

Tillbridge Solar Project EN010142

Volume 6 Environmental Statement

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Regulation 5(2)(a) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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tillbridgesolar.com

This report presents a survey of a larger area which was considered for the Scheme during the application and assessment process. As such there are areas surveyed and presented in this report which are no longer within the Order limits. This does not impact on the conclusions of this report.



Geophysical Survey Report Tillbridge Solar Ltd, Lincolnshire

For

York Archaeology

On Behalf Of

AECOM

Magnitude Surveys Ref: MSSK1393 HER Event Number: TBC OASIS Number: TBC Museum Ascension Number: LCNCC: 2022, 129 June 2023



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Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of Tillbridge Solar Scheme in Lincolnshire. A fluxgate gradiometer survey was successfully completed on a 1325.3ha area of land, with approximately 23ha unable to be surveyed due to overgrown crops, and overgrown vegetation. A large number of archaeological anomalies have been identified, with 12 Areas of Archaeological Activity defined by high densities of possible and probable archaeological features distributed across the survey area. The majority of these areas appear to form settlement complexes focussed on elevated points on the landscape. Other anomalies that do not lie within these settlements consist of trackways and a moated feature. Anomalies related to the decommissioning of a former runway of RAF Sturgate were also identified. Anomalies relating to the historical and modern agricultural use of the landscape are evident across the survey area in the form of ridge and furrow cultivation regimes, modern ploughing trends, mapped and unmapped former field boundaries and former ponds. Multiple anomalies indicative of modern drainage regimes are visible across the survey area, predominantly in low lying areas within the landscape. A number of geological variations have been detected across the survey area, particularly in the east where they may indicate the presence of glaciofluvial deposition. In addition, a number of anomalies have been classified as undetermined, these are of uncertain date and function and have little supporting context. Magnetic Interference from modern sources such as extant fencing, pylons, overhead cables, troughs, agricultural equipment and buried services is visible across the survey area, the effect of this interference is limited but locally significant.

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1. Introduction

- 1.1. Magnitude Surveys Ltd (MS) was commissioned by York Archaeology on behalf of AECOM to undertake a geophysical survey at Tillbridge Solar Scheme, Lincolnshire (SK 91507 89202). Approximately 1325.3ha of land was successfully surveyed with c. 23ha across the survey area unable to be surveyed due to overgrown crops, and overgrown vegetation.
- 1.2. The survey area was located c. 4km northeast of Willingham by Stow, Lincolnshire (Figure 1). Gradiometer survey was undertaken across 138 fields under both arable cultivation and pasture, with four fields unable to be surveyed. The survey area is bounded by the A631 to the north, the B1398 to the east, agricultural fields, with Willingham Road to the south and the villages of Heapham and Springthorpe to the east. (Figure 2).
- 1.3. The survey area consists of 138 arable, pasture and fallow fields of which 4 fields were unable to be surveyed (Figure 2).
- 1.4. The geophysical survey comprised hand-pulled/quad-towed, cart-mounted and 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).
- 1.5. 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).
- 1.6. It was conducted in line with a Written Scheme of Investigation (WSI) produced by MS (Dyulgerski 2022).
- 1.7. The survey commenced on 12/09/2022 and took 25 weeks to complete over a period of eight months.

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, **and the development** has a PhD in archaeological geophysics from the University of Bradford, is a Member of CIfA and has served as the Vice-Chair of the International Society for Archaeological Prospection (ISAP); **and the served** 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); **and the society** 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 Chair of the Archaeological Prospection Community 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 results will inform the trench evaluation phase of works in advance of a DCO planning application for a proposed solar farm with associated infrastructure.
- **3.3.** The survey results will aim to inform an outline recommendation for further works (if necessary), such as to identify areas of archaeological potential to be targeted by trial-trench evaluation.

4. Geographic Background

- 4.1. The underlying geology comprises mudstone of the Charmouth Mudstone Formation throughout the majority of the centre of the survey area, with small bands of ferruginous Limestone and ferruginous sandstone of the Marlstone Rock Formation, mudstone of the Whitby Mudstone Formation, and sandstone, siltstone, and mudstone of the Grantham Formation on the eastern extent of the survey area. The underlying geology of the western end of the survey area comprises interbedded mudstone and limestone of the Scunthorpe Mudstone Formation.
- 4.2. Superficial deposits of Mid Pleistocene diamicton Till, are present across the majority of the survey area. Small bands of alluvial clay, silt, sand and gravel are present in the north and south of the survey area, along with small groupings of Mid Pleistocene Glaciofluvial Deposits of sand and gravel in Areas 131, 132, 136 and 137 (Figure 2) (British Geological Survey, 2023).
- 4.3. The soils consist of slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and an area of loamy and clayey floodplain soils with naturally high groundwater in the southern extent of the survey area (Soilscapes, 2023).

5. Archaeological Background

- 5.1. The following is a summary of an archaeological background provided by AECOM (2022), (Phillips, 2022) and is informed by a review of Lincolnshire Historic Environment Record (HER) data.
- 5.2. Previous Archaeological investigations have been carried out within the survey area. A watching brief was carried out in in Area 112 during the construction of a gas main in 2003. The watching brief identified the edge of a Romano-British settlement, with small finds of Romano-British pottery (MLI86409). An additional watching brief in 2003 was undertaken for the same gas main in Area 89, this watching brief identified medieval plough furrows running northwest to southeast (MLI86414). No other intrusive investigations were undertaken within the survey area, however archaeological activity has been recorded within the survey area and its surrounding landscape.
- 5.3. Prehistoric evidence is primarily limited to cropmarks, find spots of stone tools and lithic scatters found in the topsoil. Possible prehistoric cropmarks are located in the southeast of Area 87 and the southwest of Area 98 (MLI53953). The survey area is located c. 7km to the east of the River Trent, which has been known to provide evidence of prehistoric remains given the past exploitation of the resource and the survival potential of archaeological remains.

- 5.4. There is a significant amount of evidence for occupation in the vicinity of the survey area during the Romano-British period. The first of which is the possible location of a Roman Villa at Glentworth located c. 950m east of the survey area. The remains of the villa were identified during 18th-century building works associated with Glentworth Hall (MLI50560). A scheduled Roman town and fort are located c. 8km southwest of the survey area. The fort, located to the south of Littleborough Lane on the east bank of the Trent, consists of archaeological deposits and features relating to a first-century fortification, visible as cropmarks. These cropmarks (MLI54200) consist of a ditched enclosure recorded marking the boundary of the fort. The fort consists of a sub-rectangular plan enclosure with rounded corners, defined by two parallel ditches. A possible second Roman fort has also been identified at Gate Burton (MLI50544) c.7.6km southwest of the survey area. The site is visible on aerial photographs, thought to represent several enclosures, although it has also been interpreted as being agricultural in nature.
- 5.5. The Roman town of Segelocum is a scheduled monument located c. 8.2km southwest of the survey area, and to the west of the Trent (list entry number 1003669). The site is visible on aerial photographs and is thought to extend over an area of approximately 400m by 300m. Geophysical survey carried out in 2015 within and around the scheduled monument identified a number of linear and rectilinear anomalies which conform to a town grid. The features indicate a high level of planned development within the core of the Roman town.
- 5.6. To the southeast of the town is the approximate site of the Roman Tillbridge Lane which at its closest point at Sturton-by-Stow is c. 6.6km south of the survey area (Area 97) (MLI50575). Till Bridge Lane (MLI50575) was a Roman road which ran from Ermine Street to the north of Lincoln to the crossing of the Trent at Marton, located to the south of the survey area. Till Bridge Lane branches from Ermine Street approximately 4.5km north of Lincoln heading to the north-west and Doncaster, crossing the Trent at the point it reaches Segelocum. Evidence of the road includes a metalled surface which was uncovered during watching brief and remains of possible paving of the Roman road have also been recorded at Marton c.7.5km southwest of the survey area (MLI52462). A geophysical survey carried out northwest of Marton c. 7.7km southwest of the survey area. The survey was undertaken either side of the Roman road and recorded evidence of settlement either side of it (ELI13366) (MLI51369). This settlement is thought to be a ribbon development, stretching along the road.
- 5.7. There is evidence of development of the landscape through the Early Medieval period (A.D. 409 1066). Medieval ridge and furrow is attested in multiple locations within the survey area (MLI54272, MLI86414 and MLI54253) Evidence of the later medieval period around the survey area includes a number of shrunken, or deserted, medieval villages that sit in proximity to the survey area. Examples include the medieval settlement and field system of Heapham c. 750m west (MLI50515), the medieval village of Springthorpe c. 700m west (MLI51360), the village of Sturgate c. 880m southwest (MLI51359), the medieval settlement of Yawthorpe c. 750m north (MLI51344), the medieval village of Harpswell, later the site of the now demolished Harpswell Hall c. 170m north of the survey area (MLI51004), the deserted settlement of Hardwick/Thorpe adjacent to Area 123 (MLI50189), shrunken settlement remains at Glentworth c. 1.2km east (MLI51102), and the medieval villa and the shrunken medieval village Normanby by Stow located c. 5km southwest of the survey area respectively (MLI52445). Anglo-Saxon churches and the locations of possible holy springs are attested at the medieval villages of Harpswell and Heapham.

