

# LAND AT BOCADDON BURY DOWN LANREATH CORNWALL

Results of a Geophysical Survey



South West Archaeology Ltd. report no. 171120



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## Land at Bocaddon, Bury Down, Lanreath, Cornwall Results of a Geophysical Survey

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By J. Bampton  
Report Version 01  
17<sup>th</sup> November 2017

Work undertaken by SWARCH for Adam Sharpe of Cornwall Archaeological Unit

### *Summary*

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*South West Archaeology Ltd. was commissioned to undertake a geophysical survey on land at Bocaddon, Bury Down, Lanreath, Cornwall. This work was undertaken in order to assess the potential impact of development of this site on any potential buried archaeological resource.*

*The geophysical survey identified two groups of anomalies totalling 3 possible archaeological or natural features. Group 1 was a linear feature that may equate to a ditch, lynchet or hollow-way. Group 2 represented two ovoid features that most probably equate to tree-throws. Ploughing was also identified to have taken place across the site.*

*Any proposed development of the site would disturb potential archaeological deposits; validation of the geophysical survey results and investigation of the potential archaeological resource through targeted archaeological evaluation trenching is recommended.*

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## ACKNOWLEDGEMENTS

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ADAM SHARPE OF CORNWALL ARCHAEOLOGICAL UNIT (THE CLIENT)

## PROJECT CREDITS

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GEOPHYSICAL SURVEY: JOSEPH BAMPTON  
REPORT: JOSEPH BAMPTON  
EDITING: FAYE BALMOND

## 1.0 INTRODUCTION

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<b>LOCATION:</b>	LAND AT BOCADDON, BURY DOWN
<b>PARISH:</b>	LANREATH
<b>COUNTY:</b>	CORNWALL
<b>NGR:</b>	SX 18281 59224
<b>SWARCH REF:</b>	LBB17

### 1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by Adam Sharpe of Cornwall Archaeological Unit (the Client) to undertake a geophysical survey on land at Bocaddon, Bury Down, Lanreath, Cornwall. This work was undertaken in order to assess the potential impact of development of this site on any potential buried archaeological resource.

### 1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

Bocaddon is a hamlet in the parish of Lanreath located c.1km north of Lanreath. The site is c.2.20km north of Lanreath, directly off of the B3359. It is on the west facing slope of a broad valley, overlooking the Trebant Water watercourse; and the western slope of Bury Down. The site slopes moderately down from east to west, at a height of approximately 160m-150m AOD.

The soils of this area are the well drained fine loamy and fine silty soils over rock of the Denbigh 1 Association (SSEW 1983); these overlie the sedimentary sandstone, siltstone and mudstone of the Staddon Formation (BGS 2017).

### 1.3 HISTORICAL & ARCHAEOLOGICAL BACKGROUND

Lanreath is a village and parish in the hundred and deanery of West (Lysons 1814). Its name is derived from the Cornish *lann* and a personal name meaning ‘church site of Reydhogh’ (Watts 2004) and was first recorded in Domesday in 1086 (MCO11217). Although very little archaeological work has been done in the immediate area the Historic Environment Record (HER) lists post-medieval quarries and medieval to post-medieval field systems identified as cropmarks in aerial photography to the west (MCO40225; MCO40226), south (MCO40239; MCO40248) and east (e.g. MCO40250). The HER also lists numerous medieval settlements in the area including: Foreland, c.1477 (MCO14455); Lankelly, 1356 (MCO15290); Brazemoor, 1279 (MCO16033); Penadlick, 1327 (MCO13582); Botelet, 1086 (MCO13555); Bocaddon, 1315 (MCO13417); and Trewen, 1324 (MCO18026). A possible prehistoric enclosure identified as a cropmark is located south of the site (MCO52902); and east of the site Bury Down has the Scheduled Ancient Monument of a Neolithic Causewayed Enclosure/Iron Age Hillfort (MCO6595/HER no.25125), which has been subject to geophysical survey and some minor archaeological works (ECO1274/HES Report no. CA33 1994; ECO1435/ER477; ECO2471/ER563). The Cornwall Historic Landscape Characterisation (HLC) lists the site as in ‘*Medieval farmland - The agricultural heartland, with farming settlements documented before the 17th century AD and whose field patterns are morphologically distinct from the generally straight-sided fields of later enclosure. Either medieval or prehistoric origins*’. However, the adjacent fields are listed as post-medieval and modern and the site, although cut by a road, appears un-enclosed on 19<sup>th</sup> century cartographic sources. The 19<sup>th</sup> century mapping (see Appendix 1) shows the site as a piece of open ground annexed by a road. The 1842 Lanreath tithe map and apportionment identify the site (plot 1093) as part of *Trewen*, which was owned by Reverend John Corna Millett and occupied by William Roberts. The field was named *Long Meadow* and under arable cultivation, although appeared annexed from the open ground of Bury Down (plot 884) by the road (later the B3359). The Lidar data for the site

(Appendix 2) appears to show a north south linear feature and a ridge running east west across the field.

