

CROP-MARKED ENCLOSURES IN SOUTH CEREDIGION AND NORTH PEMBROKESHIRE 2006: GEOPHYSICAL SURVEY



THE UNIVERSITY *of York*



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CROP-MARKED ENCLOSURES IN SOUTH CEREDIGION AND NORTH PEMBROKESHIRE 2006: GEOPHYSICAL SURVEY

Gan / By

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CONTENTS	
SUMMARY	4
INTRODUCTION	4
AIMS AND OBJECTIVES	6
SUMMARY OF RESULTS	6
<i>Figure 1. Location of Surveys</i>	
BERRY FARM	8
<i>Figure 2. General location of BerryFarm.</i>	
<i>Figure 3. Location of the geophysical surveys in relation to the cropmark.</i>	
<i>Figure 4. Aerial photograph of Berry Hill.</i>	
<i>Figure 5. Berry Hill geophysical survey.</i>	
CWMHOWNI	13
<i>Figure 6. General location of Cwmhowni.</i>	
<i>Figure 7. Location of the geophysical surveys in relation to the cropmark.</i>	
<i>Figure 8. Aerial photograph of Cwmhowni.</i>	
<i>Figure 9. Cwmhowni geophysical survey.</i>	
FFYNNONWEN	19
<i>Figure 10. General location of Ffynnonwen.</i>	
<i>Figure 11. Location of the geophysical surveys in relation to the cropmark and the excavation area.</i>	
<i>Figure 12. Aerial photograph of Ffynnonwen.</i>	
<i>Figure 13. Ffynnonwen geophysical survey.</i>	
<i>Figure 14. Ffynnonwen geophysical survey. Interpretation of raw data.</i>	
PENPEDWAST	26
<i>Figure 15. General location of Penpedwast.</i>	
<i>Figure 16. Location of the geophysical survey.</i>	
<i>Figure 17. Aerial photograph of Penpedwast.</i>	
<i>Figure 18. Penpedwast geophysical survey.</i>	
<i>Figure 19. Penpedwast high resolution geophysical survey.</i>	
TRE-CEFN ISAF	33
<i>Figure 20. General location of Troedyrhiw and Tre-cefn Isaf.</i>	
<i>Figure 21. Location of the geophysical survey.</i>	
<i>Figure 22. Tre-cefn Isaf geophysical survey.</i>	
TROEDYRHIW	38
<i>Figure 23. Location of the geophysical surveys in relation to the cropmark.</i>	
<i>Figure 24. Aerial photograph of Troedyrhiw.</i>	
<i>Figure 25. Troedyrhiw geophysical surveys.</i>	
ACKNOWLEDGEMENTS	42
REFERENCES	42

SUMMARY

Approximately 60 crop-marked enclosures have been discovered by aerial photography in south Ceredigion and several in north Pembrokeshire since the early 1980s. Thirty-two are rectangular. Aerial photographs indicate that all sites are crop-marks and that little or no earthwork evidence survives. However, prior to this project, few of these sites had been inspected on the ground. The non-rectangular sites conform to known late Iron Age defended settlement types in southwest Wales. The rectangular enclosures form a distinctive and unique group, and while they may be of a similar function and date to the non-rectangular sites, earlier or later dates are possible, and their designation as settlements is not certain. During the summer of 2004, geophysical and topographic survey was conducted on eight rectangular enclosures. A further five sites, rectangular and non-rectangular, were surveyed in 2005, and one rectangular site, Troedyrhiw, was excavated. This work confirmed that only rarely did any surface evidence for the enclosures exist, and where present it was very slight. Geophysics and excavation, however, demonstrated that important below-ground archaeology is likely to survive in addition to the crop-marked ditches recorded on aerial photographs. In particular circular gullies, probably indicating the location of roundhouses, hearths, post-holes and internal divisions of the enclosures were detected. This evidence is similar to that obtained by excavation on Iron Age defended settlement sites.

During 2006, six further cropmarked enclosures were surveyed and one of the enclosures surveyed in 2005 was partially excavated. Of the six surveys, one was partially surveyed in 2005, but was abandoned owing to malfunctioning equipment; one, Troedyrhiw - sample excavated in 2005 - had only been half surveyed in 200; and another, Ffynonwen, had been incompletely surveyed in 2005. This last site was sample excavated in 2006. Results complemented those of previous years, with internal features such as roundhouses and external trackways and ditches detected.

INTRODUCTION

Since the early 1980s a number of crop-marked enclosures of presumed later prehistoric or Romano-British date have been recognised through aerial photography in south Ceredigion, with a lesser number in north Pembrokeshire. Prior to these discoveries few later prehistoric settlements were known and these were confined to substantial hillforts with upstanding earthwork defences such as Castell Nadolig to the southeast of Aberporth, and Castell Henllys near Nevern. Until the investigation of the Troedyrhiw enclosure in 2005 (Murphy and Mytum 2005), excavated as part of this project in 2006, evidence for Romano-British settlement in south Ceredigion was absent, and rare in north Pembrokeshire apart from the excavated evidence at Castell Henllys. A series of dry summers, 1983-83, 1994-95 and 2003, and an increasing awareness that the terrain was conducive for crop-mark archaeology, has resulted in the recording of approximately 60 new enclosure sites, and the enhancement of knowledge of the few previously known settlements.

The late prehistoric settlement of southwest Wales is characterised by hillforts and smaller defended enclosures. Typically these consist of earthworks - defensive banks and ditches - enclosing an internal area that is oval or irregularly oval in shape. Rarely, some defended enclosures are rectangular. In the course of the discoveries in south Ceredigion and north Pembrokeshire it became increasingly clear that a high proportion of the crop-marked enclosures were rectangular. Currently, 32 of the enclosures recorded in the area are rectangular.

The rectangular enclosures are remarkably similar indicating similar function and date. They are defined by crop-marked ditches, about 3m to 5m wide, with only

very occasional evidence for banks or other features. The aerial photographs only rarely indicate that low earthworks may be present. The enclosures usually approximate to a square, with dimensions between 40m - 50m by 45m - 55m. Most have an entrance through the ditch mid-way along one side. Although the ditches, and assumed accompanying banks, indicate a defensive function, rectangular enclosures are not located in defensive locations. Most in south Ceredigion are sited on hill-slopes/valley sides, often just below a crest or summit, but locations towards the base of slopes are also known.

The oval or near oval enclosures are more varied, but are towards the smaller end of the scale when compared with all sites of this type in southwest Wales, with internal dimensions of 40m to 60m, and ditches 3m - 5m wide. They are found in a wider variety of locations than rectangular enclosures; on rounded hilltops as well as on hill-slopes. Several oval enclosures have concentric, larger enclosures surrounding them, some over 100m diameter. The ditches of these outer enclosures are generally slighter than those of the inner ones, but not always so. Ditches of the outer enclosures, entrances are sometimes in-turned, forming a ditched track-way approach to the inner enclosure.

The area in which most of the crop-marked enclosures have been discovered comprises a roughly triangular dissected plateau, approximately 100 square kilometres, between 80m to 150m above sea level, and lying between Newport, Aberporth and Newcastle Emlyn. The settlement pattern comprises dispersed farms with a few hamlet/village clusters. Apart from on the steepest slopes almost all the land is parcelled into fields and intensively farmed. The western section of the area is exposed to the prevailing Atlantic winds. Improved pasture is the chief agricultural land-use, with an arable element producing mainly fodder crops. To the south of the River Teifi sites comprise mainly upstanding earthworks, but in recent years aerial photography has added to our knowledge with the discovery of several crop-marked enclosures.

In the first year of this project, 2004, eight rectangular crop-marked enclosures were geophysically surveyed (Murphy *et al* 2004). In 2005, five sites, rectangular and non-rectangular, were surveyed (Murphy *et al* 2006a) and one rectangular site, Troedyrhiw (Murphy and Mytum 2005), was sample excavated. During 2006, six cropmarked enclosures were surveyed and one of the enclosures surveyed in 2005 was partially excavated (Murphy and Mytum 2006). Of the six surveys, one, Berry Farm, was partially surveyed in 2005, but was abandoned owing to malfunctioning equipment. Troedyrhiw - sample excavated in 2005 - had only been half surveyed in 2004, and another, Ffynonwen, had been incompletely surveyed in 2005. This last site was sample excavated in 2006 (Murphy and Mytum 2006). The other three sites were Penpedwast, Tre-cefn Isaf and Cwmhowni (Fig. 1).

AIMS AND OBJECTIVES

In 1996, Cambria Archaeology were grant-aided by the RCAHMS to plot all the known cropmark enclosure sites in south Ceredigion and mid Pembrokeshire/Carmarthenshire. Since then, other sites have been identified and plotted by RCAHMS staff. Thus, although c.60 enclosures, including 32 rectangular enclosures, have been identified and plotted, it is not known what archaeological evidence survives underground, and their function and date is not known. The aim of this Cadw grant-aided project was to conduct geophysical and topographic surveys on at least five rectangular enclosures in order to assess their potential for buried archaeology with the objectives of:

- assessment of the archaeological significance of these sites in both a regional and national context
- assessment of the vulnerability of the sites
- formulation of scheduling criteria, which may be appropriate regionally and nationally, and the formulation of future management strategies
- enhancement of the Regional Sites and Monuments Record and END

SUMMARY OF RESULTS

Six sites were surveyed in 2006 (Fig. 1). Detailed results from each site are described below. All six sites produced good results, and even at the most basic level of interpretation confirmed that the aerial photographs had detected archaeological sites and not geological or other anomalies, and that at all sites there is important buried archaeology for which there is no surface evidence.

In all cases the geophysical surveys detected buried archaeological features, such as roundhouses, pits, gullies and ditches that were not visible on aerial photographs. The clearest results, such as those from Ffynnonwen, Tre-cefn Isaf and Penpedewast clearly demonstrate the presence of roundhouses characteristic of late prehistoric settlement.

In 2006, unlike previous years, areas outside the main enclosures were surveyed. This returned valuable results. At Ffynnonwen an unsuspected rectangular annexe with, roundhouse was detected as well as possible hearths/furnaces. A ditched track-way was recorded at Troedyrhiw and at Cwmhowni smaller enclosures and ditches were revealed.

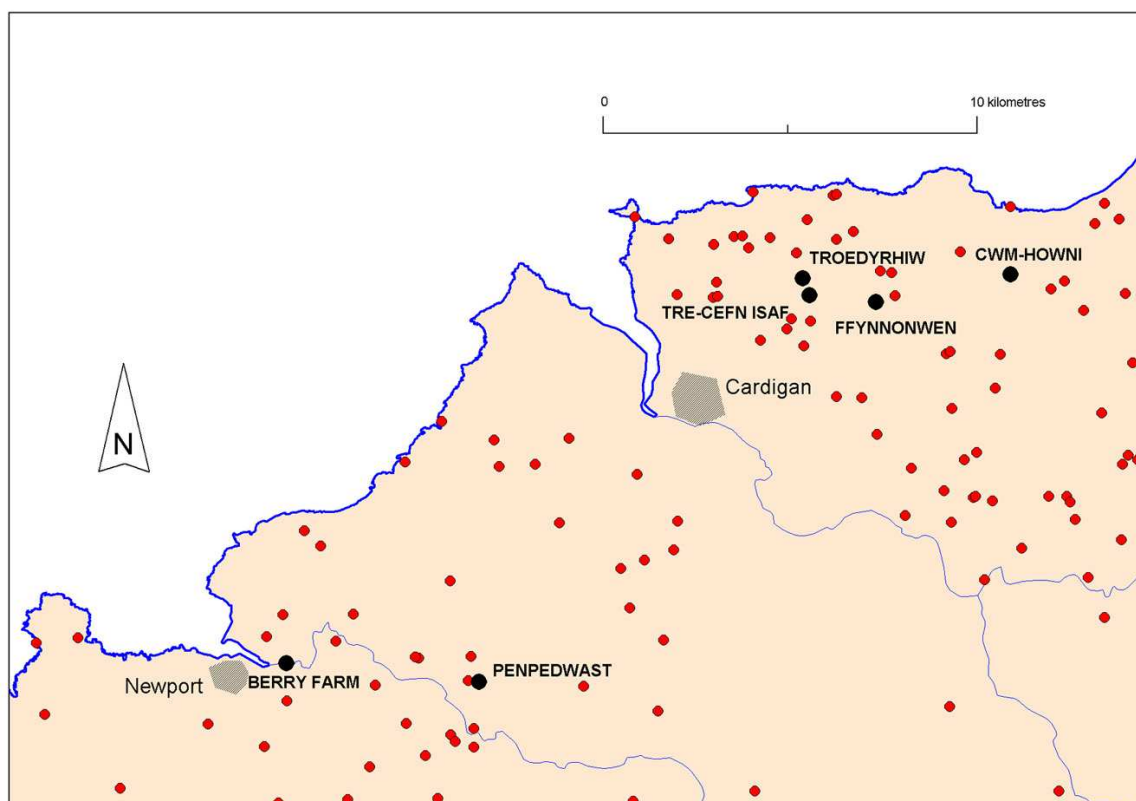


Figure 1. Location of surveys

BERRY FARM

Geophysical surveyors: Lloyd Bosworth
Andrew Needham
Richard Jemicz

Topographic surveyors: Hubert Wilson
Richard Jemicz

Site name: Berry Hill

Primary Record No. 14342

Grid reference: SN06883952

Date of survey: 17/07/06 – 19/07/06

General: Part of this site was surveyed in 2005. The results were, however, poor, and the whole site was resurveyed in 2006.

