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LINDSEY ARCHAEOLOGICAL SERVICES
FRANCIS HOUSE SILVER BIRCH PARK GREAT NORTHERN TERRACE LINCOLN LN5 8LG

SPALDING BYPASS: PROPOSED MATERIALS EXTRACTION SITE
NGR: TF 2450 1950

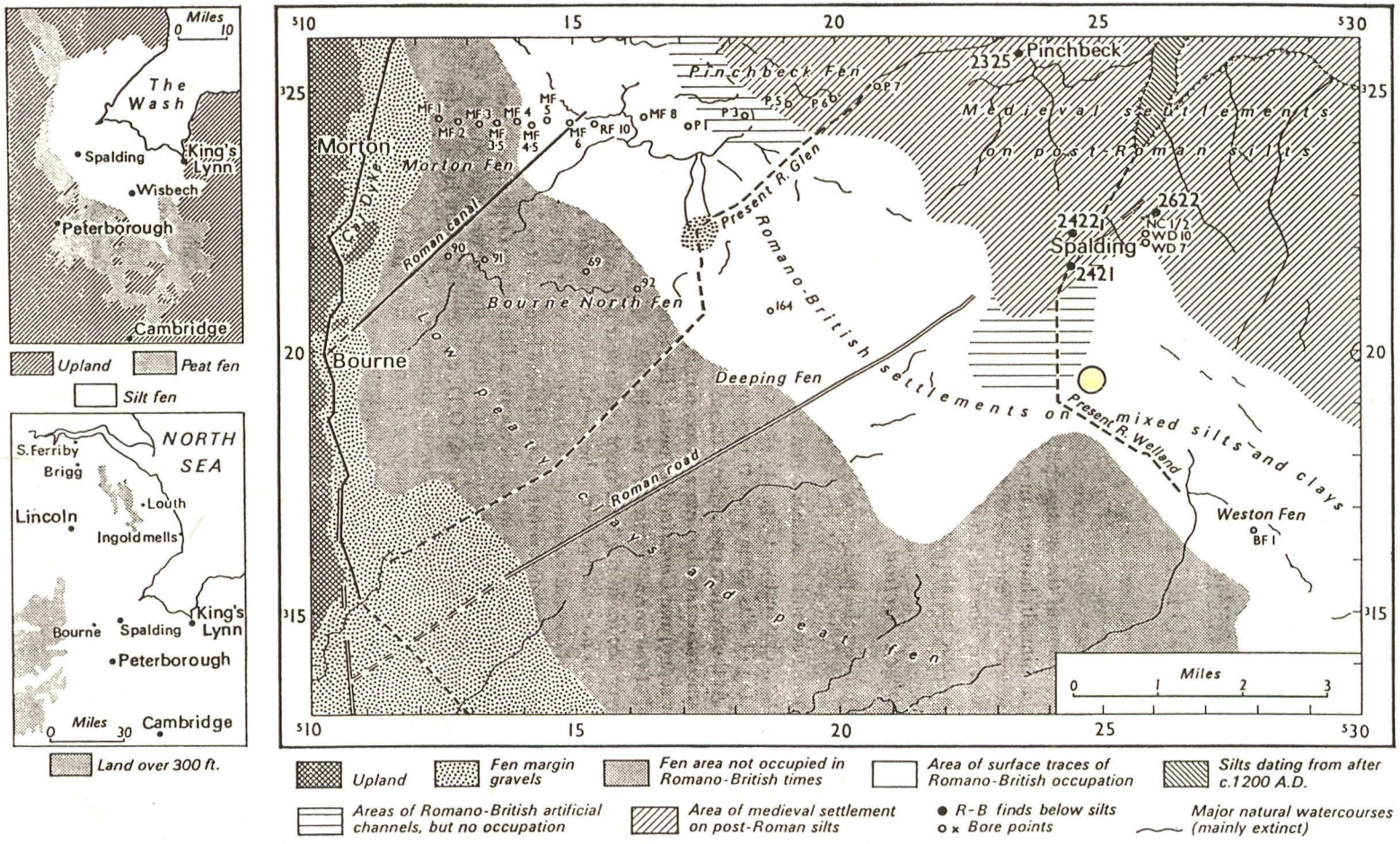

Fig.1 Location of site in relation to the fenland landscape (from Phillips 1970)

SPALDING BYPASS: PROPOSED MATERIALS EXTRACTION SITE
NGR: TF 2450 1950

Lindsey Archaeological Services were commissioned by Birse Construction Ltd (Spalding) to prepare a desk-top assessment examining the archaeological implications of materials extraction on a site beside the proposed Spalding Bypass. The 15.33ha site is intended to act as a 'borrow pit' for material required to encourage consolidation of embankments along the bypass; excavation to a depth of 3m below present ground level is anticipated.

Location

The intended extraction site lies to the SE of Spalding, slightly to the N of the parish boundary with Cowbit (Fig.1 and 2). The present A1073 trunk road, raised on the Barrier Bank, forms the western limit 0.9km E of the River Welland. The borrow pit will extend across two drainage ditches into parts of three fields which are in open farmland but designated as 'set-aside' for the 1993 season. This land was named 'Spalding Fen Ends' on a map drawn by V. Grant c.1670 and printed by J. Featherstone in 1763 which is deposited at Lincs. Archives Office (2 Deeping Fen 1/5/1). Lincolnshire Sites and Monuments Record includes entry PRN 22341 (cropmarks of an undated possible small farm settlement) close to the borrow pit, at TF 2440 1930.

Archaeological Background

The Lincolnshire Fens and their drainage have been the subject of number of geological and historical studies (e.g. Wheeler 1867, Skertchly 1877, Darby 1940). More recently the archaeology of the region has been examined firstly under the auspices of the Fenland Research Committee in the 1960s (Phillips (ed) 1970). The Fenland Project, funded by English Heritage, continued this work in the 1980s and has covered an extensive area of the Lincolnshire fens (Hayes and Lane 1992). Whilst it did not include the proposed site, survey was carried out in the neighbouring parishes of Cowbit and Deeping St Nicholas.

Sea-Level Changes and their Archaeological Impact

Geographical research into phases of post-glacial marine regression and transgression along the North Sea coast has included the examination of peats and other sediments within the Lincolnshire Fens. Analysis of samples from these has enabled pollen to be identified and quantified, leading to to presentation of the data in pollen diagrams. These show the relative predominance of plants representing freshwater and salt-water regimes, and the various episodes have been carbon dated from suitable samples. In the Roman period and more particularly since medieval times there have been many attempts to control these cyles through artificial drainage of the land.

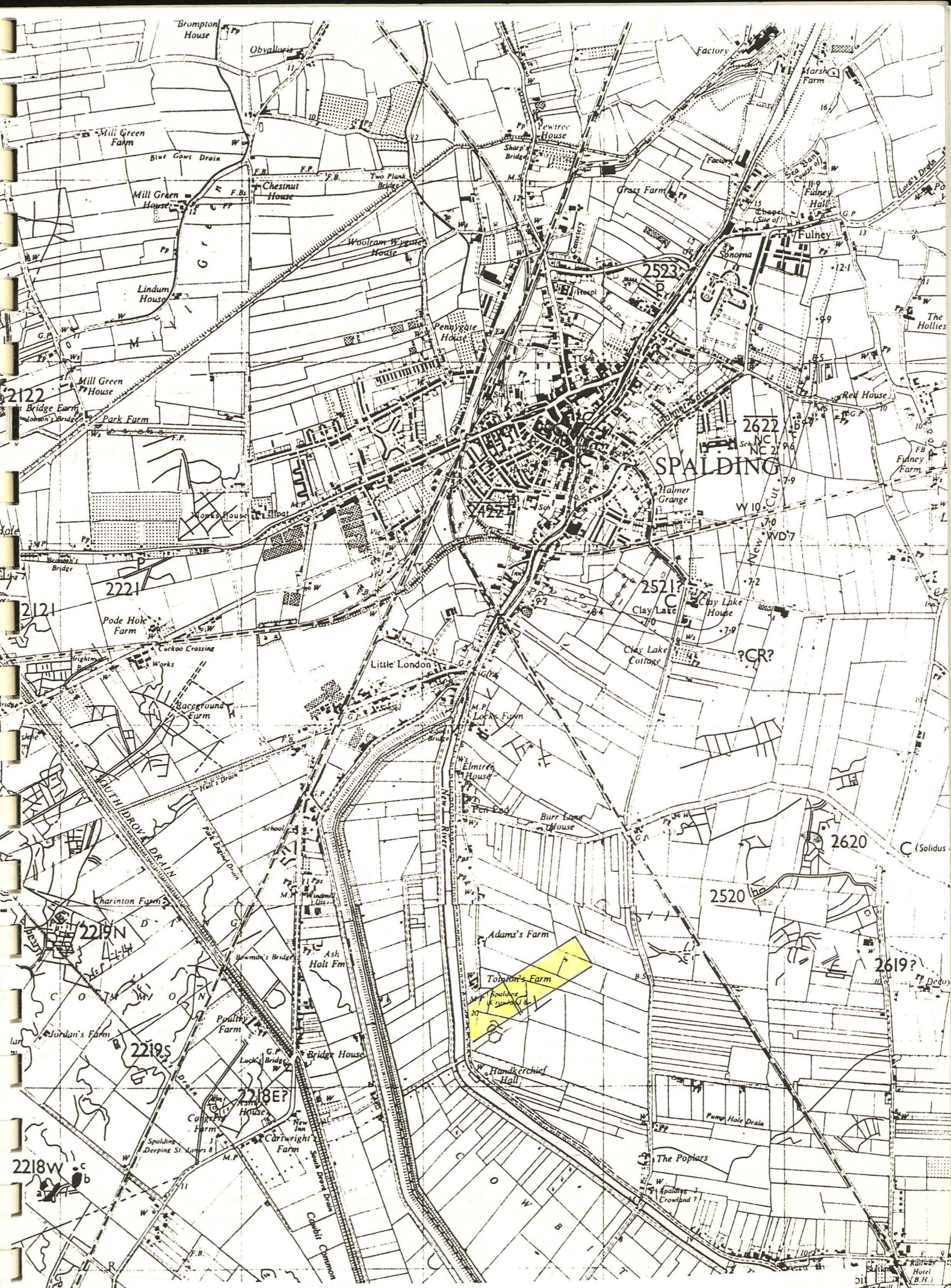

Fig.2 Location of proposed borrow pit in relation to the crop mark evidence as mapped up to 1969 (from Phillips 1970)

The soils which cover most of the South Lincolnshire Fens have formed on sediments deposited since the last glaciation (Figs. 3-8). The oldest of these deposits is the basal peat which formed over parts of the prehistoric landscape before it was buried by marine alluvium. The peat is not well dated but started to accumulate in the deepest river valleys as early as the Mesolithic period.