- 5.8. During the post-medieval period much of the land was enclosed. Glentworth Hall is located c. 950m east of the survey area and the western extent of its associated deer park was adjacent to Area 123 (MLI50659). The tithe maps and 19th century Ordnance Survey (OS) mapping also show that the agricultural fields and settlements have remained fairly unchanged in size.
- 5.9. During the modern period, a military airfield (RAF Sturgate) was located c. 750m west of the survey area. The airfield opened in 1944 and was originally used for training two operational Lancaster bomber squadrons. In 1953 the station was allocated for use by the United States Air Force Strategic Air Command. The full extent of RAF Sturgate during this period extended into the survey area, with extant remains of the runway located in Area 35. A complex of Second World War structures was located in Area 61, possibly including a searchlight battery, accommodation buildings, a gun emplacement and a guardroom (MLI80678). Two demolished 19th-century farmhouses are also located in Areas 47 and 58 (MLI118061 and MLI118030).

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 particular site, no factors precluded the recommendation of a standard magnetometer survey. The bedrock geology consisting of Scunthorpe Formation Mudstone and Limestone and Charmouth Formation Mudstone was conducive to a magnetometer survey, the results of which provided information about the different types of sub-surface anomalies, of which geological, agricultural, modern, and anomalies of archaeological origin were identified.
- 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-pulled/quad-towed cart system and hand-carried GNSS-positioned system.
- 6.1.5. MS' 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.
- 6.1.6. 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.

6.1.7. 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).

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

<u>Zero Median Traverse</u> – 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.

<u>Projection to a Regular Grid</u> – 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.

<u>Interpolation to Square Pixels</u> – 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 90, 93, 96, 99, 102, 105, 108, 111, 114, 117, 120, 123, 126, 129, 132, 135, 138, 141, 144, 147, 150 and 153). 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 (2023) 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 (Figures 7, 11, 15, 19, 23, 27, 31, 35, 39, 43, 47, 51, 55, 59, 63, 67, 71, 75, 79, 83 and 87).
- 7.2.2. A fluxgate gradiometer survey was carried out at Tillbridge Solar Scheme, Lincolnshire. An area of approximately 1325.3ha was surveyed with c. 23ha unable to be surveyed due to overgrown crops, bird cover, and overgrown vegetation (Figure 2). The survey has generally responded well to the environment of the survey area. Areas of magnetic disturbance from modern activity are present at the edges of the survey areas. Further interference is present from troughs, agricultural equipment, along the routes of buried services, and underneath overhead cables and pylons. The effect on the data caused by this interference is limited but locally significant.
- 7.2.3. The survey has expanded upon the current available HER evidence within the scope of the proposed Solar Farm. It has identified numerous complexes of archaeological activity, increased evidence of medieval and post-medieval cultivation and corroborated and expanded on cropmark evidence within the area. The geophysical survey has identified several foci of probable archaeological activity. Within these foci the anomalies generally consist of weak and strong magnetic enhancement, with defined edges emblematic of cut features such as ditches. While there are variances in signal strength and morphology among these anomalies, they are consistent and identifiable as probable archaeological features. Despite the presence of drainage features and ridge and furrow across the site, the results were able to identify the extent and morphology of the archaeological anomalies. The majority of the archaeological foci consist of complexes of closely spaced rectilinear and curvilinear abutting enclosures, predominantly situated at elevated locations within the topography of the site.
- 7.2.4. The morphology of some of these archaeological foci were distinctive enough to allow tentative dating of the anomalies. A general later prehistoric/Romano-British date is suggested for many of these enclosure complexes based on their morphology and contextual association with similarly dated features known in the surroundings of the site. The possible settlement activity and enclosures located in Areas 60, 68, 87 and 98 (Figures 99, 101, 131 and 134) have been ascribed a Romano-British provenance, evidenced by the regular organisation and rectilinear morphology of their enclosures and the presence of a round-house drip gully in Area 98. A group

of anomalies in Area 112 (Figure 116) are also ascribed a Romano-British date on the basis of supporting evidence from an archaeological watching brief previously undertaken in the area for the construction of a gas pipeline.

- 7.2.5. Some of the archaeological foci were ascribed a possible medieval provenance due to their close proximity to shrunken and deserted medieval villages such as Springthorpe for Areas 3 and 4, Harpswell for Areas 131, 132, 134 and 137 and Hardwick/Thorpe for Area 123 (Section 4.2). In addition to the presence of extant ridge and furrow surrounding the anomalies. Potential trackways were also identified as possible archaeology due to their orientation or proximity to medieval villages, such as those in Area 123 and 137 which lie in proximity to Harpswell and Hardwick/Thorpe respectively (Figures 113 and 119).
- 7.2.6. A small group of rectilinear anomalies were located that roughly correlated with a 'Moated site' visible on historical OS mapping in Area 124 (Figure 63). This moated site was filled in and ploughed over in the 1960s with reportedly no evidence of a building seen during ploughing of this area. Continuous agricultural activity has left this feature largely ploughed out, visible in the geophysical data as weak anomalies surrounded by ferrous debris.
- 7.2.7. The survey area is extensively covered by a series of drainage regimes predominantly in low lying areas in the topography. This suggests the presence of a seasonally waterlogged landscape that, on the evidence of the types of drains present in the geophysical results has been drained in the post-medieval and modern periods. Information from the Soilscapes database (Section 4.4) corroborates this, with floodplain soils in the south, and seasonally wet soils across the remainder of the survey area.
- 7.2.8. Located in Areas 35, 39 and 138 numerous strong positive anomalies and spreads of strongly enhanced magnetic material have been identified (Figures 146, 149 and 152). These anomalies roughly correspond to the remains of the former RAF Sturgate visible on satellite imagery (Figure 83). Some of the anomalies in Area 35 also follow the same alignment as extent remains of the airfield currently used to store agricultural objects.
- 7.2.9. Anomalies exhibiting properties less-clearly characteristic of anthropogenic activity, yet with some potential to be the result of human actions in antiquity have been detected throughout the survey area and characterised as 'possible archaeology' (Figures 4 to 87). These anomalies are mostly linear or curvilinear and appear representative of cut features with magnetically enhanced infill. Although these anomalies are most likely to result from the presence of archaeological features, a clear origin cannot be determined through the morphology and signal of these anomalies alone. A number of discrete anomalies located across the survey area have also been classified as possible archaeology. These anomalies, which do not correspond to any features recorded on historical or satellite imagery, have strong, inverted, dipolar signals that are indicative of in-situ burning.
- 7.2.10. Former field boundaries have been identified throughout the survey area. These are identified as both strong and weak, linear anomalies and as spreads of magnetically enhanced material, some of which align with features marked on 2nd Edition OS mapping (Figures 4 to 87). The magnetically enhanced anomalies are likely to represent former field boundaries that are indicated through the presence of concentrations of ferrous material. Those that do not

correspond with known former boundaries present a similar magnetic signal or follow similar alignments and are therefore likely to be unmapped former field boundaries. Small spreads of material displaying a strong magnetic enhancement have been detected throughout the survey area. These anomalies roughly correlate with former ponds visible on historical OS mapping. As such, they have been given the agricultural categorisation.

- 7.2.11. Groups of parallel linear and curvilinear anomalies occur across almost the whole of the survey area and are typical of ridge and furrow cultivation. These have multiple different orientations and differences in spacing and morphology, all of which suggest they are from different periods of agricultural use. Some of these appear to cross probable archaeological anomalies and may obscure smaller or weaker anthropogenic evidence (Figures 4 to 87). A large number of these ridge and furrow regimes are also located in close proximity to deserted and shrunken medieval villages which might suggest a possible connection to the agricultural hinterland of these settlements (Figures 6, 26, 38, 42, 58, and 86).
- 7.2.12. Weak, closely spaced, linear anomalies are present across all survey areas which align with modern ploughing visible in satellite imagery (Figures 4 to 87).
- 7.2.13. The magnetic data has also detected geological and topographical variations sporadically located throughout the survey area, which appear to primarily reflect changes in superficial deposits and the underlying bedrock (Figures 4 to 87). The most-strongly enhanced natural variation is located in the eastern end of the survey area, and likely is a result of glaciofluvial deposition (see Section 5).
- 7.2.14. Throughout most of the survey area, anomalies that have been classified as 'Undetermined' have been identified. All of these anomalies have limited context or lack any clear pattern or morphology to enable a confident interpretation, although an archaeological origin cannot be entirely excluded. Located throughout the survey area numerous discrete anomalies displaying a strong dipolar signal have been detected and also identified as undetermined.

