ditches and into the 'mound' area, but not disturbing the central core area. This method will enable a section to be excavated through the surrounding ditch and to determine the presence/absence of structural remains (eg internal bank, kerb etc), a sealed palaeosol and pre-barrow features. Samples will removed for potential associated environmental remains.

The same methodology will be applied to the 'C'-shaped feature.

3.5 *Gridded box excavation*
A series of 12 five metre square boxes will be excavated in the vicinity of the barrows on a 40 metre staggered grid. The topsoil from the southwestern one metre square of each box will be sieved through a 5mm mesh as a standardised finds control. The purpose of this technique is to determine whether the promontory was the site of either earlier archaeological activity or of ritual/mortuary practise associated with interments beneath or within the barrows. A further five boxes will be excavated in a north south transect in the stubble field north of Job's Lane

3.6 *Linear Trenching*
Two trenches each 100m long by 2m wide are proposed either side of the promontory. To the south the trench will extend down into the vicinity of the extinct stream in order to assess the potential for the recovery of significant environmental evidence and the potential for the presence of earlier prehistoric settlement/activity alongside the stream.

North of the promontory the linear trench will be placed either side of the now canalised 'Pike Drain', another potential early stream course. Again this will test for potential sealed archaeology and will indicate the depth and extent of any 'hillwash' derived from the northern slopes of the proposed quarry.

4 RECORDING

4.1 Site recording will be by means of the standard single context system in use by Archaeological Project Services. Within this system individual units of stratigraphy are assigned a unique record number and are individually described and drawn. Plans of features will be drawn at 1:20 scale with sections at 1:10.

4.2 Throughout the excavations a photographic record consisting of monochrome prints and colour slides will be compiled. The photographic record will show specific stages of excavation, individual features and where appropriate their sections, groups of features where their relationship is important and the site on completion of fieldwork.

5 ENVIRONMENTAL ANALYSES

5.1 The low groundwater level at the site has reduced the likelihood of the preservation of waterlogged remains in the features. Nevertheless, standard sampling methods will be employed and the possibility of charred and mineralised remains is present. The methods employed will include the collection of intact monoliths in Kubiena boxes for pollen and soil micromorphology. Bulk samples from feature fills will be scanned for plant macrofossils and molluscs.

6 POST EXCAVATION AND REPORT

6.1 On completion of fieldwork all records and schedules will be checked and ordered to ensure they form a uniform sequence constituting a Level II archive. A stratigraphic matrix will be completed. Processing of finds will be undertaken and finds despatched to relevant outside specialists.

6.2 A report will be prepared and will consist of a summary of the findings, a description of the archaeological and geographic/topographic setting, description of the methodologies used, a text describing the findings, appropriate illustrations and photographs, specialists reports.

Prepared by Archaeological Project Services, May 1997

Appendix 2

WHISBY QUARRY EXTENSION, GEOPHYSICAL SURVEY
Engineering Archaeological Services Ltd

INTRODUCTION:

NGR Centred on SK 890 666

LOCATION AND TOPOGRAPHY

An area to the south of Job's Lane was scanned and surveyed in detail using both gradiometry and resistivity techniques. A second area to the north of Job's Lane was scanned. The area was flat and level.

ARCHAEOLOGICAL BACKGROUND

A group of 'ring ditches' are known from aerial photographs to lie to the south of Job's Lane.

AIMS OF SURVEY

It was hoped that geophysical survey would locate precisely the 'ring ditches' observed on the aerial photographs and define any associated features.

A further area was scanned as part of the overall evaluation to assess the potential for further archaeology.

SUMMARY OF RESULTS

No archaeological features were detected.

SURVEY RESULTS:

COMPLICATING FACTORS

The area surveyed was under a crop of wheat that had reached a height of *c.* 0.5m. This is sufficiently high to drag on the gradiometer in its normal operating position. Of necessity, therefore the Gradiometer was carried above the crop level to avoid this. In consequence, however, sensitivity to feint features is lost as the operating height of the Gradiometer above the ground surface is increased.

In respect of the resistivity survey the area has been suffering from drought conditions for a considerable time. However, just before the survey commenced a significant downpour occurred leaving a very wet surface layer.

Examination of the subsoil exposed in one of the evaluation trenches revealed the subsoil to be a compact sand this appeared to be very dry and on crumbling in the hand was free running.

