Geophysical Survey Report

Six Oaks Renewable Energy Park

Bottisham, Cambridgeshire

For

Orion Heritage

Magnitude Surveys Ref: MSTL1227A

HER Event Number: ECB6941

July 2022

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Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 108ha area of land at Bottisham, Cambridgeshire. A fluxgate gradiometer survey was successfully completed across the survey area; however, the presence of buried services and overhead powerline cables crossing the survey area has produced broad anomalies, which may obscure weaker anomalies if any were present. Despite this, multiple anomalies have been detected including those of potential archaeological origins in the form of a series of infilled ditches likely representative of Medieval field systems, a possible although unlikely trackway associated with the Hare Park round barrow and a probable, partial sub-rectangular enclosure. Agricultural activity has been identified as a former field boundary, modern ploughing trends and ridge and furrow regimes. Natural variations have been identified throughout the survey area as dissolution processes within the chalk bedrock and variations in the composition of superficial deposits. Linear and curvilinear anomalies have been identified which lack association and generally have a weaker magnetic strength than anomalies identified as possible archaeology, but which do share similar morphologies. Therefore, an archaeological origin cannot be ruled out. Multiple strong, discrete anomalies have been identified which indicate areas of fired/burning activity. However, these areas cannot be dated through the geophysical results alone.

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1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Orion Heritage to undertake a geophysical survey over a c. 108ha area of predominantly agricultural land south of the A14, Bottisham, Cambridgeshire (TL 56981 59167).

1.2. The geophysical survey comprised of a hand-carried GNSS-positioned fluxgate gradiometer survey. Magnetic survey is the standard primary geophysical method for archaeological applications in the UK due to its ability to detect a range of different features. The technique is particularly suited for detecting fired or magnetically enhanced features, such as ditches, pits, kilns, sunken featured buildings (SFBs) and industrial activity (David *et al*., 2008).

1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David *et al*., 2008), the Chartered Institute for Archaeologists (CIfA, 2020) and the European Archaeological Council (Schmidt *et al.,* 2015).

1.4. It was conducted in line with a WSI produced by MS (Turner, 2022).

1.5. The survey commenced on 19th April and took two weeks to complete.

2. Quality Assurance

2.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society for Archaeological Prospection).

2.2. The directors of MS are involved in cutting edge research and the development of guidance/policy. Specifically, Dr Chrys Harris has a PhD in archaeological geophysics from the University of Bradford, is a Member of CIfA and is the Vice-Chair of the International Society for Archaeological Prospection (ISAP); Finnegan Pope-Carter has an MSc in archaeological geophysics and is a Fellow of the London Geological Society, as well as a member of GeoSIG (CIfA Geophysics Special Interest Group); Dr Paul Johnson has a PhD in archaeology from the University of Southampton, is a Fellow of the Society of Antiquaries of London and a Member of CIfA, has been a member of the ISAP Management Committee since 2015, and is currently the nominated representative for the EAA Archaeological Prospection Community to the board of the European Archaeological Association.

2.3. All MS managers, field and office staff have degree qualifications relevant to archaeology or geophysics and/or field experience.

3. Objectives

3.1. The objective of this geophysical survey was to assess the subsurface archaeological potential of the survey area.

3.2. The survey was carried out in accordance with the project brief created by the Cambridgeshire Historic Environment Team (CHET, forthcoming).

4. Geographic Background

4.1. The survey area was located c. 1.98km northeast of Great Wilbraham (Figure 1). The Gradiometer survey was undertaken across five fields under arable cultivation. The survey area lay to the southeast of the A14 and west of the A11 and was bordered by farmland to the north and south (Figure 2).

