Llanmelin Wood Outpost, Shirenewton, Chepstow

Results of a Geophysical Survey

Prepared for the Caerwent Historic Trust By:

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

This survey was undertaken in an attempt to discover the previous extent of the ramparts of Llanmelin Wood Outwork (PRN: 04437g), part of the scheduled Llanmelin Wood Camps (MM024) which also includes Llanmelin Wood Hillfort (PRN: 01026g). To this end a geophysical survey was conducted in the field immediately east of the remaining earthworks. For the purposes of this report the Llanmelin Wood Outwork is referred to as the Outpost. This work was undertaken in accordance with best practice and CIfA guidelines.

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The primary survey area is located to the north-east of Llanmelin Wood Hillfort, and immediately east of Llanmelin Wood Outpost, with some of the survey area set within the centre of the Outpost itself. The Outpost is currently wooded, with woodland covering the known extent of the site. This area is also listed as woodland on the 1841 Shirenewton tithe apportionment; the earthworks of the Outpost are in a partially degraded state but remain very visible. The survey area to the immediate east of the site lay under pasture, and is part of a much larger field. The centroid of the survey area is National Grid Reference ST 46393 92803. The survey area lies *c.*1.75km south-west of Shirenewton and *c.*1.6km east-north-east of Llanvair Discoed (Figure 1).

The solid underlying geology consists of Dolostone of the Black Rock Limestone subgroup (BGS 2019), which is overlain by the freely draining slightly acidic but base-rich soils (Soilscapes 2019).

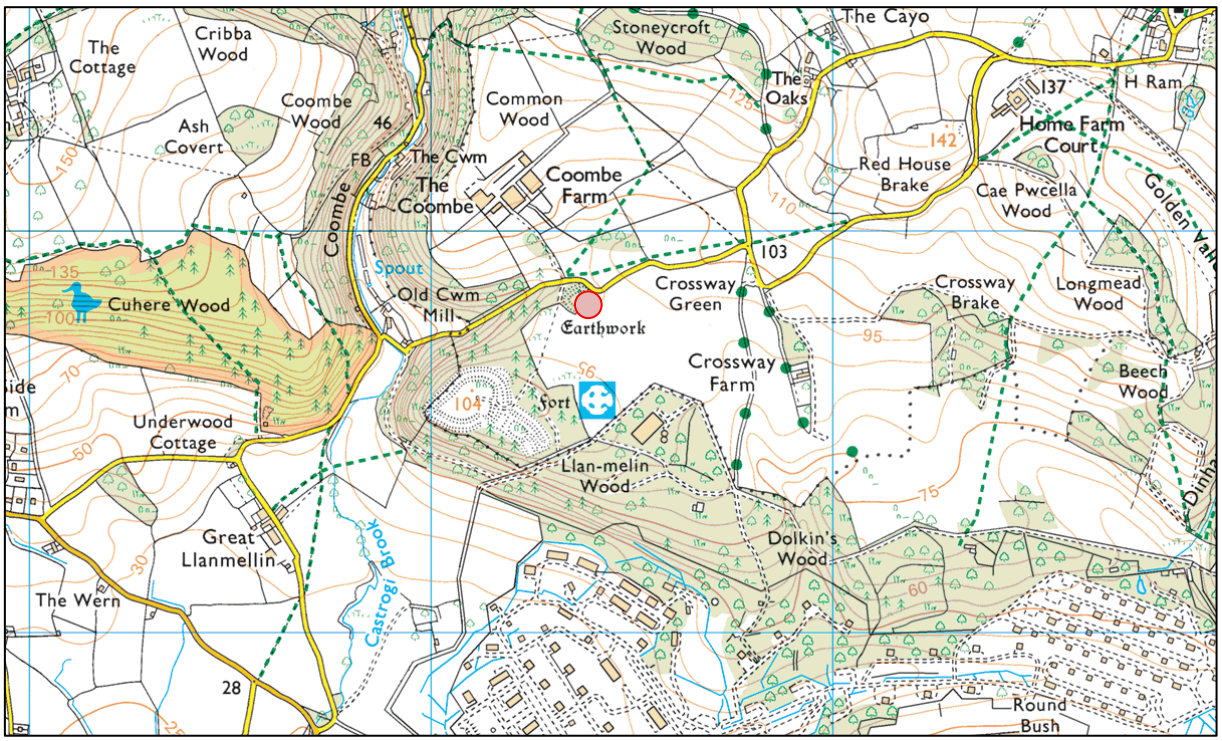

FIGURE 1: SITE LOCATION WITH APPROXIMATE LOCATION OF SITE INDICATED. REPRODUCED FROM THE ORDINANCE SURVEY'S MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S OFFICE, CROWN COPYRIGHT LICENSE NO. 100051757

1.3 Historical Background

The Outpost is a small bivallate enclosure or fort, possibly associated with the larger Llanmelin Wood Hillfort to the south-west. Both sites were excavated by VE Nash-Williams in the 1930s (Nash-Williams 1933), with the main phases of the earthworks being dated to the later Iron Age. Within the Outpost, one sherd of Iron Age pottery and some 12th century material was found, with the rectangular structure within the Outpost stated to be of probable medieval date.

