

PRE-CONSTRUCT ARCHAEOLOGY L I N C O L N

**ARCHAEOLOGICAL
EVALUATION REPORT:
BOOTS LAND,
WARDENTREE LANE, SPALDING,
LINCOLNSHIRE**

NGR: TF 2575 2560
SITE CODE: WTLS02
LCNCC ACC. NO: 2002.493

PINCH



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H14/0647/02

Report prepared for
Waterman Burrow Crocker
by Chris Clay, Peter Masters and Jim Rylatt
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Summary

- *A programme of archaeological fieldwork, entailing field walking, rapid magnetic susceptibility and gradiometer surveys was carried out on land off Wardentree Lane, Pinchbeck, Spalding.*
- *There is considerable evidence of medieval salt making taking place to the north of the site, and the west side of Pinchbeck parish has produced evidence of activity from the prehistoric to Anglo-Saxon periods.*
- *The combined evaluation has identified a range of natural features and infrequent archaeological remains: there are relatively low levels of surface artefacts within the ploughsoil, and a dispersed pattern of buried ditches has been identified by geophysics, as have a number of sinuous palaeo-channels.*
- *It would seem unlikely that this site contains areas of dense archaeological remains, and no evidence has been found relating to saltmaking activities in the medieval period.*
- *Some further archaeological intervention (trial excavation) is advised, although this probably need not be exhaustive.*

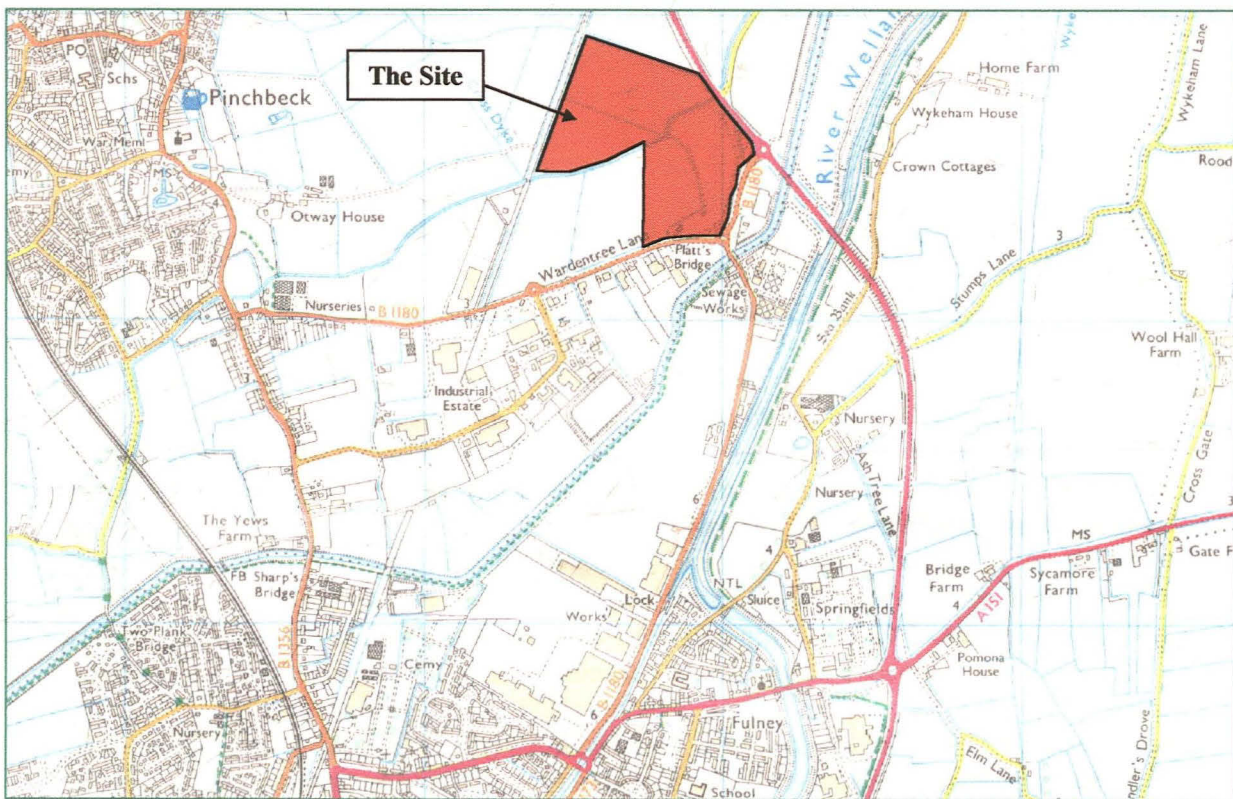


Fig.1: General site location (scale 1:25,000)
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1.0 Introduction

Pre-Construct Archaeology (Lincoln) was commissioned by Waterman Burrow Crocker to undertake a programme of archaeological field evaluation on land north of Wardentree Lane, Pinchbeck, Spalding. These works were required to fulfil the recommendations of the Senior Built Environment Officer of Lincolnshire County Council to advise an application for industrial development. To achieve this, without the use of intrusive techniques, a series of inter-related surveys were undertaken: controlled fieldwalking and two magnetic surveys (sub-contracted to Pre-Construct Geophysics). The full results of the three surveys are documented and integrated in the sections and sub-sections that follow, and a series of conclusions are presented at the end of the report.

The fieldwork and reporting methodologies that are described in this report are consistent with current archaeological/planning guidelines: Management of Archaeological Projects (*English Heritage, 1991*), IFA guidelines (IFA 1999), the Lincolnshire County Council document *Lincolnshire Archaeological Handbook: a Manual of Archaeological Practice (LCC, 1998)* and the English Heritage document 'Geophysical Survey in Archaeological Field Evaluation' (David, 1995).

Copies of this report have been deposited with the commissioning body and the County Sites and Monuments Record for Lincolnshire. Reports will also be deposited at the City and County Museum, Lincoln, along with an ordered project archive for long-term storage and curation.

2.0 Topography and Geology

The development area is situated in the civil parish of Pinchbeck, which lies within the administrative district of South Holland. It is approximately 1.2km to the east of Pinchbeck Parish Church and c. 2km to the north of Spalding (Fig. 1).

The area of investigation consists of four adjoining fields known as Boot's Land, which extend to approximately 29 hectares. They form an irregular block, bordered by Wardentree Lane to the south and the A16 to the east. An embankment that formerly carried a railway line linking Spalding with Boston defines the western edge of the study area, while a track and flanking drain form the northern perimeter. The Blue Gowt Drain runs west-south-west to east-north-east across the centre of the site. Fields 1 and 4 are located on the northern side of the drain; parts of both fields contain test crops, while other areas have recently been ploughed. Fields 2 and 3 run up to the southern edge of the drain. Field 2 contains a mature crop of broccoli.

The soils are permeable silty loams and silty clays of the Wisbech and Wallasea/Pepperthorne Associations (Hodge *et. al.*, 1984). These overlie a series of Quaternary drift deposits, which can be up to 20m in depth. The uppermost of these are the Terrington Beds, a series of sandy silts, sands and clays, which were deposited in a range of wetland environments, including tidal creeks, salt marshes, rivers and by marine inundation (BGS, 1992). Beneath the Terrington Beds are further drift deposits, possibly including Devensian Abbey Sand and Gravel, and beds of Glacial Sand and Gravel of Anglian age. These cover the uppermost formations of the solid

geology, which consist of the mudstones of the Oxford Clay Series, deposited during the Upper Jurassic period. The magnetic susceptibility of this type of geology is average to poor (Clark 1990, 92; EH 1995, 10, Table 3).

The site is flat and low lying (below the 5m contour). It centres on NGR TF 2575 2560.

3.0 Planning background

Planning permission has been granted for industrial development (offices, warehouses etc., planning ref. H14/0647/02). This permission was granted subject to the undertaking of a programme of archaeological investigation.

This report details the results of the first phase of archaeological evaluation; involving fieldwalking, magnetic susceptibility survey, and targeted detailed gradiometry; the latter was based upon the results of the former surveys.

The results of the three phases of non-intrusive evaluation may be used to inform a programme of strategic trial excavation in due course.

4.0 Archaeological and historical background

The extent of the prehistoric and Roman Fenland is not easy to define, as this low-lying area has been subject to sustained periods of inundation, linked to changes in sea level. At these times it is likely that much of the region would have been unsuitable for permanent human occupation, and any preceding activity would have been masked beneath alluvial deposits.

Boreholes have suggested that the northern edge of the site lay only 250m inland of the probable Saxon coastline (BGS, 1992). The settlement of Pinchbeck, c. 1.2km to the east of the site, appears to have been in existence by the 9th century AD, as documents record that Aelfgar, in AD810, and King Berhtwulf of Mercia, in AD851, granted lands in the parish to Siward, Abbott of Crowland (Sawyer, 1998). Following the Norman Conquest, land at Pinchbeck was in the possession of Guy de Craon and Ivo Tallboys, the latter's holding including four fisheries (Morgan & Thorne, 1986).

The Lincolnshire County Sites and Monuments Record records the presence of medieval saltern mounds extending across the area immediately to the north of the suggested Saxon coastline (SMR No. 23633). A medieval sea bank, known locally as 'Roman Bank', lay c. 100m to the east of the site. This feature defined the eastern edge of the land that had been reclaimed from the sea by c. AD1300. The geological map indicates that there were further medieval saltern mounds running along the eastern edge of this sea bank, adjacent to the area of investigation (BGS, 1992). Surviving documentary sources indicate that salt making was taking place around Pinchbeck by the early 13th century, these activities continuing until at least 1477 (Hallam, 1960).

The block of land immediately to the south-west of the area of investigation is currently under development, and has been the subject of previous archaeological investigations. A geophysical survey and an evaluation identified a series of linear and curvilinear features (Butler 1999, Albone 1999). Some of these proved to be ditches of 12th to 14th century date, while others reflected late 15th to 19th century activity. A small quantity of Romano-British pottery was also recovered from secondary contexts.

5.0 Fieldwalking Survey

5.1 Methodology

Fieldwalking was carried out using a team of three experienced archaeologists, with transects at 15m intervals. These transects were marked out on a field-by-field basis, using an appropriate boundary as a base line. Wherever possible, fields were walked along plough lines to minimise crop damage and to maintain a straight route along each transect.

Each walker was given a sequentially numbered set of bags (eg. 1-50, 51-100) for finds collection and retention. Each find was individually bagged, thereby providing a unique identification code. Following identification, each find was initially left *in situ* and flagged, prior to plotting on a 1:2500 base plan.

Information relating to local topography, soil type, ground cover and visibility was recorded on pro-forma field reconnaissance sheets, and a photographic record of each field was also maintained.

The fieldwalking programme was supervised by Chris Clay, and was carried out in November 2002. The results are shown on fig. 2.

