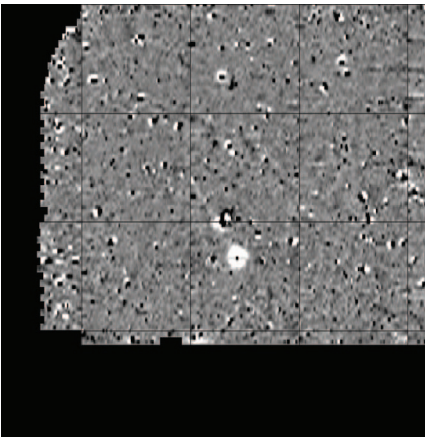


Playters New Solar Farm
Ellough, Suffolk



**Archaeological
Geophysical Survey**



February 2014

Client: WYG

OA East Report No: 1597

OASIS No: oxfordar3-170735

NGR: TM 4390 8830

Playters New Solar Farm, Ellough, Suffolk

Report on Archaeological Geophysical Survey 2014

A.D.H. Bartlett

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Playters New Solar Farm, Ellough, Suffolk

Archaeological Geophysical Survey

Summary

A geophysical survey has been undertaken as part of an archaeological evaluation of the site of a proposed solar farm at Ellough, Suffolk. The purpose of the survey was to test for evidence of any previously unrecorded archaeological features or deposits within the evaluation area.

Conditions at the site appear to be reasonably satisfactory for an investigation of this kind, but the survey has produced only minimal findings. Various land drains and cultivation effects were detected, but findings otherwise were limited to a small number of individual magnetic anomalies potentially representing silted pits or hollows. These are widely dispersed across the site, and so are likely to be of non-archaeological or natural origin. There are no groups or clusters of detectable features to suggest the presence of an archaeological site within the proposed development area.

Introduction

This geophysical survey is required in support of a planning application for a proposed solar farm at Playters New Farm, Ellough, Suffolk. It is intended to meet requirements as stated in the Written Scheme of Investigation (WSI) for the project, which was issued by WYG Planning & Environment [1]. This document specifies that a magnetometer survey is to be undertaken, following procedures as described below.

The geophysical survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by Oxford Archaeology East (OA East) on behalf of WYG, and EEW Eco Energy World. Fieldwork for the survey was done on 10-14 February 2014.

The Site

Background information on site conditions is given in the WSI [1], which also specifies the survey methods. There is also a further description of survey procedures in the Proposal document submitted to OA East by Bartlett Clark Consultancy [3]. The following notes are reproduced in part from these documents.

Fields within the site have been numbered from west to east (1-3, as indicated on figures 1 and 4) for reference in this report.

Location and topography

The development site is located to the south of Beccles, Suffolk, and is centred approximately on NGR TM 43900 88300 (643900, 288300). The survey was intended to cover all surveyable ground within the site, which extends to c. 15ha.

The site is in mixed cultivation, with a meadow to the west (field 1), an arable field in the centre (field 2), and a grassed caravan site to the east (field 3). No caravans were present at the time of the survey. The ground slopes gently from an elevation of c. 30m AOD at the west to c. 22m AOD in the eastern field.

The site is on a bedrock of Norwich Crag, with superficial deposits of Lowestoft Formation, which is a chalky till also containing gravels, silts and clays. These conditions should not present any unusual difficulties for a magnetometer survey. Magnetic susceptibility readings (which were recorded across the site during the survey) were at the lower end of the commonly encountered range of values (with readings between $5 - 12 \times 10^{-5}$ SI), but not exceptionally so. It is possible therefore (as is often the case on clay soils) that isolated ditches or other features lacking magnetically enhanced fill (of the kind usually found at ancient settlement or industrial sites) might not respond reliably to the survey.

Archaeological background

Previously identified archaeological findings in the vicinity of the site, and within a surrounding 3km diameter study area, are described in the DBA [2], and summarised in the WSI [1]. Some of the nearby findings are indicated on the plan (reproduced from WSI figure 2) which is inset in figure 4 of this report.