Flint find spots are present throughout the field to the east of the Outpost, showing evidence of earlier pre-historic activity within the landscape. A post-medieval limekiln is also present south of the site, and can be seen on the 25-inch Ordnance Survey mapping.

1.4 Historic Mapping

The earliest seen mapping of the site and surrounding area was the 1841 Shirenewton Tithe. Little detail was visible other than plot boundaries and a copy of the tithe map has therefore not been included. The current boundary between the woodland containing the standing remains of the Outpost and the field is present on the tithe map, with a further straight (and therefore, likely fenced) boundary immediately to the south of the Outpost, dividing the larger field. The field to the west was listed as pasture on the apportionment, and to the east, as arable. The 1901 Ordnance Survey mapping (Figure 2) shows the Outpost in relation to Llanmelin Wood Hillfort, listed as 'C a m p' on the map. The post-medieval limekiln is also visible. The field edge is shown as dashed, indicating an unfenced, and therefore arable, field. The boundary to the immediate east of the Outpost has been straightened since the early 20th century and now comprises a wire fence as well as a hedge and low bank.

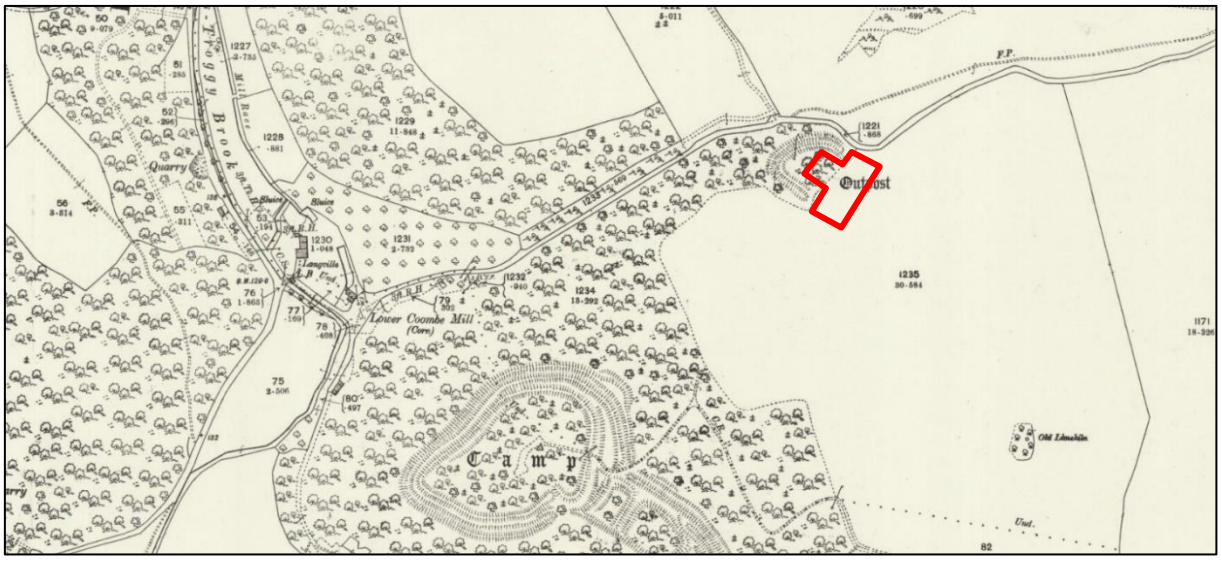

Figure 2: Ordnance Survey 1901 25" with the approximate survey area indicated.

1.5 LiDAR Imagery

LiDAR imagery (Figure 3) shows both the main Hillfort and the Outwork, and corresponds with much of the detail visible on the 1901 mapping. Due to the tree cover the detail over the Outpost is rougher, and shows little other than the broad form of the earthworks. The north-east to south-west linears within the field to the south of the Outpost correspond to modern crops.

