LAND NORTH OF BANBURY ROAD
FINMERE
CHERWELL
OXFORDSHIRE

Results of a Geophysical Survey

South West Archaeology Ltd. report no. 220126

ARCHAEOLOGICAL SERVICES & HISTORIC BUILDING RECORDING
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01769 573555
01872 223164

LAND NORTH OF BANBURY ROAD, FINMERE, CHERWELL, OXFORDSHIRE

RESULTS OF A GEOPHYSICAL SURVEY

By P. Bonvoisin, PCIfA
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Work undertaken by SWARCH for a Private Client

SUMMARY

The site is located on the south-west edge of the village of Finmere and lies immediately to the south and west of the more modern residential parts of the village. The site lies immediately north of Banbury Road, with Prehistoric and Roman activity identified to the south and west. Historical mapping shows general continuity of the layout of the site, with footpaths crossing the site but no internal divisions.

The survey identified sixteen groups of geophysical anomalies. These include: undated ditches, some of which may belong an earlier fieldsystem; a series of parallel linears indicative of previous agricultural activity (ridge and furrow); and a sub-circular possible Prehistoric feature. Although the latter features are undated, their form and concentration to the south-western part of the site would suggest Prehistoric activity.

Further archaeological mitigation, in the form of targeted evaluation trenching, would serve to validate the results of the geophysical survey, confirm the presence or absence of archaeological features, and provide dating evidence for those features that are present.

January 2022

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ACKNOWLEDGEMENTS

THE CLIENT
THE AGENT

PROJECT CREDITS

PROJECT DIRECTOR: DR. SAMUEL WALLS, MCIFA
FIELDWORK: PETER BONVOISIN, PCIFA
REPORT: PETER BONVOISIN, PCIFA
EDITING: DR. SAMUEL WALLS, MCIFA
GRAPHICS: PETER BONVOISIN, PCIFA

1.0 INTRODUCTION

LOCATION:	LAND NORTH OF BANBURY ROAD
PARISH:	FINMERE
DISTRICT:	CHERWELL
COUNTY:	OXFORDSHIRE
CENTROID NGR:	SP 63417 32867
PLANNING REF:	(PREVIOUS) 15/00552/OUT; 15/0026/PREAPP
SWARCH REF:	OFBR21
OASIS REF:	SOUTHWES1-503666

1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by HCUK (the Agent) on behalf of a private client to undertake a geophysical (gradiometer) survey on land north of Banbury Road, Finmere, Oxfordshire. This work was undertaken in accordance with best practice and a Written Scheme of Investigation (HCUK 2021), Chartered Institute for Archaeology (CIfA), and Oxfordshire County Council guidance.

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The site is located on the south-western edge of Finmere, north of Banbury Road, within agricultural fields. The site lies at a height of c.120m AOD, very gently sloping to the north. The soils of this area are the fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging of the Ashley Association, bordering the coarse loamy over clayey, slowly permeable and seasonally waterlogged soils of the Essendon Association (SSEW 1983). These overlie glacio-fluvial deposits of sand and gravel of mid-Pleistocene date. These deposits are at least 10m thick (from borehole SP63SW6.16, Tingewick Bypass) and overlie limestones of the White Limestone Formation (BGS 2022).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

A thorough review of the historic assets, monuments and archaeological work carried out in the area surrounding the site has been carried out by HCUK Group as part of their WSI for the site (Meek, 2021). The archaeological potential of the site was outlined by the Lead Archaeologist at Oxford County Council in 2015:

The site is located in an area of archaeological interest to the north of an area of Iron Age settlement recorded during the construction of the B4031 diversion. This excavation recorded a series of linear features, pits, a circular gully thought to relate to an Iron Age roundhouse and a hearth. The features extend beyond the northern limit of the road diversion and may continue into the application area. The site is also located 500m north west of the projected route of the Roman road from Alchester to Towcester.

1.4 METHODOLOGY

This work was undertaken in accordance with current best practice and CIfA guidance. Any desk-based assessment aspect of this report follows the guidance as outlined in: *Standard and Guidance for Archaeological Desk-Based Assessment* (CIfA 2014a) and *Understanding Place: historic area assessments in a planning and development context* (English Heritage 2012). The geophysical (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).

