

## GEOPHYSICAL SURVEY OF LAND AT WALK FARM, CROFT LANE, STRATTON HALL NR FELIXSTOWE, SUFFOLK

NGR TM 25693993

## SITE CODE: SNH 038

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## ABSTRACT

A gradiometer survey was carried out on land at Walk Farm, Croft Lane, Stratton Hall, near Felixstowe, Suffolk on behalf of OA East in December 2012. This survey was undertaken as part of the pre-planning application for the installation of a solar farm.

Two fields covering approximately 25ha were surveyed. The site is situated adjacent to the A14. The development site lies within a landscape containing multi-period cropmarks and other known archaeological features in the immediate vicinity.

The geophysical survey results produced little evidence in terms of archaeological remains. A series of rectilinear enclosure ditches were detected towards the southern end of Field 1. These correlate well with the cropmark evidence as recorded on the Suffolk HER. Field 2 produced a polygonal arrangement of ditches that could relate to periglacial features such as ice wedges or may denote the presence of archaeological features. Rectilinear cropmarks are known at the southern end of this field as recorded on the Suffolk HER. Other anomalies recorded relate to a former track and modern ferrous remains.

#### **1.0** INTRODUCTION

OA East commissioned the Centre for Archaeological and Forensic Analysis, Cranfield University to undertake a fluxgate gradiometer survey on land proposed for the development of solar panels on land at Walk Farm, Croft Lane, Stratton Hall, near Felixstowe, Suffolk. This work was carried out in December 2012.

The purpose of the survey was to assist in defining the character and extent of any archaeological remains relating to prehistoric and Roman remains.

The survey methodology described in this report was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (EH 2008).

#### 2.0 LOCATION AND DESCRIPTION

The information contained within sections 2 and 3 of this report is based on information supplied by OA East.

The site is located 6.5km to the north-west of Felixstowe and adjacent to the A14 to the south-west and Croft Lane to its north-east (Fig 1: TM 25693993). The proposed development site is currently under arable cultivation and planted with rapeseed.

Field 1 is virtually flat whilst Field 2 slopes very gently from the north-east to southwest towards the A14, which forms the south-western boundary of Field 2. The underlying geology is comprised of Glacial Sands and Gravels. The magnetic susceptibility of these types of geologies is generally variable (Gaffney & Gater 2003, 78; EH 2008, 15, 10; Clark 1990, 92).

#### **3.0** BACKGROUND INFORMATION

The development site is situated within a landscape containing multi-period cropmarks and archaeological remains.

Within the proposed development site are cropmarks relating to a prehistoric field system and a series of prehistoric enclosures (SNH 028, SNH 029, SNH 030, and TYN 055). Adjacent to the site of investigation are a number of Bronze Age pits and ditches as well as a Roman cremation (KIR 045).

An archaeological evaluation was carried out to the south-west of the survey area in 2004 prior to a new reservoir at Walk Farm being constructed (Sommers 2004). Four trial trenches were excavated, which revealed three undated ditches. During the topsoil strip for the new reservoir, three cremation burials, one of early Roman date and four undated pits were recorded.

## 4.0 METHODOLOGY

#### Gradiometry

Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological as well as other detectable remains (Clark 1990).

The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.

The area survey was conducted using a Bartington Grad 601 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data was processed using *Archeosurveyor v.2*. The results are plotted as greyscale and trace plot images (Figs. 2-8).

The enhanced data was processed by using de-stripe function to correct the unevenness of the image in order to produce a smoother graphical appearance. It was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings caused by stray iron fragments and spurious effects due to the inherent magnetism of soils. The data was also clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal.

## 5.0 INTERPRETATION AND ANALYSIS OF RESULTS (Figs. 2-8)

A detailed fluxgate gradiometer survey covering an area of c. 21ha of land at Walk Farm, Croft Lane, Stratton Hall, near Felixstowe, Suffolk revealed few significant archaeological anomalies. The majority appear to reflect more recent remains and modern disturbances as well as natural variations in the underlying soils and geology.

Generally, a series of isolated individual anomalies were detected (Fig. 5, examples circled pink/pink line) that reflect areas of modern ferrous litter, which lie just below or on the surface of the field. A number of these anomalies relate to tile and brick fragments, horseshoes, plough shares, fences and other spurious ferrous material on or just below the plough soil.

