LAND SOUTH OF GORRAN SCHOOL
GORRAN HAVEN
ST GORAN
CORNWALL

Results of a Geophysical Survey

South West Archaeology Ltd. report no. 220520

ARCHAEOLOGICAL SERVICES & HISTORIC BUILDING RECORDING
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Land South of Gorran School, Goran Haven, St Goran, Cornwall

Results of a Geophysical Survey

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Work undertaken by SWARCH for Cornwall Archaeological Unit (The Client)

SUMMARY

The site is located to the north-west of the village of Gorran Haven within a landscape containing multiple prehistoric, medieval and later elements, and lies immediately south of Gorran School, with early medieval settlements to the north and south. A possible prehistoric standing stone lies within the site but there is no clear response to any feature within the survey area, other than a proximity to the possible continuation of anomaly group 7, which itself has no clear interpretation.

The survey identified 13 groups of anomalies, these include: undated ditches, which may represent various previous field or enclosure systems, and probable historic Cornish hedgerows which appear on the earlier historic mapping as field boundaries. Although the majority of the potentially archaeological anomalies on the site have no date the form and location suggest a field system that predates the field pattern as evident on the 1840 tithe map.

Further archaeological mitigation, perhaps in the form of targeted evaluation trenches may serve to expand upon and clarify the results of the geophysical survey and aid in determining the date and significance of the identified features within the site and to validate the results of the survey.

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ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

LOCATION: LAND SOUTH OF GORRAN SCHOOL, GORAN HAVEN
PARISH: ST GORAN
COUNTY: CORNWALL
CENTROID NGR: SW 99951 41841
PLANNING REF: N/A
SWARCH REF: GHG22
OASIS REF: SOUTHWES1-508103

1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by Cornwall Archaeological Unit (The Client) to undertake a geophysical survey on land South of Gorran School, Gorran Haven, Cornwall. This work was undertaken in accordance with best practice, including the Chartered Institute for Archaeology (CIfA) and English Heritage (EH) guidance.

FIGURE 1: SITE LOCATION (COUTESTY OF CAU).

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The site comprises of a single field of pasture, south of Gorran School, and north-west of the settlement of Gorran Haven. The field is on a south-east facing slope, with views of the coast and sea, the northern extent of the survey area lies at c.98m AOD down to c.88m AOD at the south-eastern extent of the survey area. The soils of the area are freely draining and slightly acidic loamy soils over rock; these soils overly the slaty mudstone of the Roseland Breccia Formation, which may include metamorphic and igneous clasts (BGS 2022).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

The site is located to the west of the Gorran Haven. Both Treveague (to the south) and Gorran Churchtown (to the north) are listed as early medieval settlements, but the site appears to have been agricultural land for hundreds of years. There are prehistoric barrows in the nearby landscape, with a standing stone within the site (MCO7409) being of possible prehistoric origin. Two other standing stones in fields to the south-east of the site form a straight south-east to north-west line and are all partially quartzite or quartzite veined, it is plausible they once all formed a stone row. The 1842 tithe map of St. Goran (Figure 2), shows numerous historic field boundaries set within the modern limits of the field. All the four plots within the survey area from the tithe map are listed as arable or pasture. The 1888 six-inch Ordinance Survey mapping shows the field with a similar form to how it currently exists, meaning that internal field boundaries were all removed in the latter part of the 19th century.

FIGURE 2: EXTRACT FROM THE 1842 TITHE MAP OF ST. GORAN; THE APPROXIMATE SITE BOUNDARY IS INDICATED.

