

# DUNSLAND CROSS BRADFORD DEVON

Results of a Geophysical Survey



South West Archaeology Ltd. report no. 160520



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## Dunslund Cross, Bradford, Devon Results of a Geophysical Survey

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By J. Bampton  
Report Version: Draft 01  
20 May 2016

Work undertaken by SWARCH for Robert Pollock  
of Natural Power Consultants

### *EXECUTIVE SUMMARY*

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*South West Archaeology Ltd. was commissioned by Robert Pollock of Natural Power Consultants (the Agent) to undertake a geophysical survey on Land at Dunslund Cross, Bradford, Devon, prior to the erection of three wind turbines (95m and 100m to tip) with associated infrastructure. An archaeological assessment (Archaeological Services WYAS Report 1824) had previously been prepared for the site.*

*The fields probably formed part of the Manor of Dunslund, and the field-name element warren as recorded in the tithe apportionment, would suggest some archaeological potential for the site. However, the geophysical survey would suggest the archaeological potential of the site is low to negligible. Ground conditions, local vegetation and historic land use all indicate the area has largely been used as rough grazing. If features relating to a rabbit warren (e.g. pillow mounds) are present, they were not identified in the survey and are probably located on higher ground to the north and east.*

*On the basis of this survey, it is unlikely any further archaeological works are justified.*



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## ACKNOWLEDGEMENTS

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ROBERT POLLOCK, NATURAL POWER  
THE TENANT, FOR ACCESS TO THE SITE

## PROJECT CREDITS

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GRAPHICS: BETHANY WHITLOCK; JOE BAMPTON

## 1.0 INTRODUCTION

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**Location:** Dunsland Cross  
**Parish:** Bradford  
**County:** Devon  
**NGR:** SS 4088 0333  
**SWARCH ref:** BDC14

### 1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by Robert Pollock of Natural Power Consultants (the Agent) to undertake a geophysical survey on land at Dunsland Cross in advance of the construction of three wind turbines with associated compound. This work was carried out in accordance with a Written Scheme of Investigation (WSI) drawn up in accordance with a brief issued by Ann Dick of the Devon County Historic Environment Team (DCHET).

### 1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The site is located within the parish of Bradford, c.6.3 km east of Holsworthy on land bounded to the west by the A3079 and to the north by the A3072, between Dunsland Cross and Brandis Corner (see Figure 1). The site lies within a number of recently-rationalised fields on gently-rolling rough ground that slopes down from the north and east, at a height of between 170m to 140m AOD. The ground is often waterlogged and subject to a substantial amount of drainage. It is used for rough grazing.

The soils of this area included the well-drained fine loamy soils of the Neath Formation, but are dominated by the slowly-permeable seasonally-waterlogged clayey soils of the Hallsworth 1 Formation (SSEW 1983); these overlie the mudstones and siltstones of the Crackington Formation (BGS 2016).

### 1.3 HISTORICAL BACKGROUND

The site is located within the ancient parish of Bradford, itself in the Hundred of Black Torrington and the deanery of Holsworthy. The tithe apportionment indicates the fields were leased by Elizabeth Quick, and owned by the Rev. William Bickford Coham of Dunsland House, and thus likely to form part of the Manor of Dunsland (see Lysons 1822). The Devon HLC indicates the area of the proposed development is comprised of modern enclosures adapting post-medieval fields or enclosed from rough ground. The field names recorded in the tithe apportionment are: East Warren, Middle Warren and West Warren, with Lower Warren Moor and Warren Moor to the west.

### 1.4 ARCHAEOLOGICAL BACKGROUND

The proposed site is located 3km kilometres to the north of a number of Scheduled Prehistoric barrows, and south of an area (Dunsland House) where Prehistoric lithics have been reported. Part of a possible stock enclosure of unknown date, is recorded on the Devon HER immediately to the south-west of the site. This feature, reported to the HER after the preparation of the archaeological assessment (Pollington 2008), may extend into the site, south of the south-eastern turbine base. Given the presence of Prehistoric activity in the wider area, and the stock enclosure to the south-

west, there is some (*low to medium*) potential for the survival of related deposits or material within the site.

An archaeological desk-based assessment has previously been undertaken by Archaeological Services WYAS (Pollington 2008).

## 1.5 METHODOLOGY

This document follows the methodology outlined in the WSI (see Appendix 1). The gradiometer survey follows the guidance outlined in *Geophysical Survey in Archaeological Field Evaluation* (English Heritage 2008) and *Standard and Guidance for Archaeological Geophysical Survey* (CIfA 2014).

*'Archaeological geophysical survey uses non-intrusive and non-destructive techniques to determine the presence or absence of anomalies likely to be caused by archaeological features, structures or deposits, as far as reasonably possible, within a specified area or site on land, in the inter-tidal zone or underwater. Geophysical survey determines the presence of anomalies of archaeological potential through measurement of one or more physical properties of the subsurface.'* (Standard and Guidance for Archaeological Geophysical Survey 2014).

The results of the survey will as far as possible inform on the presence or absence, character, extent and in some cases, apparent relative phasing of buried archaeology leading to the formulation of a strategy to mitigate any threat to the archaeological resource.

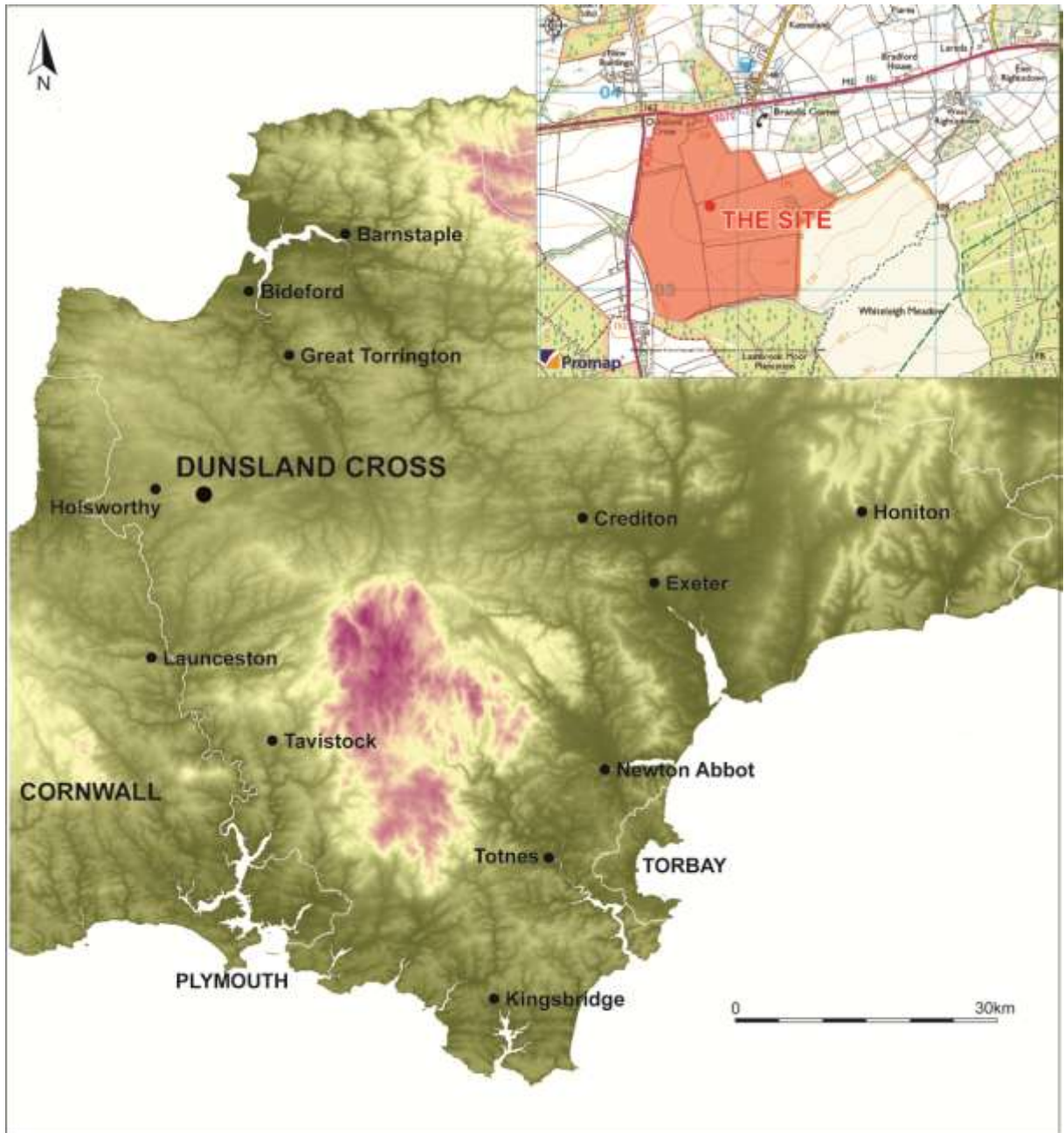


FIGURE 1: SITE LOCATION (THE SITE IS INDICATED).

## 2.0 GRADIOMETER SURVEY

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### 2.1 INTRODUCTION

The purpose of this survey is to identify and record magnetic anomalies within the vicinity of the proposed wind turbines and compound area. An area of approximately 3.83ha was surveyed, and was undertaken between the 3<sup>rd</sup> and the 5<sup>th</sup> of May 2016 by J. Bampton in sunny, dry conditions. The survey data was processed by J. Bampton.

While the identified anomalies may relate to archaeological deposits and structures, the dimensions of recorded anomalies may not directly correspond with any associated archaeological features. The following discussion attempts to clarify and characterise identified anomalies.