Aerial photograph and plot: A ditch, visible as a crop-mark on aerial photographs, with parching indicating traces of a bank cut off the easily approachable north and western sides of the promontory. The internal area enclosed is oval, approximately 125m E - W and 65m N - W. A simple gap through the bank and ditch on the west side marks the location of the entrance. Lush growth visible on the aerial photograph may mark a track running up to the entrance and there are hints of a field system to the NNE.

Topographic setting: The area encloses the highest part of the promontory. From the west, by the entrance, the hill rises steeply into a circular platform. Further in, the enclosure slopes down gently to the east and south before it meets the sharp edge of the promontory.

Visible earthwork features: The defensive bank is just visible a slight earthwork on the western side of the site.

Gradiometer survey:

The survey grid was set up along the line of the escarpment running E-W. The grid measured 180m x 80m with 32 20m x 20m grid squares of which 28 were surveyed. The survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m. Zero mean grid and despiking were used to enhance the results. The weather remained warm and dry for the duration of the survey.

Gradiometer survey interpretation:

The enclosing ditch and entrance are clearly visible, although the background is very noisy. Results from around the entrance show a possible trackway on a NNE alignment. However, as this feature terminates at the enclosing ditch rather than the entrance, it is doubtful that it has any relation to the enclosure. A short internal ditch measuring approx 20m in length and running parallel to the enclosing ditch on a NE alignment can also be seen.

There are many dark spots scattered across the interior and exterior of the enclosure that may be post-holes or pits. As no definite patterns can be made out to suggest that they could be either they may simply be part of the general background noise.

The only other internal features discernable are shallow linear ditches probably caused by more recent ploughing.

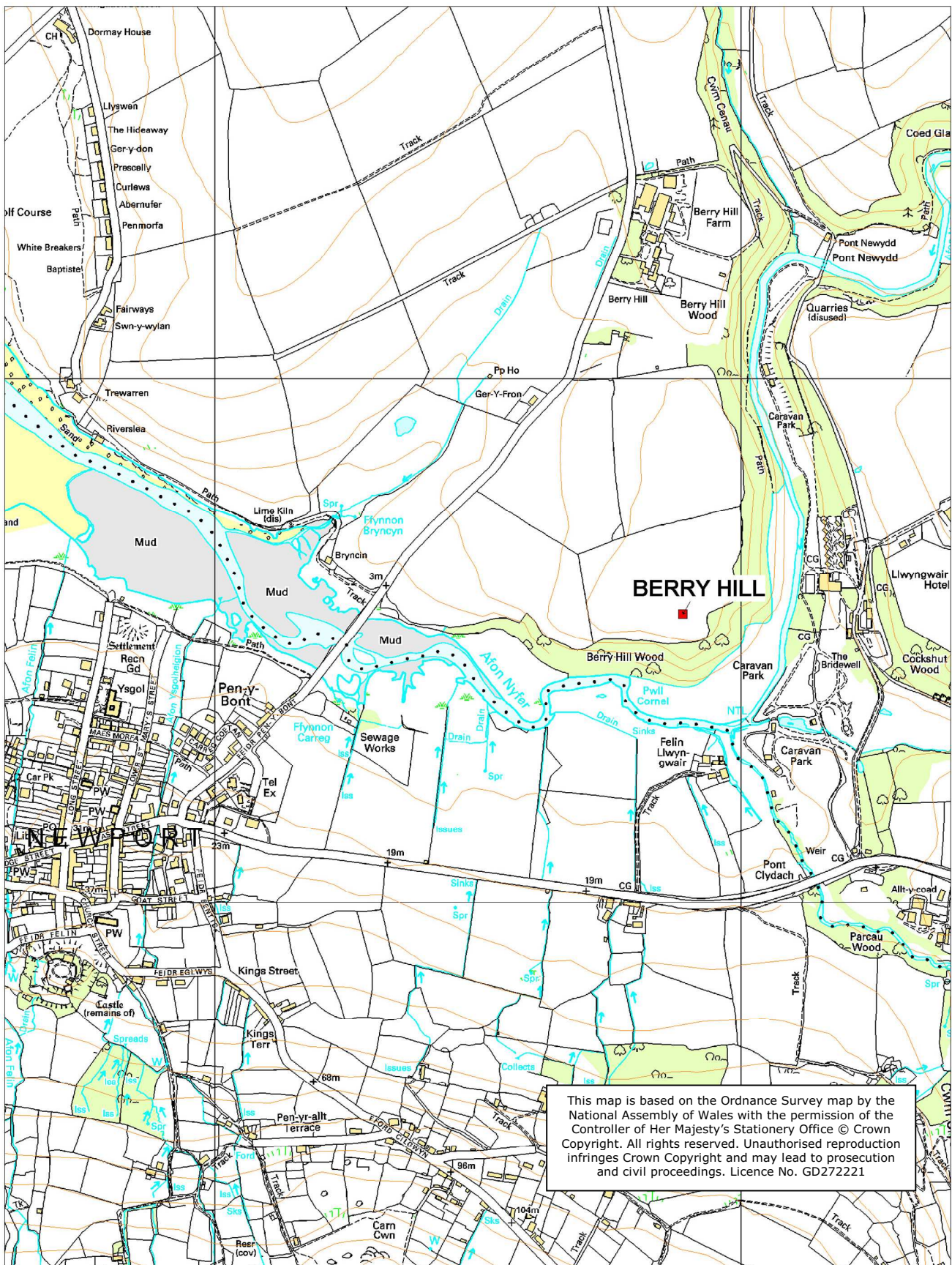


Figure 2. General location of BerryFarm. Scale 1:10,000.

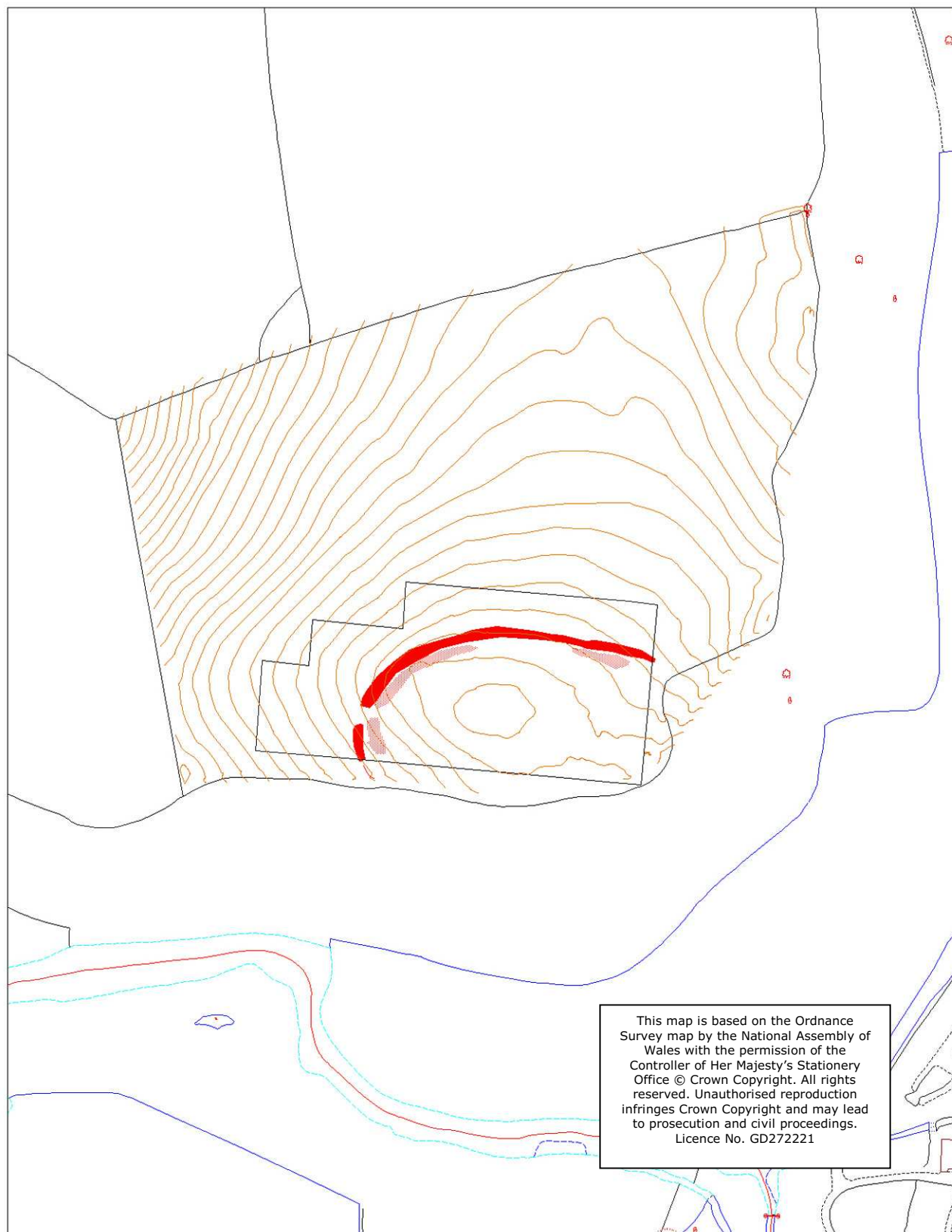


Figure 3. Location of the geophysical surveys in relation to the cropmark. Contours at 0.5m intervals.



Figure 4. Aerial photograph of Berry Hill. Photograph Cambria Archaeology.

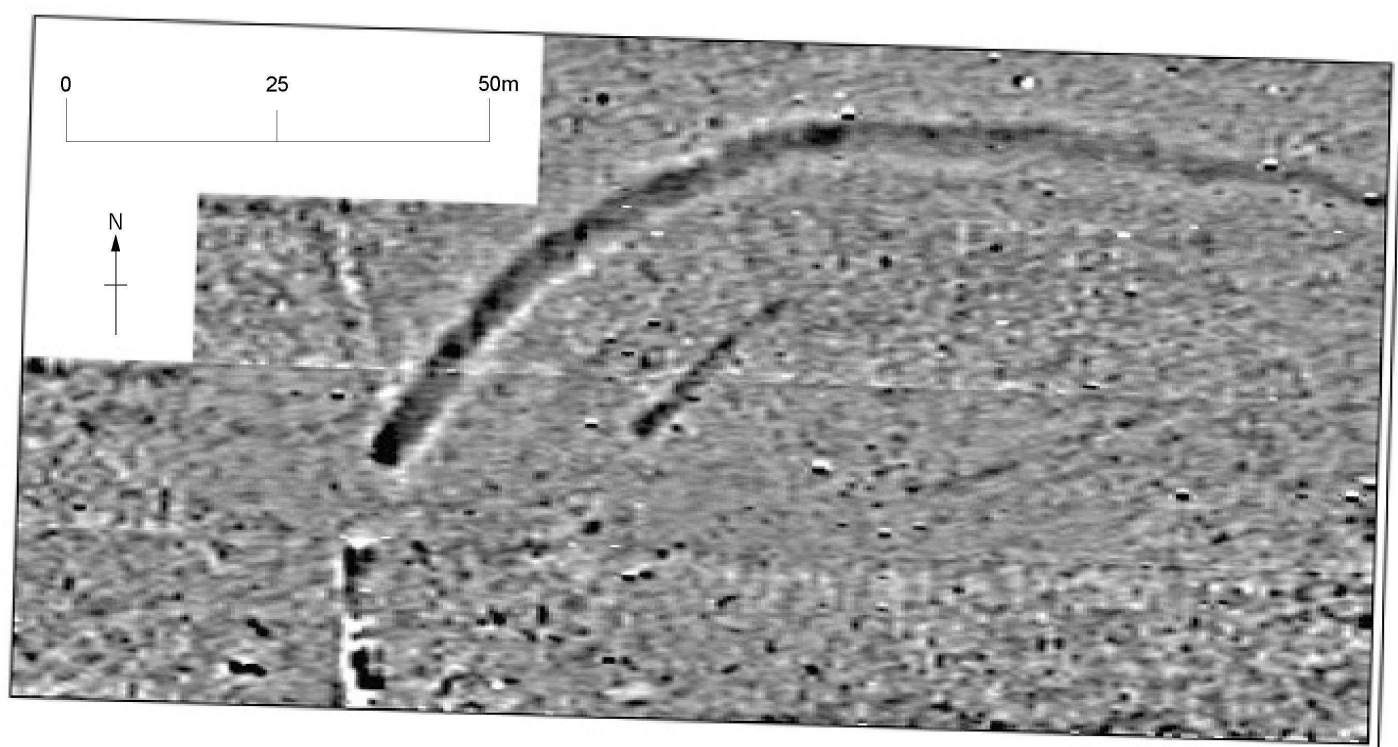


Figure 5. Berry Hill geophysical survey.

