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ARCHAEOLOGICAL EVALUATION

LAND BETWEEN LANGHAM, ANDERBY AND CHAPEL ST LEONARDS, LINCOLNSHIRE

MAY 2007

CgMs CONSULTING

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Conservation Services

- 4 OCT 2007

Highways & Planning Directorate

ELI 8049 SLI 11609 Negative (geophysics)
8050 11610 11611 Negative (fieldwalking)

ARCHAEOLOGICAL EVALUATION

LAND BETWEEN LANGHAM, ANDERBY AND CHAPEL ST LEONARDS, LINCOLNSHIRE

LOCAL PLANNING AUTHORITY: EAST LINDSEY DISTRICT COUNCIL

SITE CENTRED AT: TF545755

MAY 2007

CONTENTS

Summary

Evidence from geophysical survey and field artifact collection has failed to produce evidence of archaeological activity at the proposed development site between Langham, Anderby and St Leonards. Speculating that marine silts may mask or cover saltern activity the reports conclude that there is little potential for important archaeology at the site in the proposed locations of the turbines, anemometry mast and sub station. However, in response to the speculation in the two evaluation surveys a mitigation strategy involving a programme of Strip Map and Sample has been proposed to ensure that should any unexpected archaeological evidence, of whatever character be disturbed, it will be recorded.

1.0 INTRODUCTION AND SCOPE OF STUDY

1.1 Introduction

1.1.1 This archaeological evaluation focuses on the archaeological potential of land between Langham, Anderby and Chapel St Leonards. This is the proposed site of Langham Wind Farm which lies on the eastern coast of Lincolnshire. The proposed development site is in farmland between the villages and hamlets of Langham, Anderby and Chapel St Leonards.

1.1.2 This preface was prepared by Michael Dawson of CgMs on behalf of npower renewables in support of a proposal to construct a wind farm of six turbines.

1.2 Scope of Study

1.2.1 The objectives of the report can be summarised as follows:

- To assess the potential of the site to contain archaeological evidence.
- To assess the potential survival of archaeology at the site, its depth, condition and extent.
- To assess and evaluate the potential significance of any archaeology and to examine whether this might be the subject of further evaluation or mitigation.
- To assess whether the archaeological evidence, or potential evidence, would provide a constraint to development.

1.2.2 Evidence has been gathered by two processes at the request of the local authority, field artefact collection and geophysical survey. Both methods have been deployed to assess the potential presence of archaeological data.

1.2.3 The site was surveyed by Geophysical Surveys of Bradford (GSB) and by Archaeology Project Services (APS) in March 2007.

2.0 PLANNING BACKGROUND

2.1 In November 2006 an Environmental Statement was submitted in support of a planning application to build a wind farm on land between Langham, Anderby and Chapel St Leonards (N/005/02812/06 Land South of Broadgates, Sea Road, Anderby). Pre-application consultation was undertaken with Beryl Lott, Lincolnshire County Archaeologist, and subsequently two responses to the submission of the application were received by npower renewables which have provided the basis for this evaluation.

Lincolnshire County Council

2.2 E-mail correspondence with Lincolnshire County Council (*ex litt* Jennings 29th Jan 2007) requested an assessment of the suitability of non-invasive evaluation: geophysical survey and field artefact collection. If the conditions were appropriate survey was requested to provide the basis 'to make reliable observations regarding the impact of this development upon any archaeological remains'.

English Heritage

2.3 Correspondence from English Heritage (*ex litt* Coppack 30th January 2007 REF: P00040857) noted that whilst 'we do not wish to comment in detail....need to be certain that the applicants have adequately addressed the potential of the site'.

Site Conditions

2.4 The request for further evaluation was discussed in early February 2007 with the landowners and the site conditions assessed, in particular the growth of arable crops during an unusually warm winter. Details of land use, an in particular drainage, were discussed with the landowner and potential contractors for both geophysics and field artifact collection. Both surveys were commissioned in early March 2007 (see appendices). Specifications for both field artefact collection and geophysics were submitted to Lincolnshire County Council on 7th March by e-mail (e-mails Dawson 7th March 2007) and the specifications approved by phone on 8th March.

3 EVALUATION: SUMMARY AND CONCLUSIONS

3.1 Summary

3.1.1 The geophysical survey and field artefact collection were undertaken in March 2007 and focussed on the proposed location of the turbines, anemometry mast and sub-station with the option to extend the search area should archaeological deposits be identified in these locations. Evaluation of the access routes was omitted because the proposed routes will follow existing tracks, or are located on the margins of existing drains where upcast or imported material renders geophysical survey and field artefact collection in-operable. Areas of re-surfacing, however, will be subject to mitigation.

3.1.2 **Geophysical Survey**. The geophysical survey focussed on the turbine locations, anemometry mast and sub-station. The results confirmed the recent land-use history of the site with the discovery of the drainage pipes, laid by the landowners between 1959 and 1985 and reported to be up to 2.5m deep, recovered from sites 5 an 6, with a ferrous pipe at site 3 (para 1.3). The geophysical survey concluded that 'the dominant response from all the sites surveyed are typical of those associated with natural and alluvial deposits. The shape and form 'washed out' is typical of the way in which the deposits were laid down (Para 1.1). However, the survey also noted that 'such anomalies are not unlike the responses that could be associated with saltern activity' (para 1.2) but also that 'such archaeological activity tends to produce magnetic responses that have more form and coherency than is visible in the current results'. The survey also notes that 'whilst it is possible that the alluvial deposits may have masked any archaeological anomalies ..an archaeological interpretation is unlikely'.

3.1.3 **Field Artefact Collection**. The field artefact collection recovered material from the ground surface. The earliest was an abraded medieval sherd, with later fragments of post medieval tile. The author concluded that the possibility of substantial archaeological remains being encountered close to the surface are low. However, the presence of the marine alluvium may mask pre-Roman and Roman land surfaces, although it is not known at what depth these are likely to have occurred on the site' (sec 6).

3.2 Conclusions

3.2.1 Neither the geophysical survey nor the field artefact collection have confirmed the presence of significant archaeology at the turbine sites, the sub station or anemometry mast. However, in both reports the authors have speculated that saltern activity might be present but masked beneath alluvial silts. The depth of drainage pipes identified by the geophysics at up to 2.5m suggests that any firm evidence of salterns would be below this level (or it would have shown up in the present survey). The pipe trenches might have also been expected to have thrown up artefacts from this depth to betray the below ground presence of archaeology at turbines 5 and 6 (para 1.3) during field artefact collection.

3.2.2 The speculation presented in the conclusions of the two surveys reflects the complex situation with regard to saltern activity in the Lincolnshire Marsh area (Lane and Morris 2001[1], Lane 2001[2]). It has not, though, confirmed that important archaeological remains exist at the sites. However, reflecting on the caution in the survey reports and the limitations of PPG 16 para 21, which emphasises important archaeological remains as the basis for further evaluation, a mitigation strategy based on Strip Map and Sample (SMS) is proposed. SMS not only addresses the uncertainty in this situation, it would ensure that any archaeological evidence would be recorded. Strip, Map and Sample would also be employed along the access routes. This will ensure that *where* the maximum depth of proposed resurfacing, at 400mm, takes place any significant archaeology will be recorded. The Strip map and sample methodology has been recently promoted by the Planarch review[3] where the authors note that 'a central issue, ...is that our standard evaluation techniques are not discovering some of the most exciting archaeological remains...(Planarch 2001, 55-57), whilst 'Stripping (of topsoil or overburden) provides absolute certainty about the surviving evidence' (Planarch 2001, 32). Given the situation at Langham SMS provides a methodology which has the potential ensure the preservation of archaeological evidence by record where none has been recovered so far.

3.2.3 The methodology has a good track record and has been used on large and small scale schemes in Bedfordshire, Cambridgeshire and Leicestershire recently, by CgMs, in consultation with the local planning authority. In common with practice established in

[1] Lane T, Morris E 2001 *A Millennium of Saltmaking: Prehistoric and Romano-British Salt production in the Fenland*, Lincolnshire Archaeology and Heritage reports No 4
[2] Lane T 2001, 13 Salt Making, in Bennett S and Bennett N (eds) 2001 *An historical atlas of Lincolnshire*, Phillimore
[3] Hey G, Lacey G 2001 *Evaluation of Archaeological Decision-making Processes and Sampling Strategies, Planarch*, Oxford:Oxford Archaeological Unit

these counties the methodology would be specified in a Written Scheme of Investigation to include:

- Topsoil and overburden removal under archaeological supervision using appropriate machinery
- A planning/mapping stage at an appropriate depth/level should archaeology be revealed
- A consultative stage with the local planning authority to review the importance of the archaeology and the level of response (sampling strategy)
- An implementation stage to mitigate the effect of development, subject to a satisfactory methodology, on the archaeological evidence.

3.2.4 The SMS procedure would be built into the development programme to ensure that the archaeological issues were appropriately addressed.

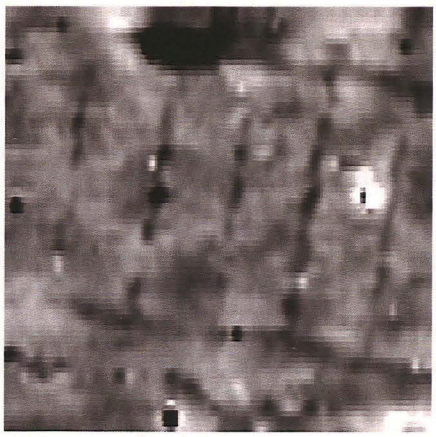
APPENDIX 1

GSB

PROSPECTION Ltd

GEOPHYSICAL SURVEY REPORT
2007/16

Land at Langham
Lincolnshire



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Specialising in Shallow and Archaeological Prospection

GSB Survey No. 07/16

Land at Langham

NGR	TF 543 749 (Approximate Centre)
Location	Approximately 1km south west of Anderby Creek, Lincolnshire.
District / Parish	East Lindsey / Anderby
Topography	Level
Current land-use	Arable farming
Soils	Wallasea 2 Association (813g) (*Soils of England and Wales. Sheet 4, Eastern England.* Soil Survey of England and Wales. 1983)
Geology	Marine Alluvium
Archaeology	Possible salterns of Romano-British date
Survey Methods	Detailed gradiometer survey using Bartington 601-2 magnetometer

Aims

To investigate the proposed locations of six wind turbines and two associated structures, and advise on the presence of any archaeological remains. The work forms part of a wider archaeological assessment being carried out by ***CgMs*** on behalf of ***npower renewables***.

