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Geophysical Survey Report

Beacon Fen Cable and Access Routes, Lincolnshire

For

Wardell Armstrong

On Behalf Of

Low Carbon

Magnitude Surveys Ref: MSTF1735

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Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 883.4ha corridor of land along the Access and Cable routes for the Beacon Fen Energy Park Lincolnshire. The survey was successfully completed across c. 776.1ha of the survey area, with c. 94ha unable to be surveyed due to being ruled inaccessible by the client; and a further area of c. 13.2ha unable to be surveyed due to poor ground conditions and access issues. The survey responded well to the environment of the survey area, and modern interference is generally limited to field boundaries, buried services, overhead cables, and pylons. Archaeological activity, consisting of probable enclosures, ring ditches, pits, and trackways, was identified at a number of points along the corridor with 15 particular foci of archaeological interest. Agricultural activity was identified in the form of extensive ridge and furrow cultivation, former mapped and unmapped historical field boundaries, drainage features, former ponds, and ploughing trends. Natural variations in the geology were also identified, including several paleochannels. Several anomalies have been classified as 'Undetermined' due to a lack of context, or any clear pattern which would enable a confident interpretation. Although they are likely agricultural, modern, or natural in origin, an archaeological origin cannot be excluded.

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1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Wardell Armstrong on behalf of Low Carbon to undertake a geophysical survey over a c. 883.4ha area of land at Beacon Fen Cable Route, Lincolnshire (TF 17938 42706). The survey was completed across c. 698.3ha of land with a total of 185.1ha of land unable to be surveyed.

1.2. The geophysical survey comprised 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).

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

1.4. It was conducted in line with a WSI produced by MS (Howarth, 2024) and a WSI produced by Wardell Armstrong (Anderton-Johnson, 2024).

1.5. The survey commenced on 19/02/2024 and was completed on 26/05/2024. A second deployment was undertaken and completed in 6 days from 25/07/2024 to the 25/09/2024.

2. Quality Assurance

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

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

4. Geographic Background

4.1. Parcel A (the Access Route) aligned on an approximate southwest-northeast trajectory was located between the villages of Asgarby and Howell (Figure 2). Parcel C (the Cable Route) aligned on a north-south orientation was located between Heckington and East Heckington. The northernmost survey area was c. 3km north of Heckington and the southernmost survey area was approximately 5.75km east of Helpringham and c. 6km south of East Heckington (Figure 2).

4.2. Parcel A was bisected by Asgarby Road running north-south, and was bordered by the A17 to the southwest, by an unnamed road to the south and east, and by further fields in all other directions (Figure 2). Parcel C was split by the A17, Litterworth Drove, North Drove and and was bordered by dykes, roads or further fields in all directions (Figure 2).

4.3. Gradiometer survey was undertaken across 83 fields under arable cultivation and grass pasture totalling c. 776.1ha. Approximately 94ha unable to be surveyed due to being ruled inaccessible by the client; and a further area of c. 13.2ha unable to be surveyed due to poor ground conditions and access issues.

4.4. The underlying geology comprises of mudstone from the Oxford Clay Formation across areas A1-16, C1, C11, C14-31, C34-42, and C49-78; and mudstone and siltstone from the West Walton Formation across areas C1-15, C19, C31-33 and C39-53. The superficial deposits comprise Tidal Flat deposits across areas C2-C5, C7, C27-28, C30-33, C35-36 and C38-78; Till across areas A5-16, C1, C4-8, C11-16, C18-C30, C34-35 and C37-38; Glaciofluvial deposits across areas A5-7, C4-5, C9-12 and C16-18; and Sleaford sands and gravel across areas A1-2 and C1-3 (British Geological Survey, 2024).

4.5. The soils comprises of loamy and clayey soils of coastal flats with naturally high groundwater across areas C3-5, C7, C27-28, C30-33, C35-36 and C38-78; slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils across areas A3-16, C1, C4-6, C8-30, C34-35 and C37-38; and freely draining lime-rich loamy soils across areas A1-4, C1-4 and C8-10 (Soilscapes, 2024).

5. Archaeological Background

5.1. The following is a summary of the Archaeological Background information within the Beacon Fen Energy Park Overarching Written Scheme of Investigation for Geophysical Survey produced and provided by Wardell Armstrong (Goring, 2023).

5.2. Worked flints were recorded c. 800m north of the northern extent of Parcel C. Romano-British Activity has been recorded in the form of Car Dyke, a 1st-century A.D. artificial water channel, which is located c. 1km east of the northern extent of Parcel C.

5.3. Medieval Pottery was recorded c. 800m north of the Northern extent of Parcel C. The settlement of Ewerby Thorpe, located c. 750m north of the eastern extent of Parcel A, was recorded in the Domesday book. Medieval pottery was also recorded, along with an unidentified bronze object, c. 1km west of the northern extent of Parcel C. The Medieval St Oswalds Church is located c. 640m south of the eastern extent of Parcel A, along with the scheduled monument of St Oswald's Churchyard Cross. Further evidence of Medieval activity

has been recorded, in unspecified locations across the wider landscape, in the form of earth works, field systems, ridge and furrow, pottery and wood finds.

5.4. Cropmarks of an undated boundary ditch were recorded c. 800m north of the northern extent of Parcel C.

6. Methodology

6.1. Data Collection

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

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

6.1.3. Table of survey strategies:

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

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

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

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

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

6.2. Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to the EAC and Historic England guidelines for 'minimally

enhanced data' (see Section 3.8 in Schmidt *et al.*, 2015: 33 and Section IV.2 in David *et al.,* 2008: 11).

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

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

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

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

6.3.Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data from the lower sensors. The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images of the gradient and total field at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figures 96, 99, 102, 105, 108, 111, 114, 117, 120, 123, 126, 129, 132, 135 & 138). 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 (2024) 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 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25 & 27).

7.2.2. The fluxgate gradiometer survey responded well to the environment of the survey area and was successfully completed across c. 698.3ha of land between the villages of Asgarby and Howell and the towns of Heckington and East Heckington (Figure 2). An area of c. 94ha was unable to be surveyed due to being ruled inaccessible by the client; a further area of c. 91.1ha was unable to be surveyed due to poor ground conditions and access issues. The geophysical survey detected a range of anomalies of archaeological, agricultural and modern origins across the survey area. Natural variations in the geology have been identified. Magnetic interference is present in the form of extant fencing, buried services, and overhead cables and pylons.

7.2.3. There are eight foci of probable archaeological activity that have been identified across the survey area (Figures 94-117), with a further seven foci of possible archaeological activity (Figures 118-138). The following will first focus in detail on the areas containing anomalies indicating the probable presence of archaeological remains.