#### 2.1.1 SITE INSPECTION

Four areas were subject to survey, falling within five large fields divided by post-and-wire fencing. The site was under rough pasture with large stands of soft rushes; the land sloped gently down from the north-east, and the soil was mainly waterlogged. The vegetation had been topped to reduce its height. Mounds of fairly recently shifted earth were present at the north-western corner of the Turbine 1 area, and there appeared to be a slight ridge running along the northern side of the post-and-wire fence here, perhaps a removed field bank. Oak trees to the east of this area stand on the line of a removed field boundary. The southern half of the Turbine 1 area was more waterlogged than the northern half. The western half of the Turbine 3 area was more waterlogged than the eastern half of the same area. The area to the north and north-west of the Turbine 3 area had been disturbed by tractor tracks and piped drainage that fed a main drain running south. The compound area was generally drier, and presumably therefore also featured underdrainage. Geotechnical pits were noted across the site, and areas relating to the development had been marked out with wooden and metal stakes.



FIGURE 2: THE SITE, VIEWED FROM THE WEST, LOOKING NORTH-EAST.





FIGURE 3: VIEW ACROSS THE SITE FROM THE WEST, LOOKING SOUTH-EAST.

## 2.2 METHODOLOGY

The gradiometer survey follows the general guidance as outlined in: *Geophysical Survey in Archaeological Field Evaluation* (English Heritage 2008) and *Standard and Guidance for Archaeological Geophysical Survey* (CIfA 2014).

The survey was carried out using a twin-sensor fluxgate gradiometer (Bartington Grad601). These machines are sensitive to depths of up to 1.50m. The survey parameters were: sample intervals of 0.25m, traverse intervals of 1m, a zigzag traverse pattern, traverse orientation was circumstantial, grid squares of 30×30m. The gradiometer was adjusted ('zeroed') every 0.5-1ha. The survey grid was tied into the Ordnance Survey National Grid. The data was downloaded onto *Grad601 Version 3.16* and processed using *TerraSurveyor Version 3.0.25.0*. The primary data plots and analytical tools used in this analysis were *Shade* and *Metadata*. The details of the data processing are as follows:

Processes: Clip +/- 3SD; DeStripe all traverses, median; DeStagger, offset in- and outbound by -2 intervals (all grids).

Details: 3.827ha surveyed; Max. 106.79nT, Min. -101.71nT; Standard Deviation 5.65nT, mean -0.19nT, median 0.00nT.

## 2.3 RESULTS

Figures 4 and 5, with the accompanying Table 1, show the analyses and interpretation of the geophysical survey data. Additional graphic images of the survey data and numbered grid locations can be found in Appendix 3.

Anomaly group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Weak positive with associated negative, probable	Linear	Historic Field Boundary	Present on the 'Map of Dunslund' of 1795 and extant on the 1907 Ordnance Survey (OS) map. Responses c.+3nT. And/or rectified between 1964 and 1981.
2	Positive, probable	Linear	Drainage ditches	The generally water-logged area required a frequent number of drainage channels of various orientations and sizes. Response of <c.+5nT. These are relatively modern ditches; parallel and perpendicular to modern fence lines/drains.
3	Negative, probable	Linear	Land drains	The generally water-logged area required a frequent number of drainage channels of various orientations and sizes. Response of between c.-2 and -4nT. These drains probably contain stony material or pipe-work of some kind.
4	Positive and negative, probable	Linear	Bank with ditch	A single length of possible bank and ditch. The very weak response (+/-3nT) may be indicative of its ephemeral nature. Its slight curving nature may relate it to the field boundaries removed and rectified in the 20 <sup>th</sup> century, making it a contemporary of the historic field boundaries that predates 1795. Its response is similar to that of the anomaly group 1 in Turbine area 2, although the group 1 anomalies are slightly obscured by water-logging and disturbed ground.
5	Positive, possible	Linear	Wheel ruts	These anomalies appear to form flanking ditches (<+5nT), However, machine tracks were noted to be holding water in the same area and along the west half of the Turbine 2 area, creating various linear responses.
6	Positive, possible	amorphous	Disturbed ground associated with a removed boundary.	An area of positive reading (<2.5nT), the strength of which would indicate natural variation in the geology or natural features. As these anomalies occur on the line of a field boundary removed between 1964 and 1981, for which no geophysical signature is clear it is possible that these anomalies are associated with its removal or tree-throws associated with the removal of trees that may have once defined the boundary.

TABLE 1: INTERPRETATION OF GRADIOMETER SURVEY DATA.



FIGURE 4: SHADE PLOT OF GRADIOMETER SURVEY DATA (MINIMAL PROCESSING).



FIGURE 5: INTERPRETATION OF GRADIOMETER SURVEY DATA.

## 2.4 DISCUSSION

The survey identified six groups of anomalies. The majority of these were linear anomalies that represent drainage and historic field boundaries. Anomalies associated with modern ground disturbance and ferrous objects were also identified in the survey. Group 1 represents two historic field boundaries. Group 2 probably represents cut drainage ditches that have most probably silted up or been buried. Group 3 probably represents the remnants of drains with possible stone lining or pipe-work. Group 4 represents a possible ditch and bank feature. Group 5 represents possible drainage ditches but it is more likely these relate to water-filled tractor ruts. A large number of tracks, possible drainage gullies and occasional animal tracks were noted across the site, and in the more waterlogged areas these sometimes appear similar to cut ditch features. Group 6 represents possible natural variation or disturbance associated with a removed historic field boundary, which is not clearly definable as a geophysical anomaly.

Group 1 are weak negative with associated positive anomalies indicative of field boundaries, shown on historic maps 1795-1906. These boundaries appear to have been removed between 1964 and 1981. These boundaries formed the western edge of a large oval enclosure enclosing the hilltop to the north-east; this presumably defined the infield for West Rightadown.

Group 2 are positive linear anomalies orientated parallel or perpendicular to the modern post-and-wire fences; these are likely to be land drains.

Group 3 are negative linear anomalies; these are likely to be stone or piped land drains.

Group 4 are a very weak negative with associated positive anomaly indicative of a relict field boundary. If so, it is not shown on the historic maps.

Group 5 consist of possible positive responses, but appear to be related to modern water-filled tractor ruts.

Group 6 consists of amorphous possible positive anomalies, on the line of a removed field boundary which does not appear on the survey, and this may perhaps relate to buried or removed trees etc.

## 2.5 RECOMMENDATIONS

This area, with its waterlogged Hallsworth 1 soils (SSEW 1983), is evidently marginal in agricultural terms, and this is reflected in the results of the geophysical survey. Most of the features identified relate to land drainage or historic field boundaries removed in the later 20<sup>th</sup> century. It is probable that these removed boundaries defined the edge of an infield associated with West Rightadown (note in this instance the very clear oval – but much smaller – enclosure around East Rightadown).

Despite the *warren* field names, on the basis of this survey and assessment it is difficult to justify further archaeological works relating to the proposed development.

### 3.0 CONCLUSION

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The geophysical survey undertaken by SWARCH would suggest the archaeological potential of the site is *low to negligible*. Ground conditions, local vegetation and historic land use all indicate the area has largely been used as rough grazing. The relict field boundaries identified in the survey and relating to the older fields to the east may belong to a medieval infield, but are listed as post-medieval enclosures on the Devon HLC. The *warren* field names in the tithe apportionment are suggestive, but if features relating to a rabbit warren (e.g. pillow mounds) are present, they were not identified in the survey and are probably located on higher ground to the north and east.

On the basis of this survey, it is unlikely any further archaeological works are justified.

## 4.0 BIBLIOGRAPHY

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### *Published Sources:*

**Chartered Institute for Archaeologists** 2014: *Standard and Guidance for Archaeological Geophysical Survey*.

**English Heritage** 2008: *Geophysical Survey in Archaeological Field Evaluation*.

**Lysons, D. Lysons, S.** 1822: *Magna Britannia: Volume 6, Devon*. T. Cadell & W. Davies, London.

**Schmidt, A.** 2002: *Geophysical Data in Archaeology: A Guide to Good Practice*. ADS series of Guides to Good Practice. Oxbow Books, Oxford.

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### *Websites:*

**British Geological Survey** 2016: *Geology of Britain Viewer*.

[http://maps.bgs.ac.uk/geologyviewer\\_google/googleviewer.html](http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html) [accessed 14.03.2016]

### *Unpublished Sources:*

**Pollington, M.** 2008: *Land at Dunslade Cross, Devon: Archaeological Desk-based Assessment*. Archaeological Services WYAS, Report No: 1824.

## APPENDIX 1: WRITTEN SCHEME OF INVESTIGATION FOR GEOPHYSICAL SURVEY AND ARCHAEOLOGICAL MITIGATION AT LAND AT DUNSLAND CROSS, BRANDIS CORNER

**Location:** Land at Dunsland Cross  
**Parish:** Bradford  
**District:** Torridge  
**County:** Devon  
**NGR:** SS 4088 0333  
**Planning Application no:** 1/1250/2011/fulm  
**Proposal:** Erection of 3 no. wind turbines of height between 95m and 100m to tip and associated infrastructure including access tracks, 1 switchgear and control building with transformers and grid connection infrastructure, underground cabling, turbine foundations, crane hardstandings, 1 upgraded site access point and 1 meteorological mast.  
**Historic Environment Team ref:** ARCH/DM/TO.18842  
**Date:** 11.04.2014

### 1.0 INTRODUCTION

1.1 This document forms a Written Scheme of Investigation (WSI) which has been produced by South West Archaeology Ltd. (SWARCH) at the request of Mike Corker of Bolsterstone Group Plc (the Agent). It sets out the methodology for desk based assessment and geophysical survey to be undertaken during the above development and for related off site analysis and reporting. The WSI and the schedule of work it proposes were drawn up in consultation with and in accordance with a brief issued by Ann Dick of the Devon County Historic Environment Team (DCHET) and forms part of a staged process of works. Following the completion of this initial stage of fieldwork investigation results and a statement of impact will be supplied to the DCHET to enable them to determine the scope of any further archaeological work that may be required.

