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AN ARCHAEOLOGICAL ASSESSMENT OF LAND FOR PROPOSED GOLF COURSE AT THONOCK, GAINSBOROUGH, LINCOLNSHIRE

Commissioned by
KARSTEN (UK) LIMITED

Dr. John Samuels BA, PhD, MIFA

Monday 19th April, 1993

AN ARCHAEOLOGICAL ASSESSMENT OF LAND FOR PROPOSED GOLF COURSE AT THONOCK, GAINSBOROUGH, LINCOLNSHIRE

1.0. INTRODUCTION

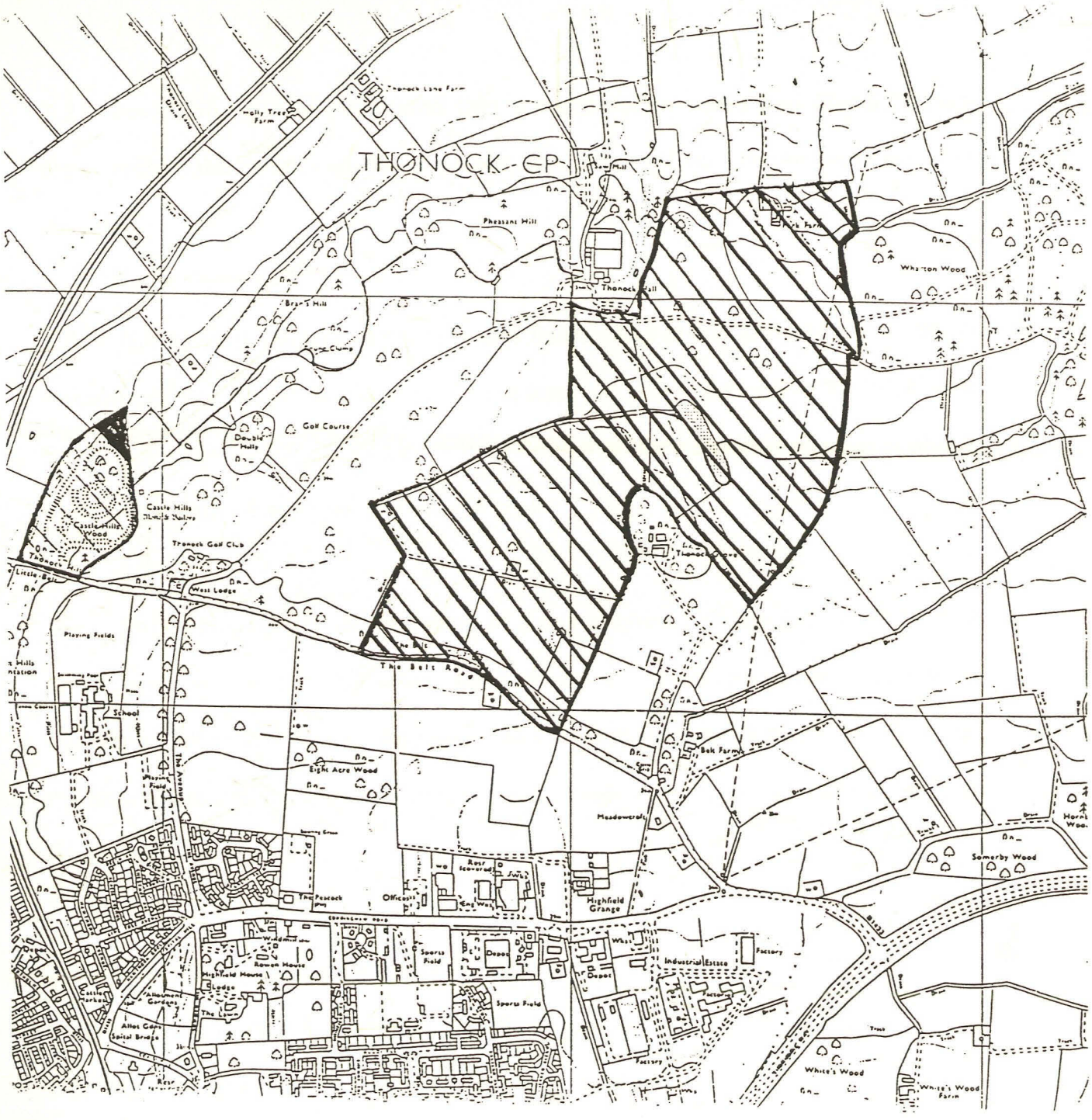
1.1. It is proposed that a golf course be constructed on approximately 250 acres of land to the east and south of the site of Thonock Hall.

1.2. Within the proposed site the land is level to the east falling off steeply to the north and more gently to a river valley to the south and rising to more level ground. The soil is generally sandy with areas of more clayey soil reflecting the changing subsoil geology.

1.3. On the advice of the County Archaeologist an archaeological assessment was requested for the proposed development and Dr. John Samuels was appointment by Karsten (UK) Limited to undertake this.

2.0. ARCHAEOLOGICAL ASSESSMENT

2.1. The Royal Commission on Historical Monuments of England (RCHM) provided a copy of relevant information from their archive from their survey of West Lindsey (see Appendix A). This referred to the lost villages of Havercroft and Thonock but from aerial photographs and place-name evidence both sites would seem to have been further to the north and west of the proposed development site.



AREA OF PROPOSED GOLF COURSE

SHADED

(Scale Reduced 1:10,000)

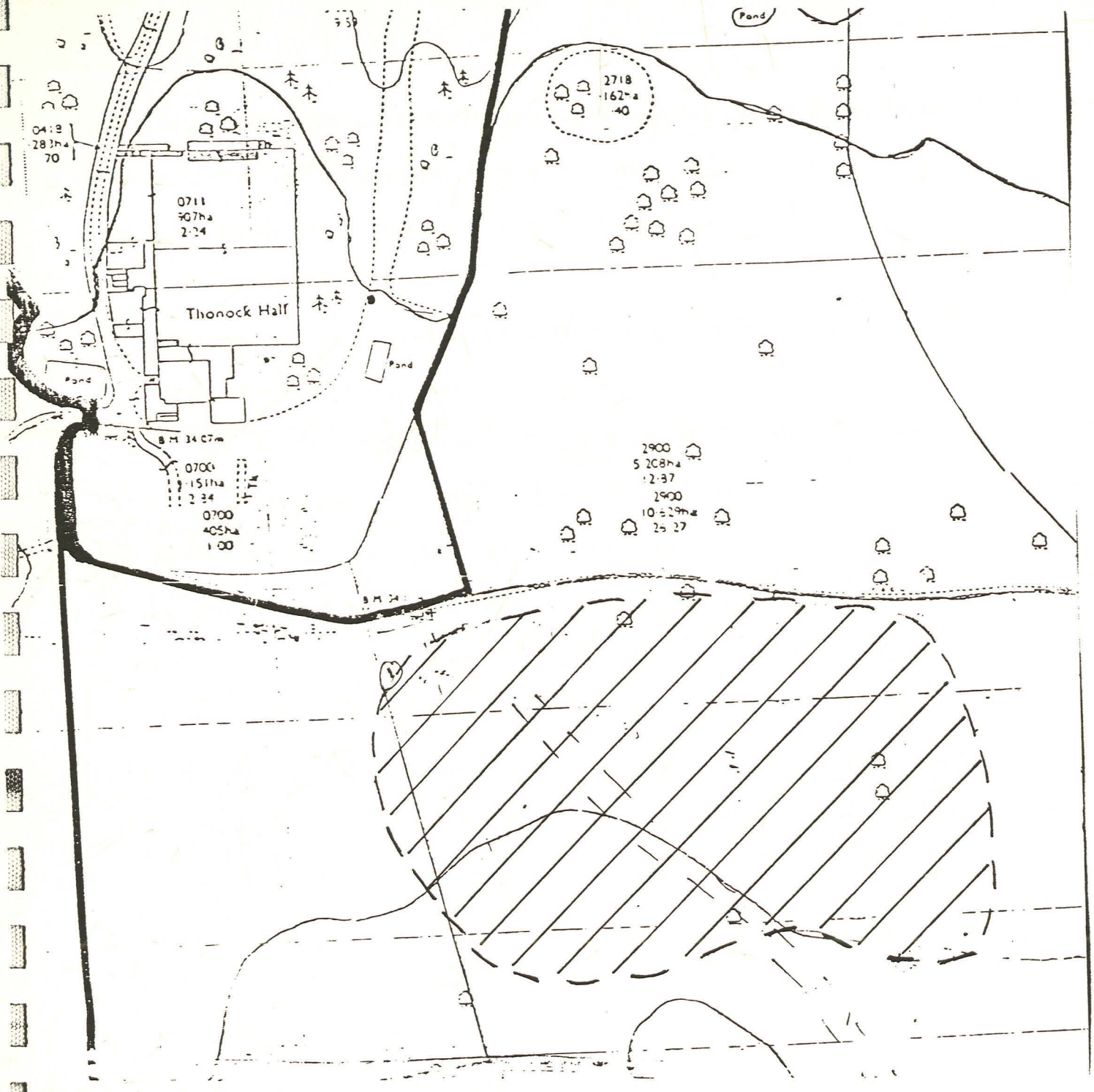
2.2. Local information suggested that metal-detector users had found Roman coins within the proposed development site although no precise location was provided.

2.3. Therefore the whole of the area was fieldwalked at 50.00m intervals. When a scatter of Roman pottery was found the intervals were reduced to 20.00m with 50.00m collection points. The scatter of Roman pottery covered an area of about 5ha. south east of the site of Thonock Hall.

2.4. The pottery is mainly grey ware of types produced in Lincolnshire in the late 2nd to early 3rd century AD. There are a few sherds of colour-coated pottery from the Nene Valley and several fragments of Mancetter- Hartshill mortaria. None of the sherds are heavily abraded and may have been brought to the surface by more recent deep ploughing.

2.5. Elsewhere in the area of the proposed development isolated sherds of Roman and medieval pottery and worked flint were found but not considered to be of any significance. The location of all finds has been plotted at 1:2,500.

2.6. To understand better the form of remains represented by the Roman pottery scatter and to ensure that no further remains existed within the area, an enhanced aerial photographic survey was undertaken by Air Photo Services (see Appendix B). Apart from ridge and furrow which has since disappeared through ploughing, no significant archaeological remains were identified.



SHADING INDICATES AREA OF

ROMAN POTTERY SCATTER

Scale 1:2,500

2.7. In a further attempt to locate any buried remains related to the Roman pottery scatter and, if possible, delimit their area a geophysical survey was undertaken by Geophysical Surveys of Bradford (see Appendix C).

