Thorpe Marsh Gas Pipeline
South, East and North Yorkshire

Detailed Gradiometer Survey Report

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Summary

Wessex Archaeology was commissioned by Environ UK Ltd to undertake a detailed gradiometer survey over the proposed route of the gas pipeline linking Thorpe Marsh Power Station and the National Transmission Service near Camblesforth (460252, 409928 to 463366, 425522). The aim of the survey is to establish the presence, or otherwise, and nature of detectable archaeological features on the site as part of a programme of archaeological works, ahead of the proposed development.

The route starts roughly 7.2km NNE of the centre of Doncaster and finishes roughly 1.65km WSW of Camblesforth. An isolated area of survey was carried out further to the northwest near the village of Burn.

Detailed gradiometer survey was undertaken over all accessible parts of the site, a total of 48ha, and has demonstrated the presence of a few anomalies of likely, probable and possible archaeological interest in addition to several modern services.

The archaeology detected includes a sub-rectangular enclosure, at least two ring ditches and several isolated pits. There are other ditch sections scattered throughout the data; some relate to fairly recent former field boundaries but others may indicate earlier field systems. Ridge and furrow was detected in some fields. The majority of detected anomalies relate to this areas use for agricultural activity.

The geophysical survey was undertaken between 18th February and 19th March 2014 and with additonal areas covered on 26th August 2014.

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The fieldwork was carried out by Laurence Savage, Jonathan Buttery, Andrew Reid, Martyn Cooper, Ashley Tuck, Mark Hackney, Philip Roberts, Richard Mason, Philipp Maier and Matthew Tooke. The geophysical data was processed by Laura Andrews and this was interpreted by Ross Lefort who also wrote this report, with later additions by Garreth Davey. The geophysical work was quality controlled by Dr. Paul Baggaley and Ben Urmston. Illustrations were prepared by Christopher Swales. The project was managed on behalf of Wessex Archaeology by Christopher Swales.

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1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commissioned by Environ UK Ltd to carry out a programme of geophysical survey over land comprising the route of the Thorpe Marsh gas pipeline, South, East and North Yorkshire (from NGR 460252, 409928 to 463366, 425522) (**Figure 1** and **2**), hereafter "the Site".

1.1.2 The survey forms part of an ongoing programme of archaeological works being undertaken ahead of the proposed installation of a high pressure gas transmission pipeline which will link the Combined Cycle Gas Turbine (CCGT) at Thorpe Marsh with the National Transmission Service (NTS) near Camblesforth, North Yorkshire.

1.1.3 The survey area was determined based on the potential for ground disturbance. Any areas within the scheme not subject to topsoil removal were left unsurveyed. The southern portion of the site office/pipe dump location was scoped out due to prior land disturbance.

1.1.4 An archaeological Desk-Based Assessment (DBA) was carried out by Wessex Archaeology (2013) and will be referred to in relation to the interpretation of certain geophysical anomalies.

1.1.5 A Written Scheme of Investigation (WSI) was prepared by Wessex Archaeology (2014) that set out the following aims for the gradiometer survey:

- *Conduct a detailed gradiometer survey that covers as much of the specified area as possible, allowing for artificial obstructions.*
- *Clarify the presence/absence and extent of any buried archaeological remains within the Site.*
- *Clarify the general nature of the remains present.*
- *Produce a report which will present the results of the geophysical survey in sufficient detail, to support an informed decision to be made concerning the Site's archaeological potential.*

1.1.6 This report presents a brief description of the methodology followed, the detailed survey results and the archaeological interpretation of the geophysical data.

1.2 Site location and topography

1.2.1 The southern end of the scheme is located approximately 7.2km NNE of the centre of Doncaster with the northern end located approximately 1.65km WSW of the centre of Camblesforth. An isolated block of data is located approximately 4.7km northwest of the northern end of the scheme on the east side of the village Burn. The overwhelming

majority of the linear scheme passes across flat floodplain that is set around 5m above Ordnance Datum (aOD). The Site comprises mainly arable agricultural land with a few pasture fields along the route. Several watercourses run through the survey area including the River Aire and the River Went along with the Knottingley and Goole Canal and the Thorpe Marsh Drain.