5.2 Results

5.2.1 Field 1

The limits of this field are defined by the Blue Gowt Drain to the south, with a smaller drain along the north-east edge of the site. A farm track extends along the north-west side of this broadly triangular field; beyond which a small, fenced, sub-triangular unit was unavailable for investigation. A spoil heap c.10m in diameter obscured another area at the northern end of the field.

For the most part, the field was a ploughed surface, offering almost 100% visibility. However, there was an area of patchy grass and weeds, approximately 125m by 75m towards the east side, and a small area of low stubble immediately to the south-west of this. Both of these areas limited visibility to c.50%.

Surface finds appeared to predominate towards the western side of Field 1, although this can partially be explained in terms of reduced surface visibility. The majority of sherds are of medieval date. They are abraded, and appear to have lain within the

ploughsoil for some considerable time. Overall densities are relatively low, and there are no specific artefact concentrations.

5.2.2 Field 2

This is defined by the A16 to the east, the Blue Gowt Drain to the north, and a smaller drain along most of the western edge. At the time of survey, the field contained a crop of leafy brassicas, which was dense in places and up to 0.5m high. However, the crop had a patchy distribution, resulting in numerous open areas with high visibility, and other areas with moderate visibility, where the crop was less dense. There was a moderate scatter of surface finds from this field, with no obvious concentrations. In date, they range between the Saxo-Norman and early modern periods, with most sherds being medieval or post-medieval. Again, pottery sherds and brick/tile fragments were very abraded.

5.2.3 Field 3

This field lies to the south of the Blue Gowt Drain, and north of Wardentree Lane, with Field 2 to the immediate east. The west boundary borders an existing new development. A single residential property with associated greenhouses is located in the south-east corner. The field had been ploughed, but was obscured in places by the rotting remains of cabbage and Brussels sprout crops.

The field yielded only a limited scatter of finds, including Saxo-Norman and medieval pottery sherds. There are no obvious artefact concentrations.

5.2.4 Field 4

This sub-rectangular field is delimited by a farm track along its north-west and north-east sides, with the Blue Gowt Drain to the south. It is separated from Field 1, to the south-west, by a smaller drain.

The north-west part of the field contains a patchy cover of low weeds and grass, offering c.50-75% visibility. This gave way to a 35m band of patchy vegetable crops, followed by a denser area of crops, which could not be walked. Beyond this, the remainder of the field had a cover of low grass, with less than 10% visibility. Results in some areas are therefore considered to be unreliable.

A relatively dense scatter of surface finds was collected towards the north-west end of Field 4, correlating to some extent with the results of the MS survey (see below). Most of the sherds collected were of medieval date.

6.0 Geophysical Survey

6.1 Methodologies

Rapid magnetic susceptibility survey

A rapid magnetic susceptibility survey was carried out using a Bartington Instrument MS2-D search loop connected to a MS2 susceptibility meter. At each station point, the sensor was first zeroed in the air, and then a measurement was taken to produce a reading for the locality. Two readings were taken at each station to avoid readings being distorted by the spurious effects of intrusive ferrous items in the topsoil and poor surface contact. Measurements of volume specific magnetic susceptibility (MS) were logged in SI units at 20m intervals along transects spaced 20m apart. The data was recorded by hand and subsequently inputted into Geoplot v.3 for analysis and plotting. The magnetic susceptibility results are shown as colour-scale plots (fig.2).

The data was despiked and processed using a median filter in order to further remove 'noise' and provide a smoother appearance. The field loop survey revealed values of MS varying between a minimum of $1 \text{ SI} \times 10^{-5}$ (shown as blue) and a maximum of $70 \text{ SI} \times 10^{-5}$ (shown as red).

Gradiometer survey

Detailed area survey using a fluxgate gradiometer is a non-intrusive method of evaluating the archaeological potential of a site. The fluxgate gradiometer detects magnetic anomalies created by areas of high or low magnetic susceptibility. These areas are caused by changes in the composition of the subsoil or the underlying geology. Archaeological features result from man-made changes to the composition of the soil and the introduction of materials such as brick and stone. These features create detectable magnetic anomalies. In addition, activities that involve heating and burning will create magnetic anomalies, as will the presence of ferrous metal objects.

The anomalies detected by a fluxgate gradiometer survey can often be resolved into entities sharing morphological characteristics with features of known archaeological provenance. This enables the formulation of an informed, but subjective interpretation.

Magnetic variation between archaeological or naturally produced features and the natural background level can result from:

- different depth or density of fill, with respect to the depth or density of surrounding soils magnetically similar to the fill
- the magnetic properties of materials introduced as a result of human activity (e.g. rubble, stone, tile, ferrous metal, etc.) in contrast to those within surrounding natural deposits
- the magnetic susceptibility of areas of burning, as opposed to unburnt areas

- the magnetic properties of localised, naturally deposited minerals, such as those that may occur in the fill of palaeo-channels. These often contrast with the composition of the surrounding soils.

The gradiometer survey was undertaken using a *Geoscan Research* FM36 fluxgate gradiometer using an ST1 sample trigger. The survey areas were divided into 30m grid-squares, which were traversed at 1m intervals in a zig-zag fashion. Zig-zag traverses were made from south to north at a rapid walking pace. Individual readings were taken at 0.5m intervals using a sample trigger.

A single, shared, base line was established along the western edges of Field 1 and Field 4. This followed the eastern edge of a track that separates these fields from the railway embankment (fig.2). Another baseline was laid out from north-north-west to south-south-east running down the centre of Field 2. This line was continued to the north of the Blue Gowt Drain and defined the western edge of the small area surveyed at the north-east corner of Field 4. Pegs were placed at the grid corners to facilitate the relocation of the surveyed area.

Data was downloaded in the field into Insite v.3 and was later processed using Geoplot v3.0. The results are presented as greyscale and traceplot images, along with an interpretative plan (Figures 3 - 11).

The data was processed using zero-mean functions to correct the unevenness of the plots in order to produce a smoother graphical appearance. It was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings caused by stray iron fragments and spurious effects due to the inherent magnetism of soils.

Instrument	Geoscan Research fluxgate gradiometer FM36 Sample trigger ST1
Grid size	30m x 30m
Sample interval	0.5m
Traverse interval	1.0m
Traverse method	Zigzag
Sensitivity	0.1nT
Processing software	Geoplot (v. 3.0)
Weather conditions	Windy, cold, overcast, showers, standing water
Area surveyed	8.6ha
Date of survey	14 th -17 th and 20 th -23 rd January 2003
Survey personnel	Peter Masters and Jim Rylatt
Central National Grid Reference	TF 2575 2560

Table 1: Summary of survey parameters

6.2 Analysis and Interpretation of results

6.2.1 Field 1 (figs. 2 – 5)

The magnetic susceptibility values were generally low (range 1-37, mean 11.77×10^{-5} SI Units - volume specific), but the distribution appears to show some magnetic enhancement. A concentration of higher magnetic susceptibility values occurs towards the north-west field boundary, suggesting some form of topsoil magnetic enhancement; possibly from either settlement activity or industrial production. Beyond this restricted zone, the variation in MS is more subdued, with the lowest values occurring to the east.

Detailed gradiometer survey was carried out in the western half of the field and the results are discussed below.

Based on fieldwalking and magnetic susceptibility survey results, the western half of the field was surveyed, an area of 3.66 ha (up to 220m north-south by 210m east-west). The north-west corner was not surveyed due to a large soil mound and deep tractor ruts (it was noted that the field had been recently ploughed, as blue/grey clay was visible in most areas, as were fresh sherds of medieval pottery).

At the south end of the survey block, two known parallel pipelines were detected, running in a north-west to south-east direction. These pipes can be seen above ground to the south-east, crossing over the Blue Gowt Drain. At the south-east corner of the survey block, situated close to the northernmost pipe, a curvilinear anomaly was detected; possibly denoting a ditch (probably of medieval date).

An extensive curvilinear anomaly (Fig 5, A) located close to the dismantled railway line appears to have a direct relationship with two adjoining short linear anomalies, which extend off it in a north-westerly direction. These features may represent buried ditches. Their distribution correlates reasonably well with fieldwalking and magnetic susceptibility survey results, suggesting that these features may be medieval field boundary ditches. At the north end of curvilinear ditch A, a faint sub-oval shaped anomaly (B) can be seen, possibly indicating the remains of a small enclosure. Approximately 80m east of A, linear anomaly (C) is orientated roughly north to south indicating a further ditch alignment. It has been truncated at the south end of the survey block by the modern pipeline, whilst its northern limit has been masked or truncated by anomaly D. Approximately 50m from the north end of C, a curvilinear anomaly (C1) extends eastwards towards anomaly D (below), probably denoting another field ditch. A further possible component of this 'system', an extensive L-shaped anomaly (anomaly C2) is situated to the east of the south end of C.

Between ditches A and C there are two faint linear anomalies, spaced approximately 20m apart, suggesting some form of association with the proposed medieval field system. An isolated negative anomaly was also detected between ditches A and C indicating ferrous signature (circled red).

To the east of linear anomaly C, and running almost parallel to it, is a faint curvilinear anomaly, probably reflecting further traces of a field drainage system. A broad sinuous anomaly (D), situated to the north-east, probably denotes a former palaeo-

channel. A short linear di-polar anomaly (E) detected close to the southern end of anomaly (C) may indicate the ploughed out remains of a hearth or possibly an area of burning.

6.2.2 Field 2 (figs 2, 3, 6 – 8)

Magnetic susceptibility values are low (range 0-37, mean 19.88×10^{-5} SI Units - volume specific), and the distribution appears to show little patterning (fig. 2). The highest values concentrate along the eastern boundary, extending westwards as slightly weaker MS readings, but generally above the field average. The results are of potential significance in that they are above the general background magnetism, indicating possible dispersal of settlement activity by agricultural means. No other significant readings are noticeable in the resultant plot.

Three discrete areas were examined in this field by fluxgate gradiometer. These comprised a 0.70ha block at the northern edge (Area A), a 0.36ha unit towards the centre (Area B), and another 0.36ha area towards the southern end (Area C). It was not possible to survey the eastern side of the field, a strip c. 60m wide, due to the height and density of the crop.

Area A – the magnetic susceptibility survey indicated above average readings with a relative concentration of medieval pottery recovered from fieldwalking.

Towards the easternmost edge of the survey, a broad curvilinear positive anomaly was detected. This can be interpreted as a palaeo-channel, similar to that located in Field 1, and this same anomaly may have been detected in the area to the north of the Blue Gowt Drain (Field 4).

Curvilinear anomaly (F) runs from the south end of the palaeo-channel to the west of the survey block, where it appears to dog-leg to the north (alternatively, the dog-leg element could be a ditch). Two further short linear anomalies situated to the south of the palaeo-channel (F) can be interpreted as possible ditches and may be related to the wider ditch alignment. Areas of diffuse positive anomalies occur across the survey area (clearer examples circled in red). It is likely that these reflect natural features such as those that can be created as a result of iron-panning or localized peat development.

