

# LAND OFF TREGENNA FIELDS CAMBORNE CORNWALL

Results of a Geophysical Survey



South West Archaeology Ltd. report no. 190606



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## Land off Tregenna Fields, Camborne, Cornwall Results of a Geophysical Survey

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Work undertaken by SWARCH for Cornwall Archaeological Unit (CAU)

### SUMMARY

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*This report presents the results of a geophysical survey carried out by South West Archaeology Ltd. (SWARCH) on land off Tregenna Fields, Camborne, Cornwall. The site is located on the south-western edge of the town. Historic sources and the HER indicate that the site is located within a landscape of medieval and post-medieval mining and agriculture. The surrounding landscape shows signs of medieval and post-medieval subdivision.*

*The geophysical survey identified a series of anomalies across the site, including: linear bank and ditch features probably relating to historic (medieval? and post-medieval) field systems; discrete ovoid features associated with either pits or tree-throws; a spread of probable building demolition material; and a mixed anomaly which may represent mineral prospecting or recent ground disturbance.*

*The removed historic field boundaries crossing the site follow the alignments of boundaries lost since 1840 and it is likely that they correspond to these features; however, they are not fully congruent and it is possible that they reflect boundaries removed in the earlier 19<sup>th</sup> century. The remains of a 20<sup>th</sup> century concrete-block structure stand towards the south-west corner of the site, and it is likely that the spread of material surrounding it represents either the creation of the levelled platform on which it stands, or the spread of waste material associated with partial demolition. To the north-west corner, the large pits and an area of strong mixed responses are highly likely to be lodeback mineral prospecting pits associated with South Wheal Seton and Wheal Frances.*

*On the basis of the geophysical survey the archaeological potential of the site is low to moderate, containing only features likely associated with the post-medieval mining activity and post-medieval field boundaries. However, the site is only just beyond the boundary of the WHS, and might be accorded greater significance on that basis.*

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June 2019

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## ACKNOWLEDGEMENTS

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CORNWALL ARCHAEOLOGICAL UNIT (CAU)  
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## 1.0 INTRODUCTION

<b>LOCATION:</b>	TREGENNA FIELDS, CAMBORNE
<b>PARISH:</b>	CAMBORNE
<b>COUNTY:</b>	CORNWALL
<b>NGR:</b>	SW 64093 39563
<b>PLANNING NO.</b>	PA19/02687
<b>SWARCH REF.</b>	CTL19

## 1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned to undertake a geophysical survey on land off Tregenna Fields, Camborne, Cornwall, as part of a planning application for a proposed residential development. This work was undertaken on behalf of CAU and in accordance with best practice and Clfa guidelines.



FIGURE 1: SITE LOCATION.

## 1.2 METHODOLOGY

This work was undertaken in accordance with best practice and 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).

## 1.3 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The site comprises a single pasture field on the western edge of Camborne. The field is on a slight west-facing slope at an altitude of c.95m AOD. The soils of this area are the well-drained fine loamy soils of the Trusham Association (SSEW 1983); these overlie metabasaltic rocks within the Mylor Slate Formation (BGS 2019).

## 1.4 HISTORICAL & ARCHAEOLOGICAL BACKGROUND

Camborne, from the Cornish *cam* and *bron* meaning 'crooked hill' (Watts 2010), is a town in the parish of the same name, in the Deanery and east division of the Hundred of Penwith (Lysons 1814). The Cornwall and Scilly HLC lists the field as *medieval farmland*, part of *Anciently Enclosed Land* (AEL), perceived to have a high potential for Prehistoric and Romano-British remains. The site is located to the north-west of the Camborne and Redruth Mining District World Heritage Site (WHS) and Camborne Conservation Area (CA), and to the south of a Scheduled medieval wayside cross (SAM1003049). The site of the medieval manor of Crane, first recorded in 1260 (MCO14141, MCO11139) with associated ruins of a chapel (MCO9915), lies to the north of the site.



FIGURE 2: EXTRACT FROM THE 1840 CAMBORNE TITHE MAP (PRO); THE SITE IS INDICATED.

The tithe map of c.1840 shows the site as comprising three small fields (nos. 1271, 1272, and 1273) within an area of similar fields flanking the road. The tithe apportionment lists them all as *Lower Field*, part of the holding of *Crane*. The landowner was the Right Honourable Lady Bassett, leased by James Vivian and occupied by Thomas Matthews. All of the fields were arable. The subsequent Ordnance Survey maps (1878, 1908 and 1946) show that the internal field boundaries had been removed to create a single larger field, which by the early 20<sup>th</sup> century had been

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subdivided again to create the layout as it exists today. By the middle of the century a building had been erected towards the southern roadside boundary.



