

LOWER BOSCASWELL FOGOU

LOWER BOSCASWELL

ST. JUST

CORNWALL

Results of a Geophysical Survey



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Lower Boscaswell Fogou, Lower Boscaswell, St. Just, Cornwall

Results of a Geophysical Survey

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Work undertaken by SWARCH for The Cornwall Wildlife Trust (the Client)

SUMMARY

South West Archaeology Ltd. (SWARCH) was commissioned by The Cornwall Wildlife Trust to undertake a geophysical survey across the site of the Scheduled Lower Boscaswell fogou. This work was undertaken in order to inform subsequent investigation and management strategies.

The site is located on the western end of the settlement of Lower Boscaswell in the parish of St Just, adjacent to an extant Iron Age probable courtyard house. An underground chamber here was known in antiquarians from at least the 1840s and has been excavated in the 1860s and 1950s. Extending west of the possible fogou was a 'great wall' up to 3.6m wide; this structure may have formed part of the fogou but it was destroyed in the 1960s.

The geophysical survey identified several features, including a possible ditch, but most of the survey returned a probable geological response that will have obscured features of archaeological interest, if they are present. No clear anomalies were identified that would correspond to the location and orientation for the fogou, but neither were any anomalies that correspond to removed historic field boundaries visible on the historic mapping.



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PROJECT CREDITS

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1.0 INTRODUCTION

LOCATION:	LOWER BOSCASWELL FOGOU
PARISH:	ST. JUST
COUNTY:	CORNWALL
NGR:	SW 37622 34860
SWARCH REF.	JBF19

1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by The Cornwall Wildlife Trust (the Client) to undertake a geophysical survey across the site of the Lower Boscaswell fogou and surrounding area. This work was undertaken in accordance with best practice and ClfA guidelines.

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The centre of the survey area is located c.190m from the approximate centre of the settlement of Lower Boscaswell, and c.350m to the north of Geevor Tin Mine. The survey area consists of a single pasture field, with pasture fields to the north, west and south. Immediately to the east is an Iron Age enclosure (MCO51546), with the settlement of Lower Boscaswell beyond that. The site slopes gently down from the east, dropping from c.90m AOD to c.80m AOD, but the slope is not consistent, with a low ridge closer to the western edge of the site.

The soils of this area are the well-drained gritty loamy soils with occasional humose surface horizon of the Moretonhampstead Association (SSEW 1983). The site is underlain by the hornfelsed slates and siltstones of the Mylor Slate Formation to the west, and the Granite of the Land's End Intrusion to the east (BGS 2019).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

The site is located in the parish of St. Just and towards the west extent of the settlement of Lower Boscaswell. The settlement of Boscaswell is first referenced in 1284 as *Boscasul*. The extant settlement is largely post-medieval and 19th century in date, with the Greevor and Levant tin mines visible to the south. The site and the settlement of Lower Boscaswell is located within the St. Just part of the Cornwall and West Devon Mining Landscape World Heritage Site.

Boscaswell lies within a landscape of adapted Prehistoric fields; an Iron Age enclosure (a probable courtyard house) lies immediately to the east (MCO51546) and this included the possible fogou (MCO6878). A field immediately to the north was called The Round in 1840 (MCO7622), and there are the earthworks of a circular platform c.130m diameter just to the north-west. Fieldwalking has recovered Iron Age and Romano-British pottery (see CAU 2003), as well as lithic material, from the fields to the south of the site (e.g. MCO39821), and a Beaker period pit with evidence for burning (MCO56584).

The site has been of some antiquarian interest (e.g. Blight 1864) and was partly excavated in the 1950s (Clark *et al.* 1957) (see Figure 2). The excavation defined the fogou and recovered pottery dating to the medieval and post-medieval period, as well as two sherds of early medieval grass-marked pottery and. Several sherds of finer pottery are illustrated in that article, which contra the authors may in fact be Romano-British or even post-Roman Gwithian Style (I Wood *pers. comm.*). If so, the recovery of Gwithian Style vessels with grass-marked platters would mirror the situation at the fogou site at Boden on the Lizard (Gossip 2013). Extending from the site to the west was a tall

stone-faced bank ('great wall') up to 3.6m wide to the east, tapering to the west. This was removed in the 1960s but may also have formed part of the monument.

The fields to the west and south were the subject of a geophysical survey carried out on behalf of the National Trust (Archaeophysica 2009); the geological responses were very strong and thus there are many caveats. However, a series of probable buried lynchets were identified together with other possible structural evidence.

