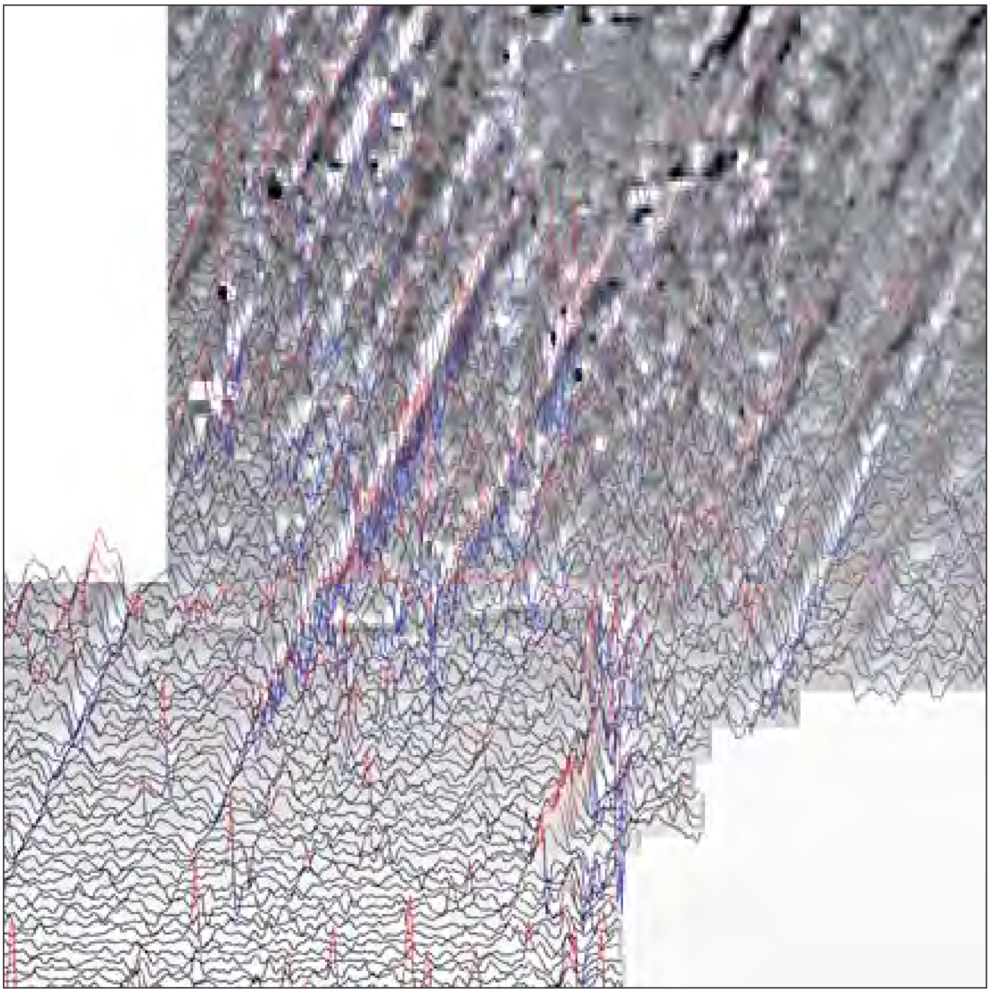
making sense of heritage

Land at Rhyd-Y-Groes Wind Farm Isle of Anglesey

Detailed Gradiometer Survey Report



Report Ref. 102823.01
January 2015

geoservices

Land at Rhyd y groes Wind Farm, Isle of Anglesey

Detailed Gradiometer Survey Report

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Detailed Gradiometer Survey Report

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Summary

A detailed gradiometer survey was conducted over land at Rhyd y groes Wind Farm, Isle of Anglesey. The project was commissioned by Natural Power Consultants Limited with the aim of establishing the presence, or otherwise, and nature of detectable archaeological features on the site ahead of proposed repowering of the wind farm.

The survey area comprises a 30m wide linear route with 13 wider blocks centred on the location of the proposed turbines. The western end of the route lies around 1km southeast of the centre of Cemaes and the route takes a curved route towards the east where it terminates some 3.2km WSW of the centre of Amlwch. The route follows a line of hills and also crosses several small valleys.

Some areas were waterlogged, whilst some parts of the survey area were inaccessible at the time of surveying. The gradiometer survey covered 25ha and has demonstrated the presence of anomalies of likely, probable and possible archaeological interest within the survey area, along with areas of superficial geology, regions of increased magnetic response, and two modern services.

Some enclosures were detected that may be related to settlement but the majority of ditches detected appear to relate to multiple phases of field division. Some very weak features were detected including a large circular group of concentric trends measuring 35m in diameter. These very weak features hint at the likelihood that there may be more archaeological features that were not detectable through gradiometer survey. Comparison of the survey results with aerial photographic survey carried out in 2006 that was followed up by excavation supports the view that some features are effectively undetectable.

The survey was undertaken between 10th and 21st of November 2014 by Wessex Archaeology's in-house geophysics team.

Land at Rhyd y groes Wind Farm, Isle of Anglesey

Detailed Gradiometer Survey Report

Acknowledgements

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The fieldwork was undertaken by Laura Andrews, Jen Smith, Rachel Chester, Alistair Salisbury and Amy Green. Ross Lefort processed the geophysical data which was interpreted by Laura Andrews, Jen Smith and Ross Lefort. This report was written by Jen Smith and Ross Lefort. The geophysical work was quality controlled by Dr. Paul Baggaley and Ross Lefort. Illustrations were prepared by Ross Lefort and Karen Nichols. The project was managed on behalf of Wessex Archaeology by Nick Cooke.

Land at Rhyd y groes Wind Farm, Isle of Anglesey

Detailed Gradiometer Survey Report

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by Natural Power Consultants Limited to carry out a geophysical survey on land at Rhyd y groes Wind Farm, Isle of Anglesey (**Figures 1** and **2**). The survey area takes the form of a linear scheme running west to east (from NGR 237800, 392800 to NGR 241075, 392525) with larger blocks planned out around the proposed locations of wind turbines (**Figure 2**). The survey forms part of an ongoing programme of archaeological works being undertaken on a pre-existing Wind Farm ahead of proposed repowering at the Site.

1.1.2 A Written Scheme of Investigation (WSI) was prepared by Wessex Archaeology (2014a) that set a general aim *"to establish the presence/absence, extent and character of detectable archaeological remains within the survey area, ahead of the proposed development"*.

1.1.3 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 survey area comprises a 30m cable route with 13 rectangular areas (at least 1ha in area) extending from this route that are centred on the base of the proposed wind turbines and associated impacts (crane bases etc) (**Figure 2**). The western end of the route lies around 1km southeast of the centre of Cemaes and the route takes a curved route towards the east where it terminates some 3.2km WSW of the centre of Amlwch (**Figure 1**). Detailed gradiometer survey was undertaken over all accessible parts of the Site some of which was unsurveyable due to waterlogging. A total of 25.0ha was surveyed.

1.2.2 The wind farm occupies an area of undulating land with numerous hills visible in the area. The proposed cable route follows a line of high hills with most of the 13 proposed turbines located on the higher ground. The highest peaks crossed were between c. 55m above Ordnance Datum (aOD) and 67m aOD and the lowest valleys around 35m aOD. The survey extents are defined by the limits of the proposed wind farm development set out by the client. Numerous unnamed streams flow through this undulating landscape with many of these streams flowing into the Afon Wygyr before it flows into the sea at Cemaes Bay.

1.3 Soils and Geology

1.3.1 The Site bedrock geology is likely to be composed of Mica Schist and Psammite from the New Harbour Group from the Ediacaran Period. There are deposits of sedimentary, metamorphic and igneous rock recorded in discrete bands including sandstone, jasper, felsite and tuffs. Superficial deposits are recorded as moraines of till composed of sand

and gravel during seasonal and post glacial melting from the Quaternary Period. There are some alluvial deposits recorded in the bases of valleys (BGS).

1.3.2 The soils underlying the Site are likely to be cambic stagnogley soils of the 713f (Brickfield 2) 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.

1.4 Archaeological Background

1.4.1 A cultural heritage assessment has been prepared by Wessex Archaeology (2014b) that concluded that there is a risk to buried archaeological remains including Bronze Age funerary sites, Iron Age/Romano-British settlement and agricultural practice in addition to similar features dating to the medieval and later. A programme of aerial photography assessment, geophysical survey and excavation carried out by Time Team in 2006 revealed well preserved buried deposits that suffered limited disturbance from later land use (Wessex Archaeology 2007). The results of this previous work will be referred to, where relevant, during the interpretation of the geophysical data.

2 METHODOLOGY

2.1 Introduction

2.1.1 The detailed magnetometer survey was conducted using a Bartington Grad601-2 dual fluxgate gradiometer system. 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 10th and 21st November 2014. Field conditions at the time of the survey were good across most of the Site, with the exception of a few areas that were too wet to survey at the time. A total of 25ha of a possible 30ha was surveyed; the surveyable area was reduced by waterlogging, presence of livestock in some fields as well as some of the area lost to the width of the field boundaries that divide much of the route.

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 (±10nT thresholds) applied to correct for any variation between the two Bartington sensors used, a deslope function, a multiply function and a de-step function to account for variations in traverse position due to varying ground cover. These four 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. Areas of superficial geology, numerous agricultural features and two modern services have also been detected.

3.1.2 Results are presented as a series of greyscale and XY plots, and archaeological interpretations, at a scale of 1:2000 (**Figures 3** to **20**). 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. Some areas where weak but significant looking anomalies have been detected have been displayed at a narrower range (-1nT to +1.5nT for the greyscale) to better show the contrast between these weak anomalies and the general background (**Figure 21**). Areas dominated by strong geological responses have been displayed at a wider range of -6nT to +9nT for the greyscale and ±50nT at 25nT per cm for the XY trace plot (**Figures 22** to **24**).

3.1.3 The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous/burnt or fired objects, and magnetic trends (**Figures 5 to 21**). Full definitions of the interpretation terms used in this report are provided in **Appendix 2**.

3.1.4 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 The westernmost survey area (Turbine 4) has a number of anomalies of interest present. Two curvilinear ditch-like features at **4000** to **4003** are aligned northeast to southwest and seem to be cut by the current field boundary (**Figure 5**). These ditches have magnetic values around +2.5nT and do not look to be part of any recent scheme of land division. It is unclear how far these ditches may extend in either direction due to the limited area surveyed. They have been classed as archaeology due to their curving form.

3.2.2 Some weaker ditches can be seen running parallel to these two at **4004**; these are very likely to be related to these other ditches but have been classed as probable archaeology due to their weak magnetic values. A cluster of pit-like positive anomalies can be seen at **4005** although it is not clear how these may relate to the ditches; they have been classed as possible archaeology as some of these anomalies have an irregular shape in plan.

3.2.3 A modern service can be seen cutting across these ditches at **4006**; this service will be discussed in more detail in the next section of the report.

3.2.4 The proposed location of Turbine 6 to the east contains a number of ditches aligned on a similar alignment at **4007**; these ditches look to serve an agricultural function but cannot be linked to a mapped boundary so have been classed as possible archaeology. Other ditches are present in this area at **4008** and **4009** and these could represent other phases of agricultural division; both groups have been classed as possible archaeology.

3.2.5 To the north the proposed location of Turbine 5 contains a linear anomaly south of **4010** that is aligned parallel to modern boundaries. It does not feature on any of the maps consulted but has been interpreted as agricultural due to the likelihood that it is a relatively recent feature. On the northern side of this feature is a peculiar arrangement of negative responses that form right angles indicative of some form of structure. The exact form and function of this feature is unclear but it has been interpreted as probable archaeology due to its regularity in plan.