Should further mitigation be required, it may consist of evaluation trenching, a watching brief to strip, map and record the site or an area excavation. This would be done in consultation with the HET and according to the methodology outlined in section 4.3 of this WSI.

1.2 In accordance with paragraph 141 of the *National Planning Policy Framework (2012)*, and the Local Development Framework Policy on archaeology, consent has been granted, conditional upon a programme of archaeological work being undertaken. This condition (no. 5) requires that:

*"No development shall take place until the applicant (or their heir or successor in title) has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted to and agreed in writing by the Local Planning Authority. The development shall be carried out at all times in strict accordance with the approved scheme, or such other details as may be subsequently agreed in writing by the Local Planning Authority".*

### 2.0 ARCHAEOLOGICAL BACKGROUND

2.1 The proposal site lies in an area some three kilometers to the north of a number of Scheduled prehistoric barrows, and south of an area in which a find of prehistoric lithic material has been reported.

Although the Devon Historic Environment Record (HER) has no record of any features of archaeological significance within the footprint of the site, part of a possible stock enclosure, of unknown date, is recorded immediately adjacent to the south-west boundary of the site. This feature, which was reported to the HER after the preparation of the applicants' Archaeological Assessment (Archaeological Services WYAS Report 1824), may extend into the site, to the south of the proposed position of the south-eastern turbine.

In view of the known presence of prehistoric features within the wider area, and the feature adjacent to the south east boundary of the site, there is some potential for survival of further deposits within the site.

### 3.0 AIMS

3.1 To observe and identify archaeological features, and to investigate, excavate and record any surviving below-ground archaeological artefacts and deposits across the area affected by the proposed development;

3.2 Analyse and report on the results of the project as appropriate.

### 4.0 PROGRAMME OF ARCHAEOLOGICAL WORKS

4.1 Geophysical Survey:

The programme of work shall include a magnetometer survey of c.2.4 hectares, covering the whole field in which the proposed turbines would be located and in which the flint scatter was recorded. The results of this survey will inform whether an archaeological evaluation or further archaeological recording of any potential buried remains or other mitigation is required.

4.2 Desk-based appraisal:

The programme of work shall include an element of desk-based research to place the development site into its historic and archaeological context. This work will consist of map regression based on the Ordnance Survey maps and the Tithe Map(s) and Apportionments. An examination will also be made of records and held by the HER. The reporting requirements for the desk-based work will be confirmed in consultation with the HET. This desk-based work will be undertaken in advance of any fieldwork commencing. If a full report is prepared then this information will be presented as part of the final report along with the results of the fieldwork.

4.3 Monitoring of Groundworks:

Depending upon the results of the desk-based appraisal and the geophysical survey there may be a requirement for a series of evaluation trenches to be excavated across the area of the development. The number and length of these trenches would be determined in relationship to the impact of the development, and the type and layout of geophysical anomalies identified in the survey, in consultation with Ann Dick (DCHET). All groundworks would be undertaken by a 360° tracked or wheeled JCB-type mechanical excavator fitted with a toothless grading bucket under the supervision and control of the site archaeologist to the surface of *in situ* subsoil/weathered natural or archaeological deposits, whichever is highest in the stratigraphic sequence. Should archaeological deposits be exposed machining will cease in that area to allow the site archaeologist to investigate the exposed deposits.

Should archaeological features and deposits be exposed, they will be excavated by the site archaeologist by hand.



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- 4.3.1 The archaeological work will be carried out in accordance with the *Institute for Archaeologists Standard and Guidance for Archaeological Field Evaluation 1994 (revised 2001 & 2008)* and *Standard and Guidance for an Archaeological Watching Brief 1994 (revised 2001 & 2008)*.
- 4.3.2 Spoil will be examined for the recovery of artefacts.
- 4.3.3 All excavation of exposed archaeological features will be carried out by hand, stratigraphically, and fully recorded by context to IfA guidelines.
- 4.3.4 If archaeological features are exposed, then *as a minimum*:
- i) small discrete features will be fully excavated;
  - ii) larger discrete features will be half-sectioned (50% excavated);
  - iii) long linear features will be sample excavated along their length - with investigative excavations distributed along the exposed length of any such feature and to investigate terminals, junctions and relationships with other features.
- 4.3.5 Should the above percentage excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined, full excavation of such features/deposits will be required. Additional excavation may also be required for the taking of palaeoenvironmental samples and recovery of artefacts.
- Any variation of the above or decisions regarding expansion will be considered in consultation with the Client and DCHET.
- 4.3.6 In exceptional circumstances where materials of a particularly compact nature are encountered, these may be removed with a toothed bucket, subject to agreement with archaeological staff on site.
- 4.3.7 Should archaeological or palaeoenvironmental remains be exposed, the site archaeologist will investigate, record and sample such deposits.
- 4.3.8 Human remains must be left *in-situ*, covered and protected. Removal will only take place under appropriate Ministry of Justice and environmental health regulations. Such removal will be in compliance with the relevant primary legislation.
- 4.3.9 Any finds identified as treasure or potential treasure, including precious metals, groups of coins or prehistoric metalwork, will be dealt with according to the Treasure Act 1996 Code of Practice (2<sup>nd</sup> Revision) (Dept for Culture Media and Sport). Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.
- 4.4 The Client will provide SWARCH with details of the location of existing services and of proposed groundworks within the site area, and of the proposed construction programme.
- 4.5 Health and Safety requirements will be observed at all times by any archaeological staff working on site, particularly when working with machinery. As a minimum: high-visibility jackets, safety helmets and protective footwear will be worn.
- 4.4.1 Appropriate PPE will be employed at all times.
- 4.4.2 The site archaeologist will undertake any site safety induction course provided by the Client.
- 4.4.3 If the depth of trenching exceeds 1.2 metres the trench sides will need to be shored or stepped to enable the archaeologist to examine and if appropriate record the section of the trench. The provision of such measures will be the responsibility of the client.
- 4.6 If significant or complex archaeological remains are uncovered, SWARCH will liaise with the client and DCHET to determine the most satisfactory way to proceed.
- 5.0 ARCHAEOLOGICAL RECORDING**
- 5.1 Should there be a requirement for further investigation following the desk-based and geophysical assessments, this will be based on IfA guidelines and those advised by DCHET and will consist of:
- 5.1.1 Standardised single context recording sheets, survey drawings in plan, section and profile at 1:10, 1:20, 1: 50 and 1:100 as appropriate and digital photography.
- 5.1.2 Survey and location of features.
- 5.1.3 Labelling and bagging of finds on site, post-1800 unstratified pottery may be discarded on site after a representative sample has been retained.
- Any variation of the above shall be agreed in consultation with the DCHET.
- 5.2 A photographic record of the excavation will be prepared. This will include photographs illustrating the principal features and finds discovered, in detail and in context. The photographic record will also include working shots to illustrate more generally the nature of the archaeological operation mounted. All photographs of archaeological detail will feature an appropriately-sized scale. The photographic record for the excavations will be made using digital techniques only.
- 5.3 The drawn and written record will be held on an appropriately archivable medium in accordance with the current conditions of deposit of the Museum of Barnstaple and North Devon (MBND).
- 5.4 Should suitable deposits be exposed (e.g. palaeoenvironmental), then scientific assessment/ analysis/dating techniques will be applied to further understand their nature/date and to establish appropriate sampling procedures. The project will be organised so that specialist consultants who might be required to conserve or report on other aspects of the investigations can be called upon. Should deposits be exposed that contain palaeoenvironmental or datable elements appropriate sampling and post-excavation analysis strategies will be initiated. On-site sampling and post-excavation assessment and analysis will be undertaken in accordance with English Heritage's guidance in *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation 2002* and if necessary with reference to and with advice from the English Heritage Regional Science Advisor.
- 6.0 REPORTING**
- 6.1 If a report is produced it will include the following elements:
- 6.1.1 A report number, date and the OASIS record number;
- 6.1.2 A copy of the DCHET brief and this WSI;
- 6.1.3 A summary of the project's background;
- 6.1.4 A description and illustration of the site location;
- 6.1.5 A methodology of the works undertaken, and an evaluation of that methodology;
- 6.1.6 Plans and reports of all documentary and other research undertaken;
- 6.1.7 A summary of the project's results;
- 6.1.8 An interpretation of the results in the appropriate context;
- 6.1.9 A summary of the contents of the project archive and its location (including summary catalogues of finds and samples);
- 6.1.10 A location plan and overall site plan including the location of areas subject to archaeological recording;