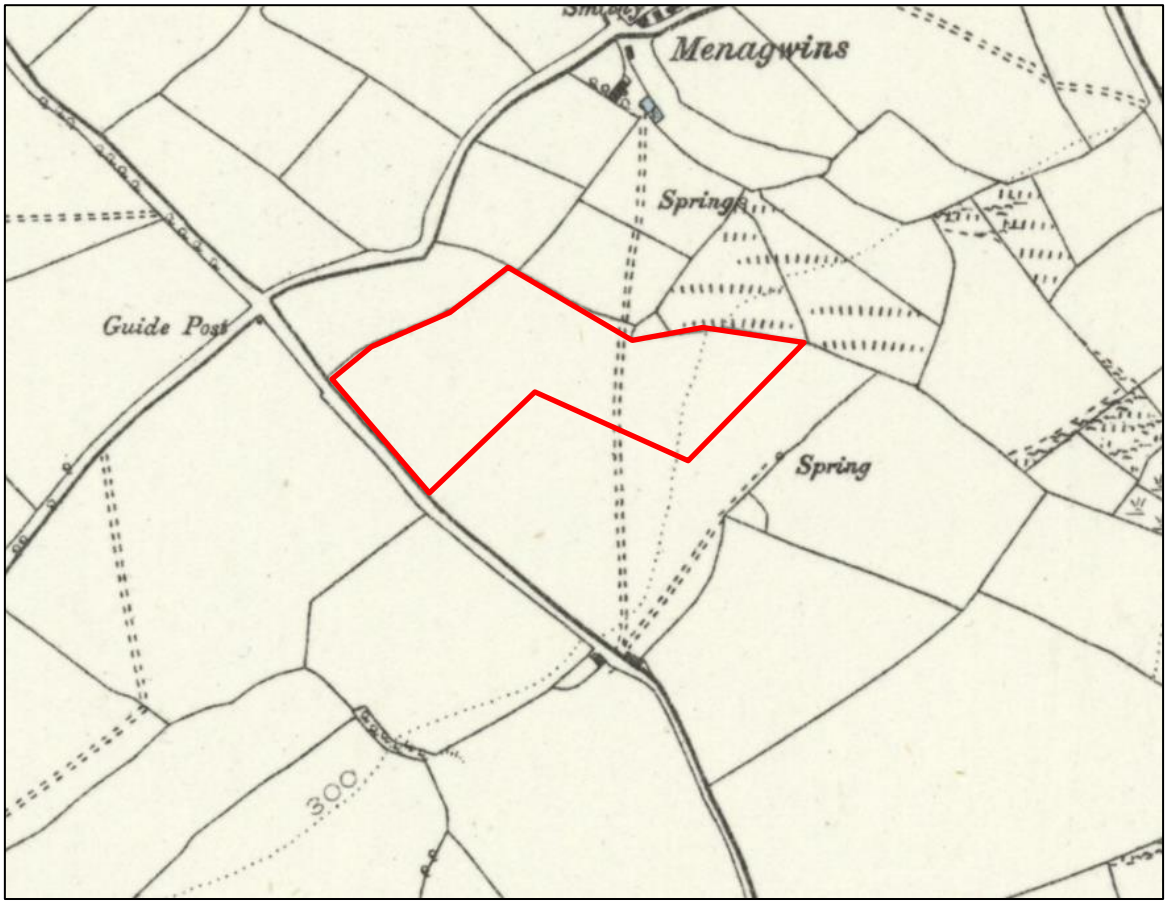

FIGURE 3: EXTRACT FROM THE OS 6" MAP, PUBLISHED 1888 (SURVEYED 1879); THE APPROXIMATE LOCATION OF THE SITE IS INDICATED.

2.0 GEOPHYSICAL SURVEY

2.1 INTRODUCTION

An area of *c.*2.1ha 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 27th of April 2022 by P. Bonvoisin; the survey data was processed by P. Bonvoisin.

2.2 SITE INSPECTION

The site comprised of a single field of pasture, which was in use at the time of the survey, had sheep within the field. The turf had been grazed short across most of the site, with some reeds and loose wood debris in the eastern corner of the field. No metallic agricultural material was left within the survey area, but the north-western and north-eastern bounds of the site were bounded by metallic fencing which was used to cordon off a pathway that led to the back of the school. Access to the site was via the farmyard to the south. The south-western boundary of the site comprised of a Cornish hedgerow, with many of the immediate field boundaries being the same. Photographs from the site inspection can be seen in Appendix 3.

2.3 METHODOLOGY

The gradiometer survey follows the general guidance as outlined in: *EAC Guidelines for the use of geophysics in Archaeology: Questions to Ask and Points to Consider* (Europae Archaeologiae Consilium/European Archaeological Council 2016) 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 Median Sensors: Grids: All.
Area Details: 2.1239ha surveyed; Max. 101.80nT, Min. -100.29nT; Standard Deviation 6.65, mean 0.06nT, median 0.00nT.