#### 1.4 METHODOLOGY

Any desk-based assessment aspect of the report follows the guidance as outlined in: *Standard and Guidance for Archaeological Desk-Based Assessment* (CIfA 2014, Revised 2017) and *Understanding Place: historic area assessments in a planning and development context* (English Heritage 2012).

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 to inform a strategy to mitigate any threat to the archaeological resource.

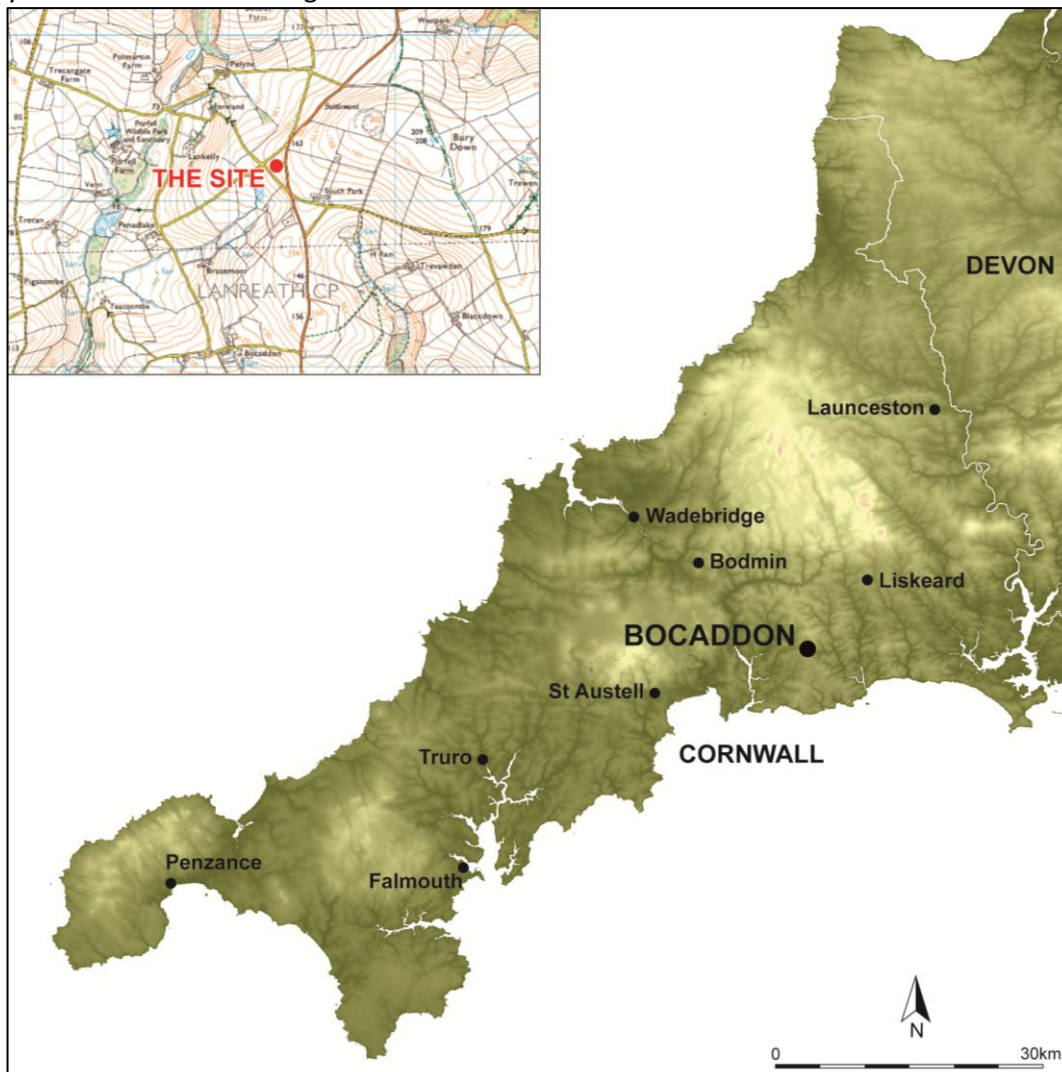


FIGURE 1: LOCATION MAP.

