

**Land at Elsenham
Essex**

**Report on Archaeological Geophysical Surveys
October + December 2012 and March 2013**

Surveys commissioned by:

**Oxford Archaeology East
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on behalf of:

CgMs Consulting

Report by:

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Introduction

The geophysical surveys described in this report were carried out to test for evidence of buried archaeological sites or remains at a proposed development site at Elsenham in Essex. The surveys were commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by Oxford Archaeology East, who are to undertake an archaeological field evaluation of the site on behalf of CgMs Consulting. Fieldwork for the initial survey was done in October 2012, and the coverage was then extended in December. An additional field which was ploughed and could not be surveyed in December was surveyed in March 2013. The present report includes results from all stages of the investigation to date.

The Site

The evaluation area is currently arable farmland between the villages of Elsenham and Henham centred approximately at NGR 554000 228000, and located about 3km NE of Stansted Mountfitchet. The areas currently being investigated form part of a larger evaluation area, which is indicated by a red outline on the attached location plan (figure 1).

Results from the initial stages of the investigation were described in our report of 9 November 2012, and in the extended version dated 22 January 2013. The initial survey covered two areas located to the north and south of Old Mead Lane, as marked by blue cross hatching on figure 1. They amount to 56.6ha and 66.1ha respectively. These areas were surveyed in full with the exception of a few minor obstacles.

Fieldwork for the second survey was done on 11-14 December 2012. This covered 28.2 ha across two fields as hatched in green. A further 16.0ha was surveyed on 11-14 March 2013 (red in figure 1). The total area surveyed to date is therefore 166.9ha.

Geology and topography

The site is open farmland with only minor variations in relief. It is on a bedrock of London Clay with chalk immediately to the north, but these are covered by drift deposits of Boulder Clay and glacial sand and gravel, as indicated on the geological map (supplied to us by CgMs) reproduced as figure 32iii.

Boulder Clay soils do not usually present any particular difficulties for a magnetometer survey, although the presence of magnetic stones in the topsoil can give rise to an increased

background noise level on glacial gravels. Such effects may be present in parts of the present survey, but not to any major extent. The general suitability of the site for a magnetic investigation was confirmed by magnetic susceptibility readings taken at the site. These gave values between 13 and 26 ($\times 10^{-8}$ SI/kg), which are not unusually high, but are well within a surveyable range. There should usually therefore be a detectable response to any earth-filled archaeological features which are present.

Archaeological background

A plan of previously identified archaeological sites and findings within the site and a surrounding study area is reproduced as figure 32i. This plan is based on sites listed in the Essex HER, and was prepared for an earlier archaeological desk based assessment of the site produced by CgMs. It shows a number of individual find spots within the survey area, but also green shaded areas which are listed as archaeological monuments. Cropmarks are indicated in one of these (HER 18898) in the southern half of the site, and may also be present in the shaded areas to the north (46545 and 4658), although this is unclear from the plan. The two fields surveyed in December contain an archaeological site (46545), and a circular feature (9866). A number of former field boundaries are indicated on historic maps of the area supplied to us by CgMs. Various boundaries were detected by the survey, and are visible also on the OS map of 1960, reproduced here as figure 32ii.

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 grey scale plots (figures 10-18), and as graphical (x-y trace) plots at 1:1500 (figures 19-31). 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 19-31 (which permits the interpreted outlines to be compared with the underlying data), and is reproduced separately to provide a summary of the findings (figures 4-9). An initial summary plan shows the interpreted findings from the entire site at reduced scale (figure 3).

Some of the survey figures remain unchanged from the original report, but others have been moved, and all are renumbered to accommodate the new survey areas.

The graphical plots show the magnetometer readings after minimal pre-processing which includes adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plots to reduce background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. The interpretation is intended to be schematic and illustrative, and not to reproduce the detail of the grey scale plots.