2.4 RESULTS

Table 1, with the accompanying Figures 4 and 5, shows the analysis and interpretation of the geophysical survey data. Additional graphic images of the survey data can be found in Appendix 1.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Moderate positive to strong negative, probable	Parallel linears	Historic field boundary	Indicative of a Cornish hedgerow, parallel positive linears flanking a negative linear, likely representative two ditches flanking a bank. Likely corresponds to field boundaries visible on the tithe mapping. Responses of *c.*+14.9nT to *c.*-20.5nT.
2	Strong positive to weak negative, probable	Parallel linears	Ditch	Indicative of a ditch, with possible raised ground to either side. May represent part of a previous field system. Similar form and responses to anomaly groups 3, 4 and 6. Responses of *c.*+20.8nT to *c.*-8.9nT.
3	Strong positive to moderate negative, probable	Parallel linears	Ditch	Indicative of a ditch, with possible raised ground to either side. May represent part of a previous field system. Similar form and responses to anomaly groups 2, 4 and 6. Responses of *c.*+29.4nT to *c.*-15.5nT.
4	Strong positive to moderate negative, probable	Parallel linears	Ditch	Indicative of a ditch, with possible raised ground alongside portions of the linear. May represent part of a previous field system. Similar form and responses to anomaly groups 2, 3 and 6. Responses of *c.*+26.8nT to *c.*-10.4nT.
5	Moderate positive to moderate negative, probable	Parallel fragmented linears	Possible historic field boundary	Indicative of a Cornish hedgerow, with parallel linears on the north-western edge. The south-eastern three linears appear as parallel positive linears flanking negative linear, likely representative of two ditches flanking a bank. May correspond to boundaries visible on the tithe mapping of the area. Responses of *c.*+17.6nT to *c.*-14.2nT.
6	Strong positive to moderate negative, probable	Parallel linears	Ditch	Indicative of a ditch, with possible raised ground along the north-western edge of the feature. May represent part of a previous field system. Similar form and responses to anomaly groups 2, 3 and 4. Responses of *c.*+23.2nT to *c.*-15.7nT.
7	Weak negative to moderate negative, possible	Fragmented linear	Linear	Indicative of possible raised ground, may be a stronger parallel response for a cut feature with a weak response, that only shows under band weight equalised response. Responses of *c.*-6.6nT to *c.*-14.5nT.
8	Strong positive to strong negative, probable	Parallel linears	Ditch	Indicative of a ditch or cut feature, with possible raised ground to either side. Has a similar form to anomaly groups 2, 3, 4 and 6 but appears to have been partially distorted by running along the same axis as survey was conducted. Responses of *c.*+21.4nT to *c.*-20.2nT.
9	Moderate positive to weak negative, probable	Parallel linears	Ditch	Indicative of raised ground or earthworks with flanking cut features, may represent a previous boundary, but displays a weaker response to other features representing known historic boundaries. Responses of *c.*+11.2nT to *c.*-8.8nT.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
10	Moderate positive to moderate negative, probable	Parallel linears	Ditch	Indicative of a ditch or cut feature. Runs broadly parallel to the current field boundary and may represent an earlier field system. Responses of *c.*+14.3nT to *c.*-12.7nT.
11	Very strong positive to moderate negative, probable	Ovoid	Pit	Indicative of a pit or similar cut features, possibly associated with anomaly group 6 due to its proximity. Responses of *c.*+37.7nT to *c.*-17.6nT.
12	Strong positive to weak negative, probable	Ovoid	Pit	Indicative of a pit or cut feature, its location suggests this feature is not associated with any of the linears or other features within the survey area. Responses of *c.*+28.1nT to *c.*-9.2nT.
13	Strong positive to weak negative, probable	Ovoid	Pit	Indicative of a pit or cut feature, possibly associated with anomaly group 1, due to its proximity to the likely historic field boundary. Responses of *c.*+22.7nT to *c.*+4.6nT
Other anomalies				
-	Moderate-strong dipolar, probable	Point/ ovoid	Ferrous objects/debris	There is a relatively high number of dipolar anomalies across the survey area. These usually indicate ferrous objects, usually assumed to be modern debris. The smaller and weaker responses may indicate geological features/anomalies. Within the survey area numerous metallic objects were visible during the survey and the majority of dipolar anomalies are expected to represent this. Responses <+/-100nT.
-	Magnetic disturbance, probable	Spreads associated with site boundaries and disturbed-/ made-ground	Magnetic disturbance	Near the edges of the site magnetic disturbance from fence lines, modern structures/services and made-ground/hard-core near field accesses/gates is visible. The groupings further into the field may be associated with metallic debris and the geotechnical test pits visible within the survey area. Responses of <+/-100nT.