Summary of Results*

The survey has identified what appear to be natural deposits with evidence of more recent interventions such as a pipe (Site 3) and drainage systems (Sites 5 & 6). The broad positive responses seen in most datasets (but most noticeably Sites 1, 4, 7 and 8) are thought to be natural marine alluvial deposits. Although of a strength and character similar to that recorded over pit-like features, the size, shape and distribution of these anomalies is more in-keeping with natural deposits, and this response pattern has been recorded on a number of alluvium covered sites. There is an outside chance that some of the stronger anomalies are related to salterns, or associated briquetage deposits; it may be that if a broader area was investigated these responses could show a more defined pattern of distribution, but from the data available this seems unlikely. That said, the last two Sites (7 & 8) do show spreads of increased magnetic response, characterised by the 'mottling' in the greyscales and 'spiking' in the XY traces, but both these areas are in field corners and as such this could quite easily be from relatively modern materials in the topsoil.

Project Information

Project Co-ordinator: I Wilkins
Project Assistants: J Adcock, M Brolly, J Gater, G Taylor and E Wood
Date of Fieldwork: 8-9 March 2007
Date of Report: 21 March 2007

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

Survey Specifications

Method

For all survey techniques: the survey grid was set out using tapes and tied in to the Ordnance Survey (OS) grid using a Trimble differential GPS or EDM system, see tie-in diagrams.

Technique	Traverse Separation	Reading Interval	Instrument	Survey Size
Magnetometer - Scanning (Appendix 1)	-	-	-	-
Magnetometer – Detailed (Appendix 1)	1m	0.25m	Bartington Grad 601-2	*c.*1.3ha
Resistance – Twin Probe (Appendix 1)	-	-	-	-
Ground Penetrating Radar (GPR) (Appendix 1)	-	-	-	-

Data Processing

	Magnetic	Resistance	GPR
Tilt Correct	y	-	-
De-stagger	-	-	-
Interpolate	-	-	-
Filter	-	-	-

Presentation of Results

Report Figures (Printed & Archive CD):	Location plots, data plots and interpretation diagrams on base map (Figures 1-5). Data plots and interpretations at 1:500 - for reference and analysis (Figures 6-8).
Plot Formats:	See Appendix 1: Technical Information, at end of report.

General Considerations

In general ground conditions were fine for survey; the fields were level and free of obstructions.

Results of Survey

1. Magnetic Survey Sites 1-8

1.1 The dominant responses from all of the sites surveyed are typical of those associated with natural / alluvial deposits. The shape and form of the responses is best described as 'washed out' - an interpretation that clearly reflects the way that the deposits have been laid. Bands of magnetically enhanced material echo the sea-washed soils and are typical of the results found on other surveys on similar geologies.

1.2 Unfortunately such anomalies are not unlike the responses that could be associated with saltern activity, or briquetage deposits. However, such archaeological activity tends to produce magnetic responses that have more form and coherency than is visible in the present results. While it is possible that the alluvial deposits have masked any archaeological anomalies, given the lack of any associated artefacts or other definite evidence of past salt-making activity, an archaeological interpretation is perhaps unlikely. Also in light of the fact that other features have been detected (see 1.3 below) it is probable that archaeological ditches or pits would be visible in the data.

1.3 At sites 5 and 6 a series of anomalies form a regular pattern that clearly reflects land-drains in the fields. These were laid in the period 1959 – 1985 at depths between 0.75m and 2.5m (information from landowner). Given that these are showing as magnetic anomalies it would seem likely that if they cut through archaeological deposits these would also have been detected.

1.4 Sites 7 and 8 demonstrate areas of magnetic noise that are different to those observed in the other survey areas. While these could represent areas of archaeological interest it seems far more likely that they are associated with modern material dumped or spread in the corner of the fields.

1.5 Site 3 has a ferrous pipe running through the centre of the survey area. Other isolated ferrous responses throughout the survey areas are presumed to be modern in origin.

2. Conclusions

2.1 The magnetic results from Langham clearly reflect the underlying marine alluvial deposits, though it is just possible that some of the responses might be of archaeological interest. In the absence of supporting evidence such an archaeological interpretation is perhaps unlikely; a natural explanation is more probable.

List of Figures

Report Figures (also on CD)

Appendix 1: Technical Information

Instrumentation

Fluxgate Gradiometer: Geoscan FM36/256 and Bartington *Grad*601-2

Both the Geoscan and Bartington instruments comprise two fluxgate sensors mounted vertically apart; the distance between the sensors on the former is 500mm, on the latter 1000mm. The gradiometers are 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 measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. The fluxgate gradiometer suppresses any diurnal or regional effects. Generally, features up to 1m deep may be detected by this method. Having two gradiometer units mounted laterally with a separation of 1000mm, the Bartington instrument can collect two lines of data per traverse.

Resistance Meter: Geoscan RM15

This instrument 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 most common arrangement is the Twin Probe configuration which involves two pairs of electrodes (one current and one potential): one pair remain in a fixed position, whilst the other measures the resistance variations across a grid. The resistance is measured in ohms and, when calculated, resistivity is in ohm-metres. The resistance method as used for standard area survey employs a probe separation of 0.5m, which samples to a depth of approximately 0.75m. The nature of the overburden and underlying geology will cause variations in this depth.

GPR: Sensors & Software Noggin Smartcart

The Noggin system includes an onboard digital video logger (DVL III), 250 MHz or 500MHz antenna, an odometer wheel and battery. It is, therefore, a fully integrated system. The built-in software uses the integrated odometer to provide an accurate distance measurement to the response. The data are recorded in digital format and can be processed to produce depth slice maps, 2D sections or 3D cubes.

Display Options

XY Trace

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

Greyscale

This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly all values below the given range are represented by the minimum intensity shade. 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. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.

Relief Plot

This is a method of display that creates a three dimensional effect by directing an imaginary light source on a given data set. Particular elements of the results are highlighted depending on the angle of strike of the light source. This display method is particularly useful when applied to resistance data to highlight subtle changes in resistance that might otherwise be obscured.

3D Surface Plot

This is similar to the XY trace, but in 3 dimensions. Each data point of a survey is represented in its relative position on the *x* and *y* axes and the data value is represented in the *z* axis. This gives a digital terrain, or topographic effect.

Radargram

Radar data comprise a record of reflection intensity against the time taken for the emitted energy to travel from the transmitter down to the reflector and back to the receiver. The resultant plot is effectively a vertical section through the ground along the line of the traverse, with time (depth) on the vertical axis, displacement on the horizontal axis and reflection intensity as a grey or colour scale.

Time Slice

If a number of radargrams are collected over a grid, or in conjunction with GPS data, it is possible to reconstruct the entire dataset into a 3D volume. This can then be resampled to compile 'plan' maps of response strength at increasing time (or depth) offsets, thus simplifying the visualisation of how anomalies vary beneath the surface across a survey area.

Terms Commonly used in the Interpretation of Results

Magnetic

Archaeology	This term is used when the form, nature and pattern of the response are clearly or very probably archaeological These anomalies, whilst considered anthropogenic, could be of any age.
? Archaeology	The interpretation of such anomalies is often tentative, with the anomalies exhibiting either weak signal strength or forming incomplete archaeological patterns. They may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
Areas of Increased Magnetic Response	These responses show no visual indications on the ground surface and are considered to have some archaeological potential.
Industrial	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
Natural	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions e.g. palaeochannels or magnetic gravels.
? Natural	These are anomalies that are likely to be natural in origin i.e. geological or pedological.
Ridge and Furrow	These are regular and broad linear anomalies that are presumed to be the result of ancient cultivation. In some cases the response may be the result of modern activity.
Ploughing Trend	These are isolated or grouped linear responses. They are normally narrow and are presumed modern when aligned to current field boundaries or following present ploughing.
Trend	This is usually an ill-defined, weak, isolated or obscured linear anomaly of unknown cause or date.
Areas of Magnetic Disturbance	These responses are commonly found in places where modern ferrous or fired materials are present e.g. brick rubble. They are presumed to be modern.
Ferrous Response	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.