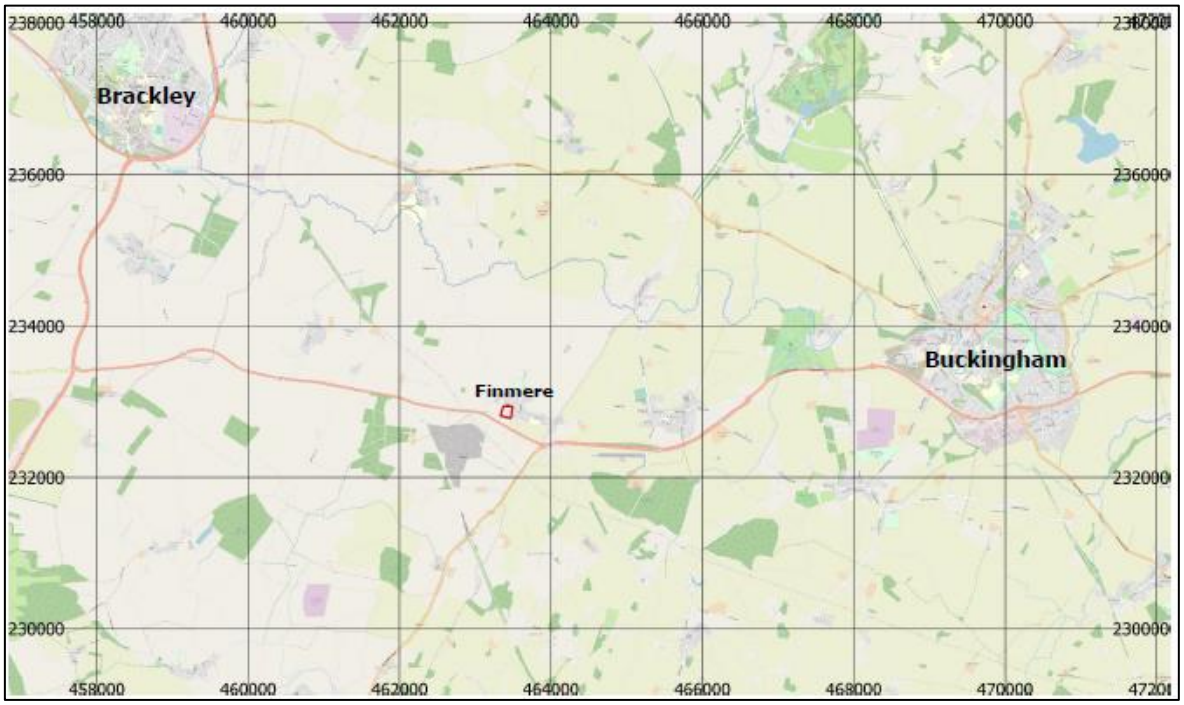

FIGURE 1: SITE LOCATION (IMAGE PROVIDED BY CLIENT).

FIGURE 2: THE SITE (IMAGE PROVIDED BY CLIENT).

2.0 GEOPHYSICAL SURVEY

2.1 INTRODUCTION

An area of *c.*2.0ha 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 1st and 3rd of January 2022 by P. Bonvoisin; the survey data was processed by P. Bonvoisin.

2.2 SITE INSPECTION

The site comprises a single field, subdivided by temporary electrical fencing. No finds were observed during the site walkover. The turf was closely grazed across the northern half of the site; the grass across the southern half was more disturbed and trampled by livestock. Modern debris and equipment remained within the field, including a horsebox and the remains of a modern fence; debris was also present along the southern boundary of the site. Access to the site was via a gate in the south-eastern corner. The site is bounded by hedgebanks to the south, east, and north, with residential properties to the east and north; the western boundary of the site consisted of a modern fence. The field is criss-crossed by three public footpaths, with foot entrances in the north-west and south-east corners. Multiple geotechnical survey pits were observed across the site and may have been picked up by the gradiometer survey. Site photographs can be found 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- and set out using a Leica CS15 GNSS Rover GPS. The data was downloaded onto *Grad601 Version 3.16* and processed using *TerraSurveyor Version 3.0.36.0*. 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:
DeStripe all traverses, median; used to equalise underlying differences between grids (potentially caused by instrument drift or orientation, directional effects inherent in magnetic instrument, or differences in instrument set up during survey e.g. using two gradiometers).

DeStagger all traverses out and in-bound by 75cm (Grids a12, a19), by 50cm (all other grids); reduces staggering effects within data derived from zig-zag collection method.
Clip +/- 1SD; removes extreme data point values.

Details:
1.8059ha surveyed
Stats unadjusted/prior to data clipping; Max. 143.34nT, Min. -124.28nT; Standard Deviation

15.82nT, mean -0.21nT, median 0.00nT.

