

**LAND OFF THORNTON CLOSE
ROCHE
ST AUSTELL
CORNWALL**

Results of a Geophysical Survey



South West Archaeology Ltd. report no. 190618



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Land off Thornton Close, Roche, St Austell, Cornwall Results of a Geophysical Survey

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Report Version: FINAL
18th June 2019

Work undertaken by SWARCH for Cornwall Archaeological Unit (CAU)

SUMMARY

This report presents the results of a geophysical survey carried out by South West Archaeology Ltd. (SWARCH) on land off Thornton Close, Roche, St Austell, Cornwall. The site is located on the north-western edge of the village of Roche. Historic sources and the HER indicate that the site is located within a landscape of Prehistoric funerary monuments, medieval and post-medieval settlement and agriculture, and post-medieval mining activity.

The geophysical survey identified a series of anomalies across the site, including features likely to be associated with historic fieldsystems and agricultural activity and a series of discrete ovoid features associated with either pits or tree-throws.

The two removed historic field boundaries crossing the site do not conform to the expected double-ditch with bank anomalies that are normally associated with removed Cornish hedgebanks; their responses are more indicative of linear strips of disturbed ground, likely to be the result of their being removed/backfilled in a single episode during later 20th century. The remaining anomalies are all likely to represent historic episodes of agricultural activity, and may include surviving remnants of strip-field divisions and/or plough ridges.

On the basis of the geophysical survey the archaeological potential of the site is deemed to be low, and containing only features likely to be associated with medieval and post-medieval agricultural activity.



June 2019

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ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

LOCATION: THORNTON CLOSE, ROCHE
PARISH: ROCHE
COUNTY: CORNWALL
NGR: SW 98482 60438
PLANNING NO. PA18/11742
SWARCH REF. RTC19

1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned to undertake a geophysical survey on land off Thornton Close, Roche, St Austell, Cornwall, as part of a planning application for a proposed residential development. This work was undertaken in accordance with best practice and CifA guidelines.