TABLE 1: RESULTS FROM GEOPHYSICAL SURVEY

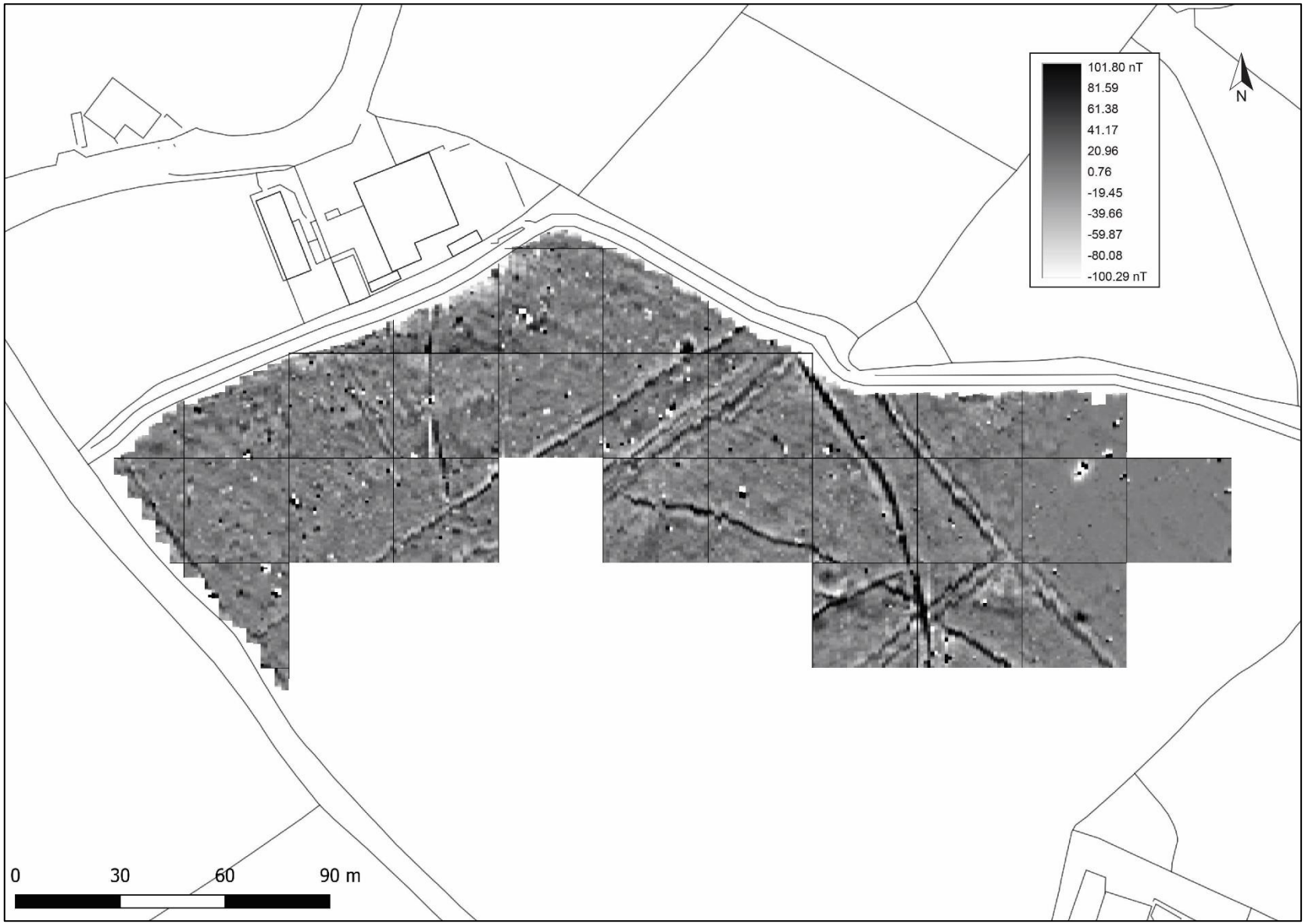

FIGURE 4: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.