3.2.6 There are some curving ditches at **4011** and **4012** that do not follow the line of any recent boundaries. They have magnetic values ranging from +1nT to +2.5nT and may represent early landscape divisions or the edges of enclosures. Both have been interpreted as probable archaeology as not enough is visible in the limited area surveyed to class them any higher.

3.2.7 There is a hint of a field division or enclosure in the form of some fragmented linear features at **4013** and **4014**; like the ditches discussed above these features do not appear to be aligned with the modern scheme of field boundaries. These anomalies are considered to represent ditches and have been classed as possible archaeology due to their intermittent form.

3.2.8 A band of strong geological responses is present around **4015**; this band may represent an igneous dyke although it is possible it could relate to some metamorphic geology.

3.2.9 The proposed location of Turbine 3 to the west contains some very weak linear and curvilinear positive anomalies at **4016** to **4018**. They are so weak they are barely visible above the background with values around +0.25nT. These features may represent field divisions of an unknown date and have been classed as possible archaeology due to their weak magnetic values. A pair of concentric trends is visible to the north of **4019**; the regularity in the form of these trends may suggest they relate to some archaeological feature.

3.2.10 The block of survey around the proposed site of Turbine 2 contains a small rectangular enclosure at **4020** that sits on a slightly different alignment to the alignment of the surrounding modern field boundaries (**Figure 8**). This enclosure has an intermittent form which may be a result of later plough damage and measures 20m x 18m with magnetic values over +5nT. The function of this enclosure is unclear but has been interpreted as archaeology with weaker and intermittent sections classed as probable archaeology.

3.2.11 A ditch on a different alignment is present close by at **4021** although it is not clear how this relates, if it does at all, to the enclosure. This ditch has been interpreted as probable archaeology with weaker sections classed as possible archaeology.

3.2.12 Other linear and curvilinear ditches are present at **4022** to **4024**; **4022** has a curved form whereas **4023** and **4024** form a rectilinear enclosure. None of these features correspond to any field boundaries marked on the historic mapping consulted in this report. The linear ditches at **4023** and **4024** may relate to some form of field division of unknown date. The curved ditch at **4022** may prove to be more significant as it partly encloses some regular trends including an arcing trend at **4025**. These ditches have been classed as possible archaeology.

3.2.13 The cable route to the northeast contains two ditches around **4026**; one is curving whereas the other is straighter and close to the modern field boundary. The function of these ditches is unclear and they have been interpreted as either probable or possible archaeology according to their form in plan.

3.2.14 The proposed location for Turbine 1 to the north of this contains few features besides weak trends and modern features. The only anomalies of note are a few isolated pit-like anomalies like the example at **4027**; these features show across many areas of the dataset although it is unclear whether they are small archaeological features such as pits and postholes or are natural features such as tree throws.

3.2.15 Two isolated ditch sections are visible further along the cable route at **4028** and **4029**; these features are not aligned with any modern field boundaries (**Figure 8**). Not enough of either feature is visible to assess their possible function and they have been classed as possible archaeology as a result of this uncertainty.

3.2.16 Two pit-like anomalies are located at **4030** that are classed as possible archaeology (**Figure 11**). A possible service is visible close to the east at **4031** although this will be discussed in more detail in the next section of the report.

3.2.17 The proposed location for Turbine 7 contains few features of interest (**Figure 14**). An L-shaped agricultural feature at **4032** lines up with a field boundary mapped to the east; no boundary is recorded in this position on the historic mapping consulted. Another similar looking anomaly cuts the northeast corner of the block at **4033** but it is unclear how this may relate to the recent scheme of field division and has been classed as possible archaeology.

3.2.18 The area around turbine 8 to the east contains a number of curvilinear ditches at **4034** to **4036** that appear to form a field system (**Figure 17**). None of these boundaries appear to line up with any mapped field boundaries so could represent earlier field divisions. These ditches have been classed as probable archaeology.

3.2.19 The other features in this block include a field boundary marked on the first edition Ordnance Survey (OS) mapping at **4037** and a perpendicular linear feature at **4038** that is likely to relate to this phase of agricultural division even though it is not mapped. No significant anomalies were recorded within the area proposed for Turbine 9.

3.2.20 The cable route running in a southerly direction towards the substation revealed a curving ditch in a corner of a field at **4039**; this ditch is aligned with the field boundary for much of its length before it curves east to cross the field boundary and possibly join up with the ditch at **4040**. The function of this feature is unclear and has been classed as probable or possible archaeology according to its regularity in plan that can be seen from the limited data coverage.

3.2.21 The area surveyed for the proposed Turbine 10 contains a number of very peculiar anomalies (**Figure 20**). A D-shaped feature classed as probable archaeology is visible at **4041** and is partly defined by a weak trend. The function of this feature is unclear but it is set at the junction of some linear ditches classed as possible archaeology such as **4042**. These ditches along with some at **4043** and one north of **4044** look to define field boundaries although none can be linked to any mapped field boundaries.

3.2.22 Some strong positive anomalies are located within an area of increased magnetic response at **4044** and **4045**; it is unclear whether these anomalies correspond to pits or are geological in origin and have consequently been classed as possible archaeology.

3.2.23 A group of very weak concentric sub-circular trends can be seen around **4046**; **Figure 21** shows this area displayed at a narrow range to better highlight these slight anomalies. The function of this arrangement, which is around 35m in diameter, is unclear but may prove to be of much greater archaeological interest.

3.2.24 A line of ferrous responses around the edge of this field at **4047** correspond to a modern concrete track and a broad diffuse edged positive anomaly at **4048** is very likely to be geological.

3.2.25 The area surveyed for Turbine 11 the northeast contains a rectangular enclosure at **4049** aligned northwest-southeast (**Figure 20**). It measures 45m x 21m and the enclosing ditches have magnetic values around +0.5nT. There is little visible inside to suggest and internal features but it is possible that the spread of increased magnetic response in this area is obscuring weak features. This enclosure has been classed as probable archaeology.

3.2.26 Two linear features are present at **4050** and **4051** that look like field boundaries given their form but do not correspond to any mapped field boundaries. The boundary at **4051** looks to define the extent of a dense area of ferrous responses at **4052**; this spread is therefore considered likely to relate to the addition of debris as part of farming practices such as manuring.

3.2.27 The area surveyed for Turbine 12 appears to contain very few anomalies of interest. A former field boundary was detected at **4053** that can be linked to a mapped boundary on the first edition OS map. The remaining anomalies in this block are a series of trends of uncertain origin.

3.2.28 The final turbine, Turbine 13 at the eastern end of the scheme contains a number of ditches at **4054** to **4056**; all of these ditches have magnetic values over +2nT. These look to represent two phases of land division with **4054** and **4055** representing one phase and **4056** representing the other. None of these boundaries correspond to any mapped field boundaries and all ditches have been classed as probable archaeology due in part to their strong magnetic values and the possibility they represent earlier features. A geological feature is visible running through this area at **4057**.

3.3 Gradiometer Survey Results and Interpretation: Modern Services

3.3.1 Two modern services have been identified in the geophysical data at **4006** and **4031**. Both services appear to represent pipes and both continue beyond the limits of the geophysical survey area. Due to the width of the footprint of these services it is likely that they could obscure potential archaeological features; this is certain to be the case with **4006**. Very little of **4031** can be seen in the data and it is possible this relates to another modern feature such as a reinforced concrete track.

3.3.2 It is not clear from the geophysical data whether 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 anomalies of likely, probable and possible archaeological interest within the Site, in addition to areas of superficial geology, numerous agricultural features and two modern services.

4.1.2 The most interesting features detected in the geophysical data include the curving ditches at **4000** to **4003**, the rectangular enclosures at **4020** and **4049** and the D-shaped feature at **4041**. In addition, a number of very weak trends have been detected that look to be quite significant including the concentric rings at **4019** and **4046**. The enclosure at **4049** is on a similar alignment to enclosures identified from aerial photography in 2006 and may form part of a wider complex.

4.1.3 It is usually the case that gradiometer survey alone will not be sufficient to find all features on a site with local stone buildings for example often falling below the detection threshold. In the case of this site it can be shown that gradiometer survey is unable to detect features such as ditches that are usually readily detectable. **Figure 25** shows the results of the 2006 Time Team assessment of aerial photography (AP) in comparison to the gradiometer results. The clear enclosure on the AP is hardly visible in the greyscale plot besides a couple of weak trends. The reason for this could be due to differences in the underlying geology or may relate to little magnetic material making it into the fill of some ditches. It should be concluded that more archaeological features may be detected than is suggested from the geophysical interpretation alone.

4.1.4 The majority of the detected features look to relate to agricultural activity with numerous boundaries of more than one phase detected. Ploughing trends are visible across the entire dataset with some aligned with modern boundaries and others with older looking boundaries. Two former field boundaries have been identified and linked to boundaries marked on the first edition OS map.

4.1.5 There are numerous small positive anomalies scattered across the dataset. These have been interpreted as possible archaeology and could represent cut features such as post holes, however it should be noted a geological explanation is also possible for them. As they have no significant patterning in their spatial distribution they should be regarded as having a low archaeological potential.

4.1.6 There is a great amount of variation in the geological background at this site with some very magnetic regions observed. These could relate to metamorphic or igneous deposits that have been magnetically enhanced by high temperatures.

4.1.7 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.

5 REFERENCES

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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:

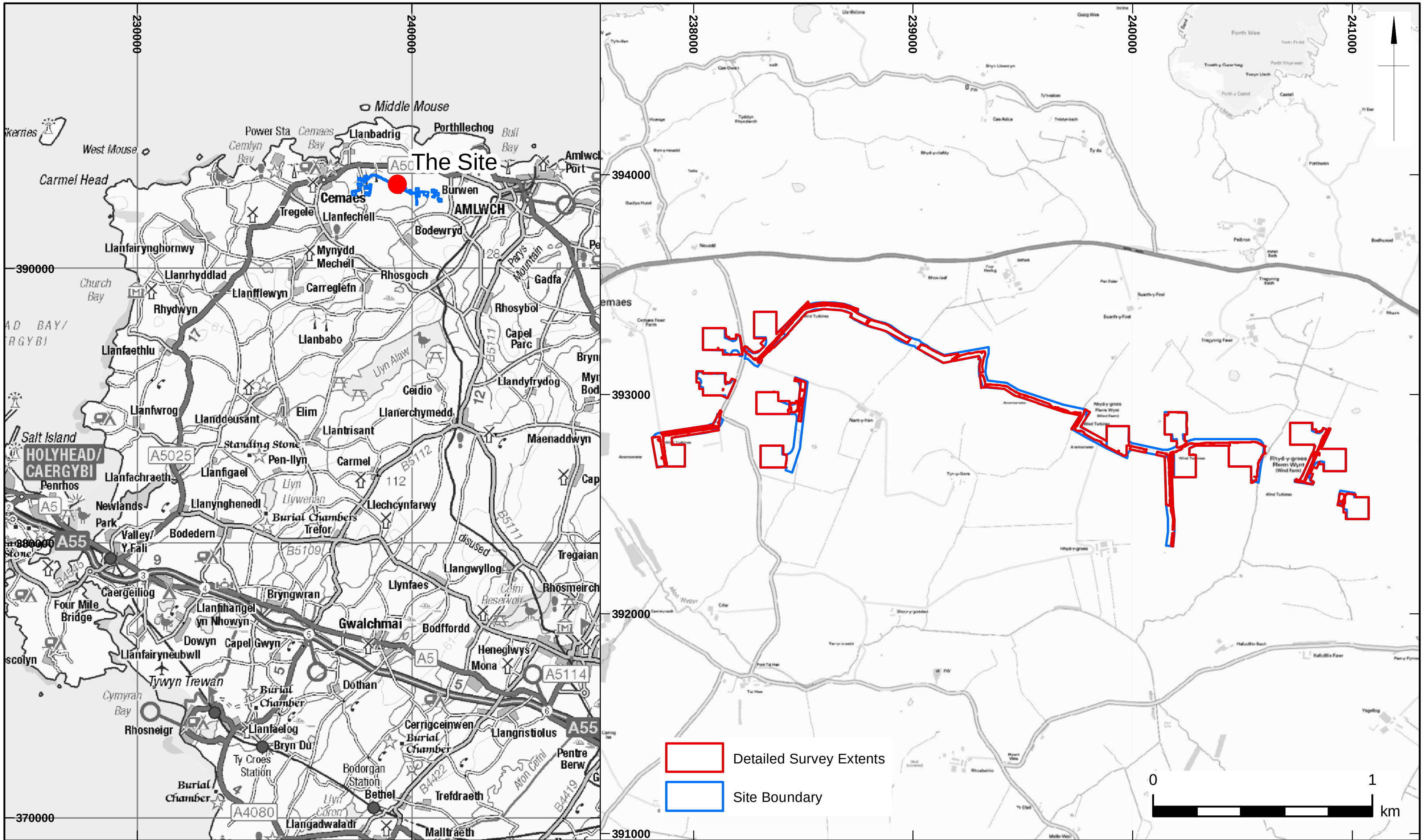
- Archaeology – used when there is a clear geophysical response and anthropogenic pattern.
- Probable archaeology – used for features which give a clear response but which form incomplete patterns.
- Possible archaeology – used for features which give a response but which form no discernible pattern 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 ceramic field drains that are visible in the data as a series of repeating bipolar (black and white) responses.