1.4 METHODOLOGY

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



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

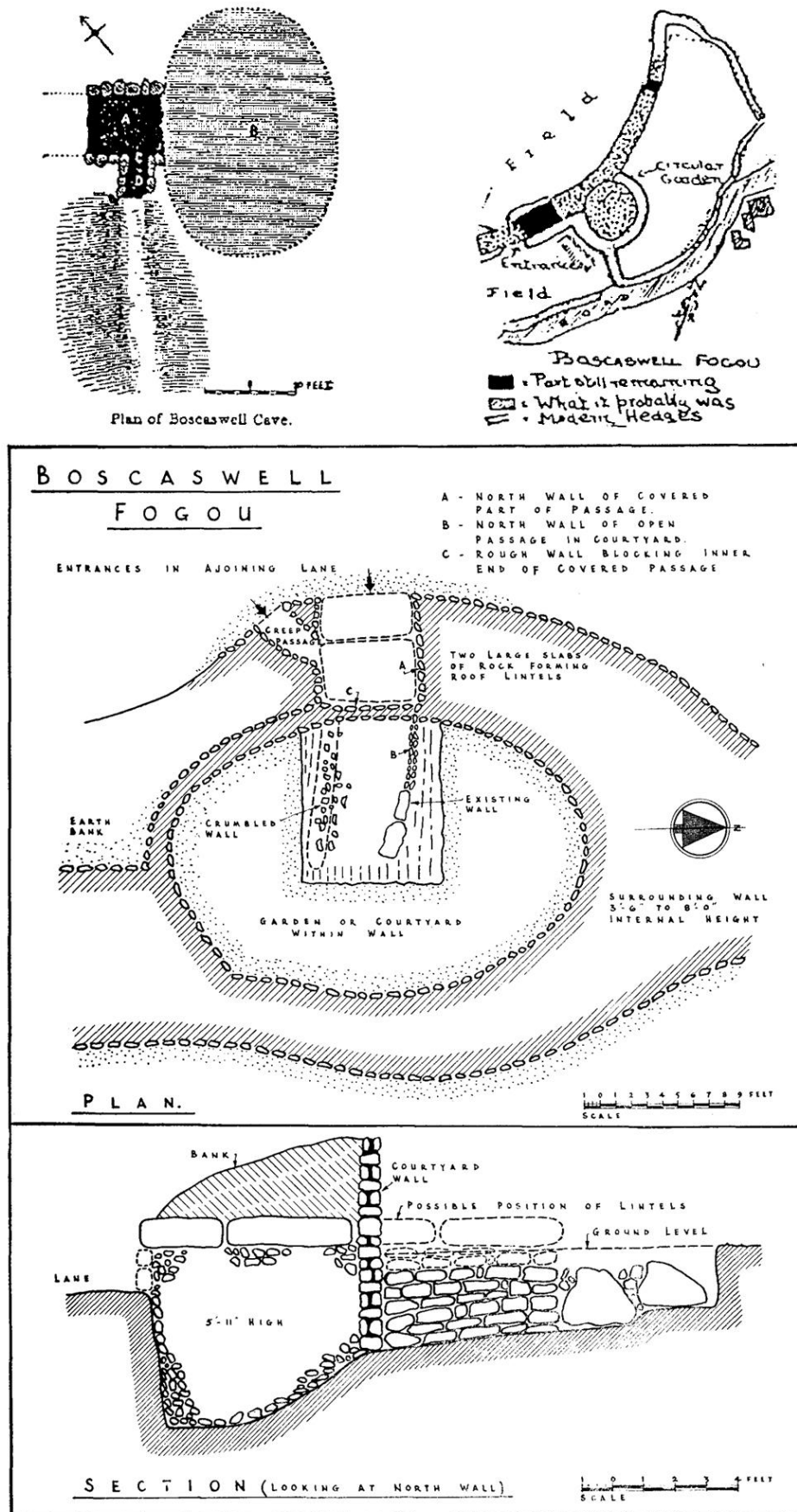


FIGURE 2: ANTIQUARIAN INVESTIGATIONS AT BOSCASWELL FOGOU (AFTER CAU2003, FIGURE 11).

2.0 CARTOGRAPHIC DEVELOPMENT

The earliest cartographic source available to this study is the 1843 tithe map of the parish of St. Just. The complex aggregated fields indicate a long history of development and adaptation, from Prehistoric through to the post-medieval period. The field names are largely uninformative, but the record of land ownership and tenancy point to a highly fragmented situation likely to arise from the enclosure/subdivision of a common field system and/or a mining landscape of small tofts and crofts. The Iron Age enclosure appears to correspond with within plots 709 and 714. The site itself is comprised of three smaller fields, plots 745, 746 and 763. The relevant entries from the tithe apportionment are listed in the table below.



FIGURE 3: EXTRACT FROM THE 1843 ST JUST TITHE MAP, THE APPROXIMATE SITE LOCATION IS INDICATED (PRO).

TABLE 1: EXTRACT FROM THE TITHE APPORTIONMENT OF 1841. THE SITE OCCUPIES THE PLOTS HIGHLIGHTED.

Landowner	Lessee	Occupier	Plot number	Plot name	Usage
Boscaswell					
Samuel Borlase Esq.	William Giles	William Lanyon	709	Garden	Arable
John Stephens	-	Edwards Nankervis	714	Garden	Arable
James Woolcock	-	James Woolcock	719	House and Garden	House &c.
Samuel Borlase Esq.	William Giles	William Lanyon	745	Long Field	Arable
	John White	Ann Roberts	746	Meadow	Arable
	Thomas Woolcock	Mary Woolcock	763	-	-
	John White	Ann Roberts	764	Wheaten Field	Arable
	William Giles	William Lanyon	771	Perelman	Arable
The Doctor's Row					
Richard Tomas Esq.	Edward Nankervis	Jane Davey	762	Great Field	Arable
Tenement in Boscaswell					
Nicholas Grenfell	Lucy Richards	Robert Richards & Edwards Nankervis	725	Garden in Boscaswell	Arable
			744	Town Field	Arable
The Reverend Michael Noel Peters	Thomas Oats	Thomas Oats	770	Road Field	Arable

The Ordnance Survey (OS) 1st and 2nd edition maps (Figures 3 and 4) indicate little change but more detail. The internal field boundaries were removed between the production of the 1963 and the 1976×78 OS maps of the area; the 1976×78 map is the first to label the site as *fogou*.