1.3 Soils and geology

1.3.1 The bedrock geology under the route is recorded as Sherwood sandstone group (Triassic); no other bedrock geologies are recorded close to the route (BGS). The superficial geology recorded all dates to the Quaternary with Hemingbrough glaciolacustrine formation for most of the route, southern half especially. Deposits of alluvium are recorded at the southern end of the route and close to watercourses elsewhere along the route. The northern half of the route has a greater concentration of sandy deposits including Breighton sand formation and lacustrine beach deposits of sand and gravel (BGS).

1.3.2 The soils recorded across the length of the route comprise typical brown sands of the 551d (Newport 1) association at the far south of the route and pelo-stagnogley soils of the 712i (Foggathorpe 2) association across the south and central portions of the scheme. The soils either side of the River Aire are recorded as pelo-alluvial gley soils of the 813d (Fladbury 3) association. The northern portion of the scheme is made up of several bands of soils including typical brown sands of the 551d (Newport 1) association, typical brown earths of the 541r (Wick 1) association, typical cambic gley soils of the 831b (Sessay) association and typical sandy gley soils of the 821a (Everingham) association (SSEW 1983). Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

2 METHODOLOGY

2.1 Introduction

2.1.1 The detailed magnetometer survey was conducted using Bartington Grad601-2 dual fluxgate gradiometer systems. The survey was conducted in accordance with English Heritage guidelines (2008).

2.1.2 The geophysical survey was undertaken by Wessex Archaeology's in-house geophysics team between the 18th February and the 19th March 2014 and again on 26th August 2014. Field conditions at the time of the survey were good, with firm conditions under foot. Some fields were deemed to be unsuitable for survey due to the presence of crops and other surface obstructions. A total of approximately 48ha was surveyed.

2.2 Method

2.2.1 Individual survey grid nodes were established at 30m x 30m intervals using a Leica Viva RTK GNSS instrument, which is precise to approximately 0.02m and therefore exceeds English Heritage recommendations (2008).

2.2.2 The magnetometer survey was conducted using a Bartington Grad601-2 fluxgate gradiometer instrument, which has a vertical separation of 1m between sensors. Data were collected at 0.25m intervals along transects spaced 1m apart with an effective sensitivity of 0.03nT, in accordance with EH guidelines (2008). Data were collected in the zigzag method.

2.2.3 Data from the survey was subject to minimal data correction processes. These comprise a zero mean traverse function (between ±5nT to ±15nT thresholds typically) applied to correct for any variation between the two Bartington sensors used, and a de-step function to account for variations in traverse position due to varying ground cover and topography. The deslope, multiply and add functions were used in certain instances to process out grid edge discontinuities and account for differences in sensor height between different operators. These processing steps were applied to all survey areas, with no interpolation applied.

2.2.4 Further details of the geophysical and survey equipment, methods and processing are described in **Appendix 1**.

3 GEOPHYSICAL SURVEY RESULTS AND INTERPRETATION

3.1 Introduction

3.1.1 The gradiometer survey has been successful in identifying anomalies of likely, probable and possible archaeological interest across the Site, along with a number of modern services. Results are presented as a series of greyscale and XY plots, and archaeological interpretations, at a scale of 1:2000 (**Figures 2** to **61**). The data are displayed at -2nT (white) to +3nT (black) for the greyscale image and ±25nT at 25nT per cm for the XY trace plots.

3.1.2 The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous/burnt or fired objects, and magnetic trends (**Figure 4** to **61**). Full definitions of the interpretation terms used in this report are provided in **Appendix 2**.

3.1.3 Numerous ferrous anomalies are visible throughout the detailed survey dataset. These are presumed to be modern in provenance and are not referred to, unless considered relevant to the archaeological interpretation.

3.2 Gradiometer survey results and interpretation

3.2.1 A possible sub-rectangular enclosure is located in the data at **4000** and **4001**, the ditches have magnetic values around +2.5nT and is aligned ENE-WSW. Only part of this suspected enclosure falls within the data so it is unclear what the full plan of these features could be; the enclosure ditches have been interpreted as probable archaeology, being clearly defined from the magnetic background. There are several sub-oval pit-like anomalies within the enclosure, south of **4000**, that may prove to be of interest; they all have magnetic values between +1.5nT and +3nT and have been variously interpreted as probable archaeology or possible archaeology depending on their size and magnetic values. There is a spread of increased magnetic response within and around this enclosure; this may indicate concentrated activity within this area.