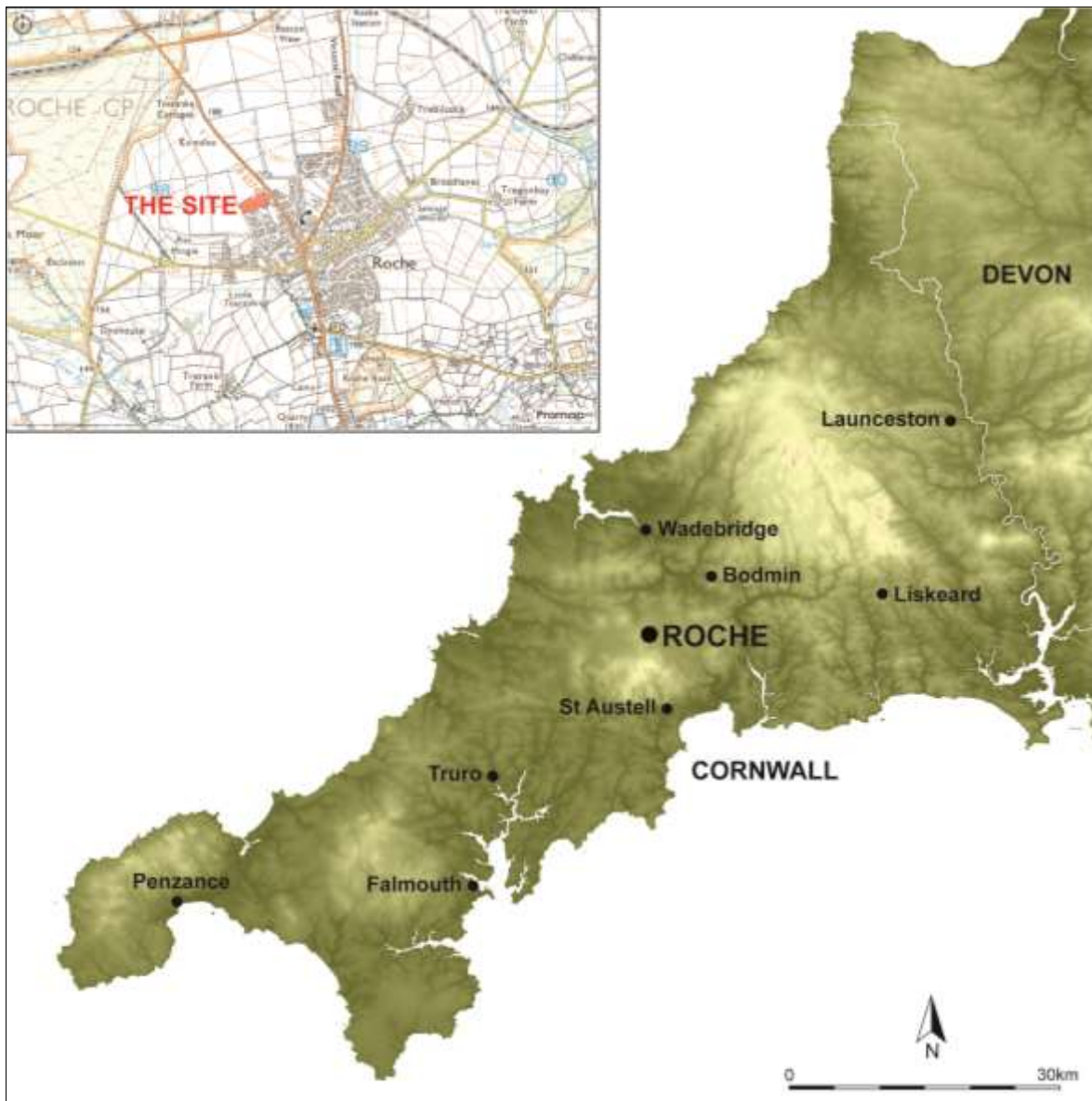


FIGURE 1: SITE LOCATION.

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The village of Roche is located south of the A30 approximately 8.4km north-west of St Austell and 10km south-west of Bodmin. The site, comprising a single field to the north Thornton Close, is situated c.300m north-west of the core of the village on fairly level ground at an altitude of c.192m AOD (Figure 1). The soils of this area are the loamy permeable upland soils with peat of the Hafren Association where they border well-drained fine loamy or silty soils of the Manod Association (SSEW 1983). These overlie the Hornfelsed slates and sandstones of the Bovisand Formation, which forms part of the Meadfoot Group (BGS 2019).

1.3 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).

1.4 HISTORICAL & ARCHAEOLOGICAL BACKGROUND

Roche, in the parish of the same name, and Deanery and East division of the Hundred of Pyder (Lysons 1814) is first recorded '*La Roche*' (meaning 'the Rock') in 1201 (Watts 2010), and expanded significantly in the 20th century; a number of the surrounding medieval farmsteads are also medieval in origin, for example Trebilcock AD1250 (MCO17084) and Trerank AD1260 (MCO17654). The Cornwall and Scilly HLC lists these fields as *post-medieval enclosed land*, usually enclosed during the 17th, 18th and 19th centuries from land that was previously *upland rough ground* and often medieval commons, although there may be some potential for Prehistoric and Romano-British remains. The site sits within a wider Prehistoric landscape that incorporates the Neolithic settlement at Tregarrick Farm (MCO47228) along with a series of Bronze Age barrows to the north-west (MCO3403; MCO3404), and south-west (MCO3401). In the 19th and early 20th century the surrounding landscape was subject to significant mining activity, including the Tower Consols and Click (MCO12606) and Dyehouse (MCO12022) mines, with further extractive pits located in the surrounding Tregoss Moor (MCO4278) and at Gilley Mill (MCO25255).

The tithe map of c.1839 shows the site as part of three small fields on the edge of Roche Common, close to the road heading out of the village. The accompanying 1838 apportionment names them as *Arable* (Field no.50), *Pasture* (Field no.51), and *Pasture* (Field no.52), part of the estates of Lord Mount Edgcombe and occupied by James Varcoe (no. 50), John Thomas (no.51), and Charles Grose (no.52). All of the field names were prosaic, the field named *Arable* being under arable agriculture, the others both laid to pasture. The Ordnance Survey maps (1888, 1908, and 1946) show that the shape of the fields and those around them remained largely consistent, there being only minor field boundary loss and creation. All of the historic maps show the site as subdivided by a pair of field boundaries running approximately north to south.