AREA

An area of *c.* 200m by 60m was scanned in order to assess the gradiometer response and to try and pinpoint the ring ditches.

An area of 0.3 Ha was surveyed in detail with both the gradiometer and resistivity meter.

A second area *c.* 200m by 20m was scanned to the north of Job's Lane.

DISPLAY

The results are displayed as a Grey Scale Image.

RESULTS

Scanning:

The scanning results indicated the area to be magnetically very quiet with an observed fluctuation of *c.* ± nano Tesla above background levels.

The ferro-magnetic feature detected in the gradiometer survey (Figure 2) was caused by APS' surveying equipment. No archaeological features were detected.

The resistivity survey detected no archaeological features. It is likely that any variation in the data is a result of a shallow surface layer with relatively high conductivity in contrast to the dry subsoil.

MAGNETIC SUSCEPTIBILITY

Soil samples were taken from random locations in the fields in order to assess the magnetic susceptibility of the soils. A subsoil sample was obtained from one of the evaluation trenches for comparison.

The susceptibilities as measured are very low with little contrast between the sub-soil susceptibility and the topsoil; in consequence one would not expect a good response from archaeological features given these values.

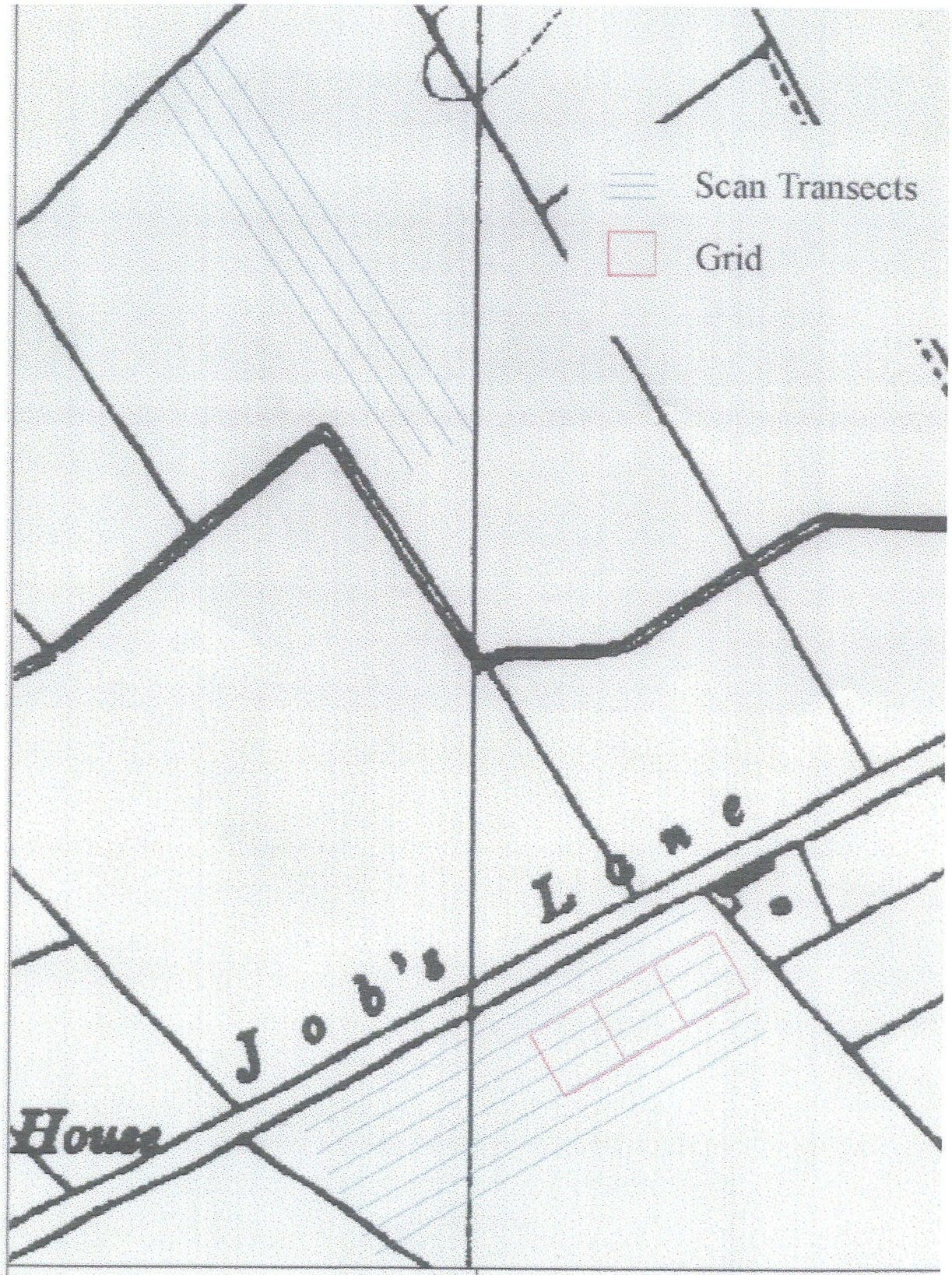
Sample	Volume susceptibility X_v	Mass susceptibility X_m
Sub-soil	3	2.1
Grid 1	8	7.4
Grid 3	8	8.1
Scanned area	15	11.7