CWMHOWNI

Geophysical surveyors: Lloyd Bosworth
Alison Summer
Gill Salt

Topographic surveyors: Hubert Wilson
Lois Sansby
Ruth Law

Site name: Cwmhowni

Primary Record No. 35731

Grid reference: SN26154986

Date of survey: 07/08/06 – 08/08/06

Aerial photograph and plot: The enclosure is defined by a cropmark ditch and is sub-circular in shape, 44m north - south and 30m east - west. The east-facing entrance is marked by a slight in-turn of the cropmark ditch terminals. Two and possibly more circular cropmarks within the enclosure may mark the site of round-houses. A linear cropmark outside the enclosure to the east may be part of a contemporaneous field system.

Topographic setting: The site lies on gently sloping land at 80m above sea level. To the north the slope becomes steeper as it drops away into a small valley.

Visible earthwork features: There are no earthworks or other surface evidence for this site.

Gradiometer survey: The survey grid was set up along the line of the hedge at the northern limit of the field. The grid measured 80m x 80m with 16 20m x 20m grid squares of which 14 were surveyed. The grid was extended to the west by 2 20m x 20m squares so as to chase a possible outer ditch bringing the total squares surveyed to 16. The survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m. Zero mean grid and despiking were used to enhance the results. The weather remained warm and dry but windy for the duration of the survey.

Gradiometer survey interpretation:

The gradiometer survey produced very clear results revealing the entire outer ditch of the defended enclosure and several internal features. A second, more complex in-turned entrance can be seen on the western side opposite the eastern entrance. This may mean that the eastern entrance is not an entrance at all but simply a less responsive section of ditch. There are three circular anomalies on the western side of the enclosure lying in close proximity to one another with diameters measuring approximately 4-5m. These could either be sunken building platforms for small dwellings or storage huts or large pits. An apparent internal dividing ditch running from and perpendicular to the enclosing ditch for approximately 7m is also visible. However, the relationship between this ditch and the enclosure is uncertain as it joins the outer ditch leaving no space for an internal bank. As it also runs parallel to the linear ditch to the east it most likely predates the enclosure and is part of an earlier trackway or avenue.

The linear ditch to the east of the enclosure, running NE/SW, was also revealed clearly and was found to have an abutting ditch running perpendicular to its axis. The northern end of this ditch fades out showing either that the ditch becomes shallower or that the fill is less responsive or that it terminates.

Faint traces of a sub-square enclosure containing a smaller sub-circular enclosure can be seen immediately to the SE of the main enclosure. Whether these are genuine enclosure ditches, filled with non-responsive material, or an accident of the underlying geology is difficult to determine. Therefore, its relation to the main enclosure and a sequence for their construction cannot be given. The linear ditch to the east of the main enclosure does appear to be earlier than the enclosure as the enclosing ditch flattens out where it runs parallel to the linear ditch.

A closer inspection of the AP for this site revealed a possible larger enclosing ditch that may surround the entire site and a faint outline of this ditch was observed in the results. This outer ditch would have to terminate at the southern extent of the defended enclosure for the above interpretation to be correct and no trace of this was found in the results. This may be because the ditch had been filled with non-responsive material or that it was simply an illusion. To verify the existence of this ditch the grid was extended westward by two more 20m x 20m squares. The faint outline of the ditch continued across the field beyond the point where it seemed to curve around on the AP and is therefore interpreted here as a modern footpath across the field.

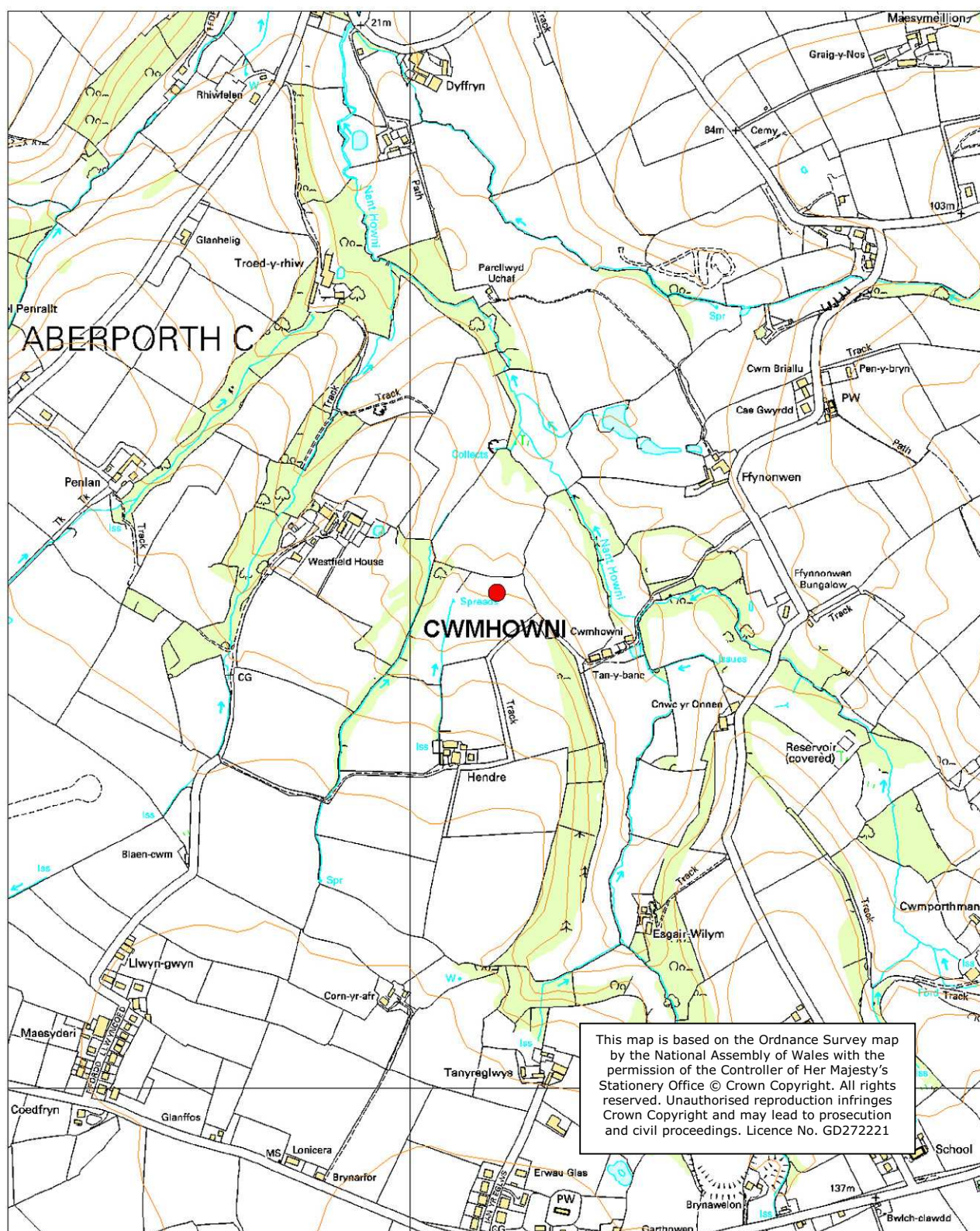


Figure 6. General location of Cwmhowni. Scale 1:10,000.

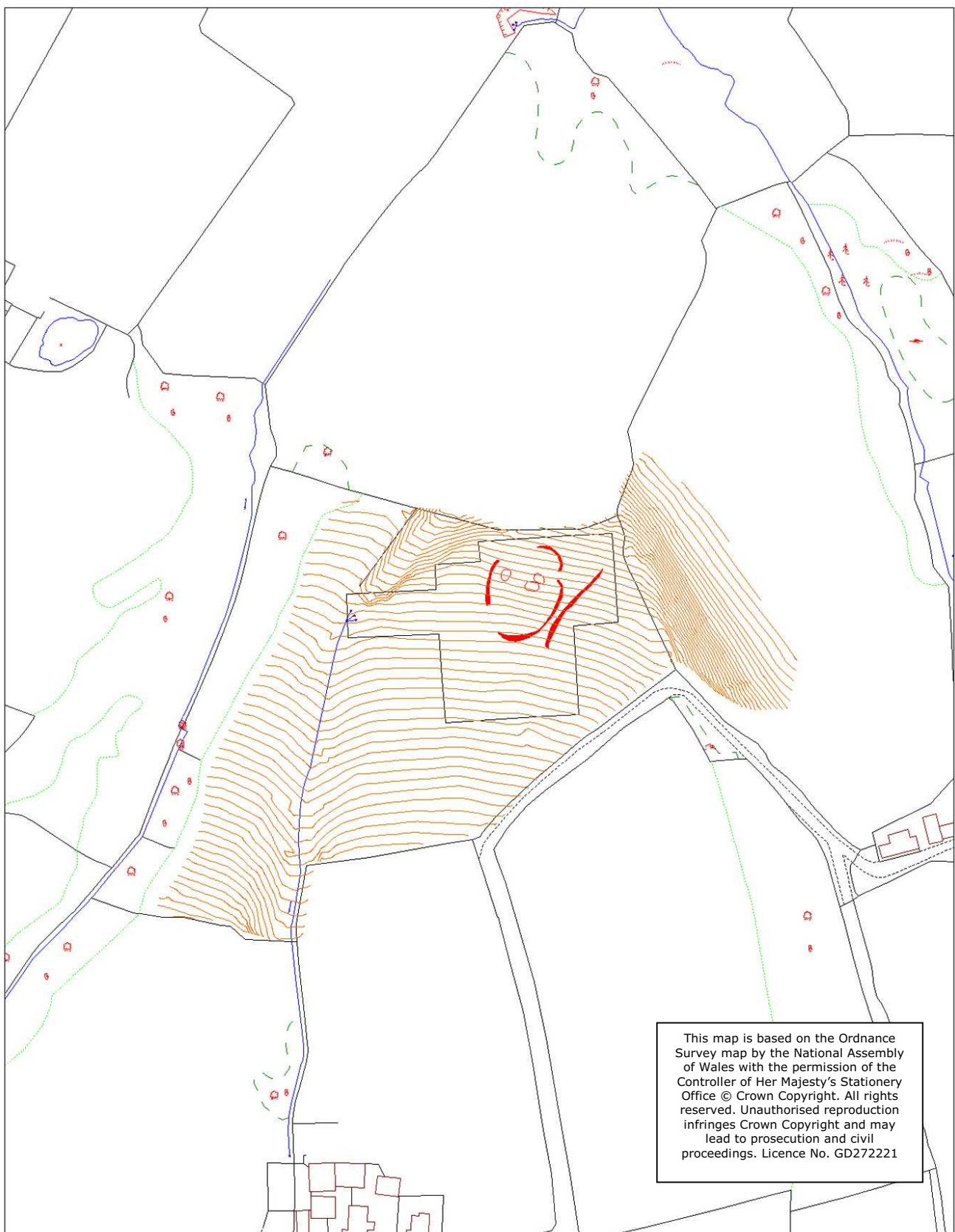


Figure 7. Location of the geophysical surveys in relation to the cropmark. Contours at 0.5m intervals. Cropmark plots: © Crown Copyright: derived from RCAHMW data.