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
1	The survey area consisted of an arable field containing winter wheat, sloping down from the southeast to the northwest.	The survey area was bordered by hedges to the north, south and west and was bordered to the east by hedges and a wooden fence. The southern edge aligned with an overhead power cable. The southern border of the survey area ran alongside an overhead power cable.
2	The survey area consisted of an arable field containing winter wheat, sloping down from the southeast to the northwest.	The survey area was surrounded on all sides by hedges. The southern border of the survey area ran alongside an overhead power cable.
3	The survey area consisted of an arable, flat field containing winter wheat.	The survey area was surrounded on all sides by hedges.
4	The survey area consisted of an arable field containing winter wheat, sloping down from the northeast.	The survey area was bordered by hedges on all sides except for the north, where it was bordered by the A14.
5	The survey area consisted of an arable flat field containing winter wheat.	The survey area was bordered by a hedge with gaps in the north, north-eastern and southern edges. The northern border aligns with the A14. A pylon was situated at the south end of the western border with overhead cables crossing the westernmost edge of the survey area. In the northern half of the area there was a dip.

4.3. The underlying geology comprises of chalk of the Zigzag formation in the central area, along with chalk of the Totternhoe Stone member. To the west, and east, there is an area of Holywell Nodular chalk formation and new pit chalk. Superficial deposits are undefined across the survey area (British Geological Survey 2022).

4.4. The soils consist of freely draining lime-rich loamy soils (Soilscapes 2022).

5. Archaeological Background

5.1. The following is a summary of a Desk-Based Assessment produced and provided by Orion Heritage Ltd. (Lock, 2022).

5.2. No previous archaeological investigations have been carried out in the area itself although multiple investigations have been undertaken in the vicinity of the site, suggesting moderate potential for Prehistoric, Roman, and Medieval archaeological evidence. These include barrow

excavations in the 19th and early 20th century and more recently, in 1989, a large-scale investigation at Hare Park c. 80m northeast of the survey area.

5.3. LiDAR data shows sinuous furlong boundaries across the survey area with probable Medieval dating, reflecting the common Medieval open-field systems. HER data reports blocks of Medieval ridge and furrow to the east of the surveyed area and a possible Prehistoric trackway known as 'The Streetway' is recorded running along the boundaries of Areas 1 and 2. There is partial eastern coverage by Hare Barrow cemetery, which contains three associated scheduled monuments, none of which are within the survey area.

5.4. A collection of undated ditch features has been recorded outside of the survey area. These include a linear ditch and trackway, a linear ditch and banks, a ploughed-out ring ditch, aerial images indicating a linear feature, and an enclosure. These are all within c.500m of the survey area to the north. A 1km long, 10m wide linear feature has been recorded to the southeast of the site consisting of two areas of double ditches. A number of additional linear features, pits, ring ditches and enclosures have been recorded within a kilometre radius of the site with a particular focus of activity to the north.

5.5. A small number of Prehistoric features have been recorded outside the survey area. These are limited to scheduled monuments within the associated Hare Park barrow cemetery and the aforementioned prehistoric trackway ('The Streetway'). The scheduled monuments include a ploughed-out bowl barrow with associated ring ditch c.480m northeast of the survey area and two more barrows in the vicinity. Geophysical surveys conducted c.600m northeast of the survey area revealed an additional Bronze Age bowl barrow. Further Prehistoric features include four barrows c.400m east of the survey area, a possible barrow c. 500m east and a Bronze Age ring ditch c.650m southeast of the survey area.

5.6. Cropmarks identified c. 900m southeast of the survey area may identify a Roman building, and a possible Roman or Iron Age enclosure is recorded c.500m southeast of the survey area.

5.7. Evidence for Medieval features near the survey area is comprised of sinuous furlong boundary banks which are indicative of an open field system, and records of ridge and furrow cultivation across the northwest west and southwest of the survey area. There is an additional record of boundary banks to the southwest, north, and east of the site.

6. Methodology

6.1. Data Collection

6.1.1. Magnetometer surveys are generally the most cost effective and suitable geophysical technique for the detection of archaeology in England. Therefore, a magnetometer survey should be the preferred geophysical technique unless its use is precluded by any specific survey objectives or the site environment. For this site, no factors precluded the recommendation of a standard magnetometer survey. Geophysical survey therefore comprised the magnetic method as described in the following section.