3.2.2 There are also a couple of curvilinear ditches around **4000**, one inside the enclosure and one outside. Both have magnetic values over +2nT and have been classed as either archaeology or probable archaeology depending on their magnetic values. It is not clear if these ditches relate to the enclosure but their curving form may suggest they are not contemporary with the rectangular enclosure.

3.2.3 A pair of slightly curved parallel ditches is visible at **4002**; they both have magnetic values around +1.5nT. The function of these ditches is unclear although it should be noted they are on a similar alignment to the possible enclosure discussed above. Both ditches have been classed as probable archaeology.

3.2.4 A weak negative linear anomaly is present at **4003**; it has magnetic values around -1nT and is aligned north-south. This feature may represent an agricultural feature although it could not be clearly linked to any feature visible on the historic mapping consulted in the DBA (Wessex Archaeology 2013). This feature has been interpreted as possible archaeology.

3.2.5 A linear band of ferrous responses is visible at **4004**; this feature does not appear to represent a clear service but may constitute some form of field drain.

3.2.6 Aside from a few trends of uncertain origin the other fields in this area do not contain any anomalies that are considered to be of archaeological interest.

3.2.7 There is a field with numerous parallel bands of ferrous responses around **4005**. These are considered to represent field drains either constructed from metal or highly-fired ceramic pipes.

3.2.8 The next field contains a broad ditch at **4006** that runs parallel to a nearby field boundary. This feature most likely represents an agricultural feature and is therefore classed as possible archaeology.

3.2.9 Some ridge and furrow is visible at **4007** and **4008** as weak broad positive and negative linear responses. The positive responses are considered to indicate the position of the ridges.

3.2.10 Most of the fields in this area have few archaeological anomalies with trends of uncertain origin such as at **4009** possibly representing very weak features.

3.2.11 A ditch is visible at **4010** that runs parallel to an existing field boundary further to the west. This ditch cannot be linked to any mapped former field boundary but is considered likely to be agricultural, because of this it has been classed as possible archaeology.

3.2.12 A former field boundary is present at **4011** as a weak positive anomaly. This can be linked to a mapped former field boundary and has therefore been classed as a field boundary rather than possible archaeology.

3.2.13 More ridge and furrow is visible at **4012** along with some field drains at **4013** that seem to take the form of ditches rather than buried pipes.

3.2.14 A spread of increased magnetic response is visible at **4014**; the extents of this spread seem to define a former field seen on historic mapping even though a boundary ditch cannot be seen. The explanation for these increased responses may result from different material added to this former field as manure that may have contained magnetic debris including metallic and ceramic fragments.

3.2.15 The neighbouring pasture field contains more ridge and furrow around **4015** but this is a little better defined than the ridge and furrow seen so far along the route.

3.2.16 There are two possible services at **4016** and **4017** but these will be discussed in more detail in the next section of the report.

3.2.17 A clear pit-like anomaly is visible at **4018** close to a ditch section at **4019** and a spread of increased magnetic response in between. The pit has magnetic values over +3nT whereas the ditch has lower values around +1.5nT. Not enough is visible to assess whether the ditch forms part of an enclosure and it does not appear to be agricultural

given its alignment is slightly off from the nearby field boundary. Both anomalies have been classed as probable archaeology to reflect this uncertainty in interpretation.

3.2.18 More strongly magnetic field drains are visible at **4020** that are similar to those observed further south at **4005**.

3.2.19 A possible service is visible at **4021** and **4022** along with ceramic field drains around **4023**. The services will be discussed in the next section of the report.

3.2.20 There are several linear bands of increased magnetic response around **4024**. These may represent ridge and furrow with the ridges marked by these higher concentrations of bipolar and dipolar (black and white) responses that is considered to represent the magnetic debris added to these ridges along with manure.

3.2.21 A faint incomplete annular anomaly is visible at **4025** with magnetic values around +1nT and a diameter of approximately 7.5m. This feature could represent a ring ditch although it is rather weak. This anomaly has been classed as probable archaeology. A former boundary is visible as a curvilinear trend at **4026** running through this possible ring ditch and may cut through it. There is some strong ridge and furrow visible running through this field at **4027** and the next one and can still be seen on modern aerial photographs.

3.2.22 The next field contains a very clear ring ditch at **4028** with similarly weak values to **4025** but has a much larger diameter of approximately 14.5m. No internal structure can be seen within so it is unclear whether these ring ditches could represent round barrows or roundhouses. There are three linear ditches with similar magnetic values close by at **4029** to **4031**; it is unclear whether these represent enclosure ditches or agricultural boundaries. The clear ring ditch has been interpreted as archaeology and the linear ditches as probable archaeology.