2.4 RESULTS

Table 1 with the accompanying Figures 3 and 4 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, probable, weak negative, probable	Sub-circular/ovoid	Ring ditch or feature, possible agricultural activity or Prehistoric feature	Indicative of possible shallow ground disturbance or truncated features. Possible presence of an internal curvilinear (anomaly group 2) and a small circular feature to the south-west (anomaly group 12). This anomaly has less defined edges but is one of the clearer features within the survey area. It could be more modern in origin, considering the nearby modern disturbance. However, it may relate to local Prehistoric activity, with Iron Age occupation identified c.130m SSW of the site. Responses vary between +3.6nT to -2.5nT.
2	Moderate positive, possible	Curvilinear	Ditch or cut feature	Indicative of a cut feature, likely associated with anomaly group 1, as it sits within that feature. Similar form to anomaly group 12, could be connected to anomaly group 11, with a Di-polar anomaly confusing the response. The feature has a more defined response than anomaly group 1. Responses vary between +4.8nT to +1nT.
3	Moderate positive, probable	Fragmented curvilinear	Ditch, possible boundary	Indicative of a ditch or boundary cut features. Displays a similar but stronger form to anomaly groups 4, 5, 6 and 7; which could be associated as a group. This grouping of responses in the northern extent of the site may represent a previous field system or perhaps enclosure. Responses vary between +4nT to +1.2nT.
4	Moderate to weak positive, probable	Curvilinear	Ditch, possible boundary	Indicative of a ditch or boundary cut features. Displays a similar but stronger form to anomaly groups 3, 5, 6 and 7; which could be associated as a group. This grouping of responses in the northern extent of the site may represent a previous field system or perhaps enclosure. Responses vary between +3.2nT to +0.9nT.
5	Weak positive, probable	Linear	Ditch, possible boundary	Indicative of a ditch or boundary cut features. Displays a similar but stronger form to anomaly groups 3, 4, 6 and 7; which could be associated as a group. This grouping of responses in the northern extent of the site may represent a previous field system or perhaps enclosure. Responses of *c.*+1.5nT.
6	Moderate to weak positive, probable	Linear	Ditch, possible boundary	Indicative of a ditch or boundary cut features. Displays a similar but stronger form to anomaly groups 3, 4, 5 and 7; which could be associated as a group. This grouping of responses in the northern extent of the site may represent a previous field system or enclosure. This feature probably continues on into anomaly group 7 as it follows the same orientation and has a similar form. Responses vary between +2.7nT to +1.3nT.
7	Moderate to weak positive, probable	Linear	Ditch, possible boundary	Indicative of a ditch or boundary cut features. Displays a similar but stronger form to anomaly groups 3, 4, 5 and 6; which could be associated as a group. This grouping of responses in the northern extent of the site may represent a previous field system or enclosure. This feature probably continues on into anomaly group 6 as it follows the same orientation and has a similar form. Responses vary between +3.1nT to +0.8nT.
8	Moderate positive, probable	Linear	Ditch, possible boundary	Indicative of a ditch or cut feature, part of this anomaly follows the same orientation as anomaly group 14. This feature may represent a previous boundary or field system, similar to the positive features in the northern extent of the field. Responses vary between +4.0nT to +1.0nT.
9	Strong positive, probable	Curvilinear	Ditch	Indicative of a ditch or cut feature, and is not clearly associated with any other features within the survey

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
				area. May be part of an earlier fieldsystem. Responses vary between +5.8nT to +2.9nT.
10	Strong to moderate positive, probable	Bent linear	Ditch	Indicative of a ditch or cut feature. This feature has a more angled corner and may trail off to the west, this form may indicate a more modern origin. Has a similar response to anomaly group 9. Responses vary between +5.6nT to +0.8nT.
11	Moderate positive to moderate negative, probable	Parallel linears	Ditch and bank	Indicative of cut and raised ground, with the negative response possibly indicating a bank or packed ground. This anomaly group may continue onwards from anomaly group 2 and be associated with anomaly group 1. Responses vary between +2.0nT to -2.9nT.
12	Strong to weak positive, probable	Ovoid/curved linear	Ditch	Indicative of a cut feature, small curved or ovoid ditch. Has a similar form and response to anomaly group 2, and is likely associated. May be associated with anomaly groups 1 and 11 as well. Responses of +4.2nT to +0.7nT.
13	Weak negative, possible	Linear	Raised ground	Indicative of raised ground or a parallel response to a cut feature. May be associated with anomaly groups 6 and 7, due to its proximity. No clear interpretation. Responses of -1nT to -2.3nT.
14	Moderate positive, moderate to weak negative, probable	Parallel linears	Agricultural activity	Indicative of agricultural activity, probably ridge and furrow as indicated by the LiDAR – Figure 5. A group of parallel linears on a roughly east-west axis, running perpendicular and parallel to the site boundaries.
15	Very strong positive to negative, probable	Amorphous area	Modern metallic debris left within the site	This response is representative of the metallic debris left within the site. Responses of *c.*+100nT to -100nT.
16	Very strong positive to negative, probable	Amorphous area	Modern metallic debris left within the site	This response is representative of the metallic debris left within the site. Responses of *c.*+100nT to -100nT.
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 or made ground	Magnetic disturbance	Near the edges of the site magnetic disturbance from fence lines, modern structures/services and 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.