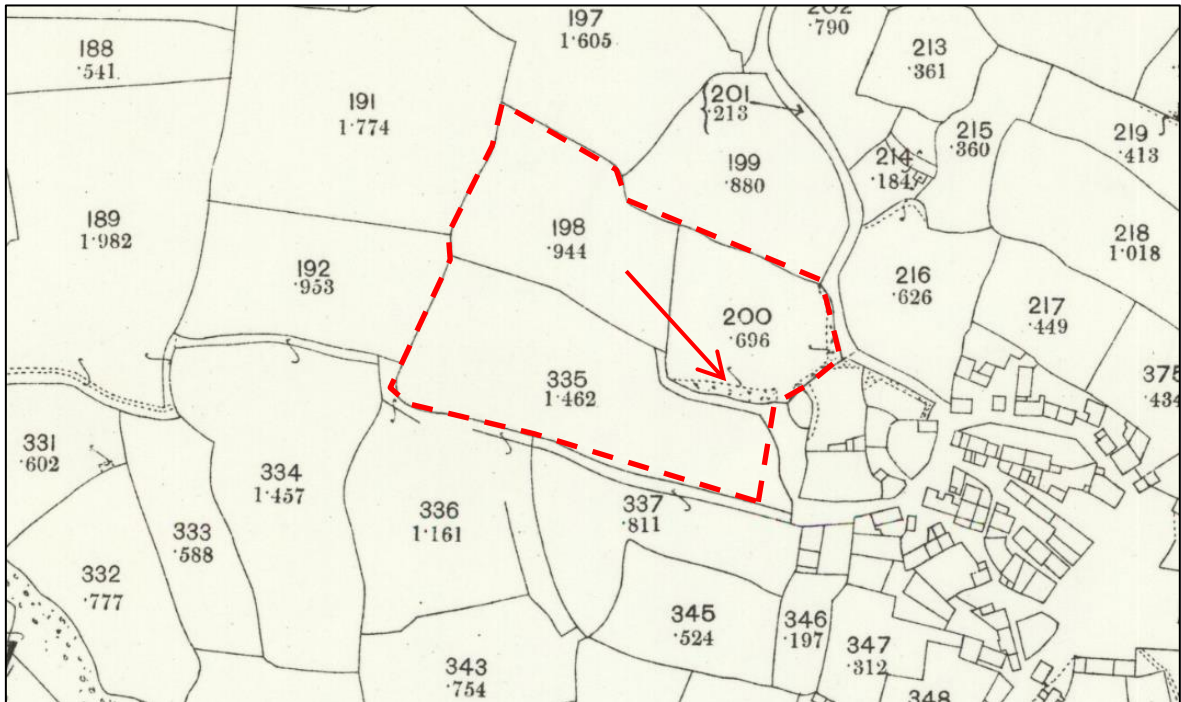


FIGURE 4: EXTRACT FROM THE OS 25 INCH MAP, SURVEYED 1875, PUBLISHED 1886 (CORNWALL SHEET LXVII.10). THE LOCATION OF THE SITE IS INDICATED (NLS). THE 'GREAT WALL' IS ALSO INDICATED.

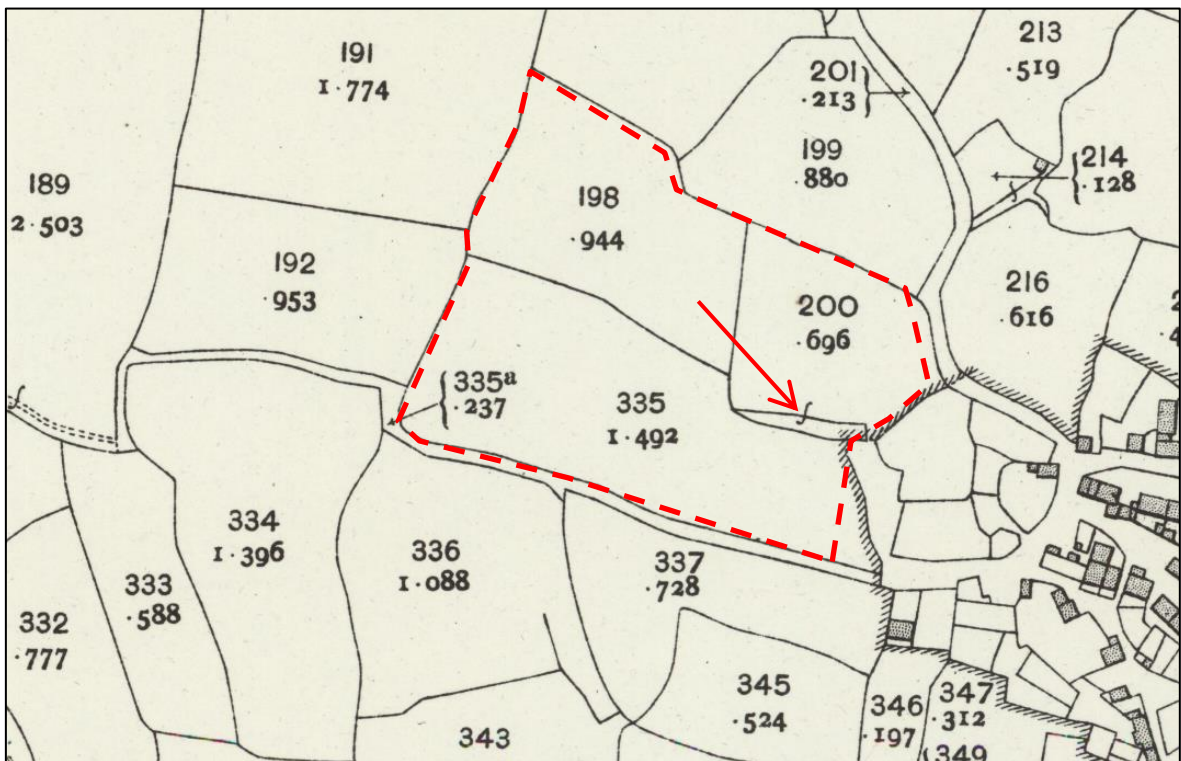


FIGURE 5: EXTRACT FROM THE OS 25 INCH MAP, SURVEYED 1906, PUBLISHED 1908 (CORNWALL SHEET LXVII.10). THE LOCATION OF THE SITE IS INDICATED (NLS). THE 'GREAT WALL' IS ALSO INDICATED.

3.0 GEOPHYSICAL SURVEY

3.1 INTRODUCTION

An area of c.1.1ha 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 17th of September 2019 by P. Bonvoisin; the survey data was processed by P. Bonvoisin.

3.2 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* (ClfA 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.

Area Details: 1.0129ha surveyed; Max. 166.83nT, Min. -194.76nT; Standard Deviation 12.38, mean 0.07nT, median 0.00nT.