2.8. The results were impressive and can be seen on the Summary Interpretation plot. Two areas of intensive magnetic anomalies marked A are probably Roman pottery kilns. Areas marked B-E are slightly less intensive anomalies but may be further kilns, iron working furnaces or dumps of pottery or iron slag. Much less intense are the anomalies marked F-H which may be the result of more industrial activity but could also be the pits left by uprooting trees when the parkland was ploughed up more recently. A series of linear anomalies have been caused by buried ditches which form two trackways with a series of small interlocking fields or house plots. The broken nature of these has probably been caused by the ridge and furrow of medieval ploughing which has also created its own magnetic anomalies. Areas described as ferrous/modern could be odd pieces of metalwork that have fallen off modern agricultural machinery or fragments of modern drainage pipes.

3.0. CONCLUSIONS AND RECOMMENDATIONS

3.1. The assessment has identified the existence of a Roman settlement with associated pottery manufacture and iron working covering an area of about 5 ha.

3.2. It is suggested that given the large scale of the proposed golf course that this area can be set aside and there should be no below-ground disturbance.

3.3. No further archaeological activity is required for the remainder of the proposed development.

Dr. John Samuels BA, PhD, MIFA

Monday 19th April, 1993

APPENDIX A

SK 89 SW 5

109 THONOCK

(4) ?Deserted settlement of Havercroft (unlocated) is documented in the early 14th century as a member of Gainsborough and in 14th- and 15th-century taxation returns as a member of Thonock.[1] Conventionally listed as a DMV and assigned a possible location (SK 830930, in contrast to Canon Foster's view that its site was included in Thonock Park),[2] it has not been confirmed by field evidence. It seems clearly to have lain on the downhill W edge of Thonock (see (2)) - perhaps in what is now strictly an adjacent parish, Morton or Blyton - and may have been little more than a single farmstead. Similar names - Bondemannescroft and Simundescroft - occur in the same 13th-century documentation.[3]

Notes

1. See population tabulation, fig. 00.

2. MVRG files; LRS 19, lvii.

3. EPNS records; I.S.Beckwith, The History of Field and Farms in Gainsborough (1972), p.10.

109 THONOCK

(3) Deserted settlement of Thonock (unlocated) represents an unresolved problem. Conventionally listed as a DMV and assigned a possible location (SK 828928),[1] it has not been confirmed by field evidence. A settlement is documented in 1086, as a member of Gainsborough in the early 14th century, and as a small settlement (including Havercroft (4)) in later 14th, 15th and even 16th-century taxation returns.[2] In the 17th, 18th and 19th century High and Low (Nether) Thonock are referred to.[3] Early APs may record a hollow-way and closes near Laundry Cottages (SK 831928).[4]

Notes

1. MVRG files.

2. See population tabulation, fig. 00.

3. EPNS records.

4. RAF VAPs, CPE/UK 2563/3309; 58/RAF 5853/F22 0054.

Extract from the 1st edition Ordnance Survey map, 1824 with railways added 1890. The area around Thonock Grove (and existing golf course) is shown as parkland

GAINSBOROUGH, or GAINSBURGH, is an ancient *market town and port*, with a *Railway Station*, situated on the *Trent*, and extending nearly a mile and half along the eastern bank of that fine navigable river; 18 miles N.W. of Lincoln; 25 miles N. of Newark; 18 miles S.W. of Brigg; 30 miles S. of the confluence of the Trent with the Humber; 10 miles N.E. by E. of Retford; 21 miles S.E. of Doncaster; and 146 miles N. of London; being in 53 deg. 23 min. 40 sec. north latitude, and in 40 min. west longitude. Gainsborough had so increased in importance as a *river port* in 1820, that a Branch Custom House from the port of Hull was established here; and its consequence, as a commercial station, was afterwards so much enhanced that it was constituted a *sea port* independent of Hull, with the privilege of bonding, &c., in 1841. It is one of the *polling places* for the Parts of Lindsey, and gives name to a PARISH, divided into the four townships of *Gainsborough, Morton, East Stockwith*, and *Walkerith*, which comprise 7210A. of land, and contained 7535 souls in 1831; 7870, in 1841; and 8293, in 1851. The TOWNSHIP OF GAINSBOROUGH contains about 3700 acres of land, including the *hamlet of Thonock*, a fertile and well-wooded district, in which is THONOCK HALL, the sylvan seat of *Henry Bacon Hickman, Esq.*, the lord of the manor, delightfully seated on a commanding eminence amidst thriving woods and plantations, nearly 2 miles N.E. of the town. H. B. Hickman, Esq, owns most of the soil, but *Sir C. H. J. Anderson, Bart.*, and several smaller owners have estates in the parish. The number of houses in the whole parish in 1851 was 2033, of which 215 were unoccupied and 15 building when the census was taken. In the same year, the number of *males* in the parish was 3973, and *females* 4320. The township of Gainsborough had 4506 inhabitants in 1801; 5172, in 1811; 5893, in 1821; 6658, in 1831; 6948, in 1841; and 7261, in 1851. The *town* is connected with the Nottinghamshire side of the Trent by a handsome stone bridge, from which it extends more than a mile northward along the east bank of the river, presenting a long line of wharfs, warehouses, and irregularly built streets; but the modern parts of the town which have been erected during the last 35 years, comprise several handsome streets and terraces.

The BOARD OF HEALTH for Gainsborough holds its meetings at the Pilot Office, and was instituted in 1851, under the "Health of Towns Act." They are now (1856) carrying out a new and complete *system of sewerage*, by which every part of the town will be well drained; and they intend to enlarge and improve the *Water Works*, so that every house may have an abundant supply of the pure beverage of nature. The present members of the board are Messrs. Fletcher Mercer, W. L. Sharp, George Gamble, Francis Gamble, T. A. Farmer, Wm. Forrest, Wm. Cook, Jas. Stephenson, John Hyde, Richard Thompson, Wm. Plaskitt, and the Rev. W. Worsley. Mr. Thomas Oldman is their *clerk*. They are now the commissioners for carrying out the powers of the acts of parliament, passed in 1769 and 1809, for lighting, watching, and improving the town. Mr. John Whiley is *inspector of nuisances* and collector of rates.

From White's Lincolnshire Directory, 1856

APPENDIX B

ENHANCED AERIAL PHOTOGRAPHIC SURVEY

THONOCK, GAINSBOROUGH, LINCOLNSHIRE

Aerial Photographic Assessment

Rog Palmer BA MIFA

INTRODUCTION

Aerial photographs from three sources have been used in this assessment. All those covering the development area were verticals but three sets of oblique photographs show the golf course immediately west of the area. The National Library of Air Photographs holds other obliques taken of features close to the golf course and the lack of oblique photographs within the assessment area suggests that nothing was visible from the air at the times of these flights. A list of photographs examined is appended.

PHOTO INTERPRETATION

The assessment area was fully covered by runs of overlapping stereoscopic vertical photographs taken on eleven different dates at scales between 1:5000 and 1:15000. Of these, one set, taken on 31 July 1963 at 1:10000, proved most revealing although additional details came from some of the other photographs. Prints were examined stereoscopically using a 1.5 x magnification stereoscope which was adequate for interpretation of the features present in the area. Interpretative overlays were made of the most informative photographs and these were computer rectified and combined to produce a 1:10000 map of the area.

ARCHAEOLOGICAL COMMENT

Most of the area (both the present assessment area and the complete golf course extent) can be seen to have had past use as medieval strip fields (see figure). Ridge and furrow, shown schematically on the map, forms an arable system of a type common to the East Midlands. Some headlands can be identified between furlongs, while others appear to be overlain by modern field boundaries.

The photographic record shows an increasing amount of land being taken into arable cultivation since 1945. Much of the ridge and furrow was in earthwork condition at that date but has since been totally flattened with the only upstanding remnants now surviving in parts of the present golf course. Some fields have always remained 'blank' on the photographs. Three of these have been arable for much of the photographic record (north-west of the lake centred SK829918, SK831919 and SK832919). They show no evidence of former ridge and furrow nor do they produce crop or soil response to any sub-surface disturbances despite the fact that positive evidence, suggesting appropriate photographic timing and soil/crop conditions, has been showing in adjacent fields. Another field has been converted to arable more recently (now mapped as two fields but previously a pasture area centred on the southern part of the lake, SK834915). Despite suitable lighting or crop

conditions on dates of photography this latter area has never shown traces of ridge and furrow. Both areas adjacent to the lake may have been former grazing land.

The air photographs show very poor response of the crop to sub-surface disturbances and this is probably related to the soils and geology of the area. The majority of marks observed, other than the earthwork field systems, appear likely to be of recent agricultural origin. Plough-flattened ridge and furrow produces some very slight crop marks but little else can be attributed to any previous occupation of the area. Marks seen on the photographs appear attributable to activities such as subsoiling and the removal of trees with no definite geological marks and certainly nothing of definite archaeological origin being identified.