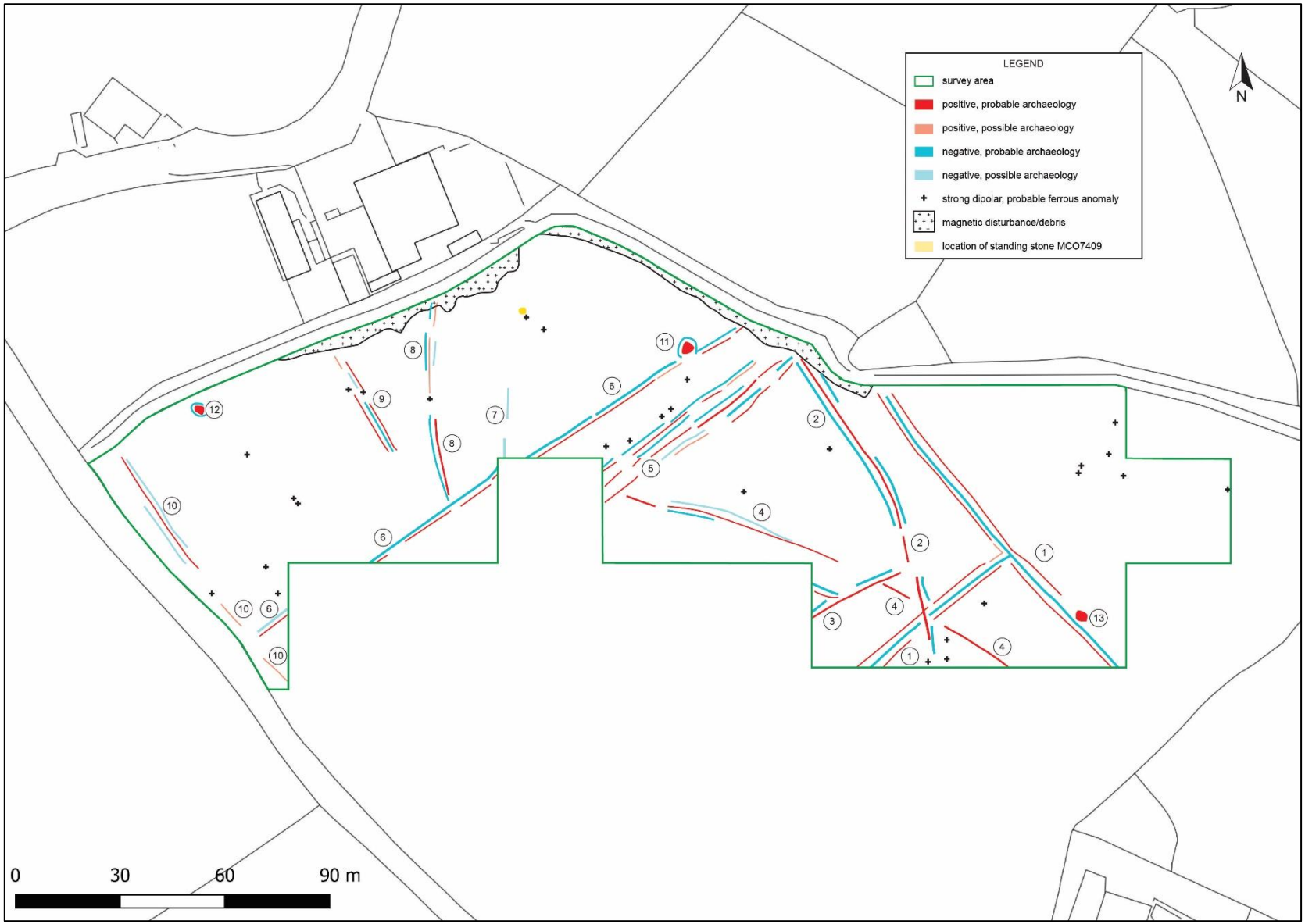

FIGURE 5: INTERPRETATION OF GRADIOMETER SURVEY DATA.

2.5 DISCUSSION

The geophysical survey identified thirteen groups of anomalies, these include: probable historic field boundaries (anomaly groups 1 and 5), ditches and linears possibly representing a relict field system or boundaries (anomaly groups 2, 3, 4, 6, 8, 9 and 10) as well as a few probable pit features (anomaly groups 11 to 13).

The general 'noise' (inherent geological variation) of the site was quiet, <*c.*+/-0.5nT. The shallow topsoil and sedimentary geology may contribute to this low background response. The presence of moderate-strong dipolar, possible ferrous and geological, anomalies and areas of magnetic disturbance are explained in Table 1. With the spread of di-polar anomalies mostly amorphous across the site, as expected for in use agricultural land, though there is a slight grouping near anomaly group 5. The majority of the anomalies with archaeological potential within the site are parallel positive and negative linears that may represent an earlier field system.

Group 1 is indicative of a Cornish hedgerow, with the distinctive positive linears bordering a negative linear, representative of a bank with ditches on either side. This particular anomaly group likely represents boundaries visible on the tithe mapping, between tithe apportionment plots 1288, 1289 and 1309. Anomaly group 5 also fits into these criteria of positive linears bordering a negative, but has a much more confusing response as there are multiple linear groups, suggesting a series of boundaries following mostly the same axis. Anomaly group 9 has a similar form to anomaly group 1, with the positive linears bordering a negative linear, indicating another possible Cornish hedgerow, but doesn't correspond to any features visible on historic mapping.

Anomaly groups 2, 3 and 4 present slightly higher responses than the other anomaly groups within the survey area, this is more visible on the red-grey-blue shade plot of the band weight equalised data. Anomaly groups 6, 8 and 10 have a similar form and response to the other anomaly groups. The interaction of some of these features suggest a previous field system or set of boundaries, with the more curved nature of these linears suggesting an earlier system. Anomaly groups 2 and 3, and 6 and 8 show clear joins and these pairs likely belong to the same boundary systems.