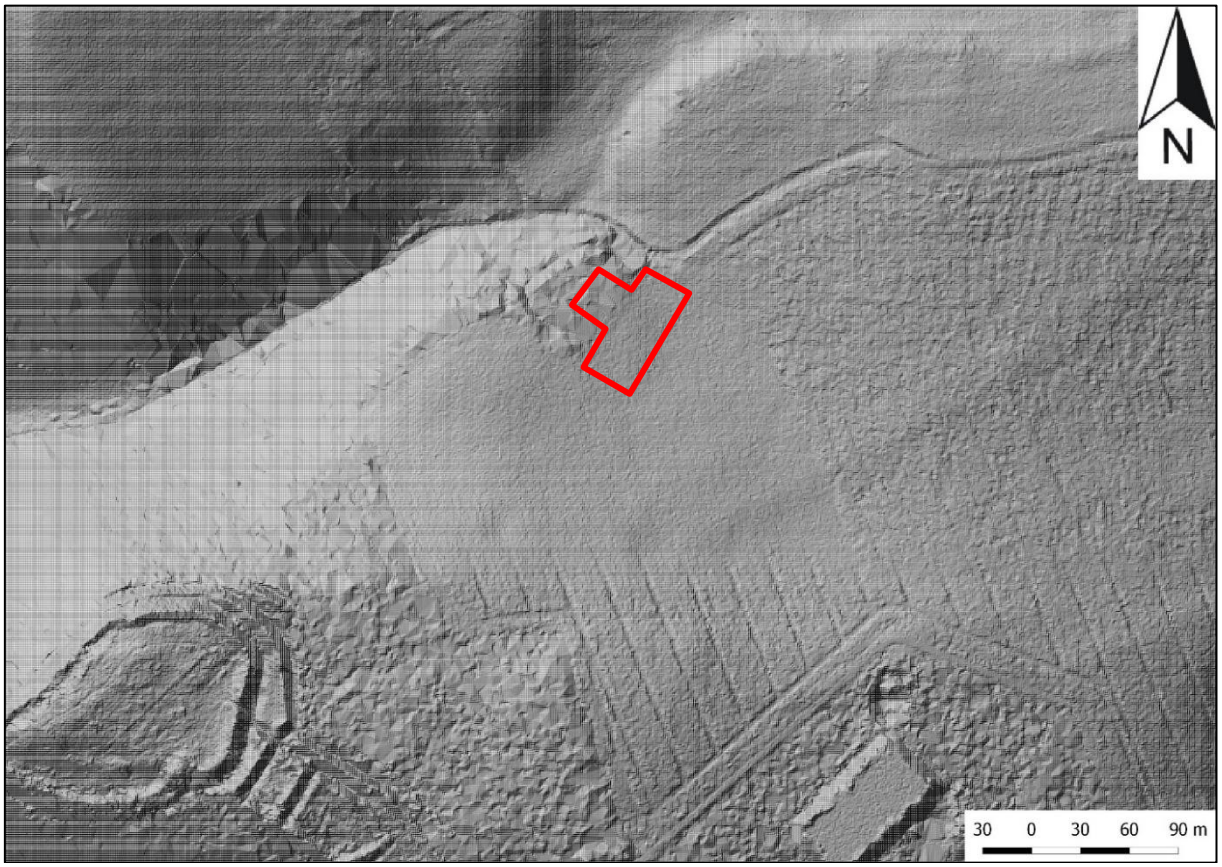

Figure 3: LiDAR image of the site, with the approximate survey area indicated. This is a QGIS-generated image, Contains Natural Resources Wales information © Natural Resources Wales and database right 2019. All rights reserved.

2.0 GEOPHYSICAL SURVEY

2.1 INTRODUCTION

An area of approximately 0.5ha was the subject of a magnetometry (gradiometer) survey. The purpose of this survey was to identify the shape and extent of any continuation of the Outpost into the adjoining field, so as to inform conservation and interpretation of this part of the heritage asset.

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 one to two grids. 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*.

Processes: Clip +/- 3SD; DeStripe all traverses, median. DeStagger of particular grids.
Survey Area Details: 0.48355ha surveyed; Max. 101.20nT, Min. -97.21nT; Standard Deviation 5.67, mean 0.12nT, median 0.00nT.

2.3 RESULTS

Table 1, along with Figures 4 and 5 show the results, and interpretation of the geophysical survey data. Additional images of the survey data can be found in Appendix 1.

Anomaly Group	Class and Certainty	Form	Characterisation	Gradiometer readings
1	Moderate positive with negative border, probable	Bent linear	Enclosure ditch	Responses range from *c.*+9nT to -3nT.
2	Moderate positive with negative border, probable	Bent linear	Ditch	Responses range from *c.*+5nT to -2nT.
3	Weak positive with parallel weak negative, probable	Parallel linear	Ditch	Responses range from *c.*+4nT to -1nT.
4	Strong positive, probable	Small ovoids	Pits	Responses range from *c.*+13nT to +4nT.
5	Weak positive, possible	Linear	Cut feature	Responses range from *c.*+2.5nT to +1.5nT.
6	Weak positive, possible	Fragmented linear	Possible cut feature	Responses range from *c.*+2nT to +1nT.
7	Moderate positive, probable/possible	Amorphous linear	Possible cut feature	Responses range from *c.*+5nT to +1nT.
8	Weak positive, possible	Linear	Ditch	Responses range from *c.*+2nT to +1.5nT.
9	Weak positive, possible	Forked linear	Possible cut feature	Responses range from *c.*+1nT to +0.5nT.
10	Weak positive, possible	Linear	Ditch	Responses range from *c.*+1.5nT to +1nT.
11	Moderate positive, possible	Fragmented linear	Cut feature	Responses range from *c.*+4.5nT to +1nT.

TABLE 1: INTERPRETATION OF GRADIOMETER SURVEY DATA.