Figure 8. Aerial photograph of Cwmhowni. (RCAHMW Crown Copyright © reference 95-cs-1727)

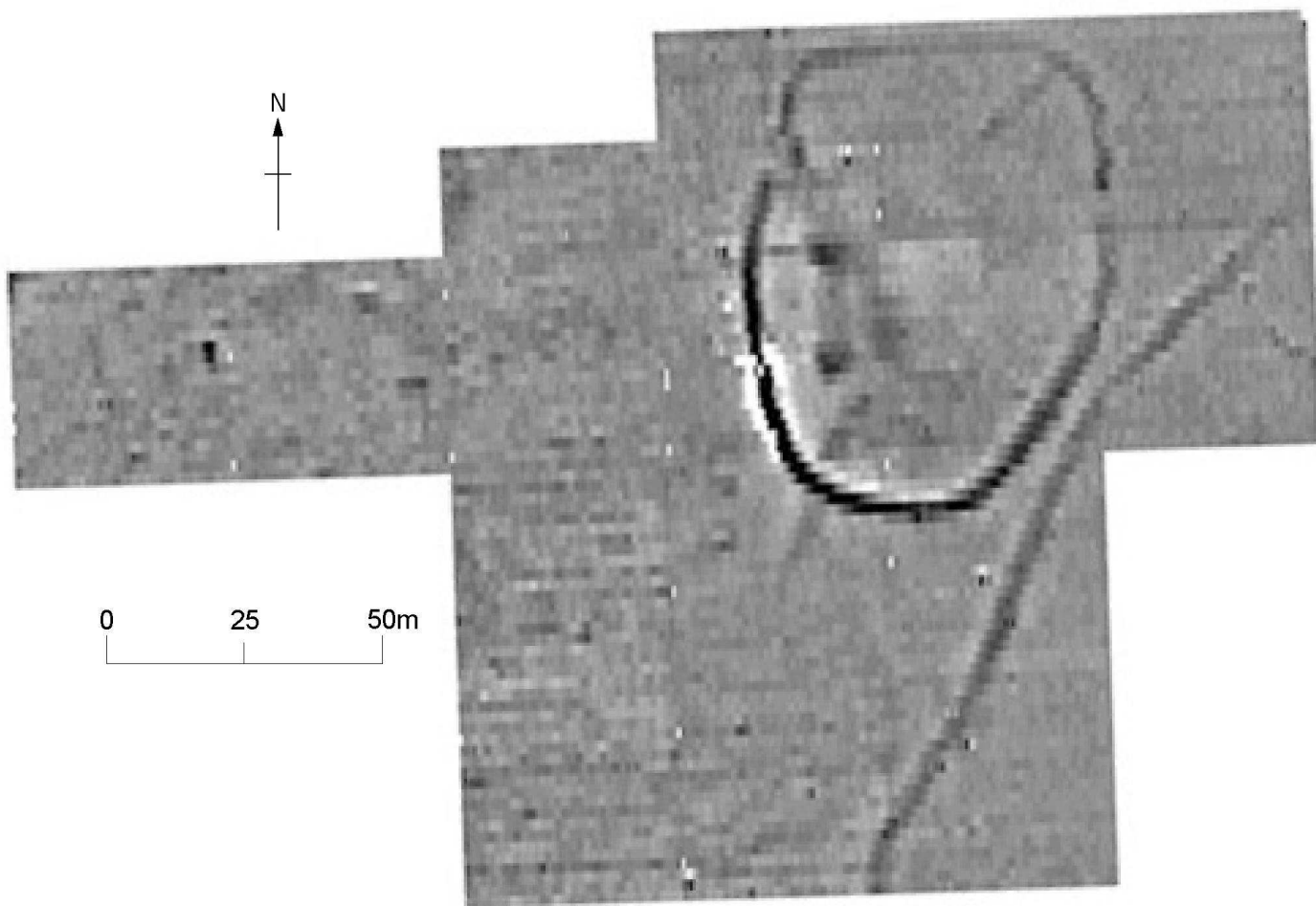


Figure 9. Cwmhowni geophysical survey.

FFYNNONWEN (formerly known as Waunlle)

Geophysical surveyors: Lloyd Bosworth, Harley Brunson, Charlotte Randle, Meg Chaby, Emily McDonald, Miranda Horan, Andrew Kurtzman, Mya Robinson, Rosie Bishop, Sarah Hull, Charles White, David Knight, Cathy Mciver, Eva Suanez, Leslie Bowers, Adam Jenkins, Louise Griffin, Richard Preston, Sean Tobias

Topographic surveyors: Hubert Wilson, Charlotte Randle, Emily McDonald, Miranda Horan, Andrew Kurtzman, Rosie Bishop, Sarah Hull, Charles White, David Knight, Leslie Bowers, Louise Griffin

Site name: Ffynnonwen

Primary Record No. 5838

Grid reference: SN22574912

Date of survey: 20/07/06 – 29/07/06

General: Part of this site was surveyed in 2005. The results shown here include this earlier survey.

Aerial photograph and plot: Aerial photographs show a very distinct site with a circular cropmark ditch approximately 45m diameter lying within the southwest quadrant of a larger elliptical enclosure. This larger enclosure measures 160m north - south and 140m east - west. A break on the northwest side of the inner enclosure may mark an entrance. A clear break in the west side of the outer enclosure is an entrance.

Topographic setting: Lying towards the southern end of a rounded hilltop at approximately 170m, Land falls gently away from the site of the enclosure except to the north where it rises very gently a few meters to a high point.

Visible earthwork features: A very slight change in slope marks the line of the south side of the inner enclosure.

Gradiometer survey: The survey grid was set up along the line of the field hedge running N-S and covered both fields on either side of this hedge. The grid measured 210m x 200m with 110 20m x 20m grid squares of which 78 were surveyed. The survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m. Zero mean grid and despiking were used to enhance the results. The weather remained warm and dry for the duration of the survey.

Gradiometer survey interpretation: The whole outer ditch, bar a short section where the 2006 excavation was being carried out, can be seen in the survey results. This matches the AP interpretation of the cropmarked enclosure. The survey confirms the location of the entrance to this outer ditch as being on the west side and is approximately 10m wide and centrally located. Within the outer enclosure can be seen many deep plough scars running northwest-southeast which are presumed to post-date the enclosure as they also appear on the outside of the ditch running on the same alignment. There are also what appear to be many pits or post-holes within the enclosure that may well, in reality, be plough scarring too. At the northern most point of the enclosing ditch there is a pronounced kink in the ditch line suggesting that the ditch at this point was being dug from both directions and this sharp deviation was needed to make them meet. In the lower centre of the enclosure, on the east side of the dividing hedge-

bank, is a ditch forming an 85-degree arc. This is continued, albeit fainter, to the west, running through the inner enclosure and forming over half of a circular enclosure. A possible roundhouse lies beneath the hedge-bank within this enclosure.

The survey has shown many areas that could potentially contain archaeology but are too indistinct to provide an interpretation. Two of these areas, NNE and NNW outside the main enclosure, appear to be areas of burning.

The speculation that there was an annexe abutting the main enclosure seen in the 2005 survey is confirmed in the results of this survey. The annexe measures approximately 25m x 25m with a clear E facing entrance. A well-defined roundhouse drainage gully, measuring approximately 13m in diameter, can be seen to the west of centre. There is a possibility that there are more features within the annexe, though they are not clearly defined. There appears to be another roundhouse drainage gully on the W side of the annexe and outside of the main enclosure that is also being cut by the outer ditch of the annexe.

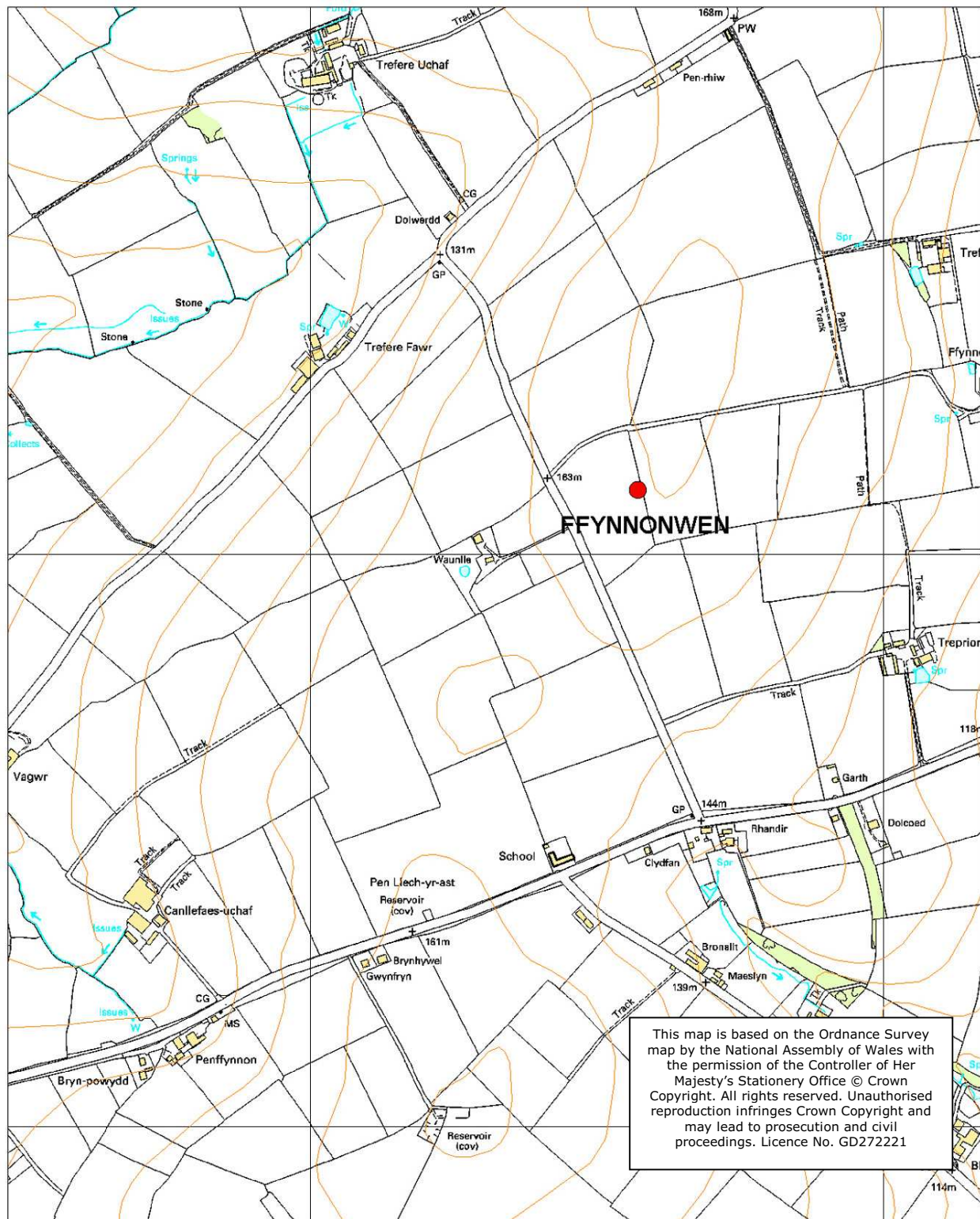


Figure 10. General location of Ffynnonwen. Scale 1:10,000.