3.2.23 An L-shaped ditch is present at **4032** with magnetic values around +2.5nT. There is not enough data coverage around this anomaly to properly assess whether it is an enclosure or an agricultural boundary and has been classed as probable archaeology as a result of this uncertainty.

3.2.24 A clear pit-like anomaly is visible at **4033** with several less clear examples further to the north and a pair of clear ditches at **4034**. All of these anomalies are located within a spread of increased magnetic response. The pits and ditches all have values over +3nT but form no clear pattern in the limited data coverage available. The spread of increased response could potentially represent a geological feature such as a formerly waterlogged area related to the River Went further south. The clear pit and ditches have been interpreted as probable archaeology but the less clear pit-like anomalies are interpreted as possible archaeology.

3.2.25 A ditch is located further north in the same field at **4035** and is considered to be an agricultural feature and has therefore been classed as possible archaeology. The orientation would suggest a possible field boundary or deep plough scar. A similar ditch is located in a field further north at **4036**.

3.2.26 A modern service is located at **4037** that will be discussed in the next section of the report.

3.2.27 A linear spread of ferrous responses is located at **4038** that does not look like a modern service. This feature is considered to represent something agricultural such as a track or a former field boundary although no map features can be found that correlate with it.

3.2.28 A former field boundary linked to a map feature is present at **4039** with another modern boundary observed further north in the data at **4040**. Another ferrous anomaly follows the same boundary at **4041** but looks more like a cable and will be discussed as a possible service in the next section of the report.

3.2.29 Some irregular shaped positive pit-like anomalies are visible around **4042**; all have magnetic values over +3nT but their irregular form resembles geological features. All have been classed as possible archaeology to reflect this uncertainty in their interpretation.

3.2.30 A ditch is visible further north at **4043** but its alignment strongly suggests it served an agricultural function and has therefore been classed as possible archaeology.

3.2.31 Two ditch sections are visible at **4044** and **4045** with magnetic values over +2nT. Both ditches are set on a differing alignment to the modern boundaries and may therefore represent remnants of an earlier field system. Both ditches have been classed as probable archaeology.

3.2.32 A ditch considered to possibly represent an archaeological feature is present at **4046** close to a former field boundary linked to a map feature at **4047**. A wide spread of ferrous further north at **4048** may indicate the presence of a service just outside the survey area.

3.2.33 A short ditch section is visible at **4049** running parallel to a modern field boundary. This feature is considered to be agricultural and has been interpreted as possible archaeology as a result.

3.2.34 A modern service is visible at **4050** that will be discussed in more detail in the next section of the report.

3.2.35 Some linear and curvilinear ditch-like anomalies are visible at **4051** to **4053** within an area of geological responses. These responses lie on the south side of the River Aire with more similar responses on the north side of the river at **4054** to **4056**. These features are considered to represent former palaeochannels or former drains and are therefore not considered to be archaeological. All have been interpreted as possible archaeology.

3.2.36 Former field boundaries linked to map features have been observed at **4057** and **4058** and dense spreads of ferrous responses at **4059** and **4060** define the extents of former fields.

3.2.37 A ditch considered to be agricultural in function is visible at **4061** and has been classed as possible archaeology. Further north in the same field is a weak curving positive anomaly at **4062**; it has magnetic values around +1nT but does not seem to form a complete ring. This feature is classed as possible archaeology due to its weak magnetic values. Two former field boundaries are also visible in these fields at **4063** and **4064**.

3.2.38 The two northernmost fields along the main bit of the route contain very high concentrations of ferrous responses similar to the field at **4059**. This ferrous will obscure any archaeological anomalies that may exist in these fields. The only noteworthy feature is a modern service at **4065** that will be discussed in more detail in the next section of the report.

3.2.39 The isolate northernmost block near the village of Burn contains few anomalies of interest with spreads of increased magnetic response around **4066** that are likely to relate to concentrations of relatively modern magnetic debris.

3.2.40 **4067** shows a clear linear band of ferrous responses which could be a field drain.