Some of the best data comes from a series of seven boreholes which were sunk into Cowbit Wash just south west of the proposed extraction site in 1980 with the aim of sampling peat and other deposits previously located and dated by the Institute of Geological Sciences (Shennan 1986). One sample, CW7, provided the most reliable sequence between +3 and -6.6m OD with three phases of peat formation. The base of the sample reached gravel deposits thought to represent an early channel or estuary of the River Welland. The earlier sampling (between 1969 and 1971) had included borehole Sp2, which lay adjacent to the south-west corner of the proposed borrow pit.

Peat was encountered at -6.6m O.D. and had formed over a weathered till surface in the late Mesolithic/early Neolithic with a Carbon 14 date of c.4710-4360 B.C.(calibrated). After a short interruption of the peat formation by marine sedimentation there followed further peat formation dated to c.4365-3805 B.C.(calibrated). There followed a substantial marine/brackish flooding and sedimentation episode. At -3.3m O.D. this was interrupted and an organic layer formed which was too thin to sample for Carbon 14 dating but pollen from it indicated a high saltmarsh/coastal reed swamp environment (Fig. 3). After further marine alluvium covered the area, peat formed again at +2m O.D. from which a date of 830-790 B.C. (calibrated) was obtained. Whilst no peat was recorded in the borehole Sp-2 at this level it is not clear from the information available whether deposits have been lost from the surface through erosion. The present ground surface is at this level O.D. Archaeological features recorded from the air in the area of the borrow pit are apparently dug through the underlying marine silts and must be contemporary with or later than the formation of the peat at the beginning of the first millenium B.C.

The work of the Fenland Project in the adjacent parish of Cowbit revealed a marked concentration of saltmaking sites which developed on the wide levees of the Welland and other creeks during the early and middle Iron Age. There was a decline in activity in the later Iron Age before an increase again in the Roman period (Figs. 5,6 and 9).

There is little physical evidence of Anglo-Saxon and medieval activity in this area of the fens (Figs. 7, 8 and 10) although there is extensive documentary information about the state of various waterways in the fen dating from the 12th century onwards. This

documentation makes it clear that the main course of the Welland was a branch flowing along the South Ea (the South Holland Drain) and into the River Nene (Skertchly 1877, 65). The branch which flowed from Crowland through Spalding and beyond was much neglected during the Middle Ages and the present course is of post-medieval date.

The proposed extraction site lies on a bend in the Barrier Bank which was constructed under an Act of 1666 to protect the South Holland Fen from the flood waters of the Welland (Wright 1973, 13). The modern field and drainage patterns date mainly from the period of enclosure towards the end of the eighteenth century. Proprietors of lands with right of common on the fens of Spalding, Cowbit and Pinchbeck resolved to "drain, divide and enclose" the fens and in December 1768 printed a leaflet explaining their decision. The document in Lincs. Archives Office (2BNL/1/2) was addressed in hand to The Speaker, at the House of Commons and began: "Whereas the several Fens belonging to the Parishes of Spalding, Pinchbeck and Cowbitt in the County of Lincoln are, in their present state, very inconvenient to the several owners and occupiers and incapable of any great Improvements and are also liable to many great encroachments from the putting on of cattle by strangers who have no right therein...".

Archaeological Evidence from the Borrow Pit Area

The only available information relating directly to the area in question comes from aerial photographs. Air photographic records at the Lincolnshire SMR, the Cambridge University Collection and the National Library of Air Photographs (RCHM, Swindon) were consulted. The first known record of the land was made in 1946 by the RAF (106G/UK/1489) when a hexagonal enclosure and associated ditches were photographed. This photograph has not been inspected but Cambridge University recorded the same features in June 1958 and June 1959 (Fig. 11). Additional photographs were taken by the National Monuments Record in 1979 and 1980 an example of which is shown on Fig. 12.

Attached to the hexagonal enclosure on its north side is a smaller sub-circular enclosure and at their eastern junction there is an entrance into the larger enclosure. The north-eastern side of the two enclosures is flanked by an outer ditch which echoes their shape and protects the entrance. Extending from the west corner of the hexagonal enclosure is a linear ditch which is a part of a large field system. There is a further linear ditch to the east which runs up to but does not meet the hexagonal enclosure. There are further linear land divisions and a possible droveway lying to the north and south-east of the enclosures (Figs. 11 and 14). Recent land drainage marks are also visible (Fig. 11). This archaeological site extends inside the southern limit of the borrow pit area.

Plotting of archaeological sites in the Lincolnshire Fen began with the pioneering work of Mrs Sylvia Hallam in the 1950s. She also visited many sites identified from the air and collected pottery to assist in their dating. The most comprehensive results of this work are presented in her contribution to *The Fenland in Roman Times* (Phillips (ed) 1970). Fig. 2 shows an extensive network of settlements closely associated with the silted up creeks (roddons) of earlier water courses. The sites visited by Mrs Hallam, and more recently by the Fenland Survey team, are of Iron Age and Romano-British date. The greatest density appear to be in Deeping Fen but not all photographs were plotted (including the hexagonal enclosure on the proposed extraction site which was first recorded in 1946). Since 1970 further sites have been recorded but mapping of this more recent data is still not complete. It will be included in the current programme of work at Cambridge funded by the Royal Commission on Historic Monuments of England.

Despite the incomplete data of the 1969 plotting there are a number of points which may be observed. The modern field boundaries and drainage channels have no bearing on the orientation of the features recorded as soil and cropmarks. Many of the major land divisions in this earlier landscape appear to be orientated in a south-westerly/north-easterly direction. The linear boundary ditches attached to the hexagonal enclosure on the proposed extraction site are no exception and it is suggested therefore that the complex on this site is most probably of Iron Age/Romano-British date which reinforces the information from the boreholes. In addition, another of the cropmark complexes in Deeping Fen, on the border between Spalding and Deeping St. Nicholas, contains a hexagonal enclosure with poorly defined features inside (Fig. 2: site 2219N and Fig. 13). 2nd century pottery was found by Mrs Hallam when fieldwalking the site in the 1950s.

Discussion

There appears to be clear evidence of archaeological activity within and extending beyond the limits of the proposed borrow pit. This takes the form of a series of apparently associated cropmarks suggesting enclosures and an access; an unusual hexagonal cropmark may represent a settlement site beside fields connected by a droveway. The clarity of some of the features from the air indicates them to be retaining moisture well despite modern land drainage and the hexagonal cropmark, in particular, may be a deeply ditched enclosure. This might have implications for the survival of organic artefacts and environmental indicators within the fills of the ditches and any pits.

The date of the cropmarks, which probably represent more than one phase of activity based around a common axis, has been conjectured from the alignment of the boundaries which is very different from the existing direction of

drainage cuts and field boundaries. Other cropmark complexes, mostly W of the River Welland, have been dated from surface scatters of pottery to the Iron Age and Romano-British periods and it is possible that the hexagonal enclosure is of similar date (Phillips 1970, Hayes and Lane 1992).

The cropmarks represent only one period of human activity on the site but occupation at earlier dates may have become sealed by marine silt deposits. Mesolithic activity might be represented by artefacts on the post-glacial land surface as far as 10m below present ground level. Sites at that depth will not be damaged by the proposed materials extraction and should not be affected by future reinstatement of the borrow pit.

Prehistoric activity on the site, associated with the peat horizon dating to the earlier first millenium, may be damaged or removed by the proposed materials extraction depending on exact depths reached. No evidence of this is likely on the land surface from fieldwalking or geophysical techniques; the overburden will mask any features from aerial photographs. Part of any evaluation programme should include test-pitting to establish the depth of the horizon in order to assess the potential threat from the borrow pit.

The hexagonal enclosure is of an extremely unusual form and it is therefore proposed that a full archaeological evaluation of the site should be undertaken prior to any excavation of the deposits. The purpose of this work would be to establish the date of the features through retrieval of associated pottery and other artefacts and to establish whether deposits are waterlogged.

The Spalding Fen area is one of continuing interest to geographers researching sea-level change and this should be considered along with the direct archaeological information which could be obtained from the site.

N. Field and G. Tann
Lindsey Archaeological Services
27.5.1993

Acknowledgements
The research for this assessment was undertaken using material held at Lincs. Sites and Monuments Record, Lincolnshire Archives Office and Lincoln City Library (Local Collection). We are grateful for the help received from the staff. Further air photographs were searched, copied and supplied by Cambridge University Collection and the National Library of Air Photographs (RCHM, Swindon). Ms. J. Frost provided valuable assistance with this assessment.