6.1.2. Geophysical prospection comprised the magnetic method as described in the following table.

6.1.3. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Magnetic	Bartington Instruments Grad-13 Digital Three-Axis Gradiometer	1m	200Hz reprojected to 0.125m

6.1.4. The magnetic data were collected using MS' bespoke hand-carried GNSS-positioned system.

6.1.4.1. MS' hand-carried system was comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing was through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

6.1.4.2. Magnetic and GPS data were stored on an SD card within MS' bespoke datalogger. The datalogger was continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allowed for data collection, processing and visualisation to be monitored in real-time as fieldwork was ongoing.

6.1.4.3. A navigation system was integrated with the RTK GPS, which was used to guide the surveyor. Data were collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

6.2. Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to the EAC and Historic England guidelines for 'minimally enhanced data' (see Section 3.8 in Schmidt *et al.*, 2015: 33 and Section IV.2 in David *et al.*, 2008: 11).

Sensor Calibration – The sensors were calibrated using a bespoke in-house algorithm, which conforms to Olsen *et al*. (2003).

Zero Median Traverse – The median of each sensor traverse is calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data are rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data are interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

6.3. Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data from the lower sensors. The gradient of the sensors

minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images of the gradient and total field at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figures 14, 17, 20, 23, 26, 29, 32, 35 and 38). XY trace plots visualise the magnitude and form of the geophysical response, aiding anomaly interpretation.

6.3.2. Geophysical results have been interpreted using greyscale images and XY traces in a layered environment, overlaid against open street maps, satellite imagery, historical maps, LiDAR data, and soil and geology maps. Google Earth (2022) was also consulted, to compare the results with recent land use.

6.3.3. Geodetic position of results – All vector and raster data have been projected into OSGB36 (ESPG27700) and can be provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures are provided with raster and vector data projected against OS Open Data.

7. Results

7.1. Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible, an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports, as well as reports from further work, in order to constantly improve our knowledge and service.

7.2. Discussion

7.2.1. The geophysical results are presented in combination with satellite imagery and historical maps (Figure 4, 7 and 10) and LiDAR (Figures 5, 8 and 11).

7.2.2. The fluxgate gradiometer survey was successfully undertaken across c.108ha of land off Bottisham, Cambridgeshire. The magnetic technique has generally responded well to the environment of the survey area; however, modern magnetic disturbance is present, caused by buried services and overhead powerline cables cutting across the survey area. This disturbance may have masked weaker anomalies within its immediate surroundings if any were present. The presence of the modern activity has not impacted the identification of other, more weakly enhanced anomalies elsewhere

within the survey area, including those interpreted as archaeological, agricultural, natural and undetermined origin.

7.2.3. Probable and possible archaeological activity has been identified within the centre and northwest of the survey area. These anomalies are indicative of infilled ditches with the majority of linear anomalies suggestive of Medieval field systems which are not depicted on historical OS mapping (Figures 4 and 11). Although it may be a former field boundary, the largest of these linear anomalies identified within the north of the survey area runs in an orientation towards the Hare Park barrow cemetery. Therefore, the possibility of this anomaly identifying a trackway to the Barrow cemetery cannot be ruled out. A sub rectangular anomaly suggestive of a partial enclosure has also been identified running towards the north-western edge of the survey area.

7.2.4. Anomalies relating to recent and historical agricultural activity have been detected across the survey area. These comprise of a former field boundary recorded on historical OS mapping in the centre of Area 5 (Figures 4, 7 and 11), as well as ridge and furrow cultivation and modern ploughing regimes correlating with satellite imagery (Figures 4, 7 and 11).

7.2.5. Variations relating to the geology and geomorphology of the survey area have been identified across the survey area and are most visible in the total field data. These natural variations are largely represented by stronger, closely spaced inter-braided, curvilinear anomalies. These are characteristic of dissolution processes within the chalk which underlies the survey area and suggests that the superficial deposits are at their thinnest within these areas. Additionally, larger and broader weakly enhanced anomalies are present throughout the survey area which likely correspond to variations in said superficial deposits. It is possible that some of these anomalies have an anthropogenic origin, as they can be difficult to distinguish in the magnetic results from those produced by natural processes.