FIGURE 3: EXTRACT FROM THE 1888 1<sup>ST</sup> EDITION OS 6" MAP (SURVEYED 1877-8) (CORNWALL SHEETS LXIII.SW); THE SITE IS INDICATED.

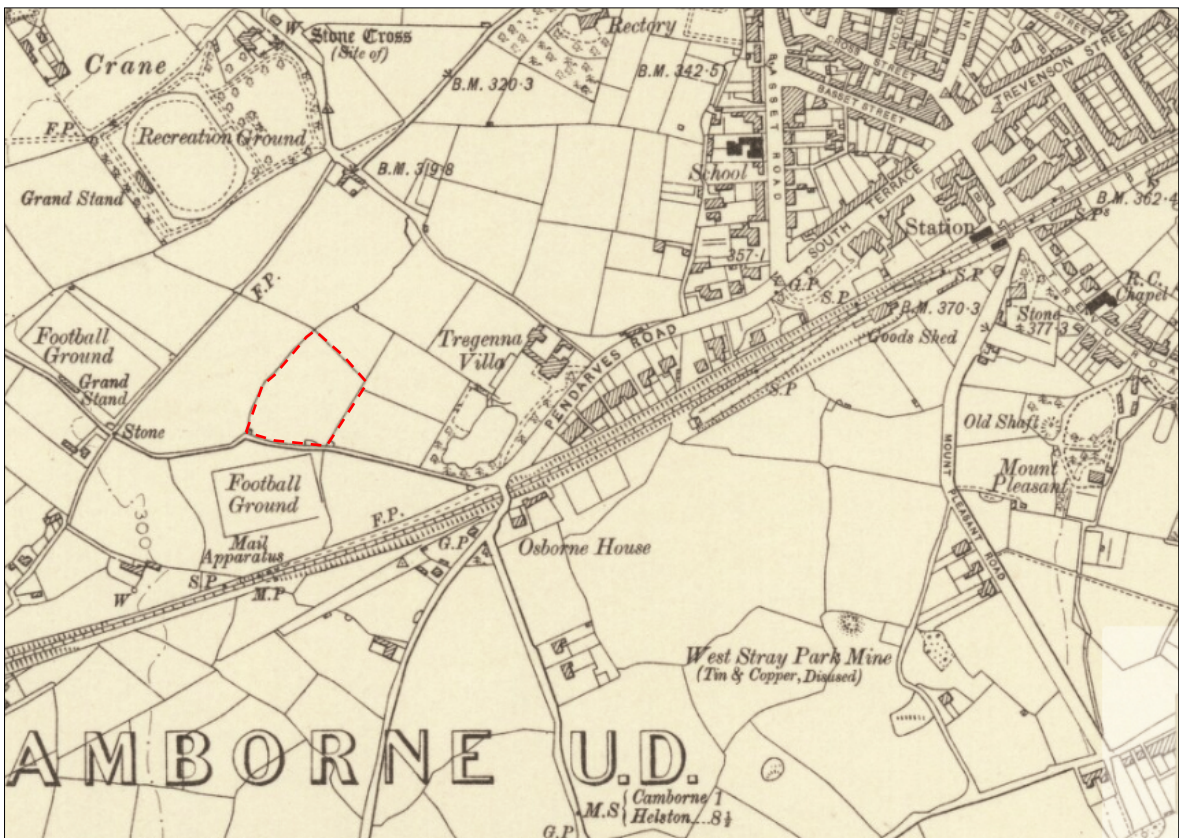


FIGURE 4: EXTRACT FROM THE 1908 2<sup>ND</sup> EDITION OS 6" MAP (REVISED 1906) (CORNWALL SHEET LXIII.SW); THE SITE IS INDICATED.



FIGURE 5: EXTRACT FROM THE 1946 OS 6" MAP (REVISED 1938) (CORNWALL SHEET LXIII.SW); THE SITE IS INDICATED.

## 2.0 GEOPHYSICAL SURVEY

### 2.1 INTRODUCTION

An area of c.0.93ha was the subject of a magnetometry (gradiometer) survey. The purpose of this survey was to identify and record magnetic anomalies within the proposed site. While identified anomalies may relate to archaeological deposits and structures, the dimensions of recorded anomalies may not correspond directly with any associated features. The following discussion attempts to clarify and characterise the identified anomalies. The survey was undertaken on the 3<sup>rd</sup> of June 2019 by P. Bonvoisin; the survey data was processed by P. Bonvoisin.