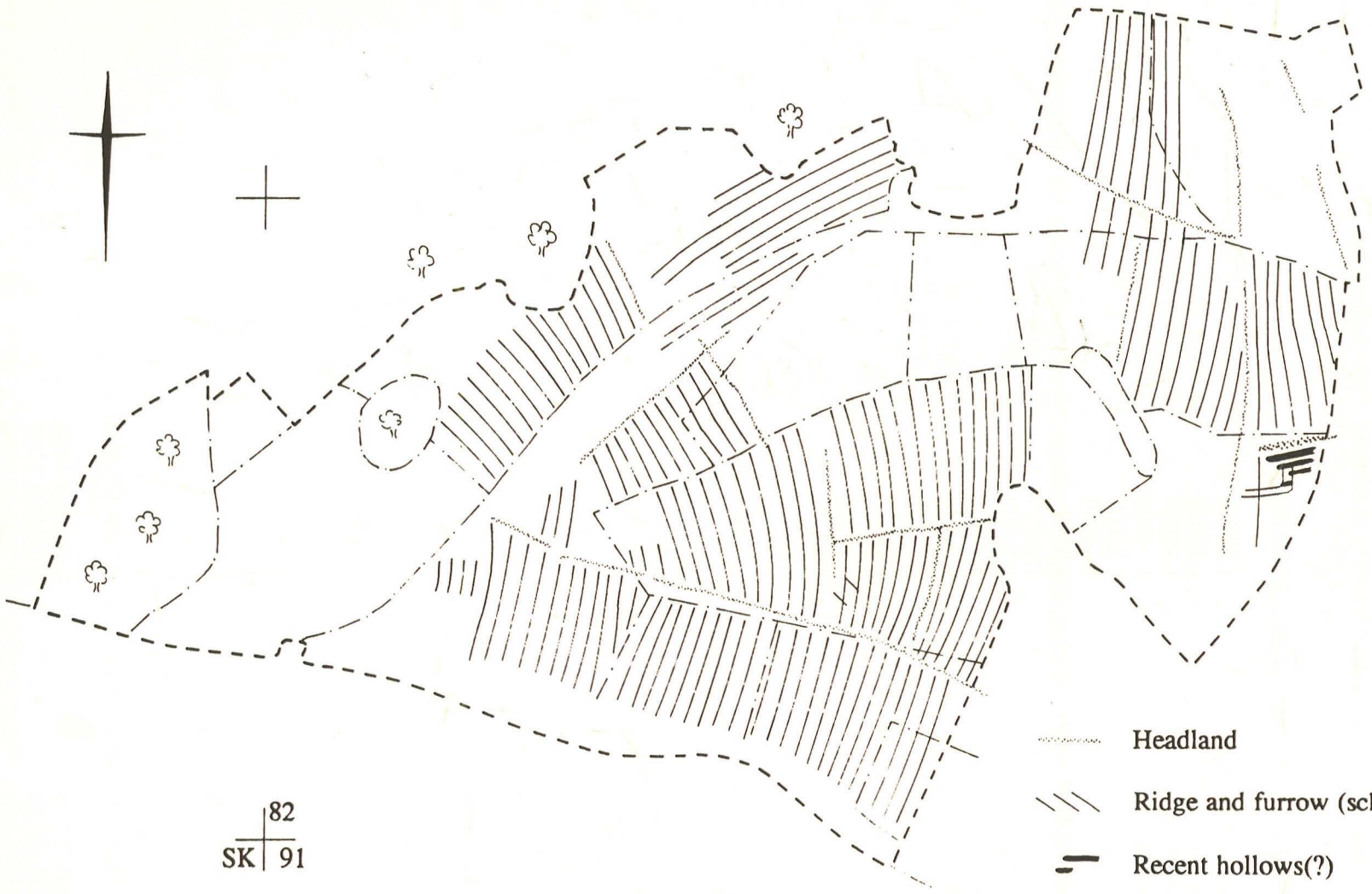
The Soil Survey map suggests that the soils and geology in this area are unsuited to the production of crop marks over buried features. Crop marks identified during photo examination are all likely to reflect recent activity and may be due to the inclusion of more humic fill in disturbed subsoil which may rapidly leach to a uniform 'blandness'. Cut archaeological features may be present in the area and are suggested by the surface finds. These features may be 'sealed' by once-overlying ridge and furrow yet due to the above described environmental conditions no crop marks are visible.

Three features require more detailed comment (see figure):

SK82959142 (HSL/UK/71.83:1154). Two parallel short lengths of possible ditch show as crop marks. These do not appear on other photographs and are of unknown origin or cause although are probably non-archaeological.

SK83609158 (CPE/UK/2563:3309). Two parallel 'ditches', showing as soil marks, form a right angle which is suggtestive of a corner of an enclosure. No traces were seen on other photographs. Overlying ridge and furrow is just visible on the same photograph. The 'ditches' are unlikely to be archaeological features and are possibly agricultural.

SK83639163 (OS.85.244:231). Three, probably four, features lie parallel to one another and to a headland to their immediate north. These show on photographs of this date only and are therefore suspect. They appear to be either slight hollows or bands of very retarded crop growth and lie on one axis of what appears to be a system of land drains (and/or recent subsoiling) which forms a grid system covering most of the field. The features abut a modern track to their east but there is no evidence for continuation beyond this nor for any humpiness along the track. Despite their similarity to medieval fish ponds it is unlikely that these are archaeological in origin but may be caused by recent agricultural activity.


84
92
82
SK 91
0
1000
Metres
AIR PHOTO SERVICES: 1992
Headland
Ridge and furrow (schematic)
Recent hollows(?)
Positive crop or soil mark
Modern boundary
Limit of survey

AERIAL PHOTOGRAPHS EXAMINED

The following vertical photographs were examined stereoscopically:

Source: National Library of Air Photographs (RCHME):

106G/LA/228:1072-1076	1:15000	17 April 1945
106G/LA/228:2072-2076	1:15000	17 April 1945
106G/LA/228:1056-1058	1:15000	17 April 1945
106G/LA/228:2072-2058	1:15000	17 April 1945
106G/LA/228:2084-2086	1:15000	17 April 1945
CPE/UK/1880:3408-3414	1:10000	6 December 1946
CPE/UK/2012:4104-4109	1:9800	16 April 1947
CPE/UK/2563:3308-3312	1:10000	28 March 1948
CPE/UK/2563:3323-3325	1:10000	28 March 1948
CPE/UK/2563:4323-4324	1:10000	28 March 1948
58/B/30:5121-5125	1:5000	13 May 1948
541/176:4005-4010	1:10000	30 September 1948
58/1435:204-212	1:5000	13 May 1954
58/1435:288-295	1:5000	13 May 1954
58/5853:18-19	1:10000	31 July 1963
58/5853:52-54	1:10000	31 July 1963
OS.68.218:210-217	1:7500	14 June 1968
OS.68.218:246-249	1:7500	14 June 1968
OS.68.218:269-274	1:7500	14 June 1968

Source: Lincolnshire County Council:

HSL/UK/71.83:1154-1156	1:12000	2 June 1971

Source: Ordnance Survey:

85.244:229-232	1:5000	15 July 1985
85.244:236-240	1:5000	15 July 1985
85.244:268-269	1:5000	15 July 1985

Cover searches showed there to be no photographs of the area in the Cambridge University Collection of Air Photographs.

Obliques: source: National Library of Air Photographs (RCHME):

SK8291/1/327-339	9 October 1980
SK8291/2/343-350	9 October 1980
SK8291/3/351-354	9 October 1980

APPENDIX C

GEOPHYSICAL SURVEY

SITE SUMMARY SHEET

92 / 110 Thonock, Lincolnshire

NGR: SK 832 918 (Approximate)

Location, topography and geology

The survey at Thonock covers an area of land approximately 1 kilometre north-east of the centre of Gainsborough, Lincolnshire. The area lies south-east of Thonock Hall, and on the edge of the present golf course. The ground is generally flat, and at the time of the survey a young crop was growing in the field; there are also a few mature trees. The underlying subsoil is thought to be sand.

Archaeology

Fieldwalking has identified two apparent concentrations of artefacts, consisting mainly of Romano-British pottery sherds. In addition, there are various reports of large quantities of metalwork, including coins, having been recovered by metal detector users. Unfortunately, much of the material remains unrecorded.

Aim of Survey

To try to define the limits of any settlement associated with the artefact scatters, which suggest the presence of a possible Romano-British farmstead.

Summary of Results *

The gradiometer survey has successfully identified a complex of archaeological features, consisting mainly of a series of ditches, which form small enclosures. There is one main sub-rectangular enclosure, approximately 120m by 140m. This appears to be separated from a second possible enclosure, the dimensions of which have not been established in the present survey. Of particular archaeological interest are several large anomalies which appear to be associated with possible kilns or small scale 'industrial' type features. Some of the latter are outside of the main enclosure.

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

SURVEY RESULTS

92 / 110 Thonock, Lincolnshire

1. Survey Areas

1.1 A total of 2 hectares was investigated using a fluxgate gradiometer. A series of 20m wide transects was employed in an attempt to define the core of archaeological activity.

1.2 The survey grid was established by **Geophysical Surveys of Bradford** (GSB) personnel and detailed tie-ins have been lodged with the client. In addition, wooden stakes have been left *in situ* on the baseline in order to facilitate relocation of the grid.

1.3 The survey grid was established in thick fog which resulted in minor errors in laying out the grid. At times visibility was as short as 20m. However, the maximum grid error was estimated as being 0.4m in 200m.

2. Display (Figures 2 to 4)

2.1 The overall results of the gradiometer survey are displayed at 1:850 as an X-Y trace and a dot density plot (Figures 2 and 3 respectively). These display options are discussed in the *Technical Information* section, at the end of the text. A simplified interpretation diagram is also produced at a scale of 1:850 (Figure 4).

2.2 Archive plots of the data at 1:500 (Areas 1-4, Figure 1) are also included for reference purposes.

3. General Considerations - Complicating factors

3.1 There were no complications with regard to survey conditions, apart from the fog which was referred to above (1.3). The field was generally level and frozen hard; this made walking easy with the gradiometer.

4. Results

The letters in brackets in the following text refer to anomalies highlighted in the interpretation diagram (Figure 4).

4.1 The strongest magnetic anomalies of archaeological interest are the two responses at (A). These would appear to be associated with fired material surviving *in situ*, and are most likely to be kilns, ovens or similar remains. A deeply buried large iron object could produce similar responses: only excavation or augering will establish the true nature of the anomalies.

4.2. Anomalies (B-E) are difficult to interpret archaeologically. The strength and nature of the responses would seem to suggest burnt or fired deposits, perhaps a dump of pottery wasters or slag. Substantial sized pits containing burnt or highly enhanced deposits is another interpretation.

4.3 A similar explanation, but representing archaeology on a smaller scale, is likely for the anomalies (F-H). It is possible that some may represent the former positions of trees, now uprooted.

4.4 There appears to be one main sub-rectangular enclosure, approximately 120m by 140m. In the west the 'defences' appear to consist of single, double and triple ditches, but the various lengths may relate to differing periods / phases. There are suggestions of internal divisions within the enclosure, but these are difficult to interpret due to the incomplete survey area.

4.5 A clear diagonal trend is visible in the data throughout the area of the enclosure and particularly along the line of the ditches aligned east-west, which appear fragmented. It is assumed that this trend marks the ridge and furrow ploughing which is visible on aerial photographs (J Samuels *pers comm*). The ploughing only shows as magnetic anomalies where the furrows have cut into archaeological deposits and 'pulled' material to the surface. Similarly, the ridges will have the effect of 'diluting' the magnetic responses of the more deeply buried archaeological deposits. It is therefore possible to infer that the extent of buried archaeological features coincides with the limits of ridge and furrow as visible in the magnetic data.

4.6 The eastern enclosure ditch has a break in the anomaly at (K) which may be an entrance associated with a presumed trackway (J). The latter appears to separate the main enclosure from a possible second similar feature (L). More survey work would be required to establish the precise nature and extent of this feature.

4.7 In general, there appears to be little surface, or near-surface ferrous metal on the site, and this may indicate that metal detector users have 'cleaned' the site.

4.8 There are short lengths of ditch along the western limits of the survey (M and N) which appear to be associated with subsidiary (?) field systems.

4.9 A small area of magnetic noise (P) in the north-eastern limit of the survey corresponds to brick and tile fragments in the track which borders the field.