7.2.6. Linear anomalies have been classified as 'undetermined' where it is difficult to determine whether they are the result of archaeological, agricultural or natural variations. This is especially true of those identified in areas particularly affected by natural variations where it is not possible to ascertain if the anomalies have been produced by natural or anthropogenic processes. Discrete, dipolar anomalies have also been identified, possibly indicating areas of burnt/fired material which cannot be dated through the geophysical results alone.

7.3. Interpretation

7.3.1. General Statements

7.3.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

7.3.1.2. **Ferrous (Spike)** – Discrete dipolar anomalies are likely to be the result of isolated pieces of modern ferrous debris on or near the ground surface.

7.3.1.3. **Ferrous/Debris (Spread)** – A ferrous/debris spread refers to a concentration of multiple discrete, dipolar anomalies usually resulting from highly magnetic material such as rubble containing ceramic building materials and ferrous rubbish.

7.3.1.4. **Magnetic Disturbance** – The strong anomalies produced by extant metallic structures, typically including fencing, pylons, vehicles and service pipes, have been classified as 'Magnetic Disturbance'. These magnetic 'haloes' will obscure weaker anomalies relating to nearby features, should they be present, often over a greater footprint than the structure causing them.

7.3.1.5. **Undetermined** – Anomalies are classified as Undetermined when the origin of the geophysical anomaly is ambiguous and there is no supporting contextual evidence to justify a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally distinct from those caused by ferrous sources.

7.3.2. Magnetic Results - Specific Anomalies

7.3.2.1. **Probable Archaeology (Strong/Weak)** – A rectilinear anomaly with a mostly weak magnetic signal has been identified running into the northwestern edge of Area 3 with a width of c. 70m [**3a**], The rectilinear morphology and similar magnetic signal of this anomaly to the surrounding, possible archaeological anomalies is suggestive of a partial enclosure.

7.3.2.2. **Possible Archaeology (Weak)** – A group of linear anomalies have been identified in Areas 2, 4 and 5 (Figures 4, 7 and 10). The largest of these anomalies [**5a**] measures c. 620m and stretches to the edges of Area 5 in a northwest-southeast alignment. Of these anomalies, [**2b**], [**3b**], [**5a**] and [**5c**] align with anomalies visible on LiDAR imagery (Figure 5, 8 and 11). [**2a**] and [**5b**] do not align with the LiDAR imagery but are perpendicular to [**5a**]. It is not certain whether these latter anomalies are directly related to each other, though they share a similar alignment. The linear morphology and magnetic signal are characteristic of ditches containing magnetically enhanced infill and the majority of these anomalies are probably indicative of medieval open-field systems (See Section 5.3). Hence, a possible archaeological interpretation has been ascribed. Furthermore, these anomalies do not correlate with historical OS mapping which suggests that these field systems predate known mapping. Although [**5a**] shares a similar morphology to the probable Medieval field boundaries (albeit with a more magnetically enhanced fill), the larger size and orientation towards the Hare Park barrow cemetery may also suggest an additional associated land division. However, the interpretation of [**5a**] as a former unmapped field boundary remains quite possible (See Section 5.5).

7.3.2.3. **Agricultural (Weak/Trends)** – A weak linear anomaly running north to south in Area 5 has been identified as a historical field boundary as it aligns with a former field boundary recorded on 2nd Edition Ordnance Survey (OS) mapping (Figure 4).

In addition to this anomaly, agricultural trends have been identified generally on a north to south orientation across the survey area. These correlate with modern ploughing regimes particularly notable in satellite images within areas 3, 4 and 5 (Figures 4, 7 and 11).