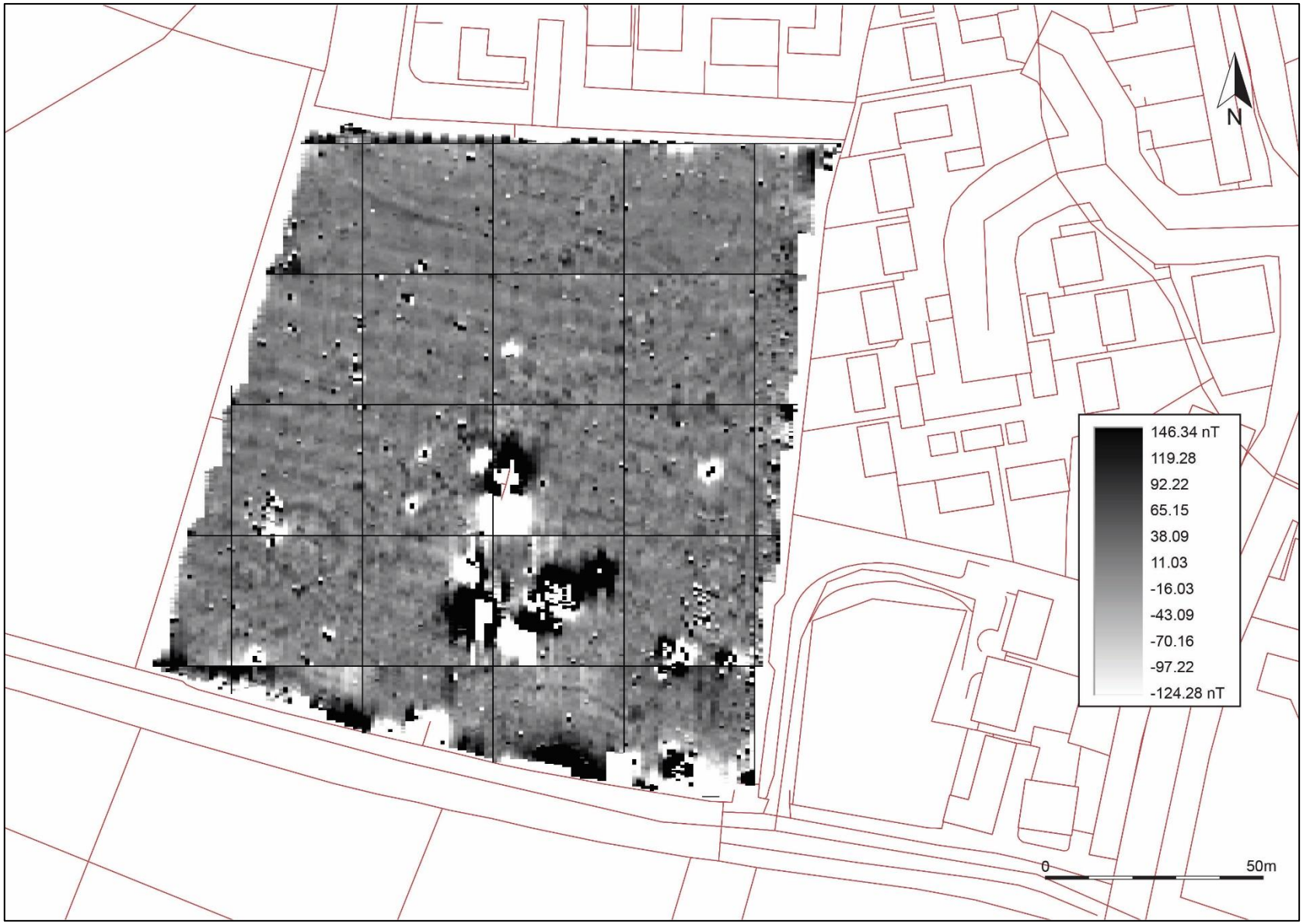

FIGURE 3: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.