CONCLUSIONS

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

No archaeology was detected.

Surveyed by John Price.
May 1997



Whisby

Scale 1:2500

Figure 1

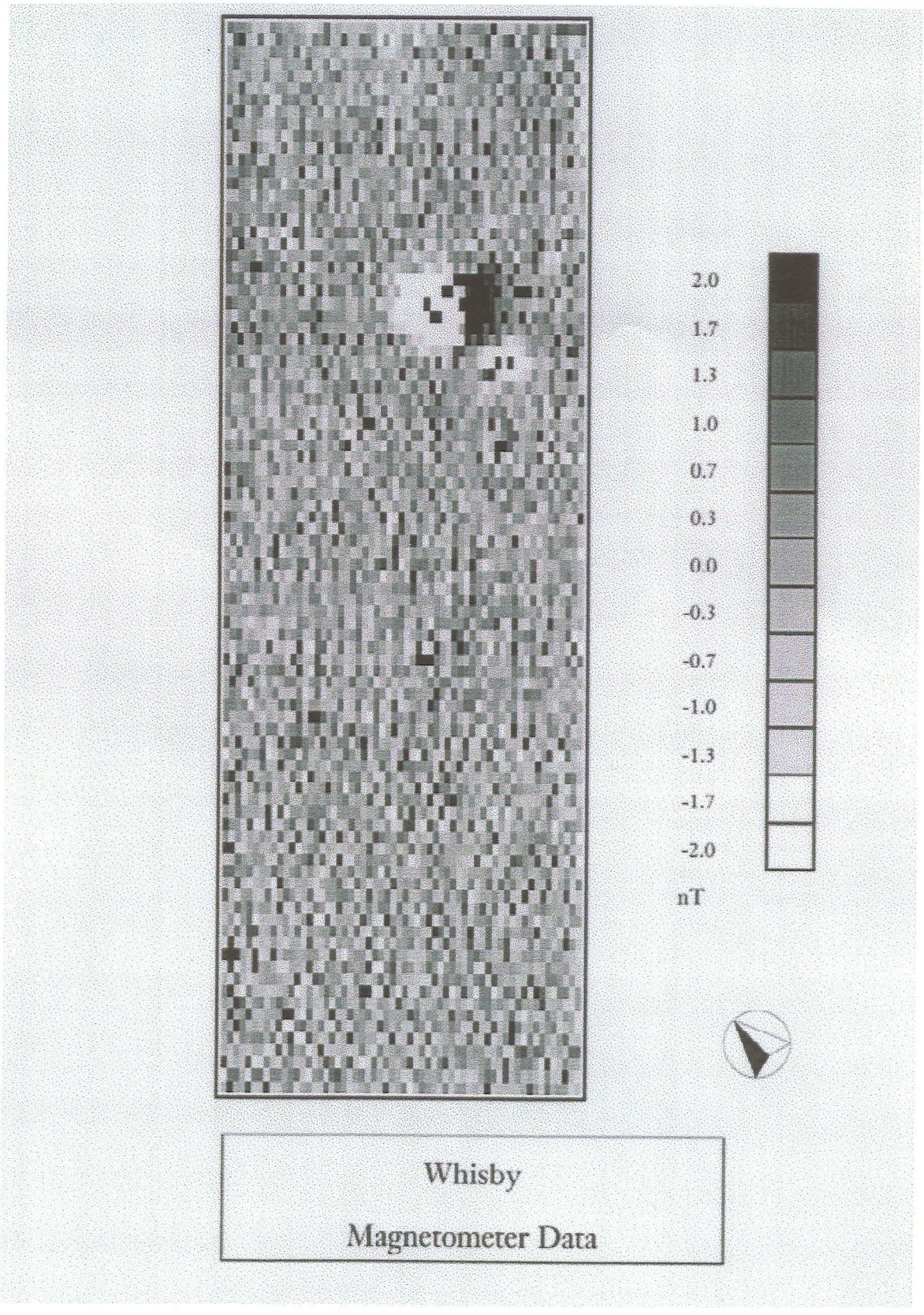


Figure 2 (Scale 1:500)

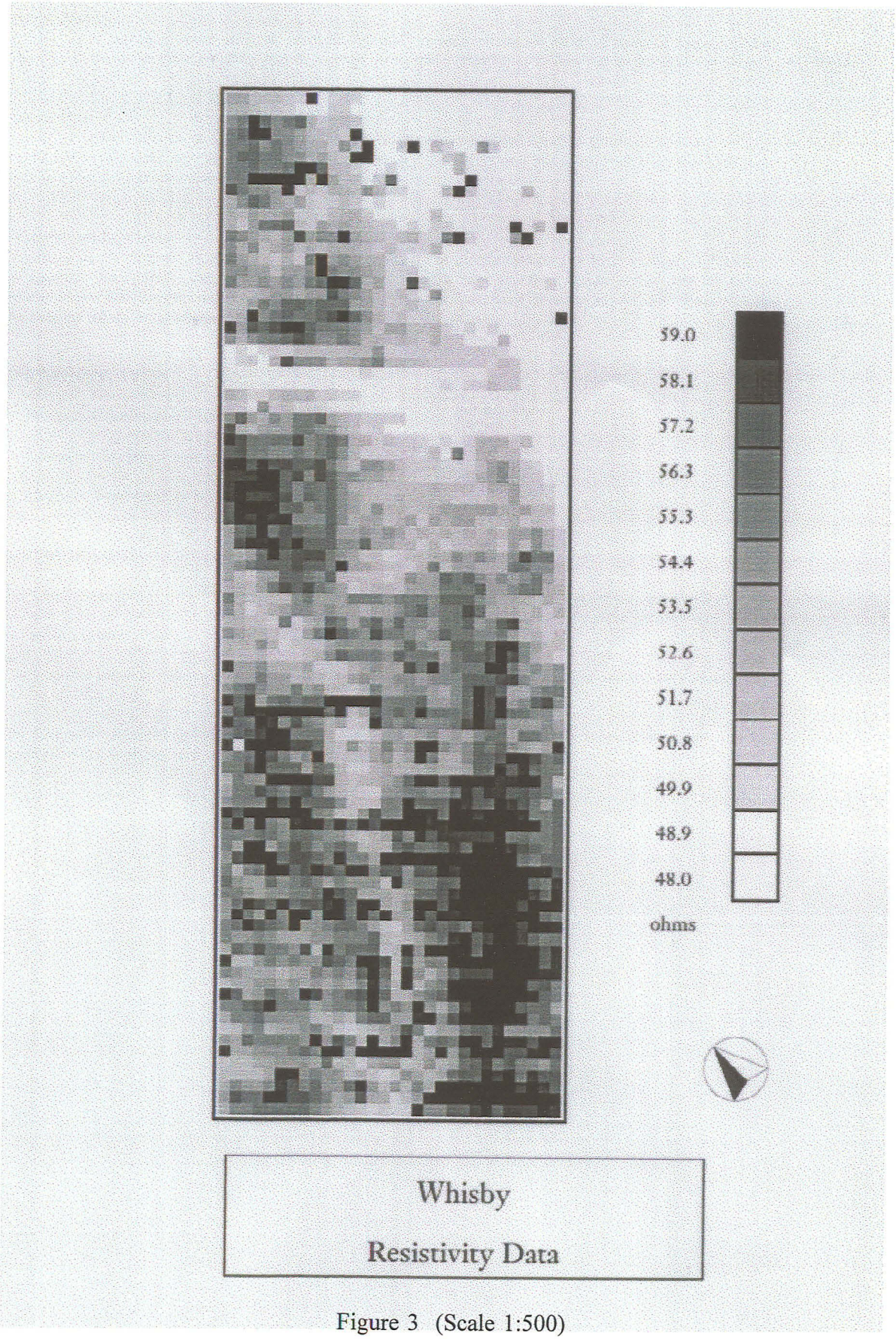


Figure 3 (Scale 1:500)