FIGURE 2: EXTRACT FROM THE 1839 ROCHE TITHE MAP (PRO); THE APPROXIMATE OUTLINE OF THE SITE IS INDICATED.



FIGURE 3: EXTRACT FROM THE 1888 1ST EDITION OS 6" MAP (SURVEYED 1881) (CORNWALL SHEET XLI.NE) (NLS); THE SITE IS INDICATED.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL

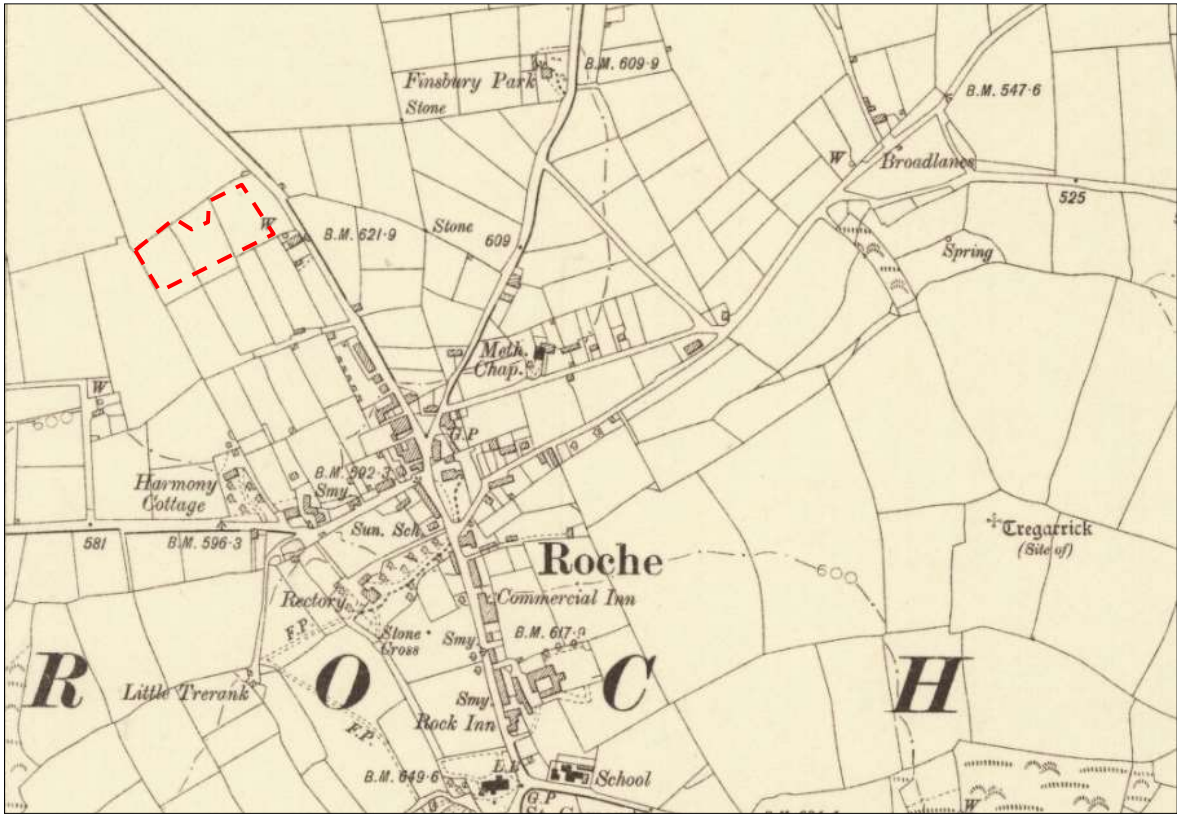


FIGURE 4: EXTRACT FROM THE 1908 2ND EDITION OS 6" MAP (REVISED 1905-06) (CORNWALL SHEET XLI.NE) (NLS); THE SITE IS INDICATED.



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

2.0 GEOPHYSICAL SURVEY

2.1 INTRODUCTION

An area of c.0.76ha 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 14th of June 2019 by P. Webb; the survey data was processed by P. Webb.