Anomaly groups 11, 12 and 13 likely represent pits or similar cut features. The proximity of anomaly groups 11 and 13 to linear features indicates a possible relationship with the respective boundaries. Anomaly group 12 has a similar form to anomaly group 13 but isn't related to any linears. The negative linears around these features may be relict from the construction of these cut features rather than indicating a small bank around the pits. This may be visible because of the relatively neutral and clear background response within the survey area.

3.0 CONCLUSION

The site is located to the north-west of the village of Gorran Haven and lies immediately south of Gorran School, with early medieval settlements to the north and south. A possible prehistoric standing stone lies within the surveyed area.

The survey identified 13 groups of anomalies, these include: undated ditches, which may represent various previous field or enclosure systems, and probable historic Cornish hedgerows which appear on the earlier historic mapping as field boundaries. Although the majority of the potentially archaeological anomalies on the site have no date the form and location suggest a field system that predates the tithe mapping layout.

Further archaeological mitigation, perhaps in the form of targeted evaluation trenches may serve to expand upon and clarify the results of the geophysical survey and aid in determining the archaeological relevance of the identified features within the site.

4.0 BIBLIOGRAPHY & REFERENCES

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APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

FIGURE 6: GEOPHYSICAL SURVEY GRID LOCATION AND NUMBERING.