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. Area of Archaeological Activity 1

7.3.2.2. **Probable Archaeology (Strong/Weak)** - Within Area 3 and 4 two small groups of anomalies of linear and curvilinear anomalies have been detected **[3a]** and **[4a]** (Figures 89 and 92). Both exhibit strong and weak positive signal that indicate ditch-like features with magnetically enhanced fill. The anomalies in Area 4 appear to form a small number of abutting curvilinear enclosures, some of which have a break in the signal possibly indicating the presence of entrances. The anomalies in Area 3 appear to form one large enclosure with a series of subdivisions inside, and some additional curvilinear anomalies located in close proximity. Both of these groups of anomalies are located in close proximity to ridge and furrow cultivation regimes and are located c. 750m northeast of the medieval village of Springthorpe. As a result of this, it is possible that these anomalies are related to the agricultural hinterland of Springthorpe deserted village and are also of a medieval origin.

7.3.2.3. Area of Archaeological Activity 2

7.3.2.4. **Probable Archaeology (Enclosure Complex)** – Located in Area 62 a group of linear, curvilinear, and discrete anomalies have been detected **[62a]** (Figure 95). These anomalies display both strong and weak magnetic enhancement, with enhanced edges suggestive of cut features such as ditches. These anomalies consist of two large curvilinear enclosures that appear to be truncated by several rectilinear anomalies. The variable enhancement and the distribution of anomalies suggest the presence of a small-scale enclosure complex. The full extent of which is difficult to establish due to the presence of dipolar noise directly to the north of **[62a]**. Multiple strong discrete anomalies have been detected within this possible enclosure complex, possibly representing pits, hearths and internal divisions indicative of occupation activity.

7.3.2.5. Area of Archaeological Activity 3

7.3.2.6. **Probable Archaeology (Possible Settlement Activity)** – Located in the north-western corner of Area 87 a group of linear, rectilinear and curvilinear anomalies, forming a series of abutting enclosures of both strong and weak positive magnetic enhancement have been detected **[87a]** (Figure 98). Within this group of anomalies, the largest rectilinear anomaly encapsulates an area of c. 0.15ha and contains multiple linear anomalies within its bounds, representing probable subdivisions of the enclosure. In the southwestern part of this group of anomalies, are numerous intercutting and overlapping anomalies of which two possible tracks or entranceways are represented by linear anomalies. The intercutting nature, and morphology of these anomalies probably indicates multiple phases of settlement activity. The presence of Harpswell Grange Farm directly to the northwest of Area 87 limits a clear understanding of the full extent of the anomalies in this area. To the southwest of **[87a]** a

number of linear and rectilinear anomalies of variable magnetic signal have been identified across Areas 87 and 98. The anomalies which cover about c. 4.3ha, form a number of abutting rectilinear enclosures on a similar alignment to [87a] (Figures 98, 101 and 104). Within this group of anomalies are numerous overlapping features, with some of those in its centre displaying a regular rectilinear arrangement [87b] and [98a]. The arrangement of these anomalies is very regular, with linear and rectilinear anomalies making up the majority of the complex, this organisation and morphology is suggestive of a possible Romano-British provenance. The anomalies in Area 98 are disturbed by extant ridge and furrow, however, it is clear from their morphology and alignment that they are part of the same settlement activity as [87b]. Large linear and rectilinear anomalies extend out of this group suggesting a field system associated with [87b] and [98a]. To the south of [98a] a penannular anomaly has been recorded within a rectilinear enclosure [98b] (Figure 104). This feature, which is c. 14m in diameter, has a break in its signal on its eastern side with an enhanced magnetic signal at its edge which suggests the presence of an entrance. The strong magnetic signal is likely caused by the deposition of enhanced organic and household refuse within the gully. Due to this morphology and location within an enclosure, it is possible this anomaly constitutes a drip gully of a round-house. To the west of it a series of strong discrete anomalies have been identified. These anomalies have the morphology of a possible pit alignment likely associated with the penannular to the west.

7.3.2.7. Probable Archaeology (Possible Settlement) – Located in the south of Area 99 and possibly extending into the northern end of Area 100 a group of linear, curvilinear, rectilinear and discrete anomalies have been detected [98a] (Figure 104). These anomalies display varying strengths of positive magnetic enhancement, characteristic of ditches and cover an area of approximately 2.1ha. A weak rectilinear anomaly located on the south and western edges of the possible settlement, seems to represent a boundary respected by the remainder of the anomalies. As such, this group of anomalies seems to indicate a contained settlement, possible of Iron Age or Romano British origin. Located to the north of [99a] a small group of linear and curvilinear anomalies have been detected. These anomalies display no clear morphology, however due to their proximity to [99a] they have been interpreted as archaeological in origin. These anomalies are on the same alignment as [98a] and [98b], so could suggest a relationship, but a modern service and magnetic disturbance obscure any anomalies which could connect these directly.

7.3.2.8. Area of Archaeological Activity 4

7.3.2.9. Possible Archaeology (Strong/Weak) – located in the south of Area 106 a small group of weak linear and curvilinear and strong discrete magnetically enhanced anomalies have been detected [106a] (Figure 107). Some of the anomalies appear to form partial enclosures however, due to the weak magnetic signal and the lack of clear morphology these anomalies have been given a possible rather than probable archaeological classification.

7.3.2.10. Area of Archaeological Activity 5

7.3.2.11. **Probable Archaeology (Strong/Weak)** – Located in the south-eastern corner of Area 131 and the north-eastern corner of Area 132 two groups of linear, curvilinear, rectilinear and discrete anomalies primarily displaying strong and weak magnetic enhancement with some

negative anomalies have been identified **[131a]** and **[132a]** (Figure 110). The location of these anomalies at the edges of their survey areas means that they are somewhat obscured by magnetic disturbance from the field edges. These anomalies are irregular in organisation, but their morphology is indicative of enclosures. It is possible some of these anomalies are agricultural in origin, due to the proximity of a mapped historical field boundary in Area 131 (Figure 27). On the western edge of Area 137, further linear and curvilinear anomalies have been detected **[137a]** (Figure 110). These anomalies are obscured by natural geology and ridge and furrow, however due to their proximity and alignment it is possible they are related to the anomalies in Areas 131 and 132. These anomalies are located c. 550m south of the deserted medieval village of Harpswell. Due to this close proximity to Harpswell and the presence of ridge and furrow nearby, it is possible these anomalies are also of a medieval origin or related to medieval Harpswell.

7.3.2.12. Possible Archaeology (Possible Trackway)- located in Areas 133 and 134 weak positive linear and curvilinear anomalies on a roughly north to south alignment have been detected [134a] (Figure 113). The morphology of these anomalies is difficult to distinguish, as they are obscured by ridge and furrow and geological anomalies. The location of these anomalies c. 300m south of the medieval village of Harpswell suggests that they may represent a trackway leading to the village. However, these anomalies lie on a band of sandstone (See section 4.3) and may therefore be caused by fracturing in the sandstone, where the thin bands of underlying bedrock differ. As natural processes cannot be ruled out as an explanation for these anomalies, they have been interpreted as possible rather than probable archaeology.

7.3.2.13. Area of Archaeological Activity 6

- 7.3.2.14. Probable Archaeology (Strong/Weak)- Located in the west of Area 112 a small group of rectilinear and discrete anomalies have been detected [112a] (Figure 116). All of these present strong and weak positive signals, indicative of ditch-like features and pits, however they are heavily obscured by field drains, a modern service and ridge and furrow cultivation. An archaeological watching brief was undertaken for the installation of the service line. The archaeological investigation corroborates these anomalies and identified them as Romano-British settlement activity. As such, despite being obscured, from the visible morphology and the watching brief evidence, it is possible to infer that these anomalies represent a small-scale Romano-British settlement.
- 7.3.2.15. **Possible Archaeology (Possible Trackway)** located in the east of Area 112 two weak positive linear anomalies and an alignment of strong positive discrete anomalies have been detected **[112b]** (Figure 116). These anomalies are ephemeral and obscured by ridge and furrow regimes. However, they are on a northeast to southwest alignment, which differs from all the other agricultural features identified in Area 116. Furthermore, the linear anomalies do not match any anomalies identified on historical OS mapping. As a result, they have been given interpreted as a possible trackway. The discrete anomalies are on the same alignment as the possible trackway, and it is possible they represent a pit alignment.