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5. Conclusions

5.1 The survey has confirmed the presence of and helped partially to define a core area of archaeological interest. In so far as the survey extends, it is now possible to estimate with some confidence the northern and eastern limits of the features based on the fall off of magnetic responses.

5.2 The western and southern limits are quite well defined by non-geophysical criteria i.e. existing field boundaries and a general lack of artefactual material of significance in the fields beyond.

5.3 At present, the geophysical survey has located what appears to be a second enclosure in the south-east but it is only defined by shape of ditch (L) and its interpretation is speculative. Scanning indicated that magnetic anomalies do extend further east, but it was not possible to define any limits within the existing brief.

5.4 Areas not investigated in detailed during the present project would benefit from additional survey. This would help present a more complete picture of the archaeological site, which in turn would assist with defining the nature of the settlement.

5.5 By accurately planning the archaeological features with the gradiometer, considered decisions can now be made with regard possible excavation and / or preservation. This will assist with siting specific golf course elements, such as bunkers and land drains.

Project Co-ordinator: J Gater
Project Assistants: A Shields and C Stephens

30th December 1992
Geophysical Surveys of Bradford

TECHNICAL INFORMATION

The following is a description of the equipment and display formats used in GEOPHYSICAL SURVEYS OF BRADFORD 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 GEOPHYSICAL SURVEYS OF BRADFORD.

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.

Magnetic readings are logged at 0.5m intervals along one axis in 1m traverses giving 800 readings per 20m x 20m grid, unless otherwise stated. Resistance readings are logged at 1m intervals giving 400 readings per 20m x 20m grid. The data are then transferred to portable computers and stored on 3.5" floppy discs. Field plots are produced on a portable Hewlett Packard Thinkjet. Further processing is carried out back at base on computers linked to appropriate printers and plotters.

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.

(b) Resistance Meter - Geoscan RM4 or 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''.

(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. The instrument employed for measuring this phenomenon is either a field coil or a laboratory based susceptibility bridge. For the latter 50g soil samples are collected in the field.

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) X-Y 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. 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 indiviual anomalies. Results are produced on a flatbed plotter.

(b) Dot-Density

In this display, minimum and maximum cut-off levels are chosen. Any value that is below the minimum cut-off value will appear white, whilst any value above the maximum cut-off value will appear black. Any value that lies between these two cut-off levels will have a specified number of dots depending on the relative position between the two levels. The focus of the display may be changed using different levels and a contrast factor (C.F.). Usually the C.F. = 1, producing a linear scale between the cut-off levels. Assessing a lower than normal reading involves the use of an inverse plot, This plot simply 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. This display is much favoured for producing plans of sites, where positioning of the anomalies and features is important.

(c) Contour

This display joins data points of an equal value by a contour line. Displays are generated on the computer screen or plotted directly on a flat bed plotter / inkjet printer.

(d) 3-D Mesh

This display joins the data values in both the X and Y axis. The display may be changed by altering the horizontal viewing angle and the angle above the plane. The output may be either colour or black and white. A hidden line option is occasionally used (see (a) above).

(e) Grey-Scale

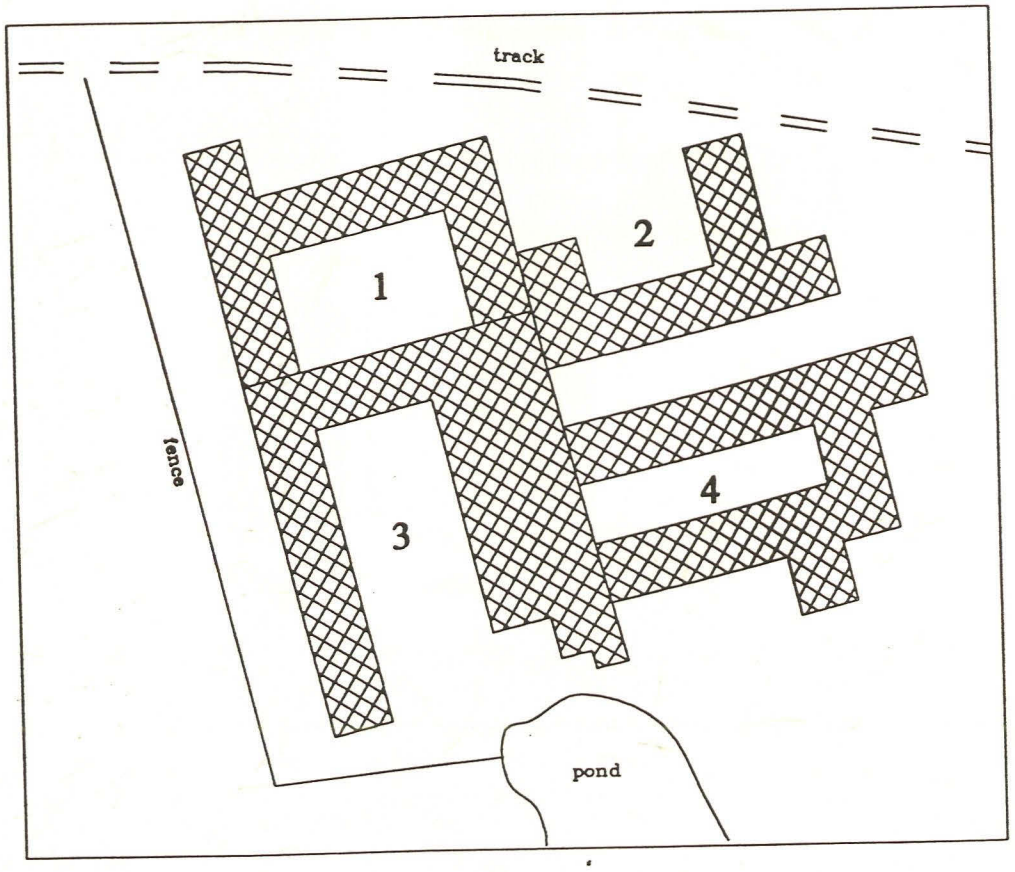
This format divides a given range of readings into a set number of classes. These classes have a predefined arrangement of dots or shade of grey, the intensity increasing with value. This gives an appearance of a toned or grey scale.

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, grey-scales tend to be more informative.

THONOCK

Grid Location Diagram

(Display Areas 1 to 4)