FIGURE 6: VIEW OF THE EASTERN PART OF THE FIELD LOOKING TOWARDS THE FOGOU AND IRON AGE ENCLOSURE; VIEWED FROM THE WEST-NORTH-WEST.

3.3 SITE INSPECTION

The survey area covers a single field immediately to the west of Lower Boscaswell. A track runs along part of the eastern boundary of the site and along the southern boundary of the site. The north, west and eastern boundaries of the site comprise of drystone walls, with the western and southern boundaries being revetment walls. Access to the site is through a gate in the eastern wall, with most of the eastern boundary forming part of an Iron Age enclosure (MCO51546) with a metallic fence separating the site and the monument.

The field was under pasture at the time of the site visit. There is a large manhole cover towards the south-eastern corner of the site and the ground was uneven near this location, likely due to near-surface geology or spoil from the construction of the utility. A low sloping ridge ran parallel to the western boundary of the site, set c.20m back from the boundary; this corresponds with anomaly group 7 in the geophysical survey results. A full complement of site photographs can be found in Appendix 2.



FIGURE 7: VIEW OF THE WESTERN PORTION OF THE FIELD; VIEWED FROM THE EAST.

3.4 RESULTS

Table 2 with the accompanying Figures 8 and 9, show the analysis and interpretation of the geophysical survey data. Additional graphic images of the survey data can be found in Appendix 1.

TABLE 2: INTERPRETATION OF GRADIOMETER SURVEY DATA.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Moderate to weak response, probable	Bent linear	Ditch or cut feature	Indicative of a ditch or discrete cut feature, possibly associated with anomaly groups 2 and 3. Responses of c.+4.61nT to c.+1.47nT.
2	Moderate to weak response, probable	Linear	Ditch or cut feature	Indicative of a ditch or discrete cut feature, possibly associated with anomaly groups 1 and 3. Responses of c.+4.52nT to c.+1.08T.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
3	Weak positive response, possible	Curvi-linear	Ditch or cut feature	Indicative of a ditch or discrete cut feature, possibly associated with anomaly groups 1 and 2. Responses of c.+2.66nT to c.+0.6nT.
4	Weak negative response, probable	Linear	Possible field drain	Indicative of a raised feature, possibly representative of a field drain or similar feature. Responses of c.-0.4nT to c.-1.2nT.
5	Weak negative response, possible	Linear	Possible field drain	Indicative of a raised feature, possibly representative of a field drain or similar feature. Responses of c.-0.3nT.
6	Weak negative response, possible	Linear	Possible field drain	Indicative of a raised feature, possibly representative of a field drain or similar feature. Responses of c.-0.4nT.
7	Strong to moderate mixed response, probable	Amorphous area	Geological response	Indicative of a geological response, corresponds to change in ground level visible on site. Responses of c.+20nT to c.-15nT.
8	Very strong mixed response, probable	Amorphous area	Modern disturbance	Indicative of disturbed ground or a strong geological response, may correspond to uneven ground relating to the construction of the nearby utility. Responses of c.+70nT to c.-70nT.

3.5 DISCUSSION

The survey identified 8 groups of anomalies showing identifiable features. Anomalies 1,2 and 3 have the highest archaeological potential, with the other anomaly groups likely to correspond to land drains or geological responses.

Groups 1 (c.+4.6 to +1.5nT) and 2 (c.+4.5nT to +1.1nT) are moderate to weak positive linears, indicative of a ditch or similar discrete cut feature. Groups 1 and 2 are likely related and part of the same original feature. Anomaly group 3 (c.+2.7nT to +0.6nT) is a weak positive response that is likely a continuation of anomaly group 1. These anomalies may represent an enclosure or relict field boundary.

Groups 4 (c.-1.2nT to -0.4nT), 5 (c.-0.4nT) and 6 (c.-0.3nT) are weak negative linears, indicative of raised ground; their form and narrow width may represent buried features such as field drains or water pipes.

Group 7 (c.+20nT to -15nT) is a strong to moderate amorphous area, the positioning correlates to a steeper change in elevation visible during the site visit and is likely a geological response.

Group 8 (c.+70nT to -70nT) is a very strong mixed amorphous area surrounding the manhole cover situated on the southern boundary of the site, and is indicative of a strong geological response; small mounds were present in the near vicinity of the manhole cover, and may be partially represented by anomaly group 8.

Di-Polar anomalies and magnetic disturbance are present across the site. Magnetic disturbance across the site is mostly associated with the manhole cover present along the southern boundary of the site, with a second area within anomaly group 7 of unclear origin.