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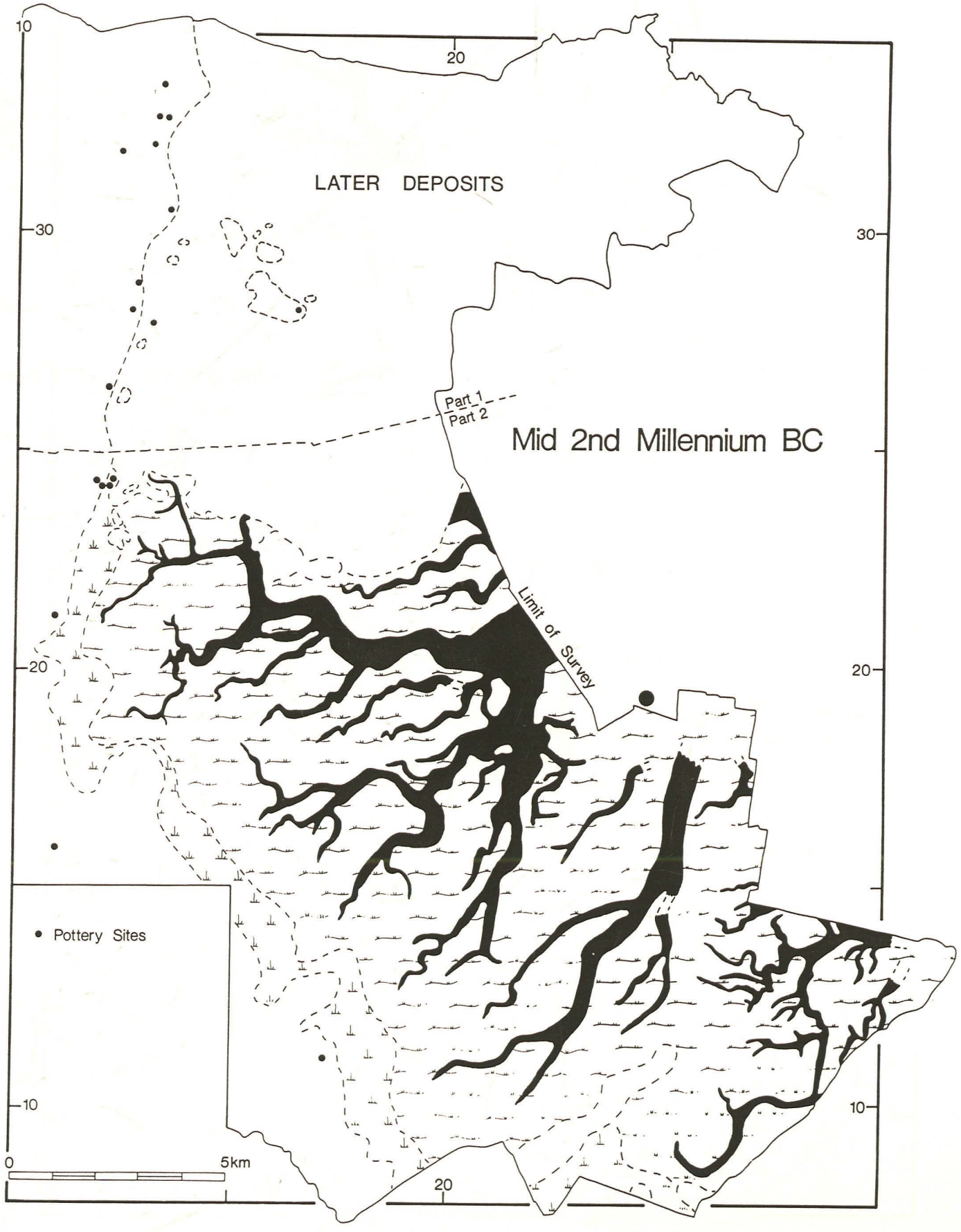
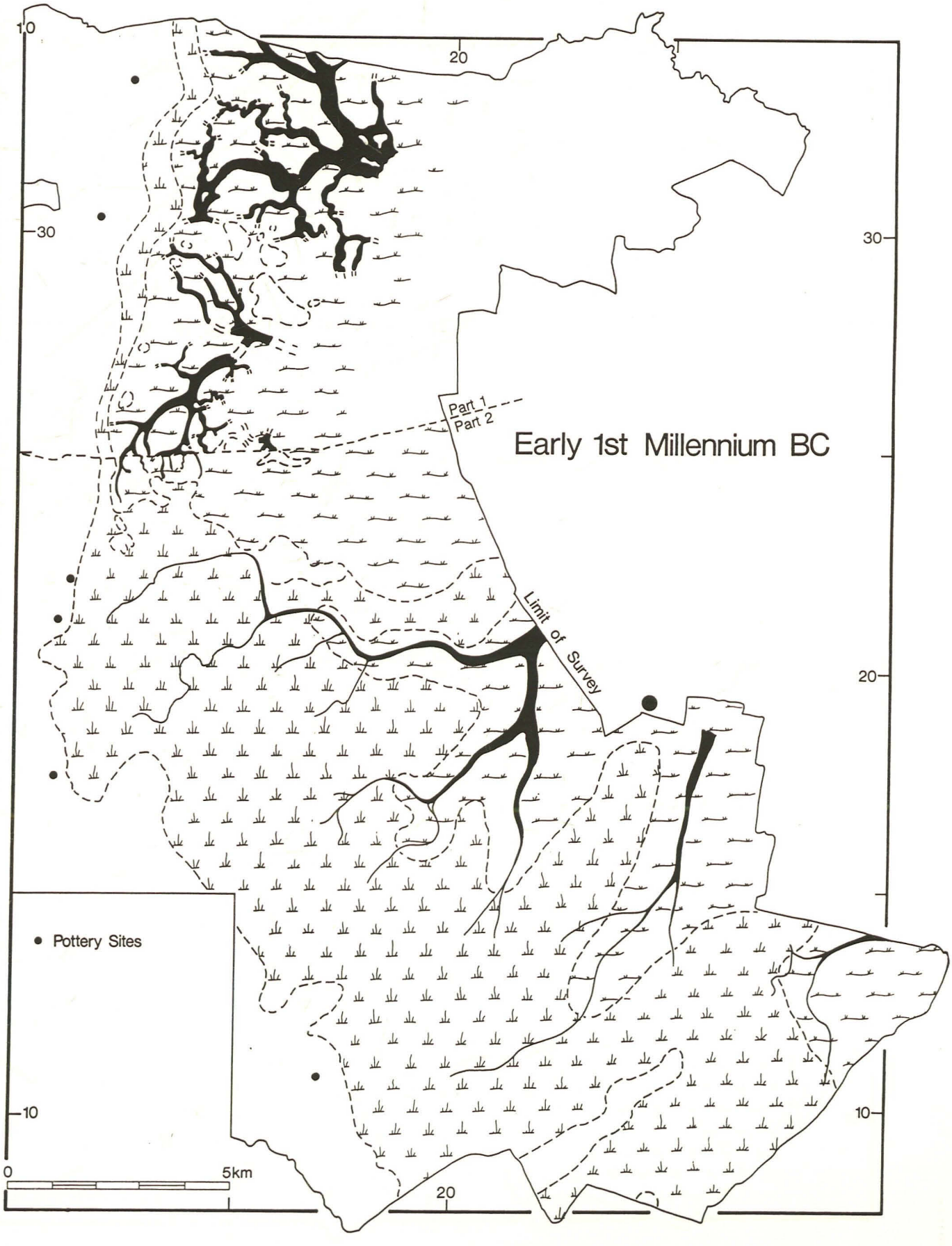