Magnetic anomalies of potential archaeological interest are outlined in red, but weaker or

less well-defined features are in a light brown. The distinction between these categories is not precise, and some of the light brown features may be archaeological, although others may be natural, or of other non-archaeological origin.

Stronger (perhaps recent) disturbances are in a darker brown. Some possible (but uncertain) cultivation markings are shown in green, and probable land drains in blue. Some of the more conspicuous ferrous objects (identifiable as narrow spikes in the graphical plots) are outlined in light blue.

Survey location

The survey grid was set out and tied to the OS grid using a differential GPS system. 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.

Results

Fields within the initial (October 2012) survey area have been numbered arbitrarily (1-7) from north to south for identification, as indicated on figure 1 and elsewhere. The two additional fields surveyed in December have therefore been numbered 8 and 9, and the March 2013 survey is field 10. Findings are described by fields in this sequence.

Survey 1 (October 2012)

Field 1

This field is at a slightly greater elevation than much of the remainder of the site, and appears to have been favoured for early settlement. A number of clearly defined ditched enclosures which are likely to represent late prehistoric (or Romano-British) settlement sites and associated field systems have been detected by the survey, together with other findings which are less clearly interpretable.

One main group of findings includes a large rounded enclosure in the centre of the field at A (as labelled on figure 4), with further rectilinear enclosures to the south at B, and perhaps others in the south eastern corner of the field at C. Various individual magnetic anomalies were detected within and around these enclosures (and are visible particularly in the graphical plot). These could indicate occupation features, mainly to the south and west of enclosure A. The large magnetic anomalies outlined in brown nearby at D are rather large to be archaeological features, and could be silted or infilled hollows unrelated to the archaeological site. Alternatively, the strong magnetic response from these features could mean they are filled with soil which is magnetically enhanced as a result of nearby occupation or industrial activity, even if the magnetic anomalies themselves do not directly represent archaeological features.

A further group of enclosures detected in the south west of the field appears to contain

numerous internal features at E. These findings, as well as those at A – C, lie mainly within an area corresponding to HER site 4658.

Linear markings detected to the north and west of the field are less clearly defined, and may include cultivation effects or land drains, perhaps in addition to traces of earlier field systems. It is possible that features in the north west corner (around F) could include both drains and enclosure ditches. A few indistinct traces of linear features could also be present in the north east corner (G).

The field is divided by an east–west former boundary (H), which was marked on OS maps until 1994. Other former boundaries were detected to the south of the field.

Field 2

Findings include a further distinct group of both rounded and rectilinear ditched enclosures around J (figure 6). Individual magnetic anomalies signify the presence of occupation remains within the enclosures, and there is a possible large hut circle to the north at K. Other findings include a former boundary at L, and a strip of disturbed readings at M. These correspond to a path or track visible on the 1960 map.

Other linear features were detected towards the west of the field at N, but (as in the north of field 1) they do not appear to be associated with dense settlement activity, and it is difficult to distinguish possible enclosures from cultivation effects or drains. It remains possible that some of the features around N represent traces of field systems.

Fields 3-5

Findings include part of a distinct rectilinear enclosure at O in field 5 (as well as various pipes), and some rather amorphous features in fields 3 and 4. Some of these appear to form possible curved or circular outlines (as at P and Q in figure 7), but are very indistinct, and may represent only minor natural silted hollows or variations in topsoil depth.

Fields 6-7

Field 6 was previously subdivided by boundaries R and S. These were detected by the survey, and are marked on the 1850 enclosure map, and some later maps. There are strong magnetic disturbances in the vicinity of the disused pit shown on the current OS mapping to the east of S. The pit is no longer extant, and must recently have been infilled and levelled with modern debris which extends across the surrounding area.

Another strip of magnetically disturbed ground (identified by grey outlines at T) extends along the northern boundary of field 6. This corresponds to the line of the Elsenham to Thaxted light railway, visible on maps dated between 1923 – 1960.