7.3.2.16. Area of Archaeological Activity 7

- 7.3.2.17. Probable Archaeology (Enclosure Complex) A series of linear and curvilinear anomalies displaying both strong and weak positive magnetic enhancement have been detected in the north of Area 123 [123a] (Figure 119). This enclosure complex, which is oriented on a north–south alignment, consists of a main rectilinear enclosure in the northwest that exhibits a stronger magnetic signal than the other recorded anomalies. This enclosure has several rectilinear and curvilinear anomalies within it that form internal divisions and a possible ring-ditch in its north-eastern corner. The site of the deserted medieval settlement of Hardwick or Thorpe is located c. 340m to the east of the anomalies. This close proximity indicates a possible relationship between the two, from the geophysical data alone it is unclear what the extent of the relationship is, however, it is possible these anomalies are also of a medieval provenance. To the south and southwest of it several other anomalies forming enclosures have been identified. The anomalies have a weaker magnetic signal and appear to be truncated by ridge and furrow regimes. Several linear anomalies also appear to extend from them suggesting the presence of a field system associated with this settlement complex.
- 7.3.2.18. Possible Archaeology (Possible Trackway) Located in the east of Area 123, two parallel curvilinear anomalies on a roughly north to south alignment, c. 12m apart, have been detected [123b] (Figure 119). These anomalies both display weak positive magnetic enhancement. The deserted medieval settlement of Hardwick or Thorpe is located c. 130m east of [123b]. While the anomalies are not orientated towards the medieval settlement, the close proximity suggests a possible relationship. A mapped historical field boundary runs through the centre of these anomalies partially obscuring them. However, the morphology and distance between the two anomalies is suggestive of a double-ditched trackway. Due to their weak signal and being partially obscured by a former field boundary, they have been given the possible archaeological categorisation.

7.3.2.19. Area of Archaeological Activity 8

- 7.3.2.20. Probable Archaeology (Possible Settlement) In the eastern half of Area 115 a multitude of anomalies covering an area of approximately 4ha have been detected on an elevated part of the landscape [115a] (Figure 122). The anomalies have variable magnetic strength, and morphological characteristics consistent with ditches filled with anthropogenically enhanced material. This potential settlement complex appears to form multi-cellular enclosures with internal ditches and pit features. The overlapping rectangular and sub-circular enclosures are aligned in a southwest to northeast orientation and are indicative of a multiphase site. Even though [115a] is truncated by a number of drains two faint parallel linear anomalies run along its north-western section indicating its extent as similar to [99a], suggesting a morphological association between them. The settlement complex [115a], is located c. 250m to the southwest of [123a] on the same topographical plateau which might suggest a possible connection between these two settlements.
- 7.3.2.21. Probable Archaeology (Possible Moated site) Located in the southwestern corner of Area 124, several weak anomalies forming a double ditched rectilinear pattern have been detected [124a] (Figure 122). These anomalies roughly correspond with a 'Moat' visible on the historical OS mapping (Figure 62). The moat was filled in 1964 and ploughed over, followed by subsequent ploughing to the present day. The levelling and ploughing of the

moated feature, are represented by the spreads of ferrous debris, and the weak nature of the rectilinear anomalies.

7.3.2.22. Area of Archaeological Activity 9

- 7.3.2.23. **Probable Archaeology (Enclosure complex)** Located in the north of Area 116 a series of linear and curvilinear anomalies, displaying both strong and weak positive magnetic enhancement **[116a]** (Figure 125). These anomalies are heavily obscured by the presence of ridge and furrow, modern drainage, and a historical mapped field boundary. Despite this, the anomalies are still visible, and their morphology and magnetic enhancement is emblematic of ditch-like features. The anomalies appear to form a number of abutting curvilinear enclosures, the majority of which have a break in the signal indicating the presence of entrances. Multiple linear and discrete anomalies have been identified within these enclosures which could be interpreted as possible internal divisions, pits and hearths. To the south and west several weak linear and curvilinear anomalies appear to form the remnants of former field systems.
- 7.3.2.24. Probable Archaeology (Small-Scale Settlement) Approximately c. 100m to the south of [116a] an additional group of anomalies is located [116b] (Figure 128). These anomalies are also heavily obscured by ridge and furrow, modern drainage features and a historical field boundary. The anomalies within [116b] have a similar magnetic signature and morphology to the anomalies located to the north. The anomalies overlap one another and are arranged in a somewhat regular pattern indicating multiple phases of occupation and possible small-scale settlement activity. In the northern part of this settlement several parallel linear anomalies have been identified that are characteristic of a double-ditched trackway. Despite the close proximity between [116a] and [116b], there is not enough evidence to determine whether they are related or contemporaneous with one another.

7.3.2.25. Area of Archaeological Activity 10

- 7.3.2.26. Probable Archaeology (Possible Settlement) Located on the western edge of Area 68 and the eastern edge of Area 60 a large group of anomalies covering an area of approximately 3.5ha have been detected [68a] and [60b] (Figure 131). These linear, curvilinear, rectilinear, and discrete anomalies exhibit both strong and weak positive magnetic enhancement, indicative of filled cut features. However, ridge and furrow cultivation has been recorded running in the same alignment as the anomalies, which might complicate their interpretation. This settlement is comprised of an organised pattern consisting of linear and rectilinear anomalies, with some of the central anomalies in a cellular arrangement. Their morphology and regular organisation indicate possible settlement activity, likely of Romano-British origin. Within some of the enclosures to the south and northwest several discrete anomalies have been identified. Their strong magnetic signal might suggest the presence of burning within these enclosures. The intersection with the ridge and furrow cultivation might also suggest the presence of secondary deposition of anthropogenic material from earlier periods within the furrows of these features.
- 7.3.2.27. Probable Archaeology and Possible Archaeology (Enclosure Complex) Located in the centre of Area 60 a group of linear, curvilinear, rectilinear, and discrete anomalies forming an enclosure complex have been detected [60a] (Figure 134). These anomalies display strong

and weak positive magnetic enhancement and roughly correspond with cropmarks visible in satellite imagery (Figure 47). These anomalies are obscured by ridge and furrow, modern drainage, and an historical field boundary, making it difficult to distinguish between probable archaeological anomalies and ridge and furrow. These anomalies have a cellular organisation and more curvilinear morphology than those recorded at **[68a]**. The anomalies are also oriented in an L-Shaped pattern that follows the topographical contours. Approximately 83m to the west and southwest, several linear and curvilinear anomalies have also been identified. These anomalies which appear to form partial enclosures have a weaker magnetic signal than **[60a]**. Due to this and the presence of a ferrous spread near the border of Area 68, these anomalies have been categorised as possible rather than probable archaeological anomalies.

7.3.2.28. Area of Archaeological Activity 11

7.3.2.29. **Probable Archaeology (Strong/Weak)-** Located in the south of Area 45, the western border of Area 47 and the northeast of Area 139, a small cluster of linear and curvilinear anomalies, displaying strong and weak positive magnetic enhancement have been identified **[45a]**, **[47a] and [139a]** (Figure 140). However, they are obscured by the presence of ridge and furrow, drainage features and magnetic disturbance caused by troughs, so they cannot be more confidently categorised beyond being identified as "Probable Archaeology". Located in the southeast of Area 49 and the southwest of Area 54, a small group of linear, curvilinear, and rectilinear anomalies have been identified **[49a]** and **[54a**] (Figure 137). The morphology of these anomalies is indicative of a small enclosure-complex, however due to the presence of ridge and furrow, modern drainage, and the anomalies being split over two areas, this interpretation is tentative.

7.3.2.30. Area of Archaeological Activity 12

7.3.2.31. Probable Archaeology and Possible Archaeology (Strong/Weak) – A group of linear and curvilinear anomalies have been detected in the centre of Area 31 [31a] (Figure 143). These anomalies, which predominantly display a weak positive magnetic enhancement, are heavily obscured by ridge and furrow and modern drainage, making confident interpretation of some of the anomalies difficult. However, the morphology of the anomalies is suggestive of anthropogenic activity, with many overlapping anomalies indicating multiple phases of occupation. The differing alignment of ridge and furrow cultivation and the truncation suggest that these anomalies predate the agricultural regimes.

7.3.2.32. Former RAF Airfield

7.3.2.33. Industrial Modern – Located in Areas 35, 39 and 138 are a multitude of strong positive anomalies [35a], [35b], [39a] and [138a] (Figures 146, 149 and 152). These anomalies correlate with the remains of the former airfield and runway at RAF Sturgate, visible on satellite Imagery (Figure 83). These anomalies lie within various spreads of strong dipolar anomalies, indicative of ferrous debris [35a], [35b], [39a] and [138a] (Figures 146, 149 and 152). These spreads of material are likely to indicate made-ground, and the debris of infrastructure removed from the former RAF airfield. As a result, these anomalies have been given the "Industrial/Modern" categorisation. A number of drains appear to align with the runway, which might suggest an effort to make the land more suitable for aircraft

operations. However, due to the presence of differing drainage regimes in this part of the survey area they have not been given any specific classification.