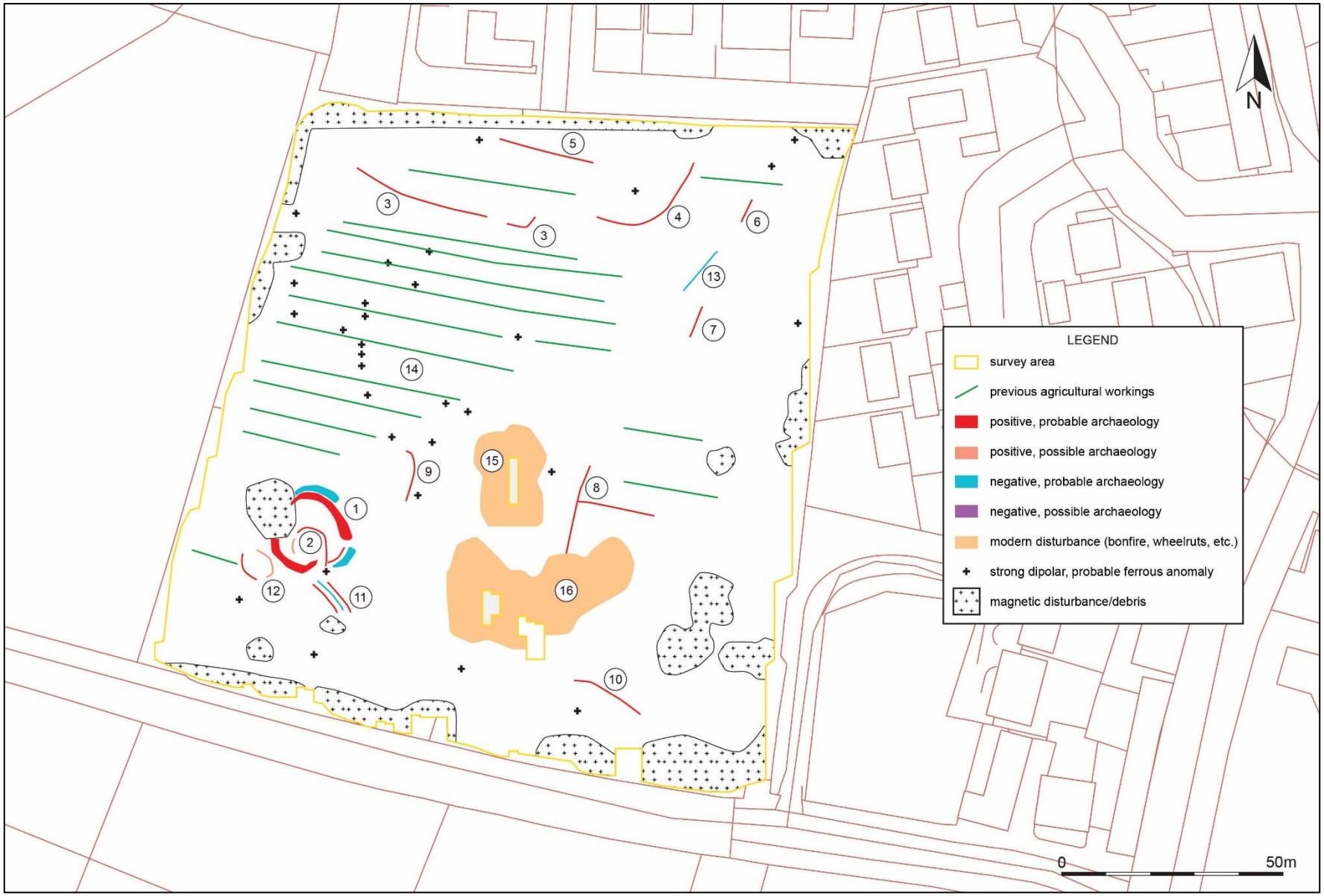

FIGURE 4: INTERPRETATION OF GRADIOMETER SURVEY DATA.

2.5 DISCUSSION

The geophysical survey identified sixteen groups of anomalies, these include: undated ovoids and curvilinears (anomaly groups 1, 2, 11 and 12) potentially associated with Prehistoric activity; ditches and a potential relict fieldsystem or boundaries (anomaly groups 3 to 7) are present within the northern portion of the site, with further undated linears present.

The general 'noise' (inherent geological variation) of the site was quiet, <*c.*+/-0.5nT. The shallow topsoil and drift geology may contribute to this low background response. The moderate-strong dipolar, possible ferrous, and geological anomalies and areas of magnetic disturbance are explained in Table 1. The site has been in agricultural use, currently under pasture. The Lidar would suggest right and furrow running both east-west and north-south (Figure 5); this ploughing may have resulted in some degree of truncation of any buried archaeological resource.

Most of the anomalies with archaeological potential within the site are positive linear features that may represent an earlier field-system. Some of these run parallel or perpendicular to the visible plough scarring and may be contemporaneous; this seems more likely with the higher response features such as anomaly group 8.

Group 1 is indicative of a small circular enclosure or structure. This group is likely to be associated with Prehistoric activity, given the proximity of the Prehistoric features identified to the south of the survey area during the construction of the Tingewick Bypass. Anomaly groups 2, 11 and 12 may be associated with anomaly group 1, as internal or contemporary features.

Groups 3, 4, 5 and 6 are indicative of an enclosure or series of boundaries; their form may suggest that they represent part of an earlier fieldsystem. The curving form of some of these linears may suggest that the boundaries are earlier in date.