7.2.3.1. Area of Archaeological Activity 1 - Located in the eastern extent of Area A5 and the northern extent of Area A6, linear anomalies forming a series of sub-rectangular enclosures have been identified [**A5a**] [**A6a**] (Figure 95). Whilst large enough to be enclosures, the existence of many discrete anomalies throughout indicates more intense activity within these boundaries. The large linear anomalies running parallel in an east-west orientation towards the south of this zone in Area A5 could also be interpreted as a trackway leading to this complex, as well as the parallel linear anomalies to the east of [**A6]**. The overlapping of the north-westernmost anomalies suggests this area is multi-phase. A grouping of curvilinear and discrete anomalies have also been recorded both within and to the north of these enclosures; whilst their

proximity may suggest an association with the linear anomalies, this cannot be confirmed without further investigation.

7.2.3.2. Area of Archaeological Activity 2 - Located in the centre of Area A16, two adjoining curvilinear anomalies form a probable ring ditch feature [**A16a**] (Figure 98). Further linear, penannular and discrete anomalies have been recorded nearby in the centre of Area A16 and south of Area A15 [**A15a**]. Though possessing a significantly weaker signal, these anomalies have been designated as possible archaeology due to their proximity to the ring ditch feature and similarities in morphology.

7.2.3.3. Area of Archaeological Activity 3 - Multiple linear and curvilinear anomalies have been identified in the north of Area C8 [**C8a**] (Figure 101). These have been interpreted as multiple phases of enclosures, due to their differing orientations, and overlapping nature of the anomalies.

7.2.3.4. Area of Archaeological Activity 4 - A fourth focus has been identified in the south of Area C14 where a series of connected sub-rectangular features have been recorded running in an east-west orientation [**C14a**] (Figure 104). The activity appears to be focused on a central point, with smaller and more densely located features situated in the centre of this zone, surrounded by larger enclosures to the north, south and west. The lack of any overlapping anomalies and their similar orientation suggests that these features may have been contemporaneous. This focus is likely representative of settlement activity, with domestic structures surrounded by larger agricultural enclosures.

7.2.3.5. Area of Archaeological Activity 5 - Area C21 possesses two zones of probable archaeological activity: one within the north [**C21b**] and a second to the south [**C21a**] (Figure 107). The northernmost feature is comprised of curvilinear and discrete anomalies to form a possible ring ditch or penannular enclosure. The southern feature possesses a different morphology, with a row of small, sub-rectangular enclosures. This southern feature is indicative of probable settlement activity. Whilst probably unrelated, the proximity of these features to one another means an association cannot be ruled out.

7.2.3.6. Area of Archaeological Activity 6 – A sixth focus occupies a substantial portion of Area C29 and contains a range of linear, curvilinear and penannular anomalies [**C29a**], indicating probable settlement activity (Figure 110). The northernmost extent of this focus is comprised of linear and discrete anomalies which form two large sub-rectangular enclosures, surrounding smaller internal divisions; likely suggesting a focus of settlement activity in this location. Intersecting the centre of [**C29a**] are two large linear anomalies which form a probable trackway with a northwest-southeast orientation. At the south of [**C29a**] penannular anomalies have been identified surrounding the larger enclosure. Similar anomalies have been found further south in C27.

7.2.3.7. Area of Archaeological Activity 7 - The anomalies which comprise [**C27a**] and [**C28a**] are clearly continuous between the two land parcels and are

representative of larger enclosures containing internal divisions (Figure 113). The anomalies to the southeast [**C27b**] are also likely of a similar origin, but only a number of weaker penannular anomalies, and faint linears can be clearly discerned. Whilst these groups of anomalies possess different morphologies, they are not unlikely to be related, and may also be related to those forming Area of Archaeological Activity 6 in land parcel C29 (Figures 109-111).

7.2.3.8. Area of Archaeological Activity 8 – The final focus for probable archaeological activity is found in Area C37 (Figure 116). Two closely situated zones containing dense groupings of small sub-rectangular features have been detected [**C37a**] and [**C37b**]. The density of these anomalies is suggestive of settlement activity, the clear overlapping of anomalies, more evident in [**C37b**], suggests multiple phases of settlement in this area. It is not clear whether the two groups of features were contemporaneous.

7.2.4. A further seven Areas of Archaeological Activity (9–15) have been identified in Areas A8, A15, C9, C10, C15-16, C42, C50-52, C57 and C75 (Figures 119, 122, 125, 128, 131, 134 & 137). These zones contain linear, curvilinear and discrete anomalies of possible archaeological origin and can be tentatively interpreted as the partial remnants of enclosures however, the weak signal and fragmented nature of the anomalies mean a greater degree of confidence in their archaeological classification cannot be given.

7.2.5. Agricultural features identified as former field boundaries have been recorded throughout the survey area. These are comprised of 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 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89 & 92). The anomalies that do not correspond with known former boundaries, but present a similar magnetic signal or alignment, are likely to be unmapped former field boundaries.

7.2.6. Groups of linear and curvilinear anomalies in a parallel formation have been recorded across the survey area, mostly present in the eastern section, which are indicative of ridge and furrow cultivation. These have multiple orientations across the site and mostly maintain a consistent spacing per field, typical of ridge and furrow. Some of these appear to cross probable archaeological anomalies and may obscure smaller or weaker anthropogenic anomalies if present (Figures 29, 32, 35, 38, 47, 50, 53, 56, 59, 83 & 86).

7.2.7. Further groups of linear anomalies have also been detected throughout the entirety of the survey area, interpreted as drainage systems. The spacing, parallel formations and dipolar signals exhibited by many of the anomalies are indicative of drainage features. (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89 & 92).

7.2.8. Weak and closely spaced linear anomalies are present across the majority of the survey area which align with modern ploughing visible in satellite imagery. These have

therefore been interpreted as 'Agricultural trends' (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 80 & 83).

7.2.9. The magnetic data has also detected geological variations sporadically located throughout the survey area (Figures 29, 32, 35, 38, 44, 47, 50, 53, 56, 65, 68, 71, 74, 77, 80, 83, 86, 89 & 92). These anomalies primarily appear as spreads or strong discrete anomalies indicative of changes in the superficial deposits or underlying bedrock. However, further strong linear and discrete anomalies have been observed in the east of the survey area that possess morphology indicative of paleo-channels (Figures 73, 76, 77, 80, 83, 86, 89 & 92).

7.2.10. Multiple anomalies classified as 'Undetermined' have been identified within the survey area. These anomalies have a limited context and lack a clear pattern or morphology required to enable a confident interpretation. Whilst these are considered more likely to be suggestive of anomalies of an agricultural, modern and/or natural origin, an archaeological origin cannot be fully excluded (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89 & 92).

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. **Archaeology Probable (Strong/Weak) –** The south-eastern corner of A5 exhibits a series of weak and strong linear, rectilinear and discrete anomalies

[**A5a**] (Figure 95). These anomalies display strong and weak positive magnetic responses, which combined appear to form probable enclosures, pits, and internal divisions, suggestive of settlement activity. The enclosures measure roughly 45m in width. The presence of ridge and furrow and agricultural activity may have obscured further details and any additional ephemeral anomalies resulting from archaeological features.

7.3.2.2. **Archaeology Probable (Strong/Weak) –** A complex of linear, curvilinear and discrete anomalies have been detected in the north of area A6 [**A6a**] (Figure 95). These anomalies are roughly arranged in a rectilinear pattern, with internal subdivisions and linear anomalies radiating out, suggesting it was a structure used for settlement. Located close to [**A5a**], it is possible that these anomalies are part of the same overall complex.