Resistance

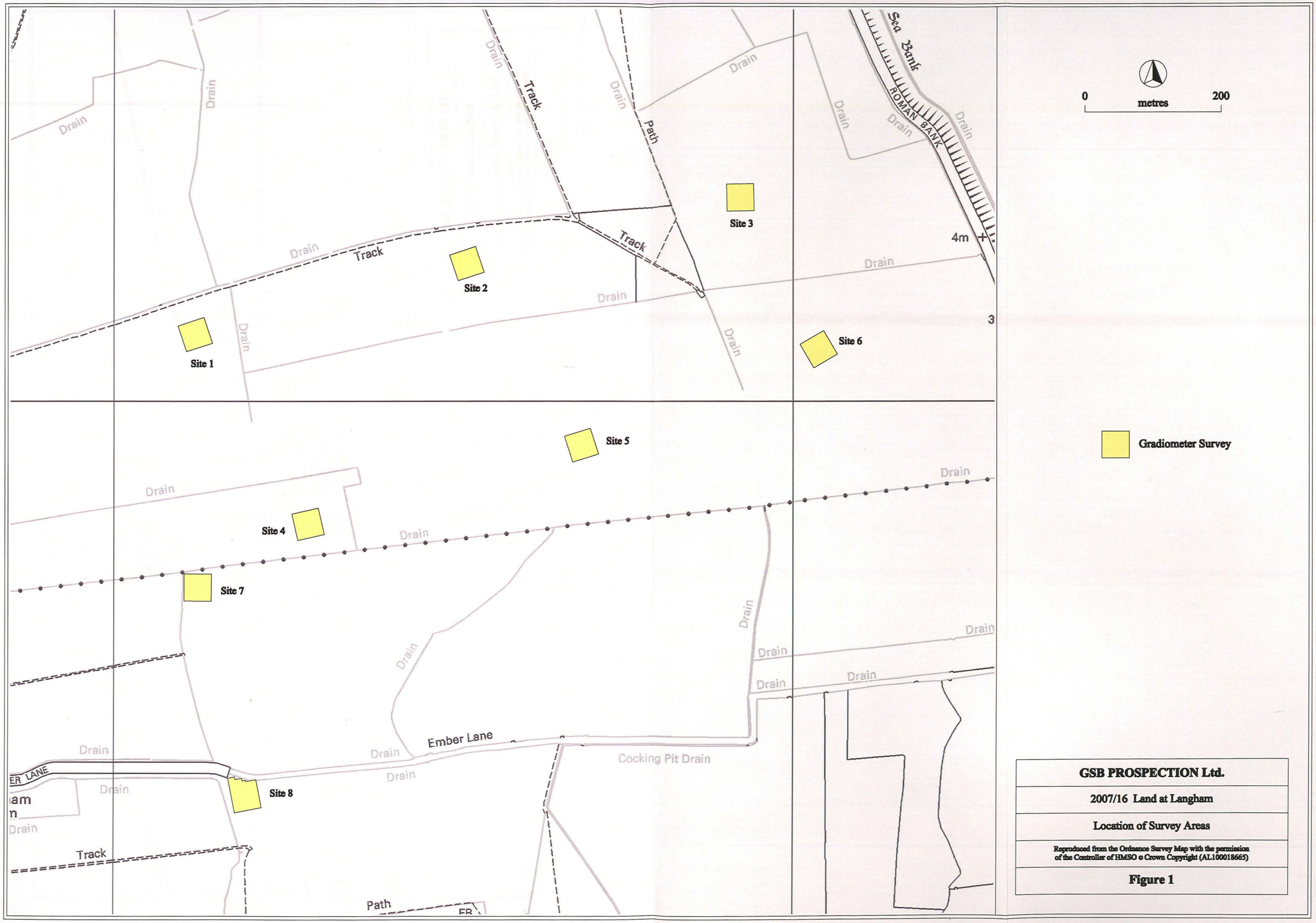
Archaeology	High or low res responses are clearly or very probably archaeological These anomalies, whilst considered anthropogenic, could be of any age.
? Archaeology	The interpretation of such anomalies is often tentative, with the anomalies exhibiting either weak signal strength or forming incomplete archaeological patterns. They may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
Natural	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions e.g. palaeochannels or magnetic gravels.
? Natural	These are anomalies that are likely to be natural in origin i.e. geological or pedological.
? Landscaping / topography	These are regular and broad linear anomalies that are presumed to be the result of ancient cultivation. In some cases the response may be the result of modern activity.
Vegetation	These are isolated or grouped linear responses. They are normally narrow and are presumed modern when aligned to current field boundaries or following present ploughing.
Trend	This is usually an ill-defined, weak, isolated or obscured linear anomaly of unknown cause or date.

GPR	

Wall /Foundation/ /Vault /Culvert etc.	High amplitude anomaly definitions used when other evidence is available that supports a clear archaeological interpretation.
Archaeology	Anomalies whose form, nature and pattern indicate archaeology but where little or no supporting evidence exists. If a more precise archaeological interpretation is possible, for example the responses appear to respect known local archaeology, then this will be indicated in the accompanying text. As low amplitude responses are less obvious features it is unlikely that they would have a definitive categorisation.
? Archaeology	When the anomaly could be archaeologically significant, given its discrete nature, but where the distribution of the responses is not clearly archaeological. Interpretation of such anomalies is often tentative, exhibiting either little contrast or forming incomplete archaeological patterns.
Historic	Responses showing clear correlation with earlier map evidence.
?Historic	Responses relating to features not directly recorded on earlier maps but which appear to respect features that are. May form patterns suggestive of formal gardens, landscaping or footpaths.
Area of Anomalous Response	An area in which the response levels are very slightly elevated or diminshed with respect to the 'background'. Where no obvious surface features or documentary evidence can explain this spread of altered reflectivity it is assumed to denote some kind of disturbance, though the origins could be of any age and either anthropogenic or natural. Possible explanations are changes in subsurface composition and groundwater 'ponding'.
Natural	Anomalies relating to natural sub-surface features as indicated by documentary sources, local knowledge or evidence on the surface.
?Natural	Responses forming patterns akin to subsoil/geological variations either attenuating or reflecting greater amounts of energy. An archaeological origin such as rubble spreads or robbed out remains cannot be dismissed.
Trend	An ill defined, weak or isolated linear anomaly of unknown cause or date.
Modern	Reflections that indicate features such as services, rebar or modern cellars correlating with available evidence (maps, communications with the client, alignment of drain covers etc.).
?Modern	Reflections appearing to indicate buried services but where there is no supporting evidence. Also applies to responses which form patterns, or are at a depth which suggests a modern origin. An archaeological source cannot be completely dismissed.
Surface	Responses clearly due to surface discontinuities, the effects of which may be seen to 'ring' down through radargrams and so incorrectly appearing in the deeper time-slices.

Data Processing	

Zero Mean Traverse	This process which sets the background mean of each traverse within each grid to zero. The operation removes striping effects and edge discontinuities over the whole of the data set. It is usually only applied to gradiometer data.
Step Correction	When gradiometer data are collected in 'zigzag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors
Interpolation	When geophysical data are presented as a greyscale, each data point is represented as a small square. The resulting plot can sometimes have a 'blocky' appearance. The interpolation process calculates and inserts additional values between existing data points. The process can be carried out with points *along* a traverse (the *x* axis) and/or *between* traverses (the *y* axis) and results in a smoother greyscale image.
Despike	In resistance survey, spurious readings can occasionally occur, usually due to a poor contact of the probes with the surface. This process removes the spurious readings, replacing them with values calculated by taking the mean and standard deviation of surrounding data points. It is not usually applied to gradiometer data.
High Pass Filter	Carried out over the whole a resistance data-set, the filter removes low frequency, large scale spatial detail, such as that produced by broad geological changes. The result is to enhance the visibility of the smaller scale archaeological anomalies that are otherwise hidden within the broad 'background' change in resistance. It is not usually applied to gradiometer data.



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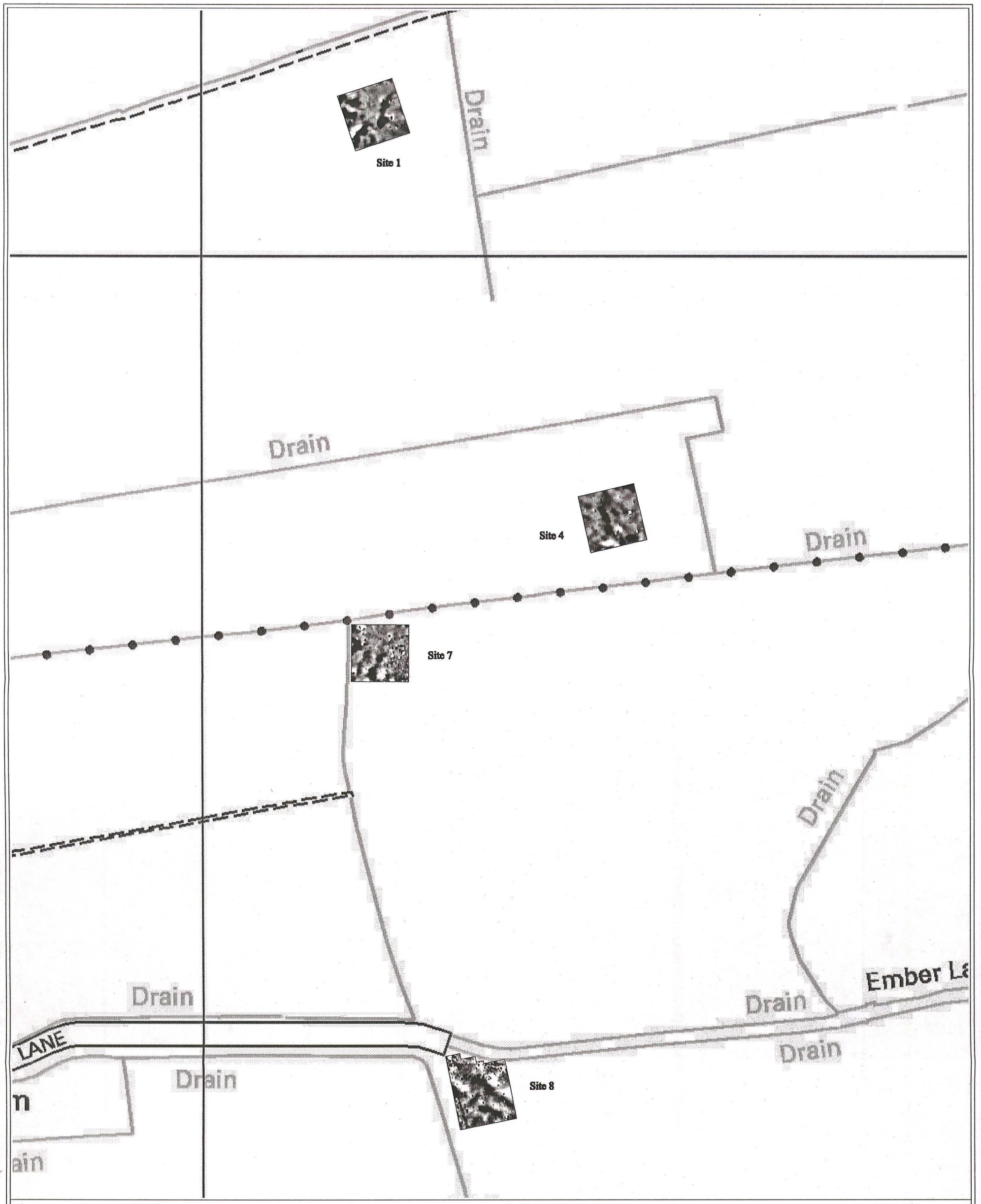
2007/16 Land at Langham