TECHNIQUES OF GEOPHYSICAL SURVEY:

Magnetometry:
This relies on variations in soil magnetic susceptibility and magnetic remanance which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

Resistivity:
This relies on the variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than magnetometry' this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

Magnetic Susceptibility:
Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

INSTRUMENTATION:

1. Fluxgate Gradiometer - Geoscan FM36

2. Resistance Meter - Geoscan RM4/DL10

3. Magnetic Susceptibility Meter - Bartington MS2

METHODOLOGY:

For Gradiometer and Resistivity Survey, 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged at either 0.5m or 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For magnetic scanning transects 10m apart are laid out across the survey area any features detected are measured and their position shown on the location map.

For Magnetic Susceptibility Survey a large grid is laid out and readings logged at 10m intervals along traverses 10m apart, data is again configured and analysed on a laptop computer.

Appendix 3

CONTEXT DESCRIPTION

No.	Trench	Description	Interpretation
001	G	Dark greyish brown silty sand, 0.17m thick	Topsoil
002	G	Dark greyish brown sand and silt, 0.35m thick	Subsoil
003	G	Yellow brown sand	Fill of 005
004	G	Grey and yellow sand	Fill of 005
005	G	Linear cut, north-south aligned, 0.5m deep	Ditch/dyke
006	G	Dark grey silty sand	Fill of 007
007	G	Linear cut, 0.92m wide by 0.15m deep	Recut of 010
008	G	White and yellow sandy silt	Fill of 010
009	G	White and grey sand	Fill of 010
010	G	Linear cut, 0.48m wide by 0.33m deep	Drainage gully
011	H	Medium grey silty sand	Fill of 012
012	H	Circular cut, 0.5m by 0.9m extent	Animal disturbance
013	H	Dark greyish brown sandy silt, 0.3m thick	Topsoil
014	H	Brown, yellow and grey silty sand	Natural
015	B	Mid brown sand, 0.36m thick	Topsoil
016	B	Dark yellow sand	Natural
017	J	Dark grey sandy silt, 0.38m thick	Topsoil
018	J	Mottled grey and yellow brown silty sand	Natural
019	F	Dark greyish brown sandy silt, 0.1m thick	Topsoil
020	F	Dark greyish brown sand and silt, 0.3m thick	Subsoil
021	C	Mid brownish grey fine sand, 0.45m thick	Topsoil
022	C	Yellow with grey and red sand	Natural
023	I	Greyish brown silty sand, 0.4m thick	Topsoil
024	I	Dark greyish brown silty sand	Fill of 034
025	I	Grey and brown mottled sand	Fill of 034
026	I	Grey and brown mottled silty sand	Fill of 034
027	I	Mottled brown silty sand with gravel	Fill of 029
028	I	Light blueish grey clayey sand	Fill of 029
029	I	Linear cut, 0.76m deep, aligned north to south	Ditch/dyke
030	I	Yellow brown sand and gravel	Natural