## 2.0 GRADIOMETER SURVEY

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### 2.1 INTRODUCTION

The purpose of this survey was to identify and record magnetic anomalies within the proposed site. While the 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. The survey was undertaken on the 16<sup>th</sup> November 2017 by J. Bampton in intermittently sunny and overcast conditions. The survey data was processed by J. Bampton. An area corresponding to the entire field, consisting of approximately 1.35ha was surveyed. The survey identified two groups of anomalies: a linear anomaly; and two discrete anomalies.

### 2.2 SITE INSPECTION

The site was a single triangular field bounded by the B3359 along its eastern boundary and small country roads along its north-west and south-west boundaries. Its eastern boundary was a Cornish hedgebank, up c.1.5m in height, which had been consolidated at its ends but eroded in places to leave an earth bank. The other boundaries were earth banks that had been lined on the inside with a post and wire fence. All of the boundaries were wooded and included predominantly oak trees with occasional hawthorn, brambles and possibly hazel and birch. Along the south-west boundary, the fence and trees had been removed and the access to the site was in this boundary. The field was under rough pasture, with tussocks of grass between 0.25m and 0.70m in length with occasional brambles. A slight ridge, possibly associated with a contour line and the natural topography of the site aligned approximately east-west across the field. Farm vehicle tracks were visible around and across the site. The ground had clearly been recently disturbed in the south and west corners of the site, having recently been used for test-pitting and/or dumping earth. A compliment of supporting photographs can be seen in Appendix 3.

### 2.3 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 -1 interval (all grids).

Details: 1.338ha surveyed; Max. 99.28nT, Min. -97.36nT; Standard Deviation 4nT, mean 0.15nT, median 0.00nT.

## 2.4 RESULTS

Table 1 with the accompanying Figures 2 and 3 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 2.

Anomaly group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Moderate positive with associated negative, probable	Linear	Hollow-way, ditch or lynchet	No boundaries shown in historic mapping. Visible as a slight earthwork on the ground. Possible ditch or lynchet. Possibly hollow-way associated with Bury Down hillfort to the east. Response of c.+5 to +16nT and <-6nT.
2	Weak-moderate positive, possible	Ovoid	Pits or Tree-throws	Indicative of discrete cut and in-filled features such as pits and tree-throws. Response of c. +6nT.

TABLE 1: INTERPRETATION OF GRADIOMETER SURVEY DATA.

Group 1 is a moderate strength positive anomaly (c.+5 to +16nT) aligned approximately east-west, with an associated negative response (<-6nT)flanking it to varying degrees. A ridge was visible on the ground as a slight earthwork, although obscured by long grass, in an approximately correlating location, at least on the east side of the site. This anomaly may be indicative of a ditch or lynchet or may be associated with hollow-ways identified by the National Mapping Programme (NMP) scheme in the field to the east (MCO40249/HER no. 57646), which have been associated with Bury Down hillfort (MCO6594/HER no.25125). However, these undated hollow-ways/trackways are most probably modern as they run from an existing set of structures to a gateway and then a historic structure within a 20<sup>th</sup> century field system. If anomaly Group 1 were a hollow-way it may be ancient. 19<sup>th</sup> century and later cartographic sources indicate no corresponding features to the anomaly.

Group 2 are weak-moderate positive (+6nT) ovoid anomalies located on the west side of the site. These are indicative of discrete cut and in-filled features such as pits or tree-throws; however, were it not for the relatively low strength responses of the site in general, these anomalies may be discounted as natural variation. Therefore it is likely that they are natural phenomenon, such as tree-throws.

Ploughing and perhaps drainage can be seen on the graphical images of the gradiometer survey to have occurred across the site, both east-west and predominantly north-south. Long term ploughing may have truncated any archaeological resource.

Dipolar responses are also visible across the site. These are typically strong responses indicative of ferrous debris; however, some of the responses are akin to thermoremnant debris, although their signature is not indicative of *in-situ* burning events.

## 2.5 DISCUSSION

The survey identified two groups of anomalies totalling 3 possible archaeological or natural features. Also identified were instances of ferrous objects or fragments across the site and areas of magnetic disturbance, such as near to fence lines and plough marks with possible associated field drains with a response strength of c.+/-4nT. The general strength of response of the underlying geology was c.+/-2nT.

The linear anomaly (Group 1) may have been visible on the ground as an earthwork/ridge and is indicative of a ditch, lynchet or hollow-way. Cartographic sources do not show any boundaries that



correspond to Group 1 and as the existing field systems surrounding the site are Medieval or later in date, it may be part of a prehistoric field system. The feature appears to correspond with the Lidar data showing an east west ridge or slope (Appendix 2). Its possible association with undated trackways (MCO40249) that have been tentatively associated with Bury Down hillfort (MCO6594) seems unlikely due to the probable modern date of the NMP trackways (explained in section 2.4).