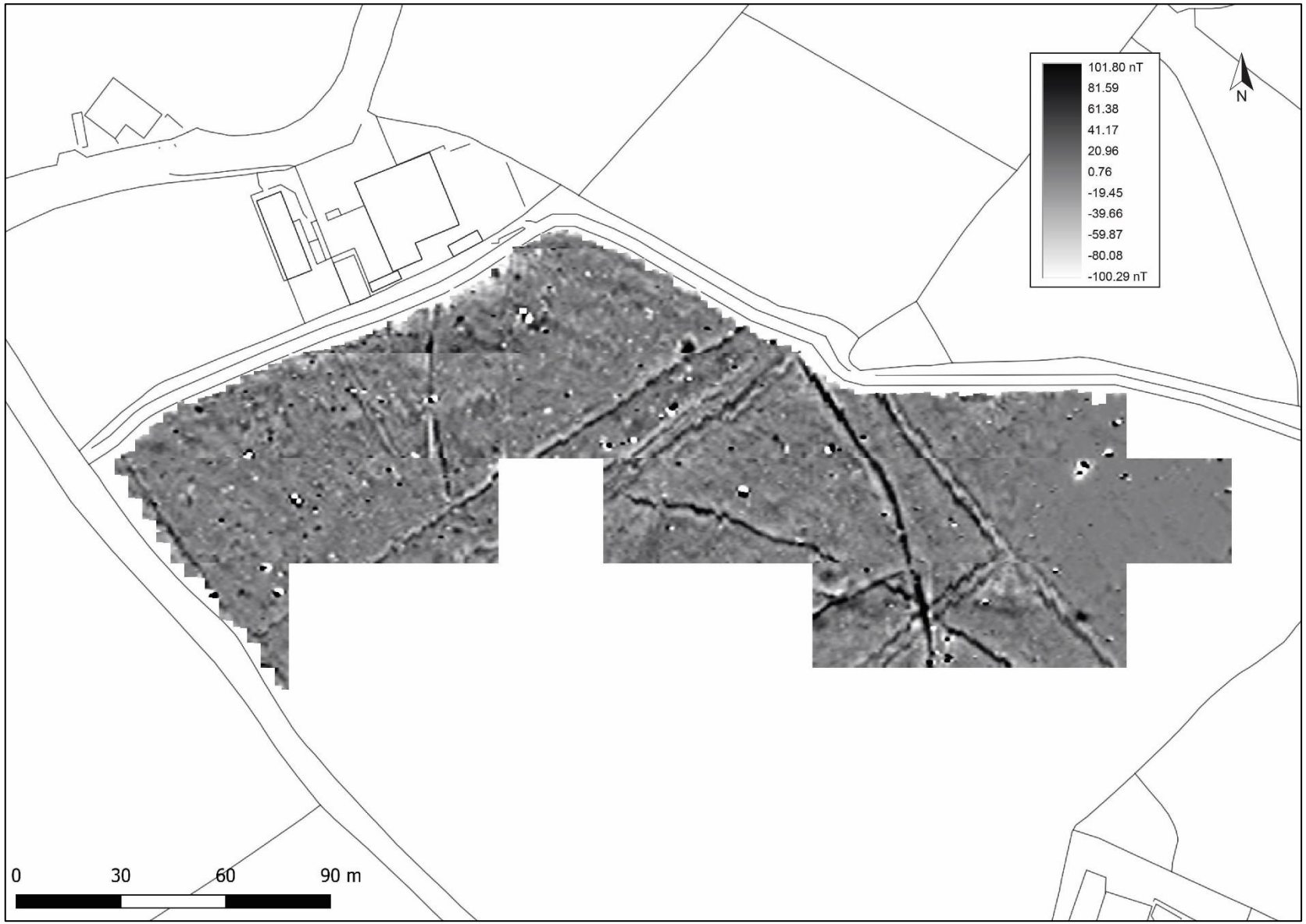

FIGURE 7: GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING, CLIPPED BY 1SD (STANDARD DEVIATION).

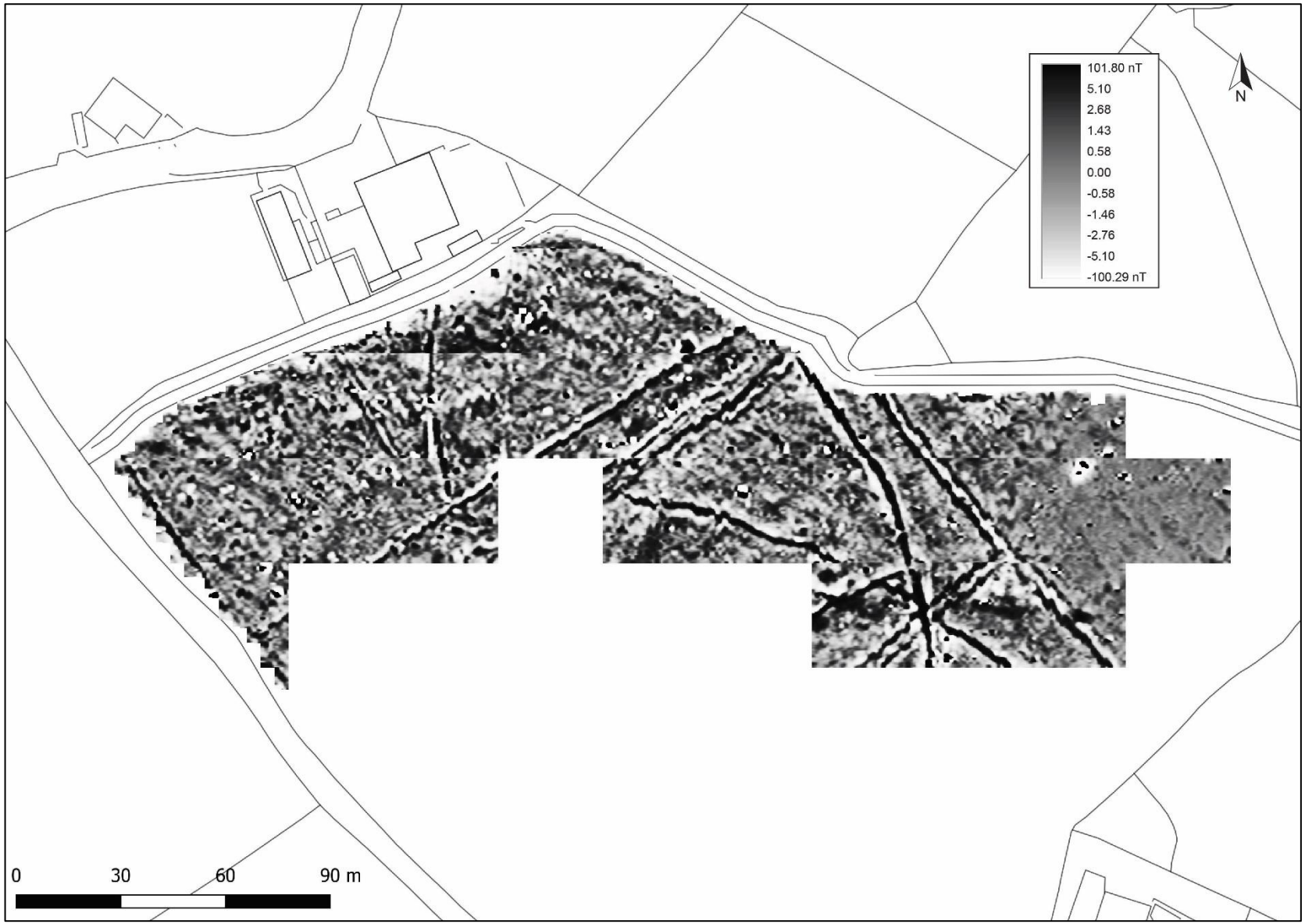

FIGURE 8: GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED; GRADIATED SHADING.