7.3.2.4. **Ridge and Furrow (Trends)** – A collection of regularly spaced linear and curvilinear anomalies have been identified in an east-west orientation in Area 3 and crossing into Area 4. These anomalies have a wider spacing (between c.5m to c.9m) than the linear anomalies related to modern ploughing regimes. Therefore, these anomalies may relate to earlier ridge and furrow cultivation.

7.3.2.5. **Natural (Strong, Weak and Spread)** – Distinct strong, interwoven, curvilinear anomalies have been identified throughout the survey area that follow an approximately common alignment (See Section 4.2). These anomalies are characteristic of weathering in the chalk producing strong sharp anomalies. The processes which cause this are more likely to occur where the soils are thinner and well drained, and thinner soils and superficial sediments in this area also mean the features come within detection range of the gradiometer. Much broader but weakly enhanced zones throughout the survey area likely correspond to variations in the composition of these superficial deposits. It is possible that some of these anomalies may have an anthropogenic origin, as they can be difficult to distinguish in the magnetic results from those produced by the natural processes.

7.3.2.6. **Services** – Several linear anomalies with strong magnetic signals have been identified across Areas 2, 3 and 5 and have been identified as modern services. Due to the strong magnetic enhancement of these modern services, weaker anomalies may have been masked if any were present.

7.3.2.7. **Undetermined (Strong/Weak)** – Several positive rectilinear and curvilinear anomalies have been identified which are partially obscured by the natural geology around them. These have been labelled undetermined as they lack a characteristic morphology and generally have a weaker magnetic signal by comparison to those labelled as possible archaeology, but an archaeological origin cannot be ruled out. A group of curvilinear/linear anomalies have been identified within the west of Area 4 [**4c**]. Although these anomalies are difficult to discern from the natural variations, an archaeological origin cannot be completely ruled out as the morphologies of these anomalies, in particular the northern most anomaly bears a resemblance to the former field boundaries.

8. Conclusions

8.1. A fluxgate magnetometer survey has been successfully undertaken across the survey area. The impact of modern activity on the site is generally limited to buried services and overhead powerline cables, which may have masked weaker anomalies within the immediate vicinity if any were present. Despite this the geophysical survey has detected a range of anomalies of probable and possible archaeological, agricultural and undetermined origins. Anomalies

resulting from natural processes have been identified as dissolution features in the chalk bedrock and variations in the composition of superficial deposits.

8.2. Anomalies of both probable and possible archaeology have been identified across the survey area in the form of discrete linear anomalies, some of which align with features visible in LiDAR data. The morphology of these anomalies is particularly indicative of Medieval field systems, the longest of these anomalies may also indicate a trackway, possibly related to the Hare Park barrow cemetery. In addition to these, a rectilinear anomaly running to the western edge of the survey area is indicative of a partial enclosure. The ditch-like anomalies have been interpreted as of possible archaeological origin due to their defined edges, omission from historical OS mapping and alignment with LiDAR data.

8.3. Historical and modern agricultural activity has been identified within the survey area. A series of regular linear and curvilinear anomalies to the west of the site are indicative of a ridge and furrow regime and a spread of magnetically enhanced material in the north of the survey area corresponds to a former field boundary recorded on the 2nd edition OS maps, while a series of tightly spaced linear anomalies parallel to the extant field boundaries correspond to modern cultivation practices.

8.4. Clusters of discrete linear anomalies have been detected across the survey area. Although their magnetic response is similar to the ditch-like anomalies identified as of a possible archaeological origin, the lack of an obvious pattern, weaker magnetic strength and lack of association with the archaeological features means that a certain classification cannot be ascribed. Three discrete anomalies have been identified which indicate the presence of burning/fired activity. However, the origin of this activity cannot be determined through the results of the geophysical data alone.

9. Archiving

9.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report.

9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to any dictated time embargoes.