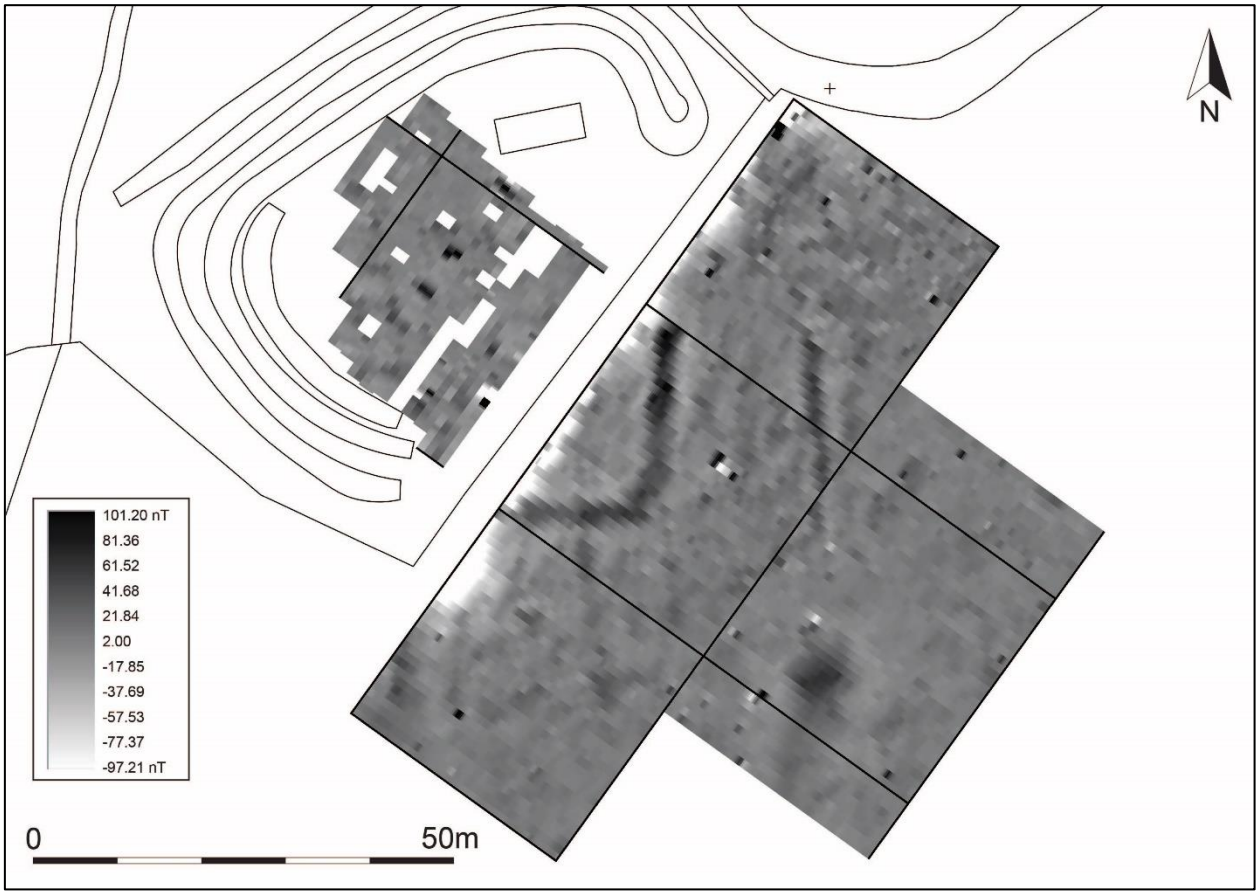

FIGURE 4: GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA.