Features represented by the cropmarks in field 6 (HER 18898 as shown on figure 32i) clearly include the former boundary at R. The linear features U and V to the west of field 6

also appear to correspond in part to the cropmarks. There do not appear to be any concentrations of associated features near to U and V as were seen near to linear features and enclosures in fields 1 and 2. The significance of a possible weak curving linear feature (W) is unclear.

The various linear markings in field 7 form a branching pattern consistent with a probable system of land drains.

Survey 2 (December 2012)

Field 8

The survey has detected additional enclosures and probable settlement remains similar to those seen in field 1. An elliptical ditched enclosure of about 25m x 30m in size at X (as labelled on figure 4) intersects a larger enclosure to the south. This perhaps contains an incompletely detected ring ditch or hut circle at Y. Both enclosures may contain internal features, but they are less concentrated than at E in field 1. One or two disturbed linear features perhaps indicating former ditches or drains connects to a group of strong disturbances at Z, and also align with the field boundary to the NW. This alignment suggests the disturbances at Z could represent an infilled pond, although strong magnetic disturbances could also indicate ancient industrial debris.

Linear features towards the north of the field at AA may indicate further traces of a field system, as noted (at F) nearby in field 1. Disturbances in the corners of the field at BB and CC are likely to be non-archaeological.

Field 9

The most clearly defined finding is a circular feature (DD) in the south eastern corner of the field. This has an entrance to the east, and is adjacent to Mill House. It has therefore been suggested to us (by Oxford Archaeology) that it could represent the site of a medieval or later windmill. It appears to correspond to feature 9866 as shown on the HER plan (32i).

Other findings include weak linear markings visible at various locations in the grey scale plot (e.g. EE, FF). These could be traces of enclosures or field systems, as previously suggested around N in field 2. The linear feature at GG corresponds to a boundary shown on the 1960 OS map.

Field 10

The potentially most significant findings are in the northern part of the field, where there are ditches and enclosures similar to those seen nearby to the north at E in field 2 and Z in field 8. The feature labelled HH in figure 5 appears to represent an irregular elliptical enclosure comparable to others detected in fields 1, 2 and 8. It may contain internal features, and other pit-like magnetic anomalies are outlined (in red) nearby, but these are less concentrated than at E.

The enclosure HH may be located within a larger incompletely detected rectilinear enclosure, part of which is labelled II. Other ditch-like features may have been detected

towards the east of the field at JJ (where an enclosure or orchard is marked on the 1960 OS map; figure 32ii), and at KK, LL, but it is unclear whether these represent a continuation of possible field systems (as seen at B in field 1 and N in field 2), or whether they are cultivation effects. Other (variously aligned) cultivation markings were also detected (green). The generally weak response to features other than HH suggests that traces of field systems or enclosures across much of the field are likely to have been eroded by ploughing.

Other findings appear to be mainly non-archaeological. There is strong magnetic activity around a pipe at MM. These disturbances correspond to an enclosure shown on the 1960 map. Another weak sequence of disturbed readings at NN also corresponds to a 1960 boundary.

Strong ferrous magnetic anomalies appear to be linked by a north-south linear feature at OO. Their significance is unclear, and no boundary is shown here on the 1960 map. The distinct linear feature PP aligns with, but does not correspond to, a short boundary shown on the 1960 map.

Conclusions

The most well-defined archaeological findings identified by the October survey are the groups of enclosures with associated occupation features around A, B, E and J in fields 1 and 2. It is possible that traces of other enclosures or field systems could also be present at C, F and G in field 1, and N in field 2, but these are not associated with dense clusters of occupation features of the kind seen at A, E, J.

It is possible that part of a further rectilinear enclosure was detected at O in field 5. This is a little to the north of cropmark group 18898, which was detected in part at U and V in field 6. There are otherwise relatively few identifiable findings in the southern survey area, other than indistinct features (P and Q) in fields 3-4, some former field boundaries, and the light railway.