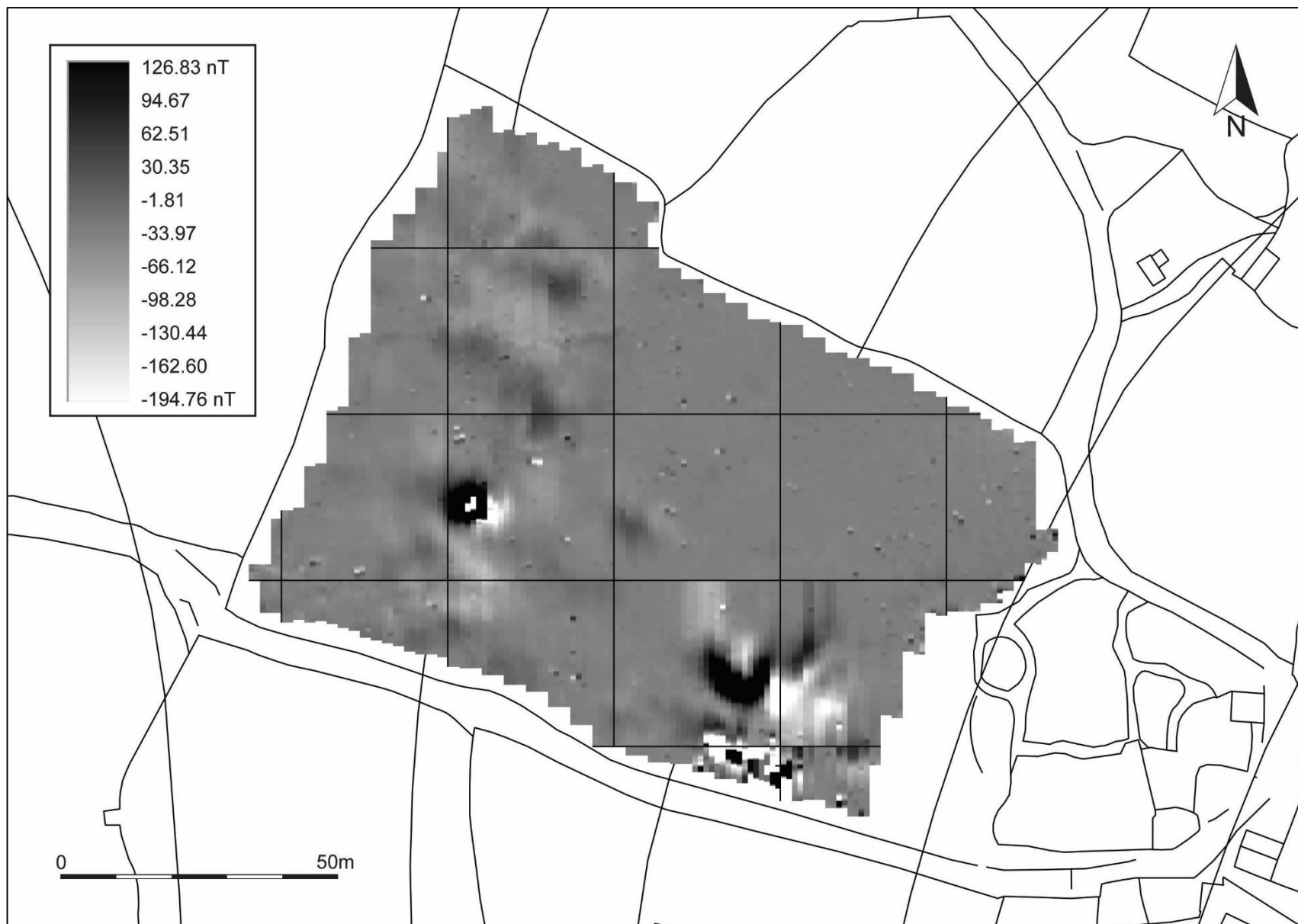


FIGURE 8: SHADE PLOT OF THE GRADIOMETER SURVEY DATA; GREYSCALE.



FIGURE 9: INTERPRETATION OF THE GRADIOMETER SURVEY DATA.

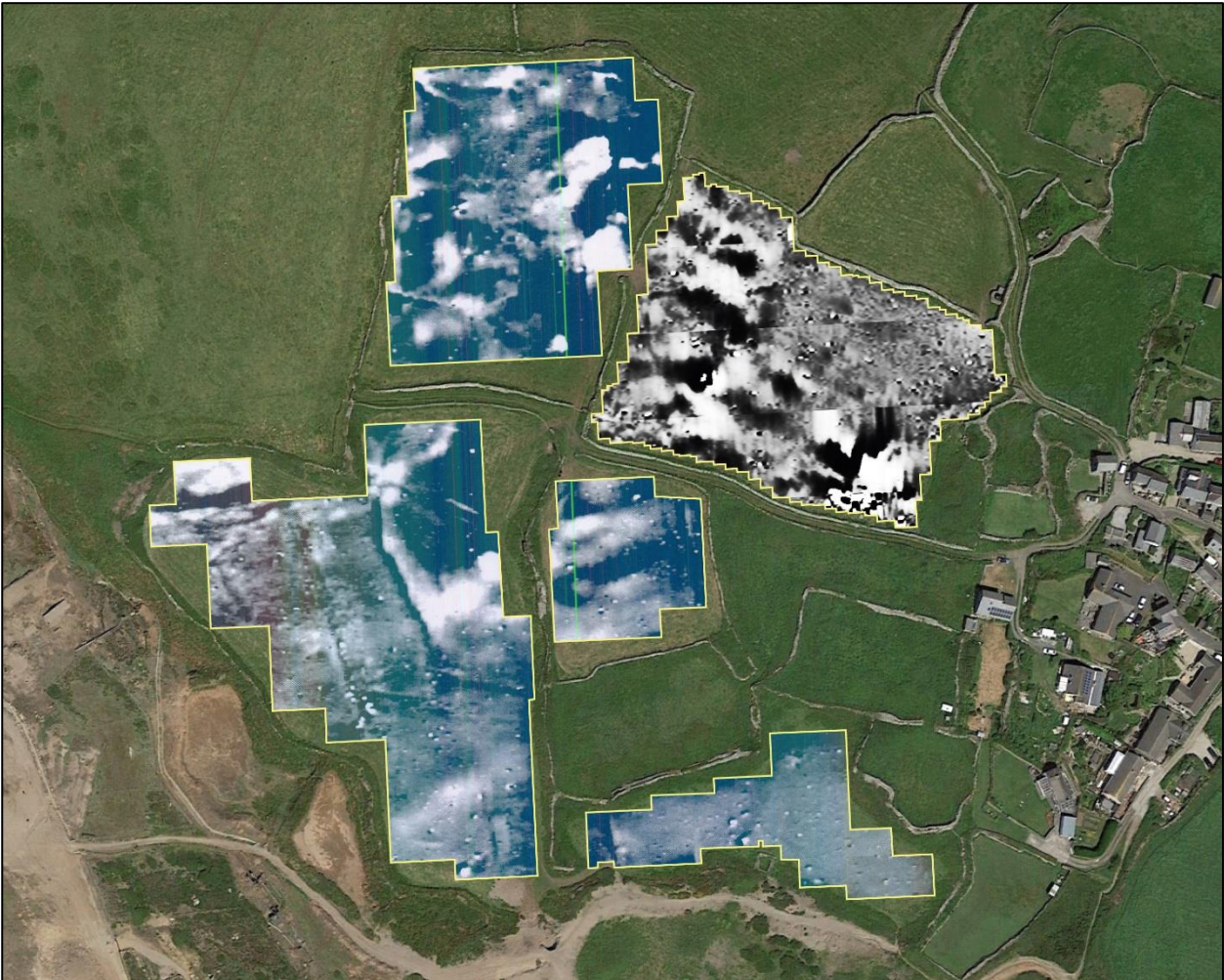


FIGURE 10: COMPOSITE IMAGE SHOWING THE RESULTS OF THE SURVEY IN RELATION TO THAT OF 2009 (ARCHAEOPHYSICA 2009).