No.	Trench	Description	Interpretation
031	N	Dark grey sandy silt, 0.38m thick	Topsoil
032	N	Mottled grey, yellow and brown sand and gravel	Natural
033	I	Mottled blue and grey clay and sand	Fill of 034
034	I	Linear cut, 0.52m deep	Recut of 029
035	N	Dark brown sand	Natural
036	K	Mid greyish brown silty sand, 0.4m thick	Topsoil
037	K	Yellow, brown and grey sand and gravel	Natural
038	D	Grey sand, 0.41m thick	Topsoil
039	D	Dark yellow silt/sand with gravel	Natural
040	P	Dark brown sandy silt, 0.54m thick	Topsoil
041	P	Mottled brown, yellow and grey sandy silt	Natural
042	L	Greyish brown silty sand, 0.4m-0.5m thick	Topsoil
043	E	Grey fine sand, 0.38m thick	Topsoil
044	E	Dark greyish brown silty sand, with charcoal	Fill of 045
045	E	Near circular cut, 1.2m diameter by 0.53m deep	Pit
046	E	Dark yellow sand	Natural
047	L	Greys and brown silty sand	Fill of 048
048	L	Semi-circular cut, 0.54m by 0.38m by 0.25m deep	Root disturbance
049	L	Yellow brown silty sand with gravel	Natural
050	O	Dark brownish grey sandy silt, 0.42m thick	Topsoil
051	O	Brownish yellow silty sand	Natural
052	S	Brownish grey sandy silt	Topsoil
053	S	Yellow, brown and grey sand and gravel	Natural
054	R	Dark brown sandy silt, 0.24m-0.48m thick	Topsoil
055	R	Brownish yellow sand	Natural
056	T	Brownish grey sandy silt, 0.4m thick	Topsoil
057	T	Dark grey sand	Fill of 058
058	T	Irregular cut, 0.26m by 0.21m by 90mm deep	Natural feature
059	T	Yellow, brown and grey sand and gravel	Natural
060	G	Brownish yellow sand and gravel	Natural
061	F	Yellowish brown sand with gravel	Natural
062	W	Dark brown and grey sandy silt, 0.27m thick	Topsoil
063	W	Mottled yellowish brown and grey silty sand	Natural

No.	Trench	Description	Interpretation
064	W	Dark grey sandy silt	Fill of 069
065	Q	Mid greyish brown sandy silt, 0.45m thick	Topsoil
066	Q	Blueish grey and brown clayey silt	Natural
067		Cancelled context	
068	Q	Yellow and brown sand and gravel	Natural
069	W	Oval cut, 0.79m by 0.51m by 70mm deep	Natural feature
070	M	Dark brownish grey sandy silt, 0.42m thick	Topsoil
071	M	Brownish yellow silty sand	Natural
072	R	Mid to dark grey sand	Fill of 078
073	R	Light greyish brown sand	Fill of 075
074	R	Yellowish brown sand	Fill of 075
075	R	Linear cut, 1.27m wide by 0.42m deep	Drainage gully
076	U	Mid greyish brown sandy silt, 0.38m thick	Topsoil
077	U	Mottled brownish yellow silty sand	Natural
078	R	Linear cut, 0.13m deep	Poss recut of 075
079	R	Dark grey sand	Fill of 080
080	R	Oval cut, 0.53m extent by 0.17m deep	Root disturbance
081	R	Yellow brown and light grey sand	Natural
082	R	Dark grey sand with gravel	Fill of 083
083	R	Oval cut, 0.87m extent by 0.13m deep	Animal disturbance
084	R	Light grey sand	Fill of 085
085	R	Linear cut, 0.4m wide by 50mm deep	Land drain feature
086	A	Dark grey sandy silt, 0.34m thick	Topsoil
087	A	Yellowish white sand	Natural
088	V	Mid brownish grey silty sand, 0.41m thick	Topsoil
089	V	Brownish yellow and light grey sand	Natural
090	X	Light brownish grey silty sand, 0.49m thick	Topsoil
091	X	Light to mid grey silty sand	Fill of 092
092	X	Irregular cut, 0.38m wide by 90mm deep	Natural feature
093	X	Light grey and brownish yellow silty sand	Fill of 094
094	X	Sub-circular cut, 0.92m by 0.43m by 60mm depth	Animal disturbance
095	X	Mid brownish grey silty sand	Fill of 097
096	X	Mid greyish brown silty sand	Fill of 097

No.	Trench	Description	Interpretation
097	X	Linear north-south cut, 2.4m wide by 0.8m deep	Ditch/dyke
098	X	Dark brown sand with gravel	Fill of 100
099	X	Yellowish brown and grey sand	Fill of 100
100	X	Linear cut, only partially excavated	Same as 097
101	X	Yellowish brown and grey sand with gravel	Natural
102	X	Mid brownish grey silty sand	Fill of 097
103	X	Mottled grey, yellow and brown sandy silt	Fill of 097
104	X	Dark greyish brown silty sand	Fill of 097
105	X	Mid grey silty sand	Fill of 097
106	X	Dark greyish brown sandy silt	Fill of 097
107	X	Dark brownish grey sandy silt	Fill of 097
108	X	Black organic sand	Fill of 097
109	X	Light grey sand	Fill of 097
110	X	Yellow brown sand and gravel	Natural
111	X	Dark grey sand	Animal disturbance
112	X	Dark greyish brown sandy silt	Fill of 113
113	X	Oval cut, 0.25m wide by 30mm deep	Natural feature
114	X	Dark brown sandy silt, 0.35m thick	Topsoil
115	X	Light grey sand	Same as 093
116	X	Cut, 0.5m wide by 0.2m deep	Same as 094
117	X	Mixed grey and yellowish brown sand	Natural