Additional findings from the December survey include intersecting ditched enclosures possibly associated with settlement remains at X and Y in field 8, and a distinct circular enclosure or ditched mound at DD in field 9. Additional traces of enclosures or field systems could be present (at AA, EE, FF) in both fields. One additional group of similar features (HH, II) was found at the north of field 10 in the survey done in March 2013. Findings elsewhere in field 10 appear to relate mainly to cultivation or former boundaries.

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The fieldwork for the first two surveys was done by C. Oatley, C. Matthews, R. Nicholson, M. Berry and A. Bartlett and F. Prince. The March 2013 survey was done by C. Oatley and N. Paveley. Data processing was by P. Cottrell.

**Land at Elsenham: Geophysical Survey
Appendix : Inventory of Selected Findings**

This list notes the more significant findings from the magnetometer survey of this site. The grading (1-4) given alongside each entry refers in part to the reliability of the geophysical evidence, but the potential archaeological relevance of detected features is also taken into account. Magnetic disturbances which may be mentioned in the text or indicated on plans are not necessarily included if they appear to be of clearly natural or non-archaeological origin.

- Grade 1: Distinct magnetic anomalies of probable archaeological origin.
- Grade 2: Weaker or more isolated magnetic anomalies which could in part be archaeologically significant.
- Grade 3: Distinct magnetic anomalies, but probably recent or natural, or of other non-archaeological origin.
- Grade 4: Weaker or more isolated magnetic anomalies of probably non-archaeological origin.

Survey 1 (October 2012):

Field	Feature		Grade
1	A	Large curved ditched enclosure within extended group of enclosures and occupation features.	1
1, 3	B, C	Groups of rectilinear enclosures to SE of A.	1
3	D	Large magnetic anomalies: perhaps natural silted hollows ?	3
3	E	Probable dense group of occupation features within enclosure.	1
3	F, G	Variously oriented linear features in NW and NE corners of field; may include drains or traces of field system.	2
5	H	Magnetic disturbances on line of former field boundary.	3
5	J	Group of enclosures containing dense occupation features.	1
5	K	Possible large hut circle near J.	1
5	L	Former field boundary.	3
5	M	Disturbed response on line of former path.	3

5	N	Possible field system or enclosures.	1-2
5	O	Part of rectilinear ditched enclosure.	1
5	P, Q	Weak curving magnetic anomalies; perhaps natural ?	2
6	R, S	Former field boundaries in field 6.	3
6	T	Strong magnetic disturbances on line of former railway.	3
6	U, V	Linear magnetic anomalies correspond in part to cropmarks 18898.	1
6	W	Weak irregular linear feature ?	2

Survey 2 (December 2012):

Field	Feature		Grade
8	X	Ditched enclosure with possible internal features.	1
8	Y	Part of possible hut circle within larger ditched enclosure.	1-2
8	Z	Group of strong magnetic anomalies: probably former pond (or possibly ancient industrial debris) ?	3
8	AA	Possible traces of field system.	1-2
8	BB, CC	Disturbances in field corners. Perhaps non-archaeological.	4
9	DD	Distinct circular feature: windmill mound ?	1
9	EE, FF	Possible traces of field systems, perhaps with other features near to EE.	2
9	GG	Former field boundary.	3

Survey 3 (March 2013):

Field	Feature		Grade
10	HH	Ditched enclosure with possible internal features.	1
10	II	Part of possible larger rectilinear ditched enclosure.	1-2
10	JJ, KK, LL	Possible traces of field systems (if not cultivation).	2

10	MM	Pipe and other disturbances near to 1960 boundary.	3
10	NN	Possible disturbances near line of 1960 boundary.	4
10	OO	Linear feature appears to link two strong ferrous anomalies.	3
10	PP	Distinct linear marking: possible continuation of features shown on 1960 map.	3