10. Copyright

10.1. Copyright and intellectual property pertaining to all reports, figures and datasets produced by Magnitude Services Ltd is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

11. References

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12. Project Metadata

MS Job Code	MSTL1226
Project Name	Six Oaks Renewable Energy Park
Client	Orion Heritage
Grid Reference	TL 56981 59167
Survey Techniques	Magnetometry
Survey Size (ha)	108ha (Magnetometry)
Survey Dates	2022-04-19 to 2022-05-05
Project Lead	Peter Turner BSc (Hons) MSc
Project Officer	Peter Turner BSc (Hons) MSc
HER Event No	TBC
OASIS No	N/A
S42 Licence No	N/A
Report Version	1.0

13. Document History

Version	Comments	Author	Checked By	Date
0.2	Initial draft for Project Lead to Review	LT/LH	KD	13 May 2022
0.3	Secondary draft for Project Lead to Review	DW	PT	18 May 2022
0.4	Third draft for Director to Review	DW	FPC	20 May 2022
0.5	Client corrections to Review	ED	PT	21 May 2022
1.0	Issued as Final	PT	PT	12 July 2022

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 1 - Site Location
1:25,000 @ A4

Survey Area

N

0 0.5 1 km

magnitude surveys

555000
556000
557000
558000
260000
259000
Chalk Farm
High Street
Wilbraham Road
Whitelands
Greengables
A1303
A14
Spring Hall
Four Mile Stable Farm
Carriage Drive Belt
Green Lane Belt
A11
Park View
Hut Plantation
Allington Hill Farm
Carriage Drive Belt
Area 4
Area 3
Area 5
Area 2
Area 1
Council Farm
The Lanes
A1304

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 2 - Location of Survey Areas
1:10,000 @ A3

Survey Extent

N

0 250 500 750 m

magnitude surveys

A1303

A14

Area 5

A11

Area 5

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 3 - Magnetic Total Field (Lower Sensor) (Northern Areas)
1:3,000 @ A3

48,998 nT 49,003

N

0 30 60 90 m

magnitude surveys

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 4 - Magnetic Interpretation Over Historical Maps (Overview) (Northern Areas)
1:3,000 @ A3

- Agricultural (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Weak)
- Open
- Undetermined (Strong)
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