### 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 of particular grids.



Details: 0.927ha surveyed; Max. 113.25nT, Min. -136.76nT; Standard Deviation 23.67nT, mean 0.07nT, median 0.00nT.

### 2.3 SITE INSPECTION

The site comprises a single sub-rectangular field (F1) on the south-western edge of Camborne and adjacent to recent modern developments. The field was fairly flat, bounded to the south and west by Cornish hedgebanks, and to the north and east by modern post-and-wire fences. The site was bordered to the south by Boundervean Lane, to the west by pasture fields, and to the north and east by residential developments. The site was under pasture at the time of survey. The partially demolished remains of a rectangular overgrown concrete-block structure were present towards the southern boundary of the site. No surface finds were observed. Further site photographs can be found in Appendix 2.



FIGURE 6: VIEW ACROSS F1; VIEWED FROM THE NORTH-WEST.



FIGURE 7: DETAIL OF THE CONCRETE-BLOCK STRUCTURE; VIEWED FROM THE SOUTH-WEST.

## 2.4 RESULTS

Table 1, with the accompanying Figures 8 and 9, 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 1.

TABLE 1: INTERPRETATION OF GRADIOMETER SURVEY DATA.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Moderate positive with associated negative, probable	Linear	Historic field boundaries	Indicative of Cornish hedgebanks (a bank flanked by linear ditches). Boundaries are not depicted on historic mapping, but are approximately aligned with elements of the mapped field system and are likely associated. Responses of c.-23nT to +25nT.
2	Weak positive with associated negative, possible	Linear	Historic field boundaries	Appear similar to Group 1 anomalies but with weaker responses. Most likely associated as part of the same field system. Responses of between c.-5nT and +11nT.
3	Weak positive, possible	Linear	Historic field boundaries	Indicative of a ditch. May reflect a former boundary in this location. Boundaries are not depicted on historic mapping, but are aligned with elements of the existing field system and are likely associated. Responses of between c.+4nT and +8nT.
4	Strong positive, probable	Amorphous	Demolition rubble	An amorphous spread of largely negative responses indicative of stone rubble. Position indicates demolition rubble. Responses of c.-28nT to -99nT.
5	Moderate/strong positive, probable	Ovoid	Possible pit	Indicative of discrete anomalies such as pits/tree-throws. Responses of c.+11nT to +49nT.
6	Weak/moderate positive with associated negative, possible	Ovoid	Possible pit	Indicative of discrete anomalies such as pits/tree-throws. The negative aspect may indicate a spoil mound. Responses of c.-5nT to -31nT.
7	Strong positive and negative	Amorphous	Possible mining features/waste	The strong positive and negative responses are indicative of heavily disturbed ground, the approximate linearity between positive and negative responses possibly indicating a lode or mining waste. Responses of c.-93nT to +109nT.
8	Weak positive and negative	Linear	Agricultural activity	Linear striations covering the entire site with regularity. Weak mixed positive and negative responses suggest shallow ploughing. Responses between -8nT and +7nT.
9	Moderate bipolar (mixed response)	Ovoid	Modern disturbance / ferrous anomaly	Indicative of a large modern metallic object. Responses of between -22nT to +20nT.

## 2.5 DISCUSSION

The survey identified nine groups of anomalies. These were predominantly linear anomalies likely to be associated with historic boundaries. The general geological variation across the site was between +/-5nT. The identified anomaly groups include: probable historic boundaries not depicted/poorly located on historic maps (removed pre-1840); demolition rubble associated with a standing structure; and mixed deposits which may be associated with mining activity across the site (including possible pits). A series of linear anomalies, very close to the natural responses, also cover the site and reflect various episodes of ploughing and agricultural practices.

Anomaly Group 1 consists of a series of moderate (+6nT to +23nT) positive linear responses with associated weak-moderate (-3nT to -23nT) negative linear responses towards the eastern boundary of the site, and are suggestive of banks with flanking ditches. These anomalies align

with various elements of the existing fieldsystem, and may have formed elements of the same or an earlier phase of the same fieldsystem.

Anomaly Group 2 consists of a series of weak (+3nT to +11nT) positive linear responses with associated weak (-4nT to -5nT) towards the centre of the site, and are suggestive of banks with flanking ditches. As with the Group 1 anomalies, these are in proximity and alignment with the existing field boundaries, but appear as much weaker and therefore possibly shallower features. Their approximate position suggests that they may reflect mapped historic boundaries, though they may represent earlier phases of the same fieldsystem.