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 2014b).

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: 0.7587ha surveyed; Max. 144.83nT, Min. -101.79nT; Standard Deviation 13.46nT, mean 0.18nT, median 0.00nT.

2.3 SITE INSPECTION

The site comprises a single sub-rectangular field on the north-western edge of the village of Roche. The survey area was fairly flat, bounded to the north, west, and part of the south by overgrown Cornish hedgebanks. The remaining boundaries comprised modern concrete block walls. All of the boundaries were augmented by electric fencing. The site was bordered to the south and east by modern residential development – the spoil of which formed a mound extending along the northern boundary – and to the north and west by fields. The site was under an established grass sward at the time of the survey and used as a horse paddock. A series of low banks and ridges were visible running approximately north to south across the site, perhaps cultivation ridges, but finds were recovered. A full complement of site photographs can be found in Appendix 2.



FIGURE 6: VIEW ACROSS THE EASTERN HALF OF THE SITE, WITH POSSIBLE PLOUGH RIDGES AND REMOVED HISTORIC FIELD BOUNDARIES; VIEWED FROM THE SOUTH-WEST.



FIGURE 7: DETAIL OF THE SOUTHERN HEDGEBANK; VIEWED FROM THE NORTH-EAST.

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/strong mixed positive and negative, probable | Linear | Historic field boundaries | Indicative of modern disturbance. Likely representing the removal of field boundaries in recent time and infilling with bank material. Boundaries depicted on historic mapping and still present in 1946 at this location. Responses of c. -97.91nT to +99.39nT. |
| 2 | Weak positive with associated negative, possible | Linear | Agricultural activity | Indicative of cut features with associated banks. Weak responses suggest only shallow survival; regularity and alignment indicating agricultural activity, possibly ridge and furrow. Responses of between c. -6.97nT and +9.01nT. |
| 3 | Weak positive, possible | Linear | Agricultural activity | Indicative of cut features. Similar to group 2 anomalies but with less clearly associated negative response. May represent ridge and furrow or strip-field divisions. Responses of between c. +0.72nT and +8.51nT. |
| 4 | 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 -2nT and +2nT. |
| 5 | Weak/moderate positive, possible | Ovoid | Possible pits/tree-throws | Indicative of discrete anomalies such as pits/tree-throws. Responses of between +3.38nT and +36.90nT. |
| | Strong bipolar (mixed response) | Ovoid | Modern disturbance / ferrous anomaly | Indicative of a large modern metallic object. Responses of between -93.49nT to +90.90nT. |
| | Strong bipolar (mixed response) | Irregular | Modern disturbance | Indicative of a disturbed ground and disturbance caused by proximity to metallic fences. Responses of between -100.39nT and +99.17nT. |

2.5 DISCUSSION

The survey identified five groups of anomalies. These were predominantly linear anomalies likely to be associated with historic boundaries and agricultural activity. The general geological variation across the site was between +/-2nT. The identified anomaly groups include: historic field boundaries forming buried parts of the existing fieldsystem; linear anomalies likely representing various phases of agricultural activity including possible plough ridges and/or strip field division; and a number of possible pits or tree-throws. A series of linear anomalies, very close to the natural responses, also cover the site and reflect episodes of ploughing and agricultural practices.

Anomaly Group 1 consists of a pair moderate-strong mixed positive (+8.57nT to +99.17nT) and negative (-4.19nT to -97.91nT) linear responses orientated approximately north to south across the site. They are indicative of modern disturbance, but their position within the field corresponds with a pair of removed historic field boundaries. It is likely that they represent the modern (post-1946) removal of these boundaries.

Anomaly Group 2 consists of a series of weak positive (+1.51nT to +9.01nT) with associated negative (-6.97nT to -1.26nT) linear responses, which suggest shallow cut features and banks. The regularity in alignment and spacing of these features indicates agricultural activity, possibly plough ridges.

Anomaly Group 3 consists of a series of weak (+0.72nT to +8.51nT) positive linear responses across the site. As with the Group 2 anomalies they are regularly aligned and spaced and they are likely to represent agricultural activity, possibly less well surviving examples of the same plough ridges; or as ditched divisions between strip-fields.