7.3.2.3. **Archaeology Possible (Strong and Weak) –** A series of strong and weak linear, curvilinear, and penannular anomalies with signals indicative of ditches were detected in the southern half of area A8 [**A8a**] (Figure 119). These anomalies have no discernible pattern, nor do they align with any mapped feature from which a confident interpretation of their specific origin can be assumed.

7.3.2.4. **Archaeology Possible/Probable (Strong/Weak) –** The centre of Area A16 contains two strong curvilinear anomalies describing a penannular feature between c. 10-12m wide, and multiple discrete anomalies labelled [**A16a**] (Figure 98). The morphology and signal of these anomalies is indicative of a probable ring ditch feature. These anomalies are surrounded by further linear, curvilinear, and discrete anomalies in [**A16a**]. A c. 10m wide penannular feature is located in the southern extent of A15 [**A15a**], which is potentially of a similar origin (Figure 98). The signal and morphology of this latter feature is not as clear as those to the north, and have therefore been categorised as possible archaeology.

7.3.2.5. **Archaeology Probable (Strong/Weak) –** Located in the north of Area C8 is a series of strong and weak linear and curvilinear anomalies [**C8a**] recorded as probable archaeology (Figure 101). These anomalies appear only partially intact, and whilst they may present further examples of agricultural or settlement activity, a clearer categorisation cannot be made due to their fragmentary nature. It is also likely this zone demonstrates multiple phases of activity on the site, as many of the anomalies overlap and follow differing orientations.

7.3.2.6. **Archaeology Possible (Strong and Weak) –** Evidence for a possible former enclosure has been detected in C9, labelled [**C9a**] (Figure 122). Whilst possibly forming the general shape of a sub-rectangular enclosure, variation in the signal strength of the northern anomalies, combined with the fragmentary nature of this feature and its location alongside clear agricultural anomalies means that a more certain archaeological designation cannot be made.

7.3.2.7. **Archaeology Probable (Strong and Weak) –** In the northeast corner of Area C10, a complex of linear and curvilinear anomalies has been detected, labelled [**C10a**] (Figure 125). These anomalies appear to curve around in a penannular pattern, with several linear anomalies radiating outwards appearing to form partial rectilinear enclosures. Due to the fragmentation of the overall set of anomalies, and its proximity to anomalies of natural and agricultural origin, a more concrete interpretation cannot be made.

7.3.2.8. **Archaeology Probable (Strong/Weak) -** A large complex of rectilinear and discrete anomalies has been detected within the southern portion of area C14 [**C14a**] (Figure 104). The rectilinear anomalies appear to form between six to eight larger enclosures measuring c. 50m long and c. 25m wide, which contain multiple internal divisions. Surrounded by these larger enclosures are multiple smaller enclosures c. 10-17m in width and length, suggesting the existence of settlement activity. The discrete anomalies present within and around these features could also point to the existence of pits inside the complex

7.3.2.9. **Archaeology Possible (Strong/Weak) –** Detected within the south-eastern corner of C15 and the northern extent of C16 is a further zone containing rectilinear and curvilinear anomalies of possible archaeological origin [**C15a**] and [**C16a**] (Figure 104). Whilst their morphology is suggestive of a partial enclosure-like feature, the weak signal and differing orientation in comparison to [**C14a**], and to nearby agricultural anomalies, means a clearer interpretation cannot be drawn.

7.3.2.10. **Archaeology Probable (Strong/Weak) –** Two sets of probable archaeology have been identified within the area C21, assigned the numbers [**C21a**] and [**C21b**] (Figure 107). The central anomalies in [**C21a**] are a series of three sub-rectangular enclosures c. 15-20m wide, adjoining one another in a north-south oriented row c. 140m long, followed by a further two connected anomalies which are of similar morphology and orientation, c. 18m to the north. This group of features also possesses further linear anomalies extending in an east-west direction which abut the edges of the sub rectangular features, and probably extend beyond the western border of the survey area. This possibly indicates that the anomalies within the survey boundary are part of an even larger zone of archaeological settlement activity. To the north of area C21 is a second concentration of anomalies, labelled [**C21b**] (Figure 107). These anomalies appear to form a large, irregular, penannular enclosure c. 45m wide, which is comprised of both strong and weak responses, with further discrete anomalies to its north. Both these sets of anomalies are intersected by evidence of ridge and furrow cultivation which could possibly disturb the data and hide any weaker anomalies.

7.3.2.11. **Archaeology Possible/Probable (Strong Weak) –** Within the centre of C28, and the north of C27, multiple linear and curvilinear anomalies appear to join to form a larger rectangular feature c. 125m long by c. 50m wide, along with smaller internal divisions [**C28a**] and [**C27a**] (Figure 113). These anomalies are

mostly weak, with the northern section of [**C28a**] appearing the strongest. The morphology of this feature suggests an enclosure, with smaller internal subdivisions in its northern end potentially indicating settlement activity. The nearby grouping of anomalies to the southeast [**C27b**] is likely related to this feature. These anomalies are also mainly linear, with smaller curvilinear and penannular anomalies surrounding them (Figure 113).

7.3.2.12. **Archaeology Probable (Strong/Weak) –** A series of strong and weak linear anomalies have been identified within Area C29 [**C29a**] (Figure 110). The anomalies are mostly linear or curvilinear, as well as multiple smaller discrete anomalies throughout. The anomalies form a collection of probable enclosures, with an apparent c. 150m long trackway through the centre running southeast-northwest. Four c. 12m diameter penannular anomalies are located to the south of main concentration. The nature and morphology of these anomalies is strongly suggestive of the presence of settlement activity.

7.3.2.13. **Archaeology Probable (Strong/Weak) –** Area C37 contains two concentrations of anomalies indicative of probable archaeological activity c. 30m apart (Figure 116). To the north of the area [**C37a**] is comprised of a collection of weak linear anomalies which form a large rectilinear enclosure c. 110m by c. 50m, containing a stronger internal division in its north and multiple weak and strong discrete anomalies throughout. To the south, [**C37b**] is comprised of a series of linear and curvilinear anomalies which form a collection of connected sub-rectangular enclosures of varying sizes between c. 7-23m wide. These two concentrations appear to be on differing orientations and there is no clear evidence to suggest that they were contemporaneous.

7.3.2.14. **Archaeology Possible (Weak)** – A zone of weak linear and curvilinear anomalies was detected in the western part of the cable route in area C42 [**C42b**] (Figure 128). These weak anomalies are clearly distinct from the underlying natural variations in the area, appear to indicate fragmented enclosures, and correspond with cropmarks visible in modern satellite imagery (Google Maps, 2024). These features respect, and follow a similar orientation to former mapped field boundaries located c. 12m to their north suggesting that there may be a degree of contemporaneity between them.