Anomaly Group 3 consists of a weak (+4nT to +8nT) positive linear response towards the southern end of the site, and is suggestive of a ditches. This anomaly aligns with various elements of the existing field-system, and may have formed elements of the same or an earlier phase of the same field-system, its alignment suggesting an association with the structure situated in the south-west corner of the site.

Anomaly Group 4 consists of an amorphous area of strong (-28nT to -99nT) negative responses indicative of a raised platform. It surrounds the remains of a structure and likely represents either a raised/levelled area created to form a platform for the building, or more likely a spread of demolition rubble associated with its (partial) destruction.

Anomaly Group 5 consists of a strong (+7nT to +49nT) positive ovoid response indicative of cut and filled discrete features such as pits or tree-throws. The overall strength of the responses indicates that it is more likely a pit than a natural feature.

Anomaly Group 6 consists of a weak (+7nT to +10nT) positive ovoid response with an associated weak to moderate (-5nT to -31nT) negative response and is indicative of cut and filled discrete features such as pits or tree-throws, the negative element indicating possible banking of material.

Anomaly Group 7 consists of an amorphous area of strong (+18nT to +109nT) positive and negative (-11nT to -93nT) responses. Whilst covering an amorphous area, the positive responses are indicative of cut linear features, the negative implying banked material; and the responses may indicate possible mining activity, chasing mineral lodes, or a spread of waste material, either associated with nearby mines or the adjacent residential developments.

The background noise across the site shows a series of weak-moderate (-4nT to +10.93nT) mixed positive and negative linear responses (Group 8), orientated broadly north-east to south-west across the site. They are narrowly- and consistently spaced and likely to represent the most recent episode of ploughing across the site.

Modern disturbance, Di-Polar anomalies (including Group 9) and magnetic disturbance are also located across the site, particularly around the site boundaries. This is likely due to modern or metallic debris and metallic components along the boundaries of the field. A series of strong negative response are also spread across the site, and these are likely to represent large stones buried beneath the soil.

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FIGURE 8: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING (SITE BOUNDARY OUTLINED IN BLUE).