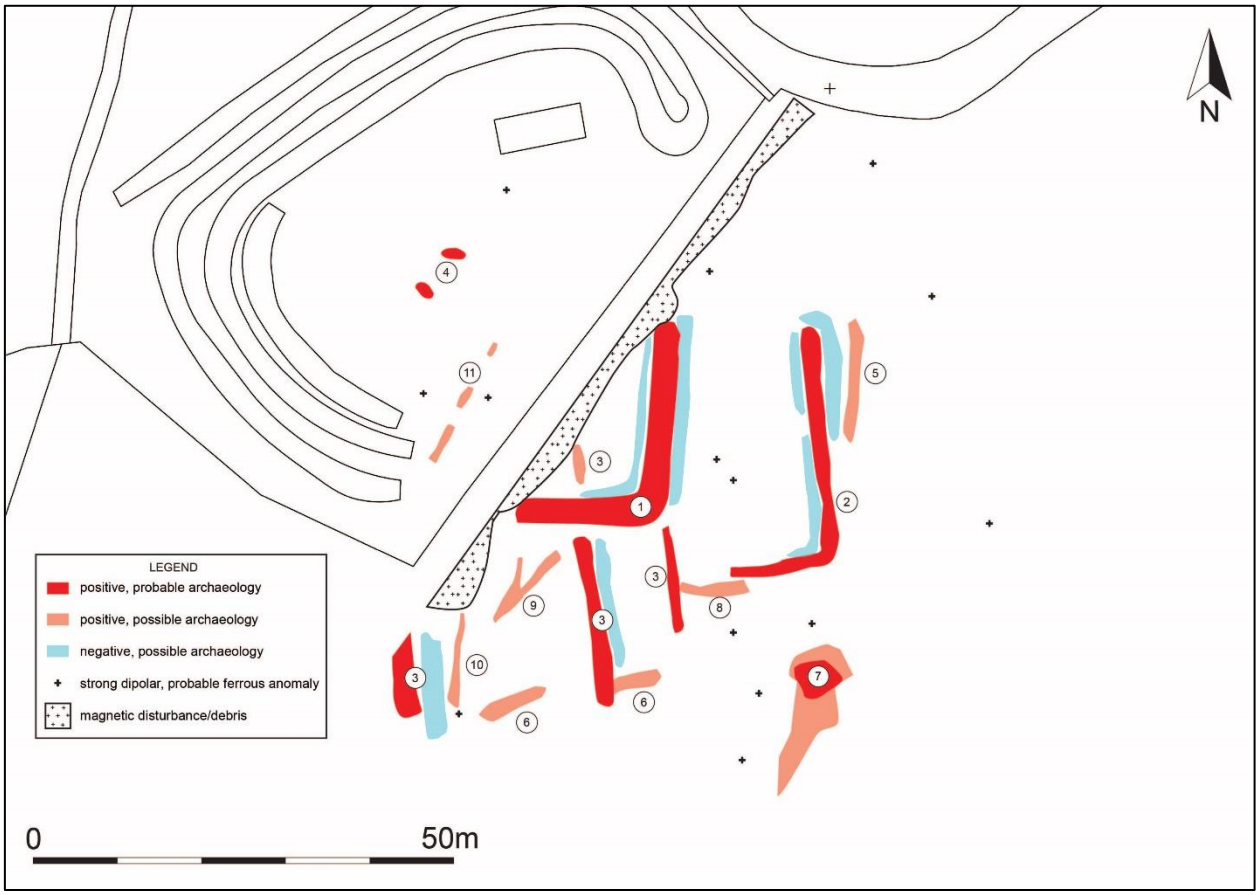

FIGURE 5: INTERPRETATION OF GRADIOMETER SURVEY DATA.

2.4 DISCUSSION

Anomaly group 1 is a roughly right-angled linear indicative of a ditch, the low positive responses bordering the linear may be demonstrative of a bank and ditch sequence. Group 1 appears to match up with surviving earthworks of the Outpost, though the survey results display a more regular feature. Anomaly group 2 has a similar form and position to group 1 but is offset approximately 10m to the east, and may represent further outlying earthworks to the Outpost; with anomaly group 5 possibly indicating a bivallate nature to the outer line of earthworks. Anomaly group 8 possibly represents a continuation of group 2.

Anomaly group 3 are a series of parallel linears orientated roughly north-south; these features do not have a clear origin, and may relate to the Outpost or to later agricultural cultivation features within the field. Google Earth from 2015 shows multiple cropmarks within the field to the east of the Outpost, including a possible system of medieval strip fields. The parallel nature and form of this anomaly group is indicative of a field system. Anomaly groups 6 and 10 may relate to the same system. The stronger response of the western part of group 3 may correspond to the field boundary between plots 304 and 308 on the Shirenewton tithe map of 1841, or to and earlier boundary or woodbank along the same alignment. An ephemeral linear may continue through Group 1, though the weak form and response is unclear.

Anomaly group 4 represents two positive ovoid features within the Outpost, indicative of pits or similar cut features.

Anomaly group 7 is an amorphous feature, with no clear form, although its rough orientation may match up with the crop marks of the possible strip field system.

Anomaly group 9 is a weak positive forked linear, indicative of a cut feature or possible ditch.

Anomaly group 11 is a moderate positive fragmented linear. The responses of the survey within the Outpost are incomplete and disturbed due to the wooded interiors. Group 11 is indicative of a cut feature such as a ditch.

3.0 CONCLUSION

The geophysical survey identified numerous features of archaeological interest, including two features which may relate to the earthworks for Llanmelin Wood Outpost. Anomaly group 1 appears to match up with the existing earthworks, displaying a right-angled corner. Anomaly group 2 echoes the form of anomaly group 1 and may be representative of an outlying earthwork associated with the Outpost. Multiple other features exist within the survey area and possibly relate to agricultural cultivation, reclamation or boundaries, although their origin is not clear.

The response from the interior of the Outpost is extremely fragmented, with two features evident, further surveying of the interior was not possible.

The significance of the archaeological evidence seen during the geophysical survey warrants further examination and discussion, with a targeted excavation being recommended if further interpretation is required.