1 : 2500

Sketch plan showing main boundaries and approximate location of the survey grid

Figure 1

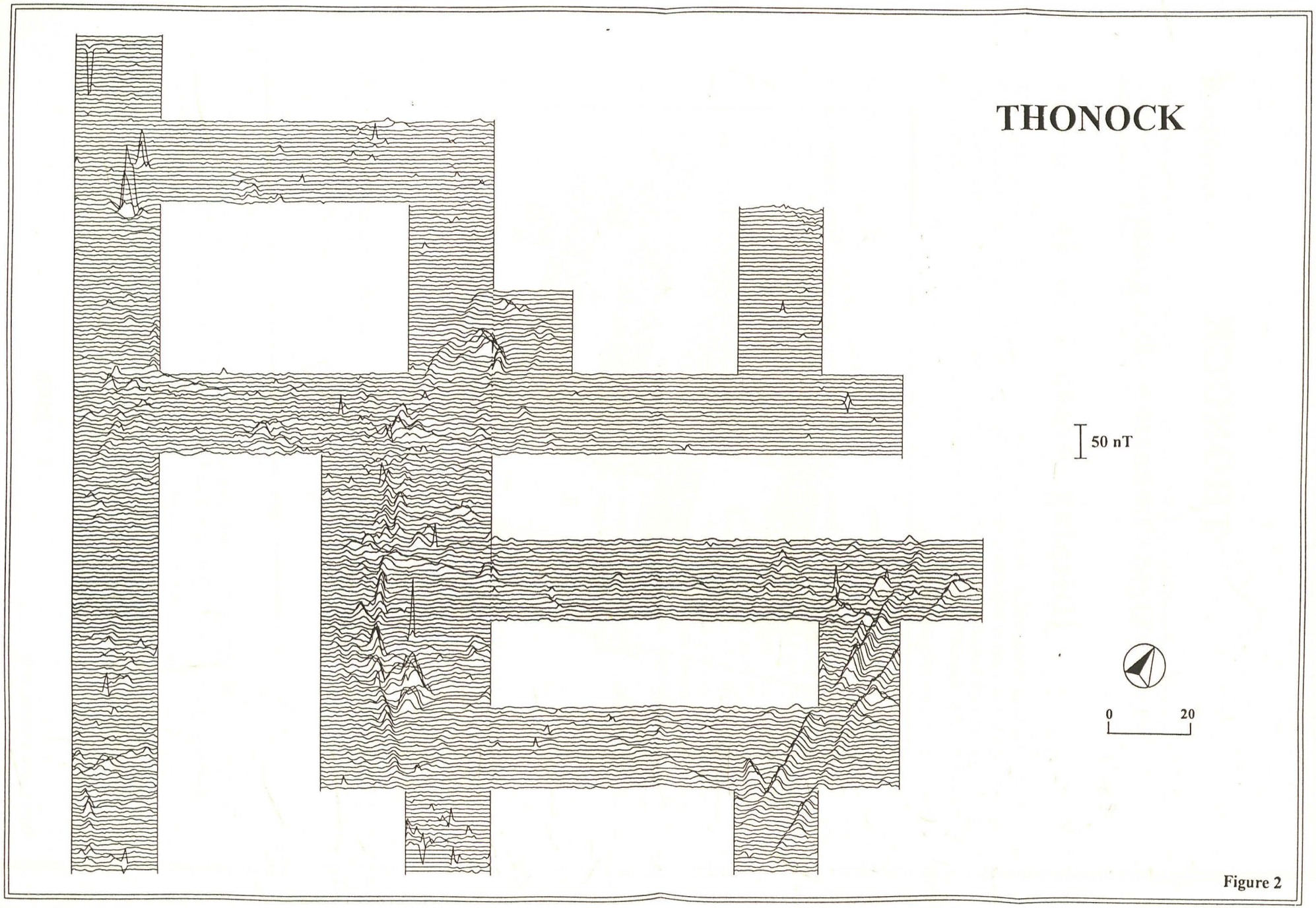


Figure 2

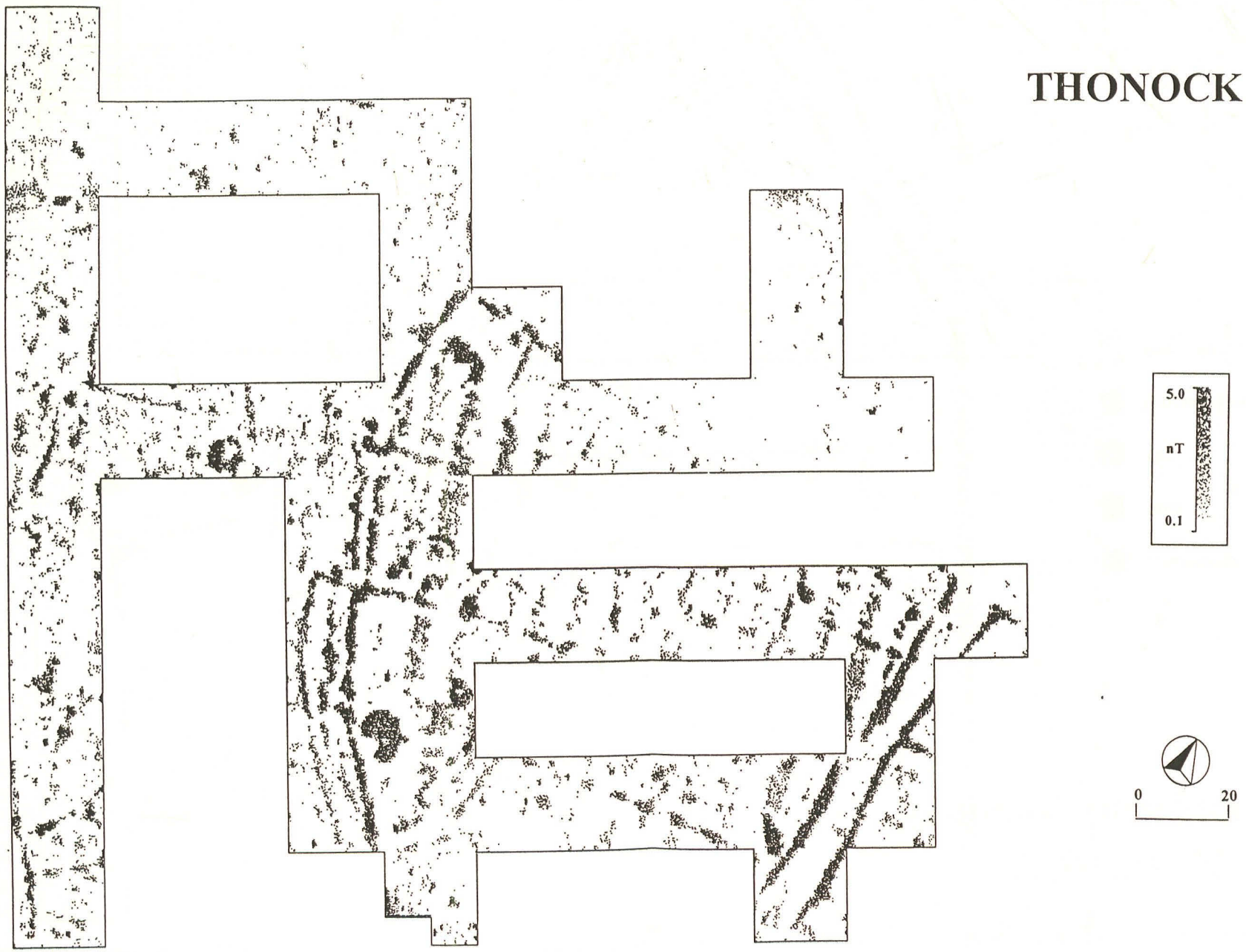


Figure 3

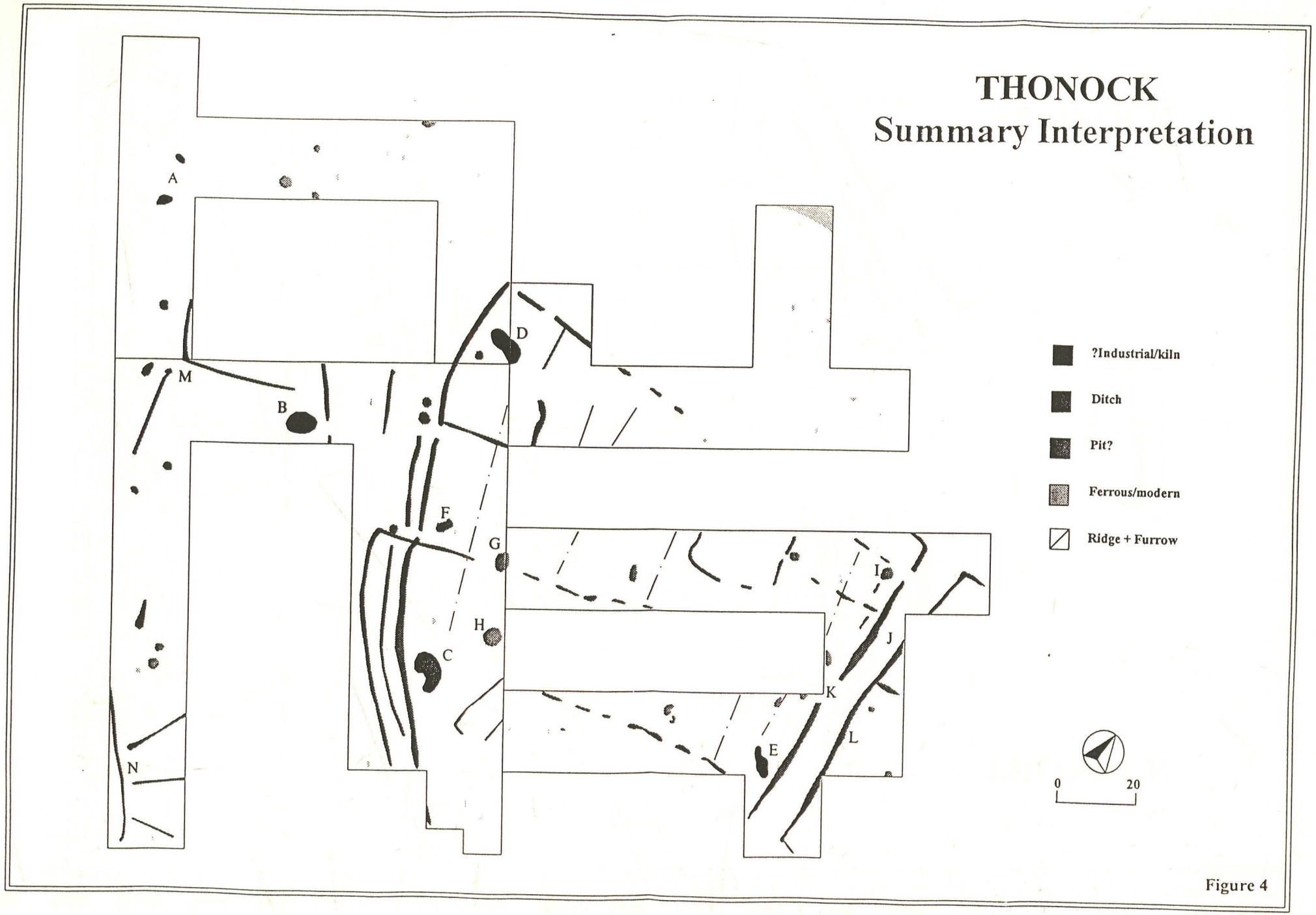

THONOCK
Summary Interpretation
A
M
B
D
F
G
H
C
N
I
J
K
L
E
?Industrial/kiln
Ditch
Pit?
Ferrous/modern
Ridge + Furrow
0
20