## DRAFT 01 Bradford, Dunslade Cross Turbines, Devon

- 6.1.11 Detailed plans of areas of the site in which archaeological features are recognised along with adequate OD spot height information. These will be at an appropriate scale to allow the nature of the features exposed to be shown and understood. Plans will show the site and features/deposits in relation to north. Archaeologically sterile areas will not be illustrated unless this can provide information on the development of the site stratigraphy or show palaeoenvironmental deposits that have influenced the site stratigraphy;
  - 6.1.12 Section drawings of deposits and features, with OD heights, at scales appropriate to the stratigraphic detail to be shown and must show the orientation of the drawing in relation to north/south/east/west. Archaeologically sterile areas will not be illustrated unless they can provide information on the development of the site stratigraphy or show palaeoenvironmental deposits that have influenced the site stratigraphy;
  - 6.1.13 A description of any remains and deposits identified including an interpretation of their character and significance;
  - 6.1.14 Assessment and analysis, as appropriate, of significant artefacts, environmental and scientific samples;
  - 6.1.15 Discussion of the archaeological deposits encountered and their context;
  - 6.1.16 A consideration of the evidence within its wider context;
  - 6.1.17 Site matrices where appropriate;
  - 6.1.18 Photographs showing the general site layout and exposed significant features and deposits referred to in the text. All photographs will contain appropriate scales, the size of which will be noted in the illustration's caption;
  - 6.1.19 A summary table and descriptive text showing the features, classes and numbers of artefacts recovered and soil profiles with interpretation;
  - 6.1.20 Specialist assessment or analysis reports where undertaken.
- 6.2 DCHET will receive the report within three months of completion of fieldwork, dependant on the provision of specialist reports, radiocarbon dating results etc, the production of which may exceed this period. If a substantial delay is anticipated then an interim report will be produced and a revised submission date for the final report agreed with the HET.
- 6.3 Should the development proceed in a staged manner, with each stage requiring archaeological fieldwork, and where a period of more than three months between each stage is anticipated or occurs, then SWARCH will prepare an interim illustrated summary report at the end of each stage. The report will set out the results of that phase of archaeological works, including the results of any specialist assessment or analysis undertaken. The report will be produced within three months of completion of each phase of fieldwork. At the completion of the final stage of the fieldwork an overarching report setting out the results of all stages of work will be prepared. HET would normally expect to receive the report within three months of completion of fieldwork - dependent upon the provision of specialist reports, radiocarbon dating results etc the production of which may exceed this period. If a substantial delay is anticipated then the HET will be informed of this, an interim report will be produced within three months of the completion of the final stage of fieldwork, and a revised date for the production of the full report agreed between the HET and SWARCH.
- 6.4 Where excavations reveal significant archaeological remains with the potential to yield important information about the site and its environment, then a formal Post-Excavation Report and revised Project Design may be required. This document may also fulfil the requirement for an interim report if a substantial publication delay is anticipated. This document will include the following elements:
- 6.4.1 A summary of the project and its background;
  - 6.4.2 A plan showing the location of the site, and plans showing the location of archaeological features and artefactual or palaeoenvironmental deposits;
  - 6.4.3 Research aims and objectives;
  - 6.4.4 A method statement, outlining how these aims and objectives will be achieved;
  - 6.4.5 Detail the tasks to be undertaken;
  - 6.4.6 The results of specialist assessment reports;
  - 6.4.7 The project team;
  - 6.4.8 The overall timetable, including monitoring points with HET;
  - 6.4.9 Detail of the journal in which the material will be published.
- HET will receive a draft of this report within three months of the completion of the fieldwork, specialist reports allowing.
- 6.5 Where the exposure of archaeological, artefactual or palaeoenvironmental remains is limited or of little significance reporting will follow on directly from the field work - see 6.3 above. Should particularly significant archaeological or palaeoenvironmental remains, finds and/or deposits be encountered, then these, because of their importance, are likely to merit wider publication in line with government planning guidance in paragraph 141 of the *National Planning Policy Framework* (2012). If such remains are encountered, the publication requirements – including any further analysis that may be necessary – will be confirmed with the HET.
- 6.6 Post Excavation Assessment, Analysis and Project Designs for further work:  
Where excavations reveal archaeological, artefactual or palaeoenvironmental deposits that have potential for yielding important information about the site or its environs, through specialist assessment and analysis, this assessment work will be undertaken and reported on in a separate formal Post-Excavation Assessment and Project Design. This document may also fulfil the role of an interim report if a substantial publication delay is expected.  
This document will be produced within three months of completion of the fieldwork - specialist input allowing - and agreed with the HET.
- 6.7 A copy of the report detailing the results of these investigations will be submitted to the OASIS (*Online AccesS to the Index of archaeological investigations*) database under reference southwes1-177019 within 3 months of completion of fieldwork.
- 7.0 MONITORING**
- 7.1.1 SWARCH shall agree monitoring arrangements with the HET and give two weeks' notice, unless a shorter period is agreed, of commencement of the fieldwork. Details will be agreed of any monitoring points where decisions on options within the programme are to be made.
  - 7.1.2 Monitoring will continue until the deposition of the site archive and finds, and the satisfactory completion of an OASIS report - see 8.0 below.
  - 7.1.3 SWARCH will notify the HET upon completion of the fieldwork stage of these works.
- 8.0 ARCHIVE**
- 8.1 On completion of the project an ordered and integrated site archive will be prepared in accordance with Section 9 of the Brief prepared by the Devon County Historic Environment Team and Management of Research Projects in the Historic Environment (MoRPHE) (<http://www.english-heritage.org.uk/publications/morphe-project-managers-guide/>). The digital element of the archive will be transferred to the Archaeology Data Service (ADS) for long-term curation. A reference number will be obtained from the Museum of Barnstaple and North Devon (MBND), with regard deposition of the material (finds) element of any archive created by these works.

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- 8.2 The archive will consist of two elements, the digital archive and the material archive.
- 8.2.1 The digital archive, including digital copies of all relevant written and drawn records and photographs, will be deposited with the Archaeology Data Service (ADS) and in compliance with their standards and requirements.
- 8.2.2 The material archive, comprising the retained artefacts/samples and the hardcopy paper record (if requested) will be cleaned (or otherwise treated), ordered, recorded, packed and boxed in accordance with the deposition standards of the MBND, and in a timely fashion.
- 8.2.3 If the MBND wishes to retain the hardcopy paper archive, it will be deposited with the rest of the material archive under the same accession number. Should the MBND decline the hardcopy paper archive, that archive will be offered to other appropriate museum bodies or the Devon Heritage Centre. If a suitable third party cannot be found, the hardcopy paper archive will be retained by SWARCH for 3 years and then destroyed.
- 8.3 SWARCH will, on behalf of the MBND, obtain a written agreement from the landowner to transfer title to all items in the material archive to the receiving museum.
- 8.4 If ownership of all or any of the finds is to remain with the landowner, provision and agreement must be made for the time-limited retention of the material and its full analysis and recording, by appropriate specialists.
- 8.5 SWARCH will notify the HET upon the completion of:
- i) deposition of the digital archive with the ADS, and
- ii) deposition of the material (finds) archive with the museum.
- 8.6 The condition placed upon this development will not be regarded as discharged until the report has been produced and submitted to the HET and the LPA, the site archive deposited and the OASIS form completed.
- 8.7 There will not be a requirement to prepare an archive for fieldwork projects that do not expose deposits of archaeological interest and yield little or no artefactual material. The results of these projects will be held by the HER in the form of the report submitted by SWARCH and the creation of an OASIS entry and uploading of the report. This process would be agreed with the HET and completed prior to the condition being discharged.
- 8.8 The archive will be completed within 3 months of the completion of the final report.
- 9.0 CONFLICT WITH OTHER CONDITIONS AND STATUTORY PROTECTED SPECIES**
- Even where groundworks are being undertaken under the direct control and supervision of SWARCH personnel, it remains the responsibility of the Client - in consultation with SWARCH, the applicant or agent - to ensure that the required archaeological works do not conflict with any other conditions that have been imposed upon the consent granted and should also consider any biodiversity issues as covered by the NERC Act 2006. In particular, such conflicts may arise where archaeological investigations/excavations have the potential to have an impact upon protected species and/or natural habitats e.g. SSSIs, National Nature Reserves, Special Protection Areas, Special Areas of Conservation, Ramsar sites, County Wildlife Sites etc.
- 10.0 PERSONNEL & MONITORING**
- 10.1 The project will be managed by Colin Humphreys; the archaeological monitoring will be undertaken by SWARCH personnel with appropriate expertise and experience. Where necessary, appropriate specialist advice will be sought (see list of consultant specialists in Appendix 1 below).

Natalie Boyd

South West Archaeology

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email:colin@swarch.net

### List of specialists

#### Building recording

Richard Parker 11 Toronto Road, St James, Exeter. EX4 6LE. Tel: 07763 248241

#### Conservation

Alison Hopper Bishop the Royal Albert Memorial Museum Conservation service [a.hopperbishop@exeter.gov.uk](mailto:a.hopperbishop@exeter.gov.uk)

Richard and Helena Jaeschke 2 Bydown Cottages, Swimbridge, Barnstaple EX32 0QD [mrshjaeschke@email.msn.com](mailto:mrshjaeschke@email.msn.com)  
Tel: 01271 830891

#### Curatorial

Thomas Cadbury Curator of Antiquities Royal Albert Memorial Museum, Bradninch Offices, Bradninch Place, Gandy Street, Exeter  
EX4 3LS Tel: 01392 665356

Alison Mills The Museum of Barnstaple and North Devon, The Square, Barnstaple, North Devon. EX32 8LNTel: 01271 346747

#### Bone

Human Professor Chris Knusel University of Exeter Tel: 01392 722491 [c.j.knusel@ex.ac.uk](mailto:c.j.knusel@ex.ac.uk)

Animal Wendy Howard Department of Archaeology, Laver Building, University of Exeter, North Park Road, Exeter EX4 4QE  
[w.j.howard@exeter.ac.uk](mailto:w.j.howard@exeter.ac.uk) Tel: 01392 269330

#### Lithics

Martin Tingle Higher Brownston, Brownston, Modbury, Devon, PL21 OSQ [martin@mtingle.freeseerve.co.uk](mailto:martin@mtingle.freeseerve.co.uk)