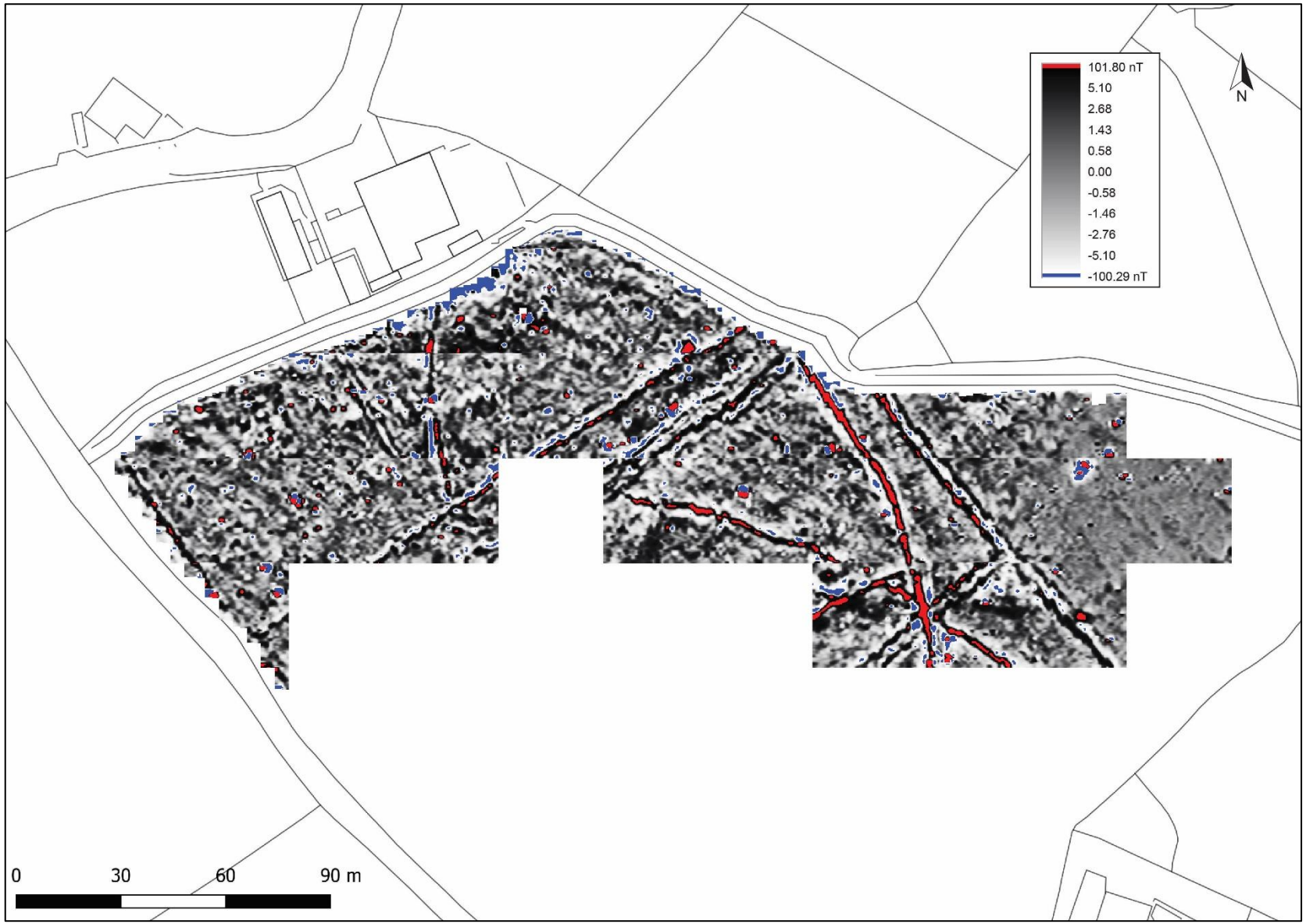

FIGURE 9: RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED; GRADIATED SHADING.

APPENDIX 2: SUPPORTING PHOTOGRAPHS

1. View of the western corner of the site; viewed from the south-east (no scale).

2. View south from the site towards the sea; viewed from the north-west (no scale).

3. View across the site; viewed from the south-west (no scale).

4. View across the site, towards the school; viewed from the south (no scale).

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