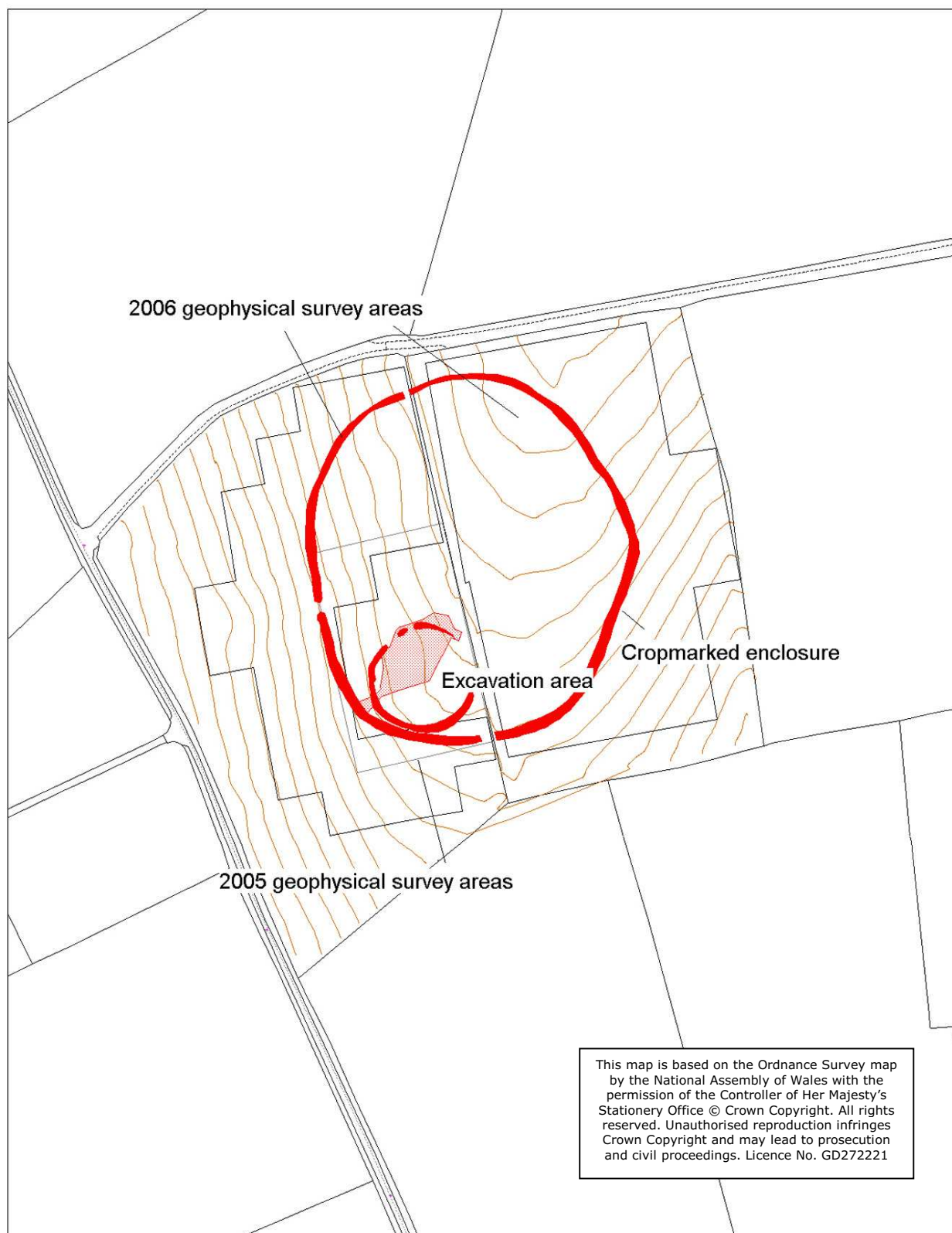


Figure 11. Location of the geophysical surveys in relation to the cropmarks and the excavation area. Contours at 0.5m intervals. Cropmark plots: © Crown Copyright: derived from RCAHMW data.



Figure 12. Aerial photograph of Ffynnonwen (RCAHMW Crown Copyright © reference 96-cs-0997).

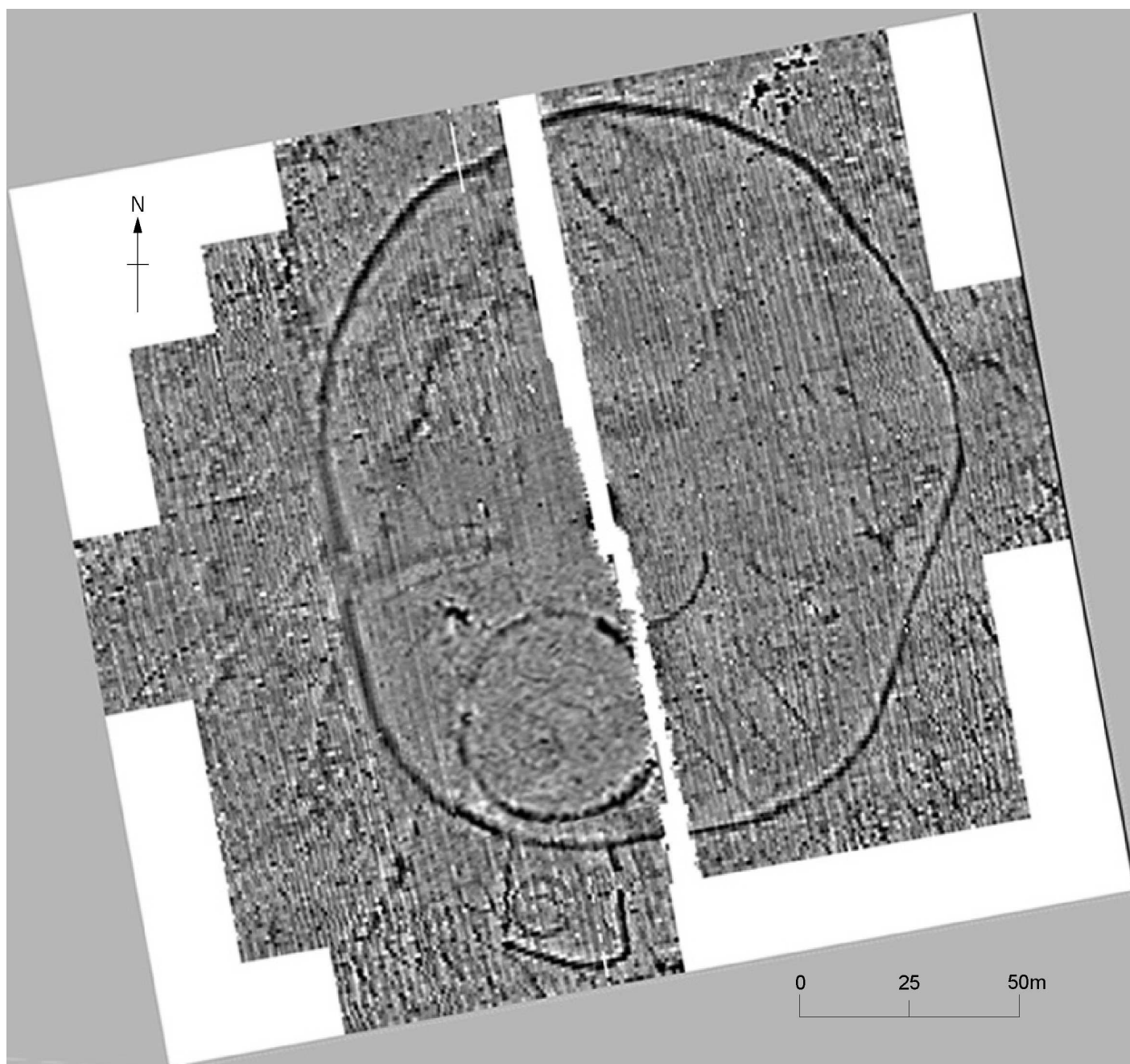


Figure 13. Ffynnonwen geophysical survey.

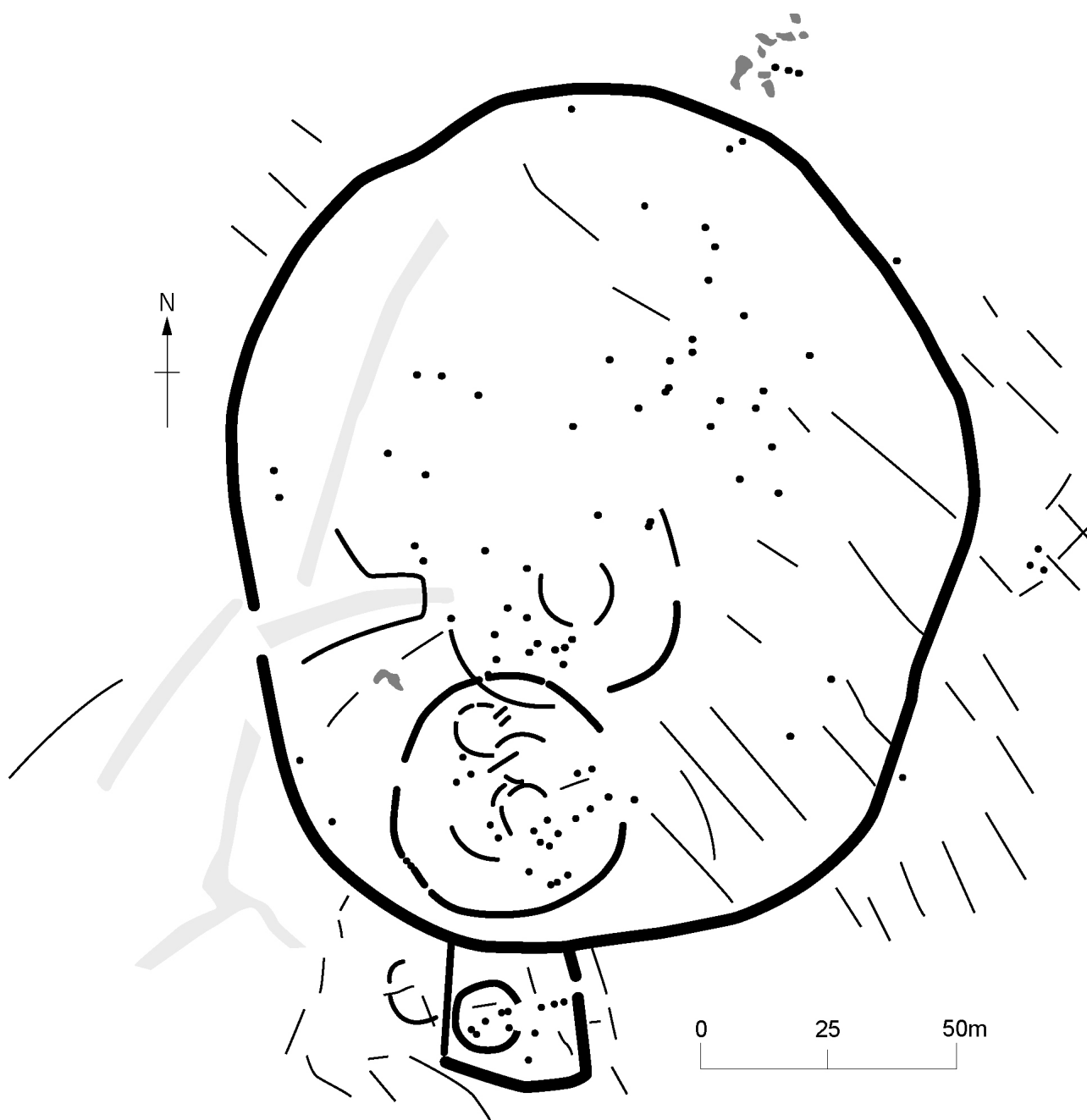


Figure 14. Ffynnonwen geophysical survey. Interpretation of raw data.

PENPEDWAST

Geophysical surveyors: Lloyd Bosworth
Alessandra Parsons
Matt Bailey
Cathy McIver
Josh Ingold
Ann Dailey

Topographic surveyors: Hubert Wilson
Josh Ingold

Site name: Penpedwast

Primary Record No. 52107

Grid reference: SN12013903

Date of survey: 30/07/06, 04/08/06 and 06/08/06

Aerial photograph: Aerial photographs show a sharp-cornered rectangular cropmarked enclosure, almost square, approximately 35m across internally. The south side is particularly well defined, with a ditch perhaps 6m wide and an entrance towards the east end. A very steep, wooded slope defines the north side of the enclosure. Some geological marking is shown on the photograph, but a faint, c. 12m diameter circle outside the SE corner of the enclosure may be archaeological.

Topographic setting: The site lies at c.80m above sea level on fairly level ground at the edge of steep valley side that falls 30m to a stream. Land falls gently away from the site to the south, but to the southeast it rises very slightly on to a high point.

Visible earthwork features: There are no traces of this enclosure in the pasture field. However, a c. 1m wide terrace running along the steep slope to the north (in deciduous woodland), a few metres below the crest top, may mark the line of a defensive ditch.

Gradiometer survey: The survey grid was set up parallel to the fenced off escarpment running WSW. The grid measured 120m x 60m with 18 20m x 20m grid squares of which 16 were surveyed. The survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m. A second grid of 16 10m x 10m squares was established based on the 20m x20m grid of which 8 were surveyed (Fig. 19). The purpose of this was to target the roundhouse drainage gully, the cluster of post-holes and entranceway with a high-resolution survey. This was achieved by walking a 10m square at 0.5m traverse intervals with the gradiometer set to record a 20m square. In this way, a 20m x 20m area would produce 6400 readings compared to the normal 1600 readings. Zero mean grid and despiking were used to enhance the results. The weather was warm but windy for the 20m survey and the 10m survey was not completed due to by heavy rain.

Gradiometer survey interpretation: The gradiometry survey produced good clear results with very little background interference. The entirety of the remaining defended enclosure was recorded with the exception of a short length of the western most ditch running toward the escarpment.

The survey revealed a square enclosure with a slightly curving eastern ditch which had overshoot its meeting with the southern ditch by approximately 5m. The enclosing ditches are of variable width with the western ditch being 2m at its widest, the southern ditch at 3m and the eastern ditch at 5m. The south-facing entranceway is clearly defined.