#### Palaeoenvironmental/Organic

Wood identification Dana Challinor Tel: 01869 810150 [dana.challinor@tiscali.co.uk](mailto:dana.challinor@tiscali.co.uk)

Plant macro-fossils Julie Jones [juliedjones@blueyonder.co.uk](mailto:juliedjones@blueyonder.co.uk)

Pollen analysis Ralph Fyfe Room 211, 8 Kirkby Place, Drake Circus, Plymouth, Devon, PL4 8AA

#### Pottery

Prehistoric Henrietta Quinnell 39D Polsloe Road, Exeter EX1 2DN Tel: 01392 433214

Imogen Wood 49 Rosebery Road, Exeter, EX4 6LT

Roman Alex Croom, Keeper of Archaeology Tyne & Wear Archives & Museums, Arbeia Roman Fort and Museum, Baring  
Street, South Shields, Tyne and Wear NE332BB Tel: (0191) 454 4093 [alex.croom@twmuseums.org.uk](mailto:alex.croom@twmuseums.org.uk)

Medieval John Allen, 22, Rivermead Road Exeter EX2 4RL Tel: 01392 256154 [john.p.allan@btinternet.com](mailto:john.p.allan@btinternet.com)

Post Medieval Graham Langman Exeter, EX1 2UF Tel: 01392 215900 email: [su1429@eclipse.co.uk](mailto:su1429@eclipse.co.uk)

APPENDIX 2: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

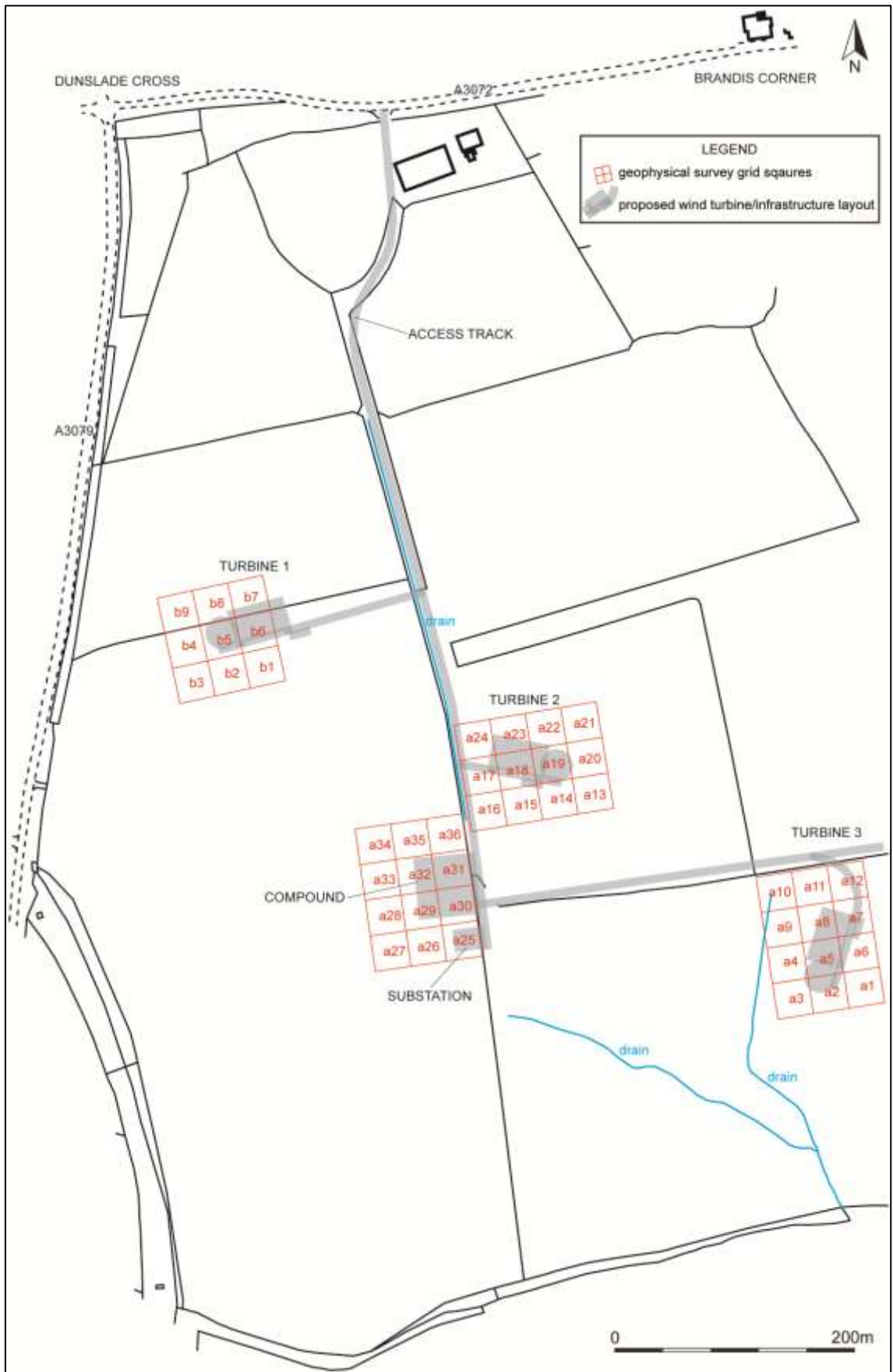


FIGURE 6: GEOPHYSICAL SURVEY GRID LOCATION, LAYOUT AND NUMBERING.

FIGURE 7: GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING.

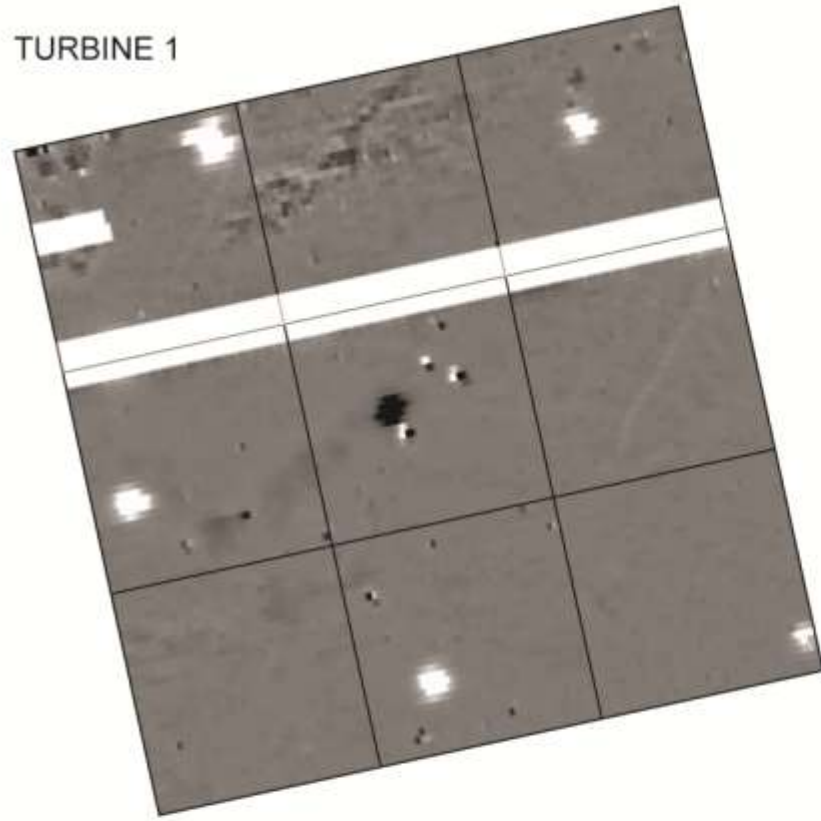


FIGURE 8: RED-BLUE-GREY(2) SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING.

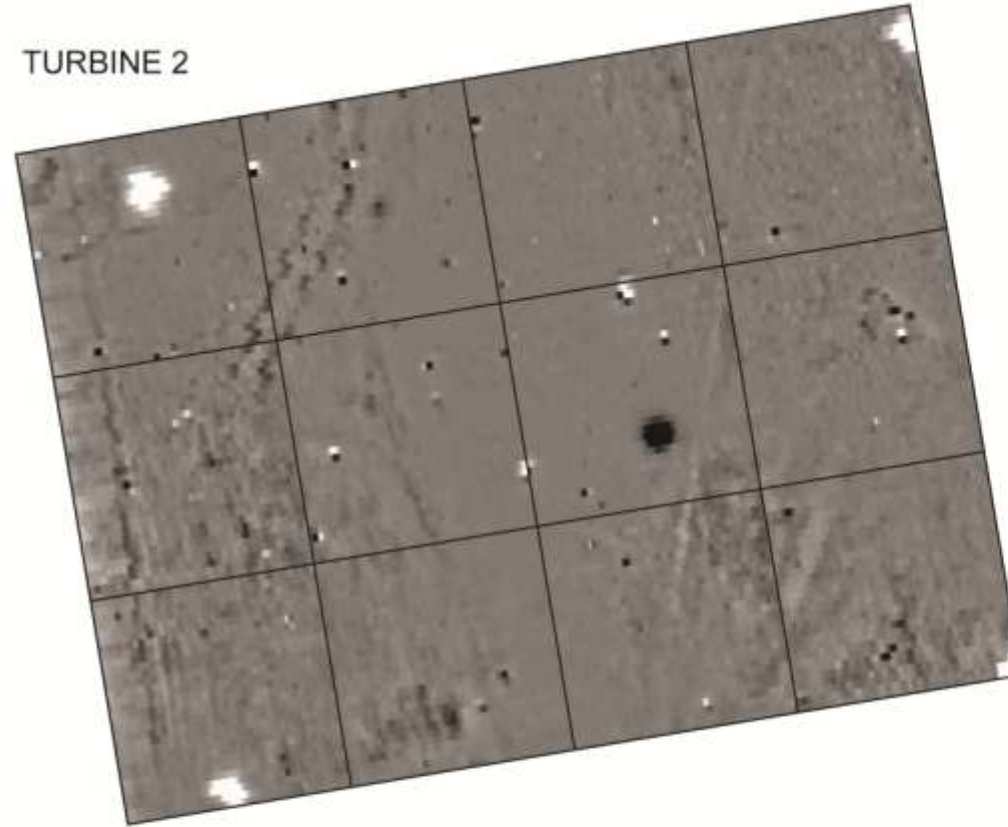


FIGURE 9: GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED, GRADIATED SHADING.