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.



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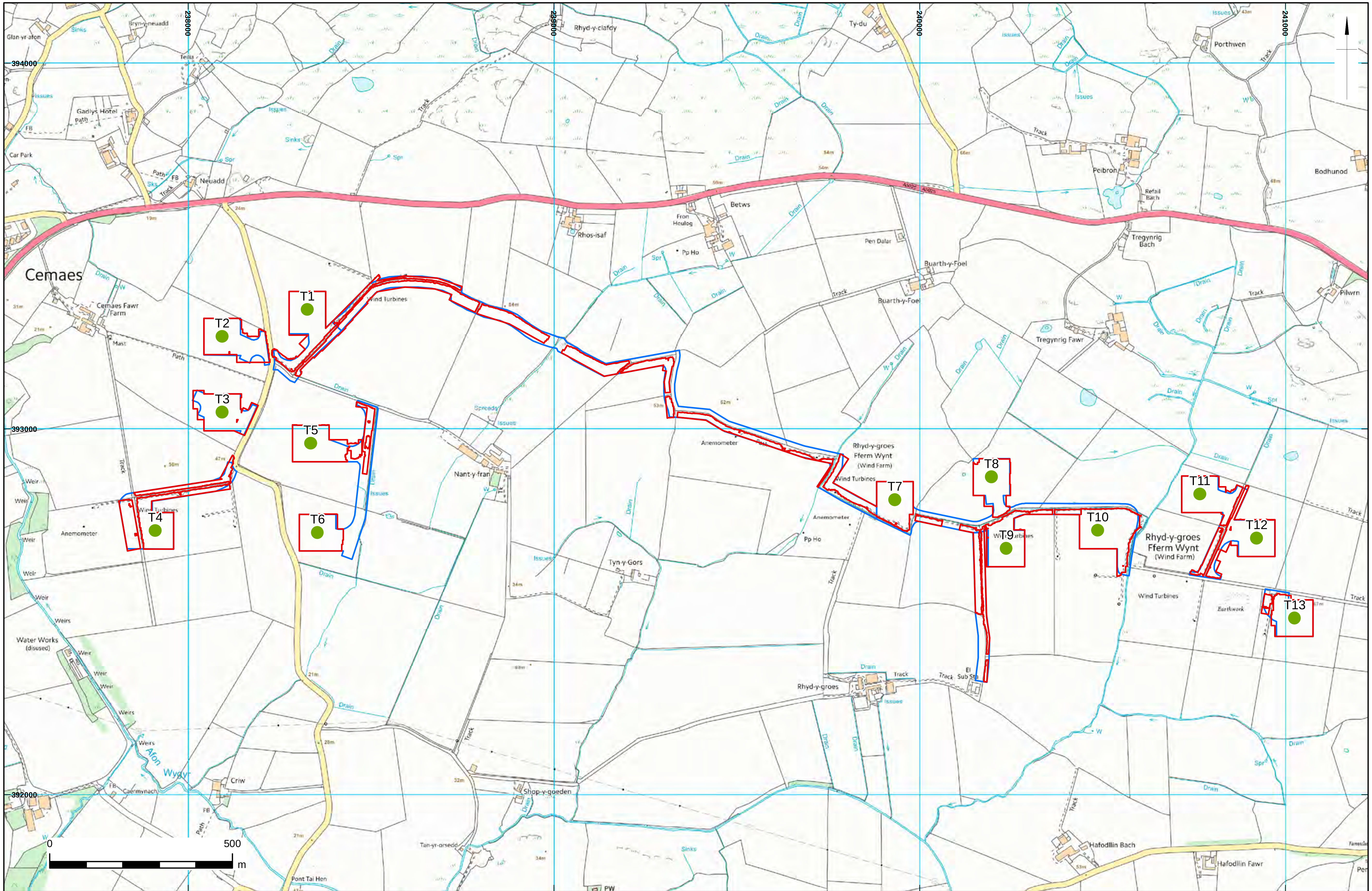
Site location and detailed survey extents

Figure 1



Detailed Survey Extents | Site Boundary | Turbine Locations

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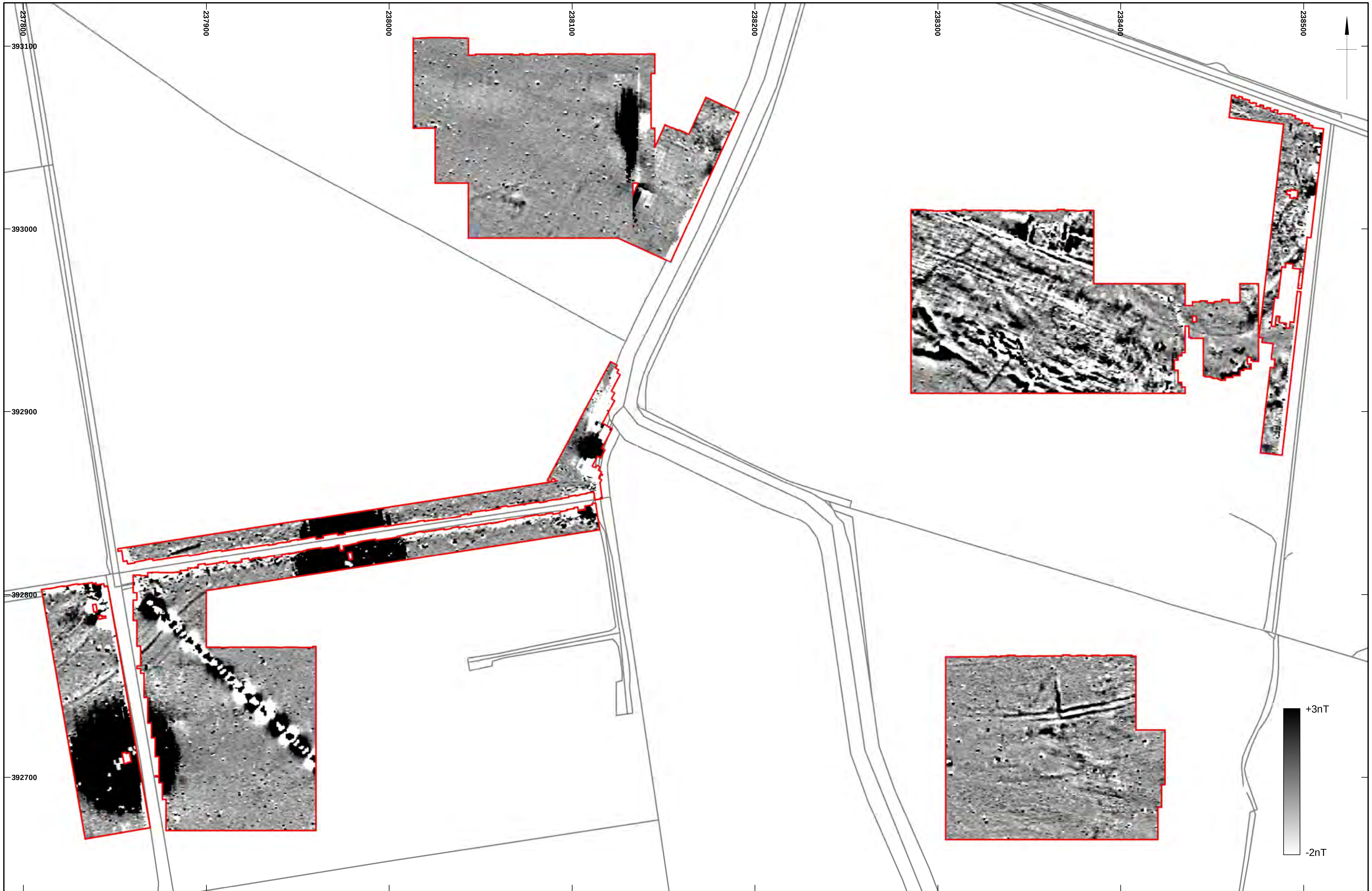
Scale:	1:10,000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Detailed survey extents and proposed turbine locations

Figure 2



Background

Detailed Survey Extents

0 100 m

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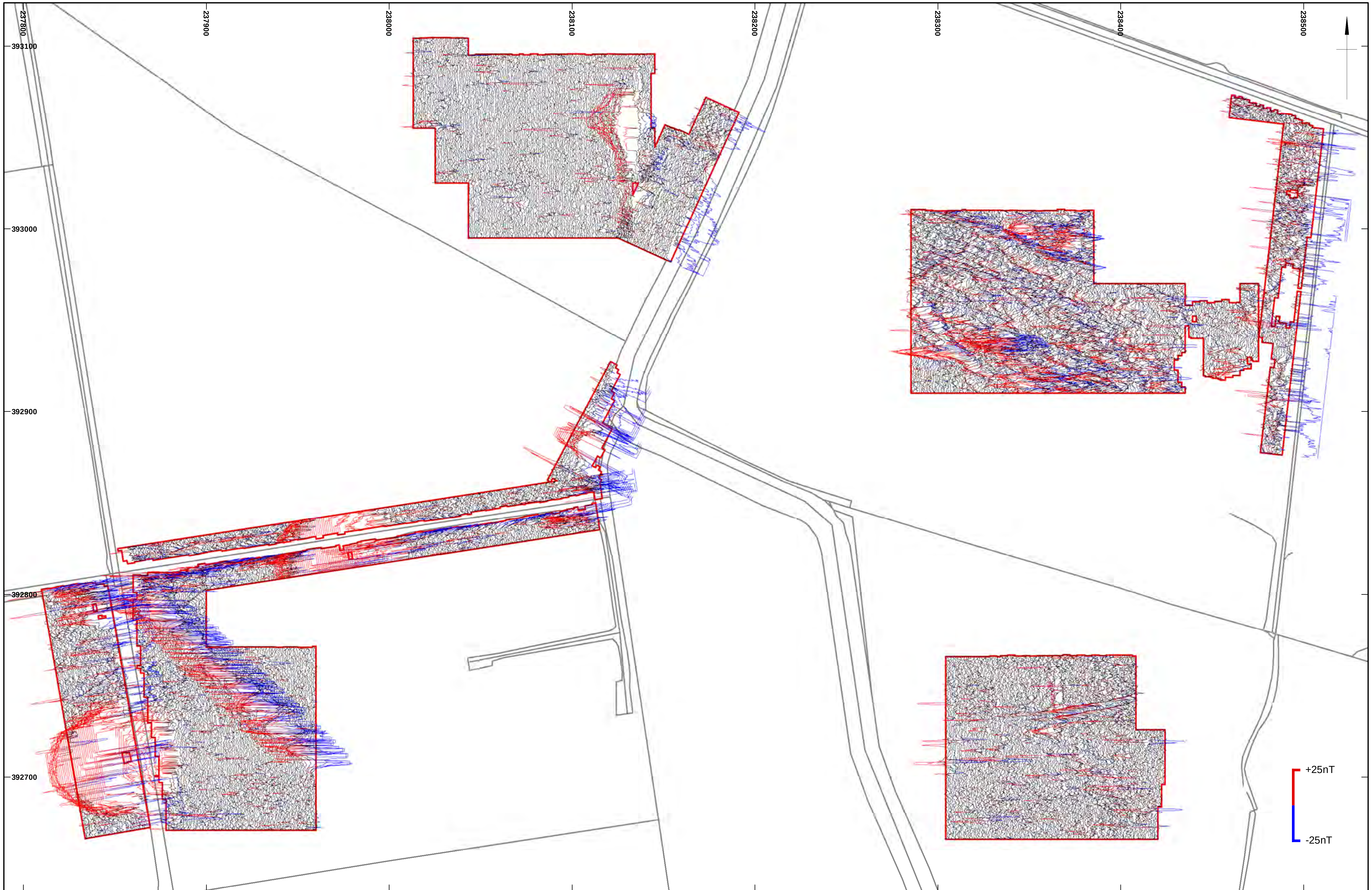
Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Greyscale plot, turbines 3 to 6