- 7.3.2.34. **Probable Archaeology (Scattered Anomalies)** Across the survey area, numerous anomalies of probable archaeological origin have been identified. These are isolated from the main foci of archaeological activity described above, and their relation to these areas is unknown. The majority of these scattered anomalies appear to exhibit the characteristics of ditched features containing magnetically enhanced fill.
- 7.3.2.35. **Possible Archaeology (Strong/Weak)** Across the survey area several positive, weak, linear, curvilinear, rectilinear, penannular, and strong, discrete anomalies have been identified (Figures 6, 18, 22, 26, 46, 62, 66, 74, 78 and 86). Most of these anomalies have the potential to be anthropogenic in origin, and therefore a possible archaeological categorisation has been given. These anomalies could form part of a former field system, parts of enclosures, or be indicative of ring ditches, yet they lack clear characteristics or context that would allow for a confident interpretation. Some of these discrete anomalies, characterised by strong, dipolar signals might be representative of in-situ burning activity and due to their proximity to archaeological anomalies, have been given the possible archaeological categorisation (Figures 95, 96, 101, 102, 119, 120, 125, 126, 134, 135, 143, and 144).
- 7.3.2.36. Ridge and Furrow (Trend) Arrangements of regularly-spaced weak linear and curvilinear anomalies have been identified across the survey area (Figures 4 to 87). These anomalies are indicative of ridge-and-furrow regimes following numerous different alignments, that for the most part do not align with modern field boundaries and crop directions. The anomalies within Areas 4, 36, 47, 48, 78 and 112 appear on multiple alignments within a field and are mostly curvilinear (Figures 7, 42, 47, 51, 79 and 87). These anomalies are emblematic of medieval field systems, with those in Area 4 and 14 being in close proximity to the medieval village of Springthorpe, and those in Areas 26, 47 and 48 being nearby to the medieval village of Heapham. In many areas it is difficult to distinguish between ploughing trends and ridge and furrow, however, those anomalies exhibiting a characteristic parallel-S-shaped curvilinear morphology and consistent positive magnetic signal have been given a 'ridge and furrow' categorisation.
- 7.3.2.37. Agricultural (Strong/Weak/Spread) Across the survey area a multitude of strong and weak linear anomalies and linear spreads of ferrous material have been identified. (Figures 4 to 87). The majority of these roughly correspond with field boundaries recorded on 2nd Edition Ordnance Survey (OS) mapping, or with footpaths visible on satellite images (Figures 4 to 87). Others have been interpreted as being unmapped field boundaries due to their similarities in magnetic signal and alignment to the mapped field boundaries.
- 7.3.2.38. Agricultural (Spread) Located throughout the survey area are multiple spreads of strongly enhanced ferrous material (Figures 4 to 87). These spreads roughly correlate with former ponds recorded on 2nd Edition Ordnance Survey (OS) mapping. As such they have been given an "Agricultural" categorisation.
- 7.3.2.39. Agricultural (Trend) Weak linear trends have been identified across the survey area. These anomalies correspond with modern ploughing visible on satellite imagery, in many parts of

the survey area it was difficult to distinguish them from drainage and ridge and furrow cultivation (Figures 7 to 87).

- 7.3.2.40. Drainage Features (Trend) A multitude of linear anomalies, on multiple alignments throughout the survey area have been detected. Three types of magnetic responses have been recorded. The first type of response consists of strong, positive, linear signals. The second kind of anomaly consist of weak positive linear signals. The third type of anomalies have a weak, dipolar signal indicative of modern ceramic drains (Figures 4 to 87). The drainage features are arranged on a variety of alignments, ranging from the typical closely-spaced herringbone pattern to wide rectilinear organisation terminating at the field edges. The majority of these drainage features are located in low lying topographical areas and follow the topographical slopes.
- 7.3.2.41. Natural (Strong/Weak/Zone) Located across the survey area, multiple large scale amorphous anomalies, most visible on the Total field plot and spreads of enhanced material have been detected (Figures 4 to 87). These anomalies likely reflect changes in the underlying geology, such as changes in superficial deposits or bedrock geology (See section 4.3). Spreads of strongly enhanced material in Area 132 and weakly enhanced material in Area 137 are possibly a result of glaciofluvial deposition in addition to changes in bedrock geology.
- 7.3.2.42. Undetermined (Strong/Weak) Multiple linear, curvilinear, and discrete anomalies have been identified across the survey area (Figures 4 to 87). These anomalies do not have any supporting contextual evidence and may be partially obscured by the spreads of anomalies resulting from geological variation across the area. These anomalies are themselves likely to be the result of geological or agricultural processes, but in these cases an archaeological origin cannot be entirely ruled out. Located In Areas 7, 31, 35, 48, 49, 50, 58, 60, 62, 64, 65, 66, 71, 75, 79, 80, 87, 91, 99, 102, 107, 110, 111, 112, 114, 115, 116, 123, 128 131, and 133 multiple discrete anomalies with a strong dipolar signal have been detected (Figures 10, 14, 18, 22, 26, 30, 34, 46, 50, 58, 62, 66, 70, 74, 78, 82 and 86). These discrete anomalies, characterised by strong, dipolar signals might be representative of high-temperature in-situ burning activity.
- 7.3.2.43. Service (Trend) Buried services have been detected throughout the survey area (Figures 4 to 87). These linear anomalies, comprising repeating strong dipolar anomalies, are characteristic of buried services; their strength and spread has contributed to the obscuring of probable archaeological anomalies in places and obscuring weaker anomalies if present.
- 7.3.2.44. Overhead Cables Across Areas 5, 50, 56, 64, 87, 98, 99, 129, and 37 a change in the magnetic background has been detected most visible on the Total Field plots (Figures 6, 14, 18, 22 and 26). This type of specked dipolar background correlates with the presence of overhead electric cables crossing over the survey area. This type of magnetic interference may mask more ephemeral anomalies of anthropogenic origin, if present.
- 7.3.2.45. Ferrous/Debris Spread Located in Areas 47, 58 and 61, spreads of strongly enhanced magnetic material have been detected. The spreads located in Areas 47 and 58 roughly corelate with the location of demolished 19th century farmhouses recorded in HER data. As there is no evidence of structures or visible remains of the farmhouses, they have been

assigned the Ferrous/Debris spread categorisation. The spread of anomalies in Area 61 roughly corresponds with a complex of Second World War structures listed in the HER (Section 5). Some of these structures were removed, and the remains likely ploughed out. As such, no clear morphological patterns were discerned in the geophysical data, and these anomalies were also assigned the Ferrous/Debris categorisation.

8. Conclusions

- 8.1. A fluxgate gradiometer survey was completed across the majority of the survey area, with c. 23ha not surveyed due to crops, bird cover, and overgrown vegetation. The survey environment presented a relatively clear magnetic background against which weaker anomalies could be identified. Some natural deposits displaying strong magnetic enhancement were visible across the survey area, however their impact upon the survey results was limited. Magnetic interference was visible at field perimeters, and in proximity to troughs, agricultural equipment, pylons, telegraph poles, overhead cables, extant structures and buried services. Nevertheless, the survey was able to identify extensive anomalies indicative of archaeological activity across the survey area.
- 8.2. The survey has detected an extensive series of archaeological anomalies distributed across the survey area, with 12 major foci of activity identified. These areas comprise anomalies indicative of probable cut features, containing anthropogenically enhanced fill. The features include ditched enclosures, ring ditches, trackways, former field systems, and discrete pits. Taken together, these anomalies represent an extensive, multi-period archaeological landscape, with settlements located atop topographical high points, and likely to have existed through multiple phases of occupation. Other more-isolated anomalies have also been interpreted as possible/probable archaeological origin.
- 8.3. The survey has also detected numerous strong anomalies and spreads of strongly enhanced material in the vicinity of the former RAF Sturgate. These anomalies have been identified as remnants of a former runway and associated structures from the airbase, a complex of Second World War military structures, and two demolished 19th-century farmhouses.
- 8.4. Long-term agricultural use of the land within the survey area has been detected in the form of extensive ridge and furrow cultivation, former mapped and unmapped historical field boundaries, drainage features, former ponds, and ploughing trends identified in the magnetic data.
- 8.5. Natural variations have been detected sporadically throughout the survey area, particularly as strong glaciofluvial deposition in the east. There are further variations in the superficial and bedrock geology which are also identifiable across the survey area.
- 8.6. Several anomalies have been classified as 'Undetermined' due to lack of context, or any clear pattern or morphology which would enable a confident interpretation. Nevertheless, an archaeological origin for these cannot be excluded.

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 ungeoreferenced 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

British Geological Survey, 2023. Geology of Britain. Willingham-by-Stow, Lincolnshire. [http://mapapps.bgs.ac.uk/geologyofbritain/home.html/]. Accessed 02/12/2023.

Chartered Institute for Archaeologists, 2020. Standards and guidance for archaeological geophysical survey. ClfA.

David, A., Linford, N., Linford, P. and Martin, L., 2008. Geophysical survey in archaeological field evaluation: research and professional services guidelines (2nd edition). Historic England.

Dyulgerski, K. 2022. Written Scheme of Investigation For a Geophysical Survey of Tilbridge Solar Farm Willingham-by-Stow, Lincolnshire. Magnitude Surveys Ltd.