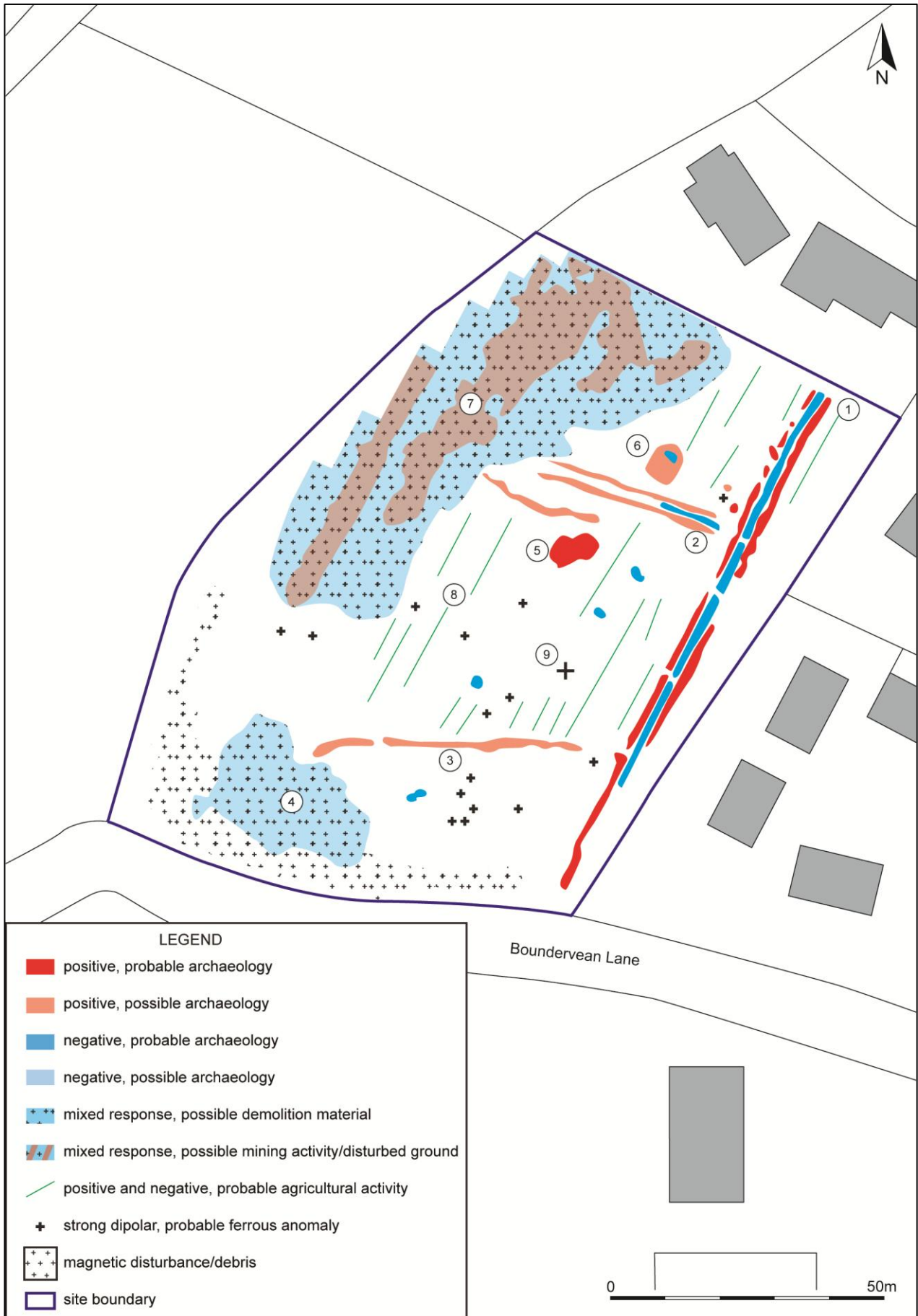


FIGURE 9: INTERPRETATION OF GRADIOMETER SURVEY DATA (SITE BOUNDARY OUTLINED IN BLUE).

### 3.0 CONCLUSION

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The site is located on the south-western edge of the town of Camborne. Historic sources and the HER indicate that the site is located within a landscape of medieval and post-medieval agriculture and mining. The surrounding landscape shows signs of medieval and post-medieval subdivision.

The geophysical survey identified a series of anomalies across the site, including: linear bank and ditch features probably relating to historic (medieval? and post-medieval) fieldsystems; discrete ovoid features associated with either pits or tree-throws; a spread of probable building demolition material; and a mixed anomaly which may represent mineral prospecting or recent ground disturbance. Ploughing evident in the survey results will have truncated any buried potential archaeological resource to some extent.

The removed historic field boundaries (anomaly Groups 1-3) crossing the site follow the alignments of boundaries lost since 1840 and it is likely that they correspond to these features; however, they are not fully congruent and it is possible that they reflect boundaries removed in the earlier 19<sup>th</sup> century. The remains of a 20<sup>th</sup> century concrete-block structure stand towards the south-west corner of the site, and it is likely that the spread of material (Group 4) surrounding it represents either the creation of the levelled platform on which it stands, or the spread of waste material associated with partial demolition. To the north-west corner, the large pits (Groups 5, and 6) and an area of strong mixed responses (Group 7) are highly likely to be lodeback mineral prospecting pits associated with South Wheal Seton and Wheal Frances.

On the basis of the geophysical survey the archaeological potential of the site is low to moderate, containing only features likely associated with the post-medieval mining activity and post-medieval field boundaries. However, the site is only just beyond the boundary of the WHS, and might be accorded greater significance on that basis.