3.2.41 There are numerous weak linear and curvilinear trends scattered sporadically throughout the datasets. These anomalies are classed as uncertain origin but it is likely some relate to ephemeral archaeological features. There are also a number of small sub-oval positive anomalies distributed in isolated clusters. These positive anomalies may represent anything from natural features or unusual ferrous responses to small archaeological features such as small pits or postholes. As these anomalies have no significant patterning in their spatial distribution they have been interpreted as possible archaeology."

3.3 Gradiometer survey results and interpretation: Modern services

3.3.1 Anomalies consistent with that of a pipe are seen at **4037** and **4065** and are considered to represent clear services. Anomalies consistent with cables are visible at **4017** and **4050** and these are also considered to represent clear services. There are some unusual anomalies considered as possible services and are discussed below.

3.3.2 A short possible service is visible at **4016**; this ferrous anomaly may represent a pipe section allowing the dike to pass through a causeway linking two fields. An unusual feature classed as a modern service is visible at **4021** and **4022**; at first sight it looks like a pipe but the positive anomalies resemble the sort of anomalies expected from an upright steel post. The line of this feature follows a path so it is possible that it relates to construction of a track. Another feature at **4041** looks similar to that of a cable but stops hallway across the data coverage and follows a modern boundary. It is uncertain whether this represents a service or not. The possible edge of a modern service is visible at **4048**; if this corresponds to a service it most likely falls outside of the area covered by geophysical survey.

3.3.3 It is not clear from the geophysical data whether any of the services identified are in active use. It should also be noted that gradiometer survey may not detect all services present on Site. This report and accompanying illustrations should not be used as the sole source for service locations and appropriate equipment (e.g. CAT and Genny) should be used to confirm the location of buried services before any trenches are opened on Site.

4 CONCLUSION

4.1.1 The detailed gradiometer survey has been successful in detecting a few anomalies of likely, probable and possible archaeological interest within the Site, in addition to regions of increased magnetic response and several modern services.

4.1.2 The clearest archaeological features are the sub-rectangular enclosure and associated features at **4000** and **4001** and the ring ditches and linear ditches at **4025** and **4028** to **4031**. These features represent the anomalies most likely to be archaeological. The ring ditches appear to be disturbed by medieval and post-medieval features and it is possible they pre-date them.

4.1.3 There are other less clear groups of archaeological anomalies such as the pits and ditches at **4018**, **4019**, **4033** and **4034** and the ditches at **4044** and **4045**. The identities of these features are less clear in part due to the limited data coverage around these anomalies. Further survey around them may either reveal them to be more or less significant that they have been classed in this report.

4.1.4 Remnants of medieval and post-medieval use of this land were detected in the form of ridge and furrow located in various places along the route.

4.1.5 Considering the results of the geophysical survey along the route as a whole, there is a background of isolated anomalies and weak trends that may relate to archaeological features, although their character does not allow a more conclusive interpretation and they are consistent with features of other origins, e.g. agricultural or geological. Given the archaeological focus of this report, such anomalies have been interpreted as being of possible interest on the balance of probability. Where anomalies of more obvious archaeological potential have been identified, they are typically well defined from the general magnetic background and are arranged in clear anthropogenic patterns; other less distinct responses are therefore considered to be of lower archaeological potential, although it may not be possible to exclude an archaeological interpretation with confidence.

4.1.6 The relative dimensions of the modern services identified by the gradiometer survey are indicative of the strength of their magnetic response, which is dependent upon the materials used in their construction and the backfill of the service trenches. The physical dimensions of the services indicated may therefore differ from their magnetic extents in plan; it is assumed that the centreline of services is coincident with the centreline of their anomalies, however. Similarly, it is difficult to estimate the depth of burial of the services through gradiometer survey.

4.1.7 It should be noted that small, weakly magnetised features may produce responses that are below the detection threshold of magnetometers. It may therefore be the case that more archaeological features may be encountered than have been identified through geophysical survey.

5 REFERENCES

5.1 Bibliography

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5.2 Cartographic Sources

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APPENDIX 1: SURVEY EQUIPMENT AND DATA PROCESSING

Survey Methods and Equipment

The magnetic data for this project was acquired using a Bartington 601-2 dual magnetic gradiometer system. This instrument has two sensor assemblies fixed horizontally 1m apart allowing two traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 1m separation, and measures the difference between the vertical components of the total magnetic field within each sensor array. This arrangement of magnetometers suppresses any diurnal or low frequency effects.