The background noise across the site shows a series of weak-moderate (-2nT to +2nT) mixed positive and negative linear responses (Group 4) orientated broadly north to south across the site. They are narrowly and consistently spaced and likely to represent the most recent episode of ploughing across the site.

Anomaly Group 5 consists of a number of weak-moderate (+3.38nT to +36.90nT) positive ovoid responses indicative of cut and filled discrete features such as pits or tree-throws. The overall strength of the majority of these responses indicates that they are more likely to be tree-throws than pits.

Modern disturbance, Di-Polar anomalies 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.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL



FIGURE 8: SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED, GRADIATED SHADING (SITE BOUNDARY OUTLINED IN BLUE).

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL

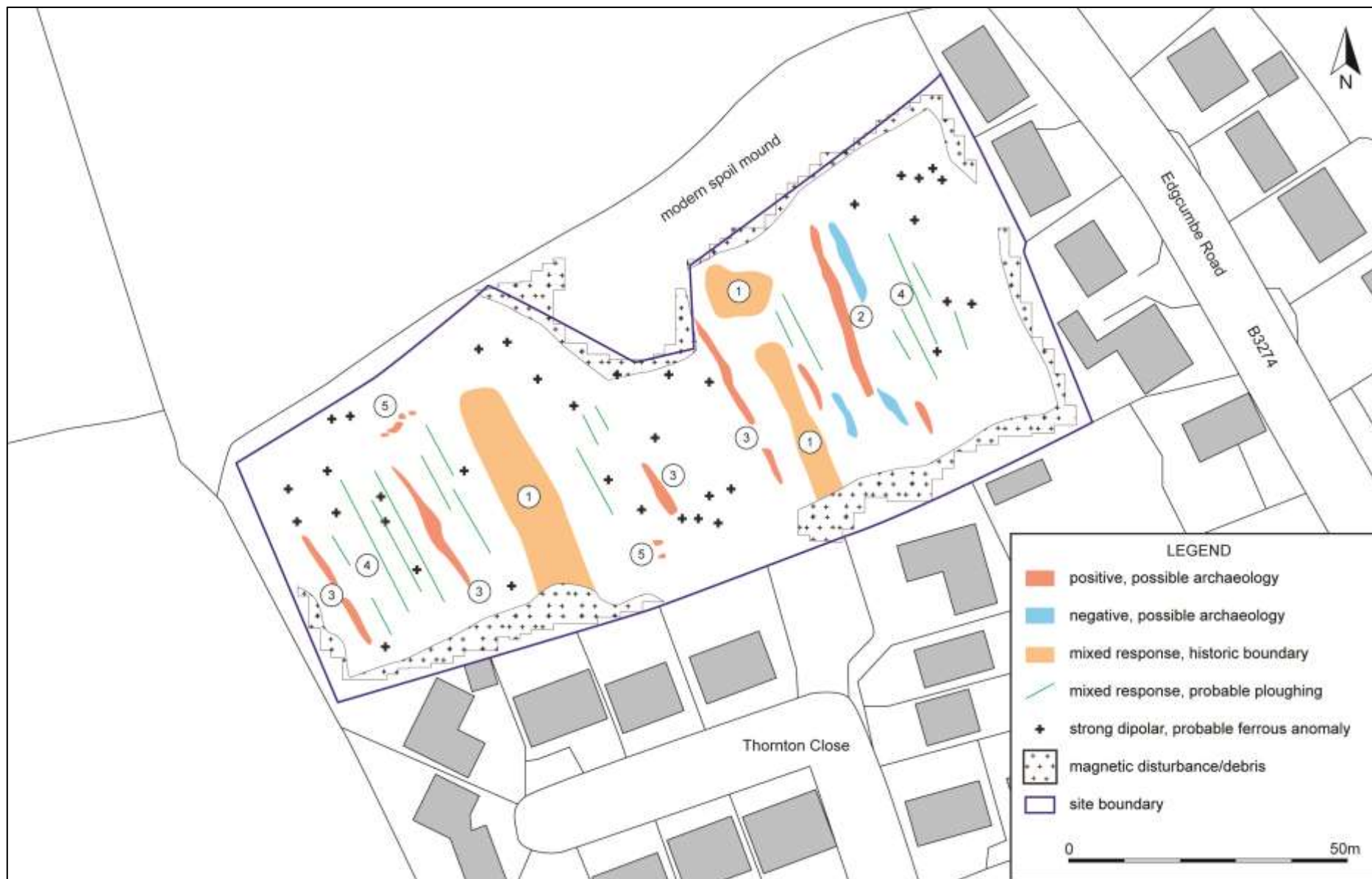


FIGURE 9: INTERPRETATION OF GRADIOMETER SURVEY DATA (SITE BOUNDARY OUTLINED IN BLUE).

3.0 CONCLUSION

The site is located in the parish of Roche on the north-western edge of the village of Roche. Historic sources and the HER indicate that the site is located in a landscape of Prehistoric settlement and funerary monuments, medieval and post-medieval settlement and agriculture, and post-medieval mining activity.

The geophysical survey identified a series of anomalies across the site, including features likely to be associated with historic (medieval? and post-medieval) fieldsystems and agricultural activity; and a series of discrete ovoid features associated with either pits or tree-throws. The ploughing evident from the survey results will have damaged the buried archaeological resource to some extent.

The two removed historic field boundaries crossing the site (anomaly Group 1) do not conform to the expected double-ditch and bank anomalies normally associated with removed Cornish hedgebanks; their responses are more indicative of linear areas of disturbed ground and this is likely to be the result of being removed/backfilled in a single episode during the later 20th century.

The remaining anomalies are all likely to represent historic episodes of agricultural activity, and may include surviving remnants of strip-field divisions and/or plough ridges.

On the basis of the geophysical survey, the archaeological potential of the site is *low*, containing only features likely associated with the medieval and post-medieval agricultural activity of the area.

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APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY