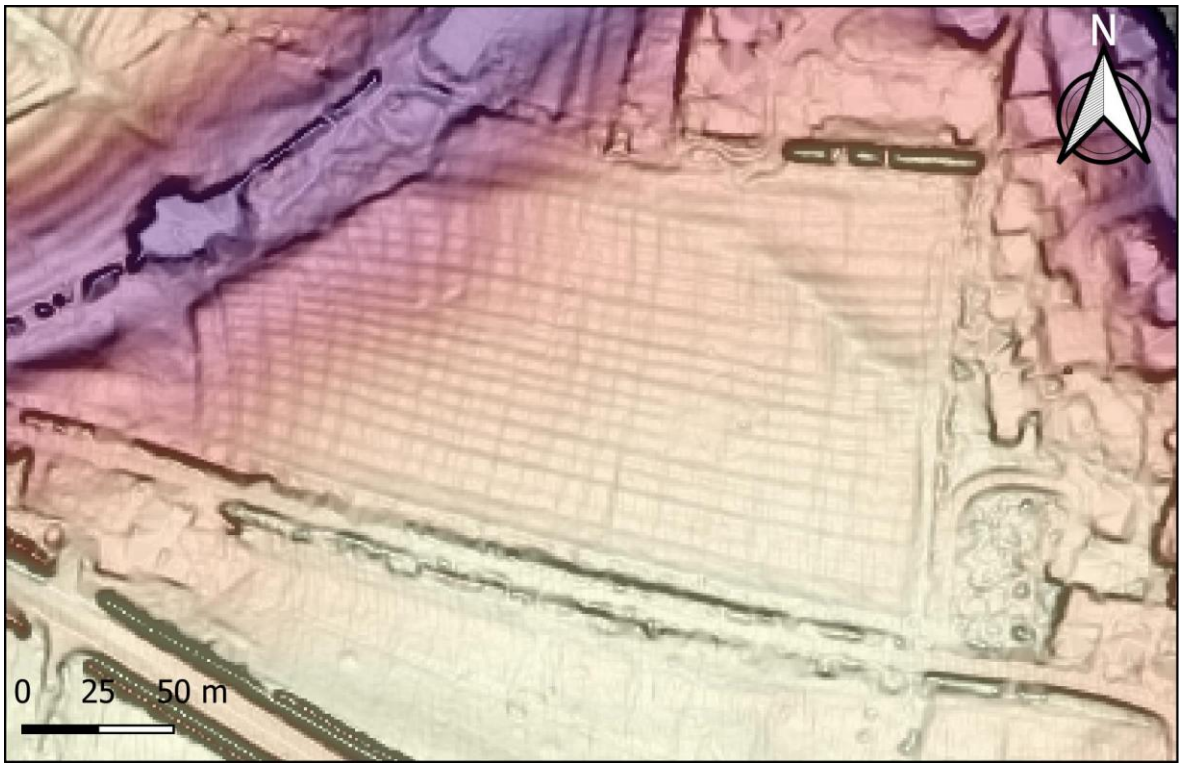

FIGURE 5: IMAGE DERIVED FROM 1M INTERVAL DTM LIDAR DATA (OPEN GOVERNMENT LICENCE V3.0). LIDAR DATA PROCESSED USING QGIS V3.16, SLOPE ANALYSIS OVERLAID ON ASCII FILE WITH 110-120M COLOUR RAMP (DARK TO LIGHT).

3.0 CONCLUSION

The site is located on the south-west edge of the village of Finmere and lies immediately to the south and west of the more modern residential parts of the village. The site lies immediately north of Banbury Road, with Prehistoric and Roman activity identified to the south and west. Historical mapping shows general continuity of the layout of the site, with footpaths crossing the site but no internal divisions.

The survey identified sixteen groups of geophysical anomalies. These include: undated ditches, some of which may belong an earlier fieldsystem; a series of parallel linears indicative of previous agricultural activity (ridge and furrow); and a sub-circular possible Prehistoric feature. Although the latter features are undated, their form and concentration to the south-western part of the site would suggest Prehistoric activity.

Further archaeological mitigation, in the form of targeted evaluation trenching, would serve to validate the results of the geophysical survey, confirm the presence or absence of archaeological features, and provide dating evidence for those features that are present.

4.0 BIBLIOGRAPHY & REFERENCES

Published Sources:

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APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