Figure 3



Background

Detailed Survey Extents

0 100 m

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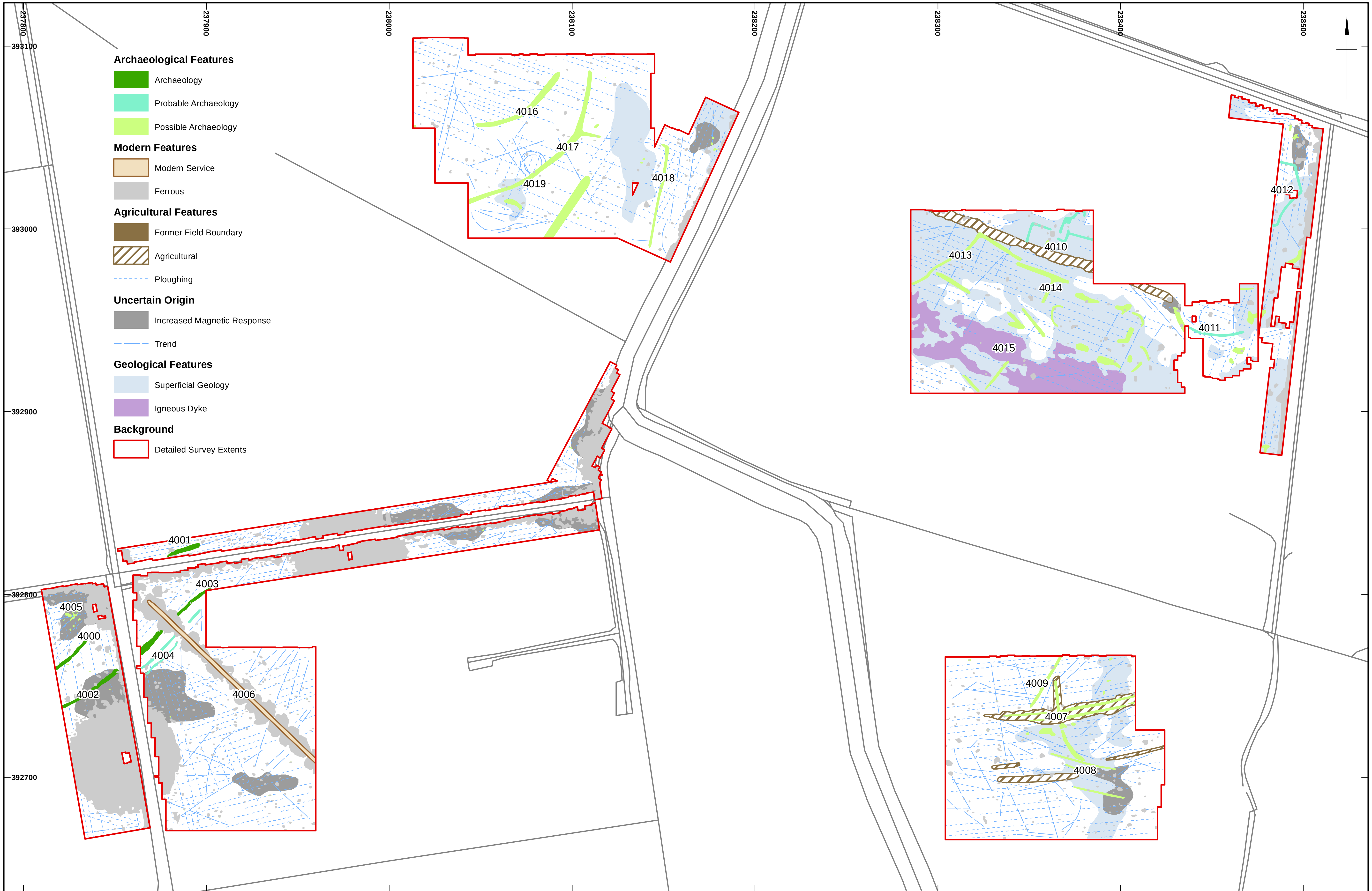
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

XY trace plot, turbines 3 to 6

Figure 4



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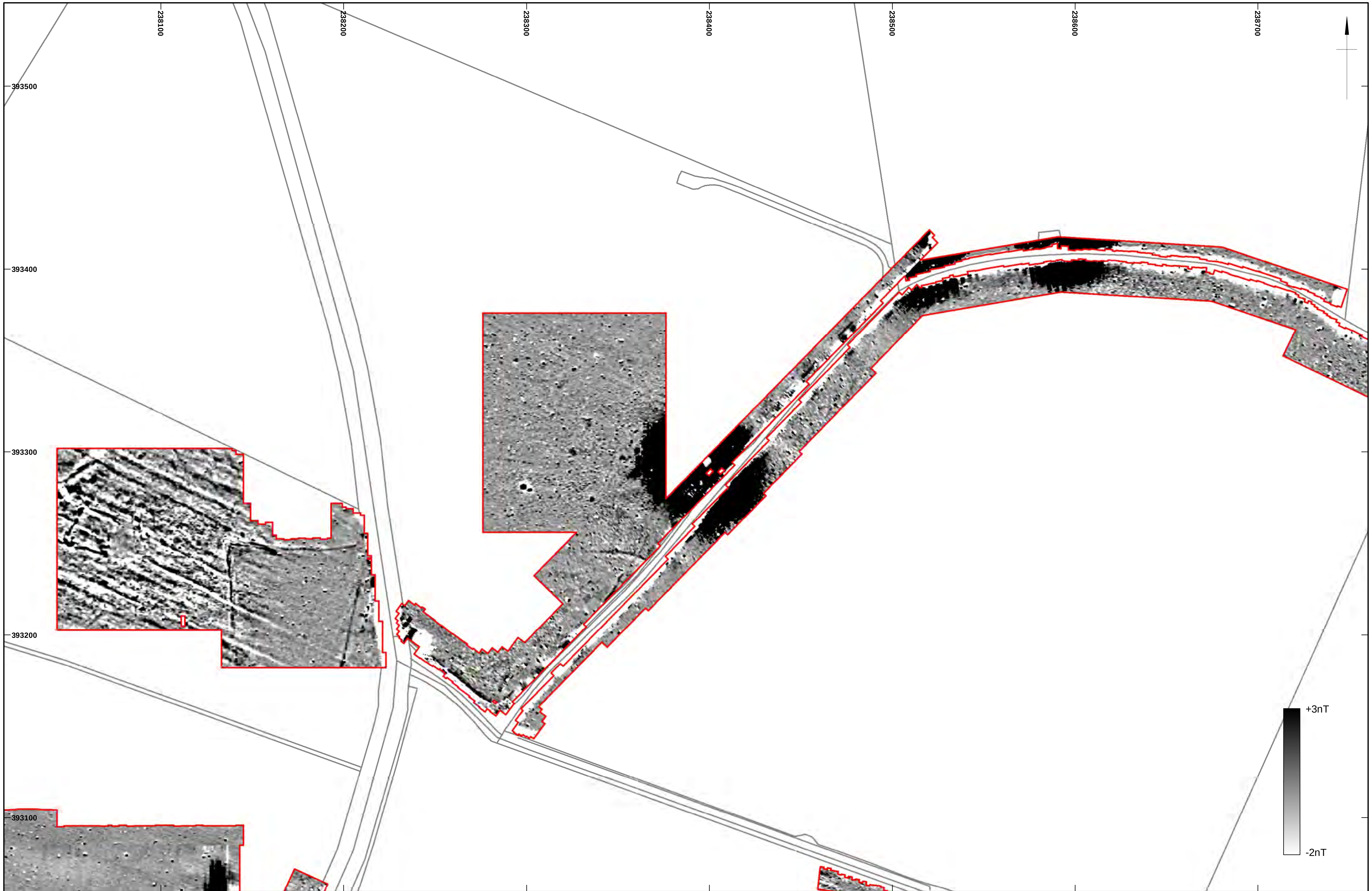
Interpretation, turbines 3 to 6