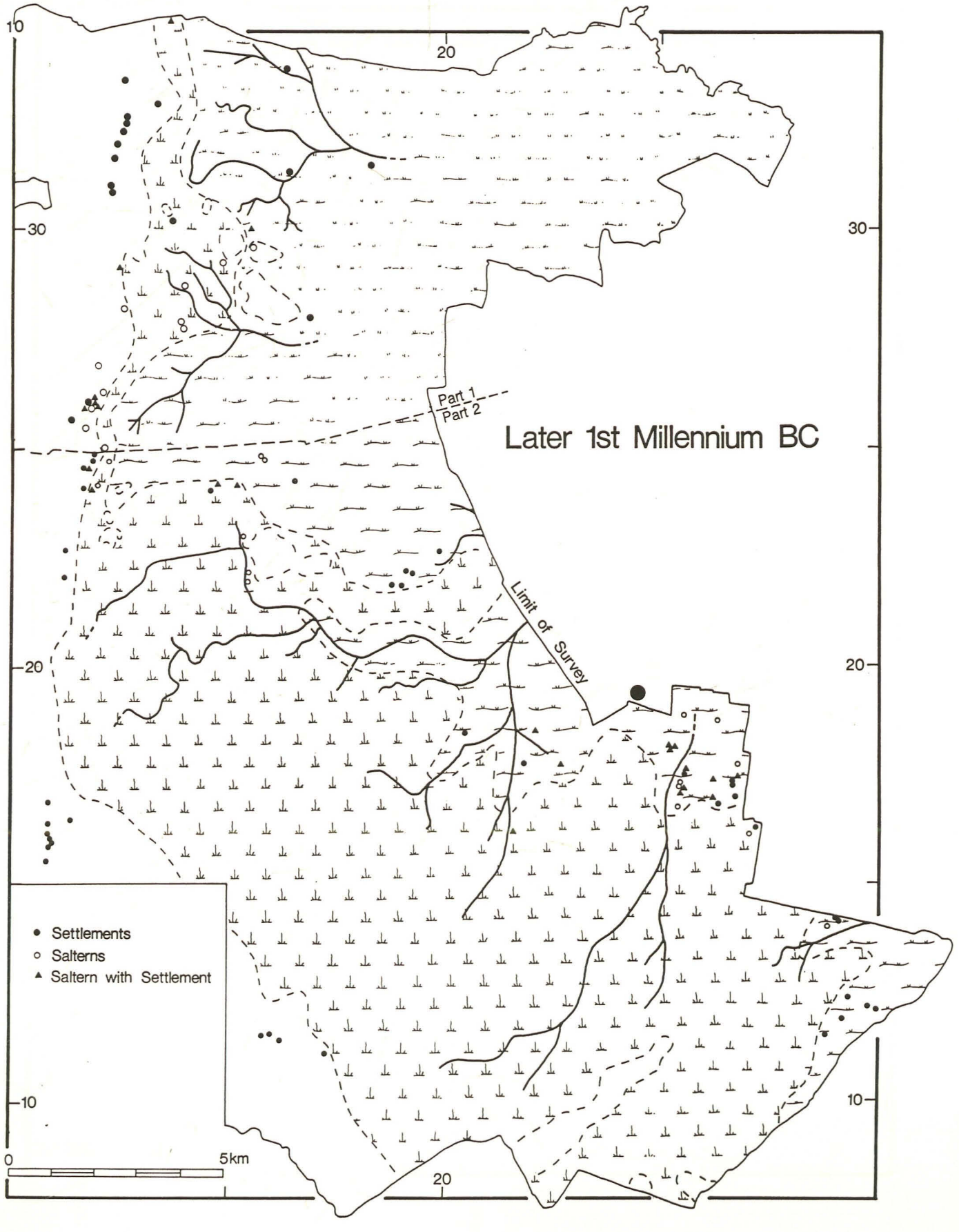
Mid 2nd Millennium BC Scale 1:125,000

Fig.3 Development of the south-west Lincolnshire fens (from Hayes and Lane 1992)



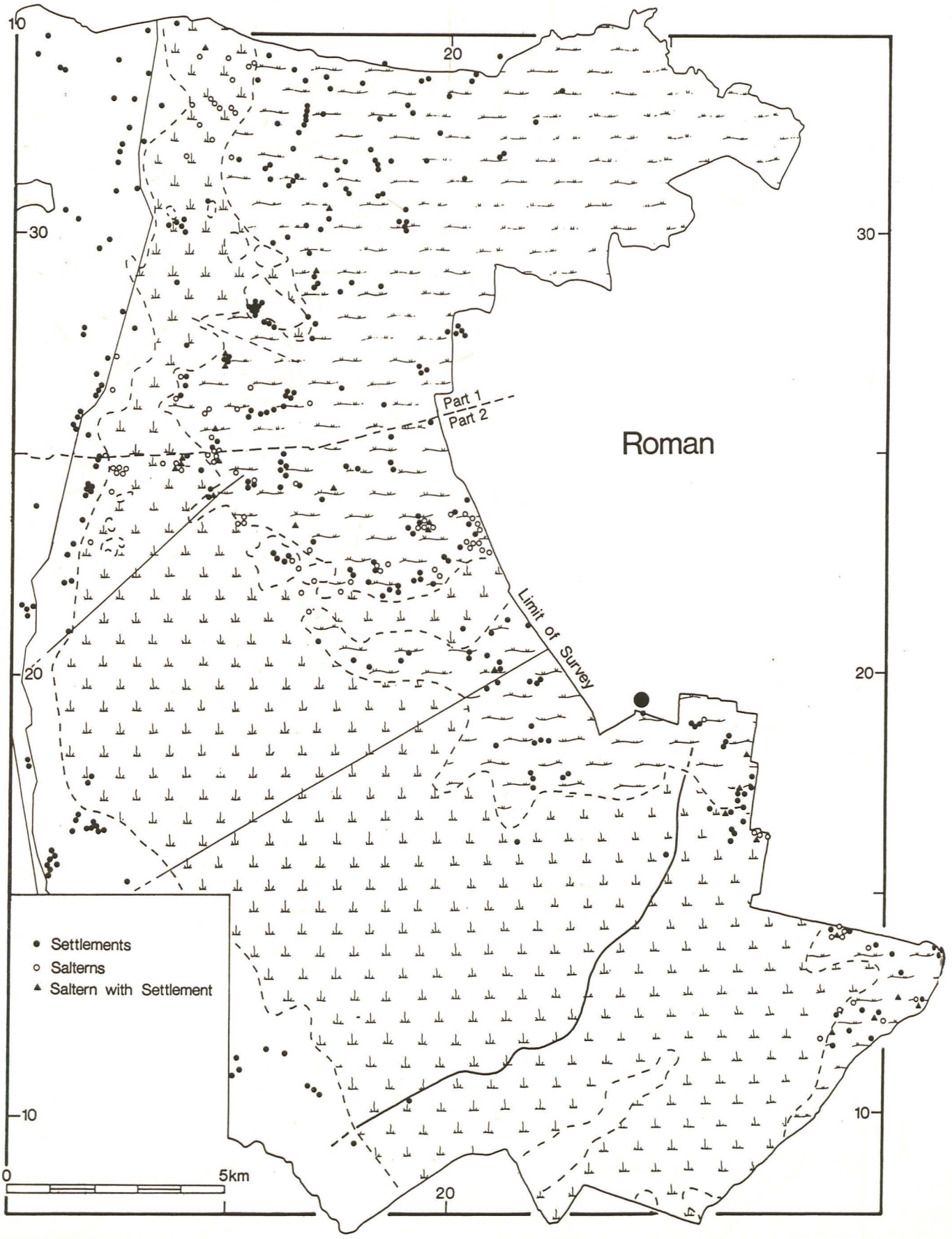
Early 1st Millennium BC Scale 1:125,000

Fig.4 Development of the south-west Lincolnshire fens (from Hayes and Lane 1992)



Later 1st Millennium BC Scale 1:125,000

Fig.5 Development of the south-west Lincolnshire fens (from Hayes and Lane 1992)



Roman Scale 1:125,000

Fig. 6 Development of the south-west Lincolnshire fens (from Hayes and Lane 1992)