4.0 CONCLUSION

The results of the gradiometer survey have proven equivocal: some archaeological features have been identified, but the strength of the geological response is such that the fogou – if present – is not identifiable. Comparison with the 2009 survey indicates the strong geological responses are confined to a relatively discrete area and magnetometry remains a valid prospection technique.

Some linear anomalies likely to correspond with buried ditches were identified, but curiously the field boundaries removed in the 1960s did not, implying the stone walls were not accompanied by ditches. The fact that the 2009 survey identified anomalies it identified as lynchets – and that there are (or were) clear earthworks in this area – would suggest that the sequence of enclosure, and the means by which that enclosure was carried out, is more complex than hitherto appreciated.

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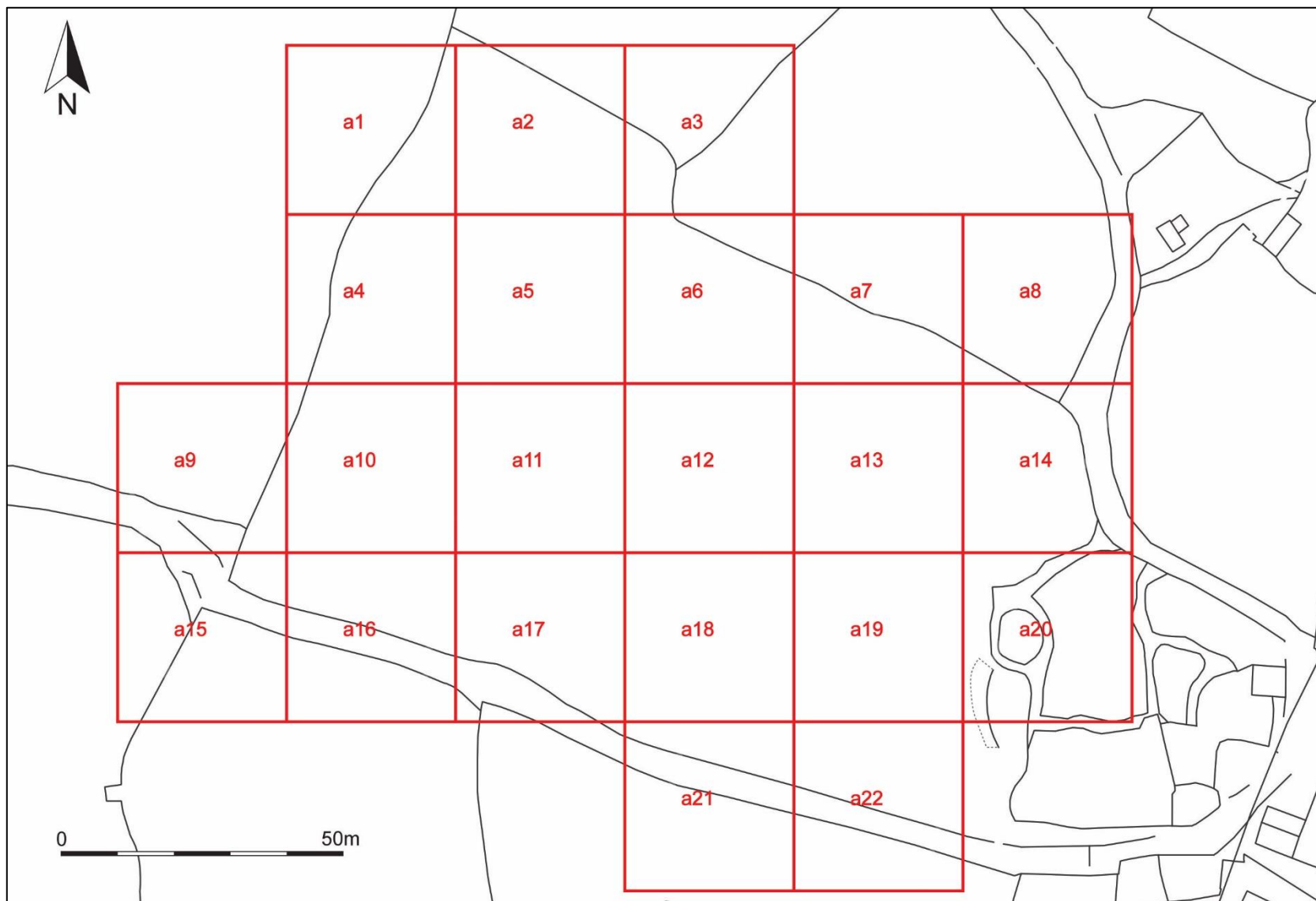
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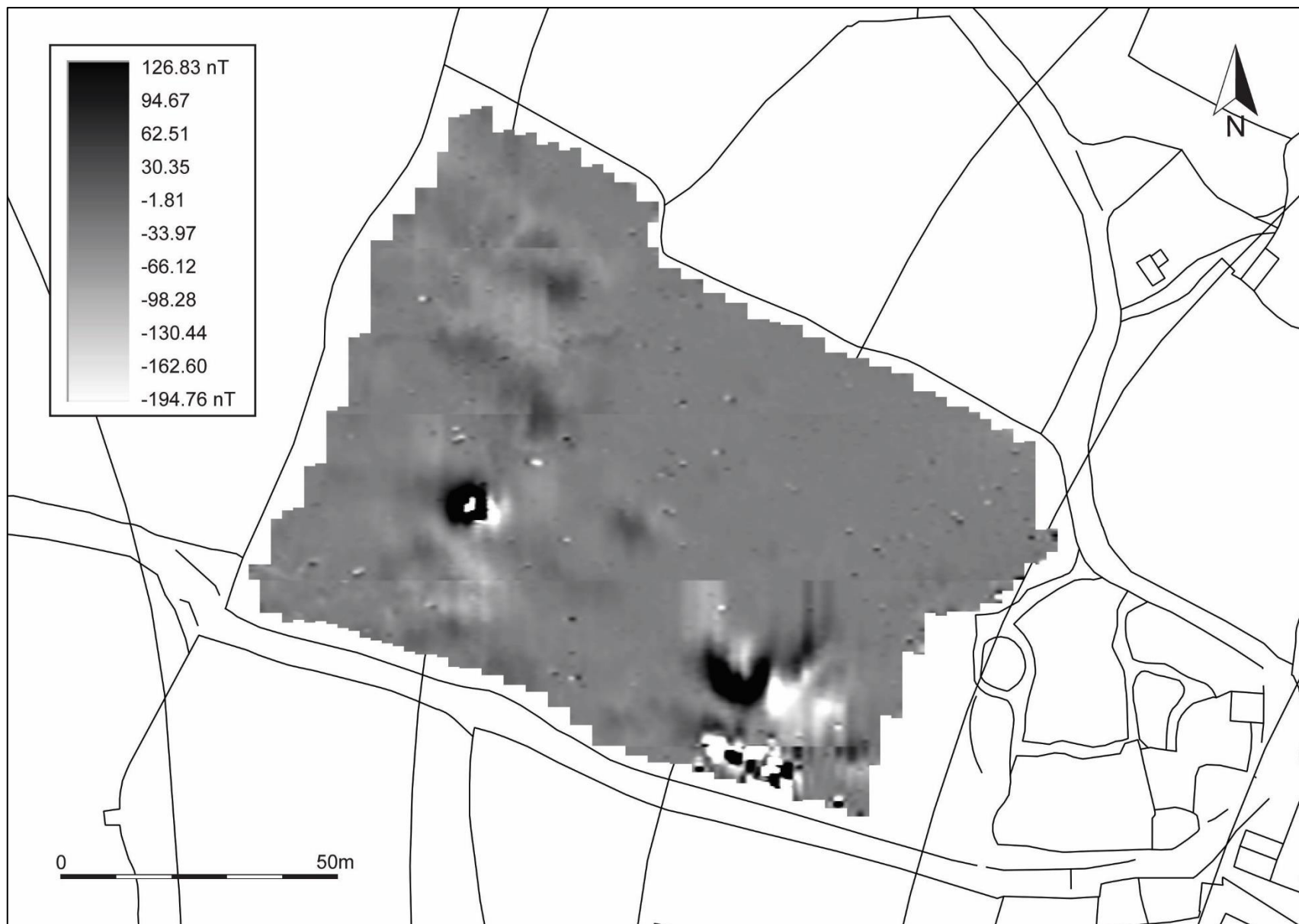
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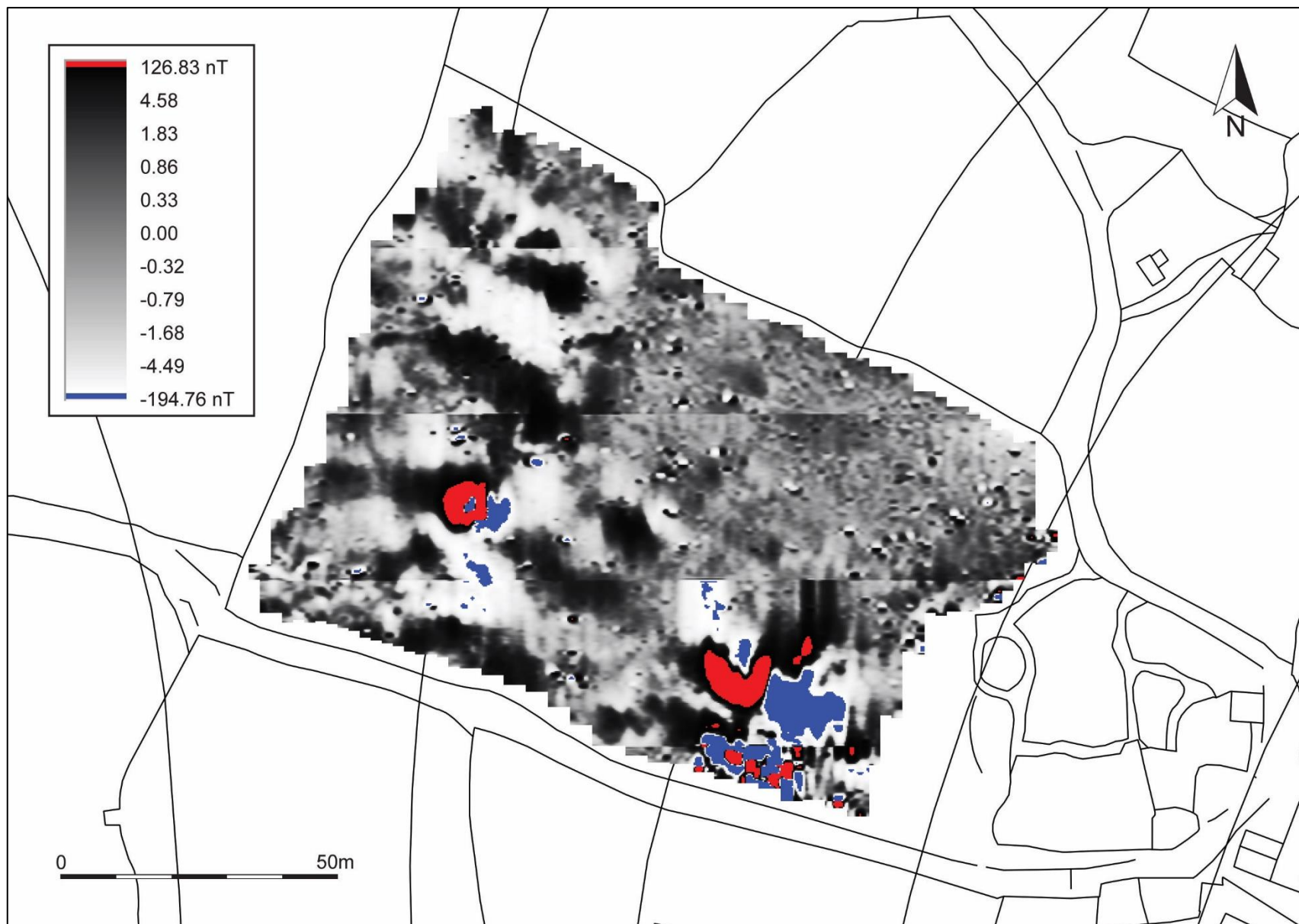
APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY



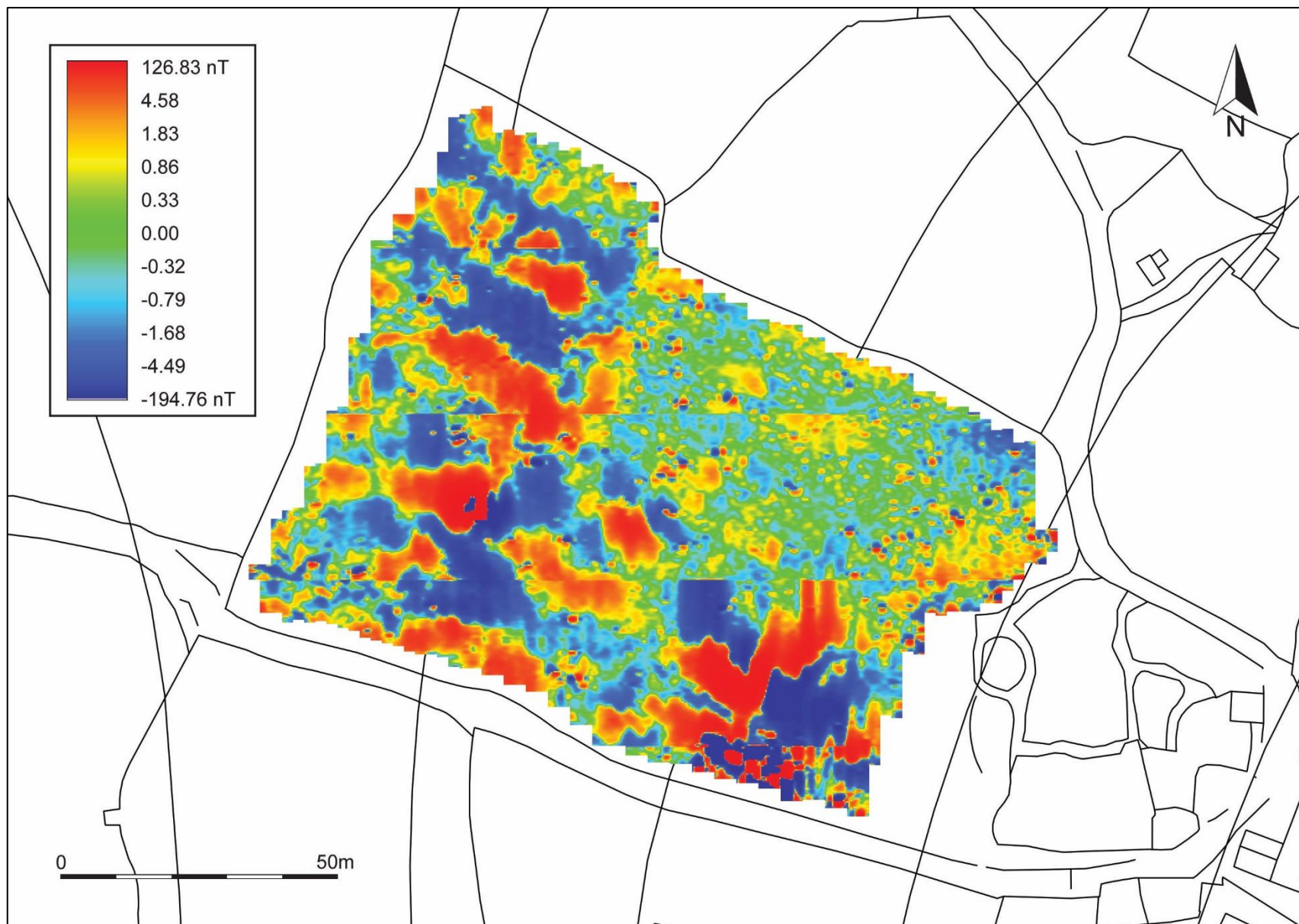
LOCATION AND NUMBERS OF THE SURVEY GRIDS.



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



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



RED-BLUE-GREEN (2) SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED; GRADIATED SHADING.

APPENDIX 2: SUPPORTING PHOTOGRAPHS



1. THE WESTERN BOUNDARY OF THE SITE; VIEWED FROM THE SOUTH.



2. THE MANHOLES LOCATED ON THE SOUTHERN BOUNDARY OF THE SITE; VIEWED FROM THE NORTH (2M SCALE).



3. THE IRON AGE ENCLOSURE FROM THE SITE; VIEWED FROM THE WEST (2M SCALE).



4. THE IRON AGE ENCLOSURE AND SITE BEYOND FROM THE EDGE OF LOWER BOSCASWELL; VIEWED FROM THE EAST.



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