Figure 5



Background

Detailed Survey Extents

0 100 m

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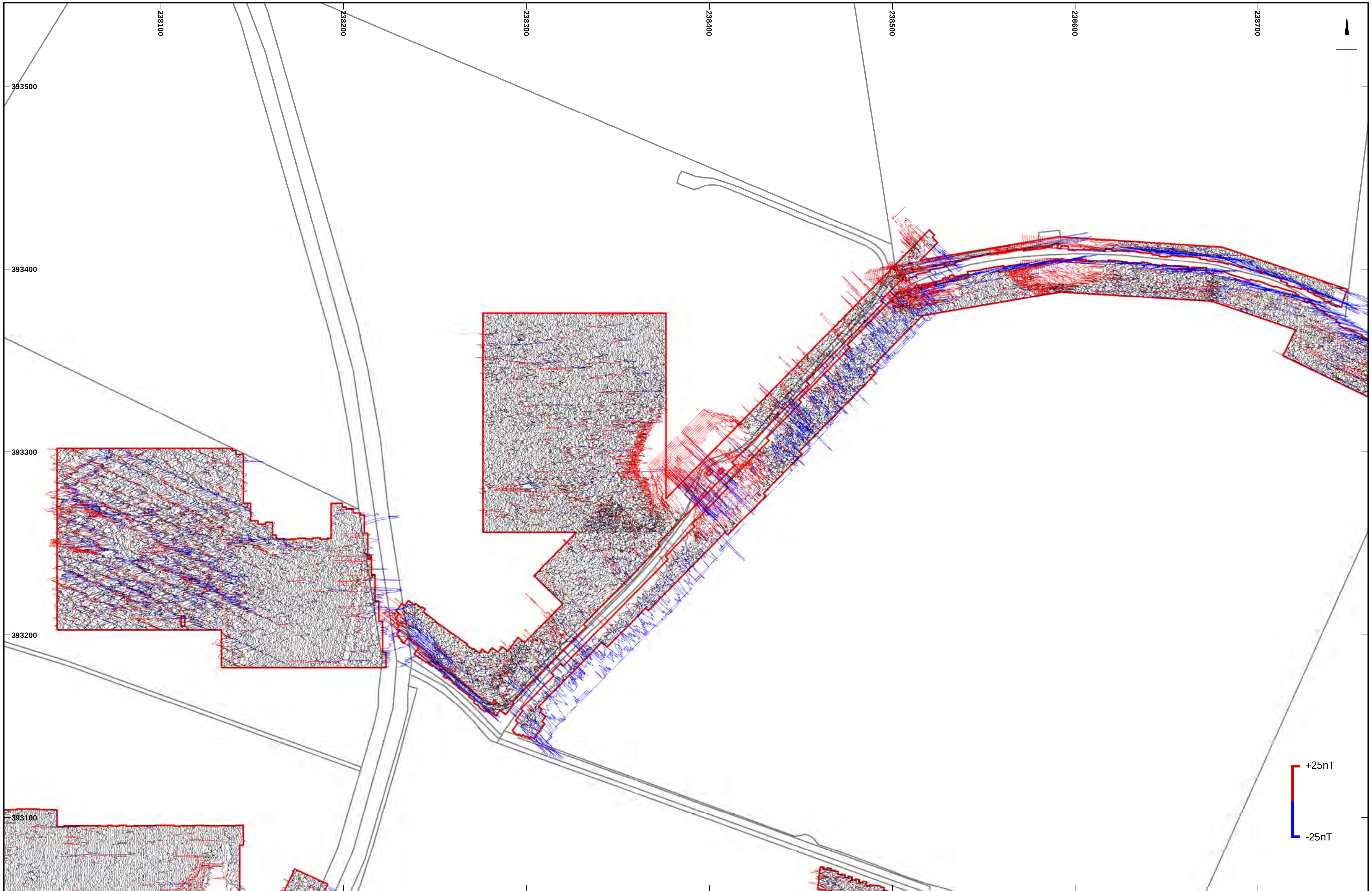
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Greyscale plot, turbines 1 and 2

Figure 6



Background

Detailed Survey Extents

0 100 m

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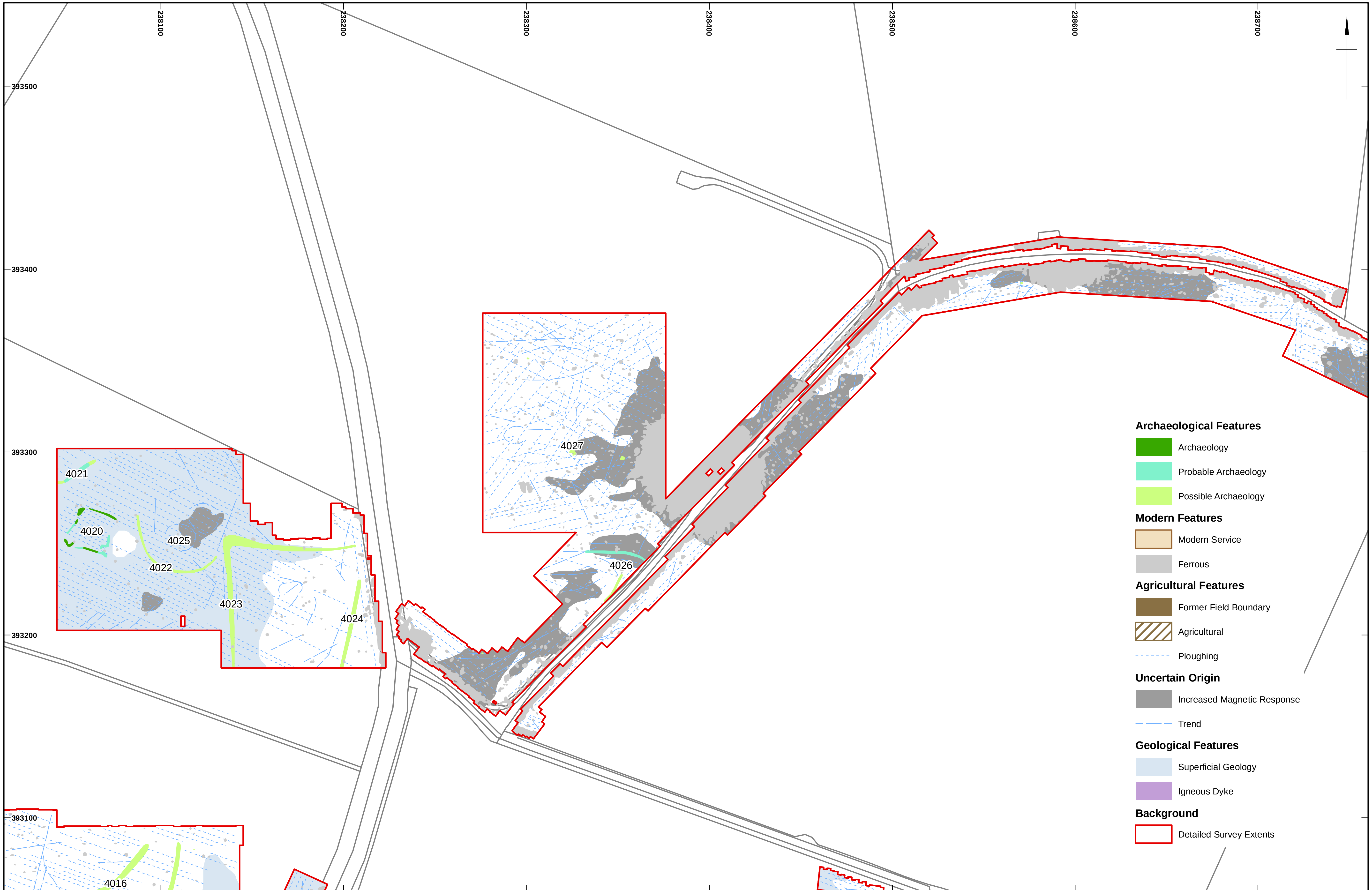
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

XY trace plot, turbines 1 and 2

Figure 7



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Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Interpretation, turbines 1 and 2

Figure 8

Background

Detailed Survey Extents

0 100 m

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Scale:	1:2000 at A3	Illustrator:	RDL
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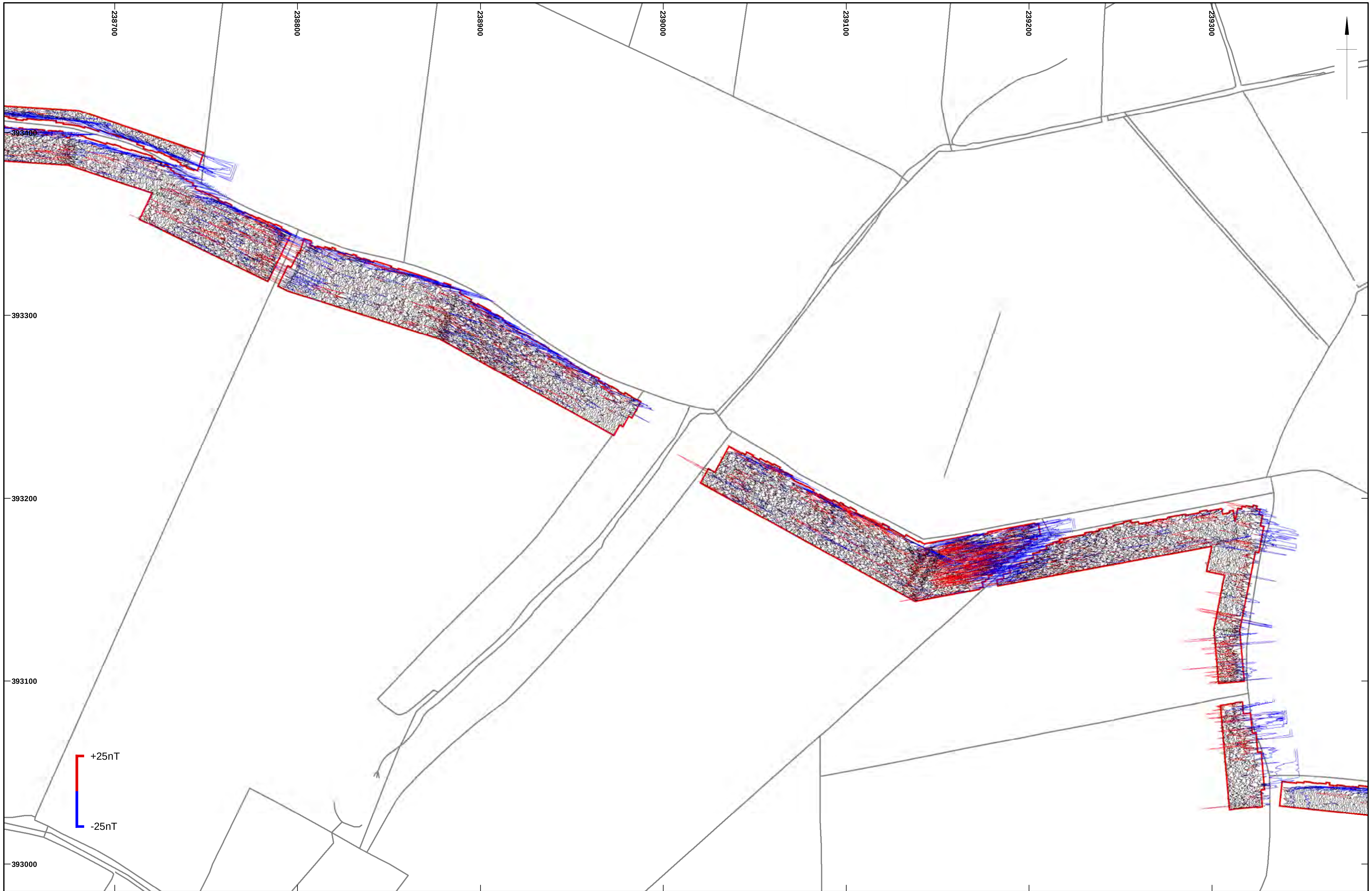
Greyscale plot, connecting track between turbines 1 and 7

Figure 9



Background

Detailed Survey Extents

0 100 m

Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

XY trace plot, connecting track between turbines 1 and 7

Figure 10

0 100 m

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Scale:	1:2000 at A3	Illustrator:	RDL
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Interpretation, connecting track between turbines 1 and 7

Figure 11

Background

Detailed Survey Extents

0 100 m

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Greyscale plot, connecting track and turbine 7