7.3.2.15. **Archaeology Possible (Strong/Weak)** – Survey Areas C50, C51 and C52 contain multiple weak linear and curvilinear anomalies (Figure 131). Anomalies [**C50a**] and [**C51a**] in Areas C50 and C51 appear to reflect a continuous group of features crossing the modern field boundary Whilst these anomalies correspond with numerous cropmarks visible on modern satellite imagery (Google Maps, 2024), they lack a distinct morphology that might enable further interpretation. In Area C52 a large, weak rectilinear anomaly is present [**C52a**]. Whilst this anomaly is possibly indicative of a feature such as an enclosure ditch, its weak signal and fragmentary nature prevent a more confident classification.

7.3.2.16. **Archaeology Possible (Strong/Weak)** – Multiple strong, discrete anomalies have been identified within the northwestern corner of Area C57 [**C57a**] (Figure 134). Whilst these anomalies have no discernible pattern visible in the data, modern satellite imagery (Google Maps, 2024) shows cropmarks which correspond directly to their location.

7.3.2.17. **Archaeology Possible (Weak)** – Area C75 contains weak, negative, linear and rectilinear anomalies [**C75a**] (Figure 137). The nature of these anomalies and their lack of a clear relationship to natural and agricultural/drainage features in the immediate vicinity suggests a possible archaeological classification.

7.3.2.18. **Agricultural (Strong /Weak/Spread)** – Throughout the survey area a number of strong and weak linear anomalies correspond with mapped historical field boundaries (CLS Data, 2024). Several agricultural spreads were also detected throughout the survey area which are related to auxiliary agricultural buildings and ponds (CLS Data, 2024).

7.3.2.19. **Agricultural (Weak and Spread)** – A large scatter of enhanced magnetic data was detected along the northern boundary of Area C21 [**C21c**] (Figure 56). This corresponds with a single square building and central courtyard named Carterplot Farm depicted on 1880s historical mapping of this area. On its eastern boundary was a pond, seen also within the data as an enhanced response (Figures 12-13). The response is therefore likely a result of the presence of debris from the demolition of the former Carterplot Farm and its associated buildings.

7.3.2.20. **Agricultural (Weak and Spread)** – A large scatter of enhanced magnetic data was detected along the southern boundary of Area C31 [**C31a**] (Figure 68). This corresponds with two rectangular buildings and surrounding boundaries depicted on historical mapping from the 1880s (Figure 15). The buildings were surrounded by farmland on all sides and the enhanced data was likely a result of the demolition of the buildings. The land where the buildings once stood is now under arable use.

7.3.2.21. **Agricultural (Spread)** – A large scatter of enhanced magnetic data was detected along the southern boundary of Area C35 [**C35a**] (Figure 53). Historical mapping from the 1880s depicts a rectangular building with a probable garden or courtyard and surrounding boundaries separating them from the field (Figure 15). The enhanced data likely results from the presence of debris from the demolition of the buildings. The land where the buildings once stood is now under arable use.

7.3.2.22. **Agricultural (Strong and Spread)** – A large scatter of enhanced magnetic data was detected along the southern boundary of Area C38 [**C38a**] (Figure 65). Historical mapping from the 1880s depicts several buildings outside the survey area and an orchard and pond within the survey area (Figure 15). The area was surrounded by farmland on all sides with the railway c. 253m north of the area. A farm called the White House was located c. 132m south of the area. The

enhanced data is likely a result of debris from the demolition of the buildings to the south being spread into the survey area.

7.3.2.23. **Agricultural (Strong /Weak/Spread)** – A large scatter of enhanced magnetic data was detected in the northwest of Area C45 and the southwest of Area C46 [**C45a and C46a**] (Figure 77). Historical mapping from the 1880s depicts a small square building with a fenced garden or courtyard in this location (Figure 21). The enhanced data is likely to be a result of the presence of debris from the demolition of the buildings.

7.3.2.24. **Agricultural (Strong /Weak/Spread)** – A large scatter of enhanced magnetic data was detected along the southern boundary of Area C63 [**C63a**] (Figure 92). Historical mapping from the 1880s depicts a rectangular building named Duckhall Farm, and a smaller square building with an external courtyard or gardens to the front and a pond (Figure 27). The magnetic enhancement visible in the data is likely to be a result of the presence of debris from the demolition of these buildings.

7.3.2.25. **Modern Ponds (Spread)** – The survey area contains numerous concentrations of enhanced magnetic signal that can been seen clearly in the data and correspond with ponds noted on historical mapping, particularly from the 1880s [**A1a, A2a, A4a, C4a, C8b, C14b, C18a, C18b, C21d, C21e, C27a, C28b, C29b, C29c, C30a, C31b, C34a, C37c, C38b, C38c and C45a**] (Figures 5, 11, 13, 15, 17 & 19).

7.3.2.26. **Modern/Industrial (Strong/Spread)** – A series of anomalies characterised by a strong magnetic signal indicative of a modern service have been detected within the survey area [**C42a, C56a, C57b, C66a, C69a and C70a**]. (Figures 74, 77, 86 & 89). The anomalies are not recorded on historical mapping, but are visible in modern satellite imagery as a trench and easement for a high-voltage electrical interconnector linked to the substation in the southeast of the survey area.

7.3.2.27. **Undetermined (Strong/Weak)** – Multiple linear, curvilinear, and discrete anomalies have been identified across the survey area that do not have any supporting contextual evidence (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89 & 92). Whilst likely agricultural or natural in origin, an archaeological explanation cannot be entirely ruled out.

7.3.2.28. **Ridge and Furrow (Trend)** – Numerous parallel linear and curvilinear anomalies have been identified as Ridge and Furrow cultivation across the survey area (Figures 29, 32, 35, 38, 47, 50, 53, 56, 59, 83 & 86). These anomalies exhibit different spacings and shapes, and conform to various orientations possibly indicating that multiple no-longer-extant land divisions were present. Many of these anomalies do not respect the probable and possible archaeological anomalies, suggesting that much of the potential archaeology pre-dates these agricultural.

7.3.2.29. **Agricultural (Trend)** – This category has been used to indicate faint linear anomalies attributed to the effects of modern ploughing and possible drains (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 80 & 83). For clarity, only a representative sample of modern plough effects, which are faint and mainly apparent as part of the background 'texture', has been drawn.

7.3.2.30. **Drainage Features** –Numerous parallel linear trends exhibiting a weak positive and weak dipolar signal, indicating probable land-drains, have been identified throughout the survey area (Figures 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69 & 71).

7.3.2.31. **Natural (Zone, Spread & Weak)** – Bands of natural anomalies across the survey area indicate changes in the composition and depth of the superficial sediments and bedrock (Figures 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89 & 92). In places, this has produced a clear contrast, where the sinuous edge of the magnetic change follows the contour and corresponds with a mapped sand and gravel deposits. Elsewhere, contrasts are subtler but correspond with the likely accumulation of sediments in slight gullies and depressions.

7.3.2.32. **Natural (Zone, Spread & Weak)** There is clear evidence for the presence of paleochannels within parts of the survey area. The locations of these former channels may indicate enhanced potential for past human activity in proximity to them. These are most visible in the Cable Corridor Route in fields C33, C39, C42, C52-55, C57-59 and C66 (Figures 73, 76, 77, 80, 83, 86, 89 & 92).