The gradiometers have an effective resolution of 0.03nT over a ±100nT range, and measurements from each sensor are logged at intervals of 0.25m. All of the data are stored on an integrated data logger for subsequent post-processing and analysis.

Wessex Archaeology undertakes two types of magnetic surveys: scanning and detail. Both types depend upon the establishment of an accurate 20m or 30m Site grid, which is achieved using a Leica Viva RTK GNSS instrument and then extended using tapes. The Leica Viva system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02m in real-time and therefore exceed the level of accuracy recommended by English Heritage (2008) for geophysical surveys.

Scanning surveys consist of recording data at 0.25m intervals along transects spaced 10m apart, acquiring a minimum of 80 data points per transect. Due to the relatively coarse transect interval, scanning surveys should only be expected to detect extended regions of archaeological anomalies, when there is a greater likelihood of distinguishing such responses from the background magnetic field.

The detailed surveys consist of 20m x 20m or 30m x 30m grids, and data are collected at 0.25m intervals along traverses spaced 1m apart. These strategies give 1600 or 3600 measurements per 20m or 30m grid respectively, and are the recommended methodologies for archaeological surveys of this type (EH, 2008).

Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and characterisation of small and ephemeral features. Data may be collected at up to 0.125m intervals along traverses spaced up to 0.25m apart, resulting in a maximum of 28800 readings per 30m grid, exceeding that recommended by English Heritage (2008) for characterisation surveys.

Post-Processing

The magnetic data collected during the detail survey are downloaded from the Bartington system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed in order to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

As the scanning data are not as closely distributed as with detailed survey, they are georeferenced using the GPS information and interpolated to highlight similar anomalies in adjacent transects. Directional trends may be removed before interpolation to produce more easily understood images.

Typical data and image processing steps may include:

- Destripe – Applying a zero mean traverse in order to remove differences caused by directional effects inherent in the magnetometer;
- Destagger – Shifting each traverse longitudinally by a number of readings. This corrects for operator errors and is used to enhance linear features;
- Despike – Filtering isolated data points that exceed the mean by a specified amount to reduce the appearance of dominant anomalous readings (generally only used for earth resistance data)

Typical displays of the data used during processing and analysis:

- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This type of image is useful as it shows the full range of individual anomalies.
- Greyscale – Presents the data in plan view using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.

APPENDIX 2: GEOPHYSICAL INTERPRETATION

The interpretation methodology used by Wessex Archaeology separates the anomalies into four main categories: archaeological, modern, agricultural and uncertain origin/geological.

The archaeological category is used for features when the form, nature and pattern of the anomaly are indicative of archaeological material. Further sources of information such as aerial photographs may also have been incorporated in providing the final interpretation. This category is further sub-divided into three groups, implying a decreasing level of confidence:

- Archaeology – used when there is a clear geophysical response and anthropogenic pattern.
- Probable archaeology – used for features which give a clear response but which form incomplete patterns.
- Possible archaeology – used for features which give a response but which form no discernible pattern or trend.

The modern category is used for anomalies that are presumed to be relatively modern in date:

- Ferrous – used for responses caused by ferrous material. These anomalies are likely to be of modern origin.
- Modern service – used for responses considered relating to cables and pipes; most are composed of ferrous/ceramic material although services made from non-magnetic material can sometimes be observed.

The agricultural category is used for the following:

- Former field boundaries – used for ditch sections that correspond to the position of boundaries marked on earlier mapping.
- Agricultural ditches – used for ditch sections that are aligned parallel to existing boundaries and former field boundaries that are not considered to be of archaeological significance.
- Ridge and furrow – used for broad and diffuse linear anomalies that are considered to indicate areas of former ridge and furrow.
- Ploughing – used for well-defined narrow linear responses, usually aligned parallel to existing field boundaries.
- Drainage – used to define the course of field drains that are visible in the data either as a series of repeating bipolar (black and white) responses or as a ditch-like anomaly.

The uncertain origin/geological category is used for features when the form, nature and pattern of the anomaly are not sufficient to warrant a classification as an archaeological feature. This category is further sub-divided into:

- Increased magnetic response – used for areas dominated by indistinct anomalies which may have some archaeological potential.
- Trend – used for low amplitude or indistinct linear anomalies.
- Superficial geology – used for diffuse edged spreads considered to relate to shallow geological deposits. They can be distinguished as areas of positive, negative or broad bipolar (positive and negative) anomalies.