Location of Survey Areas

Figure 1



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Summary Greyscales - Sites 1, 4, 7 & 8
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Figure 2

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Summary Interpretation - Sites 1, 4, 7 & 8
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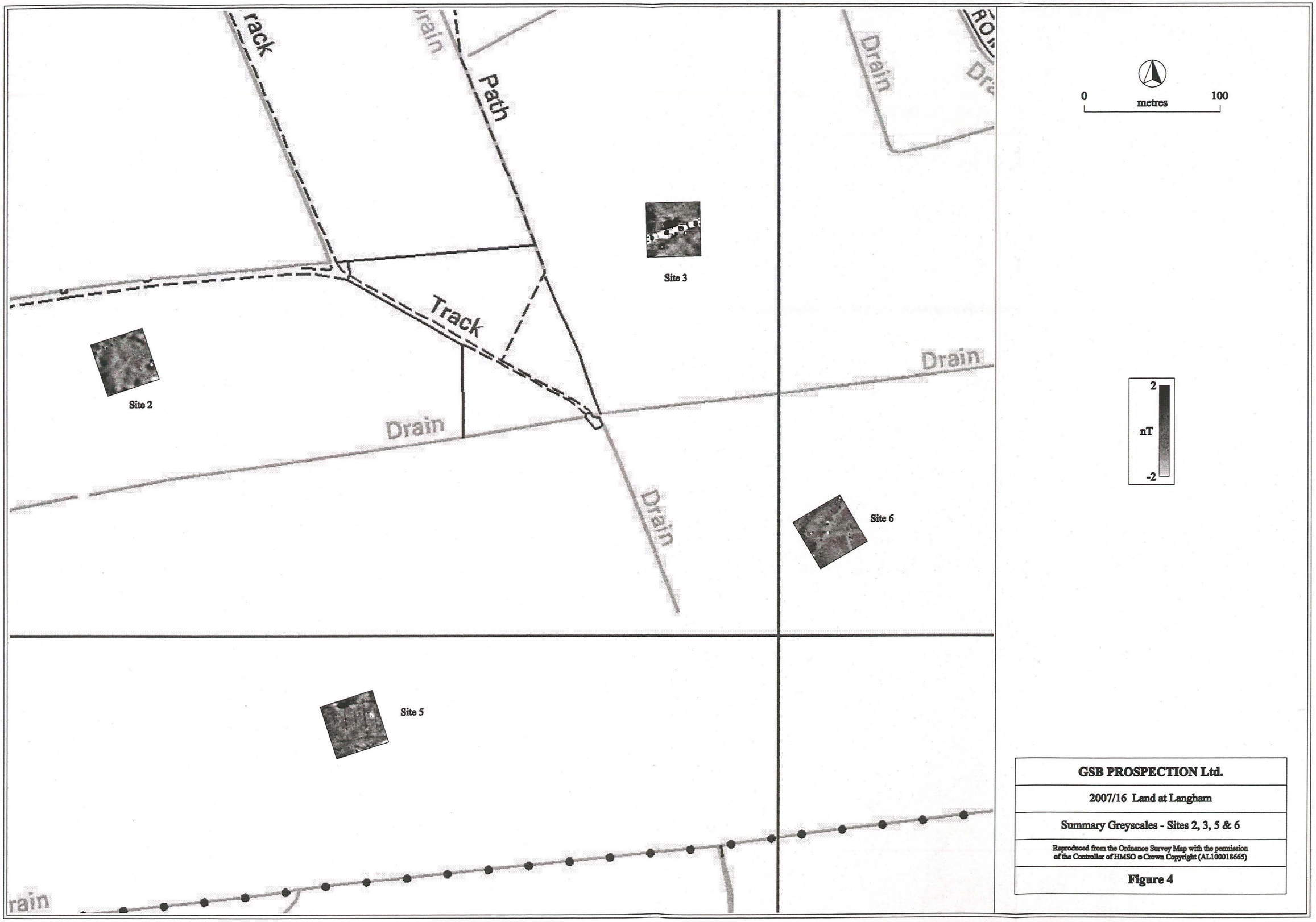
Figure 3



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Summary Greyscales - Sites 2, 3, 5 & 6
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Figure 4

0 metres 100

?Natural

Drain

Ferrous

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Summary Interpretation - Sites 2, 3, 5 & 6
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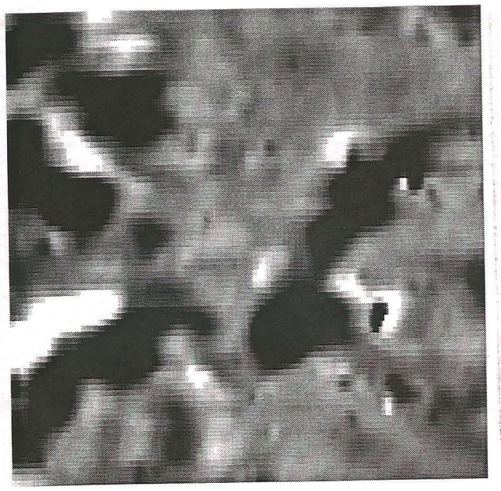
Figure 5

SITE 1



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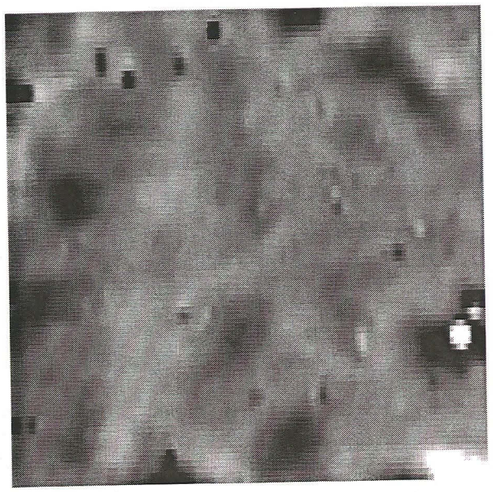

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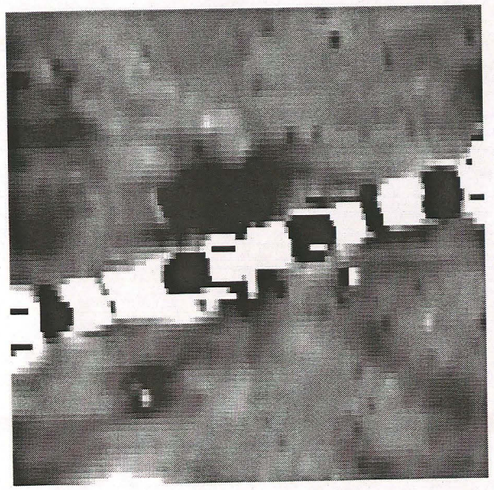

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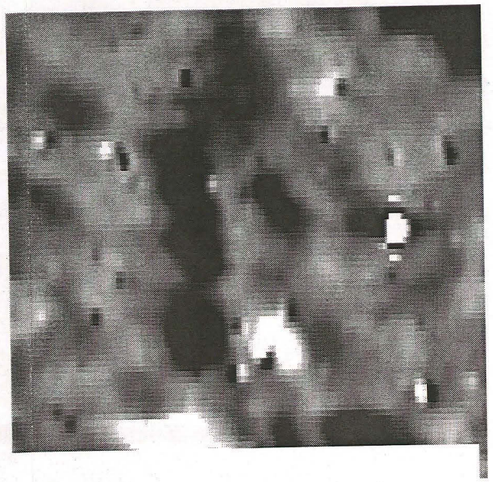

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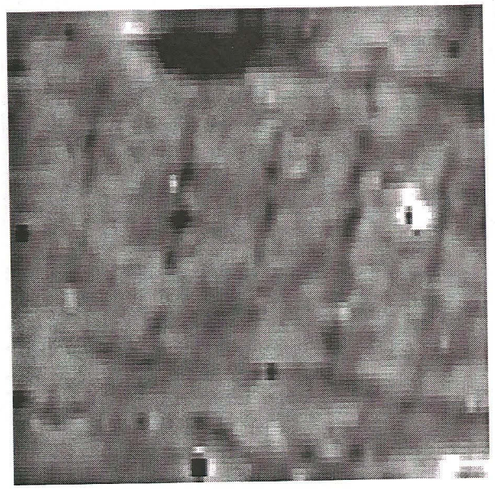

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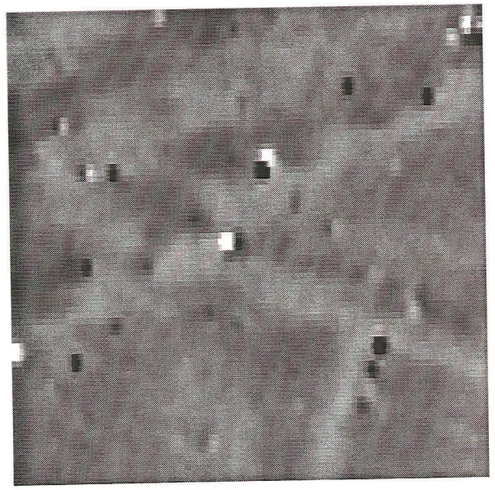