The discrete ovoid anomalies of Group 2 may be indicative of pits or tree-throws; however, were it not for the relatively low strength responses of the site in general these anomalies may be discounted as natural variation. Therefore, it is likely that they are natural phenomenon, such as tree-throws. Ground disturbance on the site, particularly across the western half of the site, including agricultural works and material dumps may also account for this group and the sporadic spread of occasional debris as indicated by some dipolar responses.

Ploughing may have truncated any buried archaeological resource.



FIGURE 2: GREY SCALE SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.

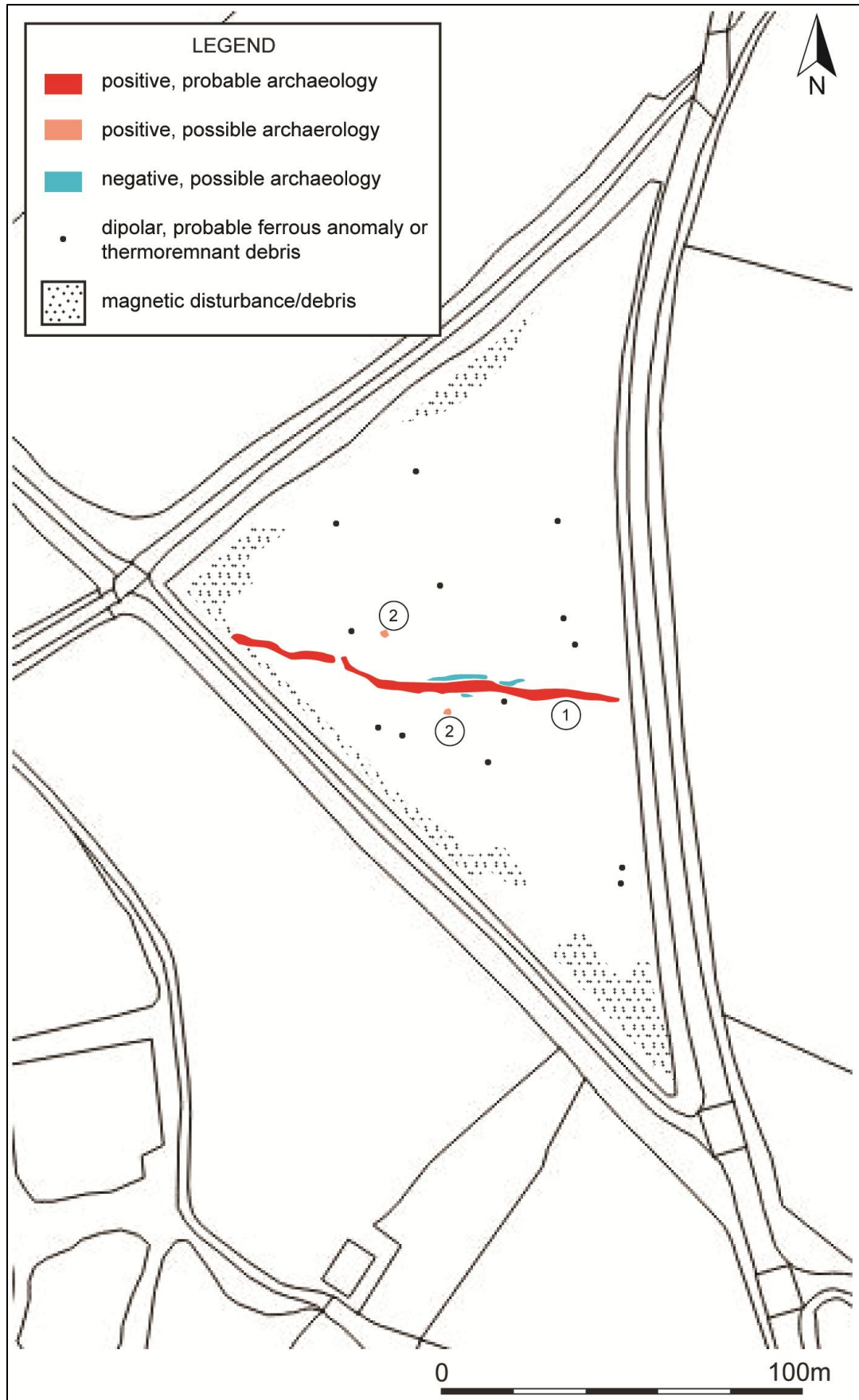


FIGURE 3: INTERPRETATION OF GRADIOMETER SURVEY DATA.