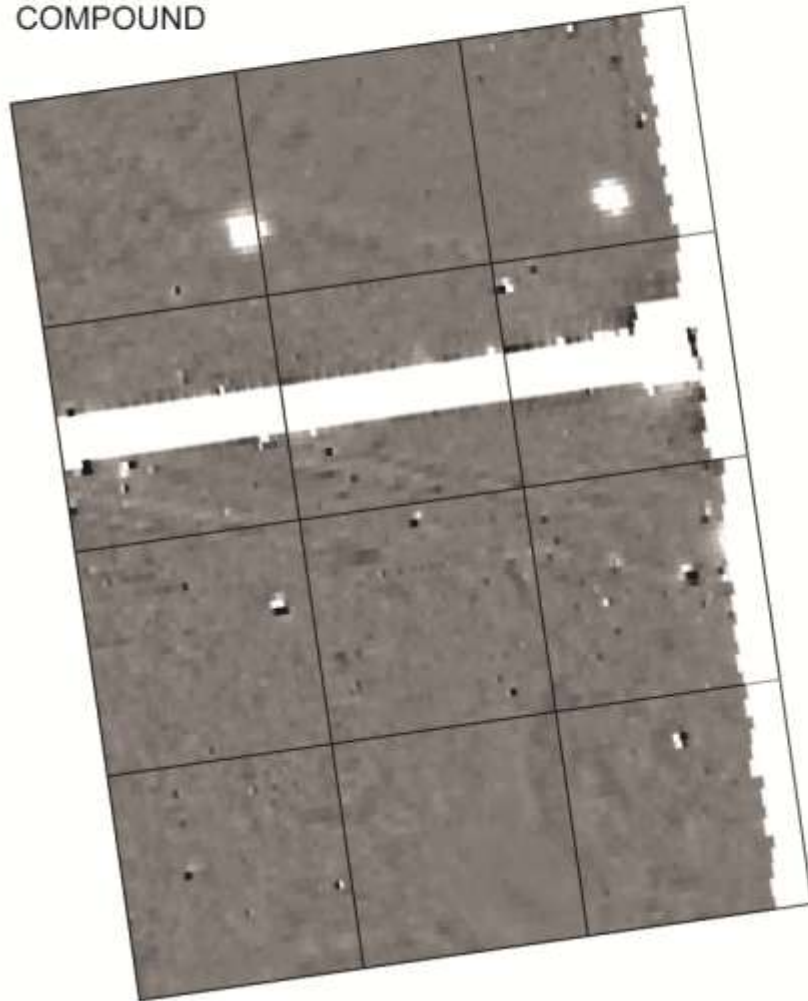
TURBINE 1



TURBINE 2



COMPOUND



TURBINE 3

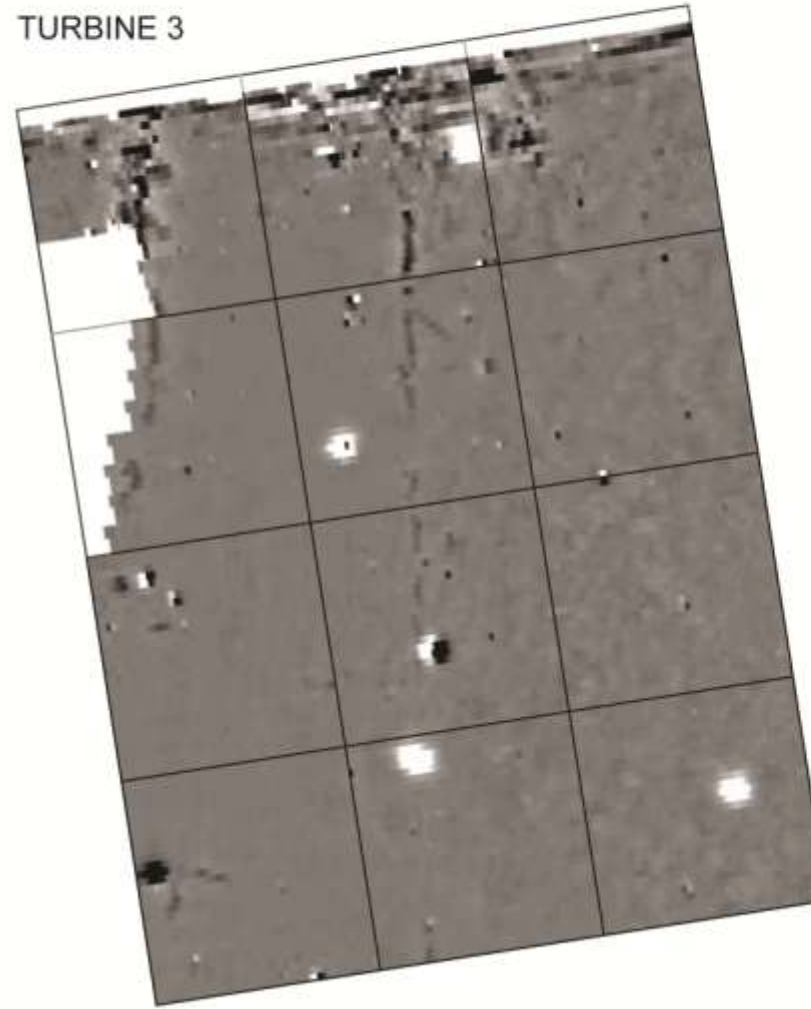


FIGURE 10: RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED, GRADIATED SHADING.

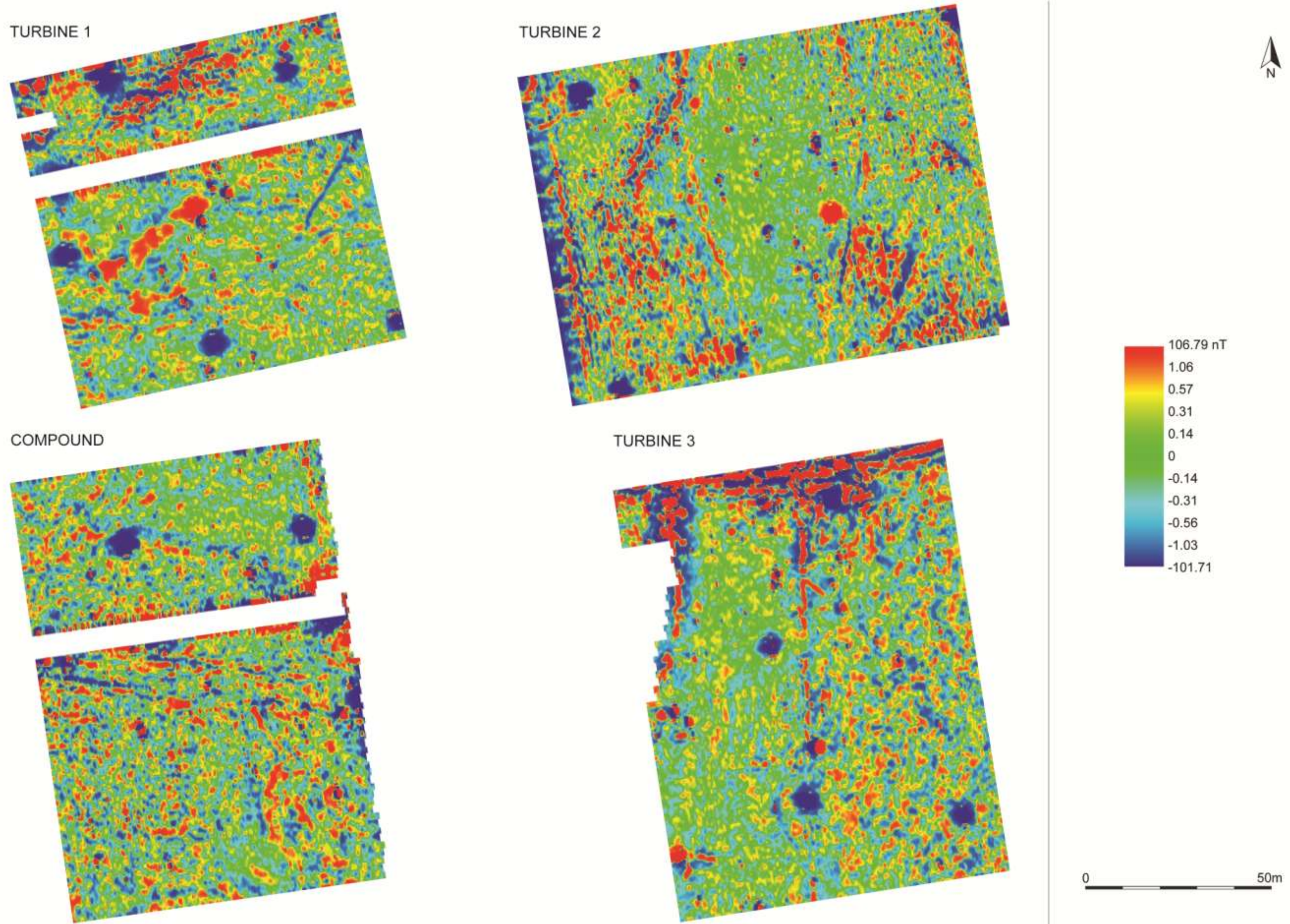




FIGURE 11: RED-BLUE-GREY(2) SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED, GRADIATED SHADING.