Google Earth, 2023. Google Earth Pro V 7.1.7.2606.

Olsen, N., Toffner-Clausen, L., Sabaka, T.J., Brauer, P., Merayo, J.M.G., Jorgensen, J.L., Leger, J.M., Nielsen, O.V., Primdahl, F., and Risbo, T., 2003. Calibration of the Orsted vector magnetometer. Earth Planets Space 55: 11-18.

Phillips, A. 2022. Tilbridge Solar, Cultural Heritage and Desk-Based Assessment (Draft). Internal Client document.

Schmidt, A. and Ernenwein, E., 2013. Guide to good practice: geophysical data in archaeology (2nd edition). Oxbow Books: Oxford.

Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. and Fassbinder, J., 2015. Guidelines for the use of geophysics in archaeology: questions to ask and points to consider. EAC Guidelines 2. European Archaeological Council: Belgium.

Soilscapes, 2023. Willingham-by-Stow, Lincolnshire. Cranfield University, National Soil Resources Institute. [http://landis.org.uk]. Accessed 02/12/2023.

12.

Appendix Survey Considerations: 12.1.

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16	The survey area consisted of a flat field under arable cultivation.	The survey area's north and western borders consisted of barbed wire fences and the east and southern borders consisted of hedgerows. A small area of trees was located in the southern end of the western border, and a pile of hay bales were located in the northeastern corner of the survey area.
17	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows.
18	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows.
19	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows and treelines.
20	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows. A ditch was located along the eastern border. A line of pylons were orientated northwest to southeast across the eastern end of the survey area.
21	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows. A line of telegraph poles were orientated along the northern border. An area of overgrown vegetation was located in the southwestern corner of the survey area.
22	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows and a line of telegraph poles were orientated northwest and southeast across the centre of the survey area.
23	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows. A farm track ran along the western border of the survey area. A tractor was located on the centre of the western border.
24	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows. A farm track ran along the western border of the survey area. A pile of refuse was located in the southwestern corner of the survey area.
25	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows. A farm track ran along the western border of the survey area
26	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows and treelines.
28	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on all sides by hedgerows. The southern border consisted of electric fencing.
29	The survey area consisted of a flat field under arable cultivation.	The survey area's north, east and western borders consisted of hedgerows, the southern border consisted of barbed wire in its western

			half and a metal barn on its eastern end. Small
			throughout the field.
ľ	31	The survey area consisted of a	The survey area was surrounded on all sides by
		flat field under arable	hedgerows. The east, west and southern borders
		cultivation.	consisted of ditches.
	32	The survey area consisted of a	The survey area was surrounded on all sides by
		flat field under arable	hedgerows. The east and southern borders
		cultivation.	consisted of ditches.
	35	The survey area consisted of a	The survey area's north and eastern borders
-		flat field under arable	consisted of hedgerows, the south and western
		cultivation.	porders had partially open boundaries. The
			the western half of the survey area, which were
			being used to store agricultural equipment. An
			area in the centre of the northern border was
			unable to be surveyed due extant fertilised piles
			stored in the field.
	36	The survey area consisted of a	The survey area was surrounded on all sides by
		flat field under arable	hedges and wire fencing.
		cultivation.	
-	3/	The survey area consisted of a	The survey area's north, east and southern
		hat pasture.	foncing the western border consisted of metal
			wire fencing and agricultural huildings. A trough
			was located in the northwestern corner of the
			survey area.
Ī	38	The survey area consisted of a	The survey area was surrounded on all sides by
		flat pasture.	hedges and metal wire fencing. A metal trough
			was located in the northeastern area of the
-	20	The sum of such as a sister diafa	survey area.
	39	The survey area consisted of a	The survey area's north and southern borders
			borders consisted of fencing An area of
		cultivation.	overgrown vegetation was orientated along the
Y			western border.
	40	The survey area consisted of a	The survey area was surrounded on all sides by
		flat pasture.	electric fencing. The north, south and western
			borders consisted of hedges. A track was
			orientated along the eastern border. An area on
Ì			the northern border was unable to be surveyed
-	4.1		due to piles of branches.
	41	The survey area consisted of a	The survey area was surrounded on all sides by
			noles was orientated northeast to southwest
			across the southern end of the survey area.
ŀ	42	The survey area consisted of a	The survey area's north and eastern borders
		flat pasture.	consisted of wood and metal wire fencing, the
			southern border consisted of hedges and the
			western border consisted of trees.

43	The survey area consisted of a flat pasture.	The survey area was surrounded on all sides by hedgerows, a ditch was located on the southern border of the survey area.
44	The survey area consisted of a flat pasture.	The survey area was surrounded on all sides by an electric fence. The east and western borders also consisted of hedgerows. A metal trough was located in the centre of the southern end of the survey area.
45	The survey area consisted of a flat pasture.	The survey area was surrounded on all sides by electric fencing. The eastern and western borders consisted of hedgerows. Sporadic trees were located along the eastern borders. Metal troughs were located sporadically throughout the survey area. A small area on the centre of the eastern border was unable to be surveyed due to waste debris.
46	The survey area consisted of a flat pasture.	The survey area's north, east and western borders consisted of an electric fence, the south and western borders consisted of hedgerows. The southern end of the field was unable to be surveyed due to small trees. A metal trough was located on the centre of the western border.
47	The survey area consisted of a flat pasture.	The survey area was subdivided into numerous small paddocks by electric fencing. The east, south and western borders consisted of hedges and trees. The northern border consisted of an agricultural building. An area in the northern half of the survey area was unable to be surveyed, due to a tree plantation.
48	The survey area consisted of a flat field under arable cultivation.	The survey area's north, south and western borders consisted of hedgerows, a road was located along the north and eastern borders.
49	The survey area consisted of a flat field under arable cultivation.	The survey area was surrounded on sides by hedgerows.
50	The survey area consisted of a flat field under arable cultivation.	The survey area's northern border consisted of a road, the east, south and western borders consisted of hedgerows. Two parallel lines of hedgerows ran east to west along the centre of the survey area. A line of telegraph poles and overhead cables were orientated east to west across the northern end of the survey area.
51	The survey area consisted of a flat field under arable cultivation.	The survey area's north, east and the eastern half of the southern borders consisted of hedgerows and the western half of the southern border, and the western border consisted of trees.
52	The survey area consisted of a flat field under arable cultivation.	The survey area's north, south and western borders consisted of a hedgerow, the eastern border consisted of a ditch.

53	The survey area consisted of a flat field under arable cultivation.	The north and eastern borders consisted of a ditch and the southern border had no physical boundary. The western half of the survey area was unable to be surveyed due to overgrown vegetation.
54	The survey area consisted of a flat field under arable cultivation.	The east, south and western borders consisted of hedgerows, the northern border had no physical boundary. The western end of the field consisted of overgrown vegetation.
55	The survey area consisted of a flat pasture.	The survey area's northern border consisted of trees and metal wire fencing, the eastern border consisted of hedges and metal wire fencing, the
		southern and western borders consisted of metal wire fencing and trees. Farm buildings were located in the southwestern corner of the survey area, a line of telegraph poles and overhead cables were orientated northwest to
		southeast across the centre of the survey area. A fenced off area was located in the north of the survey area.
56	The survey area consisted of a flat field under arable	The survey area's northern border consisted of metal wire fencing and trees, the eastern border
	cultivation.	consisted of metal wire fencing and a ditch, the southern border consisted of metal wire fencing and the western border had no physical boundary. A line of telegraph poles and overhead cables was orientated northwest to southeast across the centre of the survey area.
57	The survey area consisted of a flat field under arable cultivation.	The survey area's eastern end of the northern border, the east, south and western borders consisted of hedgerows. The north-eastern end of the survey area consisted of overgrown grass and wildflowers.
58	The survey area consisted of a field under arable cultivation that sloped down gently to the east.	The survey areas north, east and western borders consisted of hedgerows and the southern border consisted of a ditch. An area of long crops that was unable to be surveyed was located on the eastern border.
59	The survey area consisted of a field that sloped gently down to the east under arable cultivation.	The survey areas north and eastern borders consisted of a ditch, and the east, south and western borders consisted of hedgerows. A small area of grassland was located at the western end of the survey area.
60	The survey area consisted of a flat pasture.	The survey area was surrounded on all sides by ditches. The north, south and the southern half of the eastern border and the northern half of the western border consisted of hedgerows. A line of telegraph poles and overhead cables were orientated east to west across the southern half of the survey area.