### 4.0 BIBLIOGRAPHY & REFERENCES

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*Websites:*

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

APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

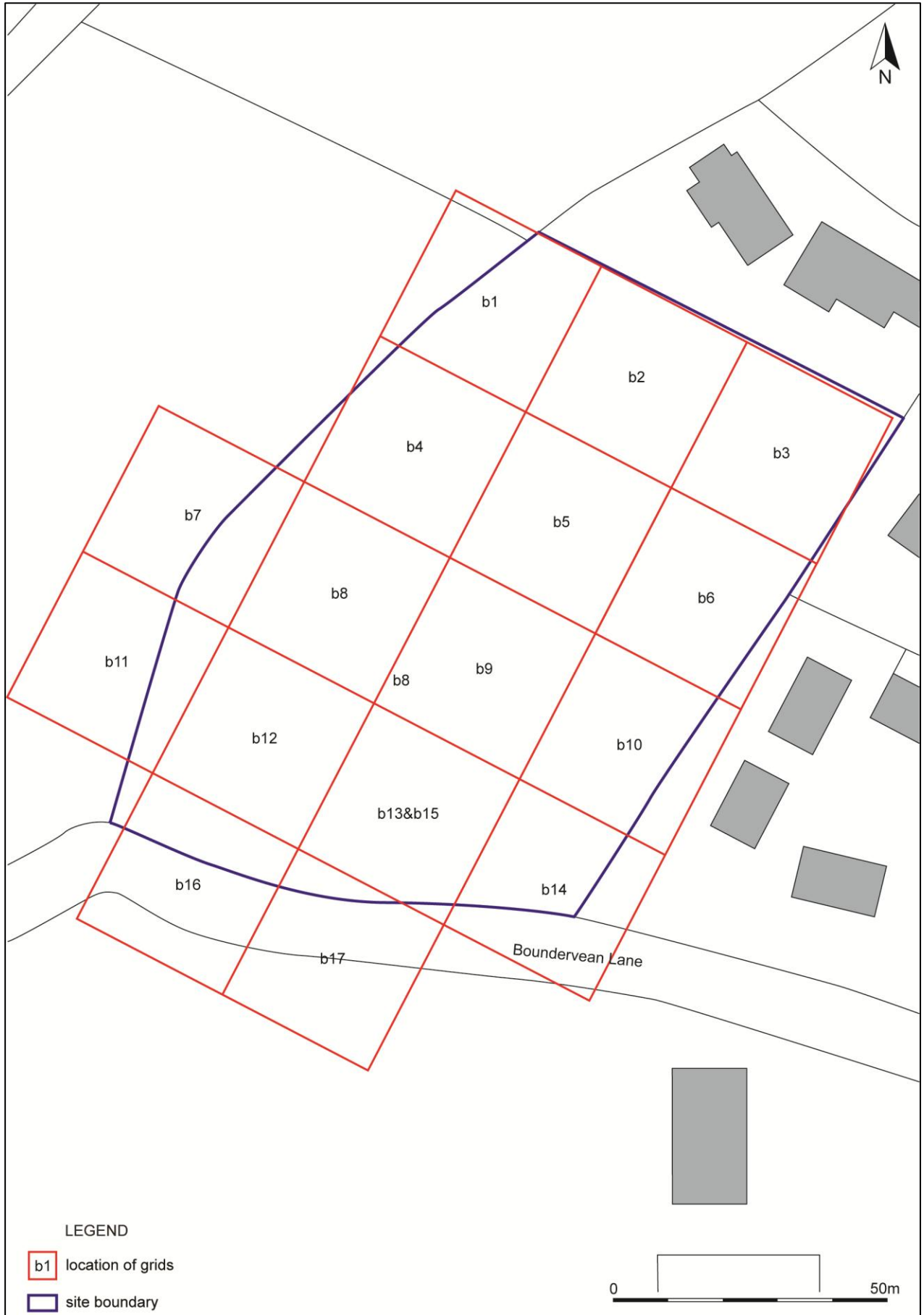


FIGURE 10: GEOPHYSICAL SURVEY GRID LOCATION AND NUMBERING.

LAND OFF TREGENNA FIELDS, CAMBORNE, CORNWALL



FIGURE 11: SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING, BAND WEIGHT EQUALISED.