Area 5

Area 5

Area 5

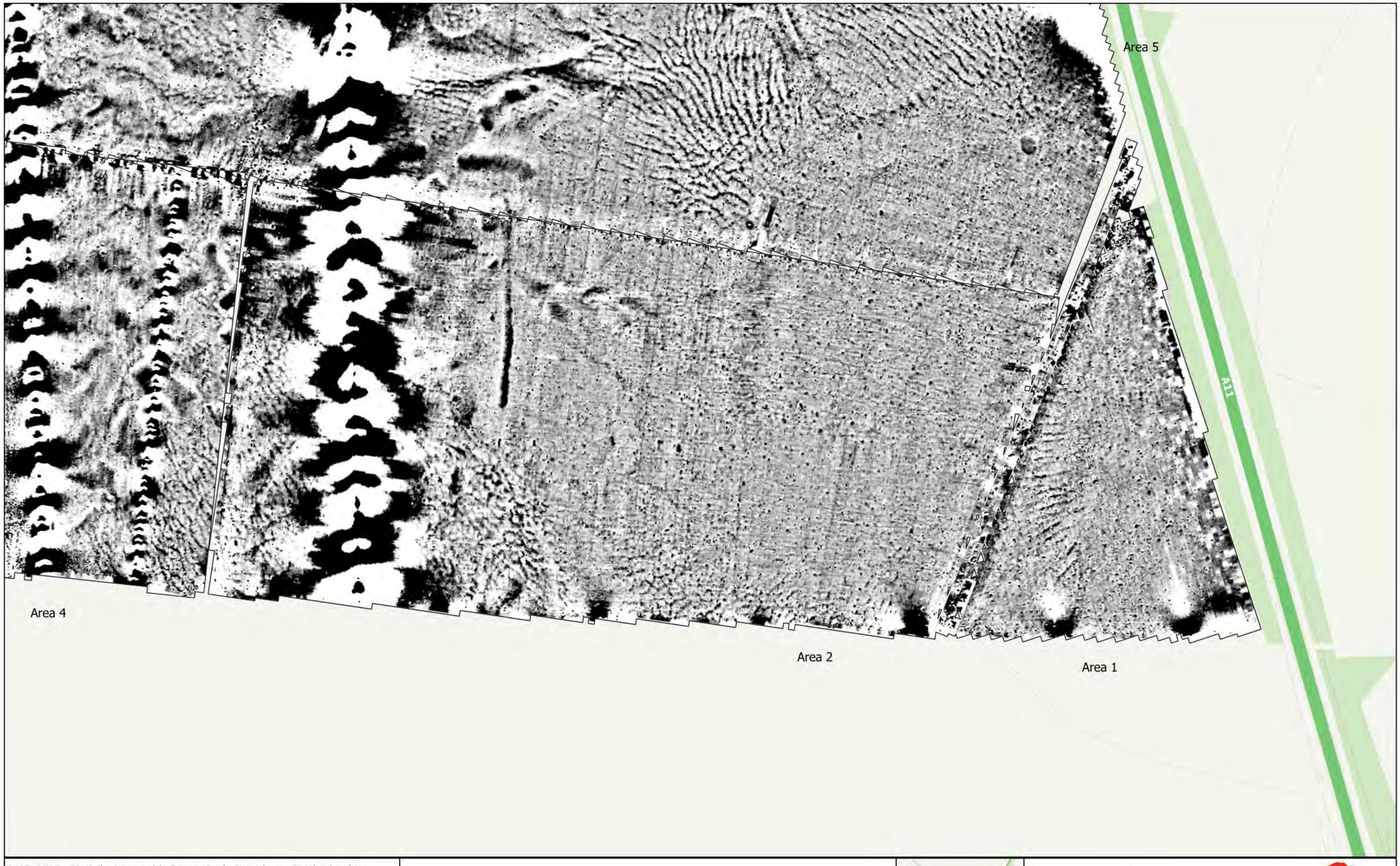
MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 5 - LiDAR (Northern Areas) (Composite 1m DTM data visualised as hillshade plot: azimuth 045°, altitude 35°, vertical exaggeration 3°)
1:3,000 @ A3

- Agricultural (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Weak)
- Open
- Undetermined (Strong)
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys



MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 6 - Magnetic Total Field (Lower Sensor) (Southeastern Areas)
1:3,000 @ A3

48,998 nT 49,003

N

0 30 60 90 m

magnitude surveys

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 7 - Magnetic Interpretation Over Historical Maps (Overview)
(Southeastern Areas)
1:3,000 @ A3

- Agricultural (Weak)
- Archaeology Possible (Weak)
- Magnetic Disturbance
- Natural (Spread)
- Natural (Strong)
- Natural (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

Area 3

Area 2

Area 2

Area 1

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 8 - LiDAR (Southeastern Areas) (Composite 1m DTM data visualised as hillshade plot: azimuth 045°, altitude 35°, vertical exaggeration 3°)
1:3,000 @ A3

- Agricultural (Weak)
- Archaeology Possible (Weak)
- Magnetic Disturbance
- Natural (Spread)
- Natural (Strong)
- Natural (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

A1303

Area 5

Area 3

Area 4

A14

Area 4

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 9 - Magnetic Total Field (Lower Sensor) (Southwestern Areas)
1:3,000 @ A3

48,998 nT 49,003

N

0 30 60 90 m

magnitude surveys

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 10 - Magnetic Interpretation Over Historical Maps (Overview) (Southwestern Areas)
1:3,000 @ A3

Contains historical mapping © CLS Data 2022: Ordnance Survey, 6" 2nd edition c. 1882-1913

- Agricultural (Weak)
- Archaeology Possible (Weak)
- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Strong)
- Natural (Weak)
- Open
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