FIGURE 10: GEOPHYSICAL SURVEY GRID LOCATION AND NUMBERING.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL



FIGURE 11: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL



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

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL

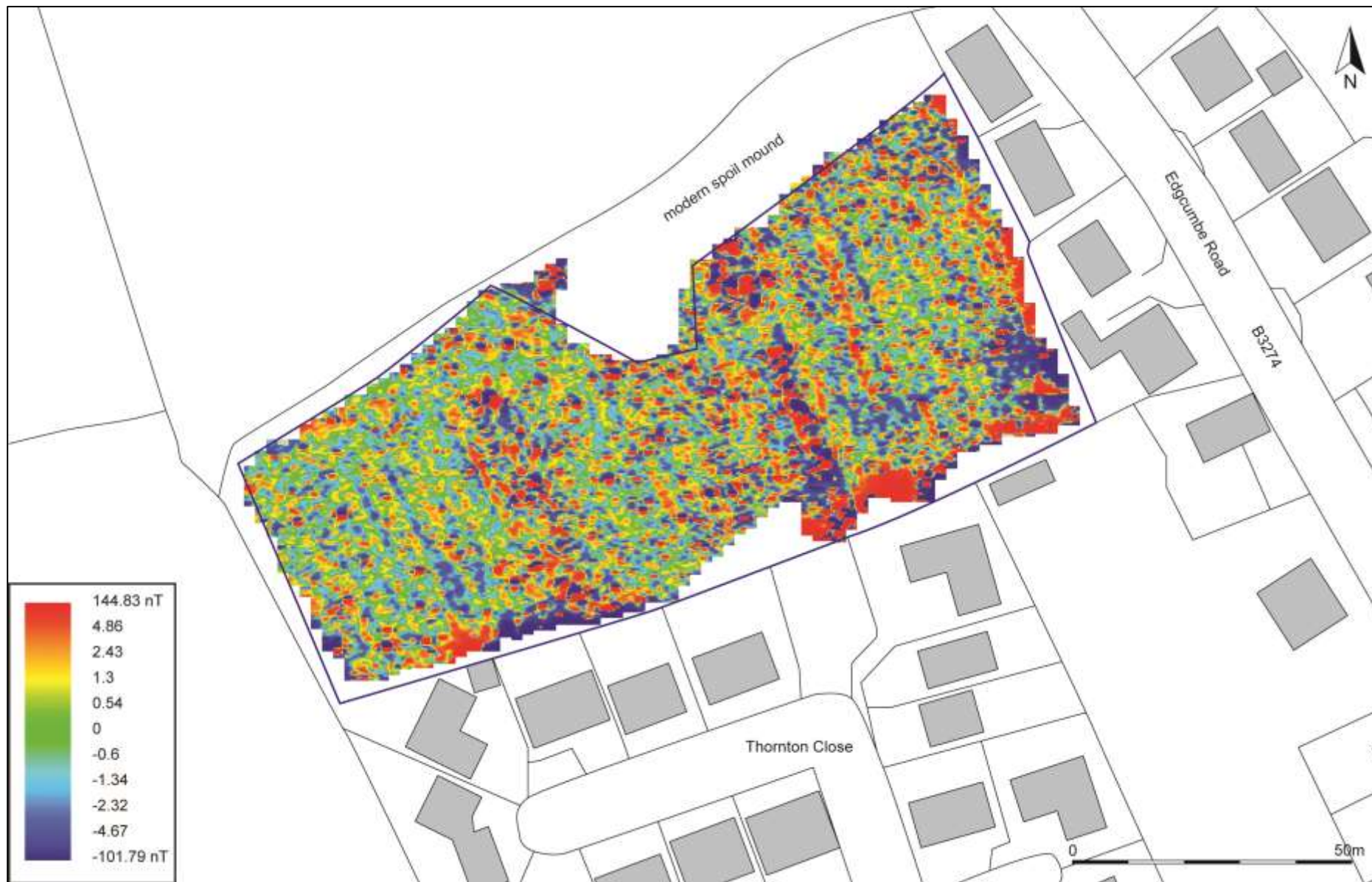


FIGURE 13: RED-BLUE-GREEN2 SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING, BAND WEIGHT EQUALISED.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL



FIGURE 14: BLACK-GREEN-YELLOW-WHITE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING, BAND WEIGHT EQUALISED.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL



FIGURE 15: RED-BLUE-GREEN2 SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED.

APPENDIX 2: SUPPORTING PHOTOGRAPHS: SITE INSPECTION



VIEW ACROSS THE EASTERN HALF OF THE SITE; VIEWED FROM THE SOUTH-WEST.



VIEW ACROSS THE CENTRE OF THE SITE TO THE MOUND OF SPOIL; VIEWED FROM THE SOUTH.

LAND OFF THORNTON CLOSE, ROCHE, ST AUSTELL, CORNWALL



VIEW ACROSS THE WESTERN HALF OF THE SITE; VIEWED FROM THE SOUTH-EAST.