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www.bgs.ac.uk

Lle Geo-Portal 2019**:** *LiDAR, Digital Terrain Model Data*
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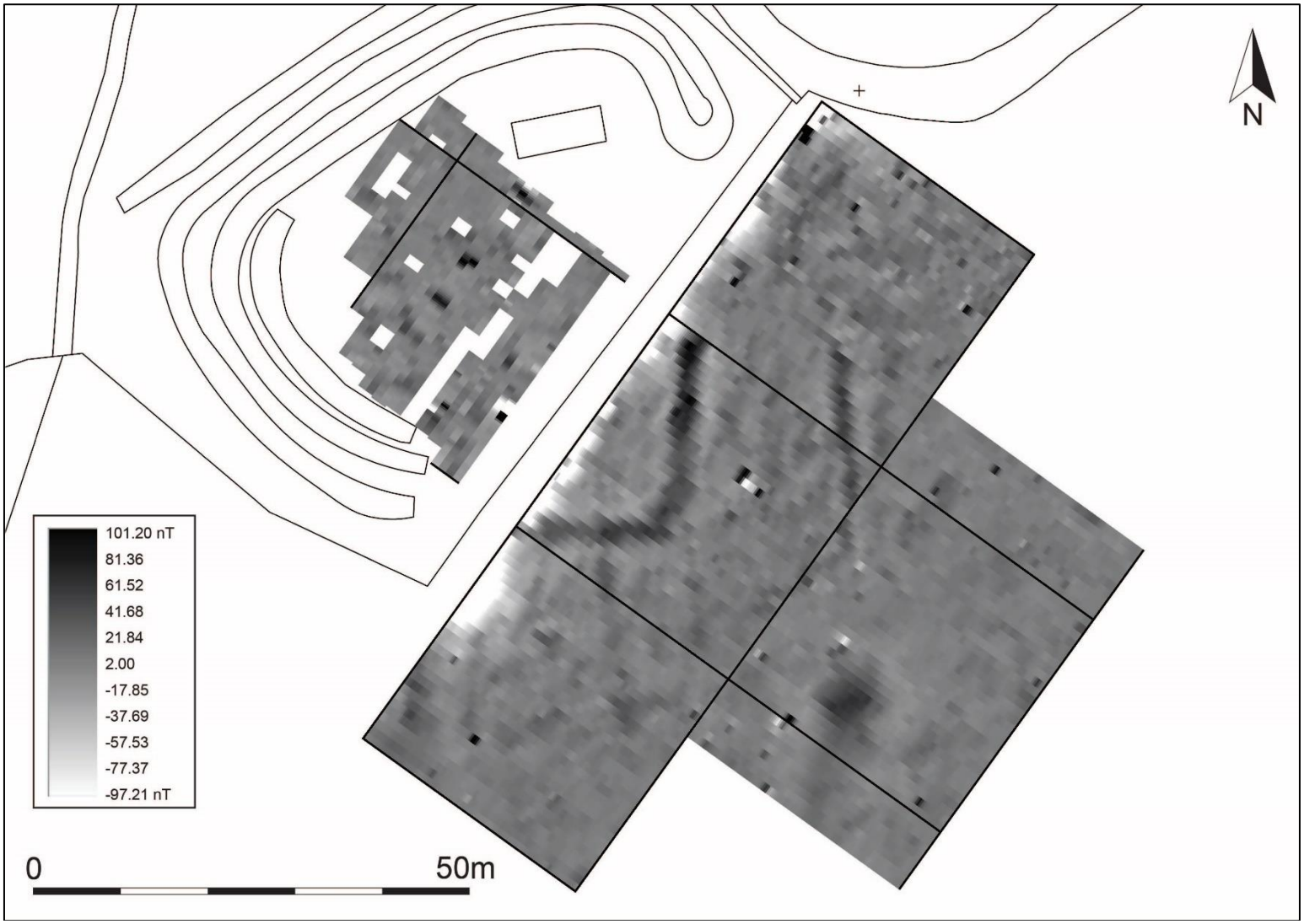
The Glamorgan-Gwent Archaeological Trust 2019: *Historical Environment Record*
www.archwilion.org.uk