Area 3

Area 4

Area 4

Area 3

Area 4

Area 3

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 11 - LiDAR (Southwestern Areas) (Composite 1m DTM data visualised as hillshade plot: azimuth 045°, altitude 35°, vertical exaggeration 3°)
1:3,000 @ A3

- Agricultural (Weak)
- Archaeology Possible (Weak)
- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Strong)
- Natural (Weak)
- Open
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

A14

Area 5

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 12 - Magnetic Gradient (Area 5 (West))
1:1,500 @ A3

-1 nT 2

N

0 30 60 90 m

magnitude surveys

A14

Area 5

Area 5

5a

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 13 - Magnetic Interpretation (Area 5 (West))
1:1,500 @ A3

- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Agricultural (Weak)
- Magnetic Disturbance
- Natural (Spread)
- Natural (Weak)
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys

A14

Area 5

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 14 - XY Trace Plot (Area 5 (West))
90nT/cm at 1:1,500 @ A3

N

0 30 60 90 m

magnitude surveys

Spring Hall

A14

Area 5

Area 3

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 15 - Magnetic Gradient (Areas 3 and 5)
1:1,500 @ A3

-1 nT 2

N

0 30 60 90 m

magnitude surveys

Spring Hall

Area 5

Area 5

A14

5c

5d

Area 3

Area 3

3a

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 16 - Magnetic Interpretation (Areas 3 and 5)
1:1,500 @ A3

- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Weak)
- Open
- Undetermined (Weak)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys

Spring Hall

Area 5

A14

Area 3

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 17 - XY Trace Plot (Areas 3 and 5)
90nT/cm at 1:1,500 @ A3

N

0 30 60 90 m

magnitude surveys

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 18 - Magnetic Gradient (Areas 2, 3 and 5)
1:1,500 @ A3

-1 nT 2

N

0 30 60 90 m

magnitude surveys

5c

5d

5b

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 19 - Magnetic Interpretation (Areas 2, 3 and 5)
1:1,500 @ A3

- Archaeology Possible (Weak)
- Agricultural (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Weak)
- Open
- Undetermined (Strong)
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 20 - XY Trace Plot (Areas 2, 3 and 5)
90nT/cm at 1:1,500 @ A3

N

0 30 60 90 m

magnitude surveys

Area 5

A11

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 21 - Magnetic Gradient (Area 5 (East))
1:1,500 @ A3

-1 nT 2

N

0 30 60 90 m

magnitude surveys

Area 5

5b

A11

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 22 - Magnetic Interpretation (Area 5 (East))
1:1,500 @ A3

Archaeology Possible (Weak)
Magnetic Disturbance
Natural (Spread)
Natural (Weak)
Undetermined (Strong)
Agricultural (Trend)
Ridge and Furrow (Trend)
Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys

Area 5

A11

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 23 - XY Trace Plot (Area 5 (East))
90nT/cm at 1:1,500 @ A3

N

0 30 60 90 m

magnitude surveys

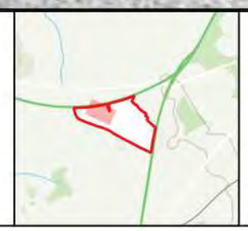
Area 3

A14

Area 4

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 24 - Magnetic Gradient (Areas 3 and 4 (North))
1:1,500 @ A3

-1 nT 2



N

0 30 60 90 m

magnitude surveys

Area 3

A14

Area 4

3a

4b

3b

4a

3c

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 25 - Magnetic Interpretation (Areas 3 and 4 (North))
1:1,500 @ A3

- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Natural (Spread)
- Natural (Strong)
- Natural (Weak)
- Open
- Undetermined (Weak)
- Agricultural (Trend)
- Service
- Ridge and Furrow (Trend)
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys

Area 3

A14

Area 4

MSTL1227 - Six Oaks Renewable Energy Park, Bottisham, Cambridgeshire
Figure 26 - XY Trace Plot (Areas 3 and 4 (North))
90nT/cm at 1:1,500 @ A3

N

0 30 60 90 m

magnitude surveys