Archaeological remains of prehistoric date within the study area are limited to a few findspots of flint and pottery sherds, and there are also various findspots of Roman pottery and coins. The nearest are located at the northern edge of the study area (MSF1176, MSF13965).

No sites dating to the Early Medieval period have been identified nearby, but there is a possible medieval moat (MSF15097) in the south west of the study area, and a medieval brick kiln was discovered at Ellough Airfield to the east (MSF17139). A geophysical survey within the airfield also located possible ditches and pits, which were confirmed by excavation.

Features recorded from historic mapping include a building (MSF17321), a brickworks (about 1 km to the west: MSF22745), and a plot of land labelled 'ruins' (of unknown date or nature: MSF17322). A cropmark enclosure of unknown date (MSF15253) is recorded within the airfield, but aerial photographs from English Heritage do not show evidence for additional cropmarks or other archaeological features within the study area. An extract from a 1928 OS map (reproduced in [2]) indicates a plantation in the eastern half of field 2.

It is concluded in the DBA (section 8.0) that there is considered to be a low potential for previously unrecorded remains at the site due to limited evidence for activity within the study area.

Survey Procedure

The site was investigated by means of a recorded magnetometer survey. Readings were collected along transects 1m apart using Bartington 1m fluxgate gradiometers, and are plotted at 25cm intervals along each transect. The results of the survey are presented at 1:2000 scale as a grey scale plot (figure 1), and as a graphical (x-y trace) plot at 1:1250 (figures 2-3). Comparison of these alternative presentations allows the detected magnetic anomalies to be examined in plan and profile respectively. An interpretation of the findings is shown superimposed on figures 2-3 (which permits the interpreted outlines to be compared with the underlying data), and is reproduced separately to provide a summary of the findings (figure 4).

The graphical plot in figures 2-3 shows the magnetometer readings after minimal pre-processing [of the kind permitted by English Heritage (2008) *Geophysical Survey in Archaeological Field Evaluation* Section 4.8]. This includes adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and truncation of extreme values. Additional weak 2D low pass filtering has been applied to the grey scale plot to adjust background noise levels. No additional processing of a kind which could modify the anomaly profiles, or influence their interpretation, has been applied to the data.

The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. It is also strongly affected by ferrous and other debris of recent origin.

Colour coding has been used in the interpretation to distinguish different effects. Magnetic anomalies which may show characteristics to be expected from features of potential archaeological interest are outlined in red. Variations in the density of background magnetic activity are indicated by the concentration of small magnetic anomalies outlined in light brown. Stronger (and perhaps recent) disturbances are outlined in grey. Possible cultivation effects are in green, and some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are marked in light blue.

Magnetic susceptibility tests

Magnetic susceptibility readings were taken (using a Bartington MS1 meter) at c. 60m intervals across the survey area. This information provides an indication of the strength of magnetic response to be expected from the site, with conclusions as noted above.

Survey location

The survey grid was set out and tied to the OS grid using a Trimble ProXRT GPS system (with VRS correction to give accuracy of 0.1m). The plans are therefore geo-referenced, and OS co-ordinates of map locations can be read from the AutoCAD version of the plans, which can be supplied with this report. Distances to boundaries or fixed points can also be scaled from the printed plans or AutoCAD file if required.

Results

The survey has detected a number of subsurface features and disturbances, but has not produced any findings of unambiguous archaeological significance. It is sometimes the case in magnetometer surveys on soils containing glacial gravels that the presence of naturally magnetic stones in the gravel will give rise to small magnetic anomalies which add to the background noise level of the survey. There may be some disturbances of this kind here, but the level of background magnetic activity (as indicated by small magnetic anomalies outlined in light brown) is generally low, and should not obscure the response from any archaeological features which may be present.

Findings include a sequence of parallel linear markings (visible in the grey scale plot, and marked by green broken lines in figure 4) in field 3. These are likely to be caused by cultivation, but the field is currently pasture. They could possibly indicate traces of ridge and

furrow, or could relate to more recent ploughing. A east - west pipe in the centre of field 3 (blue in figure 4) follows the line of a former boundary as shown on historic maps (and a 1966 aerial photograph).