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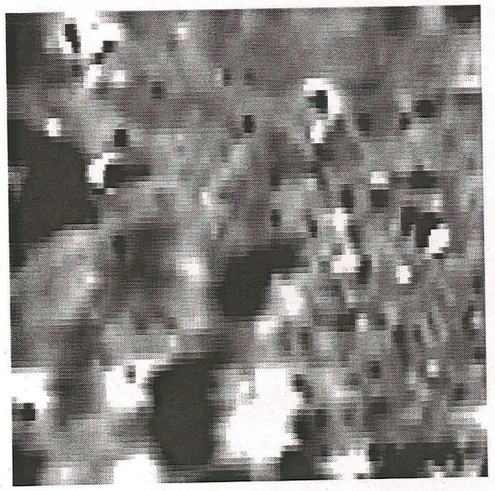

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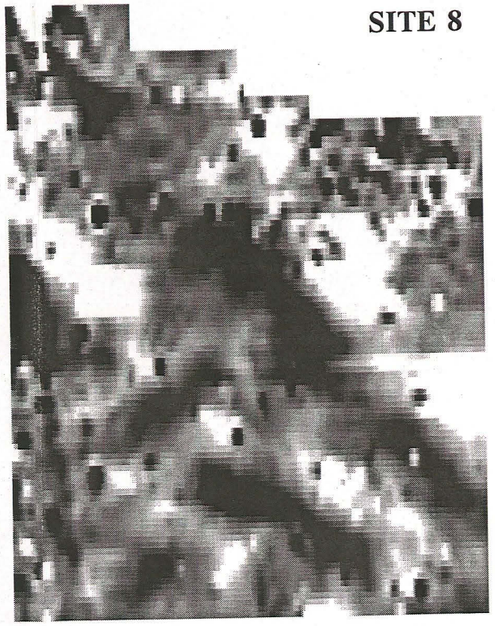

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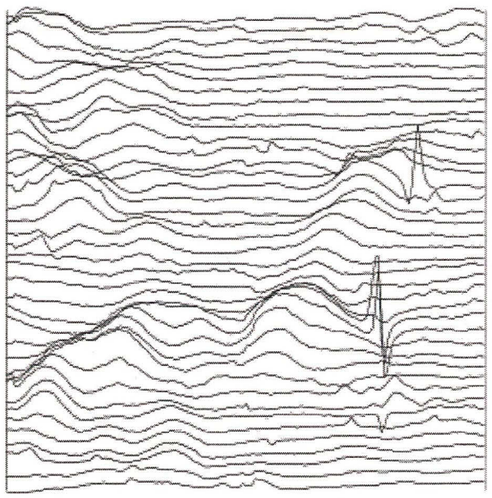
GSB Prospection Ltd.
2007/16 Land at Langham
Magnetic Data: Sites 1 - 8
Figure 6

SITE 1



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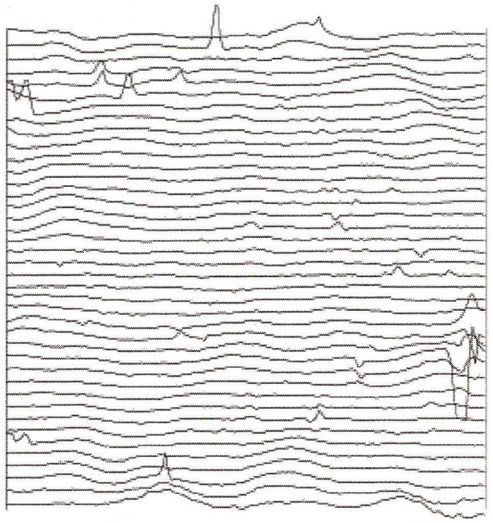

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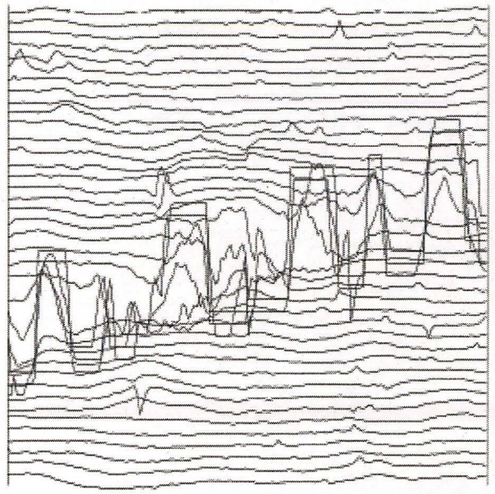

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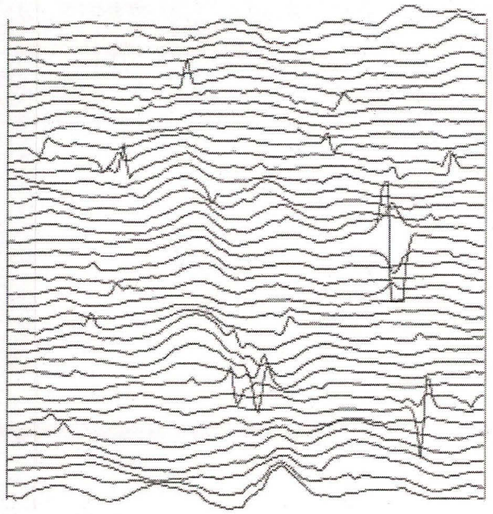

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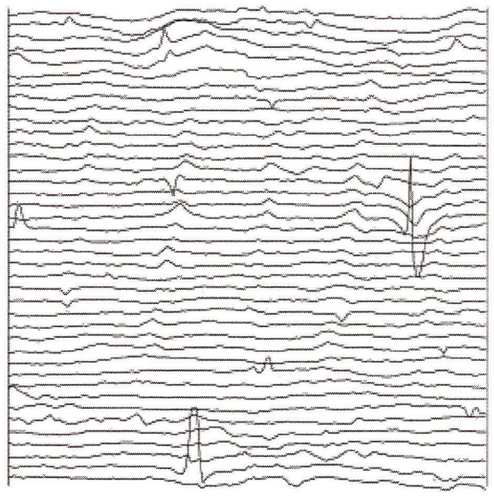

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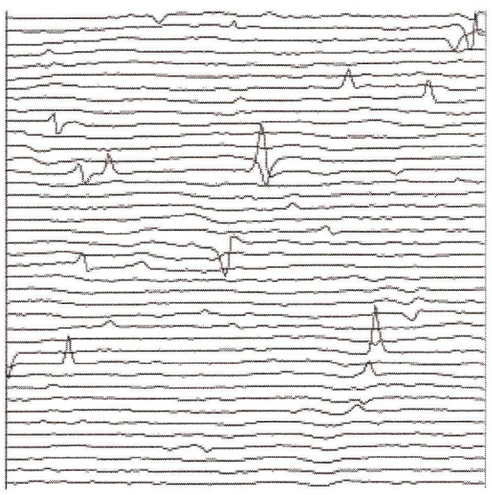

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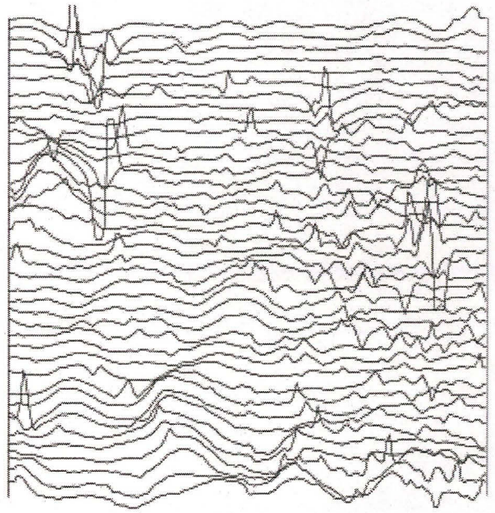

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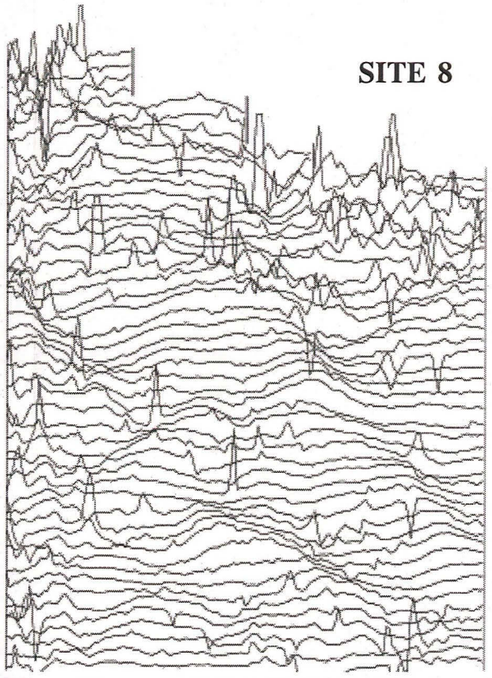

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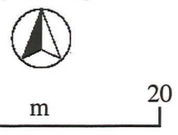

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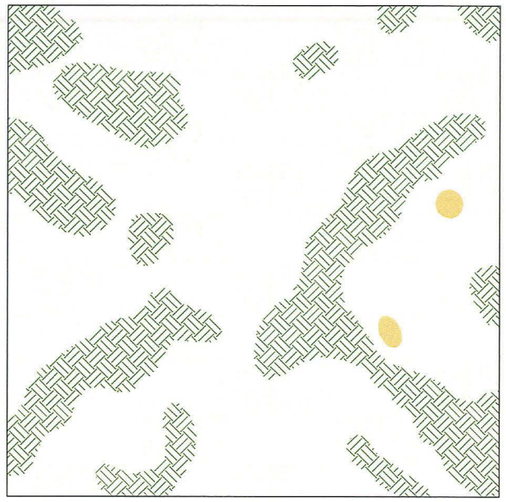
GSB Prospection Ltd.
2007/16 Land at Langham
Magnetic Data: Sites 1 - 8
Figure 7