Towards the north-east corner of the survey block are a series of related narrow linear anomalies. These anomalies are discontinuous, but combine to form a rectilinear arrangement of possible ditches (see fig. 6).

Area B - this area was sampled to incorporate the high magnetic susceptibility readings and scatter of medieval pottery recovered from the initial phase of evaluation. The results from the detailed magnetometer survey produced no significant archaeological anomalies: the only clear anomaly being a high magnetic signature caused by an agricultural bird scarer and gas bottle.

Area C - no significant anomalies were detected, excluding a modern pipeline, situated in the westernmost grid.

6.2.3 Field 3 (fig. 2)

Magnetic susceptibility values are medium (range 1-70, mean 15.95×10^{-5} SI Units - volume specific), but the distribution appears to show no significant patterning, excluding modern activity. The highest magnetic susceptibility readings occur close to the nursery boundary, Wardentree Lane, and the limits of the new development, suggesting that the topsoil magnetic enhancement is of relatively recent origin. Very few artefacts have been recovered from this field, reinforcing the interpretation of the MS data.

No detailed gradiometry was undertaken in this field.

6.2.4 Field 4 (figs 2, 3, 9 – 11)

Magnetic susceptibility values are predominantly low (range 1-27, mean 27×10^{-5} SI Units - volume specific), but the distribution appears to show some potentially significant patterning. There is a concentration of higher susceptibility values shown in yellow through to red at the north-west end of the field, close to the dismantled railway line. A relative concentration of medieval pottery was recovered from fieldwalking this particular area, and this correlates with the high susceptibility values, suggesting that some form of past human activity has taken place in this area.

Three sample areas were surveyed by fluxgate gradiometer, and these have been separated as 4A and 4B, as indicated on fig. 3. Area 4A was a 2.52ha block along the north-western edge of the field and another strip, 30m wide by 210m long (0.63ha), situated 60m to the south-east (the intervening area contained a netted brassica crop). Area 4B (a 0.36ha block) was situated at the north-eastern corner of the field, in the angle of the A16 and the Blue Gowt Drain.

North-west side (Area 4A)

The area along the north-western edge of the field, including the 30m wide strip beyond the brassica crop, revealed a series of clear magnetic anomalies.

A curvilinear anomaly (G) was detected in the south-east corner of the survey area, indicating a possible ditch.

Approximately 60m north of the drain dividing Fields 1 and 4, and partially concealed by the dismantled railway line, is a clearly defined curvilinear anomaly (H), denoting a possible former paleo-channel. Approximately 30m further north, part of a similar anomaly (J) can be seen, and this may represent the continuation of H as part of a former river channel. Immediately inside of (J), a pit-like anomaly was detected (shaded pink on fig 10). Along the north-east edge of the plot, a series of negative rectangular-shaped anomalies can be seen, denoting the magnetic signatures of irrigation sprinkler heads (pink squares on fig. 10).

To the east of anomaly (J) is a sinuous anomaly (K), possibly indicating another former palaeo-channel. Other faint magnetic anomalies, forming linear, curvilinear

and circular shapes are faintly visible in the greyscale image to the south-west of (K). These anomalies appear as ephemeral ditch-like features.

The 30m wide strip to the south-east of the main block forming Area 4A identified further magnetic anomalies. Curvilinear anomaly (L) at the north end may denote a ditch, or possibly a further palaeo-channel. Two other fragmentary anomalies were detected to the south-west of (L). These could represent ditch-like features, although it is equally possible that these are also remnant palaeo-channels (yellow on fig. 10)

South-east side (Area 4B)

The second area, located in the south-east corner of Field 4, identified a single linear anomaly with a negative trace. This may denote part of a palaeo-channel.

7.0 Discussion and conclusion

Overall, the combined results of the three non-intrusive surveys provide evidence relating to a primarily agrarian and natural landscape: there are relatively low levels of artefactual materials in the plough zone and there is intermittent geophysical data which indicates a dispersed arrangement of buried ditches; probably agricultural ditches defining fields/paddocks.

Despite the proximity of known medieval saltmaking sites, none of the surveys have detected any trace of such activities within the proposed development area. For example, no briquetage (saltmaking debris) was identified during surface collection, and the topsoil magnetic susceptibility survey did not identify any localized 'high spots' that would betray the presence of such activities.

The gradiometer survey has detected a series of magnetic anomalies in all of the areas that were surveyed. The greatest concentration occurs within Fields 1 and 4. However, a cautionary approach is required with regard to the interpretation of these anomalies. Field 4 revealed a series of linear, curvilinear and sinuous anomalies, which are likely to represent a natural patterning of wandering creeks and channels. Field 2 produced a series of linear/curvilinear anomalies, but almost all of those identified in Area A could also be natural palaeochannels.

To temper these interpretations, there is a small group of inter-related linear anomalies in the north-east corner of Field 2A (fig. 6) that may be part of a wider arrangement of rectilinear ditched 'enclosures' that are rather small, if interpreted as paddocks.

Almost all of the pottery collected during fieldwalking of the site was of an abraded nature, suggesting that it had lain within the plough zone for some considerable time. Doubtless, some of these finds were introduced to the site as a result of manuring. However, it is likely that some material derives directly from cut archaeological features. Some such features have potentially been identified by detailed gradiometry.

8.0 Effectiveness of methodology

The methodology employed at the site was an appropriate strategy: three complimentary techniques were applied, and each of these has produced independent but complimentary results. The objective of non-intrusive survey is to identify areas that may require target intrusive investigation; and whilst fieldwalking and geophysical surveys cannot localize all classes of sub-surface archaeological remains, they can certainly assist and inform a programme of controlled evaluation.

9.0 Acknowledgements

Pre-Construct Archaeology (Lincoln) would like to thank Waterman Burrow Crocker for this commission. Thanks also go to the fieldwalking team, Rachel Gardner and Stuart Whatley. Pre-Construct Geophysics would like to thank Waterman Burrow Crocker and Elsom's Seeds for this commission, and for assistance provided during the course of the survey.

10.0 References

- Albone J., 1999, *Archaeological field evaluation: Land north of Wardentree Lane, Pinchbeck, Lincolnshire*, Pre-Construct Archaeology (Lincoln), unpublished report
- British Geological Survey, 1992. *Spalding. England and Wales Sheet 144. Solid and Drift Geology. 1:50000 Provisional Series*. Keyworth, Nottingham: British Geological Survey
- Butler A., 1999, *A geophysical survey at land north of Wardentree Lane, Pinchbeck, Lincolnshire*, University of Leicester Archaeological Services, unpublished report
- Clark, A. 1990, *Seeing Beneath The Soil*, Batsford, London
- Coles J. & Hall D., 1998, *Changing Landscapes: The Ancient Fenland*, Wetland Archaeology Research Program, Cambridge County Council, Cambridge
- English Heritage, 1995, *Geophysical Survey in Archaeological Field Evaluation, Research and Professional Services Guideline No. 1*
- Hallam H.E., 1960, 'Salt making in the Lincolnshire Fens in the Middle Ages', in *Lincolnshire Architectural and Archaeological Society, reports and papers*, vol.8, 1959-60, Lincolnshire Architectural and Archaeological Society, Lincoln
- Hodge C.A.H., Burton R.G.O., Corbett W.M., Evans R. & Seale R.S., 1984, *Soils and their use in Eastern England*. Bulletin 13, Soil Survey of England and Wales, Harpenden

Morgan P., & Thorn C., (eds.), 1986, *Domesday Book: vol.31: Lincolnshire*, Phillimore & Co. Ltd, Chichester

Sawyer P., 1998, *Anglo-Saxon Lincolnshire*, History of Lincolnshire III, History of Lincolnshire Committee, Lincoln

11.0 Site archive

The documentary archive for the site is currently in the possession of Pre-Construct Archaeology. This will be deposited at Lincoln City and County Museum within six months. Access to the archive may be gained by quoting the global accession number 2002.493.

APPENDIX 1: Colour plates



General view of Field 1 looking east



General view of Field 2 looking north-west

APPENDIX 2: Pottery Archive List

Jane Young Lindsey Archaeological Services

context	cname	sub fabric	form type	sherds	weight	decoration	part	description	date	condition
132	GRIM		bowl	1	22		base	int glaze	medieval	abraded
133	GRIM		jug	1	18	applied strip	BS		medieval	very abraded
134	BOUA	B/C	bowl ?	1	6		base	int glaze	medieval	very abraded
135	MISC	OX/R/OX;fine sandy;hard	jar	1	4		BS	soot	Saxo-Norman to medieval	very abraded
136	MEDLOC	OX/R/OX;fine sandy;hard	?	1	6		BS	glaze	medieval	very abraded
137	BOUA	A/C	?	1	5		BS		medieval	very abraded
138	TOY		jug	1	16		BS		medieval	very abraded
139	BOUA	B/C	bowl ?	1	6		BS	int glaze	medieval	very abraded
140	MEDLOC	OX/R/OX;fine sandy;hard	jar/bowl	1	11		BS	soot	medieval	abraded
142	BOUA	A	?	1	4		BS		medieval	very abraded
352	BOU		bowl ?	1	29		BS	int glaze	post-medieval	abraded
353	TB		bowl	1	13		BS		post-medieval	abraded
354	BOU		jar ?	1	3		BS		post-medieval	abraded
355	NOTGL		jug/jar	1	3		BS		medieval	very abraded
356	NOTGL		jar ?	1	3		BS		medieval	very abraded
358	RGRE		bowl	1	17		BS	int glaze	post-medieval	abraded

context	cname	sub fabric	form type	sherds	weight	decoration	part	description	date	condition
359	MEDLOC	OX/R/OX;fine sandy;hard	curfew/lid	1	32	applied thumbed horizontal strip around base	base	abundant fine subround quartz	medieval	very abraded
360	NOTGL		jug ?	1	3		BS		medieval	very abraded
361	BOU		lid ?	1	22		BS	int glaze	post-medieval	abraded
362	MEDLOC	oxidised;fine sandy;hard	bowl	1	4		rim	abundant fine subround quartz	medieval	very abraded
363	NOTGL		jar	1	6		rim	? ID	medieval	very abraded
364	BOUA	A	jar ?	1	2		BS	soot;? ID	medieval	very abraded
365	BOU		jug/jar	1	5		BS	glaze;sandy fabric	medieval to post-medieval	very abraded
366	MEDLOC	light OX/R/OX;fine sandy & fe;hard	jar	1	5		BS	comm fe lumps	medieval	very abraded
366	MEDLOC	OX/R/OX;med sandy ;hard	jar	1	4		rim		medieval	very abraded
369	NOTGE		jug	1	4		BS	? ID	medieval	very abraded
370	MEDLOC	light OX/R/OX;fine sandy & fe;hard	jar ?	1	8		rim	comm fe lumps	medieval	very abraded
371	MEDLOC	light OX/R/OX;med-coarse	jar ?	1	4		BS	comm fe lumps	medieval	very abraded
372	ST	B	pitcher	1	4		handle	glaze	saxo-Norman to early medieval	abraded
373	GRIM		?	1	5		base	int glaze	medieval	very abraded
375	MEDLOC	light OX/R/OX;med-coarse	?	1	18		base	comm fe lumps;untrimmed base;soot	medieval	very abraded
376	MEDX	light OX/R/OX;med-coarse	?	1	4		BS		medieval	very abraded
377	MEDLOC	light OX/R/OX;fine sandy & fe;hard	?	1	2		BS	comm fe	medieval	very abraded