Within the enclosure was found a roundhouse drainage gully in the centre and a cluster of pits or post-holes in the SE corner.

The high-resolution survey provided much more information about the interior of the roundhouse and the cluster of post-holes in the SE corner of the enclosure. Within the roundhouse can be seen two doorposts and a possible central hearth area. The cluster of post-holes may be a second roundhouse. A 4-post structure was revealed as well as two post-holes that had previously been obscured by interference from the barbed-wire fence. One gate post-hole may be evident at the entrance-way, although this is uncertain, as the whole of the entranceway was not surveyed.

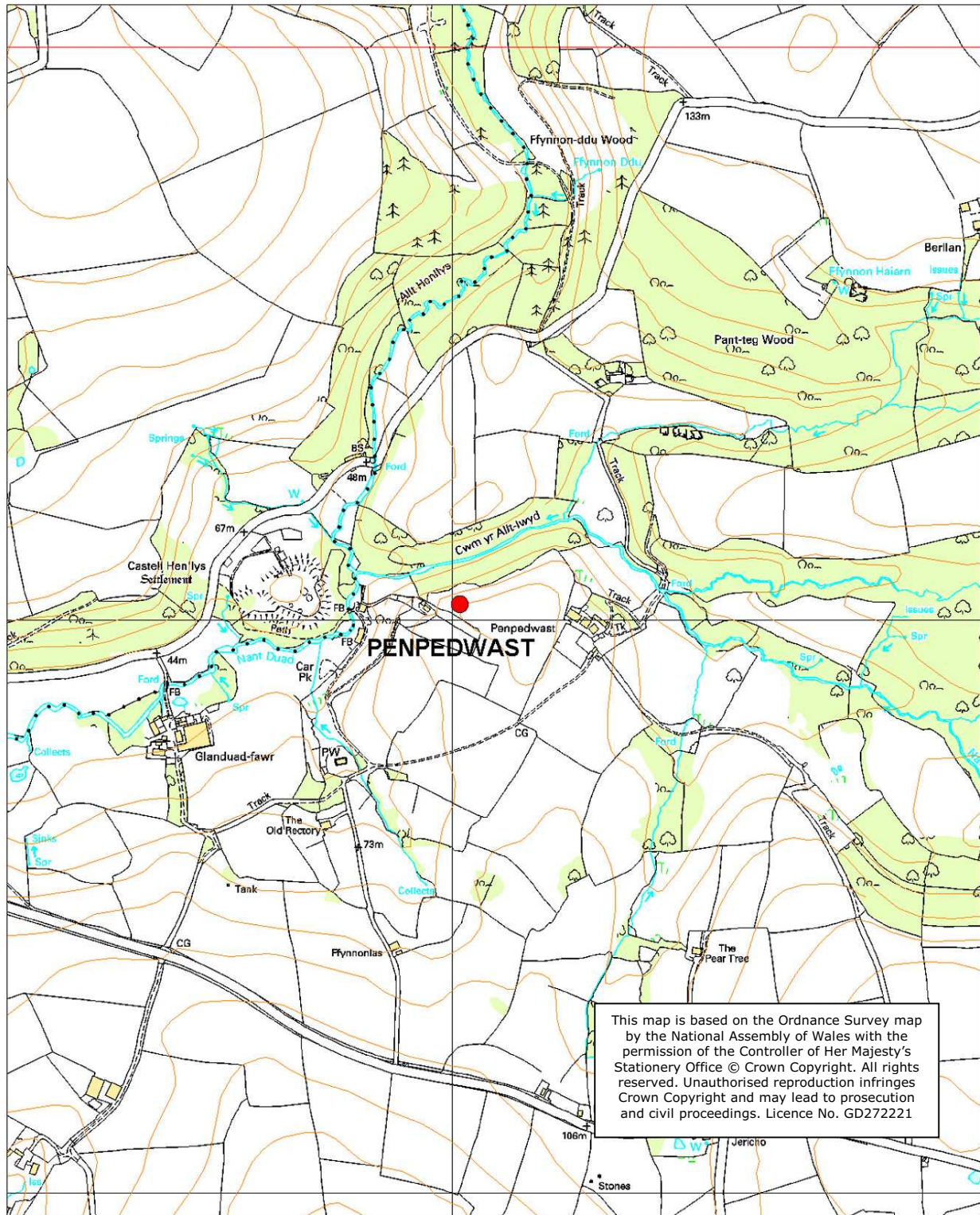


Figure 15. General location of Penpedwast. Scale 1:10,000.

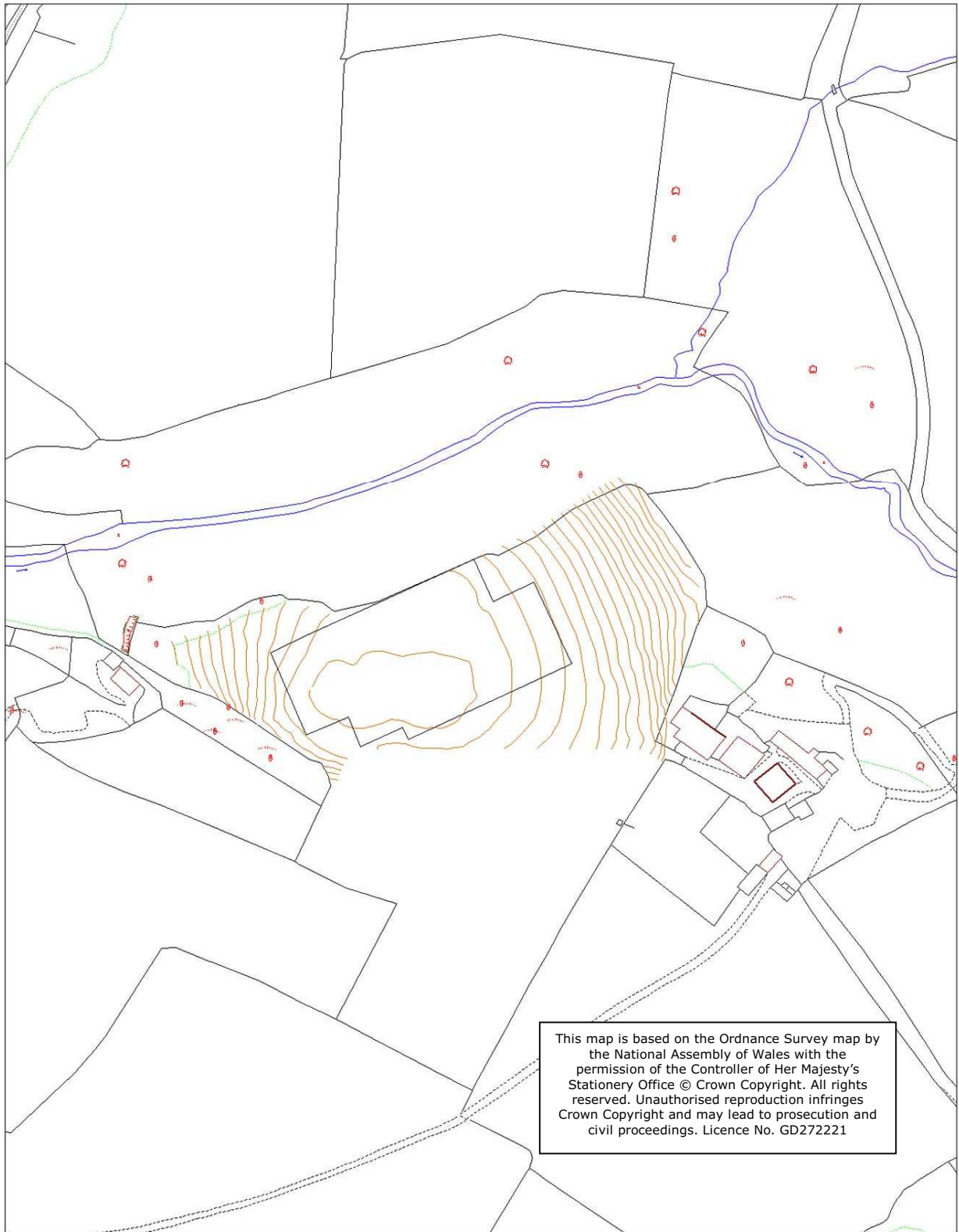


Figure 16. Location of the geophysical survey.



Figure 17. Aerial photograph of Penpedwast. (RCAHMW Crown Copyright © reference DI2006-1316).

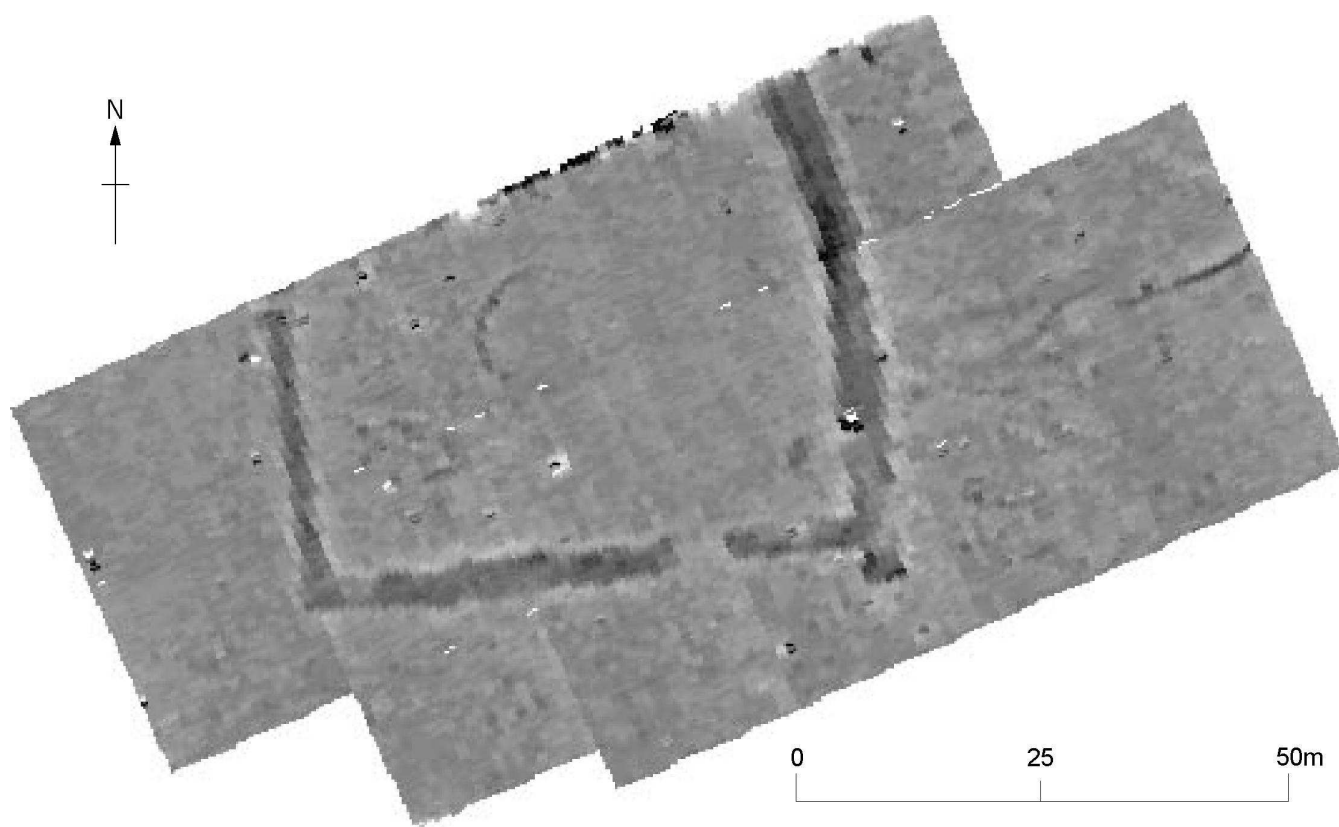


Figure 18. Penpedwast geophysical survey.