SITE 1



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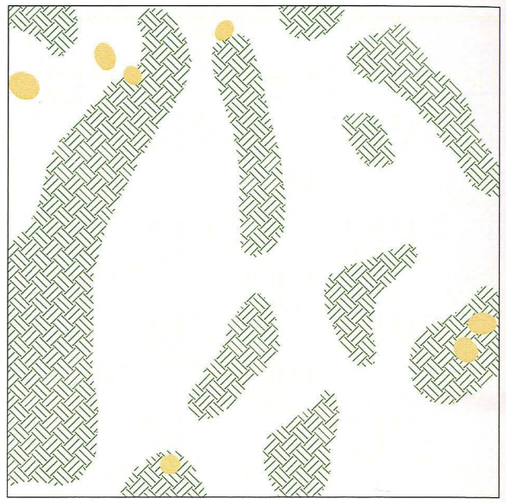

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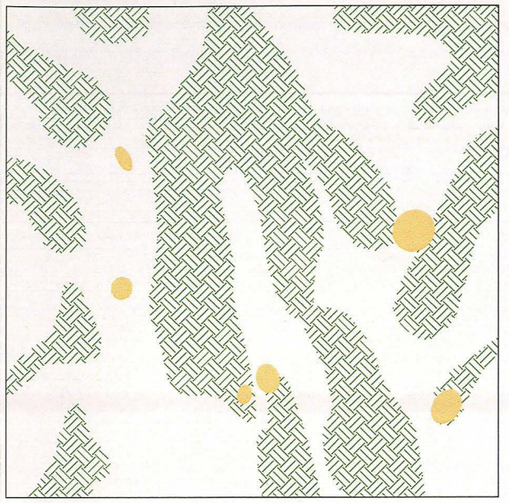

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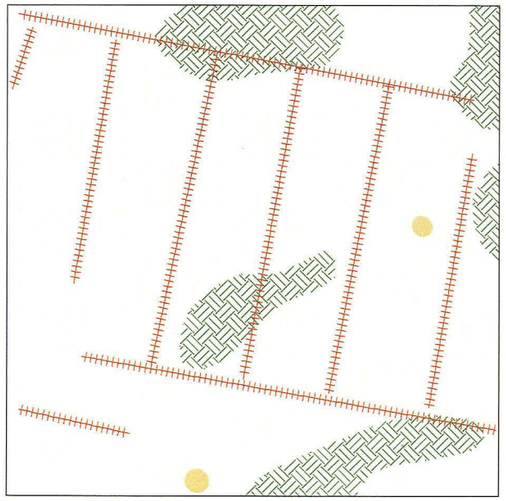

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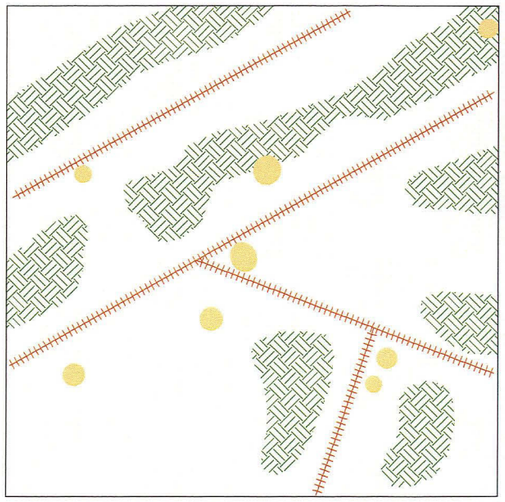

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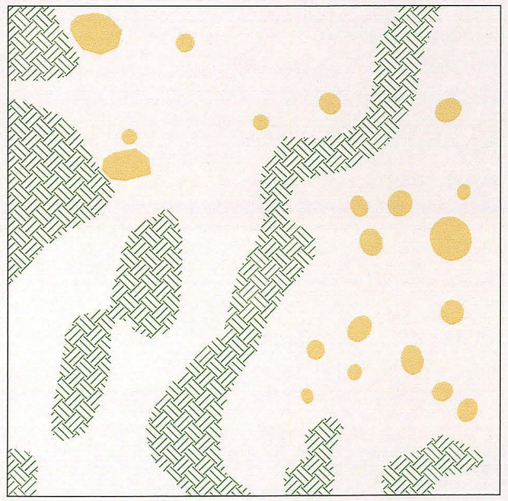

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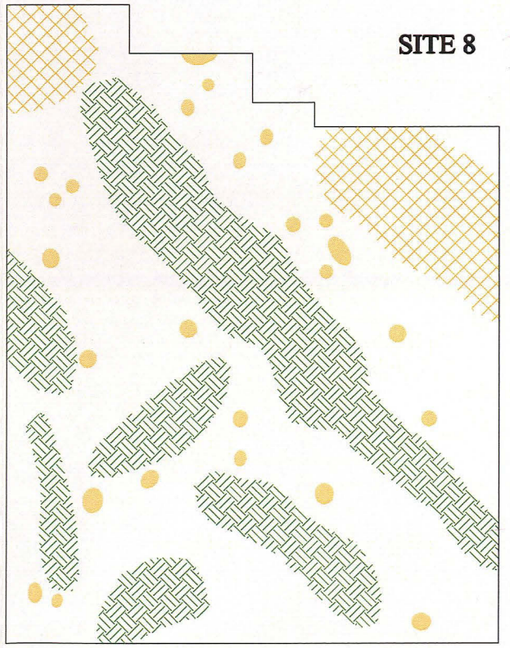

0 metres 20

?Natural

Drain

Ferrous

GSB PROSPECTION Ltd.
2007/16 Land at Langham
Interpretation: Sites 1 - 8
Figure 8

APPENDIX 2

ARCHAEOLOGICAL FIELDWALKING ON LAND BETWEEN LANGHAM, ANDERBY AND CHAPEL ST LEONARDS, LINCOLNSHIRE (LAWF 07)

Work Undertaken For
CgMs Consulting

April 2007

Report Compiled by
Paul Cope-Faulkner BA (Hons) AIFA

National Grid Reference: TF 5451 7558
City and County Museum Accession No: 2007.78
OASIS Identification Code: archaeol1-26521

ARCHAEOLOGICAL PROJECT SERVICES

APS Report No. **54/07**

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1. SUMMARY

A programme of fieldwalking was undertaken on land between Langham, Anderby and Chapel St Leonards, Lincolnshire. This was to identify the presence or otherwise of archaeological remains in advance of the construction of wind turbines.

The fieldwalking retrieved four finds from seven 30m by 30m square areas walked. This low density would argue against any significant archaeological features being present.

The finds retrieved include a single sherd of medieval pottery with later tile fragments.

2. INTRODUCTION

2.1 Planning Background

Archaeological Project Services was commissioned by CgMs Consulting to undertake fieldwalking in advance of the construction of wind turbines with associated works on land between Langham, Anderby and Chapel St Leonards, Lincolnshire. The work was undertaken on the 11th March 2007 in accordance with a specification prepared by Archaeological Project Services (Appendix 1).

2.2 Topography and Geology

Anderby is located 13km north of Skegness and 27km east of Horncastle in the administrative district of East Lindsey, Lincolnshire (Fig. 1).

The site is located south of Anderby and is centred on National Grid Reference TF 5451 7558 (Fig. 2). The area lies to the northeast of Langham Farm on generally level ground at a height of *c.* 4m OD.

Local soils are of the Wallasea 2 Association, typically pelo-alluvial gley soils (Hodge *et. al.* 1984). These soils are developed upon a drift geology of salt marsh and tidal creek alluvium above glacial till which in turn seals a solid geology of Cretaceous Chalk (BGS 1996).

2.3 Archaeological Setting

The site lies in an area of known archaeological remains dating from the Romano-British period to the present day. Romano-British pottery has been retrieved from the coast east of the site.

Anderby is first mentioned in the 12th century where it is referred to as *Andreby*, which is derived from the Old Danish *by* meaning a village or farmstead with an uncertain first element (Cameron 1998, 3). Chapel St Leonards is not mentioned until the 13th century and is a reference to a chapel that was originally in Mumby (*ibid.* 31).

Medieval salt-working sites are known to exist along the Lincolnshire coast, although the nearest lie some kilometres to the south.

3. AIMS

The aim of the fieldwalking survey was to gather sufficient information to further inform a policy for the management of the archaeological resources present on the site.

In order to achieve this, a number of objectives were formulated and set out below:

- to establish the form, spatial arrangement and density of archaeological activity that may be present within the site
- to determine the likely extent of archaeological activity present within the site

- to determine the date of archaeological remains present on the site

4. METHODS

Fieldwalking was undertaken on a 30m square around the proposed location of each of the six wind turbines as well as around the proposed location of the anemometry mast and electricity substation. The location of each area walked is depicted on Figure 3. Five metre wide transects were walked and each find was numbered then plotted using a Global Positioning by Satellite (GPS) system.

Following fieldwalking, finds were examined and a period date assigned where possible (Appendix 2).

5. RESULTS

Two fields were walked, encompassing *c.*6.2 hectares in total. Both fields are currently under agricultural usage with potato crops recently having been lifted. Conditions at the time of field walking were fair-good.

Turbine 1
No finds were recorded from this square.

Turbine 2
A single fragment of modern pantile or field drain was retrieved from the north of this area.

Turbine 3
No finds were retrieved from this square.

Turbine 4
Not walked due to being under pasture.

Turbine 5
Two finds were retrieved comprising post-medieval to modern peg, nib or ridge tile and a flake from a modern tile.

Turbine 6
No finds were retrieved from this square.

Anemometry Mast
No finds were retrieved from this square.

Substation
A single sherd of 13th – 15th century pottery was retrieved from this square.

6. DISCUSSION

The earliest artefact identified is a single sherd of abraded medieval pottery. Other finds comprise post-medieval and modern tile. The sparseness of the finds indicate that the possibility of substantial archaeological remains being encountered close to the surface are low. However, the presence of marine alluvium may mask pre-Roman and Roman land surfaces, although it is not known at what depth these occur on the site. The finds are likely to have entered the field as manuring scatters.