8. Conclusions

8.1. A fluxgate gradiometer survey was completed across c. 776.1ha of the survey area, with c. 94ha unable to be surveyed due to being ruled inaccessible by the client; and a further area of c. 13.2ha unable to be surveyed due to poor ground conditions and access issues.

8.2. 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. These natural deposits included paleochannels indicating the potential for past human activity in the landscape. Magnetic interference was visible at field perimeters, and in proximity to pylons, telegraph poles, overhead cables, extant structures and buried services. Nevertheless, the survey was able to identify anomalies indicative of archaeological activity across the survey area.

8.3. 15 foci of possible and probable archaeological activity were identified across the survey area. Within the Access Route, 4 foci were identified containing anomalies forming probable enclosures, ditches, and pits. Within Parcel C, a further 11 foci were identified within which possible settlement activity, probable enclosures, ditches, pits, and trackways were present.

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, mapped and unmapped former field boundaries, drainage features, former ponds, and ploughing trends.

8.5. Several anomalies have been classified as 'Undetermined' due to lack of context, or any clear pattern which would enable a confident interpretation. Although they are likely agricultural, modern or natural in origin, an archaeological origin 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 un-georeferenced images, XY traces and a copy of the final report.

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

10. Copyright

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

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12. Appendix

12.1. Table of Survey Considerations:

Survey Area	Ground Conditions	Further Notes
A1	The survey area consisted of flat, arable land.	The survey area was bordered to the north and east by ditches, to the south by metal fencing and the border to the west had no physical boundary.
A2	The survey area consisted of flat, arable land.	The survey area was bordered to the north, east and south by hedgerows and ditches, and the border to the west had no physical boundary.
A3	The survey area consisted of flat, arable land.	The survey area was bordered to the north and east by ditches and to the south by a ditch and a hedgerow, and the border to the west had no physical boundary.
A4	The survey area consisted of undulating boggy ground.	The survey area was bordered by a ditch on the western, eastern and southern boundaries and a hedge on the northern boundary. Deep ruts were present along the southern boundary and in the north-western corner of the survey area.
A5	The survey area consisted of slightly sloping, arable land.	The survey area was bordered to the north and west by hedgerows, trees and ditches, to the east by hedgerows and to the south by a road.
A6	The survey area consisted of arable land with a southwesterly slope.	The survey area was bordered by hedges and trees on all sides, with two metal gates on the south boundary.
A7	The survey area consisted of flat, arable land.	The survey area was bordered on all sides by hedgerows and to the south by a ditch. In the northeast, overhead cables were present.
A8	The survey area consisted of flat, arable land.	The survey area was bordered on all sides by ditches and hedgerows. Deep ruts were present in the west of the survey area. Overhead cables were present in the centre of the survey area.
A9	The survey area consisted of flat, arable land.	The survey area was bordered on all sides by ditches and hedgerows. In the east of the survey a pylon and telegraph cables were present, with overhead cables trending roughly east-west and north-south respectively.
A11	The survey area consisted of flat, arable land.	The survey area was bordered to the north and east by ditches, to the east, south and west by hedgerows. The border in the south had no physical boundary. Overhead cables where present in the southwest of the survey area.

A12	The survey area consisted of flat, arable land.	The survey area was bordered to the east by a road and to the south and west by hedgerows and ditches. The border to the north had no physical boundary.
A13	The survey area consisted of flat, arable land.	The survey area was bordered to the north, east and west by ditches and the border to the south had no physical boundary.
A14	The survey area consisted of flat, arable land.	The survey area was bordered to the east, south and west by ditches, and the border to the north had no physical boundary. An area to the east of the survey area was unable to be surveyed due to rough ground conditions due to rutting.
A15	The survey area consisted of flat, arable land.	The survey area was bordered on all sides by ditches. An area to the east was unable to be surveyed due to unsuitable ground conditions.
A16	The survey area consisted of flat arable land.	The survey area was bordered to the east, south and west by ditches and the border to the north no physical boundary was present. An area in the west of the survey area was unable to be surveyed due to rutting.
C1	The survey area consisted of flat, undulating ground.	The survey area was bordered to the west and south by a ditch. A hedge makes up the northern boundary and an access road is present along the western boundary. No physical boundary is present on the eastern border.
C2	The survey area consisted of flat arable land.	The survey area was bordered by a ditch to the north and south, and by hedgerows to the east and west.
C4	The survey area consisted of flat arable land.	The survey area was bordered to the north by a ditch, the southeast by hedgerows and a metal fence, to the south by a road, and the borders to the east and west had no physical boundaries. In the southwest of the survey area a telegraph pole and cables were present.
C5	The survey area consisted of flat arable land.	The survey area was bordered to the north, east and south by ditches, to the southeast by a road and the border to the west had no physical boundary.
C6	The survey area consisted of flat paddocks and a pig pen.	The survey area was bordered on all sides by electric fencing, with further metal fencing to the northeast, east, south, and southwest, and wooden fencing to the northwest. Within the survey area, further divisions were present in the form of wooden and electric fencing. In the east of

		the survey area a wooden shed was present.
C7	The survey area consisted of flat pastureland.	The survey area was bordered by the discontinuous hedgerow and trees in its north, east and southwest edges. An iron pole was present in the southwest corner.
C8	The survey area consisted of flat arable land.	The survey area was bordered to the north by a road, to the south by a ditch and the borders to the east and west had no physical boundary.
C9	The survey area consisted of flat grassland.	The survey area was bordered to the east and south by ditches, to the north by a road, to the northwest and northeast by hedgerows and the border to the west had no physical boundary.
C10	The survey area consisted of flat arable land.	The survey area was bordered to the north by an electric fence, to the east by hedges and trees and to the south and west by a ditch. A wooden fence was present around a set of buildings in the northwest corner. Telegraph poles were present, running along the west boundary of the survey area.
C11	The survey area consisted of flat arable land.	The survey area was bordered to the north, east and west by ditches and a trackway to the south. An area to the south was unable to be surveyed due to rough ground conditions.
C12	The survey area consisted of young crop.	The survey area was bordered to the north by a ditch, to the east by a trackway and the border to the southwest had no physical boundary. An area was unable to be surveyed due to waterlogged ground conditions.
C14	The survey area consisted of flat arable land.	The survey area was bordered to the north by a hedgerow, to the east and west by ditches and to the south by a trackway. An area to the south was unable to be surveyed due to waterlogged ground conditions.
C15	The survey area consisted of flat arable land.	The survey area was bordered to the north, east and west by ditches and to the south by a trackway. An area to the north and south were unable to be surveyed due to rough and waterlogged ground conditions.
C16	The survey area consisted of flat arable land.	The survey area was bordered to the north, east and south by ditches and the border to the west had no physical boundary. An area to the east was unable to be surveyed due to a large patch of waterlogged ground conditions.