NLS

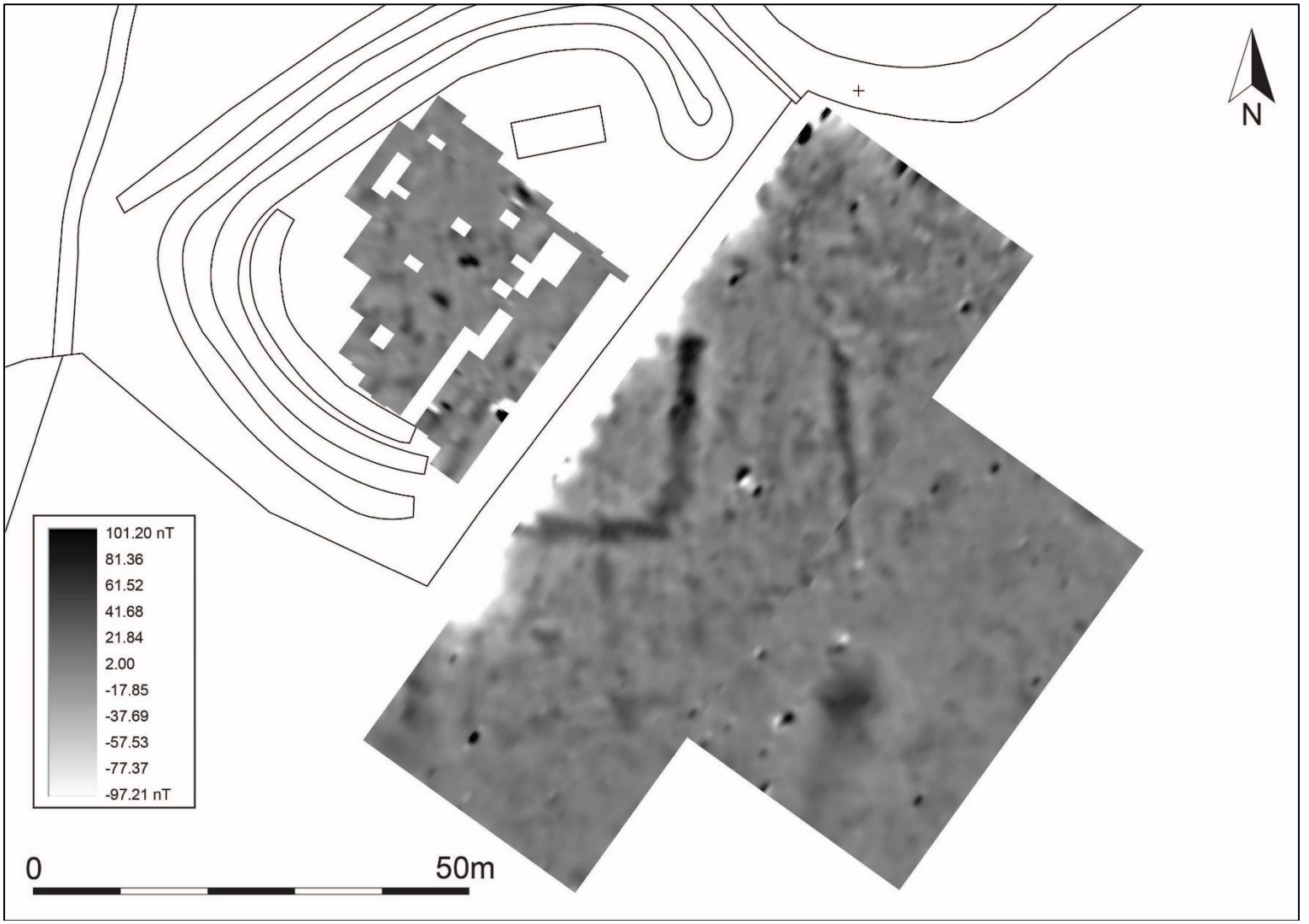
1901 OS 25" map

APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

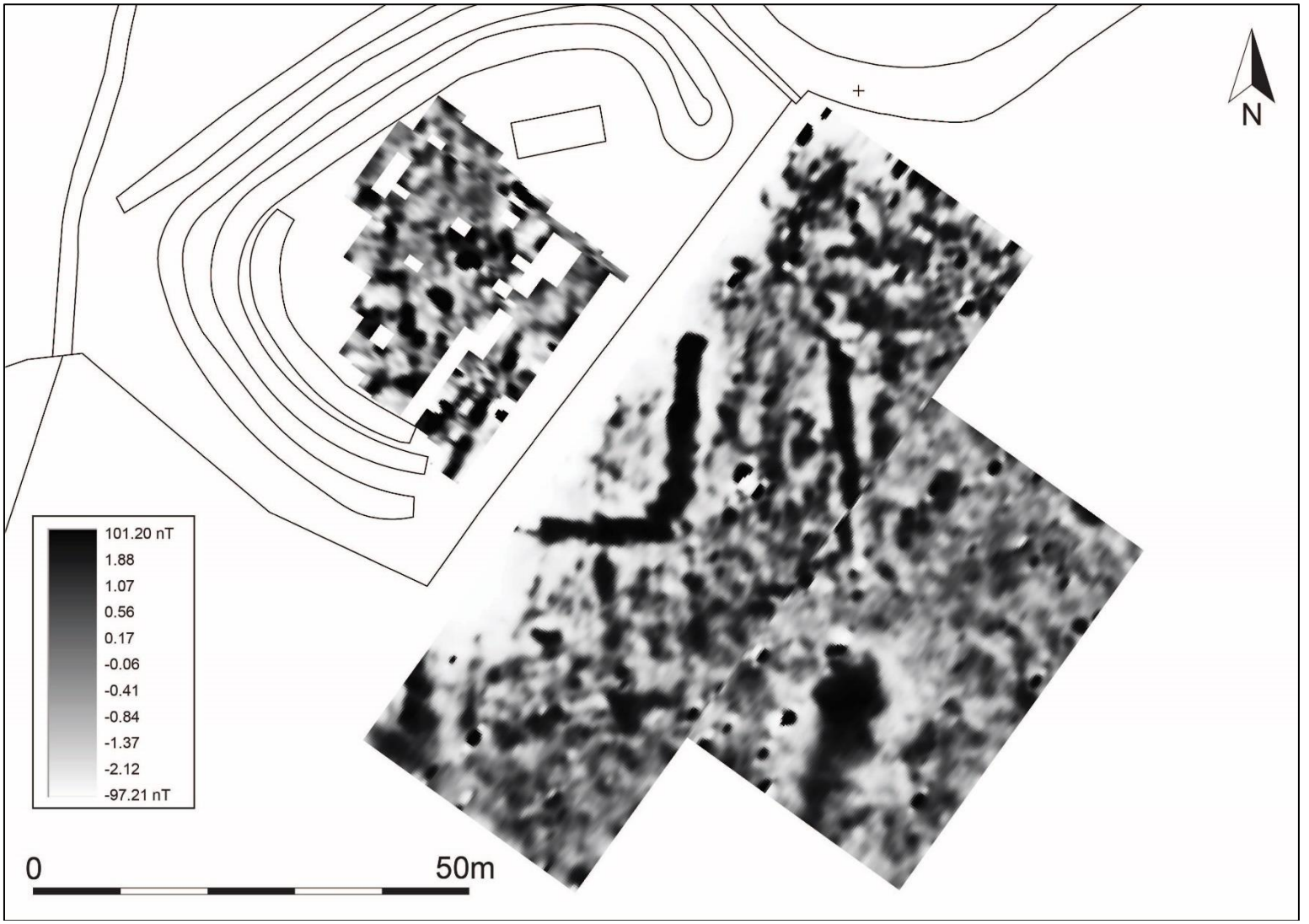
GRID NUMBERING AND LOCATION.