7. CONCLUSION

A programme of fieldwalking was undertaken on land near Langham Farm, Anderby, to determine any archaeological mitigation in advance of the construction of wind turbines.

Only four finds were identified from seven areas walked. The earliest was a sherd of medieval pottery with the remainder comprising post-medieval to modern tile.

8. ACKNOWLEDGEMENTS

Archaeological Project Services wishes to acknowledge the assistance of Mr M Dawson of CgMs Consulting for commissioning the fieldwork and subsequent analysis. The work was coordinated by Mark Williams who edited

this report along with Tom Lane. Dave Start kindly permitted access to the parish files and library maintained by Heritage Lincolnshire.

9. PERSONNEL

Project Coordinator: Mark Williams
Fieldwalking and Survey: Mark Dymond, Bob Garlant
Finds Processing: Denise Buckley
Photographic reproduction: Sue Unsworth
Illustration: Paul Cope-Faulkner, Mark Dymond
Analysis: Paul Cope-Faulkner

10. BIBLIOGRAPHY

BGS, 1996 *Mablethorpe: Solid and drift geology* 1:50 000 map sheet **104**

Cameron, K, 1998 *A Dictionary of Lincolnshire Place-Names*, English Place-Name Society Popular Series Vol. **1**

Foster, CW and Longley, T (eds), 1976 *The Lincolnshire Domesday and the Lindsey Survey*, The Lincoln Record Society **19**

Hodge, CAH, Burton, RGO, Corbett, WM, Evans, R and Seale, RS, 1984 *Soils and their use in Eastern England*, Soil Survey of England and Wales **13**

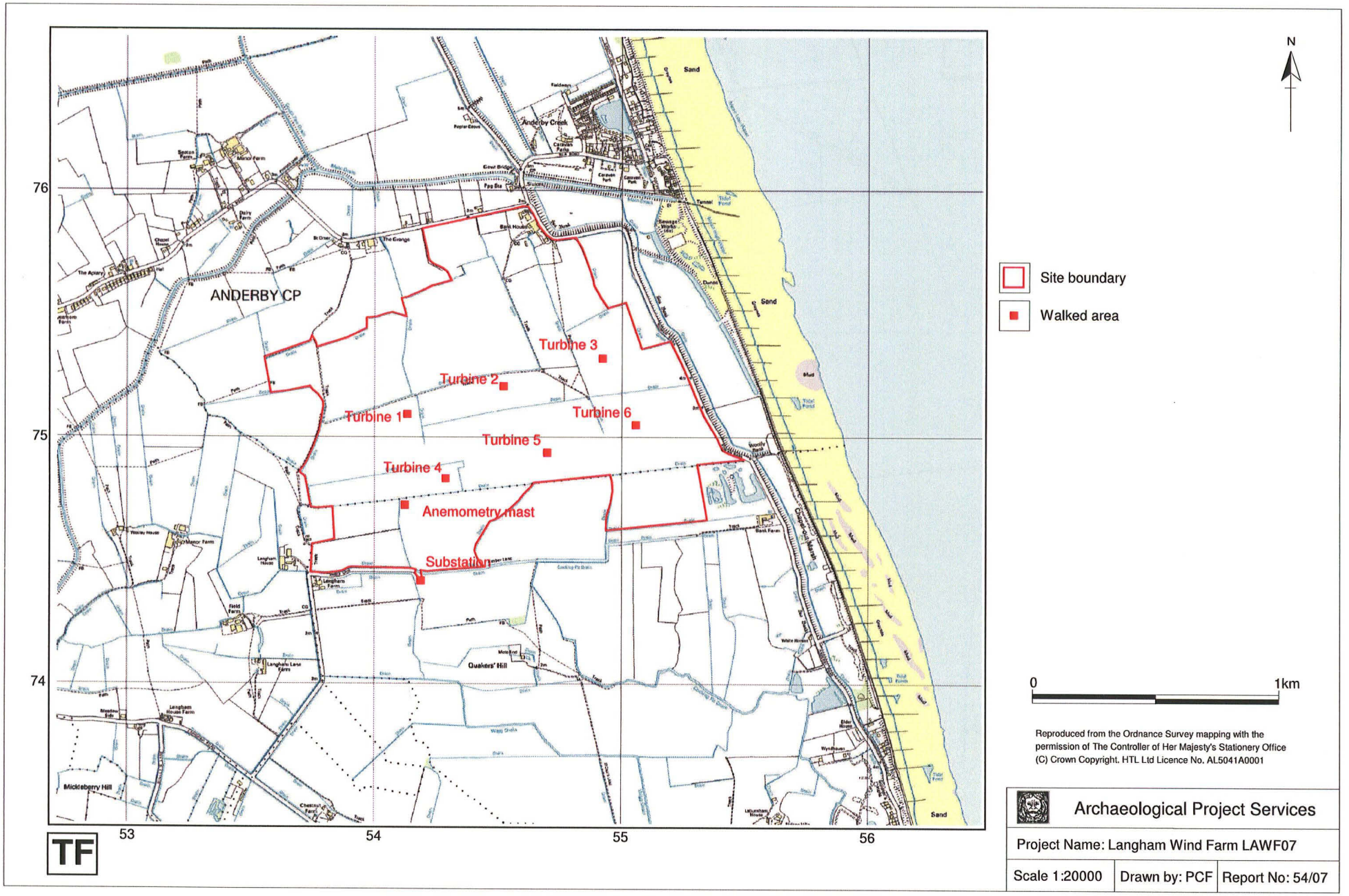
11. ABBREVIATIONS

APS Archaeological Project Services

BGS British Geological Survey

OD Ordnance Datum (height above sea level)

Figure 1 - General location plan



Reproduced from the Ordnance Survey mapping with the permission of The Controller of Her Majesty's Stationery Office (C) Crown Copyright. HTL Ltd Licence No. AL5041A0001

Archaeological Project Services		
Project Name: Langham Wind Farm LAWF07		
Scale 1:20000	Drawn by: PCF	Report No: 54/07

Figure 2 - Site location plan

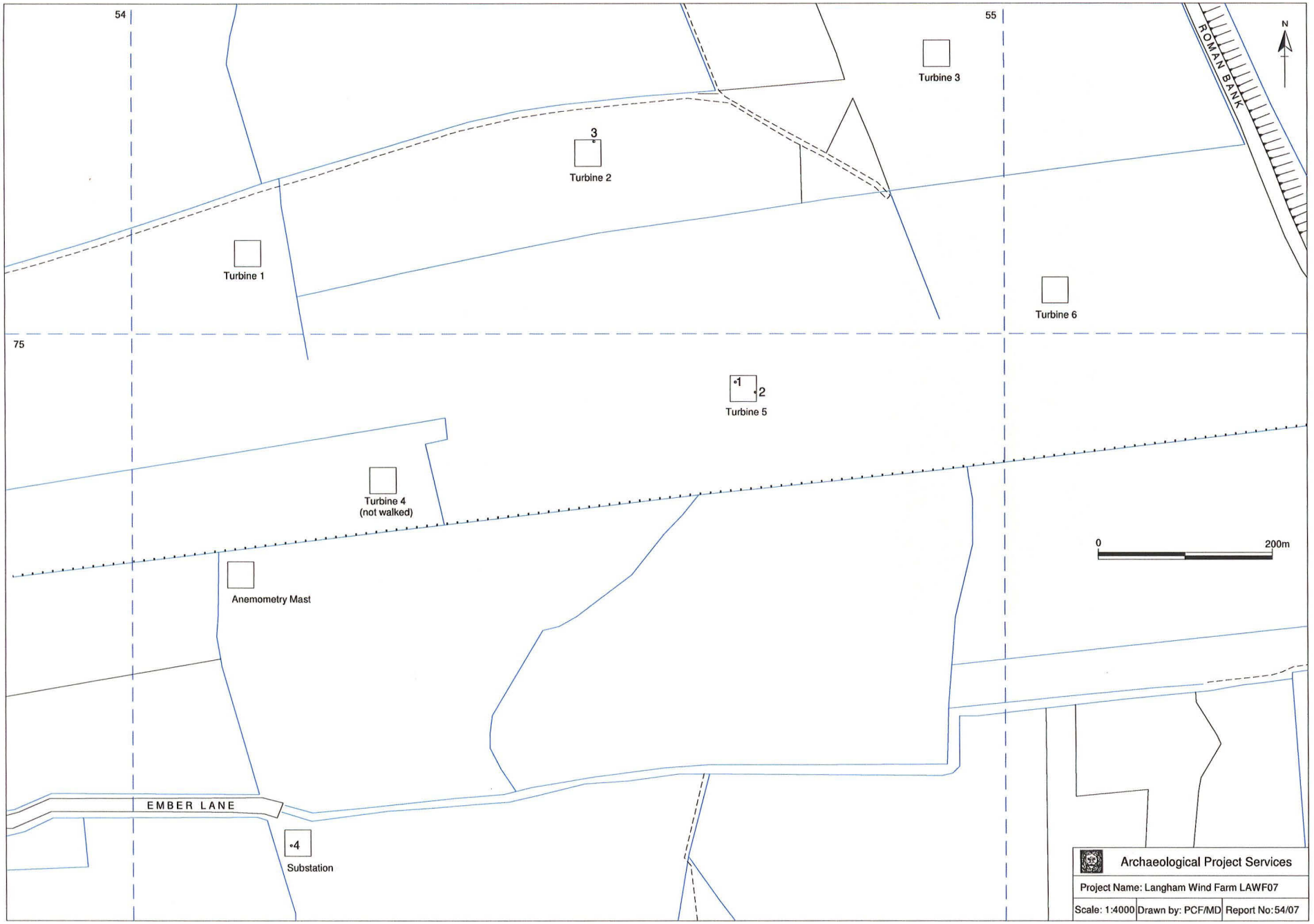


Figure 3 - Plan showing distribution of finds

Plate 1 - View looking west over the northern part of the site

Plate 2 - View looking west over the southern part of the site

Specification for Fieldwalking on land at Langham, East Lindsey

1 SUMMARY

1.1 *This document comprises a specification for a programme of fieldwalking within the parishes of Land at Langham, Lincolnshire*

1.2 *The work is being undertaken as part of a programme of works undertaken in order to inform an Environmental Statement supporting proposals for a wind farm.*

1.3 *On completion of the fieldwork a report will be prepared detailing the findings of the investigation. The report will consist of a text describing the nature of the archaeological deposits located and will be supported by illustrations and photographs.*

2 INTRODUCTION

2.1 This document comprises a specification for fieldwalking on land in the parishes of Langham, Lincolnshire. The site is centred on at National Grid Reference 554510,375580.