### 3.0 CONCLUSIONS AND RECOMMENDATIONS

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#### 3.1 CONCLUSIONS

The geophysical survey identified two groups of anomalies totalling 3 possible archaeological or natural features. Group 1 was a linear feature that may equate to a ditch, lynchet or hollow-way. Group 2 represented two ovoid features that most probably equate to tree-throws, but may be indicative of pits or some other natural variation. Ploughing will have truncated any potential archaeological resource.

Any proposed development of the site would however disturb potential archaeological deposits and validation of the geophysical survey results and investigation of the potential archaeological resource through targeted archaeological evaluation trenching is recommended.

## 4.0 Bibliography

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### *Published Sources:*

- CIfA** 2014 (Revised 2017): *Standard and Guidance for Historic Environment Desk-based Assessment*.  
**Chartered Institute for Archaeologists** 2014: *Standard and Guidance for Archaeological Geophysical Survey*.  
**English Heritage** 2008: *Geophysical Survey in Archaeological Field Evaluation*.  
**Lysons, D. and Lysons, S.** 1814: *Magna Britannia: Volume 3, Cornwall*. 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.  
**Soil Survey of England and Wales** 1983: *Legend for the 1:250,000 Soil Map of England and Wales*.  
**Watts, V.** 2004: *The Cambridge Dictionary of English Place-Names*, Cambridge

### *Websites:*

- BGS British Geological Survey** 2017: *Geology of Britain Viewer*.  
[http://maps.bgs.ac.uk/geologyviewer\\_google/googleviewer.html](http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html) [17.11.17]  
**Cornwall and Scilly Historic Environment Record (HER)** 2017: *Cornwall Council Interactive Map*  
<https://map.cornwall.gov.uk> [17.11.17]

### *Cornwall record Office:*

- Surveyors Draft map of the Liskeard area (1803)
- Lanreath Tithe Map (1842) and Apportionment (1842)
- Ordnance Survey 1<sup>st</sup> edition, surveyed 1881, published 1882

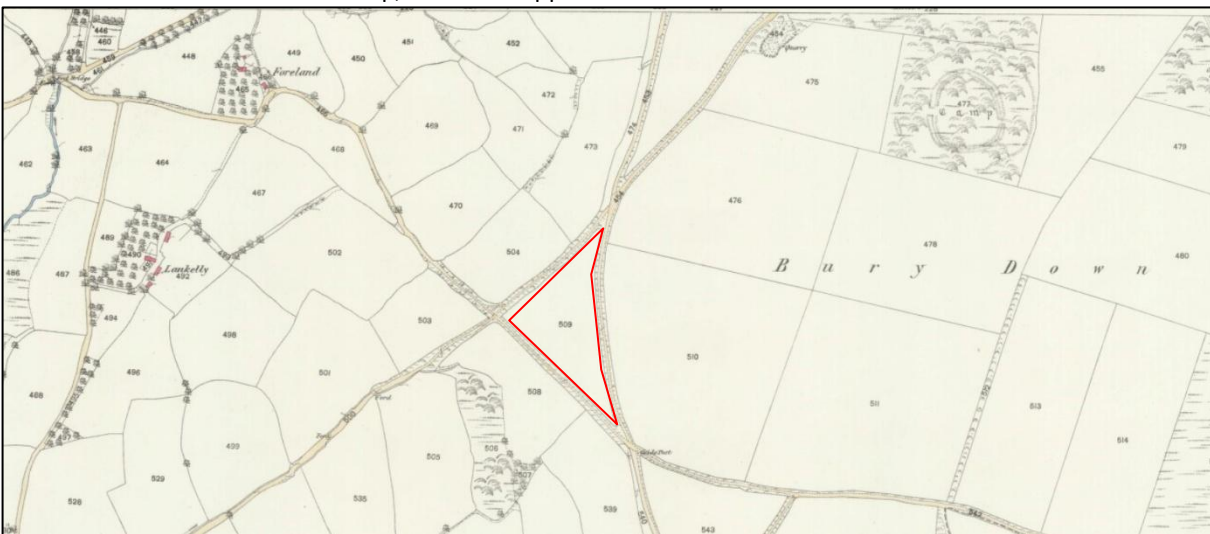
APPENDIX 1: SUPPORTING CARTOGRAPHIC SOURCES



Extract from the Surveyor's Draft Map of the Liskeard area, 1803. The approximate site is indicated