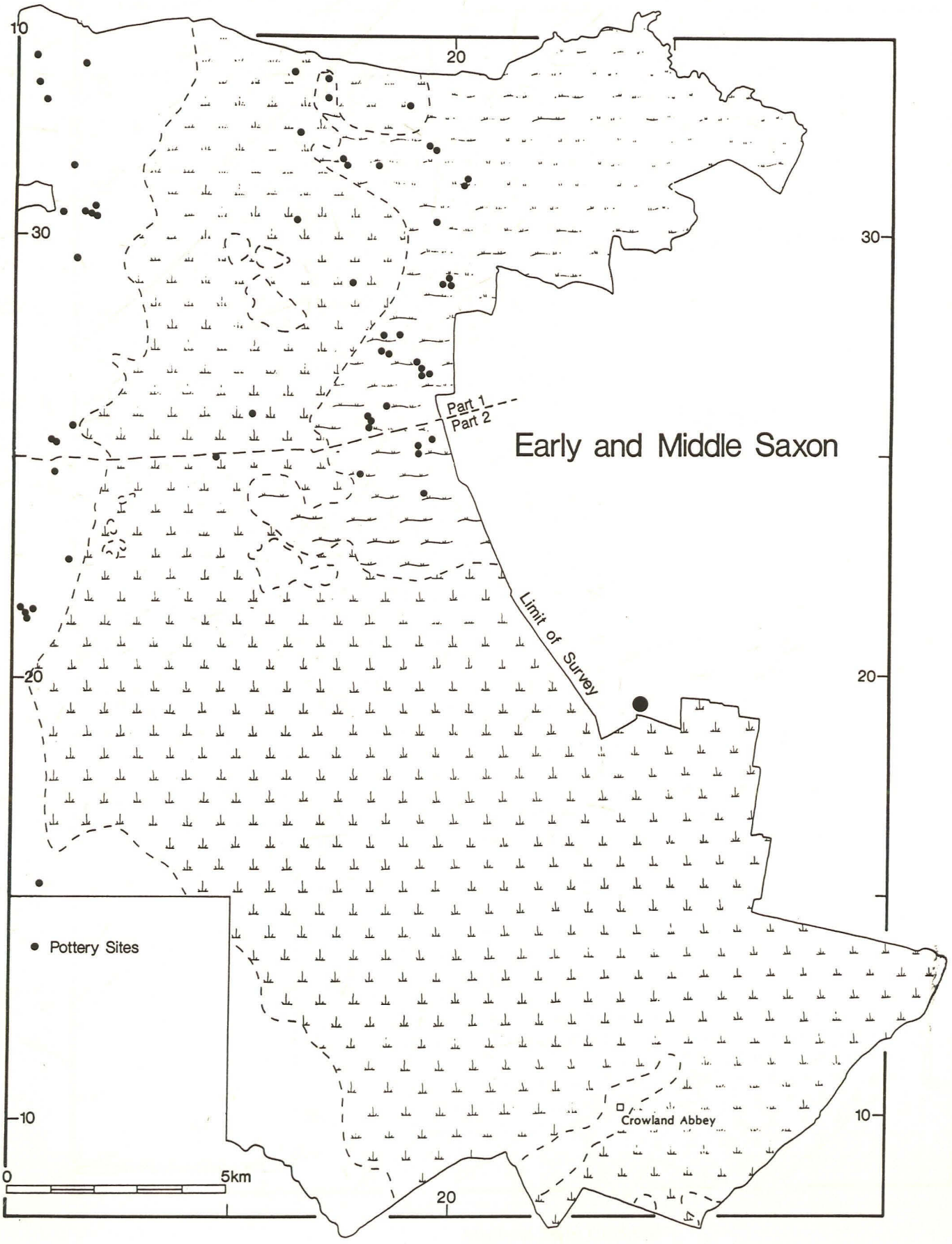
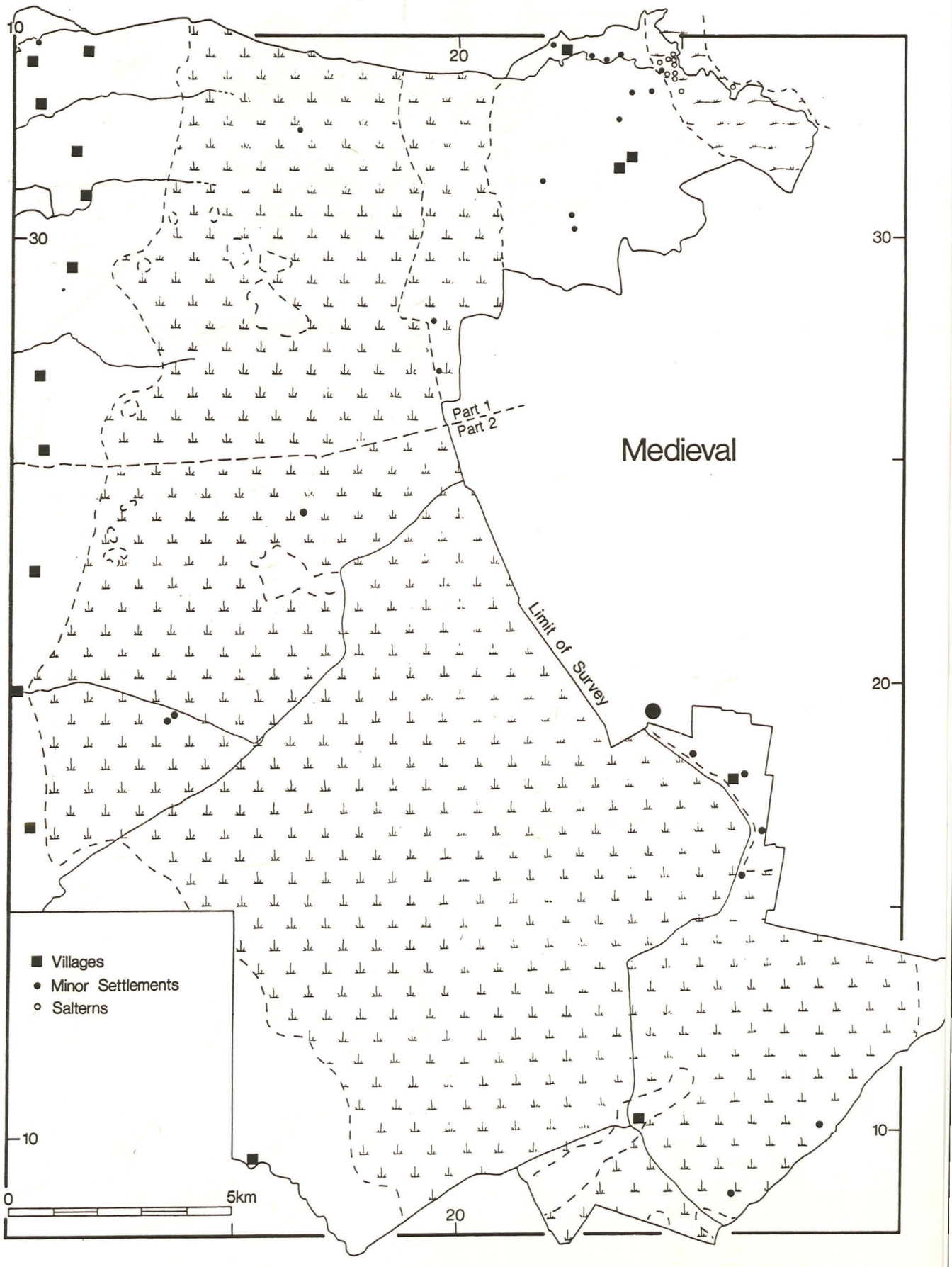
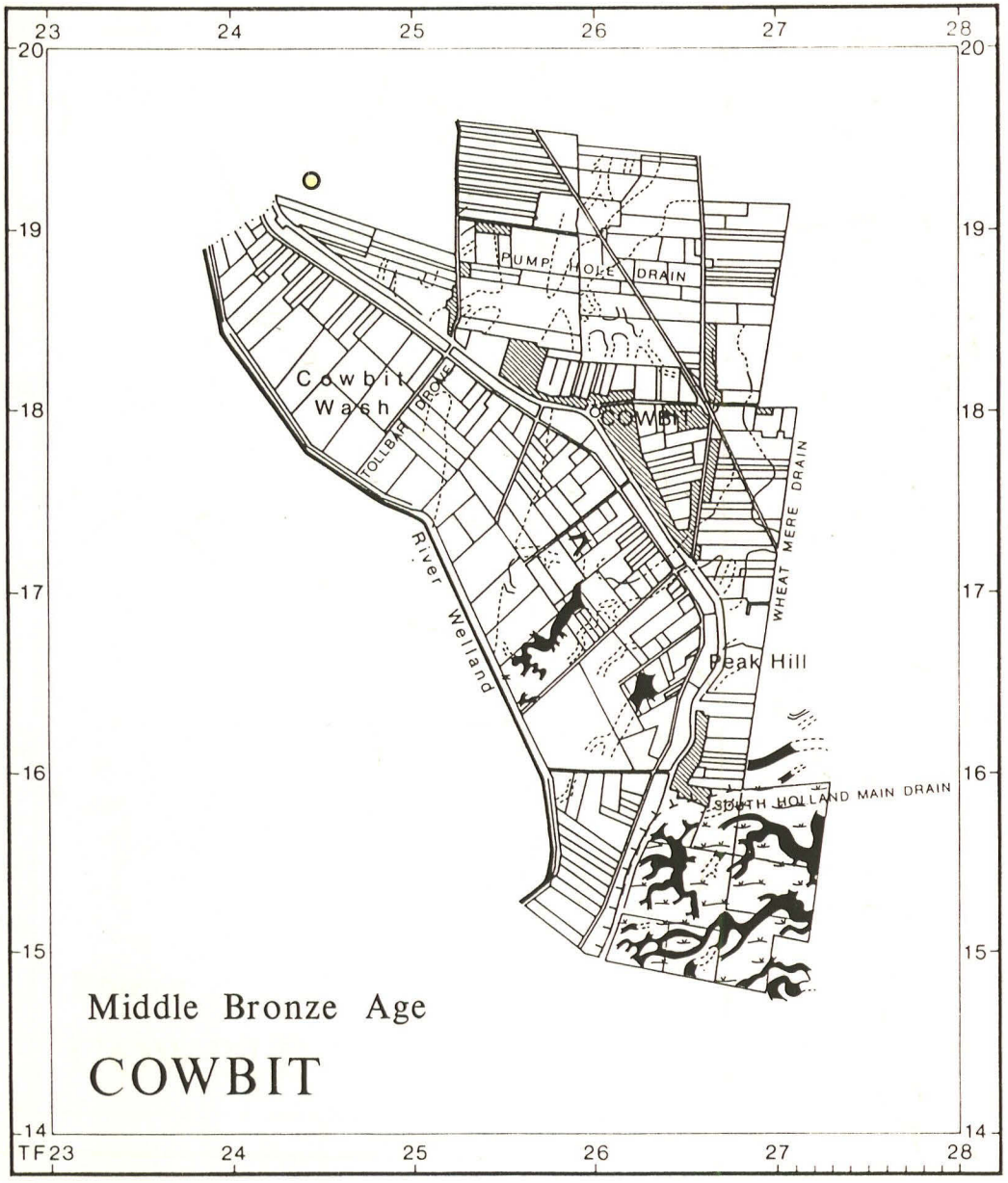


Fig.7 Development of the south-west Lincolnshire fens (from Hayes and Lane 1992)