Parallel north-south linear disturbances in field 2 are stronger than the cultivation effects, and are likely to be caused by clay land drains. They extend across the eastern half of the field (in the area previously occupied by a plantation). Drains are less clearly identifiable elsewhere in the survey, but one possible example is indicated in field 1.

Various strong magnetic disturbances (grey) along the northern boundary of fields 2 and 3 may be caused by fences, or by magnetic interference from the adjacent industrial site to the north. Items of ferrous debris (as indicated by narrow spikes in the graphical plots 2 and 3, and outlined in blue) appear to be uniformly distributed across the site, with no concentrations of a kind which could relate to variations in land use or activity within the survey area.

The remaining findings are a few individual magnetic anomalies (outlined in red) which could indicate silted pits or hollows. These features (corresponding to magnetic anomalies with rounded profiles as seen in the graphical plots 2 and 3) could in a suitable context be interpreted as features of potential archaeological origin, but here they are widely dispersed and isolated, and so are unlikely to be of archaeological interest.

The features labelled A, D and E in figure 4 are relatively broad and weak, and so could indicate earth-filled hollows 3-4m in width. The stronger example at B could be either a ferrous object at some depth, or a pit (with responsive fill) about 2m in width. The magnetic anomalies at C could perhaps indicate a short linear feature entering the site from the north, but the evidence is uncertain. Other (unlabelled) features as marked in red are less clearly distinguishable from the general level of background activity.

Conclusions

The survey has produced findings which are consistent with the limited archaeological expectations for the site as stated in the DBA [2].

Features detected by the survey include probable cultivation effects which may indicate traces of ridge and furrow in field 3, and land drains in field 2. The detection of the cultivation markings suggests that soil conditions at the site are at least reasonably responsive to magnetic surveying, and that any more substantial or concentrated archaeological features should therefore be detectable (if any are present).

The only other findings of potential archaeological relevance are isolated pit-like features (including examples labelled A – E in figure 4). There are no clusters or concentrations of such features to suggest the presence of an archaeological site.

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25 February 2014

The fieldwork for this survey was done by C. Oatley and P. Heykoop.

References

- [1] *EEW Eco Energy World Playters New Solar Farm, Ellough, Suffolk: Geophysical Survey Written Scheme of Investigation.* Document by WYG Planning and Environment; January 2014.

- [2] *EEW Eco Energy World Playters New Solar Farm, Ellough, Suffolk: Archaeology and Heritage Desk-Based Assessment.* Report by WYG Planning and Environment; November 2013.

- [3] *Playters New Solar Farm, Ellough, Suffolk: Proposal for Archaeological Geophysical Survey 2014.* Document submitted by Bartlett Clark Consultancy to Oxford Archaeology East and WYG Planning and Environment; 3 February 2014.

APPENDIX E. OASIS REPORT FORM

All fields are required unless they are not applicable.

Project Details

OASIS Number	<input type="text" value="oxfordar3-170735"/>			
Project Name	<input type="text" value="Playters New Solar Farm, Ellough, Suffolk. Geophysical Survey"/>			
Project Dates (fieldwork)	Start	<input type="text" value="10-02-2014"/>	Finish	<input type="text" value="14-02-2014"/>
Previous Work (by OA East)	<input type="text" value="No"/>	Future Work	<input type="text" value="No"/>	

Project Reference Codes

Site Code	<input type="text" value="XSFPFE14"/>	Planning App. No.	<input type="text"/>
HER No.	<input type="text" value="ELO 014"/>	Related HER/OASIS No.	<input type="text"/>

Type of Project/Techniques Used

Prompt	<input type="text" value="Direction from Local Planning Authority - PPS 5"/>
Development Type	<input type="text" value="Other"/>

Please select all techniques used:

<input type="checkbox"/> Aerial Photography - interpretation	<input type="checkbox"/> Grab-Sampling	<input type="checkbox"/> Remote Operated Vehicle Survey
<input type="checkbox"/> Aerial Photography - new	<input type="checkbox"/> Gravity-Core	<input type="checkbox"/> Sample Trenches
<input type="checkbox"/> Annotated Sketch	<input type="checkbox"/> Laser Scanning	<input type="checkbox"/> Survey/Recording Of Fabric/Structure
<input type="checkbox"/> Augering	<input type="checkbox"/> Measured Survey	<input type="checkbox"/> Targeted Trenches
<input type="checkbox"/> Dendrochronological Survey	<input type="checkbox"/> Metal Detectors	<input type="checkbox"/> Test Pits
<input type="checkbox"/> Documentary Search	<input type="checkbox"/> Phosphate Survey	<input type="checkbox"/> Topographic Survey
<input type="checkbox"/> Environmental Sampling	<input type="checkbox"/> Photogrammetric Survey	<input type="checkbox"/> Vibro-core
<input type="checkbox"/> Fieldwalking	<input type="checkbox"/> Photographic Survey	<input type="checkbox"/> Visual Inspection (Initial Site Visit)
<input checked="" type="checkbox"/> Geophysical Survey	<input type="checkbox"/> Rectified Photography	

Monument Types/Significant Finds & Their Periods

List feature types using the [NMR Monument Type Thesaurus](#) and significant finds using the [MDA Object type Thesaurus](#) together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
<input type="text" value="Cropmarks"/>	<input type="text" value="Uncertain"/>	<input type="text" value="None"/>	<input type="text" value="None"/>
<input type="text"/>	<input type="text" value="Select period..."/>	<input type="text"/>	<input type="text" value="Select period..."/>
<input type="text"/>	<input type="text" value="Select period..."/>	<input type="text"/>	<input type="text" value="Select period..."/>

County	Suffolk	Site Address (including postcode if possible)
District	Waveney	Playters New Farm, Church Road Beccles, Suffolk
Parish	Beccles	
HER	Suffolk HER	
Study Area	15 Hectares	National Grid Reference TM 4390 8830

Project Originators

Organisation	OA EAST
Project Brief Originator	WYG Planning & Environment
Project Design Originator	Charlotte Dawson
Project Manager	Paul Spoerry
Supervisor	A.D.H. Bartlett