Extract from the Lanreath Tithe Map, 1842. The approximate site is indicated



Extract from the Ordnance Survey 1<sup>st</sup> edition map, 25 inch, surveyed 1881, published 1882. The approximate site is indicated

APPENDIX 2: LIDAR DATA

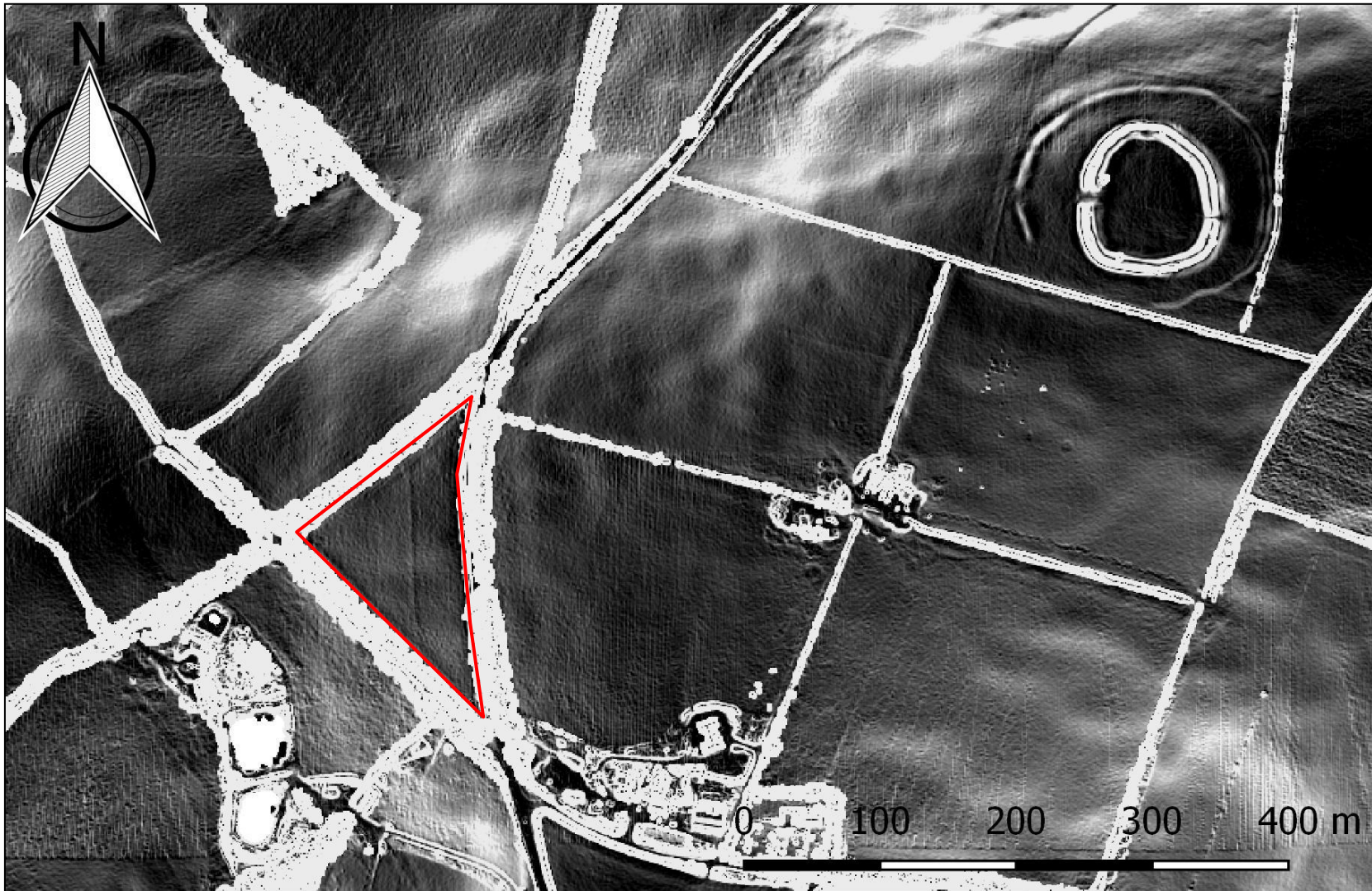
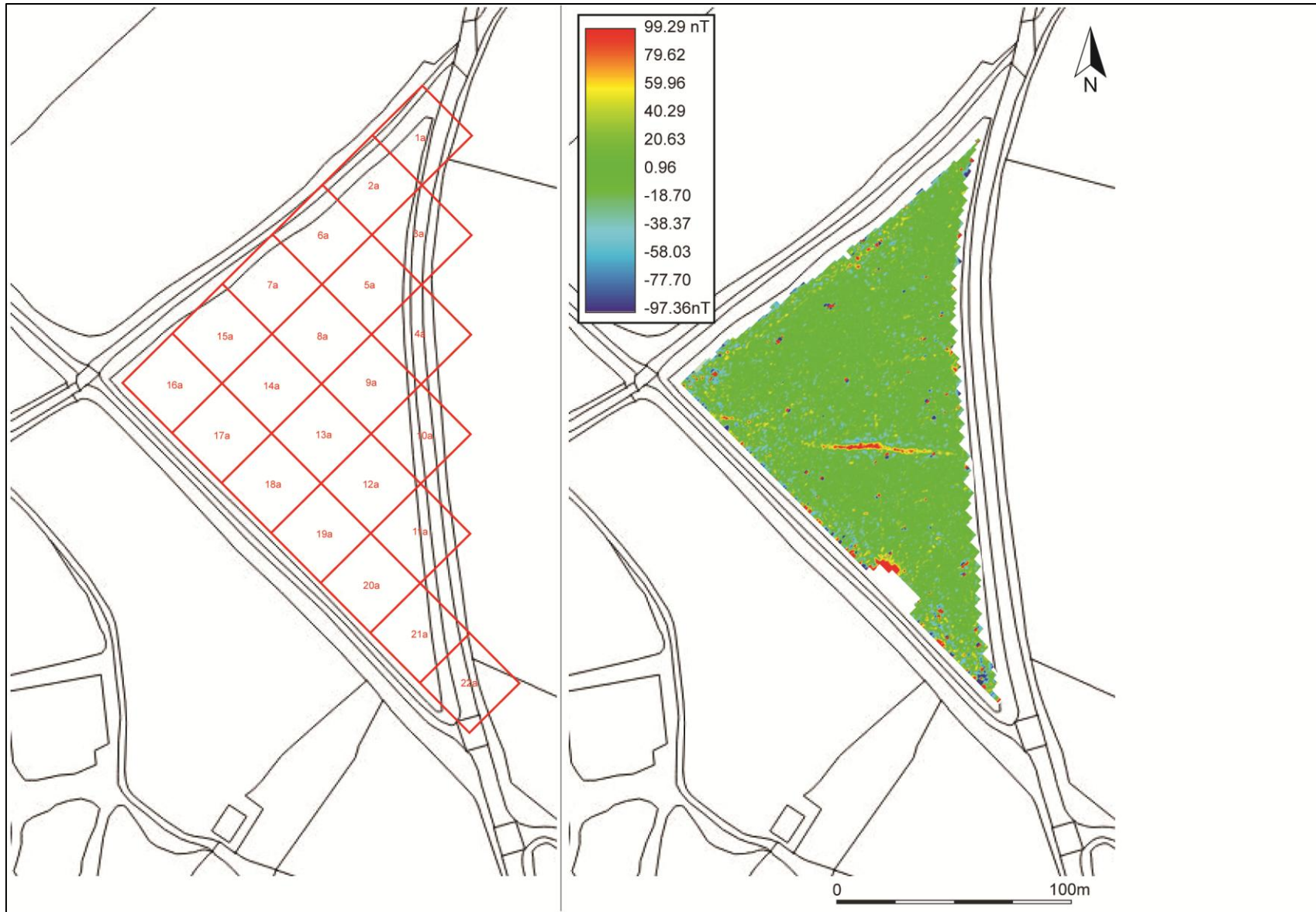