C17	The survey area consisted of flat arable land.	The survey area was bordered to the north and south by ditches, to the east by a trackway and trees and the border to the west had no physical boundary. Telegraph poles and overhead cables were present along the eastern border.
C18	The survey area consisted of flat arable land.	The survey area was bordered to the north, east, south and northwest by ditches, to the west by a road. Overhead cables were present in the south of the survey area.
C21	The survey area consisted of flat arable land.	The survey area was bordered to the north, southeast and south by ditches, to the northeast by a bank, the border to the west had no physical boundary. An area in the northeast was unable to be surveyed due to rough ground conditions. A telegraph pole and cables were present in the northeast of the survey area.
C23	The survey area consisted of flat pastureland.	The survey area was bordered by hedgerows to the north and east, a ditch to the west, and a fence to the south.
C25	The survey area consisted of flat arable land.	The survey area was bordered by a fence to the north and ditches in all other directions.
C26	The survey area consisted of a flat, arable field with no crop.	The survey area was bordered by ditches on all sides besides the north which is bordered by a metal fence separating the area from a railway. Overhead cables are present across the southern half of the survey area.
C27	The survey area consisted of a flat post-harvest arable field.	The area was bound by a road to the west, ditch to the north and east and the south was an open boundary to a trainline
C28	The survey area consisted of a flat post-harvest arable field.	The area was bound by a ditch along the northeast and majority of the south borders. The west and southeast boundaries were comprised of a wire fence line
C29	The survey area consisted of flat, arable with young crops.	The survey area was bordered by a ditch along the west and south with trees along the southern border. The northern and eastern borders were open.
C30	The survey area consisted of flat, arable with young crops.	The survey area was bordered by a ditch and trees in the south and a hedge in the east. The western and northern borders were open. A small area of unsurveyable land is present along the southern border.
C31	The area was a flat post-harvest arable field.	Along the north south and east, the boundaries were comprised of a ditch with the western boundary being a hedgerow.

		Within the southeast corner this differed slightly to that of a fence line.
C32	The survey area coverage was that of a flat post-harvest field.	The field was bound by ditches to the east and west with a tree line to the south and an open boundary to the north. North of the centre of the field was an area of standing water which was deemed unsurveyable.
C33	The survey area was that of a flat arable field	The south and west boundaries were comprised of a ditch system with the north and east being an open boundary.
C34	The survey area comprised of a flat arable field.	The northeastern and southern boundaries were formed by ditches. With the western boundary being a road. Across the survey area from north to south around a third of the way into the field from the west were overhead cables.
C35	The survey area consisted of a flat, arable field with no crop.	The survey area was bordered by a ditch on the eastern and southern boundaries with a country road along the western boundary. A metal fence was present on the northern boundary separating the area from a railway line.
C37	The survey area consisted of flat, arable land with young crops.	The survey area was bordered by a grass verge to the west and south and a drainage ditch to the north and east. Telephone poles were present along the southern boundary and extend to the northern boundary in the eastern half of the survey area.
C38	The survey area consisted of flat arable land with young crops.	The survey area was bordered by a railway line and drainage ditch to the north and hedgerow to the east, south and west. Metal marker posts were situated above drainage pipes on the northern boundary. Telephone poles and cables were present on the southern boundary.
C39	The survey area consisted of flat arable land with young crops.	The survey area was bordered by a hedgerow and trees to the north, east and west. In addition, a trackway and a drainage ditch were located to the south.
C40	The survey area consisted of flat, arable land with young crops.	The survey area was bordered by hedges on the western boundary and a ditch on the northern, southern and eastern boundaries. There are areas of unsurveyable land along the northern and southern boundaries.
C41	The survey area consisted of grassland.	The survey area was bordered by a drainage ditch having trees at some places to the north, east, south, and west. A small

		strip of land along the northern boundary was unsurveyable due to heavy ploughing.
C42	The survey area consisted of hard stubble grassland.	The survey area was bordered by a drainage ditch with trees at some places to the north, east, south, and west.
C43	The survey area consisted of flat arable land.	The survey area was bordered by a ditch to the north and south, a trackway to the east and has no physical boundary to the west.
C44	The survey area consisted of flat arable land.	The survey area was bordered by a ditch to the east and had no physical boundary to the north, south and west.
C45	The survey area consisted of flat arable land.	The survey area was bordered by a trackway to the north and a ditch to the east, south and western corner. There was no physical boundary to the northwest and southwest corner.
C46	The survey area consisted of arable land.	The survey area was bordered by a ditch to the east, south and west. On the western side was a trackway, garage, and a pile of rocks. Mud pits were found along the northern and eastern edges. The area contained young crop in the northern half and tilled ground in the southern half.
C47	The survey area consisted of flat arable land with very muddy ground conditions.	The survey area had a ditch and bushes on its eastern and southwestern edges. Throughout the survey area, deep and waterlogged trenches were present. However, there was no physical boundary along the eastern perimeter.
C48	The survey area consisted of flat arable land.	The survey area was bordered to the west and south by ditches, with no other physical boundaries.
C50	The survey area consisted of flat arable land.	The survey area was bordered to the south and west by ditches, and the borders to the north and east had no physical boundaries.
C51	The survey area consisted of flat arable land.	The survey area was bordered by ditches in all directions apart from the north which had no physical boundary.
C52	The survey area consisted of flat arable land with young crops.	The survey area had a ditch to the north, south and west. It did not have any physical boundary to the north.
C53	The survey area consisted of flat arable land.	The survey area was bordered to the east, south and west by ditches and had no physical boundary to the north.
C54	The survey area consisted of flat arable land.	The survey area was bordered by a trackway, drainage ditch and trees with a house in the north of the survey area. The western edge had no physical boundary. Several sections in the southwest were not able to be surveyed due to waterlogged ground conditions.

C55	The survey area consisted of flat arable land.	The survey area was bordered by a trackway and drainage ditch to the northern, eastern, southern, and western extents. Some sections were unsurveyable due to flooded deep ruts across the survey area.
C56	The survey area consisted of arable land.	The survey area was bordered to the north, east and west by ditches and to the south by a road. Overhead cables and telegraph cables were present in the centre, and along the eastern border of the survey area.
C57	The survey area consisted of flat, arable ploughed field. Young crops just coming through the ground.	The survey area was bordered by ditches on all sides. Overhead power cables ran east to west through the middle of the field. Along the northern half of the western boundary there was unsurveyable land due to overgrown crops. Deep ruts were present in the middle of the survey area.
C58	The survey area consisted of a flat, unploughed field.	The survey area was bordered by a ditch on all sides. Telephone lines run across from the north-east corner to the western boundary.
C59	The survey area consisted of a flat, arable field with young crop.	The survey area was bordered by ditches on the northern, eastern and western boundaries, and by an access road on the southern boundary.
C63	The survey area consisted of a flat, ploughed field.	The survey area was bordered by a ditch on the north, east, and west boundaries, an access road created the southern boundary. A patch of standing water was present in the eastern half of the survey area. Several wind turbines were just beyond the survey area to the north and south and a substation was present just outside the eastern border.
C64	The survey area consisted of flat, pasture.	The survey area was bordered by a grass verge on the north, west and south boundaries, and a ditch on the eastern boundary. Power lines run from the eastern boundary out of the northern boundary and telephone poles and wires are present along the southern boundary.
C66	The survey area consisted of flat, arable young crop.	The survey area was bordered by a ditch and an access road on the north, east and west borders and a grass verge on the south border. A wind turbine lies just outside the north-western corner of the survey area.