Figure 4

THONOCK
Area 1

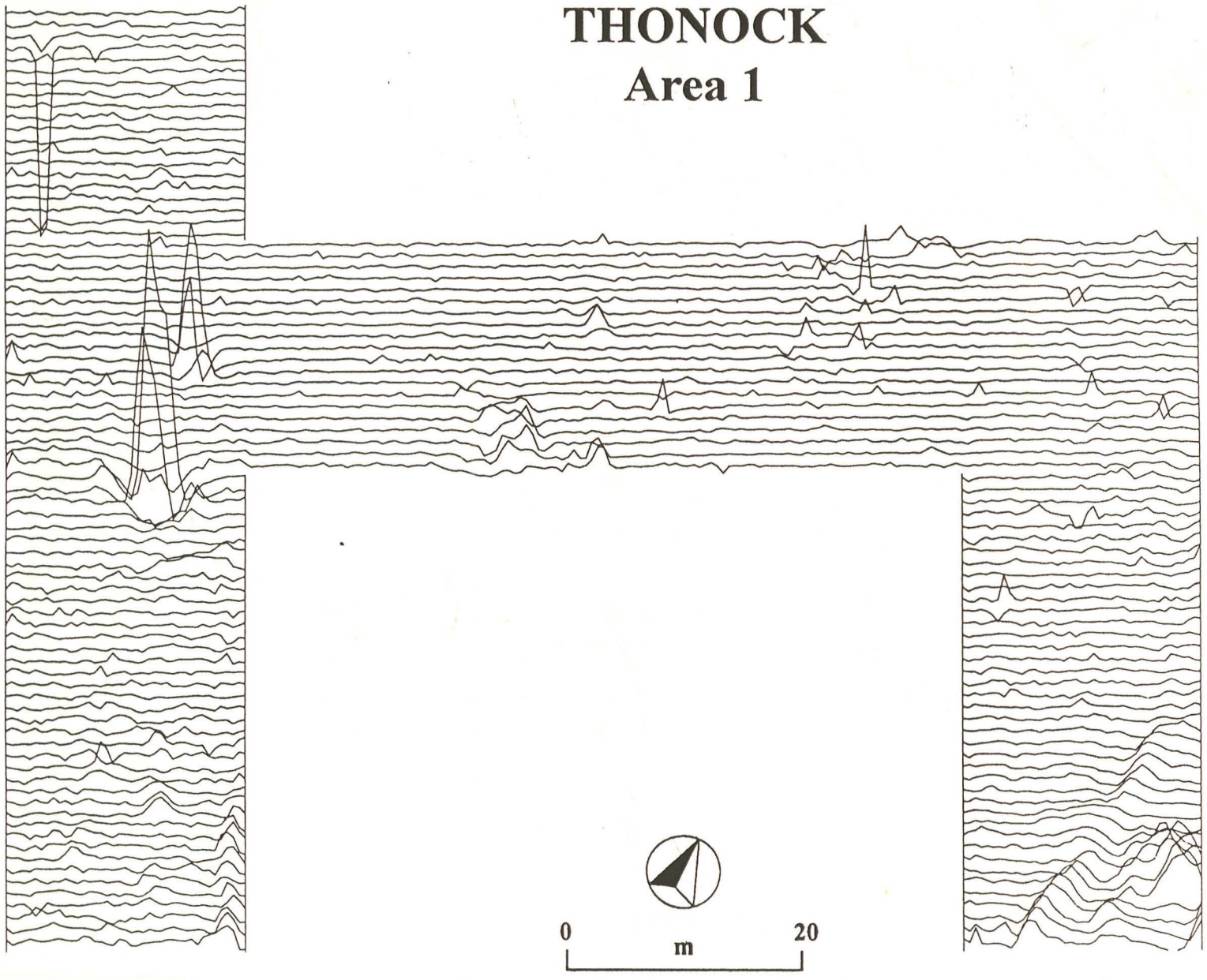


Figure 1.1

THONOCK
Area 1

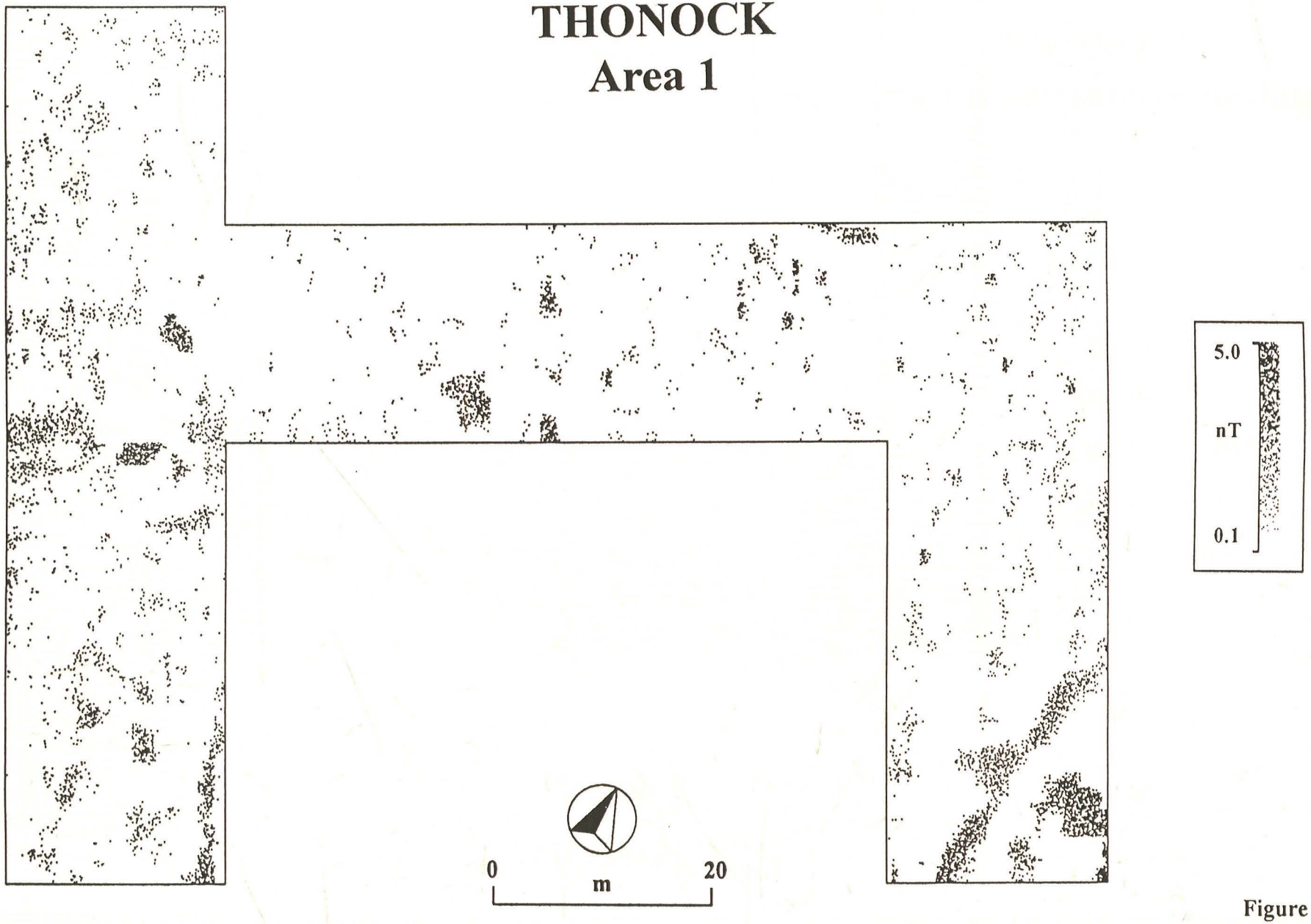


Figure 1.2

THONOCK
Area 1
Interpretation

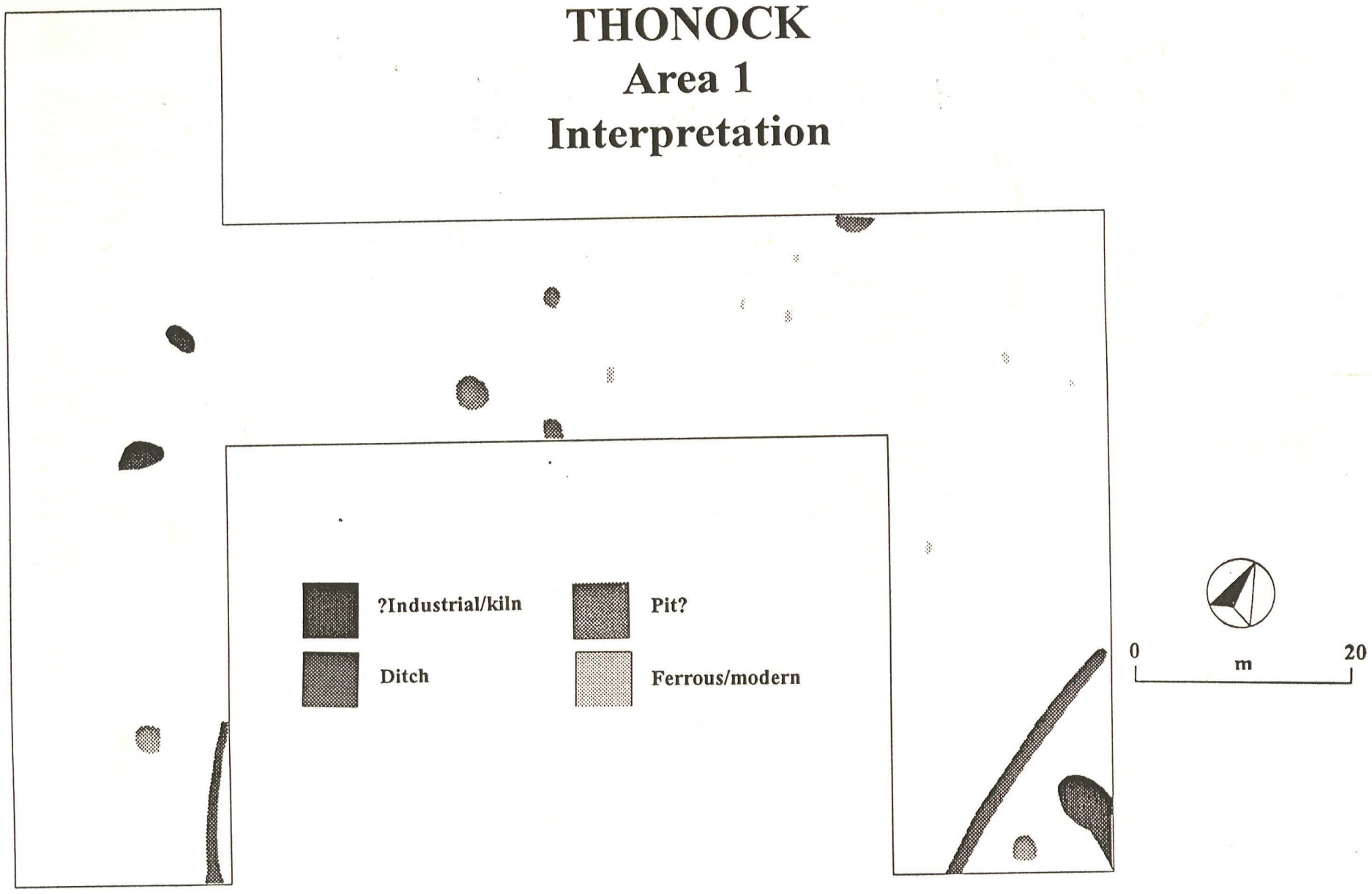


Figure 1.3

THONOCK
Area 2

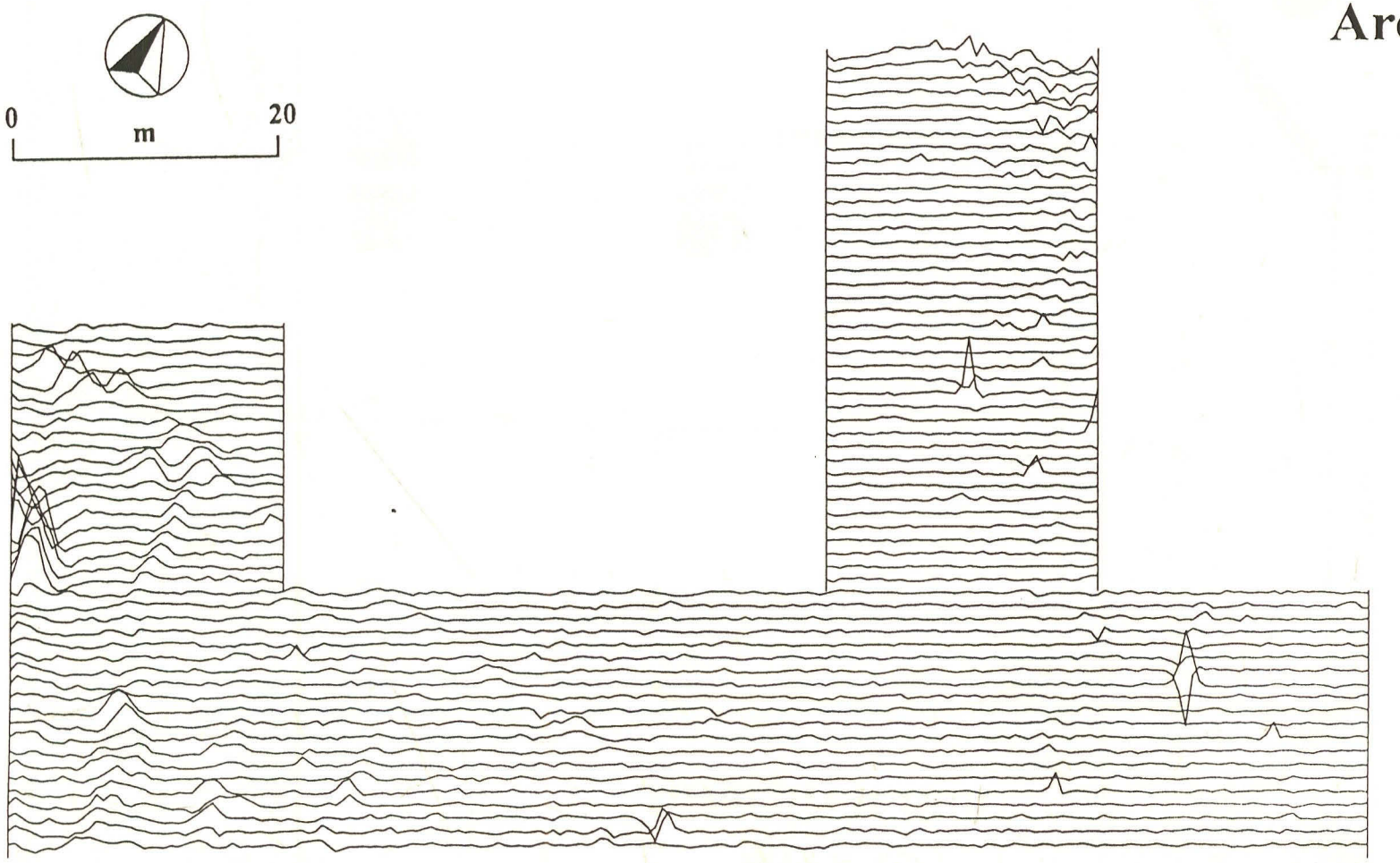