IMAGE DERIVED FROM 1M DSM LIDAR DATA, SHOWING THE SITE (INDICATED) (PROCESSED USING QGIS VER2.18.2, TERRAIN ANALYSIS/SLOPE, VERTICAL EXAGGERATION 3.0). DATA: CONTAINS FREELY AVAILABLE DATA SUPPLIED BY NATURAL ENVIRONMENT RESEARCH COUNCIL (CENTRE FOR ECOLOGY & HYDROLOGY; BRITISH ANTARCTIC SURVEY; BRITISH GEOLOGICAL SURVEY)." © NERC (CENTRE FOR ECOLOGY & HYDROLOGY; BRITISH ANTARCTIC SURVEY; BRITISH GEOLOGICAL SURVEY. THE SITE IS INDICATED.

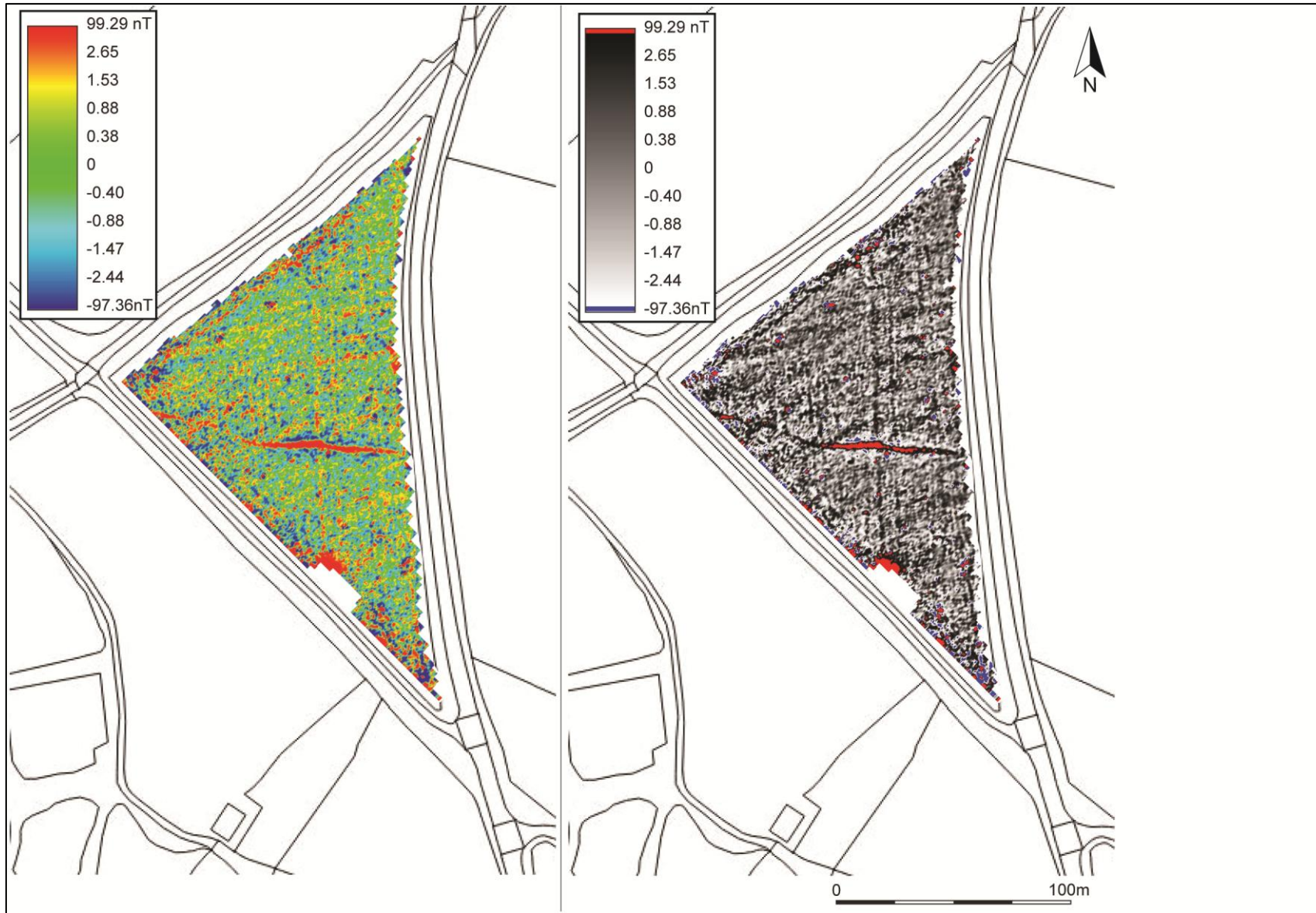
APPENDIX 3: ADDITIONAL GRAPHICAL IMAGES OF THE GEOPHYSICAL SURVEY



(LEFT) GEOPHYSICAL SURVEY GRID LOCATION; LAYOUT AND NUMBERING. (LEFT) RED-BLUE-GREY (1) SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING.



LAND AT BOCADDON, BURY DOWN, LANREATH, CORNWALL



(LEFT) RED-BLUE-GREY (1) SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING; BAND WEIGHT EQUALISED.

(RIGHT) RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING; BAND WEIGHT EQUALISED.

APPENDIX 4: SUPPORTING PHOTOGRAPHS



Site shot from the south corner; looking north-west (2m scale).



Site shot from the south corner; looking north-north-west (2m scale).



Site shot from the south corner; looking north (2m scale).



Site shot from the site entrance; looking north-east (no scale).



Site shot from the site entrance; looking north-west (no scale).



Site shot from the west corner; looking east-south-east (no scale).



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