Figure 12

Background

Detailed Survey Extents

0 100 m

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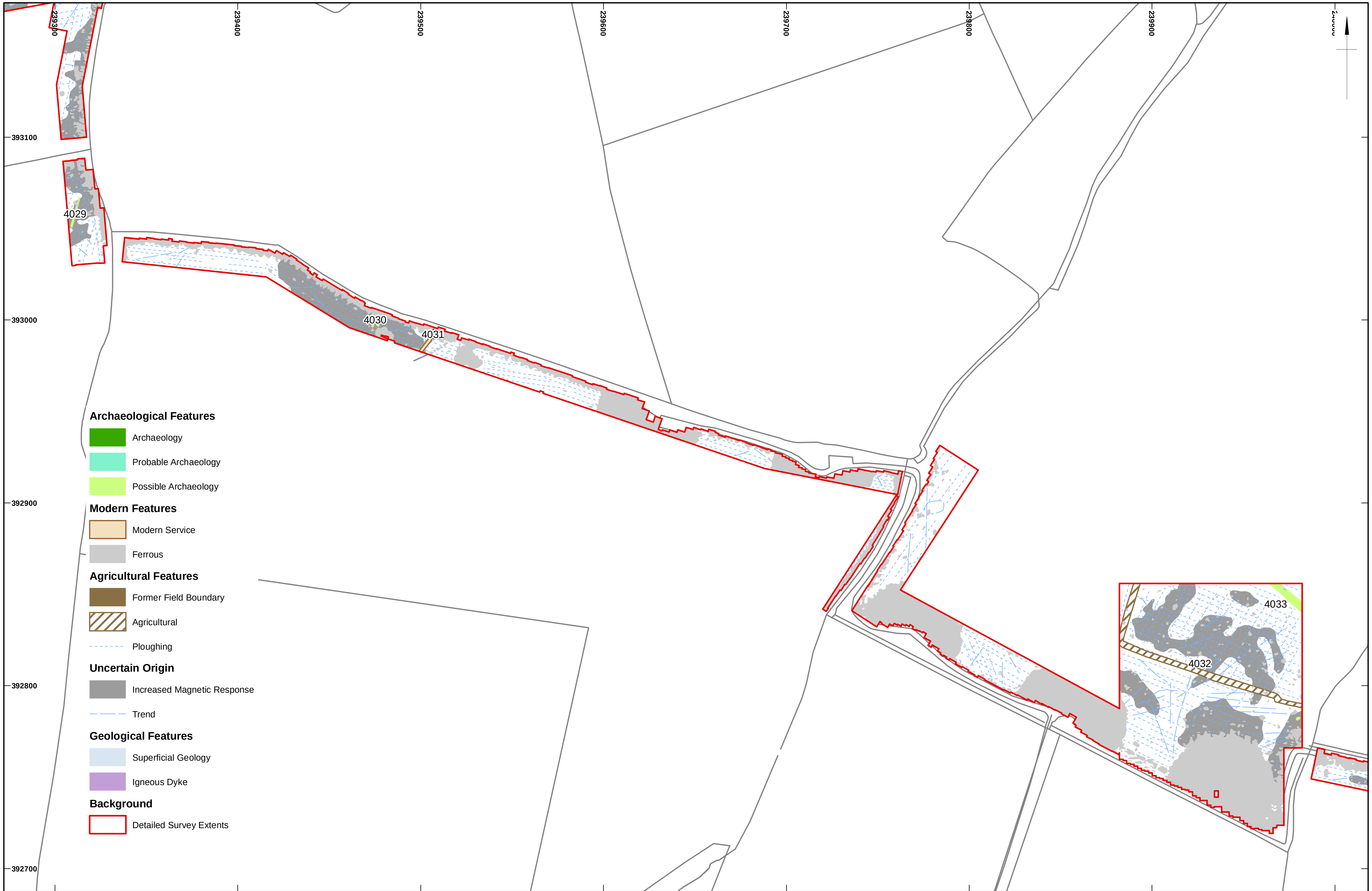
XY trace plot, connecting track and turbine 7

Figure 13



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Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Interpretation, connecting track and turbine 7

Figure 14

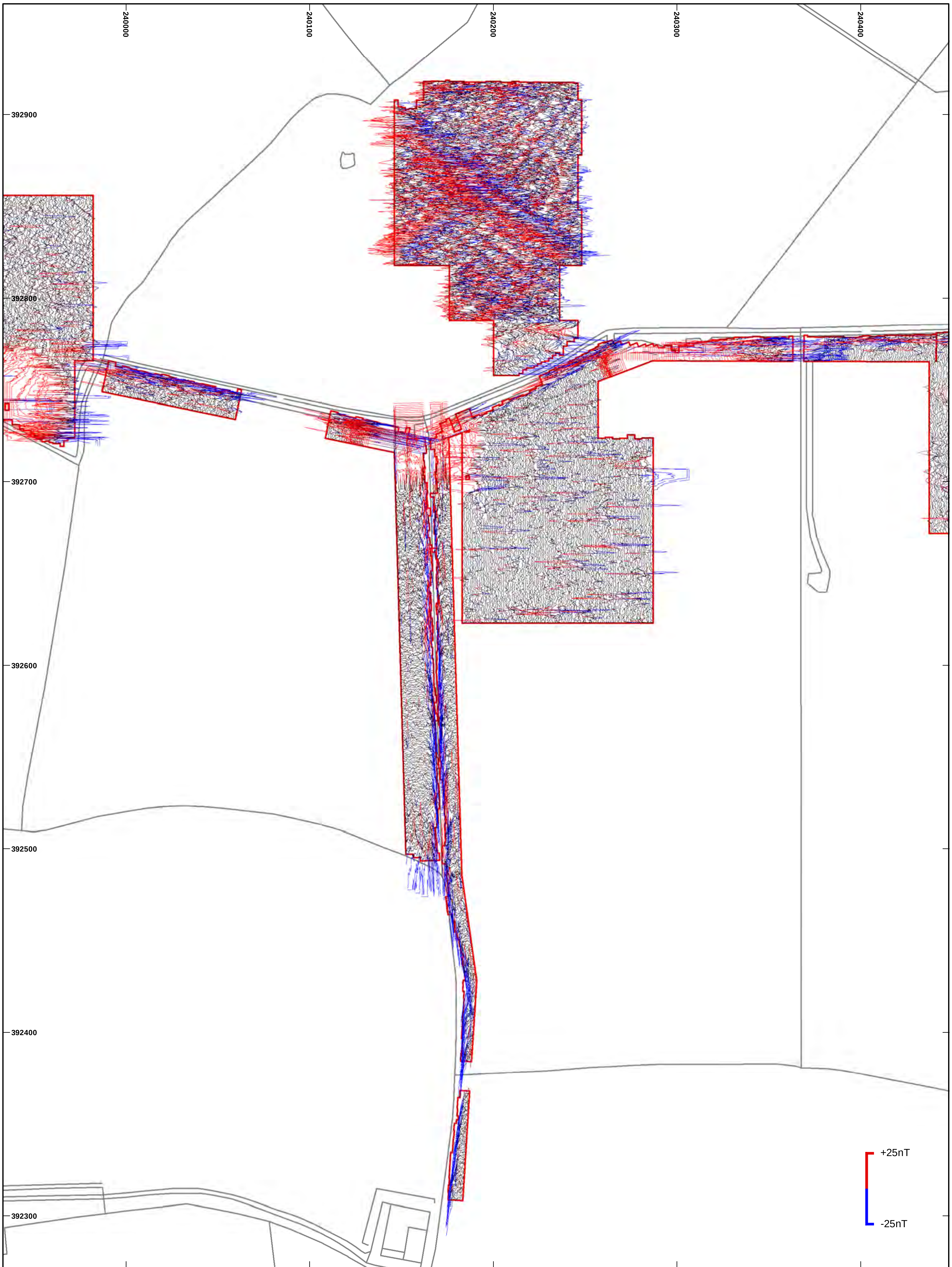
Background

Detailed Survey Extents

0 100 m

Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Greyscale plot, turbines 8 and 9



Background

Detailed Survey Extents

0 100 m

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Scale:	1:2000 at A3	Illustrator:	RDL
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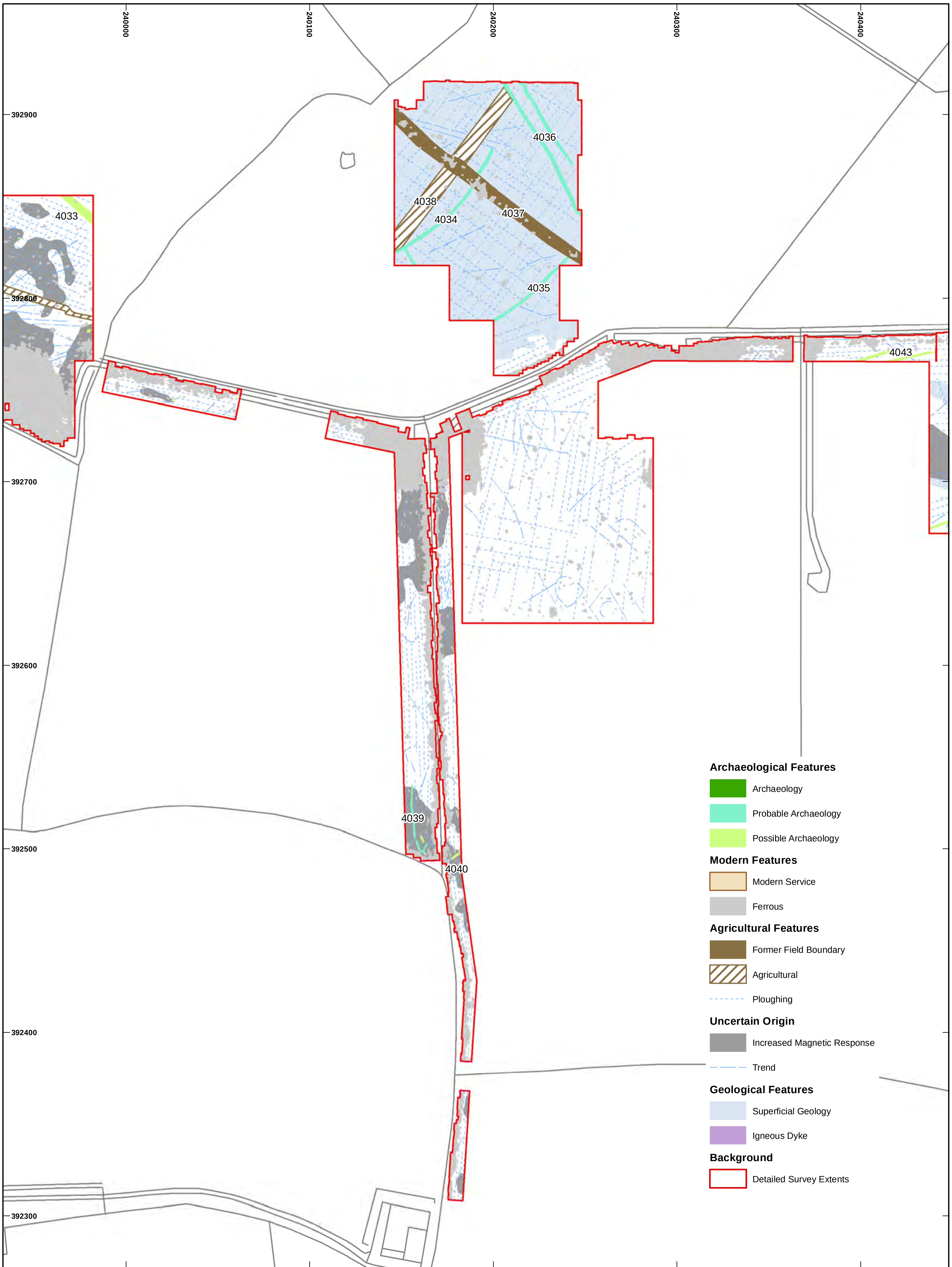
XY trace plot, turbines 8 and 9

Figure 16



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Interpretation, turbines 8 and 9