context	cname	sub fabric	form type	sherds	weight	decoration	part	description	date	condition
378	MEDLOC	light OX/R/OX;fine sandy & fe;hard	jar	1	7		rim	comm fe	medieval	very abraded
379	BOUA	B	jar ?	1	4		BS	soot	medieval	very abraded
380	MEDX	OX/R/OX;med-coarse sandy;hard	?	1	6		BS		medieval	very abraded
381	MEDLOC	OX/R/OX;fine sandy & fe;hard	jar/pipkin	1	5		base	int glaze	medieval	very abraded
382	BOU		bowl	1	14		BS	int glaze	post-medieval	abraded
383	MEDLOC	light OX/R/OX;fine-med sandy & fe;hard	jug/jar	1	4		BS		medieval	very abraded
384	BOUA	A/B	jar ?	1	2		BS	int glaze	medieval	very abraded
385	BOUA	B	?	1	2		BS	int glaze	medieval	very abraded
386	BOUA	B	?	1	1		BS		medieval	very abraded
387	BOUA	A/B	jar ?	1	6		BS	int glaze	medieval	very abraded
388	MEDLOC	light OX/R/OX;fine sandy & fe;hard	?	1	3		BS		medieval	very abraded
389	TOY		bowl ?	1	5		BS	int glaze	medieval	very abraded
390	BOUA	A/B	jar	1	7		BS	int glaze	medieval	very abraded
391	BOU		jug/jar	1	4		BS		post-medieval	very abraded
452	BOUA	A	?	1	5		BS	? ID	medieval	very abraded
453	NOTGL		small jug	1	3		BS		medieval	very abraded
455	TOY		jug/jar	1	7		BS		medieval	very abraded
456	MEDLOC	oxidised;med sandy;med hard	?	1	4		BS		medieval	very abraded
457	BOUA	A/B	?	1	7		BS		medieval	very abraded

context	cname	sub fabric	form type	sherds	weight	decoration	part	description	date	condition
458	NOTGL		?	1	2		BS	? ID	medieval	very abraded
460	MEDLOC	oxidised;med sandy;med hard	?	1	5		BS	int glaze	medieval	very abraded
461	NOTGR		small jug	1	2		BS	? ID;glaze	medieval	very abraded
462	BOU		jug/jar	1	5		base		post-medieval	abraded
463	NOTGL		jug ?	1	3		BS	? ID	medieval	very abraded
464	NOTGL		?	1	4		BS	? ID	medieval	very abraded
465	TOY		jar ?	1	4		rim		medieval	very abraded
468	MEDLOC	OX/R/OX;med sandy;hard		1	3		BS		medieval	very abraded
469	MEDX	light firing;fine sandy;hard	?	1	2		BS		medieval	very abraded
470	GRIM		?	1	3		BS	int glaze;? ID	medieval	very abraded
471	SNEOT		?	1	10		base		Saxo-Norman	abraded
472	BOUA	A	jar	1	17		BS	soot;int glaze	medieval	very abraded
473	DST		small jug	1	3		BS	ext glaze;cu speckled;? ID	early medieval	very abraded
474	EMHM		jar ?	1	6		rim	? ID	early medieval	very abraded
475	GRIM		jug/jar	1	4		BS	? ID	medieval	very abraded
476	MEDX	oxidised;coarse sandy;hard	?	1	7		BS		medieval	very abraded
477	GRIM		jug/jar	1	2		BS	? ID	medieval	very abraded
478	STCOAR		jar ?	1	20		base		post-medieval	abraded
479	BOUA	A/B	jar ?	1	11		BS		medieval	abraded
480	ST	B	jar/pitcher	1	5		BS	glaze	Saxo-Norman	very abraded

context cname	sub fabric	form type	sherds	weight	decoration	part	description	date	condition
481	MISC	OX/R/OX;fine sandy;hard	?	1	9	BS	soot	Saxo-Norman to medieval	very abraded
482	MISC	OX/R/OX;fine sandy;hard	?	1	3	BS		Saxo-Norman to medieval	very abraded
483	MEDLOC	OX/R;fine-med sandy;hard	?	1	8	BS	thumbbed base	medieval	very abraded
484	ST	A	jar ?	1	4	BS	? ID	Saxo-Norman	very abraded
485	ST	B	jar ?	1	6	base		Saxo-Norman	very abraded
486	TOY		jug/jar	1	3	BS		medieval	very abraded
487	LEMS		jar	1	16	BS	? ID or LEMS;leached	early medieval	very abraded
488	NOTGL		?	1	3	BS	? ID	medieval	very abraded
489	MEDLOC		OX/R/OX;med sandy;hard	1	3	BS		medieval	very abraded
490	MEDX	oxidised;coarse sandy;hard	?	1	3	BS		medieval	very abraded
491	SNEOT		?	1	6	BS		Saxo-Norman	very abraded
492	BOUA	A/C	?	1	8	base		medieval	very abraded
493	NOTGL		?	1	7	base		medieval	very abraded
494	TOY		jug	1	7	rim		medieval	very abraded
495	BOUA	B	?	1	11	BS		medieval	very abraded
496	MEDLOC	oxidised;med sandy;hard	?	1	3	BS		medieval	very abraded
497	BOUA	A/B	jar	1	10	BS	soot;int dep ?	medieval	very abraded
498	MEDLOC	light OX/R/OX;fine sandy & fe;hard	jar	1	7	rim		medieval	very abraded
499	TOY		?	1	3	BS		medieval	very abraded

context	cname	sub fabric	form type	sherds	weight	decoration	part	description	date	condition
500	TOY		?	1	5		BS		medieval	very abraded
551	NOTGL		?	1	3		BS	? ID	medieval	very abraded
553	TOY		jug	1	8		base		medieval	very abraded
554	BOU		bowl ?	1	8		BS		post-medieval	very abraded
555	MISC	light firing;fine sandy;hard	?	1	2		BS		Saxo-Norman to medieval	very abraded
556	TOY		jar	1	4		rim	int glaze	medieval	very abraded
557	BOUA	A/B	jug	1	4		BS		medieval	very abraded
558	BOUA	A/B	jug	1	2		BS		medieval	very abraded
559	LERTH		?	1	6		BS		early modern	abraded
561	BOU		jug/jar	1	3		BS		post-medieval	very abraded
563	BOU		jug/jar	1	7		BS		post-medieval	abraded
564	GRIM		?	1	6		rim	? ID	medieval	very abraded
565	BOUA	A	jug/jar	1	3		BS		medieval	very abraded
566	TOY		?	1	10		BS		medieval	very abraded
567	BL		?	1	2		BS		post-medieval	abraded
568	BOUA	B	jug	1	4		BS		medieval	very abraded
570	BERTH		bowl ?	1	14		BS	18th	post-medieval	abraded
571	SLSNOL		?	1	1		BS		Saxo-Norman	abraded
572	TOY		?	1	6		BS		medieval	very abraded
573	MEDLOC	oxid;fine sandy;hard	jug ?	1	3	applied dec ?	BS	glaze	medieval	very abraded

context name	sub fabric	form type	sherds	weight	decoration	part	description	date	condition	
574	MISC	OX/R/OX;fine sandy;hard	?	1	5		BS	Saxo-Norman to medieval	very abraded	
575	TOY		?	1	9		BS	medieval	very abraded	
576	BOUA	A/C	?	1	9		base	medieval	very abraded	
577	MISC	OX/R/OX;fine sandy;hard	jar	1	3		rim	Saxo-Norman to medieval	very abraded	
578	THETT	T	?	1	6		BS	Saxo-Norman		
579	BOUA	B	bowl	1	6		base	int glaze;? ID	medieval	very abraded
580	TOY		small jug	1	2		BS	medieval	very abraded	
581	BOUA	A/B	bowl/jar	1	7		BS	int glaze	medieval	very abraded
582	BOUA	A/B	?	1	9		BS	medieval	very abraded	
582	MEDX	white/dark reduced/oxid;med sandy;hard	jug	1	3		BS	cu glaze;mixed quartz	medieval	very abraded
584	TOY		jug	1	52		base	splayed base	medieval	very abraded
585	BOUA	A/B	?	1	8		BS	int glaze	medieval	very abraded
586	TOY		small jug ?	1	19		base	int glaze	medieval	abraded