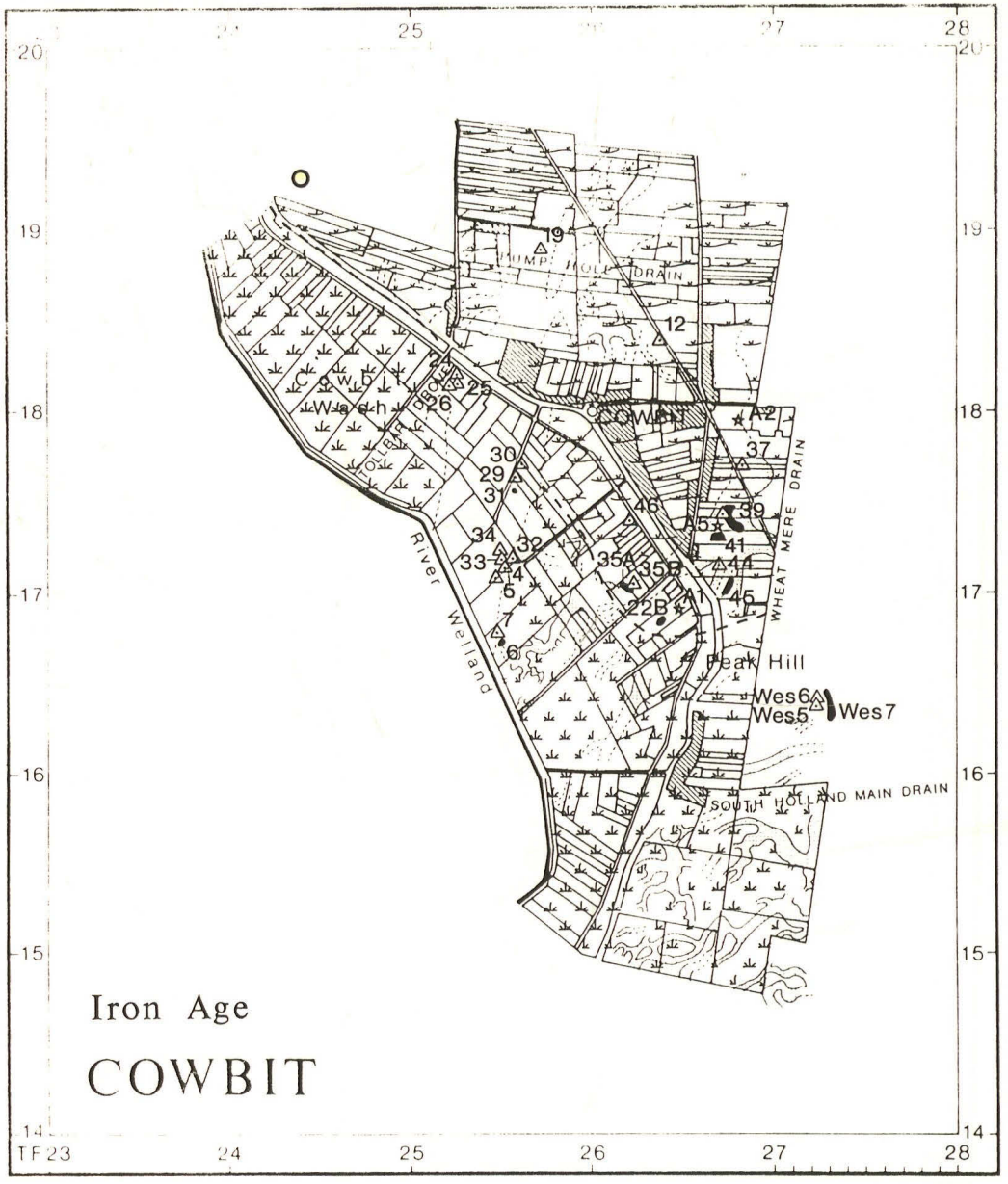


Medieval Scale 1:125,000

Fig.8 Development of the south-west Lincolnshire fens (from Hayes and Lane 1992)

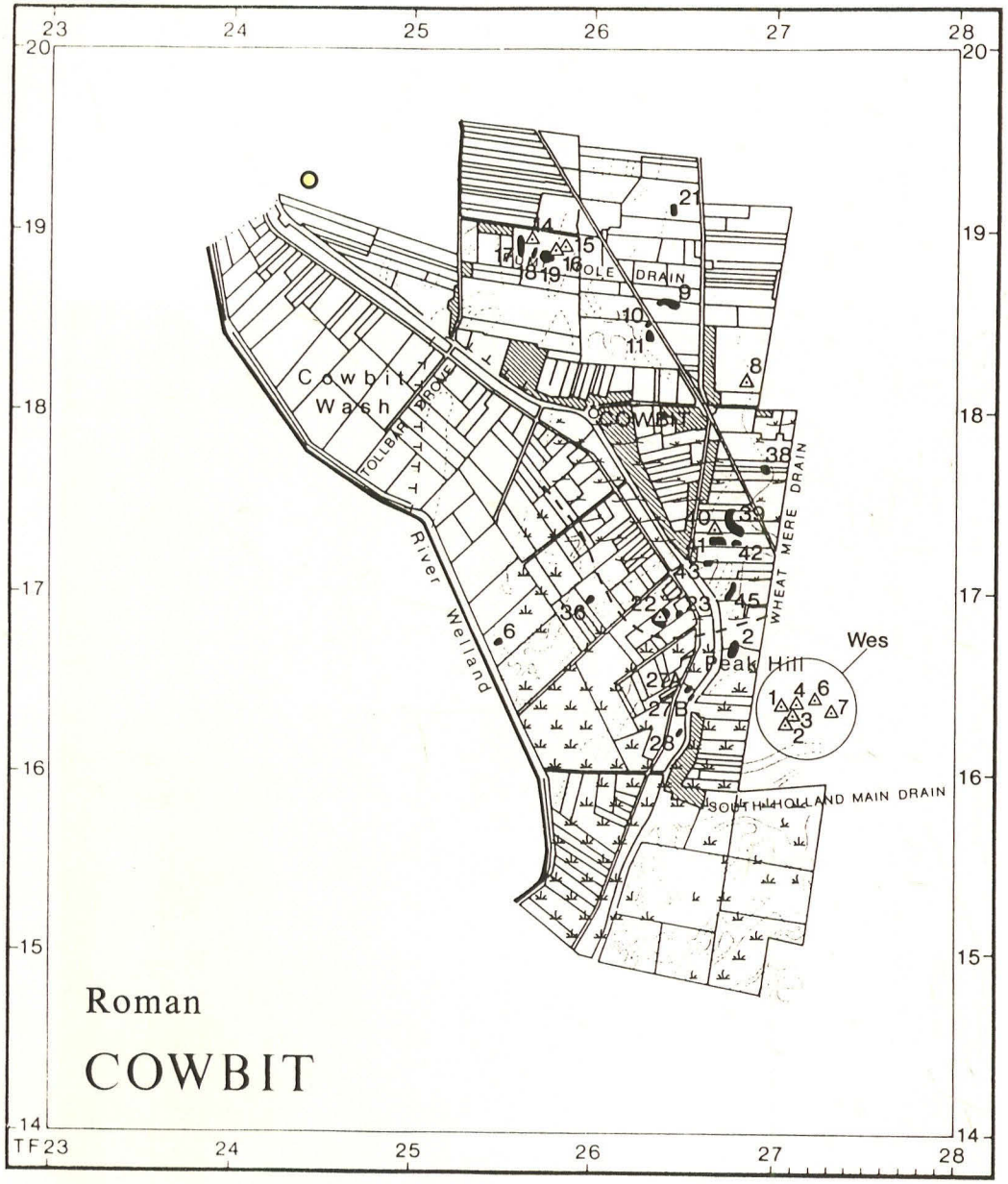


Cowbit: Middle Bronze Age

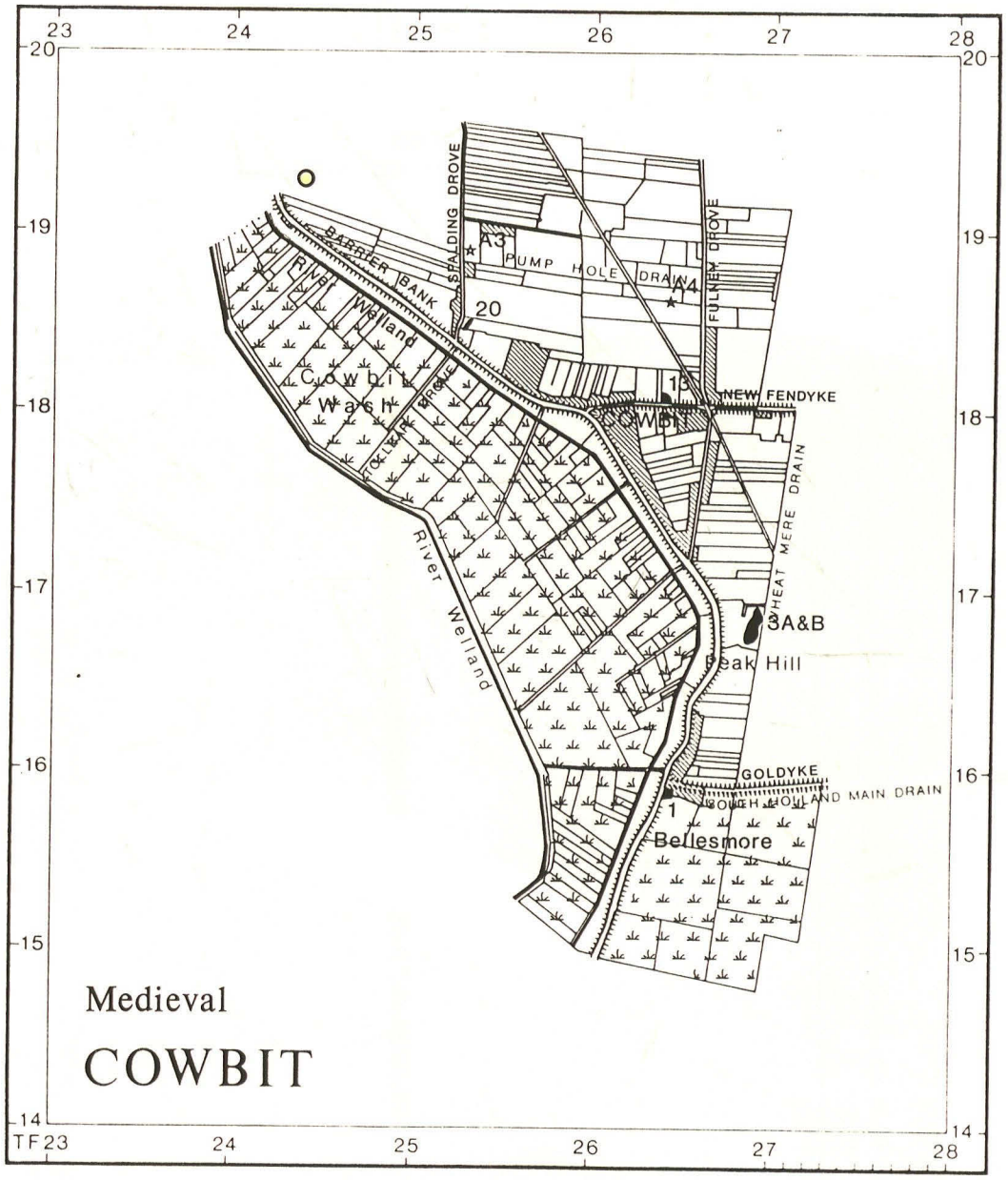


Cowbit: Iron Age

Fig.9 Mapping of the fen in Cowbit, just south of the proposed borrow pit (from Hayes and Lane 1992)



Cowbit: Roman



Cowbit: Medieval

Fig. 10 Mapping of the fen in Cowbit, just south of the proposed borrow pit (from Hayes and Lane 1992)