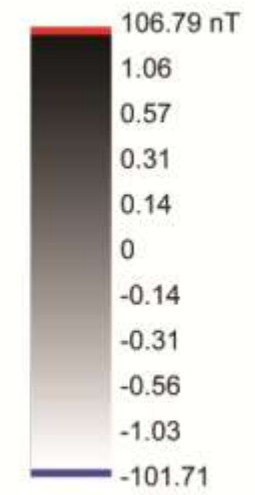
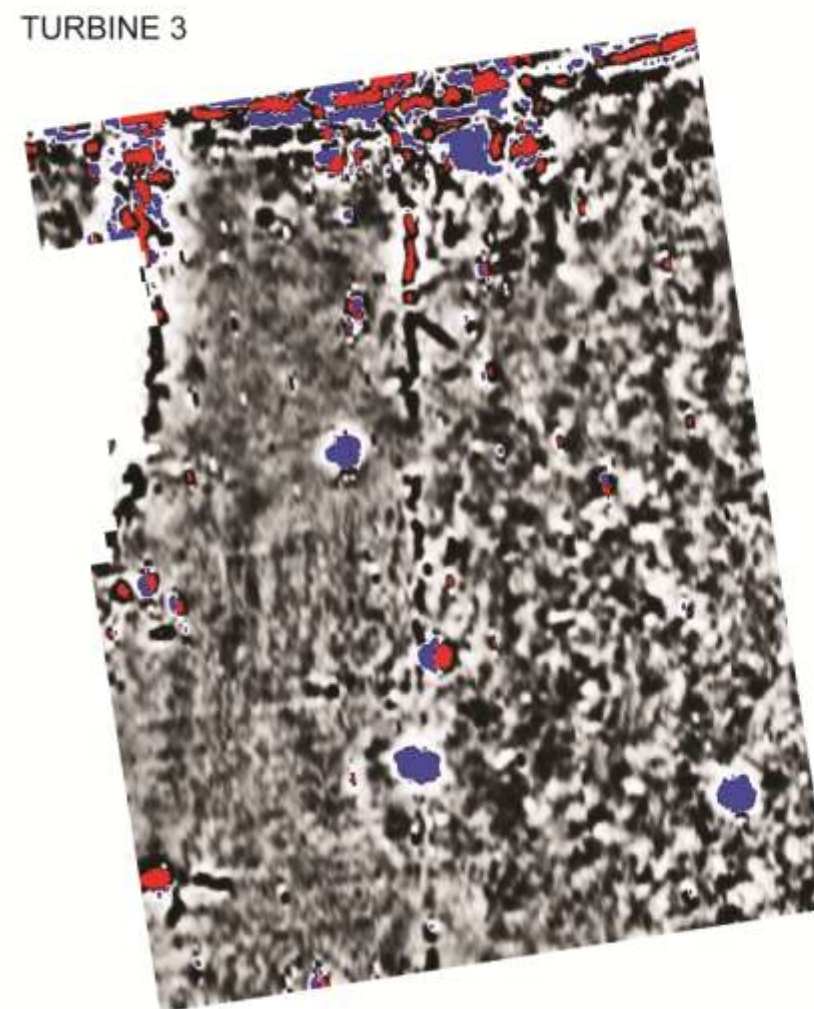
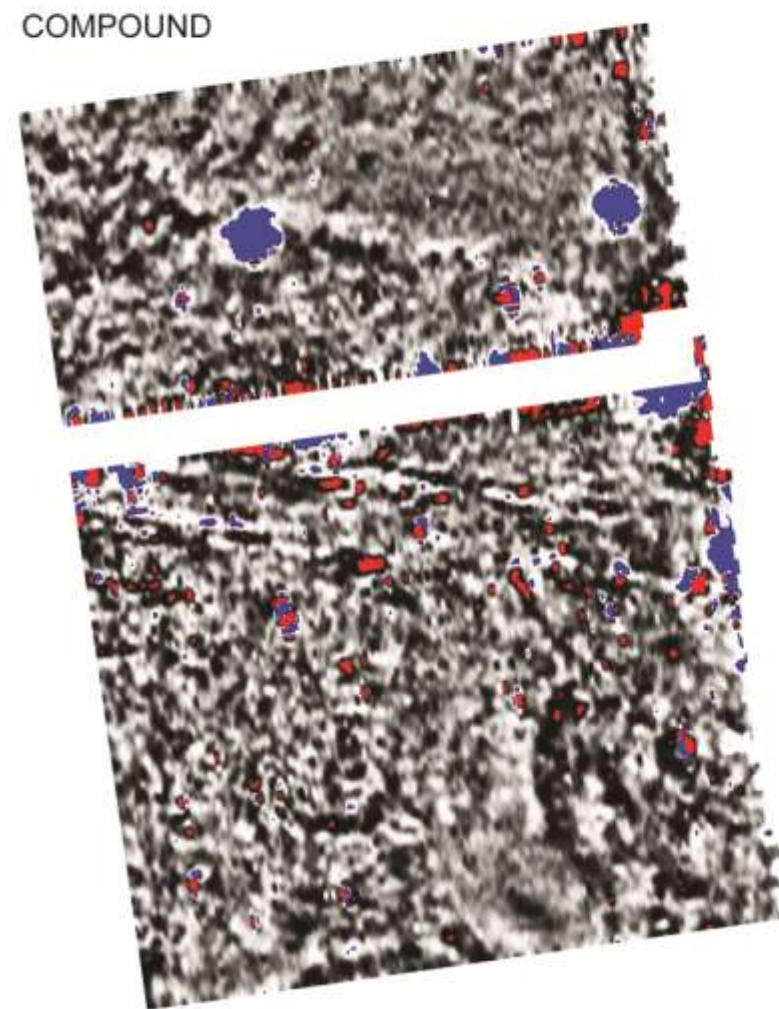
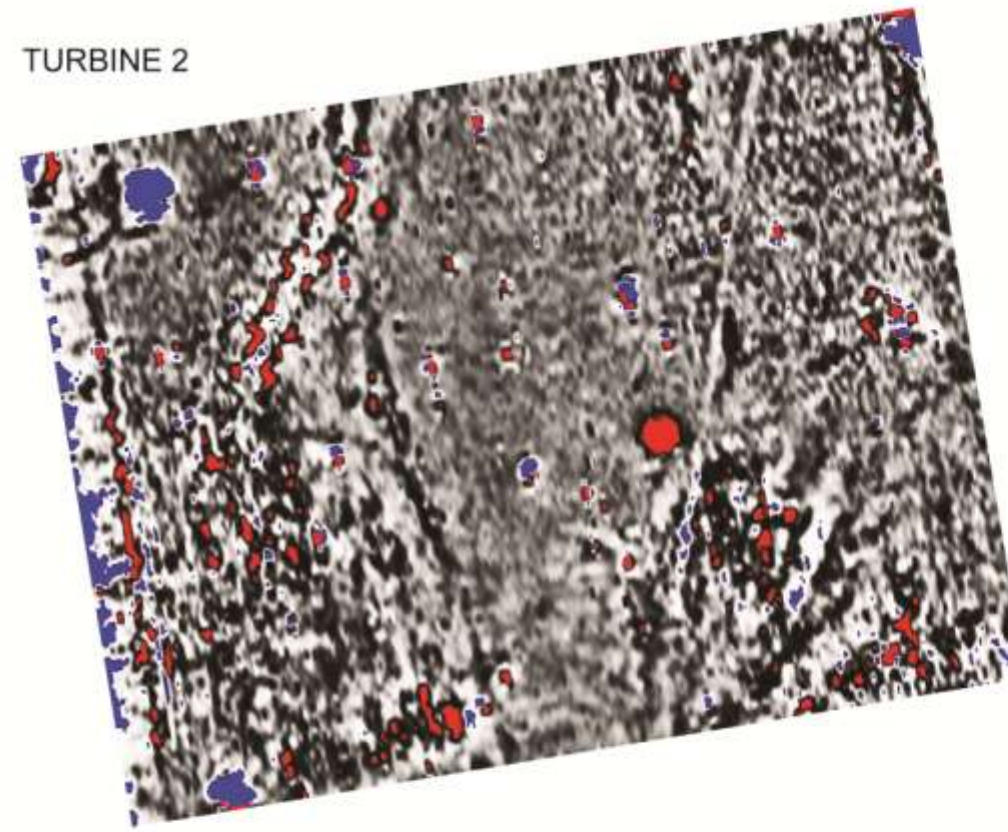
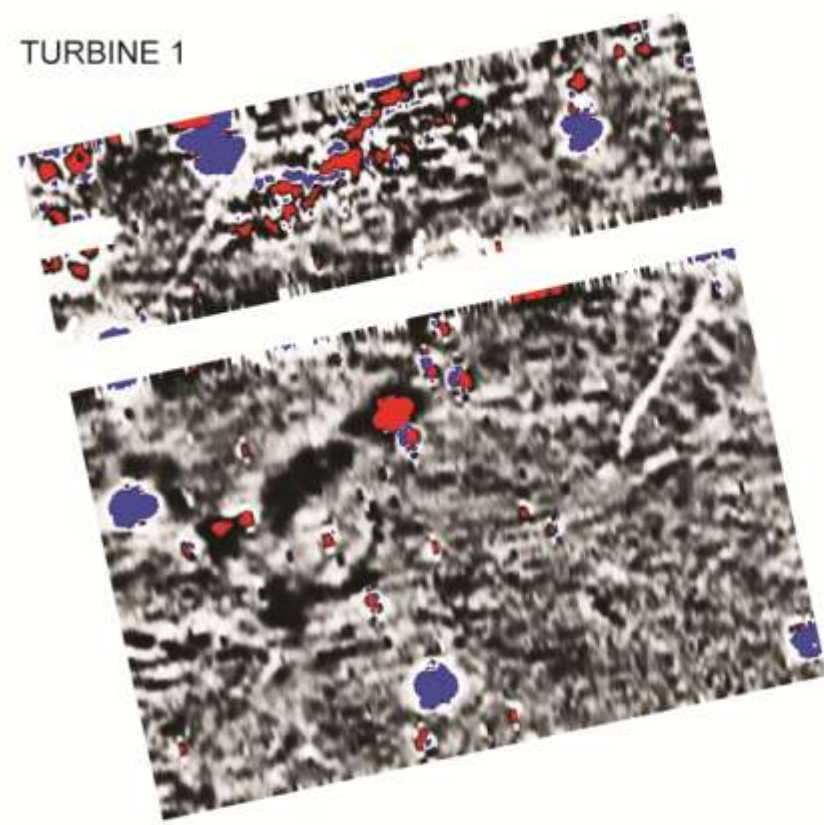
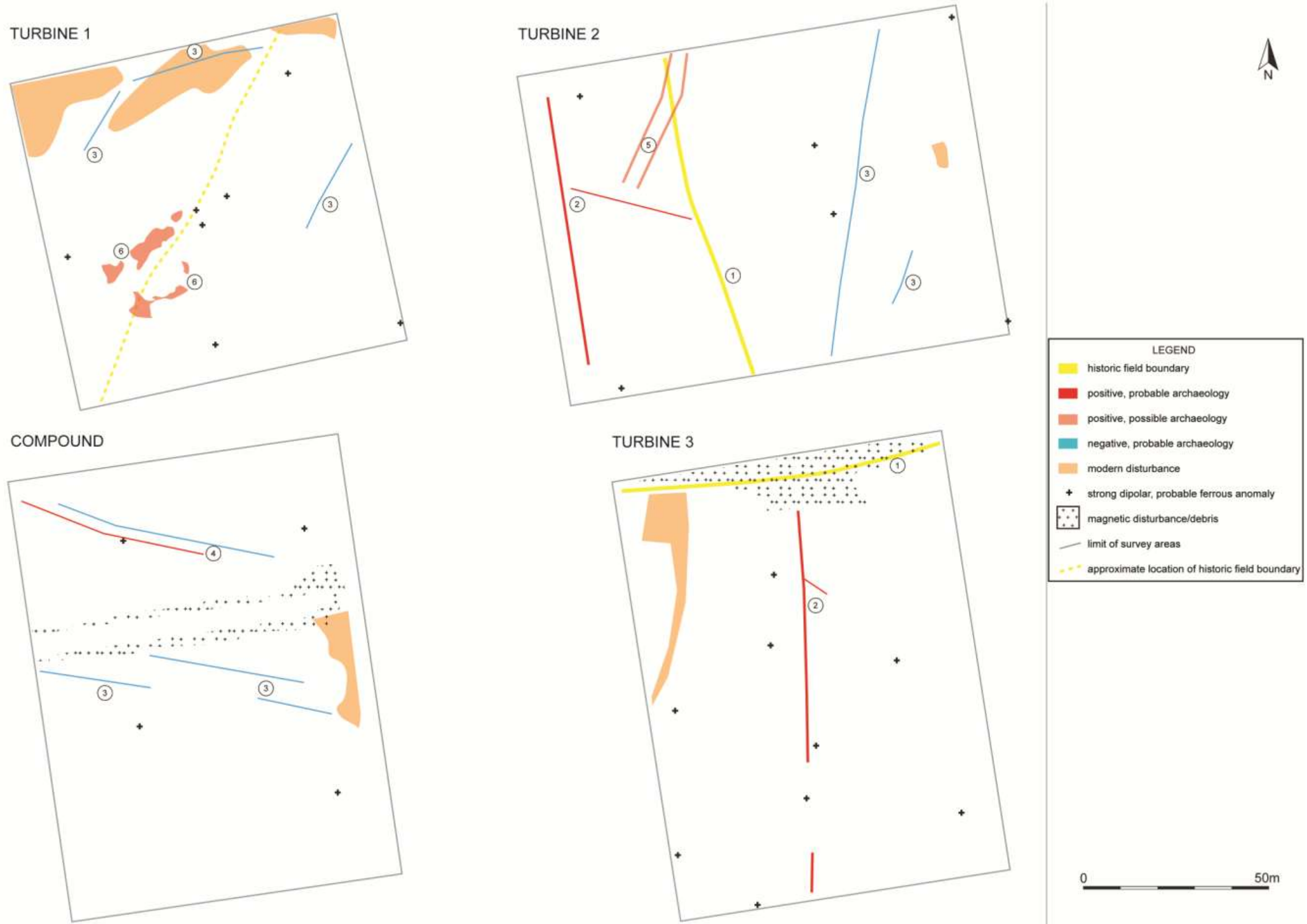
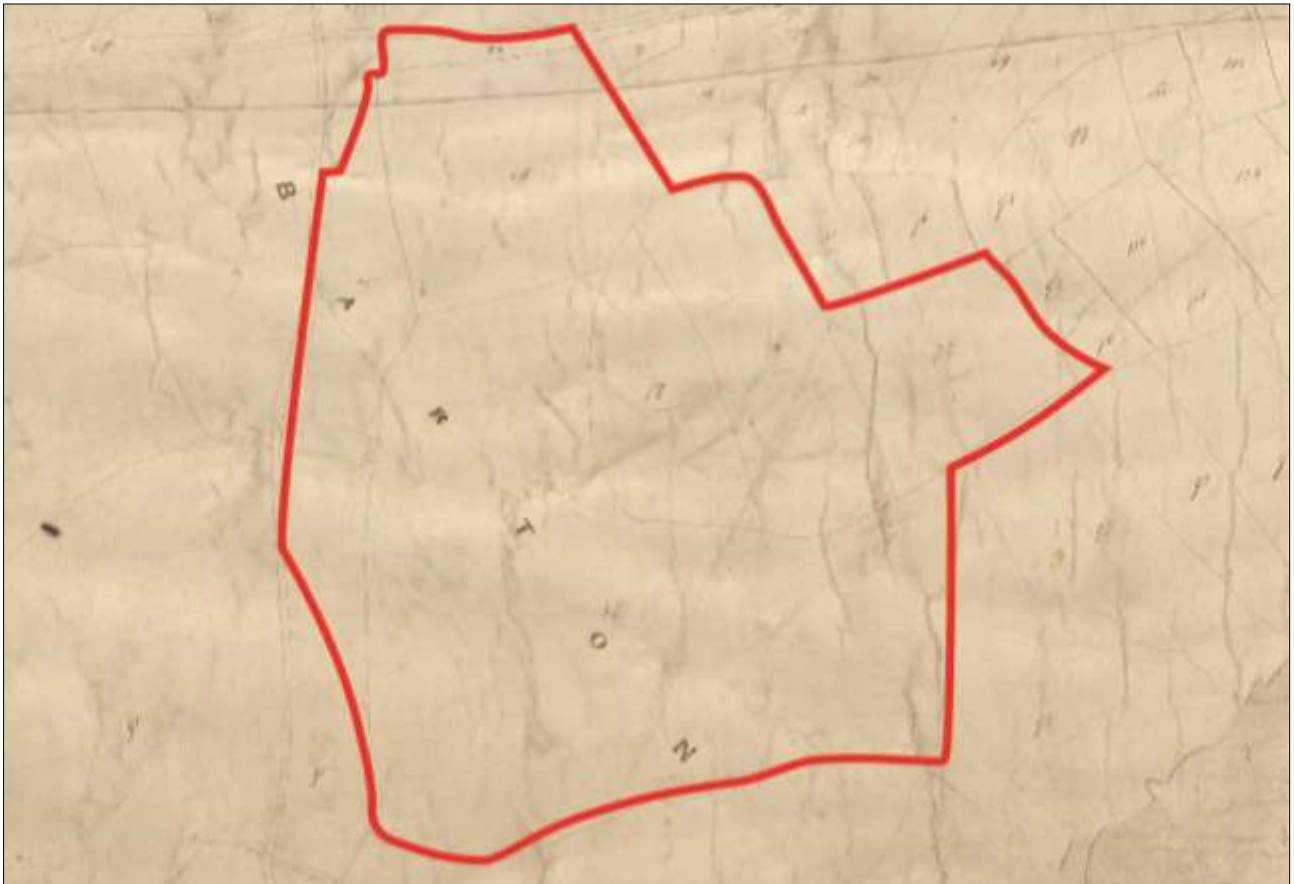


FIGURE 12: INTERPRETATION.



APPENDIX 3: HISTORIC MAPPING



Extract from the c.1840 Bradford tithe map; the edge of the development area is shown (DHC).



Extract from the 1<sup>st</sup> edition 1884/5 OS 25" maps, with interpretation of the geophysical survey results shown.



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