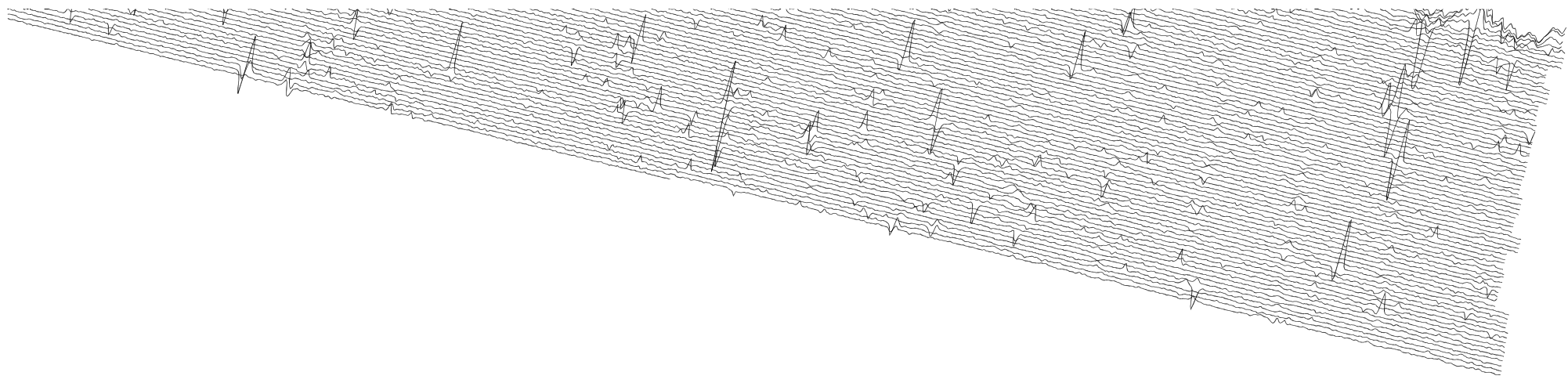
Project Archives

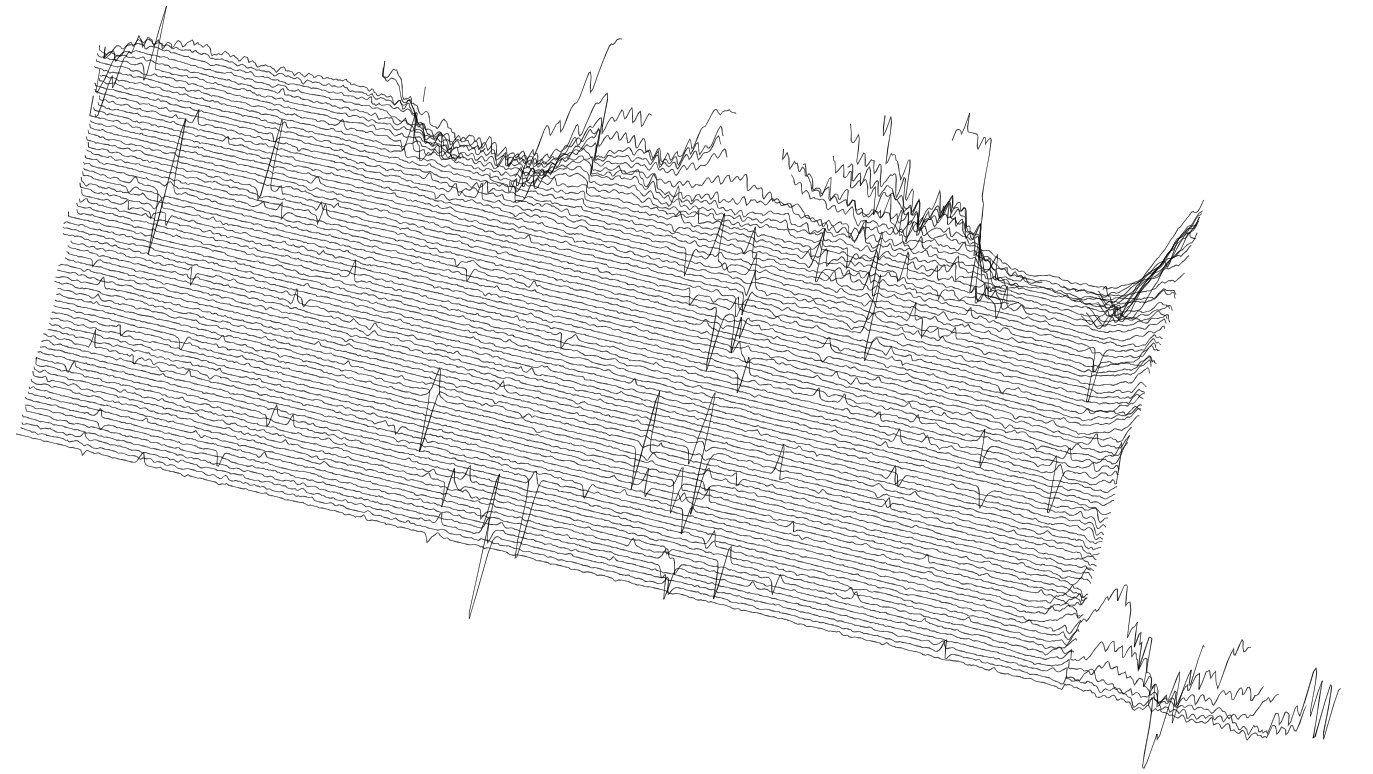
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None	OA East	Paper Archive
Accession ID ...	XSFPE14	ELO 014