Appendix 4

THE FINDS
Hilary Healey, Steven Membery, Gary Taylor

Pottery, *Hilary Healey*

Context	Description	Date
FW +	Probable Bourne B ware base sherd	14th century
026	Yellow glazed kitchenware	early 20th century

Flints, *Steven Membery*

Context	Description	Date
FW +	Possible core, no prepared surface	Unknown
FW +	Possible flake, no prepared surface	Unknown

Metalwork, *Gary Taylor*

Context	Description	Date
Tr. I +	Harrow tine fragment	19th/20th century
052	Ploughshare	20th century
073	Cast iron cauldron	18th/19th century

FW refers to finds recovered by fieldwalking.

Appendix 5

WHISBY QUARRY EXTENSION, ENVIRONMENTAL ASSESSMENT

James Rackham
The Environmental Archaeology Consultancy

1. Introduction

A single soil sample (WJL97-044 <2>) recovered from a pit fill was submitted for assessment of its environmental potential, particuarly the charcoal within it.

The sample comprised 3.6 litres of dark greyish brown silty fine sand with frequent pebbles (up to 3cm diameter). The sample was washed in a bowl and floating material poured onto a 250 micron mesh sieve. The sample was found to contain a large proportion of very fine sandy silt crumbs and was soaked in a dilute solution of washing soda to further aid the breakdown of this material. After soaking the sediment was again washed and floated, and the residue then sieved through a 250 micron mesh sieve.

2. Results

The residue, composed of small crumbs of very fine sandy silt, medium fine sand, grits and small pebbles contained no archaeological or environmental finds, other than a few small pieces of charcoal that had not floated off during processing.

The float contained a high proportion of degraded uncarbonised organic material, most of which was unidentifiable, but included one or two fragments of beetle elytra and uncarbonised seeds. Small cominuted fragments of charcoal were common and indicated the burning of vegetable matter as well as wood. No carbonised seeds were observed in the flot, and none of the carbonised material is likely to be identifiable. The wood charcoal appears to derive largely from carbonised small wood rather than timber.

Apart from indicating that the pit had contained an organic rich fill and some burning had taken place within the vicinity this sample cannot make any contribution to the interpretation of the feature and it is not recommended that any further study is made. It may be possible to radiocarbon date both the organic fraction and the carbonised fraction of the sample, but the quantities of material are small, AMS would be required, and the possibility of contamination is relatively high.

Appendix 6

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 7

THE ARCHIVE

The archive consists of:

117	Context records
8	Photographic records
62	Scale drawings
1	Box of finds
1	Stratigraphic matrix
2	Computer survey plots

All primary records and finds are currently kept at:

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

City and County Museum, Lincoln, Accession Number: 121.97
Archaeological Project Services Site Code: WJL97

Appendix 8

GLOSSARY

Anglo-Saxon	Pertaining to the early part of the Saxon period and dating from approximately AD 450-650.
Bronze Age	Part of the prehistoric era characterised by the introduction and use of bronze for tools and weapons. In Britain this period dates from approximately 2000-700 BC.
Clactonian	A Lower Palaeolithic flint industry named after discoveries at Clacton-on-Sea, Essex, and characterised by trimmed flint flakes and chipped pebbles or chopper tools.
Cropmark	A mark that is produced by the effect of underlying archaeological features influencing the growth of a particular crop.
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 magnetometery survey and resistivity survey.
Iron Age	Part of the prehistoric era characterised by the introduction and use of iron for tools and weapons. In Britain this period dates from approximately 700 BC - AD 50.
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 4000-2000 BC.
Palaeolithic	The 'Old Stone Age' period, part of the prehistoric era. In Britain this period dates from approximately 350,000 - 10,000 BP.
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.