Figure 17

Background

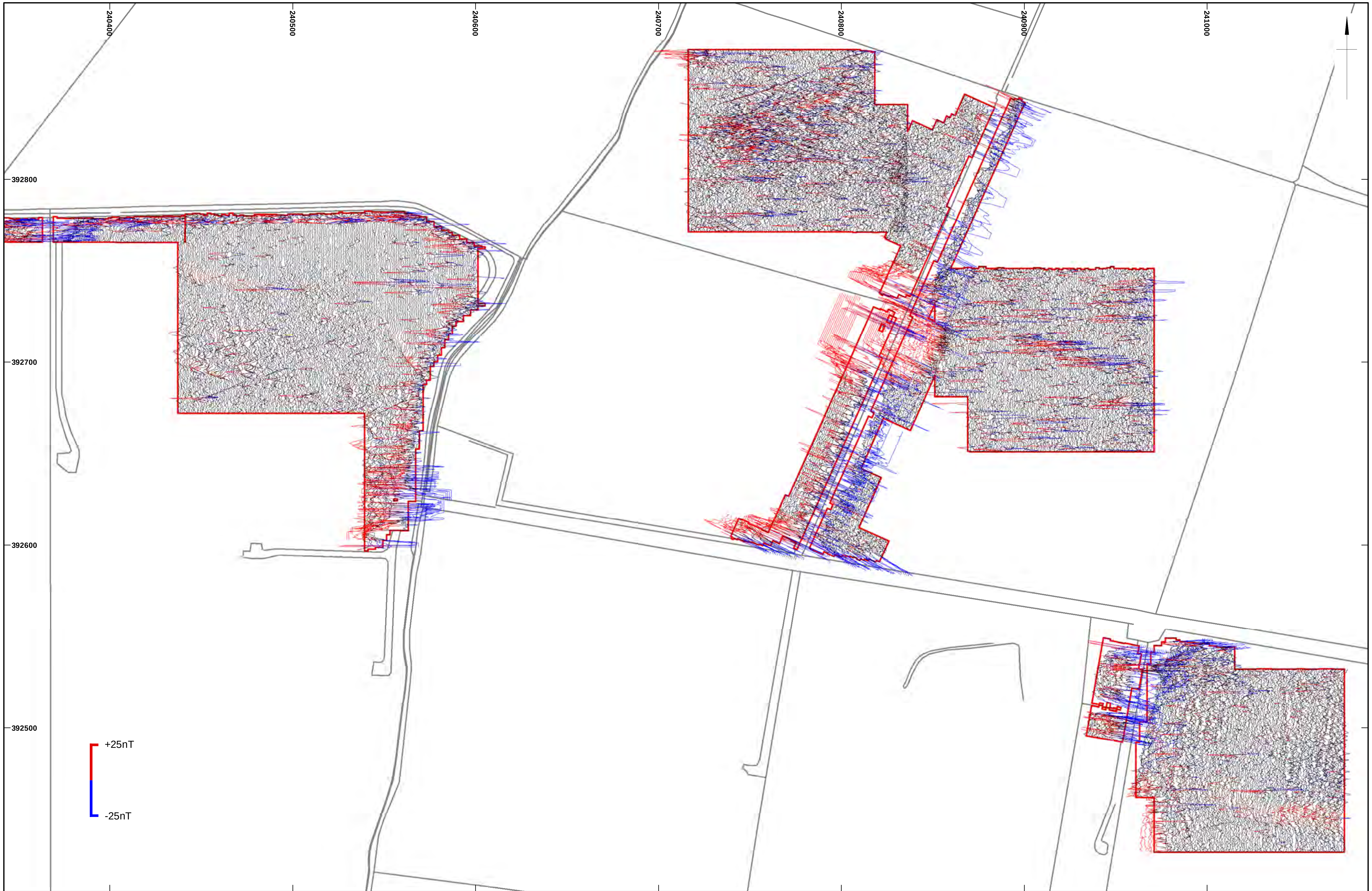
Detailed Survey Extents

0 100 m

Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Greyscale plot, turbines 10 to 13

Figure 18



Background

Detailed Survey Extents

0 100 m

Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

XY trace plot, turbines 10 to 13

Figure 19

0 100 m

Date:	10/12/2014	Revision Number:	0
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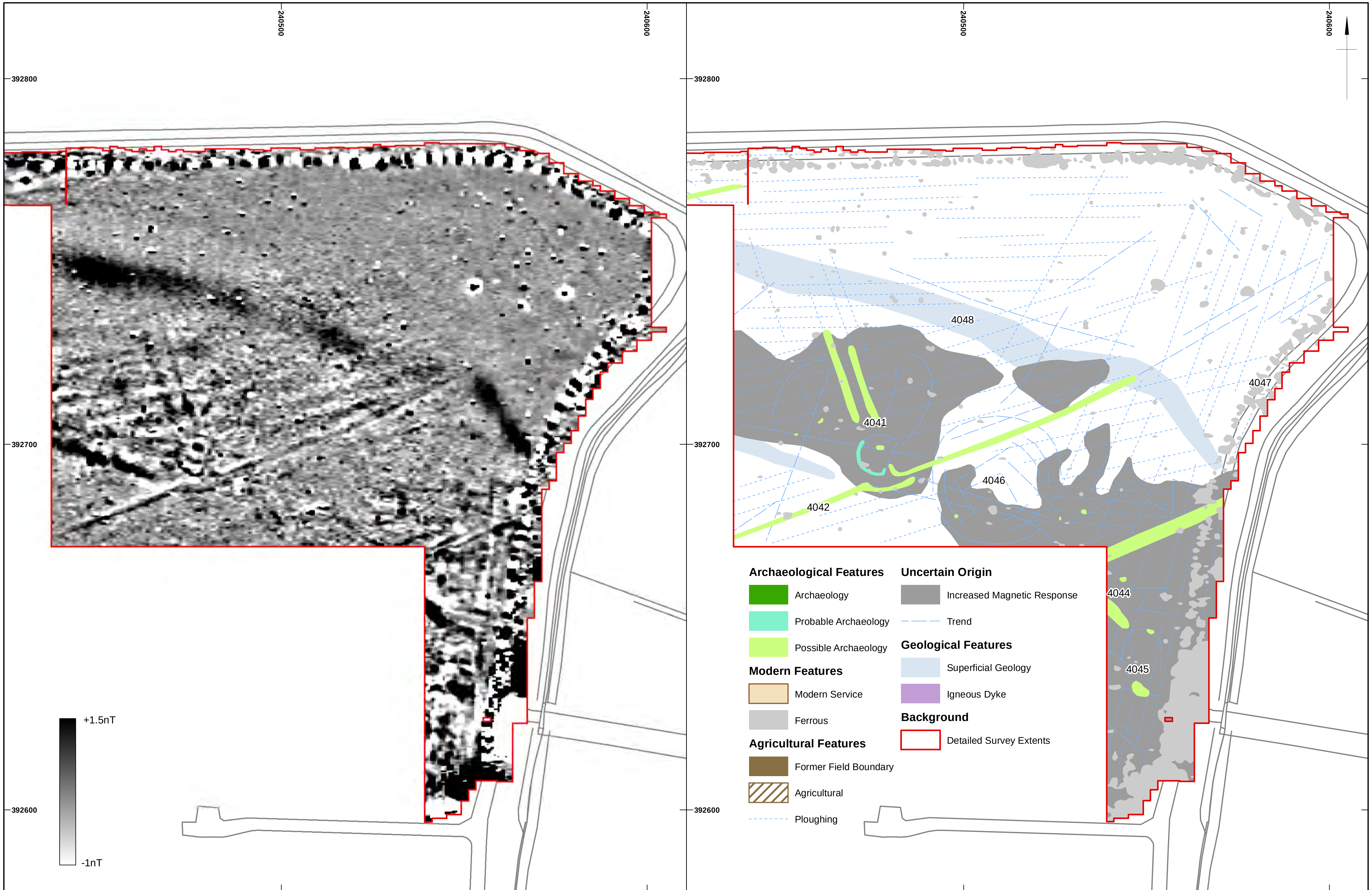
Interpretation, turbines 10 to 13



0 50 m

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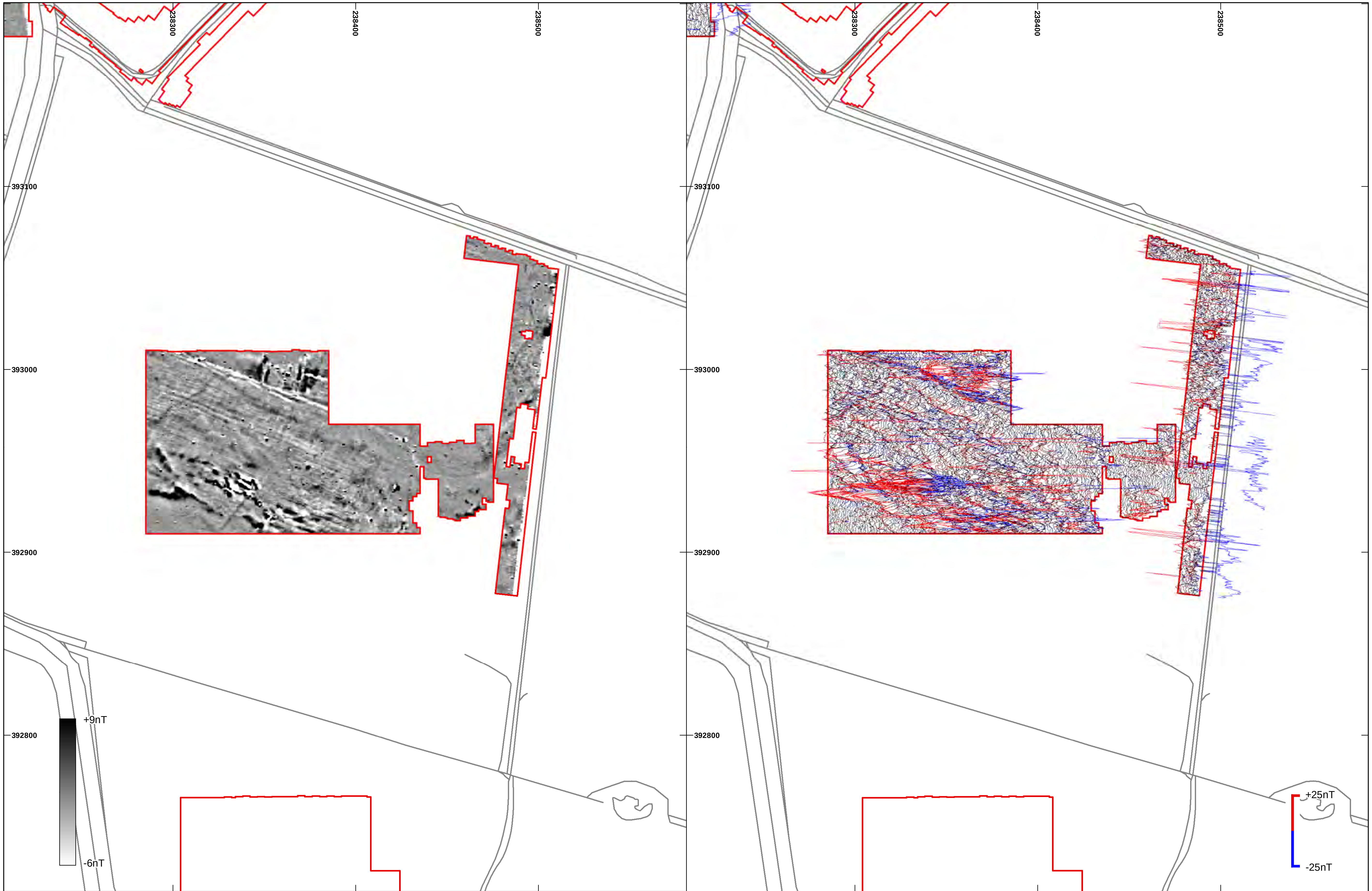
Narrow range greyscale plot and interpretation, turbine 10