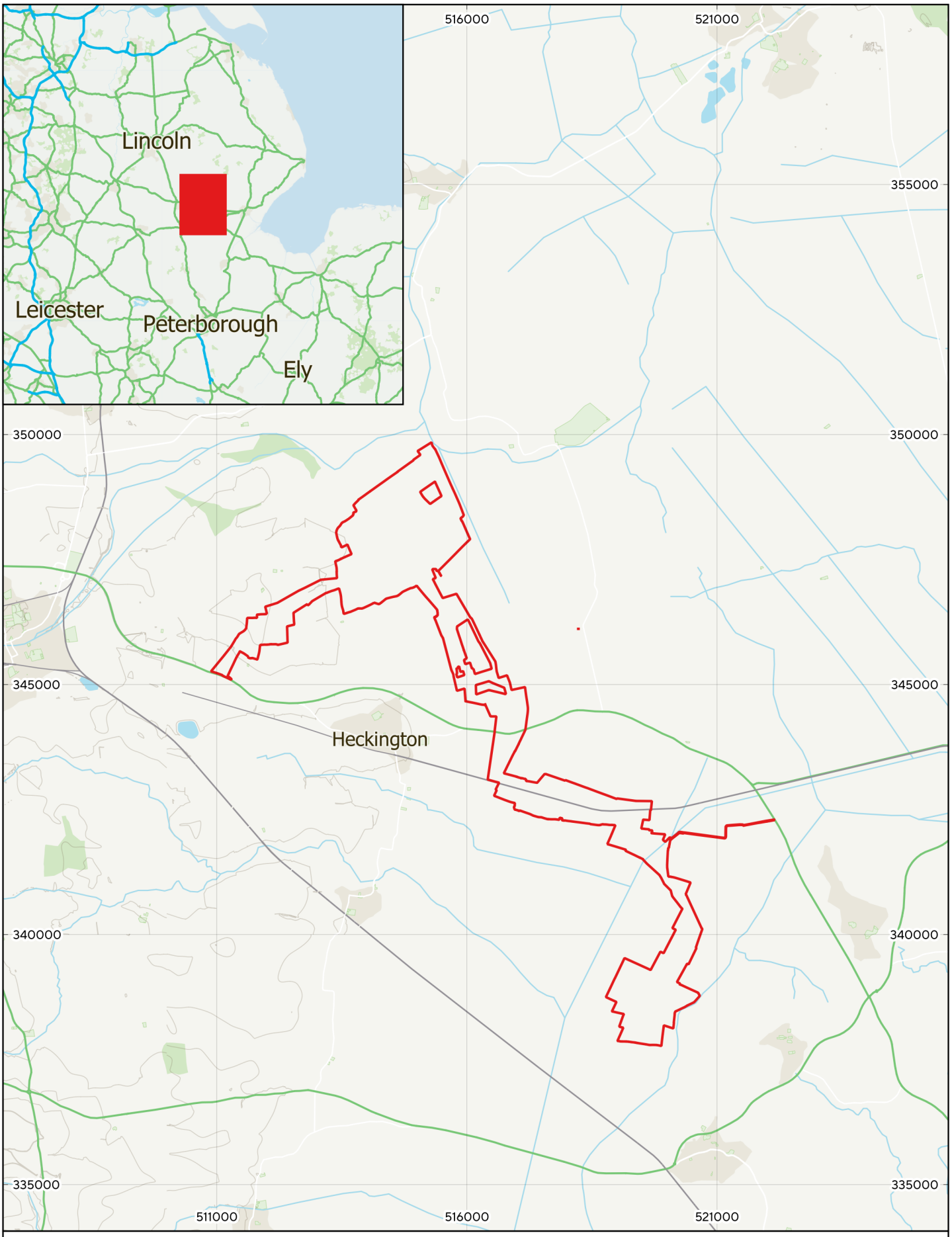
C69	The survey area consisted of a flat, ploughed field.	The survey area was bordered by ditches on all sides. Hedges were present along the northern, eastern and some of the western boundary and an access road runs along the northern boundary. A pylon with associated overhead cables was located in the south-western corner of the survey area with cables running to the middle of the eastern boundary.
C70	The survey area consisted of flat, pasture.	The survey area was bordered by ditches and hedges on the northern, western and southern boundaries, no physical boundary was present on the eastern border. A ditch was present running east to west in the middle of the survey area. Hay bales were also present near the western boundary and overhead cables ran from the southern boundary to the western boundary.
C71	The survey area consisted of flat, arable young crop.	The survey area was bordered by ditches on all sides. A road was present along the western boundary and trees were present along the southern boundary.
C72	The survey area consisted of flat, arable young crop.	The survey area was bordered by ditches on the north, south and western boundaries. The eastern boundary was made of bord crops and trees. Ditches protrude from the western and southern boundaries into the field.
C73	The survey area consisted of flat, arable field with no crop.	The survey area was bordered by a metal fence to the west, east and south. Trees and an access road were present along the northern boundary. A large area of the field was unsurveyable due to the presence of metal fencing and young trees.
C74	The survey area consisted of flat, pasture.	The survey area was bordered by ditches on all sides. A wind turbine was present just outside the south-western boundary of the survey area.
C75	The survey area consisted of flat, ploughed fields.	The survey area was bordered by ditches on all sides. Some unsurveyable ruts were present in the middle of the survey area and a wind turbine lay just outside the south-eastern corner.

13. Project Metadata

MS Job Code	MSTF1735
Project Name	Beacon Fen Cable Route
Client	Wardell Armstrong
Grid Reference	TF 17938 42706
Survey Techniques	Magnetometry
Survey Size (ha)	883.4ha
Survey Dates	19/02/2024 to 02/05/2024
Project Lead	Dr. Paul S. Johnson FSA MCIfA
Project Officer	Alison Langston BA ACIfA; Joseph Howarth MSc
HER Event No	TBC
OASIS No	TBC
S42 Licence No	N/A
Report Version	0.5

14. Document History

Version	Comments	Author	Checked By	Date
0.1	Initial draft for Project Lead to Review	WS, BO, ES	JH	21 May 2024
0.2	Secondary draft following comments from Project Officer	WS	JH, AL, PSJ	23 May 2024
0.3	Corrections following Project Lead Review	JH	PSJ	3 June 2024
0.4	Corrections following Project Lead Review	JH	PSJ	6 June 2024
0.5	Tertiary draft following more surveyed fields	DDJ, JH	FPC	9 October 2024



MSTF1735 - Beacon Fen Cable and Access Routes, Lincolnshire
Figure 1 - Geophysical Survey Location
1:100,000 @ A4