Archive Contents/Media

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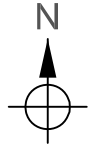
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<input checked="" type="checkbox"/> Images	<input type="checkbox"/> Diary
<input type="checkbox"/> Illustrations	<input type="checkbox"/> Drawing
<input type="checkbox"/> Moving Image	<input type="checkbox"/> Manuscript
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	<input type="checkbox"/> Report
	<input type="checkbox"/> Sections
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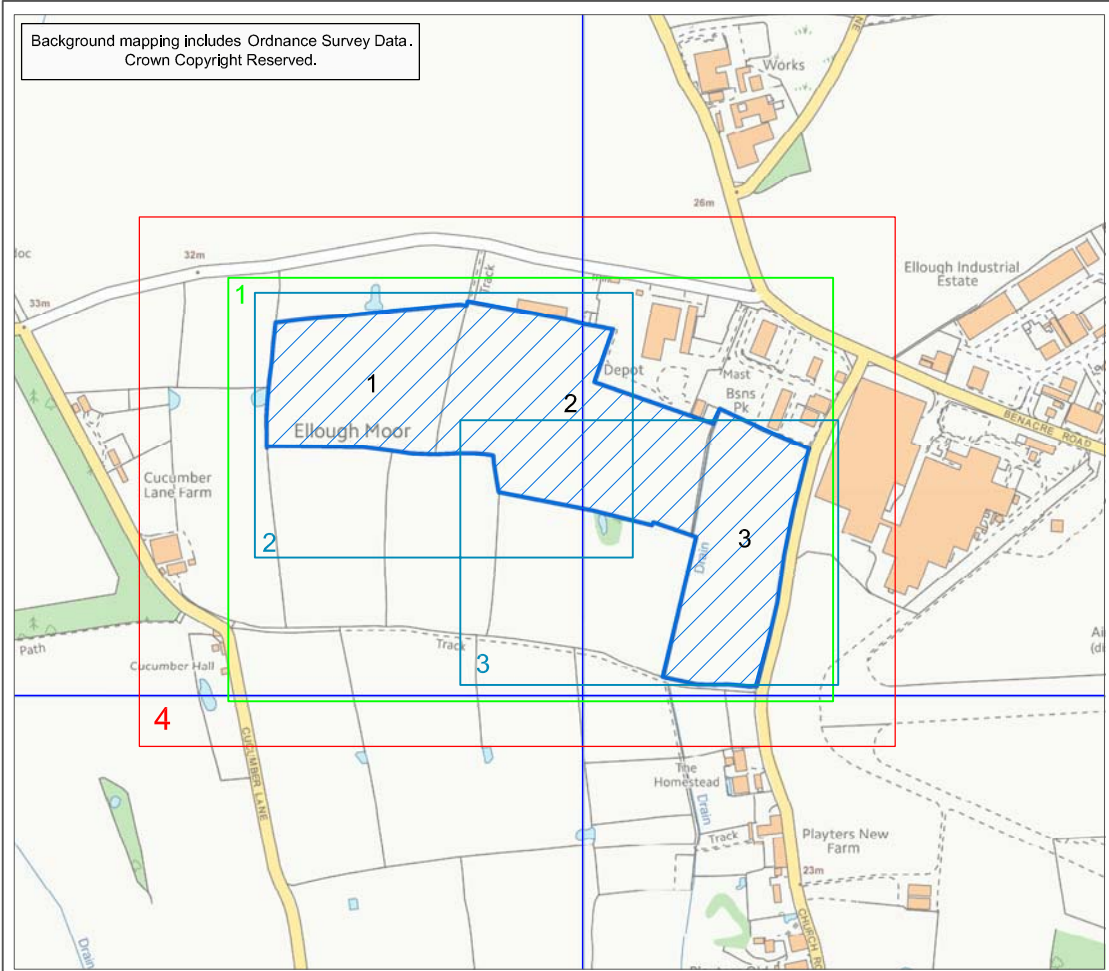


Background mapping based on site plan by
John Vincent Surveys Ltd, Neath

Surveyed by: Bartlett-Clark Consultancy 01865 200864
for: Oxford Archaeology East

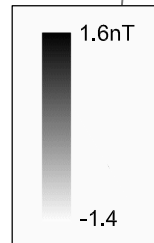


Background mapping includes Ordnance Survey Data.
Crown Copyright Reserved.