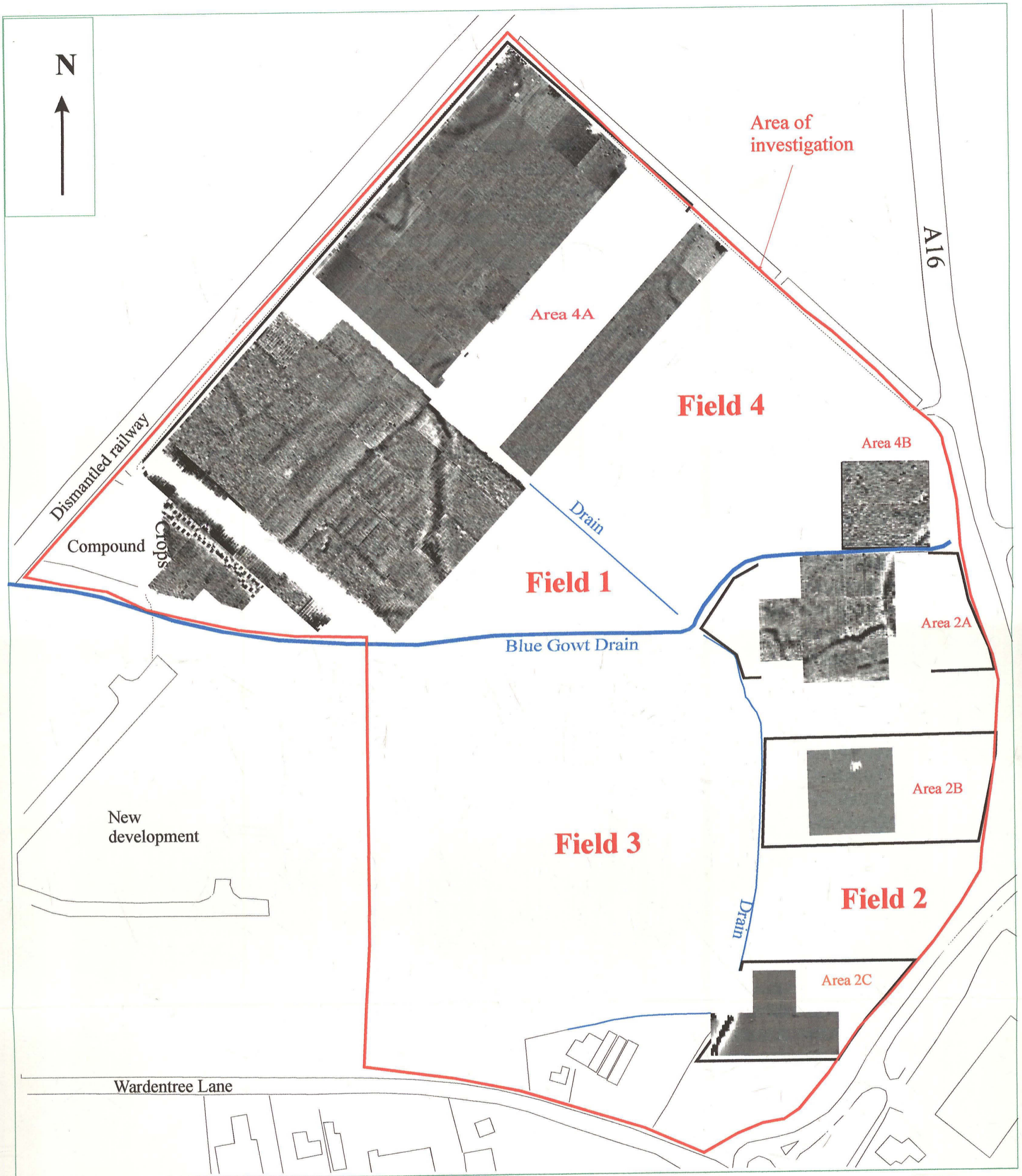
APPENDIX 3: Tile Archive List

Jane Young Lindsey Archaeological Services

context	cname	frags	weight	description	date	condition
351	BRK	1	47	handmade	Roman or post-med	very abraded
367	MODTIL	1	8	white fabric;drain	early modern	slightly abraded
451	PNR	1	8		-	very abraded
454	MODTIL	1	16		early modern	abraded
466	MODTIL	1	8		early modern	abraded
552	MODTIL	1	9	drain	early modern	abraded
560	MODTIL	1	34		early modern	abraded
569	MODTIL	1	15		early modern	abraded



Fig. 2: Site location, showing the results of the magnetic susceptibility survey and the fieldwalking survey (scale 1:2500)



Location of detailed survey by gradiometer - scale 1:2500

Fig. 3

Field 1

Raw data

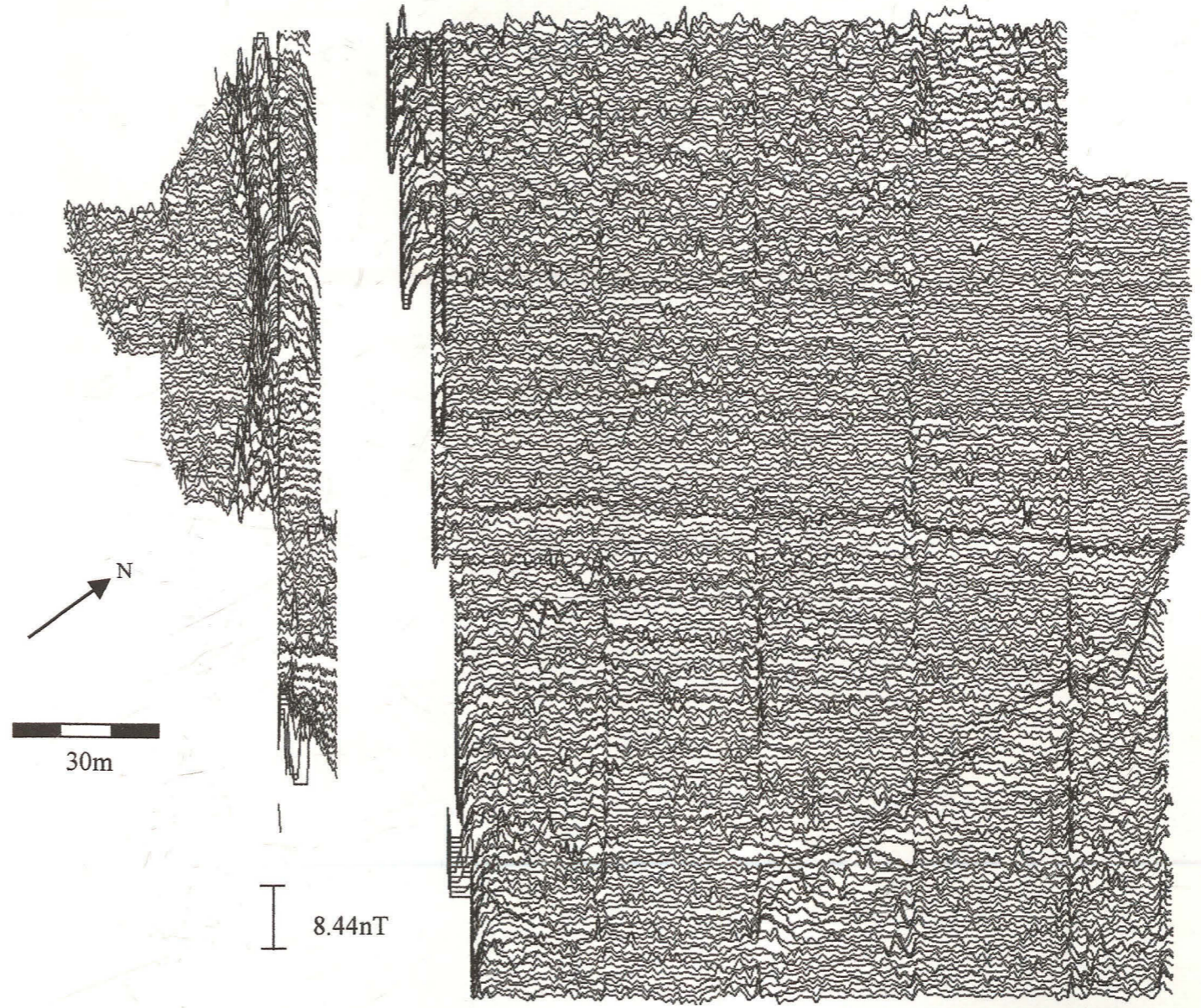
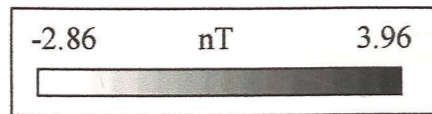
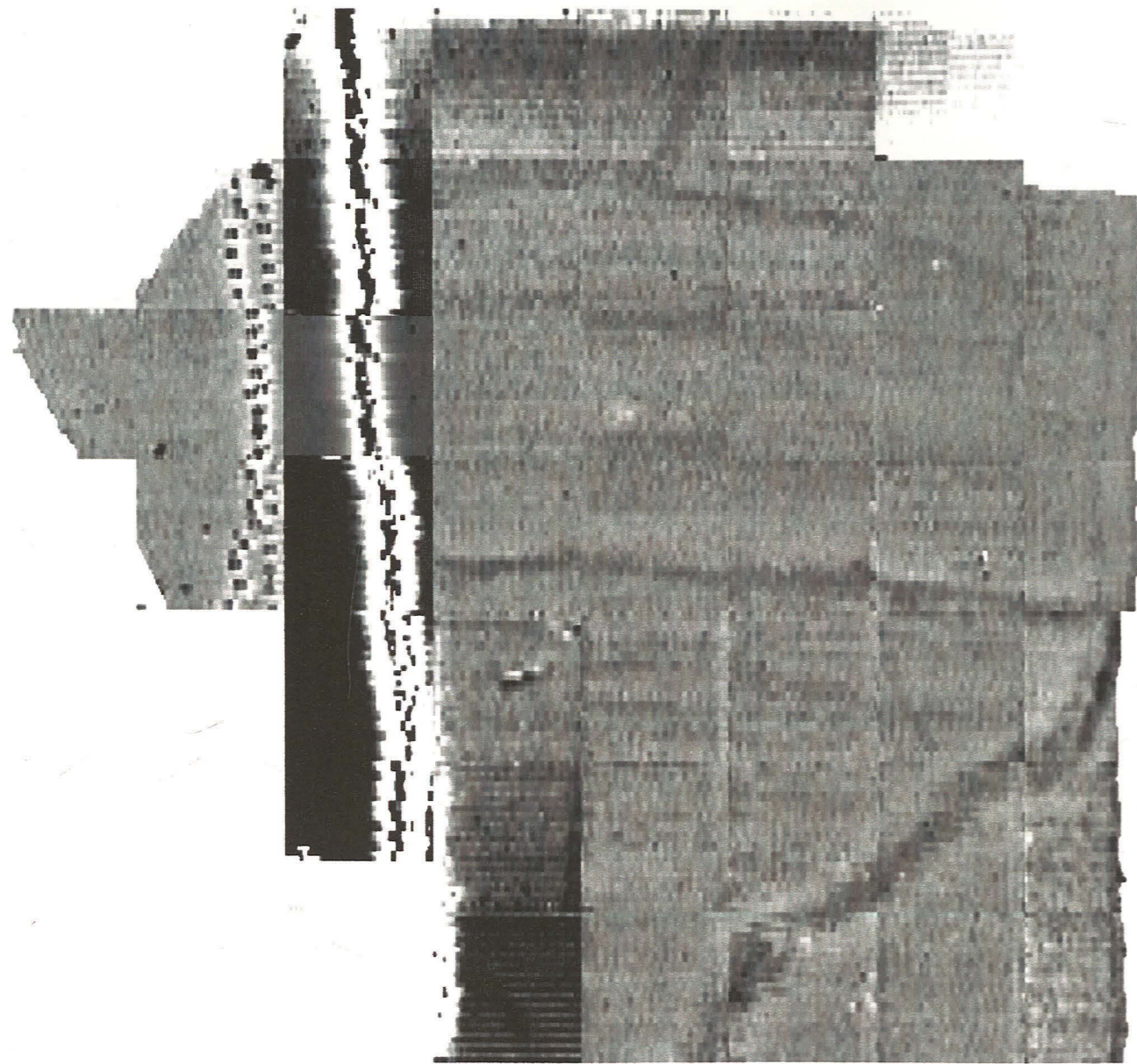