61	The survey area consisted of a flat field under arable cultivation.	The survey area's northern border consisted of a hedgerow, the eastern border consisted of a road, the southern border consisted of a hedgerow and the western border consisted of a ditch. A ditch ran across the centre of the survey area and a fertiliser pile was located in the south-
62	The survey area consisted of a flat field under arable cultivation.	The survey areas northern border consisted of a hedgerow in its western half and a ditch in its eastern half, the eastern border had no physical boundary, the southern border consisted of a hedgerow and the western border consisted of a
		ditch. A farm track and pile of fertiliser were located in the centre of the northern end of the survey area.
64	The survey area consisted of a flat field under arable cultivation.	The northern border of the survey area consisted of a ditch, the eastern border consisted of a farm track, the southern border consisted of a treeline, and the western border consisted of Gorse hunting cover. The north-eastern corner of the survey area consisted of horse pastures.
65	The survey area consisted of an undulating field under arable cultivation.	The north, south and western borders consisted of hedgerows, the eastern border consisted of a farm track. A ditch was located in the north- western corner area and a reservoir with metal fencing was located in the north-eastern corner of the survey area.
66	The survey area consisted of a flat field under arable cultivation.	The survey areas northern border consisted of a farm track, the eastern border consisted of a hedgerow and the southwestern border consisted of a ditch.
67	The survey area consisted of a flat field under arable cultivation.	The survey areas northern border consisted of a farm track, the north-eastern border consisted of a ditch, the south and western borders consisted of hedgerows.
68	The survey area consisted of a flat field under arable cultivation.	The survey area's northern border consisted of a hedgerow, the east and western borders consisted of ditches and the southern border consisted of a hedgerow and a road. A patch of overgrown vegetation was located in the southern half of the survey area.
69	The survey area consisted of a flat pasture.	The survey area was surrounded on all sides by wood and metal fencing, a road ran along the northern border and a concrete object was located in the south-eastern corner of the survey area. A line of telegraph poles and overhead cables ran northwest to southeast across the centre of the survey area.
70	The survey area consisted of a flat field under arable cultivation.	The northern border consisted of mown grass in its western half and a sunflower meadow in its eastern half, the eastern border consisted of a

[ditch and the southern border consisted of a
			ditch and hedgerow.
	71	The survey area consisted of a	The survey area was surrounded on all sides by
		flat pasture.	metal wire fencing. A metal trough was located
			in the north-eastern corner of the survey area.
	72	The survey area consisted of a	The survey area's east, south and western
		flat field under arable	borders consisted of ditches, the southern half of
		cultivation.	the eastern border, the west and northern
			borders also consisted of hedgerows. The
			southern end of the survey area contained an
			area of overgrown vegetation that was unable to
			be surveyed.
	73	The survey area consisted of a	The survey area's north and eastern border
		f <mark>lat fie</mark> ld under arable	consisted of hedgerows, the south and western
		cultivation.	borders consisted of a ditch.
	74	The survey area consisted of a	The survey area was surrounded on all sides by a
		flat field under arable	ditch, with a tree on the western half of the
		cultivation.	southern border. A line of telegraph poles and
			overhead cables were orientated east to west
			across the northern half of the survey area. An
			area of overgrown vegetation was unable to be
			surveyed in the south-eastern corner of the
			survey area.
	75	The survey area consisted of a	The survey area's northern border consisted of a
		flat field under arable	hedgerow, the eastern and southern end of the
		cultivation.	western border consisted of trees, the west and
			southern borders consisted of ditches. A line of
			overnead cables and telegraph poles were
			of the survey area
	76	The survey area consisted of a	The survey area's east south and western
	70	flat field under arable	horders consisted of trees with a hodgerow in
			the western half of the southern border. The
		cultivation.	northern border consisted of a ditch
	77	The survey area consisted of a	The survey area's north and east and the
2	,,	flat field under arable	western half of the southern border consisted of
		cultivation	hedgerows, the western border consisted of a
		califyation.	ditch and the southern border consisted of a
			road.
	78	The survey area consisted of a	The survey area's northern border consisted of a
		flat field under arable	road, the east and southern borders consisted of
		cultivation.	ditches, the western border consisted of a farm
			track. A line of overhead cables was orientated
			northwest to southeast over the southwestern
			corner of the survey area.
	79	The survey area consisted of a	The survey area's north and eastern border
		flat field under arable	consisted of a ditch, the southern border
		cultivation.	consisted of a hedgerow and the western border
			consisted of a metal fence. A line of telegraph
			poles and overhead cables were orientated

		northwest to southeast over the north-eastern
		corner of the survey area.
80	The survey area consisted of a flat field under arable cultivation.	The survey area's north and western borders consisted of ditches, the east and southern borders consisted of hedgerows. The southern end of the survey area contained overgrown grass. A line of telegraph poles and overhead cables were orientated northeast to southwest along the south-eastern corner of the survey
83	The survey area consisted of a	area. The survey area's northern border consisted of a
	flat field under arable cultivation.	hedgerow and a road, the southern border consisted of a ditch, the western border
		had no physical boundary.
84	The survey area consisted of a flat field under arable cultivation.	The survey area's northern border consisted of a hedgerow and road, the south and eastern borders consisted of a ditch, and the western border consisted of a substation and a pylon.
85	The survey area consisted of a flat field under arable cultivation.	The survey area's north and western borders consisted of ditches, the south and eastern borders consisted of a road, and the southern border also consisted of a hedge.
87	The survey area consisted of a flat field under arable cultivation.	The survey area's north, east and southern borders consisted of hedgerows, the southern border also consisted of a ditch. The western border also consisted of a trackway, with a wooden fence in its northern corner. A line of pylons and overhead cables were orientated east to west in the southern end of the survey
88	The survey area consisted of a flat field under arable cultivation	area. The survey area was surrounded on all sides by hedgerows. Ditches were located on the western
89	The survey area consisted of a flat field under arable cultivation.	The survey area's north and western borders consisted of hedgerows, the eastern borders consisted of a ditch and the southern border had no physical boundary. A road ran along the southern border.
90	The survey area consisted of a flat field under arable cultivation.	The survey area was bordered by ditches on its eastern, southern and western borders. The northern border consisted of a road. Two lines of overhead cables were orientated east to west across the centre of the survey area. A road ran along the northern border of the survey area. A fallen tree was located in the centre of the survey area.
91	The survey area consisted of an undulating field under arable cultivation.	The survey area's northern, eastern and western borders consisted of hedgerows and the southern border consisted of a ditch. A line of telegraph poles and overhead cables were

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[orientated northeast to southwest across the
	02	The survey area consisted of an	western end of the survey area.
	92	undulating field under arable	consisted of ditches the north south and
			western borders consisted of bedgerows
-	07	The survey area consisted of a	The suproverse's southern and western borders
	97	field under arable cultivation	the survey area's southern and western borders
		thet cloned down to the west	consisted of these and nedges. There was a
		that sloped down to the west.	the southern border. An area of impassable
			terrain that was unable to be surveyed on the
			western border
-	98	The survey area consisted of a	The survey areas northern western and
	50	flat field under arable	southern horders consisted of a ditch. The east
		cultivation	and western borders also consisted of
			hedgerows Two parallel lines of telegraph poles
			and cables were orientated east to west along
			the centre of the survey area. A hedgerow and
			ditch were orientated north to south along the
			centre of the survey area.
-	99	The survey area consisted of a	The survey area was surrounded on all sides by
		flat field under arable	hedgerows. The northern border also consisted
		cultivation.	of a ditch.
	100	The survey area consisted of a	The survey area's northern, eastern and western
		flat field under arable	borders consisted of hedgerows and the
		cultivation.	southern border consisted of trees. Areas along
			the east, south and western borders were
			unable to be surveyed due to waterlogged
			ground conditions.
	101	The survey area consisted of a	The survey area's east, west and the western end
		flat field under arable	of the northern border had no physical
		cultivation.	boundary, the remainder of the northern border
			consisted of trees and the western border
			consisted of a ditch. A road ran along the
			southern border.
	102	The survey area consisted of a	The survey area's northern and eastern borders
		flat field under arable	consisted of hedgerows, the western border
		cultivation.	consisted of a ditch and the southern border had
	N		no physical boundary. A road ran along the
			southern border and a line of telegraph poles
			were orientated northeast to southwest along
	102		the south-eastern corner of the survey area.
	103	The survey area consisted of a	The survey area's north and western borders
			consisted of a ditch and the eastern and
			southern borders had no physical boundary. A
			corner of the survey area. A line of telegraph
			noles was orientated northeast to southwest
			along the north-western corner of the survey
			area.