Geophysical Survey Area

0 2 4 km

510000
515000
520000
345000
340000
Ewerby
Howell
Kirkby la Thorpe
Asgarby
Heckington
East Heckington
Great Hale
Little Hale
Swineshead Bridge
Claydike Bank
Tarry Hill
North End
Northbeck
Scredington
Helpringham
Spanby
Howell Fen Drove
Eveden Road
Ewerby Road
Asgarby Road
Old Ballast Pit
Mount Lane
The Beck
Sardesons Plantation
Mount Plantation
B1394
Burton Road
Great Hale Drove
Asgarby Road
Heckington Road
Burton Gorse Plantation
Cliff Beck
Whitecross Lane
Burton Plantation
Crow Lane
Scredington Road
Little Plantation
Hensnest Plantation
Mareham Lane
Station Road
Helpringham Road
Gorse Lane
Gorse Drove
Swaton Wood
The Drove
Spanby Lodge Plantation
Fen Road
Little Hale Drove
North Drove
South Drove
Engine Drove
Helpringham Eau
Car Dyke
Heckington Eau
Catchwater Drain
Car Dyke
Head Dike
Littleworth Drove
B1395
Sandlees Lane
Carterplot Road
A17
Catchwater Drain
Holland Dike
Six Hundreds Drove
Skerth Drain
Ullyatt's Drove
Brown's Drove
A1121
Sykemouth Drove
Great Hale Eau
Timms's Drove
Boston Road
Villa Lane
Tilebarn Lane
Park Lane
Hammond Beck
Mill Drain
Mill Drain
North Drove
Longhedge Drove
Fore Lane
Old Eau
Fendike Lane
Cowbridge Road
Gauntlet Road
Ing Road
Ing Drove
A52
New Cut
Sutterton Drove
Claydike Bank
New Wood
Boughton Plantation
Vicarage Drove
A1
A2
A3
A4
A5
A6
A7
A8
A9
A11
A12
A13
A14
A16
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
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C70
C71
C72
C73
C74
C75
C78

MSTF1735 - Beacon Fen Cable Route, Lincolnshire
Figure 2 - Geophysical Survey Areas
1:40,000 @ A3

Access Route Survey Extent
Cable Route Survey Extent
Unable to be Surveyed

Magnitude Surveys

0 400 800 1,200 1,600 m

510000
515000
520000
345000
340000
Ewerby
Kirkby la Thorpe
Heckington
East Heckington
Great Hale
Little Hale
Swineshead Bridge
Claydike Bank
Helpringham
Scredington
Northbeck
Spanby
North End
Tarry Hill
Area of Archaeological Activity 1 Figures 72-74
Area of Archaeological Activity 2 Figures 75-77
Area of Archaeological Activity 3 Figures 78-80
Area of Archaeological Activity 4 Figures 81-83
Area of Archaeological Activity 5 Figures 84-86
Area of Archaeological Activity 6 Figures 87-89
Area of Archaeological Activity 7 Figures 90-92
Area of Archaeological Activity 8 Figures 93-95
Area of Archaeological Activity 9 Figures 96-98
Area of Archaeological Activity 10 Figures 99-101
Area of Archaeological Activity 11 Figures 102-104
Area of Archaeological Activity 12 Figures 105-107
Area of Archaeological Activity 13 Figures 108-110
Area of Archaeological Activity 14 Figures 111-113
Area of Archaeological Activity 15 Figures 114-116
1
2
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11
12
13
14
15
Boughton Plantation
New Wood
Sardesons Plantation
Mount Plantation
Old Ballast Pit
Burton Gorse Plantation
Cliff Beck
Bellhouse Plantation
Little Plantation
Hensnest Plantation
Swaton Wood
Swaton Plantation
Heckington Eau
Great Hale Eau
Helpringham Eau
Hammond Beck
Catchwater Drain
Car Dyke
Mill Drain
Head Dike
Holland Dike
Skerth Drain
New Cut
Claydike Bank
Sutterton Drove
Ullyatt's Drove
Brown's Drove
Six Hundreds Drove
Sykemouth Drove
Timms's Drove
Boston Road
Fendike Lane
Old Eau
Fore Lane
Longhedge Drove
Cowbridge Road
Ing Road
Ing Drove
Gauntlet Road
Park Lane
Villa Lane
Vicarage Drove
North Drove
South Drove
Engine Drove
Little Hale Drove
Howell Fen Drove
Littleworth Drove
Great Hale Drove
Fen Road
Crow Lane
Whitecross Lane
Scredington Road
Helpringham Road
Station Road
Burton Road
Ewerby Road
Eveden Road
Asgarby Road
Mount Lane
Mareham Lane
Gorse Lane
Gorse Drove
The Drove
Heckington Road
B1394
B1395
A17
A1121
A52
MSTF1735 - Beacon Fen Cable Route, Lincolnshire
Figure 3 - Location of Areas of Archaeological Activity
1:40,000 @ A3
© Magnitude Surveys 2024
Contains Ordnance Survey data © Crown Copyright and database right 2024
Survey Extent
Areas of Archaeological Activity
Magnitude Surveys
0 400 800 1,200 1,600 m

511000
511500
512000
512500
346000
345500
A1
A2
A3
A4
A5
A6
A7
A8
A9
A11
Asgarby Road
New Wood
Asgarby Plantation
St Andrew's Church
Asgarby
Boughton House
A17

MSTF1735 - Beacon Fen Cable Route, Lincolnshire
Figure 4 - Magnetic Total Field (Lower Sensor) (Access Route Areas A1-A9 & A11)
1:5,000 @ A3

48,997 nT 49,005

Magnitude Surveys

0 50 100 150 200 m

511000
511500
512000
512500
346000
345500
A1
A1a
A2
A2a
A3
A4
A4a
A5
A5a
A6
A6a
A7
A8
A8a
A9
A11
Boughton
Boughton House
Asgarby
Asgarby Hall
St. Andrew's Ch.
Asgarby Plantations
Sheepfold
Hill
Rectory
B.M.57·1
B.M.65·7
B.M.66·1
B.M.30·3
B.M.20·5

MSTF1735 - Beacon Fen Cable Route, Lincolnshire
Figure 5 - Magnetic Interpretation over Historical Maps and Satellite Imagery (Access Route Areas A1-A9 & A11)
1:5,000 @ A3

Contains historical mapping © CLS Data 2024: Ordnance Survey, 6" 2nd edition c. 1882-1913
Contains satellite imagery © Bing Satellite 2024

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

Magnitude Surveys

0 50 100 150 200 m

511500
512000
512500
513000
347000
346500
Ewerby
Church Lane
Main Street
Kirkby Road
Ewerby Road
Play Space
Playing Field
Orchard Farm
Asgarby Road
A5
A7
A9
A8
A11
A12
A13
A14
A15
A16

MSTF1735 - Beacon Fen Cable Route, Lincolnshire
Figure 6 - Magnetic Total Field (Lower Sensor) (Access Route Areas A5, A7 A9 & A11-A16)
1:5,000 @ A3

48,997 nT 49,005

Magnitude Surveys

0 50 100 150 200 m