Fig. 4

Field 1

Enhanced data and interpretation

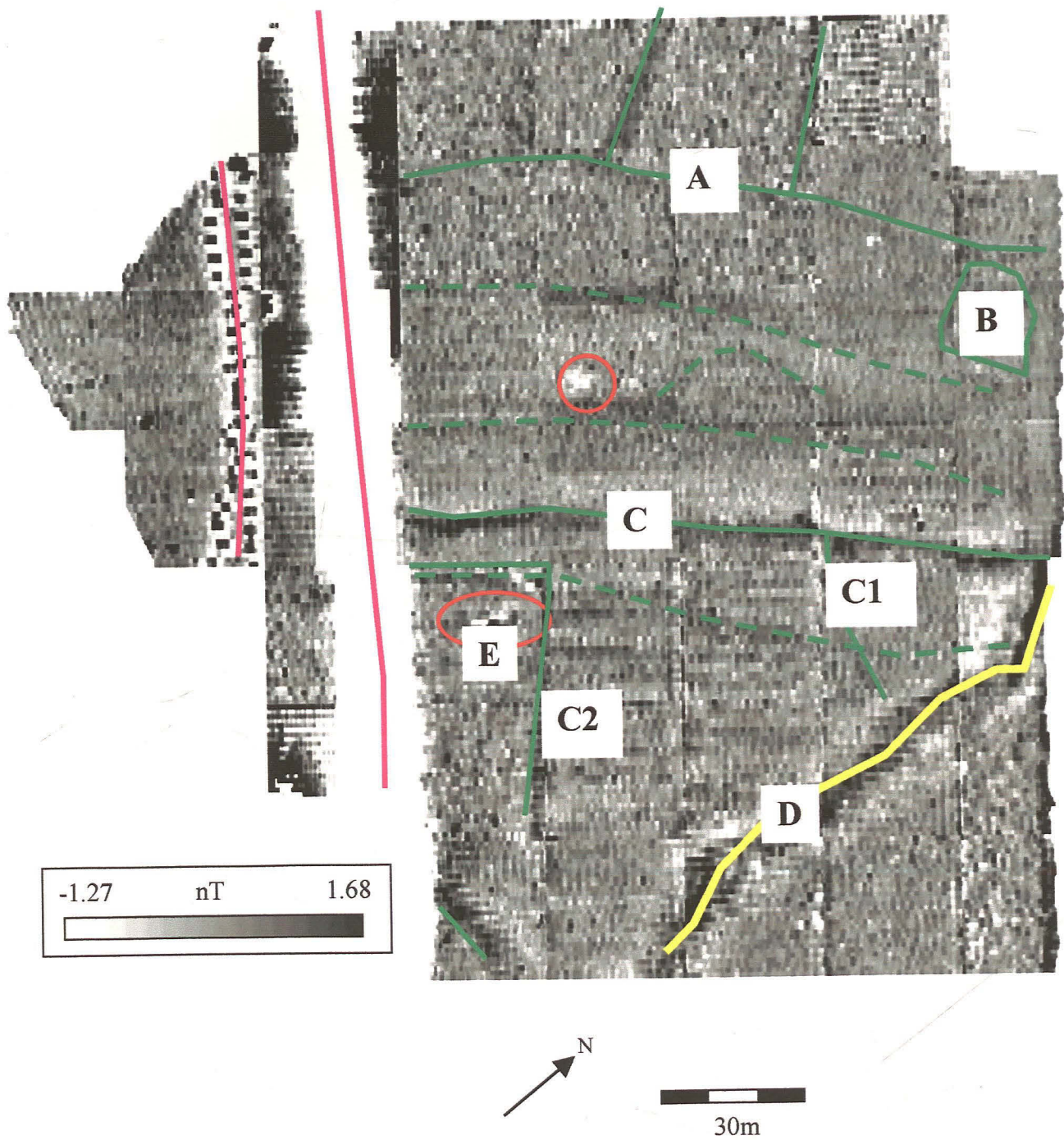
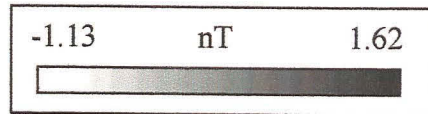


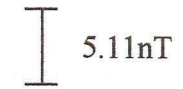
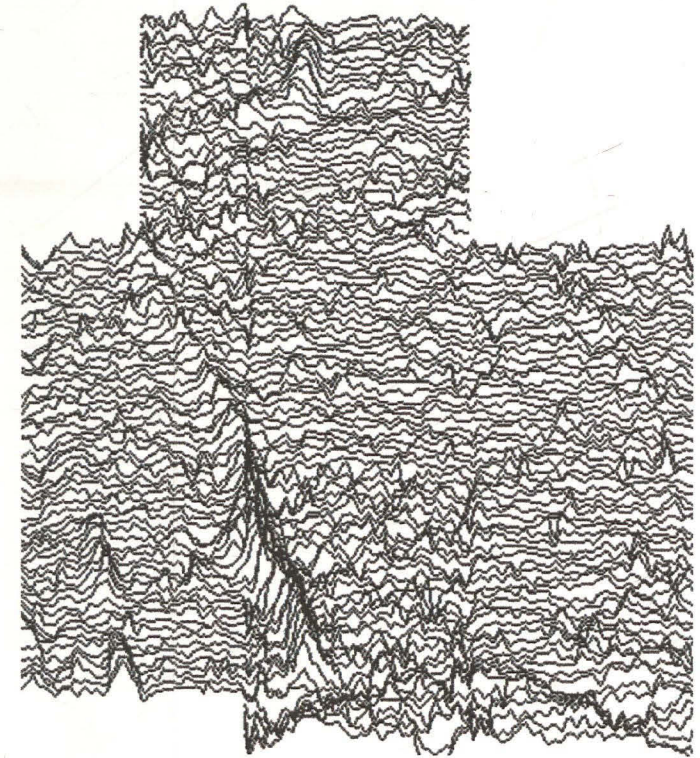
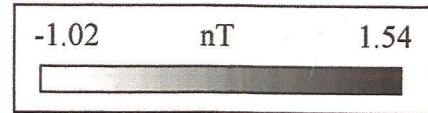
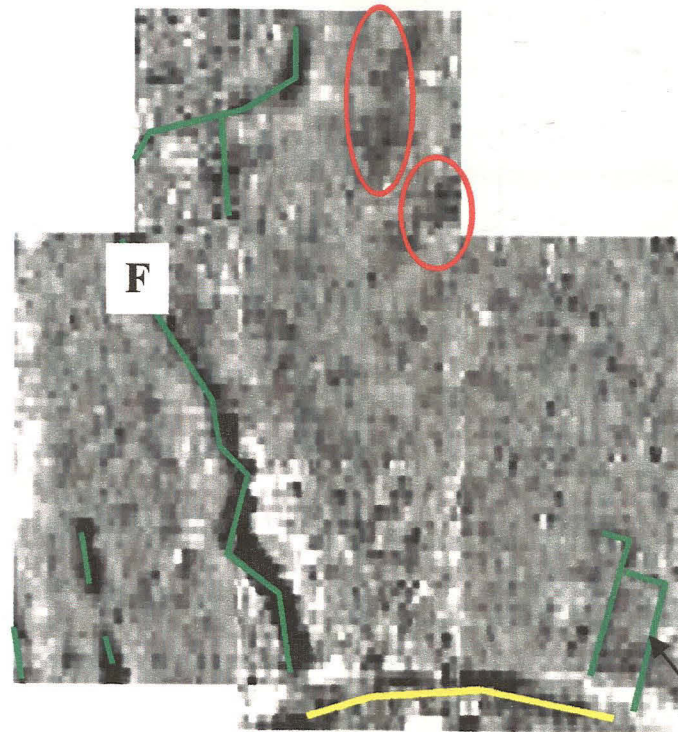
Fig. 5

Field 2 - Area 2A

Raw data

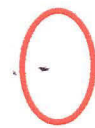


Enhanced data



Rectilinear ditches

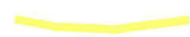
KEY



?Iron panning



Ditches/palaeo-channels



Palaeo-channel

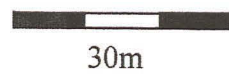
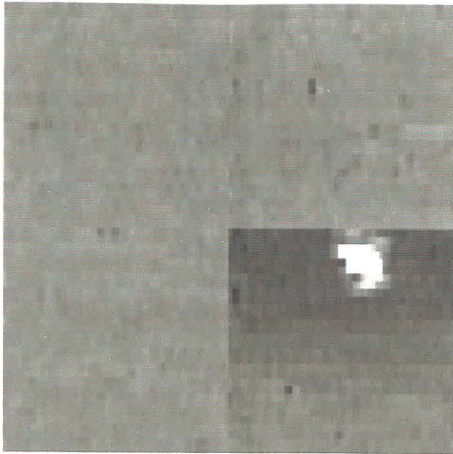
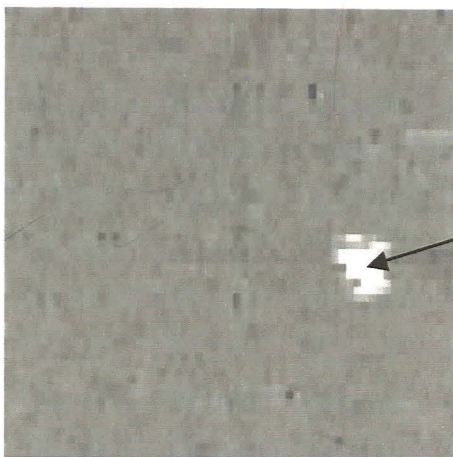
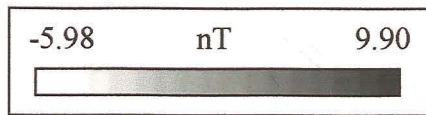