	104	The survey area consisted of a flat field under arable cultivation.	The survey area's northern border consisted of a ditch, the south and western borders consisted of hedgerows and the eastern border had no physical boundary. A line of telegraph poles and overhead cables were orientated northeast to southwest along the western half of the survey area.
	105	The survey area consisted of a flat field under arable cultivation.	The survey area's northern, southern and western borders consisted of hedgerows. A road ran along the southern border. The eastern border consisted of a barbed wire fence. A line
			or telegraph poles and overhead cables was orientated northeast to southwest along the centre of the survey area.
	106	The survey area consisted of a flat pasture.	The survey area's northern border consisted of a hedgerow, the eastern border consisted of trees in its northern half and a ditch and a road in its
			a ditch and a road, and the western border consisted of a ditch and a road, and the western border consisted of a ditch. An area of tall corn in the northern end of the survey area was unable to be surveyed, and a line of telegraph poles and overhead cables were orientated northeast to southwest over the centre of the survey area.
	107	The survey area consisted of a flat field under arable cultivation.	The survey area's northern and eastern borders consisted of trees, the south and western borders consisted of hedges. A farm track ran along the north and eastern borders, an agricultural pump was located in the centre of the northern border. A line of telegraph poles and overhead cables was orientated northeast to southwest across the centre of the survey area.
	108	The survey area consisted of a flat field under arable cultivation.	The northern and western borders consisted of hedgerows, the southern border consisted of trees and the eastern border consisted of tall maize crop. A line of telegraph poles and overhead cables were orientated northeast to southwest across the centre of the survey area.
	109	The survey area consisted of a flat field under arable cultivation.	The survey area's north, east and southern borders consisted of hedgerows, and the western border consisted of a barbed wire fence.
	110	The survey area consisted of a flat pasture.	The survey area's northern border consisted of a road, the east and southern borders consisted of a ditch and the western border had no physical boundary. A manhole cover was located in the north-eastern corner of the survey area.
	111	The survey area consisted of a field under arable cultivation that sloped slightly down to the north.	The survey area's north and eastern borders consisted of hedgerows, the south and western borders consisted of ditches. A line of overhead
			cables ran north to south along the western border
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	112	The survey area consisted of a flat field under arable cultivation.	The survey area's east and the centre of the northern border consisted of trees and hedges. A road ran along the southern border. An area of unharvested crop was located in the north- eastern corner of the survey area. A line of telegraph poles and overhead cables was orientated northwest to southeast along the western half of the survey area.
-	113	The survey area consisted of a flat field under arable	The survey area's north, east and western borders consisted of hedges and the southern
		cultivation.	border consisted of a road. Overhead cables
			were orientated northwest to southeast over the north-eastern corner of the survey area.
	114	The survey area consisted of a	The survey area's northern, western and
		flat field under arable cultivation.	southern borders consisted of ditches, the eastern border consisted of a road, and there was metal fencing in the south-eastern corner of the survey area
	115	The survey area consisted of a	The survey area's northern border consisted of a
		flat field under arable cultivation.	ditch in its eastern end and no physical boundary for the remainder. The eastern border consisted of a ditch, the southern border consisted of a
			ditch in the east and western ends and farm buildings in the centre and the western border consisted of a hedge and wire fence. A line of overhead cables and telegraph poles were oriented east to west across the southwestern corner of the survey area.
	116	The survey area consisted of a field under arable cultivation that sloped down gradually to the east.	There was partial hedges and trees along the north and southern borders, a stream was located along the eastern border.
	117	The survey area consisted of a flat field under arable cultivation.	The survey area's western boundary consisted of hedgerows and a treeline; the survey area had no physical boundary in all other directions.
	118	The survey area consisted of a	The survey area's northern, southern and
		cultivation.	was located on the southern border and the eastern border had no physical boundary.
	119	The survey area consisted of a flat field under arable cultivation.	The survey area's northern and southern borders consisted of ditches, the east and western borders consisted of hedgerows, with the southern half of the eastern border also containing a ditch. A line of telegraph poles and overhead cables were orientated northwest to southeast across the western half of the survey area. A pile of burnt material was located in the centre of the southern area.

	121	The survey area consisted of a flat field under arable cultivation.	The survey area's northern and western borders had no physical boundary, the south-eastern border consisted of a ditch. A road ran along the	
			western border.	
	122	The survey area consisted of a flat field under arable cultivation.	The survey area's northern border consisted of corn crop, the east and southern borders consisted of hedgerows and the western border consisted of a ditch. A road ran along the southern border and a line of telegraph poles and overhead cables were orientated east to west across the centre of the survey area.	
	123	The survey area consisted of a flat field under arable	The survey area's northern, eastern and southern borders consisted of hedgerows, and	
		cultivation.	the western border consisted of a fence.	
	124	The survey area consisted of a	The survey area's eastern and southern borders	
		grassland that sloped from the	consisted of hedgerows and the north and	
		west to the east.	western borders had no physical boundary.	
	126	The survey area consisted of a	The survey area's northern, eastern and	
		flat field under arable	southern borders consisted of hedgerows; the	
		cultivation.	western border had no physical boundary. A	
			ditch ran along the southern border. The	
-			western half of the field was unable to be	
	4.2.7	The second	surveyed due to extant crop.	
	127	field under graphs sultivation	The survey area was bordered on all sides by	
		thet sleped down to the wort	the parthern barder	
	120	The survey area consisted of a	The survey area's north past and wastern	
	128	flat field under arable	herders consisted of a ditch and the couth and	
			western borders consisted of bodgerows. A road	
		cultivation.	ran along the norther border	
	129	The survey area consisted of a	The survey area's north east and western	
	120	flat field under arable	borders consisted of hedgerows, the southern	
		cultivation.	border consisted of a farm track. A substation	
			with metal fencing was located in the north-	
)		western corner of the survey area. An area in the	
1			centre of the survey area was unable to be	
			surveyed due to waterlogged ground conditions.	
	131	The survey area consisted of a	The survey area's southern boundary consisted	
		flat field under arable	of overgrown grass; the survey area had no	
		cultivation.	physical boundary in all other directions. A strip	
Ì			along the norther n boundary was unable to be	
			surveyed due to overgrown maize crop.	
	132	The survey area consisted of a	The survey area's northern border consisted of a	
		flat field under arable	farm track, the east and southern borders	
		cultivation.	consisted of hedges and trees and the western	
			border had no physical boundary	
	133	The survey area consisted of a	The survey area's northern border had no	
		flat field under arable	physical boundary, the eastern border consisted	
		cultivation.	or a nedgerow with a road just beyond, the south	
			and western border consisted of roads.	

134	The survey area consisted of a	The survey area's northern border consisted of a		
	flat field under arable	road, the eastern border consisted of a hedgerow with a road just beyond, the southern		
	cultivation.			
		border consisted of a ditch and the western		
		border had no physical boundary.		
135	The survey area consisted of a	The survey area's eastern border consisted of a		
	flat field under arable	hedgerow with a road just beyond, the southern		
	cultivation.	border consisted of trees and the north and		
		western border had no physical boundary		
136	The survey area consisted of a	The survey area's north and western border		
	, flat field under arable	consisted of hedgerows, the southern border		
	cultivation.	consisted of a road and the eastern border had		
		no physical boundary.		
137	The survey area consisted of a	The survey area's northern border consisted of a		
	flat field under arable	hedgerow, the northern end of the eastern border consisted of a road and the remainder		
	cultivation.			
		had no physical boundary, the southern border		
		consisted of a ditch and the western border		
		consisted of a treeline. A road ran east to west		
		along the northern end of the survey area.		
138	The survey area consisted of a	The survey area's southern border consisted of a		
	flat field under arable	hedgerow and the north, east and western		
	cultivation.	borders had no physical boundary.		
139	The survey area consisted of a	The survey areas north, east south and western		
	flat field under pasture.	borders consisted of hedgerows. Electric fences		
		were located throughout the survey area.		
140	The survey area consisted of a	The survey area's north and eastern borders		
	flat field under pasture.	consisted of hedges and barbed wire fencing, the		
		southern border consisted of a treeline, the		
		western border consisted of electric fencing and		
		the northwestern border consisted of barbed		
		wire fencing.		

10. 110,000 110 tadata				
MS Job Code	MSSK1393			
Project Name	Tilbridge Solar Farm, Willingham-by-stow, Lincolnshire			
Client	York Archaeology			
Grid Reference	SK 87577 84499			
Survey Techniques	Magnetometry			
Survey Size (ha)	1190ha (Magnetometry)			
Survey Dates	2022-09-22 to 2023-02-17			
Project Lead	Krasimir Dyulgerski BA MRes			
Project Officer	Dr Anna Chmielowska ACIfA			
HER Event No	TBC			
OASIS No	TBC			
S42 Licence No	N/A			
Museum Accession	LCNCC: 2022, 129			
Number:				
Report Version	0.8			

13. Project Metadata

14. Document History

Version	Comments		Author	Checked By	Date
0.1	Initial draft for Project Lead		ACS	KD	10 March
	to Review				2023
0.2	Changes Following Project		ACS	KD	16 March
0.2	Lead Review		All S		2023
0.3	Additional Changes for		ACS	PSJ	16 March
	Director Review				2023
0.4	Changes Following Director	8	ACS	PSJ	16 March
	Review				2023
0.5	Client Corrections		ACS	KD	27 March
			1		2023
0.6	Changes Following Additional		ACS	KD	06 June
	Surveyed Areas				2023
0.7	Changes Following Director		ACS	PSJ	08 June
	Review				2023
0.8	Client Corrections		ACS	KD	14 June
					2023






































































































































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