LAND OFF TREGENNA FIELDS, CAMBORNE, CORNWALL

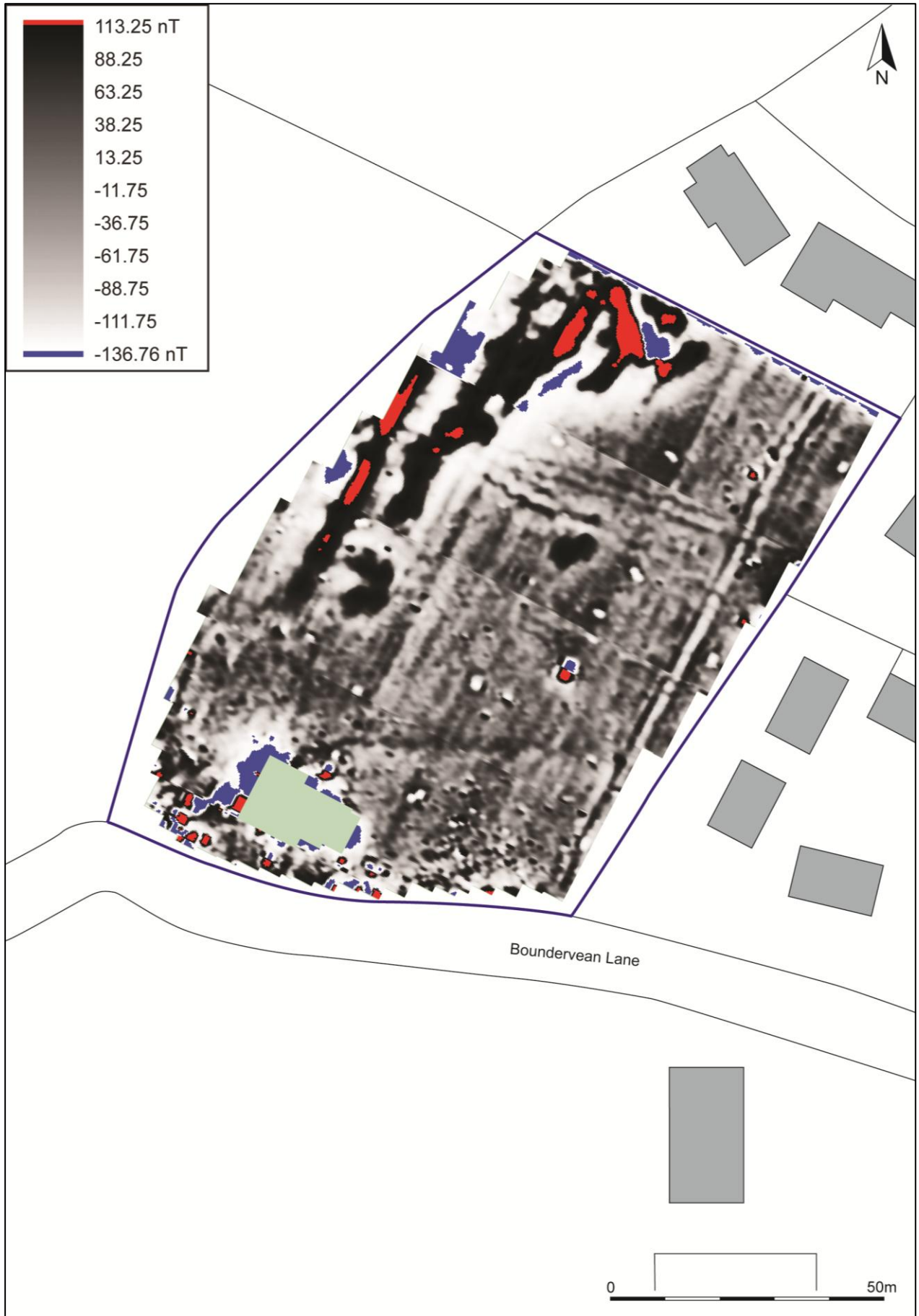


FIGURE 12: RED GREYSCALE BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING, BAND WEIGHT EQUALISED.