Survey location (from WYG WSI figure 4)

1:10000



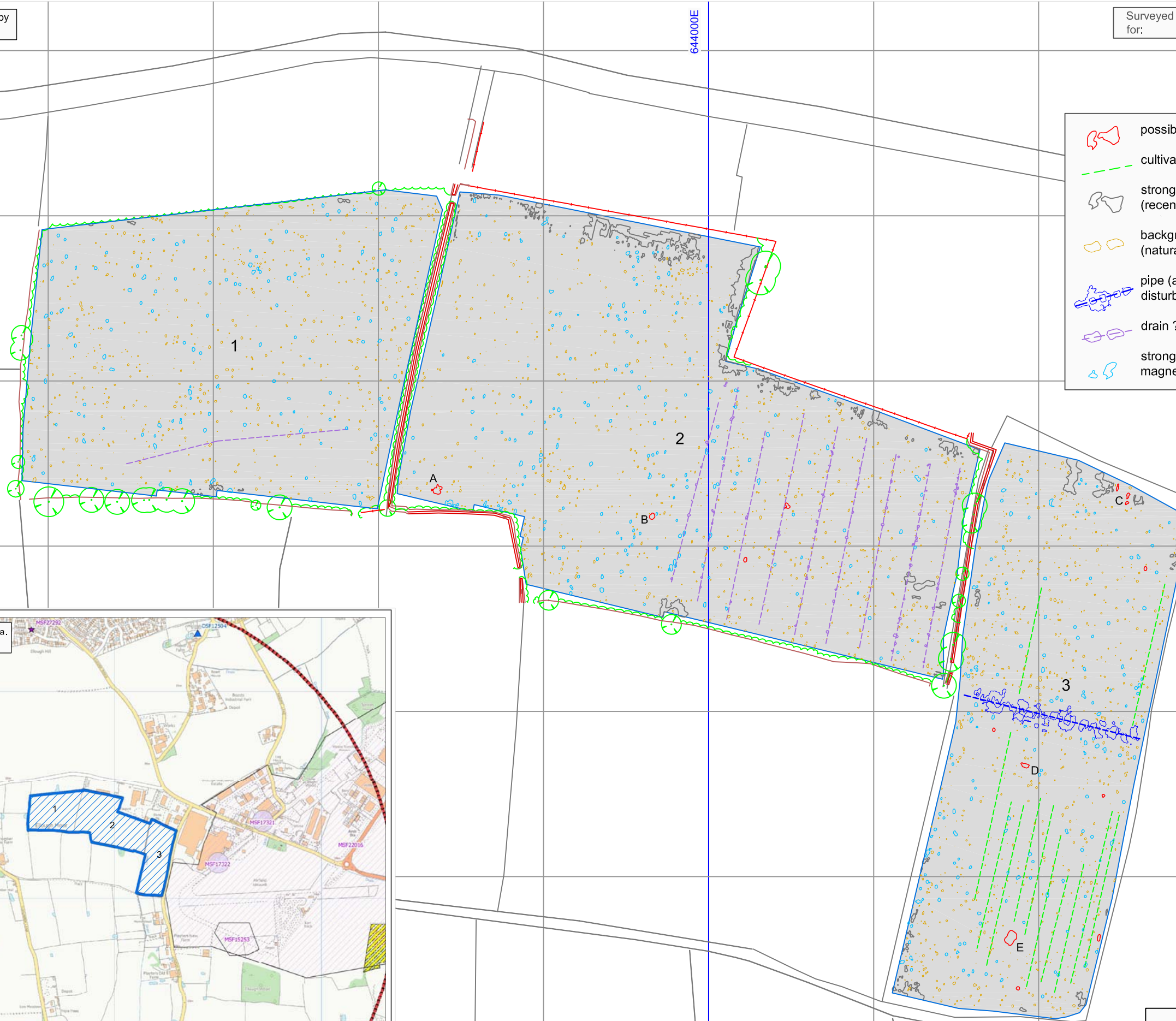
Platers New Solar Farm
Ellough, Suffolk
Geophysical Survey 2014
Figure 1: Magnetometer survey
(grey scale plot)