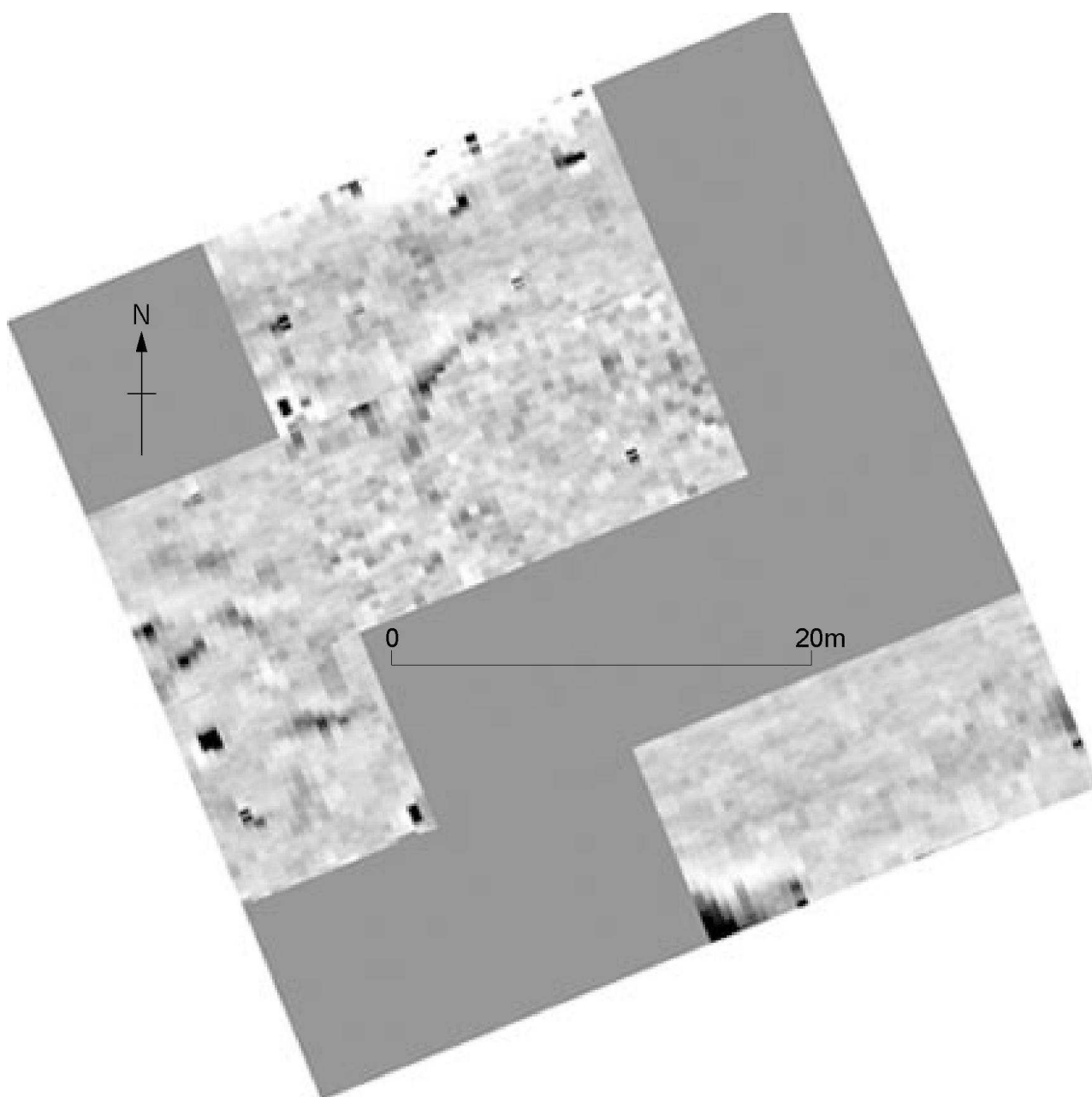


Figure 19. Penpedwast high resolution geophysical survey.

TRE-CEFN ISAF

Geophysical surveyors: Lloyd Bosworth
Piers Collins
James Clark
Josh Ingold
Charlie Moore

Topographic surveyors: Hubert Wilson
Piers Collins

Site name: Tre-cefn Isaf

Primary Record No. 12135

Grid reference: SN21064943

Date of survey: 31/07/06 – 01/08/06

Aerial photograph: An aerial photograph shows a ditch of a sub-rectangular cropmark enclosure approximately 45m northwest - southeast and 35m southwest - northeast, with a simple entrance midway along the southeast-facing (downslope) side. The only aerial photograph is held by Cambridge University and is their copyright. It is not shown here.

Topographic setting: The site lies on a gentle southeast-facing slope. Immediately to the south and east the land falls away more steeply into a small valley. To the northwest the land climbs gently.

Visible earthwork features: None

Gradiometer survey: The survey grid was set up along the line of the hedge running WSW. The grid measured 100m x 60m with 15 20m x 20m grid squares of which all 15 were surveyed. The survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m. Zero mean grid and despiking were used to enhance the results. The weather was windy but warm with the survey being interrupted by frequent heavy showers.

Gradiometer survey interpretation:

The gradiometer survey produced good results showing the majority of the external defensive ditch of a sub-circular enclosure with a clear entrance. The size of the enclosure visible in the results measures approximately 48m x 43m with several internal and external features.

Within the enclosure there appears to be a three-sided squared ditch containing post-holes. This may be its actual shape, though the possibility that the ditch fill has distorted a circular roundhouse drainage gully may also be the case. There are two amorphous shapes emanating from the ditch terminals running in a NNE direction. It is difficult to tell whether these are archaeological or natural.

Two ditches running east-west and measuring approximately 5m and 7m are also clearly visible. The northern ditch terminates approximately 3m from the outer defensive ditch that suggests a possible thickness of 3m for the internal bank. The southern ditch appears to connect with the outer defensive ditch, though this may be due the fact that a cluster of high readings nearby may indeed spread to the ditch giving the illusion of a connection.

There are several clusters of what may be pits or post-holes within the enclosure, though no definite pattern is discernable to say which they are. In the centre of the enclosure there is a 2m-diameter pit/post-hole.

The survey grid caught what appears to be another possible squared ditch similar to the internal one approximately 30m SE of the entrance, although there is not enough visible to make out its true shape. There also appears to be a pit alignment running in the same direction and connecting this possible squared ditch with the enclosure.

A series of possible pits or post-holes can be seen running for approximately 90 degrees of the southern circumference of the enclosure.

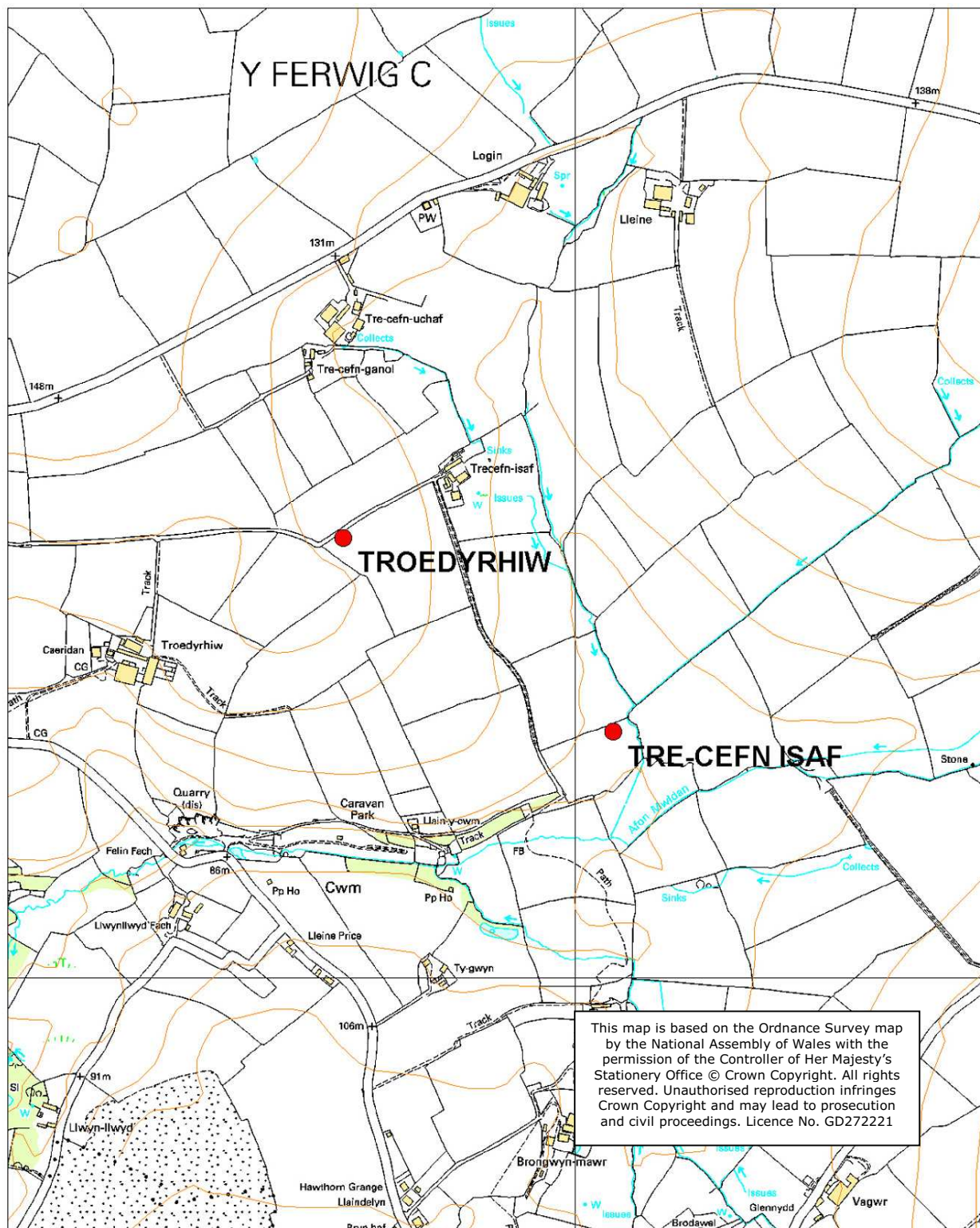


Figure 20. General location of Troedyrhiw and Tre-cefn Isaf. Scale 1:10,000.



Figure 21. Location of the geophysical survey. Contours at 0.5m intervals.

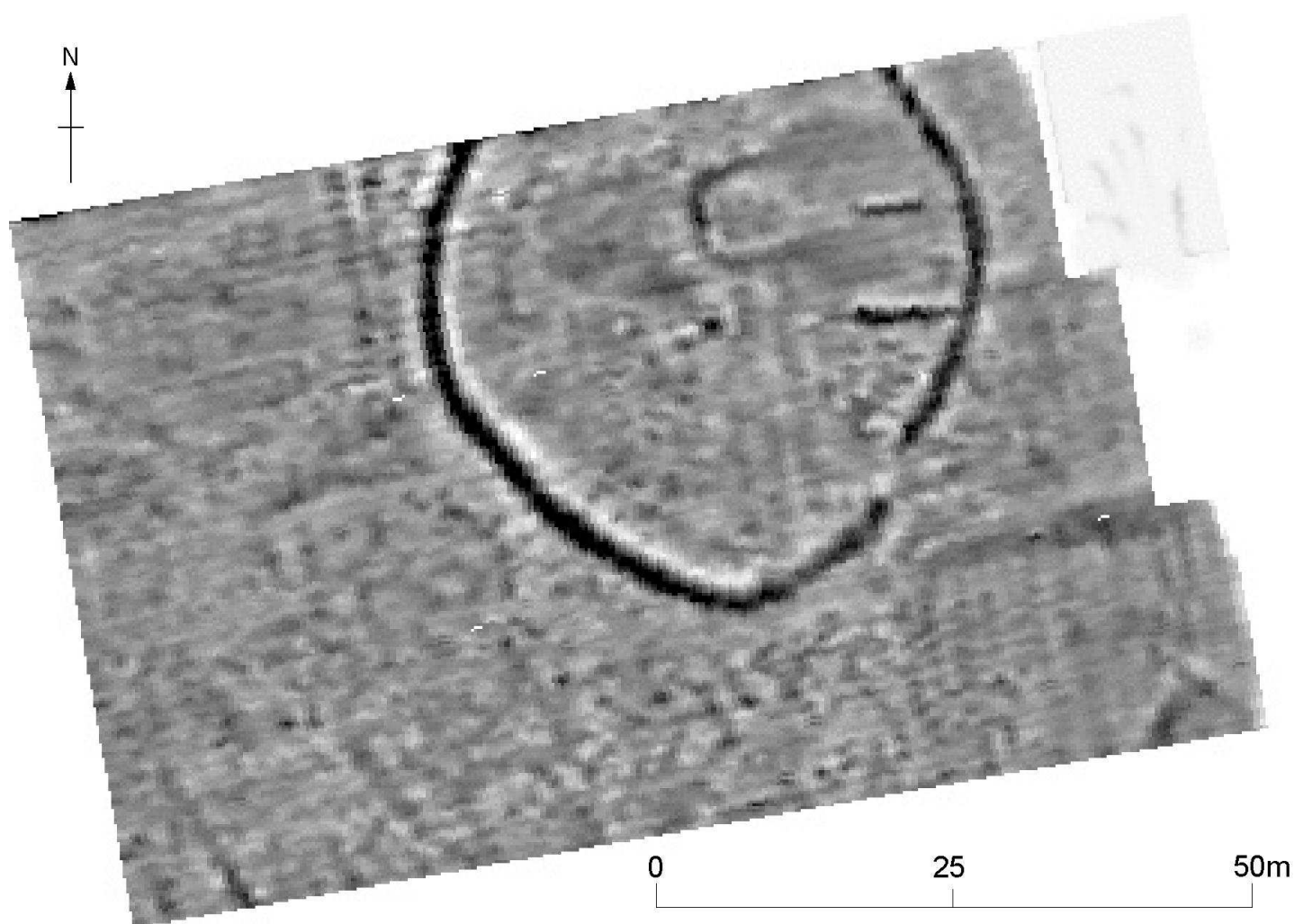


Figure 22. Tre-cefn Isaf geophysical survey.