Fig. 6

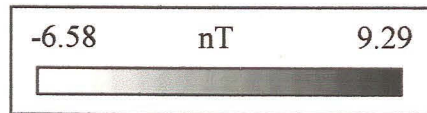
Field 2 – Area 2B



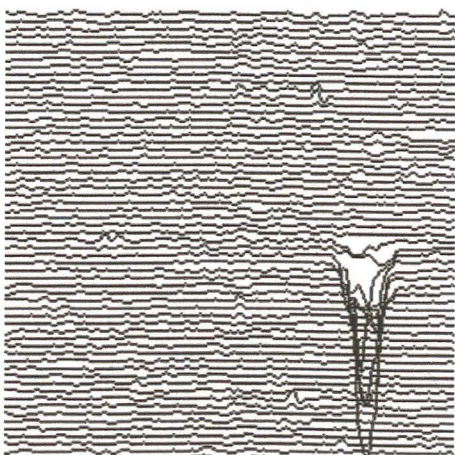
Raw data



Bird scarer and gas bottle



Enhanced data



31.72nT

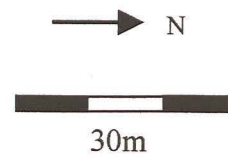


Fig.7

Field 2 - Area 2C

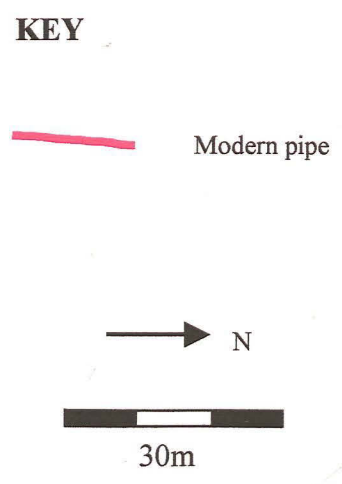
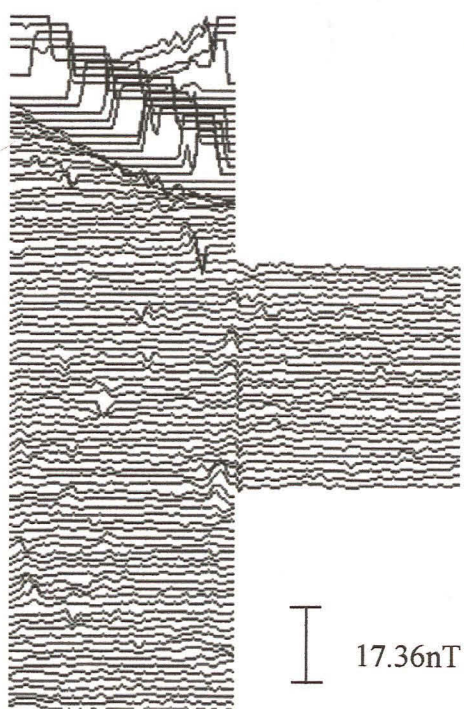
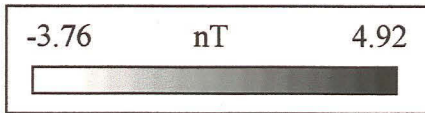
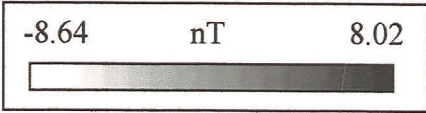
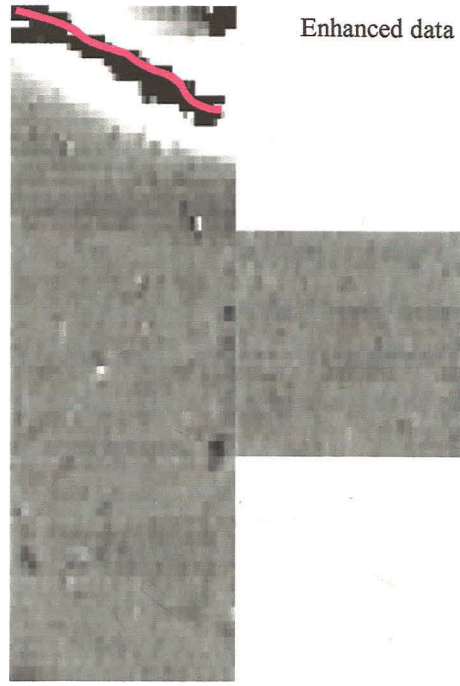
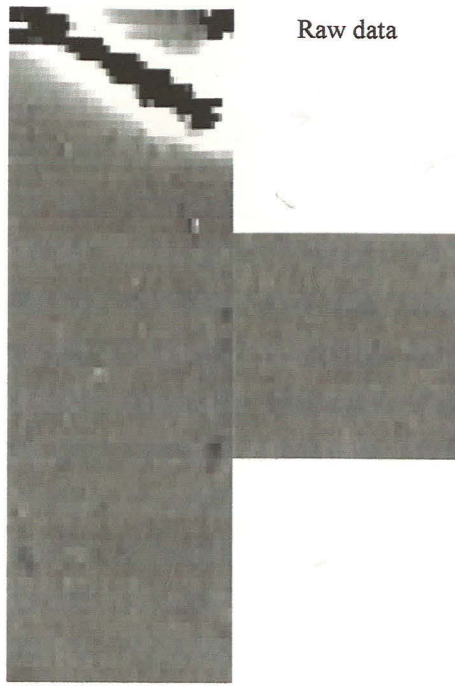


Fig. 8

Field 4 - North-west side Area 4A

Raw Data

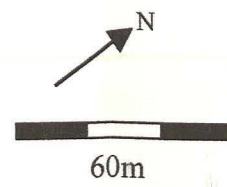
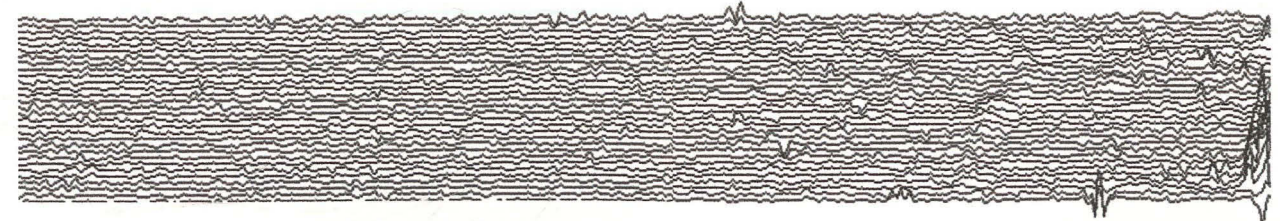
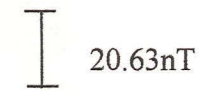
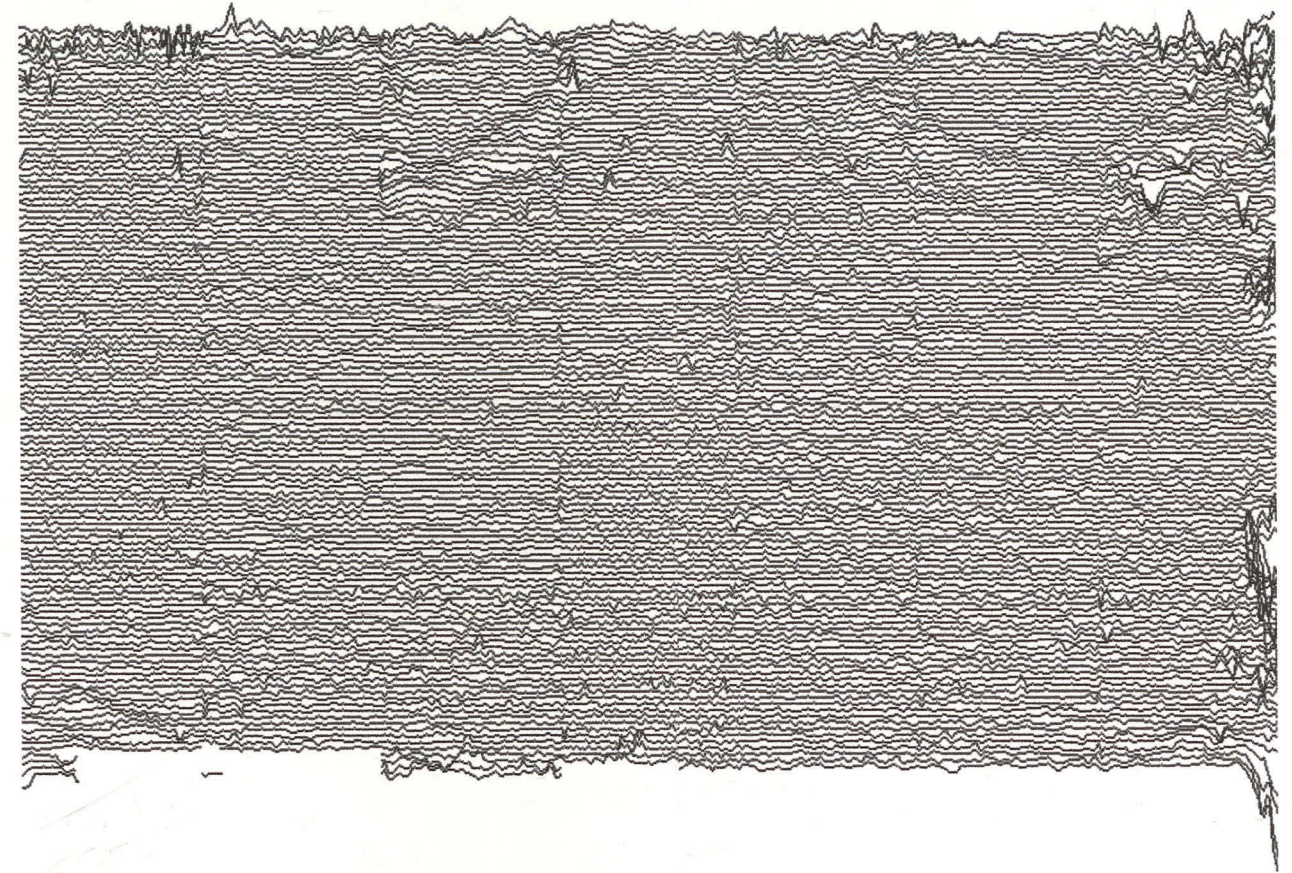
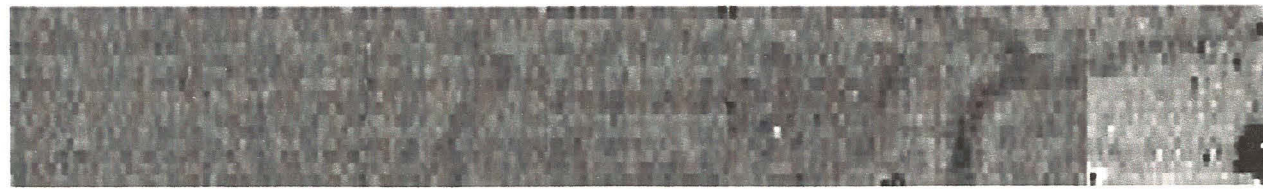
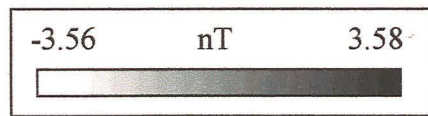
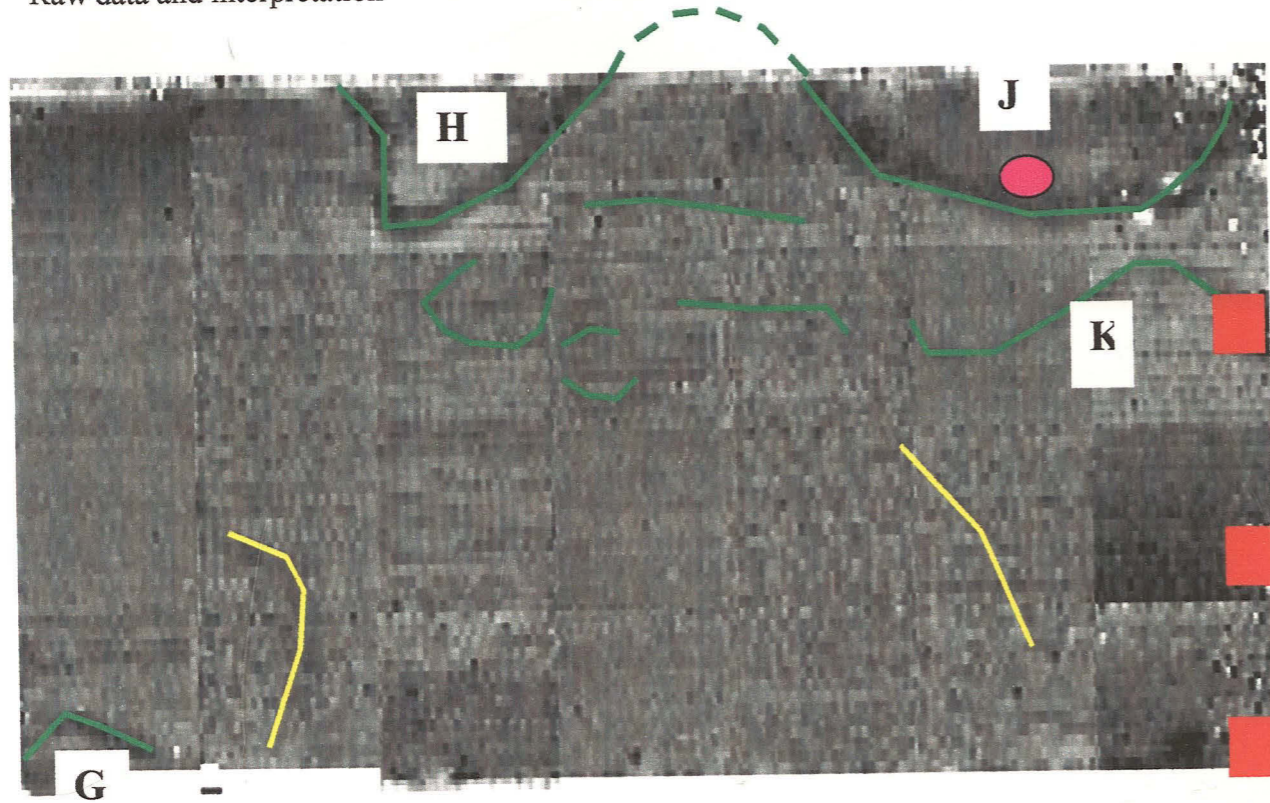