0 Scale 1:2000 @ A3 100m

288000N

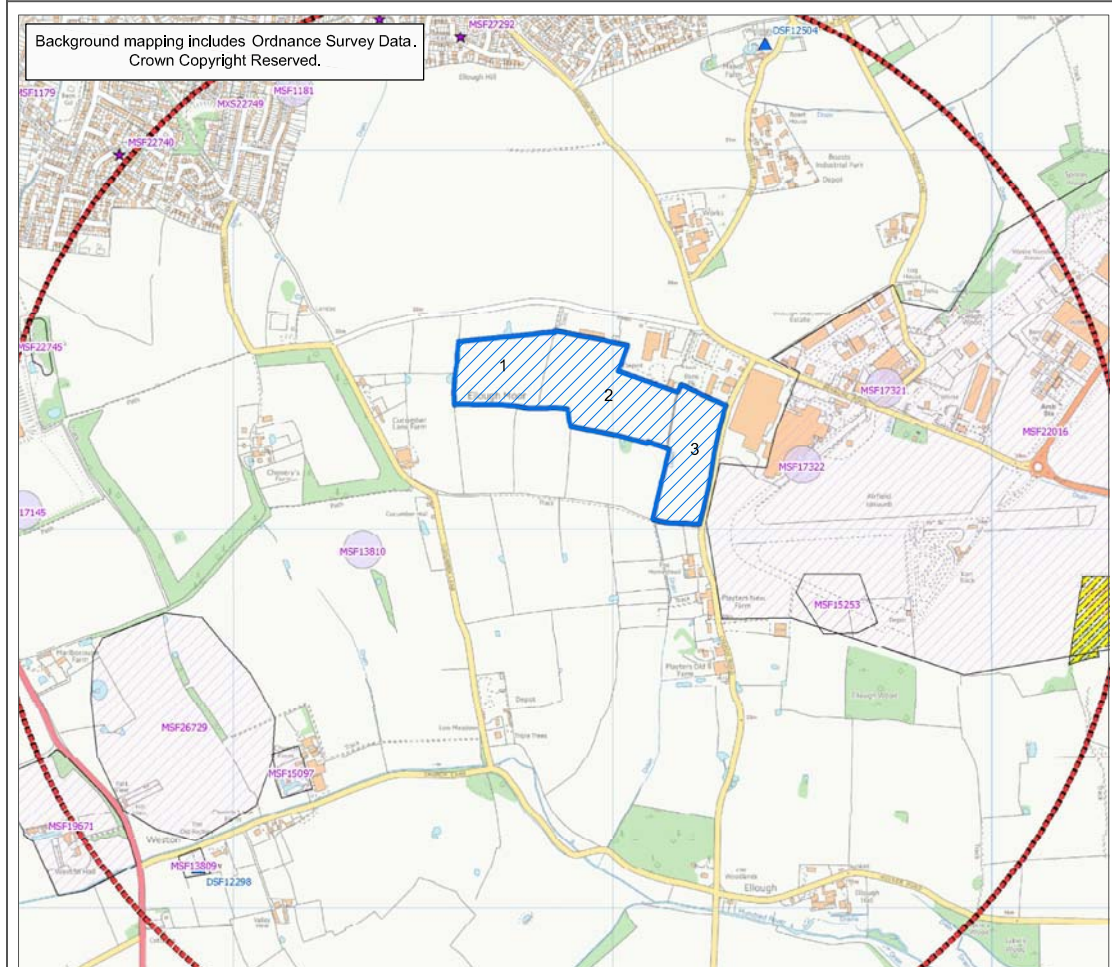
Background mapping based on site plan by
John Vincent Surveys Ltd, Neath

Surveyed by: Bartlett-Clark Consultancy 01865 200864
for: Oxford Archaeology East




-  possible silted pits / hollows
-  cultivation ?
-  strong magnetic disturbances (recent / non-archaeological)
-  background magnetic anomalies (natural / non-archaeological)
-  pipe (and associated magnetic disturbance)
-  drain ?
-  strong (ferrous) magnetic anomalies

Background mapping includes Ordnance Survey Data.
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HER data (from WYG WSI figure 2) 1:20000

Platers New Solar Farm
Ellough, Suffolk
Geophysical Survey 2014
Figure 4: Summary of findings





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