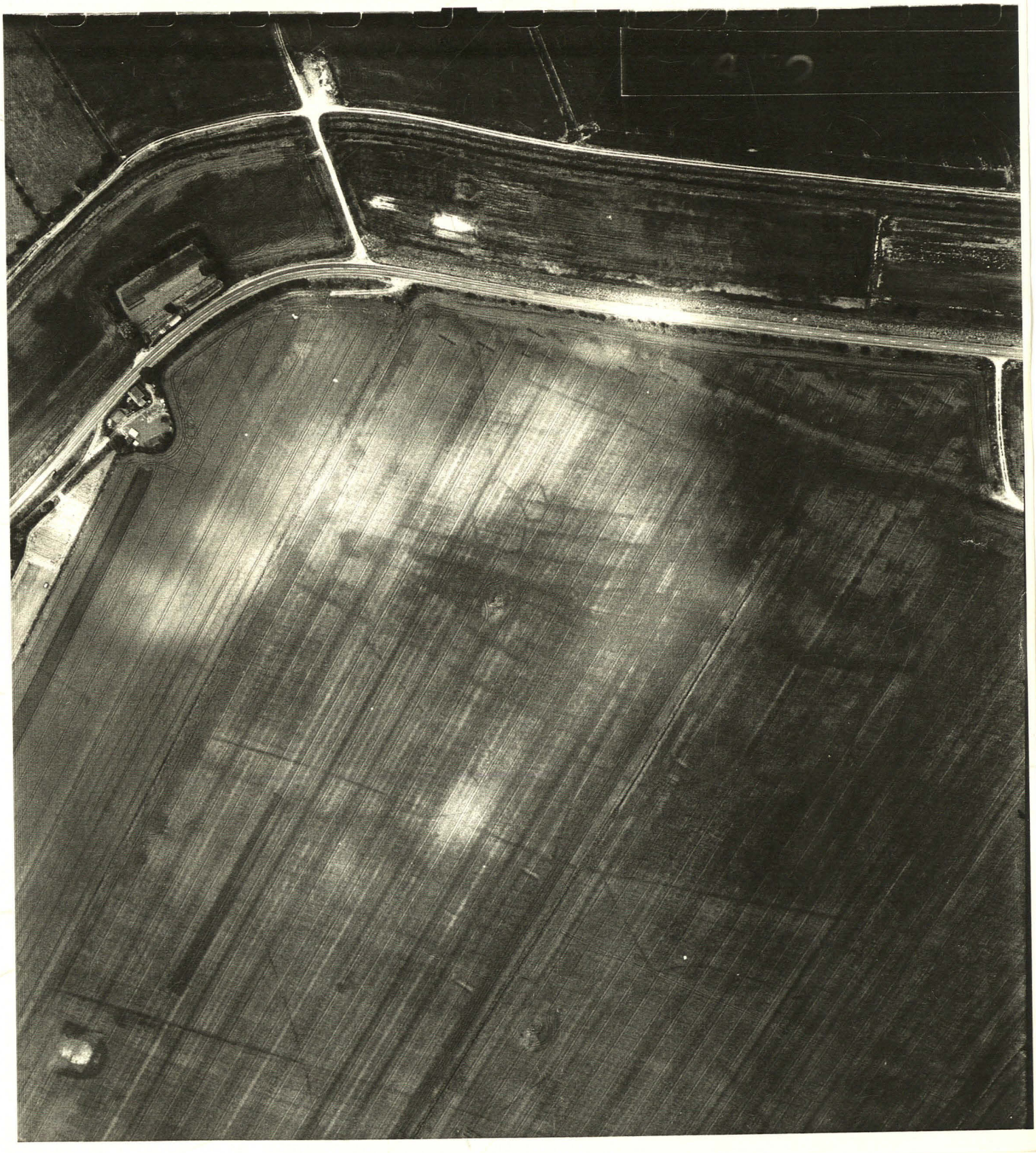


Fig. 12 Aerial view of the site photographed in July 1979.
National Monuments Record, by permission.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

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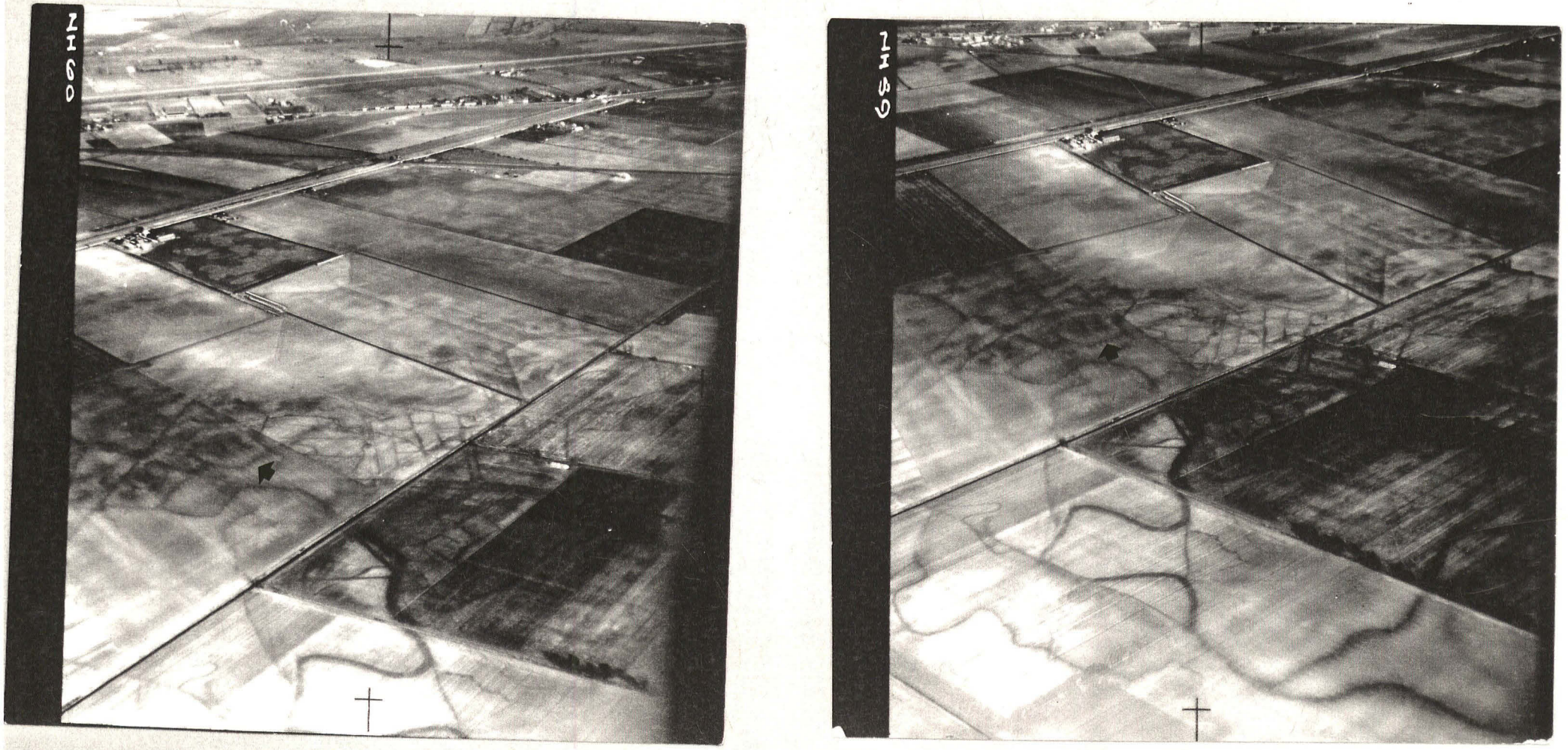
Fig. 11 Cropmarks of hexagonal enclosure and other archaeological features. Photographed in June 1958 and June 1959 (Cambridge University Collection, by permission of the Curator)

Fig. 12 Aerial view of the site photographed in July 1979. National Monuments Record, by permission.

Fig. 13 Cropmarks in Spalding Fen which include a hexagonal enclosure (Cambridge University Collection, by permission of the Curator).