## Field 1

Close to the southern end of this field, a series of rectilinear anomalies (Figs 2-4 and 8, 1) were detected indicating the presence of rectangular shaped ditched enclosures of prehistoric date. These can be clearly seen on the latest Google Earth image (2012) possibly relating to a prehistoric field system. One of these ditches extends into Field 2. They also correlate well with the cropmarks as recorded on the Suffolk Historic Environment Record (HER No SNH 029).

Parallel to the existing track, a linear dipolar anomaly (Fig 8, blue line) was recorded denoting the presence of an existing pipe. During the survey, a replacement pipe was laid into the ground around the perimeter of the field. This replaced a pipe that ran across the centre of the field from north to south. However, traces of this plastic pipe were not recorded in the resultant grey scale image. A similar magnetic response was detected parallel to the hedge line at the northern end of Field 2.

Other anomalies of an ephemeral nature (Fig 8, yellow lines) were recorded at the across the field possibly indicate modern plough marks or variations in the underlying natural of sands and gravel.

## Field 2

Close to the north-eastern apex of the field, two linear anomalies (Fig 8, 1) were detected that appear to relate to the enclosure ditches in Field 1.

An oval shaped zone of magnetic variation was detected in the northern part of the field (Fig 8, 2), which may reflect the remains of a former quarry pit.

A strong dipolar linear anomaly (Fig 8, green line) was recorded towards the centre of the field running in a north-west to south-east direction indicates the former presence of a track. This is clearly depicted on the 1968 1:2500 series map for Felixstowe but has been removed by the 1980's as this is no longer depicted on the Ordnance Survey map for this time.

To the south-west of the former track, a polygonal arrangement of linear anomalies (Fig 8, 3) were detected possibly denoting ditches although they are more likely to resolve as natural or geological features. Periglacial features are not uncommon in the East Anglia region. The HER records show rectilinear cropmarks at the southern end of this field (HER No SNH 028). No correlation can be made with the magnetic anomalies and the cropmarks in this area but they could be related.

Immediately to the west of anomaly **3**, is a strong broad curvilinear shaped anomaly was recorded (Fig 8, **4**) possibly denoting further evidence of a former quarry or may resolve as a natural feature in the underlying geology.

To the south-east of the track, a rectilinear shaped anomaly (Fig 8, 5) was detected that may represent part of a ditched enclosure.

Close by, are a series of strong individual anomalies (Fig 8, red circles) resemble pits. However, due to the very nature of the underlying natural geology here, they are more likely to resolve as natural iron deposits.

Other weakly magnetic linear, curvilinear and rectilinear anomalies (Fig 8, yellow lines) were recorded in the resultant plot that possibly represent plough marks or variations in the underlying natural deposits.

No further anomalies were recorded of an archaeological nature.

#### 6.0 **CONCLUSIONS**

The survey has identified very few significant archaeological anomalies and the majority appear to reflect the remains of natural variations in the underlying geology.

A rectilinear arrangement of ditches detected appears to reflect remains of prehistoric enclosures and field systems.

Other anomalies relate to a former track and modern ferrous remains.

Based on the survey results, it is concluded that the site indicates very few archaeological anomalies. However, the area of investigation may still possess archaeological potential and further archaeological investigations maybe required to resolve some of these more significant anomalies.

#### 7.0 ACKNOWLEDGEMENTS

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Fig. 1 - Location map showing survey areas, scale - 1:7500



-10 nT 10

Γ

FIG. 2: Field 1 - Grey scale plot of raw data, scale – 1:1500



20 nT/cm

FIG. 3: Field 1 - Trace plot of raw data, scale – 1:1500



FIG. 4: Field 1 – Grey scale plot of enhanced data, scale – 1:1500



60m

FIG. 5: Field 2 – Grey scale plot of raw data, scale – 1:1500



# FIG. 6: Field 2 – Trace plot of raw data, scale – 1:1500



FIG. 7: Field 2 – Grey scale plot of enhanced data, scale – 1:1500



Figure 8 - Interpretation of results, scale - 1:2500