Figure 21



Background

Detailed Survey Extents

0 100 m

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Scale:	1:2000 at A3	Illustrator:	RDL
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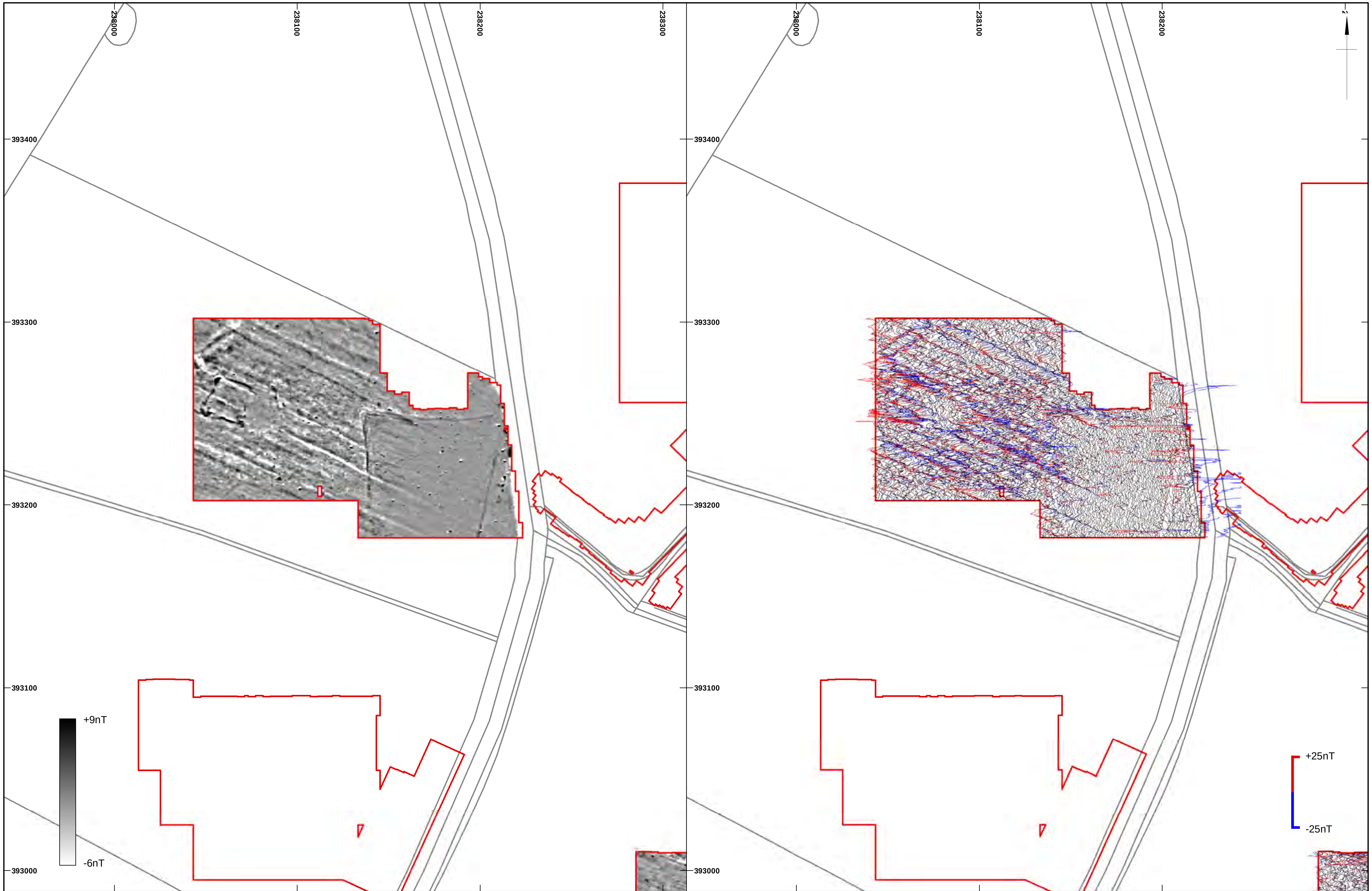
Wide range greyscale and XY trace plot, turbine 5

Figure 22



Background

Detailed Survey Extents

0 100 m

Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
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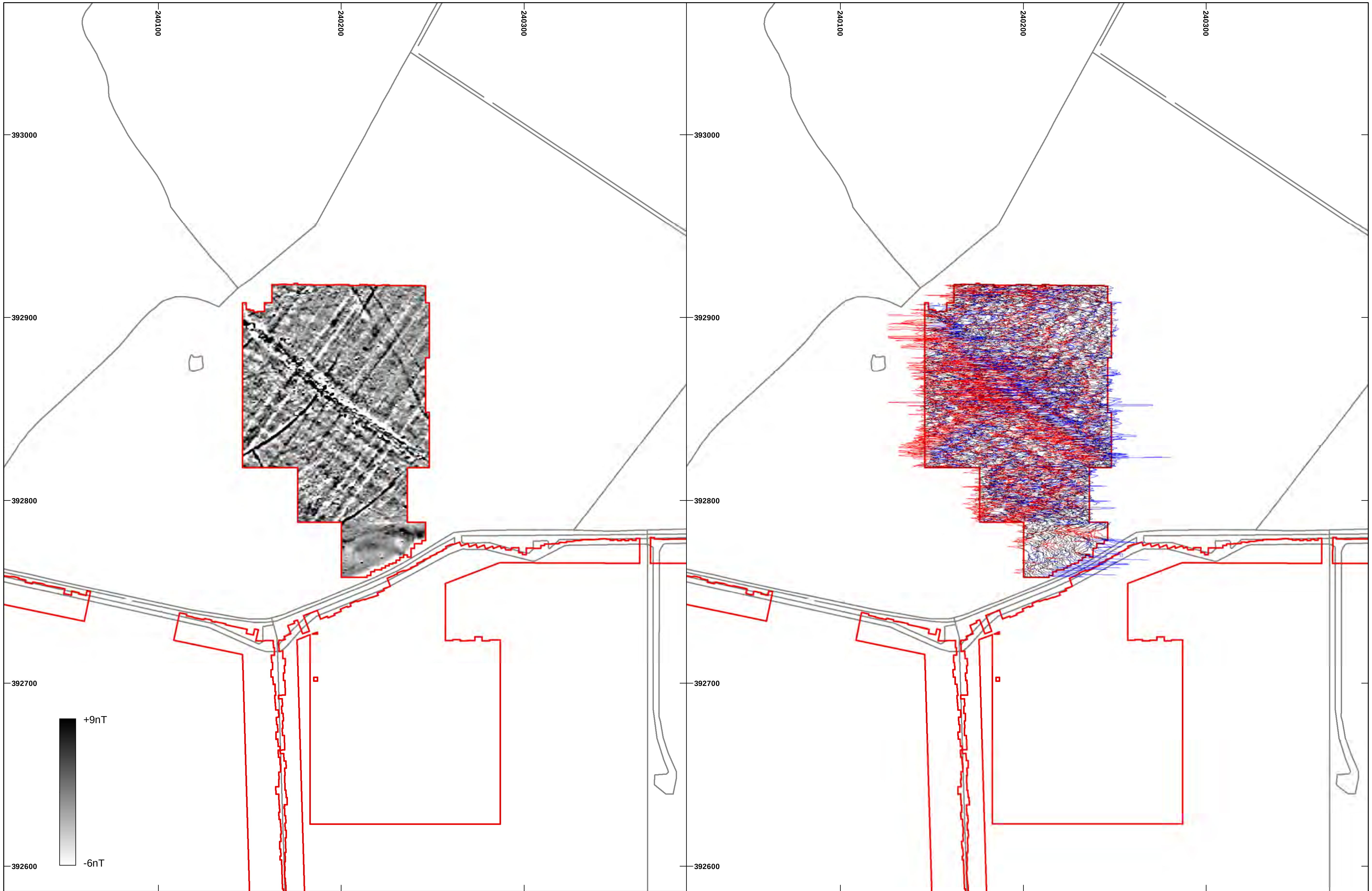
Wide range greyscale and XY trace plot, turbine 2

Figure 23



Background

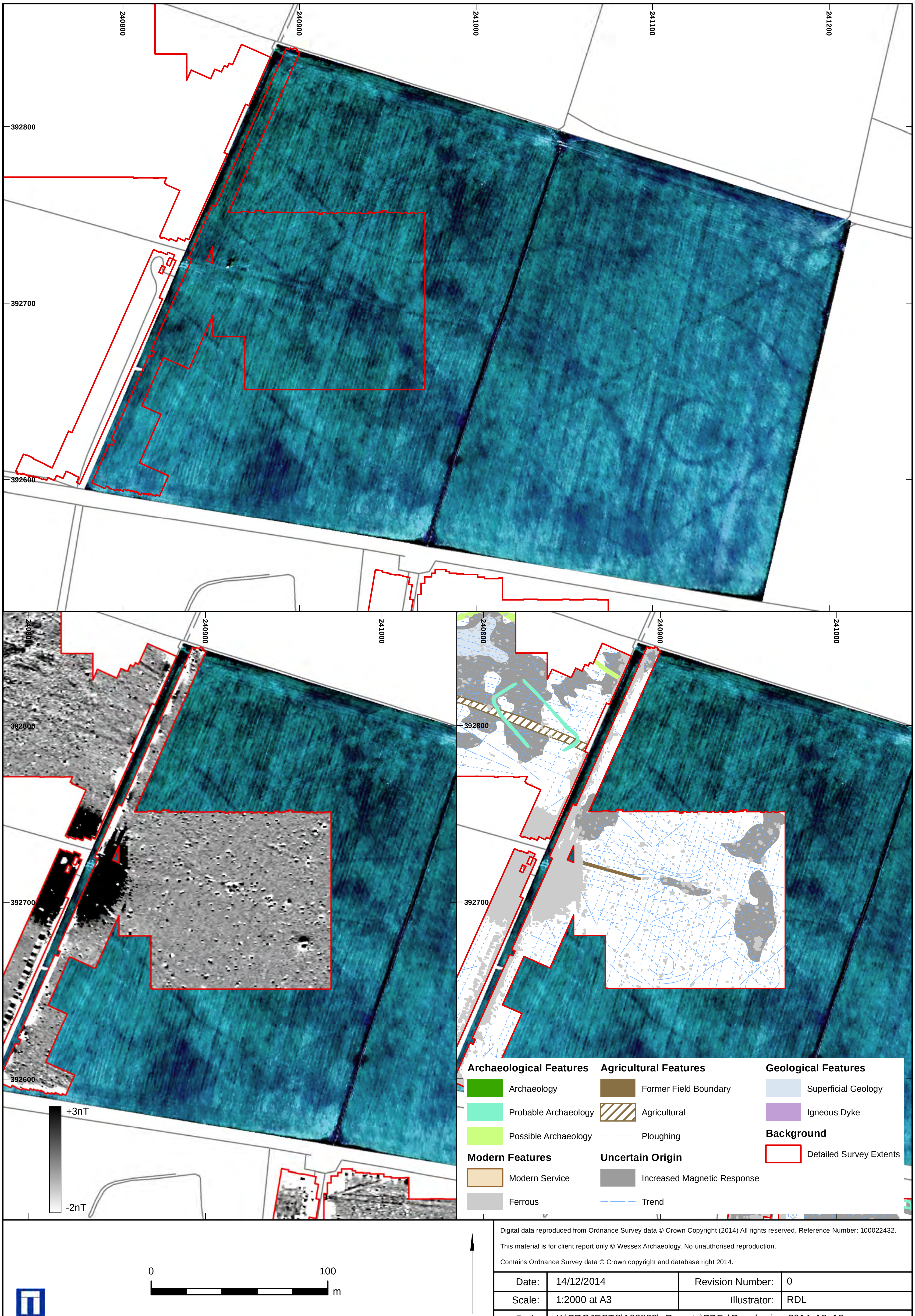
Detailed Survey Extents

0 100 m

Date:	10/12/2014	Revision Number:	0
Scale:	1:2000 at A3	Illustrator:	RDL
Path:	X:\PROJECTS\102823_Reports\PDFs\Geophysics_2014_12_10		

Wide range greyscale and XY trace plot, turbine 8

Figure 24



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Comparison of geophysical survey results with previous aerial photography results (Wessex Archaeology 2007)

Figure 25

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