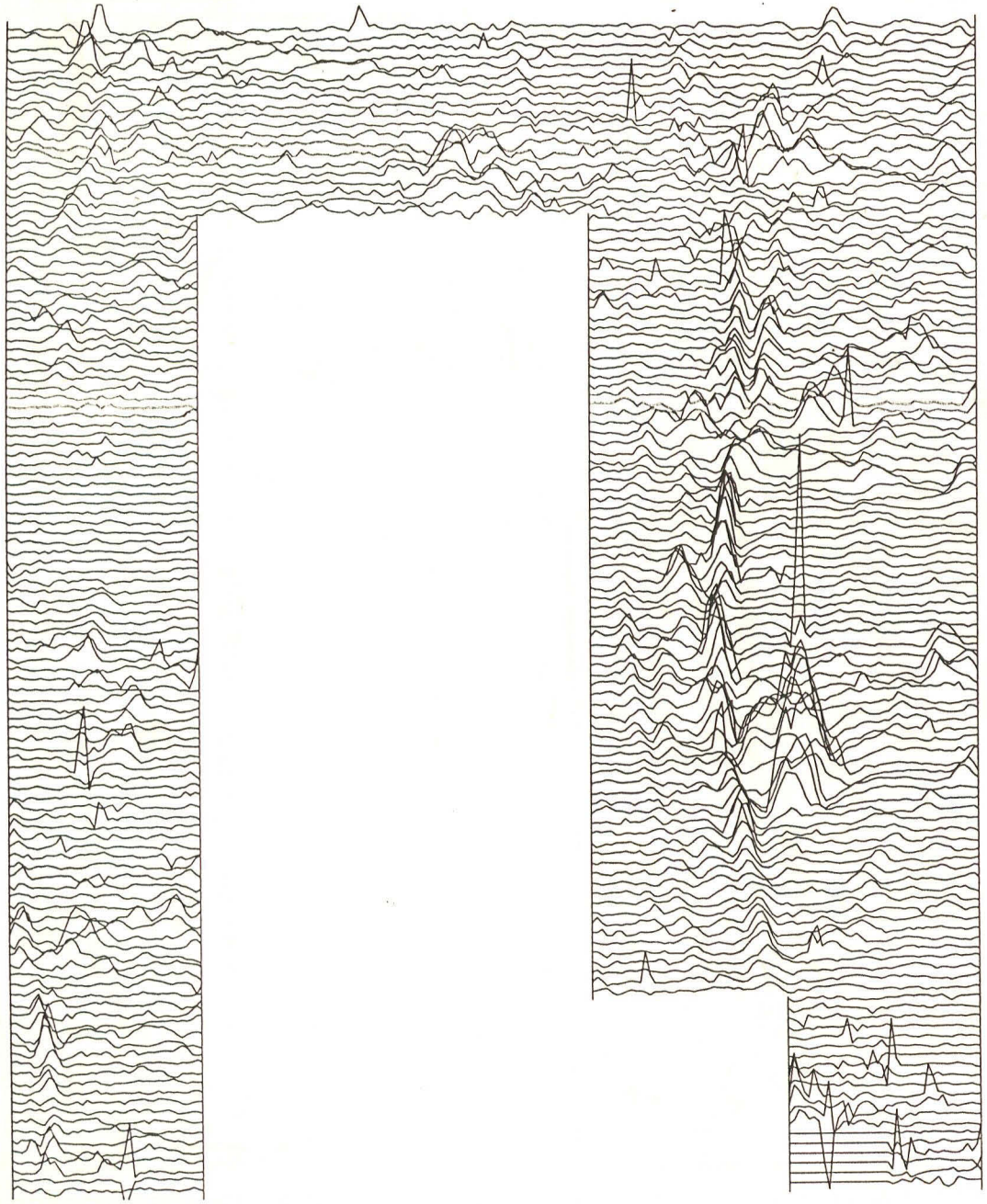
Figure 2.1

THONOCK
Area 2

Figure 2.2

THONOCK
Area 2
Interpretation

Figure 2.3



THONOCK
Area 3

30 nT

0 m 20

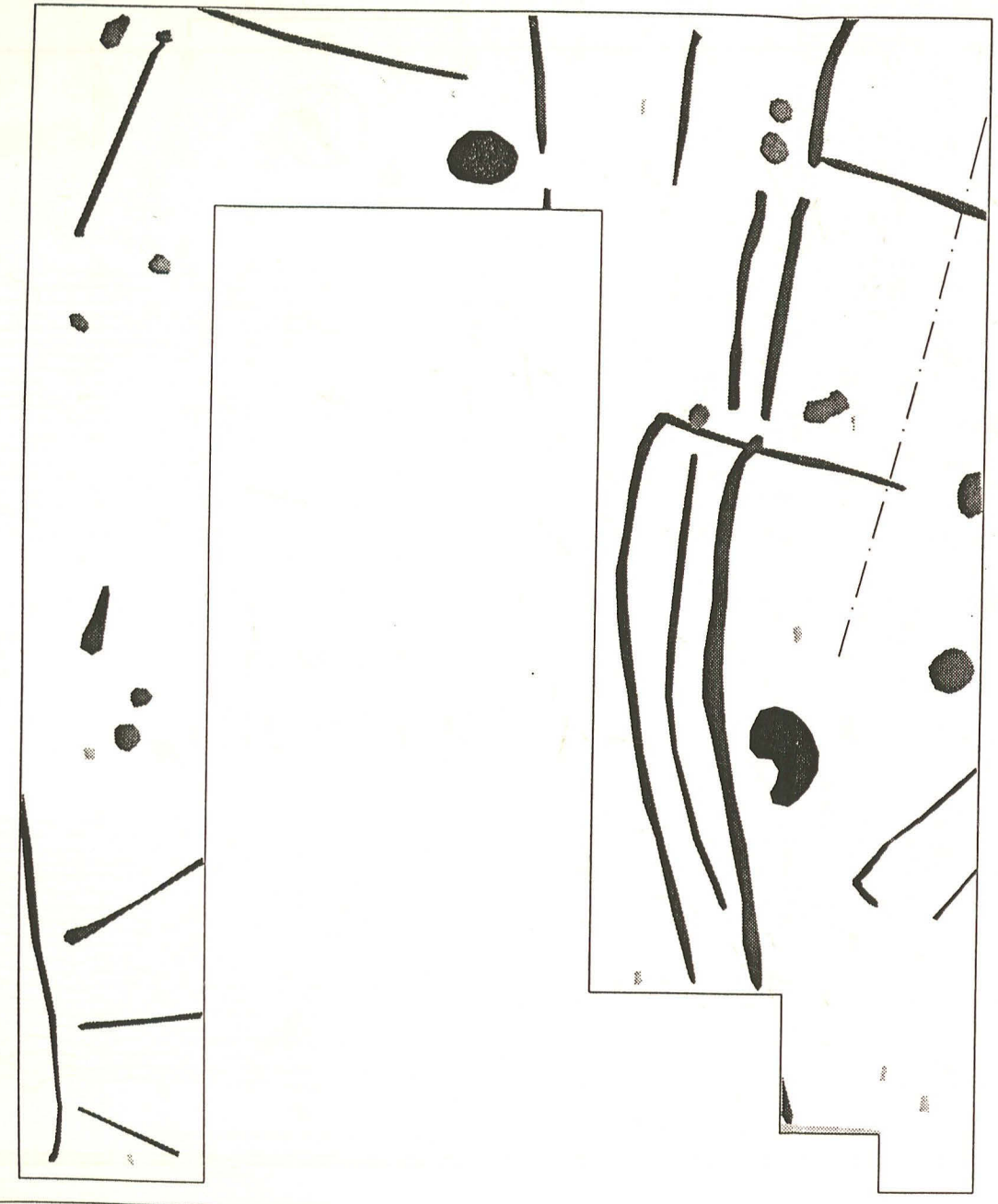
Figure 3.1

THONOCK
Area 3

5.0
nT
0.1

0 m 20

Figure 3.2



THONOCK
Area 3
Interpretation

?Industrial/kiln

Ditch

Pit?