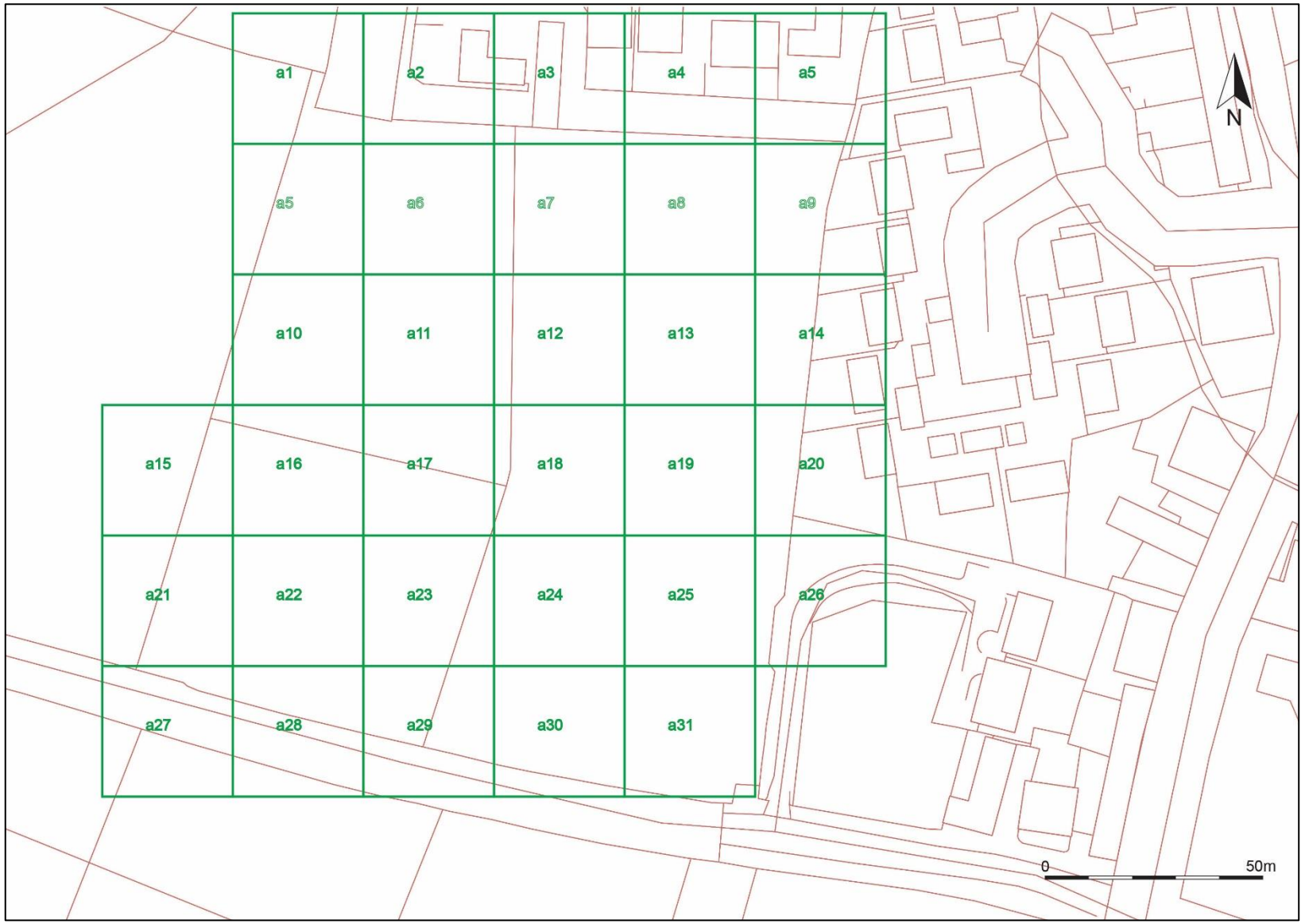

FIGURE 6: GEOPHYSICAL SURVEY GRID LOCATION AND NUMBERING.

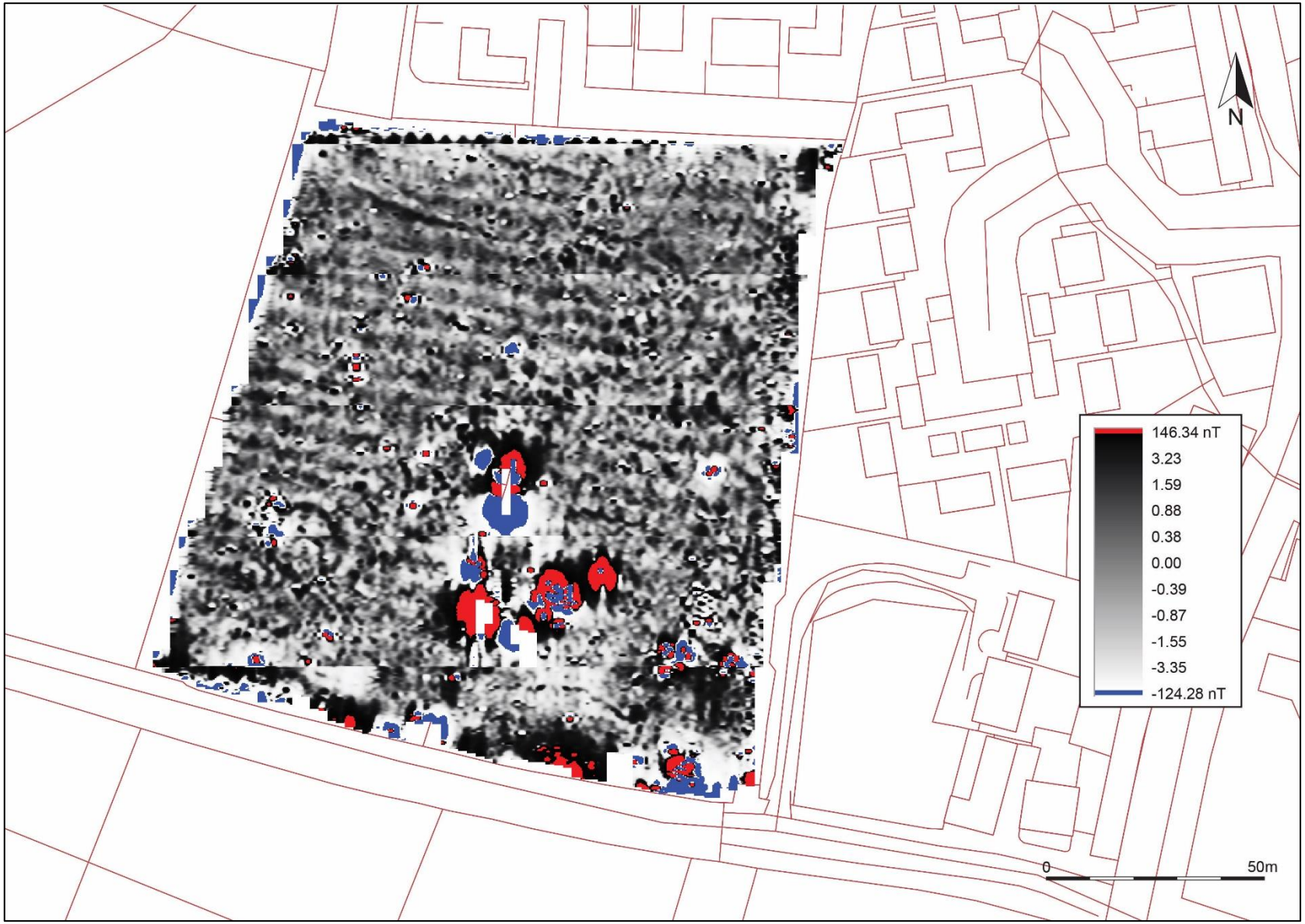

FIGURE 7: RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; CLIPPED BY 1SD (STANDARD DEVIATION).