VIEW ALONG THE MODERN SOUTHERN BOUNDARY WITH ITS AREA OF WASTE AND GARDEN SHED; VIEWED FROM THE WEST.



DETAIL OF THE HEDGEBANK BOUNDARY AT THE EASTERN END OF THE SOUTH BOUNDARY; VIEWED FROM THE NORTH-EAST.



VIEW ACROSS THE SITE; VIEWED FROM THE SOUTH-EAST.



VIEW ALONG THE EAST BOUNDARY; VIEWED FROM THE SOUTH-SOUTH-EAST.



VIEW TO THE NORTH HEDGEBANK BOUNDARY AND MOUND OF TOPSOIL IN THE NORTH-EAST CORNER; VIEWED FROM THE SOUTH-SOUTH-EAST.



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



DETAIL OF THE SLIGHTLY RAISED AREA IN THE EASTERN HALF OF THE SITE; VIEWED FROM THE NORTH.



VIEW ALONG THE NORTH BOUNDARY; VIEWED FROM THE SOUTH-WEST.



VIEW ACROSS THE SITE; VIEWED FROM THE NORTH-WEST.



VIEW ALONG THE WEST BOUNDARY; VIEWED FROM THE NORTH.



VIEW ALONG THE WEST BOUNDARY; VIEWED FROM THE SOUTH-SOUTH-EAST.



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



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



VIEW ACROSS POSSIBLE PLOUGH RIDGE OR REMOVED FIELD BOUNDARY IN THE EASTERN HALF OF THE SITE; VIEWED FROM THE SOUTH.



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