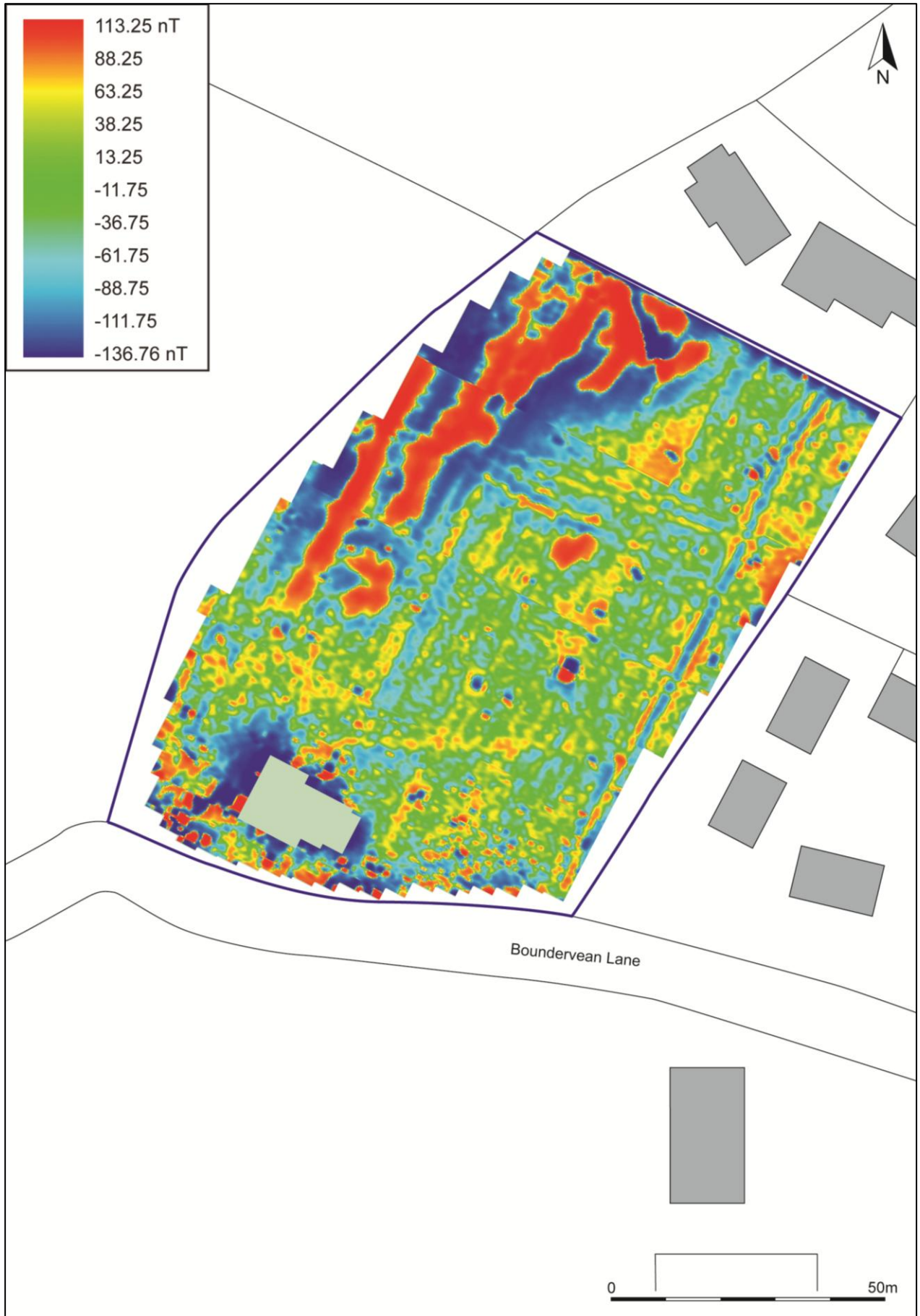


FIGURE 13: RED-BLUE-GREEN SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING, BAND WEIGHT EQUALISED.

APPENDIX 2: SUPPORTING PHOTOGRAPHS: SITE INSPECTION



VIEW LOOKING ACROSS THE SITE FROM THE SITE ACCESS; VIEWED FROM THE SOUTH-WEST.



DETAIL OF THE GATEPOST ON THE SOUTH-EAST SIDE OF THE ENTRANCE; VIEWED FROM THE NORTH-WEST.

LAND OFF TREGENNA FIELDS, CAMBORNE, CORNWALL



VIEW ALONG THE WEST BOUNDARY OF THE SITE; VIEWED FROM THE SOUTH-WEST.



VIEW ACROSS THE SITE FROM THE SOUTH-WEST CORNER; VIEWED FROM THE WEST.

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VIEW ALONG THE SOUTHERN BOUNDARY OF THE SITE; VIEWED FROM THE NORTH-WEST.



DETAIL OF THE WEST SITE BOUNDARY SHOWING BADGER SETT DAMAGE; VIEWED FROM THE SOUTH.



DETAIL OF THE WEST SITE BOUNDARY SHOWING BADGER SETT DAMAGE; VIEWED FROM THE SOUTH.



DETAIL OF THE BADGER SETT DAMAGE WITHIN THE WEST SITE BOUNDARY; VIEWED FROM THE NORTH-EAST.

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DETAIL OF THE OVERGROWN NORTH-WEST CORNER OF THE SITE, WITH MODERN WASTE; VIEWED FROM THE SOUTH-EAST.



VIEW ALONG THE MODERN POST-AND-WIRE POST FENCE AND HEDGE ALONG THE NORTHERN SITE BOUNDARY; VIEWED FROM THE NORTH-WEST.

LAND OFF TREGENNA FIELDS, CAMBORNE, CORNWALL



VIEW ACROSS THE SITE FROM THE NORTH BOUNDARY; VIEWED FROM THE NORTH-EAST.



VIEW ACROSS THE SOUTH END OF THE SITE; VIEWED FROM THE EAST.



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DETAIL OF THE 20<sup>TH</sup> CENTURY STRUCTURE AT THE SOUTHERN END OF THE SITE; VIEWED FROM THE EAST.



DETAIL OF THE 20<sup>TH</sup> CENTURY STRUCTURE; VIEWED FROM THE NORTH-EAST.

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DETAIL OF THE 20<sup>TH</sup> CENTURY STRUCTURE; VIEWED FROM THE WEST.



DETAIL OF THE REMAINS OF THE 20<sup>TH</sup> CENTURY STRUCTURE; VIEWED FROM THE NORTH.



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