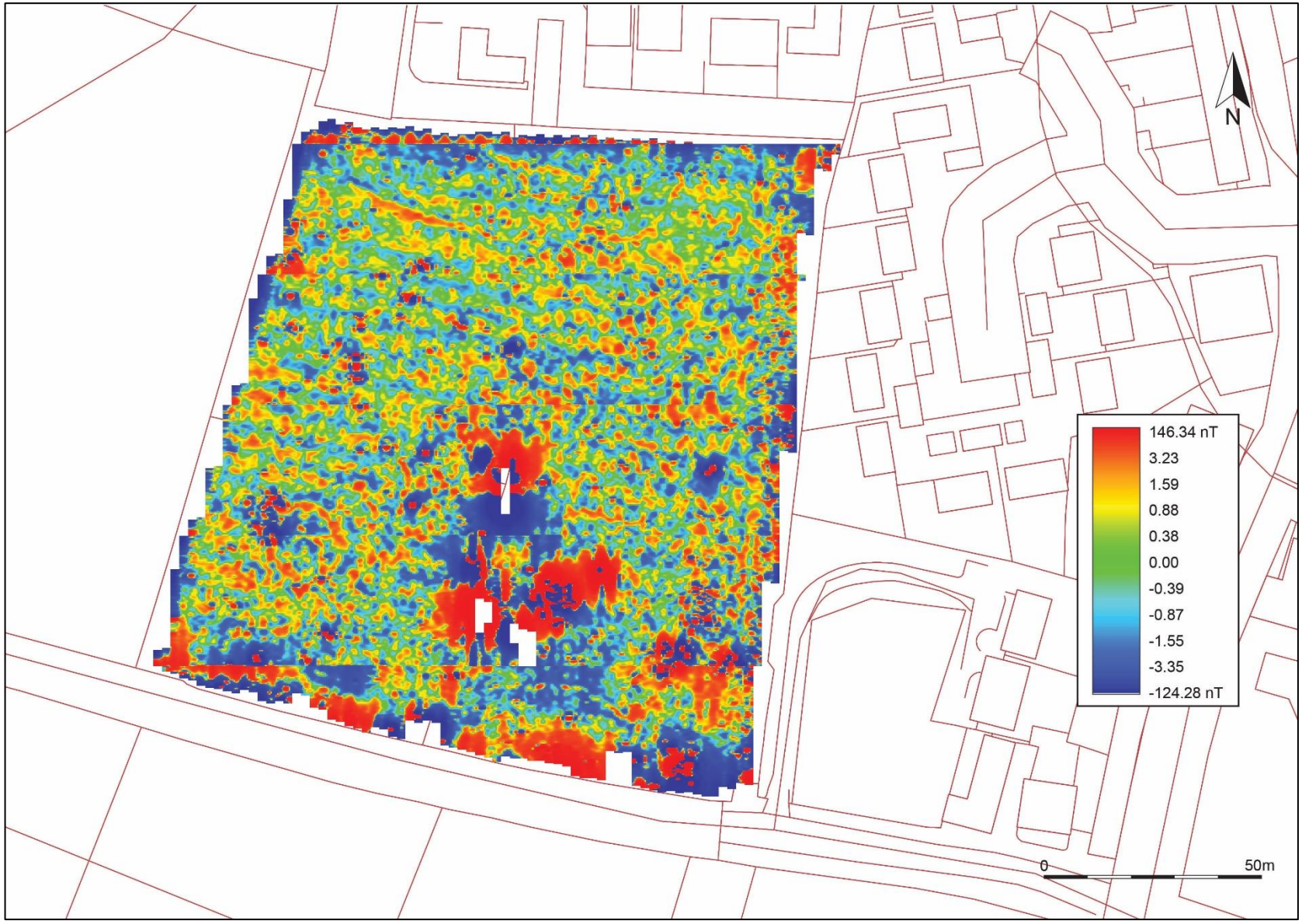

FIGURE 8: RED-GREEN-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WEIGHT EQUALISED; GRADIATED SHADING.

APPENDIX 2: SUPPORTING PHOTOGRAPHS

1. VIEW OF THE SOUTH-WESTERN CORNER OF THE SITE; VIEWED FROM THE NORTH (NO SCALE).

2. WESTERN BOUNDARY OF THE SITE; VIEWED FROM THE EAST (NO SCALE).

3. VIEW ACROSS THE SITE; VIEWED FROM THE NORTH-EAST (NO SCALE).

ARCHAEOLOGICAL SERVICES & HISTORIC BUILDING RECORDING
SOUTHWEST ARCHAEOLOGY

THE OLD DAIRY
HACCHE LANE BUSINESS PARK
PATHFIELDS BUSINESS PARK
SOUTH MOLTON
DEVON
EX36 3LH

01769 573555
01872 223164
MAIL@SWARCH.NET