TROEDYRHIW

Geophysical surveyors: Lloyd Bosworth
Jess Shields
David Hunt

Topographic surveyors: Hubert Wilson
Oli Wilson
Leslie bower

Site name: Troedyrhiw

Primary Record No. 52064

Grid reference: SN20624975

Date of survey: 02/08/06 – 04/08/06

General: Part of this site was surveyed in 2004. The results shown here include this earlier survey.

Aerial photograph and plot: Aerial photographs show a sharp-cornered rectangular enclosure measuring c. 50m E-W and 45m N-S with an entrance in the east side. A lane bisects this enclosure. A fainter rectangular enclosure, 50m by 28m, is attached to the south side. This enclosure has an east-facing entrance.

Topographic setting: Located on a gentle east-facing slope.

Visible earthwork features: None

Gradiometer survey: The survey grid was set up parallel to the line of the hedge running SE alongside the road. The grid measured 60m x 140m with 21 20m x 20m grid squares of which 20 were surveyed. The survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m. Zero mean grid, despiking and interpolation were used to enhance the results. The weather remained warm and dry for the duration of the survey.

Gradiometer survey interpretation: The gradiometer survey produced very clear results revealing the northern corner of the defended enclosure at Troedyrhiw.

The interior of the enclosure visible in the results is relatively small measuring only 60m x 20m. The only features discernable within the enclosure are what appear to be storage pits or the postholes of a four-post structure.

Two parallel linear ditches measuring approximately 20m at their widest and 15m at their narrowest can be seen running east-west to the north of the enclosure. They appear to deliberately avoid the enclosure suggesting that the enclosure predates these linear ditches and that the enclosure was still a substantial/visible earthwork at the time of their construction.

Also visible are two more recent field ditches to the northeast of the enclosure. These are a field boundary demolished to create one larger field.

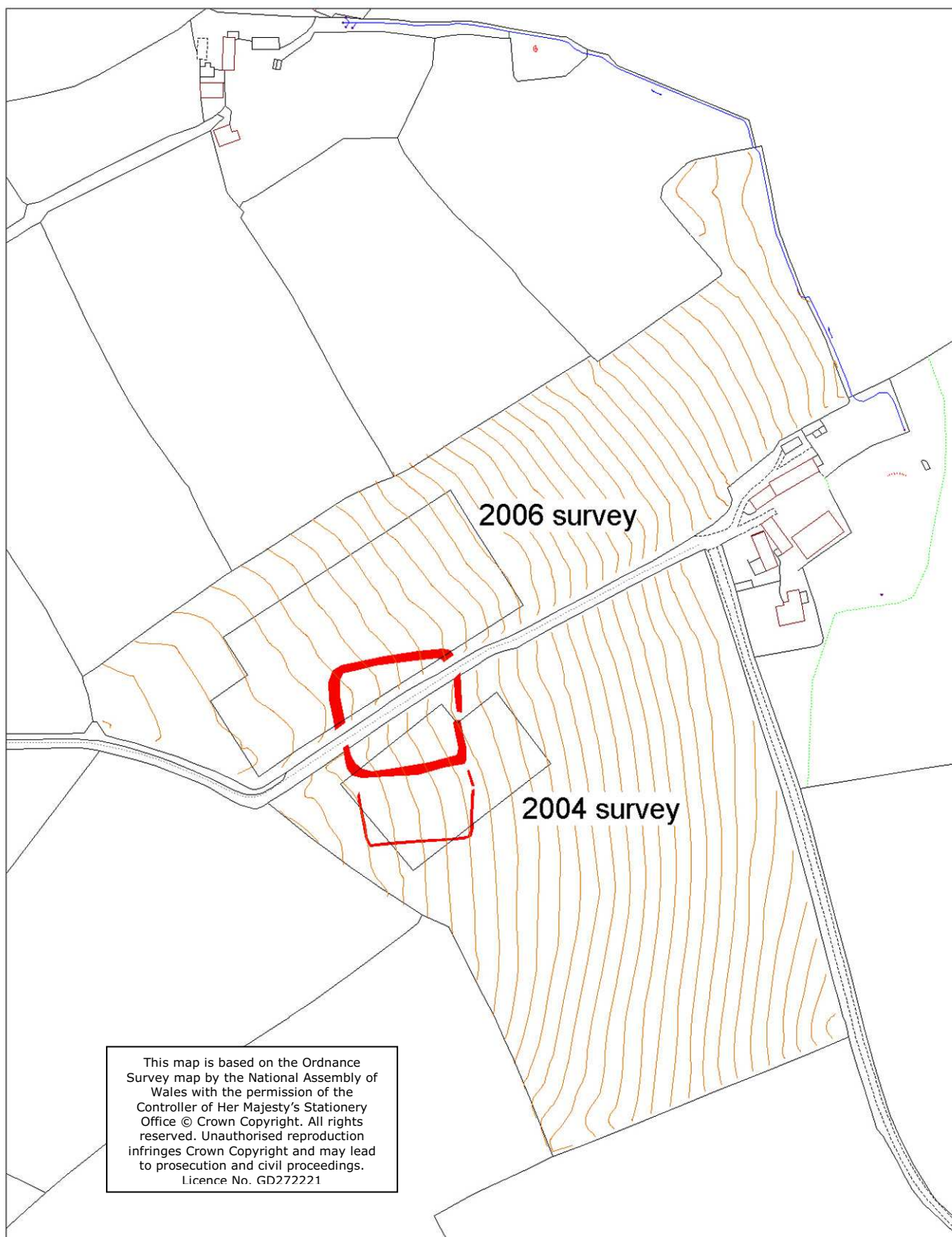


Figure 23. Location of the geophysical surveys in relation to the cropmark. Contours at 0.5m intervals. Cropmark plots: © Crown Copyright: derived from RCAHMW data.



Figure 24. Aerial photograph of Troedyrhiw (RCAHMW Crown Copyright © reference 2003-cs-1451).

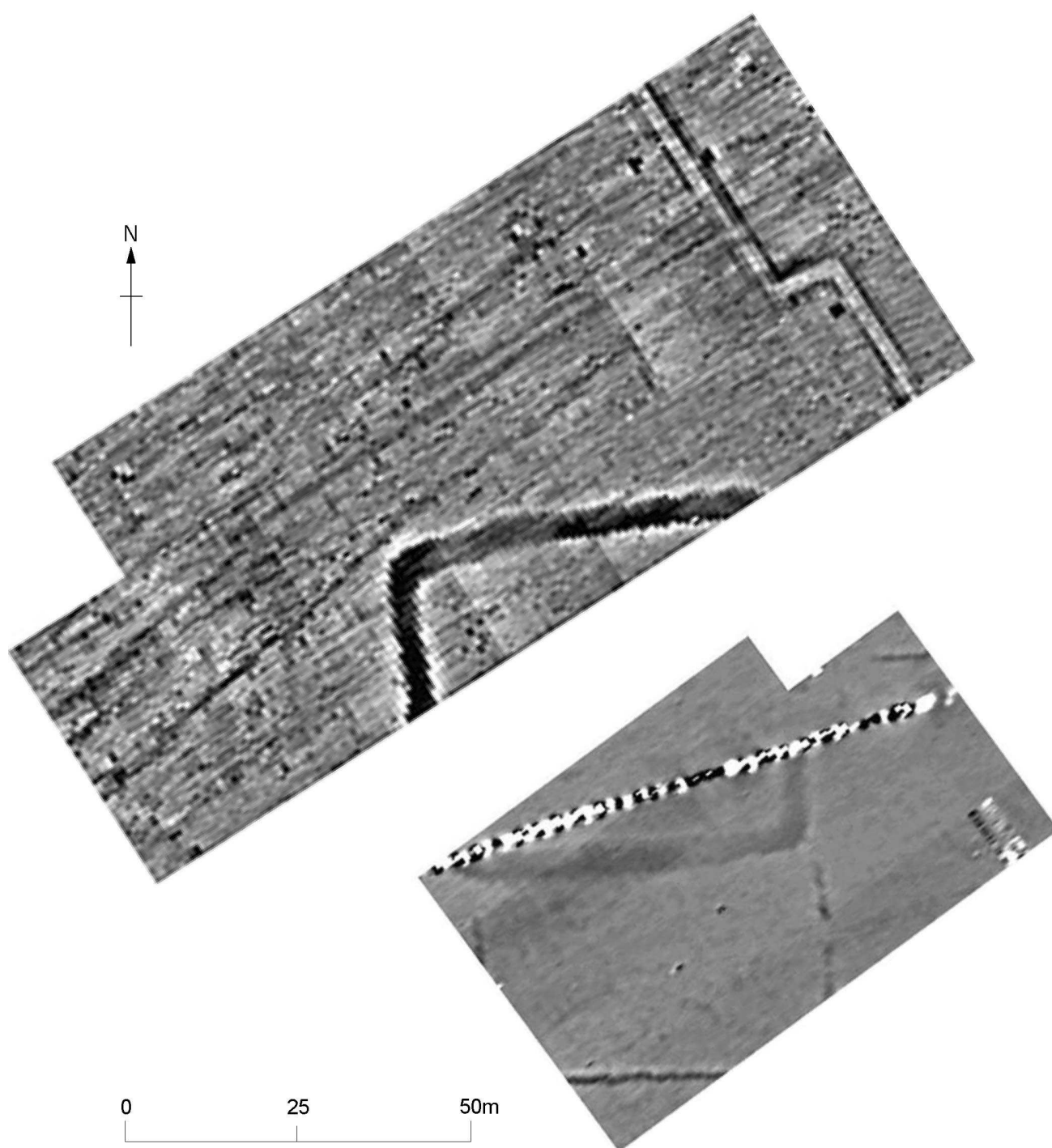


Figure 25. Troedyrhiw geophysical surveys.

ACKNOWLEDGEMENTS

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REFERENCES

Murphy K and Mytum H 2005, *Excavation of an Iron Age and Romano-British Defended Enclosure at Troedyrhiw, Verwig, Ceredigion, 2005: Interim Report*, unpublished Cambria Archaeology report 2005/125

Murphy K and Mytum H 2006, *Excavation of an Iron Age Defended Enclosure at Ffynnonwen, Tremain, Carigan, 2006: Interim Report*, unpublished Cambria Archaeology report 2006/97

Murphy K, Mytum H, Carver R and Wilson H 2004, *Rectangular Crop-marked Enclosures in South Ceredigion*, unpublished report by Cambria Archaeology, Report No 2004/97

Murphy K, Mytum H, Carver R and Wilson H 2006a, *Crop-Marked Enclosures in South Ceredigion and North Pembrokeshire 2005: Geophysical Survey*, Cambria Archaeology unpublished report 2006/7

**CROP-MARKED ENCLOSURES
IN SOUTH CEREDIGION AND NORTH PEMBROKESHIRE
2006: GEOPHYSICAL SURVEY**

RHIF YR ADRODDIAD / REPORT NUMBER 2006/109

**Medi 2006
September 2006**

Paratowyd yr adroddiad hwn gan / This report has been prepared by K Murphy

Swydd / Position: Principal Archaeologist

Llofnod / Signature Dyddiad / Date

Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by E G Hughes

ar ran Archaeoleg Cambria, Ymddiriedolaeth Archaeolegol Dyfed Cyf.
on behalf of Cambria Archaeology, Dyfed Archaeological Trust Ltd.

Swydd / Position: Director

Llofnod / Signature Dyddiad / Date

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau
sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

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