Ferrous/modern

Ridge + Furrow

0 m 20

Figure 3.3

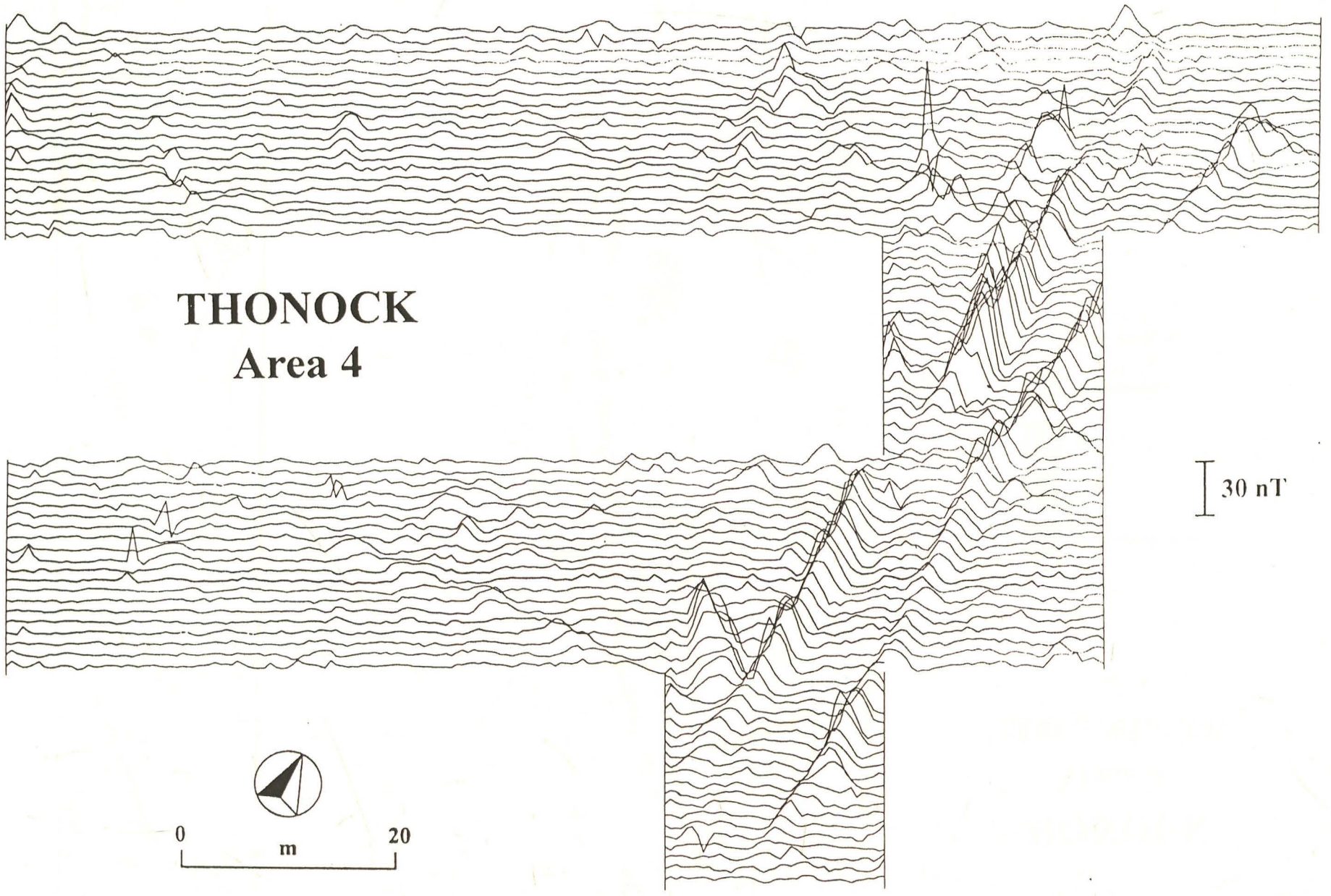


Figure 4.1

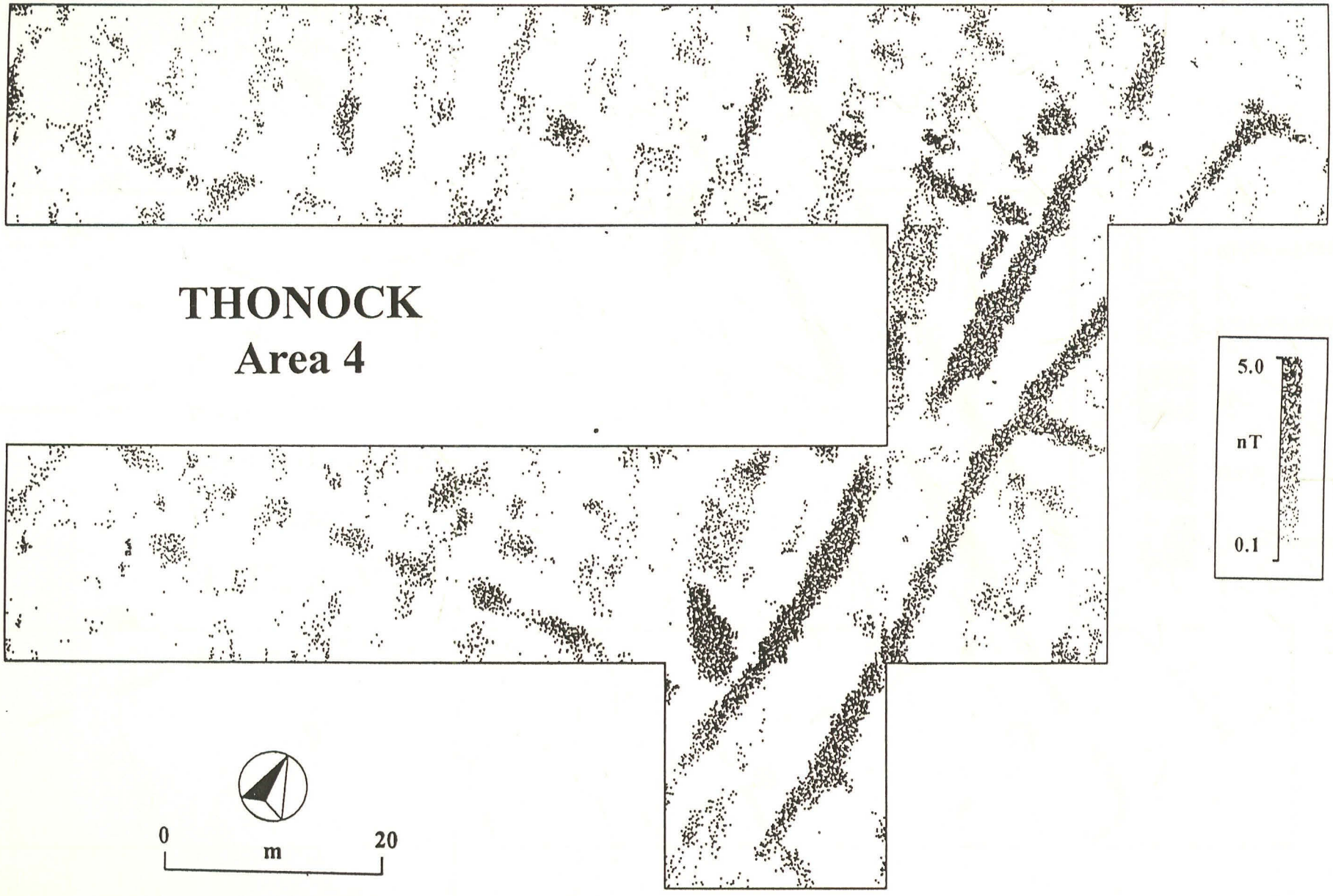


Figure 4.2

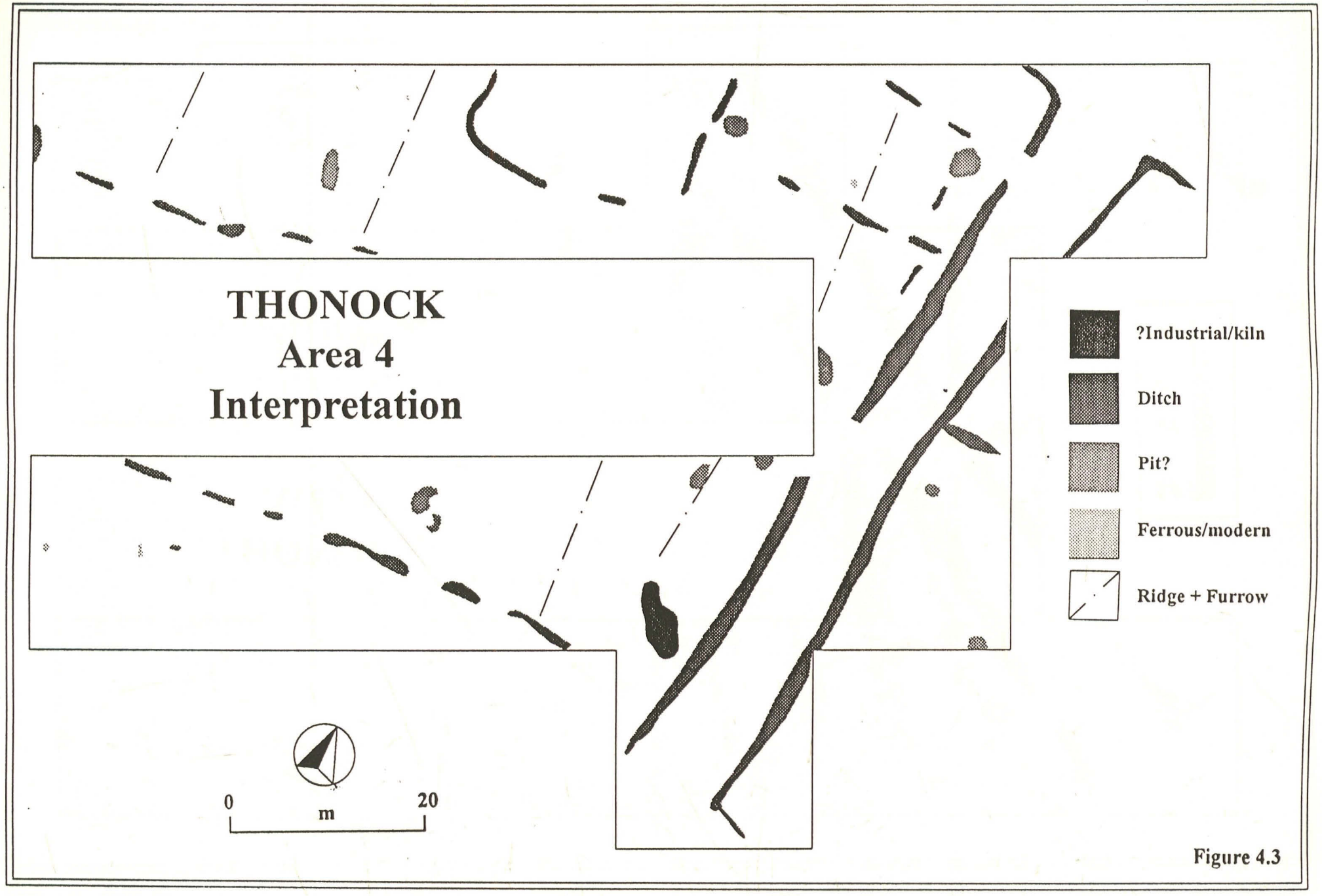

THONOCK
Area 4
Interpretation
?Industrial/kiln
Ditch
Pit?
Ferrous/modern
Ridge + Furrow
0
m
20

Figure 4.3