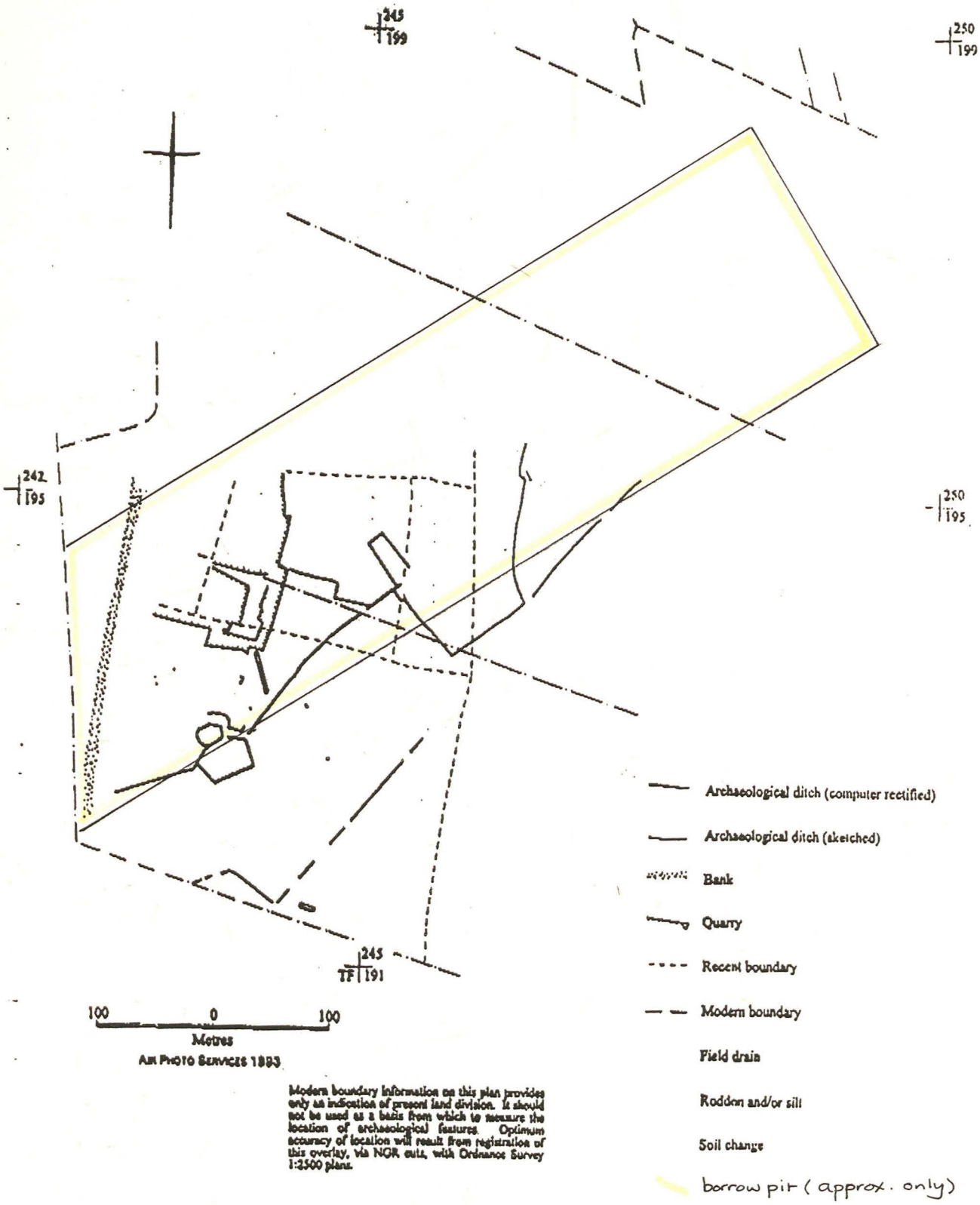


Fig. 14 Computer plot of cropmarks within and adjacent to the proposed borrow pit (Air Photo Services).

COWBIT RD SPALDING
Proposed borrow-pit for Spalding by-pass
ARCHAEOLOGICAL EVALUATION

Provisional Specification subject to modification, dependent upon results of Desk Top Assessment (See separate document)

INTRODUCTION
The archaeological resource comprises all man-made features above and below ground, and includes the historical and environmental landscapes in which they lie. The purpose of an Evaluation is to examine the archaeological remains in the field to determine their nature and quality and to outline the best course of action for their preservation, either in situ or through fuller recording by excavation.

THE EVALUATION
1.Field walking
If work is undertaken in the immediate future field walking will not be possible because the land is currently Set Aside and ground conditions are unsuitable. This means that evaluation of the land will be based upon geophysical survey and test trenching.

MAG. SUS.

2. Geophysical Survey
A magnetometer survey will be undertaken using a Geoscan FM36 Fluxgate gradiometer which can identify magnetic anomalies in the soil. These represent areas of human activity and features such as pits, ditches and hearths may be located. Resistivity survey (which takes longer to carry out) is not recommended, on the basis of present knowledge, because it is mainly suitable for the location of stone (or brick) walls and foundations.

A full strategy for geophysical survey will be prepared based on the results of the air photographic plots. It is likely that this will include some or all of the following:
a) an area within the main hexagonal enclosure to establish whether there are any internal structures.
b) An area or areas outside the enclosure complex, but covering the associated linear boundaries and subsidiary enclosures to establish whether other, less substantial features are present.
c) A contingency for areas as yet to be defined

3.Trial Trenching
This will comprise trenching of selected cross-sections of the main hexagonal enclosure ditch to include part of the interior and any features which may have been identified by the geophysical survey.

selection of.

Archaeological features located by machine trenching will be hand-dug as specified in Paragraph 7 of the Archaeological Brief dated 18/5/93.

Further trenches will be dug across subsidiary enclosures and linear boundary ditches. The purpose of the work will be to obtain evidence for the date of construction and/or use of the site together with an indication of the environmental potential for any deposits recorded. It should be noted that such potential is considered to be very high given low height of the site above sea level.

THE REPORT

The results of the Evaluation will be prepared in accordance with Paragraph 9 of the Brief. Where apppropriate, recommendations may be made for fuller investigation/excavation of sites along the route prior to commencement of the groundworks.

THE ARCHIVE

Arrangements for final deposition of the site archive, which will comprise the paper archive, together with artefacts from the excavation will be discussed with the developer and/or landowner. It is hoped that this material will be donated to the City and County Museum, Lincoln or other appropriate museum.

Naomi Field
May 19th 1993

Appendix 1
Staff Structure

Geophysical Survey
To be undertaken by specialist sub-contractors. Because of the short timetable the contractor will have to be chosen according to availability.

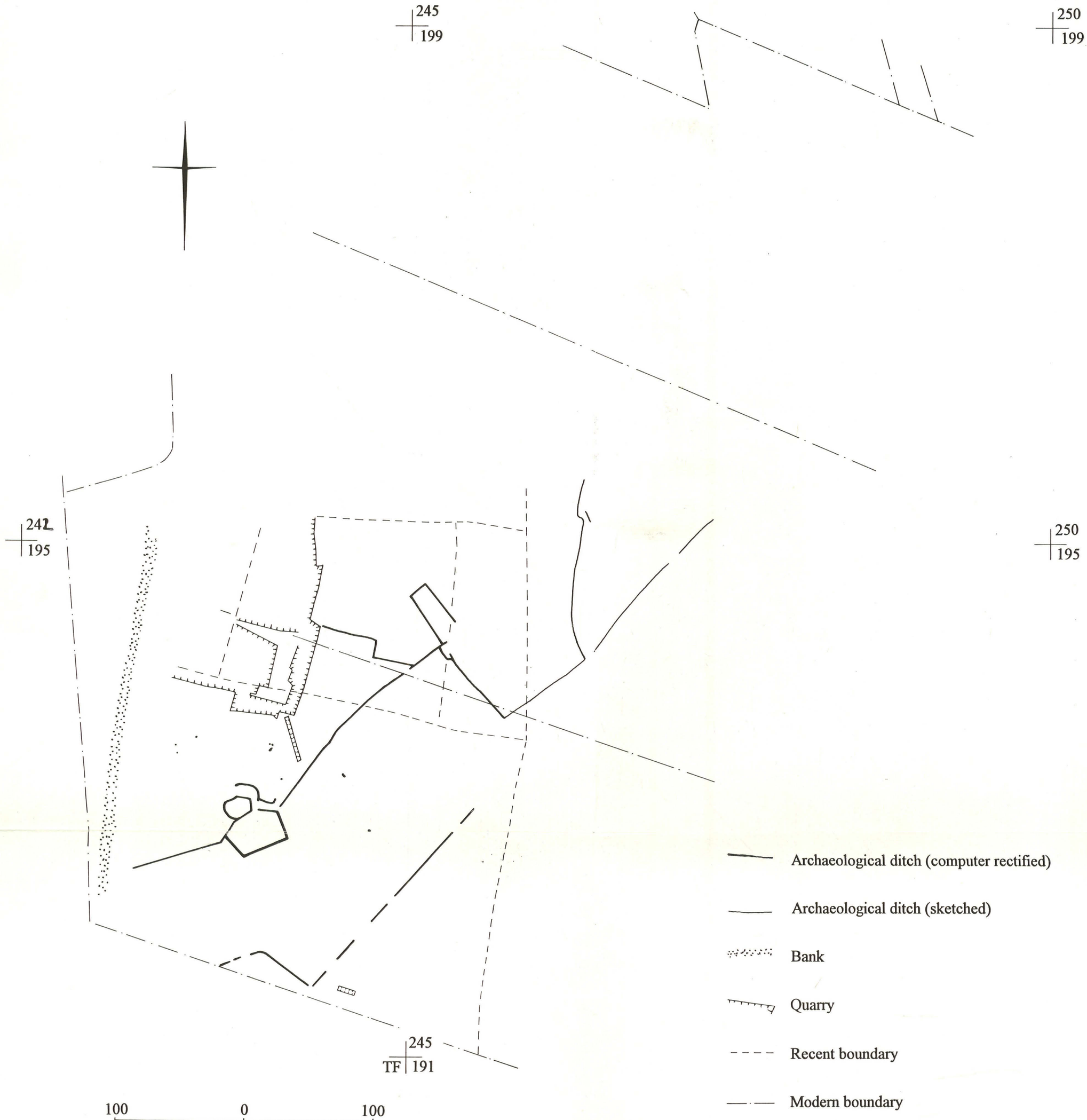
Trial trenches
Excavation team of 3 + Site Director

Finds processing to be contracted to The City of Lincoln Archaeological Unit (CLAU).

Finds identification
N.B. Not all of the following categories of material may be found
Provision has been made for the following categories:

Prehistoric pottery (Nottingham University)
Worked flint (Sheffield University)
Environmental Samples (Sheffield University)
Medieval and Roman pottery (CLAU)
Human and animal bones (Sheffield University)
Anglo-Saxon pottery and artefacts (Scunthorpe Museum)
Carbon 14 dating (Radio Carbon Dating, Wantage)

Naomi Field
May 19th 1993



Archaeological ditch (computer rectified)

Archaeological ditch (sketched)

Bank

Quarry

Recent boundary

Modern boundary

Field drain

Roddon and/or silt

Soil change

Modern boundary information on this plan provides only an indication of present land division. It should not be used as a basis from which to measure the location of archaeological features. Optimum accuracy of location will result from registration of this overlay, via NGR cuts, with Ordnance Survey 1:2500 plans.

Spalding By-pass.
1:2500 Scale
A - P plot