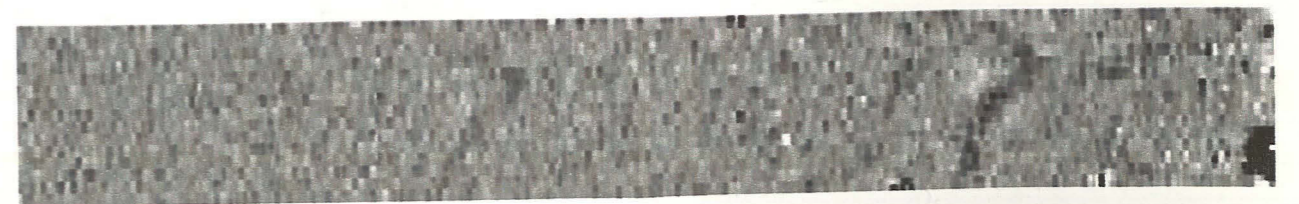
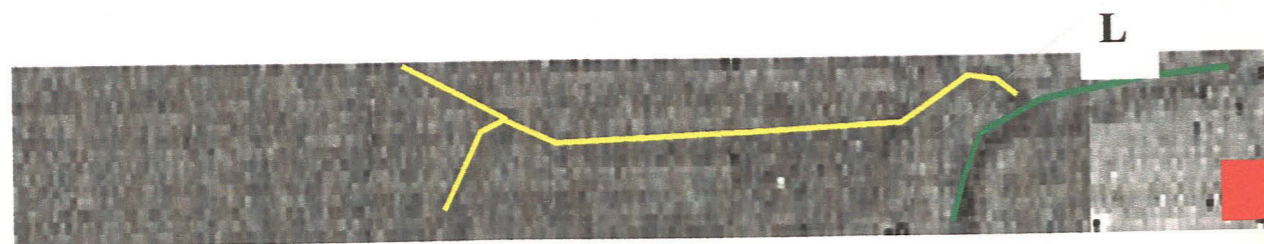
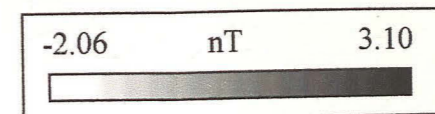
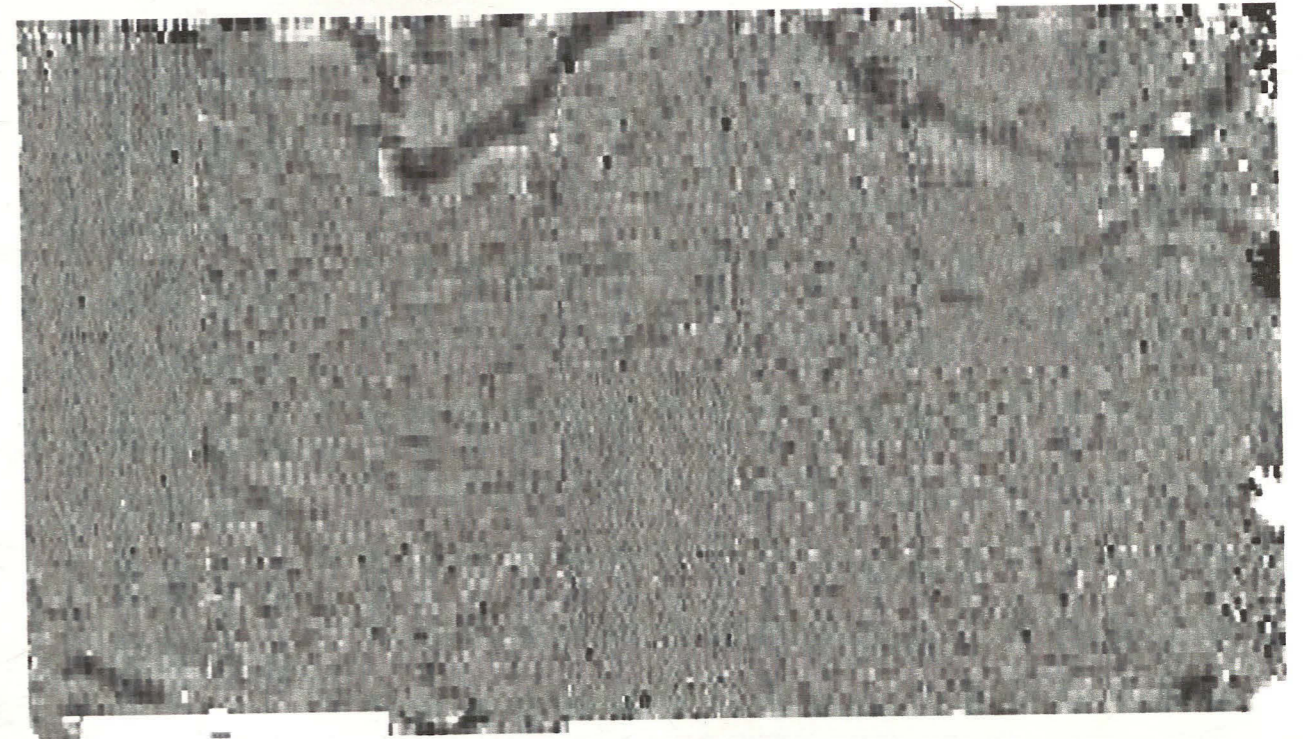
Fig. 9

Field 4 – North west side Area 4A

Raw data and interpretation



Enhanced data



Geomorphological?

Ditches?

Pit?

Irrigation
sprinkler heads

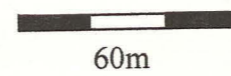
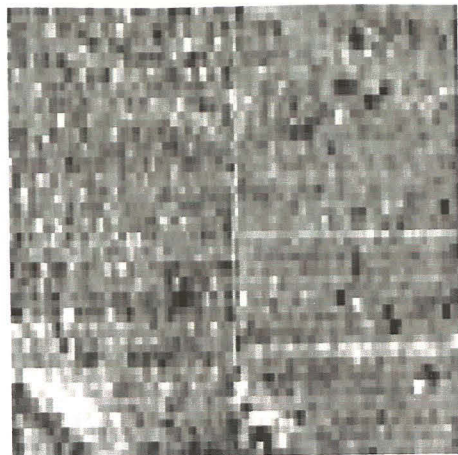
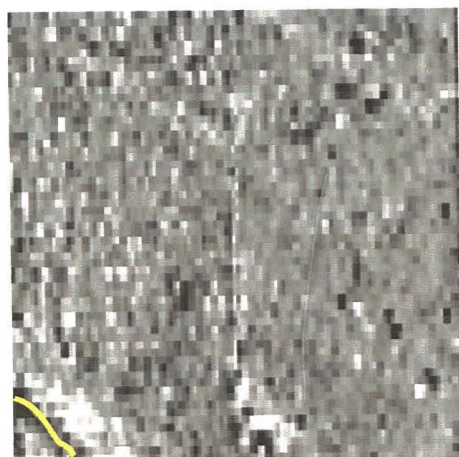
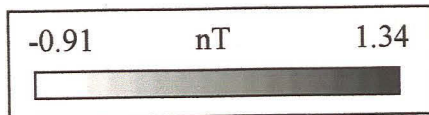


Fig. 10

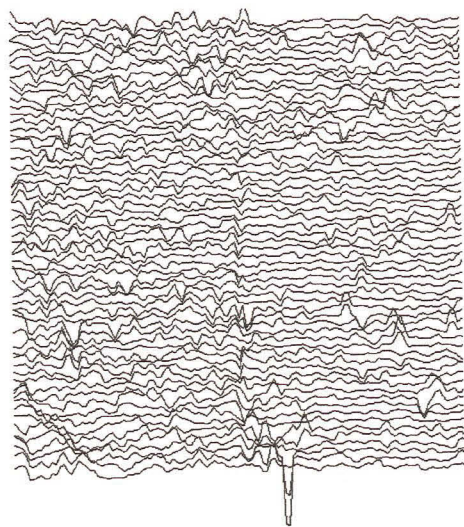
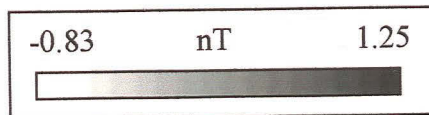
Field 4 – South-east side Area 4b



Raw data



Enhanced data



?palaeo-channel



4.16nT

Fig. 11