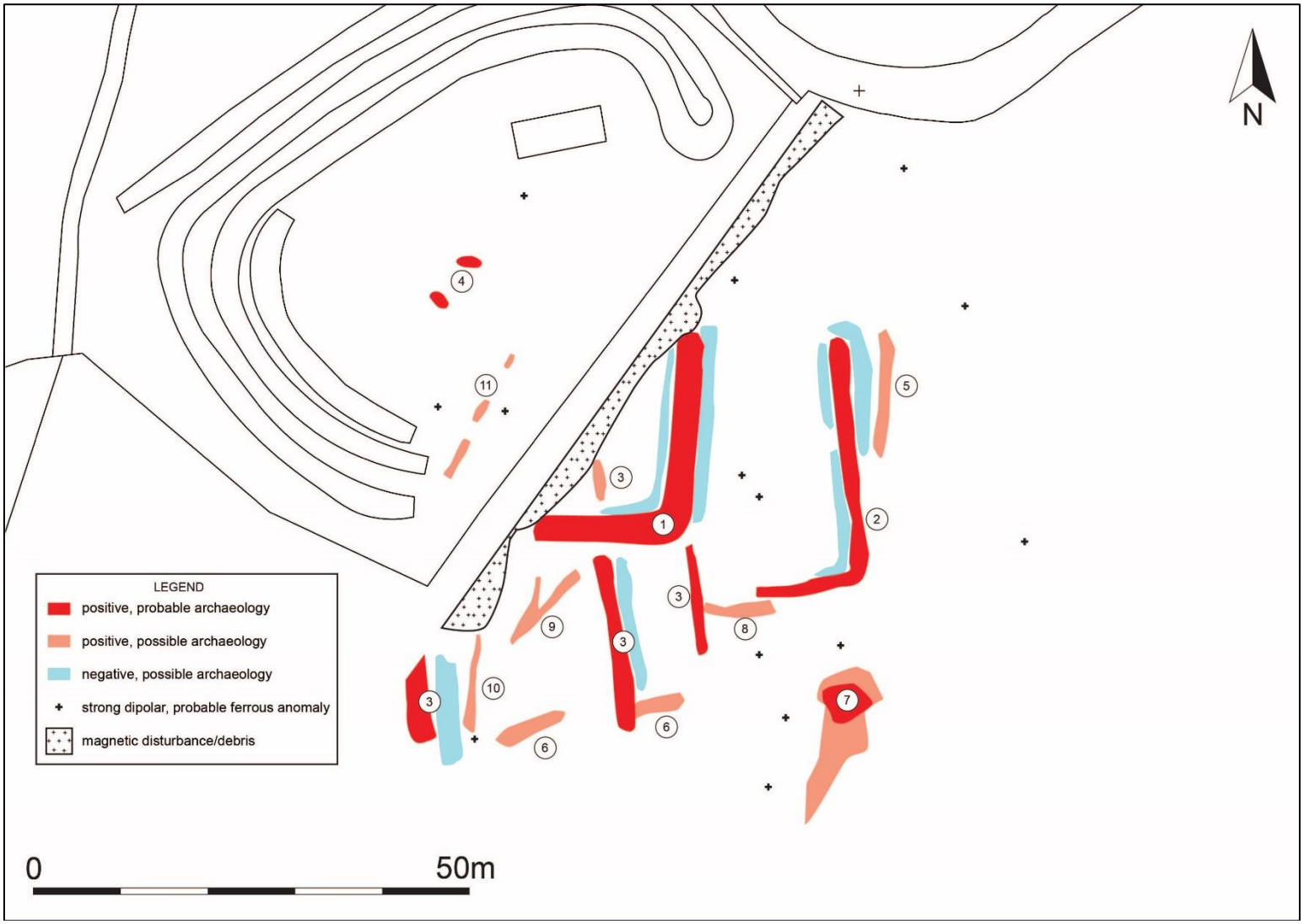
GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA.



GREYSCALE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING.



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



INTERPRETATION OF GRADIOMETER SURVEY DATA.