2.1.1 The document contains the following parts:

2.1.2 Overview

2.1.3 The archaeological and natural setting

2.1.4 Stages of work and methodologies to be used

2.1.5 List of specialists

2.1.6 Programme of works and staffing structure of the project

3 SITE LOCATION

3.1 The proposed Windfarm is located south of Anderby Creek in East Lindsey. The proposed works comprise 8 x 30m areas, based on the location of 6 turbines, an anemometry mast and a substation.

4 PLANNING BACKGROUND

4.1 A planning application for a wind farm is under consideration by the local planning authority, East Lindsey District Council. An Environmental Statement has been prepared. Archaeological works are being undertaken in order to provide information on the archaeological implications of any such works at the site.

5 ARCHAEOLOGICAL OVERVIEW

5.1 The site lies in an area of archaeological potential with evidence of Salt production from the prehistoric to the medieval period found in the vicinity.

6 AIMS AND OBJECTIVES

6.1 The aim of the work will be to gather information in order to supplement the existing Environmental Assessments at the request of the Lincolnshire County Council Historic Environment Officer. This information will assist the archaeological curator in formulating a policy for the management of the archaeological resources present on the site.

6.2 The objectives of the work will be to:

6.2.1 Establish the type and date range of archaeological artefacts that may be present within the topsoil.

6.2.2 Determine the likely extent of archaeological finds present within the site.

6.2.3 Determine the spatial arrangement of the archaeological finds present within the site.

6.2.4 Determine the extent to which the surrounding archaeological features extend into the application area.

6.2.5 Establish the way in which the archaeological finds identified fit into the pattern of occupation and land-use in the surrounding landscape.

6.2.6 Determine the presence of non artefactual archaeological indicators (soilmarks, ploughed down earthworks etc)

6.2.7 Produce accurate plots of artefact findspots and interpret the results

7 FIELD WALKING

7.1 A transect-based field survey involving fieldwalking will be undertaken in order to recover information about the extent, date and significance of archaeological finds within the ploughsoil.

7.2 Fieldwalking will be undertaken on all fields in a suitable condition on transects at 5m intervals, using plough or drill furrows as a directional guide.

7.3 Surface artefacts will be collected, bagged and assigned a unique reference number. Each of these finds will be accurately plotted using a Differential GPS.

7.4 The report will include description of artefacts recovered and plots showing the position of individual finds. Period plans showing detailed and summary interpretations of the results of the fieldwalking will be produced.

7.5 Identification of artefacts will be by Archaeological Project Services staff for all 'scatter' material. In the event of finds clusters ('sites') being discovered, including slags, the material will be identified by external period specialists.

8 ARCHIVE

8.1 The documentation, finds, photographs and other records and materials generated during the evaluation will be sorted and ordered in accordance with the procedures in the Society of Museum Archaeologists' document *Transfer of Archaeological Archives to Museums* (1994), and any additional local requirements, for long term storage and curation. This work will be undertaken by the Finds Supervisor, an Archaeological Assistant and the Conservator (if relevant). The archive will be deposited with the receiving museum as soon as possible after completion of the project, and within 12 months of that completion date.

9 REPORT DEPOSITION

9.1 Copies of the investigation report will be sent to: the Client; the Historic Environment Officer, Lincolnshire County Council; East Lindsey District Council Planning Department; and the Lincolnshire County Sites and Monuments Record.

10 SPECIALISTS TO BE USED DURING THE PROJECT

10.1 The following organisations/persons will, in principle and if necessary, be used as subcontractors to provide the relevant specialist work and reports in respect of any objects or material recovered during the investigation that require their expert knowledge and input. Engagement of any particular specialist subcontractor is also dependent on their availability and ability to meet programming requirements.

Task	Body to be undertaking the work
Conservation	Conservation Laboratory, City and County Museum, Lincoln.
Pottery Analysis	Prehistoric: Dr D Knight, Trent and Peak Archaeological Trust
	Roman: T.S Martin, independent specialist
	Anglo-Saxon: J Young, independent specialist
	Medieval and later: H Healey, independent archaeologist; or G Taylor, APS
Other Artefacts	J Cowgill, independent specialist; or G Taylor, APS

Human Remains Analysis	R Gowland, independent specialist
Animal Remains Analysis	Environmental Archaeology Consultancy; or J Kitch, APS

11 PROGRAMME OF WORKS AND STAFFING LEVELS

11.1 Fieldwalking is expected to be undertaken by 3 staff, a supervisor and 2 assistants, and to take upto 3 days.

11.2 Post-excavation analysis and report production is expected to take 10 person-days within a notional programme of 5 days. A project officer or supervisor will undertake most of the analysis, with assistance from the finds supervisor and CAD illustrator.

12 INSURANCES

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

13 COPYRIGHT

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

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

13.3 In the case of non-satisfactory settlement of account then copyright will remain fully and exclusively with Archaeological Project Services. In these circumstances it will be an infringement under the *Copyright, Designs and Patents Act* 1988 for the client to pass any report, partial report, or copy of same, to any third party. Reports submitted in good faith by Archaeological Project Services to any Planning Authority or archaeological curator will be removed from said Planning Authority and/or archaeological curator. The Planning Authority and/or archaeological curator will be notified by Archaeological Project Services that the use of any such information previously supplied constitutes an infringement under the *Copyright, Designs and Patents Act* 1988 and may result in legal action.

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

LAWF07 CERAMIC BUILDING MATERIAL ARCHIVE

ANNE BOYLE

context	cname	full name	fabric	frags	weight	description	date
P 1	PNR	Peg, nib or ridge tile	hard; red + ca	1	65	bedded on sand; 19mm	post medieval to modern
P 2	MODTIL	Modern tile		1	5	flake	19th to 20th
P 3	MODTIL	Modern tile		1	53	abraded; patchy soot; pantile or field drain	19th to 20th

LAWF07 POST ROMAN POTTERY ARCHIVE

ANNE BOYLE

context	cname	full name	form type	sherds	vessels	weight	part	description	date
P 4	TOY	Toynton Medieval Ware	jug / jar	1	1	2	BS	abraded	13th to 15th

Appendix 3

GLOSSARY

Alluvium	A deposit (usually clay, silts or sands) laid down in water. Marine alluvium is deposited by the sea and freshwater alluvium by streams, rivers or within lakes.
Layer	A layer is a term to describe an accumulation of soil or other material that is not contained within a cut.
Medieval	The Middle Ages, dating from approximately AD 1066-1500.
Post-medieval	The period following the Middle Ages, dating from approximately AD 1500-1800.
Romano-British	Pertaining to the period dating from AD 43-410 when the Romans occupied Britain.
Till	A deposit formed after the retreat of a glacier. Also known as boulder clay, this material is generally unsorted and can comprise of rock flour to boulders to rocks of quite substantial size.

Appendix 4

THE ARCHIVE

The archive consists of:

7	Fieldwalking Record Sheets
1	Photographic Record Sheet
1	Dayworks Sheet
1	Bag of finds

All primary records and finds are currently kept at:

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

The ultimate destination of the project archive is:

The Collection
Art and Archaeology in Lincolnshire
Danes Terrace
Lincoln
LN2 1LP

Accession Number: 2007.78

Archaeological Project Services Site Code: LAWF 07

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

Our Ref: MD/6514

Mark Bennett Esq
Historic Environment Senior Records Officer
Planning and Conservation Group
Lincolnshire County Council
4th Floor City Hall
Beaumont Fee
LINCOLN LN11DN

Lincolnshire County Council
4 OCT 2007
Planning & Conservation

3rd October 2007

Dear Mark

Langham Evaluation Report CgMs 6514

Please find enclosed a copy of the above report as requested by Judy O'Neill on 20th September.

I hope this is satisfactory

Yours sincerely

Michael Dawson

Michael Dawson

stbook Ref:	254-876
Officer Dealing	Mark
Reply Required:	—
Date Replied Via:	
CRM Transaction No.	

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Cheltenham
Newark

Web Site: www.cgms.co.uk

Now incorporating:
John Samuels Archaeological Consultants

MARK for info

Louise aware of HER copy arriving 4/10/

From: Judy O'Neill
To: mike.dawson@cgms.co.uk
Date: 20/09/07 11:41:22
Subject: request for Report MD/6514

FAO: Mike Dawson,

Mike,

In May 2007 you produced an archaeological evaluation report, MD/6514, in support of an ELDC planning application N/005/02812/06. Title of report is "Land between Langham, Anderby and Chapel St Leonards, Lincs".

Would you please provide us with a bound copy of this report for our Lincolnshire Historic Environment Record library (formerly known as Lincs SMR)? The report would be accessioned into the HER and used as reference.
Please can you post it to

Mark Bennet
Historic Environment Senior Records Officer
Planning and Conservation Group
Lincolnshire County Council
4th Floor, City Hall
Beaumont Fee
LINCOLN LN1 1DN

Thank you very much,
Judy O'Neill

Judy O'Neill
Senior Technical Officer
(01522) 554836
judy.o'neill@lincolnshire.gov.uk